PETROBRAS	DATA SHEET	No. I-FD-3010.66-1410-831-PPC-001	
	CLIENT OR USER: UN –RIO / ATP - MLL		SHEET: 1 of 6
	JOB OR PROJECT: MARLIM LESTE FIELD DEVELOPMENT		CC: 601272
	AREA OR UNIT: PETROBRAS 53 (P-53)		WITHOUT SCALE
CENPES	TITLE: CONTROL VALVES (TURRET)		

MICROSOFT WORD / V. 7.I-FD-3010.66-1410-831-PPC-001_D.DOC

INDEX OF REVISIONS

REV	DESCRIPTION AND/OR REVISED SHEETS
0	ORIGINAL
A	GENERAL REVISION
B	REVISED WHERE INDICATED DUE TO CONSISTENCY VERIFICATION
C	REVISED WHERE INDICATED.
D	REVISED WHERE INDICATED DUE TO ATP-MLL COMMENTS.

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STANDARDIZED FORM BY EP-2B-0004 - FIGURE B-4

	ORIGINAL	REV. A	REV. B	REV. C	REV. D	REV. E	REV. F	REV. G	REV. H
DATE	30OCT03	14NOV03	14JUL04	29NOV04	18MAR05				
DESIGN	CENPES	CENPES	CENPES	CENPES	CENPES				
EXECUTION	IP	IP	IP	IP	IP				
CHECK	SERGIO	SERGIO	SERGIO	SERGIO	VARINIA				
APPROVAL	SERGIO	SERGIO	SERGIO	SERGIO	SERGIO				

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PETROBRAS

DATA SHEET	No. I-FD-3010.66-1410-831-PPC-001	REV. D
AREA OR UNIT: PETROBRAS 53 (P-53)		SHEET 2 of 6

TITLE

CONTROL VALVES (TURRET)

