PETROBRAS	DATA SHEET	No. I-FD-3A17.01-1231-332-1J5-001	
	CLIENT: *BS/ATP-IMI/OP-PMXL*		SHEET: 1 of 16
	JOB: *PROJETO COMPLEMENTAR PMXL-1*		
	AREA: *1231 - PRIMARY PROCESSING UNIT*		
	TITLE: **GAS TURBINE TS – 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	02/02/2026	03/12/2026					
EXECUTION	Note 7	Note 7	Note 7	Note 7					
CHECK	U32A	CTFQ	CTFQ	CTFQ					
APPROVAL	BEGS	BEGS	BEGS	BEGS					

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FORM OWNED TO PETROBRAS N-0381 REV. M.

PETROBRAS	DATA SHEET	Nº I-FD-3A17.01-1231-332-1J5-001	REV. C
	BS/ATP-IMI/OP-PMXL	SHEET 2 of 16	
	TITLE: **GAS TURBINE TS – UC-1231002**	BS/PCM/PROJDP	
		INTERNAL	

APPLICABLE TO:	☒ PROPOSAL	☐ PURCHASE	☐ AS BUILT	
FOR:	**E&P**	UNIT:	**Top deck – M04**	
SITE:	**BS/ATP-IMI/OP-PMXL**	SERVICE:	**NATURAL GAS COMPRESSION**	
No. REQ / TAG:	**SEE I-RM-3A17.01-1231-321-1J5-001**	MANUFACTURER:		
MODEL:		VENDOR:		
SIZE / TYPE:		DRIVEN EQUIPMENT:	**NATURAL GAS COMPRESSOR**	
SERIAL No..		MANUFACTURER No.:		

CYCLE: ☐ REGEN ☒ SIMPLE ☐ EXHAUST HEAT RECOVERY TYPE: ☐ SINGLE ☒ MULTI SHAFT

DRIVEN EQUIP.: NORMAL SHAFT kW @ rpm RATED SHAFT kW @ rpm

OUTPUT SHAFT SPEED RANGE ☐ MIN rpm ☐ MAX rpm

MINIMUM SITE POWER KW (EA SET) @ ºC MINIMUM REQ ISO RATED POWER (EA SET) **5694** kW

OPERATION: ☐ ATTENDED ☒ UNATTENDED ☐ POTENTIAL MAX. POWER kW

DUTY: ☒ CONTINUOUS ☒ STAND BY ☐ INTERMITTENT ☐ No. OF STARTS / YEAR

TURBINE TYPE: ☒ AERODERIVATIVE ☒ LIGHT INDUSTRIAL

APPLICATION: ☐ ELECTRIC GENERATOR ☒ MECHANICAL DRIVE

PERFORMANCE: *[NOTE 2]*

GAS TURBINE INCLUDING ALL LOSSES

	SITE RATED	ISO CONDITION	SITE MAX TEMP	SITE MIN TEMP
☒ DRY BULB TEMP., ºC	**30**	**15**	**39**	**6,4**
☒ RELATIVE HUMIDITY, %	**80**	**60**	**80**	**80**
☐ BAROMETER, kPa				
☐ HEAT RATE, LHV, MJ/kW-h				
☐ OUTPUT POWER, kW				
☐ FUEL CONSUMPTION, kg/h				
☐ THERMAL EFFICIENCY, %				
☐ OUTPUT SHAFT SPEED, rpm				
☐ AIR FLOW, kg/s				
☐ EXHAUST FLOW, kg/s				
☐ FIRING TEMPERATURE, ºC				
☐ GG EXHAUST TEMP.,ºC				
☐ PT EXHAUST TEMP, ºC				
☐ CERTIFIED POINT				

INCLUDING ☐ STEAM ☐ WATER EFFECTS FOR:
☐ EMISSION CONTROL ☐ AUGMENTATION

☐ STEAM FLOW, kg/h				
☐ WATER FLOW, m³/h				

ESTIMATED POWER LOSSES, kW:

	SITE RATED	NORMAL DUTY
INLET:		
FILTER & SILENCER @ mm H_2O[a]		
EXHAUST:		
SILENCER & STACK & EXHAUST HEAT REC. @ mm H_2O[a]		
LOAD GEAR		
MFR EXPECTED DEGRADATION FACTOR FOR:		
½ PERIOD EQUIVALENT TO MTBO		
1 PERIOD EQUIVALENT TO MTBO		

LOCATION *[NOTE 3]*

☐ INDOOR ☒ OUTDOOR ☐ GRADE
☐ HEATED ☐ UNDERROOF ☐ MEZZANINE
☒ UNHEATED ☐ PARTIAL SIDES ☐

ELECTRICAL AREA CLASSIFICATION
☐ NON-HAZARDOUS ☒ HAZARDOUS
APPLICABLE CODE: ☐ NEC 500 ☐ NEC 505 ☐ IEC
CLASS GROUP TEMP. CODE
AREA CLASSIFICATION
CLASS DIV ZONE
☐ THIRD PARTY CERTIFICATION REQUIRED
☐ WINTERIZATION REQ'D
☒ TROPICALIZATION REQ'D

SITE DATA
ELEVATION, m: **30** BAROMETER, kPa a: **101,4**

RANGE OF AMB. TEMPS:	DRY BULB	WET BULB
SITE RATED, ºC:		
NORMAL, ºC:		
MAXIMUM, ºC:		
MINIMUM, ºC:		

MIN / MAX RAINFALL, mm / DAY:
RELATIVE HUMIDITY, % @ SITE RATED TEMP

ATMOSPHERIC AIR:
UNUSUAL CONDITIONS: ☐ DUST ☐ FUMES
DUST: BELOW 10, ppm:
10 AND ABOVE, ppm
CORROSIVE AGENTS:
CONSTITUENTS: ☐ SULFUR ☐ AMMONIA ☐ AMMONIUM SALTS
☒ OTHER **MARINE ENVIRONMENT**

NOISE SPECIFICATIONS
☒ APPLICABLE TO MACHINE
SEE SPECIFICATION
☒ APPLICABLE TO NEIGHBOURHOOD:
SEE SPECIFICATION

APPLICABLE SPECIFICATIONS:
☒ GOVERNING SPECIFICATION:
☒ VENDOR HAVING UNIT RESPONSIBILITY **FOR PACKAGE**
☒ OTHER **SEE MATERIAL REQUISITION**

PAINTING:
☒ MANUFACTURERS STANDARD
☒ OTHER ***[NOTE 1.3]***

REMARKS:
[a] Maximum and minimum

PETROBRAS	DATA SHEET	Nº I-FD-3A17.01-1231-332-1J5-001	REV. C
	BS/ATP-IMI/OP-PMXL		SHEET 3 of 16
	TITLE: GAS TURBINE TS – UC-1231002		BS/PCM/PROJDP
			INTERNAL

