Sismage

A proprietary software suite of seismic interpretation tools
Objectives

Sismage™ is TOTAL’s proprietary software suite of seismic interpretation tools developed since the mid 80’s by the Sismage Team in its Pau-based Research Centre. In addition to the in-house team, Sismage™ also benefits from the collaboration and active contribution from different French Scientific Research Centres (CNRS). The underlying philosophy is to let the seismic data express the information it contains and to help interpreters apprehend it. Sismage offers an extensive range of effective seismic tools tested in a variety of geological environments.

Technical approach

Sismage™ offers methods and tools that are tailored to the interpreters’ requirements in a user-friendly environment, due chiefly to constant ongoing interaction between TOTAL Geophysicists and the Research / Development Team which provides rapid feedback and responses to users’ needs. Ongoing updates are produced rather than successive versions of the software. Developed under Linux / Unix systems, Sismage™ does not require specific installation, is compatible with all workstations, and connects to Charisma or Landmark projects with existing Vendor data bases.

Description

Through time, Sismage™ has developed an expertise in different domains of seismic interpretation. A variety of effective tools are present in the software suite including:

- 3D tracking Prop3D, attributes definition and study,
- Fault definition through specific tools such as Impro, fault peeling and automatic interpretation as well as stratigraphic tools such as Geotime reconstruction.
- Seismic reservoir characterisation tools are also developed such as supervised or non-supervised neural network classification for seismic traces which can be coupled with Massive Modeling (TotalFinaElf Fiche 36).
Sismage™ proprietary software suite of seismic interpretation tools:
Attribute analysis has been extensively developed to prepare various aspects of seismic interpretation in the structural and/or stratigraphic domains.
**Sismage™ Fault Peeling:**

Fault interpretation in Sismage™ may be carried out through attribute studies leading to use of specific tools such as fault peeling or automatic interpretation.
**Sismage** is a proprietary software suite of seismic interpretation tools

**Geotime**

*Geotime* is a *Sismage*™ tool for stratigraphic reconstruction based on Wheeler diagram concepts applied to seismic images and based on attribute analysis.

**Progradation Attribute for Geotime Stratigraphic Reconstruction:**
Sismage™ software has also developed a seismic reservoir characterisation tool allowing seismic trace classification with a Neural Network method. It can be used with supervised or unsupervised methods: integrating with well data or Massive Modelling (TOTAL 36) results helps to calibrate the classification results.
**Sismage**: A proprietary software suite of seismic interpretation tools

**Sismage™ Neural Network Classification:**

Sismage™ Neural Network Pseudo Logs technique may be applied to estimate net HC reservoir extension using near and far offset sub-stacks seismic data cube if they satisfy petro-acoustic conditions.
**Neural Network Pseudo Log technique**

\[ f(\text{Well traces}) = NNPGR = \text{Filtered GR} + \text{RawGR} \]

Relation between near and far offsets:

\[ f(\text{Near offsets}) = \text{NNPGR} = \text{Far offsets} \]

"N.N. Pseudo Gamma Ray":
3D block calculation

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Reservoir modeling

*Sismage*™ facilitates the link with reservoir modeling and allows quality controls and cross-validations between the reservoir and geological models.

References / Applications

This evolving suite of software has been widely applied to the different TOTAL assets in worldwide Subsidiaries in various geological context.

All the *Sismage*™ developments are registered and patented.

Contact

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