

INVENTORY NO	SIGN. AND DATE	REF. DRG. NO.	COMPUTER FILE NAME
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GENERAL DIMENSIONAL LIMITS, FITS & TOLERANCES AS PER HY0230261

CONTINUATION TO SHEET 02

[illegible]

 CUSTOMER  CONSULTANT  TATA  POWER	TELANGANA STATE POWER GENERATION CORPORATION LTD. TELANGANA, INDIA YADADRI TPS 5 X 800 MW
	TATA CONSULTING ENGINEERS LIMITED BANGALORE, INDIA
	BHARAT HEAVY ELECTRICALS LIMITED PEASD, HYDERABAD
	TITLE : COMPOSITE LAYOUT OF HYDRANT AND SPRAY SYSTEM

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DEPT. PPSD UNIT, DSO C&P CODE 450 450 450	DOCUMENT NO. SPT-N-UP-D-MOBT-8661-01 SPT-N-UP-D-OS 05 REV. 05
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GENERAL DIMENSIONAL LIMITS, FITS & TOLERANCES AS PER HY0230261

SIGN. AND DATE
INVENTORY NO

COMPUTER FILE NAME

REF. DRG. NO.

DATE

TG BUILDING UNIT - #1 & #2									
Sr. No.	DESCRIPTION	UNIT	VOIDS	GRID NO.	SIZE (L x W x H)	AS PER DRAWING (m ³)	AS PER DRAWING (m ³)	TOTAL VOLUME (m ³)	BEAMS REDUCIBLE VOLUME (m ³)
1.	CENTRAL EQUIPMENT ROOM - A & B UNIT - #1 (ZONB-01) (37 cylinders)	UNIT - #1	a) ABOVE FALSE CEILING b) ROOM VOID	E-G & 12-13	21.00 x 11.10 x 3.275 21.00 x 11.10 x 3.50	763.402 815.850	1579.252	--	as per drawing 3115.822
2.	CENTRAL EQUIPMENT ROOM - C & D UNIT - #1 (ZONB-03) (12 cylinders)	UNIT - #1	a) ABOVE FALSE CEILING b) ROOM VOID	E-D & 11-13	21.60 x 10.50 x 3.275 21.60 x 10.50 x 3.50	742.770 793.800	1536.570	--	as per drawing 3115.822
3.	CENTRAL EQUIPMENT ROOM - A & B UNIT - #2 (ZONB-02) (37 cylinders)	UNIT - #2	a) ABOVE FALSE CEILING b) ROOM VOID	E-G & 13-14	21.00 x 11.10 x 3.275 21.00 x 11.10 x 3.50	763.402 815.850	1579.252	--	as per drawing 3115.822
4.	CENTRAL EQUIPMENT ROOM - C & D UNIT - #2 (ZONB-04) (12 cylinders)	UNIT - #2	a) ABOVE FALSE CEILING b) ROOM VOID	E-D & 13-15	21.60 x 10.50 x 3.275 21.60 x 10.50 x 3.50	742.770 793.800	1536.570	--	as per drawing 3115.822
5.	COMPUTER ROOM UNIT - #1 (ZONB-05) (12 cylinders)	UNIT - #1	a) ABOVE FALSE CEILING b) ROOM VOID	C-D & 12-13	12.80 x 10.90 x 3.275 12.80 x 10.90 x 3.50	456.928 488.320	945.248	--	as per drawing 945.248
6.	COMPUTER ROOM UNIT - #2 (ZONB-06) (12 cylinders)	UNIT - #2	a) ABOVE FALSE CEILING b) ROOM VOID	C-D & 13-15	12.80 x 10.90 x 3.275 12.80 x 10.90 x 3.50	456.928 488.320	945.248	--	as per drawing 945.248
7.	COMMON CONTROL ROOM, CONFERENCE ROOM & C&I ROOM MAINTENANCE ROOM UNIT - #1 & #2 (ZONB-07) (42 cylinders)	UNIT - #1 & #2	a) ABOVE FALSE CEILING b) ROOM VOID	B-C & 11-15	12.33 x 6.00 x 3.275 12.33 x 6.00 x 3.5	242.284 258.930	501.214	464.473 (REFER BEAMS COLUMNS TABLE)	as per drawing 2422.340
8.	VFD PANEL ROOM UNIT - #1 & #2 (ZONB-08) (10 cylinders)	UNIT - #1 & #2	a) ABOVE FALSE CEILING b) ROOM VOID	G-H & 12-13	11.245 x 11.10 x 3.275 11.245 x 11.10 x 3.5	408.783 436.968	845.651	--	as per drawing 845.651

240V, AC POWER
INPUT BY CLIENT

BATTERIES (2 Nos.)

GRP-001 (UNIT - #1&2)

TABLE

BEAMS/COLUMNS - COMMON CONTROL ROOM

Sr. No.	BEAM GRID NUMBERS	BEAM SIZE (L x W x H)	BEAM No.	BEAMS VOLUME (m ³)	BEAMS TOTAL VOLUME (m ³)
1.	C-14 TO C-15 (CFM AREA)	8.1 x 1.85 x 6.80	01 No.	101.890	
2.	C-11 TO C-12 (CFM AREA)	6.33 x 1.75 x 6.80	01 No.	75.327	
3.	B-14 TO B-15 (CFM AREA)	5.545 x 2.345 x 6.80	01 No.	88.420	
4.	B-12 & B-13 (COLUMNS)	2.00 x 2.35 x 6.80	02 Nos.	62.560	
5.	C-13 (COLUMNS)	1.90 x 1.10 x 6.80	01 No.	14.212	
6.	B-12 TO B-13 (BEAM)	1.0 x 0.6 x 44.00	01 No.	26.400	
7.	C-12 TO C-13 (BEAM)	1.0 x 0.6 x 44.00	01 No.	26.400	
8.	GRID 11 TO 15 (BEAM)	1.0 x 0.6 x 13.00	05 Nos.	39.000	
9.	B-11 (COLUMNS)	2.30 x 1.935 x 6.80	01 No.	30.264	

CONTROL AND OPERATION PHILOSOPHY

Sr. No.	AREA	ZONE No.	RELEASE DEVICE ELECTRICAL/ RELEASE DEVICE MANUAL MASTER CYLINDER (PRESSURE CYLINDER BANK)	RELEASE DEVICE ELECTRICAL/ RELEASE DEVICE MANUAL SLAVE CYLINDER (RESERVE CYLINDER BANK)	SOLENOID OPERATED PNEUMATIC MASTER CYLINDER (PRESSURE CYLINDER BANK)	SOLENOID OPERATED PNEUMATIC SLAVE CYLINDER (RESERVE CYLINDER BANK)	SOLENOID OPERATED PNEUMATIC MASTER CYLINDER (PRESSURE CYLINDER BANK)	SOLENOID OPERATED PNEUMATIC SLAVE CYLINDER (RESERVE CYLINDER BANK)	SOLENOID OPERATED PNEUMATIC MASTER CYLINDER (PRESSURE CYLINDER BANK)	SOLENOID OPERATED PNEUMATIC SLAVE CYLINDER (RESERVE CYLINDER BANK)
1.	CENTRAL EQUIPMENT ROOM - A & B UNIT #1 FLOOR LEVEL EL.(+17.00M)	01	M1, M2 & M3	M5, M6 & M7	S.C.-1 S.C.-2 TO S.C.-34	S.C.-40 S.C.-41 TO S.C.-72	S.C.-1 S.C.-2 TO S.C.-34	S.C.-40 S.C.-41 TO S.C.-72	S.C.-1 S.C.-2 TO S.C.-34	S.C.-40 S.C.-41 TO S.C.-72
2.	CENTRAL EQUIPMENT ROOM - C & D UNIT #2 FLOOR LEVEL EL.(+17.00M)	02	M1, M2 & M3	M5, M6 & M7	S.C.-1 S.C.-2 TO S.C.-34	S.C.-40 S.C.-41 TO S.C.-72	S.C.-1 S.C.-2 TO S.C.-34	S.C.-40 S.C.-41 TO S.C.-72	S.C.-1 S.C.-2 TO S.C.-34	S.C.-40 S.C.-41 TO S.C.-72
3.	COMPUTER ROOM UNIT - #1 FLOOR LEVEL EL.(+17.00M)	03	M1	M5	S.C.-01 TO S.C.-11	S.C.-40 TO S.C.-50	S.C.-01 TO S.C.-11	S.C.-40 TO S.C.-50	S.C.-01 TO S.C.-11	S.C.-40 TO S.C.-50
4.	COMPUTER ROOM UNIT - #2 FLOOR LEVEL EL.(+17.00M)	04	M1	M5	S.C.-01 TO S.C.-11	S.C.-40 TO S.C.-50	S.C.-01 TO S.C.-11	S.C.-40 TO S.C.-50	S.C.-01 TO S.C.-11	S.C.-40 TO S.C.-50
5.	COMMON CONTROL ROOM, CONFERENCE ROOM, C&I ROOM MAINTENANCE ROOM UNIT - #1 & #2 FLOOR LEVEL EL.(+17.00M)	05	M1	M5	S.C.-01 TO S.C.-11	S.C.-40 TO S.C.-50	S.C.-01 TO S.C.-11	S.C.-40 TO S.C.-50	S.C.-01 TO S.C.-11	S.C.-40 TO S.C.-50
6.	COMPUTER ROOM UNIT - #1 FLOOR LEVEL EL.(+17.00M)	06	M1	M4	S.C.-01 TO S.C.-11	S.C.-40 TO S.C.-50	S.C.-01 TO S.C.-11	S.C.-40 TO S.C.-50	S.C.-01 TO S.C.-11	S.C.-40 TO S.C.-50
7.	COMMON CONTROL ROOM, CONFERENCE ROOM, C&I ROOM MAINTENANCE ROOM UNIT - #1 & #2 FLOOR LEVEL EL.(+17.00M)	07	M1, M2, M3 & M4	M5, M6, M7 & M8	S.C.-01 TO S.C.-38	S.C.-39 TO S.C.-76	S.C.-01 TO S.C.-38	S.C.-39 TO S.C.-76	S.C.-01 TO S.C.-38	S.C.-39 TO S.C.-76
8.	VFD PANEL ROOM UNIT - #1 & #2 FLOOR LEVEL EL.(+17.00M)	08	M2	M6	S.C.-12 TO S.C.-20	S.C.-51 TO S.C.-59	S.C.-12 TO S.C.-20	S.C.-51 TO S.C.-59	S.C.-12 TO S.C.-20	S.C.-51 TO S.C.-59

