

MECHANICAL HANDBOOK

SECTION 4.4

DATA SHEET N° 1645-Q55-1

Humphreys and Glasgow, Ltd. London, S.W.1.		STEAM TURBINE		Item No. Q1851
Contract C1645 VARNA		Sheet 1 of 3 sheets		
Main Item No.	Q1851		Plant	G30 M.T.P.D AMMONIA
Total No. off	ONE		Location	VARNA, BULGARIA
1	Service PROCESS AIR COMPRESSOR DRIVER			
2	SPECIFICATION		GOVERNOR, CONTROLS & TRIPS.	
3	Manufacturer NUOVO PIGNONE-SIEMENS		Governor Manufactured by NUOVO PIGNONE-ASKANIA	
4	Type/Size	K801-2 Vertical/Horizontal	Type	Hydraulic/Mechanical
5	Back Pressure/Condensing/Pass-in/out/Mixed Flow		Isochronous/Proportional/Integral	
6	Vertically/Horizontally Split; Rotor Built-up/Solid			
7	No. of Casings/shaft extensions: ONE		Speed Range: 80 to 105 % Rated	
8	No. of Stages: 1 Press./Velocity Compounded/Impulse			
9	No. of Stages: 15 Impulse - Reaction		Control: Manual/Remote Speeder/External Signal	
10	Signal From: COMPRESSOR DISCHARGE FLOW CONTROLLER			
11	Rotation: Clockwise/Anticlockwise (Pacing Coupling)		Nature of Signal: PNEUMATIC 3 TO 15 PSIG	
12	DRIVEN UNIT SUPPLIED BY PUMP ASER		Controlled Variables: Speed/Max. Speed/Power Output	
13	Type CENTRIFUGAL COMPRESSOR		Turbine, Flow/Inlet/Exhaust/Pass-in/out/Pressure	
14	Manufactured by CHANTIERS DE L'ATLANTIQUE		Driven Unit, Capacity/Inlet/Discharge Pressure	
15	Arrangement: Direct Drive/Thru Gearbox(es)			
16	Type: Inlet Throttle/Nozzle Groups (5 Valves)			
17	GEARBOX (IF REQUIRED)		Additional Hand Valves (None off) / Automatic start-up	
18	Manufactured by		ALARMS STRIPS 0=OTHERS X=VENDOR	
19	Type Integral/Separate		Low Inlet Pressure (37 ATA) OVERRIDE X	
20	Input/Output RPM		High Exh. Pressure (0.6 ATA) Alarm/Trip X	
21	Efficiency % Max. Rating		Overspeed (110% MAX. CONTINUOUS) Trip X	
22	DESIGN		Servo oil failure (4 ATA) Trip X	
23	Materials Casing:	GS22 Mo 4	Process Signal (Electric to solenoid Valve) Trip 0	
24	Steam Chest	GS22 Mo 4	Shaft Position Indicator Alarm/Trip X	
25	Shaft	30CrMoNiV411	Luboil System PRES (see sheet) Alarm/Trip X	
26	Rotor/Discs		High level in Condenser Alarm/Trip X	
27	Nozzles		Bearing Temperature(s) (0) Alarm/Trip *	
28	Rotor Blades	X22 Cr Mo V 12.1	TURBINE TRIPPED ALARM X	
29	Stator Blades	X18CrMo 12.1		
30	Diaphragms		SEE SHEET 8 FOR TRIP SYSTEM	
31	Gland Packings	LABYRINTH-ST. STEEL	* SENSING ELEMENTS ONLY BY VENDOR	
32	WEIGHTS			
33	Bearings, Journal	SLEEVE (MULTI-OIL WEDGE)	TURBINE + AUXILIARIES Nett/Gross 11,000 Kg	
34	Thrust	DOUBLE COLLAR	Gearbox Baseplate Nett/Gross	
35	Flanges, Inlet Size/Rating	1 X 200MM ASA600RTJ	Driver Condenser Nett/Gross Kg	
36	Pass-in/out Size/Rtg.		" " (FULL OF WATER) Kg	
37	Exhaust Size/Rtg.	1000 - OVAL	Max. Erection Lift (Turbine) 6,300 Kg	
38	Casing Design Press./Temp.	46.8 Kg/cm ² A/378 °C	Max. Maintenance Lift (Turbine) 3,000 Kg	
39	Hydraulic Test Press	98 Kg/cm ² A	INSTALLATION	
40	Speed, Maximum Continuous	(105% CONT) 9,710 RPM	Indoors/Outdoors/Semi-open: UNDER ROOF	
41	First Critical	14,100 RPM	Condenser: Integral/Mounted Below/Separate	
42	Second Critical	- RPM	Ambient Temperature: Maximum/Mean/Minimum 35/25/-10°C	
43	Overspeed Test	(121%) 12,350 RPM		
44	OVERSPEED TRIP	(115.5%) 11,750 RPM		
45	SPECIFICATIONS SEE SHEET 10 & 11		KEY DRAWINGS	
46	Set shall be in accordance with		General Arrgt.	
47	Steam Turbine	SS-Q1-1 Rev.	Foundation Drg.	
48	Equipment Protection	SM-Y4-1 Rev.	Condenser Arrgt.	
49	Guards	BS-CP.3004 BS. 4649	Control Schematic	
50	See also Sheet(s)		Performance curves TV000640 62/68/301-2	
PRPD BY	RJP RJP RJP	Remarks: A) TENDON TO SUPPLY DETAILS MARKED THEREON THIS AND ALL FOLLOWING SHEETS.		
CHKD BY		B) THE USE OF COPPER OR COPPER ALLOYS IS NOT PERMITTED DUE TO THE PRESENCE OF AMMONIA IN STEAM		
APVD BY				
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