FUEL SYSTEM[a] *[NOTE 4]*

TYPE ☒ GAS ☐ LIQUID ☐ DUAL

DUAL SYSTEM REQUIREMENTS ☐ GAS / GAS ☐ GAS / LIQUID ☐ LIQUID / LIQUID

☐ COMPLETE FUEL RECEIVING SYSTEM ☐ MAXIMUM TIME ALLOWED TO COMPLETE TRANSFER _____ SECONDS

GAS FUELS

See document I-FD-3A17.01-1231-321-1J5-001

☐ FUEL ANALYSIS – MOL%

COMPOSITION:	SYMBOL	M.W.	NORMAL	STARTING	ALT
AIR	-	29	**0**		
OXYGEN	O_2	32	**0**		
NITROGEN	N_2	38	**0,50529**		
WATER VAPOR	H_2O	18	**0,07817**		
CARBON MONOXIDE	CO	28	**0**		
CARBON DIOXIDE	CO_2	44	**0,21448**		
HYDROGEN	H_2	2	**0**		
METHANE	CH_4	16	**92,757**		
ETHYLENE	C_2H_4	26	**0**		
ETHANE	C_2H_6	30	**3,999**		
PROPYLENE	C_3H_6	42	**0**		
PROPANE	C_3H_8	44	**1,367**		
I – BUTANE	C_4H_{10}	58	**0,27013**		
A – BUTANE	C_4H_{10}	58	**0,38531**		
I – PENTANE	C_5H_{12}	72	**0,12768**		
A – PENTANE	C_5H_{12}	72	**0,10449**		
HEXANE	C_6H_{14}	86	**0,09640**		
HEPTANE	C_7H_{16}	100	**0,06322**		
OCTANE	C_8H_{18}	114	**0,02666**		
NONANE	C_9H_{20}	128	**0,00496**		
DECANE PLUS	C10+	142+	**0,00093**		
TOTAL			**100%**		
AVERAGE MOL WEIGHT			**17,67**		
CORROSIVE AGENTS, ppm			**10 (H2S)**		
CONTAMINANTS, ppm					
Cp/Cv			**1,328**		
HHV, kJ/kg			**53690**		
LHV, kJ/kg			**48840**		
NORM. FUEL PRESS., kPa a			**2125**		
MAX. / MIN. FUEL PRESS., kPa a					
FUEL PRESS. REQUIRED, kPa a					
NORM. FUEL TEMPERATURE, ºC			**22**		
MAX. / MIN. FUEL TEMPERATURE, ºC			**45/10**		
FUEL TEMP. REQUIRED, ºC					
WOBBE INDEX					
COMPRESSOR SYSTEM REQ'D			☐ YES	☐ NO	
HEATER REQUIRED			☐ YES	☐ NO	
RATE OF CHANGE OF LHV					

LIQUID FUELS

FUEL GRADE

ASTM D1655 ASTM ☐ 0GT ☐ 1GT

JET ☐ A ☐ A-1 ☐ B D2880 ☐ 2GT ☐ 3GT ☐ 4GT

☐ OTHER INDICATE ANALYSIS BELOW

LIQUID FUEL TREATMENT REQUIRED ☐ YES ☐ NO

TREATMENT SYSTEM BY: ☐ VENDOR ☐ OTHER

FUEL TRANSFER EQUIP. REQ. ☐ YES ☐ NO

HEATER REQUIRED ☐ YES ☐ NO

☐ LIQUID FUEL PRESSURE REQUIRED, MAX/MIN, kPa g _____ / _____

☐ UNINTERRUPTED RUN LENGTH, m _____

FUEL ANALYSIS DATA

PROPERTY	ASTM METHOD	MEASURED VALUE
VISCOSITY, SSU @ 38ºC	D-445	
DISTILLATION DATA	D-86	
50% RECOVERY, ºC MAX		
END POINT, ºC MAX		
SULFUR CONTENT %WT MAX (SELECT APPL METHOD)		
BOMB METHOD	D-129	
LAMP METHOD	D-1266	
HIGH-TEMP METHOD	D-1552	
CARBON RESIDUE (ON 10% BOTTOMS) % WT. MAX.		
CONRADSON	D-189	
RAMSBOTTOM	D-524	
COPPER STRIP CORROSION		
PLATE 3 h @ 100ºC MAX	D-130	
AROMATIC CONTENT	D-1319	
ASH CONTENT	D-482	
SPECIFIC GRAVITY, 15ºC	D-1298	
FLASH POINT, ºC	D-56	
POUR POINT, ºC	D-97	
WATER	D-95	
FILTERABLE DIRT, mg/100ml	D-2276	
MAX DIRT SIZE, μm		
TRACE METALS (ATOMIC ABSORPTION PREF.)	D-3605	
SODIUM		
POTASSIUM		
VANADIUM		
CALCIUM		
LEAD		
OTHER METALS _____		
LOWER HEAT. VALUE, MJ/kg	D-2382	

FUEL SYSTEM PIPING

☒ TRANSFER VALVE ☒ MANUAL ☒ AUTO

☐ SHUTDOWN TO TRANSFER

☒ TRANSFER @ RATED LOAD

☐ TRANSFER @ _____ % LOAD

☐ LIQUID FUEL PUMP QTY _____ @ 100%

☒ ISOLATION BLOCK VALVES

☒ ISO 15156 MATERIAL STANDARDS

☒ BY-PASS AND VENT VALVE

☒ CONTROL VALVE

☒ ANSI FLANGE RATING

☒ SS PIPING SYSTEM MANIFOLD

☐ BREAKOUT FLANGES

☒ TWIN Y-TYPE STRAINER WITH CONT. FLOW

☐ MESH _____

REMARKS:

[a] Equipment shall be able to operate in any case with all specified fuel compositions.

CONSTRUCTION FEATURES[a]

SPEEDS: MIN _____ rpm NORM _____ rpm
MAX. CONT _____ rpm TRIP _____ rpm
☒ LATERAL CRITICAL SPEEDS[b] ☒ DAMPED ☐ UNDAMPED
FIRST CRITICAL _____ rpm _____ MODE
SECOND CRITICAL _____ rpm _____ MODE
THIRD CRITICAL _____ rpm _____ MODE
FOURTH CRITICAL _____ rpm _____ MODE
☐ PROTOTYPE OR MODIFIED ROTOR SUPPORT
☒ TRAIN LATERAL ANALYSIS REQUIRED [c]
☒ TRAIN TORSIONAL ANALYSIS REQUIRED
☒ TORSIONAL CRITICAL SPEEDS:
FIRST CRITICAL _____ rpm
SECOND CRITICAL _____ rpm
THIRD CRITICAL _____ rpm
FOURTH CRITICAL _____ rpm
VIBRATION:
ALLOWABLE TEST LEVEL SHAFT: _____ µm P/P
CASE: _____ mm/s
TURBINE ωr^2 _____

ROTATION, VIEWED FROM DRIVE END ☐ CW ☐ CCW

AIR COMPRESSOR:
STAGES _____ MAX. TIP SPEED _____ m/s
TYPE _____ PRESSURE RATIO _____
CASING SPLIT ☐ AXIAL ☐ RADIAL
ROTOR ☐ SOLID ☐ BUILT UP
MAX ALLOWABLE PRESSURE _____ kPa g
MAX ALLOWABLE TEMPERATURE _____ ºC
OPERATING RANGE SPEED _____ rpm

TURBINE:
STAGES _____ MAX. TIP SPEED m/s
TYPE _____ PRESSURE RATIO _____
CASING SPLIT ☐ AXIAL ☐ RADIAL
ROTOR ☐ SOLID ☐ BUILT UP
MAX ALLOWABLE PRESSURE _____ kPa g
MAX ALLOWABLE TEMPERATURE _____ ºC
OPERATING RANGE SPEED _____ rpm

COMBUSTORS:
☐ SINGLE ☐ MULTIPLE, QUANTITY: _____
☒ GAS ☐ LIQUID ☐ DUAL FUEL
COMBUSTION TEMPERATURE _____ ºC
MAXIMUM ALLOWABLE TEMP. VARIATION _____ ºC
APPLICABLE PLANE _____
FUEL NOZZLES PER COMBUSTOR _____
WOBBE INDEX No. REQ'D MAX _____ MIN _____

BLADES COOLING SYSTEM
☐ YES ☐ NO ☐ AIR ☐ WATER
SHAFT SEAL TYPE _____
VARIABLE NOZZLES: GG _____ PT _____
COOLING AIR, Nm^3/h

___ STG NOZZLES	_____	___ STG NOZZLES	_____
___ STG BLADES	_____	___ STG BLADES	_____
___ STG NOZZLES	_____	___ STG NOZZLES	_____
___ STG BLADES	_____	___ STG BLADES	_____
ROTOR	_____	SEAL	_____
OTHER	_____	TOTAL	_____

EXTERNAL COOLING AIR REQ, Nm^3/h _____
AIR EXTRACTION REQUIRED FOR: _____

REMARKS:
[a] For multiple shaft turbines, complete all applic. sections for each shaft
[b] Infinite and actual stiffness
[c] applicable for solid coupling only

