



# ENDORSEMENT SHEET FOR QP

## MANUFACTURING- / STANDARD / REFERENCE FIELD QUALITY PLAN ( MQP / SQP / RFQP )

TO BE FILLED IN BY SUPPLIER AT THE TIME OF SUBMISSION :		 To be filled in by NSPCL	
PROJECT NAME	NSPCL - ROURKELA 1X250MW PP-II EXPANSION		
CONTRACT NO.:	CC&M-C-347-211-FC-NOA-01/118, DTD. 11/05/2016		
MAIN SUPPLIER	BHEL-PSER		
MANUFACTURER WORKS & ADDRESS	As per approved vendor list		
ITEM/EQUIPMENT/ SYSTEM / SUB-SYSTEM DETAILS i.e. MODEL TYPE/SIZE/RATING etc.	<b>Controls &amp; Instrumentation</b>		
PROJECT SPECIFIC DOC. No. ALLOTMENT	QPX:RKL:250:EL:62 / REV 00		
APPROVED DOC.No:RQP/SQP/ RFQP/SEQP	4410-001-205-QVE-Q-003, REV 00 of NKSTPP		
Confirmation by Main Supplier (TICK WHICHEVER APPLICABLE)			
<i>I. That the item/component is identical to that considered for QP approval. OR:</i> <i>✓ II. That there are minor changes in the item/component with respect to that considered for QP approval, however the same do not affect the contents of QP, OR</i> <i>III. That there are minor changes in the item/component with respect to that considered for QP approval, however the same affect the QP slightly, as indicated below / in attached sheet.</i>			
<b>CHANGES EFFECTED:</b> 1. Class A checks shall be witnessed by NSPCL FQA/ Consultant, surveillance by NSPCL FQA Head 2. Class B checks shall be witnessed by NSPCL Site 3. Class C checks shall be witnessed by BHEL Site engineer, surveillance by NSPCL Erection Engineer 4 Disposition authority for nonconformities of all categories of checks shall be as under - Drawing / Design nonconformities: BHEL Engineering Center / OEM Process / System nonconformities: BHEL, Head (Quality): PS ER			
 Digitally signed by Arup Ratan Paul DN: cn=Arup Ratan Paul, o=BHEL, ou=PSER/OLY, email=arpaul@bhel.in, c=IN Location: BHEL, PSER, Kolkata Date: 2018.03.16 13:30:35 +05'30'		<b>DISTRIBUTION OF ENDORSEMENT OF</b> A) RQP/SQP: 1. MAIN SUPPLIER (WITH A COPY OF QP) 2. MANUFACTURER 3. RIG 4. CQA-SPL 5. CQA-O/C B) RFQP/SFQP: 1. MAIN SUPPLIER (WITH A COPY OF QP) 2. MANUFACTURER 3. NSPCL FQA (WITH A COPY OF QP) 4. NSPCL ERECTION (WITH A COPY OF QP) 5. CQA-SPL 3. CQA-O/C	
SIGNATURE OF MAIN SUPPLIER		SIGNATURE OF MANUFACTURER	
		NSPCL / MECON (Reviewed/Approved by/Date & Seal)	

# FIELD QUALITY PLAN

FOR

CONTROLS & INSTRUMENTATION  
(SG, ST, TG & AUXILIARIES)  
(ERECTION)

FOR

## NORTH KARANPURA STPS (3X660MW)

M/S NTPC LIMITED, NOIDA

PREPARED BY BHEL, PSER. KOLKATA

BHEL DOC No. QPE:NKP:660:EL:62

REVISION 00

REVISION DATE 29.06.2016

REVIEWED BY M/S NTPC LTD, NOIDA

APPROVED BY M/S NTPC LTD, NOIDA

NTPC DOC No. 4410-001-405-QVI-G-195

REVISION 00

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29.06.2016



Certification signature Digitally signed  
<kcbdw@nptc.co.in> by Kailash  
Date: 2016.07.12  
11:14:02 IST  
Reason: CAT I  
Location:  
NTPCEOC



*Handwritten signature: Kailash*

BHARAT HEAVY ELECTRICALS LIMITED  
POWER SECTOR - EASTERN REGION  
KOLKATA - 700091



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REV No.: 00



DATE: 29.06.2016

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4.0	Log Sheets (L-00 TO L-01)	02

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	<p align="center"><b>DOCUMENTS REFERRED IN FIELD QUALITY PLAN</b></p>	QP NO.: QPE:NKP:660:EL:62
		REV No.: 00
		DATE: 29.06.2016
		PAGE: <b>01 OF 01</b>
S. NO.	Reference Document	Issuing Authority
1.	Loose Instruments – Instruction / O & M Manual / Catalogues	Supplying unit
2.	Procedure for Handling ,Storage & Preservation of Electronic Equipments / Panels / Desks.	PSER, Kolkata

	<b>AUTHORISATION FOR DIFFERENT CATEGORY OF CONSTRUCTION/ ERECTION CHECKS &amp; NONCONFORMITY DISPOSITION</b>			
Category of Check	Agency	Inspection Authority	Accepting Authority	Nonconformity Disposition Authority
‘A’ Customer Hold Point	<b>BHEL</b>	Erection Engineer & QAE	Head of Erection	ENGG Center/ Head (Quality): PS-Region
‘B’ Customer Hold Point	<b>BHEL</b>	Erection Engineer	Head of Erection	ENGG Center/ Head (Quality): PS-Region
‘C’	<b>BHEL</b>	Erection Engineer	Head of Erection	ENGG Center/ Head (Quality): PS-Region
Category of Check	Agency	Witness & Accepting Authority		Surveillance By NTPC
‘A’	<b>NTPC</b>	FQA in association with Executing Engineer.		Head (FQA)
‘B’	<b>NTPC</b>	Executing Engineer		FQA Engineer
‘C’	<b>NTPC</b>	Executing Engineer		Another Engineer authorized by Head (executing Department)
<b>LEGEND for TYPE OF CHECK:</b>				
R – Record Verification, V – Visual Check, P – Physical Check, M – Measurement, T – Test.				
<b>Note:</b>				
1. Disposition authority for all categories of checks shall be as under: Product nonconformities: BHEL Engineering Center. Process/System nonconformities: BHEL, Head (Quality): PS Region.				
2. Wherever log sheet is not called for, suitable record shall be maintained in logbook/protocol.				
3. In case of nonconformity, accepting authority shall ensure the disposition of the nonconformity before acceptance, and disposition shall be reflected in the log sheets/protocols.				
4. QAE shall witness ‘A’ category checks. He is also authorized to carry out surveillance in any of B & C category of checks at his discretion.				
5. Concerned agencies shall ensure that instruments having valid calibration are only used for measurements.				
6. Quantum of check shall be 100% for all characteristics unless otherwise mentioned specifically in Field Quality Plan/ reference documents.				



