**ADDENDUM-2**

**DATE: 30-07-2021**

**Complete DFDS, SW, CW & PW System for 2X800 MW Telangana Super Thermal Power Project-Karimnagar**

**Tender Ref: 77/21/6046/DSP**

**"Extension of due date for submission of offer"**

Due date for submission of Offer has been extended to 06.08.2021

Submission of offer by 1.00 PM on 06.08.2021

Opening of Techno commercial bid at 4.00 PM on 06.08.2021

**"New Link for NTPC Specification, bid document, NTPC approved Drawings"**

As earlier link for NTPC specification, bid document no. CS-9591-101-2 is expiring on 31.07.2021, new link as attached shall form part of Tender document

**" Link for Water Package Sump Pump drain to CSSP Drg No. 9591-102-162-PVM-F-001-08(CORRECTED)"**

**"Replies to Bidder queries"**

Replies to bidder queries as attached shall form part of Tender document

Any further addendum such issued carry part of the bidding documents and this will be available at the web site from where the original documents have been received / downloaded by the bidder. Hence, bidders are requested to visit the web site on regular basis.

**For Further Queries if any, Contact:**


**For Commercial :**

**Sh. D S Pradeep Kumar Sarma**
Manager / MM
BHEL-ISG,
Prof.C.N.R.Rao Circle,
Bangalore-560 012
Off: 080 2218 4520,
e-mail: dsp@bhel.in

**For Technical :**

**Sh. Indrajit Dey**
Sr Manager / PE / Mech
BHEL-ISG,
Prof.C.N.R.Rao Circle,
Bangalore-560 012
Off: 080 2218 4219,
e-mail : idey@bhel.in

## New Link for NTPC Specification, bid document:

Karimnagar SG ISLAND PKG NTPC specification, bid document no. CS-9591-101-2

Kindly click on the link to download the Documents.

External Link: DOC/160721/101213

**6-ANNEXURE_D-_NTPC APPROVED DRGS_DOCS-WATER PKG(R) Documents have been shared to you. pl. click on the link to download the Documents.**

External Link: DOC/290721/101274

**Documents related to Karimnagar-Water Package Sump Pump drain to CSSP Drg No. 9591-102-162-PVM-F-001-08(CORRECTED).**

Pl. click on the link to download the Documents.

External Link: DOC/290721/101273

The above links expire on 31/Aug/2021

## Replies to Bidder queries:

| Bidder Queries | BHEL Reply |
|---|---|
| Please provide us the following drawing as same is not available with us.<br><br>1. DRG. NO. 9591-102-162-PVM-F-001-04<br><br>2. DRG. NO. 9591-102-162-PVM-F-001<br><br>Above drawing is require for estimate the sump pump pipe length | Pl. find below our clarifications w.r.t. your queries related to sump pump head requirement, piping length, scope and termination points etc.<br><br>(1) Latest Revision (08) of DRG. NO. 9591-102-162-PVM-F-001 is enclosed with additional sketch/details.<br><br>(2) Also enclosed GA DRG./ DATASHEET/ CURVE/PI&D/CONTROL WRITEUP/FLOW DIAGRAM OF WATER PUMP may pl. be replaced with earlier uploaded drg No. 9591-102-155-PVM-B-036-04 (All corrections marked in this attached drg shall be incorporated in next revision re-submission to customer for CAT-I approval).<br><br>Also pl. note 'Clarification point" mentioned elsewhere in the previously or latest uploaded document for the same is due to typographical error and may pl. be ignored. |

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM

DRAWING NO.

DO NOT SCALE. IF IN DOUBT, ASK.

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It must not be used in any way detrimental to the interest of the Company.

PIPE 100NB

PIPE 100NB

PIPE 100NB

△3 REF. DWG. NO. 9591-102-162-PVM-F-001 ~~04~~ 08 for termination ~~TO CLARIFICATION PLANT~~

DRAIN FROM TP-41

C5ENC56AA001 C5ENC56AA601 C5ENC56CP501 C5ENC56AP201 C5ENC56AA301 C5ENC57AP202 C5ENC57AA001 C5ENC57AA301 C5ENC57CP501 C5ENC57AA601 C5ENC000CL004 C5ENC000BB204

OVER FLOW DRAIN

**DRAIN SUMP & PUMPS**

**NEAR TP - 41**

QTY : 2Nos. (1W+1S)

DRAIN FROM TP-40

C5ENC54AA001 C5ENC54AA601 C5ENC54CP501 C5ENC54AP201 C5ENC54AA301 C5ENC54AP203 C5ENC55AA001 C5ENC55AA301 C5ENC55CP501 C5ENC55AA601 C5ENC000CL003 C5ENC000BB203

OVER FLOW DRAIN

**DRAIN SUMP & PUMPS**

**NEAR TP - 40**

QTY : 2Nos. (1W+1S)

DRAIN FROM TP-39

C5ENC52AA001 C5ENC52AA601 C5ENC52CP501 C5ENC52AP201 C5ENC52AA301 C5ENC52AP203 C5ENC53AA001 C5ENC53AA301 C5ENC53CP501 C5ENC53AA601 C5ENC000CL002 C5ENC000BB202

OVER FLOW DRAIN

**DRAIN SUMP & PUMPS**

**NEAR TP - 39**

QTY : 2Nos. (1W+1S)

DRAIN FROM TP-38

C5ENC50AA001 C5ENC50AA601 C5ENC50CP501 C5ENC50AP001 C5ENC50AA301 C5ENC51AP202 C5ENC51AA001 C5ENC51AA301 C5ENC51CP501 C5ENC51AP002 C5ENC000CL001 C5ENC000BB201

OVER FLOW DRAIN

**DRAIN SUMP & PUMPS**

**NEAR TP - 38**

QTY : 2Nos. (1W+1S)

OWNER/CONSULTANT

एन टी पी सी NTPC

**NTPC Limited**
ENGINEERING DIVISION
(A GOVERNMENT OF INDIA ENTERPRISE)

PROJECT
TELANGANA SUPER THERMAL POWER PROJECT
PHASE-I (2X800MW)

JOB No. IS-1-15-2003

STATUS OF DRAWING

| DISTRIBUTION OF PRINTS | QTY. |
|---|---|
| | |

BHARAT HEAVY ELECTRICALS LTD.
INDUSTRIAL SYSTEMS GROUP, BANGALORE

| | NAME | SIGN | DATE |
|---|---|---|---|
| DRN. | JAGBIR | | 16.05.2019 |
| CHD. | PAWAN | | 16.05.2019 |
| APPD. | F.PAUL | | 16.05.2019 |

NO.OF VAR

| REV. | | NAME | SIGN | DATE |
|---|---|---|---|---|
| | ALTERED | | | |
| | CHECKED | | | |
| | APPROVED | | | |

DIRECTORY :

FILE NO. :

SCALE N.T.S.

WEIGHT(Kgs.)

NTPC DRAWING NO. 9591-102-155-PVM-B-036

ITEM NO.

NO.OF ITEMS

BHEL DRAWING NO. IS-3-DS-701-110-M027

REV. 04

OSM DRAWING NO: OSM-17007-GA-SP-001

ZONE

TITLE : PI & D DRAWING FOR DRAIN PUMP FROM TP TO CLARIFICATION PLANT

SHEET NO. 1. NO.OF SHTS. 1

REF.DRG.NO. SIGN & DATE INVENTORY NO.

FORM-66.101

SIZE-A3

## Control write-up Drain sump Pump

Drain sumps (4 nos.) and 2 nos. of Pumps (40M$^3$/hr @50MWC 30KW each) for each sump considered. One working and one standby is considered for each drain sump. At a time only one working pump will be in operation out of 4 nos. Working Drain sump pump. Graphic page considered for the same. The facility for operation of each Drain sump pumps are as follows:

1. Working /stand by selection switch provided.
2. Maximum 'ON' time set point for each set of pumps in each sump provided.
3. Level switch (High and low) provided for each sump.
4. Electrical Status from sump pump Local control panel is considered.
5. Start/ stop operation of individual pump are provided.
6. Auto Group Start/ stop operation is provided.

