



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

Hojas de datos Válvulas ESDVs, BDVs, XSVs

NÚMERO DE CONTRATO: 2021-3037741-015	
<input checked="" type="checkbox"/>	1. APROBADO PARA DISEÑO
<input type="checkbox"/>	2. APROBADO CON COMENTARIOS, PUEDE PROCEDER SUJETO A LA INCORPORACIÓN DE LOS CAMBIOS INDICADOS
<input type="checkbox"/>	3. DEVUELTO Y REVISADO, NO PUEDE PROCEDER
<input type="checkbox"/>	4. SOLO PARA INFORMACIÓN
FIRMAS 	FECHA: 27-09-2021

D1	27-sep-21	Emitido para Diseño (Modificado Donde se Indica)	JCPM	DJCF	JRDM
D	20-sep-21	Emitido para Diseño	JCPM	DJCF	JRDM
A	19-sep-21	Documento Interdisciplinario	JCPM	DJCF	JRDM
REV	FECHA	DESCRIPCIÓN	ELABORÓ	REVISÓ	APROBÓ
PROYECTO WOOD No. 07220100 20.00.041.000			DOCUMENTO No. FFM-F-PCF-GN-ICX-29-001		

INGENIERÍA BÁSICA EXTENDIDA PROYECTO INTERCONEXIÓN SISTEMA DE ENDULZAMIENTO DE GAS ÁCIDO CUIAGUA										FFM-F-PCF-GN-ICX-29-001 Documento No.			
Hojas de datos Válvulas ESDVs, BDVs, XSVs										Revisión:		D1	
SHUTDOWN VALVE (ESDV's)													
GENERAL	1	Tag No.			SDV-2505								
	2	Service			Valve shutdown Acid gas to fuel gas								
	3	Line, Vessel, or Equip No.			12"-PG-25038-B2A1-VA								
	4	P&ID No.			CGPFGSP1PRE25001.6-10 (ACID GAS COMPRESSOR AFTERCOOLER)								
LINE	5	Line Size and Schedule			12" - SCH XS								
	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			
PROCESS CONDITIONS	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			psig	335.7		335.7		335.7			
	12	Oper. Temperature			°F	124.9		124.9		124.9			
	13	Density	Specific Gravity		lb/ft3	-	1.288	0.755	1.288	0.755	1.288	0.755	
	14	Viscosity			cP	0.01318		0.01318		0.01318			
	15	Molecular weight			21.84 lb/lbmol								
VALVE	16	Max. Shut-off Differential Pressure			335.7 psig								
	17	Manufacturer		API 6D / BS 5351									
	18	Model		Long Pattern Cast Steel									
	19	Body Type		2 Pieces type arrangement Trunnion ball									
	20	Body Size	Port Type	12"	Full Port								
	21	End Connec. & Rating		12" - 300# Raised Face ANSI B16.5									
	22	Seat Leakage Class		ISO 5208 Rate A/Class VI Tight Shut-off									
	23	Running torque, units		By vendor									
	24	Breaking torque, units		By vendor									
	25	Fire Safe	Code	Yes	API 607 Antistatic								
	26	Valve Characteristic											
	27	Installation			Horizontal								
	28	Packing type			By vendor								
	MATERIALS, VALVE AND TRIM	29	Bonnet Type			Bolted							
30		Body Material		ASTM A216 GR. WCB									
31		Bonnet Material		ASTM A216 GR. WCB									
32		Trim (moving parts)		NA									
33		Stem Material		A182 GR F6 (Note 3)									
34		Plug/Ball/Disk Material		A182 GR F6 (Note 3)									
35		Packing / Seal		Viton (Note 3)									
36		Seat / Seat Spring		Filled PTFE (Note 3)									
37		Gasket Material		(Note 3)									
ACTUATOR		38	Mfr. and Model		By vendor								
	39	Type		Spring return - simple, Stroke test									
	40	Orientation		Top Mounted									
	41	Dimension		By vendor									
	42	Connections: Act - Body		By vendor									
	43	Act - Stem		By vendor									
	44	Torque@min/max supply		By vendor (Maximum pressure ANSI)									
	45	Thrust@min/max supply		By vendor									
	46	Time: Open / Close		5-10 Seg.	5-10 Seg. (Adjustable)								
	47	Failure Position		Open									
	48	Actuator mounted by		By vendor									
	49	Frequency of operation		Emergency									
	50	Fire Safe		Yes - fireproofing-epóxico		D1							
	CERTIFICATES	51	Mfr Calculations	Hydrotest	Material	Yes		Yes		Yes			
		52	Calibration	Seat leak test	Conformance	Yes		Yes		API 598			
		53	Dimensional Drawing			Yes							
	Notes: 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. 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 Intrinsically safe according to ANSI/UL 913												