## FQP NO.: QPE:NKP:660:EL:62

REV NO.: 00

Sheet 1 / 30 Sheets

## STATEMENT OF CHECKS


**Capacity / Type** : 660MW

System : SG, ST, TG &amp; Auxiliaries

**Sub-System : CONTROL & INSTRUMENTATION**

**Area : ERECTION**

- \* Suitable records should be maintained in the form of log book / protocols for calibration of instruments / control valves
- \* As an evidence of having carried out the work satisfactorily, a general purpose protocol may be maintained for the sub systems.
- \* Abbreviations used in the column “Type of Check” are :
  - R : Record Verification
  - M : Measurement
  - V : Visual
  - T : Functional Test

<div> PSER</div>		FIELD QUALITY PLAN FOR CONTROL & INSTRUMENTATION (SG,ST,TG & AUX) (Erection)					STATEMENT OF CHECKS			FQP NO.: QPE:NKP:660:EL:62 REV NO.: 00 SHEET 2 / 30 SHEETS	
SYSTEM : C & I		SUB-SYSTEM : ACDB / DCDB, CONTROL PANEL & CONTROL DESK			AREA : ERECTION						
SL NO.	CHARACTERISTICS / ITEM	TYPE OF CHECK	INSTRUMENT	CLASS	QUANTUM/ FREQUENCY OF CHECK	REFERENCE DOCUMENT/ ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS			
1.0	ACDB/DCDB										
1.1	Foundation dimensions	M	Tape	B	100%	Drawing	Logbook				
1.2	Ensure proper installation of ACDB / DCDB	V		B	100%	-	-				
1.33	Interconnection between ACDB / DCDB and UPS.	V		B	100%	Drawing	-				
1.4	Ensure mounting of all loose instruments in the cabinets.	V		B	100%	Drawing					
1.5	IR value of ACDB / DCDB	T	Megger	B	100%	-	Logbook				
1.6	Earthing.	T	Megger	B	100%	Drawing					
2.0	CONTROL PANEL & CONTROL DESK										
2.1	Foundation dimensions.	M	Tape	B	100%	Drawing	Logbook				
2.2	Proper positioning, alignment and mounting of loose instruments etc.	V		B	100%	- do -	-				
2.3	Verticality of panels.	V	Plumb bob	B	100%	-	-				
2.4	Functioning of panel door for opening, closing and locking purposes.	V		B	100%	-	-				
2.5.	Segregation of power, control pre-fabricated. and signal cables.	V		B	100%	Drawing	-				


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							REV NO.: 00	
							SHEET 3 / 30 SHEETS	
SYSTEM : C & I		SUB-SYSTEM : CONTROL PANEL & CONTROL DESK, PLC PANEL			AREA : ERECTION			
SL NO.	CHARACTERISTICS / ITEM	TYPE OF CHECK	INSTRUMENT	CLASS	QUANTUM/ FREQUENCY OF CHECK	REFERENCE DOCUMENT/ ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS
2.6	Cable size, termination and inter-connection between the panels / cabinets / cubicles / control desks / MCC as applicable	V		B	100%	Cable schedule	-	
2.7	Earthing of panels as specified	T		B	100%	Drawing	-	
2.8	Wiring as per color coding scheme. Designation of pre-fabricated cables. Termination of signal cables by maxi-termination/wire wrapping tool.	V		B	100%	- do -	-	
2.9	Shielded cables are earthed at panel end only.	V		B	100%	-	-	
2.10	Bottom sealing of panels. Plug unused cable gland holes	V		B	100%	-	-	
2.11	Cleanliness.	V		B	100%	-	-	
2.12	Ensure all unused slots of electronic racks are properly dummied	V		B	100%	Drawing		
3.0	PLC PANEL							
3.1	Ensure all the components are installed properly.	V		B	100%	Drawing/ Manual		
3.2	Ensure suitable jumpers are provided for proper input voltage	V		B	100%	Drawing/ Manual		
3.3	Ensure earthing of panel	V		B	100%	Drawing/ Manual		


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SYSTEM : C & I		SUB-SYSTEM : UPS, CABLE TRAYS & RACKS			STATEMENT OF CHECKS				AREA : ERECTION		
SL NO.	CHARACTERISTICS / ITEM		TYPE OF CHECK	INSTRUMENT	CLASS	QUANTUM/ FREQUENCY OF CHECK	REFERENCE DOCUMENT/ ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS		
4.0	UPS										
4.1	Foundation dimensions.		M	Tape	B	100%	Drawing	Logbook			
4.2	Installation of cabinets.		V		C	100%	- do -	-			
4.3	Battery bank installation and connections.		V		C	100%	- do -				
4.4	Installation of AC distribution boards		V		C	100%	-do-	-			
4.5	Interconnections between UPS to AC Distribution boards and battery bank		V		B	100%	-do-				
4.6	Mounting of all loose instruments in the cabinets.		V		C	100%	Schematic Drawing				
4.7	IR value and earthing.		M	Megger	B	100%	--				
5.0	CABLE TRAYS & RACKS										
5.1	Material of the trays conforms to the requirement.		V		C	100%	Drawing	-			
5.2	Dimensions of the trays.		V			100%	-do-	Logbook			
5.3	Provision of correct size of ladder/ perforated trays.		V		C	100%	-do-				
5.4	Identification and marking for Instrument, Power and Control Cables		V		B	100%	-do-				


<div><div>PSER</div></div>		FIELD QUALITY PLAN FOR CONTROL & INSTRUMENTATION (SG,ST,TG & AUX) (Erection)				STATEMENT OF CHECKS			FQP NO.: QPE:NKP:660:EL:62		
									REV NO.: 00		
									SHEET 5 / 30 SHEETS		
SYSTEM : C & I		SUB-SYSTEM : SIGNAL CABLING			AREA : ERECTION						
SL NO.	CHARACTERISTICS / ITEM	TYPE OF CHECK	INSTRUMENT	CLASS	QUANTUM/ FREQUENCY OF CHECK	REFERENCE DOCUMENT/ ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS			
6.0	SIGNAL CABLING										
6.1	Ensure specified cables are used as per application	V		C	100%	Drawings	-				
6.2	IR value & continuity of cables	M		B	100%	-					
6.3	Earthing of screened cables at panel end.	V		C	100%	Drawings					
6.4	Identification, glanding, dressing of cables at panel end, junction box and at field device end.	V		C	100%	Cable schedule					
6.5	Ensure provision of electronic earth.	M		C	100%	-					
6.6	Screening for individual and overall pairs	V		B	100%	-	-				
6.7	Ensure no shorting between the pins and continuity for pre-fabricated cables.	V		C	100%	-	-				


WI:QLY-03-F08/R0

		<b>FIELD QUALITY PLAN FOR CONTROL &amp; INSTRUMENTATION (SG,ST,TG &amp; AUX) (Erection)</b> STATEMENT OF CHECKS				FQP NO.: QPE:NKP:660:EL:62		
						REV NO.: 00		
						SHEET 6 / 30 SHEETS		
SYSTEM : C & I		SUB-SYSTEM : ELECTRICAL ACTUATOR		AREA : ERECTION				
SL NO.	CHARACTERISTICS / ITEM	TYPE OF CHECK	INSTRUMENT	CLASS	QUANTUM/FREQUENCY OF CHECK	REFERENCE DOCUMENT/ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS
<b>7.0</b>	<b>ELECTRICAL ACTUATOR</b>							
7.1	Name plate details, type of actuator and mounting	V		B	100%	O & M Manual		
7.2	Electrical connections	V		B	100%	Drawing		
7.3	IR value of motor	M	Megger	B	100%	-	Logbook	
7.4	Type & size of cable glands and conduit	V		B	100%	Cable Schedule	-	
7.5	Sealing of cable entries	V		B	100%	-	-	
7.6	Termination of control and power cables	V		B	100%	Drawing	-	
7.7	Starter/ push button connections	V		B	100%	Drawing	-	
7.8	Proper matching of actuator flange with the valve flange	V		B	100%	-	-	
7.9	Tightening of all fasteners	V		B	100%	-	-	
7.10	Earthing	T	Megger	B	100%	Drawing	-	


