

MANUFACTURING QUALITY PLAN										
ITEM: BEARING PEDESTALS (Front Bearing Pedestal, Bearing Pedestal (IP-LP), HP-IP Bearing Pedestal, LP Generator Bearing Pedestal)		PROJECT: PACKAGE: MAIN PLATE PACKAGE								
SUB SYSTEM: 0116015700000 R-00-0, 0118011800000 R-08-0, 0117015700000 R-01-0, 0118031800000		CONTRACT NO: EMPR MUMBAI								
SL NO.	COMPONENT AND OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE OF NORMS	FORMAT OF	REMARK	
1	2	3	4	5	6	7	8	9	10	
1.000	Material									
1.010	Verification supplier's certificate of plates				100%	AA 10108 AA 10119	AA 10108 AA 10119	Receiving inspection record.	V V	
2.000	Inprocess inspection									
2.010	Acid cleaning of pipes		Major	Visual	100%	Drg.	-	Obs. Sheet	P -	
2.020	Visual inspectin of welds		Major	Visual	100%	Drg.	Drg.	Obs. Sheet	P -	
2.030	Check for stress relieving		Major	Heat treatment	100%	Drg.	Drg.	Furnace chart	P V	
2.040	UT of butt welds		Major	NDT	10%	Drg.	Drg.	Report	P V	
2.050	DPT of fillet welds		Major	NDT	10%	Drg.	Drg.	Report	P V	
2.060	Leak test for 12 Hrs.		Major	Visual	100%	Drg.	Drg.	Hyd. Test Certificate	P V	
2.070	Verification of dimensions and visual inspection		Major	Visual & Measurement	As per log sheet	Drg.	Drg.	Logsheets	P	
2.080	Hydraulic testing of bearing oil inlet pipes & Jacking Oil Pipeline		Major	Hydro test	100%	Drg.	Drg.	Hyd. Test Certificate	P W	
2.090	Alignment of bearing in bearing pedestal		Major	Measurement	100%	Drg.	Drg.	Obs. Sheet	P W	
3.000	Final Inspection									
3.010	Predispatch inspection		Major	Visual	100%	Drg.	Drg.	-	P -	
MANUFACTURER/ SUB CONTRACTOR		SIGNATURE				LEGEND: S=SUB-VENDOR, B=BHEL/ BHEL NOMINATED INSPECTION AGENCY, C=CUSTOMER, P=PERFORM, V=REVIEW OF RECORDS W=CUSTOMER WITNESS/NOT HOLD, BHEL O GIVE ADVANCE NOTICE AND CUSTOMER TO ASSOCIATE BUT WORK WILL NOT STOP. CHP=CUSTOMER HOLD POINT (WORK WILL NOT PROCEED UNLESS THE CLEARANCE FROM CUSTOMER) * RECORDS IDENTIFIED WITH "TICK" SHALL BE SUBMITTED TO CUSTOMER AS A QC DOCUMENTATION PACKAGE.				DOC NO.: REV: ..... CAT: .....
						FOR CUSTOMER USE				APPROVAL SEAL

MANUFACTURING QUALITY PLAN									
ITEM : MAIN OIL PUMP		Q.P NO. : 1.09.07		PROJECT :		PACKAGE : MAIN PLATE PACKAGE			
SUB SYSTEM : 0116055700000 R-00-0		REV : 1		DATE :		CONTRACT NO. :			
PAGE : 1 of 1		CONTRACTOR : EMRP MUMBAI		ACCEPTANCE OF NORMS		FORMAT OF RECORDS		REMARK	
SL NO.	COMPONENT AND OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	8	9	10
1	2	3	4	5	6	7	D*	S	B
1.000	Material	Verification of supplier's certificate of MOP casing	Major	TC review	100%	HW 19799	HW 19799	-	V
1.010									V
2.000	Inprocess inspection	Verification of dimensions of casing	Major	Measurement	100%	Drg.	Drg.	Logsheet	P
2.010									
2.020		NDT of babbit & welds	Major	Major	As per drg.	do-	do-	Report	P
2.030		Hydraulic testing of casing	Major	Hydraulic	100%	do-	do-	Hyd. Test Certificate	P
2.040		Check during assembly of MOP	Major	Measurement	100%	Drg.	Drg.	Obs. sheet/Logsheet	P
3.000	Final Inspection								P
3.005	performance test	Major	test	Major	100%	Drg.	Drg.	Test Certificate	P
3.010	Check for cleanliness & Completeness	Major	Visual	Major	100%	Drg.	Drg.		P

