PETROBRAS	**DATA SHEET**	No I-FD-3A17.01-1231-321-1J5-001	
	CLIENT: *BS/ATP-IMI/OP-PMXL*		SHEET: 1 of 15
	JOB: *PROJETO COMPLEMENTAR PMXL-1*		
	AREA: *1231 - PRIMARY PROCESSING UNIT*		
	TITLE: **CENTRIFUGAL COMPRESSOR FOR NATURAL GAS C-UC-1231002**		BS/PCM/PROJDP
			INTERNAL

INDEX OF REVISIONS

REV.	DESCRIPTION AND/OR REVISED SHEETS
0	ORIGINAL ISSUE
A	REVISED WHERE INDICATED AFTER APR, HAZOP AND GRS
B	REVISED WHERE INDICATED
C	REVISED WHERE INDICATED

	REV. 0	REV. A	REV. B	REV. C	REV. D	REV. E	REV. F	REV. G	REV. H
DATE	10/31/2025	01/12/2026	02/05/2026	02/24/2026					
EXECUTION	Note 6	Note 6	Note 6	Note 6					
CHECK	U32A	CTFQ	CTFQ	CTFQ					
APPROVAL	BEGS	BEGS	BEGS	BEGS					

INFORMATION IN THIS DOCUMENT IS PROPERTY OF PETROBRAS, BEING PROHIBITED OUTSIDE OF THEIR PURPOSE.
FORM OWNED TO PETROBRAS N-0381 REV. M.

APPLICABLE TO: ☒ PROPOSAL ☐ PURCHASE ☐ AS BUILT

FOR:	**E&P**	UNIT:	**1231 - PRIMARY PROCESSING UNIT**
SITE:	**BS/ATP-IMI/OP-PMXL**	SERVICE:	**NATURAL GAS CENTRIFUGAL COMPRESSOR**
No REQ / TAG:	**1x100% / UC-1231002**	MANUFACTURER:	
MODEL:		VENDOR:	
SIZE / TYPE:		DRIVER:	**GAS TURBINE**
SERIAL No.		MANUFACTURER No:	

OPERATING CONDITIONS (1/2) *[Note 2]*

CASE	1	2	3	4	5	6		
FLUID	NG	NG	NG	NG	NG	NG		
(ALL DATA ON UNIT BASIS)								
☒ GAS HANDLED (SEE PAGE **4**)								
☐ GAS PROPERTIES								
☒ Sm^3 / d (101.3 kPa a & 15ºC) ☐ DRY ☒ WET	5016000	4758000	3193000	2457000	1678000	2137000		
☒ WEIGHT FLOW, kg/h ☐ DRY ☒ WET	153600	145900	98090	51900	65850	98090		
INLET CONDITIONS [a]								
☒ PRESSURE, bar a	57.5	47.5	40.5	30	23	29.3		
☒ TEMPERATURE, ºC	15	15	15	15	15	15		
☐ RELATIVE HUMIDITY, %								
☒ MOLECULAR WEIGHT	17.62	17.62	17.62	17,62	17,62	17,62		
☐ C_p/C_v ☐ K_1 ☐ K_{avg}								
☐ COMPRESSIBILITY ☐ Z_1 ☐ Z_{avg}								
☐ INLET VOLUME, m^3/h ☐ DRY ☐ WET								
DISCHARGE CONDITIONS [a] [b]								
☒ PRESSURE, bar a	82	82	82	82	76	88		
☐ TEMPERATURE, ºC								
☐ C_p/C_v ☐ K_2 ☐ K_{avg}								
☐ COMPRESSIBILITY ☐ Z_2 ☐ Z_{avg}								
☐ GAS POWER REQUIRED, kW								
☐ COMPRESSOR MECHANICAL LOSSES, kW								
☐ BkW REQUIRED AT DRIVER INCL. EXT. LOSSES (GEAR, ETC.)								
☐ SPEED, rpm								
☐ ESTIMATED SURGE (SPEED ABOVE), kg/h & m^3/h								
☐ TURNDOWN, %								
☐ POLYTROPIC HEAD, kJ/kg								
☐ POLYTROPIC EFFICIENCY, %								
☒ CERTIFIED POINT					X			
☐ PERFORMANCE CURVE NUMBER								
☐ BALANCE PISTON LEAKAGE, kg/h								

PROCESS ☐ SUCTION THROTTLING ☐ VARIABLE INLET ☒ SPEED VARIATION ☐ DISCHARGE ☐ COOLED BY-PASS

CONTROL METHOD	FROM	kPa a	GUIDE VANES / STATOR BLADES	FROM	**70**	%	BLOWOFF	FROM		
	TO	kPa a		TO	**105**	%	TO	TO		

SIGNAL ☒ SOURCE

TYPE: ☒ ELECTRONIC ☐ PNEUMATIC ☐ OTHER

RANGE: **4 - 20** mA kPa g

☒ ANTI-SURGE SYSTEM: ☒ MANUAL ☒ AUTOMATIC ☐ OTHER

REMARKS:

[a] Conditions at compressor nozzles to be informed by MANUFACTURER.

[b] It is MANUFACTURER responsibility the choice of discharge temperature and values different from the listed above shall be approved by PETROBRAS. The other conditions are fixed. The minimum temperature shall be determined after the depressurization analysis.

[c] Whenever recycling flow is required, suction temperature of compressor will be affected and shall be defined by MANUFACTURER and approved by PETROBRAS considering cooler discharge temperature at 40°C.

PETROBRAS	DATA SHEET	Nº I-FD-3A17.01-1231-321-1J5-001	REV. C
	BS/ATP-IMI/OP-PMXL		SHEET: 3 of 15
	TITLE: CENTRIFUGAL COMPRESSOR FOR NATURAL GAS C-UC-1231002		BS/PCM/PROJDP
			INTERNAL

APPLICABLE TO:	☒ PROPOSAL	☐ PURCHASE		☐ AS BUILT
FOR:	**E&P**	UNIT:	**1231 - PRIMARY PROCESSING UNIT**	
SITE:	**BS/ATP-IMI/OP-PMXL**	SERVICE:	**NATURAL GAS CENTRIFUGAL COMPRESSOR**	
No REQ / TAG:	**1x100% / UC-1231002**	MANUFACTURER:		
MODEL:		VENDOR:		
SIZE / TYPE:		DRIVER:	**GAS TURBINE**	
SERIAL No.		MANUFACTURER No:		