MATERIALS OF CONSTRUCTION

COMPRESSOR ROTOR BLADES _____
COMPRESSOR STATOR VANES _____
SHAFT _____ BLADE / VANE COATING _____
TURBINE SEALS _____ COMPRESSOR SEALS _____

TURBINE STAGE	NOZZLES	BLADES	WHEELS OR DISCS
1			
2			
3			
4			

COMPRESSOR CASING _____
COMBUSTOR CASING _____
COMBUSTOR LINERS _____
TURBINE CASING _____
INLET CASE _____
EXHAUST CASE _____

GAUGE BOARDS AND CONTROL PANELS

GAUGE BOARDS
☒ LOCATION **LOCAL**
CONTROL CONSOLES ☐ ON-SKID ☐ OFF SKID LOCAL
☒ OFF SKID REMOTE
WEATHER PROTECTION REQ'D ☐ YES ☐ NO
☐ SPECIFICATION _____
☐ ANNUNCIATOR REQUIRED
☐ VISUAL DISPLAY UNIT (VDU) ☐ KEYBOARD

CONTROL SYSTEMS

TYPE
☐ MECH ☐ PNEUM ☐ HYDRA ☐ ELECTRIC ☐ ELECTRONIC
☐ MICROPROCESSOR BASED ☐ COMBINED _____
☐ SIGNAL SOURCE _____
☐ SENSITIVITY _____ ☐ RANGE _____ TO _____
☐ TIME OF AC OUTAGE PROTECTION _____ MIN
☐ SHUTOFF VALVES FOR SHUTDOWN SENSORS
STARTING SYSTEM: ☐ MANUAL ☐ SEMI ☐ AUTOMATIC
☐ PURGE _____ MIN
☐ SEPARATE SHUTDOWN VALVE TEST DURING OPERERATION

GOVERNOR

☒ MFR STANDARD ☐ OTHER _____
☐ MAKE _____ ☐ MODEL _____
☐ CONSTANT SPEED ☒ VARIABLE SPEED
☐ ISOCHRONOUS ☐ DROOP
REMOTE SHUTDOWN SIGNAL
☐ PNEUMATIC ☐ HYDRAULIC ☒ ELECTRIC ☐ NONE
MANUAL SPEED CHANGER, rpm: _____ MAX _____ MIN
CONTROL SIGNAL: _____ MAX _____ MIN
IN CASE OF FAILURE OF CONTROL SIGNAL OR ACTUATOR:
☐ MAINTAIN TURBINE SPEED ☐ GOES TO MAXIMUM SPEED
☐ GOES TO MINIMUM SPEED
LIMIT SWITCH FOR GENERATION DRIVE ☐ YES ☐ NO
REGULATION NEMA CLASS _____
CONTROL METHOD / PROCESS VARIABLE
_____
☐ PROVISION REQUIRED FOR TEST SEPARATE SHUTOFF VALVE DURING OPERATION

CONSTRUCTION FEATURES (CONT.)[a]

BEARINGS AND BEARING HOUSINGS

RADIAL [b,c]	INLET	EXHAUST
☐ TYPE		
☐ MANUFACTURER		
☐ LENGTH, mm		
☐ SHAFT DIAMETER, mm		
☐ UNIT LOAD (ACT. / ALLOW.), kPa	/	/
☐ BASE MATERIAL		
☐ BABBITT THICKNESS, mm		
☐ No. PADS		
☐ LOAD: BETWEEN / ON PAD		
☐ PIVOT: CENTER / OFF SET, %		
☐ DAMPER BEARING		
☐ _____		

THRUST	ACTIVE	INACTIVE
☐ TYPE		
☐ MANUFACTURER		
☐ UNIT LOAD (ULTIMATE), kPa		
☐ UNIT LOAD (SITE RATED), kPa		
☐ UNIT LOAD (MAX POTEN.), kPa		
☐ No. OF PADS / AREA, mm²	/	/
☐ BASE MATERIAL		
☐ BABBITT THICKNESS, mm		
☐ PIVOT: CENTER / OFFSET, %		

LUBRICATION: ☐ FLOODED ☐ DIRECTED

THRUST COLLAR: ☐ INTEGRAL ☐ REPLACEABLE

BEARING TEMPERATURE DEVICES

☒ SEE MACHINERY PROTECTION SYSTEM DATA SHEET

☐ THERMOCOUPLES

☐ SELECTOR SWITCH & IND BY: ☐ PURCH ☐MFR

☐ RESISTANCE TEMPERATURE DETECTORS

☐ RESISTANCE MATERIAL _____ ☐ _____ ohms

☐ SELECTOR SWITCH & IND. BY: ☐ PURCH ☐MFR

☐ LOCATION-JOURNAL BEARING

☐ No.____ EACH PAD ____ EVERY OTH PAD ____ PER BRG

☐ OTHER _____

☐ LOCATION-THRUST BEARING

☐ No.(ACT) ____ EA PAD ____ EVERY OTH PAD ____ PER BRG

☐ OTHER _____

☐ No.(INACT) ____ EA PAD ____ EVERY OTH PAD ____ PER BRG

☐ OTHER _____

☐ MONITOR SUPPLIED BY _____

☐ LOCATION _____ ENCLOSURE _____

☐ MFR _____ ☐ MODEL _____

☐ SCALE RANGE _____ ☐ ALARM SET@ _____ ºC

☐ SHTDWN ☐SET@____ ºC ☐ TIME DLY _____ s

VIBRATION DETECTORS

☒ SEE MACHINERY PROTECTION SYSTEM DATA SHEET

RADIAL VIBRATION DETECTORS

☐ TYPE _____ ☐ MODEL _____

☐ MFR _____

☐ No. ON EACH SHAFT BEARING _____ TOTAL No. _____

☐ OSCILLATOR-DEMODULATOR SUPPLIED BY _____

☐ MFR _____ ☐ MODEL _____

☐ MONITOR SUPPLIED BY _____

☐ LOCATION _____ ☐ ENCLOSURE _____

☐ MFR _____ ☐ MODEL _____

☐ SCALE RGE _____ ☐ ALARM SET @ _____ µm

☐ SHTDWN ☐ SET @ _____ µm ☐ TIME DLY _____ s

AXIAL POSITION DETECTOR

☒ SEE MACHINERY PROTECTION SYSTEM DATA SHEET

☐ TYPE _____ ☐ MODEL _____

☐ MFR _____ ☐ No. REQUIRED _____

☐ OSCILLATOR-DEMODULATOR SUPPLIED BY _____

☐ MFR _____ ☐ MODEL _____

☐ MONITOR SUPPLIED BY _____

☐ LOCATION _____ ENCLOSURE _____

☐ MFR _____ ☐ MODEL _____

☐ SCALE RANGE _____ ☐ ALARM SET@ _____ µm

☐ SHTDWN ☐ SET@ _____ µm ☐ TIME DLY _____ s

ACCELERATION TRANSDUCERS

☒ SEE MACHINERY PROTECTION SYSTEM DATA SHEET

☐ MFR _____ ☐ MODEL _____

☐ LOCATION _____ ☐ NUMBER _____

☐ MONITOR SUPPLIED BY _____

☐ LOCATION _____ ENCLOSURE _____

☐ MFR _____ ☐ MODEL _____

☐ SCALE RGE _____ ☐ ALARM SET@ _____ G

☐ SHTDWN ☐ SET@ _____ G ☐TIME DLY _____ s

MAINTENANCE DATA

TIME BETWEEN HOT GAS PATH INSPECTIONS	h
TIME BETWEEN MAJOR OVERHAULS	h
EXPECTED TIME FOR SIMPLE MAINTENANCE	h
EXPECTED TIME COMPLETE OVERHAULS	
WITHOUT SPARE ROTOR:	h
WITH SPARE ROTOR:	h
MEAN TIME TO REPAIR (MTTR)	h
TURNAROUND TIME FOR OVERHAUL (TAT)	h
EQUIVALENT HOURS FOR STARTING	h
EQUIVALENT HOURS FOR DIESEL OPERATING	h

REMARKS:

[a] For multiple shaft turbines, complete all applicable portions for each shaft;

[b] For three bearing shafts, use a separate sheet for the extra bearing;

[c] For rolling element bearings, modify entries as required, show L-10 bearing life.

