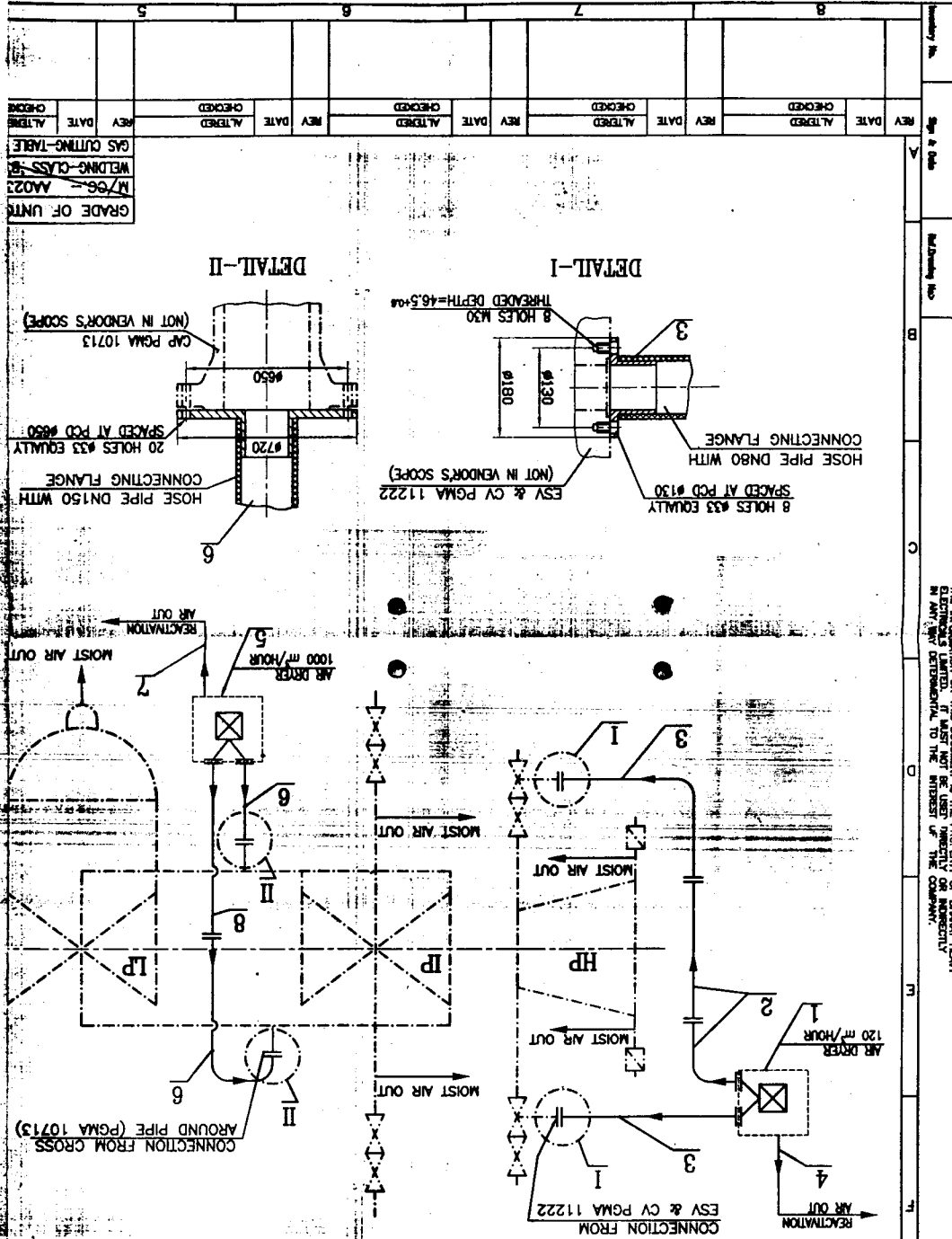




1. APPLICATION OF EQUIPMENT:
 DRY AIR BLOWING EQUIPMENT SHALL BE USED FOR REMOVING THE MOIST AIR FROM TURBINE AND REPLACING IT WITH DRY AIR DURING SHUT DOWN OF TURBINE TO PREVENT CORROSION.

2. SPECIFICATION:
 TWO UNITS OF DRY AIR BLOWING EQUIPMENT (ONE UNIT OF AT LEAST 120 m³/hr CAPACITY AND SECOND UNIT OF AT LEAST 1000 m³/hr CAPACITY) AS PER ANNEXURE - A, WITH FOLLOWING OUTLET CONDITIONS:
 A. TEMPERATURE OF DRY AIR AT OUTLET MAX. 60 °C.
 B. RELATIVE HUMIDITY < 11% AT AMBIENT TEMPERATURE.
 C. PROVISION OF AIR FILTER(S) IN THE SYSTEM TO PREVENT THE DUST PARTICLES > 55 MICRON.
 D. NOISE LEVEL AT FULL LOAD < 85 dB(A), WHEN MEASURED AT A DISTANCE OF 1 METRE AND HEIGHT OF 1.5 METRE.