### Group Start / stop Operation

Working/ standby and Auto/ Manual selector switch provided in each Local control panel. If manual selected in Local control panel then pump can be operated from local control panel. If Auto selected in Local control panel provided in each control panel then the working selected pump can be operated from DCS. The operation of each working sump pumps in DCS is as follows:

1. Check the Auto start Permissive (AS*) of working pump in sump 1 (Details given below).
2. If start Permissive o.k. of selected working pump of sump-1. Then working selected pump will start and the ON timer (Timer AS*) for sump-1 will start.
3. If Auto Trip condition (Details given below) true or ON timer time over or Auto start Permissive not O.K., then logic will stop/ bypass pump of sump 1 and check for working pump of sump-2.
4. Check the Auto start Permissive (AS*) of working pump in sump 2 (Details given below).
5. If start Permissive o.k. of selected working pump of sump-2. Then working selected pump will start and the ON timer (Timer AS*) for sump-2 will start.
6. If Auto Trip condition (Details given below) true or ON timer time over or Auto start Permissive not O.K., then logic will stop/ bypass pump of sump 2 and check for working pump of sump-3.
7. Check the Auto start Permissive (AS*) of working pump in sump 3 (Details given below).
8. If start Permissive o.k. of selected working pump of sump-3. Then working selected pump will start and the ON timer (Timer AS*) for sump-3 will start.

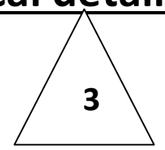
9. If Auto Trip condition (Details given below) true or ON timer time over or Auto start Permissive not O.K., then logic will stop/ bypass pump of sump 3 and check for working pump of sump-4.

10. Check the Auto start Permissive (AS*) of working pump in sump 4 (Details given below).

11. If start Permissive o.k. of selected working pump of sump-4. Then working selected pump will start and the ON timer (Timer AS*) for sump-4 will start.

12. If Auto Trip condition (Details given below) true or ON timer time over or Auto start Permissive not O.K., then logic will stop/ bypass pump of sump 4 and repeat the procedure of step no. 1 till Auto stop Bit initiated from MMI i.e. unlatch Start Bit in MMI.

## Typical details of interlock for Drain Sump Pump in DCS

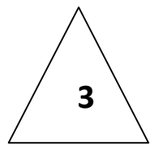



**Auto Start Permissive (SP*)**

1. Emergency stop released
2. Pump selected (Working/ Standby)
3. Electrical Condition Healthy for working pump selected.
4. Drain sump water level above Danger low set point or water level above high set point.

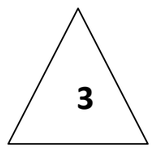
**Auto Trip Condition (TC*)**

1. Emergency stop Operated
2. Electrical Condition Not Healthy
3. Drain sump water level Danger low




**Auto Start Condition (AS*) (For further detail refer flow diagram)**

1. Auto start permissive available
2. Auto stop bit unlatched for particular sump. (sump1, sump2, sump3 & sump4)
3. Sequence is in particular sump i.e. as at a time only one working pump will run out of 4 working sump pump.

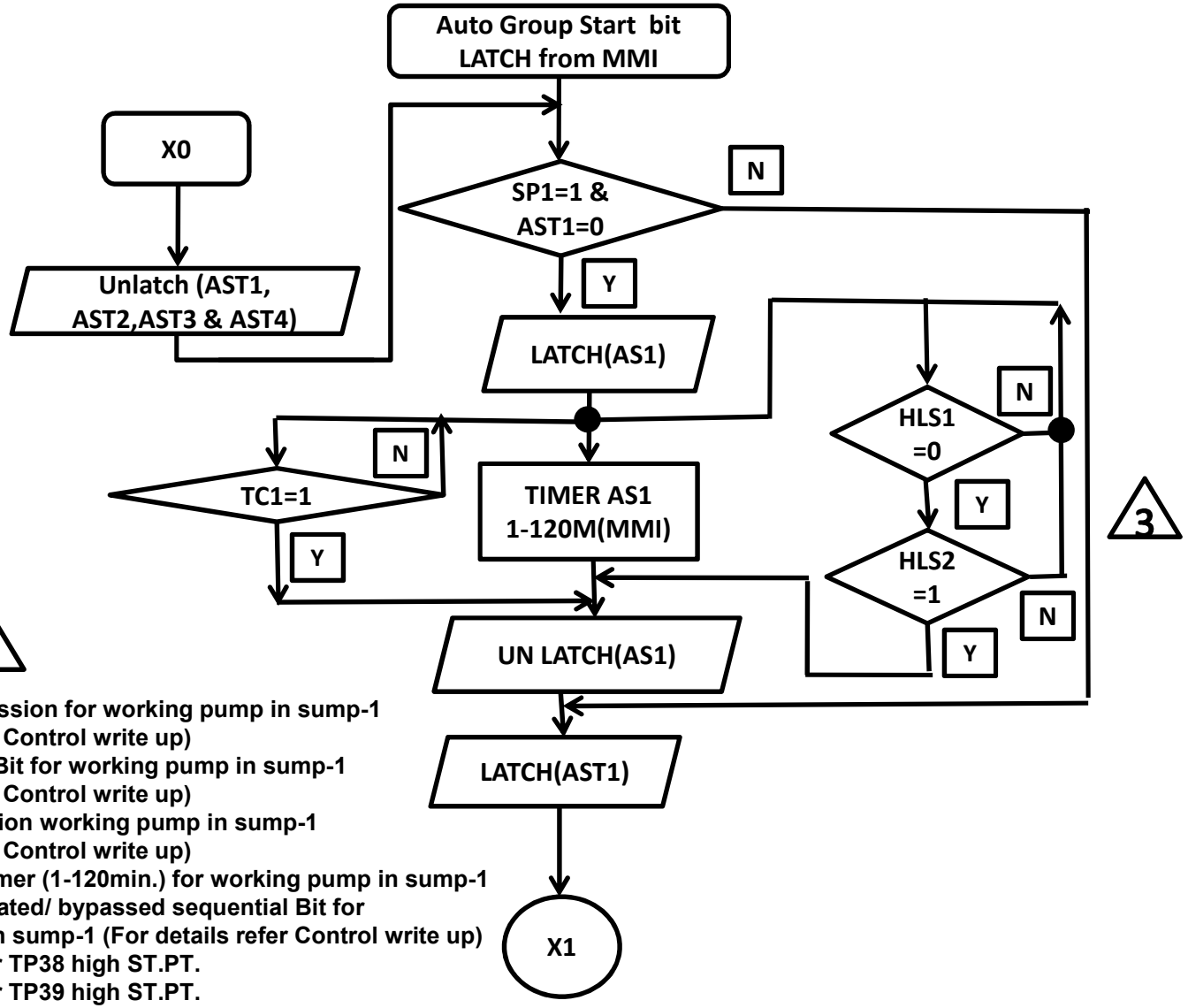



**Auto Stop condition (AST*) (For further detail refer flow diagram)**

1. On time over for particular sump.
2. Trip condition actuated (TC*)
3. Sump level of running sump pump below high level and next sump level is above High level.