UTILITIES *[NOTE 5]*

STEAM

		AUXILIARY DRIVERS				HEATING			
INLET	MIN	____	kPa g	____	ºC	____	kPa g	____	ºC
	NORM	____	kPa g	____	ºC	____	kPa g	____	ºC
	MAX	____	kPa g	____	ºC	____	kPa g	____	ºC
EXHST	MIN	____	kPa g	____	ºC	____	kPa g	____	ºC
	NORM	____	kPa g	____	ºC	____	kPa g	____	ºC
	MAX	____	kPa g	____	ºC	____	kPa g	____	ºC

		STARTING				INJECTION			
INLET	MIN	____	kPa g	____	ºC	____	kPa g	____	ºC
	NORM	____	kPa g	____	ºC	____	kPa g	____	ºC
	MAX	____	kPa g	____	ºC	____	kPa g	____	ºC
EXHST	MIN	____	kPa g	____	ºC	____	kPa g	____	ºC
	NORM	____	kPa g	____	ºC	____	kPa g	____	ºC
	MAX	____	kPa g	____	ºC	____	kPa g	____	ºC

ELECTRIC POWER (☐ PILOT LIGHT INDICATORS)

	MOTORS >100kW	MOTORS <100kW	HEATING	CONTROL
VOLTAGE				
HERTZ				
PHASE				

COOLING WATER (ºC & kPa g):

INLET TEMP	DES:	____	MAX:	____	NORM:	____	MIN:	____
RETURN TEMP	DES:	____	MAX:	____	NORM:	____	MIN:	____
INLET PRESS	DES:	____	MAX:	____	NORM:	____	MIN:	____
RETURN PRESS	DES:	____	MAX:	____	NORM:	____	MIN:	____

WATER SOURCE ____

FOULING FACTOR ____ m^2 ºC / W

INSTRUMENT AIR

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

TEMP., ºC: MAX ____ NORM ____ MIN ____

DEOILED: ☐ Y ☐N MAX. PARTICLE SIZE, μm ____

DEWPOINT: ____ ºC @ ____ kPa a

SERVICE AIR

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

TEMP., ºC: MAX ____ NORM ____ MIN ____

TOTAL UTILITY CONSUMPTION

STEAM LEVEL	____ kPa g	____ kPa g	____ kPa g
STEAM, NORMAL	____	____	____ kg/h
STEAM, MAX	____	____	____ kg/h
INSTRUMENT AIR			____ Nm^3/h
MOTORS (AUXILIARIES)			____ kW
BATTERY CHARGERS			____ kW
HEATERS			____ kW
PURGE : ☐ AIR ☐ N_2 ☐ OTHER			____ Nm^3/h
COOLING WATER			____ m^3/h

TURBINE AIR EXTRACTION REQUIRED

☐ Nm^3/h ____ @ ____ kPa g

☐ MAX PRESSURE AVAILABLE AT MIN SPEED: ____ kPa g

☐ MINIMUM SPEED: ____ rpm

☐ DISCHARGE TEMPERATURE: ____ ºC

☐ COMPRESSOR EXTRACTION STAGE NUMBER:

SHIPMENT

☐ DOMESTIC ☐ EXPORT ☒ EXPORT BOXING REQUIRED

☒ OUTDOOR STORAGE MORE THAN **12** MONTHS

SPARE ROTOR ASSEMBLY PACKAGED FOR

☐ DOMESTIC ☐ EXPORT ☐ SHIPMENT

CONNECTIONS

CONNECTION	DESIGN APPROVAL REQUIRED	SIZE	FACING END RATING	POSITION AND ORIENTATION	FLANGED OR STUDDED	MATING FLG & GASKET BY VENDOR	GAS VELOCITY m/s
INLET					**FLANGED**		
EXHAUST					**FLANGED**		
FUEL SUPPLY					**FLANGED**		
WATER					**FLANGED**		
INSTRUMENT AIR					**FLANGED**		
DRAINS					**FLANGED**		
VENTS					**FLANGED**		

REMARKS:

INSTRUMENTS[a, e, f]

DESCRIPTION	INSTRUMENT TYPE		INSTRUMENT LOCATION			TRANS-MITTERS FURNISHED BY		CONTROL ROOM RECEIVERS FURN BY	
	INDICATING	RECORDING	LOCALLY	LOCAL PANEL	CONTROL PANEL	VENDOR	OTHERS	VENDOR	OTHERS
PRESSURE GAUGE									
AIR COMPRESSOR DISCHARGE	☒	☒	☐	☐	☒	☒	☐	☒	☐
GG EXHAUST	☒	☒	☒	☐	☒	☒	☐	☒	☐
PT EXHAUST	☒	☒	☒	☐	☒	☒	☐	☒	☐
FUEL SUPPLY	☒	☒	☒	☐	☒	☒	☐	☒	☐
STARTING GAS SUPPLY	☒	☐	☐	☐	☒	☐	☐	☐	☐
STARTING GAS EXHAUST	☒	☐	☐	☐	☒	☐	☐	☐	☐
LUBE / CONTROL OIL PUMP DISCHARGE[d] (No.)	☒	☐	☐	☐	☒	☐	☐	☐	☐
LUBE OIL (EACH LEVEL) (No.)	☒	☐	☐	☐	☒	☐	☐	☐	☐
CONTROL OIL	☒	☐	☐	☐	☒	☐	☐	☐	☐
PT LUBE OIL INLET	☒	☐	☐	☐	☒	☐	☐	☐	☐
CLEANING SYSTEM OUTLET	☒	☐	☒	☐	☐	☒	☐	☐	☐
DIFFERENTIAL PRESSURE GAUGE									
INLET AIR SYSTEM ΔP (EACH STAGE)	☒	☒	☒	☐	☒	☒	☐	☒	☐
EXHAUST DUCT ΔP	☒	☐	☐	☐	☐	☐	☐	☐	☐
FUEL FILTER ΔP	☒	☒	☒	☐	☒	☒	☐	☒	☐
LUBE OIL FILTER ΔP	☒	☐	☐	☐	☒	☐	☐	☐	☐
CONTROL OIL FILTER ΔP	☒	☐	☐	☐	☒	☐	☐	☐	☐
ENCLOSURE ΔP	☒	☐	☐	☐	☒	☐	☐	☐	☐
TEMPERATURE GAUGE									
INLET AIR	☒	☒	☐	☐	☒	☒	☐	☒	☐
COMBUSTOR MEASUREMENT (6 PTS MIN)	☒	☐	☐	☐	☒	☐	☐	☐	☐
GAS TURB CONTROL PANEL (6 PTS MIN)	☒	☒	☐	☐	☒	☒	☐	☒	☐
AIR COMPRESSOR DISCHARGE	☒	☒	☐	☐	☒	☒	☐	☒	☐
GG EXHAUST	☒	☒	☒	☐	☒	☒	☐	☒	☐
PT EXHAUST (2 PTS MIN)	☒	☒	☒	☐	☒	☒	☐	☒	☐
FUEL MANIFOLD	☒	☒	☒	☐	☒	☒	☐	☒	☐
RADIAL BEARING MATERIAL[b,c]	☒	☒	☒	☐	☒	☒	☐	☒	☐
THRUST BEARING MATERIAL[b,c]	☒	☒	☒	☐	☒	☒	☐	☒	☐
BEARING SUMP (FOR EACH ROLLING ELEMENT TYPE)	☒	☒	☐	☐	☒	☒	☐	☒	☐
THRUST AND RADIAL BEARING OIL DRAIN[c]	☒	☐	☐	☐	☒	☐	☐	☐	☐
ENCLOSURE COOLING AIR EXHAUST	☒	☒	☒	☐	☒	☒	☐	☒	☐
LUBE / CONTROL OIL RESERVOIR	☒	☐	☐	☐	☒	☐	☐	☐	☐
LUBE OIL OVERHEAD TANK	☐	☐	☐	☐	☐	☐	☐	☐	☐
LUBE / CONTROL OIL COOLER OIL IN / OUTLET	☒	☐	☐	☐	☒	☐	☐	☐	☐
LUBE / CONTROL OIL COOLER COOLANT IN / OUTLET	☒	☐	☐	☐	☒	☐	☐	☐	☐
PT LUBE OIL INLET	☐	☐	☐	☐	☐	☐	☐	☐	☐
DIESEL DAILY TANK	☐	☐	☐	☐	☐	☐	☐	☐	☐
START MOTOR WIDING	☒	☒	☐	☐	☒	☒	☐	☒	☐
LEVEL GAUGE									
LUBE OIL RESERVOIR	☒	☐	☐	☐	☒	☐	☐	☐	☐
CONTROL OIL RESERVOIR	☒	☐	☐	☐	☒	☐	☐	☐	☐
OVERHEAD OIL TANK	☒	☐	☒	☐	☒	☐	☐	☐	☐
DIESEL DAILY TANK	☐	☐	☐	☐	☐	☐	☐	☐	☐
CLEANING SYSTEM FLUID TANK	☒	☐	☒	☐	☐	☒	☐	☐	☐