01	TAG NUMBER			FV-1231010 A/E		PV-1231006A		PV-1231006B	
02	QUANTITY			05 (FIVE)		01 (ONE)		01 (ONE)	
	SERVICE			LP-122301A/E		SPLIT RANGE W / PV-1231006B		SPLIT RANGE W / PV-1231006A	
03	LINE No./ VESSEL No.			4"-P-G2-342/346		8"-P-G2-163		8"-P-G2-163	
BODY AND INTERNALS	04	TYPE OF BODY		GLOBE		GLOBE		GLOBE	
	05	BODY MATERIAL		A - 216 Gr WCB		A - 216 Gr WCB		A - 216 Gr WCB	
	06	BODY SIZE	PORT SIZE	2"	BY MFR	3"	BY MFR	6"	BY MFR
	07	END CONNECTIONS & RATING		FLG 1500# RTJ (NOTE 2)		FLG 1500# RTJ (NOTE 2)		FLG 1500# RTJ (NOTE 2)	
	08	BONNET TYPE		STD		STD		STD	
	09	PACKING MATERIAL		PTFE		PTFE		PTFE	
	10	LUBRICATOR	ISOL. VALVE	----	----	----	----	----	----
	11	PORTS No.	GUIDING	01	TOP	01	TOP	01	TOP
	12	CONTROL CHARACTERISTIC		=%		=%		=%	
	13	LEAKAGE CLASS		IV		IV		IV	
	14	SEAT/ TRIM MATERIAL		NOTE 18		NOTE 18		NOTE 18	
	15	FLOW ACTION		OPEN		OPEN		OPEN	
ACTUATOR	16	TYPE		DIAPHRAGM		DIAPHRAGM		DIAPHRAGM	
	17	MODEL & SIZE		BY MFR		BY MFR		BY MFR	
	18	CLOSE AT	OPEN AT	0,2 Kgf/cm^2	1,0 Kgf/cm^2	1,0 Kgf/cm^2	0,2 Kgf/cm^2	1,0 Kgf/cm^2	0,2 Kgf/cm^2
	19	FAILURE POSITION		OPEN		CLOSE		CLOSE	
	20	HANDWHEEL & LOCATION		NO		NO		NO	
POSITION.	21	MFR. & MODEL		ELECTRO-PNEUMATIC(NOTE 8)		ELECTRO-PNEUMATIC(NOTE 8)		ELECTRO-PNEUMATIC(NOTE 8)	
	22	INPUT SIGNAL	OUTPUT SIGNAL	4-20 mA	0,2-1,0 Kgf/cm^2	4-12 mA	0,2-1,0 Kgf/cm^2	12-20 mA	0,2-1,0 Kgf/cm^2
	23	BY-PASS	GAGES	---	YES	---	YES	---	YES
	24	AIR SUPPLY PRESSURE		10,5 Kgf/cm^2		10,5 Kgf/cm^2		10,5 Kgf/cm^2	
ACCESS.	25	REG. FILTER/ SUPPLY GAGE		YES		YES		YES	
	26	SOLENOID VALVE - 3 WAY		NO		NO		NO	
	27	CONVERTER		----		----		----	
OPERATING CONDITIONS	28	FLUID AND STATE		HC – GAS		HC – GAS		HC – GAS	
	29	MAX. FLOW	NORM. / MINIM.	NOTE 16	- / -	NOTE 17	- / -	NOTE 17	- / -
	30	MAX INLET PRESS.	NORM. / MINIM.	199.2	- / -	199.2	- / -	199.2	- / -
	31	MAX. OUTLET PRESS.	NORM. / MINIM.	198.7	- / -	198.7	- / -	198.7	- / -
	32	MAX. SHUT OFF ΔP	LEVEL OF NOISE(dB)	219.0	NOTE 6	219.0	NOTE 6	219.0	NOTE 6
	33	NORMAL TEMP.	MAXIMUM TEMP.	38.5	78.6	38.5	78.6	38.5	78.6
	34	OPER. SP. GR.	VISCOSITY (cP)	-	-	-	-	-	-
	35	MOL. WEIGHT	K / Z	19.8	1.9 / 0.76	19.8	1.9 / 0.76	19.8	1.9 / 0.76
	36	CRITICAL PRESS.	VAPOR PRESS.	-	-	-	-	-	-
	37	NORMAL CV / MINIM. CV / MAX. CV		-	- / 18.989	-	- / 30.386	-	- / 218.163
	38	SCH							
39	VALVE: CV		FL.	52		118		410	
40	MANUFACTURER								
41	MODEL								
42	UNITS: PRESSURE (Kgf/cm² g)			TEMPERATURE (^{0}C)				FLOW (m^3 / h)	

NOTES : SEE PAGES 5 AND 6.

STANDARDIZED FORM BY EP-2B-0004 - FIGURE B-8

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PETROBRAS	DATA SHEET	No. I-FD-3010.66-1410-831-PPC-001	REV. D
	AREA OR UNIT: PETROBRAS 53 (P-53)		SHEET 3 of 6
	TITLE: **CONTROL VALVES (TURRET)**		

