



Document No.	GP 31-02
Applicability	Group
Date	25 April 2005

Guidance on Practice for Analyser Validation

GP 31-02

BP GROUP
ENGINEERING TECHNICAL PRACTICES

Foreword

This is the first issue of Engineering Technical Practice (ETP) GP 31-02. This Guidance on Practice (GP) is based on parts of heritage documents from the merged BP companies as follows:

Amoco (ACES)

A AR-FBD-PA-P	Architectural—Facility Buildings—Process Analyser Shelters—Supply Specification
A PC-PA-00-E	Process Control—Process Analysers—Engineering Specification
A PC-PA-00-G	Process Control—Process Analysers—Guide
A PC-PA-00-P	Process Control—Process Analysers—Supply Specification

ARCO (APCES)

Std 312-92	Analysers
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British Petroleum (RPSE)

RP 30-02	Instrumentation and Control, Selection and use of Measurement Instrumentation
GES RP30-2/4	Analyser Sampling System Specification
GEMS/31-001	Guide to Analyser and Instrument Cabinet Design

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1. Scope

This GP provides guidance for the validation process of on-line analyser systems.

2. Terms and definitions

For the purposes of this GP (GIS), the following terms and definitions apply:

On-line analyser

Field instruments or inferential calculations that provide real-time indications of process stream properties.

Distributed Control System (DCS)

Process control system.

Process information system is connected to the DCS and includes bi-directional communication. It also acts as a process data historian and serves information to users and software applications.

Laboratory analyser

An instrument that is not connected to the process that can analyse discrete samples and provide measurements that are traceable and compliant with international standards.

Inferential calculations

Calculations that utilise single or multiple on-line process measurements to estimate properties of process streams. The calculation could include linear or non-linear models.

Process control applications use the results of on-line analysers and manipulate process variables in real-time in order to achieve the desired process conditions and production targets.

Statistical Process Control (SPC)

A technique to analyse the numerical variance of process variables and measurements.

Validation Sample

A sample injected into an analyser that is certified by a third party but does not calibrate the analyser i.e. calibration gas cylinder. These samples shall be traceable and compliant with international standards.

% Analyser availability

Analyser availability = %Time Analyser is available without errors and accurate and the plant requires it.

Adcon Utilisation

Adcon Utilisation = % Time advance control loop used / %Analyser available.

3. Functional requirements of validation application

3.1. General

- a. The applications shall compare equivalent results from on-line and laboratory based analyses and/or validation samples.
- b. The application shall include facilities to ensure that the values being compared have been adjusted to account for process, instrument and system dynamics and that sample time