DESIGN CRITERIA :

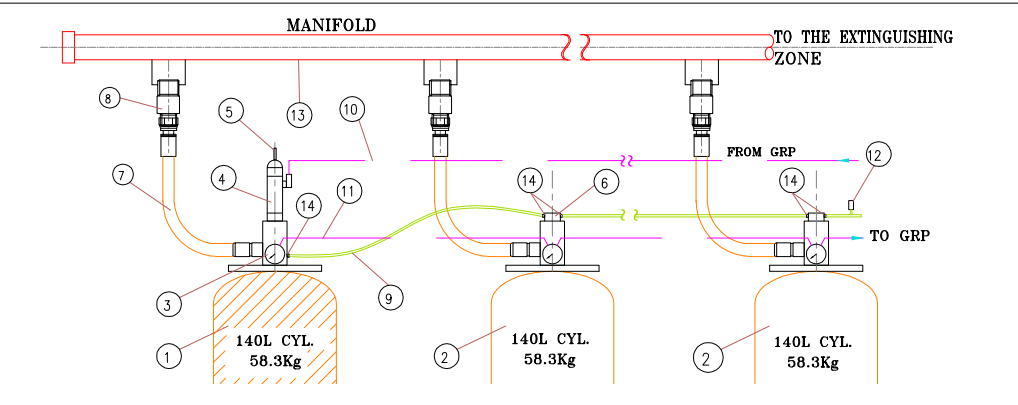
- APPLICABLE STANDARD - NFPA 2001 (2018)
- INERT GAS - IG541
- ROOM (HAZARD TEMP. CONSIDERED) - 21° C
- DESIGN CONCENTRATION OF GAS - 38.50 %
- SYSTEM PRESSURE - 300 BAR
- FLOODING FACTOR - 0.8857 kg/m³
- MAX. FILL FOR CYLINDER GAS - 58.3 kg
- CLASS OF FIRE - C FIRE
- DISCHARGE TIME - 120 SEC. (MAX)
- NOZZLE TYPE - RD 1/2"
- NOZZLE RADIAL COVERAGE - 360°
- NOZZLE COVERAGE AREA - 30.0 m²
- SAFETY VALVE OPERATING PRESSURE - 365 BAR

IG541 GAS CYLINDER QUANTITY

01. IG541 GAS CYLINDERS	MAIN CYLINDERS	42 Nos.
02. IG541 GAS CYLINDERS	STAND BY CYLINDERS	42 Nos.
TOTAL CYLINDERS = 84 Nos.		

CLEAN AGENT DATA

01. CLEAN AGENT	IG-541
02. NOMINAL COMPOSITION	NITROGEN : 52% ARGON : 40% CO ₂ : 8%
03. MAKE	MINIMAX
04. SYSTEM PRESSURE	300 BAR



TAG No.	DESCRIPTION	ARTICLE No.	TAG No.	DESCRIPTION	ARTICLE No.
01	EXTINGUISHING AGENT MASTER CYLINDER	EXC	08	CHECK VALVE KRY-2 (NON RETURN VALVE)	886030
02	EXTINGUISHING AGENT SLAVE CYLINDER		09	PILOT PIPES CYLINDER RACK BAS STRAIGHT (ACTUATION HOSE)	917596
03	CONTACT PRESSURE GAUGE CUM SWITCH	888615	10	CABLE FOR SOLENOID	--
04	RELEASE DEVICE ELECTRICAL	887667	11	CABLE FOR PRESSURE GAUGE CUM SWITCH	--
05	RELEASE DEVICE MANUAL	887668	12	SAFETY DEVICE MALFUNCTION PRESSURE	888603
06	RELEASE DEVICE PNEUMATIC	887669	13	SONB MANIFOLD FLOOR	--
07	HOSE 1/2" - 300BAR (FLEXIBLE DISCHARGE BEND) M20X1.5 x 3/4 x 375	886032	14	ADAPTER M12X1.5 G1/8 MX 200/1230	887644

NOTES:-

- 1) THE SYSTEM OFFERED IS IG-541, 300 BAR CENTRALIZED DIRECTIONAL VALVE SYSTEM.
- 2) GAS REQUIREMENTS AND CYLINDER BANK SELECTIONS IS BASED ON "SINGLE LARGEST RISK" PRINCIPLE
- 3) LOCK STAND BY CYLINDERS ONLY CONNECTED WITH MANIFOLD ARE ALSO PROVIDED.
- 4) GAS WILL BE RELEASED AFTER TWO DELAY DELAY DURATION 30 SEC. HOWEVER AS PER SPECIFICATION THE SAME CAN BE ADJUSTABLE FROM 30 SEC TO 120 SEC. IN THE RESPECTIVE ROOM.
- 5) SYSTEM OPERATIONAL LOGS ARE FACILITATED THROUGH CONTROL PANEL BY FOLLOWING MEANS:
 - a) AUTOMATICALLY DUE TO FIRE DETECTION IN THE PROTECTED AREA.
 - b) OPERATION OF MANUAL RELEASE PUSH BUTTON LOCATED ADJACENT TO THE PROTECTED AREA.
 - c) BY OPERATING MANUALLY LEVER PROVIDED ON RELEASE UNIT.
- 6) THE ZONES CONSIDERED UNDER PROTECTION SHALL BE COMPLETELY SEGREGATED FROM THE ADJACENT AREA BY MEANS OF PERFECT FIRE RATED PARTITION AT ALL LEVELS (i.e. ROOM & CEILING VOID).
- 7) PIPES UPSTREAM SIDE OF RESTRICTOR ARE CONFORMING TO IG SEAMLESS ASTM A106 GRB SCH.40. DOWN STREAM SIDE OF RESTRICTOR SHALL BE FORGED CARBON STEEL AS PER ASTM-A106 SOCKET WELDED / THREADED (NPT) TO ASME B.16.11 6000# FOR SIZES SONB.
- 8) FITTING DOWN STREAM SIDE OF RESTRICTOR SHALL BE FORGED CARBON STEEL AS PER ASTM-A106 SOCKET WELDED / THREADED TO ASME B.16.11 3000# FOR SIZES 40NB & BELOW AND C.S. SEAMLESS AS PER ASTM-234 GR. WPB BUTT WELDED TO ASME B.16.9 SUITABLE FOR SCH.40 PIPES FOR SIZES SONB & ABOVE.
- 9) PIPE SIZES, VALVES, RESTRICTOR & NOZZLES SHALL BE AS PER ACTUAL ANALYSIS OF THE CLEAN AGENT SYSTEM.
- 10) "TAS RELEASED" & FAILURE OF AUTOMATIC ACTUATION SHALL BE ANNUNCIATED ON PANEL.
- 11) FIRE ALARM AND DETECTION SYSTEM BY OTHERS.
- 12) NOZZLE SHOWN ARE INDICATIVE ONLY. ACTUAL QTY. SHALL BE AS PER LAYOUT.

THIS ROOM IS PROTECTED BY
IG541 SYSTEM
AND SHALL BE LEFT AT ONCE
WHEN ALARM SOUND
WARNING PLATE DETAILS

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VENDOR:-		MX SYSTEMS INTERNATIONAL PVT. LTD. (SUBSIDIARY OF MINIMAX GmbH & Co. KG)	
CUSTOMER		TELANGANA STATE POWER GENERATION CORPORATION LTD.	
PROJECT		5 x 800 MW YADADRI TPS	
CONSULTANT		TATA CONSULTING ENGINEERS LIMITED BENGALURU INDIA	
DR. NAME		DRN. NAME	DRN. NAME
CHD. NAME		CHD. NAME	CHD. NAME
APPD. NAME		APPD. NAME	APPD. NAME
DEPT. CODE		UNTO. DMS. GR. 9/M/Y	SCALE N.T.S.
TITLE		P&ID OF INERT GAS EXTINGUISHING SYSTEM (UNIT - #1 & #2 TG BUILDING)	REV. NO. 01
REV. NO. 01		REV. NO. 01	REV. NO. 01



CENTRAL CONTROL ROOM
UNIT-1 & 2

ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED					
CMD/APPD			CMD/APPD			CMD/APPD			CMD/APPD			CMD/APPD			CMD/APPD			CMD/APPD			CMD/APPD					
ISSUED FOR REVIEW	00	16.12.21		ZONE			ZONE			ZONE			ZONE			ZONE			ZONE							
									REVISED AS PER CUSTOMER COMMENTS.			REVISED AS PER CUSTOMER COMMENTS.			REVISED AS PER CUSTOMER COMMENTS.			REVISED AS PER CUSTOMER COMMENTS.			REVISED AS PER CUSTOMER COMMENTS.					
1			2			3			4			5			6			7			8			9		

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VENDOR:- **MX SYSTEMS INTERNATIONAL PVT. LTD.**
(SUBSIDIARY OF MINIMAX GmbH & Co. KG)

