

Continuing Education for Oil & Gas Professionals

Geodetic Positioning & Survey Related Issues



The fundamentals of surveying and its geodetic components are an integral part of the seismic survey data collection and interpretation process. These course modules have been prepared to inform the spatial data users of data acquisition (GPS), datums (eg. NAD27), projections (X,Y values), data integrity, field survey technologies and data management issues.

Mix and match modules to suit your interests or allow us to custom design a course for you. Courses can be presented at your offices or at Divestco.

Presentations can be customized to address specific project areas and related issues.

GPS & Field Survey Technologies

- GPS Principles of operation (components, control segment, errors, accuracy)
- Differential GPS (base stations, real-time, RTCM, outside sources)
- Other technologies used in field seismic surveys (Conventional, LiDAR, INS, Barometry, lasers, Clinometers)

Datums, Surfaces and Map Projections

- Definitions (reference ellipsoid, datums, geoid, geographic coordinates)
- Surfaces (ellipsoid vs geoid)
- Datum origins and transformations (Local datums vs WGS84)
- Define concepts of map projections (Lat/Lon to XY)
- Classifications (distortions, choosing the proper projection)
- Commonly used projections (UTM, Lambert)
- Possible source of errors (zones, central meridians)

Survey Systems in Western Canada

- Dominion Land Survey (DLS)
- Alberta Township System (ATS), Saskatchewan Township System (STS)
- Peace River Block
- National Topographic System (NTS) BC
- Federal Permit System (FPS) NWT

Marine Seismic

- Real-time GPS data collection
- Vessel Configuration and layout
- Data storage and management

Lidar and Imagery Basics

- Remote sensing definition which includes Lidar and Imagery
- Overview of the technology
- Power of analysis (examples)

Geospatial Data Integrity and Migration

- Overview of risks (data, geodetics, procedural)
- Recommended approach to capture current state
- Data management issues (metadata cataloging, impacts)
- Data compatibility (integration of datasets)

Workstation Data Formats (Compatibility)

- Identification and Definition of workstation formats
- Issues related to working with various formats (limitations)

Divestco Technical Series Seminar

Explore the Potential of GIS and Remote Sensing

The technological advancements in acquisition technology has opened the realm of GIS with Remote Sensing, thereby providing a wealth of analytical tools and processes related to geosciences. This presentation explores the basic concepts of GIS and Remote Sensing and their relationship, the various Remote Sensing image options and capabilities, as well as advanced GIS techniques to leverage these new technologies. We will also focus on how the GIS/RS technologies are used in the oil and gas industry through five case studies.

International Geomatics

The use and accuracy of spatial information plays an integral role in our industry. Coordinates, be it latitude/longitude or northing/easting, are based on reference systems known as datums. Internationally, there are over 450 recognized datums with spatial differences between them reaching 800 m. Current acquisition and mapping technology use GPS, based on the WGS84 datum, which is not compatible with the majority of official country datums, thereby introducing data integrity issues.

This presentation will define datums and map projections as well as provide insight and examples on the impact to geophysical projects.

Leveraging Google Earth Internationally: An overview to sustaining spatial data integrity

Domestic Oil and Gas Companies working internationally often lack quality base mapping data. Tools such as Google Earth are used to position geophysical data, wells and concessions, to name a few, for planning and development. In most cases, the local country datum differs from these tools as imagery data is typically referenced to WGS84. The spatial differences between datums can introduce positional errors reaching 500 m.

This presentation will focus on how to leverage and use Google Earth to manage and map spatial data, identify and define the impact of datums and map projections, and address data integrity issues related to survey and mapping. This presentation will be of particular interest to the geosciences, data and GIS communities.

Seismic Survey Basics – Field Work (Full Day Course). Seasonal

This hands-on field course, run at a city park minutes from downtown, was designed to introduce participants to the methods used (past and present) to gather seismic survey data. Topics include: laying out a program, chaining, conventional survey (stadia and EDM), sunshots, GPS, new technologies, and common errors in field surveys. Ideal for anyone who handles field survey data.

Learn More

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