D1

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 (ESDV's)													
GENERAL	1	Tag No.			SDV-2504								
	2	Service			Valve shutdown Acid gas to Sweetening package								
	3	Line, Vessel, or Equip No.			10"-PG-25400-B2A1-VA								
	4	P&ID No.			CGPFGSP1PRE25001.6-10 (ACID GAS COMPRESSOR AFTERCOOLER)								
LINE	5	Line Size and Schedule			10" - SCH XS								
	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		
PROCESS CONDITIONS	8	Fluid and State			Gas ácido								
	9				Units	@ Min. Flow		@ Norm. Flow		D1 @ Max. Flow			
	10	Flow Rate			MMSCFD	15.2		30.5		D1 33.5			
	11	Oper. Pressure			psig	335.7		335.7		335.7			
	12	Oper. Temperature			°F	124.9		124.9		124.9			
	13	Density	Specific Gravity		lb/ft3	-	1.288	0.755	1.288	0.755	1.288	0.755	
	14	Viscosity			cP	0.01318		0.01318		0.01318			
	15	Molecular weight			21.84 lb/lbmol								
	16	Max. Shut-off Differential Pressure			335.7 psig								
	VALVE	17	Manufacturer			API 6D / BS 5351							
18		Model			Long Pattern Cast Steel								
19		Body Type			2 Pieces type arragment Trunnion ball								
20		Body Size	Port Type	10"	Full Port								
21		End Connec. & Rating			10" - 300# Raised Face ANSI B16.5								
22		Seat Leakage Class			ISO 5208 Rate A/Class VI Tight Shut-off								
23		Running torque, units			By vendor								
24		Breaking torque, units			By vendor								
25		Fire Safe	Code	Yes	API 607 Antistatic								
26		Valve Characteristic											
27		Installation			Horizontal								
28		Packing type			By vendor								
29		Bonnet Type			Bolted								
MATERIALS, VALVE AND TRIM	30	Body Material			ASTM A216 GR. WCB								
	31	Bonnet Material			ASTM A216 GR. WCB								
	32	Trim (moving parts)			NA								
	33	Stem Material			A182 GR F6 (Note 3)								
	34	Plug/Ball/Disk Material			A182 GR F6 (Note 3)								
	35	Packing / Seal			Viton (Note 3)								
	36	Seat / Seat Spring			Filled PTFE (Note 3)								
ACTUATOR	37	Gasket Material			(Note 3)								
	38	Mfr. and Model			By vendor								
	39	Type			Spring return - simple, Stroke test								
	40	Orientation			Top Mounted								
	41	Dimension			By vendor								
	42	Connections: Act - Body			By vendor								
	43	Act - Stem			By vendor								
	44	Torque @min/max supply			By vendor (Maximum pressure ANSI)								
	45	Thrust@min/max supply			By vendor								
	46	Time: Open / Close			5-10 Seg.	5-10 Seg. (Adjustable)							
	47	Failure Position			Close								
	48	Actuator mounted by			By vendor								
	49	Frequency of operation			Emergency								
	50	Fire Safe			Yes - fireproofing-epóxico		D1						
	CERTIFICATES	51	Mfr Calculations	Hydrotest	Material	Yes		Yes		Yes			
52		Calibration	Seat leak test	Conformance	Yes		Yes		API 598				
53		Dimensional Drawing			Yes								
Notes: 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/FIB-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 Intrinsically safe according to ANSI/UL 913													