3. GENERAL DESIGN FEATURES:
 A. THE DRY AIR BLOWER(S) SHOULD BE SINGLE, COMPACT, PORTABLE & READY TO SWITCH IN UNIT AT SITE.
 B. IT SHOULD BE CAPABLE TO HANDLE TOTAL PRESSURE DROP IN THE SYSTEM.
 C. THE EQUIPMENT SHALL BE SKID MOUNTED AND SHOULD NOT REQUIRE ANY FIXING WITH FOUNDATION.
 D. THE EQUIPMENT SHOULD BE ABLE TO OPERATE WITH 415 V-3 PHASE AND/OR 230 V A.C. MAIN SUPPLY.

4. SCOPE OF SUPPLY:
 BILL OF MATERIAL -

ITEM NO.	DESCRIPTION	QTY
10	INSTRUMENTS FOR MEASURING THE AIR CONDITIONS AT INLET & OUTLET OF TURBINE	4 SETS
9	FASTENERS-BOLTS/NUTS-CLAMPS-FOR CONNECTING FLANGES/HOSES etc.	1 SET
8	HOSE PIPE DN150, L=10 m WITH SUITABLE END CONNECTIONS	01
7	HOSE PIPE DN150, L=30 m WITH SUITABLE CONNECTION FOR REACTION AIR	01
6	HOSE PIPE DN150, L=5 m WITH SUITABLE FLANGE AS PER DETAIL-II	02
5	AIR DRYER OF CAPACITY AT LEAST 1000 m³/hr WITH TWO OUTLETS	01
4	HOSE PIPE DN80, L=30 m WITH SUITABLE CONNECTION FOR REACTION AIR	01
3	HOSE PIPE DN80, L=5 m WITH SUITABLE FLANGE AS PER DETAIL-I	02
2	HOSE PIPE DN80, L=5 m WITH SUITABLE END CONNECTIONS	02
1	AIR DRYER OF CAPACITY AT LEAST 120 m³/hr WITH 2 OUTLETS	01

5. PAINTING:
 THE EQUIPMENT SHALL BE PAINTED WITH ANTI CORROSION PAINT (EPDM) DETAILS AS PER ANNEXURE - B.

6. DOCUMENTS FOR ONE TIME APPROVAL:
 A. VENDOR'S OWN DRAWINGS INCLUDING BILL OF MATERIAL
 B. POWER WIRING DIAGRAM OF MOTORS, HEATERS AND CONTROLS.
 C. DATA SHEETS OF MOTORS, HEATERS AND CONTROLS.
 D. PAINTING SCHEDULE.
 E. PERFORMANCE TEST PROCEDURE.
 F. PERFORMANCE CHARACTERISTIC CURVE.
 G. QUALITY PLAN GIVING IN DETAILS OF THE QUALITY CHECKS CARRIED OUT BY THE VENDOR.
7. TEST/GUARANTEE CERTIFICATE:
 A. PERFORMANCE CERTIFICATES FOR FLOW RATE, TEMPERATURE AND RELATIVE HUMIDITY OF DRY AIR AT OUTLET.
 B. PERFORMANCE CERTIFICATES FOR NOISE LEVEL.
 C. MATERIAL & PERFORMANCE TEST CERTIFICATES OF ALL PARTS/ASSEMBLIES.
 D. GUARANTEE CERTIFICATE FOR SMOOTH AND RELIABLE FUNCTIONING OF THE EQUIPMENT.
8. OPERATING MANUAL:
 22 COPIES (20 FOR SITE AND 2 FOR BHEL, HARDWAR) OF OPERATION & MAINTENANCE MANUAL, COVERING ALL ASPECTS OF INSTALLATION, OPERATION AND MAINTENANCE, ARE TO BE SUPPLIED.