						PV-1223004		PV-1223003		PV-1212001	
01	TAG NUMBER					PV-1223004		PV-1223003		PV-1212001	
02	QUANTITY					01 (ONE)		01 (ONE)		01 (ONE)	
	SERVICE					PRODUCTION MANIFOLD		PRODUCTION MANIFOLD		TEST MANIFOLD	
03	LINE No./ VESSEL No.					24"-P-G2-091		24"-P-G2-090		10"-P-G2-086	
BODY AND INTERNALS	04	TYPE OF BODY				GLOBE		GLOBE		GLOBE	
	05	BODY MATERIAL				A - 216 Gr WCB		A - 216 Gr WCB		A - 216 Gr WCB	
	06	BODY SIZE	PORT SIZE			20"	BY MFR	20"	BY MFR	8"	BY MFR
	07	END CONNECTIONS & RATING			D	FLG 1500 # RF (Note 2)		FLG 1500 # RTJ (HOLD)		FLG 1500 # RTJ (HOLD)	
	08	BONNET TYPE				STD		STD		STD	
	09	PACKING MATERIAL				PTFE		PTFE		PTFE	
	10	LUBRICATOR	ISOL. VALVE			----	----	----	----	----	----
	11	PORTS No.	GUIDING			01	TOP	01	TOP	01	TOP
	12	CONTROL CHARACTERISTIC				PARABOLIC MODIFIED		PARABOLIC MODIFIED		=%	
	13	LEAKAGE CLASS				IV		IV		IV	
	14	SEAT/ TRIM MATERIAL				AISI 316		AISI 316		AISI 410	
	15	FLOW ACTION				OPEN		OPEN		OPEN	
ACTUATOR	16	TYPE				DIAPHRAGM		DIAPHRAGM		DIAPHRAGM	
	17	MODEL & SIZE				BY MFR		BY MFR		BY MFR	
	18	CLOSE AT	OPEN AT			1,0 Kgf/cm^2	0,2 Kgf/cm^2	1,0 Kgf/cm^2	0,2 Kgf/cm^2	1,0 Kgf/cm^2	0,2 Kgf/cm^2
	19	FAILURE POSITION				OPEN		OPEN		OPEN	
	20	HANDWHEEL & LOCATION				NO		NO		NO	
POSITION.	21	MFR. & MODEL				ELECTRO-PNEUMATIC(NOTE 8)		ELECTRO-PNEUMATIC(NOTE 8)		ELECTRO-PNEUMATIC(NOTE 8)	
	22	INPUT SIGNAL	OUTPUT SIGNAL			4-20 mA	0,2-1,0 Kgf/cm^2	4-20 mA	0,2-1,0 Kgf/cm^2	4-20 mA	0,2-1,0 Kgf/cm^2
	23	BY-PASS	GAGES			---	YES	---	YES	---	YES
	24	AIR SUPPLY PRESSURE				10,5 Kgf/cm^2		10,5 Kgf/cm^2		10,5 Kgf/cm^2	
ACCESS.	25	REG. FILTER/ SUPPLY GAGE				YES		YES		YES	
	26	SOLENOID VALVE - 3 WAY				NO		NO		NO	
	27	CONVERTER				---		---		---	
OPERATING CONDITIONS	28	FLUID AND STATE				HC – LIQUID + GAS		HC – LIQUID + GAS		HOLD	
	29	MAX. FLOW	NORM.	MIN.		NOTE 20	- -	NOTE 20	- -	NOTE 19	- -
	30	MAX INLET PRESS.	NORM.	MIN.		14.3	- -	14.3	- -	14.3	- -
	31	MAX. OUTLET PRESS.	NORM.	MIN		13.8	- -	13.8	- -	13.8	- -
	32	MAX. SHUT OFF ΔP	LEVEL OF NOISE(dB)			10.5	NOTE 6	10.5	NOTE 6	10.5	NOTE 6
	33	NORMAL TEMP.	MAXIMUM TEMP.			25	55	25	55	25	55
	34	OPER. SP. GR.	VISCOSITY (cP)			0.912	330.6	0.912	330.6	0.912	330.6
	35	MOL. WEIGHT	K	Z		18.6	1.3 0.97	18.6	1.3 0.97	18.6	1.3 0.97
	36	CRITICAL PRESS.	VAPOR PRESS.			125	11.8	125	11.8	125	11.8
	37	NORMAL CV	MINIM. CV	MAX. CV		-	- 2533.68	-	- 2533.68		515.595
	38	SCH									
39	VALVE: CV		FL.			3945		3945		683	
40	MANUFACTURER										
41	MODEL										
42	UNITS: PRESSURE (Kgf/cm² g)					TEMPERATURE (^{0}C)				FLOW (m^3 / h)	

NOTES : SEE PAGES 5 AND 6.