OPERATING CONDITIONS (2/2) *[Note 2]*

CASE [d]	7	8	9	10	11			
FLUID	NG	NG	NG	NG	NG			
(ALL DATA ON UNIT BASIS)								
☒ GAS HANDLED (SEE PAGE **4**)								
☐ GAS PROPERTIES								
☒ Sm^3 / d (101.3 kPa a & 15ºC) ☐ DRY ☒ WET	5016000	4758000	3193000	2457000	1678000			
☒ WEIGHT FLOW, kg/h ☐ DRY ☒ WET	153600	145900	98090	51900	65850			
INLET CONDITIONS [a]								
☒ PRESSURE, bar a	57,5	47,5	40,5	30	23			
☒ TEMPERATURE, ºC	15	15	15	15	15			
☐ RELATIVE HUMIDITY, %								
☒ MOLECULAR WEIGHT	17,62	17,62	17,62	17,62	17,62			
☐ C_p/C_v ☐ K_1 ☐ K_{avg}								
☐ COMPRESSIBILITY ☐ Z_1 ☐ Z_{avg}								
☐ INLET VOLUME, m^3/h ☐ DRY ☐ WET								
DISCHARGE CONDITIONS [a] [b]								
☒ PRESSURE, bar a	58	58	58	58	58			
☐ TEMPERATURE, ºC								
☐ C_p/C_v ☐ K_2 ☐ K_{avg}								
☐ COMPRESSIBILITY ☐ Z_2 ☐ Z_{avg}								
☐ GAS POWER REQUIRED, kW								
☐ COMPRESSOR MECHANICAL LOSSES, kW								
☐ BkW REQUIRED AT DRIVER INCL. EXT. LOSSES (GEAR, ETC.)								
☐ SPEED, rpm								
☐ ESTIMATED SURGE (SPEED ABOVE), kg/h & m^3/h								
☐ TURNDOWN, %								
☐ POLYTROPIC HEAD, kJ/kg								
☐ POLYTROPIC EFFICIENCY, %								
☐ CERTIFIED POINT (GUARANTEED POINT)								
☐ PERFORMANCE CURVE NUMBER								
☐ BALANCE PISTON LEAKAGE, kg/h								

REMARKS:

[a] Conditions at compressor nozzles to be informed by MANUFACTURER.

[b] It is MANUFACTURER responsibility the choice of discharge temperature and values different from the listed above shall be approved by PETROBRAS. The other conditions are fixed. The minimum temperature shall be determined after the depressurization analysis.

[c] Whenever recycling flow is required, suction temperature of compressor will be affected and shall be defined by MANUFACTURER and approved by PETROBRAS considering cooler discharge temperature at 40°C.

[d] Cases 7 to 11 are Alt scenarios (copies of Cases 1 to 5) with lower discharge pressure. Priority should be given to addressing Cases 1 to 6.

OPERATING CONDITIONS (CONT.)

GAS ANALYSIS [a]	CASES 1, 2, 3, 7, 8 and 9	CASES 4, 5, 6, 10 and 11
☒ MOL % ☐		
CO_2	0,230%	0,214%
Nitrogen	0,508%	0,505%
Methane	92,919%	92,757%
Ethane	3,970%	3,999%
Propane	1,332%	1,367%
i-Butane	0,256%	0,270%
n-Butane	0,360%	0,385%
i-Pentane	0,115%	0,128%
n-Pentane	0,093%	0,104%
n-Hexane	0,083%	0,096%
n-Heptane	0,057%	0,063%
n-Octane	0,027%	0,027%
n-Nonane	0,006%	0,005%
n-Decane	0,001%	0,001%
n-C_{11}	0,000%	0,000%
C_{12+*}	0,000%	0,000%
H_2O	0,043%	0,078%
TOTAL	**100%**	**100%**
AVG. MOL. WT.	**17.62**	**17.62**

LOCATION: *[Note 3]*

☐ INDOOR ☒ OUTDOOR ☒ GRADE
☐ HEATED ☐ UNDER ROOF ☒ MEZZANINE
☒ UNHEATED ☐ PARTIAL SLIDES ☒ TROPICALIZATION
☐ ELEC. AREA CLASSIFICATION ZN GR CL

SITE DATA:

☐ ELEVATION **30** m BAROMETER **101,4** kPa a
☐ RANGE OF AMBIENT TEMP, ºC:

	DRY BULB	WET BULB
NORMAL		
MAXIMUM		
MINIMUM		

☐ RELATIVE HUMIDITY, %:
UNUSUAL CONDITIONS: ☐ DUST ☐ FUMES
☒ MARINE ENVIRONMENT ☐ OTHER
☐ COPPER AND COPPER ALLOYS PROHIBITED

COATING:

☐ ROTATING COMPONENTS
☐ STATIONARY COMPONENTS

NOISE SPECIFICATIONS:

☒ APPLICABLE TO MACHINE:
SEE SPECIFICATION I-ET-3A17.01-1231-321-1J5-001
☒ APPLICABLE TO NEIGHBORHOOD:
SEE SPECIFICATION
ACOUSTIC HOUSING: ☐ YES ☐ NO

APPLICABLE SPECIFICATIONS:

☒ VENDOR HAVING UNIT RESPONSIBILITY
☒ GOVERNING SPECIFICATION (IF DIFFERENT)

PAINTING:

☒ MANUFACTURER STD.
☒ OTHER *[Note 1.5]*
NAMEPLATE ☐ US CUSTOMARY ☒ METRIC
SHIPMENT:
☐ DOMESTIC ☐ EXPORT ☒ EXPORT BOXING REQ'D
☒ OUTDOOR STORAGE MORE THAN **12** MONTHS
SPARE ROTOR ASSEMBLY PACKAGE
☐ HORIZONTAL STORAGE ☐ VERTICAL STORAGE

REMARKS:

[a] Consider the minimum values of 5% (vol.) of CO2 and 170 ppmv of H2S.

CONSTRUCTION FEATURES *[Note 4]*

SPEEDS:
MAX. CONT _____ rpm TRIP _____ rpm
MAX. TIP SPEEDS: _____ FPS @ 100% SPEED
_____ FPS @ MAX. 100% CONT. SPEED
LATERAL CRITICAL SPEEDS ☒ DAMPED ☐ UNDAMPED
FIRST CRITICAL _____ rpm _____ MODE
SECOND CRITICAL _____ rpm _____ MODE
THIRD CRITICAL _____ rpm _____ MODE
FOURTH CRITICAL _____ rpm _____ MODE
☒ LATERAL ANALYSIS ADDITIONAL REQUIREMENTS
☒ LATERAL CRITICAL SPEED BASIS
☒ DAMPED UNBALANCED RESPONSE ANALYSIS
☒ SHOP VERIFICATION OF UNBALANCED RESPONSE ANALYSIS
☒ TRAIN LATERAL ANALYSIS REQUIRED
☒ TRAIN TORSIONAL ANALYSIS REQUIRED
TORSIONAL CRITICAL SPEEDS:
FIRST CRITICAL _____ rpm
SECOND CRITICAL _____ rpm
THIRD CRITICAL _____ rpm
FOURTH CRITICAL _____ rpm
☒ LIST OF TRAIN UNDESIRABLE SPEEDS
☒ STABILITY ANALYSIS
VIBRATION:
ALLOWABLE TEST / FIELD LEVEL _____ / _____ µm (PK-TO-PK)

☐ ROTATION, VIEWED FROM DRIVEN END ☐ CW ☐ CCW

☒ MATERIALS INSPECTIONS REQUIREMENTS
☐ RADIOGRAPHY REQUIRED FOR _____
☐ ULTRASONIC REQUIRED FOR _____
☐ MAGNETIC PARTICLE REQUIRED FOR _____
☐ LIQUID PENETRANT REQUIRED FOR _____
☐ LOW TEMPERATURE _____
MIN. DESIGN METAL TEMPERATURE, ºC _____
AT CONCURRENT PRESSURE, kPa g _____
☐ OTHER TRAIN COMPONENTS

