PetroVision IV

CONTENTS

1. INTRODUCTION

This document is a summary description of the PetroVision family of products and services. PetroVision is a large set of components of an Exploration and Production (E&P) databank environment. This environment is made up of the following components (see Figure 1):

1. A set of software products that provide data browsing, access and extract functionality for end user applications.

2. A set of software products that provide the management and control infrastructure of the E&P databank environment such as access authorisation, data security, data request queuing and servicing, and audit trail and log management.

3. A set of software products for all stages of dataflow management:

    -   Bulk data stage capturing, conditioning and loading software.

    -   Data capture work flow management and physical store management software.

    -   Tape library transcription software.

    -   Paper document scanning software.

4. A set of software products that provide a near line data store management environment, such as access to robotic data storage devices, which are integrated into the databank environment.

5. POSC Epicentre E&P Data Model implemented on Oracle Relational Database Management Software (RDBMS) and PostgreSQL.

6. Baseline hardware and communication environment.

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DATABANK COMPONENTS

Fig. 1 Databanks components
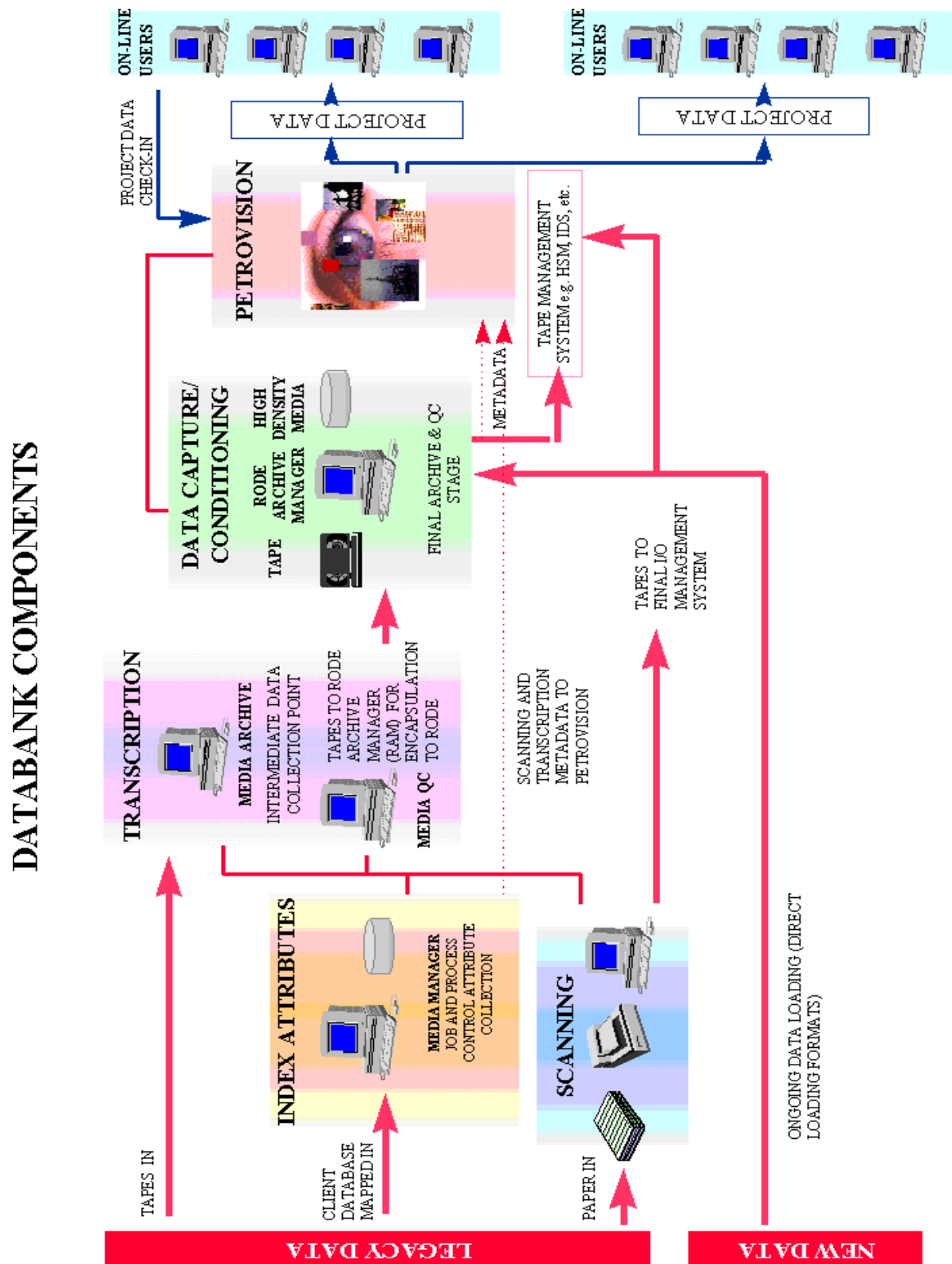
In addition to the above, a full range of complementary services such as integration of databank hardware and communication environments, data capture and data loading services such as cataloguing, tape library transcription and paper document scanning, client specific customisation of PetroVision software, facilities management and training can be provided on request.

