4X270 MW BHADRADRI

ADDENDUM No. 2

(TECH SPEC No. PE-TS-411-554-A001 Rev 0)

VENTILATION SYSTEM

ADDENDUM No. 2 TO THE TECHNICAL SPECIFICATION PE-TS-411-554-A001 Rev 0

AMENDMENT TO EXISTING CLAUSES OF THE TECHNICAL SPECIFICATION

S.No	VOLUME	SECTION	CLAUSE	Existing Description	To Be Read As (Amendment)
1.	IIB	C-1-A	7.0	Control philosophy, stamp running page no. 24.	Clause 7.1.3 is added in the exiting control philosophy and same shall be considered as per attached enclosure.
2.	IIB	C-1-E		Painting specification, stamp running page no. from 120 to 131.	Revised painting specification rev 01 shall be considered as per attached enclosure.
3.	III	6.		Guaranteed power consumption Rev 01 (stamp running page no. 366).	Revised Guaranteed power consumption Rev 02 shall be considered as per attached enclosure.
4.	III	7(I).		Typical scheme of air washer unit (PE-DG-411-554-A001 R-1), stamp running page no. 367.	Revised Typical scheme of air washer unit (PE-DG-411-554-A001 R-2) shall be considered as per attached enclosure.
5.	III	7(II).		Typical scheme of UAF unit (PE-DG-411-554-A002 R-1), stamp running page no. 368.	Revised Typical scheme of UAF unit (PE-DG-411-554-A002 R-2) shall be considered as per attached enclosure.

7.1.3 LOCAL CONTROL PANEL FOR AIR WASHER UNIT AND UAF UNIT SYSTEM FOR UNIT- 1, 2, 3 & 4.

Local Control panel shall be provided for a bunch of Ventilation / AC equipments depending upon their relative locations.

Following drives pertaining to Ventilation system shall be controlled from the above said control pane.

1. Air Washer Unit Fan / UAF unit Fan
2. Air Washer Unit Pump / UAF unit Pump
3. Field instrument for Air washer / UAF.

Field instruments which are used for control Operation and monitoring of the system (applicable for single Air washer / UAF) shall be as under.

- 1 no. Level Switch.
- 2 nos. pressure switch.
- 2 nos. motorized butterfly valve.
- 1 no. differential pressure indicating switch.
- 4 nos pressure gauge for Air washer / 3 nos pressure gauge for UAF

Interlocks / Control Logic:-

1. Air washer pump / UAF pump shall not start until the Air washer fan / UAF fan is running.
2. Pumps shall be ready for start from Local Control Panel.
3. There are two option auto and manual for starting the working and stand-by Pumps.
4. Each pump shall be auto stop when it gets the signal from level switch w.r.t. low / high level in Air washer tank / UAF tank.
5. Each Pump and fan drive has the provision of start and stop from this local control panel and there have also the indication for On, Off & Trip.
6. For each fan and pump drives there are a provision of annunciations in trip conditions.

Revised Painting specification (Rev 01) – Section C-1-E of Technical specification no. PE-TS-411-554-A001-Rev 00

Paint Reference Scheme	Surface Preparation Grade / Surface Profile	Primer Coat			Intermediate Coat			Finish Coat			Total DFT in microns
		Premier Paint	No. of Coats	DFT in Microns	Intermediate Paint	No. of Coats	DFT in Microns	Finish Paint (See Note)	No. of Coats	DFT in Microns	
Various type of equipment/ valve, etc. (Temp. up to 90°C)	Degreasing and Mech. Cleaning with wire brushing/hand tool (Sa1/St2/St3 as applicable)	Red Oxide Zinc Phosphate (alkyd Medium)	2	35 per coat				Synthetic enamel (alkyd med.) as per IS:2932	2	35 per coat	140
LP Piping/ structural/ Vessels, etc. (Temp. upto 90°)	- do -	Red Oxide Zinc Phosphate (alkyd Medium)	2	35 per coat				Synthetic enamel (alkyd med.) as per IS:2932	2	35 per coat	140
Equipment with (Temp. upto 250°)	- do -	Heat resistant Al – paint	2	20 per coat	- NA	-	-	Heat resistant Al – paint	2	20 per coat	80
Elect. / Control Panels, etc.	Seven tank process	Red Oxide Zinc Phosphate (alkyd Medium)	2	35 per coat				Synthetic enamel (alkyd med.) as per IS:2932	2	35 per coat	140