INSTRUMENTS[a, e, f]

DESCRIPTION	INSTRUMENT TYPE		INSTRUMENT LOCATION			TRANS-MITTERS FURNISHED BY		CONTROL ROOM RECEIVERS FURN BY	
	INDICATING	RECORDING	LOCALLY	LOCAL PANEL	CONTROL PANEL	VENDOR	OTHERS	VENDOR	OTHERS
SITE FLOW INDICATORS									
BEARING OIL OUTLET	☒	☐	☐	☐	☒	☐	☐	☐	☐
LUBE / CONTROL OIL COOLER COOLANT OUTLET	☒	☐	☐	☐	☒	☐	☐	☐	☐
PUMP OIL RETURN	☒	☐	☐	☐	☒	☐	☐	☐	☐
EACH OIL DRAIN[c]	☒	☐	☐	☐	☒	☐	☐	☐	☐
SPEED & VIBRATION[c, b]									
TACHOMETER(S) (No.)	☒	☒	☒	☐	☒	☒	☐	☒	☐
PHASE ANGLE	☒	☒	☐	☐	☒	☒	☐	☒	☐
AXIAL THRUST POSITION	☒	☒	☐	☐	☒	☒	☐	☒	☐
RADIAL SHAFT VIBRATION	☒	☒	☐	☐	☒	☒	☐	☒	☐
CASING VIBRATION	☒	☒	☐	☐	☒	☒	☐	☒	☐
OTHER									
FIRED HOUR METER	☒	☒	☐	☐	☒	☒	☐	☒	☐
NUMBER STARTS COUNTER	☒	☒	☐	☐	☒	☒	☐	☒	☐
START SEQUENCE TIMER	☒	☒	☒	☐	☒	☒	☐	☒	☐
FUEL FLOWMETER[a]	☒	☒	☐	☐	☒	☒	☐	☒	☐
INLET GUIDE VANE POSITION INDICATOR	☒	☒	☐	☐	☒	☒	☐	☒	☐
CHIP DETECTOR (ANTI-FRICTION BEARING)	☒	☒	☒	☐	☒	☒	☐	☒	☐

INSTRUMENTATION (CONT.)[g]

PUSH BUTTON & ALARMS	LOCAL PANEL	CONTROL ROOM	PUSH BUTTON & SWITCHES	LOCAL PANEL	CONTROL ROOM
MANUAL START / STOP SEQUENCE	☐	☐	HORN SILENCER	☐	☐
FUEL FEED SYSTEM START / STOP	☐	☐	ALARM TEST	☐	☐
OIL PUMP START / STOP	☐	☐	ENCLOSURE VENTILATOR MAIN / STAND / OFF	☐	☐
STARTER MOTOR MANUAL CRANK ON / OFF	☐	☐	ENCLOSURE FIRE DAMPER OPEN / CLOSE	☐	☐
NORMAL STOP	☐	☒	FIRE PROTECTION MANUAL DISCHARGE	☐	☐
EMERGENCY STOP	☐	☒	RESET SYSTEM	☐	☐
LOCAL MANUAL CONTROL	☐	☐			
MANUAL SPEED ADJUSTMENT	☐	☐			

REMARKS:

[a] Items referred as “fuel”, shall be provided for all types of fuels used in turbine.

[b] For gas turbine, transmission and driven equipment.

[c] For PT and GG.

[d] Different gauges for main, spare and emergency oil pump (if specified).

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

[f] For this project, control room means Automation Turbomachinery Room - ATR (Module 4).

[g] PACKAGER shall inform standard configuration.

ALARMS AND SHUTDOWNS [b]

DESCRIPTION	APPLIES TO:		ANNUCIATOR POINT IN VENDOR FURNISHED CONTROL PANEL		SENSING DEVICES TO BE FURNISHED BY		INDICATING LIGHT ONLY[a]
	SINGLE SHAFT OR G.G.	SEP PWR TURB.	ALARM	SHUT-DOWN	VENDOR	OTHERS	
RADIAL SHAFT VIBRATION[c] (No.)	☒	☒	☒	☒	☒	☐	☐
AXIAL THRUST POSITION[c] (No.)	☒	☒	☒	☒	☒	☐	☐
OVERSPEED[c] (No.)	☒	☒	☒	☒	☒	☐	☐
CASING VIBRATION[c] (No.)	☒	☒	☒	☒	☒	☐	☐
HIGH OIL-BEARING OUTLET TEMPERATURE	☐	☐	☐	☐	☐	☐	☐
HIGH THRUST BEARING TEMPERATURE[c]	☒	☒	☒	☐	☒	☐	☐
HIGH RADIAL BEARING TEMPERATURE[c]	☒	☒	☒	☐	☒	☐	☐
LOW FUEL SUPPLY PRESSURE	☒		☒	☐	☒	☐	☐
LOW STARTING GAS PRESSURE	☐		☐	☐	☐	☐	☐
LOW FUEL TEMPERATURE	☒		☒	☒	☐	☐	☐
HIGH FUEL FILTER ΔP	☒		☒	☐	☒	☐	☐
HIGH GAS TURBINE TEMPERATURE SPREAD (T5)		☒	☒	☒	☒	☐	☐
HIGH AIR COMPRESSOR DISCHARGE TEMPERATURE	☒		☒	☐	☒	☐	☐
HIGH PT EXHAUST TEMPERATURE		☒	☒	☐	☒	☐	☐
HIGH INLET AIR FILTER ΔP (EACH)	☒		☒	☒	☒	☐	☐
LOW LUBE / CONTROL OIL PRESSURE (No.)	☐	☐	☐	☐	☐	☐	☐
HIGH LUBE / CONTROL OIL FILTER ΔP (No.)	☐	☐	☐	☐	☐	☐	☐
LOW LUBE / CONTROL OIL RESERVOIR / OVERHEAD TK LEVEL	☐	☐	☐	☐	☐	☐	☐
LUBE / CONTROL OIL SPARE / EMERGENCY PUMP OPERATING	☐	☐	☐	☐	☐	☐	☐
HIGH LUBE OIL TEMPERATURE (DOWNSTREAM COOLER)	☐	☐	☐	☐	☐	☐	☐
LOW DIESEL DAILY TANK LOW LEVEL	☐		☐	☐	☐	☐	☐
FAILURE OF OVER-TEMPERATURE SHUTDOWN DEVICE		☒	☒	☐	☒	☐	☐
COMBUSTOR FLAME-OUT	☒		☒	☒	☒	☐	☐
CHIP DETECTOR (ANTI-FRICTION BEARING)	☐	☐	☐	☐	☐	☐	☐
FAILURE STARTING CLUTCH TO ENGAGE OR DISENGAGE	☐		☐	☐	☐	☐	☐
LOW CONTROL VOLTAGE	☒	☒	☒	☒	☒	☐	☐
RESERVOIR HEATER “ON”	☐	☐	☐	☐	☐	☐	☐
IMPLOSION DOOR OPEN	☐	☐	☐	☐	☐	☐	☐
EXTERNAL PERMISSIVE START SIGNAL			☒	☐	☐	☒	☐
EXTERNAL SHUTDOWN SIGNAL			☐	☒	☐	☒	☐
LOSS OF AUXILIARY COOLING AIR			☐	☐	☐	☐	☐
LAMP TEST PUSH BUTTON			☐	☐	☐	☐	☐
ENCLOSURE HIGH TEMPERATURE	☒	☒	☒	☒	☒	☐	☐
ENCLOSURE VENT FAN FAILURE	☐	☐	☐	☐	☐	☐	☐
ENCLOSURE LOW ΔP	☒	☒	☒	☒	☒	☐	☐
CONTROL SIGNAL FAILURE	☒	☒	☒	☒	☒	☐	☐
CONTROL SYSTEM ACTUATOR FAILURE	☒	☒	☒	☒	☒	☐	☐
GOVERNOR FAILURE	☒	☒	☒	☒	☒	☐	☐
FIRE DAMPER OPEN			☐	☐	☐	☐	☐
WHRU DAMPER OPEN			☐	☐	☐	☐	☐
START MOTOR OPERATION PERIOD EXCEEDED			☐	☐	☐	☐	☐
FIRE PROTECTION ON / OFF AND ARMED / DISCHARGED			☐	☐	☐	☐	☐
UNIT IN ALARM / TRIP			☐	☐	☐	☐	☐
UNIT IN START SEQUENCE / NORMAL OR EMERGENCY STOP			☐	☐	☐	☐	☐
INCOMPLETE STARTING SEQUENCE			☐	☐	☐	☐	☐
HIGH START MOTOR WIDING TEMPERATURE			☐	☐	☐	☐	☐
HIGH GAS TURBINE TEMPERATURE		☒	☒	☒	☒	☐	☐

