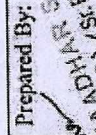
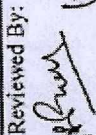
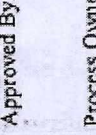
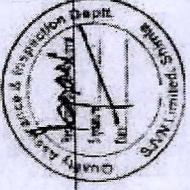
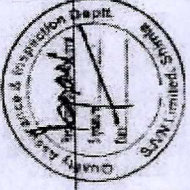


		PROJECT: ARUN 3 HEP (4x225 MW)				MANUFACTURING QUALITY ASSURANCE PLAN				MANUFACTURER: Bharat Heavy Electricals Limited, Bhopal			
ITEM DESCRIPTION		SUB-ITEM		QAP & REV		ISSUE DATE		FORMAT OF RECORD		AGENCY		REMARKS	
GENERATOR & AUXILIARIES		Rotor		QA/HG/561 Rev-04		06.12.2019		9		M C S		11	
COMPONENT & OPERATION		CHARACTERISTICS		TYPE OF CHECK		QUANTUM OF CHECK		REFERENCE DOCUMENT		ACCEPTANCE NORMS			
SR. NO.		CLASS		M/C		S		7		8			
1		2		3		4		5		6			

B. ROTOR												
1	Incoming Material											
1.1	Pole end plate											
1.1.1	Mechanical properties (UTS, YS, % elongation, % RA & Impact test, Chemical composition)											
1.1.2	NDT (UT & MPI), visual & dimensional check &											

Prepared By: 		Reviewed By: 		Approved By: 	
ANANDHAR SHANKAR Sr. Engineer (QC) Quality Assurance (QC)		ANANDHAR SHANKAR Sr. Engineer (QC) Quality Assurance (QC)		Process Owner	
Page 6 of 18					

 एलवीएल लिमिटेड		PROJECT: ARUN 3 HEP (4x225 MW)				MANUFACTURING QUALITY ASSURANCE PLAN				MANUFACTURER: Bharat Heavy Electricals Limited, Bhopal			
ITEM DESCRIPTION		SUB-ITEM		QAP & REV		ISSUE DATE		AGENCY		FORMAT OF RECORD		REMARKS	
GENERATOR & AUXILIARIES		Instruments & Testing Equipment		Q/HG/561 Rev -04		06.12.2019		M C S		9		11	
S.R. NO.	COMPONENT & OPERATION	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS						
1	2	3	4	5	6	7	8						

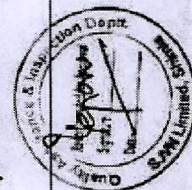
LEGENDS									
C	CONTRACTOR (BHEL)	IR	INSPECTION REPORT	P	PERFORM				
CHP	CUSTOMER HOLD POINT	M	MANUFACTURER	S	SAPDC LTD.				
CR	CRITICAL	MA	MAJOR	TC	TEST CERTIFICATE				
DRG	DRAWING	ME	MEASUREMENT	V	VERIFICATION OF RECORDS				
ET	ELECTRICAL TEST	MIN	MINOR	Vis	VISUAL CHECK				
HT	HEAT TREATMENT	NDT	NON DESTRUCTIVE TESTING	W	WITNESS				
NOTE: QAP SHALL BE READ IN CONJUNCTION WITH QUALITY ASSURANCE REQUIREMENT GIVEN AS PART OF TECHNICAL SPECIFICATION.									
MANUFACTURER / SUB-CONTRACTOR:					FOR SAPDC USE:				
CONTRACTOR:					REFERENCE DOC NO. OF SJVN:				
PREPARED BY:		REVIEWED BY		REVIEWED & RECOMMENDED BY		REVIEWED BY		RECOMMENDED BY	
NAME & SIGNATURE		NAME & SIGNATURE		NAME & SIGNATURE		NAME & SIGNATURE		APPROVED BY	
NAME & SIGNATURE		NAME & SIGNATURE		NAME & SIGNATURE		NAME & SIGNATURE		SIGNATURE & SEAL	

Note:

1. BHEL shall submit copy of all the internal reports/ TCs/ MTCs for review and record of SAPDC
2. Material of construction / methodology of construction shall be as per technical specification / approved drawing
3. Mechanical properties, if not covered above, but required to be conducted as per relevant material standard; same shall be conducted by BHEL

Prepared By:  13/12/19 Rajat Dhiman Manager	Reviewed By:  13/12/19 Rajat Dhiman Manager	Approved By:  13/12/19 Rajat Dhiman Manager	Process Owner  13/12/19 Rajat Dhiman Manager
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By: Name & Signature	By: Name & Signature
By: Name & Signature	By: Name & Signature
By: Name & Signature	By: Name & Signature
By: Name & Signature	By: Name & Signature
By: Name & Signature	By: Name & Signature

