# Corrigendum 1 dated Dec 17, 2016 to Tender Specification BHEL PSSR SCT 1648

A) The Erection Welding Schedule (18 pages) for auxiliary Boiler piping is enclosed with this corrigendum. Bidders are requested to consider this also along with the Erection Welding Schedule that are already published in the Technical Conditions of Contract.

B) The clause 1.5.1 of chapter V in Technical Conditions of Contract is revised as below:

List of T&Ps to be made available by BHEL to contractor free of hire charges on sharable basis.

| Sl.No | Description | Quantity. |
|---|---|---|
| 01 | Induction Heating machine (Refer clause 1.5.3 below) | As Required |
| 02 | Spot Welding Machine | 01 |
| 03 | Chemical Cleaning Pumps with Accessories | As Required |
| 04 | Hydro Test pumps (400 / 600 kg/cm$^2$) | 01 |
| 05 | **Suitable capacity cranes required for erection of FW storage tank & Deaerator assembly of Auxiliary Boiler, Makeup water storage tank, Flash tank, Flash tank vent pipe and Flash tank drain tank will be provided by BHEL free of hire charges.** | **As Required** |

C) The clauses 1.5.19 to 1.15.21 are added in the Chapter V in Technical Conditions of Contract and are as below:

1.5.19 BHEL may provide either owned cranes or hired cranes at the discretion of BHEL and the terms and conditions shall be as below:

1.5.19.1 In the event of providing BHEL Cranes:

i. For all BHEL's own cranes of capacity greater than 100T, BHEL shall provide operators, free of charges. The above Cranes shall be provided for erection of all heavy lifts as per the site requirement and only for a limited period. Fuel and lubricants for BHEL's own cranes of capacity greater than 100T, are to be arranged by the contractor within the quoted rate.

1.5.19.2 In the event of providing hired cranes:

i) Crane Operators for hired cranes will be provided by BHEL, on free of charges.

ii) The fuel charges shall be recovered as given below:

| | |
|---|---|
| For 100MT / 135 MT / 150MT crane | : Rs. 200 /hr |
| For 250 MT crane | : Rs. 300 /hr |
| For 600 MT / 750 MT crane | : Rs. 500 /hr |

1.5.19.3 The day to day routine maintenance including replacement of spares (Including filters) for the crane provided by BHEL will be carried out by the contractor at his own cost. However, BHEL shall supply spare parts free of charge for normal wear and tear only. Contractor shall provide required manpower assistance as per the instruction of BHEL engineer for carrying out the above works.

1.5.20 For movement of cranes etc. it may become necessary to lay sleeper bed for obtaining leveled safe approach for usage of equipment. It shall be the responsibility of the contractor to lay necessary sleepers. The sleepers shall be arranged by the contractor at his cost.

1.5.21 Increasing / shortening of the crane boom to suit work requirements shall have to be arranged by the contractor at his cost. All necessary manpower, tools, support, consumables, illumination etc. will have to be arranged by contractor at his cost. If required, contractor has to return the crane with original boom.

D) Some of the bidders had raised queries in the published tender specification. The Clarifications issued by BHEL are furnished below:

| No | Reference clause | Existing provision | Bidder's query | BHEL's clarification |
|---|---|---|---|---|
| 1) | Price Bid<br>Volume II<br>Ref no 1E | For Hangers & Supports required for all piping indicated under **rate schedule ID** 1A,1B,1C,1D of above, **Aux steel** for the above piping including fabrication if required<br>…….. ……. ……. …… ……. …… ……<br>Miscellaneous items. | Please clarify the following :<br>a) ID is mentioned twice<br>b) We do not find rate schedule but Part C: Bill of quantities.<br>c) Whether Aux. Steel will be supplied by BHEL free of cost<br><br>We feel "Aux steel" should be replaced by "Aux structure". Please confirm.<br>Please confirm all the structural materials required for fabrication (if any) will be provided by BHEL on free issue basis.<br>Please confirm that fabrication of Tanks, Vessels is not in Bidder scope. | **Rate schedule ID** May be read as Rate schedule identity.<br>Part C is Bill of Quantities as mentioned in instruction to Bidders in Part A.<br>All structural materials required for Fabrication (if any) will be provided by BHEL on free issue basis.<br>Fabrication of tanks, Vessels are not in bidder scope.<br>1E of Bill of Quantities revised as below:<br>For Hangers & Supports required for all piping indicated under rate schedule ID 1A,1B,1C,1D of above, **Aux Structure** for the above piping including fabrication if required, …….. …….. ……. ……. Miscellaneous items. |
| 2) | Technical Conditions of Contract (TCC) Volume IA, Part-I Chapter –III note of clause 1.3.3.1 | Contractor shall adopt pre-engineered / pre-fabricated constructions …….. …….. …… ……building. Alternatively, contractor can adopt readymade 'porta cabin" or similar construction. | Please confirm that, is it compulsory that contractor shall adopt readymade porta cabin for office or can construct by conventional method? | Bidder to follow the tender conditions. |

<table>
<tr><th>No</th><th>Reference clause</th><th>Existing provision</th><th>Bidder's query</th><th>BHEL's clarification</th></tr>
<tr>
<td>3)</td>
<td>TCC<br>Volume IA, Part-I<br>Chapter –IV<br>clause 1.4.1 and 1.4.2</td>
<td><u>Clause 1.4.1</u><br>The following minimum major Tools & Plants (T&P) …… …… …… Contractor within the quoted rate for execution of this contract.
<table>
<tr><th>Sl. No</th><th>Description</th><th>Quantity.</th></tr>
<tr><td>01</td><td>Pick & Carry crane - TRX or equivalent type (12- 16 MT)</td><td>As required</td></tr>
<tr><td>02</td><td>Trailer ( 20 T / 30 T)</td><td>As required</td></tr>
<tr><td>03</td><td>Combination of Diesel Generator set of 300 KVA or above (As standby supply for P91 Welding only)</td><td>Minimum 900 KVA capacity</td></tr>
<tr><td>04</td><td>Fill pump</td><td>As required</td></tr>
<tr><td>05</td><td>HT pump for hydro test ( up to 50 Kg/Sq.cm) of LP piping</td><td>As required</td></tr>
</table>
<u>Clause 1.4.2</u><br>All the T&Ps required for this scope of work, ……. …… …… …….. …… by the contractor with in the quoted rates.</td>
<td>From the mentioned clause as well as from PGMA it is very difficult to envisage regarding the requirement of Heavy Lift Crane (Greater than 16 MT Capacity). As per our previous experiences we feel that Heavy Cranes may be required for a very short period and cost implication for the same is practically impossible to consider in estimation. Hence we propose to provide Heavy Cranes (if required) by M/s BHEL on free issue basis.</td>
<td>Suitable capacity cranes required for erection of FW storage tank & Deaerator assembly of Auxiliary Boiler, Makeup water storage tank, Flash tank, Flash tank vent pipe and Flash tank drain tank will be provided by BHEL free of hire charges.<br><br>Also refer sl.no. C of this corrigendum regarding clauses on crane.</td>
</tr>
</table>

<table>
<tr><th>No</th><th>Reference clause</th><th>Existing provision</th><th>Bidder's query</th><th>BHEL's clarification</th></tr>
<tr><td>4)</td><td>TCC<br>Volume IA, Part-I<br>Chapter –IV<br>clause 1.4.1<br>Sl no 3</td><td><table><tr><th>Description</th><th>Quantity</th></tr><tr><td>Combination of Diesel Generator set of 300 kVA or above (As standby supply for P91 Welding only)</td><td>Minimum 900 kVA capacity</td></tr></table></td><td rowspan="2">Please mention the required period / months for which Diesel Generator set of 300 KVA or above as standby supply for P91 welding only.<br><br>As per Clause No. 1.4.3.1 of TCC "Electricity for construction purpose (415 V) shall be provided by BHEL at one single point at free of any charges" which contradicting Clause No. 1.4.5 "Diesel Generator for P 91 welding (along with required cables, switches, fuel and operator) has to be arranged by the contractor within the quoted rates".<br><br>Please confirm Diesel Generators sets will have to be provided by Bidder as standby supply for P91 welding only and in case of Power cut the running cost of Bidder's DG sets will be reimbursed by BHEL at actual.</td><td rowspan="2">DG sets shall be deployed till completion of all P91 welding & hydro test of piping in both units.<br><br>DG sets are to be deployed as stand by supply for P 91 welding and the running cost to be borne by bidder and will not be reimbursed by BHEL</td></tr>
<tr><td>5)</td><td>TCC<br>Volume IA, Part-I<br>Chapter –IV<br>clause 1.4.5</td><td>Diesel Generator for P 91 welding ….. ……. …… ….. arranged by the contractor within the quoted rates. In the eventuality ……. …… …… ……. at the contractor's risk and cost.</td></tr>
</table>

