

INSPECTION STANDARD

FOR

GENERAL INSTRUMENT SYSTEMS

SECOND EDITION

NOVEMBER 2015

FOREWORD

The Iranian Petroleum Standards (IPS) reflect the views of the Iranian Ministry of Petroleum and are intended for use in the oil and gas production facilities, oil refineries, chemical and petrochemical plants, gas handling and processing installations and other such facilities.

IPS are based on internationally acceptable standards and include selections from the items stipulated in the referenced standards. They are also supplemented by additional requirements and/or modifications based on the experience acquired by the Iranian Petroleum Industry and the local market availability. The options which are not specified in the text of the standards are itemized in data sheet/s, so that, the user can select his appropriate preferences therein.

The IPS standards are therefore expected to be sufficiently flexible so that the users can adapt these standards to their requirements. However, they may not cover every requirement of each project. For such cases, an addendum to IPS Standard shall be prepared by the user which elaborates the particular requirements of the user. This addendum together with the relevant IPS shall form the job specification for the specific project or work.

The IPS is reviewed and up-dated approximately every five years. Each standards are subject to amendment or withdrawal, if required, thus the latest edition of IPS shall be applicable

The users of IPS are therefore requested to send their views and comments, including any addendum prepared for particular cases to the following address. These comments and recommendations will be reviewed by the relevant technical committee and in case of approval will be incorporated in the next revision of the standard.

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GENERAL DEFINITIONS

Throughout this Standard the following definitions shall apply.

COMPANY :

Refers to one of the related and/or affiliated companies of the Iranian Ministry of Petroleum such as National Iranian Oil Company, National Iranian Gas Company, National Petrochemical Company and National Iranian Oil Refinery And Distribution Company.

PURCHASER :

Means the "Company" where this standard is a part of direct purchaser order by the "Company", and the "Contractor" where this Standard is a part of contract document.

VENDOR AND SUPPLIER:

Refers to firm or person who will supply and/or fabricate the equipment or material.

CONTRACTOR:

Refers to the persons, firm or company whose tender has been accepted by the company.

EXECUTOR :

Executor is the party which carries out all or part of construction and/or commissioning for the project.

INSPECTOR :

The Inspector referred to in this Standard is a person/persons or a body appointed in writing by the company for the inspection of fabrication and installation work.

SHALL:

Is used where a provision is mandatory.

SHOULD:

Is used where a provision is advisory only.

WILL:

Is normally used in connection with the action by the "Company" rather than by a contractor, supplier or vendor.

MAY:

Is used where a provision is completely discretionary.

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1. SCOPE

This Inspection Standard is intended to provide guidance to both the authorized inspector and the manufacturer/supplier for the inspection and testing of all instruments and instrument systems, to be used in Petroleum Industries.

For those instruments which are included as part of an equipment package, this procedural specification shall be applied in conjunction with Part one of [IPS-M-IN-280](#), 'Packaged Equipment Instrumentation'.

Note 1:

This is a revised version of this standard, which is issued as revision (2)-2015. Revision (1)-2005 of the said standard specification is withdrawn.

2. REFERENCES

Throughout this Standard the following dated and undated standards/codes are referred to. These referenced documents shall, to the extent specified herein, form a part of this standard. For dated references, the edition cited applies. The applicability of changes in dated references that occur after the cited date shall be mutually agreed upon by the company and the vendor. For undated references, the latest edition of the referenced documents (including any supplements and amendments) applies.

IPS (IRANIAN PETROLEUM STANDARDS)

[IPS-M-IN-280](#) "Material Standards for Miscellaneous Items"

[IPS-E-IN-100](#) "Engineering Standard for General Instrumentation"

3. THE INSPECTION AND TESTING OF INSTRUMENTS AND INSTRUMENT SYSTEMS

3.1 General

Prior to the factory inspection by or on behalf of the Company, the manufacturer/supplier shall carry out all the required inspections and tests and if necessary, take corrective actions with full knowledge of the Company to ensure that instruments and instrument systems fulfill the requirements stated in the purchase order.

3.2 Classification of Instruments and Instrument Systems

Instruments and instrument systems are considered in the following categories for the purpose of factory inspection:

- **Category A** - For which factory inspection and testing are not normally required. However, manufacturer test and calibration reports shall be provided.
- **Category B** - For which factory inspection and testing shall be carried out.
- **Category C** - For which factory inspection and testing should be carried out.