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)													
GENERAL	1	Tag No.			SDV-2912								
	2	Service			Valve shutdown gas to high pressure relief system								
	3	Line, Vessel, or Equip No.			8"-PG-29404-D2A1-VA								
	4	P&ID No.			CGPFGSP1PRE24002.1-4. (MEMBRANES SKID 1-2-3)								
LINE	5	Line Size and Schedule			8" - SCH 80								
	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		
PROCESS CONDITIONS	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			psig	900.0		900.0		900.0			
	12	Oper. Temperature			°F	112.3		112.3		112.3			
	13	Density	Specific Gravity		lb/ft3	3.103	0.630	3.103	0.6304	3.103	0.6304		
	14	Viscosity			cP	0.01352		0.01352		0.01352			
	15	Molecular weight			18.25 lb/lbmol								
	16	Max. Shut-off Differential Pressure			800.0 psig								
	VALVE	17	Manufacturer			API 6D / BS 5351							
18		Model			Long Pattern Cast Steel								
19		Body Type			2 Pieces type arragement Trunnion ball								
20		Body Size	Port Type	8"	Full Port								
21		End Connec. & Rating			8" - 600# Raised Face ANSI B16.5								
22		Seat Leakage Class			ISO 5208 Rate A/Class VI Tight Shut-off								
23		Running torque, units			By vendor								
24		Breaking torque, units			By vendor								
25		Fire Safe	Code	Yes	API 607 Antistatic								
26		Valve Characteristic											
27		Installation			Horizontal								
28		Packing type			By vendor								
29		Bonnet Type			Bolted								
MATERIALS, VALVE AND TRIM		30	Body Material			ASTM A216 GR. WCB							
	31	Bonnet Material			ASTM A216 GR. WCB								
	32	Trim (moving parts)			NA								
	33	Stem Material			A182 GR F6 (Note 3)								
	34	Plug/Ball/Disk Material			A182 GR F6 (Note 3)								
	35	Packing / Seal			Viton (Note 3)								
	36	Seat / Seat Spring			Filled PTFE (Note 3)								
ACTUATOR	37	Gasket Material			(Note 3)								
	38	Mfr. and Model			By vendor								
	39	Type			Spring return - simple, Stroke test								
	40	Orientation			Top Mounted								
	41	Dimension			By vendor								
	42	Connections: Act - Body			By vendor								
	43	Act - Stem			By vendor								
	44	Torque@min/max supply			By vendor (Maximum pressure ANSI)								
	45	Thrust@min/max supply			By vendor								
	46	Time: Open / Close			5-10 Seg.	5-10 Seg. (Adjustable)							
	47	Failure Position			Close								
	48	Actuator mounted by			By vendor								
	49	Frequency of operation			Emergency								
	50	Fire Safe			Yes - fireproofing-epóxico		D1						
CERTIFICATES	51	Mfr Calculations	Hydrotest	Material	Yes		Yes		Yes				
	52	Calibration	Seat leak test	Conformance	Yes		Yes		API 598				
	53	Dimensional Drawing			Yes								
<p>Notes:</p> <ol style="list-style-type: none"> 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. 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 To confirm according to recommended installation by vendor. The seller should supply the actuator valve, filter and regulator assembled as a set. 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. 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 accepted brands of Ecopetrol (EDP-P-013 V5) The shutdown valve (SDV) does not require any SIL level Require Intrinsically safe according to ANSI/UL 913 													

INGENIERÍA BÁSICA EXTENDIDA PROYECTO INTERCONEXIÓN SISTEMA DE ENDULZAMIENTO DE GAS ÁCIDO CUPUAGUA										FFM-F-PCF-GN-ICX-29-001						
Hojas de datos Válvulas ESDVs, BDVs, XSVs										Revisión:		D1				
ON - OFF VALVE (XSV)																
GENERAL	1	Tag No.								XSV-2505						
	2	Service								By pass Valve SDV-2505 Acid Gas to Fuel Gas						
	3	Line, Vessel, or Equip No.								SDV-2505						
	4	P&ID No.								CGPFGP1PRE25001.6-10 (ACID GAS COMPRESSOR AFTERCOOLER)						
LINE	5	Line Size and Schedule								2" - SCH-80						
	6	Pipe Material				Pipe Insulation				Carbon Steel						
	7	Run of pipe		Design Press.		Design Temp.				740 Psig @ 100°F		N/A				
PROCESS CONDITIONS	8	Fluid and State								Gas ácido						
	9									Units	@ Min. Flow		@ Norm. Flow			
	10	Flow Rate								MMSCFD		15.2		30.5		
	11	Oper. Pressure								psig		335.7		335.7		
	12	Oper. Temperature								°F		124.9		124.9		
	13	Density				Specific Gravity				lb/ft3	1.288	0.755	1.288	0.755		
	14	Viscosity								cP	0.01318		0.01318			
	15	Molecular weight								21.84 lb/lbmol						
	16	Max. Shut-off Differential Pressure								335.7 psig						
	VALVE	17	Manufacturer				BS 5351				ACTUATOR MATERIALS	54	Yoke	Stem	By vendor	By vendor
18		Model				By vendor				55		Casing	Spring	By vendor	By vendor	
19		Body Type				Floating ball				56		Protective coating				Yes
20		Body Size	Port Type		2"		Full Port		57	Painting specifications				By vendor		
21		End Connec. & Rating				2" - 300# Raised Face ANSI B16.5				HYDRAULIC PNEUMATIC ACTUATOR	58	Supply medium				Instrument air
22		Seat Leakage Class				ISO 5208 Rate A/Class VI Tight Shut-off					59	Volume per stroke				By vendor
23		Running torque, units				By vendor					60	Supply min/norm/max				80/120 psig
24		Breaking torque, units				By vendor					61	Control Signal				24 Vdc / Pneumatic IS (EX i).
25		Fire Safe	Code	Yes		API 607 Antistatic		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	
29	Bonnet Type				Bolted				66		Qty.	Actuation points		2	Open / Close	
MATERIALS, VALVE AND TRIM	30	Body Material				ASTM A216 GR. WCB					SWITCHES	67	Type	SPDT (limit switch) mechanic IS (Ex i)		
	31	Bonnet Material				ASTM A216 GR. WCB				68		Contacts / Rating		24 Vdc IS (EX i).		
	32	Trim (moving parts)				NA				69		Electric conn.size/type		1/2" NPT		
	33	Stem Material				A182 GR F6 (Note 3)				70		Enclosure		NEMA 4X, IS (EX i) Intrínsecamente 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	By vendor		
	36	Seat / Seat Spring				Filled PTFE (Note 3)				73		Tag number		SY-2505		
ACTUATOR	37	Gasket Material				(Note 3)				SOLENOID VALVE	74	Type		3 Way		
	38	Mfr. and Model				By vendor					75	Power Supply	Body mtrl.	24 Vdc Low Power	SS	
	39	Type				Spring return - simple					76	Electric conn.size/type		1/2" NPT		
	40	Orientation				Top Mounted					77	Enclosure		Nema 4X, IS (EX i)		
	41	Dimension				By vendor					78	Area classification		Cl 1, Div 2 Gr C & D		
	42	Connections: Act - Body				By vendor					79	Housing	Coating	By vendor		
	43	Act - Stem				By vendor					80	Side Body/ Parts		By vendor		
	44	Torque@min/max supply				By vendor (Maximum pressure ANSI)					MISC.	81	Accumulator unit		No (Note 5)	
	45	Thrust@min/max supply				By vendor						82	Position ind./trans.		No	
	46	Time: Open / Close		2-5 Seg.		2-5 Seg. (Adjustable)		83	Handwheel			No				
	47	Failure Position				Close						84	Reset Ext Push Button		Yes	
	48	Actuator mounted by				By vendor						85	Filter/Regulator/Gauge		Yes	
	49	Frequency of operation				By pass						86	Stroke test device		No	
	50	Fire Safe				Yes - fireproofing-epóxico						87	Positioner Type		No	
CERTIFICATES	51	Mfr Calculations	Hydrotest		Material		Yes		Yes			Yes				
	52	Calibration	Seat leak test		Conformance		Yes		Yes		API 598					
	53	Dimensional Drawing								Yes						
Notes:																
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.																
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 (XSV) does not require any SIL level.																
12. Require Intrinsically safe according to ANSI/UL 913																
<div>D1</div>																

