

# **Unused Sulfuric Acid Plant**



Contact Edward Zhang | Director, Plant Sales | edz@phxequip.com

333 Broad Street • Red Bank, NJ 07701 • Phone (732) 442-6990 • Fax (732) 268-8670 • www.phxequip.com

#### **1. Executive Summary**

#### 1.1 Plant Capacity

- Design capacity 1,500 TPD (as 100% acid)
- Minimum production capacity 650 TPD (as 100% acid)
- Heat Recovery System (HRS) produces 32 tons/hour of medium-pressure steam.
- The boiler produces 80 tons/hour of high-pressure steam.

#### 1.2 Process Technology

- Provided by MECS
- Double catalysis Double absorption process

#### 1.3 Raw Material

- Liquid Sulphur 99.9% w/w 9dry basis)
- o Temperature 140 °C
- Ash 20 ppm (max)

#### 1.4 Product

o Sulfuric acid concentration 98.5% (minimum)

#### 1.5 Plant Reliability

- o Conversion (yield) 99.8%
- Minimum 339 days per year of operation (26 days for scheduled maintenance).
   Downtime of major turnaround: 3 weeks per 18 months

#### 2. Process Description

The plant includes four process sections:

- Sulphur fusion / filtration
- Production of gaseous SO2
- Catalytic oxidation of SO2 to produce SO3
- Absorption of SO3 to produce sulfuric acid

<u>Sulphur Dioxide (SO2) Production</u> The combustion of Sulphur is carried out with oxygen in a drying tower. The gas leaving the Sulphur furnace is cooled in a heat exchanger to the temperature required to convert SO2 into SO3.

Catalytic Oxidation of SO2 Vanadium oxide is used as the catalyst to convert SO2 to SO3.

<u>Absorption of SO3</u> In the double absorption tower with ceramic rings, SO3 reacts with water to form concentrated sulfuric acid.

# 2.1 Melting, Filtration and Storage of Molten Sulphur - Unit 610

The solid Sulphur is deposited to a hopper and then transferred by a conveyor to the melting tank which is heated at 135 °C by medium pressure (9 bar) steam. The molten Sulphur is then filtered to remove impurities such as ash, dust, bitumen, etc. The filtered Sulphur is kept in liquid phase by low pressure (4 bar) steam. This is a batch process. The unit has capacity to process 506.5 tons/day of solid Sulphur in 16 hours.

There are two filtration pits. The first receives the Sulphur directly from the melting tank and the second prepares the filtration prelayer. Approximately 20 - 30 Kg of diatomaceous earth and 25 Kg of lime are added to the second pit and circulate for  $\frac{1}{2} - \frac{3}{4}$  hours to form the prelayer. As soon as the prelayer is formed, the Sulphur pump starts to filter the dirty liquid and sends the filtered Sulphur to the polish filter. When the filtration is complete, the pumps are insulated and the filters and pipes are drained to the pit. The filtered Sulphur liquid goes to the storage tank.

# 2.2 SO2 Formation and SO3 Conversion - Unit 620

In a combustion chamber, the Sulphur burns in the presence of air to form sulfur dioxide (SO2). Atmospheric air is drawn in through a filter and compressed by the blower to pass through the rest of the installation. It first crosses the drying tower in which it encounters a flow of 98.5% sulfuric acid which removes the moisture it contains. The flow of acid flowing over the drying tower is kept sufficient so that the concentration of acid leaving the tower is not reduced too significantly. The temperature of the gas leaving the combustion chamber is much higher than that required for entering the converter. For this, the gas is cooled in a recovery boiler allowing the production of saturated HP vapor. At the outlet of the boiler, the gas enters the first catalysis pass.

A drying tower is used to remove moisture from the air before it enters to the oxidation reaction. The oxidation reactor is set to convert 99.8% of SO2 to SO3 in 4 catalytic passes. The main superheater cools the partially converted gas leaving the first pass of the converter, recovering the heat to superheat the HP vapor produced (and thus avoid water hammer in the steam pipes). The cooled gas then enters the second pass of the converter in which the conversion reaction continues and generates heat. The gas leaving the second pass is cooled in the hot gas-gas exchanger, before being directed to the third pass in which the reaction still continues. At the exit of the third pass, the gas is partially cooled in the cold gas-gas exchanger. The second economizer beam (device generally called interpass economizer) provides additional cooling by heating the feed water to the HP boiler which comes from the first economizer beam, itself located at the bottom of the final economizer. The acid product is produced by combining SO3 with the water contained in the circulating acid. The process has 278 ppm of SO2 discharge to the chimney.

After passing through the fourth pass, the process gas is successively cooled in the primary steam superheater HP, the steam superheater MP, the third economizer beam and the first economizer beam. The bundles of these four devices are placed one below the other in the same gas-side grille, which is generally called the final economizer and in which the gas flows vertically from top to bottom. The HP primary steam superheater slightly overheats the saturated steam leaving the HP boiler, the MP steam superheater overheats the MP steam leaving the HRS boiler, the third and first economizer bundles preheat the feed water to the HP boiler. At the outlet of the final economizer, the gas is directed to the final absorption tower, in which the remainder of SO3 is absorbed in a counter current of 98.5% acid. The demister located at the top of the final absorption tower collects the acid droplets entrained in the gas before it is released into the atmosphere through the chimney. The demister units are designed to comply with atmospheric discharge standards.

# 2.3 Absorption of SO3 in Sulfuric Acid and Heat Recovery – Unit 630

The SO3 gas, even if properly cooled, cannot combine directly with H2O water to give H2SO4 (the heat generation would be too great and dangerous). It must be combined indirectly with the water contained in the 99.0 and 98.5% acids circulating on the HRS and final absorption towers. The concentration and temperature of the acid circulating in the drying towers, HRS and final absorption, must be kept within certain limits to ensure the most efficient absorption of SO3 and atmospheric water vapor. The acid watering the drying tower is diluted by the absorption of water vapor contained in the air. The acids watering the HRS and final absorption towers see increase its concentration by the absorption of SO3 gas. The acids leaving the drying and final absorption towers are collected in a common tank in which dilution water is added to maintain the titer of the acid. The acid must be stored below 45°C to limit corrosion of the tanks.

The heat recovery system recovers the heat of absorption of SO3 coming from the third pass of the converter to produce MP (Medium Pressure) steam. In the HRS tower, the heat of absorption of SO3 is recovered in the first stage. At the second stage, the residual SO3 and the sulfuric acid vapors are recovered. It eliminates the heat of absorption of the residual SO3, the heat of condensation of the sulfuric acid vapors as well as the sensible heat of the gas.

The gas rises vertically in the HRS tower and the SO3 is absorbed through a 99.0% sulfuric acid counter-current falling flow. The recommended maximum concentration for circulating HRS acid is 99.7%. The gas leaving the HRS tower passes through a demister installed on the top of the tower and is directed to the cold gas-gas exchanger. The demister is intended to protect the equipment located downstream from the HRS tower.

The HP steam system generates steam at 64 bar and 425 °C; the MP steam is 9 bar and 220 °C.

### 2.4 Steam Generation - Unit 640

The temperature of the combustion gas leaving the furnace is higher than that required by the conversion system. The gas is cooled in the main boiler which recovers excess heat to produce

high-pressure steam. The temperature of the gas at the entrance to the conversion is adjusted using a gas-side boiler bypass. The temperature of the steam at the exit of the boiler depends only on the pressure in the boiler.

Two HP superheaters operate in series to overheat HP steam to 425 °C. The temperature of the HP steam coming out of the unit is first controlled by the steam side bypass of the primary superheater. If the temperature is still too high with this wide open bypass, then the de-heater located between the two is used. The temperature of the MP steam is adjusted by the steam side bypass of the MP steam superheater.

# 2.5 Steam Distribution & Utilization - Unit 650

This unit manages the steam produced in the sulfuric acid production by distributing it to three utilizations:

- Generate electricity
- Melt and keep liquid sulphur at designed temperature
- Maintain the temperature at the entrance of the absorption tower

HP (60 bar, 450 °C, 80 t/h) and MP (9 bar, 220 °C, 23 t/h) steams are mainly used to generate electricity by the steam generator (max 23.3 MW). Some of the MP steam and all the LP (4 bar 152 °C) steam are used for process Unit 610 Melting Sulphur and Unit 630 Absorption.

### 2.6 Boiler Water & Condensate - Unit 660

This unit prepares boiler water from the condensates of the acid production unit by doing the following tasks:

- Collect condensates
- Generate boiler water
- Distribute the water to boiler

### 3. Major Equipment

#### 3.1 Melting, Filtration and Storage of Molten Sulphur - Unit 610

610-CV-1000	Sulphur belt conveyor
610-BN-1010	Sulphur loading bin
610-MG-1030	Sulphur tramp iron magnet
610-WS-1020	Sulphur belt scale
610-BN-1110	Lime loading bin
610-WS-1120	Lime dosing screw
610-ZM-1140	Lime chute
610-TK-2000	Sulphur melting tank

610-AG-2020	Sulphur melting tank agitator
610-TK-3000	Melted Sulphur pit
610-HE-3010 & 3018	Melted Sulphur pit heating coils
610-AG-3020 & 3022	Melted Sulphur pit agitators
610-PU-3040	Filter feed pump
610-FL-4000	Sulphur filter
610-FL-4100	Polishing filter
610-TK-5000	Filtered Sulphur tank
610-PU-5030 A&B	Furnace feed pumps

# 3.2 SO2 Formation and SO3 Conversion - Unit 620

Sulphur Furnace
Sulphur Guns
Start-up Burner
Converter
Cold Interpass Heat Exchanger
Hot Interpass Heat Exchanger
Exhaust Stack
Main Superheater
Hot Gas-Gas Exchanger
Cold Gas-Gas Exchanger

# 3.3 Absorption of SO3 - Unit 630

630-BL-1000	Main Blower
630-FL-1010	Air Inlet Filter
630-CM-3000	Absorption Tower (commonly referred as Heat Recovery Tower)
630-CM-2000	Drying Tower
630-CM-4000	Final Absorption Tower
630-TK-5000	Common Acid Pump Tank
630-PU-5010	Common Acid Circulating Pump
630-PU-6000 A/B	Product Pumps
630-HE-2100	Main Acid Cooler
630-HE-6100	Product Cooler
630-DL-7200	Diluter
630-HE-3100	HRS Acid Cooler
630-GP-7000	HRS boiler
630-DL-7200	HRS Diluter
630-HE-7300	Heater
630-HE-7400	Preheater

# 3.4 Steam Generation – Unit 640

640-GP-2000	Main Boiler
640-HE-5000 & 5100	HP Steam Superheater I & II
640-HE-5200	MP Steam Superheater
640- HE-6000	Primary Economizer
640-HE-6100	Intermediate Economizer
640-HE-6200	Final Economizer

# 3.5 Steam Distribution and Utilization - Unit 650

650-GP-1000	Electric Generator
650-TG-1100	Steam Turbine (20.7 MW, Max 24 MW)
650-AC-1110 A/B/C	Air Condensers
650-PU-1120-A/B	Condense Pumps
650-ED-1400A/B, 141	.0A/B, 1420 Ejectors
650-TK-1130	Condensate Tank
650-TK-2000	High-Pressure steam Header (Dia: 0.6 m, L 6.4 m, 60-64 barg)
650-TK-2100	Medium-Pressure Steam Header (Dia: 0.75 m, L 8.0 m, 9 barg)
650-TK-2200	Low-Pressure Steam Header (Dia: 0.4 m, L 6.2m, 4 barg)
650-TK-2300	MC Flash Tank (Dia: 0.6 m, L 2.2 m)
650-TK-2400	HP Condensate Flash Tank (Dia: 0.6 m, L 2 m)

#### 3.6 Boiler Water & Condensate - Unit 660

660-ST-1100	Exhaust Stack (Diam. 2.0m; top. 25m)
660-HE-2100	Thermal Deaerator
660-TK-2000	Boiler Feed Water Tank (Diam. 3.0m; Long. 9.2m)
660-TK-5000	Condensate Buffer Tank (Diam. 1.1m; Long. 3.0m)
660-PU-2010-A/B	Main Boiler Feed Pumps
660-PU-2020-A/B	De-superheating pumps
660-PU-2030-A/B	HRS and Auxiliary Boiler Pumps
660-GP-3000 O2	Oxygen scavenger Package
660-GP-6000	Volatile Amine Package
660-GP-4000	Trisodium Phosphate Package
660-TK-1000	Condensate Tank (Diam. 0.9 m; Long. 2.0 m)
660-PU-1010-A/B	Boiler Feed Water Tank

