PVTbase 2012

An Internet Enabled, PVT Database,
GIS Mapping System, and Associated
Analytical Service Program

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GEOMARK

PVT Database 2012
GLOBAL PVT DATABASE

INTRODUCTION

With the release of the PVTbase 2012 GeoMark's PVT Database now holds the detailed analyses of over 3,500 PVT Reports, with over 800 in the "Open" portion of the database. By the end of 2012 we intend to have over 1,500 global reports in the "Open" section.

The PVTbase Database is available online via the RFDbase internet-enabled database for the storage, review and manipulation of all petroleum fluid analyses. Web accessibility allows anyone in your company to use the PVT Database, regardless of geographical location. Also, it allows immediate updates of new analytical results and permits an easy integration of any data in any of the other RFDbase modules (gas analyses, oil analyses, etc). The PVT database is divided into a "closed" section for the storage of confidential reports, and a large "open" section for the storage of non-exclusive reports accessible to all participants. Participation is limited to subscribing companies.

GeoMark has gained significant experience in the collection, storage and manipulation of non-exclusive geochemical data during the development of our 13,000 sample global OILS database and 3,000 gas sample database (GAD). Subscribing members to these programs receive continual updates to the database and are able to manipulate and interpret the data using extensive mapping and statistical capabilities. That basis was used for the development of RFDbase, extending its functionality by making it accessible over the Internet and also allowing for the storage of proprietary data.

GeoMark has direct experience integrating the various report formats provided by the different PVT laboratories. During the data collection process in GeoMark's gPVT Study, standardized data input/output protocols were developed to incorporate the design formats of all the various PVT laboratories. This format is the universal design of the PVT Module of RFDbase.
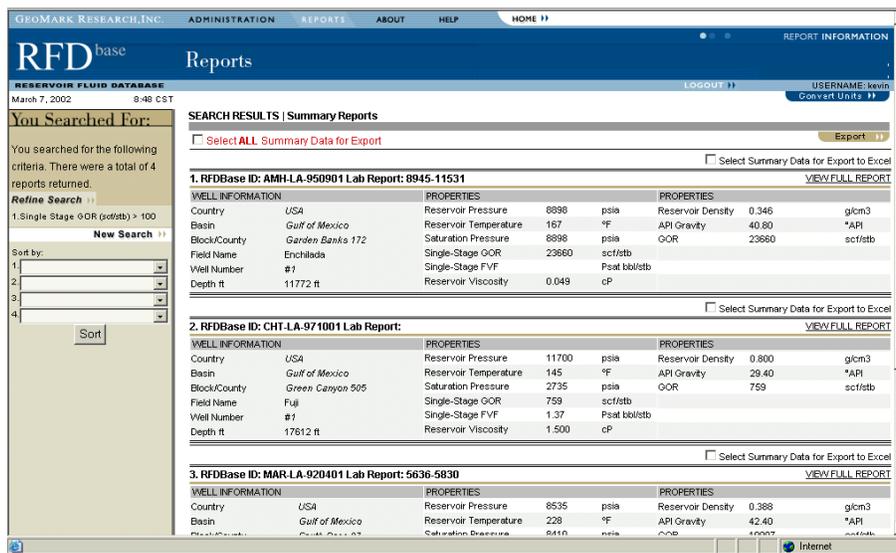

Figure 1. Screen capture of a selection of PVT Reports from the PVT Module of RFDbase.

The technical aspects of this database are briefly explained in this proposal. The PVT database is financially supported by participating companies, which will have the right to have all their reports loaded into the database. Participating companies are given full access to the "nonexclusive" portion of the database, and are permitted to have their "proprietary" reports loaded into the exclusive section. GeoMark maintains the database, and guarantees that the open portion of the database grows substantially each year. Subscription is on an annual basis, and the licensing fee is $35,000.00 per year. Initial licensees are asked to commit for a minimum of three (3) years.

OBJECTIVES

GeoMark's PVT Module has two main objectives. First, it provides a means to collect, quality check, organize, digitize, and store a company's complete archive of PVT reports. Second, it gives participants access to a global database of PVT reports for the rapid assessment of production fluids in established or frontier areas.

GeoMark will ensure that the PVT database program is upgraded and maintained over time. This includes populating the database with new reports and adding additional functionality as it is developed. We guarantee that the database will be expanded by a minimum of 500 reports per year. Although companies are not required to place their reports in the "open" portion of the database, we are encouraging participants to release their non-strategic reports, and hopefully, we will grow the non-exclusive portion of the database faster than guaranteed 500 reports per year.

DATABASE SECURITY

All data/reports are protected with cascading levels of user access based upon established permissions. Levels include Open access, Corporate access, and Proprietary access for tight-holes wells.

Not only is proprietary data protected from other participants; the existence of such data is not available or even indicated during GIS mapping or numerical searches. If a company wishes to "share" data with another participating company, a password adjustment allows only the specific data to be exchanged while maintaining overall confidentiality.

DATABASE DESIGN

The RFDbase application has been developed as an interactive web interface overlaying an SQL database populated with the PVT data. The database is hosted off-site offering electronic and physical security, as well as broadband access for member companies.

