

## Note No. #3

## Attachment:CQR for ALCS Controllers.pdf

<b>PROJECT:</b> PVUNL PATRATU 3 x 800 MW (BHEL W.O no: R839,R840,R841 & R4R2)  <b>NTPC CONTRACT NO:</b> CS-9585-001-2  <b>PACKAGE: EPC</b> <b>PACKAGE</b> <b>MAIN CONTRACTOR:</b> BHEL - RANIPET <b>SUB CONTRACTOR &amp; ADDRESS:</b>  (To be filled by VENDOR)		<b>CONTRACT QUALITY REQUIREMENTS (CQR) for</b> <b><u>ALCS CONTROLLERS</u></b>  PVUNL PATRATU 3 x 800 MW (BHEL W.O no: R839, R840,R841 & R4R2)		<b>DOC.NO:</b> BAP/CQR/R839-R841/ PATRATU/ALCS: 001  Rev NO.: 00  PAGE : Page 1 of 2  DATE: 21.08.2021	<b>##Enquiry No: R5201137</b>  <b>## Supplier Name &amp; Address:</b>  <b>##Offer reference:</b>  <b>##Date:</b>  <b>Contact Official Name:</b> <b>Mobile no:</b> <b>Email id:</b>
<b>Sl. NO.</b>	<b>DESCRIPTION</b>	<b>BHEL/NTPC Requirements</b>		<b>##Specific confirmations by the vendor</b>	
<b>ITEM: ALCS CONTROLLERS</b>					
01	<b>Type Test Requirements</b>	1. Vendor shall submit the type test reports of all the type tests as listed in SQP and carried out within 5 years from the data of PVUNL- Patratu bid opening (17.07.2017). These reports should be for the test conducted on the similar Controllers to those proposed to be supplied under this enquiry and test(s) should have been either conducted at an independent laboratory (or) should have been witnessed by TPI/BHEL/PVUNL.			
		2. However, if vendor is not able to submit the similar type test report as per above condition (or) in the case of type test reports are not found to be meeting the specification requirement, the vendor shall conduct all the tests at no additional cost to BHEL/PVUNL either at third party lab (or) own lab in the presence of TPI/BHEL/PVUNL and submit the reports for approval.			
		3. Type Test reports review and approval by TPI/BHEL is a must.			
02	<b>Quality Plan Requirement</b>	1. SQP Ref No.QP:E:829 Rev:03 dt 06-08-2014 is applicable with relevant test procedure for this ALCS Controllers and accordingly ALCS Controllers manufacturer shall submit duly signed SQP attached with this CQR. 2. Supplier shall conduct all the test requirements as mentioned in SQP in Engg. Specification(As applicable) in totality in the event of an order including successful conduction/completion/submission of all valid type tests reports/certificates (As Applicable) for ALCS Controllers as indicated in the SQP for BHEL/witness/review and approval in line with approved Data sheet /specification/Drg./SQP etc.			
03	<b>Vendor approval</b>	Supplier shall note that if Ultimate customer NTPC vendor approval is not there / not available, then the respective vendor offer will not be considered for further processing / ordering for the supply of ALCS Controllers against this Indent/Enquiry.			
04	<b>Inspection Methodology</b>	No material shall be dispatched without BHEL/BHEL AIA inspection.			
05	<b>For inspection call</b>	To raise inspection call by BHEL/BHEL AIA inspection including for type test witnessing , vendor is requested to contact Mr R Kesavan., DGM (QC-Proc)., Mobile no: +91 9443006303., Email id: <a href="mailto:kesavan@bhel.in">kesavan@bhel.in</a> and Mr Zeeshan Ali., Sr. Engineer (QC-Proc)., Mobile no: +91 9443149691., Email id: <a href="mailto:zeeshan@bhel.in">zeeshan@bhel.in</a> for inspection related activities for immediate response / resolution.			