<table>
<tr><th>No</th><th>Reference clause</th><th>Existing provision</th><th>Bidder's query</th><th>BHEL's clarification</th></tr>
<tr><td>6)</td><td>TCC<br>Volume IA, Part-I<br>Chapter –IV<br>clause 1.4.1<br>Sl no 3</td><td><table><tr><th>Description</th><th>Quantity</th></tr><tr><td>Combination of Diesel Generator set of 300 kVA or above (As standby supply for P91 Welding only)</td><td>Minimum 900 kVA capacity</td></tr></table></td><td rowspan="2">As in clause 1.4.4.1 and l.4.5 no quantity / cap has been mentioned as 300 kVA whereas under column of quantity it is written as 900 kVA, please confirm the number of Diesel Generator required. We feel it should be One Number.</td><td rowspan="2">Tender condition is self-explanatory</td></tr>
<tr><td>7)</td><td>TCC<br>Volume IA, Part-I<br>Chapter –IV<br>clause 1.4.5</td><td>Diesel Generator for P 91 welding ….. ……. …… ….. arranged by the contractor within the quoted rates. In the eventuality ……. …… …… ……. at the contractor's risk and cost.</td></tr>
<tr><td>8)</td><td>TCC<br>Volume IA, Part-I<br>Chapter –IV<br>clause 1.5.3.1 (d)</td><td>One set of Annealing cable for Induction Heating Equipment will be supplied by BHEL. Additional requirement of annealing cables have to be arranged by the contractor within the quoted rates.</td><td>a) Please confirm that required nos of Induction Heating M/c shall be provided by BHEL free of cost at site and the nos. also to be specified.<br>b) Please also confirm whether each Induction Heating M/c will be provided with one set of Annealing Cable by BHEL free of cost.</td><td>The clause is revised as below:<br>One set of Annealing cable for each Induction Heating Equipment will be supplied by BHEL.<br>Additional requirement of annealing cables have to be arranged by the contractor within the quoted rates.</td></tr>
</table>

<table>
<tr><th>No</th><th>Reference clause</th><th>Existing provision</th><th>Bidder's query</th><th>BHEL's clarification</th></tr>
<tr><td>9)</td><td>TCC<br>Volume IA, Part-I<br>Chapter –VI<br>clause 1.6.3.2</td><td>Milestones<br><table><tr><td>Major Milestone Activity</td><td>Milestone Month for unit-1</td></tr><tr><td>Steam Blowing completion</td><td>11th Month</td></tr><tr><td>Readiness for Synchronisation</td><td>10th Month</td></tr><tr><td>Trial Operation</td><td>14th Month</td></tr><tr><td>Completion of scope of work</td><td>17th Month</td></tr></table></td><td>Synchronization is done after steam blowing, please clarify?</td><td>The milestone of Readiness for Synchronisation stands deleted.</td></tr>
<tr><td>10)</td><td>TCC<br>Volume IA, Part-I<br>Chapter –XIV<br>clause 1.14.2.78 and 1.14.2.79</td><td>1.14.2.78: All Rotating machineries and equipment …. ……. …….. ……. ……. …. …. … carried out by contractor at his cost.<br>1.14.2.79: All the shafts of rotating equipment ….. ……. …… … ……. …….. …. shorten the life of the equipment.</td><td>As this is a Power Cycle Piping work please confirm what items are covered under rotating machine.</td><td>Small pumps and motors under the scope of this contract are referred to as “rotating machines”</td></tr>
<tr><td>11)</td><td>TCC<br>Volume IA, Part-I<br>Chapter –XIV<br>clause 1.14.2.51</td><td>The surface of the pipes …….. …. …… ……. …….. of BHEL Engineers. Edge preparation shall be done by chamfering machine, whenever ….. …… …… ……. ……. as per BHEL Engineer's instructions.</td><td>The edge preparation of pipe shall be done by chamfering machine which is costly machine, kindly confirm the approx. quantum of work involved in terms of inch- dia so that proper costing could be done.</td><td>Bidders are requested to quote as per the standard practice.</td></tr>
</table>

| No | Reference clause | Existing provision | Bidder's query | BHEL's clarification |
|---|---|---|---|---|
| 12) | TCC<br>Volume IA, Part-I<br>Chapter –XIV<br>clause 1.14.3.11 | Wherever iron components are to be welded on non-pressure parts, the contractor shall employ only approved structural welders. It shall also be the responsibility of the **contractor to arrange for welding hooks, flats, plates, supports** and other fixtures also. All consumables tools and plants etc., required for the work shall be arranged by the contractor at their cost. | Please confirm whether materials for hooks, flats, plates, supports and other fixtures etc are to be supplied by contractor or by BHEL free of cost? | Clause is revised as below:<br>Wherever iron components are to be welded on non-pressure parts, the contractor shall employ only approved structural welders. It shall also be the responsibility of the **contractor to weld hooks, flats, plates, supports** and other fixtures also. All consumables tools and plants etc., required for the work shall be arranged by the contractor at their cost. |
| 13) | TCC<br>Volume IA, Part-I<br>Chapter –XVII<br>clause 1.17 | FINAL PAINTING | Please provide Painting System Specification for each BOQ item and also provide the quantity for each BOQ item required to be painted. | Bidders are requested to quote as per the standard practice. |
| 14) | TCC<br>Volume IA, Part-I<br>Chapter –XVII<br>clause 1.17.21 | The painting scheme for Bunker & allied structures will be similar to the boiler structures. However changes if any as per design documents / drawing will have to be carried out with in the quoted rate. | Since this is a Power Cycle Piping Works, this clause should be deleted. | This clause stands deleted. |

| No | Reference clause | Existing provision | Bidder's query | BHEL's clarification |
|---|---|---|---|---|
| 15) | General Conditions of Contract (GCC) Clause 2.12 and clause 2.17 | Clause 2.12 : Over Run Compensation (ORC) Clause 2.17 : Price Variation Compensation (PVC) | Please confirm that PVC & ORC both will be payable only during extended period of contract (if any) after the scheduled completion period and for the portion of work delayed / backlog for the reasons not attributable to the contractor. | Tender condition is self-explanatory |

**All other conditions of the tender specification remain unchanged.**

**Bidders are requested to consider this corrigendum as part of tender specification and quote accordingly.**

-Sd-
S.P.Sethuraman
Sr.Manager / Subcontracts

# ERECTION / FIELD WELDING SCHEDULE

PROJECT : DARLIPALLI STPP 2x800MW
CONTRACTOR : M/S BHEL
CONTRACT NO : ----------
DRG.NO. : 1-80-300-21069

CUST. NO : 7244(AUXILIARY BOILER)
PGMA : 80-300
SYSTEM : MAIN STEAM PIPING

FWS DOC.NO. : ----------
REV. NO. : --
WELDING CODE : IBR / ASME
PAGE NO : 01 / 01

| SL. NO. | DRG NO. FOR WELD LOCATION IDENTIFICATION MARK | DESCRIPTION OF PARTS TO BE WELDED | MATL.SPEC. (ATT) | DIMENSIONS SIZE OD mm | DIMENSIONS THICK mm | PROCESS OF WELDING | TYPE OF WELD | ELECTRODE FILLER SPEC. (ATT) TIG | ARC SPEC. | | | W.P.S NO. | MIN. PRE HEAT TEMP. °C | HEAT TREATMENT TEMP. °C | HEAT TREATMENT HOLD TIME | NDT METHOD/ QUANTUM | REF. SPEC. NO. | ACC. NORM REF. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PART-1 | PART-1 | | | | | QTY(gms) | QTY(NOS.) | | | | | | | | | | |
| | | PART-2 | PART-2 | | | | QTY | ø2.4 | ø2.5 | ø3.15 | ø4.0 | | | | | | | | |
| 01 | 1-80-300-21069 | PIPE | SA 106 GrB | 273.0 | 6.35 | TIG& ARC | 6.35V̂ | RT1/2Mo | E 7018-1 | | | 1003 REV 03 | - | - | - | RT 10% | * | * | |
| | | PIPE/FITTING | SA 106 GrB SA 234 WPB | | | | 12 | 1068 | 240 | 132 | | | | | | | | | |
| 02 | 1-80-300-21069 | PIPE | SA 106 GrB | 273.0 | 12.7 | TIG& ARC | 12.7V̂ | RT1/2Mo | E 7018-1 | | | 1003 REV 03 | - | - | - | RT 10% | * | * | |
| | | PIPE/FITTING | SA 106 GrB SA 234 WPB | | | | 2 | 178.0 | 40 | 66 | 16 | | | | | | | | |
| 03 | 1-80-300-21069 | PIPE | SA 106 GrB | 21.3 | 3.73 | TIG | 3.73V̂ | RT1/2Mo | - | | | 1003 REV 03 | - | - | - | RT 10% | * | * | |
| | | PIPE/FITTING | SA 106 GrB | | | | 1 | 14 | - | - | | | | | | | | | |
| 04 | 1-80-300-21069 | PIPE | SA 106 GrB | 21.3 | 3.73 | ARC | 4Δ | - | E 7018-1 | | | 1021 REV 01 | - | - | - | LPI/MPI 10% | * | * | |
| | | PIPE/FITTING | SA 106 GrB | | | | 1 | - | 5 | - | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |

NOTES: 01. LPI/MPI, UT WHEREVER APPLICABLE SHALL BE CARRIED AFTER PWHT. 02. * REFER NDE MANUAL DOC NO. PSQ-NDM-COM REV NO.R00/04-02/AMD-02.

| PREPARED | DESIGN/CHD. | DESIGN/APD. | DATE | | DRAWING NO. | REV . |
|---|---|---|---|---|---|---|
| M.P.K | P SURESH | R.SESHAGIRI | 24.08.16 | | 4-80-300-79680 | 00 |

# ERECTION / FIELD WELDING SCHEDULE

PROJECT : DARLIPALLI STPP 2x800MW
CONTRACTOR : M/S BHEL
CONTRACT NO : ----------
DRG.NO. : 1-80-345-21078

CUST. NO : 7244 (AUXILIARY BOILER)
PGMA : 80-345
SYSTEM : AUX STEAM PPG FROM HEADER TO DEAEREATING HEATER.