# Auto Sequence Logic for 4 nos. Drain Sump Pump

## Logic for Drain Sump-1 (Near TP38) working selected Pump




**NOTE:-**

**SP1 -** Auto Start Permission for working pump in sump-1 (For details refer Control write up)

**AS1 -** Auto Start/Stop Bit for working pump in sump-1 (For details refer Control write up)

**TC1 -** Auto Trip Condition working pump in sump-1 (For details refer Control write up)

**Timer AS1-** Auto On delay timer (1-120min.) for working pump in sump-1

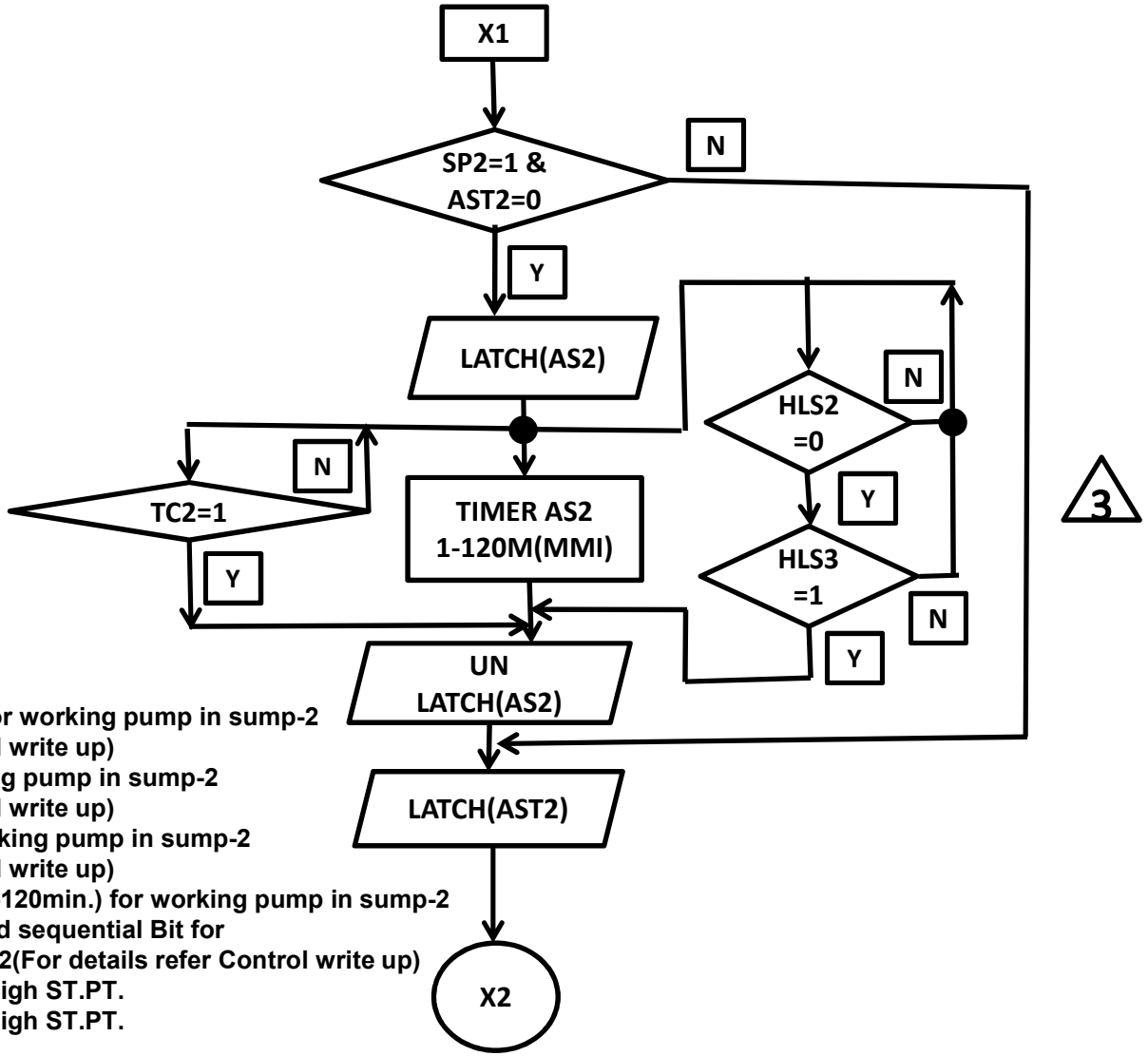
**AST1-** Auto pump operated/ bypassed sequential Bit for working pump in sump-1 (For details refer Control write up)

**HLS1-** Sump Level near TP38 high ST.PT.

**HLS2-** Sump Level near TP39 high ST.PT.

# Auto Sequence Logic for 4 nos. Drain Sump Pump

## Logic for Drain Sump-2 (Near TP39) working selected Pump




**NOTE:-**

**SP2 -** Auto Start Permission for working pump in sump-2 (For details refer Control write up)

**AS2 -** Auto Start Bit for working pump in sump-2 (For details refer Control write up)

**TC2 -** Auto Trip Condition working pump in sump-2 (For details refer Control write up)

**Timer AS2-** Auto OFF delay timer (1-120min.) for working pump in sump-2

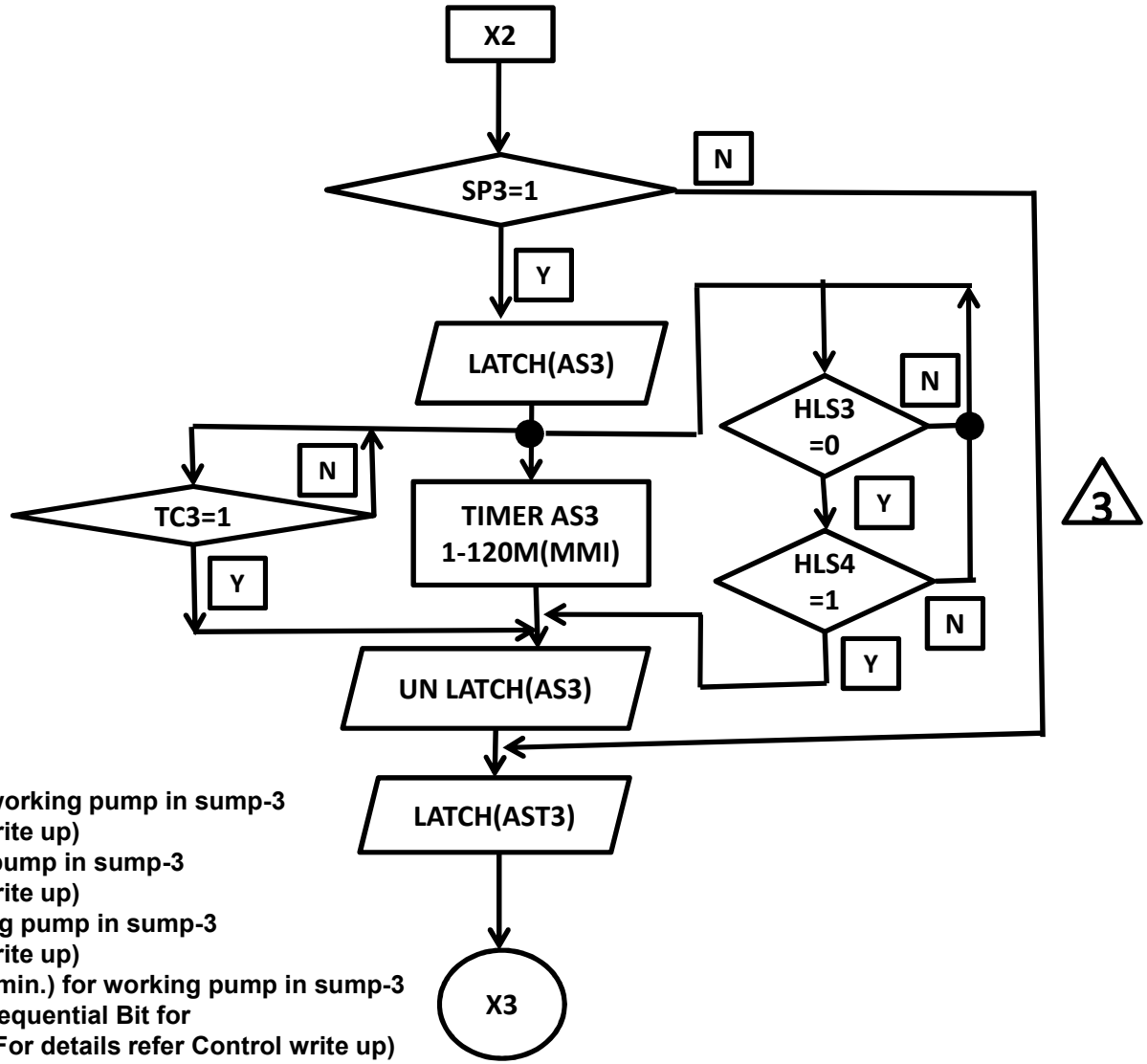
**AST2-** Auto operated/ bypassed sequential Bit for working pump in sump-2(For details refer Control write up)

