Document Name:

- **Contractor Quality Control Plan for Instrumental Equipment Installation**
- **Inspection and Test Plan for Instrumental Equipment Installation**

		Responsibility		
No.	**Item description**	**CC**	**TPI**	**Owner**
5.	**Instrument items**			
5.1	**Installation of equipment**			
5.1.1	Pre-installation check 1) Foundation and setting bolts - Dimension - Visual check 2) Visuals check 3) Identification marking	H		
5.1.2	Installation and assembling 1) Location 2) Orientation 3) Assembling layout and arrangement 4) Leveling 5) tightness of connection and fastening 6) Grounding 7) Visual check	H		
5.2	**Cabling and wiring** (included instrument analog signal cable, thermocouple extension wire, switch signal cables and special cable and wire)			
5.2.1	Pre-installations check	H		
5.2.2	Identification marking	H		
5.2.3	Clearness on cable ducts and/or calbe racks	H		
5.2.4	Cable laying	H		
5.2.5	Cable ends, glands, clamping and termination	H		
5.2.6	Connection and continuity	H		
5.2.7	Clamping and supporting	H		
5.2.8	Labeling of cables	H		
5.2.9	Protection against mechanical damage	H		
5.2.10	Tightness of connection and fastening	H		
5.2.11	Visual check	H		
5.2.12	Continuity test	H		
5.2.13	Megger test	H		

5.3	**Installation and assembling of field Instruments**			
5.3.1	Pre-installation check	H		
5.3.2	Identification marking	H		
5.3.3	Location	H		
5.3.4	Orientation	H		
5.3.5	Assembling layout and arrangment	H		
5.3.6	Supportings	H		
5.3.7	Tightness of connection and fastening	H		
5.3.8	Calibration	H		
5.3.9	Visual check	H		
5.4	**Special calibration**			
5.4.1	Flow instrument 1) Flatness and the condition of the orifice edge of orifice plates 2) Continuity and proper operation of indicating flow instruments, rotameters, turbine meters, etc. 3) Transmitters and receivers of differential type instruments	H		
5.4.2	Temperature instrument 1) Specific range of potentiometric or digital temp. instrument 2) Wire, lead wire polarity of connection of thermocouple 3) transmitters and receivers of temp. control instruments (Except Bi-metal dial thermometers)	H		
5.4.3	Pressure instrument 1) Pressure transmitters and receivers 2) Scale range of local pressure controllers	H		
5.4.4	Level instrument 1) Differential type level instruments 2) Float type level instrument 3) Level controller	H		

5.4.5	Control valves 1) Loop check 2) Air failure position, travel indicator adjustment, and open and close diaphragm pressures 3) Input and output signal range of set positioner, booster or relays	H		
5.4.6	Refief control valves 1) Set relief pressure prior to installation	H		
5.4.7	Process stream analyzers 1) Calibrate after the field pressure test	H		
5.5	**Pressure lead piping and tubing**			
5.5.1	Pre-installation check	H		
5.5.2	Routing and laying	H		
5.5.3	Clamping and supporting	H		
5.5.4	Space allowance	H		
5.5.5	Tightness of connection and fastening	H		
5.5.6	Pressure test and leak test	H		
5.5.7	Allowance for thermal expansion	H		
5.5.8	Visual check	H		
5.6	**Air piping and tubing**			
5.6.1	Pre-installation check	H		
5.6.2	Routing and laying	H		
5.6.3	Clamping and supporting	H		
5.6.4	Tightness of connection and fastening	H		
5.6.5	Pressure test and leak test	H		
5.6.6	Visual check	H		
5.7	**Electrical heat tracing**			
5.7.1	Location	H		
5.7.2	Type of installation	H		
5.7.3	Numbers of tracer	H		
5.8	**Cabling and wiring**			
5.8.1	Pre-installatin check	H		
5.8.2	Identificatino marking	H		
5.8.3	Clearness on cable ducts and cable racks	H		

5.8.4	Cable laying	H		
5.8.5	Clamping and supporting	H		
5.8.6	Wire marking or color coding in junction box	H		
5.8.7	Sealing compound or packing	H		
5.8.8	Cable ends, glands, clamping and termination	H		
5.8.9	Connection and continuity	H		
5.8.10	Insulation resistance	H		
5.8.11	Protection against mechanical damage	H		
5.8.12	Location of junction box	H		
5.8.13	Visual check	H		
5.9	**Testing of instrument panel**			
5.9.1	Function test by applying reference inputs or by varying actuating signals	H		
5.9.2	Calibration of indicating instruments	H		
5.9.3	Functional test by simulating inputs and measuring ourtputs	H		
5.10	**Instrumentation loop and function checks**			
5.10.1	Loop and function test of all instrument	H		
5.10.2	Annunciator alarm sequence, test acknowledge, and reset function	H		
5.10.2	Interlocking and shutdown systems	H		
5.10.3	Pushbuttons	H		
5.10.4	Some status command signals	H		
5.10.5	Proper point identification for instruments	H		
5.10.7	Shiedling and drain wire connection	H		
5.10.8	Flow direction of in-line instruments	H		
5.10.9	Function test of protection devices	H		
5.10.10	Liquid seal in pressure lead pipes	H		
5.10.11	Function test of controller	H		
5.11	**Testing of DCS, FCS, PLC**			
5.11.1	Power and grounding system check	H		
5.11.2	Hardware and rack loading status check	H		
5.11.3	System burn-in test	H		
5.11.4	Loop and function check	H		

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CC: Construction Contractor

TPI: Third Party Inspection

H: Hold Point; Hold on the production till TPI Inspector performs inspection and supervise the required test

If you want to use this draft for inspection and test plan you need to fill the TPI and Owner Column based your project requirement. You may use following abbreviation for filling the columns:

W: Witness Point; Manufacture shall notify client and TPI Inspector but there is no hold on the Construction;

R: Document Review; Review means Review document, which includes of material test certificates, test reports, records and etc.

A: Approval

SW: Spot Witness; for items with spot witness contractor shall notify TPI inspector as fulfilling the monitoring;