 PSER		FIELD QUALITY PLAN FOR CONTROL & INSTRUMENTATION (SG,ST,TG & AUX) (Erection) STATEMENT OF CHECKS				FQP NO.: QPE:NKP:660:EL:62		
						REV NO.: 00		
						SHEET 7 / 30 SHEETS		
SYSTEM : C & I		SUB-SYSTEM : PNEUMATIC ACTUATOR		AREA : ERECTION				
SL NO.	CHARACTERISTICS / ITEM	TYPE OF CHECK	INSTRUMENT	CLASS	QUANTUM/ FREQUENCY OF CHECK	REFERENCE DOCUMENT/ ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS
8.0	<b>PNEUMATIC ACTUATOR</b>							
8.1	Name plate details, type, and mounting.	V		B	100%	O& M Manual		
8.2	Supply & signal air connection, quality of air, and setting of air filter regulator	V		B	100%	Drawing		
8.3	Mounting of I/P converter, PFT, solenoid valve assembly and air lock relays, if received separately.	V		B	100%	Drawing		
8.4	Copper tubing, and ensure there is no leakage from air connections.	V		B	100%	Drawing		
8.5	Proper glanding and termination of signal cables	V		B	100%	Cable schedule		
8.6	Check manual operation to ensure smooth open / close functions.	V		B	100%	Inst. Manual		


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<div> PSER</div>		FIELD QUALITY PLAN FOR CONTROL & INSTRUMENTATION (SG,ST,TG & AUX) (Erection) STATEMENT OF CHECKS				FQP NO.: QPE:NKP:660:EL:62		
						REV NO.: 00		
						SHEET 8 / 30 SHEETS		
SYSTEM : C & I		SUB-SYSTEM : CONTROL VALVES, IMPULSE PIPING, TUBING & FITTINGS				AREA : ERECTION		
SL NO.	CHARACTERISTICS / ITEM	TYPE OF CHECK	INSTRUMENT	CLASS	QUANTUM/ FREQUENCY OF CHECK	REFERENCE DOCUMENT/ ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS
9.0	CONTROL VALVES							
9.1	Ensure valves are always installed in a straight run of the main line & away from pipe bends and sections of abnormal velocity	V		C	100%	Drawing		
9.2	Maintain Direction of flow	V		C	100%	Drawing		
9.3	Tightness of packing flange nuts for optimum pressure on valve stem and packing box walls.	V		C	100%	-	-	
9.4	Ensure that there is no leakage from airlines connected to the actuator.	V		C	100%	-	-	
9.5	Air supply pressure setting with that of the control valve requirement.	V		B	100%	Drawing	Logbook	
9.6	Mounting of position feedback transmitter and limit switches	V		C	100%	-		
9.7	Operation of controller and valve for full open & close position. Ensure desired direction of valve movement.	V		B	100%	Drawing	-do-	
10.0	IMPULSE PIPING, TUBING & FITTINGS							
10.1	Material, size, pressure rating and IBR certification where applicable.	V / R		C	100%	Drawing		
10.2	Proper thread formation	V		C	100%	Drawing		
10.3	Capping of open ends to keep out foreign particles	V		C	100%	Drawing		

<div><div>PSER</div></div>		FIELD QUALITY PLAN FOR CONTROL & INSTRUMENTATION (SG,ST,TG & AUX) (Erection) STATEMENT OF CHECKS				FQP NO.: QPE:NKP:660:EL:62 REV NO.: 00 SHEET 9 / 30 SHEETS		
SYSTEM : C & I		SUB-SYSTEM : IMPULSE PIPING, TUBING & FITTINGS			AREA : ERECTION			
SL NO.	CHARACTERISTICS / ITEM	TYPE OF CHECK	INSTRUMENT	CLASS	QUANTUM/ FREQUENCY OF CHECK	REFERENCE DOCUMENT/ ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS
10.4	Routing, proper installation and clampings.	V		C	100%	Drawing		
10.5	Ensure piping is not routed above or below equipment removal areas, mono-rails, removal gratings and cable trays etc	V		C	100%	-do-		
10.6	Maintain proper gradient/ slope	M	Water level	C	100%	-do-		
10.7	Blow down of lines.	V		C	100%	-		
10.8	<b>Welding of Impulse Piping</b>							
10.8.1	Qualification of welders prior to start of welding	V/R		A	100%	Welding Manual	WQR	
10.8.2	Ensure adoption of correct procedure/method, and use of approved electrodes during welding	V/R		A	100%	Drawing / FWS, Welding Manual		
10.8.3	Preheating of joints, heating during welding, and post weld heating of welds (as applicable)	V/R		B	100%	FWS/ Heat Treatment Manual	HT Report	
10.9	<b>NDE on impulse piping welds</b>							
10.9.1	Visual inspection of welds	V		A	100%	-		
10.9.2	LPI/ MPI of welds of low pressure lines	T		A	02%	Drawing / FWS / NDT Manual	Test Report	
10.9.3	LPI/ MPI of welds of high pressure lines where hydro test is performed.	T		A	10%	Drawing / FWS / NDT Manual	Test Report	
10.9.4	LPI/ MPI of welds of high pressure lines where hydro test is not performed	T		A	100%	Drawing / FWS / NDT Manual	Test Report	
10.9.5	Hydro test of high pressure lines where 10% LPI/MPI was performed.	V		B	-	Drawing	Protocol	


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 PSER	FIELD QUALITY PLAN FOR CONTROL & INSTRUMENTATION (SG,ST,TG & AUX) (Erection) STATEMENT OF CHECKS				FQP NO.: QPE:NKP:660:EL:62			
					REV NO.: 00			
					SHEET 10 / 30 SHEETS			
SYSTEM : C & I		SUB-SYSTEM : INDICATORS & RECORDERS, FLOW METERS		AREA : ERECTION				
SL NO.	CHARACTERISTICS / ITEM	TYPE OF CHECK	INSTRUMENT	CLASS	QUANTUM/ FREQUENCY OF CHECK	REFERENCE DOCUMENT/ ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS
<b>11.0</b>	<b>INDICATORS &amp; RECORDERS</b>							
11.1	Mounting as per drawing	V		C	100%	Drawing	-	
11.2	Supply voltage and input signal.	M	Multimeter	C	100%	Drawing	Logbook	
11.3	Free movement & correct speed of chart/ pointer	V		C	100%	-	-	
11.4	Earthing of instrument casing / body	M	Megger	C	100%	Drawing	-	
11.5	Firmly secure mounting lugs and bolts	V		C	100%	-	-	
11.6	Compensating cable leads do not have any loops and are connected with correct polarity	V		C	100%	-	-	
11.7	Signal cables are separated from power cables	V		C	100%	Schematics	-	
<b>12.0</b>	<b>FLOW METERS</b>							
12.1	Identification of instrument for correct range, tag number, tapping point and end connections.	V		C	100%	Drawing/Inst. Schedule	Logbook	
12.2	Functional checking of instrument by feeding input signal and comparing output	M	MME(Setting at specified values for alarm, trip etc.)	B	100%	Drawing/Inst. Schedule	L-01	
12.3	Ensure correct direction of flow.	V		C	100%	Drawing		
12.4	Ensure straight length of pipe in upstream and downstream	M	Tape	B	100%	-		
12.5	Cleanliness of lines.	V		C	100%	-		