FWS DOC.NO. : ----------
REV. NO. : --
WELDING CODE : IBR / ASME
PAGE NO : 01 / 01

| SL. NO. | DRG NO. FOR WELD LOCATION IDENTIFICATION MARK | DESCRIPTION OF PARTS TO BE WELDED | MATL.SPEC. (ATT) | DIMENSIONS SIZE OD mm | DIMENSIONS THICK mm | PROCESS OF WELDING | TYPE OF WELD | ELECTRODE FILLER SPEC. (ATT) TIG QTY(gms) ø2.4 | ARC SPEC. QTY(NOS.) ø2.5 | ø3.15 | ø4.0 | W.P.S NO. | MIN. PRE HEAT TEMP. °C | HEAT TREATMENT TEMP. °C | HEAT TREATMENT HOLD TIME | NDT METHOD/ QUANTUM | REF. SPEC. NO. | ACC. NORM REF. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PART-1 | PART-1 | | | | | | | | | | | | | | | | |
| | | PART-2 | PART-2 | | | | QTY | | | | | | | | | | | | |
| 01 | 1-80-345-21078 | PIPE | SA 106 GrB | 114.3 | 6.02 | TIG& ARC | 6.02 V | RT1/2Mo | E 7018-1 | | | 1003 REV 03 | - | - | - | RT 10% | * | * | |
| | | PIPE/FITTING | SA 106 GrB SA 234 WPB | | | | 30 | 798.0 | 660 | - | - | | | | | | | | |
| 02 | 1-80-345-21078 | PIPE | SA 106 GrB | 355.6 | 9.53 | TIG& ARC | 9.53 V | RT1/2Mo | E 7018-1 | | | 1003 REV 03 | - | - | - | RT 10% | * | * | |
| | | PIPE/FITTING | SA 106 GrB SA 234 WPB | | | | 19 | 2185 | 513 | 779 | | | | | | | | | |
| 03 | 1-80-345-21078 | PIPE | SA 106 GrB | 273 | 6.35 | TIG& ARC | 6.35 V | RT1/2Mo | E 7018-1 | | | 1003 REV 03 | - | - | - | RT 10% | * | * | |
| | | PIPE/FITTING | SA 106 GrB SA 234 WPB | | | | 4 | 356.0 | 80 | 44 | | | | | | | | | |
| 04 | 1-80-345-21078 | PIPE | SA 106 GrB | 219.1 | 6.35 | TIG& ARC | 6.35 V | RT1/2Mo | E 7018-1 | | | 1003 REV 03 | - | - | - | RT 10% | * | * | |
| | | PIPE/FITTING | SA 106 GrB SA 234 WPB | | | | 10 | 710.0 | 370 | - | | | | | | | | | |
| 05 | 1-80-345-21078 | PIPE | SA 106 GrB | 21.3 | 3.73 | ARC | 4Δ | - | E 7018-1 | | | 1021 REV 01 | - | - | - | MPI/LPI 10% | * | * | |
| | | PIPE/FITTING | SA 105 | | | | 2 | - | 2 | - | | | | | | | | | |

NOTES: 01. LPI/MPI, UT WHEREVER APPLICABLE SHALL BE CARRIED AFTER PWHT. 02. * REFER NDE MANUAL DOC NO. PSQ-NDM-COM REV NO.R00/04-02/AMD-02.

| PREPARED | DESIGN/CHD. | DESIGN/APD. | DATE | | DRAWING NO. | REV . |
|---|---|---|---|---|---|---|
| M.P.K | P SURESH | R.SESHAGIRI | 25.08.16 | | 4-80-345-79712 | 00 |

# ERECTION / FIELD WELDING SCHEDULE

PROJECT : DARLIPALLI STPP 2x800MW
CONTRACTOR : M/S BHEL
CONTRACT NO : -----
DRG.No. : 1-80-366-21010,2-80-366-13721 & 3-80-366-32617

CUST. NO : 7244 (AUXILIARY BOILER)
PGMA : 80-366
SYSTEM : IBD TANK VENT TO ATMOSPHERE

FWS DOC.NO. : ----------
REV. NO. : --
WELDING CODE : IBR / ASME
PAGE NO : 01 / 01

| SL. NO. | DRG NO. FOR WELD LOCATION IDENTIFICATION MARK | DESCRIPTION OF PARTS TO BE WELDED | MATL.SPEC. (ATT) | DIMENSIONS SIZE OD mm | DIMENSIONS THICK mm | PROCESS OF WELDING | TYPE OF WELD | ELECTRODE FILLER SPEC. (ATT) TIG | ELECTRODE FILLER SPEC. (ATT) ARC SPEC. | | | W.P.S NO. | MIN. PRE HEAT TEMP. °C | HEAT TREATMENT TEMP. °C | HEAT TREATMENT HOLD TIME | NDT METHOD/ QUANTUM | REF. SPEC. NO. | ACC. NORM REF. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PART-1 | PART-1 | | | | | QTY(gms) | QTY(NOS.) | | | | | | | | | | |
| | | PART-2 | PART-2 | | | | QTY | ø2.4 | ø2.5 | ø3.15 | ø4.0 | | | | | | | | |
| 01 | 1-80-366-21010<br>3-80-366-32617 | PIPE | SA 106 GrB | 219.1 | 6.35 | TIG& ARC | 6.35V | RT1/2Mo | E 7018-1 | | | 1003 REV 03 | - | - | - | RT 10% | * | * | |
| | | PIPE/FITTING | SA 106 GrB<br>SA 234 WPB | | | | 12 | 852 | 444 | - | - | | | | | | | | |
| 02 | 1-80-366-21010 | PIPE | SA 106 GrB | 114.3 | 6.02 | TIG& ARC | 6.02V | RT1/2Mo | E 7018-1 | | | 1003 REV 03 | - | - | - | RT 10% | * | * | |
| | | PIPE/FITTING | SA 106 GrB<br>SA 234 WPB | | | | 14 | 373 | 294 | - | | | | | | | | | |
| 03 | 2-80-366-13721 (MANIFOLD) | PIPE | SA 106 GrB | 168.3 | 10.97 | TIG& ARC | 10.97V | RT1/2Mo | E 7018-1 | | | 1003 REV 03 | - | - | - | RT 10% | * | * | |
| | | PIPE/FITTING | SA515GR70 | | | | 2 | 102 | 30 | 46 | | | | | | | | | |
| 04 | 1-80-366-21010 | PIPE | SA 106 GrB | 60.3 | 5.54 | ARC | 6△ | - | E 7018-1 | | | 1021 REV 01 | - | - | - | MPI/LPI 10% | * | * | |
| | | PIPE/FITTING | SA 105 | | | | 6 | - | 18 | - | | | | | | | | | |
| 05 | 1-80-366-21010 | PIPE | SA 106 GrB | 33.4 | 4.55 | ARC | 5△ | - | E 7018-1 | | | 1021 REV 01 | - | - | - | MPI/LPI 10% | * | * | |
| | | PIPE/FITTING | SA 105 | | | | 2 | - | 3 | - | | | | | | | | | |

NOTES: 01. LPI/MPI, UT WHEREVER APPLICABLE SHALL BE CARRIED AFTER PWHT. 02. * REFER NDE MANUAL DOC NO. PSQ-NDM-COM REV NO.R00/04-02/AMD-02.

| PREPARED | DESIGN/CHD. | DESIGN/APD. | CHD./APD. - QA | DATE | DRAWING NO. | REV . |
|---|---|---|---|---|---|---|
| M.P.K | P SURESH | R.SESHAGIRI | | 31.08.16 | 4-80-366-79593 | 00 |