REMARKS:

[a] VDU may use message indicator.

[b] Items referred as “fuel”, shall be provided for all types of fuels used in turbine.

[c] For gas turbine, transmission and driven equipment.

ACCESSORIES

STARTING AND HELPER DRIVERS

☒ STARTER ONLY ☐ STARTER / HELPER

TYPE ☐ ELET. MOTOR ☐ STEAM TURBINE ☐ HYDRAULIC
☐ GAS EXPANDER ☐ IC ENGINE ☐ OTHER
☐ GAS TURBINE ☐ SHAFT TURNING DEVICE

☐ STARTER IS CLUTCHED

☐ HELPER RATING _____ kW

☐ STARTER RATING _____ kW

☐ SHAFT TURNING DEVICE

TYPE: _____ RATING: _____

NP: _____

ENGAGE ☐ AUTO ☐ MANUAL

DISENGAGE ☐ AUTO ☐ MANUAL

ENGAGE INDICATOR ☐ PANEL MOUNTED ☐ CTRL ROOM

☐ MOTOR:

MFR _____ RATING _____ kW

TYPE _____ MODEL _____

☐ STEAM TURBINE (REFERENCE API DATA SHEETS)

MFR _____ MODEL _____

kW _____ MAX. STEAM FLOW _____ kg/h

TOTAL/START _____ kg

☐ GAS EXPANDER

APPLICABLE SPEC. _____

MFR _____ MODEL _____

kW _____ MAX. GAS FLOW _____ kg/h

TOTAL/START _____ kg

☐ GAS FOR EXPANSION TURBINE: _____

	MIN	MAX	NORMAL
INLET PRESSURE, kPa g			
EXHAUST PRESS, kPa g			
INLET GAS TEMP, ºC			
EXHAUST GAS TEMP, ºC			
MOLECULAR WEIGHT			

SPEED CONTROL ☐ GOVERNOR ☐ PRESSURE REGULATOR

	YES	NO
INLET CONTROL VALVE FURNISHED	☐	☐
STAINLESS STEEL PIPING MANIFOLD	☐	☐
CARBON STEEL FLANGES	☐	☐
Y-STRANGER W/ BREAKOUT FLANGES	☐	☐
LOW SPEED CAPABILITY (FOR COMPRESSOR CLEANING)	☐	☐

RELIEF VALVE PRESSURE SET POINT _____ kPa g

CASING MATERIAL _____

SEAL TYPE _____

☐ INTERNAL COMBUSTION ENGINE

TYPE ☐ SPARK IGNITED ☐ DIESEL

APPLICABLE SPECIFICATION _____

MFR _____ MODEL _____

SPEED _____ rpm POWER _____ kW

☐ COMBUSTION GAS TURBINE

APPLICABLE SPECIFICATION _____

MFR _____ MODEL _____

SPEED _____ rpm POWER _____ kW

☒ GEARS: SEE GEAR DATA SHEET

☒ DRIVEN EQUIPMENT: SEE DRIVEN EQUIPMENT DATA SHEETS

☒ FIRE PROTECTION EQUIPMENT

TYPE: ☐ HALON 1301 ☐ HALON 1211 ☒ WATER MIST ☐ CO_2

TYPE OF SENSOR NUMBER OF DETECTORS

☐ ULTRA VIOLET NUMBER _____

☐ INFRA RED NUMBER _____

☐ ADDITIONAL LEVELS _____

☐ MANIFOLD HEADER ☐ BY PURCHASER ☐ BY VENDOR

MOUNTING PLATES

TYPE ☐ SOLEPLATE ☒ BASEPLATE

☐ SHIM PACK THICKNESS _____ mm

BASEPLATE

☒ FURNISHED BY **PACKAGER**

☐ GAS TURBINE ONLY ☒ EXTENDED FOR **ALL TRAIN**

☐ SUB-SOLEPLATES REQUIRED ☒ DRIP RIM

☐ COLUMN MOUNTING ☒ LEVELLING PADS

☐ GROUTING ☐ CONCRETE ☐ EPOXY ☐ OTHER _____

☐ DECKING TYPE

ENCLOSURES

☒ ENCLOSURES REQUIRED

REQUIREMENTS

☒ ACOUSTICAL

☒ WEATHERPROOF

☒ SAFETY

☒ FIRE PROTECTION

☐ ADDITIONAL VENTILATION

COUPLINGS AND GUARDS

☒ VENDOR SHALL FURNISH API-671 DATA SHEETS

☐ MFR _____ ☐ TYPE _____

☐ MODEL _____

☒ COUPLING SUPPLIED BY **PACKAGER**

☐ MAXIMUM OUTSIDE DIAMETER _____ mm

☐ HUB WEIGH _____ kg

☒ SPACER REQ'D

☐ SPACER LENGTH _____ mm

☐ SPACER WEIGHT _____ kg

☐ IDLING ADAPTER REQUIRED ☐ SOLO PLATE REQUIRED

☐ KEYED & SHRUNK ☒ HYDRAULIC FIT

CPLG. FRICT. COEFF.: _____

CPLG. GEAR PITCH DIA., mm: _____

TURBINE SHAFT: ☐ TAPER ☐ CYL.

DRIVEN EQUIP. SHAFT: ☐ TAPER ☐ CYL.

☒ GUARD SUPPLIED BY **PACKAGER**

TYPE: ☒ FULLY ENCLOSED ☐ SEMI-OPEN ☐ OTHER

LUBRICATING REQUIREMENTS:

☒ NON-LUBE ☐ GREASE ☐ CONT. OIL LUBE

QUANTITY PER HUB _____ m^3/h

REMARKS:

ACCESSORIES (CONT.)