Important design criteria of the PVT Module allow the following:

- Provides a link between the PVT and geochemical databases to further understand the relationship between oil geochemistry, fluid properties and phase behavior.
- Utilizes a mapping interface to improve searching and data interpretation capabilities.
- Develops a standard PVT report format (for both black oils and gas condensates) so reports from different PVT companies can be more easily recognized and understood.
- Provides interfaces to digitally import current PVT studies from the various PVT companies, simplifying data entry to the database.
- In addition to the database tables, the database stores electronic copies of each report as Adobe Acrobat PDF files for historical archiving.
- Provides storage for tuned Equation of State (EOS) parameters from commercial PVT programs.
- Provides interfaces to digitally export the data to and from commercial petroleum engineering simulators.
- Allows for the storage and protection of non-exclusive and proprietary data with appropriate security.

DATABASE FUNCTIONALITY

The PVT database application has a number of functions in addition to the ability to store and maintain "open" and "closed" PVT reports from the member companies. The mapping interface can be used to search for specific fluid studies or to locate similar fluids (based on geochemical and PVT classifications) in different geographic regions. These "similar" fluids can be further utilized in estimating PVT properties at other temperature / pressure conditions as the database will store tuned Equation of State parameters and link to commercial PVT simulation programs.

The database can store data from complete black oil and gas condensate PVT reports including:

field and well information   compositional analyses
sampling information   geochemical analyses
well test data   solids precipitation data
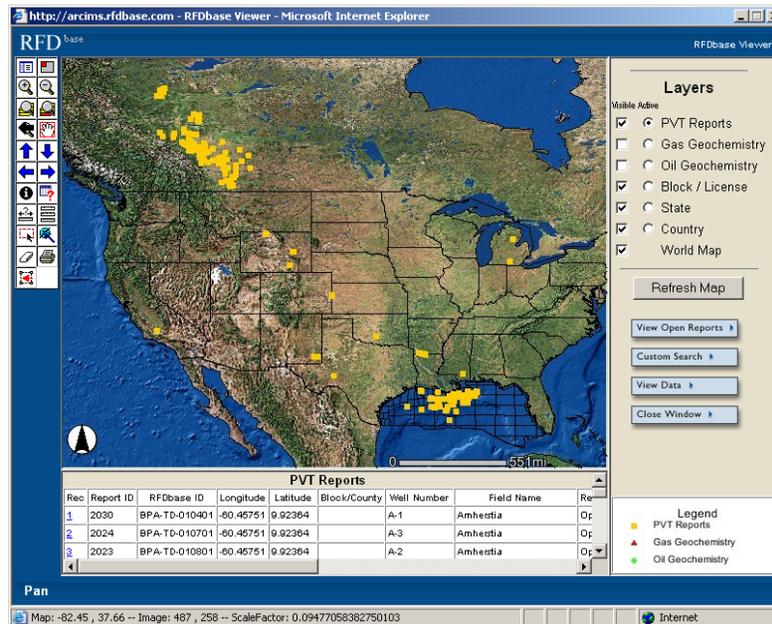oil and gas fluid properties

Figure 2. Map search example showing the GIS mapping application with
PVT Reports in North America.

Some of the specific functions which are included in PVT database are listed below.

- The database stores Adobe Acrobat PDF files for every report so the original source data is available

- The proprietary data is protected with different levels of user access based upon permissions established by member companies. Levels include overall access, partner access, limited access for "tight-holes", etc.

- Electronic or hardcopy PVT reports are generated directly from the database. The reports can be exported into the new standard Excel file format or from the Adobe Acrobat PDF file containing the original hardcopy.

- An important feature is allowing for extensive data searching by fluid properties, field information, etc. Additionally, a Geographical Information System (GIS) mapping application is provided for data searching and comparative analyses in a more visual environment.

- The program allows for real time plotting of selected data or data sets.

- Users can set default or choose custom units when viewing data tables.

- With the mapping interface, the application allows for comparisons of multiple fluids on a geographical basis.

- Data can be easily exported to Excel for the development of fluid property correlations and mathematical relationships.

- The application accepts tuned EOS parameters that can be further interfaced with commercial reservoir or production simulators.

- Where available from past experience or from the PVT companies, the application contains dialogs explaining laboratory measurement procedures and calculation methods and particularly, the differences between measured and calculated data.

TERMS, CONDITIONS, AND TIMING

The PVT database is currently operational and available to participants. The site can be viewed at www.RFDbase.com. A Demo feature is provided allowing visitors to view a limited number of reports.

Licenses

The license fee for the PVT Module of RFDbase is $35,000.00 per year. Initial licensees are asked to commit for a minimum of three (3) years. After the initial three years licenses will be for one year.

Sample Contribution

Participating companies are permitted to submit up to 50 reports per year for digitization and inclusion in their proprietary (closed) section of the database. Participants wanting to have more than 50 reports loaded over the course of a single year, can either place some of the reports in the "open" portion of the database (no charge), or have GeoMark perform this work at a nominal charge. There will be no limit, or charge, for digital reports that are transferred directly into PVTbase using the GeoMark electronic input format.

There is no limit to the number of reports a participant may contribute for inclusion in the nonexclusive (open) section of the database. There will be no charge for digitizing and loading these reports. GeoMark will load the reports into the appropriate portion of the database (closed or open) as soon as digitization is completed.

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A demonstration of the RFDbase Database and the PVT Module is viewable at:

www.RFDbase.com