CASING:
MODEL **BARREL TYPE**
CASING SPLIT **RADIALLY**
MATERIAL _____
THICKNESS, mm _____ CORR. ALLOW., mm _____
TEST PRESS, kPa g : HELIUM _____ HYDRO _____
MAX. ALLOWABLE PRESS _____ kPa g
MAX. DESIGN PRESSURE _____ kPa g
MAX. ALLOWABLE TEMPERATURE _____ ºC
MAX. OPER TEMP. _____ ºC MIN. OPER. TEMP _____ ºC
MAX. No OF IMPELLERS FOR CASING _____
MAX. CASING CAPACITY, m_n^3/h _____
SYS. RELIEF VALVE SET PT., kPa g _____
RADIOGRAPH QUALITY _____
☒ Q.C. OF INACCESSIBLE WELDS

DIAPHRAGMS:
MATERIAL _____
AXIALLY SPLIT ☐ YES ☐ NO

INTERMEDIATE MAIN PROCESS CONNECTIONS
DISCH. PRESSURE, kPa g : MAX _____ MIN _____
INLET PRESSURE, kPa g : MAX _____ MIN _____
GUIDE VANES
MATERIAL _____
NUMBER OF AXIAL BLADE ROWS _____
NUMBER OF ADJUSTABLE ROWS _____
No. VANES GUIDE VANE _____
IMPELLERS:
No. _____ DIAMETERS _____
No. VANES EA. IMPELLER _____
TYPE (OPEN, ENCLOSED, ETC.) **ENCLOSED**
TYPE FABRICATION _____
MATERIAL _____
MIN. YIELD STRENGTH, kPa _____
HARDNESS, (BNH)(Rc): MAX _____ MIN _____
SMALLEST TIP INTERNAL WIDTH, mm _____
MAX. MACH. No. @ IMPELLER EYE _____
MAX. IMPELLER HEAD @ 100% SPD, m - kg _____
SHAFT: ☐ ONE PIECE ☐ BUILT UP
MATERIAL _____
DIA @ IMPELLERS, mm _____ DIA @ COUPLING, mm _____
DIA @ BEARINGS, mm _____ DIA @ SEAL, mm _____
SHAFT END: ☒ TAPERED ☐ CYLINDRICAL
☐ SPLINED ☐ INTEGRAL FLANGE
MIN. YIELD STRENGTH, kPa _____
SHAFT HARDNESS, (BNH)(Rc) _____
MAX. TORQUE CAPABILITY, m - kg _____
☒ BALANCE PISTON: _____
MATERIAL _____ AREA _____ mm^2
FIXATION METHOD _____
NORMAL CLEARANCE, mm _____
FLOW WITH NORMAL CLEARANCE, kg/min _____
FLOW WITH 2 x NORMAL CLEARANCE, kg/min _____
☒ PRESS CONN. BAL LINE DOWNSTREAM
SHAFT SLEEVES:
AT INTERSTG. CLOSE MATL _____
CLEARANCE POINTS
AT SHAFT SEALS MATL _____
☐ ACCESSIBLE ROTOR
☐ DISASSEMBLY AND REASSEMBLY
☒ AT SPEED BALANCING (G 2.5 as per ISO 21940-11)
☒ SEQUENTIAL LOW SPEED BAL PREC. AT SPEED BAL
☒ RESIDUAL BALANCE CHECK
LABYRINTHS
INTERSTAGE
TYPE _____ MATERIAL _____
BALANCE PISTON
TYPE _____ MATERIAL _____

REMARKS:

CONSTRUCTION FEATURES (CONT.)

SHAFT SEALS ☐ MFR:
☒ SEAL TYPE **DRY GAS SEAL (CARTRIDGE)**
☒ SETTLING OUT PRESSURE, kPa g[c]
☐ MIN. SEALING PRESSURE, kPa g
API 692 SCHEMATIC: ☐ FIG. 1 ☒ FIG. 2 ☐ FIG. 3 ☐ OTHER
☒ SUPPLT'L DEVICE REQ'D FOR CONTACT SEALS TYPE
☒ PRIMARY / BUFFER SEAL GAS TYPE: **PROCESS GAS**
- ☐ PRESSURE kPa g
- ☐ TEMPERATURE ºC
- ☐ FILTRATION
- ☒ GAS SYSTEM REQUIRED
- ☐ MANIFOLD
- ☒ METHOD OF CONTROL I-ET-3A17.01-1231-327-1J5-001
- ☒ GAS CONTROL SYSTEM SCHEMATIC BY VENDOR
- ☐ PRESSURIZING GAS FOR SUBATMOSPHERIC SEALS
- ☐ EDUCTOR ☐ INJECTION
- ☐ TRACER LINE
- ☐ LEAKAGE TO PROCESS, m^3 / DAY / SEAL
- ☒ GAS REQUIRED FOR:
- ☐ AIR RUN-IN[b] ☒ OTHER **START / SET. OUT / SHTDWN**
- ☐ FLOW (PER SEAL):

NORM: kg/min @ kPa ΔP
MAX: kg/min @ kPa ΔP

☐ SECONDARY / BARRIER SEAL GAS TYPE: -
- ☐ PRESSURE kPa g
- ☐ TEMPERATURE ºC
- ☐ FILTRATION
- ☐ GAS SYSTEM REQUIRED
- ☐ MANIFOLD
- ☐ METHOD OF CONTROL
- ☐ GAS CONTROL SYSTEM SCHEMATIC BY VENDOR
- ☐ PRESSURIZING GAS FOR SUBATMOSPHERIC SEALS
- ☐ EDUCTOR ☐ INJECTION
- ☐ TRACER LINE
- ☐ LEAKAGE, m^3 / DAY / SEAL
- ☐ GAS REQUIRED FOR:
- ☐ AIR RUN-IN ☐ OTHER -
- ☐ FLOW (PER SEAL):

NORM: kg/min @ kPa ΔP
MAX: kg/min @ kPa ΔP

☒ SEPARATION GAS TYPE: **NITROGEN**
- ☐ PRESS kPa g ☐ TEMP ºC
- ☐ FLOW, kg/min (MAX / MIN PER SEAL): /

☒ROTATION: ☐ UNI ☒ BI-DIRECTIONAL

BEARING HOUSING CONSTRUCTION
☒ SEPARATE ☐ INTEGRAL ☒ HORIZONTAL ☐ VERTICAL SPLIT
MATERIAL

AXIAL COMPRESSOR[a]

STAGE					
ROTOR					
☐ BLADE MATERIAL					
☐ FABRICATION METHOD					
☐ BLADE QUANTITY					
☐ BLADE ROOT TYPE / FASTENING METHOD					
☐ CORD WIDTH, mm					
☐ OUTER DIAMETER, mm					
☐ BLADE HEIGHT, mm					
☐ REACTION DEGREE					
☐ MACH NUMBER DESIGN / ALLOWABLE					
☐ MAXIMUM YIELD STRENGTH, kgf/cm^2					
☐ STRESS @ RATED / TRIP RPM, kgf/cm^2					
STATOR					
☐ BLADE MATERIAL					
☐ FABRICATION METHOD					
☐ BLADE QUANTITY					
☐ BLADE ROOT TYPE / FASTENING METHOD					
☐ CORD WIDTH, mm					
☐ OUTER DIAMETER, mm					
☐ BLADE HEIGHT, mm					
☐ REACTION DEGREE					
☐ MACH NUMBER DESIGN / ALLOWABLE					
☐ MAXIMUM YIELD STRENGTH, kgf/cm^2					
☐ STRESS @ RATED / TRIP RPM, kgf/cm^2					

REMARKS:

[a] PACKAGER shall fill in this table for all stages of axial compressor. If necessary, PACKAGER shall repeat this page in your proposal.