2. THE CHOICE OF DATA MODEL

In practice the choice of the data model defines the level of data integration, and hence the level of end user sophistication that can be achieved in a databank environment.

PetroVision uses the **POSC Epicentre** data model. The reasons for this choice are highlighted below:

- The POSC Epicentre data model has the widest coverage of E&P data available. Topics covered are activity, coordinate systems, cartography, document management, earth model, E&P management, spatial model, well information, well logs, equipment and facilities, seismic, materials, production and reservoir.

- The POSC Epicentre data model is strongly supported by most of the major oil companies. And there is now no doubt that it will become the standard for the E&P industry after the announcement that the last big oil companies, which supported the PPDM data model until end 1996, have decided to support only the POSC Epicentre data model.

- Using the POSC Epicentre data model results in desirable side effects such as better resolution and definition of data. For example, not only does one need to define a Kelly Bushing elevation, but also the unit of measure, the coordinate system, reference elevation datum, etc.

- We are able to draw upon the experiences gained by the wider E&P community that is actively conducting or sponsoring projects in uses of Epicentre.

- Use of an application suite related datamodel environment would have resulted in too much dependency on the application vendor, and a very limited scope of datamodel as these systems typically only model the data as utilised within the application.

We believe that using the Epicentre as the target repository data model has resulted in many benefits for the project, and we will continue to accrue more benefits as time goes on.

3. DEFINITION OF A DATABANK

In simplistic terms, a databank is made up of the following components:

- A well defined data model that covers most of the subjects and activities of an E&P company, and hence can act as a receptacle for all E&P related data. This is essentially the POSC Epicentre data model.

- Methods of logically populating the databank with E&P data, specifically:

  o Positional/cartographic/cultural data.
  o Geophysical data (seismic, gravity, magnetics, etc.).
  o Well related data (header, logs, flow tests, cores, cuttings, etc.).
  o Production data.
  o Physical inventory data for document and digital data libraries.
  o Project related derived (interpreted) data.

- Methods of mapping data from existing data models or formats into the target databank domain

- Methods of inputting, quality checking/conditioning, and processing various physical data types and formats for the purpose of legacy data loading:

  o Transcription of seismic, navigation and well log tapes into a nearline (preferably robotic) environment.
  o Importing of existing data such as physical store indices, geographic data, etc.
  o Scanning of paper data such as maps, seismic sections, well logs, exploration reports, etc.
  o Automatic vectorisation of manually digitized data for the cases where a digital version does not exist, specifically for well logs, seismic sections, and positional information.

- Well defined workflow practices and methods of quality checking all input to the databank.

- Well defined output interfaces for ad hoc queries, date browsing, delivery and reformatting. Queries to be via a text interface as well as a GIS style interface.

- Links to E&P application/project environments where the data model of the application/project is different to that of the databank.

- A robust data management environment incorporating physical data security, access authorisation, tracking of check-in/check-out activities, disaster recovery and backup.

- The computer and communication infrastructure to support the above activities.

4. LINKS TO APPLICATION SOFTWARE

The **PetroVision** users are able to link their favourite E&P application suites to the databank environment. Applications immediately benefit from the ability of defining project areas on maps, extracting data to download to the specific application suites, using the databank environment for bulk archiving, retrieval and tracking of interpretation project status.

For applications who wish to co-operate more closely with the **PetroVision** environment, a well defined Application Programming Interface (API) is available. As an example of this, there is interrelation between the *Isoline* software and **PetroVision**, allowing an *Isoline* user to work with data and files located in the Data Bank.