# 4. Plant Plot Plan

#### 4.1 Entire Plant



# 4.2 Conversion Unit





#### 5. Process Flow Diagram - Sulfur Melting, Filtration and Storage





# GE Steam Turbine Data Sheet

333 Broad Street • Red Bank, NJ 07701 • Phone (732) 442-6990 • Fax (732) 268-8670 • www.phxequip.com

Γ									PROJECT TITLE							
								PROJECT SUB-TITLE SULPHURIC ACID PLANT								
		ST	EAM TU	RBINE			F	Projec	xtN° U	nit I	Documen	t Code	Seri	ial N° F	Rev	Page
		г		FET					6	50				01	1 I	2
			SI UNI	ΓS					0.	50			0	01		2
1	APPLICABLE TO:	0	PROPOSAL	. 🌒 F	PURCHASE		Ο				ITE	Μ				
2	FOR							UNI			MR					
3 4								NUN			1					
5	MANUFACTURER GE Thermodyn MODEL 6-8 MC 8					8 IN		DF	RIVEN E		NT ITEM	NO.				
6	DRIVEN EQUIPM	ENT TYPE:	⊖ <b>co</b>	MPRESSO	DR •	GENER	ATOR	_ (								
7 8	NOTE: INFORMA	TION TO BE C	COMPLETED	) BY: PFI		RCHASER			ANUFACT	URER	110)	JRCHAS	SER OR M	ANUFACTUF	RER	
9	OPERATING POINTS SHAFT INLET					T	IND	UCTION				EXHAUST				
10	AS APPLICAE	BLE	POWER	SPEED	FLOW	PRESS	TEM	IP T	FLOW	PRESS		PF	RESS	TEMP	EN	THALPY
11 12			KVV	r/min	kg/h	Barg	°C (1	1)	kg/h	Barg	°C (11)	E	Sara	°C (11)	K	cal/kg
13	RATED		23300	5700	84300	64	450	)	23400	9.3	242	(	).15	55.4		571.6
14 15			20470	5700 5700	80300 34500	60 60	416	5 )	18800	9	223	(	0,2	61,2 54		566,8 565 9
16			7010	0/00	04000	00	400	, 	0					04		000.0
17	STEAM RATE	E, kg/kWh (3.4	5):	3.923	NORMAL	3.570	RATED	)	IND	UCTION	٠	CONTR	OLLED		NTRO	LLED
18	POTENTIAL I	MAXIMUM PO	WER (3.30)		075414.00		0 (5 (		EXT	TRACTIC	O N	CONTR	OLLED		NTRO	LLED
19 20				IFT		YHAUST	5 (Refe	r to P				RACTIC	N		стіо	N
20						ALIA001			INDUCTIO						TION	l
22	FLOW kg/h	V kg/h MAXIMUM 84300					23400									
23		NORMAL	80	300	_			18800								
24		MINIMUM		24					0							
25 26	PRESSURE	NORMAI	6	50		9           8,7           242										
27	Barg	MINIMUM							8,7							
28		MAXIMUM	4	50				242								
29	TEMPERATURE	NORMAL	4	16	_			242								
30	°C (TT)	MINIMUM	40	00					223							
31 32	LOCATION:					SILE A				DRI	/FRS	HFATIN	G INSTR	UMENT/ AI	ARM/	
33			0	UNDER F	ROOF O	OUTDO	OR						CON	ITROL SH	UTDC	WN
34			SIDES O	GRADE	•	MEZZAN	NINE	V	/OLTS	6	90	230				
35								P	PHASE		3	1				
36 37		ION REQUIRE			ALIZATION R	EQ'D		F V	HERTZ	5 5	0	50				
38		AREA CLASS	SIFICATION:	oonnoe		0		• 0		VATER:						
39	CLASS	GROUP	DIVIS		Safe			11	NLET TEMP	PERATU	RE:	31 °C	MAX R	ETURN		41 °C
40	ZONE	GROUP	TI	EMPERAT	URE RATING	G:	-	PRESS. NORM.: 4 Barg DESIGN 7,5 Ba							7,5 Barg	
41 42		425	m 🔿 BAI	ROM PRE	ss	1 023	Bara	N N	ΛΙΝΙΜΟΜ Κ ΛΑΧΙΜΙΙΜ Α			RE: SS DRO	)P·			3 Barg
43		 /P.	5 °C	SUMMER	R TEMP.	47	°C	v	VATER SO	URCE		00.011				
44	• REL. HUMIDI	TY	15 - 40 %	DESIGN	WET BULB		°C	V	/ELOCITY,	m/s:	MIN		Ν	IAX		
45		ONDITIONS:	•	DUST				F	OULING F	ACTOR:				0,00033 m <sup>2</sup>	K/kW	
46		Sulphuric aci	d plant				-	U U		NSUMP	FION:	m <sup>3</sup>	/h INI	T AID		m <sup>3</sup> /h
47		TEAM:	(10) M	AX	NORM	MIN		A	UX. STM:	NORMA	L	ka/l	יייו ייי. MA ה			(a/h
49	INITIAL PRESS. (Barg 9,3 9 8,7						A	AUX. DRIVE	RS: ELE	CTRIC	5	kW ST	EAM		kW	
50	INITIAL TEMPERATURE, °C (TT) 225						F	HEATER(S)			kW	то	HER:			
51	EXH. PRESS. (Barg															
52 53	2 INST. AIR (Barg NORM 7 MIN 3,5 MAX 10					-										
54	REMARKS:															
55	(10) Steam for s	team seal sy	rstem ( 211	kg/h duri	ng start-up	and 141 I	kg/h foi	r cou	intinuous c	operation	n, desigr	n flow 6	33 kg/h)			
56																
57 50																
50 59																
60																

						1	PROJECT TITLE								
		ST	EAM T	JRBINE			Project N°	Unit	Document Co	de	Serial N°	Rev	Page		
		D	ATA S	HEET				650			001	0	3		
			SI UN	ITS			1								
1	APPLICABLE SPECI	FICATION	IS:				NOISE SP		ONS:						
2							SEE SPECIFICATION:								
3 4	OTHER IEC 43-														
5	VENDOR HAVIN		SEE SPECIFICATION:												
6	•						ACOUSTICAL TREATMENT • YES · NO								
7		ECIFICAT	FION, IF D	IFFERENT:			TYPE R	ock hool							
8															
9					cc	ONSTRUCT	ION FEATU	RES							
10	TURBINE TYPE	$\bigcirc$ back	KPRESSU	IRE		NSING		TION		TION			२		
11	SPEEDS:						TORS	IONAL CRI	TICAL SPEEDS (	9.5):					
12	MAXIMUM CONT		5	700 r/min T	RIP 6	270 r/min	FIRST	CRITICAL				1020 r/n	nin		
13		WABLE		r/min			SECO		AL			2640 r/m	nin		
14		JAL SPEE	DS (DAM	PED)		MORE	THIRD					8880 r/m	nin		
15		ΔI	3180 8860	r/min	rigid	MODE	FOUR	TH CRITIC			2	13860 r/m	าเท		
17		AL	0000	r/min	Conical						)				
18	FOURTH CRITIC			r/min		MODE			FINESS MAP RE		(923b)				
19		see 1TV	/0020NT	201 µm	(PEAK	TO PEAK)	<ul> <li>TRAIN TORSIONAL ANALYSIS REPORT REQUIRED (9.5.1)</li> </ul>								
20	Lat	eral critic	al speed	analysis	-		TRAIN TORSIONAL PERFORMED BY Turbine Vendor								
21		LES & DI	APHRAG	NS											
22	MAWP						HYDRO TEST PRESSURE :								
23	INLET SECTION	74	(Ba	arg) EXH. SECTI	ON 0,7	(Barg)*	HP CASING 124 (Barg) MID CASING 70/45/28/18/7/3 (Barg)*								
24	INDUCTION/EXT	RACT. SE	ECTION		12	(Barg)*	EXHAUST CASING 3 (Barg) OTHER (Barg)*								
25						(Barg)"	WELDED NOZZLE RING NOZZLE RING 50 %ADM.								
20	INI ET SECTION	450	°C EXH	HAUST SECTIO	N	100 °C									
28	INDUCTION/EXT	RACTION		N		300 °C									
29		N METAL	. TEMPER	ATURE	( impact tes	t) 20 °C	DIAPHRAGM AXIAL LOCATION: INDIVIDUALLY STACKED								
30	RELIEF VALVE	SETTING:	INLET	74 (Barg)											
31	EXTRACTION		(Ba	rg) OTHER	(Induction	) 12 (Barg)	rg) *UNLESS OTHERWISE SPECIFIED, ALL PRESSURE UNITS ARE GAUGE								
32	CASING CONNECTION	ONS													
33					•		FLAN	GED		G. 🗌	MAXIMUM	🗆 МІ	NIMUM		
34	CONNECTION		SIZE	FACING	PO	SITION			& GASKE	Г	STEAM	S	TEAM		
35									BY VENDO	R	FLOW	F	LOW		
36			8"			Piaht	Elen	hen			кg/h		кg/n		
37 38	EXHAUST		U	900 # R I J FF	'	Down	Fian	geu aed							
39	EXTRACTION						- Tian	gou							
40	INDUCTION		8"	300 # RF	[	Down	Flan	ged							
41															
42	AUX. SCRWD. PIPE	CONN.:		ED OSTRAI	GHT 🔿	MAIN CAS	ING JOINT S	STUDS/NU	TS DESIGNED F	OR HYD.	TENSIONIN	IG			
43	ALLOWABLE FORCES & MOMENTS NEMA SM 23 3 times N				3 times NE	MA	ROTATI	ON: (VIEWED FR	OM INLE	T END)					
44	4 INLET EXHAUST EXTRA		T./INDUCT.		CM CCM	V									
45	FORCE MOMENT FORCE MOMENT FORCE		MOMENT	-				_							
46 17	PAPALLEI N. N-M N. N-M N				N	N-M		N/		OTE /	M				
48	TO SHAFT							VIEV	$\rightarrow$			$\rightarrow$			
49	VERTICAL										<u> </u>				
50	HORZ. 90°														
51								1							
52															
1															

				PROJECT TITLE								
							S111					
					PROJECT	SUD-IIILE	301		LANT			
	STEAN		E		Project N°	, Unit [	Document Code	Serial N°	Rev	Page		
	_	-						Condition		. ugo		
	DATA	SHEET				650		001	0	4		
	SI	UNITS										
1	MATERIALS-CASINGS & APPUR	FENANCES:										
2	HIGH PRESSURE CASING	A 356 Grade	6		DIAPH	IRAGM RING	A 3	22 Grade 4130 /A	573 Grade	e 70		
3	MID PRESSURE CASING	MID PRESSURE CASING A 356 Grade 6			DIAPH	IRAGM NOZZLE	S AISI	410 modified				
4	EXHAUST CASING	A573 Grade 7	0			R						
5	STEAM CHEST integral with HP casing											
6										<u> </u>		
7												
8	○ STEAM PATH COMPONENTS	S < HRC 22										
9												
10	RUTATING ELEMENTS (8)				1							
12		ТПР						G	1	90 mm		
13						STRAIGHT		<u> </u>	1	mm/m		
14			G SPAN	2740 mm				UBLE				
15	SHAFT MATERIAL A470 CI	ass 4		<u></u>	Ō			AL FLANGE				
16				400 m/s	Õ	FIELD BALANC	ING PROVISIONS					
17	FINAL STAGE BLADE LENGT	Н 266,7	mm MAX	mm		DESCRIPTION	OF FIELD BALAN	CING PROVISIO	NS:			
18	REMARKS:	,										
19					REMA	RKS:						
20												
21												
22		STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	STAGE 6	STAGE 7	STAG	E 8		
23	WHEEL MATERIAL					A 470 Class	4					
24	BLADE MATERIAL		AISI 410	modified		X12CrNiMoV12.3	AISI 410 modified	X12CrN Circonformatical	liMoV12.3	3		
25	BLADE ROOT TYPE	Fir tree	Те			Fir tree		fir tree	fir tr	ee		
26	CLOSURE PIECE TYPE											
27	TIE WIRE MATERIAL											
28	SHROUD MATERIAL	X19CrMoVNbN11.1	A	ISI 410 Modifie	d	X12CrNiMoV12.3	X19CrMoVNbN11.1	X12CrNiMoV12.3	Integral w	ith blade		
29	SHROUD ATTACH.				Rive	eted	1	1	Zlo	ck		
30	PITCH DIAMETER, mm	655.1	716	717.2	723.8	834.9	855.1	946.7	107:	3.7		
31	BLADE HEIGHT, mm	20.6	18	19.2	25.8	47.5	67.7	139.7	266	6.7		
32	BLADE TYPE			N	lachined			Fo	orged			
33												
34												
35	SHAFI SEALS		ET	EVHAUOT	1							
36												
20	STEAM LEAKAGE kal	See			TYDE			OTHER				
30	AIR I FAKAGE m <sup>3</sup> /h (std cond	) See	PID		MATE							
40	SHAFT DIA. @ SFAI mm	, 0000	10	320			770 120					
41	STATIONARY LABY. TYPE	retrac	table	retractable						<u> </u>		
42	ROTATING LABY. TYPE	n	0	no	INTERSTA	GE SEALS :						
43	MATERIAL A473 type 420 A473 type 420			TYPE:   LA	BYRINTH							
44				⊖ от	HER							
45					MATERIAL: A 4	73 type 420						
46												
47	*UNLESS OTHERWISE SPECIFIE		D, ALL PRES	SURE UNITS	ARE GAUG	E						
48	REMARKS:											
49												
50												
51												
1												