CUSTOMER		TELANGANA STATE POWER GENERATION CORPORATION LTD.
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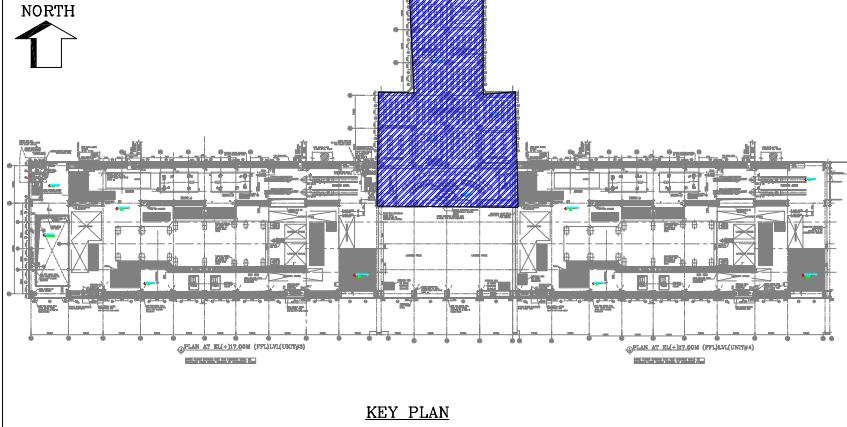
PROJECT	5 x 800 MW YADADRI TPS
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CONSULTANT	 TATA CONSULTING ENGINEERS LIMITED BENGALURU INDIA
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	BHARAT HEAVY ELECTRICALS LTD.			NAME	SIGN.	DATE
	HYDERABAD		DRN.	TRIPATI	<i>[Signature]</i>	15.11.2019
	PROJECT ENGG & SYSTEMS DIVISION		CHD.	SWARUP	<i>[Signature]</i>	15.11.2019
			ADD.	YAMH	<i>[Signature]</i>	15.11.2019

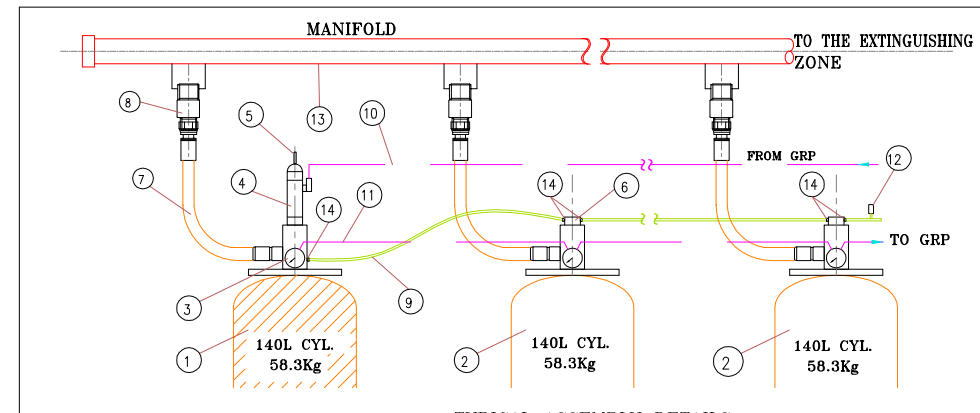
DEPT. PED	UNTOL. DIMS. GR.		SCALE	WEIGHT (KG)	REF. TO ASSY. DRG.	ITEM
CODE A50	9/M/f		N.T.S	N.A.	N.A.	N

TITLE	BHEL DRG. NO.
P&ID OF INERT GAS EXTINGUISHING SYSTEM (UNIT - #1 & #2 TG BUILDING)	PY-DP-1-M081-8662-01 MMSI DRG. NO. MMSI-051854-PI-11001 SHT. No 02 No. OF SHT. 06
	CARD CODE
	NA



SP. No.	SYMBOL	DESCRIPTION	ARTICLE No.
1		MAIN CYLINDER + CYLINDER VALVE	
2		SLAVE CYLINDER + CYLINDER VALVE (MAIN BANK)	EXC-888552
3		SLAVE CYLINDER + CYLINDER VALVE (STAND BY BANK)	
4		HOSE I.D. = 300BAR (FLEXIBLE DISCHARGE BEND) MEAN I.D. 3/4" x 3/8"	886032
5		CONTACT PRESSURE GAUGE CUM SWITCH 300bar (NC), RANGE 400 BAR	886615
6		RELEASE DEVICE-ELECTRICAL (SOLENOID VALVE), RELEASE DEVICE-MANUAL	886767 887608
7		PILOT PIPES CYLINDER RACK BAS STRAIGHT (ACTUATION HOSE)	917596 Stright Type
8		PILOT CONTROL MANIFOLD CO2	850833
9		DISABLE DEVICE MX	878070
10		LIMIT SWITCH DISABLE DEVICE (LS)	828482
11		SELECTION VALVE DMSO (DISCHARGE VALVE) (SV)	886134
12		SAFETY VALVES C1/2 - 365 BAR	886261
13		KSAI DISCHARGE NOZZLE WITH DEFLECTOR	Refer Reference Dwg No. MX05-051578-LY-11001
14		PRESSURE REDUCER (DR)	886033
15		PNEUMATIC RELEASE DEVICE PALE = CO2 ELECTRICAL (CONSISTING OF CYLINDER + ACCESSORIES FOR RELEASE)	885336
16		SOLENOID OPERATED PILOT VALVE (SOV)	
17		SHUTTLE NON RETURN VALVES	886247
18		ADAPTER M12X1.5 0/78 mm 300/1230	887644
19		SONB PIPE UPTREEM 300 BAR (SEAMLESS)	886126
20		MONITORING LOSS PNEUMATIC ACTUATION DEVICE (RC)	888998
21		LIMIT SWITCH PNEUMATIC OPERATED (PRESSURE SWITCH)	826708
22		PUSH BUTTON SELECTOR VALVE	822674
23		SONB PIPE DOWNSTREAM 300 BAR	
24		ELECTRICAL CONNECTION	--
25		PIPE #46	--
26		BORDER	--
27		PUSH BUTTON, ABORT SWITCH BLUE (ABS)	REFER DATA SHEET
28		PUSH BUTTON-MANUAL, RELEASE-YELLOW (MMS)	REFER DATA SHEET
29		PRE ALARM INDICATOR (WITH HOOTER & STROBE LIGHT) (PO)	REFER DATA SHEET
30		DISCHARGE ALARM INDICATOR (WITH & STROBE LIGHT) (PNEUMATIC) (DI)	REFER DATA SHEET
31		END CAP	--
32		GAS RELEASE PANEL	--
33		SMOKE DETECTOR (BY OTHERS)	--

CLIENT REFERENCE DRAWINGS:-			
Sr. No.	DWG. NO.	REV.	TITLE
1.	PE-V0-417-553-A505	1	AIRCONDITIONING DUCT LAYOUT FOR CONTROL ROOM AREAS UPS BATTERY CHARGER ROOM AT 17M OF STAGE (1UNIT-1&2STAGE 2(UNIT-3&4)
2.	PE-DG-417-611-C072	1	POWER HOUSE BUILDING ARCHITECTURAL PLAN AT EL+117.00(MFL) (UNIT#3 & #4)
3.	PE-DG-417-611-C061	1	POWER HOUSE BUILDING ARCHITECTURAL PLAN AT EL+210.00(MFL) (UNIT#3 & #4)



- ## NOTES:-
- a) THE SYSTEM OFFERED IS 6-541-200 BAR CENTRALIZED DIRECTIONAL VALVE SYSTEM.
 - b) GAS REQUIREMENTS AND CYLINDER BANK SELECTIONS ARE BASED ON "SINGLE LARGEST ROOF" PRINCIPLE
 - c) 100R STAND BY CYLINDERS ONLY CONNECTED WITH MANIFOLD ARE ALSO PROVIDED
 - d) GAS WILL BE RELEASED (AT THE TIME DELAY DUE TO 30 SEC. HOWEVER AS PER SPECIFICATION THE SAME CAN BE ADJUSTABLE FROM 30 SEC TO 120 SEC.) IN THE RESPECTIVE ROOM.
 - e) ALL TWO TROOP SHALL MAINTAIN ONLY ONE PRESSURE CONTROLLED FLOW SINKING FROM FAIR
- SYSTEM OPERATIONAL LOGICS ARE FACILITATED THROUGH CONTROL PANEL BY FOLLOWING MEANS:
- a) AUTOMATICALLY due to FIRE DETECTION IN THE PROTECTED AREA.
 - b) OPERATION OF MANUAL RELEASE PUSH BUTTON LOCATED ADJACENT TO THE PROTECTED AREA.
 - c) BY OPERATING LOCAL EMERGENCY LEVER OR BY REMOTE CONTROLLER.
 - d) THE ZONES CONSIDERED UNDER PROTECTION SHALL BE COMPLETELY SEGREGATED FROM THE ADJACENT AREA BY MEANS OF PREPARED FIRE RATED PARTITION AT ALL LEVELS (i.e. ROOM & CEILING Voids).
 - e) UPON ACTIVATION OF THE SYSTEM, THE FOLLOWING ACTIONS SHALL TAKE PLACE:
 - i) ASME A108 GRB SHX KYXS AND PIPES DOWN STREAM DRAINAGE OF RESTRICTOR ARE CONFIRMATORY OF SEAMLESS ASTM A106 GRB SHA40.
 - ii) FITTINGS UP STREAM OF RESTRICTOR SHALL BE FORGED CARBON STEEL CLASS 2 AS PER ASME-A105 SOCKET WELDED / THREADED (NPT) TO ASME B16.31 6000G FOR SIZES AS PER.
 - iii) FITTING DOWN STREAM OF RESTRICTOR SHALL BE FORGED CARBON STEEL CLASS 2 AS PER ASME-A105 SOCKET WELDED / THREADED (NPT) TO ASME B16.31 6000G FOR SIZES AS PER.
 - iv) BELOW AND ABOVE THE S.S. SEAMLESS AS PER ASTM-A214 DR. WPBB BUT WELDED TO ASME-B16.31 SUITABLE FOR SCH40 PIPES FOR SIZES 20" & ABOVE.
 - v) PIPE SIZES SHALL BE AS PER DESIGN SPECIFICATIONS AND SHALL BE AS PER ANALYSIS OF THE CLEAN SYSTEM ACTION.
 - f) "TWO RELEASED" & FAILURE OF AUTOMATIC ACTUATION SHALL BE ANNOUNCED ON PANEL.
 - g) FIRE ALARM AND NOTIFICATION SYSTEM BY CHIRPER.
 - h) NOZZLE SHOWN ARE INDICATIVE ONLY. ACTUAL QTY. SHALL BE AS PER LAYOUT