5



QUALITY ASSURANCE DEPARTMENT

QA PLAN FOR: FORGINGS
QA PLAN NO: QSP/HG/104

DATE: 13/10/1993

PI NO: _____
REVISION: 01

SHEET 1 of 2
DATE: 14/01/2016

SL. NO.	COMPONENT/ASSY/ OPERATION	CHARACTERISTICS	CLASS	TYPE	QUANTUM OF CHECK	REF. DOC.	RECORD FORMAT	INSPECTION AGENCY	REMARKS
1.0	Forging stock (ingot or bloom)	a) Material certification	Major	Review	100%	Spec/ Drawing	TC	Supplier/BHEL/ Customer	
		b) Material identification	Major	Review	100%	Spec/ Drawing	TC	Supplier/BHEL/ Customer	
1.2	Forging	a) Visual and process checks	Major	Review	100%	Approved forging process	Supplier QC record	Supplier/BHEL/ Customer	
		b) Heat treatment	Critical	Heat treatment	100%	Spec	TC	Supplier/BHEL/ Customer	
		c) Marking of test samples as per drawing	Major	Review	100%	Drawing	Supplier QC record	Supplier/BHEL/ Customer	
		d) Chemical analysis	Major	Chem	Sample	Spec	TC	Supplier/BHEL/ Customer	
		e) Mechanical analysis	Major	Mech	Sample	Spec	TC	Supplier/BHEL/ Customer	
		f) Ensure proof marking for availability of machining allowance	Major	Dimensional	100%	Drawing	Supplier QC record	Supplier/BHEL/ Customer	
		g) Marking of PF nos., etc. before rough machining	Major	Review	100%	Drawing	Supplier QC record	Supplier/BHEL/ Customer	
		h) Visual & dimensional checks of rough machined forgings	Major	Visual/ Dimensional	100%	Drawing	Supplier QC record	Supplier/BHEL/ Customer	

PREPARED BY: -SD-

CHECKED BY: -SD-

APPROVED BY: -SD-

DATE: 13/10/1993

REVISION 01: 1) "Important note" has been added. 2) The "Type" field was blank for 1.2 c) & 1.2 g). 3) The "Record format" field was blank for Sl. No. 1.2 c). 4) The format has been updated.

PREPARED BY: *[Signature]* 14/01/2016

CHECKED BY: *[Signature]* 14/01/2016

APPROVED BY: *[Signature]*

DATE: 14/01/2016

कृष्णा चौ. बंडारु

KRISHNA C BANDARU

वरि अभियंता (अभिकल्प) / Sr. Engineer (D)

एच.जी.ई. प्र. भा. / H G E DIVISION

बी.एच.ई.एल., भोपाल / BHEL, BHOPAL

रितेश गजमिये / RITESH GAJBHIYE

वरि प्रबंधक (अभिकल्प) / Sr. Manager (D)

एच.जी.ई. प्रभाग / H G E Division

बी.एच.ई.एल., भोपाल / BHEL, BHOPAL

2



QA PLAN FOR: FORGINGS

QA PLAN NO: QSP/HG/104

DATE: 13/10/1993

PI NO:

REVISION: 01

SHEET 2 of 2

DATE: 14/01/2016

QUALITY ASSURANCE DEPARTMENT

SL. NO.	COMPONENT/ASSY/ OPERATION	CHARACTERISTICS	CLASS	TYPE	QUANTUM OF CHECK	REF. DOC.	RECORD FORMAT	INSPECTION AGENCY	REMARKS
		i) UT on forging and boroscopic examination	Major	NDT	100%	Drawing	TC	Supplier/BHEL/ Customer	
		j) Final marking of PF nos., heat nos., identification, etc.	Major	Review	100%	Drawing	TC	Supplier/BHEL/ Customer	
		k) Painting, preservation, and packing	Major	Review	100%	Drawing	TC	Supplier/BHEL/ Customer	

ABBREVIATIONS: NDT - Non Destructive Testing, Mech - Mechanical, Chem - Chemical, Elec - Electrical, Spec - Specification, TC - Test Certificate, QC - Quality Control

IMPORTANT NOTE: Some of the above-mentioned tests may be witnessed by the customer. This shall be intimated at a later date.

PREPARED BY: -SD-

CHECKED BY: -SD-

APPROVED BY: -SD-

DATE: 13/10/1993

REVISION 01: 1) "Important note" has been added. 2) The "Type" field was blank for 1.2 c) & 1.2 g). 3) The "Record format" field was blank for Sl. No. 1.2 c). 4) The format has been updated.

PREPARED BY: *[Signature]* 14/01/2016CHECKED BY: *[Signature]* 14/01/2016APPROVED BY: *[Signature]*

DATE: 14/01/2016

कृष्णा चै. बंडारु

KRISHNA C BANDARU

वरि अभियंता (अभिकल्प) / Sr. Engineer (D)

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वरि प्रबंधक (अभिकल्प) / Sr. Manager (D)

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