			PROJECT TITLE										
				PROJECT SUB-TITLE SULPHURIC ACID PLANT									
	STEAM T	URBINE		Project N°	Unit	Document Code	Serial N°	Rev	Page				
	DATA S	HEET			650		001	1	5				
1	SI UN BEARINGS AND BEARING HOUSING	<u>   5</u>											
2	RADIAL (10.1)		EXHALIST	THRUST (10	) 2)								
3													
4	MANUFACTURER	Waukesha	Waukesha	TYPE				т					
5		126	MANUE	ACTURE	R	Waukesha	W	aukesha					
6		180	180			MAX. Mpa	28		14				
7	UNIT LOAD (ACT/ALLOW), N	15150/49900	20850/49900		DAD ULT	IMATE Mpa	43.5		43.5				
8	BASE MATERIAL	White metal	White metal	NUMBE	R OF PA	DS	8		8				
9	BABBIT THICKNESS (mm)	1	1	AREA m	nm <sup>2</sup>		37300		18700				
10	NUMBER OF PADS	5	5	PIVOT:	CENTER	/OFFSET, %	CTR		CTR				
11	LOAD: BETWEEN/ON PAD	on	on	PAD BA	SE MATE	ERIAL	White metal	Wh	ite metal				
12	PIVOT: CENTER/OFFSET %	CTR	CTR										
13				LUBRICATIO	DN:		DIRECTED						
14				THRUST CO	DLLAR:			E					
15	BEARING TEMPERATURE DEVICES:			VIBRATION	DETECT	ORS:							
16		E		• TYPE	No conta	act M	ODEL 3300XL						
17	SELECTOR SWITCH & INDIC	ATOR BY: PUF	CH MFF		ACTURE	R B, NEVADA							
18	RESISTANCE TEMPERATURE DE	TECTORS			R AT EA	CH SHAFT BRG 2	ΤΟΤΑ		ER 4				
19	RESISTANCE MATERIAL	рт 🖸	100 ohm	MONITOR S		BY GE Thermoo	lyn						
20	SELECTOR SWITCH & INDIC	ATOR BY:	MFR	R LOCATION Turbine Control F ENCLOSURE IP 41									
21	LOCATION-JOURNAL BEARING			○ MFR <u>B, NEVADA</u> MODEL <u>3500</u>									
22	TOTAL 4 LOC	ATION		SC/	ALE RAN	GE ALARI	M SET @		μm				
23	SCALE RANGE ALA	RM SET @	°C	⊖ sh	JTDOWN	l: SET @ 87 µr		Y	0,1 s				
24	SHUTDOWN SET @	120 °C DEL	AY <u>1</u> s	AXIAL POS	TION DE	TECTORS:							
25	LOCATION-THRUST BEARING			TYPE No contact MODEL 3300XL									
26	ACTIVE SIDE			○ MFR <u>B, NEVADA</u> ● NUMBER REQUIRED <u>2</u>									
27	TOTAL 2 LOC	ATION		MONITOR SUPPLIED BY GE Thermodyn									
28	INACTIVE SIDE			LOCATION Turbine Control F ENCLOSURE IP 41									
29	TOTAL 2 LOC	ATION			R <u>B,</u> N	IEVADA M	ODEL 3500						
30	SCALE RANGEALA	RM SET @	0°	SCALE RANGEALARM SET @µm									
31	SHUTDOWN SET @	128 °C DEL	AY <u>1</u> s	○ SHUTDOWN □ SET @ <u>+/- 0.6</u> mm ○ DELAY <u>0.1</u> s									
32	MONITOR SUPPLIED BY: GE	Thermodyn		PROVISION FOR ACCELEROMETER MOUNTED ON BRG HOUSINGS									
33	LOCATION <u>Turbine Control</u>			KEYPHASOR : • STEAM TURBINE GEAR ORIVEN EQUIP.									
34	• MFR. B, NEVADA	MODEL	3500	REMARKS:									
35													
36													
37													
38													
39		rsiem						<u> </u>					
40						5: m <sup>3</sup> /h							
41						, 111 / 11	0,4		44,4				
42			enerator		IDE Da-	2vv, III /II a	100	+	15				
43			JEI IEI ALUI	TEMP	DRE, Bar RATHOR	°С	50	+	50				
44		1 Y·			ATREI	, <u> </u> MW	50	+	50				
46		 )R			PF Hydro	carbon/Synthetic		+					
47	STAINLESS STEEL OIL SUPP		G		SITY SSI	J @ 37.8°C	ISO VG 32	1.50	O VG 32				
48	STAINLESS STEEL OIL SUPPLY HEADING PIPING     OIL DRAIN HEADER PIPING				TION. um	1 2 3 1 3 3	10		10				
49	OIL DRAIN HEADER PIPING     STAINI ESS STEEL     CARBON STEEL				- · · , թո			1	-				
50	SIGHT FLOW INDICATOR	RS											
51		GLE 🌰 DUA	L										
52		• - 5/		I			L						
53	REMARKS: CONTROL OIL : SEPI	ERATE CONSOLE S	UPPLIES OIL AT	HIGH PRESS	SURE 120	BAR G							
54													
55													
56						<b></b>	<b></b>						

				PROJECT TITLE										
				PROJECT	SOR-IIILE		SULPH		) PLA	IN I				
	STEAM TU	JRBINE		Proiect N°	Unit	Document (	Code	Serial N°		Rev	Р	ade		
				.,							•	- J-		
	DATA SH	IEET			650			001		0		6		
	SI UNI	TS												
1			ACC	ESSORIES										
2	COUPLINGS AND GUARDS													
3	NOTE: SEE ROTATING ELEMENTS-SE	IAFT ENDS												
4 5		modyn												
6	MANUFACTURER Euroflex	TYP	PE Flex	ible		MODEL 8	GH-330-8	5						
7	COUPLING GUARD FURNISHED BY	GE Thermodyn												
8	TYPE • FULLY ENCLOSED		OTHER	ER										
9	COUPLING DETAILS		-											
10	MAXIMUM OUTER DIAMETER		446 mm	VEND	OR MOUNT	F HALF COUP	LING							
11			92,5 kg	$\bigcirc$ mass	SIMULATO	DR (		G ADAPTER	R RE	QUIRE	)			
12		88	88,6 mm	LUBRICAT	ION REQU			-						
13			65 kg		REASE		IL LUBE		IE 3 //					
14					IIIY PER H			кg UR m	/n					
15	MOUNTING PLATES (15.3)	<b>T</b> he a man a sh												
16	BASEPLATES FURNISHED BY: GE	Thermodyn		SOLEPLAT		SHED BY: (	GE Therr	nodyn						
17			& Gear		NESS			10	mm					
10														
20		TI-SECTION				VENDOR								
21		SUBPLATES REQ'D												
22	LEVELING (CHOCK) BLOCKS REC	D SUPPLIED BY: GE	Thermod		OR BOLTS	FURNISHED	BY:	GE	Ther	modyn				
23	GEAR UNIT													
24	FURNISHED BY: Ge Thermodyn		ENCE AP	l 613	$\bigcirc$ (	OTHER Stan	dard Ma	nufacturer						
25	SEE ATTACHED GEAR DATA SHEETS	See doc												
26	CONTROL AND INSTRUMENTATION (	12)												
27	INSTRUMENTS AND CONTROL PANE	LS SHALL BE												
28	IN ACCORDANCE WITH THE FOLLOW	/ING		API 670, PAGES										
29 30	ATTACHED DATA SHEETS:				able spec	ancation . 90	061							
21	PROTECTIVE DEVICES													
32		EXHAUST RELIEF	INC	UCTION	VAC	СЛЛМ	SHUT	T OFF	THE	RMAL	REI	IEF		
33		VALVE	RELI	EF VALVE	BRE	AKER	VAL\	/E(S)		VALVE	E(S)			
34							INDUC							
35	MOUNTING LOCATION	Air Cooled Condenser	MF	Steam			MP S	team						
36	SET RELIEF PRESSURE, Barg	0,44		12			1	2						
37	CAPACITY, kg/h STEAM		_	18800			188	300						
38			Conse	plated valve			ADA	AMS						
39		Rupture disc	1910-	0011-4-CC	+		MAł or / /	150#						
40 41			8	, 300# RF	-		0/ <sup>*</sup> D	'F						
42	FURNISHED BY	Others GF					GE Thermodyn							
43	QUANTITY	1			1		2	2						
44	TAG NO	PSE 1110-9												
45	REMARKS:													
46														
47														
48														
49 50														
50														
1														

				PROJECT T	TLE									
						PROJECT SUB-TITLE SULPHURIC ACID PLANT								
	STEAM TURE	BINE		Project N°	Unit Doc	ument Code	Serial N°		Rev		Page			
	DATA SHEE	ET			650		001		0		7			
Ŀ														
1			DUPLIC			LE VALVES K	EQUIRED	Duilt	n (	mm				
2					LAL A 387 Grad	512E		Duiit	<u> </u>	, mm,	iviesn)			
3 4		DEL 8-900			RARY START-II									
5	SIZE 8" RATING 900 #	FACING R		MATER		OTIVANEN				_ '				
6		FACING				HAF	RDNESS				HRC			
7		FACING				HA					HRC			
8	CONSTRUCTION FEATURES:	INLE	T INDUCT		IG MATERIAL	LEA	KOFF				kg/h			
9	RESET: O MANUAL • HYDRAULIC	;			SUPPORT OF	VALVE REQU	RED				_ `			
10	TRIP: • LOCAL (MANUAL) • REF	NOTE		О ВУ	VENDOR	🔿 BY PUR	CHASER							
11	EXERCISER: OLOCAL (MANUAL)	REMOTE												
12	FULLY OIL OPERATED													
13	GOVERNOR-CONTROLLED VALVE(S):													
14	LOCATION	MAIN INLET	IND	UCTION	INDUCTIO	N IND	UCTION		NO	TES	;			
15					EXTRACTIO	ON EXT	RACTION							
16	TRIP POSITION (OPEN/CLOSED)	Closed	C	Closed										
17	NUMBER OF VALVES	4	Gi	rid valve										
18	CONNECTION SIZE	integral casing	integ	gral casing										
19	RATING	N/A int	earal casi	na										
20	FACING (RF, RTJ, OTHER)			5										
21	ACTION (CAM,BAR, OTHER)	Bar		Other										
22	STEM MATERIAL	X19CrN	oNiNbVN1	1.1										
23	STEM MATERIAL HARDNESS, HRC		_											
24	SEAT MATERIAL	AISI 410	_											
25	SEAT MATERIAL HARDNESS, HRC	84												
26		A	355 Gr A											
27			NI/A											
20 20			N/A											
20			-											
31														
32	TURNING GEAR			MISCELLAN	IEOUS									
33	TURNING GEAR REQUIRED			O START-	UP ASSISTANC	E			D	AYS				
34	FURNISHED BY GE Thermodyn				R'S REVIEW &	COMMENTS O	N PURCHASE	R'S						
35	TYPE SSS clutch	SPEED	150 r/min	PIPING	AND FOUNDAT	ION DRAWING	SS							
36	ENGAGEMENT :		IANUAL		R WITNESS INI	TIAL ALIGNME	NT							
37	MANUFACTURER Motox	MODEL KAF 1	28	"Y" TYPE STRAINER										
38	MOUNTED BY <u>GE Thermodyn</u>			WATER WASHING CONNECTIONS										
39		1		⊖ STATIC	CONDUCTING	BRUSHES								
40	DRIVEN BY:  ELECTRIC MOTOR		BINE		OWN ACTIVATE	ES EXHAUST V	ACUUM BREA	<b>KE</b> R	(12.	3.1.3	3)			
41	HYD./PNEU. MOTOR			<u> </u>										
42	OPERATOR STATION		DTE	0		<u>.</u>								
43	INSULATION & JACKETING			SPECIAL TO	DOLS									
44	BLANKET OTHER Mineral Fib	er			NG RING AND	PLUG GAUGE								
45					ULIC COUPLING	G MOUNTING/	REMOVAL KIT							
46	CARBON STEEL • Aluminium				Vendor list						_			
47 ⊿∘					DER BEAM(S)									
+0 49					RCHASE									
⊢	·													