The Categories A, B and C are listed in Appendix A.

Note: Appendix A is extracted from [IPS-E-IN-100](#), Part 3.

Instruments and materials for instrumentation have been grouped as shown in Appendix A for the purposes of inspection and testing:

3.2.1 In-line instruments (Table 1, Appendix B)

These are instruments which form part of, or are defined as forming part of, the process pressure piping system, such as control valves, positive displacement and turbine meters, venturi and other flow tubes and elements, etc.

3.2.2 On-line instruments (Table 2, Appendix B)

These are those instruments which can be isolated from the process fluids by a valve, such as pressure gages, pressure switches and transmitters, etc.

3.2.3 Off-line/ Pre-fabricated instruments (Table 3, Appendix B)

These are all instruments which are not in contact with any process fluid, e.g. receiving-type instruments and all pre-fabricated instrument equipment, such as console desks, local panels, and system cabinets, etc.

3.2.4 Construction materials (Table 4, Appendix B)

These are materials such as instrument cables, instrument air piping, tubing and instrument impulse lines, etc.

3.3 Types of Inspection

The types of inspection are defined as follows:

- **None** - Where inspection and/or testing is not required, normal for Category A.
- **Visual** - Each item is visually checked for compliance with the purchase order.
- **Random** - Where 10 to 15% of a batch of items, as selected by the authorized inspector, are fully checked.
- **Full** - This is a visual check, plus a full test for each item of Category B and, where specified, for Category C. In some case a complete test may have to be carried out in few stages of construction at the factory.

Warning:

If, during the random inspection, failures occur in the batch of selected items, the authorized inspector may decide to increase the level of inspection to 100%.

3.4 The Requirements for Inspection

Tables 1 to 4, which are included in Appendix B, are typical examples indicating the requirements for inspection and the parties which will witness such inspection.

Note: These tables are subject to change based on the inspection plan.

3.5 Spare Parts

When specified in the purchase order, spare parts for the above instruments or instrument systems, comprising either part or complete systems, shall be inspected and tested as per factory inspection and testing procedures. However, spare components for systems, such as printed circuit boards, etc. need only a 10 to 15% random inspection by the authorized inspector.

4. FACTORY INSPECTION AND TESTING

4.1 General

The purpose of 'factory inspection and testing' is to check that the instruments and instrument systems to be supplied, comply with the requirements stated in the purchase order.

Before attempting to carry out the inspection and especially the checking of calibrations, the authorized inspector shall check that the factory test equipment, as supplied by the manufacturer/supplier, is suitable for testing the instruments included in the purchase order. The factory shall provide a Calibration Certificate with the calibration carried out against primary test equipment.

The manufacturer shall be able to prove that equipment used for calibration is traceable back to national standards, with certificates issued by approved independent laboratories, institutes or other bodies.

The following documents should form the basis of the manufacturer's production system in the order of priority as listed.

- 1) The purchase order and any subsequent variations.
- 2) Data/requisition sheets and drawings.
- 3) The Company's standards.
- 4) The manufacturer's quotation.
- 5) The manufacturer's standard specifications.
- 6) The manufacturer's standard quality control procedures.

Deviations from the above requirements will be allowed only with the written approval of the Company.

Factory inspection shall be witnessed by:

- The Company; or the Company's third party for 'in-house' projects.
- The designer; for turn-key projects, either alone or (at the Company's discretion) accompanied by a representative of the Company, or the Company's third party.
- The designer/Company for other projects, as applicable.

Note:

If, for any reason, the Purchaser waives inspection, this shall not relieve the supplier from the responsibility of repairing at his own cost any defects found.

The Company's and/or the Company's third-party inspector or specialist shall have free entry and access during normal working hours, to those parts of the manufacturer's and/or submanufacturer's premises which are involved in the manufacturing and testing of instruments and instrument systems applicable to the purchase order.

4.2 The Scope of Inspection

The basic scope of inspection will be defined by written notes giving the following information:

- The inspection agency.
- The engineer coordinating inspection activity.
- Pre-manufacturing/inspection meeting to be held (if any).
- Type of inspection i.e. running, intermediate, final.
- Requirement for a document review.
- Requirement for an inspection report.
- Any additional information.

Where other disciplines are involved in instrument inspection, the nominated instrument inspector shall have overall responsibility for the release note.