INLET SYSTEM[a]

☒ AIR FILTER
☐ INERTIAL TYPE SEPARATION ☐ MEDIA FILTERS
☐ PAD TYPE PREFILTERS ☐ COMBINATION
☐ SELF CLEANING (PULSE TYPE)
☐ SINGLE STAGE WITH PROVISION FOR FUTURE EXTRA STAGES ☐ YES ☐ NO
☐ NORMAL DUST LOADING _____ kg/ Nm³/h
☐ WIND DESIGN VELOCITY _____ km/h
☐ SNOW LOAD _____ kg/m
☐ SEISMIC ZONE _____
LOCATION ☐ GROUND LEVEL ☐ ELEVATED
☐ FILTRATION EFFICIENCY _____ %
☐ MAINTENANCE INTERNAL _____ MONTHS
☐ CLEANING FREQUENCY _____ DAYS
☐ IMPLOSION DOOR, TYPE _____
☐ ANTI-ICING SYST. TYPE _____
☐ EVAPORATIVE COOLER
☐ LIQUID TO AIR EXCHANGER
☒ WALKWAY, LADDERS, HANDRAILS REQUIRED
☒ COMPRESSOR CLEANING SYSTEM
TYPE _____
☐ FILTER MFR _____ MODEL _____
@ 110% RATED AIR FLOW ΔP _____ mm H_2O
CLEAN _____ mm H_2O ALARM _____ mm H_2O
☐ COOLER, MFR. _____ MODEL _____
ΔP _____ mm H_2O
☐ EXCHANGER, MFR. _____ MODEL _____
ΔP _____ mm H_2O
☐ DUCTING GAUGE / MATERIAL _____ / _____
☐ DUCTING ΔP _____ mm H_2O
☐ EXPANSION JOINT, MFR _____ TYPE _____
☐ SILENCER MFR _____ ΔP _____ mm H_2O
PLATE ELEMENT MATERIAL _____
☐ MANOMETER MFR _____ MODEL _____
RANGE _____ mm H_2O
☐ SYSTEM SITE RATED ΔP _____ mm H_2O
@ 110% RATED AIR FLOW
☒ ALLOWABLE SYSTEM SITE RATED ΔP **100** mm H_2O

EXHAUST SYSTEM[a]

☐ EXTENT OF FURNISHED INSULATION (SKETCH N._____)
☐ SPECIAL INSULATION REQUIRED
☐ DIVERSION VALVE
☐ EXHAUST HEAT RECOVERY SYSTEM
☐ EMISSION CONTROL SYSTEM
☐ EMISSIONS SAMPLING SYSTEM
☐ STACK LENGTH (FROM TURBINE CENTER LINE) _____
☐ EXPANSION JOINT MFR _____ TYPE _____
☐ DUCTING GAUGE / MATERIAL _____ / _____
☐ DUCTING & STACK ΔP _____ mm H_2O
☐ SILENCER MFR _____ ΔP _____ mm H_2O
PLATE ELEMENT MATERIAL _____
☐ HEAT RECOVERY DEVICE ☐ VENDOR ☐ PURCHASER
MFR _____ TYPE _____
MAT _____ ΔP _____ mm H_2O
STEAM GEN: PRESS. _____ kPa g TEMP. _____ ºC
RATE _____ kg/h
☐ MANOMETER, MFR _____ MODEL _____
RANGE _____ mm H_2O
☐ ATMOSPHERIC RELIEF DEVICE
TYPE _____ MFR _____ LOCATION _____
☐ SYSTEM SITE RATED ΔP _____ mmH_2O
☒ ALLOWABLE SYSTEM SITE RATED ΔP **250** mmH_2O

ATMOSPHERIC EMISSIONS

☐ EMISSION SUPPRESSION
☐ NO_X REQUIREMENTS _____
☐ NO_X EMITTED _____

EMISSIONS REDUCTION METHOD

☐ WATER INJECTION ☐ SCR
☐ STEAM ☐ DRY COMBUSTOR
☐ OTHER _____
☐ SO_X REQUIREMENTS _____
☐ SULFUR CONTENT OF FUEL _____
☐ SO_X EMITTED _____
☐ CO_X REQUIREMENTS _____
☐ CO REQUIREMENTS _____
☐ CO EMITTED _____
☐ PARTICULATE REQUIREMENTS _____
☐ PARTICULATE EMITTED _____
☐ UNBURNED HC REQUIREMENTS _____
☐ UNBURNED HC EMITTED _____

APPLICABLE EMISSION CODES OR REGULATIONS

☐ EPA – TITLE 40 – CFR ☐ OTHERS _____

SPECIALIZED INSTRUMENTS[b]

TACHOMETERS

TYPE ☐ ELECTRICAL ☐ ELECTRONIC
☐ ANALOG ☐ DIGITAL
☐ MFR _____ ☐ LOCATION _____
☐ MOUNTING ☐ INTEGRAL ☐ FREE STANDING
☐ WEATHER PROTECTION ☐ VENDOR STD
☐ EXTRA CUTOUTS REQUIRED ☐ No. REQ _____
☐ OIL FILLED PRESSURE GAUGES

SWITCHES

CIRCUIT SHALL
☐ ENERGIZE ☐ DEENERGIZE TO ALARM
☐ ENERGIZE ☐ DEENERGIZE TO SHUTDOWN

ENCLOSURES
☐ EXPLOSION PROOF ☐ WEATHERPROOF

PROVISION REQ. FOR TESTING
☐ ALARM ☐ SHUTDOWN WHILE IN OPERATION

REMARKS:

[a] All inlet and exhaust data for site rated conditions, unless otherwise indicated.
[b] According to machinery protection system data sheet.

INSPECTION AND TESTING[a]

SHOP INSPECTION AND TESTS:	REQ	WIT	OBS
SHOP INSPECTION	☒	☐	☒
CLEANLINESS	☒	☐	☒
MECHANICAL RUN	☒	☐	☒
☒ CONTRACT COUPLING			
☐ IDLING ADAPTOR(S)			
☒ CONTRACT PROBES			
☐ SHOP PROBES			
VIBRATION PLOTS	☒		
CD RECORD VIB DATA	☒		
PERFORMANCE TEST	☒	☐	☒
COMPLETE UNIT TEST [c]	☒	☒	☐
PACKAGE TEST	☐	☐	☐
LOAD GEAR TEST	☐	☐	☐
SOUND LEVEL TEST	☒	☐	☒
AUXILIARY EQUIPMENT	☒	☐	☒
POST TEST INSPECTION	☒	☐	☒
HYDRAULIC COUPLING INSPECTION	☐	☐	☐
GOVERNOR RESPONSE TEST	☒	☐	☒
SPARE PARTS	☒	☐	☒
FIRE PROTECTION	☒	☐	☒
HYDROSTATIC TEST	☒	☐	☒

TURBINE CASING	_____	kPa g
WELDED PIPING	_____	kPa g
PRESS. VESSEL	_____	kPa g
FILTER, ETC	_____	kPa g
COMBUSTOR	_____	kPa g
OTHER	_____	kPa g

MATERIALS INSPECTION REQUIREMENTS

☐ SPECIAL CHARPY TESTING
☐ RADIOGRAPHY REQUIRED FOR _____
☐ MAGNETIC PARTICLE REQUIRED FOR _____
☐ LIQUID PENETRANT REQUIRED FOR _____
☐ ULTRASONIC REQUIRED FOR _____
☐ WELD INSPECTION _____
☐ WELDING HARDNESS TESTING

WELDED CASING CONNECTIONS
☐ APPROVED DRAWING REQUIRED
☐ CASING CONNECTIONS REQUIRED BY _____

REMARKS:

[a] See Technical Specification for Turbocompressor Package
[b] Including utility consumption vs output power for all conditions
[c] Complete Unit Test, also referred to as Factory Integrated Test in I-ET-3A17.01-1231-321-1J5-001.