PROJECT SUB-ITILE         SULPHURIC ACID PLANT           STEAM TURBINE         Project N*         Unit         Document Code         Strik         Rev         Page           DATA SHEET         gs0         0.0         0			PROJECT TITLE									
STEAM TURBINE         Project.N*         Unit Document Code         Sand M*         Rev         Page           0         DATA SHEET         0.01         0.0			PROJECT SUB-TITLE SULPHURIC ACID PLANT									
DATA SHEET         dot         not		STEAM TURBINE	Project N° Unit Document Code Serial N° Rev Page									
Image: Second		DATA SHEET SI UNITS	650 001 0 8									
TYPE       Didrial_PROCESSOR BASED <ul> <li>OTHER</li></ul>	1	GOVERNOR										
9       O THER       ● SUPPLEX       MULTI-CPU         9       SIMPLEX MULTI-CPU       ● SUPPLEX BY GE Thermodyn         6       SINGLE AUX ENDANCE STAGE       DOUBLE AUTOMATIC EXTRACTION         7       SINGLE AUX ENDANCE STAGE       SINGLE AUTOMATIC EXTRACTION         8       MULTI-AUX ENDANCE STAGE       SINGLE AUTOMATIC EXTRACTION         9       SINGLE AUX ENDANCE       OUBLE AUTOMATIC EXTRACTION         10       CENTRIFUGAL COMPRESSOR       INDUCTION ENDERSTOR         11       CENTRIFUGAL COMPRESSOR       INDUCTION ENDANCE         12       AUX COMPRESSOR       INDUCTION ENDANCE         14       SERVICE REQUIREMENTS       INDUCTION CONTROL         14       MERCHANCE STRACTOR RESULT       INDUCTION CONTROL         14       TURBINE EXALVET PRESSURE FLOW       KW MINORTEXPORT CONTROL         1	2	TYPE	MANUFACTURER - MODEL Included in PLC Software									
SIMPLEX MULTI-CPU      STEAM TURBINE TYPE      SINGLE AUXE MILLISTAGE     SINGLE AUTOATIC EXTRACTION O     OTHER      MULTI-CALVE MILLISTAGE     SINGLE AUTOATIC EXTRACTION NOUCTION      MILLIX-KMILLISTAGE     SINGLE AUTOATIC EXTRACTION NOUCTION      MULTI-CALVE MILLISTAGE     SINGLE AUTOATIC EXTRACTION NOUCTION      MULTI-CALVE MILLISTAGE     SINGLE AUTOATIC EXTRACTOR NOUCH EXTRACTOR      MULTI-CALVE MILLISTAGE     SINGLE AUTOATIC EXTRACTOR      MULTI-CALVE MILLISTAGE     SINGLE AUTOATIC EXTRACTOR      SINGLE AUTOATIC EXTRACTOR PRESSURE     SINGLE AUTOATIC EXTRA	3		SUPPLIED BY GE Thermodyn									
5         TEAM TURBINE TYPE           6         SINGLE VALVE SINGLE STAGE         DOUBLE AUTOMATIC EXTRACTION           7         SINGLE VALVE MULTISTAGE         SINGLE AUTOMATIC EXTRACTION           9         SINGLE AUTOMATIC EXTRACTIONNOUCTION           9         SINGLE AUTOMATIC EXTRACTIONNOUCTION           9         SINGLE AUTOMATIC EXTRACTIONNOUCTION           9         SINGLE AUTOMATIC EXTRACTIONNOUCTION           10         DENDERTION CENTRATION           11         CENTRIFUGAL COMPRESSOR         \$ STACHRONOUS GENERATOR           12         AVAL COMPRESSOR         \$ STACHRONOUS GENERATOR           13         CENTRIFUGAL PUMP         OTHER           14         SERVICE REGUREMENTS         BECHARLOW           15         DECONTROL BY:         PRESSURE FLOW           16         PRESSURE PLOW         KW MINORTEXPORT           17         TURBINE ENLIT         PRESSURE FLOW         KW MINORTEXPORT           18         NUCCTION         PRESSURE FLOW         KW MINORTEXPORT           19         TURBINE ENLIT         PRESSURE FLOW         KW MINORTEXPORT           10         TURBINE EXALUST         PRESSURE FLOW         KW MINORTEXPORT           20         TURBINE EXHAUST         PRESSURE FLOW         KW MI	4											
Single Valve Single State     Double AutOMATIC EXTRACTION       Single Valve Multistrace     Single Valve Multistrace       Single Valve Multistrace     Double AutOMATIC EXTRACTIONINDUCTION       Single Valve Multistrace     Othere       MECHANICAL PUMP     Othere       Sense Control Extraction     Induction Extraction       MECHANICAL PUMP     Othere       MECHANICAL DRIVE     GENERATOR DRIVE       MECHANICAL DRIVE     GENERATOR DRIVE       MECHANICAL DRIVE     DROOP CONTROL       MECHANICAL DRIVE     PRESSURE       MECHANICAL DRIVE     DROOP CONTROL       MECHANICAL DRIVE     PRESSURE       MECHANICAL DRIVE     PRESSURE       MUTURINE INLET     PRESSURE       PROCESS VARIABLE     PRESSURE       NOUCTON     PRESSURE       PROVE     CAUMANTIC EXTRACTION       MUTURINE INTER     LAND CONTROL       Common Structure     AUTOMATIC EXTRACTION       NULBER INTER     DISCRETE OUTPUTS       DISCRETE OUTPUTS     COMMON ALARM       MPUTIOUTPUT REQUIREMENTS     DISCRETE OUTPUTS       DISCRETE OUTPUTS <th>5</th> <th>STEAM TURBINE TYPE</th> <th></th>	5	STEAM TURBINE TYPE										
7     SINGLE AUTOMATIC EXTRACTIONINDUCTION       8     MULTIVALVE MULTISTAGE     DOUBLE AUTOMATIC EXTRACTIONINDUCTION       9     SINGLE AUTOEXTRACTION     OTHER       10     DREVENEGUPMENT TYPE	6	SINGLE VALVE SINGLE STAGE	O DOUBLE AUTOMATIC EXTRACTION									
9         SINGLE AUTO ATTIC EXTRACTION         OTHER	7	○ SINGLE VALVE MULTISTAGE	○ SINGLE AUTOMATIC EXTRACTION/INDUCTION									
9     SINGLE AUTO EXTRACTION     OTHER       10     DRIVEN EQUIPMENT TYPE       11     CENTRIFUGAL COMPRESSOR     SYNCHRONOUS GENERATOR       12     CANAL COMPRESSOR     OTHER       13     CENTRIFUGAL PUMP     OTHER       14     SERVICE REQUIREMENTS       15     SEEVICE REQUIREMENTS       16     SEEVICE REQUIREMENTS       17     PROCESS VARIABLE     PRESSURE       18     SEEVICE ONTROL     PRESSURE       19     INDUCTION     PRESSURE       10     INDUCTION     PRESSURE       10     INDUCTION     PRESSURE       11     REATRACTION     PRESSURE       12     TURBINE EXHAUST     PRESSURE       12     TURBINE EXHAUST     PRESSURE       14     EXTRACTION     PRESSURE       15     WELTON     WW IMPORTEXPORT CONTROL       16     URBINE EXHAUST     PRESSURE LIAW       17     URBINE EXHAUST     PRESSURE LIAW       18     RAGE STRONT CONTROL     URBINE EXHAUST       19     OTHER	8	MULTIVALVE MULTISTAGE	O DOUBLE AUTOMATIC EXTRACTION/INDUCTION									
00         DEVEN EQUIPMENT TYPE           11         CENTRIFUGAL COMPRESSOR         SYNCHRONOUS GENERATOR           12         ANAL COMPRESSOR         INDUCTION GENERATOR           13         CENTRIFUGAL PUMP         OTHER           14         SERVICE REQUIREMENTS         GENERATOR DRIVE           15         SERVICE REQUIREMENTS         GENERATOR DRIVE           16         SPEED CONTROL BY:         PROCESS VARIABLE         PRESSURE           17         PROCESS VARIABLE         PRESSURE         FLOW         I.A.DA CONTROL           18         ENTRATION         PRESSURE         FLOW         I.A.DA CONTROL           19         INDUCTION         PRESSURE         FLOW         I.A.DA CONTROL           21         TURBINE INLET         PRESSURE         FLOW         I.A.DA CONTROL           21         TURBINE INLET         PRESSURE CONTROL         I.A.TOMATIC SYNCHRONIZATION           22         OTHER         AUTOMATIC SYNCHRONIZATION         I.M.TET PRESSURE LIMITING           23         INDUCTOUT PUT REQUIREMENTS         DISCRETE OUTPUTS         COMMON SHUTDOWN           24         ONDRAL STOP         COMMON ALARM         COMMON ALARM           25         START OR RESET         COMMON ALARAM         COMMON ALARM <th>9</th> <th>○ SINGLE AUTO EXTRACTION</th> <th></th>	9	○ SINGLE AUTO EXTRACTION										
1       CENTRIFUGAL COMPRESSOR          SYNCHROMOUS GENERATOR          12       AVAIL COMPRESSOR       INDUCTION GENERATOR          13       CENTRIFUGAL PLANP          THER          14       SERVICE REQUIREMENTS           SERVICE REQUIREMENTS          15       SERVICE ONTROL DRIVE          CRECHANICAL DRIVE          16       SPEED CONTROL          PROSESS VARIABLE          17       PROCESS VARIABLE        PRESSURE          18       EXTRACTION        PRESSURE          10       INDUCTION        PRESSURE          20       TURBINE INLET        PRESSURE          21       TURBINE EXHAUST        PRESSURE          22       TURBINE EXHAUST        PRESSURE LOW          23       TURBINE INLET        PRESSURE LIMITING          24            LOW        AUTOMATIC VOLTAGENERATION          24             AUTOMATIC VOLTAGENERATION          24             AUTOMATIC VOLTAGENERATION          25       START OR RESET <th>10</th> <th>DRIVEN EQUIPMENT TYPE</th> <th></th>	10	DRIVEN EQUIPMENT TYPE										
12     AXALL COMPRESSOR     INDUCTION GENERATOR       13     CENTRIFUGAL PUMP     OTHER       14     SERVICE REQUIREMENTS       15     MECHANICAL DRIVE       16     SPRED CONTROL BY:       17     PROCESS VARIABLE     PRESSURE       18     EXTRACTION     PRESSURE       19     INDUCTION     PRESSURE       19     INDUCTON     PRESSURE       10     TURRINE INLET     PRESSURE       21     TURRINE INLET     PRESSURE       22     OTHER     CAD SHEDDING       23     TURRINE INLET     PRESSURE       24	11		SYNCHRONOUS GENERATOR									
13     CENTRIFUGAL PUMP     OTHER       14     EERVICE REQUIREMENTS       15     MECHANICAL DRIVE       16     SPEED CONTROL BY:     DROOP CONTROL       17     PROSESS VARIABLE     PRESSURE       18     EXTRACTION     PRESSURE       19     INDUCTION     PRESSURE       10     INDUCTION     PRESSURE       11     TURBINE INLET     PRESSURE       12     TURBINE EXTAUST     PRESSURE       20     OTHER	12											
14       SERVICE REQUIREMENTS         15       MECHANICAL DRIVE       GENERATOR DRIVE         16       SFFED CONTROL BY:       DROOP CONTROL         17       PROCESS VARIABLE       PRESSURE       FLOW         18       EXTRACTION       PRESSURE       FLOW         19       INDUCTION       PRESSURE       FLOW         10       TURBINE INLET       PRESSURE       FLOW         21       TURBINE INLET       PRESSURE       FLOW         22       OTHER       AUTOMATIC SYNCHRONIZATION         23       OTHER       AUTOMATIC SYNCHRONIZATION         24       UTURBINE INLET PRESSURE LIMITING       INLET PRESSURE LIMITING         25       INPUT/OUTPUT REQUIREMENTS       DISCRETE OUTPUTS         26       OTHER       COMMON SHUTDOWN         27       START OR RESET       COMMON SHUTDOWN         28       START OR RESET       COMMON SHUTDOWN         30       EWRERDENCY TRIP       OVERSPEED TSIP TENDINT ENABLED         31       RAMP TO MINIMUM CONTINUOUS       PRESSURE CONTROL ENABLED         32       OVERSPEED TSIP TENDIE       INDUCTION CONTROL ENABLED         33       ENABLE PRESSURE CONTROL       SPEED SETPOINT         34       RAMP TO	13											
Is     MECHANICAL DRIVE     GENERATOR DRIVE       16     SPEED CONTROL BY:     OROOP CONTROL       17     PROCESS VARIABLE     PRESSURE       18     EXTRACTION     PRESSURE       19     INDUCTION     PRESSURE       20     TURBINE INLET     PRESSURE       21     TURBINE INLET     PRESSURE       22     OTHER     OUTOWATC VOLTAGE REQULATION       23     OTHER     OUTOWATC VOLTAGE REQULATION       24     OTHER     OUTOWATC VOLTAGE REQULATION       25     OUTOWATC VOLTAGE REQULATION     OUTOWATC VOLTAGE REQULATION       24     OTHER     OUTOWATC VOLTAGE REQULATION       25     OUTOWATC VOLTAGE REQULATION     OUTOWATC VOLTAGE REQULATION       26     OUTOWATC VOLTAGE REQULATION     OUTOWATC VOLTAGE REQULATION       27     DISCRETE INPUTS     DISCRETE OUTPUTS       28     START OR RESET     OUTOMAND ALARM       29     OWERSPEED SET FORT     OUTONE NABLED       30     RAME SPEED     SPEED SETPOINT       31     RAME SPEED SETPOINT     FLOW CONTROL ENABLED       32     ENABLE DRESSURE CONTROL     SPEED SETPOINT CLEARABLED       34     RAME TO MINIMUM CONTINUOUS     EXTRACTION CONTROL ENABLED       35     ENABLE PRESSURE CONTROL     SPEED SETPOINT <t< th=""><th>14</th><td>SERVICE REQUIREMENTS</td><td></td></t<>	14	SERVICE REQUIREMENTS										
16       SPEED CONTROL BY:       DROOP CONTROL         17       PROCESS VARIABLE       PRESSURE       FLOW         18       EXTRACTION       PRESSURE       FLOW         19       INDUCTION       PRESSURE       FLOW         20       TURBINE INLET       PRESSURE       FLOW         21       TURBINE EXHAUST       PRESSURE       FLOW         22       OTHER       AUTOMATIC SYNCHRONIZATION         23       OTHER       AUTOMATIC SYNCHRONIZATION         24	15	MECHANICAL DRIVE	GENERATOR DRIVE									
17       PROCESS VARIABLE       PRESSURE       FLOW       FREQUENCY CONTROL         18       EXTRACTION       PRESSURE       FLOW       CAD CONTROL         20       TURBINE INLET       PRESSURE       FLOW       KW CONTROL         21       TURBINE INLET       PRESSURE       FLOW       KW IMPORT/EXPORT CONTROL         21       TURBINE EXHAUST       PRESSURE       FLOW       CAD SHEDDING         22       OTHER	16	○ SPEED CONTROL BY:										
18       EXTRACTION       PRESSURE       FLOW       LOAD CONTROL         19       INDUCTION       PRESSURE       FLOW       KW CONTROL         21       TURBINE INLET       PRESSURE       FLOW       KW CONTROL         21       TURBINE EXHAUST       PRESSURE       FLOW       LOAD SHEDDING         22       OTHER       AUTOMATIC SYNCHRONIZATION         23	17	PROCESS VARIABLE $\bigcirc$ PRESSURE $\bigcirc$ FLOW										
19       INDUCTION       PRESSURE       FLOW       KW CONTROL         20       TURBINE EXHAUST       PRESSURE       FLOW       KW MPORTEXPORT CONTROL         21       TURBINE EXHAUST       PRESSURE       FLOW       LADA SHEDDING         21       TURBINE EXHAUST       PRESSURE       FLOW       LADA SHEDDING         22       OTHER	18	EXTRACTION O PRESSURE O FLOW										
20       TURBINE INLET       PRESSURE       FLOW       KW IMPORT/EXPORT CONTROL         21       URBINE ENALUST       PRESSURE       FLOW       LOAD SHEDDING         22       OTHER       AUTOMATIC SVNCHRONIZATION         24	19											
21       TURBINE EXHAUST       PRESSURE       FLOW       AUTOMATIC SYNCHRONIZATION         22       OTHER       AUTOMATIC SYNCHRONIZATION       AUTOMATIC SYNCHRONIZATION         23       TURBINE INLET PRESSURE LIMITING       INLET PRESSURE LIMITING         24       INLET PRESSURE LIMITER       DISCRETE OUTPUTS         26       INPUT/OUTPUT REQUIREMENTS       DISCRETE OUTPUTS         28       START OR RESET       COMMON SHUTDOWN         29       NORMAL STOP       OVERSPEED TOINT ENABLED         30       EMERGENCY TRIP       OVERSPEED TRIP       6270 r/min         31       RAME TO MINIMUM CONTINUOUS       PRESSURE CONTROL ENABLED       PRESSURE CONTROL ENABLED         32       ELOWER SPEED       REMOTE SPEED SETPOINT       FLOW CONTROL ENABLED         34       RAMP TO MINIMUM CONTINUOUS       EXTRACTION CONTROL ENABLED         35       OVERSPEED TE ENABLE       INDUCTION CONTROL ENABLED         36       OVERSPEED TRIP       SPEED PICKUP ALARM         37       ENABLE ANTACTION ONTROL       OTHER         38       REMOTE SYLED KONTROL       SPEED PICKUP ALARM         39       ENABLE ANTACTON ONED       SPEED SETPOINT         40       CASCADE RAISELOWER       SPEED SETPOINT         41	20											