TA No.	DESCRIPTION	ARTICLE No.	TA No.	DESCRIPTION	ARTICLE No.
1.	EXTINGUISHING AGENT MASTER CYLINDER	887608	8.	CHECK VALVE KRV-2 (NON RETURN VALVE)	887630
2.	EXTINGUISHING AGENT SLAVE CYLINDER	887609	9.	PILOT HIPS CYLINDER RACK BAS STRAIGHT (ACTUATION HOSE)	887631
3.	CONTACT PRESSURE GAUGE CUM SWITCH	888515	10.	CABLE FOR SOLENOID	887632
4.	RELEASE DEVICE ELECTRICAL	887667	11.	CABLE FOR PRESSURE GAUGE CUM SWITCH	--
5.	RELEASE DEVICE MANUAL	887668	12.	SAFETY DEVICE MALFUNCTION PRESSURE	88009 (OR EQUIVALENT with fittings - 91244)
6.	RELEASE DEVICE PNEUMATIC	887669	13.	SONAR MANIFOLD PIECE	--
7.	HOSE 1/2" BORE (FLEXIBLE DROSHORE BEND) N24X1.5, 3/4" ID	886032	14.	ADAPTER MITOILX 5.1 G/8 M 200/1230	887644

<u>DESIGN CRITERIA :</u>	
* APPLICABLE STANDARD	= NFPA 2001 (2018)
* INERT GAS	= IG541
* ROOM (HAZARD TEMP. CONSIDERED)	= 21° C
* DESIGN CONCENTRATION OF GAS	= 38.50 %
* SYSTEM PRESSURE	= 300 BAR
* FLOODING FACTOR	= 0.6857 Kg/m ³
* MAX. FILL FOR CYLINDER GAS	= 58.3 Kg
* CLASS OF FIRE	= C FIRE
* DISCHARGE TIME	= 120 SEC. (MAX)
* NOZZLE TYPE	= RD 1/2"
* NOZZLE RADIAL COVERAGE	= 360°
* NOZZLE COVERAGE AREA	= 30.0M ²
* SAFETY VALVE OPERATING PRESSURE	= 365 BAR

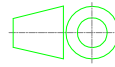
IG541 GAS CYLINDER QUANTITY		
1.	IG541 GAS CYLINDERS	42 Nos.
2.	IG541 GAS CYLINDERS	42 Nos.
TOTAL CYLINDERS =		84 Nos.

CLEAN AGENT DATA		
1.	CLEAN AGENT	IG-541
2.	NOMINAL COMPOSITION	NITROGEN : 52% ARGON : 40% CO2 : 8%
3.	MAKE	MINIMAX
4.	SYSTEM PRESSURE	300 BAR

TGS BUILDING UNIT- #3 & #4															
SR. NO.	DESCRIPTION	UNIT	VOIDS	GRID NO.	SIZE (L x W x H)	AS PER DRAWING (m ³)	TOTAL VOLUME (m ³)	BEAMS DUCTIBLE VOLUME (m ³)	TOTAL VOLUME (m ³)	ZONE	FLOODING FACTOR	TOTAL NO. GAS	TOTAL GAS QTY/NO. OF GAS CILINDER REQ	TOTAL GAS QTY/NO. OF GAS CILINDER PROVIDED	OPERATED MASTER CYLINDERS
1.	CENTRAL EQUIPMENT ROOM - A FLOOR LEVEL (L1)7/200	UNIT-#3	a) ABOVE FALSE CEILING	E-G & 12-13	21.00 x 11.10 x 3.275	763.402	1579.252	--	as per drawing 3115.822	ZONE-01 (PART-1&2)	0.6857 $\frac{Kg}{M^3}$	as per drawing 2136.519	as per drawing 36.646 Nos.	37 Nos. MAIN STAND BY	M1, M2 & M3 MAIN MS, M6 & M7 STAND BY
	b) ROOM VOID		21.00 x 11.10 x 3.50		815.850										
	c) ABOVE FALSE CEILING		E-D & 11-13		21.60 x 10.50 x 3.275	742.770									
			b) ROOM VOID		21.60 x 10.50 x 3.50	793.800									
2.	CENTRAL EQUIPMENT ROOM - A FLOOR LEVEL (L1)7/200	UNIT-#4	a) ABOVE FALSE CEILING	E-G & 13-14	21.00 x 11.10 x 3.275	763.402	1579.252	--	as per drawing 3115.822	ZONE-01 (PART-1&2)	0.6857 $\frac{Kg}{M^3}$	as per drawing 2136.519	as per drawing 36.646 Nos.	37 Nos. MAIN STAND BY	M1, M2 & M3 MAIN MS, M6 & M7 STAND BY
	b) ROOM VOID		21.00 x 11.10 x 3.50		815.850										
	c) ABOVE FALSE CEILING		E-D & 13-15		21.60 x 10.50 x 3.275	742.770									
			b) ROOM VOID		21.60 x 10.50 x 3.50	793.800									
3.	CENTRAL EQUIPMENT ROOM - C FLOOR LEVEL (L1)7/200	UNIT-#3	a) ABOVE FALSE CEILING	C-D & 12-13	12.80 x 10.90 x 3.275	456.928	945.248	--	as per drawing 945.248	ZONE-04	0.6857 $\frac{Kg}{M^3}$	as per drawing 646.56	as per drawing 11.117 Nos.	12 Nos. MAIN STAND BY	M1 MAIN MS STAND BY
	b) ROOM VOID		12.80 x 10.90 x 3.50		488.320										
	c) ABOVE FALSE CEILING		C-D & 12-13		12.80 x 10.90 x 3.50	488.320									
			b) ROOM VOID		12.80 x 10.90 x 3.50	488.320									
4.	CENTRAL EQUIPMENT ROOM - D FLOOR LEVEL (L1)7/200	UNIT-#4	a) ABOVE FALSE CEILING	C-D & 12-13	12.80 x 10.90 x 3.275	456.928	945.248	--	as per drawing 945.248	ZONE-04	0.6857 $\frac{Kg}{M^3}$	as per drawing 646.56	as per drawing 11.117 Nos.	12 Nos. MAIN STAND BY	M1 MAIN MS STAND BY
	b) ROOM VOID		12.80 x 10.90 x 3.50		488.320										
	c) ABOVE FALSE CEILING		C-D & 11-12		13.50 x 10.60 x 3.275	488.652									
			b) ROOM VOID		13.50 x 10.60 x 3.50	500.850									
5.	COMPUTER ROOM FLOOR LEVEL (L1)7/200	UNIT-#3	a) ABOVE FALSE CEILING	C-D & 11-12	13.50 x 10.60 x 3.275	488.652	969.502	--	as per drawing 969.502	ZONE-05	0.6857 $\frac{Kg}{M^3}$	as per drawing 664.787	as per drawing 11.402 Nos.	12 Nos. MAIN STAND BY	M1 MAIN MS STAND BY
	b) ROOM VOID		13.50 x 10.60 x 3.50		500.850										
	c) ABOVE FALSE CEILING		C-D & 14-15		13.50 x 10.60 x 3.275	500.850									
			b) ROOM VOID		13.50 x 10.60 x 3.50	500.850									
6.	COMPUTER ROOM FLOOR LEVEL (L1)7/200	UNIT-#4	a) ABOVE FALSE CEILING	C-D & 14-15	13.50 x 10.60 x 3.275	472.330	973.080	--	as per drawing 973.080	ZONE-06	0.6857 $\frac{Kg}{M^3}$	as per drawing 667.240	as per drawing 11.444 Nos.	12 Nos. MAIN STAND BY	M1 MAIN MS STAND BY
	b) ROOM VOID		13.50 x 10.60 x 3.50		472.330										
	c) ABOVE FALSE CEILING		B-C & 11-15		34.325 x 10.430 x 3.275	1577.173									
			b) ROOM VOID		34.325 x 14.030 x 3.5	1685.529									
7.	COMMON CONTROL ROOM FLOOR LEVEL (L1)7/200	UNIT-#3 & #4	a) ABOVE FALSE CEILING	B-C & 11-15	34.325 x 6.00 x 3.275	242.284	501.214	464.473 (REFER BEAMS' COLUMN'S TABLE)	as per drawing 3532.654	ZONE-07 (PART-1&2)	0.6857 $\frac{Kg}{M^3}$	as per drawing 2422.540	as per drawing 41.495 Nos.	42 Nos. MAIN STAND BY	M1, M2, M3 & M4 MAIN MS, M6, M7 & M8 STAND BY
	b) ROOM VOID		34.325 x 14.030 x 3.5		1685.529										
	c) ABOVE FALSE CEILING		B-C & 11-15		12.33 x 6.00 x 3.5	258.930									
			b) ROOM VOID		9.635 x 3.50 x 3.275	112.733									
			b) ROOM VOID		9.635 x 3.50 x 3.5	120.478									
8.	VTD PANEL ROOM FLOOR LEVEL (L1)7/200	UNIT-#3 & #4	a) ABOVE FALSE CEILING	G-H & 12-13	11.245 x 11.10 x 3.275	408.783	845.651	--	as per drawing 845.651	ZONE-08	0.6857 $\frac{Kg}{M^3}$	as per drawing 579.862	as per drawing 9.946 Nos.	10 Nos. MAIN STAND BY	M2 MAIN MS STAND BY
	b) ROOM VOID		11.245 x 11.10 x 3.5		436.868										
	c) ABOVE FALSE CEILING														

TABLE					
BEAMS/COLUMNS - COMMON CONTROL ROOM					
SR NO.	BEAM GRID NUMBERS	BEAM SIZE (L x W x H)	BEAM NO.	BEAMS VOLUME (m ³)	BEAMS TOTAL VOLUME (m ³)
1	C-14 to C-15 (CFM AREA)	8.1 x 1.8 x 6.80	01 No.	101.890	
2	C-11 to C-12 (CFM AREA)	6.33 x 1.75 x 6.80	01 No.	75.327	
3	B-14 to B-15 (CFM AREA)	5.545 x 2.345 x 6.80	01 No.	86.420	
4	B-12 to B-13 (COLUMNS)	2.00 x 2.35 x 6.80	02 Nos.	62.560	
5	C-13 (COLUMNS)	1.90 x 1.10 x 6.80	01 No.	14.212	
6	B-13 (COLUMNS)	1.90 x 1.10 x 6.80	01 No.	14.212	464.473
7	C-10 to C-11 (BEAM)	1.00 x 0.66 x 4.40	01 No.	26.400	
8	C-9 to C-10 (BEAM)	1.00 x 0.66 x 4.40	01 No.	26.400	
9	GRID 11 to 15 (BEAM)	1.00 x 0.6 x 13.00	05 Nos.	39.000	
CONFERENCE ROOM					
10	B-11 (COLUMNS)	2.30 x 1.935 x 6.80	01 No.	30.264	