STANDARDIZED FORM BY EP-2B-0004 - FIGURE B-8

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PETROBRAS	DATA SHEET	No. I-FD-3010.66-1410-831-PPC-001	REV. D
	AREA OR UNIT: PETROBRAS 53 (P-53)		SHEET 4 of 6
	TITLE: **CONTROL VALVES (TURRET)**		

01	TAG NUMBER					FV-1231010 F/R								
02	QUANTITY					11 (ELEVEN)								
	SERVICE					LP-122301F/R								
03	LINE No./ VESSEL No.					4"-P-G2-342/346								
BODY AND INTERNALS	04	TYPE OF BODY				GLOBE								
	05	BODY MATERIAL				A - 216 Gr WCB								
	06	BODY SIZE	PORT SIZE			2"	BY MFR							
	07	END CONNECTIONS & RATING				FLG 1500# RTJ (NOTE 2)								
	08	BONNET TYPE				STD								
	09	PACKING MATERIAL				PTFE								
	10	LUBRICATOR	ISOL. VALVE			----	----							
	11	PORTS No.	GUIDING			01	TOP							
	12	CONTROL CHARACTERISTIC				=%								
	13	LEAKAGE CLASS				IV								
	14	SEAT/ TRIM MATERIAL				NOTE 18								
	15	FLOW ACTION				OPEN								
ACTUATOR	16	TYPE				DIAPHRAGM								
	17	MODEL & SIZE				BY MFR								
	18	CLOSE AT	OPEN AT			0,2 Kgf/cm^2	1,0 Kgf/cm^2							
	19	FAILURE POSITION				OPEN								
	20	HANDWHEEL & LOCATION				NO								
POSITION.	21	MFR. & MODEL				ELECTRO-PNEUMATIC(NOTE 8)								
	22	INPUT SIGNAL	OUTPUT SIGNAL			4-20 mA	0,2-1,0 Kgf/cm^2							
	23	BY-PASS	GAGES			---	YES							
	24	AIR SUPPLY PRESSURE				10,5 Kgf/cm^2								
ACCESS.	25	REG. FILTER/ SUPPLY GAGE				YES								
	26	SOLENOID VALVE - 3 WAY				NO								
	27	CONVERTER				---								
OPERATING CONDITIONS	28	FLUID AND STATE				HC - GAS								
	29	MAX. FLOW	NORM.	MINIM.		NOTE 16	-	-						
	30	MAX INLET PRESS.	NORM.	MINIM.		199.2	-	-						
	31	MAX. OUTLET PRESS.	NORM.	MINIM.		198.7	-	-						
	32	MAX. SHUT OFF ΔP	LEVEL OF NOISE(dB)			219	NOTE 6							
	33	NORMAL TEMP.	MAXIMUM TEMP.			38.5	78.6							
	34	OPER. SP. GR.	VISCOSITY (cP)			-	-							
	35	MOL. WEIGHT	K	Z		19.8	1.9	0.76						
	36	CRITICAL PRESS.	VAPOR PRESS.			-	-							
	37	NORMAL CV	MINIM. CV	MAX. CV		-	-	18.989						
	38	SCH												
39	VALVE: CV		FL.			52								
40	MANUFACTURER													
41	MODEL													
42	UNITS: PRESSURE (Kgf/cm² g)					TEMPERATURE (^{0}C)								FLOW (m^3 / h)

NOTES: SEE PAGES 5 AND 6.

STANDARDIZED FORM BY EP-2B-0004 - FIGURE B-8

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GENERAL NOTES

1. Operational Pressure Conditions (Air Supply):

   Maximum: 1030 kPa (10,5 Kgf/ cm^2)
   Normal: 686 kPa (7,0 Kgf/ cm^2)
   Minimum: 490 kPa (5,0 Kgf/ cm^2)

   Temperature maximum: 50°C
   normal : 40°C

2. Flanges must be in accordance with ANSI B-16.5 and face to face dimension according to ISA S 75.03.

3. All the valves must be equipped with a rod position indicator.

4. Valve stroke (%) x CV curve shall be sent by the manufacturer, annex to the proposal.

5. If it is necessary to use aluminum on the casings or enclosures of the instruments, this must be done copper-free, and the following can be used: alloy A-356.0 of standard ASTM-B26/ 82b, alloy 359.0 of standard ASTM-B108/ 82b and alloy 6063 of standard ASTM-B 221/ 83.