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Hojas de datos Válvulas ESDVs, BDVs, XSVs										Revisión:		D1	
ON - OFF VALVE (XSV)													
GENERAL	1	Tag No.			XSV-2504								
	2	Service			By pass Valve SDV-2504 Acid gas to Sweetening package								
	3	Line, Vessel, or Equip No.			SDV-2504								
	4	P&ID No.			CGPFGP1PRE25001.6-10 (ACID GAS COMPRESSOR AFTERCOOLER)								
LINE	5	Line Size and Schedule			2" - SCH 80								
	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			
PROCESS CONDITIONS	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			psig	335.7		335.7		335.7			
	12	Oper. Temperature			°F	124.9		124.9		124.9			
	13	Density	Specific Gravity		lb/ft3	1.288	0.755	1.288	0.755	1.288	0.755		
	14	Viscosity			cP	0.01318		0.01318		0.01318			
	15	Molecular weight			21.84 lb/lbmol								
	16	Max. Shut-off Differential Pressure			335.7 psig								
	VALVE	17	Manufacturer		BS 5351	ACTUATOR MATERIALS	54	Yoke	Stem	By vendor	By vendor		
18		Model		By vendor	55		Casing	Spring	By vendor	By vendor			
19		Body Type		Floating ball	56		Protective coating		Yes				
20		Body Size	Port Type	2"	Full Port	57	Painting specifications		By vendor				
21		End Connec. & Rating		2" - 300# Raised Face ANSI B16.5	HYDRAULIC PNEUMATIC ACTUATOR	58	Supply medium		Instrument air				
22		Seat Leakage Class		ISO 5208 Rate A/Class VI Tight Shut-off		59	Volume per stroke		By vendor				
23		Running torque, units		By vendor		60	Supply min/norm/max		80/120 psig				
24		Breaking torque, units		By vendor		61	Control Signal		24 Vdc / Pneumatic IS (EX i).				
25		Fire Safe	Code	Yes		API 607 Antistatic	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-2504					
29	Bonnet Type		Bolted	66		Qty.	Actuation points	2	Open / Close				
MATERIALS, VALVE AND TRIM	30	Body Material		ASTM A216 GR. WCB		SWITCHES	67	Type	SPDT (limit switch) mechanic IS (EX i)				
	31	Bonnet Material		ASTM A216 GR. WCB	68		Contacts / Rating	24 Vdc IS (EX i)					
	32	Trim (moving parts)		NA	69		Electric conn.size/type	1/2" NPT					
	33	Stem Material		A182 GR F6 (Note 3)	70		Enclosure	NEMA 4X, IS (EX i) Intrínsecamente 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	By vendor	By vendor			
	36	Seat / Seat Spring		Filled PTFE (Note 3)	73		Tag number		SY-2504				
	37	Gasket Material		(Note 3)	74		Type		3 Way with local reset				
ACTUATOR	38	Mfr. and Model		By vendor	SOLENOID VALVE	75	Power Supply	Body mtrl.	24 Vdc Low Power	SS			
	39	Type		Spring return - simple		76	Electric conn.size/type	1/2" NPT					
	40	Orientation		Top Mounted		77	Enclosure	Nema 4X, IS (EX i)					
	41	Dimension		By vendor		78	Area classification		Cl 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				
	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				
	46	Time: Open / Close		2-5 Seg. 2-5 Seg. (Adjustable)		83	Handwheel		No				
	47	Failure Position		Close		84	Reset Ext Push Button		Yes				
CERTIFICATES	48	Actuator mounted by		By vendor	MISC.	85	Filter/Regulator/Gauge		Yes				
	49	Frequency of operation		By pass		86	Stroke test device		No				
	50	Fire Safe		Yes - fireproofing-epóxico		87	Positioner Type		No				
	51	Mfr Calculations	Hydrotest	Material		Yes	Yes	Yes					
	52	Calibration	Seat leak test	Conformance		Yes	Yes	API 598					
	53	Dimensional Drawing				Yes							