The above instructions will be further clarified by the final inspection plan.

5. THE INSPECTION PLAN

5.1 General

The manufacturer shall provide (with the quotation) a basic document entitled inspection Plan for instrumentation, this shall include all instruments and instrument systems which are subject to inspection.

Objectives of the Inspection Plan:

- Establish the inspection activities specified in the purchase order.
- Finalize and agree all inspection and testing procedures by collating the purchaser's and manufacturer's requirements.
- Allow the Purchaser to plan his inspection activities.
- Determine which inspections and tests at manufacturer's/submanufacturer's may or will be attended and by whom.
- Define the activities which will be coordinated by the instrument, electrical or mechanical inspectors.
- Establish a yardstick if payment is to be made in installments.

5.2 Types of Inspection Plan

- | | |
|---------------|--|
| Plan A | - The Standard Inspection Plan - the manufacturer's standard inspection and test procedure, as approved by the Purchaser. |
| Plan B | - The Amended Inspection Plan - the manufacturer's standard inspection plan, but with additional requirements of the Purchaser incorporated. |

5.3 The Authority and Content of the Inspection Plan

The finally agreed inspection plan, whether the standard or the amended plan, shall be accepted as

the basic inspection document and, in cases of conflict between documents of the requisition, its requirements shall rule.

The inspection plan shall be signed by both parties, i.e. manufacturer and user. The document shall not be amended without the written agreement of the user.

The inspection plan shall include all references to manufacturer's documents and/or standards.

The inspection plan shall consider the following items as applicable:

- a)** A clarification or pre-manufacturing meeting.
- b)** Preparation of a sub-orders list.
- c)** Subsuppliers visits.
- d)** Progress.
- e)** Inspection (visual and general).
- f)** Testing (pressure, electrical insulation, etc.).
- g)** Calibration of instruments.
- h)** Function/performance tests.
- i)** Special procedures (see 4.2).
- j)** Special documents.
- k)** Manufacturer's documents.
- l)** Packing and preservation procedures: This item is also the responsibility of the Materials Department.
- m)** Inspection time schedule.
- n)** Packing, marking and loading methods.

For standard instrumentation, the manufacturer's functional testing procedures should be added to the inspection plan.

For all complex systems such as:

- Equipment Packages.
- PCS.
- PLC (logic systems).
- Process stream analyzers / analyzer modules.
- Safeguarding systems.
- Blending.
- Tank gauging system.

- Metering system.
- Process computer systems.
- SCADA.
- F&G.
- HIPPS (High Integrity Pressure Protection System).
- WHCP (Wellhead Control Panel).

The inspection plan includes specific functional test procedures, as agreed with the Company.

5.4 Notification of Inspection

The manufacturer/supplier shall notify the authorized inspector and the user, at least 60 calendar days in advance of the date when the instrument(s) or instrument system(s) will be ready for inspection.

The manufacturer/supplier shall send the results of the necessary contractual control tests to the user.

5.5 Manufacturer's Quality Control Records

The manufacturer/supplier shall provide a Quality Control Record 'QCR' which shall be available during the intermediate and final phases of the inspection and testing program.

The QCR shall be arranged in a logical sequence, divided into appropriate sections and contain the following:

- The manufacturer's address, telephone, telefax "numbers and Email".
- An index and an introduction.
- QC procedure and references.
- Material certificates as appropriate.
- Acceptance test details and test report.
- Equipment manual, if applicable.
- Certificates of conformity.
- Design briefs and design approval form.
- A copy of the inspection plan.
- Calibration report.
- Survey studies if applicable.
- A statement of compliance and a manufacturing inspection report, signed by the manufacturer.
- Details of special procedures, such as welding, weld repair, radiography and heat treatment, etc.

- As built drawings.
- Subsuppliers documents, if applicable.

Note: The above documents either in total or in part as applicable, are usually made up into a Composite Instrument Manual.

6. FACTORY INSPECTION DOCUMENTS

The basic document shall be the Instrument Inspection Report as described below.

This document shall be completed, signed and issued by the authorized inspector within 10 working days after the completion of inspection.

All sheets shall contain Company's purchase order number.