TYPE OF PRODUCT
 OR
NAME OF CUSTOMER/PROJECT

STEAM TURBINE

DRM CHAKRA
 SD/-
 17.09.04
 DATE

CHD A.K.GOEL
 SD/-
 18.09.04
 DATE

APPRD A.K.JAIN
 SD/-
 20.09.04
 DATE

DEPT STE
 CODE 4011

SCALE
 WEIGHT (KG)

REF. TO ASSY. DRG.
 ITEM NO.
 73 74

DRAWING NO.
 2-12076-46000

CARD
 CODE
 2-12076-46000

TITLE: DRY AIR PRESERVATION SYSTEM (210/250 MW)

SIZE A2

Annexure -A

Drg.No. 2-12076-46000

DRY AIR PRESERVATION SYSTEM

1. Dry Air Preservation System should be capable to handle total pressure drop in the system.
2. Suitable connection for connecting the hosepipes shall be designed and incorporated in the Dry Air Preservation System by the supplier.
3. Performance tests for flow rate, temperature and relative humidity of dry air at outlet shall be carried out by the vendor. Procedure for performance tests, test schemes and norms shall be furnished by the vendor for approval by BHEL/customer.
4. Noise level of the equipment, measured at a distance of one meter from the nearest surface of the equipment and at a height of 1.5 meters, shall not be more than 85 dB (A). Performance test for the same to be carried out.
5. 22 copies (20 for site and 2 for BHEL, Hardwar) of Operation & Maintenance manual, covering all aspects of installation, operation and maintenance, are to be supplied.
6. The aesthetic look of the equipment should be excellent. All the fabrication and sheet metal work should be done with utmost care.
7. Painting is to be carried out as per Annexure-B.

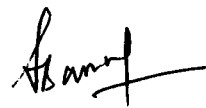

SANJAY BANSAL
Manager (STE)

Annexure -B

Drg.No. 2-12076-46000

PAINTING SCHEME / INSTRUCTIONS
FOR DRY AIR PRESERVATION SYSTEM

1. The equipment will be painted with Full Gloss Polyurethane Finishing Paint as follows -
 - a. Prior to application of paint, surfaces to be painted shall be cleaned/prepared for painting as per IS:8629 - Part 2.
 - b. Two coats of Epoxy Based Zinc Rich Primer Paint (IS:14589) shall be applied (Dry Film Thickness - 35 + 35 μ m).
 - c. One coat of High Build Intermediate Epoxy Paint [BHEL Specification AA56112, equivalent Epilux 4 HB Epoxy Coating (Berger Paints) or Epilac HB Epoxy Paint (Jenson & Nicholson Paints)] shall be applied thereafter (Dry Film Thickness - 70 μ m).
 - d. Two finishing coats of Full Gloss Polyurethane Finishing Paint (IS:13213) shall be applied (Dry Film Thickness - 30 + 30 μ m). The shade of the paint shall be intimated after placement of order.
 - e. The total thickness of the paint shall not be less than 200 μ m. Primer, High Build Intermediate paint & Finishing Paint should be of one make only.
2. If paint is damaged/scratched during shipment, one coat of "Full Gloss Polyurethane Finishing Paint" (IS:13213) shall be applied at site (Dry Film Thickness - 30 μ m).


SANJAY BANSAL
Manager (STE)

NTPC QUALITY PLAN

	MANUFACTURERS NAME & ADDRESS:		MANUFACTURING QUALITY PLAN					PROJECT: _____ PACKAGE: _____ CONTRACT NO.: _____ CONTRACTOR: _____					
			ITEM: _____			QP NO. _____ REV. _____ DATE: _____ PAGE ____ OF ____							
			SUB-SYSTEM: _____										
SL NO.	COMPONENT OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	AGENCY				REMARKS
									D*	M	C	N	
1	2	3	4	5	6	7	8	9	10				11
			LEGEND: * RECORDS IDENTIFIED WITH TICK SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN QA DOCUMENTATION. M: MANUFACTURER / SUB-CONTRACTOR C: CONTRACTOR NOMINATED INSPECTION AGENCY N: NTPC INDICATE “ P ” PERFORM “ W ” WITNESS AND “ V ” VERIFICATION AS APPROPRIATE “ CHP ” NTPC SHALL IDENTIFIED IN COLUM “ N ”					FOR NTPC USE:		DOC NO.			
MANUFACTURER / SUB- CONTRACTOR		CONTRACTOR											
SIGNATURE:													REVIEWED BY:

QUALITY PLAN

 QC-178		Q.P. NO. _____ REV _____ SPEC. NO. _____ REV _____ DRG. NO. _____ REV _____						SHEET _____ OF _____ LEGENDS P-Performed by 1-BHEL REP W-Witnessed by 2-Vendor V-Verified by 3-Subvendor				
		SL NO 1	COMPONENT OPERATION 2	CHARACTERISTICS 3	CLASSIFICATION 4	TYPE OF CHECK 5	QUANTUM 6	REFERENCE DOCUMENT 7	ACCEPTANCE NORMS 8	FORMAT OF RECORDS 9	AGENCY P W V	
Empty row for data entry												