Notes:

- 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.
- 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 & Antistatic Devices, Operation.
- To confirm according to recommended installation by vendor.
- The seller should supply the actuator valve, filter and regulator assembled as a set.
- 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.
- 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 accepted brands of Ecopetrol (EDP-P-013 V5)
- The ON-OFF valve (XSV) does not require any SIL level**
- Require Intrinsically safe according to ANSI/UL 913**

INGENIERÍA BÁSICA EXTENDIDA PROYECTO INTERCONEXIÓN SISTEMA DE ENDULZAMIENTO DE GAS ÁCIDO CUIAGUA										FFM-F-PCF-GN-ICX-29-001 Documento No.													
Hojas de datos Válvulas ESDVs, BDVs, XSVs										Revisión:		D1											
ON - OFF VALVE (XSV)																							
GENERAL	1	Tag No.								XSV-2912													
	2	Service								By pass Valve SDV-2912 Acid gas to Sweetening package													
	3	Line, Vessel, or Equip No.								SDV-2912													
	4	P&ID No.								CGPFGSP1PRE24002.1-4 (MEMBRANES SKID 1-2-3)													
LINE	5	Line Size and Schedule								2" - SCH 160													
	6	Pipe Material				Pipe Insulation				Carbon Steel													
	7	Run of pipe		Design Press.		Design Temp.				1480 Psig @ 100°F		N/A											
PROCESS CONDITIONS	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								psig		900.0		900.0		900.0							
	12	Oper. Temperature								°F		112.3		112.3		112.3							
	13	Density				Specific Gravity				lb/ft3		3.103		0.630		3.103 0.6304 3.103 0.6304							
	14	Viscosity								cP		0.01352		0.01352		0.01352							
	15	Molecular weight								18.25 lb/lbmol													
	16	Max. Shut-off Differential Pressure								800.0 psig													
	VALVE	17	Manufacturer				API 6D / BS 5351				ACTUATOR MATERIALS		54		Yoke		Stem		By vendor		By vendor		
18		Model				By vendor				55			Casing		Spring		By vendor		By vendor				
19		Body Type				Trunnion ball				56			Protective coating				Yes						
20		Body Size		Port Type		2"		Full Port		57			Painting specifications				By vendor						
21		End Connec. & Rating				2" - 600# Raised Face ANSI B16.5				HYDRAULIC PNEUMATIC ACTUATOR		58		Supply medium				Instrument air					
22		Seat Leakage Class				ISO 5208 Rate A/Class VI Tight Shut-off						59		Volume per stroke				By vendor					
23		Running torque, units				By vendor						60		Supply min/norm/max				80/120 psig					
24		Breaking torque, units				By vendor						61		Control Signal				24 Vdc / Pneumatic IS (EX i).					
25		Fire Safe		Code		Yes		API 607 Antistatic		62		Diaphragm/Piston size				By vendor							
26		Valve Characteristic								63		Diaphragm/Piston mtrl				By vendor							
27		Installation								64		Conn. Supply Return		By vendor		Spring							
28		Packing type								65		Tag numbers				ZSO/ZSC-2912							
29		Bonnet Type								66		Qty.		Actuation points		2		Open / Close					
MATERIALS, VALVE AND TRIM		30	Body Material				ASTM A216 GR. WCB				SWITCHES		67		Type				SPDT (limit switch) mechanic IS (EX i) D1				
	31	Bonnet Material				ASTM A216 GR. WCB				68			Contacts / Rating				24 Vdc IS (EX i), D1						
	32	Trim (moving parts)				NA				69			Electric conn.size/type				1/2" NPT						
	33	Stem Material				A182 GR F6 (Note 3)				70			Enclosure				NEMA 4X, IS (EX i) Intrinsically safe						
	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-2912							
ACTUATOR	37	Gasket Material								(Note 3)				74		Type				3 Way with local reset			
	38	Mfr. and Model								By vendor				75		Power Supply		Body mtrl.		24 Vdc Low Power		SS	
	39	Type								Spring return - simple				76		Electric conn.size/type				1/2" NPT			
	40	Orientation								Top Mounted				77		Enclosure				Nema 4X, IS (EX i) D1			
	41	Dimension								By vendor				78		Area classification				Cl 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			
	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			
	46	Time: Open / Close				2-5 Seg. 2-5 Seg. (Adjustable)				83		Handwheel				No D1							
	47	Failure Position								Close				84		Reset Ext Push Button				Yes D1			
	48	Actuator mounted by								By vendor				85		Filter/Regulator/Gauge				Yes D1			
	49	Frequency of operation								By pass				86		Stroke test device				No			
	50	Fire Safe								Yes - fireproofing-epóxico D1				87		Positioner Type				No			
CERTIFICATES	51	Mfr Calculations		Hydrotest		Material		Yes		Yes		Yes											
	52	Calibration		Seat leak test		Conformance		Yes		Yes		API 598											
	53	Dimensional Drawing								Yes													
Notes: <ol style="list-style-type: none"> 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. 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 with the process. Valve shall be fire safe tested according to API 607. To confirm according to recommended installation by vendor. The seller should supply the actuator valve, filter and regulator assembled as a set. 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. 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 accepted brands of Ecopetrol (EDP-P-013 V5) The ON-OFF valve (XSV) does not require any SIL level Require Intrinsically safe according to ANSI/UL 913 																							