**HLS2-** Sump Level near TP39 high ST.PT.

**HLS3-** Sump Level near TP40 high ST.PT.

# Auto Sequence Logic for 4 nos. Drain Sump Pump

## Logic for Drain Sump-3 (Near TP40) working selected Pump




**NOTE:-**

**SP3 -** Auto Start Permission for working pump in sump-3 (For details refer Control write up)

**AS3 -** Auto Start Bit for working pump in sump-3 (For details refer Control write up)

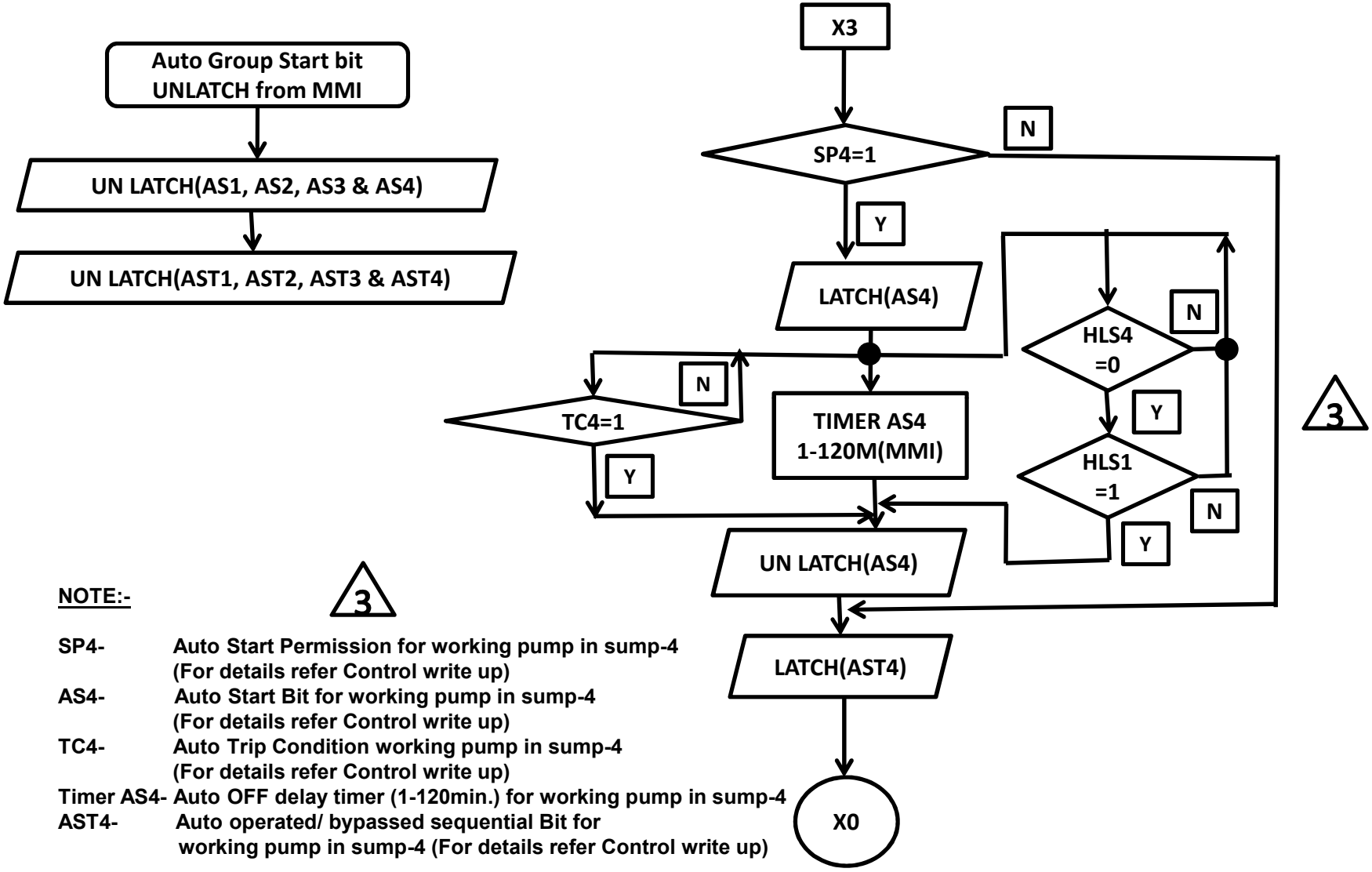
**TC3 -** Auto Trip Condition working pump in sump-3 (For details refer Control write up)

**Timer AS3-** Auto ON delay timer (1-120min.) for working pump in sump-3

**AST3-** Auto operated/ bypassed sequential Bit for working pump in sump-3 (For details refer Control write up)

# Auto Sequence Logic for 4 nos. Drain Sump Pump

## Logic for Drain Sump-4 (Near TP41) working selected Pump




**NOTE:-**

**SP4-** Auto Start Permission for working pump in sump-4 (For details refer Control write up)

**AS4-** Auto Start Bit for working pump in sump-4 (For details refer Control write up)

**TC4-** Auto Trip Condition working pump in sump-4 (For details refer Control write up)

**Timer AS4-** Auto OFF delay timer (1-120min.) for working pump in sump-4

**AST4-** Auto operated/ bypassed sequential Bit for working pump in sump-4 (For details refer Control write up)

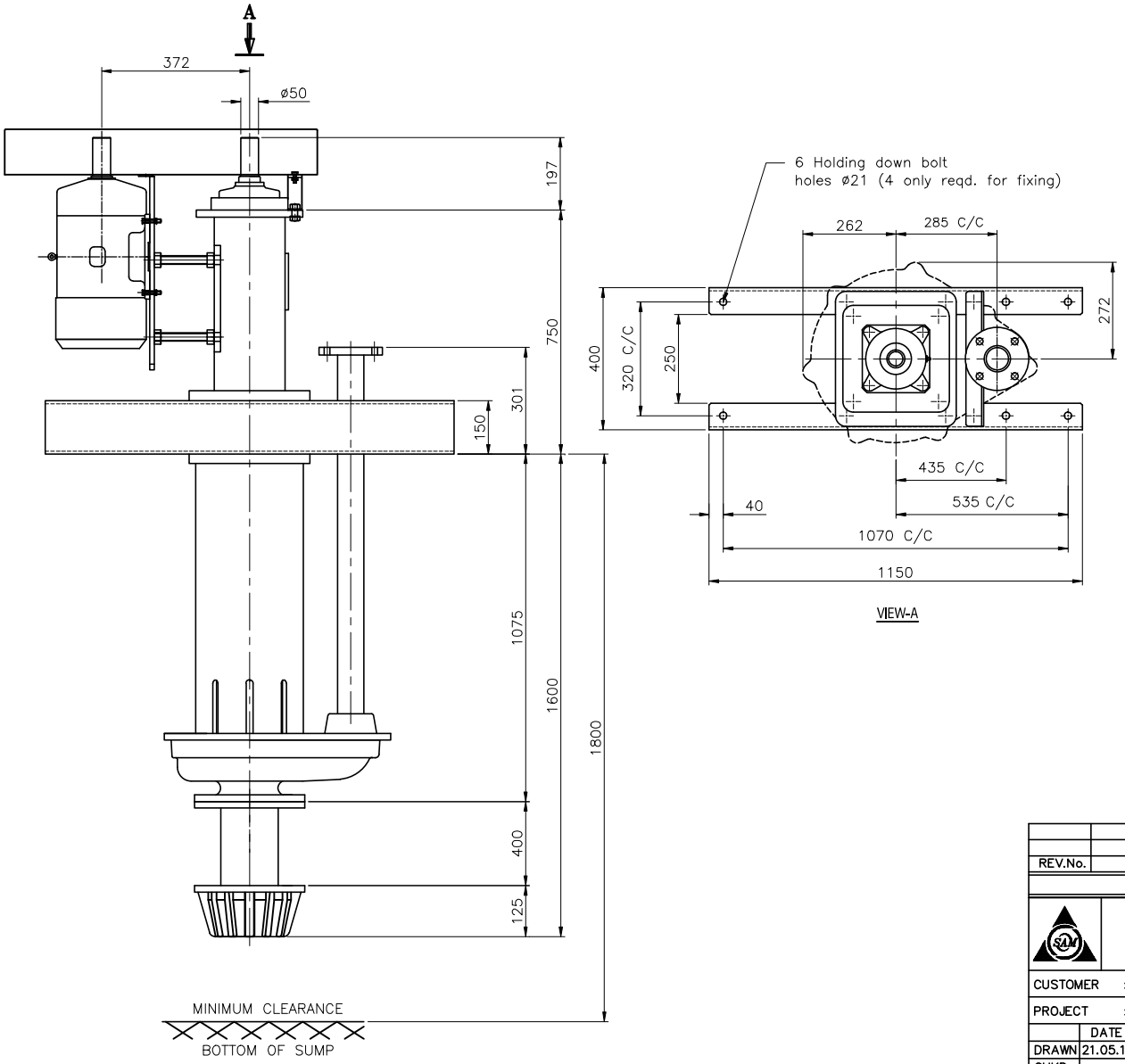
## Sump Pump Calculations

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | REVISION : 4 | | | | DATE : 04.12.19 | | |
| **Project Title** | **2X800 MW Telangana Super Thermal Power project** | | | | | | |
| **Pacakge** | **Coal Handling System** | | | | | | |
| **Client** | **NTPC LTD.** | | | | | | |
| **Customer** | **BHEL -ISG BANGALORE** | | | | | | |
| **Contractor** | **OSM PROJECTS PVT. LTD.** | | | | | | |

to be corrected to 1445 m ( i.e. 305 +15+955+170)

