

SCOPE

- I 1.1 This practice covers the design, installation, and inspection of process analytical instruments (analyzers).
- I 1.2 **An asterisk (*)** indicates that a decision by the purchaser is required or that additional information is furnished by the purchaser.

SUMMARY OF ADDITIONAL REQUIREMENTS

- I 2.1 **Table 1** lists the practices which shall be used with this practice.
- I ↕ * 2.2 **Table 2** lists the practices and standards which shall be used with this practice as specified by the purchaser.

TABLE 1

PRACTICES	
IP 15-6-1	Electronic and Pneumatic Instruments
IP 15-10-1	Instrument Transmission Systems
IP 15-12-1	Instrument Wire and Cable
IP 20-1-1	Inspection of Equipment and Materials

TABLE 2

PRACTICES	
IP 4-3-3	Shelters for Process Analyzers
IP 15-8-2	Sample Transport and Sample Conditioning Systems for Process Stream Analyzers
IP 16-1-1	Area Classification and Related Electrical Design for Flammable Liquids, Gases or Vapors
STANDARDS	
Other Exxon Standards	
Exxon Chemical Company	Process Analyzer Requirements Handbook - 97 CENG T 2141 (Guidelines for Factory Acceptance)
API Standards	
TP 555	Process Analyzers

- I * 2.3 The vendor shall comply with any local rules or regulations specified by the purchaser.

DEFINITIONS

- I 3.1 **Process analytical instrument (analyzer)** is defined as a specialized instrument for measuring, or inferring, physical or chemical properties or chemical composition of gases, liquids, or solids.
- I 3.2 **Repeatability** is defined as the closeness with which an analyzer repeats indications when measuring identical values of the measured variable under the same conditions.
- I 3.3 **Sensitivity** is defined as the smallest change in a variable capable of causing a measurable corresponding change in the output signal.
- I 3.4 **Standard sample** is defined as a sample of process fluid, or sample similar to process fluid with precisely determined composition or physical properties.
- I 3.5 **Analyzer span** is defined as the calibrated range of the 4-20 mA output signal(s) or the maximum expected operating range defined for analyzers with serial data outputs.

IP 15-8-1		Process Stream Analyzers	EXXON INTERNATIONAL PRACTICE
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(This practice is appropriate for attachment to Inquiry or Purchase Document)

DOCUMENTATION

- O,R 4.1 **All analyzer proposals** shall be reviewed by the Owner's Engineer.
- M,R * 4.2 **Instruction manuals** shall be supplied by the vendor for each analyzer. The number of copies and delivery schedule of the manuals shall be specified by the Owner's Engineer. These manuals shall cover all components and shall include the following:
- a. Internal wiring diagrams.
 - b. Interconnecting diagram indicating all connections and shielding requirements. Markings for wire color coding or numbering, and for terminal identification, shall be identical to those actually on the analyzer.
 - c. Detailed installation instructions including piping instructions.
 - d. Detailed operating instructions.
 - ◆ e. Field Calibration procedure.
 - ◆ f. Calibration curve.
 - g. Troubleshooting procedure.
 - h. Complete parts list showing, and corresponding to, the model and serial number of the actual analyzer.
 - i. Recommended spare parts list for 2 years of operation.
 - j. A copy of the factory inspection data.
 - k. Completed application data sheets.
 - S ◆ l. Materials safety data sheet.
 - ◆ m. Minimum quality and maximum pressure rating of all required utilities.
- M,R * 4.3 If applicable, **the original diskettes containing software** required to operate or interact with the analyzer shall be provided by the vendor. The number of copies and the delivery schedule shall be specified by the Owner's Engineer.
- S,O 4.4 For **analyzers containing radioactive or ionizing sources**, all details of the source shall be forwarded to the Owner within 4 weeks of order placement to allow site safety and local operating permits to be obtained.
- O 4.5 **Preliminary documentation and all software** which is required to install and start-up the analyzer shall be shipped with the analyzer.

DESIGN

GENERAL

- O,R * 5.1 **Analyzers shall be used on single streams.** Proposals to use analyzers for multi-stream applications shall be submitted to purchaser for approval by the Owner's Engineer.
- R,M 5.2 Analyzers shall in all cases be based on the latest technology. Whenever possible, analyzers shall be microprocessor controlled and provide a means of local digital indication of their output in scaled engineering units. **Analyzers shall include self diagnostic features** to indicate malfunction. An output shall be available at the analyzer to remotely alarm a malfunction.
- M 5.3 If **an external maintenance interface device** is required, this shall be included in the scope of supply of the analyzer, including all necessary software.

MATERIALS OF CONSTRUCTION

- S 5.4 **All components exposed to the process** shall be resistant to the specified process fluid. As a minimum, materials in contact with hydrocarbon process fluids shall be stainless steel (Type 316 preferred) with Viton, Teflon, Kalrez or EPR gaskets and seals. No copper, zinc, or silver-bearing alloys are allowed in contact with process streams.