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					
BLOWDOWN VALVE (BDV)												
GENERAL	1	Tag No.				BDV-2505						
	2	Service				Blowdown Valve gas to low pressure relief system						
	3	Line, Vessel, or Equip No.				2"-PG-25402-B2A1-VA						
	4	P&ID No.				CGPFGSP1PRE25001.6-10 (ACID GAS COMPRESSOR AFTERCOOLER)						
LINE	5	Line Size and Schedule				2" - SCH 80						
	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					
PROCESS CONDITIONS	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				psig	335.7 335.7 335.7					
	12	Oper. Temperature				°F	124.9 124.9 124.9					
	13	Density Specific Gravity				lb/ft3	1.288 0.755 1.288 0.755 1.288 0.755					
	14	Viscosity				cP	0.01318 0.01318 0.01318					
	15	Molecular weight				21.84 lb/lbmol						
	16	Max. Shut-off Differential Pressure				335.7 psig						
	VALVE	17	Manufacturer	BS 5351			ACTUATOR MATERIALS	54	Yoke	Stem	By vendor	By vendor
18		Model	By vendor			55		Casing	Spring	By vendor	By vendor	
19		Body Type	Floating ball			56		Protective coating	Yes			
20		Body Size	Port Type	2" Full Port		57		Painting specifications	By vendor			
21		End Connec. & Rating	2" - 300# Raised Face ANSI B16.5			HYDRAULIC PNEUMATIC ACTUATOR	58	Supply medium	Instrument air			
22		Seat Leakage Class	ISO 5208 Rate A/Class VI Tight Shut-off				59	Volume per stroke	By vendor			
23		Running torque, units	By vendor				60	Supply min/norm/max	80/120 psig			
24		Breaking torque, units	By vendor				61	Control Signal	24 Vdc / Pneumatic IS (EX i).			
25		Fire Safe	Code	Yes	API 607 Antistatic		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				
29	Bonnet Type	Bolted			66		Qty.	Actuation points	2	Open / Close		
MATERIALS, VALVE AND TRIM	30	Body Material	ASTM A216 GR. WCB				SWITCHES	67	Type	SPDT (limit switch) D1 mechanic IS (Ex i)		
	31	Bonnet Material	ASTM A216 GR. WCB			68		Contacts / Rating	24 Vdc IS (EX i) D1			
	32	Trim	NA			69		Electric conn.size/type	1/2" NPT			
	33	Stem Material	A182 GR F6 (Note 3)			70		Enclosure	D1 NEMA 4X, IS (EX i) Intrinsicament 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	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 with local reset			
ACTUATOR	38	Mfr. and Model	By vendor			SOLENOID VALVE	75	Power Supply	Body mtl.	24 Vdc Low Power	SS	
	39	Type	Spring return - simple				76	Electric conn.size/type	1/2" NPT			
	40	Orientation	Top Mounted				77	Enclosure	D1 Nema 4X, IS (EX i)			
	41	Dimension	By vendor				78	Area classification	Cl 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			
	44	Torque@min/max supply	By vendor (Maximum pressure ANSI)				MISC.	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.	4-8 Seg. (Adjustable)				83	Handwheel	No D1		
	47	Failure Position	Close					84	Reset Ext Push Button	Yes D1		
48	Actuator mounted by	By vendor			85	Filter/Regulator/Gauge		Yes D1				
49	Frequency of operation	By pass			86	Stroke test device		No				
50	Fire Safe	Yes - fireproofing-epóxico D1			87	Positioner Type		No				
CERTIFICATES	51	Mfr Calculations	Hydrotest	Material		Yes	Yes	Yes				
	52	Calibration	Seat leak test	Conformance		Yes	Yes	API 598				
	53	Dimensional Drawing				Yes						
Notes: 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. 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 Intrinsically safe according to ANSI/UL 913												