CONTROL AND OPERATION PHILOSOPHY										
Sl. No.	AREA	ZONE NO.	RELEASE DEVICE ELECTRICAL/ RELEASE DEVICE MANUAL MASTER CYLINDER (MAIN CYLINDER BANK)	RELEASE DEVICE ELECTRICAL/ RELEASE DEVICE MANUAL MASTER CYLINDER (RESERVE CYLINDER BANK)	RELEASE DEVICE PNEUMATIC/ SLAVE CYLINDER (MAIN CYLINDER BANK)	RELEASE DEVICE PNEUMATIC/ SLAVE CYLINDER (RESERVE CYLINDER BANK)	SOLENOID OPERATED RELIEF VALVE (MAIN BANK) PAE	SOLENOID OPERATED RELIEF VALVE (RESERVE BANK) PAE	SOLENOID VALVE PISTON (OTHER MASTER COIL)	SELECTOR VALVE ACTUATION
1.	CENTRAL EQUIPMENT ROOM - A & B UNIT #3 FLOOR LEVEL EL(+)*17.00M	01	M1, M2 & M3	M5, M6 & M7	S.C.-1 TO S.C.-2 TO S.C.-34	S.C.-40 S.C.-41 TO S.C.-72			SOV-11	SV-01 & SV-04
2.	CENTRAL EQUIPMENT ROOM - A & B UNIT #4 FLOOR LEVEL EL(+)*17.00M	02	M1, M2 & M3	M5, M6 & M7	S.C.-1 TO S.C.-2 TO S.C.-34	S.C.-40 S.C.-41 TO S.C.-72			SOV-12	SV-02 & SV-05
3.	CENTRAL EQUIPMENT ROOM - C UNIT #3 FLOOR LEVEL EL(+)*17.00M	03	M1	M5	S.C.-01 TO S.C.-11	S.C.-40 TO S.C.-50			SOV-13	SV-6
4.	CENTRAL EQUIPMENT ROOM - D UNIT #4 FLOOR LEVEL EL(+)*17.00M	04	M1	M5	S.C.-01 TO S.C.-11	S.C.-40 TO S.C.-50			SOV-14	SV-7
5.	COMPUTER ROOM UNIT #3 FLOOR LEVEL EL(+)*17.00M	05	M1	M5	S.C.-01 TO S.C.-11	S.C.-40 TO S.C.-50	P1- SOV-09	P2- SOV-10	SOV-15	SV-8
6.	COMPUTER ROOM UNIT #4 FLOOR LEVEL EL(+)*17.00M	06	M1	M4	S.C.-01 TO S.C.-11	S.C.-40 TO S.C.-50			SOV-16	SV-9
7.	COMMON CONTROL ROOM, CONFERENCE ROOM, LAB ROOM, MAINTENANCE ROOM UNIT - #2 & #4 FLOOR LEVEL EL(+)*17.00M	07	M1, M2, M3 & M4	M5, M6, M7 & M8	S.C.-01 TO S.C.-38	S.C.-39 TO S.C.-76			SOV-17	SV-03 & SV-10
8.	VFD PANEL ROOM UNIT - #3 & #4 FLOOR LEVEL EL(+)*17.00M	08	M2	M6	S.C.-12 TO S.C.-20	S.C.-51 TO S.C.-59			SOV-18	SV-11

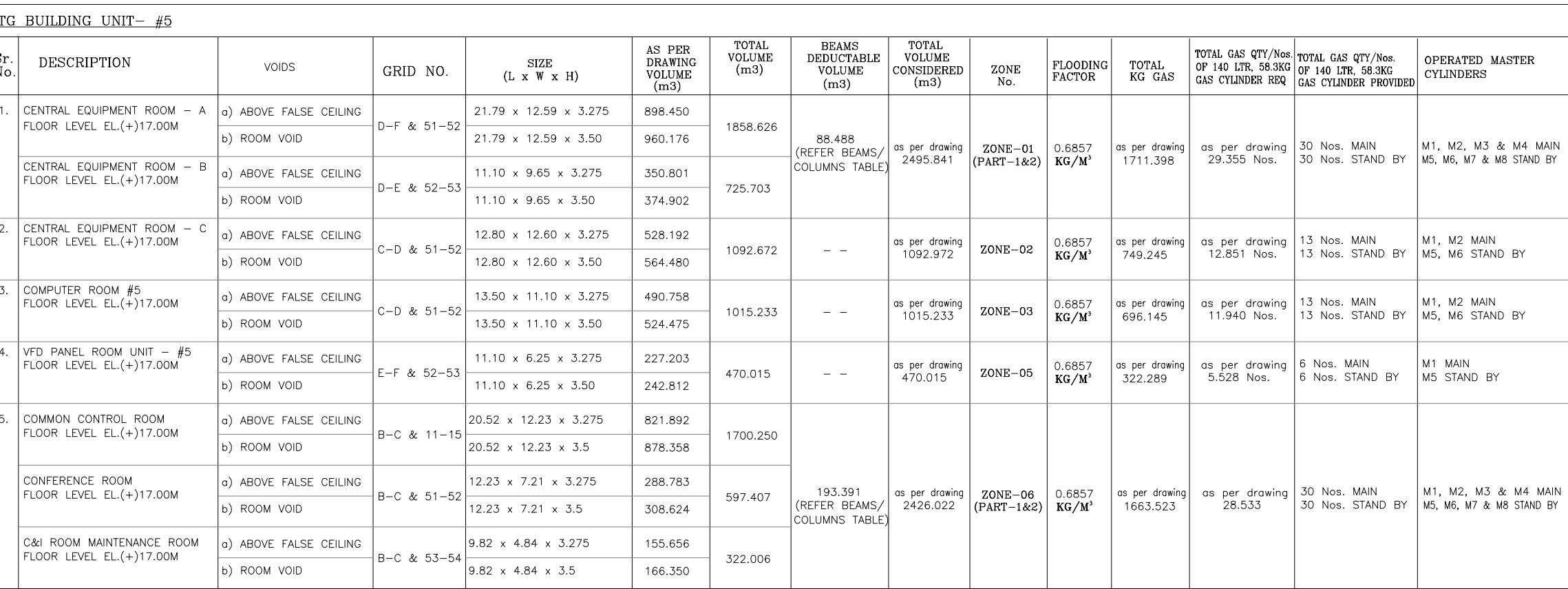
THIS DRAWING AND DESIGN IS THE PROPERTY OF M/S. MX SYSTEMS INTERNATIONAL PVT. LTD. AND IS NOT TO BE COPIED WITHOUT WRITING.																								
VENDOR:-		MX SYSTEMS INTERNATIONAL PVT. LTD. (SUBSIDIARY OF MINIMAX GmbH & Co. KG)																						
																								
CUSTOMER		TELANGANA STATE POWER GENERATION CORPORATION LTD.																						
PROJECT	5 x 800 MW YADADRI TPS																							
CONSULTANT		TATA CONSULTING ENGINEERS LIMITED BENGALURU INDIA																						
		BHARAT HEAVY ELECTRICALS LTD. HYDERABAD PROJECT ENMG & SYSTEMS DIVISION			<table><tr><th>NAME</th><th>SIGN.</th><th>DATE</th><th>NO. OF PAGE</th></tr><tr><td>DRN. TRIPATI</td><td></td><td>15.12.21</td><td>03</td></tr><tr><td>CHD. SWAPUR</td><td></td><td>15.12.21</td><td>03</td></tr><tr><td>APPD. VMH</td><td></td><td>15.12.21</td><td>03</td></tr></table>		NAME	SIGN.	DATE	NO. OF PAGE	DRN. TRIPATI		15.12.21	03	CHD. SWAPUR		15.12.21	03	APPD. VMH		15.12.21	03		
NAME	SIGN.	DATE	NO. OF PAGE																					
DRN. TRIPATI		15.12.21	03																					
CHD. SWAPUR		15.12.21	03																					
APPD. VMH		15.12.21	03																					
DEPT. PED CODE 450		UNTLT. DIMS. GR. 9/W/1		SCALE N.T.S.	WEIGHT (KG) N.A.	REF. TO ASSY. DRG. N.A.		ITEM NO. N.A.	NO. OF ITEM															
TITLE P&ID OF INERT GAS EXTINGUISHING SYSTEM (UNIT - #3 & #4 TG BUILDING)					CARO CODE NA		BHEL DRG. NO. PY-DP-1-M081-8662-01 MXST DRG. NO. MXSI-051854-PI-11002 SHT. NO. 03		No. OF SHT. 03 SIZE - A															



ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED
CHD/APPD			CHD/APPD			CHD/APPD		05	15.12.21	CHD/APPD		04	16.02.21	CHD/APPD		03	22.04.20	CHD/APPD		02	04.02.20	CHD/APPD		01	30.04.19	CHD/APPD				
ISSUED FOR REVIEW	00	16.12.21		ZONE			ZONE			ZONE			ZONE			ZONE			ZONE			ZONE			ZONE					
									REVISED AS PER CUSTOMER COMMENTS.				REVISED AS PER CUSTOMER COMMENTS.				REVISED AS PER CUSTOMER COMMENTS.				REVISED AS PER CUSTOMER COMMENTS.				REVISED AS PER CUSTOMER COMMENT					
1			2			3			4			5			6			7			8			9						