LUBRICATION & WEIGHTS

LUBRICATION SYSTEMS

☒ SEE OIL SYSTEM DATA SHEETS
LUBE OIL VISCOSITY ISO GRADE _____
COMMON TO ☐ GAS GENERATOR / SINGLE SHAFT TURBINE
☐ FREE POWER TURBINE ☐ LOAD GEAR
☐ DRIVEN EQUIPMENT ☐ AUXILIARIES
☐ COMBINED ☐ SEPARATE LUBE / SEAL SYSTEM
☐ SYSTEM DESIGNED FOR SYNTHETIC LUBRICANT
LUBE SPECIFICATION _____
COMMON TO ☐ GAS GENERATOR ☐ POWER TURBINE
☐ LOAD GEAR ☐ DRIVEN EQUIPMENT
☐ AUXILIARIES

OIL REQUIREMENTS	FLOW m³/h	PRESSURE kPa g	HEAT LOAD MJ/h
GG OR SS TURBINE			
DRIVEN EQUIP.			
GEAR			
COUPLINGS			
POWER TURBINE			
TOTAL			

MOUNTING ARRANGEMENT
☐ CONSOLE ☐ COLUMN ☐ BASEPLATE

WEIGHTS AND DIMENSIONS

	DRY INSTALLED WT., kg	SHIPPING WT., kg	DIMENSIONS L x W x H, m
GG OR SS TURBINE			
SS TURBINE ROTOR			
POWER TURBINE			
PT ROTOR			
LUBE SYSTEM			
DRIVEN EQUIPMENT			
FILTER			
INLET SILENCER			
EXHAUST SILENCER			
DUCTING			

MAX ERECTION WEIGHT, kg _____ ITEM _____
MAX MAINTENANCE WEIGHT, kg _____ ITEM _____

MISCELLANEOUS

☒ VENDOR'S REVIEW & COMMENTS ON PURCHASERS PIPING & FOUND.
☒ FINAL ASSEMBLY CLEARANCES
☒ COORDINATION MEETING SITE
☒ SPEED-TORQUE CURVE
☐ INCREASE POWER FOR STEAM / WATER INJECTION CURVES[b]
☒ EFFECTS OF ENVIRONMENT CONDITIONS ON EXHAUST FLOW
☒ RUNDOWN CURVES
☒ PURCHASER REVIEW OF CAMPBELL / GOODMAN DIAGRAMS
☒ VENDOR WITNESS ALIGNMENT
☒ TECHNICAL DATA MANUAL
☒ INSULATION FOR HEAT CONSERVATION AND PERSONNEL PROTECTION
☒ CERTIFIED COPIES OF TEST DATA
☐ SPARE ROTOR
☒ FIELD BALANCING

NOTES

1. General

1.1. Gas turbine for main equipment package shall be in accordance with API std 616, last edition.

1.2. PACKAGER shall fill in all blank spaces (fields) in these data sheet. All not applicable spaces shall be filled in with NA (NOT APPLICABLE).

1.3. 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.

1.4. For other details see I-ET-3A17.01-1231-321-1J5-001.

2. Performance

2.1. Turbocompressor rate shall account for all the mechanical losses for the complete train, inlet and exhaust losses, ambient effects and degradation during uninterruptible operation and all service life. Site nominal conditions shall consider 30ºC for turbine ambient temperature, sea level and offshore environment.

2.2. PACKAGER shall submit to PURCHASER detailed calculations for site power value, including standard derating curves and expected degradation data for all variables, in proposal phase.

2.3. PACKAGER shall inform gas turbine performance data (including curves) for all specified types of fuels. Performance curves with respective guaranteed points shall provide full range of operational conditions (including all limitations).

2.4. PACKAGER shall inform specific fuel consumption (gas) and heat rate versus required power curves for the turbine operating at site rated condition. Values for 25%, 50%, 75% and 100% of turbine power shall be provided as a minimum.

2.5. For turbine size selection an additional power loss of 5% due to performance degradation (aging and fouling) of turbine and an additional power loss of 7% due to compressor degradation and mechanical losses of the whole train. For performance guarantee shall be considered the respective correction to site conditions and losses at turbine inlet and exhaust. PETROBRAS shall be consulted for possible approval of a different power loss margin.

3. Location

3.1. Site data

The equipment supplied shall be suitable for the environment and range of ambient conditions 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, please see DE-3A17.01-5400-94A-1J5-001 - PLANTA DE CLASSIFICAÇÃO DE ÁREAS. Electrical equipment 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. Cancelled. (Rev. A)

5. Utilities

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

6. Instruments

6.1. In addition to the items selected in the Instruments section (sheets 7 and 8), the following additional information shall be supplied by PACKAGER thought Ethernet Package Unit Lan:

INSTRUMENTS		
DESCRIPTION	**INSTRUMENT TYPE**	**INSTRUMENT LOCATION**
	INDICATING	**PACKAGE UNIT DATA SERVER**
PRESSURE GAUGE (KPa)		
Discharge pressure P2 (GG)	X	X
Instrument air pressure	X	X
Mineral oil heat exchanger inlet water pressure	X	X
Gear oil pressure	X	X
Synthetic oil heat exchanger inlet water pressure.	X	X
After filter inlet air pressure P1	X	X
TEMPERATURE GAUGE (^{0}C)		
PT bearing oil drain temperature.	X	X
Back bearing temperature oil drain. GG.	X	X
Downstream temperature TCV	X	X
Upstream temperature TCV	X	X
Heat exchanger water inlet temperature	X	X
Heat exchanger water oulet temperature	X	X
Crown axial bearing temperature (active side)	X	X
Crown axial bearing temperature (passive side)	X	X
Axial bearing temperature GG active side.	X	X
Axial bearing temperature GG passive side.	X	X

Axial bearing temperature pinion active side.	X	X
Axial bearing temperature pinion passive side.	X	X
Axial bearing temperature PT active side.	X	X
Axial bearing temperature Pt passive side.	X	X
Radial bearing temperature – crown in coupling side	X	X
Radial bearing temperature – crown in non coupled side.	X	X
Radial bearing temperature – front GG	X	X
Radial bearing temperature – front PT	X	X
Radial bearing temperature – Pinion coupled side.	X	X
Radial bearing temperature – Pinion Non coupled side.	X	X
Radial bearing temperature – Rear GG	X	X
Radial bearing temperature – Rear PT	X	X
Front drain oil bearing temperature GG.	X	X
Drain oil header temperature.	X	X
Synthetic oil temperature.	X	X
Synthetic oil heat exchanger water inlet temperature.	X	X
Synthetic oil heat exchanger water outlet temperature.	X	X
Fuel gas temperature.	X	X
Hood temperature.	X	X
Heat exchanger inlet oil temperature.	X	X
Heat exchanger outlet oil temperature.	X	X
Inlet T1 air temperature after filter.	X	X
Temperature T2 (Disch compressor GG).	X	X
Temperature T4 – Right	X	X
Temperature T4 – Left	X	X
Date temperature T4	X	X
DISPLACEMENT		
Shaft Axial displacement – Crown non-coupled side.	X	X
Axial displacement GG.	X	X
Axial displacement PT	X	X
VIBRATION		
Crown shaft vibration – Horizontal coupling side	X	X
Crown shaft vibration – Vertical coupling side	X	X
Pinion shaft vibration – Horizontal coupled side.	X	X
Pinion shaft vibration – Vertical coupled side.	X	X
GG vibration	X	X
Horizontal GG vibration (X)	X	X
Vertical GG vibration (Y).	X	X

PT vibration.	X	X
Horizontal PT vibration (X)	X	X
Vertical PT vibration (Y)	X	X
SPEED		
NGG - GG rotation.	X	X
NPT – PT rotation	X	X
OTHER		
Lube tank oil level.	X	X
Synthetic oil level.	X	X
Gas valve angle	X	X
Vane angle	X	X

7. 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