6.1 The Instrument Inspection Report

The instrument inspection report shall cover all the stages of inspection given in the final inspection plan, and the format should be as follows:

6.1.1 A cover sheet

The cover sheet shall contain:

- The type and title of the report.
- Name and address of the manufacturer/subsupplier.
- User's complete purchase order number, and letter of credit.
- Requisition number and revision letter or number.
- Inspection order number.
- Manufacturer's reference.
- Date of report.
- Name and signature of the authorized inspector.
- Approval of the report by the inspectors management.
- Cross-references to other reports.

6.1.2 Table of contents

The following gives a typical example of the table of contents of an inspection report:

- Inspection Reference Data.
- Statement of compliance.
- Scope of inspection.
- Inspection reference documents.
- List of sub suppliers.

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- List of test and Calibration Equipments.
 - Inspection results.
 - Review of Manufacturer's Documentation.
 - Notes of non acceptance (NONA) and non conformance report (NCR)
 - Attachments to the inspection record.

6.1.3 Inspection reference data

This shall contain

- Purchase order number.
- Manufacturer's reference number.
- Commodity (good or service).
- Instrument tag numbers/identification.
- Quantity.
- Data and number of delegation telex and telefax.
- Scope of work indicated in delegation telefax.
- Commodity shipment date.
- Original delivery date as stated on purchase order.
- Inspection agency.

6.1.4 Statement of compliance

Stating that the inspected goods meet all the requirements of the purchase order (and agreed deviations) as could be verified by the inspection agency.

6.1.5 Scope of inspection

Summarize inspection activities giving dates of inspection with reference to the inspection plan.

6.1.6 Inspection reference documents

This section shall make reference to all engineering standards drawings, etc. including revision numbers on which final inspection was based.

6.1.7 List of sub suppliers

This section shall list all sub suppliers and their scope of supply, date of release, and report number (if any).

6.1.8 List of test and calibration equipment

This section shall list all calibration and test equipment used, with serial numbers, personnel involved, etc.

6.1.9 Inspection results

This section shall report in detail, all the results of the inspection activities.

6.1.10 Review of manufacturer's documentation

This section shall state that the documentation presented by the manufacturer complies with the purchase order.

6.1.11 Notes of non acceptance (NONA) and non conformance report (NCR)

This section shall list all NONA and NCR's issued during the contract together with the resolution, and clear reference to the fax or letter.

6.1.12 Attachments to the inspection report

At the final Acceptance Inspection Release the following documents shall be attached to the report.

- The inspection plan.
- Certificate of conformity (design/construction/testing).
- Certificate of performance.
- Calibration/test notes.
- Inspection sheets if applicable.
- Letters approving deviations or granting concessions from specifications and or requisitions.
- Minutes of meetings held before and/or during inspection stages.
- Release notes, NONA, NCR's.

6.2 Completion of the Report

If so requested in the order for inspection, a factory Instrument Inspection Report shall be completed by the authorized inspector.

A report may also be issued on final acceptance of sub-orders to the main purchase order. However, this report shall be considered as intermediate and it shall be re-issued as part of the final report. This is particularly applicable in the context of packaged units.

The Instrument Inspection Report shall be completed in five original sets and presented to the Company.

6.3 The Non-Conformance Report

The non-conformance report is a quality assurance related document, for reporting all serious deficiencies in a manufacturer/ supplier's capabilities to supply manufactured items of the required quality, for whatever reason, e.g. quality of work factory organization, test equipment and assistance rendered, etc.

6.4 The Release Note/Note of Non-Acceptance

When the authorized inspector or inspection agency are satisfied that the instruments and or instrument systems comply with the technical requirements and conditions of the purchase order, a release note shall be issued otherwise a note of non-acceptance shall be issued.

The release note/note of non-acceptance is an official contractual document and shall be completed carefully and accurately. The purchase order number shall be clearly readable and the release note shall apply to one purchase order only.

The release note/note of non-acceptance shall be given to the manufacturer/supplier with copies to the user as indicated on the form itself.