[b] Run-In on Air and/or Nitrogen.

[c] See I-ET-3A17.01-1231-321-1J5-001.

CONSTRUCTION FEATURES (CONT.)

BEARINGS AND BEARING HOUSINGS

MAGNETIC BEARINGS ☐ YES ☒ NO

RADIAL	THRUST	NON-THRUST
☐ TYPE		
☐ MANUFACTURER		
☐ LENGTH, mm		
☐ SHAFT DIA, mm		
☐ UNIT LOAD (ACT/ALLOW)		
☐ BASE MATERIAL		
☐ BABBIT THICKNESS, mm		
☐ No. PADS		
☐ LOAD: B'TWN / ON PAD		
☐ PIVOT: CENTER / OFFSET, %		
☐ BEARING SPAN		
☐ PAD MATERIAL		

THRUST	ACTIVE	INACTIVE
☐ TYPE		
☐ MANUFACTURER		
☐ UNIT LOADING (MAX), kPa		
☐ UNIT LOADING (ULT.), kPa		
☐ AREA, mm^2		
☐ No. PADS		
☐ PIVOT: CENTER / OFFSET, %		
☐ PAD BASE MATL		
☐ BABBIT THICKNESS, mm		

☐ COPPER BACKED

LUBRICATION: ☐ FLOODED ☒ DIRECTED

THRUST COLLAR ☐ INTEGRAL ☒ REPLACEABLE

MATERIAL

☐ SIZING CRITERION

BEARING TEMPERATURE DETECTORS

☒ SEE MACHINERY PROTECTION SYSTEM DATA SHEET

☐ THERMOCOUPLES TYPE

☐ RESISTANCE TEMP DETECTORS

☐ RESISTANCE MAT'L ☐ _____ OHMS

☐ ALARM TEMPERATURE, ºC _____

☐ SHUTDOWN TEMPERATURE, ºC _____

☐ PROVISION FOR LOCAL DISCONNECT

☐ LOCATION-JOURNAL BRG

No ____ EA. PAD ____ EVERY OTH PAD ____ PER BRG

OTHER _____

☐ LOCATION-THRUST BRG ☐ ACT. ☐ INACT

No ____ EA. PAD ____ EVERY OTH PAD ____ PER BRG

OTHER _____

☐ LOCATION-THRUST BRG ☐ ACT. ☐ INACT

No ____ EA. PAD ____ EVERY OTH PAD ____ PER BRG

OTHER _____

☐ LOCAL DISCONNECTION

☐ MONITOR SUPPLIED BY _____

☐ LOCATION _____ ENCLOSURE _____

☐ MFR. _____ ☐ MODEL _____

☐ SCALE RGE _____ ALARM ☐ SET@ _____ ºC

☐ SHTDWN ☐ SET@ _____ ºC ☐ TIME DELAY _____ s

KEY PHASOR REQUIRED

☐ COMPRESSOR ☐ GEAR H.S. ☐ GEAR L.S. ☐ DRIVER

VIBRATION DETECTORS ☒ SEE MACHIN. PROT. SYS. DATA SHEET

☐ TYPE _____ ☐ MODEL _____

☐ MFR _____

☐ No. AT EA SHAFT BEARING _____ TOTAL No. _____

☐ OSCILLATOR-DETECTORS SUPPLIED BY _____

☐ MFR _____ ☐ MODEL _____

☐ MONITOR SUPPLIED BY _____

☐ LOCATION _____ ENCLOSURE _____

☐ MFR. _____ ☐ MODEL _____

☐ SCALE RGE _____ ALARM ☐ SET@ _____ µm

☐ SHTDWN: ☐ SET@ _____ µm ☐ TIME DELAY _____ s

☐ CASING VIBRATION TRANSDUCERS _____

☐ CASING VIBRATION MONITORS _____

AXIAL POSITION DETECTOR ☒ SEE MACHIN. PROT. SYS. DATA SHEET

☐ TYPE _____ ☐ MODEL _____

☐ MFR _____ ☐ No. REQUIRED _____

☐ OSCILLATOR-DEMODULATOR SUPPLIED BY _____

☐ MFR _____ ☐ MODEL _____

☐ MONITOR SUPPLIED BY _____

☐ LOCATION _____ ENCLOSURE _____

☐ MFR _____ ☐ MODEL _____

☐ SCALE RGE _____ ALARM ☐ SET@ _____ µm

☐ SHTDWN: ☐ SET@ _____ µm ☐ TIME DELAY _____ s

CASING CONNECTIONS

CONNECTION (DESIGN APP. REQUIRED)	ANSI/ASME B16.1; B16.5; B16.42; B16.47 Series A, B; ISO 7005-1,-2; OTHER	SIZE FACING BORE RATING	ORIENTATION	FLANGED OR STUDDED	MATING FLG & GASKET BY VENDOR	GAS VELOCITY, m/s
INLET			**UP**	**FLANGED**		
DISCHARGE			**UP**	**FLANGED**		
INSTRUMENT AIR				**FLANGED**		
WATER				**FLANGED**		
DRAINS / VENTS				**FLANGED**		

☒ BOROSCOPIC INSPECTION PORTS

PETROBRAS	DATA SHEET	Nº I-FD-3A17.01-1231-321-1J5-001	REV. C
	BS/ATP-IMI/OP-PMXL	SHEET: 8 of 15	
	TITLE: CENTRIFUGAL COMPRESSOR FOR NATURAL GAS C-UC-1231002	BS/PCM/PROJDP	
		INTERNAL	

OTHER CONNECTIONS

SERVICE	No.	SIZE	TYPE		No.	SIZE	TYPE
LUBE OIL INLET				PRESSURE			
LUBE OIL OUTLET				TEMPERATURE			
SEAL OIL INLET				SOLVENT INJECTION			
SEAL OIL OUTLET				PURGE FOR			
SEAL GAS INLET				BRG. HOUSING			
SEAL GAS OUTLET				BTWN BRG & SEAL			
CASING DRAINS				BTWN SEAL &GAS			
STAGE DRAINS							

☒ INDIVIDUAL STAGE DRAINS REQUIRED
☐ VALVE & BLINDED
☒ VALVE & BLINDED & MANIFOLD

ALLOWABLE PIPING FORCES AND MOMENTS

	INLET		DISCHARGE			
	FORCE	MOMT.	FORCE	MOMT.	FORCE	MOMT.
	N	N.m	N	N.m	N	N.m
AXIAL						
VERTICAL						
HORIZ. 90º						

	FORCE	MOMT.	FORCE	MOMT.	FORCE	MOMT.
	N	N.m	N	N.m	N	N.m
AXIAL						
VERTICAL						
HORIZ. 90º						

LUBRICATION AND SEALING SYSTEMS

☒ SEE OIL SYSTEM DATA SHEET
☐ SEPARATE ☐ COMBINED
☐ INTEGRAL OIL RESERVOIR
☐ OIL TYPE: _____

ACCESSORIES

☒ COUPLING AND GUARDS ☒ ACCORDING TO API-671
☐ SEE ATTACHED API-671 DATA SHEET ☒ KEYLESS HYDRAULIC ☐ KEYED ☐ FLANGED ☐ OTHER _____
☒ COUPLING FURNISHED BY VENDOR
MANUFACTURER _____ TYPE _____ MODEL _____
☒ COUPLING GUARD FURNISHED BY VENDOR
TYPE: ☒ FULLY ENCLOSED ☐ SEMI-OPEN ☒ NON-SPARKING MATERIAL