<div><div>PSER</div></div>		FIELD QUALITY PLAN FOR CONTROL & INSTRUMENTATION (SG,ST,TG & AUX) (Erection) STATEMENT OF CHECKS				FQP NO.: QPE:NKP:660:EL:62		
						REV NO.: 00		
						SHEET 11 / 30 SHEETS		
SYSTEM : C & I		SUB-SYSTEM : FLOW NOZZLE / ORIFICE PLATE		AREA : ERECTION				
SL NO.	CHARACTERISTICS / ITEM	TYPE OF CHECK	INSTRUMENT	CLASS	QUANTUM/ FREQUENCY OF CHECK	REFERENCE DOCUMENT/ ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS
12.6	Ensure low and high tapings are connected correctly	V		B	100%	Drawing		
12.7	Earthing of enclosure, cable glanding and termination	V		C	100%	Drawing/ Inst Schedule		
12.8	Power supply with correct polarity.	V		C	100%	Drawing	-	
13.0	FLOW NOZZLE / ORIFICE PLATE							
13.1	Number, location and size of tapings.	V		C	100%	Drawing	--	
13.2	Dimensions of orifice / nozzle	M	Micrometer	C	100%	Drawing	Logbook	
13.3	Concentricity with main line	V		C	100%	-	-	
13.4	Ensure tapings are cleaned and are free from choking.	V		C	100%	-	-	
13.5	Ensure correct direction of flow	M	Water level	B	100%	Drawing	-	
13.6	Maintain proper gradient of impulse lines	V		B	100%	Drawing		
13.7	Purging of impulse lines before connecting	D		C	100%	-		
13.8	Welding and NDE	V		A	100%	FWS/ NDE Manual	NDE report	
13.9	Ensure no leakage from weld joints	V		B	100%	-		
13.10	Ensure straight length of pipe in up steam and down steam of Flow Nozzle / Orifice Plate		Tape	C	100%	Drawing & Specification		

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 PSER	FIELD QUALITY PLAN FOR CONTROL & INSTRUMENTATION (SG,ST,TG & AUX) (Erection) STATEMENT OF CHECKS				FQP NO.: QPE:NKP:660:EL:62			
					REV NO.: 00			
					SHEET 12 / 30 SHEETS			
SYSTEM : C & I		SUB-SYSTEM : GAUGES		AREA : ERECTION				
SL NO.	CHARACTERISTICS / ITEM	TYPE OF CHECK	INSTRUMENT	CLASS	QUANTITY/ FREQUENCY OF CHECK	REFERENCE DOCUMENT/ ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS
<b>14.0</b>	<b>GAUGES OF ALL TYPES</b>							
14.1	Identification of the instrument for . type, range, tag number, tapping point and end connections.	V		C	100%	Drawing		
14.2	Ensure tightening of fasteners.	V		C	100%	-do-		
14.3	Ensure the DP gauges are mounted as detailed below : a) For water and steam path they are mounted below the tapping points. b) For air & flue gas path, they are mounted above the tapping points.	V		C	100%	- do -		
14.4	Piping connections to the gauges are clean and free from strains.	V		C	100%	-do-		
14.5	For differential pressure gauges (DP), ensure that the line with higher static pressure is connected to the connection marked 'HIGH' or '+' and the line with lower static pressure to connection marked 'LOW' or '-'.	V		C	100%	-do-		
14.6	Calibration and setting of the instruments as applicable.	M	MME	B	100%	Installation Manual	Logbook	


 PSER		FIELD QUALITY PLAN FOR CONTROL & INSTRUMENTATION (SG,ST,TG & AUX) (Erection) STATEMENT OF CHECKS					FQP NO.: QPE:NKP:660:EL:62	
							REV NO.: 00	
							SHEET 13 / 30 SHEETS	
SYSTEM : C & I		SUB-SYSTEM : I/P CONVERTOR			AREA : ERECTION			
SL NO.	CHARACTERISTICS / ITEM	TYPE OF CHECK	INSTRUMENT	CLASS	QUANTUM/FREQUENCY OF CHECK	REFERENCE DOCUMENT/ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS
<b>15.0</b>	<b>I/P CONVERTOR</b>							
15.1	Identification of instrument for type / range / tag No. / tapping points & end connection.	V		C	100%	Drawing		
15.2	Proper mounting of the instrument and tightening of all fasteners.	V		C	100%	-do-		
15.3	Calibration	M	Multimeter	B	100%	- do -	Logbook	
15.4	Working of the instrument for its specified accuracy	M	Master instrument	B	100%	Installation Manual	L-01	
15.5	Instrument earthing	M	Megger	B	100%	Drawing		
15.6	Leak proof-ness of fittings, using soap solution.	V		B	100%	O & M Manual		
15.7	Polarity of input signal.	M	Multimeter	C	100%	-do-	Logbook	
15.8	AFR to be set as per requirement.	M	Pressure gauge	B	100%	-do-	Logbook	

<div> PSER</div>		FIELD QUALITY PLAN FOR CONTROL & INSTRUMENTATION (SG,ST,TG & AUX) (Erection) STATEMENT OF CHECKS				FQP NO.: QPE:NKP:660:EL:62		
						REV NO.: 00		
						SHEET 14 / 30 SHEETS		
SYSTEM : C & I		SUB-SYSTEM : THERMO COUPLE & RTD			AREA : ERECTION			
SL NO.	CHARACTERISTICS / ITEM	TYPE OF CHECK	INSTRUMENT	CLASS	QUANTUM/ FREQUENCY OF CHECK	REFERENCE DOCUMENT/ ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS
16.0	THERMO COUPLE & RTD							
16.1	Identification of thermocouples w.r.t type (grounded / ungrounded and dual / single element), range, tag number, tapping point and connection conform to the requirement.	V		B	100%	Drawing	Logbook	
16.2	Calibration of characteristics of Temperature Elements (TE) / healthiness.	M	Milliamps / Resistance Calibrator	B	100%	O & M Manual	L-01	
16.3	Mounting and tightening of fasteners.	V		C	100%	Drawing		
16.4	Continuity and IR value.	M	Multimeter / Megger	C	100%	Drawing/ O & M Manual	Logbook	
16.5	Ensure proper installation of thermo wells.	V		A	100%	-do-		
16.6	Earthing as applicable	M	Megger	C	100%	-do-		
16.7	Routing of compensating cable is free from interference of strong electrical fields.			C	100%	Drawing		
16.8	Seal welding after installation of thermocouple / RTD thermo well.			C	100%	-do-		
16.9	Stubs are provided as per requirement.			C	100%	-do-		
16.10	Right type of compensating cable.			C	100%	-do-		
16.11	Polarity of connection			C	100%	-do-		