22       OTHER       AUTOMATIC SYNCHRONIZATION         23       AUTOMATIC VOLTAGE REGULATION         24       INPUTOUTPUT REQUIREMENTS         25       DISCRETE INPUTS         26       INPUTOUTPUT REQUIREMENTS         27       DISCRETE INPUTS         28       \$ START OR RESET         29       NORMAL STOP         20       NORMAL STOP         21       EMERGENCY TRIP         22       INPUTOUTPUT REQUIREMENTS         23       ENARGENCY TRIP         30       E EMERGENCY TRIP         31       RAISE SPEED         32       LOWER SPEED         33       PRABLE/DISABLE REMOTE SPEED SETPOINT         34       RAMP TO MINIMUM CONTINUOUS         35       OVERSPEED TEST ENABLE         36       OVERSPEED TEST ENABLE         37       ENABLE PRESSURE CONTROL         38       REMOTE ALARM CLEAR/ACKNOWLEDGE         39       ENABLE AUTO SYNCHRONIZE         40       CASCADE RAISEL/OWER         41       OTHER         42       ANALOG INPUTS (4 mA to 20 mA)         43       REMOTE SET POINT         44       PROCESS PRESSURE         45       EXTRACTION PRESSURE S	21	TURBINE EXHAUST $\bigcirc$ PRESSURE $\bigcirc$ FLOW	C LOAD SHEDDING									
23	22	OTHER	○ AUTOMATIC SYNCHRONIZATION									
24	23		AUTOMATIC VOLTAGE REGULATION									
25	24											
26     INPUTIOUTPUT REQUIREMENTS       27     DISCRETE INPUTIS     DISCRETE OUTPUTS       28     START OR RESET <ul> <li>COMMON SHUTDOWN</li> <li>COMMON ALARM</li> <li>EMERGENCY TRIP</li> <li>OVERSPEED TRIP</li> <li>OVERSPEED TRIP</li> <li>ENABLE/DISABLE REMOTE SPEED SETPOINT</li> <li>ENABLE/DISABLE REMOTE SPEED SETPOINT</li> <li>FLOW CONTROL ENABLED</li> <li>ENABLE/DISABLE REMOTE SPEED SETPOINT</li> <li>FLOW CONTROL ENABLED</li> <li>OVERSPEED TEST ENABLE</li> <li>INDUCTION CONTROL ENABLED</li> <li>EXTRACTION CONTROL ENABLED</li> <li>SPEED PICKUP ALARM</li> <li>OTHER</li> <li>ENABLE EXTRACTION CONTROL</li> <li>SPEED PICKUP ALARM</li> <li>OTHER</li> <li>ANALOG OUTPUTS (4 mA to 20 mA)</li> <li>SPEED SETPOINT</li> <li>REMOTE SPEED NIT</li> <li>REMOTE SPEED SETPOINT</li> <li>SPEED SETPOINT</li> <li>REMOTE SPEED SETPOINT</li> <li>REMOTE SPEED SETPOINT</li> <li>EXTRACTION PRESSURE</li> <li>EXTRACTION PRESSURE</li></ul>	25											
27       DISCRETE INPUIS         28       START OR RESET         29       NORMAL STOP         30       EMERGENCY TRIP         31       RAISE SPEED         32       LOWER SPEED         33       ENABLE/DISABLE REMOTE SPEED SETPOINT         34       RAMD TO MINIMUM CONTINUOUS         35       OVERSPEED TEST ENABLE         36       ENABLE PRESSURE CONTROL         37       ENABLE PRESSURE CONTROL         38       REMOTE ALARM CLEAR/ACKNOWLEDGE         39       ENABLE AUTO SYNCHRONIZE         40       CASCADE RAISE/LOWER         41       OTHER         42       ANALOG INPUTS (4 mA to 20 mA)         43       REMOTE SET POINT         44       PROCESS PRESSURE         45       EXTRACTION PRESSURE         46       EXTRACTION PRESSURE         47       KW IMDOAT         48       OTHER         49	26											
23       STARTOR RESET         29       NORMAL STOP         29       NORMAL STOP         20       EMERGENCY TRP         31       RAISE SPEED         32       LOWER SPEED         33       ENABLE/DISABLE REMOTE SPEED SETPOINT         34       RAME TO MINIMUM CONTINUOUS         35       OVERSPEED TEST ENABLE         36       ENABLE PRESSURE CONTROL         37       ENABLE ZERACTION CONTROL         38       REMOTE ALARM CLEAR/ACKNOWLEDGE         39       ENABLE AUTO SYNCHRONIZE         40       CASADE RAISE/LOWER         41       OTHER         42       ANALOG INPUTS (4 mA to 20 mA)         43       REMOTE SET POINT         44       PROCESS PRESSURE         45       EXTRACTION         46       EXTRACTION         47       PROCESS PRESSURE         48       OTHER         49	27											
23       NORMALS IOP         30       EMERGENCY TRIP         31       RAISE SPEED         32       LOWER SPEED         33       ENABLE/DISABLE REMOTE SPEED SETPOINT         34       RAMP TO MINIMUM CONTINUOUS         35       OVERSPEED TEST ENABLE         36       ENABLE /DISABLE REMOTE SPEED SETPOINT         37       ENABLE ONTROL         38       RAMP TO MINIMUM CONTINUOUS         39       ENABLE PESSURE CONTROL         30       ENABLE EXTRACTION CONTROL ENABLED         36       ENABLE PESSURE CONTROL         37       ENABLE EXTRACTION CONTROL         38       REMOTE ALARM CLEAR/ACKNOWLEDGE         39       ENABLE AUTO SYNCHRONIZE         40       CASCADE RAISE/LOWER         41       OTHER         42       ANALOG INPUTS (4 mA to 20 mA)         41       OTHER         42       ANALOG INPUTS (4 mA to 20 mA)         43       REMOTE SET POINT         44       PROCESS PRESSURE         45       EXTRACTION         46       KW IND. LOAD         47       KW IMPORT/EXPORT         48       OTHER         49	28											
30       EMERGENCET TRIP       0270 (mining)         31       RAISE SPEED       REMOTE SPEED SETPOINT ENABLED         32       LOWER SPEED       PRESSURE CONTROL ENABLED         33       ENABLE/DISABLE REMOTE SPEED SETPOINT       FLOW CONTROL ENABLED         34       RAMP TO MINIMUM CONTINUOUS       EXTRACTION CONTROL ENABLED         35       OVERSPEED TEST ENABLE       INDUCTION CONTROL ENABLED         36       ENABLE PRESSURE CONTROL       SPEED PICKUP ALARM         37       ENABLE EXTRACTION CONTROL       OTHER         38       REMOTE ALARM CLEAR/ACKNOWLEDGE       OTHER         39       ENABLE AUTO SYNCHRONIZE       OTHER         40       CASCADE RAISE/LOWER       ANALOG OUTPUTS (4 mA to 20 mA)         41       OTHER       SPEED         42       ANALOG INPUTS (4 mA to 20 mA)       SPEED SETPOINT         43       REMOTE SPEESURE       EXTRACTION PRESSURE         44       PROCESS PRESSURE       EXTRACTION PRESSURE SETPOINT         45       EXTRACTION       PRESSURE FLOW         46       kW IND. LOAD       PRESSURE FLOW         47       kW IMPORT/EXPORT       PROCESS PRESSURE         48       OTHER       kW         49	29											
31       NAISE SPEED         32       LOWER SPEED         33       ENABLE/DISABLE REMOTE SPEED SETPOINT         34       RAMP TO MINIMUM CONTINUOUS         35       OVERSPEED TEST ENABLE         36       ENABLE PRESSURE CONTROL         37       ENABLE PRESSURE CONTROL         38       REMOTE ALARM CLEAR/ACKNOWLEDGE         39       ENABLE AUTO SYNCHRONIZE         40       CASCADE RAISE/LOWER         41       OTHER         42       ANALOG INPUTS (4 mA to 20 mA)         43       REMOTE SPRESSURE         44       PROCESS PRESSURE         45       EXTRACTION         46       kW IND. LOAD         47       KW IMPORT/EXPORT         48       OTHER         49	3U 21											
32       CONTROL PROBLE/DISABLE REMOTE SPEED SETPOINT       FLOW CONTROL ENABLED         33       ENABLE/DISABLE REMOTE SPEED SETPOINT       FLOW CONTROL ENABLED         34       RAMP TO MINIMUM CONTINUOUS       EXTRACTION CONTROL ENABLED         35       OVERSPEED TEST ENABLE       INDUCTION CONTROL ENABLED         36       ENABLE PRESSURE CONTROL       SPEED PICKUP ALARM         37       ENABLE ALTACTION CONTROL       OTHER         38       REMOTE ALARM CLEAR/ACKNOWLEDGE       OTHER         39       ENABLE AUTO SYNCHRONIZE       OTHER         40       CASCADE RAISE/LOWER       ANALOG OUTPUTS (4 mA to 20 mA)         41       OTHER       SPEED         42       ANALOG INPUTS (4 mA to 20 mA)       SPEED SETPOINT         43       REMOTE SET POINT       REMOTE SPESSURE         44       PROCESS PRESSURE       EXTRACTION PRESSURE         45       EXTRACTION       PRESSURE FLOW         46       kW IND. LOAD       PRESSURE FLOW         47       kW IMPORT/EXPORT       PROCESS PRESSURE         48       OTHER       KW         49	32											
34       RAMP TO MINIMUM CONTINUOUS       EXTRACTION CONTROL ENABLED         35       OVERSPEED TEST ENABLE       INDUCTION CONTROL ENABLED         36       ENABLE PRESSURE CONTROL       SPEED PICKUP ALARM         37       ENABLE EXTRACTION CONTROL       OTHER         38       REMOTE ALARM CLEAR/ACKNOWLEDGE       OTHER         39       ENABLE AUTO SYNCHRONIZE       OTHER         40       CASCADE RAISE/LOWER       ANALOG OUTPUTS (4 mA to 20 mA)         41       OTHER       SPEED         42       ANALOG INPUTS (4 mA to 20 mA)       SPEED SETPOINT         43       REMOTE SET POINT       REMOTE SET POINT         44       PROCESS PRESSURE       EXTRACTION PRESSURE SETPOINT         45       EXTRACTION       PRESSURE FLOW         46       kW IND. LOAD       PRESSURE FLOW         47       kW IMPORT/EXPORT       PROCESS PRESSURE         48       OTHER       KW         49	32											
35       OVERSPEED TEST ENABLE       INDUCTION CONTROL ENABLED         36       ENABLE PRESSURE CONTROL       SPEED PICKUP ALARM         37       ENABLE EXTRACTION CONTROL       OTHER         38       REMOTE ALARM CLEAR/ACKNOWLEDGE       OTHER         39       ENABLE AUTO SYNCHRONIZE       OTHER         40       CASCADE RAISE/LOWER       ANALOG OUTPUTS (4 mA to 20 mA)         41       OTHER       SPEED         42       ANALOG INPUTS (4 mA to 20 mA)       SPEED SETPOINT         43       REMOTE SET POINT       REMOTE SET POINT         44       PROCESS PRESSURE       EXTRACTION PRESSURE         45       EXTRACTION       PRESSURE         46       kW IND. LOAD       PRESSURE         47       kW IMPORT/EXPORT       PROCESS PRESSURE         48       OTHER       KW         49	34											
36       ENABLE PRESSURE CONTROL       SPEED PICKUP ALARM         37       ENABLE EXTRACTION CONTROL       OTHER         38       REMOTE ALARM CLEAR/ACKNOWLEDGE       OTHER         39       ENABLE AUTO SYNCHRONIZE       ANALOG OUTPUTS (4 mA to 20 mA)         40       CASCADE RAISE/LOWER       ANALOG OUTPUTS (4 mA to 20 mA)         41       OTHER       SPEED         42       ANALOG INPUTS (4 mA to 20 mA)       SPEED SETPOINT         43       REMOTE SET POINT       REMOTE SPEED SETPOINT         44       PROCESS PRESSURE       EXTRACTION PRESSURE         45       EXTRACTION       PRESSURE FLOW         46       kW IND. LOAD       PRESSURE FLOW         47       kW IMPORT/EXPORT       PROCESS PRESSURE         48       OTHER       kW         49       KW       kW         50       KW IMPORT/EXPORT       kW	35											
37       ENABLE EXTRACTION CONTROL       OTHER	36	ENABLE PRESSURE CONTROL										
38       REMOTE ALARM CLEAR/ACKNOWLEDGE         39       ENABLE AUTO SYNCHRONIZE         40       CASCADE RAISE/LOWER         41       OTHER         42       ANALOG INPUTS (4 mA to 20 mA)         43       REMOTE SET POINT         44       PROCESS PRESSURE         45       EXTRACTION         46       kW IND. LOAD         47       kW IMPORT/EXPORT         48       OTHER         49       KW IMPORT/EXPORT         50       KW IMPORT/EXPORT	37	ENABLE EXTRACTION CONTROL	OTHER									
39       ENABLE AUTO SYNCHRONIZE         40       CASCADE RAISE/LOWER         41       OTHER         42       ANALOG OUTPUTS (4 mA to 20 mA)         43       SPEED         44       PROCESS PRESSURE         45       EXTRACTION         46       KW IND. LOAD         47       KW IMPORT/EXPORT         48       OTHER         49       KW IMPORT/EXPORT         50       KW IMPORT/EXPORT	38	REMOTE ALARM CLEAR/ACKNOWLEDGE										
40       CASCADE RAISE/LOWER       ANALOG OUTPUTS (4 mA to 20 mA)         41       OTHER       SPEED         42       ANALOG INPUTS (4 mA to 20 mA)       SPEED SETPOINT         43       REMOTE SET POINT       REMOTE SPEED SETPOINT         44       PROCESS PRESSURE       EXTRACTION PRESSURE         45       EXTRACTION       PRESSURE         46       kW IND. LOAD       PRESSURE         47       kW IMPORT/EXPORT       PROCESS PRESSURE         48       OTHER       kW         49       KW       kW IMPORT/EXPORT         50       KW IMPORT/EXPORT       kW IMPORT/EXPORT	39	C ENABLE AUTO SYNCHRONIZE										
41       OTHER       SPEED         42       ANALOG INPUTS (4 mA to 20 mA)       SPEED SETPOINT         43       REMOTE SET POINT       REMOTE SPEED SETPOINT         44       PROCESS PRESSURE       EXTRACTION PRESSURE         45       EXTRACTION       PRESSURE         46       kW IND. LOAD       PRESSURE         47       kW IMPORT/EXPORT       PROCESS PRESSURE         48       OTHER       kW         49	40	CASCADE RAISE/LOWER	ANALOG OUTPUTS (4 mA to 20 mA)									
42       ANALOG INPUTS (4 mA to 20 mA)       SPEED SETPOINT         43       REMOTE SET POINT       REMOTE SPEED SETPOINT         44       PROCESS PRESSURE       EXTRACTION PRESSURE         45       EXTRACTION       PRESSURE         46       kW IND. LOAD       PRESSURE         47       kW IMPORT/EXPORT       PROCESS PRESSURE         48       OTHER       kW         49       KW IMPORT/EXPORT       kW         50       KW IMPORT/EXPORT       kW IMPORT/EXPORT	41		○ SPEED									
43       REMOTE SET POINT       REMOTE SPEED SETPOINT         44       PROCESS PRESSURE       EXTRACTION PRESSURE         45       EXTRACTION       PRESSURE         46       kW IND. LOAD       PRESSURE         47       kW IMPORT/EXPORT       ACTUATOR POSITION         48       OTHER       kW         49	42	ANALOG INPUTS (4 mA to 20 mA)										
44       PROCESS PRESSURE       EXTRACTION PRESSURE         45       EXTRACTION       PRESSURE         46       kW IND. LOAD       PRESSURE         47       kW IMPORT/EXPORT       ACTUATOR POSITION         48       OTHER       kW         49       KW IMPORT/EXPORT       kW         50       KW IMPORT/EXPORT       kW	43											
45       CEXTRACTION       PRESSURE       FLOW       EXTRACTION PRESSURE SETPOINT         46       kW IND. LOAD       PRESSURE       FLOW       ACTUATOR POSITION         47       kW IMPORT/EXPORT       PROCESS PRESSURE       kW         48       OTHER       kW       kW         49       KW       kW       kW         50       KW       kW       kW         51       KW       KW       KW	44											
46       · kW IND. LOAD       · PRESSURE · FLOW       · ACTUATOR POSITION         47       · kW IMPORT/EXPORT       · PROCESS PRESSURE         48       · OTHER       · kW         49       ·       · kW IMPORT/EXPORT         50       ·       · kW IMPORT/EXPORT         51       ·	45											
47 <ul> <li>kW IMPORT/EXPORT</li> <li>OTHER</li> <li>OTHER</li> <li>KW</li> <li>kW IMPORT/EXPORT</li> </ul> 49 <ul> <li>kW IMPORT/EXPORT</li> <li>kW IMPORT/EXPORT</li> <li>kW IMPORT/EXPORT</li> </ul>	46											
48       OTHER	47											
49 WIMPORT/EXPORT	48		-   · kW									
50 51	49											
	50		-									
	51	1										