COUPLING DETAILS
☐ MAX O. D. _____ mm
☐ HUB WEIGHT _____ kg
☐ SPACER LENGTH _____ mm
☐ SPACER WEIGHT _____ kg
☒ VENDOR MOUNT HALF COUPLING

☐ IDLING ADAPTER / SOLO PLATE REQ.'D
☐ PLUG AND RING GAUGES
LUBRICATION REQUIREMENTS:
☒ NON-LUBE ☐ CONT. OIL LUBE ☐ OTHER _____
QUANTITY PER HUB _____ m^3/h

☒ MOUNTING PLATES
☒ BASEPLATES FURNISHED BY **PACKAGER**
☒ COMPRESSOR ☒ DRIVER ☒ GEAR
☐ OTHER _____
☒ NONSKID DECKING ☒ SLOPED DECK
☒ LEVELING PADS OR TARGETS
☒ DRIP RIM
☐ COLUMN MOUNTING
☐ SUB-SOLE PLATES REQUIRED
☒ STAINLESS STEEL SHIM THICKNESS _____ mm
☒ MACHINED MOUNTING PADS REQUIRED
☐ BASEPLATE WILL BE ON CONCRETE FOUNDATION

☐ SOLEPLATES FURNISHED BY _____
☐ THICKNESS _____ mm
☐ SUBSOLE PLATES REQUIRED
☐ LEVELING BLOCKS REQ.'D
☒ STAINLESS STEEL SHIM THICKNESS _____ mm
☒ COMPRESSOR _____
☒ GEAR
☒ DRIVER
☐ COUNTER BORE ANCHOR BOLT HOLES
☐ PRIMER FOR EPOXY GROUT REQ.'D
TYPE _____
☐ EPOXY GROUT REQ.'D
TYPE _____

SHOP INSPECTION AND TESTS[b]

	REQ'D	WIT	OBS
HYDROSTATIC	☒	☐	☒
IMPELLER OVERSPEED	☒	☐	☒
STABILITY (ONLY ONE SET)	☐	☐	☐
MECHANICAL RUN	☒	☒	☐
☒ CONTRACT COUPLING ☐ IDLING ADAPTOR(S)			
☒ CONTRACT PROBES ☐ SHOP PROBES			
☒ PURCHASER VIBRATION EQUIPMENT			
VARY LUBE & SEAL OIL PRESSURES AND TEMPERATURES[a]	☒	☒	☐
POLAR FORM VIBRATION DATA	☒		
CD RECORD VIBRATION DATA	☒		
SHAFT END SEAL INSPECTION	☒	☒	☐
GAS LEAK TEST AT DISCHARGE PRESS	☒	☒	☐
POST TEST INTERNAL INSPECTION			
☐ BEFORE GAS LEAKAGE TEST			
☒ AFTER GAS LEAKAGE TEST			
PERFORMANCE TEST W/ ☒ GAS ☐ AIR	☒	☒	☐
COMPLETE UNIT TEST [d]	☒	☒	☐
TANDEM TEST	☐	☐	☐
GEAR TEST	☐	☐	☐
HELIUM LEAK TEST	☐	☐	☐
SOUND LEVEL TEST	☒	☐	☒
AUX. EQUIPMENT TEST	☒	☐	☒
FULL LOAD / SPEED / PRESS TEST	☐	☐	☐
HYDRAULIC COUPLING INSP	☐	☐	☐
SPARE PARTS TEST	☒	☒	☐
INSPECTOR'S CHECKLIST COMPLIANCE	☒	☐	☐
GAS SEAL TEST VENDOR SHOP	☒	☐	☒
TORSIONAL VIBRATION MEASUREMENT	☐	☐	☐
RESIDUAL ELECTRIC / MECH. RUNOUT	☒	☐	☒
DISAS. /REASSEMB. COMP. AFTER TEST	☐	☐	☐
SITE ACCEPTANCE TEST	☒	☒	☐
CERTIFIED COPIES OF ALL TEST DATA	☒	☐	☐

MANUALS

☒ DRAFT MANUAL FOR REVIEW
☒ TECHNICAL DATA MANUAL

MISCELLANEOUS

☒ RECOMMENDED STRAIGHT RUN OF PIPE DIAMETERS BEFORE SUCTION _____
☐ COMPRESSOR TO BE SUITABLE FOR FIELD RUN-IN [c]
☒ VENDOR'S REVIEW & COMMENTS ON PURCHASER'S PIPING & FOUNDATION
☐ COMPLETE ☐ PROVISION FOR LIQUID INJECTION SYSTEM
☒ VENDOR'S ANTI-SURGE SYSTEMS[b]
☒ EXTENT OF PROCESS PIPING BY VENDOR
☒ AUXILIARY EQUIP. MOTORS SUITABLE FOR AREA CLASSIFICATION
☒ OPTICAL ALIGNMENT FLATS REQ. ON COMP. / DRIVER
☒ VENDOR'S REVIEW & COMMENTS ON PURCHASER'S CONTROL SYSTEMS
☒ SHOP FIT UP OF VENDOR PROCESS PIPING
☒ WELDING HARDNESS TESTING _____
☐ DESIGN AUDIT
☒ BALANCE PISTON ΔP
☒ PROVIDE TAIL END SCHEDULES
VENDOR'S REPRESENTATIVE SHALL:
☐ OBSERVE FLANGE PARTING
☒ CHECK ALIGNMENT AT TEMPERATURE
☒ BE PRESENT AT INITIAL ALIGNMENT

WEIGHTS, kg

COMPR. _____ GEAR _____
DRIVER _____ BASE _____
ROTORS COMP. _____ DRIVER _____ GEAR _____
COMPRESSOR UPPER CASE _____
MAX. FOR MAINTENANCE (IDENTIFY) _____
L.O. CONSOLE _____
TOTAL SHIPPING WEIGHT _____

SPACE REQUIREMENTS, m & mm

	L	W	H
COMPLET UNIT:			
COMPRESSOR			
GEAR			
DRIVER			
L.O. CONSOLE			

APPLICABLE SPECIFICATIONS

☒ API STD 617
☒ ASME PTC 10
☒ SEE MATERIAL REQUISITION **I-RM-3017.01-1231-321-1J5-001**
☒ LOCAL REGULATION

REMARKS:

[a] The following cases shall be verified:
-High lube oil pressure & high lube oil temperature;
-High lube oil pressure & low lube oil temperature;
-Low lube oil pressure & high lube oil temperature;
-Low lube oil pressure & low lube oil temperature.
[b] See I-ET-3A17.01-1231-321-1J5-001 – TURBOCOMPRESSOR.
[c] Run-in on Air and/or Nitrogen.
[d] Complete Unit Test, also referred to as Factory Integrated Test in I-ET-3A17.01-1231-321-1J5-001.