Notes

1. Surface preparation shown above is as per Swedish Standards SIS 05-5900. Degreasing will be as per Standard SSPC-SP1.

2. In case of insulated surfaces, only primer coats shall be applied.

3. Gun metal/SS items with piping and G.I. pipes will not be painted. Further SS/GI piping shall be given necessary colour banding for identification as per colour scheme.

4. All instruments shall be painted as per manufacturer standard practice.

5. All structural steel items shall be painted at site. Piping shall go with primer coating & finish paint shall be applied at site. Equipment shall be finish painted at shop.

6. Method of painting application shall be as per paint manufacturer's recommendation.

7. Paint makes - Asian Paints/Berger Paints/Shalimar Paints / Goodlass Nerolac / Addison Paints / Grand Paints / Bombay Paints / Jenson & Nicholson / CDC Carboline / Jotun / Hemple / Akzonoble.

4X270 MW BHADRADRI TPS

VENTILATION SYSTEM

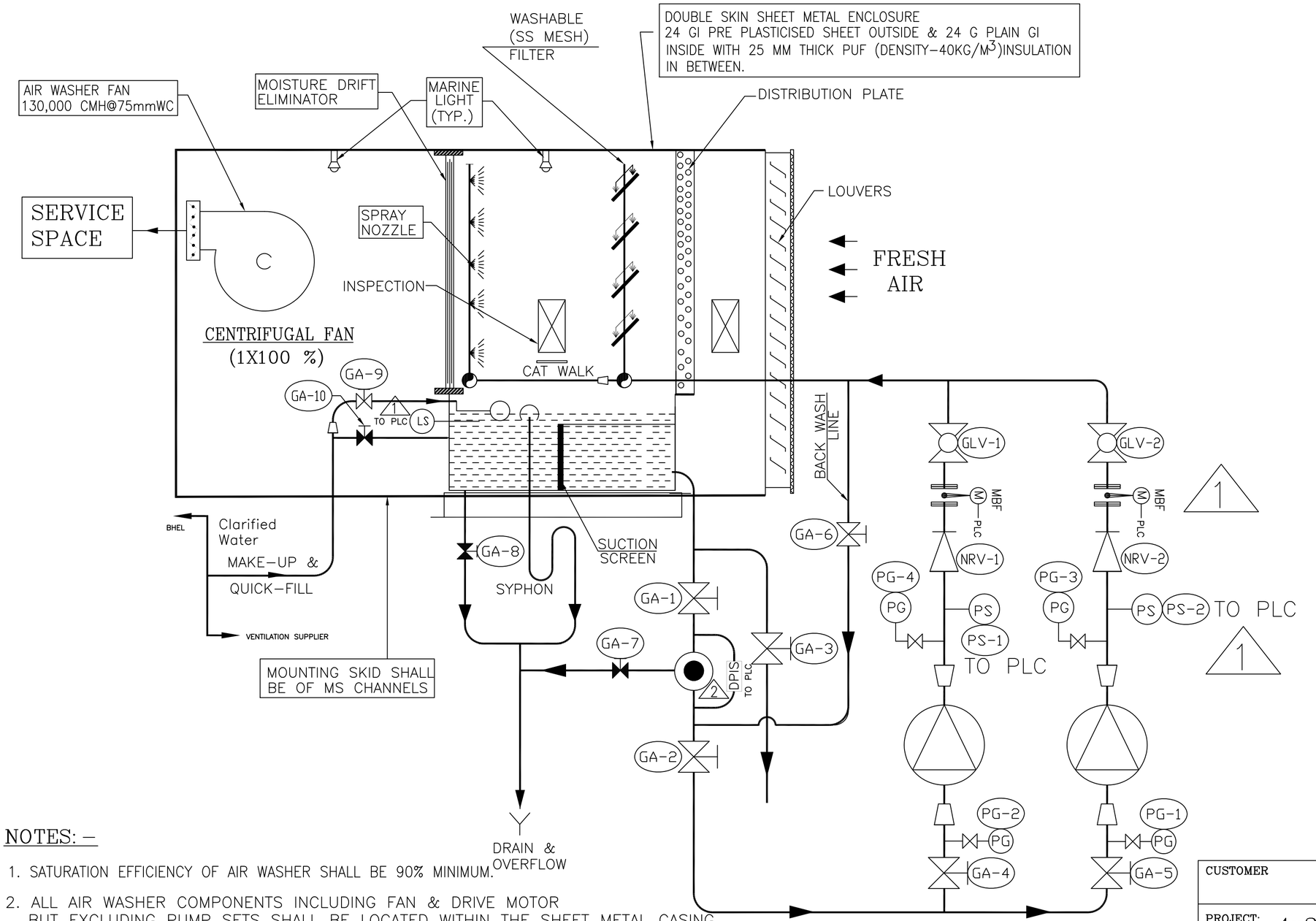
GUARANTEED POWER CONSUMPTION FIGURES _ Rev 02