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				REV NO.: 00		SHEET 15 / 30 SHEETS		
SYSTEM : C & I		SUB-SYSTEM : SOLENOID VALVES, SWITCHES			AREA : ERECTION			
SL NO.	CHARACTERISTICS / ITEM	TYPE OF CHECK	INSTRUMENT	CLASS	QUANTUM/ FREQUENCY OF CHECK	REFERENCE DOCUMENT/ ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS
17.0	SOLENOID VALVES							
17.1	Ensure proper direction of flow.	V		C	100%	O & M Manual		
17.2	Setting of air pressure, ensuring supply of dry instrument air.	M	Pressure gauge	B	100%	Cable Schedule	Log book	
17.3	Type, size of cable glands and cable termination.	V		C	100%		Log book	
17.4	Sealing of cable entries.	V		C	100%	O & M Manual	Log book	
17.5	IR value and resistance value.	M		B	100%	-do-	Log book	
17.6	Supply voltage	M		C	100%	-do-	Log book	
17.7	Fixing of identification tag numbers.	V		C	100%			
18.0	SWITCHES OF ALL TYPES							
18.1	Identification of switches with respect to type, rating, range, tag no., tapping point and end connection conforms to requirement.	V		C	100%	Drawing	Log book	
18.2	Mercury bulb switches are always mounted vertically if applicable.	V		C	100%			
18.3	Tightness of terminal connections.	V		C	100%	O & M Manual		

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<div>PSER</div>		FIELD QUALITY PLAN FOR CONTROL & INSTRUMENTATION (SG,ST,TG & AUX) (Erection) STATEMENT OF CHECKS					FQP NO.: QPE:NKP:660:EL:62		
							REV NO.: 00		
							SHEET 16 / 30 SHEETS		
SYSTEM : C & I		SUB-SYSTEM : SWITCHES			AREA : ERECTION				
SL NO.	CHARACTERISTICS / ITEM	TYPE OF CHECK	INSTRUMENT	CLASS	QUANTUM/ FREQUENCY OF CHECK	REFERENCE DOCUMENT/ ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS	
18.4	Impulse pipelines are cleaned with compressed air and joints are leak proof.	V		C	100%	Drawing			
18.5	Gradient of pipelines	M	Water level	C	100%	-do-			
18.6	Line connection does not transmit strain to the switch.	V		C	100%	-do-			
18.7	Type and size of cable gland / conduit used.	V		C	100%	-do-			
18.8	For differential applications, the line with higher static pressure is connected to connection marked HIGH or “+” and the line with lower static pressure is connected to connection marked LOW or “-”.	V		B	100%	-do-			
18.9	Electrical connections to the switch / micro switch.	V		C	100%	-do-			
18.10	Free movement of mercury switches by manual tilting.	V		C	100%	O&M Manual			
18.11	Change over of contacts by actuating the micro switches.	V		B	100%	Drawing			
18.12	IR value and continuity		Megger/Multi meter		100%	O&M Manual			
18.13	Check thermo well installation as per requirement.	V		C	100%	Drawing			
18.14	Ensure proper earthing, wherever applicable	M	Megger	C	100%	-do-			

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	<b>FIELD QUALITY PLAN FOR CONTROL &amp; INSTRUMENTATION</b> (SG,ST,TG & AUX) (Erection) <b>STATEMENT OF CHECKS</b>				FQP NO.: QPE:NKP:660:EL:62			
					REV NO.: 00			
					SHEET 17 / 30 SHEETS			
SYSTEM : C & I		SUB-SYSTEM : TRANSDUCERS		AREA : ERECTION				
SL NO.	CHARACTERISTICS / ITEM	TYPE OF CHECK	INSTRUMENT	CLASS	QUANTITY/ FREQUENCY OF CHECK	REFERENCE DOCUMENT/ ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS
19.0	<b>TRANSDUCERS</b>							
19.1	Identification of transducers with respect to type, range, tag no., tapping point, and end connections conforms to the requirement.	V		C	100%	Drawing		
19.2	Earthing connection.	M	Megger	B	100%	-do-		
19.3	Power supply input	M	Multimeter	C	100%	O & M Manual / Drawing	Log book	
19.4	Ensure cleanliness of Impulse piping.	V		B	100%	Drawing		
19.5	Slope of impulse pipe.	M	Water level	C	100%	-do-		
19.6	Calibration and setting of transducers.	M	Master instruments.	B	100%	Procedure / O & M Manual	Log book	
19.7	Fixing of identification tag numbers.	V		C	100%	Instrument Schedule/DRG		
19.8	Routing of signal cables with tag numbers.	V		C	100%	Drawing/Cable Schedule		
19.9	Ensure proper phase sequence / polarity of the input signals.	M	Multimeter	B	100%	Cable Schedule	Log book	

<div> PSER</div>		FIELD QUALITY PLAN FOR CONTROL & INSTRUMENTATION (SG,ST,TG & AUX) (Erection) STATEMENT OF CHECKS				FQP NO.: QPE:NKP:660:EL:62 REV NO.: 00 SHEET 18 / 30 SHEETS		
SYSTEM : C & I		SUB-SYSTEM : TRANSMITTERS, ANALYZERS			AREA : ERECTION			
SL NO.	CHARACTERISTICS / ITEM	TYPE OF CHECK	INSTRUMENT	CLASS	QUANTUM/ FREQUENCY OF CHECK	REFERENCE DOCUMENT/ ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS
20.0	TRANSMITTERS							
20.1	Identification of transmitters with respect to type, range, tag no., tapping point, and end connections conforms to the requirement.	V		C	100%	Drawing	Log book	
20.2	Proper mounting of instrument and tightening of all fasteners.	V		C	100%	-do-		
20.3	Earthing of instruments and hosepipe carrying the cables.	M		C	100%	-do-		
20.4	Routing of impulse pipelines and gradient.	M		C	100%	-do-		
20.5	The line with higher static pressure is connected to the connection marked high or “+” and the line with lower static pressure is connected to the connection marked LOW or “-”.	V		B	100%	O & M Manual		
20.6	Supply voltage with correct polarity / air supply availability.	M		C	100%	Drawing / O & M Manual	Log book	
21.0	ANALYZERS							
21.1	Location and proper mounting instrument.	V		B	100%	Drawing	Log book	
21.2	Protection of instrument against cold, heat radiation, and vibrations	V		B	100%	O & M Manual		
21.3	Connection of pipelines and gradient.	M	Water level	C	100%	Drawing		