# ERECTION / FIELD WELDING SCHEDULE

PROJECT : DARLIPALLI STPP 2x800MW
CONTRACTOR : M/S BHEL
CONTRACT NO : ----------
DRG.NO. : 1-80-417-21071

CUST. NO : 7244 (AUXILIARY BOILER)
PGMA : 80-417
SYSTEM : BOILER FEED PUMP DISCHARGE PIPING

FWS DOC.NO : ---------
REV. NO. : --
WELDING CODE : IBR / ASME
PAGE NO : 01 / 01

| SL. NO. | DRG NO. FOR WELD LOCATION IDENTIFICATION MARK | DESCRIPTION OF PARTS TO BE WELDED | MATL.SPEC. (ATT) | DIMENSIONS SIZE OD mm | DIMENSIONS THICK mm | PROCESS OF WELDING | TYPE OF WELD | ELECTRODE FILLER SPEC. (ATT) TIG QTY(gms) ø2.4 | ARC SPEC. QTY(NOS.) ø2.5 | ø3.15 | ø4.0 | W.P.S NO. | MIN. PRE HEAT TEMP. °C | HEAT TREATMENT TEMP. °C | HEAT TREATMENT HOLD TIME | NDT METHOD/ QUANTUM | REF. SPEC. NO. | ACC. NORM REF. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PART-1 | PART-1 | | | | | | | | | | | | | | | | |
| | | PART-2 | PART-2 | | | | QTY | | | | | | | | | | | | |
| 01 | 1-80-417-21071 | PIPE | SA 106 Gr.B | 88.9 | 5.49 | TIG& ARC | 5.49 V̂ | ER70SA1 | E 7018-1 | | | 1003 REV 03 | - | - | - | RT 10% | * | * | |
| | | PIPE/FITTING | SA 106 Gr.B SA 234 WPB | | | | 72 | 1372 | 1190 | - | - | | | | | | | | |
| 02 | 1-80-417-21071 | PIPE | SA 106 Gr.B | 73.0 | 5.16 | TIG& ARC | 5.16 V̂ | ER70SA1 | E 7018-1 | | | 1003 REV 03 | - | - | - | RT 10% | * | * | |
| | | PIPE/FITTING | SA 106 Gr.B SA 234 WPB | | | | 2 | 33 | 22 | - | - | | | | | | | | |
| 03 | 1-80-417-21071 | PIPE | SA 106 Gr.B | 33.4 | 4.55 | ARC | 5△ | - | E 7018-1 | | | 1021 REV 01 | - | - | - | MPI/LPI 10% | * | * | |
| | | PIPE/FITTING | SA 105 | | | | 9 | - | 11 | - | - | | | | | | | | |
| 04 | 1-80-417-21071 | PIPE | SA 106 Gr.B | 88.9 | 5.49 | TIG& ARC | 5.49 V̂ | ER70SA1 | E 7018-1 | | | 1033 REV 01 | 150 | 655±15 | 2.5mtS PER mm minimum 120 min | RT 100% | * | * | |
| | | CONTROL VAL | WC6 | | | | 4 | 80 | 68 | - | - | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
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NOTES: 01. LPI/MPI, UT WHEREVER APPLICABLE SHALL BE CARRIED AFTER PWHT. 02. * REFER NDE MANUAL DOC NO. PSQ-NDM-COM REV NO.R00/04-02/AMD-02.

| PREPARED | DESIGN/CHD. | DESIGN/APD. | | DATE | DRAWING NO. | REV . |
|---|---|---|---|---|---|---|
| M.P.K | P SURESH | R.SESHAGIRI | | 29.08.16 | 4-80-417-79682 | 00 |

# ERECTION / FIELD WELDING SCHEDULE

PROJECT : DARLIPALLI STPP 2x800MW
CONTRACTOR : M/S BHEL
CONTRACT NO : ---------
DRG.NO. : ---------

CUST. NO : 7244 (AUXILIARY BOILER)
PGMA : 80-418
SYSTEM : ERECTION MATERIALS FOR INSTRUMENTS

FWS DOC.NO. : ---------
REV. NO. : --
WELDING CODE : IBR / ASME
PAGE NO : 01 / 02

| SL. NO. | DRG NO. FOR WELD LOCATION IDENTIFICATION MARK | DESCRIPTION OF PARTS TO BE WELDED | MATL.SPEC. (ATT) | DIMENSIONS SIZE OD mm | DIMENSIONS THICK mm | PROCESS OF WELDING | TYPE OF WELD | ELECTRODE FILLER SPEC. (ATT) TIG | ARC SPEC. | | | W.P.S NO. | MIN. PRE HEAT TEMP. °C | HEAT TREATMENT TEMP. °C | HEAT TREATMENT HOLD TIME | NDT METHOD/ QUANTUM | REF. SPEC. NO. | ACC. NORM REF. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PART-1 | PART-1 | | | | | QTY(gms) | QTY(NOS.) | | | | | | | | | | |
| | | PART-2 | PART-2 | | | | QTY | ø2.4 | ø2.5 | ø3.15 | ø4.0 | | | | | | | | |
| 01 | - | PIPE | SA 106 GrB | 21.3 | 4.78 | TIG | 4.78 V̂ | RT1/2Mo | - | | | 1003 REV 03 | - | - | - | RT 10% | * | * | |
| | | PIPE/FITTING | SA 106 GrB | | | | 15 | 149 | - | - | - | | | | | | | | |
| 02 | - | PIPE | SA 106 GrB | 21.3 | 4.78 | ARC | 5Δ | - | E 7018-1 | | | 1021 REV 01 | - | - | - | MPI/LPI 100% | * | * | |
| | | PIPE/FITTING | SA 105 | | | | 60 | - | 44 | - | | | | | | | | | |
| 03 | - | PIPE | SA 312TP304H | 21.3 | 3.73 | TIG | 3.73 V̂ | ER347 | - | | | 1016 REV 01 | - | - | - | RT 10% 100% LPI | * | * | |
| | | PIPE/FITTING | SA 312TP304H | | | | 2 | 27 | - | - | | | | | | | | | |
| 04 | - | PIPE | SA 312TP304H | 21.3 | 3.73 | ARC | 4Δ | - | E347 | | | 1029 REV 00 | - | - | - | 100% LPI | * | * | |
| | | PIPE/FITTING | SA 182F304H | | | | 35 | - | 15 | - | | | | | | | | | |
| 05 | - | PIPE | SA 106Gr.B | 33.4 | 4.55 | TIG& ARC | 4.55 V̂ | RT1/2Mo | E 7018-1 | | | 1003 REV 03 | - | - | - | RT 10% | * | * | |
| | | PIPE/FITTING | SA 106Gr.B | | | | 13 | 64.0 | 50 | - | | | | | | | | | |

NOTES: 01. LPI/MPI, UT WHEREVER APPLICABLE SHALL BE CARRIED AFTER PWHT. 02. * REFER NDE MANUAL DOC NO. PSQ-NDM-COM REV NO.R00/04-02/AMD-02.

| PREPARED | DESIGN/CHD. | DESIGN/APD. | DATE | | DRAWING NO. | REV . |
|---|---|---|---|---|---|---|
| M.P.K | P SURESH | R.SESHAGIRI | 30.08.16 | | 4-80-418-79828 | 00 |

# ERECTION / FIELD WELDING SCHEDULE

PROJECT : DARLIPALLI STPP 2x800MW
CONTRACTOR : M/S BHEL
CONTRACT NO : ----------
DRG.NO. : ----------

CUST. NO : 7244 (AUXILIARY BOILER)
PGMA : 80-418
SYSTEM : ERECTION MATERIALS FOR INSTRUMENTS

FWS DOC.NO. : ---------
REV. NO. : --
WELDING CODE : IBR / ASME
PAGE NO : 02 / 02

| SL. NO. | DRG NO. FOR WELD LOCATION IDENTIFICATION MARK | DESCRIPTION OF PARTS TO BE WELDED | MATL.SPEC. (ATT) | DIMENSIONS | | PROCESS OF WELDING | TYPE OF WELD | ELECTRODE FILLER SPEC. (ATT) | | | | W.P.S NO. | MIN. PRE HEAT TEMP. °C | HEAT TREATMENT | | NDT METHOD/ QUANTUM | REF. SPEC. NO. | ACC. NORM REF. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SIZE OD mm | THICK mm | | | TIG | ARC SPEC. | | | | | TEMP. °C | HOLD TIME | | | | |
| | | PART-1 | PART-1 | | | | | QTY(gms) | QTY(NOS.) | | | | | | | | | | |
| | | PART-2 | PART-2 | | | | QTY | ø2.4 | ø2.5 | ø3.15 | ø4.0 | | | | | | | | |
| 06 | - | PIPE | SA 106Gr.B | 33.4 | 4.55 | ARC | 5Δ | - | E 7018-1 | | | 1021 REV 01 | - | - | - | 10% MPI/LPI | * | * | |
| | | PIPE/FITTING | SA 105 | | | | 13 | - | 15 | - | | | | | | | | | |
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NOTES: 01. LPI/MPI, UT WHEREVER APPLICABLE SHALL BE CARRIED AFTER PWHT. 02. * REFER NDE MANUAL DOC NO. PSQ-NDM-COM REV NO.R00/04-02/AMD-02.