INGENIERÍA BÁSICA EXTENDIDA PROYECTO INTERCONEXIÓN SISTEMA DE ENDULZAMIENTO DE GAS ÁCIDO CUPUAGUA										FFM-F-PCF-GN-ICX-29-001			
										Documento No.			
Hojas de datos Válvulas ESDVs, BDVs, XSVs										Revisión:		D1	
BLOWDOWN VALVE (BDV)													
GENERAL	1	Tag No.			BDV-2911								
	2	Service			Blowdown Valve gas to low pressure relief system								
	3	Line, Vessel, or Equip No.			2"-GS-29404-B2A1-VA								
	4	P&ID No.			FFMFPCFMPPRE29006.1-3.D (COMPRESSION - SUCTION SCRUBBERS)								
LINE	5	Line Size and Schedule			2" - SCH 80								
	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	
PROCESS CONDITIONS	8	Fluid and State			Gas ácido								
	9				Units	@ Min. Flow		@ Norm. Flow		@ Max. Flow			
	10				MMSCFD	13.1		26.2		29.0			
	11	Oper. Pressure			psig	325.0		325.0		325.0			
	12	Oper. Temperature			°F	141.9		141.9		141.9			
	13	Density	Specific Gravity		lb/ft3	1.003	0.630	1.003	0.630	1.003	0.630		
	14	Viscosity			cP	0.01259		0.01259		0.01259			
	15	Molecular weight			18.24 lb/lbmol								
	16	Max. Shut-off Differential Pressure			350.0 psig								
	VALVE	17	Manufacturer		BS 5351	ACTUATOR MATERIALS	54	Yoke	Stem	By vendor	By vendor		
		18	Model		By vendor		55	Casing	Spring	By vendor	By vendor		
		19	Body Type		Floating ball		56	Protective coating		Yes			
		20	Body Size	Port Type	2"		57	Painting specifications		By vendor			
		21	End Connec. & Rating		2" - 300# Raised Face ANSI B16.5	HYDRAULIC PNEUMATIC ACTUATOR	58	Supply medium		Instrument air			
		22	Seat Leakage Class		ISO 5208 Rate A/Class VI Tight Shut-off		59	Volume per stroke		By vendor			
		23	Running torque, units		By vendor		60	Supply min/norm/max		80/120 psig			
24		Breaking torque, units		By vendor	61		Control Signal		24 Vdc / Pneumatic IS (EX i).				
25		Fire Safe	Code	Yes	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-2911				
29		Bonnet Type		Bolted	66		Qty.	Actuation points	2	Open / Close			
MATERIALS, VALVE AND TRIM		30	Body Material		ASTM A216 GR. WCB		SWITCHES	67	Type	SPDT (limit switch) mechanic IS (Ex i)			
	31	Bonnet Material		ASTM A216 GR. WCB	68	Contacts / Rating		24 Vdc IS (EX i)					
	32	Trim		NA	69	Electric conn.size/type		1/2" NPT					
	33	Stem Material		A182 GR F6 (Note 3)	70	Enclosure		NEMA 4X, IS (EX i) Intrínsecamente 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	By vendor	By vendor			
	36	Seat / Seat Spring		Filled PTFE (Note 3)	73	Tag number		SY-2911					
	37	Gasket Material		(Note 3)	74	Type		3 Way with local reset					
ACTUATOR	38	Mfr. and Model		By vendor	SOLENOID VALVE	75	Power Supply	Body mtrl.	24 Vdc Low Power	SS			
	39	Type		Spring return - simple		76	Electric conn.size/type		1/2" NPT				
	40	Orientation		Top Mounted		77	Enclosure		Nema 4X, IS (EX i)				
	41	Dimension		By vendor		78	Area classification		Cl 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				
	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				
	46	Time: Open / Close		4-8 Seg. 4-8 Seg. (Adjustable)	83	Handwheel		No D1					
	47	Failure Position		Close	84	Reset Ext Push Button		Yes D1					
	48	Actuator mounted by		By vendor	85	Filter/Regulator/Gauge		Yes D1					
	49	Frequency of operation		By pass	86	Stroke test device		No					
	50	Fire Safe		Yes - fireproofing-epóxico D1	87	Positioner Type		No					
CERTIFICATES	51	Mfr Calculations	Hydrotest	Material	Yes	Yes		Yes					
	52	Calibration	Seat leak test	Conformance	Yes	Yes		API 598					
	53	Dimensional Drawing			Yes								
Notes: 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. 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 Intrinsically safe according to ANSI/UL 913													