APPENDICES**APPENDIX A****EQUIPMENT CATEGORIES****A.1 Category A**

Comprising individual items of equipment and separately mounted instruments. Typical items in this category are:

- Transmitters
- Recorders
- Standalone controllers (including indicating controllers)
- Pressure/draught/receiving/temperature gages
- Installation materials (except for impulse lines containing valves)
- Solenoid valves
- Plant mounted terminal/junction boxes
- Switches (manual/receiver and process)
- Push buttons
- Cables
- Variable-area meters (except for process applications)
- Indicators
- Diaphragm/chemical seals
- Pulse counters
- Alarm light units
- Computing/selecting/limiting/boosting/time relays
- Air filter-reducers
- Thermocouple assemblies
- Resistance thermometer elements/RTD's
- Detectors
- Tank gages
- Gage glasses
- Signal converters
- Volume boosters

- Load cells
- Lock-up/quick exhaust devices
- Control drives for dampers
- Valve actuators/positioners.

A.2 Category B

Comprising instruments and equipment of a more complex nature, custom-built systems or equipment packages. Typical items of equipment in this category are:

1) Field equipment and Packages such as:

- Local panels
- Metering station
- Meter provers
- Remote I/Os
- Remote terminal unit (RTU)
- Well head panels
- High integrity pressure protection systems (HIPPS)
- Pressure regulators
- Self acting temperature regulators

2) Analytical equipment such as:

- Sampling systems for process stream analyzers
- Process stream analyzers.

3) Piped and/or wired system cabinets or racks for:

- Receiver devices
- Signal converters
- Signal amplifiers
- Miscellaneous/auxiliary components.

4) Control room equipment such as:

- Control desks
- Alarm systems/alarm service units
- Safeguarding systems
- Interlock systems

-
- Sequential control systems
 - Relay systems
 - Process control systems (PCS)
 - Multiplexers
 - Operator consoles
 - Programmable logic controllers (PLC)
 - SCADA systems
 - Mimic panels
 - Interface systems
 - Tank gaging systems
 - Interposing cabinets
 - Monitoring systems
 - Fire and gas systems (FGS)
 - Patch panels
 - Weighing systems
 - Dosing systems
 - Blending systems
 - Sequential event recorder
 - Multi point paperless indicating systems
 - Batch control units
 - Counters
 - Flow computers.
 - Machine monitoring systems (MMS)
 - Leak detection systems (LDS)
 - Control valves/safety valves

A.3 Category C

Comprising in-line mounted instruments and items for instrument impulse lines. Typical items of equipment in this category are:

1) In line mounted instruments such as:

- Orifice plates/restriction orifices

- Variable area meters
- Special meter runs. (e.g. for custody transfer)
- Turbine/PD meters (including all accessories)
- Venturi/dall/pitot tubes
- Electromagnetic/vortex/impact/ultrasonic flow meters
- Flow straighteners
- Flow nozzles
- Displacer level instruments
- Probe-type level instruments

2) Installation materials (for impulse lines) such as:

- Manifold valves

Note:

All instruments installation materials in Category C which are to be inspected shall be examined by a mechanical specialist to ensure compliance with the piping specification.

**APPENDIX B
TYPICAL INSTRUMENT INSPECTION REQUIREMENTS AND RESPONSIBILITIES**

TABLE 1 - IN-LINE INSTRUMENTS

Item No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Description	Orifice plate/ Restriction orifice	Venturi Tubes	Orifice Meter Run	PD Meter / Turbine Meter	Variable area meter	Pitot Tube	Electro magnetic/ vortex ultrasonic instruments	Control Valve	Emergency depressurizing Emergency Shut down valves	ON/OFF Control Valves	Probe type Level Instrument	Analyzer Sample Probes	Metering Station	Meter Prover	Weighting / Dosing System	Level Switches (Float Types)	Radio active Level Instrument
Type of inspection plan	A	B	B	A	A	A	B	B	B	B	A	A	B	B	A	A	B
Pre – inspection meeting	no	yes	yes	no	no	no	yes	yes	yes	yes	no	no	yes	yes	yes	no	yes
Inspection	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	X
construction	W ²⁾	W ²⁾	W ²⁾	---	---	---	---	W ²⁾	W ²⁾	W ²⁾	---	---	W ²⁾	W ²⁾	---	---	---
Quantities	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
Appearance	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
Accessories	---	---	---	W	---	---	---	W	W	W	---	---	W	W	W	W	W
Dimensions	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
Material certificates	R	R	R	R	R	R	R	R	R	R	R	R	R	R	---	R	R
Pressure test	---	W	W	W	W	W	W	W	W	W	---	W	W	W	---	---	---
Calibration	---	---	---	---	---	---	W	W	W	W	---	---	W	W	W	W	W
Performance test	---	---	---	R	R	---	---	W	W	W	---	---	W	W	W	---	---
Remarks	6)	6)	6)	6)	6)	6)		1) 5) 6)	1) 5) 6)	1) 5) 6)		6)	6)	6)			3) 4)