| Sl No | Parameters | Duty | code | unit | Formulae | Value | Reference |
|---|---|---|---|---|---|---|---|
| A | Flow requirement | | | | | | |
| i | Coal wash water from drain pump ( coal +water ) | Intermittent | Q | $m^3/hr$ | | 40 | MOM dated 03.05.19 |
| ii | No of drain pumps working at a time | | Nos | | | 1 | |
| B | **Total dynamic Head** | | | | | | |
| 1 | Total rated flow | | Q | $m^3/hr$ | | 40 | |
| 2 | Total line length | | L | meters | | 1200 | Refer drg. No 9591-102-162-PVM-F-001 |
| 3 | Line rise | | H | meters | | 10 | Refer drg. No 9591-102-162-PVM-F-001 |
| 4 | Pipe size considered (mm NB) | | d | mm | | 100 | |
| 5 | Pipe OD | | ID | mm | | 114.3 | |
| 6 | Pipe thickness | | t | mm | | 5.4 | |
| 7 | Pipe ID | | d0 | mm | | 103.50 | |
| | | | ft | | | 0.3395 | |
| 8 | Pipe Area | | a | $m^2$ | | 0.0084 | |
| 9 | Line velocity through the pipe | | v | m/s | | 1.19 | |
| | | | | f/sec | | 3.90 | |
| 10 | Fow through the pipe | | Q | $m^3/hr$ | | 40.00 | |
| 11 | Frictional Coefficient (Williams Hazens formula) | | C | | | 100 | |
| | | | k | | | 0.528 | |
| 12 | Frictional resistance coefficient (Williams Hazens formula) per 1000 ft | | | | $h_f = (v^{1.852}/d^{1.167})k$ | 23.20 | |
| 13 | Frictional resistance coefficient | | $h_f$ | % | | 2.32 | |
| 14 | Friction loss due to bend loss | | f | | | | |
| 14.1 | 90 deg. Bend | | | | 2.2 | | |
| 14.2 | Quantity of bend | | 10 | | 2.2x 10 | 22 | |
| 14.3 | 45 deg. Bends | | 2 6 | | 1.4x2 | 2 | |
| 14.4 | Plug Valve | | 1 | | 10x1 | 10 | |
| 15 | Total friction loss in line | | hf | m | f(L)/100 | 28 | |
| 16 | Dynamic head required | | h | mwc | hf+H | 38 | |
| 17 | Margin on frictional head ( straight pipe line friction loss & bend loss) | | | % | | 10 | Includes bend losses |
| | | | hmar | mwc | | 2.78 | |
| 18 | Total dynamic head required with margin | | Htot | mwc | h+hmar | 40.62 | |
| 19 | No. of Pump per stream | | n | nos | | 1 | |
| 20 | Total dynamic head required per pump | | | mwc | Htot/n | 40.62 | |
| 21 | Total dynamic head of pump slected | | TDH | MWC | | 50 | |
| | **Selection** | | | | | | |
| 22 | Selected capacity | | | $m^3/hr$ | | 40 | |
| 23 | Head | | | MWC | | 50 | |
| 24 | Motor rating | | | KW | | 30 | |

| REF : TMC/IP/15718/N | DT:01.07.2019 |
|---|---|
| **PUMP DATA SHEET (VERTICAL SLURRY PUMP)** | |
| **CUSTOMER :** | **M/s. OSM PROJECTS PRIVATE LIMITED** |
| **PROJECT :** | **NTPC KARIMNAGAR 2x800 MW** |
| **TECHNICAL SPECIFICATION** | **VERTICAL CANTILEVER SLURRY PUMP** |
| Equipment No | 1 |
| Pump Designation | Sump Pump |
| Quantity in Nos. | 8 Nos |
| **LIQUID DETAILS** | |
| Liquid Handled | Coal Slurry |
| Temparature in C | Ambient |
| Specific Gravity | 1.10 |
| Solid concentration | -- |
| Solid Size (mm) | 20 mm (Max) |
| **PUMP SPECIFICATION** | |
| Capacity in $M^3$/hr | 40 |
| Head in mwc / mlc (TDH) | 50 |
| Pump Type / Model | **VGS NH 65** |
| Size in mm (suc /del) | 120 X 65 |
| Speed in RPM | 1900 |
| Efficiency in % (W/L) | 31 |
| BKW (W) | 17.57 |
| BKW (L) | 19.33 |
| Max. Solid Size Pump can handle - mm | 26 mm |
| Shutoff Head in m | 55 m |
| Shaft sealing | TIGA (GLAND PACKING) |
| Impeller Type / Dia - mm | Open / 280 |
| Pump Setting Height mm | 1200mm + 400mm(Suction Spool) |
| Pump Sump Depth - mm | 1800 |
| **MATERIAL OF CONSTRUCTION** | |
| Volute Casing | HICHROME (ASTM A 532 TYPE A CLASS III ) (550 BHN) |
| Impeller | HICHROME (ASTM A 532 TYPE A CLASS III ) (550 BHN) |
| Wear Plate | HICHROME (ASTM A 532 TYPE A CLASS III ) (550 BHN) |
| Single Shaft | BS 970 EN 8 |
| Shaft Sleeve | AISI 410 |
| Column / Delivery Pipe | IS 1239 Part I Heavy |
| Bearing Bed & Other Parts | CI & STD MOC |
| **DRIVE DETAILS** | |
| Recommender Motor power - KW | **30 KW** |
| Speed - Rpm | **1500 RPM** |
| Type of Drive | "V" Belt Drive |




| TECHNICAL PARAMETERS | |
|---|---|
| PUMP DETAILS | |
| EQUIPMENT NO. | 1 |
| PUMP MODEL | VGS NH 65 |
| SIZE | 120X65 |
| QTY | 8 NOS |
| CAPACITY | 40 $m^3$ /hr |
| HEAD in MWC/MLC(TDH) | 50 m |
| SP.GRAVITY OF SLURRY | 1.10 |
| PUMP SPEED | 1900 RPM |
| PUMP LENGTH | 1200 mm+400mm SUCTION SPOOL |
| BKW (W/L) | 17.57/19.33 |
| EFFICIENCY | 31 % |
| MOTOR DETAILS | |
| MAKE | MARATHON |
| FRAME SIZE | D200L |
| SPEED(SYN) | 1500 RPM |
| POWER | 30 KW |
| BELT DETAILS | |
| PUMP PULLEY PCD | 180 |
| MOTOR PULLEY PCD | 236 |
| BELT SIZE | SPB 1400-3 NOS |
| SCOPE OF SUPPLY | |
| BARE PUMP | YES |
| MOTOR MOUNTING FRAME | YES |
| V BELTS | YES |
| SET OF PULLEYS | YES |
| DRIVE GUARD | YES |

| REV.No. | DESCRIPTION | DATE | CRRD | CHKED | APPD. |
|---|---|---|---|---|---|
| | | | | | |

REVISION

**SAM TURBO INDUSTRY PRIVATE LIMITED**

CUSTOMER : **M/s. OSM PROJECTS PRIVATE LIMITED**

PROJECT : **NTPC KARIMNAGAR 2x800 MW**

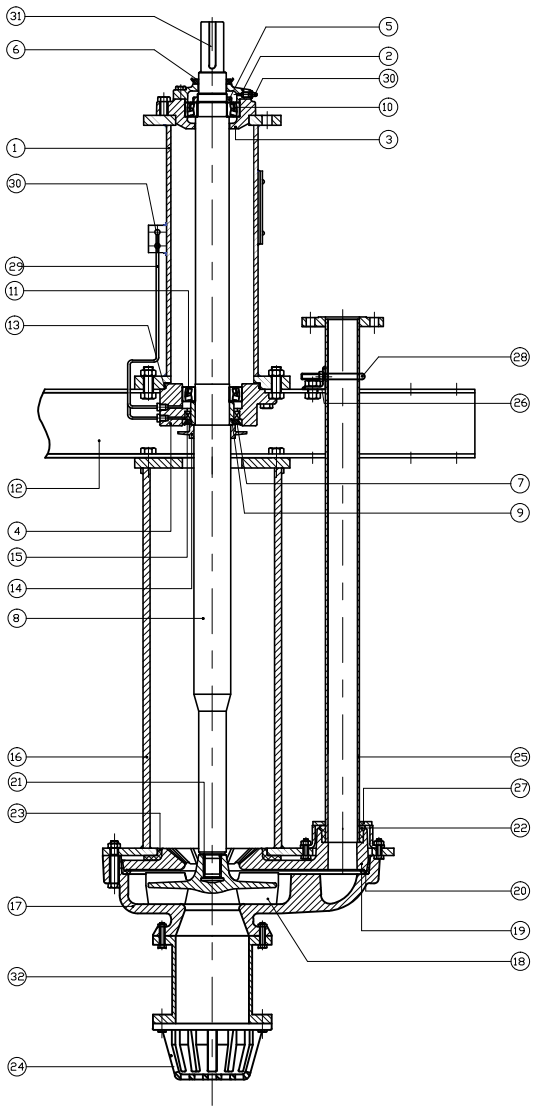
| | DATE | NAME |
|---|---|---|
| DRAWN | 21.05.19 | D.I |
| CHKD | | |
| APPD | | |