S.NO.	DESCRIPTION OF EQUIPMENT	NO OF EQUIPMENT		TOTAL GUARANTEED POWER CONSUMPTION FOR EACH EQUIPMENT AT MOTOR INPUT TERMINAL AND CONTROL PANEL (IN KW)	DUTY FACTOR	TOTAL KW
		WORKING	STANDBY			
		3A	3B	4	5	6=3Ax4x5
1	**VENTILATION SYSTEM FOR TG BUILDING**					
1.1	Centrifugal Fan of cap. 1,30,000 CMH at 75 mmwc static pr for air washers.	16	0			
1.2	Pumps for circulation of water in spray chamber of above air washer	16	16			
1.3	RE Units 50,000 cmh at 15mmwc	26	0			
1.4	Centrifugal Fan of cap. 50,000 CMH at 60 mmwc static pr for UAF.	2	0			
1.5	Pump for above UAF.	2	2			
				TOTAL (KW)		**1050**

NOTE:

1 Estimated power consumption (EPC) figure for the system (for working drives only) has been considered as **1050** KW. So long bidder's quoted guaranteed power consumption (GPC) above remains within this EPC, there will be no technical loading of bid on power consumption for evaluation. However, if bidder's quoted GPC exceeds EPC, there shall be technical loading of bid for evaluation **@ Rs 2,52,000/-** per KW of additional power over EPC.

2 Bidder’s guaranteed power consumption at motor input terminals (not shaft power) as furnished in relevant schedule shall be demonstrated by the successful bidder during performance testing at works/ site. In case power consumption is noted higher than EPC / bidder's quoted GPC whichever is higher, during inspection/ PG test, penalty **@ Rs 2,52,000/-** per KW shall be levied on vendor.



LEGEND: –

SYMBOL	DESCRIPTION	
	GATE VALVE	
	GATE VALVE (NORMALLY CLOSED)	
	GLOBE VALVE	
	CHECK VALVE (NON–RETURN VALVE)	
	POT STRAINER	
	VOLUME CONTROL DAMPER(OPPOSD.BLD.)	
	CENTRIFUGAL PUMP	
	SS FILTER	
PG	PRESSURE GAUGE	
PS	PRESSURE SWITCH	
LS	LEVEL SWITCH	
LLS	LOW LEVEL SWITCH	
TI	TEMPERATURE INDICATOR	
	FLOAT VALVE	
	REDUCER	
	SCOPE OF SUPPLY	
	CENTRIFUGAL FAN	
DPIS	DIFFERENTIAL PRESSURE INDICATING SWITCH	2
M	MOTORISED BUTTER FLY VALVE	1