PETROBRAS	DATA SHEET	Nº I-FD-3A17.01-1231-321-1J5-001	REV. C
	BS/ATP-IMI/OP-PMXL	SHEET: 10 of 15	
	TITLE: CENTRIFUGAL COMPRESSOR FOR NATURAL GAS C-UC-1231002	BS/PCM/PROJDP	
		INTERNAL	

UTILITIES CONDITIONS *[Note 5]*

STEAM (DRIVERS)

INLET	MIN	____ kPa g	____	ºC
	NORM	____ kPa g	____	ºC
	MAX.	____ kPa g	____	ºC
EXHAUST.	MIN	____ kPa g	____	ºC
	NORM.	____ kPa g	____	ºC
	MAX.	____ kPa g	____	ºC

TOTAL CONSUMPTION ____ kg/h

STEAM (HEATERS)

INLET	MIN	____ kPa g	____	ºC
	NORM	____ kPa g	____	ºC
	MAX.	____ kPa g	____	ºC
EXHAUST.	MIN	____ kPa g	____	ºC
	NORM.	____ kPa g	____	ºC
	MAX.	____ kPa g	____	ºC

TOTAL CONSUMPTION ____ kg/h

ELECTRICITY

	DRIVERS	CONTROL	SHUTDOWN
VOLTAGE			
HERTZ			
PHASE			

TOTAL CONSUMPTION ____ kW/h

ELECTRICITY

	DRIVERS	CONTROL	SHUTDOWN
VOLTAGE			
HERTZ			
PHASE			

TOTAL CONSUMPTION ____ kW/h

☐ REDUCED VOLTAGE START

☐ NUMBER OF STARTS ____

COOLING WATER

SOURCE ____ ☐ OPEN ☐ CLOSED

WATER TYPE ____

INLET

PRESS., kPa MAX ____ NORM. ____ MIN. ____

TEMP., º C MAX ____ NORM. ____ MIN. ____

RETURN

PRESS., kPa MAX ____ NORM. ____ MIN. ____

TEMP., º C MAX ____ NORM. ____ MIN. ____

FOULING FACTOR, m^2 ºC / W ____

TOTAL CONSUMPTION, m^3h ____

NITROGEN

SOURCE ____ ☐ DRY ☐ WET

PRESS., kPa MAX ____ NORM. ____ MIN. ____

TEMP., º C MAX ____ NORM. ____ MIN. ____

TOTAL CONSUMPTION, m^3/h ____

OTHER GAS ____

SOURCE ____ ☐ DRY ☐ WET

PRESS., kPa MAX ____ NORM. ____ MIN. ____

TEMP., º C MAX ____ NORM. ____ MIN. ____

INSTRUMENT AIR

PRESS., kPa MAX ____ NORM. ____ MIN. ____

TEMP., º C MAX ____ NORM. ____ MIN. ____

DEOILED: ☐ YES ☐ NO

DEW POINT ____ º C @ ____ kPa

TOTAL CONSUMPTION, m^3/h ____

SERVICE AIR

PRESS., kPa MAX ____ NORM. ____ MIN. ____

TEMP., º C MAX ____ NORM. ____ MIN. ____

DEOILED: ☐ YES ☐ NO

DEW POINT ____ º C @ ____ kPa

TOTAL CONSUMPTION, m^3/h ____

REMARKS:

PETROBRAS	DATA SHEET	Nº I-FD-3A17.01-1231-321-1J5-001	REV. C
	BS/ATP-IMI/OP-PMXL	SHEET: 11 of 15	
	TITLE: CENTRIFUGAL COMPRESSOR FOR NATURAL GAS C-UC-1231002	BS/PCM/PROJDP	
		INTERNAL	

INSTRUMENTATION[g]

☒ PER API 617, 614 AND API 670 ☐ OTHER

UNIT CONTROL PANEL (UCP)

FURNISHED BY: ☒ VENDOR ☐ PURCHASER ☐ OTHERS

☐ BASE MOUNTED ☐ FREE STANDING ☐ WEATHERPROOF ☐ TOTALLY ENCLOSED ☐ EXTRA CUTOUTS

☐ VIBRATION ISOLATORS ☐ STRIP HEATERS ☐ PURGE CONNECTIONS ☐ WITH DOORS

☐ ANNUNCIATOR WITH FIRST OUT INDICATION LOCATED UNIT CONTROL PANEL

☐ CUSTOMER CONNECTIONS BROUGHT OUT TO TERMINAL BOXES BY VENDOR

REMARKS: _____

INSTRUMENT SUPPLIERS

PRESSURE GAGES	MFR.		SIZE & TYPE	
TEMPERATURE GAGES	MFR		SIZE & TYPE	
LEVEL GAGES	MFR		SIZE & TYPE	
DIFF. PRESSURE GAGES	MFR		SIZE & TYPE	
PRESURE TRANSMITTERS	MFR		SIZE & TYPE	
DIFF. PRESSURE TRANSMITTERS	MFR		SIZE & TYPE	
TEMPERATURE TRANSMITTERS	MFR		SIZE & TYPE	
LEVEL TRANSMITTERS	MFR		SIZE & TYPE	
CONTROL VALVES	MFR		SIZE & TYPE	
PRESSURE RELIEF VALVES	MFR		SIZE & TYPE	
SIGHT FLOW INDICATORS	MFR		SIZE & TYPE	
VIBRATION EQUIPMENT	MFR		SIZE & TYPE	
TACHOMETER	MFR		RANGE &TYPE	
SOLENOID VALVES	MFR		SIZE & TYPE	
ANNUNCIATOR	MFR		MODEL & No. POINTS	
DAMPER/VANE ACTUATOR	MFR		MODEL	
FURNISHED BY _____	TYPE		MAX. TORQUE, N-m	

PRESSURE GAUGE REQUIREMENTS	LOCALLY	LOCAL	CONTROL		LOCALLY	LOCAL	CONTROL
FUNCTION	MOUNTED	PANEL	PANEL	FUNCTION	MOUNTED	PANEL	PANEL
COMPRESSOR SUCTION[a]	☒	☐	☒	PROCESS GAS COOLER[a,c]	☐	☐	☐
COMPRESSOR DISCHARGE[a]	☒	☐	☒	LIQUID INJECTION SYSTEM	☐	☐	☐
COMPRESSOR SUCTION FILTER ΔP'	☒	☐	☒	LUBE OIL PUMP DISCHARGE[f]	☒	☐	☒
JOURNAL OIL BEARING INLET[a,e]	☒	☐	☐	LUBE OIL COOLER[d]	☒	☐	☒
THRUST OIL BEARING INLET[a,e]	☒	☐	☐	LUBE OIL MANIFOLD	☐	☐	☐
BALANCE PISTON CHAMBER[m]	☒	☐	☒	LUBE OIL FILTER ΔP	☒	☐	☒
BALANCE PISTON ΔP	☒	☐	☒	CONTROL OIL PUMP DISCHARGE[f]	☒	☐	☒
SEAL GAS FILTER ΔP[a,b]	☒	☐	☒	CONTROL OIL COOLER[d]	☐	☐	☐
SEAL GAS INLET / OUTLET[a,b]	☒	☐	☒	CONTROL OIL MANIFOLD	☐	☐	☐
SEAL GAS ΔP[a,b,h]	☒	☐	☒	CONTROL OIL FILTER ΔP	☒	☐	☒
SEAL CHAMBER[a,b,n]	☒	☐	☒	SUCTION HEATER	☒	☐	☒