6. The noise level shall be limited to 82 dBa from 1,20m downstream and 0,80m perpendicular to the piping surface.

7. Pressure regulator with filter gages converter and positioner shall be supplied already installed in the valve, with pneumatic compression fittings and tubing in stainless steel 316 (1/4" O.D.)

8. The eletro-pneumatic positioner shall be smart type, 4 a 20 mA with HART protocol, Device Description Language – DDL based, alphanumeric display, power supply of 24 Vdc, two wire, weather-proof (IPW-66) and explosion proof, according to IEC 79 standard, Zones I or II, Group IIA, temperature class T3. The smart positioner must have a driver to communicate with the software AMS (FISHER ROSEMOUNT trademark). For further details see ET-3000.00-1200-800-PCI-001 – CRITÉRIOS GERAIS PARA PROJETOS DE INSTRUMENTAÇÃO E CONTROLE - ITEM 24 and I-ET-3010.66-1200-800-PPC-001– INSTRUMENTATION ADDITIONAL TECHNICAL REQUIREMENTS.

9. Control valve body shall be conventional globe type.

10. Control valves dimensioning is concerned, the following must be considered: rangeability, the flow type (sub-critical or critical with vaporization (flash) or cavitation), influence of viscosity, two-phase flow, flow speed and noise level. As far as selection and dimensioning are concerned, item 13 of ET-3000-1200-800-PCI-001, "Critérios Gerais para Projetos de Instrumentação e Controle" shall be considered.

11. The manufacturer shall provide calculation sheets: CV, actuators sizing, noise.

12. Manufacturer Guarantee:

12.1. Valve leakage shall be limited to valves required by specifications, according to ANSI B 16.104 (FCI 70-2) standard.

12.2. All valves shall be operate perfectly at the service conditions specified

13. For all valves shaft material must be AISI 420.

STANDARDIZED FORM BY EP-2B-0004 - FIGURE B-8

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14. All Valves shall be painted according to Petrobras Specifications N-1374 / N-1789.

15. The control valves shall comply with “CRITÉRIOS GERAIS PARA PROJETOS DE INSTRUMENTAÇÃO E CONTROLE (ET-3000.00-1200-800-PCI-001) and “INSTRUMENTATION ADDITIONAL TECHNICAL REQUIREMENTS” (I-ET-3010.66-1200-800-PPC-001)

16. It shall be considered for valves FV-1231010 A/R the following process conditions:

- Normal Flow = 6250 m³/h (at 20 °C and 101.3 kPa abs) for each valves.

17. Flow conditions for valves PV-1231006A/B

17.1. PV-1231006A
- Max Flow = 10000 m³/h (at 20 °C and 101.3 kPa abs)
- Minimum Flow = 3129 m³/h (at 20 °C and 101.3 kPa abs)

17.2. PV-1231006B
- Maximum Flow =71798 m³/h (at 20 °C @ 101.3 kPa abs)
- Minimum Flow = 5000 m³/h (at 20 °C @ 101.3 kPa abs)

PV-1231006A+PV123006B = Maximum Flow: 81798 m³/h (at 20 °C and 101.3 kPa abs)
Minimum Flow: 3129 m³/h (at 20 °C and 101.3 kPa abs)

18. Hardened stainless steel.

19. It shall be considered for valves PV-1212001 the following process conditions:
- Liquid (Normal Flow) = 162.5 m³/h (at 15.6° C and 101.3 kPa abs)
  Gas (Normal Flow) = 20833.3 m³/h (at 20 °C and 101.3 kPa abs)
  Liquid (Minimum Flow) = 8.3 m³/h (at 15.6° C and 101.3 kPa abs)
  Gas (Minimum Flow) = 833.3 m³/h (at 20 °C and 101.3 kPa abs)

20. It shall be considered for valves PV-1223003/004 th D lowing process conditions:

- Liquid (Max Flow) = 630 m³/h (at 15.6° C and 101.3 kPa abs)
  Gas (Max Flow) = 125,000 m^3/h (at 20 °C and 101.3 kPa abs)

STANDARDIZED FORM BY EP-2B-0004 - FIGURE B-8

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