FOR TENDER

NOTES: –

1. SATURATION EFFICIENCY OF AIR WASHER SHALL BE 90% MINIMUM.
2. ALL AIR WASHER COMPONENTS INCLUDING FAN & DRIVE MOTOR BUT EXCLUDING PUMP SETS SHALL BE LOCATED WITHIN THE SHEET METAL CASING
3. PID FOR AIR WASHER MAY CHANGE DURING DETAIL ENGINEERING
4. Control device using Humidistat interlocked with the Pump–Motor for the re–circulation shall be used in the electrical areas. Humidity beyond 60% RH in these ventilated space shall automatically trip the respective AWU pump for recirculation section. The pump may be restarted automatically at about 50% RH. Selection and starting of stand–by pump shall be automatic. At least two (2) nos. Humidistat (RH High and Low) shall be provided for each Air Washer Unit. However, manual over riding facility shall be provided for humidistat controlled Pump sets of the Air Washer Unit.
5. P&ID shows only the bare minimum requirement of valves and instruments. Any instrumentation & valves as required for the completion of the system in line with technical specification shall be provided by bidder during detailed engineering without any commercial implication.

REV. NO	DATE	DESCRIPTION	REVD. BY	CHKD. BY	APPD. BY
01	28.05.15	PID revised as per consultant comments	AK	SAK	PK