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<b>Sl. NO.</b>	<b>DESCRIPTION</b>	<b>BHEL/NTPC Requirements</b>		<b>##Specific confirmations by the vendor</b>	
<b>ITEM: ALCS CONTROLLERS</b>					
06	<b>Painting Requirements</b>	Painting requirement like paint shade and painting thickness including no of coats if any are to be ensured by ALCS Controller supplier for these ALCS Controllers as per BHEL approved data sheet/drg/specification (As applicable).			
07	<b>Packing</b>	Required Packing & preservation shall also to be ensured as per requirements stipulated in Engg spec / drg / data sheet to avoid any damage during transit, handling damages & storage at site.			
08	<b>Document Package/Dossier Document Package/Dossier</b>	Supplier shall give Specific confirmation for Document Package in the event of an order (3 hard copies + 2 CDs in PDF file) for onward transmission to customer on need basis and same shall contain the following with proper linkages (.) 1. Index Sheet 2. BHEL SQP. 3. TCs identified by BHEL or its authorized inspection agency for record and Verification portion as given in approved SQP/Data sheet/spec (As applicable). 4. Final Inspection Report by BHEL / BHEL AIA + TC 5. Type test reports conducted/submitted with BHEL / BHEL AIA/ or its authorized inspection agency (As applicable)			

Supplier signature with seal

## Necessarily to be filled up by the vendor at the time of offer itself otherwise the offer may not be considered w.r.t Quality Requirements being Ultimate customer PVUNL specific requirements.

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 MANUFACTURER'S NAME & ADDRESS BHARAT HEAVY ELECTRICALS LIMITED, BOILER AUXILIARIES PLANT, RANIPET 632 406		STANDARD QUALITY PLAN									
		ITEM : ARECA/ARECA-1/INTELLIRAP & INTELLISTAT CONTROLLERS (as applicable)				SOP No: QP-E:819 Rev 03 DT: 06 08 2014		PREPARED BY	REVIEWED BY	APPROVED BY	
SL.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE	QUANTUM	REFERENCE	ACCEPTANCE	FORMAT	AGENCY	M	B
1	2	3	4	5	6	7	8	9	10	11	12
1	SMD components Resistor, Capacitors and Diodes, Transistors, ICs	a Type Number	Major	Visual	100%	BOM	BOM	**	**	10	
		Major	Visual	100%		BOM	BOM	P	V	** Items not conforming shall be recorded and separately identified.	
2	Capacitors	a Marking/Polarity & Voltage	Major	Measu	Sampling (AQL-4%II-III)	BOM	BOM	TC	P	V	
		b Capacitance Value	Critical	Measu	5%	BOM	BOM		P	V	
3	Inductors	a Inductor value	Major	Visual	100%	BOM	BOM		P	V	
4	Display(LCD)	a Part No.	Major	Visual	100%	BOM	Brightness shall be Uniform when visually examined		P	V	
		b Uniformity of bright	Major	Elect	100%	BOM	Satisfactory Performance	R	P	V	
		c Functional test	Major	Visual	100%	BOM	BOM		P	V	R-Register
5	Transistors	a Part.No / rating	Major	Elect	100%	BOM	Shall function satisfactory	**	P	V	
		b Functional test	Major	Visual	100%	BOM	BOM		P	V	** Items not conforming shall be recorded and separately identified.
6	Integrated Circuits(Digital)	a Verification of IC NO	Major	Elect	100%	BOM	Satisfactory as per IC tester result	**	P	V	
		b Functional test	Major	Visual	100%	BOM	BOM		P	V	
7	ICs Linear Op Amps	a Verification of IC No	Major	Elect (Review of TC)	100%	TC	Satisfactory performance	TC	P	V	
8	DC-DC Converter	a Functional	Major	Visual	100%	Drg & BOM	Legend shall be clear and accurate	TC	P	V	
9	Keypad with PCB	a Key legend	Major	Elect	100%	BOM	Satisfactory operation	R	P	V	
		b Functional test using test set up	Major	Visual	100%	BOM	BOM		P	V	