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							
BLOWDOWN VALVE (BDV)																			
GENERAL	1	Tag No.								BDV-2913									
	2	Service								Blowdown Valve gas to high pressure relief system									
	3	Line, Vessel, or Equip No.								2"-PG-29405-D2A1-VA									
	4	P&ID No.								CGPFGSP1PRE24002.1-4.(MEMBRANES SKID 1-2-3)									
LINE	5	Line Size and Schedule								2" - SCH 160									
	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							
PROCESS CONDITIONS	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								psig		900.0		900.0		900.0			
	12	Oper. Temperature								°F		112.3		112.3		112.3			
	13	Density				Specific Gravity				lb/ft³		3.103		0.630		3.103 0.6304 3.103 0.6304			
	14	Viscosity								cP		0.01352		0.01352		0.01352			
	15	Molecular weight								18.25 lb/lbmol									
	16	Max. Shut-off Differential Pressure								900.0 psig									
	VALVE	17	Manufacturer				API 6D / BS 5351				54		Yoke		Stem		By vendor		By vendor
18		Model				By vendor				55		Casing		Spring		By vendor		By vendor	
19		Body Type				Trunnion ball				56		Protective coating		Yes					
20		Body Size		Port Type		2"		Full Port		57		Painting specifications		By vendor					
21		End Connec. & Rating				2" - 600# Raised Face ANSI B16.5				58		Supply medium		Instrument air					
22		Seat Leakage Class				ISO 5208 Rate A/Class VI Tight Shut-off				59		Volume per stroke		By vendor					
23		Running torque, units				By vendor				60		Supply min/norm/max		80/120 psig					
24		Breaking torque, units				By vendor				61		Control Signal		24 Vdc / Pneumatic IS (EX i).					
25		Fire Safe		Code		Yes		API 607 Antistatic		62		Diaphragm/Piston size		By vendor					
26		Valve Characteristic								63		Diaphragm/Piston mtrl		By vendor					
MATERIALS, VALVE AND TRIM	27	Installation				Horizontal				64		Conn. Supply Return		By vendor		Spring			
	28	Packing type				By vendor				65		Tag numbers		ZSO/ZSC-2403					
	29	Bonnet Type				Bolted				66		Qty.		Actuation points		2		Open / Close	
	30	Body Material				ASTM A216 GR. WCB				67		Type		SPDT (limit switch) mechanic IS (Ex i)					
	31	Bonnet Material				ASTM A216 GR. WCB				68		Contacts / Rating		24 Vdc IS (EX i)					
	32	Trim				ASTM A216 GR. WCB				69		Electric conn.size/type		1/2" NPT					
	33	Stem Material				A182 GR F6 (Note 3)				70		Enclosure		NEMA 4X, IS (EX i) Intrinsicamentre 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		By vendor		By vendor	
	36	Seat / Seat Spring				Filled PTFE (Note 3)				73		Tag number		SY-2403					
ACTUATOR	37	Gasket Material				(Note 3)				74		Type		3 Way with local Reset					
	38	Mfr. and Model				By vendor				75		Power Supply		Body mtrl.		24 Vdc Low Power		SS	
	39	Type				Spring return - simple				76		Electric conn.size/type		1/2" NPT					
	40	Orientation				Top Mounted				77		Enclosure		Nema 4X, IS (EX i)					
	41	Dimension				By vendor				78		Area classification		Cl 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					
	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					
	46	Time: Open / Close				4-8 Seg.		4-8 Seg. (Adjustable)		83		Handwheel		No					
CERTIFICATES	47	Failure Position				Close				84		Reset Ext Push Button		Yes					
	48	Actuator mounted by				By vendor				85		Filter/Regulator/Gauge		Yes					
	49	Frequency of operation				By pass				86		Stroke test device		No					
	50	Fire Safe				Yes - fireproofing-epóxico				87		Positioner Type		No					
	51	Mfr Calculations		Hydrotest		Material		Yes		Yes		Yes							
	52	Calibration		Seat leak test		Conformance		Yes		Yes		Yes		API 598					
	53	Dimensional Drawing				Yes													

Notes:

- 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.
- 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.
- To confirm according to recommended installation by vendor.
- The seller should supply the actuator valve, filter and regulator assembled as a set.
- 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.
- 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 accepted brands of Ecopetrol (EDP-P-013 V5)
- The ON-OFF valve (BDV) does not require any SIL level**
- Require Intrinsically safe according to ANSI/UL 913**