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Guidance on Practice for Onshore Pipeline Surveys

GP 43-25

BP GROUP
ENGINEERING TECHNICAL PRACTICES

Foreword

This is the first issue of Engineering Technical Practice (ETP) BP GP 43-205. This Guidance on Practice (GP) is based on parts of heritage documents from the merged BP companies as follows:

British Petroleum

RP 4-3 Civil Engineering

Amoco

A PN-xxx-SOP-C

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Scope

This GP provides guidance for onshore surveys for pipelines only. For offshore pipeline surveying requirements, refer to BP GP43-206, Guidance for Practice for Offshore Pipeline Surveys.

This ETP may refer to certain local, national, or international regulations, but responsibility to ensure compliance with legislation and any other statutory requirements lies with user.

User shall adapt or supplement this document to ensure compliance for specific application.

Normative references

The following normative documents contain requirements that, through reference in this text, constitute requirements of this technical practice. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this technical practice are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies.

BP

GP 11-22	BP spec format. (RefDoc style.)
GP 33-44	BP spec format. (RefDoc style.)
GIS 55-66	BP spec format. (RefDoc style.)

Amoco

A FE-HE-XX-P	Amoco spec format. (RefDoc style.)
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ARCO

Std 00-xx	ARCO spec format. (RefDoc style.)
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American Congress on Surveying & Mapping) ACSM \ American Land Title Association (ALTA)

99alta	ALTA/ ACSM Minimum Detail Requirements for ALTA/ACSM Land Title Surveys
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U.S. Department of the Interior, Bureau of Land Management

BLM-im2001-186attach1	Standards & Guidelines for Cadastral Surveys using Global Positioning System Methods
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Federal Geodetic Control Committee

GeomGeod	Geometric Accuracy Standards and Specifications for Using GPS Relative Positioning Techniques
National Oceanic and Atmospheric Administration (NOAA)	
NOS NGS-58	Guidelines for Establishing GPS-derived Ellipsoidal Heights



3.0 Symbols and abbreviations

For the purpose of this GP the following symbols and abbreviations apply:

CAD	Computer Aided Design
DGPS	Differential Global Positioning System
GPS	Global Positioning System
PDOP	Position Dilution of Precision
RTK	Real Time Kinematic
GIS	Geographic Information System
FGCC	Federal Geodetic Control Committee
FGDC	Federal Geodetic Data Committee
NGS	National Geodetic Survey

4.0 Survey Types

4.1 Geodetic Control Survey

4.1.1. Summary

A geodetic control survey is defined as being the required service and product that establishes sufficient geodetic survey control for a specific project referenced to the appropriate horizontal and vertical datums and grid coordinate system. The established survey control may be horizontal, vertical or both depending on project requirements. They form the primary framework to support and reference subsequent surveys including locative, construction, land boundary, route, environmental, and geophysical surveys. The geodetic control framework should be complete and validated prior to commencing any additional survey work. Geodetic control surveys will include, but are not limited to: the proper location, monumentation, survey observations, data reduction and adjustment, and description of the control points. The density and location of the control shall be designed to accommodate the immediate project requirements as well as potential future projects and survey methods.

The horizontal datum, vertical datum and grid coordinate system definition, including any datum transformation method and parameters, shall be clearly defined prior to any field work in consultation with a BP surveyor. Non-geodetic survey control shall not be acceptable for BP projects.

4.1.2. Accuracy Requirements

Static dual-frequency GPS techniques approved by BP are acceptable for establishing primary geodetic control networks. GPS surveys should conform to Federal Geodetic Control Committee document Geometric Geodetic Accuracy Standards and Specifications for using GPS Relative Positioning Techniques and NOAA Technical Memorandum NOS NGS-58 Guideline for Establishing GPS-derived Ellipsoid Heights (Standards: 2cm and 5cm) Version 4.3.

Post-processed kinematic and/or real-time kinematic GPS techniques approved by BP are acceptable for establishing secondary geodetic control networks. Kinematic GPS surveys shall be implemented utilizing a minimum of three (3) dual frequency receivers. Final locations shall be computed and confirmed through post processing techniques. Kinematic GPS surveys should conform with post-