LEGEND:

A Inspection Plan type, see (5.2)

B Inspection Plan type, see (5.2)

R Report review

W Witness

X Applicable

Notes:

- 1) For control valves, the requisition shall indicate where vacuum and helium tests are applicable and/or the duties are cryogenic.
- 2) Construction shall be in accordance with an agreed design and certain constructional details shall be witnessed.
- 3) All indications of safety aspects shall be checked (e.g. warning plates).
- 4) Mounting, maintenance and operation instructions shall be checked for compliance.
- 5) Tight shut-off leak test required.
- 6) Certified mill test report (CMTR) for wet parts only.

(to be continued)

APPENDIX B (continued)
TABLE 2 - ON-LINE INSTRUMENTS

Item No.	1	2	3	4	5	6	7	8	9	10	11	12	13
Description	Differential Pressure Transmitter FLOW / Pressure /Level Instruments	Pressure Transmitter Local Controllers	Pressure Switches Temperature Switches	Purge Rotameter Assemblies	Tank Gauging System	Temperature Transmitter	Temperature Controller	Process Stream Analyzer	Analyzer Sampling System	Master Meter	Analyzer Retractable sample probes	Manometers	Displacement level Transmitter
Type of inspection plan	A	A	A	A	A	A	A	B	B	A	A	A	A
Pre – inspection meeting	no	no	no	no	yes	no	no	yes	yes	no	no	no	yes
Inspection construction	X	X	X	X	X	X	X	X	X	X	X	X	X
Quantities	W	W	W	W	W	W	W	W	W	W	W	W	W
Appearance	W	W	W	W	W	W	W	W	W	W	W	W	W
Accessories	---	---	---	---	---	---	---	W	W	W	---	---	---
Dimensions	W	W	W	W	W	W	W	W	W	W	W	---	W
Material certificates	R	R	R	R	R	---	---	---	R	R	R	---	---
Pressure test	W	W	---	W	W	---	---	---	W	---	W	X	---
Calibration	W	W	W	---	W	W	W	W	---	W	---	X	W
Performance test	W	W	W	W	W	W	W	W	W	W	---	---	---
Remarks	1)	1)	1)	1)	1)				1)				

LEGEND:

A Inspection Plan type, see (5.2)

B Inspection Plan type, see (5.2)

R Report review

W Witness

X Applicable

Notes:

1) Certified mill test report (CMTR) for wet parts only.

2) Construction shall be in accordance with an agreed design and certain constructional details shall be witnessed.

3) All indications of safety aspects shall be checked (e.g. warning plates).

APPENDIX B (continued)

TABLE 3 - OFF-LINE / PREFABRICATED INSTRUMENTS

Item No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Description	Process Control System (PCS)	Programmable Logic Controller (PLC)	Flame Failure Detector	Vibration/Displacement Monitors	Speed Instruments	Flammable/Toxic Gas Detection System	Fire/Smoke Detection System	Fire Fighting System	Safeguarding/Interlock System	Blending Control System	Computer Systems	F&G System	CCTV Systems	Loading Control Systems		Volume Boosters	Air Filter Reducer Station	Solenoid Valves	Quick Exhaust Valve	TC/Resistance/Bulb Assembly	Dial Thermometer	Converters I/P P/I	EMF/I Converter	Sequential Control Cabinet
Type of inspection plan	B	B	A	A	A	B	B	B	B	B	B	B	B	A		A	A	A	A	A	A	A	A	B
Pre - inspection meeting	yes	yes	no	no	no	yes	yes	yes	yes	yes	yes	yes	yes	yes		no	no	no	no	no	no	no	no	yes
Inspection	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X
construction	---	---	---	---	---	1)2)	1)2)	1)2)	---	---	---	---	---	---		---	---	---	---	---	---	---	R	---
Quantities	W	W	W	W	W	W	W	W	W	W	W	W	W	W		W	W	W	W	W	W	W	W	W
Appearance	W	W	W	W	W	W	W	W	W	W	W	W	W	W		W	W	W	W	W	W	W	W	W
Accessories	W	W	W	W	W	W	W	W	W	W	W	W	W	W		W	W	W	W	W	W	W	W	W
Dimensions	W	W	W	W	W	W	W	W	W	W	W	W	W	W		W	W	W	W	W	W	W	W	W
Material certificates	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---	---	---	---	---	---	---	---	---
Pressure test	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---	---	W/R	W/R	---	---	---	---	---
Calibration	W	W/R	---	R	R	W/R	W/R	---	---	---	W/R	W/R	W/R	R		---	---	R	R	R	---	---	R	---
Performance test	W	W/R	W/R	W/R	W/R	W/R	W/R	W/R	W/R	W/R	W/R	W/R	W/R	W/R		---	---	R	R	---	---	R	R	W/R
Shock Test	R	R	---	---	---	---	---	---	---	---	---	R	---	---		---	---	---	---	W/R	W/R	---	---	---
Heat Test	R	W/R	---	---	---	---	---	---	---	---	---	W/R	---	---		W/R	---	---	W/R	W/R	W/R	---	---	---
Remarks																								