| PREPARED | DESIGN/CHD. | DESIGN/APD. | DATE | | DRAWING NO. | REV . |
|---|---|---|---|---|---|---|
| M.P.K | P SURESH | R.SESHAGIRI | 30.08.16 | | 4-80-418-79828 | 00 |

# ERECTION / FIELD WELDING SCHEDULE

PROJECT : DARLIPALLI STPP 2x800MW
CONTRACTOR : M/S BHEL
CONTRACT NO : ----------
DRG.NO. : 2-80-420-13746

CUST. NO : 7244 (AUXILIARY BOILER)
PGMA : 80-420
SYSTEM : BOILER FEED PUMP SUCTION

FWS DOC.NO. : ----------
REV. NO. : --
WELDING CODE : IBR / ASME
PAGE NO : 01 / 01

| SL. NO. | DRG NO. FOR WELD LOCATION IDENTIFICATION MARK | DESCRIPTION OF PARTS TO BE WELDED | MATL.SPEC. (ATT) | DIMENSIONS SIZE OD mm | DIMENSIONS THICK mm | PROCESS OF WELDING | TYPE OF WELD | ELECTRODE FILLER SPEC. (ATT) TIG QTY(gms) ø2.4 | ARC SPEC. QTY(NOS.) ø2.5 | ø3.15 | ø4.0 | W.P.S NO. | MIN. PRE HEAT TEMP. °C | HEAT TREATMENT TEMP. °C | HOLD TIME | NDT METHOD/ QUANTUM | REF. SPEC. NO. | ACC. NORM REF. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PART-1 | PART-1 | | | | | | | | | | | | | | | | |
| | | PART-2 | PART-2 | | | | QTY | | | | | | | | | | | | |
| 01 | 2-80-420-13746 | PIPE | SA 106 GrB | 168.3 | 7.11 | TIG& ARC | 7.11 | RT1/2Mo | E 7018-1 | | | 1003 REV 03 | - | - | - | RT 10% | * | * | |
| | | PIPE/FITTING | SA 106 GrB SA 234 WPB | | | | 30 | 1590.0 | 450 | 330 | - | | | | | | | | |
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NOTES: 01. LPI/MPI, UT WHEREVER APPLICABLE SHALL BE CARRIED AFTER PWHT. 02. * REFER NDE MANUAL DOC NO. PSQ-NDM-COM REV NO.R00/04-02/AMD-02.

| PREPARED | DESIGN/CHD. | DESIGN/APD. | DATE | | DRAWING NO. | REV . |
|---|---|---|---|---|---|---|
| M.P.K | P SURESH | R.SESHAGIRI | 25.08.16 | | 4-80-420-79609 | 00 |

# ERECTION / FIELD WELDING SCHEDULE

PROJECT : DARLIPALLI STPP 2x800MW
CONTRACTOR : M/S BHEL
CONTRACT NO : ----------
DRG.NO. : 2-80-421-13806

CUST. NO : 7244 (AUXILIARY BOILER)
PGMA : 80-421
SYSTEM : SCHEMATIC DRG FOR BOILER FEED PUMP RECIRCULATION PPG.

FWS DOC.NO : ----------
REV. NO. : --
WELDING CODE : IBR / ASME
PAGE NO : 01 / 01

| SL. NO. | DRG NO. FOR WELD LOCATION IDENTIFICATION MARK | DESCRIPTION OF PARTS TO BE WELDED | MATL.SPEC. (ATT) | DIMENSIONS SIZE OD mm | DIMENSIONS THICK mm | PROCESS OF WELDING | TYPE OF WELD | ELECTRODE FILLER SPEC. (ATT) TIG | ARC SPEC. | | | W.P.S NO. | MIN. PRE HEAT TEMP. °C | HEAT TREATMENT TEMP. °C | HEAT TREATMENT HOLD TIME | NDT METHOD/ QUANTUM | REF. SPEC. NO. | ACC. NORM REF. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PART-1 | PART-1 | | | | QTY(gms) | | QTY(NOS.) | | | | | | | | | | |
| | | PART-2 | PART-2 | | | | QTY | ø2.4 | ø2.5 | ø3.15 | ø4.0 | | | | | | | | |
| 01 | 2-80-421-13806 | PIPE | SA 106 Gr.B | 60.3 | 5.54 | TIG& ARC | 5.54 V | RT1/2Mo | E 7018-1 | | | 1003 REV 03 | - | - | - | RT 10% | * | * | |
| | | PIPE/FITTING | SA 106 Gr.B | | | | 22 | 252 | 200 | - | - | | | | | | | | |
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NOTES: 01. LPI/MPI, UT WHEREVER APPLICABLE SHALL BE CARRIED AFTER PWHT. 02. * REFER NDE MANUAL DOC NO. PSQ-NDM-COM REV NO.R00/04-02/AMD-02.

| PREPARED | DESIGN/CHD. | DESIGN/APD. | DATE | | DRAWING NO. | REV . |
|---|---|---|---|---|---|---|
| M.P.K | P SURESH | R.SESHAGIRI | 25.08.16 | | 4-80-421-79681 | 00 |

# ERECTION / FIELD WELDING SCHEDULE

PROJECT : DARLIPALLI STPP 2x800MW
CONTRACTOR : M/S BHEL
CONTRACT NO : ----------
DRG.NO. : 3-80-446-32631

CUST. NO : 7244 (AUXILIARY BOILER)
PGMA : 80-446
SYSTEM : FEED WATER TANK OVERFLOW AND DRAIN,PIPING.

FWS DOC.NO. : ---------
REV. NO. : --
WELDING CODE : IBR / ASME
PAGE NO : 01 / 01

| SL. NO. | DRG NO. FOR WELD LOCATION IDENTIFICATION MARK | DESCRIPTION OF PARTS TO BE WELDED | MATL.SPEC. (ATT) | DIMENSIONS | | PROCESS OF WELDING | TYPE OF WELD | ELECTRODE FILLER SPEC. (ATT) | | | | W.P.S NO. | MIN. PRE HEAT TEMP. | HEAT TREATMENT | | NDT METHOD/ QUANTUM | REF. SPEC. NO. | ACC. NORM REF. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SIZE OD | THICK | | | TIG | ARC SPEC. | | | | | TEMP. | HOLD TIME | | | | |
| | | PART-1 | PART-1 | mm | mm | | | QTY(gms) | QTY(NOS.) | | | | | | | | | | |
| | | PART-2 | PART-2 | | | | QTY | ø2.4 | ø2.5 | ø3.15 | ø4.0 | | °C | °C | | | | | |
| 01 | 3-80-446-32631 | PIPE | SA 106 GrB | 48.3 | 5.08 | TIG& ARC | 5.08 V̂ | RT1/2Mo | E 7018-1 | | | 1003 REV 03 | – | – | – | RT 10% | * | * | |
| | | PIPE/FITTING | SA 106 GrB | | | | 2 | 20 | 16 | – | – | | | | | | | | |
| 02 | 3-80-446-32631 | PIPE | SA 106 GrB | 114.3 | 6.02 | TIG& ARC | 6.02 V̂ | RT1/2Mo | E 7018-1 | | | 1003 REV 03 | – | – | – | RT 10% | * | * | |
| | | PIPE/FITTING | SA 106 GrB SA 234 WPB | | | | 30 | 798.0 | 630 | – | | | | | | | | | |
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NOTES: 01. LPI/MPI, UT WHEREVER APPLICABLE SHALL BE CARRIED AFTER PWHT. 02. * REFER NDE MANUAL DOC NO. PSQ-NDM-COM REV NO.R00/04-02/AMD-02.

| PREPARED | DESIGN/CHD. | DESIGN/APD. | CHD./APD. - QA | DATE | DRAWING NO. | REV . |
|---|---|---|---|---|---|---|
| M.P.K | P SURESH | R.SESHAGIRI | | 31.08.16 | 4-80-446-79606 | 00 |

# ERECTION / FIELD WELDING SCHEDULE

PROJECT : DARLIPALLI STPP 2x800MW
CONTRACTOR : M/S BHEL
CONTRACT NO : ----------
DRG.NO. : 3-80-450-32815

CUST. NO : 7244 (AUXILIARY BOILER)
PGMA : 80-450
SYSTEM : SCHEMATIC DRG FOR BOILER DRAINS PIPING.