S.	TITLE	BHEL DRG. NO.
	P&ID OF INERT GAS EXTINGUISHING SYSTEM (UNIT - #3 & #4 TG BUILDING)	PY-DP-1-M081-8662-01
	CARD CODE	MXSI DRG. NO.
	NA	MXSI-051854-PI-11001
		SHT. No 04 No. OF SHT. 06

GENERAL DIMENSIONAL LIMITS, FITS & TOLERANCES AS PER HY0230261



CONTROL AND OPERATION PHILOSOPHY:- TG BUILDING UNIT- #5										
Sr. No.	AREA	Zone	RELEASE DEVICE ELECTRICAL/ RELEASE DEVICE MANUAL MASTER CYLINDER (MAIN CYLINDER BANK)	RELEASE DEVICE ELECTRICAL/ RELEASE DEVICE MANUAL MASTER CYLINDER (RESERVE CYLINDER BANK)	RELEASE DEVICE PNEUMATIC SLAVE CYLINDER (MAIN CYLINDER BANK)	RELEASE DEVICE PNEUMATIC SLAVE CYLINDER (RESERVE CYLINDER BANK)	SOLENOID OPERATED PIST VALVE (MAIN BANK P&E)	SOLENOID OPERATED PIST VALVE (STAND BY BANK P&E)	SOLENOID VALVE PIST CONTROL MANIPUL CPG	SELECTOR VALVE ACTUATION
1.	CENTRAL EQUIPMENT ROOM - A & B UNIT #3 FLOOR LEVEL EL.(+)*17.00M	01	M1, M2, M3 & M4	M5, M6 & M7	S.C.-1 S.C.-2 TO S.C.-26	S.C.-27 S.C.-28 TO S.C.-52			SOV-11	SV-01 & SV-03
2.	CENTRAL EQUIPMENT ROOM - C UNIT #3 FLOOR LEVEL EL.(+)*17.00M	02	M1, M2	M5, M6	S.C.-01 TO S.C.-17	S.C.-27 TO S.C.-43			SOV-12	SV-4
3.	COMPUTER ROOM UNIT #4 FLOOR LEVEL EL.(+)*17.00M	03	M1, M2	M5, M6	S.C.-01 TO S.C.-17	S.C.-27 TO S.C.-43	P1- SOV-09	P2- SOV-10	SOV-13	SV-5
4.	VFD PANEL ROOM UNIT - #3 & #4 FLOOR LEVEL EL.(+)*17.00M	04	M1	M5	S.C.-1 TO S.C.-5	S.C.-27 TO S.C.-31			SOV-14	SV-6
5.	COMMON CONTROL ROOM, CONFERENCE ROOM, C&I ROOM MAINTENANCE ROOM UNIT #4 & #4 FLOOR LEVEL EL.(+)*17.00M	05	M1, M2, M3 & M4	M5, M6, M7 & M8	S.C.-1 S.C.-2 TO S.C.-26	S.C.-27 S.C.-28 TO S.C.-52			SOV-15	SV-02 & SV-07

DESIGN CRITERIA :	
• APPLICABLE STANDARD	– NFPA 2001 (2018)
• INERT GAS	– I0541
• ROOM (HAZARD TEMP. CONSIDERED)	– 21° C
• DESIGN CONCENTRATION OF GAS	– 38.50 %
• SYSTEM PRESSURE	– 300 BAR
• FLOODING FLOW	– 0.6857 Kg/m ³
• MAX. FILL FOR CYLINDER GAS	– 58.3 Kg
• CLASS OF FIRE	– C FIRE
• DISCHARGE TIME	– 120 SEC. (MAX)
• NOZZLE TYPE	– RD 1/2"
• NOZZLE RADIAL COVERAGE	– 360°
• NOZZLE COVERAGE AREA	– 30.0M ²
• SAFETY VALVE OPERATING PRESSURE	– 365 BAR

TABLE – TG BUILDING UNIT – #5					
BEAMS/COLUMNS – COMMON COLUMN ROOM					
SEAM GRID NO	BEAM GRID NO NUMBERS	BEAM SIZE (L x W x H)	BEAM NO.	BEAMS VOLUME (m ³)	BEAMS TOTAL VOLUME (m ³)
1	B-53 TO B-54 (CFM AREA)	6.45 x 2.245 x 6.80	01 No.	98.465	
	B-52 (COLUMNS)	2.10 x 1.90 x 6.80	01 No.	27.132	
	B-GRID 51 TO 54 (BEAM)	1.0 x 0.60 x 33.00	01 No.	19.800	
	C-GRID 51 TO 54 (BEAM)	1.0 x 0.60 x 33.00	01 No.	19.800	193.391
	GRID 52 TO 53 (BEAM)	1.0 x 0.60 x 12.40	02 Nos.	14.880	
COMPENSURE ROOM					
	B-51 (COLUMNS)	2.20 x 0.89 x 6.80	01 No.	13.314	
CENTRAL EQUIPMENT ROOM					
	GRID E & F (BEAM)	1.0 x 0.60 x 12.50	02 Nos.	15.108	
	GRID 51 D TO F (BEAM)	1.0 x 0.60 x 21.89	01 No.	13.314	
	GRID D – 51 (COLUMNS)	1.445 x 0.95 x 6.80	01 No.	9.334	
	GRID E – 51 (COLUMNS)	1.445 x 1.90 x 6.80	01 No.	18.669	88.468
	GRID F – 51 (COLUMNS)	1.32 x 1.645 x 6.80	01 No.	14.655	
	GRID E – 52 (COLUMNS)	1.60 x 1.60 x 6.80	01 No.	17.408	

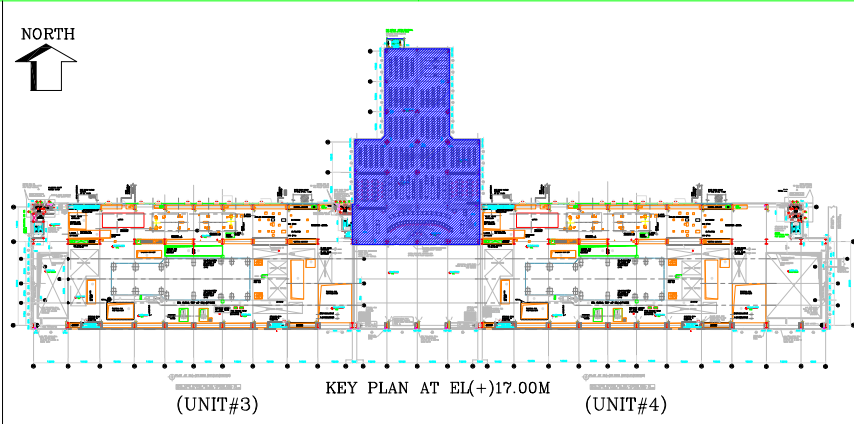
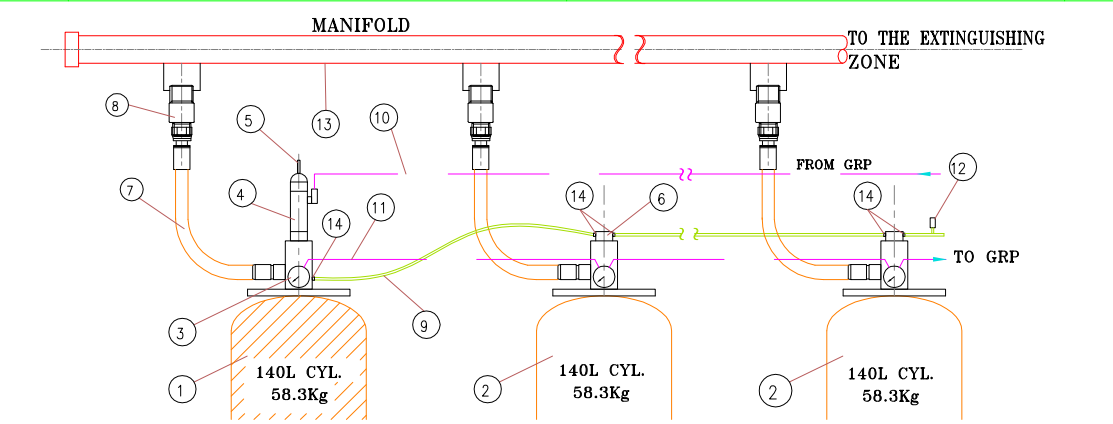
CLEAN AGENT DATA		
01.	CLEAN AGENT	IG-541
02.	NOMINAL COMPOSITION	NITROGEN : 52% ARGON : 40% CO2 : 8%
03.	MAKE	MINIMAX
04.	SYSTEM PRESSURE	300 BAR

IG541 GAS CYLINDER QUANTITY			
01.	IG541 GAS CYLINDERS	MAIN CYLINDERS	30 Nos.
02.	IG541 GAS CYLINDERS	STAND BY CYLINDERS	30 Nos.
		TOTAL CYLINDERS =	60 Nos.