LEGEND:		DOC NO. :	
S=SUB-VENDOR, B=BHEL/BHEL NOMINATED INSPECTION AGENCY, C=CUSTOMER, P=PERFORM, V=REVIEW OF RECORDS W=CUSTOMER WITNES(NOT HOLD, BHEL O GIVE ADVANCE NOTICE AND CUSTOMER TO ASSOCIATE BUT WORK WILL NOT STOP. CHP=CUSTOMER HOLD POINT (WORK WILL NOT PROCEED UNLESS THE CLEARANCE FROM CUSTOMER) * RECORDS IDENTIFIED WITH "TICK" SHALL BE SUBMITTED TO CUSTOMER AS A QC DOCUMENTATION PACKAGE.		REV. .... CAT.....	
MANUFACTURER/ SUB CONTRACTOR	MAIN-SUPPLIER	FOR CUSTOMER USE	APPROVED BY
SIGNATURE		BY	APPROVAL SEAL

MANUFACTURING QUALITY PLAN											
ITEM : BEARING SHELL		QIP NO : 1.05.02		PROJECT : MAIN PLATE PACKAGE		REMARK					
SUB SYSTEM : 0116041800000 R-05-0, 0118181800000 R-03-0, 0117031800000 R-03-0, 0118141800000		REV : 1 of 1		CONTRACT NO : EMRP MUMBAI		AGENCY					
SL NO. COMPONENT AND OPERATIONS		CLASS TYPE OF CHECK		QUANTUM OF CHECK		REFERENCE DOCUMENT		ACCEPTANCE OF NORMS		FORMAT OF RECORDS	
1		3		4		5		6		7	
2		3		4		5		6		7	
1.000 Material		3		4		5		6		7	
1.010		3		4		5		6		7	
2.000 Inprocess inspection		3		4		5		6		7	
2.010		3		4		5		6		7	
2.020		3		4		5		6		7	
2.030		3		4		5		6		7	
2.040		3		4		5		6		7	
3.000 Final Inspection		3		4		5		6		7	
3.010		3		4		5		6		7	
Verification of supplier's certificates including for Bearing shell: chemical, Mechanical, Heat treatment, UT & for Bearing lining: Chemical Composition		Certificates review 100%		HW 19361		HW 19361		HW 19361		Receiving inspection record.	
Pressure & leak test of oil pressure relief (only for journal Bearing)		Major		Hydraulic		100%		Drg.		Hyd Test Certificate	
Check for feeler gauge tightness of joint planes of bearing shell.		Major		NDT		100%		Drg.		Report	
Non-Destructive testing UT & DPT of bonding of		Major		NDT		100%		HW0850195		Report	
Verification of dimension & visual inspection		Major		Visual & measurement		100%		Drg.		Obs. sheet/Logs sheet	
Check for cleanliness & Completeness		Major		Visual		100%		Drg.		Route Card	
LEGEND:		S=SUB-VENDOR, B=BHEL/ BHEL NOMINATED INSPECTION AGENCY, C=CUSTOMER, P=PERFORM, V=REVIEW OF RECORDS W=CUSTOMER WITNESSES (NOT HOLD, BHEL O GIVE ADVANCE NOTICE AND CUSTOMER TO ASSOCIATE BUT WORK WILL NOT STOP, CHP-CUSTOMER HOLD POINT (WORK WILL NOT PROCEED UNLESS THE CLEARANCE FROM CUSTOMER)									
MANUFACTURER/ SUB CONTRACTOR		MAIN-SUPPLIER		SIGNATURE		REVIEWED BY		APPROVED BY		APPROVAL SEAL	
DOC NO.:		REV. ....		CAT. ....		FOR CUSTOMER USE		APPROVED BY		APPROVAL SEAL	



## QUALITY ASSURANCE PLAN

PROJECT : BHEL EMRP MUMBAI  
Package :- Main Plant Package  
Contractor :- BHEL MUMBAI  
CONTRACT NO./PO : LOI

Page No. : 1 of 2

Item:- Bearing pedestal & Cover  
(HP FRONT, HP-IP, IL-LP-GEN)  
Drg No. :- 0-1160157100, 0-1165318000,  
0-1170157100, 0-1172218000, 0-1180118100,  
0-118021800, 0-1180318100, 0-1180418000.  
QAP NO : 1824 -01, 1825-01, 1854-01 REV - 00  
DATE : 30/09/2011  
W. O. No. :-1824-01, 1825-01, 1854-01.  
Enquiry Ref. No. :-