TEMPERATURE GAUGE REQUIREMENTS	LOCALLY	LOCAL	CONTROL		LOCALLY	LOCAL	CONTROL
FUNCTION	MOUNTED	PANEL	PANEL	FUNCTION	MOUNTED	PANEL	PANEL
COMPRESSOR SUCTION[a]	☒	☐	☒	LUBE OIL PUMP DISCHARGE[f]	☒	☐	☒
COMPRESSOR DISCHARGE[a]	☒	☐	☒	LUBE OIL RESERVOIR	☒	☐	☒
JOURNAL OIL BEARING OUTLET[a,e]	☒	☐	☒	LUBE OIL COOLER[d]	☒	☐	☒
THRUST OIL BEARING OUTLET[a,e]	☒	☐	☒	CONTROL OIL PUMP DISCHARGE[f]	☒	☐	☒
JOURNAL METAL BEARING[a,e]	☒	☐	☒	CONTROL OIL RESERVOIR	☒	☐	☒
THRUST METAL BEARING[a,e]	☒	☐	☒	CONTROL OIL COOLER[d]	☒	☐	☒
PROCESS GAS COOLER[a,c]	☐	☐	☐	SEAL GAS INLET	☒	☐	☒
ELECTRIC MOTOR WINDING[k]	☒	☐	☒				

REMARKS:

[a] Each stage / casing.

[b] Primary / buffer, secondary / barrier and separation gas, where applicable.

[c] Gas side, inlet & outlet.

[d] Oil side, inlet & outlet.

[e] Compressor, transmission and drive.

[f] Each pump.

[g] For oil system instruments, alarms and shutdown signals see Oil System Data Sheet.

[h] Seal Gas ΔP or Flow.

[k] Motor winding temperature sensors shall be connected to protection relay in Electrical Panel. Alarm and trip by electrical panel.

[m] Balance piston chamber and balance line DP.

[n] DE and NDE side.

LEVEL GAUGE REQUIREMENTS

FUNCTION	LOCALLY MOUNTED	LOCAL PANEL	CONTROL PANEL	FUNCTION	LOCALLY MOUNTED	LOCAL PANEL	CONTROL PANEL
SUCTION SCRUBBER[a]	☒	☐	☒	OVERHEAD TANK	☐	☐	☐
LIQUID INJECTION SYSTEM	☐	☐	☐	RUNDOWN TANK	☐	☐	☐
LUBE OIL RESERVOIR	☒	☐	☒	CONTROL OIL RESERVOIR	☐	☐	☐
CONTAMINATED LUBE OIL RECOV.TANK	☐	☐	☐	CONT. CTRL OIL RECOV. TANK	☐	☐	☐
LUBE OIL ACCUMULATOR	☐	☐	☐	CONTROL OIL ACCUMULATOR	☐	☐	☐

DISPLACEMENT AND VIBRATION GAUGE REQUIREMENTS

FUNCTION	LOCALLY MOUNTED	LOCAL PANEL	CONTROL PANEL	FUNCTION	LOCALLY MOUNTED	LOCAL PANEL	CONTROL PANEL
AXIAL DISPLACEMENT	☐	☐	☒	PHASE ANGLE	☐	☐	☒
VIBRATION INDICATORS	☐	☐	☒	SPEED INDICATOR	☐	☐	☒

GENERAL INDICATORS

FUNCTION	LOCALLY MOUNTED	LOCAL PANEL	CONTROL PANEL	FUNCTION	LOCALLY MOUNTED	LOCAL PANEL	CONTROL PANEL
SERVICE HOURMETER	☐	☐	☒	RECYCLE VALVE OPENING PERCENTAGE[a]	☐	☐	☒
ELECTRIC MOTOR AMPERIMETER	☐	☐	☐				
COMPRESSOR SUCTION VOLUMETRIC AND MASS FLOW[a]	☐	☐	☒	COMPRESSOR RECYCLE MASSIC FLOW	☐	☐	☐
THROTTLE VALVE OPENING PERCENTAGE	☐	☐	☐				

SIGHT FLOW INDICATORS

- ☒ OIL OUTLET COMPRESSOR BEARING
- ☒ OIL OUTLET DRIVER BEARINGS
- ☒ OIL OUTLET GEAR BEARINGS
- ☐ OIL OUTLET OVERHEAD TANK
- ☐ ALL RETURN OIL LINES TO RESERVOIR
- ☐ COOLING WATER OUTLET
- ☐ LIQUID INJECTION MANIFOLD
- ☐ SEAL FLOW (EACH)

PUSH BUTTONS ALARMS[b]

- ☐ LAMP TEST
- ☐ RESET SYSTEM
- ☐ TURNING GEAR OPERATION
- ☐ RECYCLE OPENING[a]
- ☐ DRIVER RUNNING
- ☐ MAIN OIL PUMP RUNNING
- ☐ AUXILIARY OIL PUMP RUNNING
- ☐ SIGNALING OF ALL ALARMS AND TRIPS
- ☐ ALL WASH OIL SYSTEM SIGNALING
- ☒ NORMAL STOP
- ☒ EMERGENCY STOP

SWITCH CLOSURES

ALARM CONTACTS SHALL	☒ OPEN	☐ CLOSE TO SOUND ALARM AND BE NORMALLY	☒ ENERGIZED	☐ DE-ENERGIZED
SHUTDOWN CONTACTS SHALL	☒ OPEN	☐ CLOSE TO TRIP AND BE NORMALLY	☒ ENERGIZED	☐ DE-ENERGIZED

REMARKS:

[a] Each stage / casing.

[b] Packager shall inform standard configuration.

INSTRUMENTATION (CONT.)

ALARM & TRIPS

FUNCTION	ALARM	TRIP	FUNCTION	ALARM	TRIP
HIGH COMPRESSOR SUCTION PRESSURE[a] [h]	☒	☒	LOW LUBE OIL RESERVOIR LEVEL	☒	☒
LOW COMPRESSOR SUCTION PRESSURE[a] [h]	☒	☒	LOW LUBE OIL PRESSURE	☒	☒
HIGH COMPRESSOR SUCTION TEMPERATURE[a]	☐	☐	LUBE OIL AUX. PUMP RUNNING	☐	☐
HIGH COMPRESSOR DISCHARGE PRESSURE[a] [h]	☒	☒	HIGH TEMP. AFTER LUBE OIL COOLERS	☒	☐
LOW COMPRESSOR DISCHARGE PRESSURE[a] [h]	☒	☒	LOW OIL TEMP. IN LUBE OIL RESERVOIR	☐	☐
HIGH COMPRESSOR DISCHARGE TEMPERATURE[a] [h]	☒	☒	HIGH LUBE OIL FILTER ΔP	☒	☐
HIGH THRUST BEARING METAL TEMPERATURE[c] [h]	☒	☒	LOW ACCUMULATOR LEVEL	☐	☐
HIGH JOURNAL BEARING METAL TEMPERATURE[c] [h]	☒	☒	LOW RUNDOWN TANK LEVEL	☐	☐
LOW BALANCE PISTON ΔP	☒	☐	LOW OVERHEAD TANK LEVEL	☐	☐
HIGH AND LOW SEAL GAS ΔP[b,f]	☒	☒	LOW CONTROL OIL RESERVOIR LEVEL	☒	☐
HIGH AND LOW SEAL GAS FLOW[b,f]	☒	☒	LOW CONTROL OIL PRESSURE	☐	☐
HIGH AND LOW SEAL GAS PRESSURE INLET[b]	☒	☒	CONTROL OIL AUX. PUMP RUNNING	☐	☐
HIGH AND LOW SEAL CHAMBER PRESSURE	☐	☐	HIGH TEMP. AFTER CONTROL OIL COOLERS	☐	☐
HIGH SEAL GAS FILTER ΔP[b]	☒	☐	LOW OIL TEMP. IN CONTROL OIL RESERVOIR	☐	☐
INBOARD AND OUTBOARD SEAL FAILURE	☒	☒	HIGH CONTROL OIL FILTER ΔP	☒	☐
HIGH COOLER GAS OUTLET TEMPERATURE[a,e] [h]	☒	☒	LIQUID DOWNSTREAM SEAL GAS CONDITIONING	☒	☒
HIGH SUCTION DRUM LEVEL[a,e] [h]	☒	☒			
EXCESSIVE AXIAL DISPLACEMENT[d] [h]	☒	☒			
EXCESSIVE VIBRATION[d] [h]	☒	☒			
COMPRESSOR IN SURGE [h]	☒	☒			
ELECTRIC MOTOR WINDING[g]	☐	☐			