FWS DOC.NO : ----------
REV. NO. : --
WELDING CODE : IBR / ASME
PAGE NO : 01 / 01

| SL. NO. | DRG NO. FOR WELD LOCATION IDENTIFICATION MARK | DESCRIPTION OF PARTS TO BE WELDED | MATL.SPEC. (ATT) | DIMENSIONS SIZE OD mm | DIMENSIONS THICK mm | PROCESS OF WELDING | TYPE OF WELD | ELECTRODE FILLER SPEC. (ATT) TIG | ARC SPEC. | | | W.P.S NO. | MIN. PRE HEAT TEMP. °C | HEAT TREATMENT TEMP. °C | HEAT TREATMENT HOLD TIME | NDT METHOD/ QUANTUM | REF. SPEC. NO. | ACC. NORM REF. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PART-1 | PART-1 | | | | | QTY(gms) | QTY(NOS.) | | | | | | | | | | |
| | | PART-2 | PART-2 | | | | QTY | ø2.4 | ø2.5 | ø3.15 | ø4.0 | | | | | | | | |
| 01 | 3-80-450-32815 | PIPE | SA 106 Gr.B | 88.9 | 5.49 | TIG& ARC | 5.49 V̂ | RT1/2Mo | E 7018-1 | | | 1003 REV 03 | - | - | - | RT 10% | * | * | |
| | | PIPE/FITTING | SA 106 GrB SA 234 WPB | | | | 14 | 275 | 210 | - | - | | | | | | | | |
| 02 | 3-80-450-32815 | PIPE | SA 106 Gr.B | 48.3 | 5.08 | TIG& ARC | 5.08 V̂ | RT1/2Mo | E 7018-1 | | | 1003 REV 03 | - | - | - | RT 10% | * | * | |
| | | PIPE/FITTING | SA 106 Gr.B | | | | 5 | 50 | 40 | - | - | | | | | | | | |
| 03 | 3-80-450-32815 | PIPE | SA 106 Gr.B | 48.3 | 5.08 | ARC | 6△ | RT1/2Mo | E 7018-1 | | | 1021 REV 01 | - | - | - | - | * | * | |
| | | PIPE/FITTING | SA 105 | | | | 3 | - | 8 | - | - | | | | | | | | |
| 04 | 3-80-450-32815 | PIPE | SA 106 Gr.B | 33.4 | 4.55 | ARC | 5△ | - | E 7018-1 | | | 1021 REV 01 | - | - | - | - | * | * | |
| | | PIPE/FITTING | SA 105 | | | | 3 | - | 6 | - | - | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |

NOTES: 01. LPI/MPI, UT WHEREVER APPLICABLE SHALL BE CARRIED AFTER PWHT. 02. * REFER NDE MANUAL DOC NO. PSQ-NDM-COM REV NO.R00/04-02/AMD-02.

| PREPARED | DESIGN/CHD. | DESIGN/APD. | DATE | | DRAWING NO. | REV . |
|---|---|---|---|---|---|---|
| M.P.K | P SURESH | R.SESHAGIRI | 30.08.16 | | 4-80-450-79829 | 00 |

# ERECTION / FIELD WELDING SCHEDULE

PROJECT : DARLIPALLI STPP 2x800MW
CONTRACTOR : M/S BHEL
CONTRACT NO : ----------
DRG.NO. : 3-80-451-32816

CUST. NO : 7244(AUXILIARY BOILER)
PGMA : 80-451
SYSTEM : SCHEMATIC DRAWING FOR BOILER DRAINS PIPING.

FWS DOC.NO : ----------
REV. NO. : --
WELDING CODE : IBR / ASME
PAGE NO : 01 / 01

| SL. NO. | DRG NO. FOR WELD LOCATION IDENTIFICATION MARK | DESCRIPTION OF PARTS TO BE WELDED | MATL.SPEC. (ATT) | DIMENSIONS SIZE OD mm | DIMENSIONS THICK mm | PROCESS OF WELDING | TYPE OF WELD | ELECTRODE FILLER SPEC. (ATT) TIG | ELECTRODE FILLER SPEC. (ATT) ARC SPEC. | | | W.P.S NO. | MIN. PRE HEAT TEMP. °C | HEAT TREATMENT TEMP. °C | HEAT TREATMENT HOLD TIME | NDT METHOD/ QUANTUM | REF. SPEC. NO. | ACC. NORM REF. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | QTY(gms) | QTY(NOS.) | | | | | | | | | | |
| | | PART-1 | PART-1 | | | | | | | | | | | | | | | | |
| | | PART-2 | PART-2 | | | | QTY | ø2.4 | ø2.5 | ø3.15 | ø4.0 | | | | | | | | |
| 01 | 3-80-451-32816 | PIPE | SA 106 Gr.B | 33.4 | 4.55 | TIG& ARC | 4.55 V̂ | RT1/2Mo | E 7018-1 | | | 1003 REV 03 | - | - | - | RT 10% | * | * | |
| | | PIPE/FITTING | SA 106 GrB | | | | 6 | 39 | 30 | - | - | | | | | | | | |
| 02 | 3-80-451-32816 | PIPE | SA 106 Gr.B | 60.3 | 5.54 | TIG& ARC | 5.54 V̂ | RT1/2Mo | E 7018-1 | | | 1003 REV 03 | - | - | - | RT 10% | * | * | |
| | | PIPE/FITTING | SA 106 Gr.B | | | | 18 | 76 | 60 | - | - | | | | | | | | |
| 03 | 3-80-451-32816 | PIPE | SA 106 Gr.B | 88.9 | 5.49 | TIG& ARC | 5.49 V̂ | RT1/2Mo | E 7018-1 | | | 1003 REV 03 | - | - | - | RT 10% | * | * | |
| | | PIPE/FITTING | SA 106 Gr.B SA 234 WPB | | | | 15 | 294 | 225 | - | - | | | | | | | | |
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NOTES: 01. LPI/MPI, UT WHEREVER APPLICABLE SHALL BE CARRIED AFTER PWHT. 02. * REFER NDE MANUAL DOC NO. PSQ-NDM-COM REV NO.R00/04-02/AMD-02.

| PREPARED | DESIGN/CHD. | DESIGN/APD. | DATE | | DRAWING NO. | REV . |
|---|---|---|---|---|---|---|
| M.P.K | P SURESH | R.SESHAGIRI | 29.08.16 | | 4-80-451-79830 | 00 |

# ERECTION / FIELD WELDING SCHEDULE

PROJECT : DARLIPALLI STPP 2x800MW
CONTRACTOR : M/S BHEL
CONTRACT NO : ----------
DRG.NO. : 3-80-453-32817

CUST. NO : 7244 (AUXILIARY BOILER)
PGMA : 80-453
SYSTEM : LOW PRESSURE PIPING DRAINS ( SG SCOPE )

DOC.NO : ----------
REV. NO. : --
WELDING CODE : IBR / ASME
PAGE NO : 01 / 01

| SL. NO. | DRG NO. FOR WELD LOCATION IDENTIFICATION MARK | DESCRIPTION OF PARTS TO BE WELDED | MATL.SPEC. (ATT) | DIMENSIONS SIZE OD mm | DIMENSIONS THICK mm | PROCESS OF WELDING | TYPE OF WELD | ELECTRODE FILLER SPEC. (ATT) TIG | ARC SPEC. | | | W.P.S NO. | MIN. PRE HEAT TEMP. °C | HEAT TREATMENT TEMP. °C | HEAT TREATMENT HOLD TIME | NDT METHOD/ QUANTUM | REF. SPEC. NO. | ACC. NORM REF. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PART-1 | PART-1 | | | | | QTY(gms) | QTY(NOS.) | | | | | | | | | | |
| | | PART-2 | PART-2 | | | | QTY | ø2.4 | ø2.5 | ø3.15 | ø4.0 | | | | | | | | |
| 01 | 3-80-453-32817 | PIPE | SA 106 Gr.B | 33.4 | 4.55 | TIG& ARC | 4.55 V̂ | RT1/2Mo | E 7018-1 | | | 1003 REV 03 | - | - | - | RT 10% | * | * | |
| | | PIPE/FITTING | SA 106 Gr.B SA 105 | | | | 25 | 93 | 75 | - | - | | | | | | | | |
| 02 | 3-80-453-32817 | PIPE | SA 106 Gr.B | 33.4 | 4.55 | ARC | 5Δ | - | E 7018-1 | | | 1021 REV 01 | - | - | - | 10% LPI/MPI | * | * | |
| | | PIPE/FITTING | SA 105 | | | | 42 | - | 55 | - | - | | | | | | | | |
| 03 | 3-80-453-32817 | PIPE | SA 106 Gr.B | 21.3 | 3.73 | TIG | 3.73 V̂ | RT1/2Mo | - | | | 1003 REV 03 | - | - | - | RT 10% | * | * | |
| | | PIPE/FITTING | SA 106 Gr.B SA 105 | | | | 6 | 81 | - | - | - | | | | | | | | |
| 04 | 3-80-453-32817 | PIPE | SA 106 Gr.B | 21.3 | 3.73 | ARC | 4Δ | - | E 7018-1 | | | 1021 REV 01 | - | - | - | 10% LPI/MPI | * | * | |
| | | PIPE/FITTING | SA 105 | | | | 11 | - | 7 | - | - | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
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NOTES: 01. LPI/MPI, UT WHEREVER APPLICABLE SHALL BE CARRIED AFTER PWHT. 02. * REFER NDE MANUAL DOC NO. PSQ-NDM-COM REV NO.R00/04-02/AMD-02.