SL. No.	COMPONENT & OPERATION	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE OF NORMS	FORMAT OF RECORD	AGENCY			REMARKS	
									M	B	C		
1	2	3	4	5	6	*7	8	9	D	10	11	12	13
1.	Material inspection	Record Review of supply Material	major	TC Review	100%	AA10108 AA10119	AA10108 AA10119	Material TC	✓	P	V	-	Material shall be procured from BHEL approved Sources with correlated TC identification.
2.	Cutting and Weld Edge preparation.	Marking	major	Marking check	100%	Drawing	Drawing	Observation sheet		P	-	-	
		Dimension	major	measurement	100%	Drawing	Drawing	Observation sheet		P	-	-	
		DPT of Weld edge preparation	major	Testing	100%	Drg No. HW0850199	Drg No. HW0850199	Report		P	-	-	
3.	WPS,PQR and WPQ	Scrutinizing	major	Record Review	100%	ASME sec-IX	ASME sec-IX	Report		P	V	-	
4.	Welding Operation	Fit up welding Joint	major	Visual	100%	Drawing	Drawing	Observation sheet	✓	P	V	-	
		Visual inspection of weld seam	major	Visual	100%	HW06200199	HW06200199	Observation sheet	✓	P	V	-	
		DPT on Root Run (base Welding )	major	NDT	100%	HW06200199	No Defect	Observation sheet	✓	P	W	-	
		Hydraulic Testing of Pipes (Sub-Assemblies) Before and after welding to the pedestal.	major	Testing	100%	Drawing AA 06473601	No leakage allow	Report	✓	P	W	-	
		Acid cleaning of pipes after subassembly	major	Visual	100%	Drawing AA 06473601	Drawing AA 06473601	Observation sheet	✓	P	V	-	
		Check for stress Relieving	major	Record Review	100%	HW06200199	HW06200199	S. R. Chart	✓	P	V	-	
		RT/UT of Butt Welds	major	NDT	100%	HW06200199	HW06200199	Report	✓	P	W	-	'V' in case of RT 'W' in case of UT
		Surface Crack Examination on Butt Weld in case of Doubt.	major	NDT	100%	HW06200199	HW06200199	Report	✓	P	W	-	

## LEGEND:

M : Manufacturer  
B: BHEL (QC)/BHEL Nominated Inspection Agency.  
C : Customer  
P : Perform  
W : Witnessed  
V : Record Verification  
\* : Record identification with (✓) shall be submitted to customer  
As per QAP Documentation Package.

FOR BHEL EMRP MUMBAI USE

REVIVED BY :

APPROVED BY :

APPROVAL SEAL



## QUALITY ASSURANCE PLAN

PROJECT: BHEL EMRP MUMBAI  
Package :- Main Plant Package  
Contractor :- BHEL MUMBAI  
CONTRACT NO./PO : LOI

Page No. : 2 of 2

Item:- Bearing pedestal & Cover  
(HP FRONT, HP-IP,IL-LP-GEN)  
Drg No. :- 0-1160157100,  
0-1165318000, 0-1170157100,  
0-1172218000,0-1180118100, 0-118021800,  
0-1180318100, 0-1180418000.  
QAP NO : 1824 -01, 1825-01, 1854-01 REV -00  
DATE : 30/09/2011  
W. O. No. :-1824-01, 1825-01, 1854-01.  
Enquiry Ref. No. :-

SL No	COMPONENT & OPERATION	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE OF NORMS	FORMAT OF RECORD	AGENCY			REMARKS	
									M	B	C		
1	2	3	4	5	6	*7	8	9	D	10	11	12	13
		Surface Crack Examination of fillet Welds.	major	NDT	100%	HW06200199	HW06200199	Report	✓	P	W	-	
		Leak Testing for 12 Hours.	major	Testing	100%	Drawing	Drawing	Report	✓	P	W	-	
		Hydraulic test of bearing oil inlet pipes after machining.	major	Hydraulic	100%	Drawing	Drawing	Report	✓	P	W	-	
		Hydraulic test for jacking oil pipe line at 225 bar for 30 minutes.	major	Hydraulic	100%	Drawing	Drawing	Report	✓	P	W	-	
5.	Final Inspection	Verification of Dimension, Identification, Cleanliness and Completeness of job	major	Visual & Measurement	100%	Drawing	Drawing	s Observation sheet	✓	P	W	-	

Note:

## Note:

- BHEL approved electrodes shall be used during welding.
- Lloyds Qualified welders in accordance with ASME sec IX shall be deployed on job.
- Preheating shall be done as per WPS.
- Welder code shall be punched near the weld seam.
- Ndt shall be carried out by ASNT/ISNT level I/II Qualifications.
- Stress Relieving / Shot blasting / Painting and Hydro testing if any shall be done at vendor works BHEL (QC) shall maintain the record.
- CTQ's :- (a) M/C allowance on joint flanges.
- Item shall be dispatched to BHEL after acceptance by BHEL after duly identifying by punching P.O. NO, Drg No, Plant Order No, & I.R. No.
- Manufacturing shall be done as per manufacturing plan approved by BHEL (Welding Technology)-Mr. H.P. Roy.
- In case any discrepancies noticed during random checking 100% testing shall be done.
- All materials of construction shall be as per BHEL drawing and BHEL plant standard.
- All final machining and drilling if any shall be done as per BHEL work.
- \*13 Plugging of openings is mandatory to ensure absence of foreign material / dirt in pipe of bearing pedestal which must be recorded and verified by vendor and BHEL nominated inspection agency before the item is dispatch to BHEL.(Ref Drg No. 2-12052-01000).
- \*14 Ensure Hydraulic testing of pipe line

## LEGEND:

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\* : Record identification with (✓) shall be submitted to customer As per QAP Documentation Package.

FOR BHEL EMRP MUMBAI USE

REVISED BY :

APPROVED BY :

APPROVAL SEAL