LEGEND:

A Inspection Plan Type, see (5.2) B Inspection Plan Type, see (5.2)

R Report review W Witness

X Applicable

Notes: 1) Construction shall be in accordance with an agreed design and certain constructional details shall be witnessed.

2) All indications of safety aspects shall be checked (e.g. warning plates). 3) Electromagnetic interference test required.

(to be continued)

APPENDIX B (continued)
TABLE 3 - OFF-LINE / PREFABRICATED INSTRUMENTS

Item No.	1	2	3	4	5	6	7	8	9	10
Description	Control Desk	Local Panel	System Cabinet	Alarm Service Unit	Auxiliary racks	Instrument Cabinets (Converter/ Vibration Monitor)	Electrical / Instruments Interface Cabinets		Alarm Display Panel	Graphic Mimic Panel
Type of inspection plan	B	B	B	B	B	B	B		B	B
Pre – inspection meeting	yes	yes	yes	yes	yes	yes	yes		yes	yes
Inspection	x	x	x	x	x	x	x		x	x
construction	W ¹⁾	W ¹⁾	W ¹⁾	---	W ¹⁾	W ¹⁾	W ¹⁾		W ¹⁾	W ¹⁾
Quantities	W	W	W	W	W	W	W		W	W
Appearance	W	W	W	W	W	W	W		W	W
Accessories	W	W	W	W	W	W	W		W	W
Dimensions	W	W	W	W	W	W	W		W	W
Material certificates	---	---	---	---	---	---	---		---	---
Pressure test	---	---	---	---	---	---	---		---	---
Calibration	---	---	---	---	---	W	---		---	---
Performance test	---	---	---	W	---	W	---		W	W
Heat Test	B	---	---							
Remarks										

LEGEND:

A Inspection Plan type, see (5.2)

R Report Review

X Applicable

Notes:

1) Construction shall be in accordance with an agreed design and certain constructional details shall be witnessed.

2) All indications of safety aspects shall be checked (e.g. warning plates).

B Inspection Plan type, see (5.2)

W Witness

(to be continued)

APPENDIX B (continued)
TABLE 4 - CONSTRUCTION MATERIALS

Item No.	1	2	3	4	5	6	7	8	9
Description	(Instrument Signal) Cables	(power System) Cables	(T/C Extension) Cables	System Cables	Wiring Materials	Instruments Air Tubing Materials	Cable Trunking	Cable Trays/Conduit	Field Junction Boxes
Type of inspection plan	A	A	A	A	A	A	A		A
Pre – inspection meeting	no	no			no	no	no		no
Inspection	X	X	X	X	X	X	X		X
construction	---	---	---	---	---	---	---		---
Quantities	W	W	W	W	W	W	R	R	W
Appearance	W	W	W	W	W	W	R	R	W
Electrical Test	W	W	W	W	---	---	---	---	R
Dimensions	W	W	W	W	---	W	R	R	W
Material certificate	---	---	R	R	---	R	R	R	---
Pressure test	---	---	---	---	---	R	---	---	---
Calibration	---	---	---	---	---	---	---	---	---
Performance test	---	---	---	---	---	---	---	---	---
Remarks									

LEGEND:

- A Inspection Plan type, see (5.2)
- B Inspection Plan type, see (5.2)
- R Report review
- W Witness
- X Applicable