Page 1 of 5

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STANDARD QUALITY PLAN													
 MANUFACTURERS NAME & ADDRESS BHARAT HEAVY ELECTRICALS LIMITED, BOILER AUXILIARIES PLANT, RANIPET 632 406		ITEM : ARECA/ARECA-INTELLIRAP & INTELLISTAT				SQP No: QP.E.829 Rev 03 DT: 06 08 2014		PREPARED BY		REVIEWED BY		APPROVED BY	
		CONTROLLERS (As applicable)											
SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE	QUANTUM	REFERENCE	ACCEPTANCE	FORMAT	AGENCY	RECORD	REMARKS		
				OF	OF CHECK	DOCUMENT	NORMS	OF					
1	2	3	4	5	6	7	8	9	M	C			
			*	Visual	100%	BOM	BOM & No defects	R	**	10	11		
10	Relays	1 Cracks / Damages	Major	Visual	1 per lot	BOM	BOM	R	P	V			
		2 Verification of model No. & rating	Major	Elect (Review of TC)	100%	BOM	Verify Data sheet		P	V			
		3 Coil voltage, current rating of contact	Major	Visual	1 per lot	Drg & BOM	PR QA 555 Galis Epoxy-FR4	TC	P	V			
11	PCB	a Material	Major	Elect (Review of TC)	100%		Shall be free from any cracks or discontinuities	R	P	V			
		b Bare board testing (BBT)	Major	Visual	100%	Drg & BOM	Drg & BOM As per PRQA 555	R	P	V			
		c Identification	Major	Elect (Review of TC)	100%	PR QA 555	PR QA 555	R	P	V			
		d IR & HV							P	V			
		SMD Components need not undergo baking, however all NON SMD Components shall undergo 24 hrs baking at 70 Deg C to remove infant mortalities and record to be maintained	Major	Visual	100%	BOM/Catalogue	PR QA 555	R					
12	PCB Connectors	a Model No. & rating	Major	Visual	1 per lot	Drawing	Satisfactory as per Catalogue	HC	P	V			
		b Matching of Holes	Major	Visual	100%		Catalogue	HC	P	V	HC=History Card		
13	Assembled PCBs	a Identification	Major	Visual	100%	Drawing	Drawing / BOM & PRQA 555	HC	P	V			
		b Orientation of Components	Major	Visual	100%	Drawing	Drawing / BOM & PRQA 555	HC	P	V			
		c Legends	Major	Visual	100%			TC	V	V			
		d Soldering of NON SMD Components and through Hole components	Major	Visual	100%				P	V			

Page 2 of 5

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 MANUFACTURER'S NAME & ADDRESS BHARAT HEAVY ELECTRICALS LIMITED.		ITEM : ARECA/ARECA-II/INTELLIRAP & INTELLISTAT CONTROLLERS (As applicable)		SQP No:QP-E-829 Rev 03, DT:06 08 2014		PREPARED BY K. K. K.	REVIEWED BY P. K. K.	APPROVED BY A. M. M.		
		CLASS	TYPE	QUANTUM	REFERENCE	ACCEPTANCE	FORMAT	AGENCY	REMARKS	
SL.	COMPONENT &	CHARACTERISTICS	OF	OF CHECK	DOCUMENT	NORMS	OF	AGENCY	REMARKS	
NO.	OPERATIONS		CHECK	M	B			M	B	
1	2	3	4	5	6	7	8	9	10	
Final Inspection of hardware of ARECA and INTELLIRAP at Vendor works										
	ARECA/ARECA-II	Routine Test	Minor	Visual	1 per lot	1 per lot	Drawing	Drawing	HC	
	RAPCON/INTELLIRAP & STATCON-INTPELLISTAT	a Fixing and overall dimensions	Major	Measurement	1 per lot	1 per lot	Drawing	Drawing	TC	P W
		b Paint Thickness & peel off test	Major	Elect	100%	-	TP-132 (at vendor works) & TP-231 (at BAP) for ARECA, TP-133 (at vendor works) & TP-233 (at BAP) for Areca II, TP131-2 (at vendor works) & TP-232 (at BAP) for INTELLIRAP, TP-131-1 (at vendor works) for Intelli relay and Intelli buffer cards, & TP-135-2 (at vendor works) & TP-234 (at BAP) for Intellistat.	TP-132 (at vendor works) & TP-231 (at BAP) for ARECA, TP-133 (at vendor works) & TP-233 (at BAP) for Areca II, TP131-2 (at vendor works) & TP-232 (at BAP) for INTELLIRAP, TP-131-1 (at vendor works) for Intelli relay and Intelli buffer cards, & TP-135-2 (at vendor works) & TP-234 (at BAP) for Intellistat.	TC	P W
		c Functional at ambient temperature	Major	Elect	100%	100%	As per Technical specification	As per Technical specification	TC	P W
		d Soak Test for 48hrs (POWER ON)	Major	Elect	100%	100%	As per Technical specification	As per Technical specification	TC	P W
		e Burn in test at 50 deg + or - 2 Deg C for 48 Hrs (Power On)	Major	Elect	100%	100%	TP-132 (at vendor works) & TP-231 (at BAP) for ARECA, TP-133 (at vendor works) & TP-233 (at BAP) for Areca II, TP131-2 (at vendor works) & TP-232 (at BAP) for INTELLIRAP, TP-131-1 (at vendor works) for Intelli relay and Intelli buffer cards, & TP-135-2 (at vendor works) & TP-234 (at BAP) for Intellistat.	TP-132 (at vendor works) & TP-231 (at BAP) for ARECA, TP-133 (at vendor works) & TP-233 (at BAP) for Areca II, TP131-2 (at vendor works) & TP-232 (at BAP) for INTELLIRAP, TP-131-1 (at vendor works) for Intelli relay and Intelli buffer cards, & TP-135-2 (at vendor works) & TP-234 (at BAP) for Intellistat.	TC	P W
		f Repeat Functional test after Burn in test							P	W