CLIENT REFERENCE DRAWINGS:-			
Sr. No.	DWG. NO.	REV.	TITLE
1.	PE-V0-417-553-A506	0	AIRCONDITIONING DUCT LAYOUT FOR CONTROL ROOM AREAS & UPS ROOM AT 17M OF UNIT-5
2.	PE-DG-417-145-A401	6	CCR/CER/COMPUTER UPS ROOM LAYOUT (AT EL.17.)
3.	PE-DG-417-611-C062	1	POWER HOUSE BUILDING ARCHITECTURAL PLAN AT EL.(+0.00)(FFL)(UNIT-5)

MXSI REFERENCE DRAWINGS:-		TITLE
SP. NO.	DWG. NO.	
01.	CLIENT DWG. NO. PY-VL-1-M081-8662-03 MXSI DWG. NO. MXSI-051854-LY-11003	PIPING LAYOUT & ISOMETRIC FOR CLEAN AGENT SYSTEM FOR TO BUILDING UNIT - #5 TO BUILDING
02.	MXSI DWG. NO. MXSI-051854-CA-11004	GA DRAWING FOR CYLINDER STORAGE ROOM FOR UNIT - #5 TO BUILDING
03.	CLIENT DWG. NO. 9585-001-151-PMV-U-063 MXSI DWG. NO. MXSI-051854-CAL-11004	PRESSURE DROP CALCULATION FOR CLEAN AGENT SYSTEM FOR TO BUILDING UNIT - #5 TO BUILDING
04.	MXSI DWG. NO. MXSI-051854-LY-11006	CABLING LAYOUT FOR DI-POLABORT & MANUAL RELEASE FOR TO BUILDING
05.	MXSI DWG. NO. MXSI-051854-CA-11005	GA & WIRING DIAGRAM FOR GAS RELEASE PANEL

TAG No.	DESCRIPTION	ARTICLE No.	TAG No.	DESCRIPTION	ARTICLE No.
01	EXTINGUISHING AGENT MASTER CYLINDER	EKC	08	CHECK VALVE KRV-2; (NON RETURN VALVE)	886030
02	EXTINGUISHING AGENT SLAVE CYLINDER		09	PILOT PISTON CYLINDER RACK BAS STRAIGHT (ACTUATION HOSE)	917596 Stright type
03	CONTACT PRESSURE GAUGE CUM SWITCH	888615	10	CABLE FOR SOLENOID	--
04	RELEASE DEVICE ELECTRICAL	887867	11	CABLE FOR PRESSURE GAUGE CUM SWITCH	--
05	RELEASE DEVICE MANUAL	887668	12	SAFETY DEVICE MAINTENANCE PRESSURE	885849 (for assembly with fittings - 912460)
06	RELEASE DEVICE PNEUMATIC	887669	13	SOND MANIFOLD	--
07	HOSE 1/2" X 300MM (FLUIDIC DISCHARGE BEND) M24X1.5 X 3/4 X 375	886032	14	ADAPTER M12X1.5 G1/8 MM 200/1230	887644



LEGEND			
No.	SYMBOL	DESCRIPTION	ARTICLE Nos.
01.		MAIN CYLINDER + CYLINDER VALVE	
02.		SLAVE CYLINDER + CYLINDER VALVE (MAIN BANK)	EXC-888652
03.		SLAVE CYLINDER + CYLINDER VALVE (STAND BY BANK)	
04.		DISCHARGE VALVE (DISCHARGE BOMB) MX241 5" 3/4 x 375	886032
05.		CONTROL PRESSURE GAUGE CUM SWITCH 300BAR (100 PSI) RANGE 400 BAR	886161
06.		RELEASE DEVICE-ELECTRICAL (SOLIDNO VALVE) RELEASE DEVICE-MANUAL	887667 886168
07.		PILOT PIPES CYLINDER RACK BAS (STRAIGHT ACTION HOSE)	917596 Straight Type
08.		PILOT CONTROL MANIFOLD CO2	830833
09.		DISABLE DEVICE MX	878070
10.		LIMIT SWITCH DISABLE DEVICE (LS)	828482
11.		SELECTOR VALVE IN/OUT (DIRECTION VALVE) (SV)	886134
12.		SAFETY VALVES G1/2 - 365 BAR	886281
13.		GS54 DISCHARGE DISCHARGE VALVE WITH DEFLECTOR	Refer Isometric Tag No. MX-05 1278-LV-11001
14.		PRESSURE REDUCER (RM)	886033
15.		PNEUMATIC RELEASE VALVE P-2 CO2 ELECTRICAL DISCHARGE P-200 CYLINDER + ACCESSORIES (FOR HELDEX)	885336
16.		SOLENOID OPERATED PILOT VALVE (SOV)	
17.		SHUTTLE NON RETURN VALVES	886247
18.		ADAPTER M12x1.5 G1/8 M 200/1330	887644
19.		SEAMLESS PIPE UPSTREAM 300 BAR (SEAMLESS)	886126
20.		MONITORING LOSS PNEUMATIC ACTION DEVICE (RC)	889898
21.		LIMIT SWITCH PNEUMATIC OPERATED (PRESSURE SWITCH)	826758
22.		PUSH BUTTON SELECTOR VALVE	822674
23.		SEAM PIPE DOWNSTREAM 300 BAR	
24.		ELECTRICAL CONNECTION	
25.		PILOT PIPE #6	
26.		BORDER	
27.		PUSH BUTTON, ABORT SWITCH BLUE (ABS)	REFER DATA SHEET
28.		PUSH-BUTTON-MANUAL-RELEASE-YELLOW (RDS)	REFER DATA SHEET
29.		PER ALARM INDICATOR (WITH HOOPER & STROBE LIGHT) (PST)	REFER DATA SHEET
30.		DISCHARGE ALARM INDICATOR (WITH & STROBE LIGHT) (WSTH) (PST) (D)	REFER DATA SHEET
31.		END CAP	--
32.		GAS RELEASE PANEL	--
33.		SMOKE DETECTOR (BY OTHERS)	--

NOTES:-

- 1) THE SYSTEM OFFERED IS 10-541.300 BAR CENTRALIZED DISTRIBUTION VALVE SYSTEM.
- 2) GAS REGULATORS AND CLOSURE BARN DELAYED IS BASED ON "SINGLE LARGE ORG" PRINCIPLE
- 3) INSTEAD OF 10-541.300 BAR, THE SYSTEM OFFERED IS ALSO AVAILABLE FOR 10-541.300 BAR.
- 4) GAS WILL BE RELEASED AFTER THE SELECT DELAY DURATION 30 SEC. HIGHER AS PER SPECIFICATION.
- 5) THE SAME CAN BE ADJUSTABLE FROM 30 SEC TO 120 SEC. IN THE RESPECTIVE ROOM.
(IN ALL TWO VOIDS SIMULTANEOUSLY) ONLY AFTER RECEIVING CONFIRMED FIRE SIGNAL FROM F.A.S.
- 6) SYSTEM OPERATIONAL LOGICS ARE FACILITATED THROUGH CONTROL PANEL BY FOLLOWING MEANS:
 - a) AUTOMATICALLY TO FIRE DETECTION IN THE PROTECTED AREA.
 - b) OPERATION MANUALLY BY PRESSURE PUSH BUTTON LOCATED ADJACENT TO THE PROTECTED AREA.
 - c) BY OPERATING MANUALLY LEVER PROVIDED ON RELEASE UNIT.
- 7) THE ZONES COVERED UNDER PROTECTION SHALL BE COMPLETELY SEPARATED AS FOLLOWS:
 - a) PROTECTED ROOM AND CEILING OF PROTECTED ROOM.
 - b) PROTECTED ROOM AND CEILING OF PROTECTED ROOM.
- 8) PIPES UPSTREAM SIDE OF RESTRICTOR ARE CONFORMING TO 2 SEAMLESS
ASTM A106 GR.B SCH. XKS AND PIPES DOWN STREAM SIDE OF RESTRICTOR
ARE CONFORMING TO 2 SEAMLESS
ASTM A106 GR.B SCH. XKS
- 9) FITTINGS UP STREAM SIDE OF RESTRICTOR SHALL BE FORGED CARBON STEEL AS PER
ASTM-A106 SOCKET WELDED / THREADED (NPT) TO ANSI B.16.11 6000S FOR SIZES 200
- 10) FITTING DOWN STREAM SIDE OF RESTRICTOR SHALL BE FORGED CARBON STEEL AS PER
ASTM-A106 SOCKET WELDED / THREADED (NPT) TO ANSI B.16.11 6000S FOR SIZES 4000
- 11) VALVES SHALL BE 2 SEAMLESS AS PER ASTM-234 GR. WPB BUT WELDED TO ANSI B.16.9
FOR SIZES 1000 AND ABOVE. FOR SIZES 1000 AND BELOW SHALL BE 2 SEAMLESS AS PER
ASTM-234 GR. WPB BUT WELDED TO ANSI B.16.9 FOR SIZES 1000 AND BELOW.
- 12) PIPES, SIZES, VALVES, RESTRICTOR AND NOZZLES SHALL BE AS PER ANALYSIS OF
THE CLEAN AGENT SYSTEM.
- 13) "TAS RELEASED" & FAILURE OF AUTOMATIC ACTIVATION SHALL BE ANNUNCIATED ON PANEL.
- 14) FIRE ALARM AND DETECTION SYSTEM SHALL BE OPERATIVE.
- 15) NOZZLE SHOWN ARE INDICATIVE ONLY, ACTUAL QTY. SHALL BE AS PER LAYOUT

THIS ROOM IS PROTECTED BY
IG541 SYSTEM
AND SHALL BE LEFT AT ONCE
WHEN ALARM SOUND

WARNING PLATE DETAILS

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VENDOR:-

MX SYSTEMS INTERNATIONAL PVT. LTD.
(SUBSIDIARY OF MINIMAX GmbH & Co. KG)

CUSTOMER

TELANGANA STATE
POWER GENERATION CORPORATION LTD.

5 x 800 MW YADADRI TPS

 TATA CONSULTING ENGINEERS LIMITED
BENGALURU INDIA



DEPT	
PED	
CODE	
450	

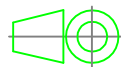
UNTOL. DIMS. GR. 9/11/17		SCALE N.T.S.
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P&ID OF INERT GAS EXTINGUISHING
(UNIT - #5 TG BUILDING)

INERT GAS EXTINGUISHING SYSTEM (UNIT - #5 TG BUILDING)	CARD CODE NA	BHEL DRG. NO. PY-DP-1-M081-8662-01 MXXI DRG. NO. MXXI-051854-PI-11003
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ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED
CHD/APPD			CHD/APPD			CHD/APPD	05	15.12.21	CHD/APPD	04	18.02.21	CHD/APPD	03	22.04.20	CHD/APPD	02	04.02.20	CHD/APPD	01	30.04.19	CHD/APPD
ISSUED FOR REVIEW	00	16.12.21		ZONE			ZONE			ZONE						ZONE					ZONE
								REVISED AS PER CUSTOMER COMMENTS.			REVISED AS PER CUSTOMER COMMENTS.			REVISED AS PER CUSTOMER COMMENTS.			REVISED AS PER CUSTOMER COMMENTS.			REVISED AS PER CUSTOMER COMMENTS.	