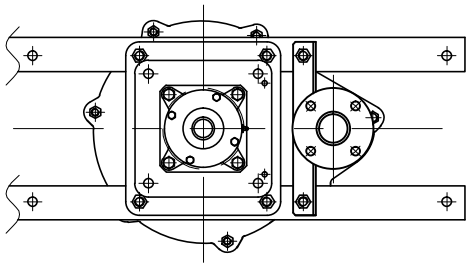
TITLE : OVERALL DIMENSIONAL DRAWING

DRAWING No. 1813 | 227 | TMC | IP | 15718 | N

REV.No. 0

ALL DIMENSIONS ARE IN MM



| ITEM | DESCRIPTION | MATERIAL | QTY. |
|---|---|---|---|
| 1 | BEARING HOUSING | IS 2062 MS | 1 |
| 2 | END COVER | IS 210 FG 260 | 1 |
| 3 | BEARING HOLDER (DRIVE)) | IS 210 FG 260 | 1 |
| 4 | BEARING HOLDER | IS 210 FG 260 | 1 |
| 5 | BEARING NUT | BS 970 En8 | 1 |
| 6 | BEARING SEAL(DRIVE) | NATURAL RUBBER | 1 |
| 7 | BEARING SEAL(PUMP) | NATURAL RUBBER | 1 |
| 8 | SHAFT | BS 970 En8 | 1 |
| 9 | SHAFT SLEEVE | AISI 410 | 1 |
| 10 | BEARING(DRIVE) | STEEL | 1 |
| 11 | BEARING(P.END) | STEEL | 1 |
| 12 | MOUNTING PLATE | IS 2062 MS | 2 |
| 13 | O-RING | NEOPRENE RUBBER | 1 |
| 14 | FLINGER | NATURAL RUBBER | 1 |
| 15 | BEARING SEAL(BRG HOLDER) | NATURAL RUBBER | 1 |
| 16 | COLUMN PIPE | IS 1239 PART I HEAVY | 1 |
| 17 | CASING | HICHROME (ASTM A 532 TYPE A CLASS III) (550 BHN) | 1 |
| 18 | IMPELLER | | 1 |
| 19 | BACK LINER | | 1 |
| 20 | BACK LINER SEAL | NATURAL RUBBER | 1 |
| 21 | O-RING | NEOPRENE RUBBER | 1 |
| 22 | JOINT RING | NATURAL RUBBER | 1 |
| 23 | SPIGOT RING | NATURAL RUBBER | 1 |
| 24 | STRAINER | IS 210 FG 260 | 1 |
| 25 | DISCHARGE PIPE | IS 1239 PART I HEAVY | 1 |
| 26 | DISCHARGE PIPE SUPPORT | IS 2062 MS | 1 |
| 27 | DISCHARGE PIPE CLAMP | IS 2062 MS | 1 |
| 28 | U-BOLT WITH NUT | M.S | 1 |
| 29 | GREASE LINE | AISI 304 | 1 |
| 30 | GREASE NIPPLE | STEEL | 2 |
| 31 | KEY (PUMP PULLEY) | BS 970 En8 | 1 |
| 32 | SUCTION SPOOL | IS 1239 PART I HEAVY | 1 |
| R | FASTENERS (WETTED PARTS) | H.T.S GR.8.8 | 1SET |

R NOT SHOWN IN SECTIONAL ASSEMBLY

**EQUIPMENT NO : 1**

| | |
|---|---|
| Pump Type | VGS NH 65 |
| Size | 120 x 65 |
| Capacity | 40 $M^3$/Hr |
| Head in MWC/MLC(TDH) | 50 M |
| Efficiency(w/l) | 31 % |
| Qty | 8 NOS |

| REV.No. | DESCRIPTION | DATE | CRRD | CHKED | APPD. |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |

REVISION

**SAM TURBO INDUSTRY PRIVATE LIMITED**

CUSTOMER : **M/s. OSM PROJECTS PRIVATE LIMITED**

PROJECT : **NTPC KARIMNAGAR 2x800 MW**

| | DATE | NAME |
|---|---|---|
| DRAWN | 21.05.19 | D.I |
| CHKD | | |
| APPD | | |

TITLE : SECTIONAL DRAWING WITH BILL OF MATERIAL

DRAWING No. 2222 | 06 | TMC | IP | 15718 | N

REV.No. 0

ALL DIMENSIONS ARE IN MM

# SAM TURBO INDUSTRY PVT LTD

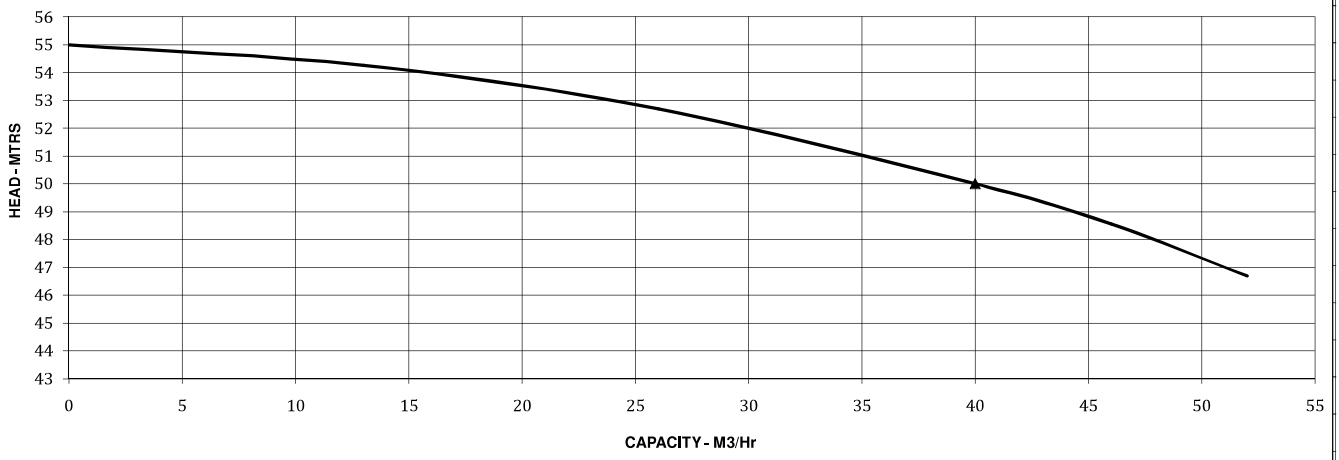
*VGS NH 65*

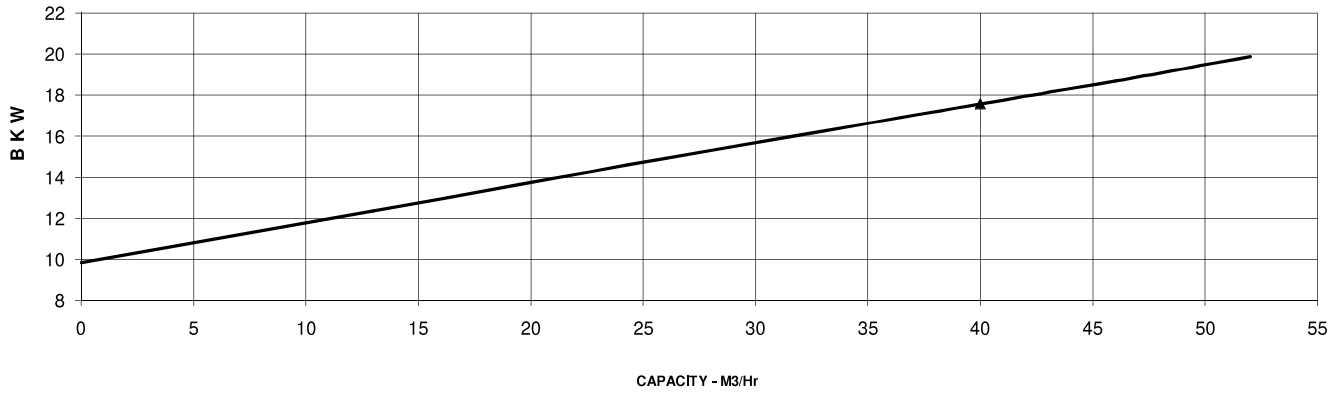
## PUMP CHARACTERISTIC CURVE

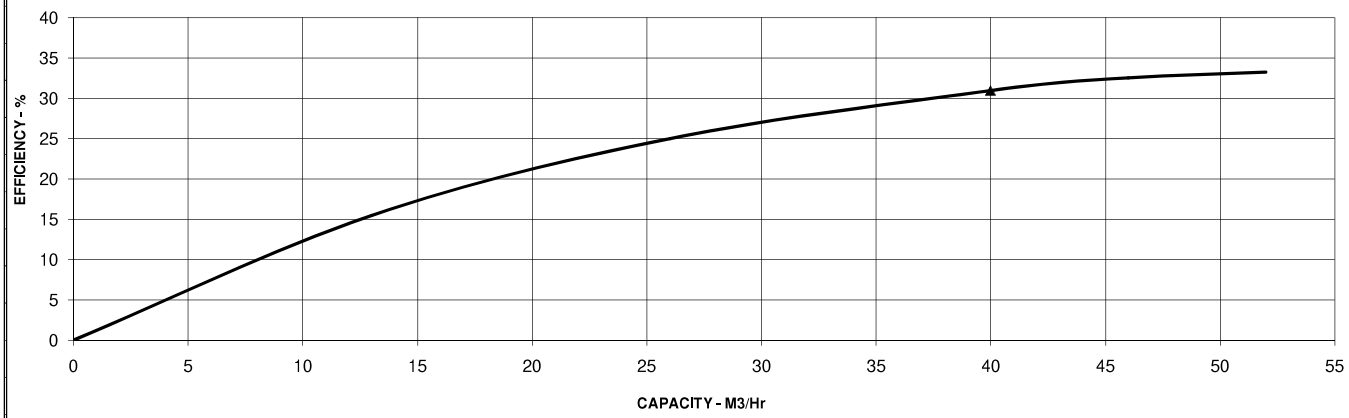
*SIZE : 120X65*

BASED ON THE PERFORMANCE OF WATER OF VISCOSITY 1CST, SP GR 1.0

PUMP MODEL :- VGS NH 65

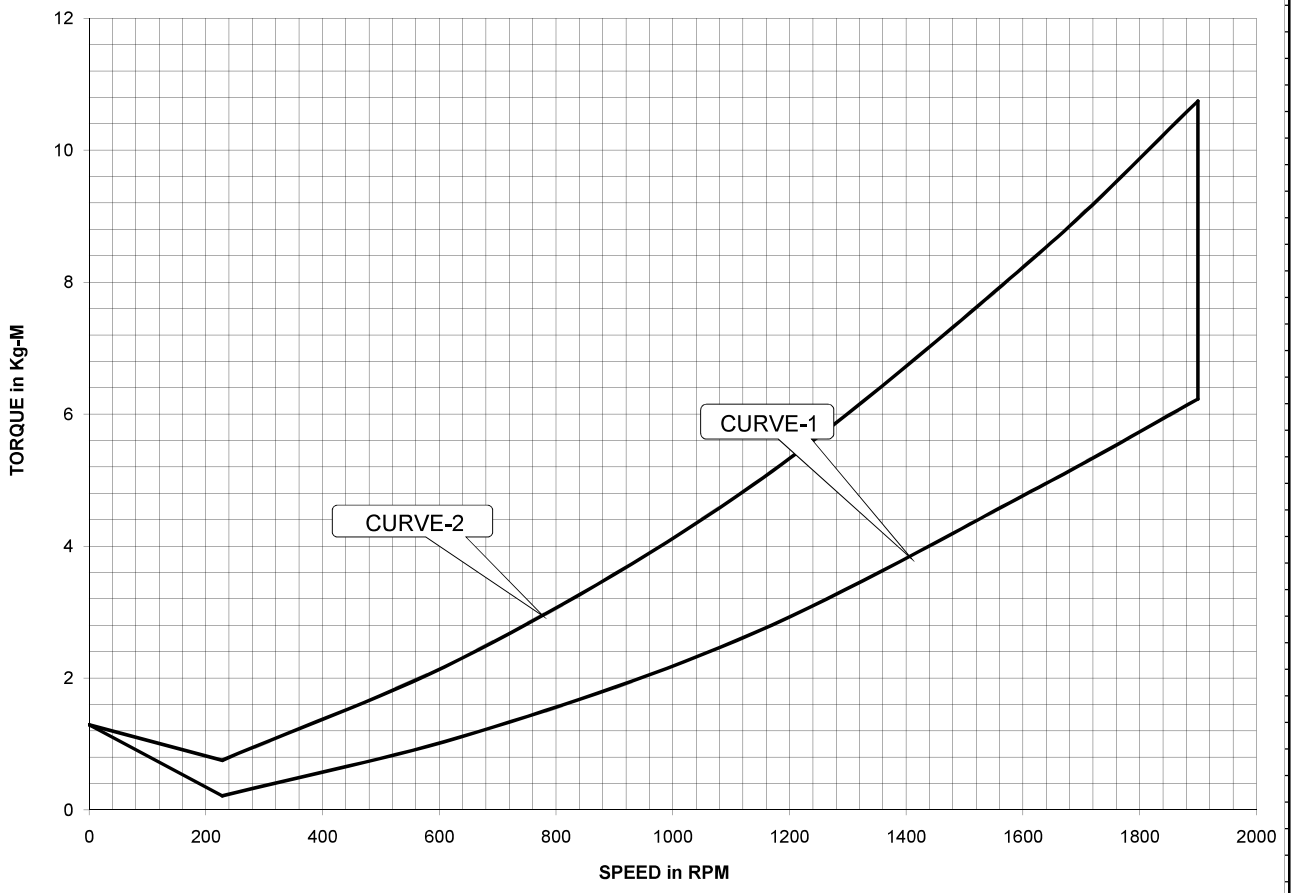



| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| CAPACITY - CUB MTRS/HR | | 40 | | **CUSTOMER** | | **M/s. OSM PROJECTS PRIVATE LIMITED** | | |
| TOTAL HEAD -MTRS | | 50 | | **PROJECT** | | **NTPC KARIMNAGAR 2x800 MW** | | |
| SPEED - RPM | | 1900 | | **PUMP DESIGNATION** | | **DRAIN SUMP PUMP** | | |
| EFFICIENCY - % | | 31.0% | | | | | | |
| BKW | with S.G =1.0 | 17.57 | | | | | SAM REF : TMC/IP/15718/N | |
| SUCTION & DELIVERY-MM | | 120 x 65 | | DRAWN | G.MEENA | ND | CHKD G.M | DT: 1.07.2019 |

# SAM TURBO INDUSTRY PVT LTD
# SPEED TORQUE CURVE




| | |
|---|---|
| CURVE 1 - Indicates when delivery valve fully opened and pipe line drained | CURVE 2 - Indicates when delivery valve fully opened and no geodetic head |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| CUSTOMER | : | M/s. OSM Projects Pvt Ltd | | | | | | |
| PROJECT | : | NTPC KARIMNAGAR 2x800 MW | | | | | | |
| PUMP SPECIFICATION | : | Sump Pump | | | | | | |
| PUMP TYPE | : | VGS NH 65 | | HEAD | : | 50 | M | |
| SIZE | : | 120X65 | | CAPACITY | : | 40 | M³/Hr | |
| MOTOR RATING | : | 30 | KW | PUMP SPEED | : | 1900 | rpm | |
| GD² VALUE | : | 0.3320 | Kg-M² | SP. GRAVITY | : | 1.10 | | |
| ORDER REF | : | TMC/IP/15718/N | | EFFICIENCY | : | 31% | | |
| | | | | BKW/BHP(L) | : | 19.33 | KW | 26 HP |

**Compliance Report**

| S.no. | NTPC Comment on rev 03 through transmittal27849 dated 03-12-2019 | BHEL reply dated 04-12-2019 |
|---|---|---|
| 1 | Review the capacity as provided earlier and indicated on page no.-2. | Values corrected in Page 2 in line with Calculation/datasheet and MOM |