Page 3 of 5

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BHEL BHARAT HEAVY ELECTRICALS LIMITED, BOILER AUXILIARIES		ITEM: ARECA/ARECA-II-INTELLIRAP & INTELLISTAT CONTROLLERS (As applicable)			SQP No: QP-E-829 Rev 03, DT: 06/08/2014			<i>h.k. Jha</i>	<i>P.K. Jha</i>	<i>Chaitanya</i> DGM/IA		
SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE	QUANTUM	REFERENCE	ACCEPTANCE	FORMAT	M	B		
1	2	3	4	5	6	7	8	9	M	B		
	ARECA/ARECA-II RAPCON/INTELLIRAP & STATCON- EINTELLISTAT		Major	Visual	100%			#HC	E SHOP	QC Proc		
	1	Verification of S.No and inspection status at Vendor works	Major	Visual	Estop-100%	100%	TP 231, TP 233 (latest) for ARECA & ARECA-II TP232 (latest) for INTELLIRAP and TP-234 (latest, Rev 00 for Statcon/Intellistat	TP 231, TP 233 (latest) for ARECA, TP232 (latest) for INTELLIRAP and TP-234 (latest, Rev 00 for Statcon/Intellistat	v	W	#HC- History Card or BHEL/ BHEL Authorised Inspection Agency report with correlation to Module S/No	
	2	Functional test with self test Dongle for Area & Integrated testing for Intellirap	Major	Visual	100%	100%	100%	Purchase Specification	Purchase Specification	P	W	100% By QC (Proc) at E Shop
	3	Packing	Major	Type test	one	--	IEEE 472/IEC 61000-4-5	IEEE 472/IEC 61000-4-5	TC	P	--	--
	TYPE TESTS											
	1	Surge withstand capability test (Damp sine wave test 2.5 kv/MHZ)	Major	Type test	one	--	IEEE 472/IEC 61000-4-5	Item shall function satisfactorily as per TP's after this test	TC	P	V	If type test is already conducted for identical design test report will be submitted for review. Validity of type tests is five years from the date of inspection conducted.
	2	Elevated temp test with out power (70 ± 2 °C for 24 hrs)	Major	Type test	one	--	--	Item shall function satisfactorily as per TP's after this test	TC	P	V	
	3	Thermal cycle test (-25°C for 30 Minutes to +70 °C) for 30 Minutes with transfer time of 1 Minutes, 3 cycles (with power supply off)	Major	Type test	one	--	--	_do_	TC	P	V	
	4	Heat run test at 60 °C for 6 hours with Power "ON"	Major	Type test	one	--	--	Item shall function satisfactorily as per TP's after this test	TC	P	V	
	5	Burn-in test at 50°C, 80% RH, 48 hrs with energized condition (Supply variation ± 10% rated voltage)	Major	Type test	one	--	CISPR-11 2005 Class A Group 1, IEC 61000	CISPR-11 2005 Class A Group 1, IEC 61000	TC	P	V	
	6	EMI/EMC TEST								P	V	
		Conduct Emission test					CISPR-11 2005 Class A Group 1, IEC 61000	CISPR-11 2005 Class A Group 1, IEC 61000				
		Radiated Emission test					CISPR-11 2005 Class A Group 1, IEC 61000	CISPR-11 2005 Class A Group 1, IEC 61000				
		Conducted Immunity test					CISPR-11 2005 Class A Group 1, IEC 61000	CISPR-11 2005 Class A Group 1, IEC 61000				
		Radiated Immunity test	Major	Type test	one	--	CISPR-11 2005 Class A Group 1, IEC 61000	CISPR-11 2005 Class A Group 1, IEC 61000	TC			
	7	Vibration Test					IS 9000 Part-1/1988	1. Frequency Range = 10 to 50 Hz 2. Amplitude=0.15 mm constant displacement (or) 2g constant acceleration which ever is lesser 3. Sweep rate =One octave/Minute 4. Sweep cycle= Bi directional 5. Duration= 15 minutes/axis(Axis=X,Y & Z) 6. Status=Power on 7. Condition=unpacked		P	V	

Page 4 of 5