| PREPARED | DESIGN/CHD. | DESIGN/APD. | DATE | | DRAWING NO. | REV . |
|---|---|---|---|---|---|---|
| M.P.K | P SURESH | R.SESHAGIRI | 29.08.16 | | 4-80-453-79831 | 00 |

# ERECTION / FIELD WELDING SCHEDULE

PROJECT : DARLIPALLI STPP 2x800MW
CONTRACTOR : M/S BHEL
CONTRACT NO : ----------
DRG.NO. : ----------

CUST. NO : 7244 (AUXILIARY BOILER)
PGMA : 80-460
SYSTEM : SG AUX COOLING WATER UNIT ,

FWS DOC.NO : ---------
REV. NO. : --
WELDING CODE : IBR / ASME
PAGE NO : 01 / 01

| SL. NO. | DRG NO. FOR WELD LOCATION IDENTIFICATION MARK | DESCRIPTION OF PARTS TO BE WELDED | MATL.SPEC. (ATT) | DIMENSIONS SIZE OD mm | DIMENSIONS THICK mm | PROCESS OF WELDING | TYPE OF WELD | ELECTRODE FILLER SPEC. (ATT) ARC SPEC. | ELECTRODE FILLER SPEC. (ATT) ARC SPEC. | | | W.P.S NO. | MIN. PRE HEAT TEMP. °C | HEAT TREATMENT TEMP. °C | HEAT TREATMENT HOLD TIME | NDT METHOD/ QUANTUM | REF. SPEC. NO. | ACC. NORM REF. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PART-1 | PART-1 | | | | | QTY(NOS.) | QTY(NOS.) | | | | | | | | | | |
| | | PART-2 | PART-2 | | | | QTY | ø2.5 | ø2.5 | ø3.15 | ø4.0 | | | | | | | | |
| 01 | - | PIPE | IS 1239 BL | NB 15 | 3.2 | ARC | 3.2 V | E6013 | E 7018 | | | 1001 REV 00 | - | - | - | RT 10% | * | * | |
| | | PIPE/FITTING | IS 1239 BL IS 1239 BL | | | | 2 | 2 | 4 | - | - | | | | | | | | |
| 02 | - | PIPE | IS 1239 BL | NB 40 | 4.0 | ARC | 4.0V | E6013 | E 7018 | | | 1001 REV 00 | - | - | - | RT 10% | * | * | |
| | | PIPE/FITTING | IS 1239 BL IS 1239 BL | | | | 6 | 6 | 36 | - | - | | | | | | | | |
| 03 | - | PIPE | IS 1239 BL | NB 50 | 4.50 | ARC | 4.5 V | E6013 | E 7018 | | | 1001 REV 00 | - | - | - | RT 10% | * | * | |
| | | PIPE/FITTING | IS 1239 BL IS 1239 BL | | | | 24 | 72 | 240 | - | - | | | | | | | | |
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NOTES: 01. LPI/MPI, UT WHEREVER APPLICABLE SHALL BE CARRIED AFTER PWHT. 02. * REFER NDE MANUAL DOC NO. PSQ-NDM-COM REV NO.R00/04-02/AMD-02.

| PREPARED | DESIGN/CHD. | DESIGN/APD. | CHD./APD. - QA | DATE | DRAWING NO. | REV . |
|---|---|---|---|---|---|---|
| M.P.K | P SURESH | R.SESHAGIRI | | 31.08.16 | 4-80-460-79884 | 00 |

# ERECTION / FIELD WELDING SCHEDULE

PROJECT : DARLIPALLI STPP 2x800MW
CONTRACTOR : M/S BHEL
CONTRACT NO : ----------
DRG.NO. : ----------

CUST. NO : 7244 (AUXILIARY BOILER)
PGMA : 80-473
SYSTEM : DEMINERALISED WATER

FWS DOC.NO : ---------
REV. NO. : --
WELDING CODE : IBR / ASME
PAGE NO : 01 / 01

| SL. NO. | DRG NO. FOR WELD LOCATION IDENTIFICATION MARK | DESCRIPTION OF PARTS TO BE WELDED | MATL.SPEC. (ATT) | DIMENSIONS | | PROCESS OF WELDING | TYPE OF WELD | ELECTRODE FILLER SPEC. (ATT) | | | | W.P.S NO. | MIN. PRE HEAT TEMP. | HEAT TREATMENT | | NDT METHOD/ QUANTUM | REF. SPEC. NO. | ACC. NORM REF. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SIZE OD | THICK | | | TIG | ARC SPEC. | | | | | TEMP. | HOLD TIME | | | | |
| | | | | mm | mm | | | QTY(gms) | QTY(NOS.) | | | | | | | | | | |
| | | PART-1 | PART-1 | | | | QTY | ø2.4 | ø2.5 | ø3.15 | ø4.0 | | °C | °C | | | | | |
| | | PART-2 | PART-2 | | | | | | | | | | | | | | | | |
| 01 | - | PIPE | SA312TP304H | 114.3 | 3.05 | TIG& ARC | 3.05√ | ER347 | E347 | | | 1016 REV 01 | - | - | - | RT 10% LPI 100% | * | * | |
| | | PIPE/FITTING | SA312TP304H SA403WP304H | | | | 50 | 1330 | 800 | - | - | | | | | | | | |
| 02 | - | PIPE | SA312TP304H | 60.3 | 3.91 | TIG& ARC | 3.91√ | ER347 | E347 | | | 1016 REV 01 | - | - | - | RT 10% LPI 100% | * | * | |
| | | PIPE/FITTING | SA312TP304H SA403WP304H | | | | 32 | 1622 | - | - | - | | | | | | | | |
| 03 | - | PIPE | SA312TP304H | 33.4 | 3.38 | TIG& ARC | 3.38√ | ER347 | E347 | | | 1016 REV 01 | - | - | - | RT 10% LPI 100% | * | * | |
| | | PIPE/FITTING | SA312TP304H SA403WP304H | | | | 8 | 428 | - | - | - | | | | | | | | |
| 04 | - | PIPE | SA312TP304H | 21.3 | 2.77 | TIG& ARC | 2.77√ | ER347 | E347 | | | 1016 REV 01 | - | - | - | RT 10% LPI 100% | * | * | |
| | | PIPE/FITTING | SA312TP304H SA403WP304H | | | | 2 | 107 | - | - | - | | | | | | | | |
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NOTES: 01. LPI/MPI, UT WHEREVER APPLICABLE SHALL BE CARRIED AFTER PWHT. 02. * REFER NDE MANUAL DOC NO. PSQ-NDM-COM REV NO.R00/04-02/AMD-02.

| PREPARED | DESIGN/CHD. | DESIGN/APD. | CHD./APD. - QA | DATE | DRAWING NO. | REV . |
|---|---|---|---|---|---|---|
| M.P.K | P SURESH | R.SESHAGIRI | | 31.08.16 | 4-80-473-79885 | 00 |

# ERECTION / FIELD WELDING SCHEDULE

PROJECT : DARLIPALLI STPP 2x800MW
CONTRACTOR : M/S BHEL
CONTRACT NO : ----------
DRG.NO. : ----------

CUST. NO : 7244 (AUXILIARY BOILER)
PGMA : 80-600
SYSTEM : HIGH PRESSURE DOSING

FWS DOC.NO : ---------
REV. NO. : --
WELDING CODE : IBR / ASME
PAGE NO : 01 / 01

| SL. NO. | DRG NO. FOR WELD LOCATION IDENTIFICATION MARK | DESCRIPTION OF PARTS TO BE WELDED | MATL.SPEC. (ATT) | DIMENSIONS | | PROCESS OF WELDING | TYPE OF WELD | ELECTRODE FILLER SPEC. (ATT) | | | | W.P.S NO. | MIN. PRE HEAT TEMP. °C | HEAT TREATMENT | | NDT METHOD/ QUANTUM | REF. SPEC. NO. | ACC. NORM REF. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SIZE OD mm | THICK mm | | | TIG | ARC SPEC. | | | | | TEMP. °C | HOLD TIME | | | | |
| | | | | | | | | QTY(gms) | QTY(NOS.) | | | | | | | | | | |
| | | PART-2 | PART-2 | | | | QTY | ø2.4 | ø2.5 | ø3.15 | ø4.0 | | | | | | | | |
| 01 | - | PIPE | SA312TP304H | 33.4 | 3.38 | TIG | 3.38 | ER347 | E347 | | | 1016 REV 01 | - | - | - | RT 10% 100%LPI | * | * | |
| | | PIPE/FITTING | SA312TP304H SA403WP304H | | | | 41 | 1345 | - | - | - | | | | | | | | |
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NOTES: 01. LPI/MPI, UT WHEREVER APPLICABLE SHALL BE CARRIED AFTER PWHT. 02. * REFER NDE MANUAL DOC NO. PSQ-NDM-COM REV NO.R00/04-02/AMD-02.