CUSTOMER: TSGENCO

PROJECT: 4x270 MW MANUGURU TPS, TELANGANA

CONTRACTOR: BHARAT HEAVY ELECTRICALS LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT, NOIDA

	NAME	DATE
DESIGN. & DRAWN		
CHECKED		
APPROVED		

TITLE: P&I DIAGRAM FOR AIR WASHER SYSTEM

DEPT. | SIGN | DATE | SCALE: 1:1

BHEL DRAWING NO: PE–DG–411–554–A001

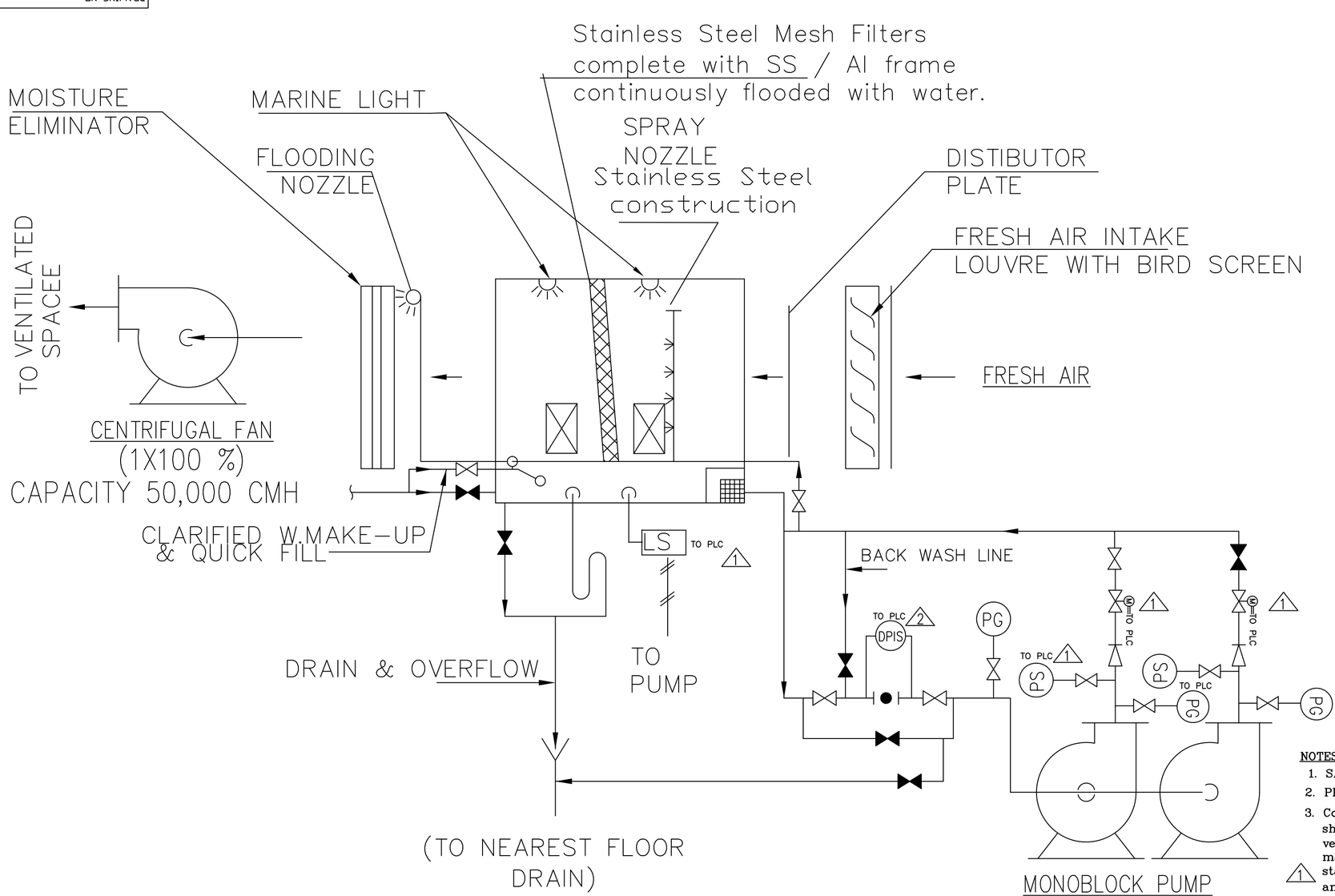
SHEET: 1 OF 1 | REV – 02

SIZE:A2

COMPUTER FILE NAME: G:\MAUX\SKC\FARIDA\CONTRAC\VENT\AWUFORF

DRAWING NO. PE-DG-K27-554-A002.

CUSTOMER'S DRAWING NO.



LEGEND:

GATE VALVE	
CHECK VALVE	
GLOBE VALVE	
GATE VALVE (NORMALLY CLOSED)	A
POT STRAINER	
SYPHON	
DRAIN	
PRESSURE GAUGE	PG
LEVEL SWITCH	LS
COARSE STRAINER	
DIFF. PRESSURE INDICATING SWITCH	DPIS 2
PRESSURE SWITCH	PS
MOTORISED BUTTER FLY VALVE	M

TYPICAL SCHEME FOR UAF UNIT FOR CAPACITY: 50,000 CMH STATIC PR. 60 mmwc

NOTES:-

1. SATURATION EFFICIENCY OF UAF SHALL BE 70% MINIMUM.
2. PID FOR UAF MAY CHANGE DURING DETAIL ENGINEERING
3. Control device using Humidistat interlocked with the Pump Motor shall be used in the electrical areas. Humidity beyond 60% RH in these ventilated space shall automatically trip the respective UAF pump. The pump may be restarted automatically at about 50% RH. Selection and starting of stand-by pump shall be automatic. At least two (2) nos. Humidistat (RH High and Low) shall be provided for each UAF Unit. However, manual over riding facility shall be provided for humidistat controlled Pump sets of the UAF Unit.
4. P&ID shows only the bare minimum requirement of valves and instruments. Any instrumentation & valves as required for the completion of the system in line with technical specification shall be provided by bidder during detailed engineering without any commercial implication.

FOR TENDER

REV	DATE	ALTD	CHD	APPD
01	28.05.15	AK	SAK	PK
01	Revised as per Consultant comments			

CUSTOMER: TSGENCO

STATUS CONTRACT

4x270 MW MANUGURU TPS, TELANGANA

JOB NO. 360

VENTILATION SYSTEM

BHARAT HEAVY ELECTRICALS LTD
POWER GROUP
PROJECTS ENGINEERING MANAGEMENT
NEW DELHI

DEPT CODE		NAME	SIGN	DATE
MAX.	DRN			
	DESN			
	CHD			
	APPD			

TITLE: TYPICAL SCHEME OF UAF

DEPT. SCALE ~ BHEL DRAWING NO. PE-DG-411-554-A002.

SIGN DATE SHEET 1 OF 1 REV 02

SIZE-A1