CONTACTS:

☐ LUBE & CONTROL OIL AUX. PUMP START UP
☐ LUBE & CONTROL OIL MAIN PUMP START UP
☐ SEAL OIL AUX. PUMP START UP
☐ AUTOMATIC HEATER SWITCHING – ON
☐ REMOTE AND LOCAL SHUTDOWN / START UP
☐ LIQUID INJECTION PUMP

MISCELLANEOUS:

☒ ALARM AND SHUTDOWN SHALL BE SEPARATE

☒ ELECTRICAL AND INSTRUMENT CONNECTIONS WITHIN THE BOUNDARIES OF THE BASE SHALL BE BROUGHT OUT TO TERMINAL BOXES

COMMENTS REGARDING INSTRUMENTATION _____

REMARKS:

[a] Each stage / casing.

[b] Primary / buffer, secondary / barrier and separation gas.

[c] Compressor and driver.

[d] Compressor, transmission and drive.

[e] These instruments shall not be compressor package scope of supply, but the 4-20mA signals shall be actuated by compressor unit control panel.

[f] Seal Gas ΔP or Flow.

[g] Motor winding temperature sensors shall be connected to protection relay in Electrical Panel. Alarm and trip by electrical panel.

[h] These functions shall initiate pressurized shutdowns.

NOTES

1. General:

1.1. Centrifugal compressor for NATURAL GAS Turbocompressor package unit shall be in accordance with API std 617, last edition.

1.2. For quantity required of supply, see I-RM-3017.01-1231-321-1J5-001 – TURBOCOMPRESSOR.

1.3. PACKAGER shall fill in all blank spaces (fields and check boxes) in these data sheets. All blank spaces not applicable shall be filled with NA. All missing information will be considered as not applicable or not according to proposal.

1.4. PACKAGER shall make all efforts to select a compressor with none or less recirculation as possible.

1.5. All components within the compressor package must comply with the requirements of the COLOR CODE established on the regulatory standards (NR-26) of the MTE. The painting specifications / schemes must be previously approved by PETROBRAS.

2. Operating conditions:

2.1. For turbine size selection an additional power loss was considered in ISO condition. For more details see I-FD-3A17.01-1231-332-1J5-001.

2.2. Compressor shall be able to start up from settle-out pressure, PETROBRAS shall be consulted for possible approval of a reduced start up pressure.

2.3. Where required, the Packager shall provide a suction throttle valve to enable compressor capacity regulation during specific operating scenarios and to assist in achieving a controlled pressurized start-up condition.

2.4. The process control method shall be on the package inlet pressure set point, by speed variation. The package outlet pressure shall be monitored; it shall be limited in value below the outlet design pressure and few below the compressor alarm by high outlet pressure. Operators shall be capable of setting the value for package inlet pressure and also the maximum limit value for discharge pressure, limited by the speed control.

3. Location

3.1. The equipment supplied shall be suitable for the environment and range of ambient condition including, atmospheric pressure, relative humidity, rainfall, air temperature (dry bulb, see Obs.1), characteristics monthly values and wind motions defined at the document I-ET-3926.01-1000-941-PPC-001 – METOCEAN DATA.

Obs.1: For air temperature (dry bulb) of electric equipment, use the most critical conditions, between those defined by Classification Society and specific documentation of equipment.

3.2. For area classification, see DE-3A17.01-5400-94A-1J5-001 - PLANTA DE CLASSIFICAÇÃO DE ÁREAS. Electrical equipment installed in external safe areas, that shall be kept operating during emergency shutdown ESD-3P and ESD-3T shall be certified for installation in hazardous areas Zone 2 Group IIA temperature T3.

3.3. For noise requirements, please see I-ET-3A17.01-1231-321-1J5-001 - TURBOCOMPRESSOR.

4. Construction features:

4.1. PACKAGER shall fill in all necessary repeated pages for construction features, in order to provide all information for different cases and/or stages.

4.2. PACKAGER shall consider a gas with H_2S concentration for the compressor materials specification. PACKAGER shall also consider all operational cases, gas compositions and corrosive components content (H_2S, H_2O and CO_2) for the compressor materials specification. PACKAGER shall also consider the compressor non running, cold and pressurized (with process gas containing free water) conditions and water condensation. For more details see I-ET-3A17.01-1231-321-1J5-001 - TURBOCOMPRESSOR.

5. Utilities

5.1. For utilities, please see I-RL-3A17.01-1200-940-1J5-001 – GENERAL SPECIFICATION FOR AVAILABLE UTILITIES.

6. Working Group

REV. 0		
KEY	**DEPARTMENT**	**ROLE**
CL2R	BS/ATP-IMI/MIED	EXECUTION
DHG1	BS/PCM/PROJDP	EXECUTION
FBJW	BS/PCM/PROJDP	EXECUTION
FEU5	BS/PCM/PROJDP	EXECUTION
FZ35	BS/PCM/PROJDP	EXECUTION
RZA7	BS/PCM/PROJDP	EXECUTION
SGPL	SRGE/ESUP/PIES/PPP	EXECUTION
URS8	BS/PCM/PROJDP	EXECUTION
U32A	BS/PCM/PROJDP	CHECK
BEGS	BS/PCM/PROJDP	APPROVAL

REV. A / REV. B		
KEY	**DEPARTMENT**	**ROLE**
DHG1	BS/PCM/PROJDP	EXECUTION
FBJW	BS/PCM/PROJDP	EXECUTION
FEU5	BS/PCM/PROJDP	EXECUTION
FZ35	BS/PCM/PROJDP	EXECUTION
RZA7	BS/PCM/PROJDP	EXECUTION
SGPL	SRGE/ESUP/PIES/PPP	EXECUTION
U32A	BS/PCM/PROJDP	EXECUTION
URS8	BS/PCM/PROJDP	EXECUTION
CTFQ	BS/ENGP/EEDSE	CHECK
BEGS	BS/PCM/PROJDP	APPROVAL

REV. C		
KEY	**DEPARTMENT**	**ROLE**
FBJW	BS/PCM/PROJDP	EXECUTION
FEU5	BS/PCM/PROJDP	EXECUTION
CTFQ	BS/ENGP/EEDSE	CHECK
BEGS	BS/PCM/PROJDP	APPROVAL