| PREPARED | DESIGN/CHD. | DESIGN/APD. | CHD./APD. - QA | DATE | DRAWING NO. | REV . |
|---|---|---|---|---|---|---|
| M.P.K | P SURESH | R.SESHAGIRI | | 31.08.16 | 4-80-600-79703 | 00 |

# ERECTION / FIELD WELDING SCHEDULE

PROJECT : DARLIPALLI STPP 2x800MW
CONTRACTOR : M/S BHEL
CONTRACT NO : ----------
DRG.NO. : ----------

CUST. NO : 7244 (AUXILIARY BOILER)
PGMA : 80-601
SYSTEM : LOW PRESSURE DOSING ,

FWS DOC.NO : ---------
REV. NO. : --
WELDING CODE : IBR / ASME
PAGE NO : 01 / 01

| SL. NO. | DRG NO. FOR WELD LOCATION IDENTIFICATION MARK | DESCRIPTION OF PARTS TO BE WELDED | MATL.SPEC. (ATT) | DIMENSIONS | | PROCESS OF WELDING | TYPE OF WELD | ELECTRODE FILLER SPEC. (ATT) | | | | W.P.S NO. | MIN. PRE HEAT TEMP. | HEAT TREATMENT | | NDT METHOD/ QUANTUM | REF. SPEC. NO. | ACC. NORM REF. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SIZE OD | THICK | | | TIG | ARC SPEC. | | | | | | | | | | |
| | | | | mm | mm | | | QTY(gms) | QTY(NOS.) | | | | | | | | | | |
| | | PART-1 | PART-1 | | | | | | | | | | | TEMP. °C | HOLD TIME | | | | |
| | | PART-2 | PART-2 | | | | QTY | ø2.4 | ø2.5 | ø3.15 | ø4.0 | | °C | | | | | | |
| 01 | - | PIPE | SA312TP304H | 33.4 | 3.38 | TIG | 3.38 V | ER347 | E347 | | | 1016 REV 01 | - | - | - | RT 10% LPI 100% | * | * | |
| | | PIPE/FITTING | SA312TP304H SA403WP304H | | | | 40 | 1376 | - | - | - | | | | | | | | |
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NOTES: 01. LPI/MPI, UT WHEREVER APPLICABLE SHALL BE CARRIED AFTER PWHT. 02. * REFER NDE MANUAL DOC NO. PSQ-NDM-COM REV NO.R00/04-02/AMD-02.

| PREPARED | DESIGN/CHD. | DESIGN/APD. | CHD./APD. - QA | DATE | DRAWING NO. | REV . |
|---|---|---|---|---|---|---|
| M.P.K | P SURESH | R.SESHAGIRI | | 31.08.16 | 4-80-601-79704 | 00 |

# ERECTION / FIELD WELDING SCHEDULE

PROJECT : DARLIPALLI STPP 2x800MW
CONTRACTOR : M/S BHEL
CONTRACT NO : ----------
DRG.No. : ----------

CUST. NO : 7244 (AUXILIARY BOILER)
PGMA : 80-650
SYSTEM : FUEL OIL SUPPLY AND RETURN PIPING

FWS DOC.NO. : ---------
REV. NO. : --
WELDING CODE : IBR / ASME
PAGE NO : 01 / 01

| SL. NO. | DRG NO. FOR WELD LOCATION IDENTIFICATION MARK | DESCRIPTION OF PARTS TO BE WELDED | MATL.SPEC. (ATT) | DIMENSIONS | | PROCESS OF WELDING | TYPE OF WELD | ELECTRODE FILLER SPEC. (ATT) | | | | W.P.S NO. | MIN. PRE HEAT TEMP. | HEAT TREATMENT | | NDT METHOD/ QUANTUM | REF. SPEC. NO. | ACC. NORM REF. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SIZE OD | THICK | | | TIG | ARC SPEC. | | | | | TEMP. | HOLD TIME | | | | |
| | | PART-1 | PART-1 | mm | mm | | QTY | QTY(gms) | QTY(NOS.) | | | | °C | °C | | | | | |
| | | PART-2 | PART-2 | | | | | ø2.4 | ø2.5 | ø3.15 | ø4.0 | | | | | | | | |
| 01 | - | PIPE | SA 106 GrB | 88.9 | 5.49 | TIG& ARC | 5.49 | RT1/2Mo | E 7018-1 | | | 1003 REV 03 | - | - | - | RT 10% | * | * | |
| | | PIPE/FITTING | SA 106 GrB SA 234 WPB | | | | 30 | 550 | 420 | - | - | | | | | | | | |
| 02 | - | PIPE | SA 106 GrB | 48.3 | 5.08 | TIG& ARC | 5.08 | RT1/2Mo | E 7018-1 | | | 1003 REV 03 | - | - | - | RT 10% | * | * | |
| | | PIPE/FITTING | SA 106 GrB | | | | 15 | 100 | 80 | - | | | | | | | | | |
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NOTES: 01. LPI/MPI, UT WHEREVER APPLICABLE SHALL BE CARRIED AFTER PWHT. 02. * REFER NDE MANUAL DOC NO. PSQ-NDM-COM REV NO.R00/04-02/AMD-02.

| PREPARED | DESIGN/CHD. | DESIGN/APD. | CHD./APD. - QA | DATE | DRAWING NO. | REV . |
|---|---|---|---|---|---|---|
| M.P.K | P SURESH | R.SESHAGIRI | | 31.08.16 | 4-80-650-79702 | 00 |

# ERECTION / FIELD WELDING SCHEDULE

PROJECT : DARLIPALLI STPP 2x800MW
CONTRACTOR : M/S BHEL
CONTRACT NO : ----------
DRG.No. : 1-81-026-01080

CUST. NO : 7244(Aux.Boiler)
PGMA : 81-026
SYSTEM : DEARATOR MAIN ASSEMBLY

FWS DOC.:NO. : ---------
REV. NO. : --
WELDING CODE : IBR / ASME
PAGE NO : 01 / 01

| SL. NO. | DRG NO. FOR WELD LOCATION IDENTIFICATION MARK | DESCRIPTION OF PARTS TO BE WELDED | MATL.SPEC. (ATT) | DIMENSIONS SIZE OD mm | DIMENSIONS THICK mm | PROCESS OF WELDING | TYPE OF WELD | ELECTRODE FILLER SPEC. (ATT) TIG | ELECTRODE FILLER SPEC. (ATT) ARC SPEC. | | | W.P.S NO. | MIN. PRE HEAT TEMP. °C | HEAT TREATMENT TEMP. °C | HEAT TREATMENT HOLD TIME | NDT METHOD/ QUANTUM | REF. SPEC. NO. | ACC. NORM REF. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | QTY(gms) | QTY(NOS.) | | | | | | | | | | |
| | | PART-1 | PART-1 | | | | | | | | | | | | | | | | |
| | | PART-2 | PART-2 | | | | QTY | ø2.5 | ø2.5 | ø3.15 | ø4.0 | | | | | | | | |
| 01 | 1-81-026-01080 | PIPE | SA 106 GrB | 48.3 | 5.08 | TIG& ARC | 5.08V̂ | RT1/2Mo | E 7018-1 | | | 1003 REV 03 | - | - | - | RT 10% | * | * | |
| | | PIPE/FITTING | SA 106 GrB | | | | 8 | 80 | 64 | - | - | | | | | | | | |
| 02 | 1-81-026-01080 | PLATE | SA515 Gr.70 | SUPPORT | - | ARC | 16△ | - | E 7018 | | | 1213 REV 00 | - | - | - | 10% LPI/MPI | * | * | |
| | | PLATE | SA515 Gr.70 | | | | 4 | - | - | 120 | 252 | | | | | | | | |
| 03 | 1-81-026-01080 | SHELL | SA515 Gr.70 | 1500 | 12 | TIG& ARC | 12 V̂ | RT1/2Mo | E 7018-1 | | | 1003 REV 03 | - | - | - | RT 10% | * | * | |
| | | NOZZLE | SA515 Gr.70 | | | | 1 | 510 | 116 | 190 | 55 | | | | | | | | |
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NOTES: 01. LPI/MPI, UT WHEREVER APPLICABLE SHALL BE CARRIED AFTER PWHT. 02. * REFER NDE MANUAL DOC NO. PSQ-NDM-COM REV NO.R00/04-02/AMD-02.

| PREPARED | DESIGN/CHD. | DESIGN/APD. | | DATE | DRAWING NO. | REV . |
|---|---|---|---|---|---|---|
| M.P.K | P SURESH | R.SESHAGIRI | | 29.09.16 | 4-81-026-05744 | 00 |