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<div>PSER</div>		FIELD QUALITY PLAN FOR CONTROL & INSTRUMENTATION (SG,ST,TG & AUX) (Erection) STATEMENT OF CHECKS					FQP NO.: QPE:NKP:660:EL:62		
							REV NO.: 00		
							SHEET 19 / 30 SHEETS		
SYSTEM : C & I		SUB-SYSTEM : ANALYZERS			AREA : ERECTION				
SL NO.	CHARACTERISTICS / ITEM		TYPE OF CHECK	INSTRUMENT	CLASS	QUANTUM/ FREQUENCY OF CHECK	REFERENCE DOCUMENT/ ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS
21.4	Hydraulic test of impulse pipe lines.		M	Pressure gauge	B	100%	Drawing / O & M Manual	Logbook	
21.5	Power supply as required.		M	Multimeter	C	100%	-do-	Logbook	
21.6	Earthing.		M	Megger	B	100%	-do-		
21.7	Working of the instrument for its specified accuracy.		M	Master Instrument	A	100%	O & M Manual / Procedure	L-01	
21.8	Gas entering the measuring cell is at specified pressure and temperature.		M	Master Instrument	A	100%	O & M Manual	Logbook	
21.9	Regulation of sample gas flow.		M		A	100%	Installation Manual		
21.10	Calibration with standard gas.		M	Lab instruments	A	100%		Logbook	
21.11	For flue gas O2 analyzer, check following								
a.	Installation of Probe and electronic parts.		V		C	100%	Installation Manual/ Catalogue		
b.	Start up and calibration (as applicable).		M	Lab instruments	B	100%	Specifications / Data Sheets	Logbook	
21.12	For flue gas CO analyzer, check Installation of probe, panel, and transmitter Indicator.		V		B	100%	Installation Manual/ Catalogue		




<div> PSER</div>		FIELD QUALITY PLAN FOR CONTROL & INSTRUMENTATION (SG,ST,TG & AUX) (Erection) STATEMENT OF CHECKS				FQP NO.: QPE:NKP:660:EL:62		
						REV NO.: 00		
						SHEET 20 / 30 SHEETS		
SYSTEM : C & I		SUB-SYSTEM : pH CONDUCTIVITY ANALYZER, PUMP & HEATER PANEL			AREA : ERECTION			
SL NO.	CHARACTERISTICS / ITEM	TYPE OF CHECK	INSTRUMENT	CLASS	QUANTUM/ FREQUENCY OF CHECK	REFERENCE DOCUMENT/ ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS
22.0	pH CONDUCTIVITY ANALYZER							
22.1	Location of analyzer.	V		C	100%	Drawing		
22.2	All electronic cards are in position.	V		C	100%	Drawing/ O & M Manual		
22.3	Hydraulic test of impulse piping.	V		B	100%	- do -	Logbook	
22.4	Earthing	M	Megger	B	100%	- do -		
22.5	Verification of calibration report.	R		B	100%			
22.6	Power supply as per requirement	M	Multimeter	C	100%	- do -	Logbook	
22.7	Fluid entering the measuring cell is at specified pressure and temperature.	M	Pressure Gauge	B	100%	- do -	Logbook	
22.8	Healthiness and proper operation of valves and other equipment.	V		B	100%	- do -		
22.9	Healthiness and proper operation of all the electronic cards with equipments.	V		B	100%	- do -		
23.0	PUMP & HEATER PANEL							
23.1	Calibration of the pressure switches in P & H Panel.	M	Pressure Gauge	B	100%	O & M Manual	Logbook	
23.2	Calibration of the temperature sensor in P & H Panel	M	Thermometer	B	100%	- do -	Logbook	




<div><div>23.2PSER</div></div>		FIELD QUALITY PLAN FOR CONTROL & INSTRUMENTATION (SG,ST,TG & AUX) (Erection) STATEMENT OF CHECKS					FQP NO.: QPE:NKP:660:EL:62 REV NO.: 00 SHEET 21 / 30 SHEETS		
SYSTEM : C & I		SUB-SYSTEM : SWAS, FLAME SENSING SYSTEM			AREA : ERECTION				
SL NO.	CHARACTERISTICS / ITEM	TYPE OF CHECK	INSTRUMENT	CLASS	QUANTUM/ FREQUENCY OF CHECK	REFERENCE DOCUMENT/ ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS	
24.0	STEAM & WATER ANALYZER SYSTEM (SWAS)								
24.1	Installation of SWAS	V		B	100%	Drawings / SWAS Room Layout Drawing			
24.2	Pipeline connection	V		B	100%	Drawing			
24.3	External connection like power & control.	V		B	100%	Cable Schedule			
24.4	Earthing	M	Megger	B	100%	Installation Manual / Data sheets			
25.0	FLAME SENSING SYSTEM								
25.1	Flame scanner for respective elevation and corner is to be mounted at the proper location.	V		C	100%	Drawing			
25.2	All Mechanical components like flame scanner, guide pipe assembly, flame scanner head assembly to be installed as per Instruction Manual.	V		C	100%	Installation Manual	Logbook		
25.3	All electrical components like power supply modules, Transmitter modules, 2/4 summing modules, individual output module, flame scanner test module, distributor module, master timer module, check timer module, timer synchronizer fault module will be installed in FSSS panel itself.	V		C	100%	-do-	Logbook		


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<div> PSER</div>		FIELD QUALITY PLAN FOR CONTROL & INSTRUMENTATION (SG,ST,TG & AUX) (Erection)					FQP NO.: QPE:NKP:660:EL:62 REV NO.: 00 SHEET 22 / 30 SHEETS		
SYSTEM : C & I		SUB-SYSTEM : FLAME SENSING SYSTEM			STATEMENT OF CHECKS				
SYSTEM : C & I		SUB-SYSTEM : FLAME SENSING SYSTEM			AREA : ERECTION			REMARKS	
SL NO.	CHARACTERISTICS /ITEM	TYPE OF CHECK	INSTRUMENT	CLASS	QUANTUM/ FREQUENCY OF CHECK	REFERENCE DOCUMENT/ ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS	
25.4	Installation of Cooling air arrangement for scanner assembly.	V		C	100%	Installation Manual			
25.5	Interconnection between modules, scanner assembly etc.	V		C	100%	- do -			
25.6	Disconnect power supply before connecting any wire to prevent electrical shock and damage to equipment.	V		C	100%	- do -			
25.7	Ensure proper installation of scanner/ scanner panel.	V		B	100%	Drawing			
25.8	Ensure availability of proper operating voltage and set the same if required	M	Multimeter	C	100%	- do -	Logbook		
25.9	Ensure installation of all loose supplied cards.	V		C	100%	- do -			
25.10	Ensure number of input signals and type of signals conforms to the requirement.	V		B	100%	O & M manual	Logbook		
25.11	Ensure proper cable size and termination	V		C	100%	Drawing			
25.12	Continuity and I.R value.	M		B	100%	- do -			
25.13	Switch on power supply and check output by simulating input.	M		B	100%	O & M manual	Logbook		
25.14	Set the alarm set point for its value and check for proper operation.	V		B	100%	- do -	Logbook		
25.15	Ensure adequate cooling air.	V		B	100%				