**MINUTES OF TECHNICAL COORDINATION MEETING BETWEEN NTPC,BHEL,TPL AND OSMPPL ON DATED 03.05.2019 AT NTPC EOC, NOIDA**

**PROJECT :** TELANGANA STPP PHASE – 1 (2 x 800 MW) BOP PACKAGE

**SUBJECT :** INTERFACE MEETING WITH TPL/BHEL

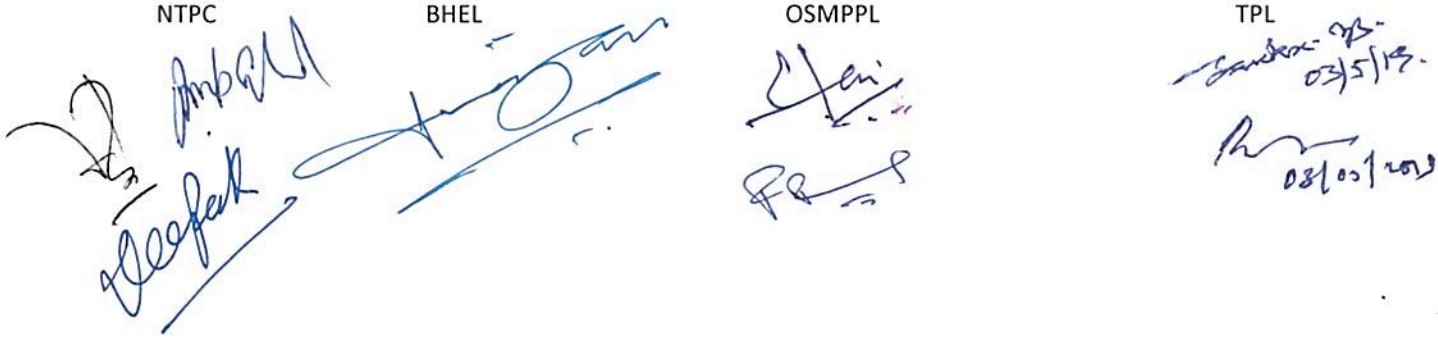
**PARTICIPANTS :-**

| NTPC | TPL | BHEL | OSMPPL |
|---|---|---|---|
| ARUP GHOSAL | Y B SANKAR | INDRAJITDEY | HARI PRASAD |
| DIPANKAR BISWAS | RVN SRIKANTH | | VARUN BIMAL |
| D K JAIN | | | F.PAUL |

This MOM will supersede the point no 2 of MOM dated 09.05.18 (Attached) regarding effluent transfer from TP 38 to 41 and it shall be read as :

1. Scheme revised to transfer the Coal decanted water to CSSP pit.
2. At each TP i.e TP 38,39,40,41 one no sump ( 2 X 2 X 1.8 M DEPTH) with 2 nos. sump pumps each of capacity 40 m3/hr @ 50 mWc will be provided to transfer the coal wash water from respective TPs and 10 cu.m/hr MRS effluent of bunker area to effluent sump near TP -35 through DN 100 pipe line. From sump pit near TP-35 it will be discharged to CSSP. BHEL and TPL jointly checked and confirmed the same in meeting.
3. BHEL/OSM will provide all the pump 8 nos. (4 working + 4 standby) and common pipe header of DN 100 from TP 41 to terminal point B and from there onwards ( terminal point B) DN 100 pipe line up to effluent sump near TP-35 will be provided by TPL.
4. At any point of time only one sump pump among 4 sump pumps located in 4 bunker TP's will be in operation. BHEL will provide suitable interlock/ permissive to ensure the same.
5. Each sump pit will be provided with Level switches showing Low & high level which will be connected to local control panel for start and stop of the pumps.

NTPC BHEL OSMPPL TPL



9591-102-102-POE-E-010A**MINUTES OF TECHNICAL COORDINATION MEETING BETWEEN NTPC, TPL , BHEL AND ABFPL ON 09-05-18 AT NTPC EOC, NOIDA**

PROJECT: TELANGANA STPP PHASE – 1 (2 X 800 MW) - BOP PACKAGE

SUBJECT: Interfacing meeting with TPL/BHEL /ABFPL

**Participants: -**

| NTPC | TPL | BHEL | ABFPL |
|---|---|---|---|
| Arup Ghosal | R Mathivanan | I. Dey (BHEL/ISG) | Pratik |
| Deepak Jindal | | Deepak (BHEL/PEM) | Rishov |
| Prabhat Ranjan Deen | | | |
| Rajat Sharma | | | |

**1. The following MEP layout TPL clarification discussed and finalized as per below details**

| S.No | TPL Comment | NTPC Reply | Final resolution |
|---|---|---|---|
| 1. | NTPC to update complete ash slurry piping corridor in this layout to check interference. | TPL to plan the layout of its trestle w.r.t BHEL drawing no 9591-102-162-PVM-F-010 titled "BOTTOM ASH SLURRY DISPOSAL AREA PIPING LAYOUTS (INSIDE PLANT)"(attached) | TPL clarified that PR-9 interference with ash slurry pipe corridor near to terminal point C (9591-131-LP-PVM-P-004). NTPC/BHEL will revert with possible solution for providing space for TPL pipe rack trestle column (9591-102-162-PVC-C-1324). BHEL will submit the proposal by 15-05-18 |
| 2. | As commented earlier, NTPC to reroute the ash slurry pipe corridor as per approved yard piping layout. | Same as S.No.1 | Same as S.No.1 |
| 3. | Silo orientation to be updated latest FGD layout. | BHEL to update MEP layout as per FGD drawing no 9591-109-PVC-B-001 titled "GA & RCC Detail of Foundation of Lime Stone Slurry Tank" (attached) | BHEL will update the same in next revision of MEP. |
| 4. | TP-50 size & orientation to be updated based | TPL to submit the GA drawing of TP-50, so that the same can be forwarded to BHEL | TPL clarified that based on TCM dt 10-05-18 with FGD vendor, final GA of TP-50 will be submitted to NTPC by |

| | | | |
|---|---|---|---|
| | on TCM dt 14-03-18. | for updating MEP layout. | 16-05-18 |
| 5. | Monorail landing fouling with piperack.PL revise pipe rack as per GA of TP-37 9591-155-PVM-B-018 | BHEL to take suitable action | BHEL ISG will revert by 17-05-18 |
| 6. | Tower size to be updated based on latest approved drg (9591-155-PVM-B-018). | BHEL to update MEP drawing based on the referred drawing. (attached) | BHEL clarified that the same will update in next revision of MEP |
| 7. | FWBPH location have updated in MEP layout (AutoCAD drawing attached). The same to be updated. | BHEL to update MEP layout drawing based on TPL drawing no 9591-151-PVM-P-010 titled "Piping & Equipment Layout for Hydrant & Spray Booster Pump House" (attached) | BHEL proposed that North coordinate as 726.0 (Column centreline A1) for FWBPH. Accordingly, TPL will provide revised drawing to BHEL/NTPC by 17.05.2018. Same will be updated in next revision of MEP. |
| 8. | NTPC to show staircase & elevator details | Same as S.No. 6 above. | BHEL/NTPC informed that only overall space arrangement will be shown in MEP. |
| 9. | NTPC to relocate LM-6 & DG to locate MCC-D switchgear room.<br>MCC - D location have updated in MEP layout (AutoCAD drawing attached). The same to be updated. | As shown in Auto Cad drawing, LM-6 is not required to be shifted. The same was also discussed with TPL.<br>Regarding the shifting of DG set, BHEL to take necessary action | TPL will review MCC-D location w.r.t clearance from nearby BHEL/NTPC pipe rack foundation and PSS-6&LM6<br>After confirmation from NTPC, same will be updated in the next revision on MEP. |
| 10. | DG set location have updated in MEP layout (AutoCAD drawing attached). The same to be updated. | BHEL to update location as per attached AutoCAD dwg | BHEL requested TPL/NTPC to provide locating coordinate of DG by 17-05-18. Accordingly, same will be updated in next revision of MEP. |

2. NTPC/BHEL/TPL discussed that main plant TP effluent transfer scheme and finalized that BHEL will provide one pipe line (100 NB) up to terminal point C and further piping up to ETP will be done by TPL (Refer TCM). TPL will provide the sketch showing piping length & bends for BHEL to select the pump head by 16-05-18
TPL will provide necessary interconnection at site for TP-37 effluent Connection to TP-38 sump pit scheme by 16-05-18. NTPC requested BHEL to accept the same without changing sump & sump pit located at TP-38. BHEL accepted

09/05/18

09/05/18

3. TPL requested NTPC to obtain complete BHEL layout showing MEP, ash handling plant layout & ash slurry pipe corridor layout to avoid interference issues. NTPC advised TPL to submit the revised plot plan and will be forwarded the same to BHEL to taking care of interfacing issues.
4. BHEL-ISG will submit pipe trestle location, loading details and connection details connecting with ABFPPL trestle at C row by 25.05.18. ABFPPL will review and revert.
5. BHEL/NTPC will submit LP Dosing station GAD & NaOH tank GAD by 15th June,18.
6. TPL requested NTPC to submit control room architecture drawing/false celling room(Including HVAC layout ) by 10-05-18 to submit the Inert Gas Cylinder room & distribution arrangement by 19-05-18 .
7. ABFPPL requested NTPC/TPL to provide all inputs required by ABFPPL agreed in Interface meeting on dated 18th & 19th April,18 at earliest

**NTPC** **TPL** **BHEL** **ABFPL**