		PROJECT TIT	LE							
		PROJECT SU	B-TITLE		SULPHU	RIC ACIE	) PLAN	IT		
	STEAM TURBINE	Project N°	Unit	Document C	Code	Serial N°	F	Rev	Pa	ige
	DATA SHEET		650		I	001	1	0	g	9
	SI UNITS				11					
1	GOVERNOR INSTALLATION REQUIREMENTS									
2	LOCATION CLOCAL (AT TURBINE)	MOUNTING	0 F	LUSH MOUN	IT IN PANEL	. •	SURFA	ACE N	IOUN	IT
3	REMOTE (CONTROL ROOM)		$\bigcirc$ v	VERTICAL RA	CK					
4	OTHER Field instrument room	POWER SOU	RCE	SINGLE	DUAL					
5	AREA CLASSIFICATION: Safe	120 V (A.C.)		0	0					
6	CLASS GROUP DIVISION	220 V (A.C.)		0	0					
7	ZONEGROUPTEMP. RATING:	125 V (D.C.)		0	0					
8	$\underbrace{Enclosure}_{O}  \bigcup  Def_{O}$	24 V (D.C.)		0	0					
9 10				0	0					
10				$\bigcirc$	$\bigcirc$					
12			UIRED							
14		ENCLOSURE				10.42				
14						IA 4A				
16	~~~~~ <u></u>			AREA CL	ASSIFICATI	ON:	Safe			
17	OUTPUTS FROM PANEL TO GOVERNOR			CLASS	GROUP	DIVI	SION			
18	⊖ start			ZONE	GROUP	TEM	P. RAT	ING:		
19		INPUTS TO P	ANEL F	ROM GOVERI	NOR					
20		○ сом	MON AL	ARM TRIP						
21			LAMP							
22			OTE SE	TPOINT ENAE	BLED LAMP					
23			ED SETF	POINT METER	R					
24			ER 9806	J						
25										
26										
27	MISCELLANEOUS GOVERNOR DE LAILS		00/0							
28	GOVERNOR ACTION ON LOSS OF REMOTE SIGNAL:					c				
29 30						5				
31		U U				.0				
32	EXTERNAL INTERFACE DEVICE TYPE: O PRINTER FO	ORMAT: • •	GRAPHIC	C DISPLAY						
33		О Т	ABULAF	R DATA						
34		От	RENDIN	IG (REAL TIM	IE)					
35		<u></u> н	ISTORI	CAL ARCHIVI	NG					
36										
37		(		TOCOL						
38										
39										
40										
41	MANUEACTURER RENTLY NEVADA MODEL 3300		м. 🔴 г	ד 🔿 וגוור		ΙΝΙςται Ι		ARE		
43	NUMBER OF TEETH IN SPEED SENSING SURFACE Multi			50/12 0 I			20 01	/		
44										
45	ACTUATOR(S): • SUPPLIED BY GE Thermodyn		CTUREF	R MOOG	0	MODEL				
45			/ULTI CO		R					
46										
47	TURBINE MOUNTED ACCESSORIES									
48						IBER RE	QUIRE	D.		
49										
50										
51	1									