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<div> PSER</div>		FIELD QUALITY PLAN FOR CONTROL & INSTRUMENTATION (SG,ST,TG & AUX) (Erection) STATEMENT OF CHECKS					FQP NO.: QPE:NKP:660:EL:62	
SYSTEM : C & I		SUB-SYSTEM : ELECTRONIC WATER LEVEL INDICATOR, PRESSURE VESSEL				AREA : ERECTION		
SL NO.	CHARACTERISTICS / ITEM	TYPE OF CHECK	INSTRUMENT	CLASS	QUANTUM/ FREQUENCY OF CHECK	REFERENCE DOCUMENT/ ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS
26.0	ELECTRONIC WATER LEVEL INDICATOR (E W L I)							
26.1	PANEL:							
26.1.1	Foundation dimension.	M	Tape	B	100%	Drawing		
26.1.2	Name plate details	V		C	100%	-do-	Logbook	
26.1.3	Ensure location of assessor panel away from heat zone	V		C	100%	-do-		
26.1.4	Proper positioning, alignment and mounting of all instruments.	V		B	100%	-do-		
26.1.5	Segregation of power, control and signal cables.	V		C	100%	Cable Schedule		
26.1.6	Cable size, termination and interconnections between panels and pressure vessel. Note: Ensure sealing of cable entries	V		C	100%	Drawing		
26.1.7	Wiring as per colour coding scheme.	V		C	100%	-do		
26.1.8	Cut out dimension of display in U C B.	M	Tape	C	100%	-do		
26.1.9	Earthing	M	Megger	C	100%	-do		
26.2	PRESSURE VESSEL:							
26.2.1	Installation of pressure vessel and piping with proper slope.	M		B	100%	Drawing		



<div> PSER</div>		FIELD QUALITY PLAN FOR CONTROL & INSTRUMENTATION (SG,ST,TG & AUX) (Erection) STATEMENT OF CHECKS				FQP NO.: QPE:NKP:660:EL:62 REV NO.: 00 SHEET 24 / 30 SHEETS			
SYSTEM : C & I		SUB-SYSTEM : FSSS		AREA : ERECTION					
SL NO.	CHARACTERISTICS / ITEM	TYPE OF CHECK	INSTRUMENT	CLASS	QUANTUM/ FREQUENCY OF CHECK	REFERENCE DOCUMENT/ ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS	
26.2.2	Insulation of water line and corresponding valves only.	V		C	100%	Drawing			
26.2.3	Ensure that pressure vessel and steam lines are not insulated	V		B	100%	-do-			
26.2.4	Flushing of pressure vessel before electrode mounting.	V		B	100%	-do-			
26.2.5	Mounting of electrode with special torque wrench. Do not exceed torque values specified.	V		B	100%	-do-			
26.2.6	Ensure that root valves and isolating valves are mounted in horizontal plane.	V		B	100%	-do-			
26.2.7	Ensure verticality of vessels. Also ensure verticality of electrodes with reference to vessel.	V		B	100%				
27.0	FSSS								
27.1	Ensure that panels are lifted by means of ropes only	V		C	100%	Drawing			
27.2	Placing of panels over foundation pockets and foundation bolts are fixed from inside panel by removing bottom gland plate.	V		C	100%	-do-			
27.3	Drilling of bottom gland plate and correct type & size cable glands are mounted.	V		C	100%	-do-			
27.4	Ensure mounting of Console insert on customer's console.	V		C	100%	-do-			



<div> PSER</div>		FIELD QUALITY PLAN FOR CONTROL & INSTRUMENTATION (SG,ST,TG & AUX) (Erection) STATEMENT OF CHECKS					FQP NO.: QPE:NKP:660:EL:62 REV NO.: 00 SHEET 25 / 30 SHEETS		
SYSTEM : C & I		SUB-SYSTEM : GRAVIMETRIC FEEDER		AREA : ERECTION					
SL NO.	CHARACTERISTICS / ITEM	TYPE OF CHECK	INSTRUMENT	CLASS	QUANTUM/ FREQUENCY OF CHECK	REFERENCE DOCUMENT/ ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS	
27.5	Ensure Cable interconnection between FSSS panels and console insert, FSSS panels and Mill panel, FSSS panels and secondary air panel, FSSS panels and Field Equipments.	V		C	100%				
27.6	Ensure mounting of loose supplied instruments in the FSSS panels	V		C	100%				
27.7	Ensure Control panel is earthed by means of copper conductor.	V		B	100%				
28.0	GRAVIMETRIC FEEDER								
28.1	Installation of equipments including flexible connections above and below the feeders.	V		B	100%	Drawing			
28.2	Mounting of loose instruments and PCBs.	V		B	100%	Schematic Drawings			
28.3	Refilling of fresh lubricant including gearbox.	V		C	100%	O & M Manual			
28.4	Tightness of all fasteners.	V		B	100%				
28.5	Ensure all electrical connections are made as per requirement.	V		C	100%	Schematic Drawings			
28.6	Installation of ultrasonic coal flow detector and necessary connections.	V		B	100%	Drawing			
28.7	Connection of demand signal to feeder speed control	V		C	100%	-do-			

<div> PSER</div>		FIELD QUALITY PLAN FOR CONTROL & INSTRUMENTATION (SG,ST,TG & AUX) (Erection) STATEMENT OF CHECKS				FQP NO.: QPE:NKP:660:EL:62 REV NO.: 00 SHEET 26 / 30 SHEETS		
SYSTEM : C & I		SUB - SYSTEM : OPACITY MONITOR			AREA :ERECTION			
SL NO.	CHARACTERISTICS	TYPE OF CHECK	INSTRUMENT	CLASS	QUANTUM/ FREQUENCY OF CHECK	REFERENCE DOCUMENT/ ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS
28.8	Ensure that there is no foreign material in the belt and clean out conveyor area.	V		B	100%			
28.9	Power, Control & signal cabling between power and local feeder cabinets.	V		B		Cable Schedule		
28.10	IR value of all cables	M	Megger	B				
29.0	OPACITY MONITOR							
29.1	FLANGES:							
29.1.1	Before installation of source / receiver units ensure that serial numbers of both are same.	V		C	100%	Operating Manual	Logbook	
29.1.2	Ensure that flanges are mounted as per guidelines of Manufacturer.	V		C	100%	-do-		
29.1.3	Check proper level of flanges (Zero level).	M	Water level	C	100%	-do-		
29.1.4	Ensure that centers of flanges are in one line.	M	Piano wire	C	100%	-do-		
29.1.5	Ensure that axis of flanges is precisely aligned to each other.	M	Water level/ Tape	C	100%	-do-		
29.1.6	Ensure that "TOP" marking on flanges is on top before installation.	V		C	100%	-do-		
29.1.7	Ensure that gusset plates are mounted as per guidelines of Manufacturer, if applicable.	V		C	100%	-do-		

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SYSTEM : C & I		SUB - SYSTEM : OPACITY MONITOR		AREA :ERECTION				REV NO.: 00	
SL NO.	CHARACTERISTICS	TYPE OF CHECK	INSTRUMENT	CLASS	QUANTUM/ FREQUENCY OF CHECK	REFERENCE DOCUMENT/ ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS	
29.1.8	Ensure that full welding is completed on flanges.	V		C	100%	Operating Manual			
29.1.9	Ensure that spring washers are inserted properly as per guidelines of Manufacturer.	V		C	100%	-do-			
30.2	<b>PURGE UNIT:</b>								
30.2.1	Ensure that purge unit is properly mounted as per guidelines of Manufacturer.	V		C	100%	-do-			
30.2.2	Ensure provision of rain protection hood.	V		C	100%	-do-			
30.3	<b>PURGE METER:</b>								
30.3.1	Identification of the meter for type, range, tag number, tapping point and end connections.	V		C	100%	Drawing	Logbook		
30.3.2	Ensure proper mounting and orientation of the meter.	V		C	100%	-do-			
30.3.3	Ensure proper incoming and outgoing connections.	V		C	100%	-do-			
30.3.4	Ensure free float movement.	V		C	100%	O & M Manual			
30.3.5	Calibration and setting of the meter.	M	Master Instrument	B	100%	Calibration Procedure / O & M Manual	L-01		
30.3.6	Blowing of the meter with instrument air.	V		B	100%	O & M Manual	Logbook		


