1.0 BASIS OF DESIGN

GENERAL DATA:			
1	Type of Boiler proposed	Natural Circulation Water tube type	
2	Orientation of Boiler	Horizontal	
FLUE GAS SIDE DATA:		**Normal**	**Max.**
1	Gas flow rate (nm3/hr)*	25,000	30,000
2	Gas inlet temperature (°C)*	900 - 950	900 - 950
3	Gas outlet temperature (°C)*	,180*	180*
4	Gas composition (*) (% v/v)	CO_2	15 – 17
		H_2O	12 – 14
		N_2	64.7 – 69.7
		O_2	3 – 4
		CO	0.3
		SO_2	200 ppm
5	Gas Dust loading (gm/nm^3)	50	
6	Total Gas side pressure drop (mm WC) across boiler, ducting & ESP	200	
7	Radiation loss	2 % of heat duty	
WATER/STEAM SIDE DATA:			
1	Steam Generation rate (kg/hr)	10,200 *	12000
2	Steam Pressure at final superheater outlet (kg/cm^2 g)	66	
3	Steam Temperature at final superheater outlet (°C)	490± 5	
4	Water inlet temperature at economiser inlet (°C)	105	
5	Superheated steam outlet temperature control range, %	80 to 100	
6	Blow down	2 %	

* Thermax will submit the Performance Curve for various gas flow rate starting from 25000 nm^3/hr to 30000nm^3/hr and gas temperature 900°C to 950°C. Boiler has been designed for to give maximum steam output of 12T/hr considering 30000nm^3/hr gas flow and gas inlet temperature of 900°C to 950°C.

Curves of steam flow VIS gas flow will be given keeping temp (900-950°) as a fixed parameter.

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AREA CLASSIFICATION:

Safe & Non-hazardous.
Environment: Non – corrosive
Boiler location: Outdoor

DESIGN CODES:

(a) Pressure parts: IBR 1950 with latest amendments.
(b) Piping: ANSI 31.1
(c) Boiler Performance: ASME PTC 4.4 – Indirect method

SITE DETAILS:

Location	Raigarh (Chattisgarh)
Seismic Coefficient	Zone III, IS 1893
Wind velocity	As per IS 875, Part 3
Ambient temperature	(Max) 50 °C
Relative Humidity	Average 60 %
Electrical Design temperature	50 °C

INSPECTION:

a) Pressure parts: IBR
   - Stage wise inspection: IBR / Thermax / NSIL
   - Final dispatch inspection: Thermax / NSIL

b) Non-Pressure parts: NSIL
   - Stage wise inspection: NSIL (based on TL's practice)
   - Final dispatch inspection: NSIL

Thermax to carry out inspection for item listed in "PART B", if sought by NSIL.