THIS DRAWING AND DESIGN IS THE PROPERTY OF M/S. MX SYSTEMS INTERNATIONAL PVT. LTD. AND IS NOT TO BE COPIED WITHOUT THEIR PERMISSION IN WRITING.																													
VENDOR:- minimax (SUBSIDIARY OF MINIMAX GmbH & Co. KG)																													
CUSTOMER		 TELANGANA STATE POWER GENERATION CORPORATION LTD.																											
PROJECT		5 x 800 MW YADADRI TPS																											
CONSULTANT		 TATA CONSULTING ENGINEERS LIMITED BENGALURU INDIA																											
		BHARAT HEAVY ELECTRICALS LTD. HYDERABAD PROJECT ENG & SYSTEMS DIVISION						<table><tr><td>NAME</td><td>SIGN.</td><td>DATE</td><td>NO.OF VAR.</td></tr><tr><td>TRIPATI</td><td></td><td>15.12.21</td><td></td></tr><tr><td>CHD: SWARUP</td><td></td><td>15.12.21</td><td>N.A.</td></tr><tr><td>APPD: VMH</td><td></td><td>15.12.21</td><td></td></tr></table>						NAME	SIGN.	DATE	NO.OF VAR.	TRIPATI		15.12.21		CHD: SWARUP		15.12.21	N.A.	APPD: VMH		15.12.21	
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TITLE										BHEL DRG. NO. PY-DP-1-M081-8662-01 QRS DRG. NO. MXSI-051854-P1-11001 NA SHT. NO 06 No. of SHT.06 SHT. - A1				REV. 05															
P&ID OF INERT GAS EXTINGUISHING SYSTEM (UNIT - #5 TG BUILDING)																													

TELANGANA STATE POWER GENERATION
CORPORATION LTD. (TSGENCO)



YADADRI TPS 5 X 800 MW
NALGONDA, TELANGANA

07	19.08.21	REVISED AS PER CUSTOMER COMMENTS
06	15.06.21	REVISED AS PER CUSTOMER COMMENTS
05	21.12.20	REVISED AS PER CUSTOMER COMMENTS
04	12.11.20	REVISED AS PER CUSTOMER COMMENTS
03	06.07.20	NO CHANGE IN DOCUMENT.COMMENT RESOLUTION SHEET SUBMITTED.
02	22.05.20	REVISED AS PER CUSTOMER COMMENTS
01	04.05.19	REVISED AS PER CUSTOMER COMMENTS
00	31.05.18	INITIAL SUBMISSION

REV	DATE	DESCRIPTION
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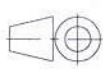
CUSTOMER 	TELANGANA STATE POWER GENERATION CORPORATION LTD. TELANGANA , INDIA YADADRI TPS 5 X 800 MW
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CONSULTANT 	TATA CONSULTING ENGINEERS LIMITED BANGALORE, INDIA
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	BHARAT HEAVY ELECTRICALS LIMITED PE&SD , HYDERABAD
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			DRN.	ANUPAM	-sd-	31.05.18
			CHD.	AMIT	-sd-	31.05.18
			APPD.	MNSR	-sd-	31.05.18

TITLE :	PAINTING SCHEDULE FOR FIRE PROTECTION & DETECTION SYSTEM
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				DEPT. PESD	UNTOL. DIM. CR. C/M/F		DOCUMENT NO
				CODE 450			PY-AQ-4-M081-8315-01
							SHT No. 01 OF 02


CHIEF ENGINEER
 Thermal Projects Construction
 TSGENCO, Vidyut Soudha,
 Khairatabad, Hyderabad - 82.

	BHARAT HEAVY ELECTRICALS LIMITED		BHEL Doc. No		PY-AQ-4-M081-8315-01
	PROJECT ENGINEERING & SYSTEMS DIVISION		Date		19.08.21
	HYDERABAD-32		Rev No.		07
PAINTING SCHEDULE					
1. Painting requirement for Over-ground pipes (GI Pipes) normally empty but periodically charged with water, foam system applications					
SL No	Name of the item	Type	Number of coat	DFT of each layer in micron	Remark
1	Primer	epoxy resin based zinc phosphate primer	1	40	
2	Final Paint	Chlorinated rubber paint	3	50	shade : Fire red paint as per IS:5, shade 536
Total DFT				190	
Note: Surface preparation shall be done either by manually or by any other approved method.					
2. Painting requirement for external surfaces protection of vessels / tanks / equipment / piping / fittings / valves etc. to be installed indoor					
SL No	Name of the item	Type	Number of coat	DFT of each layer in micron	Remark
1	Primer	chlorinated rubber based zinc phosphate	1	50	
2	Intermediate paint	chlorinated rubber based paint pigmented with Titanium Dioxide.	1	50	
3	Final Paint	chlorinated rubber paint	1	50	shade : Fire red paint as per IS:5, shade 536
Total DFT				150	
Note: Surface preparation shall be done either by manually or by any other approved method.					
3. Painting requirement for external surfaces protection of vessels / tanks / equipment / piping / fittings / valves etc. to be installed outdoor					
SL No	Name of the item	Type	Number of coat	DFT of each layer in micron	Remark
1	Primer	epoxy resin based zinc phosphate primer.	1	100	
2	Intermediate paint	epoxy resin based paint pigmented with Titanium Dioxide	1	100	
3	Final Paint	epoxy paint	1	75	shade : Fire red paint as per IS:5, shade 536
		additional Finish Coat of polyurethane	1	25	
Total DFT				300	
Note: Surface preparation shall be done by means of sand blasting which shall confirm to Sa 2-1/2 Swiss standard					
4. Painting requirement for structural steel					
SL No	Name of the item	Type	Number of coat	DFT of each layer in micron	Remark
1	Primer	Zinc silicate	2	50	
2	Final Paint	high built epoxy	2	90	shade: Dark Admiralty Grey colour shade 632 as per IS:5
Total DFT in micron				280	
Note: Surface preparation shall be done by means of sand blasting which shall confirm to Sa 2-1/2 Swiss standard					
5. Painting requirement for Fire Water Tanks					
5.1 Internal Painting					
SL No	Name of the item	Type	Number of coat	DFT of each layer in micron	Remark
1	Primer	Epoxy zinc phosphate primer	1	50	
2	Final Paint	Coal Tar Epoxy resin based finish paint	3	50	
Total DFT in micron				200	
	Surface preparation	White metal blasting			
5.2 External Painting					
Same as S. No. 3					
5.3 Bottom plate underside painting					
	Type		Number of coat	DFT of each layer in micron	Remark
	Bitumastic paint		3	80 - 100	
Total DFT in micron				240 - 300	
NOTES :					
1) For Underground Piping, Wrapping & Coating datasheet shall be submitted separately. (Doc No. : PY-VD-4-M081-8661-09)					
2) For Painting details of Hydro-Pneumatic tank , Please refere Datasheet of Hydro-pneumatic tank (Doc No. : PY-VD-4-M081-8661-17)					


CHIEF ENGINEER
 Thermal Projects Construction
 TSGENCO, Vidyut Soudha,
 Khairatabad, Hyderabad - 82.

TELEGANA STATE POWER GENERATION CORPORATION LTD. (TSGENCO)



5 X 800 MW YADADRI TPS
YADADRI, TELANGANA

00	22.04.20	INITIAL SUBMISSION																		
REV	DATE	DESCRIPTION																		
TATA CONSULTING ENGINEERS LIMITED, BENGALURU, INDIA																				
TELANGANA STATE POWER GENERATION CORPORATION LTD. (TSGENCO)																				
ADDITIONAL INFORMATION		5 x 800 MW YADADRI THERMAL POWER STATION																		
STATUS OF DRAWING																				
DISTRIBUTION OF PRINTS																				
MANUFACTURER :		BHARAT HEAVY ELECTRICALS LTD. PE & SD HYDERABAD																		
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th></th> <th>NAME</th> <th>SIGN.</th> <th>DATE</th> <th>NO.OF VAR.</th> </tr> <tr> <td>DRN.</td> <td>ANUPAM</td> <td>—sd—</td> <td>22.04.20</td> <td rowspan="3"></td> </tr> <tr> <td>CHD.</td> <td>AMIT K</td> <td>—sd—</td> <td>22.04.20</td> </tr> <tr> <td>APPD.</td> <td>SEKHAR</td> <td>—sd—</td> <td>22.04.20</td> </tr> </table>		NAME	SIGN.	DATE	NO.OF VAR.	DRN.	ANUPAM	—sd—	22.04.20		CHD.	AMIT K	—sd—	22.04.20	APPD.	SEKHAR	—sd—	22.04.20
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NAME	SIGN.	DATE																		
DRN.																				
CHD.																				
APPD.																				
		DOCUMENT NO PY—VD—4—M081—8661—09	REV. 00																	
		SHT No. 01	NO OF SHT. 02																	

DATASHEET OF WRAPPING & COATING MATERIAL

1. Type : Coal tar tape
2. Thickness of tape : 4 mm (2 layers x 2mm thk.)
3. Width of tape : 150 mm
4. Confirming to standard : AWWA C 203 / IS :15337.
5. Inspection : As per approved ICL
6. Application : For buried pipes
7. **Details of Tape**
 - a. Length : 20 meters
 - b. Softening point : 65-121 ° C
 - c. Penetration at 25 ° C : 3 to 20 dmm
 - d. Filler Percentage : 20-30%
 - e. Tensile Strength (N/5cm) : 300 (Min.) - Length wise & 100 - Cross wise
 - f. Holiday Test : As per AWWA C 203
 - g. Impact Test : As per AWWA C 203
 - h. Adhesion Test : As per AWWA C 203
8. **Details of the Primer :**
 - Type : Synthetic Chlorinated primer
 - Viscosity at 23 ° C : 35-60 sec
 - Volatile Matter : < 75%
 - Drying Time : Minimum 15 minutes
 - Flash Point : > 23 ° C
 - Coverage on Metal (Practical) @ 25 : 6 m²/liter/coat
 - Specific Gravity : 0.9 to 0.95
 - DFT : 80-100 Micron