		PROJECT TITLE								
			רודו ה							
		PROJECT SUB-	IIILE		PLANT	'LANT				
	STEAM TURBINE	Project N°	Unit	Document Code Serial N°	Rev		Page			
	DATA SHEET		650	001	0		10			
	SI UNITS									
1										
2			OF TEET		Multi					
3	ELECTRONIC SET POINT		IDS SHAL		IP					
4 5	OVERSPEED SHUTDOWN REQUIREMENTS		TS SHALL							
6	• 2 OUT OF 3 VOTING LOGIC									
7	OTHER		E LEVEL:							
8							_			
9										
10	GLAND SEALING AND VACUUM SYSTEM									
11	SYSTEM PER: O ANNEX G.1 O ANNEX G.2		• VA	CUUM SYSTEM FURNISHED BY GE	Thermody	/n				
12			⊖ sн	IP LOOSE • SKID MOUNTED						
13	AVAIL. HEADER PRESSURE Barg TEMPERA	TURE°C	О от	HER						
14	AVAILABLE SEAL STEAM SUPPLY PRESSURE     9 Barg		GL			EMA C				
15	◆ AVAILABLE SEAL STEAM SUPPLY TEMPERATURE 220 °C	1 //	⊖ st			Ba	arg			
10	SEAL STM. PRESS. 0,1 Barg FLOW 141	_kg/n	$\bigcirc$ VA			kg	/n			
18	ELENNISHED BY Samson									
19	FLOW ADJUSTING VALVES, TYPE 3241-7		С LO	OP SEAL HEIGHT			m			
20	FURNISHED BY GE Thermodyn									
21	I	SPECTION AND T	ESTING							
22	GENERAL			MECHANICAL RUNNING TEST						
23	SHOP INSPECTION				OBSVD	W	/IT			
23 24				C CONTRACT ROTOR	OBSVD	W C	/IT )			
23 24 25	SHOP INSPECTION     EXTEN1     REFERENCE INSPECTION CHECKLIST			CONTRACT ROTOR	OBSVD	W C C	/IT ) )			
23 24 25 26	SHOP INSPECTION     EXTEN1     REFERENCE INSPECTION CHECKLIST			CONTRACT ROTOR SPARE ROTOR TEST W/JOB COUPLING	OBSVD	W C C C C				
23 24 25 26 27	SHOP INSPECTION     EXTEN1     REFERENCE INSPECTION CHECKLIST  INSPECTION AND MATERIAL TESTING			CONTRACT ROTOR SPARE ROTOR TEST W/JOB COUPLING TEST TAPE RECORD REQUIRED	OBSVD	× 0 0 0 0 0				
23 24 25 26 27 28 20	SHOP INSPECTION     EXTEN1     REFERENCE INSPECTION CHECKLIST  INSPECTION AND MATERIAL TESTING  SPECIAL MATERIAL INSPECTION & TESTING DECIVIDEMENTS			CONTRACT ROTOR SPARE ROTOR TEST W/JOB COUPLING TEST TAPE RECORD REQUIRED TEST TAPE GIVEN TO PURCH.	OBSVD	× ~ ~ ~ ~ ~ ~ ~ ~ ~	/IT ) ) ) ) )			
23 24 25 26 27 28 29 30	SHOP INSPECTION     EXTEN1     REFERENCE INSPECTION CHECKLIST  INSPECTION AND MATERIAL TESTING  SPECIAL MATERIAL INSPECTION & TESTING REQUIREMENTS COMPONENT MAG PART DYF PEN R T UT	OBSVD	WIT	<ul> <li>CONTRACT ROTOR</li> <li>SPARE ROTOR</li> <li>TEST W/JOB COUPLING</li> <li>TEST TAPE RECORD REQUIRED</li> <li>TEST TAPE GIVEN TO PURCH.</li> <li>TEST W/JOB LUBE OIL CONSOLE</li> </ul>	OBSVD 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		//T ) ) ) ) )			
<ul> <li>23</li> <li>24</li> <li>25</li> <li>26</li> <li>27</li> <li>28</li> <li>29</li> <li>30</li> <li>31</li> </ul>	SHOP INSPECTION     EXTEN1     REFERENCE INSPECTION CHECKLIST  INSPECTION AND MATERIAL TESTING  SPECIAL MATERIAL INSPECTION & TESTING REQUIREMENTS COMPONENT MAG PART DYE PEN R.T. U.T. TRIP & T & T	OBSVD	WIT	CONTRACT ROTOR SPARE ROTOR TEST W/JOB COUPLING TEST TAPE RECORD REQUIRED TEST TAPE GIVEN TO PURCH. TEST W/JOB LUBE OIL CONSOLE	OBSVD 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		/IT ) ) ) ) ) )			
<ul> <li>23</li> <li>24</li> <li>25</li> <li>26</li> <li>27</li> <li>28</li> <li>29</li> <li>30</li> <li>31</li> <li>32</li> </ul>	SHOP INSPECTION EXTEN1     REFERENCE INSPECTION CHECKLIST  INSPECTION AND MATERIAL TESTING  SPECIAL MATERIAL INSPECTION & TESTING REQUIREMENTS COMPONENT MAG PART DYE PEN R.T. U.T. TRIP & T & T VALVE	OBSVD	WIT	CONTRACT ROTOR SPARE ROTOR TEST W/JOB COUPLING TEST TAPE RECORD REQUIRED TEST TAPE GIVEN TO PURCH. TEST W/JOB LUBE OIL CONSOLE	OBSVD		/IT ) ) ) ) ) )			
<ul> <li>23</li> <li>24</li> <li>25</li> <li>26</li> <li>27</li> <li>28</li> <li>29</li> <li>30</li> <li>31</li> <li>32</li> <li>33</li> </ul>	SHOP INSPECTION EXTEN1     REFERENCE INSPECTION CHECKLIST  INSPECTION AND MATERIAL TESTING  SPECIAL MATERIAL INSPECTION & TESTING REQUIREMENTS COMPONENT MAG PART DYE PEN R.T. U.T. TRIP & T & T VALVE     STM CHEST     O	OBSVD •	WIT	CONTRACT ROTOR SPARE ROTOR TEST W/JOB COUPLING TEST TAPE RECORD REQUIRED TEST TAPE GIVEN TO PURCH. TEST W/JOB LUBE OIL CONSOLE	OBSVD 		VIT () () () () () () () () () ()			
<ul> <li>23</li> <li>24</li> <li>25</li> <li>26</li> <li>27</li> <li>28</li> <li>29</li> <li>30</li> <li>31</li> <li>32</li> <li>33</li> <li>34</li> </ul>	SHOP INSPECTION EXTEN1     REFERENCE INSPECTION CHECKLIST  INSPECTION AND MATERIAL TESTING SPECIAL MATERIAL INSPECTION & TESTING REQUIREMENTS COMPONENT MAG PART DYE PEN R.T. U.T. TRIP & T & T VALVE     O     STM CHEST     O     O     CASING     O     O	OBSVD • •	<b>WIT</b>	CONTRACT ROTOR SPARE ROTOR TEST W/JOB COUPLING TEST TAPE RECORD REQUIRED TEST TAPE GIVEN TO PURCH. TEST W/JOB LUBE OIL CONSOLE OPTIONAL TESTS PERFORMANCE	OBSVD 	W C C C C C C C C C C C C C C C C C C C	VIT ) ) ) ) ) WIT ()			
<ul> <li>23</li> <li>24</li> <li>25</li> <li>26</li> <li>27</li> <li>28</li> <li>29</li> <li>30</li> <li>31</li> <li>32</li> <li>33</li> <li>34</li> <li>35</li> </ul>	SHOP INSPECTION EXTEN1     REFERENCE INSPECTION CHECKLIST  INSPECTION AND MATERIAL TESTING SPECIAL MATERIAL INSPECTION & TESTING REQUIREMENTS COMPONENT MAG PART DYE PEN R.T. U.T. TRIP & T & T VALVE     STM CHEST     CASING     O     PIPING     O     O	OBSVD • •	<b>WIT</b>	CONTRACT ROTOR SPARE ROTOR TEST W/JOB COUPLING TEST TAPE RECORD REQUIRED TEST TAPE GIVEN TO PURCH. TEST W/JOB LUBE OIL CONSOLE OPTIONAL TESTS PERFORMANCE COMPLETE UNIT	0BSVD ○ ○ ○ ○ ○	W C C C C C C C C C C C C C C C C C C C	/IT ) ) ) ) ) WIT () ()			
<ul> <li>23</li> <li>24</li> <li>25</li> <li>26</li> <li>27</li> <li>28</li> <li>29</li> <li>30</li> <li>31</li> <li>32</li> <li>33</li> <li>34</li> <li>35</li> <li>36</li> <li>36</li> </ul>	SHOP INSPECTION EXTEN1     REFERENCE INSPECTION CHECKLIST  INSPECTION AND MATERIAL TESTING SPECIAL MATERIAL INSPECTION & TESTING REQUIREMENTS COMPONENT MAG PART DYE PEN R.T. U.T. TRIP & T & T VALVE     STM CHEST     CASING     O     PIPING     O     O	OBSVD • •	WIT	CONTRACT ROTOR SPARE ROTOR TEST W/JOB COUPLING TEST TAPE RECORD REQUIRED TEST TAPE GIVEN TO PURCH. TEST W/JOB LUBE OIL CONSOLE OPTIONAL TESTS	OBSVD ○ ○ ○ ○		VIT ) ) ) ) WIT O			
<ul> <li>23</li> <li>24</li> <li>25</li> <li>26</li> <li>27</li> <li>28</li> <li>29</li> <li>30</li> <li>31</li> <li>32</li> <li>33</li> <li>34</li> <li>35</li> <li>36</li> <li>37</li> <li>22</li> </ul>	SHOP INSPECTION EXTEN1     REFERENCE INSPECTION CHECKLIST  INSPECTION AND MATERIAL TESTING  SPECIAL MATERIAL INSPECTION & TESTING REQUIREMENTS COMPONENT MAG PART DYE PEN R.T. U.T. TRIP & T & T VALVE     O     STM CHEST     O     CASING     O     PIPING     O     CASING O     O	OBSVD • • • • • •	WIT	CONTRACT ROTOR SPARE ROTOR TEST W/JOB COUPLING TEST TAPE RECORD REQUIRED TEST TAPE GIVEN TO PURCH. TEST W/JOB LUBE OIL CONSOLE OPTIONAL TESTS PERFORMANCE COMPLETE UNIT	0BSVD 0 0 0 0 0		VIT 0 0 0 0 0 0 0 0 0 0 0 0 0			
<ul> <li>23</li> <li>24</li> <li>25</li> <li>26</li> <li>27</li> <li>28</li> <li>29</li> <li>30</li> <li>31</li> <li>32</li> <li>33</li> <li>34</li> <li>35</li> <li>36</li> <li>37</li> <li>38</li> <li>30</li> </ul>	SHOP INSPECTION EXTEN1     REFERENCE INSPECTION CHECKLIST  INSPECTION AND MATERIAL TESTING SPECIAL MATERIAL INSPECTION & TESTING REQUIREMENTS COMPONENT MAG PART DYE PEN R.T. U.T. TRIP & T & T VALVE     O     STM CHEST     O     CASING     O     O     INFING     O     O     Casing weld     O     HEAT STABILITY      CIEANLINESS	OBSVD • • • • • • • • • • • • •	WIT	CONTRACT ROTOR SPARE ROTOR TEST W/JOB COUPLING TEST TAPE RECORD REQUIRED TEST TAPE GIVEN TO PURCH. TEST W/JOB LUBE OIL CONSOLE OPTIONAL TESTS PERFORMANCE COMPLETE UNIT AUXILIARY EQUIPMENT TRIP/TRIP & THROTTLE VALV GLAND SEAL SYSTEM	0BSVD 	W C C C C C C C C C C C C C C C C C C C	VIT ) ) ) ) WIT () ()			
<ul> <li>23</li> <li>24</li> <li>25</li> <li>26</li> <li>27</li> <li>28</li> <li>29</li> <li>30</li> <li>31</li> <li>32</li> <li>33</li> <li>34</li> <li>35</li> <li>36</li> <li>37</li> <li>38</li> <li>39</li> <li>40</li> </ul>	SHOP INSPECTION EXTEN1     REFERENCE INSPECTION CHECKLIST  INSPECTION AND MATERIAL TESTING  SPECIAL MATERIAL INSPECTION & TESTING REQUIREMENTS COMPONENT MAG PART DYE PEN R.T. U.T. TRIP & T & T VALVE     O     STM CHEST     O     O     STM CHEST     O     O     CASING     O     O     O     CASING     O     O     Casing weld     O     HEAT STABILITY     CLEANLINESS     HARDNESS	OBSVD	WIT 0 0 0 0 0 0 0	CONTRACT ROTOR SPARE ROTOR TEST W/JOB COUPLING TEST TAPE RECORD REQUIRED TEST TAPE GIVEN TO PURCH. TEST W/JOB LUBE OIL CONSOLE OPTIONAL TESTS PERFORMANCE COMPLETE UNIT AUXILIARY EQUIPMENT TRIP/TRIP & THROTTLE VALV GLAND SEAL SYSTEM GLAND VACIUM SYSTEM	OBSVD 	W     C	VIT ) ) ) ) WIT () () ()			
<ul> <li>23</li> <li>24</li> <li>25</li> <li>26</li> <li>27</li> <li>28</li> <li>29</li> <li>30</li> <li>31</li> <li>32</li> <li>33</li> <li>34</li> <li>35</li> <li>36</li> <li>37</li> <li>38</li> <li>39</li> <li>40</li> <li>41</li> </ul>	SHOP INSPECTION EXTEN1     REFERENCE INSPECTION CHECKLIST  INSPECTION AND MATERIAL TESTING  SPECIAL MATERIAL INSPECTION & TESTING REQUIREMENTS COMPONENT MAG PART DYE PEN R.T. U.T. TRIP & T & T VALVE  STM CHEST CASING CASI	OBSVD	WIT 0 0 0 0 0 0 0 0 0	CONTRACT ROTOR SPARE ROTOR TEST W/JOB COUPLING TEST TAPE RECORD REQUIRED TEST TAPE GIVEN TO PURCH. TEST W/JOB LUBE OIL CONSOLE OPTIONAL TESTS PERFORMANCE COMPLETE UNIT AUXILIARY EQUIPMENT TRIP/TRIP & THROTTLE VALV GLAND SEAL SYSTEM GLAND VACUUM SYSTEM RELIEF VALVES	0BSVD 0 0 0 0 0 0 0		WIT • • • • • • • • • • • • •			
<ul> <li>23</li> <li>24</li> <li>25</li> <li>26</li> <li>27</li> <li>28</li> <li>29</li> <li>30</li> <li>31</li> <li>32</li> <li>33</li> <li>34</li> <li>35</li> <li>36</li> <li>37</li> <li>38</li> <li>39</li> <li>40</li> <li>41</li> <li>42</li> </ul>	SHOP INSPECTION EXTEN1 REFERENCE INSPECTION CHECKLIST INSPECTION AND MATERIAL TESTING SPECIAL MATERIAL INSPECTION & TESTING REQUIREMENTS COMPONENT MAG PART DYE PEN R.T. U.T. TRIP & T & T VALVE STM CHEST CASING IPING O Casing weld HEAT STABILITY CLEANLINESS HARDNESS HYDRO TESTS BLADE SHAKER (STATIC)	OBSVD	WIT	CONTRACT ROTOR SPARE ROTOR TEST W/JOB COUPLING TEST TAPE RECORD REQUIRED TEST TAPE GIVEN TO PURCH. TEST W/JOB LUBE OIL CONSOLE OPTIONAL TESTS OPTIONAL TESTS PERFORMANCE COMPLETE UNIT AUXILIARY EQUIPMENT TRIP/TRIP & THROTTLE VALV GLAND SEAL SYSTEM GLAND VACUUM SYSTEM RELIEF VALVES	0BSVD 0 0 0 0 0 0	W C C C C C C C C C C C C C C C C C C C	WIT 0 0 0 0 0 0 0 0 0 0 0 0 0			
23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43	SHOP INSPECTION EXTEN1 REFERENCE INSPECTION CHECKLIST INSPECTION AND MATERIAL TESTING SPECIAL MATERIAL INSPECTION & TESTING REQUIREMENTS COMPONENT MAG PART DYE PEN R.T. U.T. TRIP & T & T VALVE STM CHEST O STM CHEST O O O O O O O O O O Casing weld HEAT STABILITY CLEANLINESS HARDNESS HYDRO TESTS BLADE SHAKER (STATIC) ROTOR BALANCE STANDARD	OBSVD	WIT	CONTRACT ROTOR SPARE ROTOR TEST W/JOB COUPLING TEST TAPE RECORD REQUIRED TEST TAPE GIVEN TO PURCH. TEST W/JOB LUBE OIL CONSOLE OPTIONAL TESTS PERFORMANCE COMPLETE UNIT AUXILIARY EQUIPMENT TRIP/TRIP & THROTTLE VALV GLAND SEAL SYSTEM GLAND VACUUM SYSTEM RELIEF VALVES CASING INTERNAL INSP	0BSVD       	W C C C C C C C C C C C C C C C C C C C	WIT 0 0 0 0 0 0 0 0 0 0 0 0 0			
23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44	SHOP INSPECTION EXTEN1 REFERENCE INSPECTION CHECKLIST INSPECTION AND MATERIAL TESTING SPECIAL MATERIAL INSPECTION & TESTING REQUIREMENTS COMPONENT MAG PART DYE PEN R.T. U.T. TRIP & T & T VALVE STM CHEST CASING PIPING Casing weld HEAT STABILITY CLEANLINESS HARDNESS HYDRO TESTS BLADE SHAKER (STATIC) ROTOR STANDARD HIGH SPEED	OBSVD	WIT	CONTRACT ROTOR SPARE ROTOR TEST W/JOB COUPLING TEST TAPE RECORD REQUIRED TEST TAPE GIVEN TO PURCH. TEST W/JOB LUBE OIL CONSOLE OPTIONAL TESTS OPERFORMANCE COMPLETE UNIT AUXILIARY EQUIPMENT GLAND SEAL SYSTEM GLAND VACUUM SYSTEM GLAND VACUUM SYSTEM RELIEF VALVES CASING INTERNAL INSP COUPLING TO SHAFT FIT	0BSVD 	W C C C C C C C C C C C C C C C C C C C	WIT 0 0 0 0 0 0 0 0 0 0 0 0 0			
23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45	SHOP INSPECTION EXTEN1 REFERENCE INSPECTION CHECKLIST INSPECIAL MATERIAL INSPECTION & TESTING REQUIREMENTS COMPONENT MAG PART DYE PEN R.T. U.T. TRIP & T & T VALVE O STM CHEST O CASING PIPING O CASING O Casing weld HEAT STABILITY CLEANLINESS HARDNESS HYDRO TESTS BLADE SHAKER (STATIC) ROTOR TO HIGH SPEED LOW SPEED PRIOR TO HIGH SPEED	OBSVD	WIT ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○	CONTRACT ROTOR SPARE ROTOR TEST W/JOB COUPLING TEST TAPE RECORD REQUIRED TEST TAPE GIVEN TO PURCH. TEST W/JOB LUBE OIL CONSOLE OPTIONAL TESTS PERFORMANCE COMPLETE UNIT AUXILIARY EQUIPMENT TRIP/TRIP & THROTTLE VALV GLAND SEAL SYSTEM GLAND VACUUM SYSTEM RELIEF VALVES CASING INTERNAL INSP COUPLING TO SHAFT FIT TURNING GEAR	0BSVD 	W     C	WIT 0 0 0 0 0 0 0 0 0 0 0 0 0			
23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46	SHOP INSPECTION EXTEN1 REFERENCE INSPECTION CHECKLIST INSPECTION AND MATERIAL TESTING SPECIAL MATERIAL INSPECTION & TESTING REQUIREMENTS COMPONENT MAG PART DYE PEN R.T. U.T. TRIP & T & T VALVE O STM CHEST O O O O CASING O O PIPING O CASING O O ROTOR Casing weld HEAT STABILITY CLEANLINESS HARDNESS HYDRO TESTS BLADE SHAKER (STATIC) ROTOR BALANCE ROTOR TO HIGH SPEED LOW SPEED PRIOR TO HIGH SPEED LOW SPEED RESIDUAL UNBALANCE CHECK	OBSVD	WIT	CONTRACT ROTOR SPARE ROTOR TEST W/JOB COUPLING TEST TAPE RECORD REQUIRED TEST TAPE GIVEN TO PURCH. TEST W/JOB LUBE OIL CONSOLE OPTIONAL TESTS	0BSVD 		WIT 0 0 0 0 0 0 0 0 0 0 0 0 0			
23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47	SHOP INSPECTION EXTEN1 REFERENCE INSPECTION CHECKLIST INSPECTION AND MATERIAL TESTING SPECIAL MATERIAL INSPECTION & TESTING REQUIREMENTS COMPONENT MAG PART DYE PEN R.T. U.T. TRIP & T & T VALVE STM CHEST CASING IPING Casing weld HEAT STABILITY CLEANLINESS HARDNESS HYDRO TESTS BLADE SHAKER (STATIC) ROTOR BALANCE STANDARD HIGH SPEED LOW SPEED PRIOR TO HIGH SPEED LOW SPEED RESIDUAL UNBALANCE CHECK	OBSVD	WIT	CONTRACT ROTOR SPARE ROTOR TEST W/JOB COUPLING TEST TAPE RECORD REQUIRED TEST TAPE GIVEN TO PURCH. TEST W/JOB LUBE OIL CONSOLE OPTIONAL TESTS	0BSVD       					
23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48	SHOP INSPECTION EXTEN1     REFERENCE INSPECTION CHECKLIST  INSPECTION AND MATERIAL TESTING  SPECIAL MATERIAL INSPECTION & TESTING REQUIREMENTS COMPONENT MAG PART DYE R.T. U.T. TRIP & T & T VALVE      STM CHEST     O	OBSVD	WIT	CONTRACT ROTOR SPARE ROTOR TEST W/JOB COUPLING TEST TAPE RECORD REQUIRED TEST TAPE GIVEN TO PURCH. TEST W/JOB LUBE OIL CONSOLE OPTIONAL TESTS OPERFORMANCE COMPLETE UNIT AUXILIARY EQUIPMENT TRIP/TRIP & THROTTLE VALV GLAND SEAL SYSTEM GLAND VACUUM SYSTEM RELIEF VALVES CUPLING TO SHAFT FIT TURNING GEAR OVERSPEED SHUTDOWN SYS. GOVERNOR RESPONSE SOUND SPARE PARTS TESTS	0BSVD       					
23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 950	SHOP INSPECTION EXTEN1    REFERENCE INSPECTION CHECKLIST     INSPECTION AND MATERIAL TESTING     SPECIAL MATERIAL INSPECTION & TESTING REQUIREMENTS   COMPONENT   MAG PART   DYE PEN   R.T.   U.T.   TRIP & T & T   VALVE   STM CHEST   O   CASING   ING   PIPING   O   Casing weld   HEAT STABILITY   CLEANLINESS   HARDNESS   HYDRO TESTS   BLADE SHAKER (STATIC)   ROTOR BALANCE   STANDARD   HIGH SPEED   LOW SPEED PRIOR TO HIGH SPEED   LOW SPEED RESIDUAL UNBALANCE CHECK   FINAL SURFACE INSPECTION   CRATING INSPECTION   SPARE ROTOR FIT   CASING LOINT LEAK TEST	OBSVD	WIT	CONTRACT ROTOR SPARE ROTOR TEST W/JOB COUPLING TEST TAPE RECORD REQUIRED TEST TAPE GIVEN TO PURCH. TEST W/JOB LUBE OIL CONSOLE OPTIONAL TESTS OPERFORMANCE COMPLETE UNIT AUXILIARY EQUIPMENT GLAND SEAL SYSTEM GLAND VACUUM SYSTEM GLAND VACUUM SYSTEM RELIEF VALVES CASING INTERNAL INSP COUPLING TO SHAFT FIT TURNING GEAR OVERSPEED SHUTDOWN SYS. GOVERNOR RESPONSE SOUND SPARE PARTS TESTS	0BSVD 	W C C C C C C C C C C C C C C C C C C C				
23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51	SHOP INSPECTION EXTEN1    REFERENCE INSPECTION CHECKLIST   INSPECTION AND MATERIAL TESTING   INSPECTION AND MATERIAL TESTING   SPECIAL MATERIAL INSPECTION & TESTING REQUIREMENTS   COMPONENT   MAG PART   DYE PEN   R.T.   U.T.   TRIP & T & T   VALVE   O   STM CHEST   O   CASING   PIPING   O   ROTOR   Casing weld   O   HEAT STABILITY   CLEANLINESS   HARDNESS   HYDRO TESTS   BLADE SHAKER (STATIC)   ROTOR BALANCE   STANDARD   HIGH SPEED   LOW SPEED PRIOR TO HIGH SPEED   LOW SPEED PRIOR TO HIGH SPEED   LOW SPEED RESIDUAL UNBALANCE CHECK   FINAL SURFACE INSPECTION   CRATING INSPECTION   SPARE ROTOR FIT   CASING JOINT LEAK TEST   FINAL CHECK (PUNCH LIST)	OBSVD	WIT ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○	CONTRACT ROTOR SPARE ROTOR TEST W/JOB COUPLING TEST TAPE RECORD REQUIRED TEST TAPE GIVEN TO PURCH. TEST W/JOB LUBE OIL CONSOLE OPTIONAL TESTS PERFORMANCE COMPLETE UNIT AUXILIARY EQUIPMENT TRIP/TRIP & THROTTLE VALV GLAND SEAL SYSTEM GLAND VACUUM SYSTEM RELIEF VALVES CASING INTERNAL INSP COUPLING TO SHAFT FIT TURNING GEAR OVERSPEED SHUTDOWN SYS. GOVERNOR RESPONSE SOUND SPARE PARTS TESTS	OBSVD 					