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SYSTEM : C & I		SUB - SYSTEM : TURBO SUPERVISORY SYSTEM			AREA :ERECTION			
SL NO.	CHARACTERISTICS	TYPE OF CHECK	INSTRUMENT	CLASS	QUANTUM/ FREQUENCY OF CHECK	REFERENCE DOCUMENT/ ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS
31.0	TURBO SUPERVISORY SYSTEM							
31.1	DISPLACEMENT TRANSDUCERS (TURBINE EXPANSION, AXIAL SHAFT)							
31.1.1	Type of transducer. Ensure mechanical healthiness.	V		C	100%	Instruction Manual	Logbook	
31.1.2	Resistance of coils	M	Multimeter	C	100%	Instruction Manual	Logbook	
31.1.3	Check following during mounting of transducers:							
a	Gap between two coils	M	Vernier / Slip gauge	C	100%	Instruction Manual	Logbook	
b	Parallelism of coils with measuring surface.	M	Vernier / Slip gauge	C	100%	-do-	Logbook	
c	Parallelism of coils	M		C	100%	-do-		
d	Safety gaps	V		C	100%	-do-		
e	Sliding movement.			C	100%	-do-		
f	Cabling from panel to local junction box	V		C	100%	Cable Schedule		
g	Routing and termination of transducer cables in local junction box.	V		C	100%	-do-		

WI:QLY:03-F08/R0


<div> PSER</div>		FIELD QUALITY PLAN FOR CONTROL & INSTRUMENTATION ( SG,ST,TG & AUX) (Erection) STATEMENT OF CHECKS				FQP NO.: QPE:NKP:660:EL:62		
						REV NO.: 00		
						SHEET 29 / 30 SHEETS		
SYSTEM : C & I		SUB - SYSTEM : TURBO SUPERVISORY SYSTEM			AREA :ERECTION			
SL NO.	CHARACTERISTICS	TYPE OF CHECK	INSTRUMENT	CLASS	QUANTUM/ FREQUENCY OF CHECK	REFERENCE DOCUMENT/ ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS
h	Tightening and locking of all the bolts	V		C	100%	Drawing		
i	Doweling of transducers.	V		B	100%	-do-		
31.2	<b>EXPANSION PICK UP</b>							
31.2.1	Type and range of input & output of pickups.	V		B	100%	Instruction Manual	Logbook	
31.2.2	Ensure that sensor is mounted perpendicular to the shaft and distance between sensor and shaft is as per drawing.	V		C	100%	Drawing		
31.2.3	Distance between lower part of the sensor shell and the casing wall.	M	Vernier/ slip gauge	B	100%	-do-	Logbook	
31.2.4	MICS/ Screened cables are fastened to turbine casing with at least two clamps.	V		B	100%	-do-		
31.2.5	Centerline of sensor bracket coincides with the symmetry line of the collar of the double cone.	V		B	100%	-do-		
31.2.6	Check connections between sensors and PROXIMETERS.	V		B	100%	-do-	Logbook	
31.2.7	Ensure correct supply voltage for sensors.	M	Multimeter.	C	100%	Drawing/ O & M Manual	Logbook	

WI:QLY:03-F08/RO

<div> PSER</div>		FIELD QUALITY PLAN FOR CONTROL & INSTRUMENTATION ( SG,ST,TG & AUX) (Erection) STATEMENT OF CHECKS					FQP NO.: QPE:NKP:660:EL:62  REV NO.: 00  SHEET 30 / 30 SHEETS		
SYSTEM : C & I		SUB - SYSTEM : VIBRATION PICK-UP						AREA :ERECTION	
SL NO.	CHARACTERISTICS	TYPE OF CHECK	INSTRUMENT	CLASS	QUANTUM/ FREQUENCY OF CHECK	REFERENCE DOCUMENT/ ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS	
32.0	<b>VIBRATION PICK-UP</b>								
32.1	Type of pick up.	V		C	100%	Drawing / O & M Manual	Logbook		
32.2	Ensure no cracks on the body and damage to the mounting surface.	V		B	100%	O & M Manual	Logbook		
32.3	Ensure minimum 80% surface contact where pick up is mounted.	V		B	100%	Drawing	Logbook		
32.4	Tightening of pick up.	V		C	100%		Logbook		
32.5	Cabling and termination from panel to local junction box.	V		C	100%	Drawing / Cable Schedule	Logbook		
32.6	Routing and clamping of cables.	V		C	100%	Drawing	Logbook		
32.7	Earthing of screen of field cables.	M	Megger.	C	100%	-do-	Logbook		
33.0	<b>AUTOMATIC TURBINE RUN UP SYSTEM SGC OIL SYSTEM</b>								
33.1	Alarm and trip signals for operation.	V		B	100%	-do-	Logbook		
34.0	<b>SGC CONDENSATE, EVACUATION SYSTEM &amp; TURBINE RUN UP</b>								
34.1	Alarm and trip signals for operation	V		B	100%	-do-	Logbook		

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		RECORD OF QUALITY CHECKS						
PSER		CHECK NO.	RESULTS ACHIEVED OK / NOT OK	DRAWING / DOCUMENT REFERENCE	FORMAT OF RECORD	INSPECTED BY SIGN. & DATE	CLEARED BY SIGN. & DATE	REMARKS
<b>Note :</b> Any protocol made is to be numbered & mentioned in "Format of Record" column.								
				SYSTEM	SUB-SYSTEM	AREA		FQP NO.: QPE:NKP:660:EL:62
PROJECT								REV NO. R-00
UNIT NO.								LOG SHEET NO. : L-00
RATING								SHEET 1 / 1 SHEET

 PSER	INSTRUMENT REGN.NO.			
	DATE OF INSPECTION			
	DRAWING / DOCUMENT REF.			

RECORDING OF PARAMETERS DURING INSTRUMENTS AND SWITCHES			
INSTRUMENT :		SERVICE :	
MAKE :	TAG NO.:	SL.NO. :	
	RANGE :	TYPE :	
TEST INSTRUMENT USED			
TYPE :	RANGE :	MAKE :	
ACCURACY :		SL.NO. :	

\* FOR INSTRUMENT

SL.NO.	REFERENCE PARAMETER	INSTRUMENT READING / MEASURED OUTPUT	DEVIATION	REMARKS

\* FOR SWITCHES :

SET VALUE :	OPERATED AT : a) Increasing
	b) Decreasing
HYSTERISIS :	

\* Strike out whichever is not applicable.

Note : Use continuation sheets, if applicable.

			NAME	SIGNATURE & DATE	FQP NO.: QPE:NKP:660:EL:62
PROJECT		CHECKED BY			REV NO.: 00
UNIT NO.		ACCEPTED BY			LOG SHEET NO.: L-01
RATING		CUSTOMER			SHEET 1 / 1 SHEETS