		PRO	JECT TITLE								
		PROJECT SUB-TITLE SULPHL					PLA	NT			
	STEAM TURBINE	Proje	ect N° Unit	D	ocument Co	ode	Serial N°		Rev	Page	
	DATA SHEET		650			II	001	1	0	11	
	SI UNITS		000				001		0		
1	MISC	ELLAN	EOUS								
2	PAINTING		WEIGHTS:								
3	MANUFACTURER'S STANDARD		TURBINE				_		2	2500 kg	
4			ROTOR				_			3700 kg	
5	0			UPPEF	R HALF CAS	SING	_			7985 kg	
6	UNIT NAMEPLATE UNITS O U.S. CUSTOMARY O SI		MAXIMUM	FOR	AINTENAN	NCE (IDE	ENTIFY)		1600	00 (*) kg	
7	SHIPMENT		TRIP/TRIP	& THR	OTTLE VA	LVE	_			770 kg	
8				NEOU	S		_			kg	
9		ΉS	U TOTAL SH	IIPPINC	3 MASS		-			kg	
10											
11	SPARE ROTOR ASSEMBLY PACKAGED FOR:						(*) G	enera	tor Ro	tor	
12											
13				WING	& DATARE	QUIREN	AEN IS				
14	COMPLETE UNIT: L 6850 mm W 4350 mm H 4000	mm									
15		mm									
10											
10											
18	REMARKS AND ADDITIONAL REQUIREMENTS:										
19											
20											
22											
23											
24											
25											
26											
27											
28											
29											
30											
31											
32											
33											
34											
30											
30											
38											
39											
40											
41											
42											
43											
44											
45											
46											