5. DATA PREPARATION AND CAPTURE

5.1 Initial Data Conditioning/Loading

One of the major hurdles to constructing a successful databank is the identification, conditioning, and loading of the existing data in existing formats into the target databank environment. This involves activities that result in physical upgrade of data (transcription of tapes, scanning of documents etc), and logical upgrade of data (correction of indices, tying data to spatial objects, correction of attributes and other metadata etc).

5.2 Cataloguing

One of the first activities to carry out prior to a databank project is to generate a proper catalogue of all available E&P data. The cataloguing essentially defines the size of the problem to be tackled during the project lifecycle. The cataloguing exercise seeks to find reasonably accurate answers to the set of questions outlined below by providing the techniques of archive search, user interviews, and reports from existing databases and ledgers, but hopefully stopping short of "pulling" the actual physical items for inspection (except for the cases where a representative set is examined for the purpose of generating statistical information):

- What are the data domains that are deemed to be important in the project (i.e., seismic, well, reservoir, cartography, etc.)?

- What is the relative priority of these data domains?

- For each data domain:

  o What are the data items of interest (raw field data, processed data, interpreted data, etc.)?

  o Where are these data items currently stored?

  o What is the data model of the existing storage system? (This may be very simple or very sophisticated depending on the current methods employed).

  o If related data items are stored in more than one place, how is the relationship between these items established?

  o Have the semantics of any given item in a database evolved over time? (For example, a given data field used for date of acquisition until 1975, and then for date of receipt at the archives after 1975).

  o What is the physical condition of this type of data? For example, digital tapes may have become sticky, or paper data may have become brittle, with both conditions having an impact on the cost and speed of data capture operations. One may need to resort to statistical sampling to define the answer to this question as it would be too costly to examine every item in question which may be in the order of millions of items.

  o Do the actual usage semantics of given field attributes match the intended semantics

of the data model? For example, it is possible that a field defined as the author of a document is overloaded with author and his departmental affiliation. This means that one would have to devise means of separating out the author and the department for the purpose of loading to the target.

o Are the fields under lookup table control, and therefore, are reference values reliably defined? Good data management practices require that one adheres to strict naming conventions for items such as well names, seismic line names, survey names, etc. The absence of these standards makes the initial loading exercise a very difficult one.

o How much data is there?

o What is the typical rate of increase for this type of data?

o What is the typical frequency of modification for this type of data?

Searching for reasonably reliable answers to the above questions arms one with the proper knowledge to devise and implement a good data loading strategy.

5.3 Loading of Legacy Databases into PetroVision database

Having completed the cataloguing exercise described above, one has sufficient knowledge and material to proceed to the step of data loading legacy databases into **PetroVision** data base. To give an example, the following databases may have to be mapped into the Epicentre data model in a typical case and loaded into **PetroVision** database.[1]

- A wells database which covers well header information, as well as information on permits, coordinates, and some information on seismic surveys.

- A production history which covers several fields during 10 past years.

- A document library database which covers the index information for the exploration documents in physical storage.

- A tape library database which covers the index information for the seismic and well log tapes in the tape library.

- A cartographic information database containing seismic navigation information.

So, for every one of the above databases, the following activities would have to be carried out:

- Fully describe the source database in terms of semantics and contents by employing Entity Relationship diagrams.

- Identify source to target mappings and resolve problems.

- Condition the data with automatic filters. As an example, this may mean using correct cases, delimiters, and correcting reference values, etc.

- Condition the data by visual inspection and removal of logical discrepancies.

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[1] The range and level of data detailing, the so called footprint of Epicentre data model described in the corresponding documentation of PetroVision, includes everything necessary for a standard Data Bank project. However, the flexibility of PetroVision allows modifying the data viewing in each concrete case.

- Develop the data loading templates for the target.

- Load the data.

- Inspect the data in the target environment to verify its accuracy and completeness.

At the end of this exercise, all legacy attribute data will be loaded into the target database environment.

5.4 Transcription and Scanning

Transcription and scanning of existing data assets is probably the longest and costliest part of the process of building a databank. The sheer volume of data requires a very well organized and optimized workflow that ensures an acceptable speed of operations as well as an excellent degree of quality control.

Transcription of tape libraries and scanning of documents from existing media to new high density high speed media is carried out for a number of reasons:

- Arrest the physical deterioration of the library items: All magnetic media deteriorates with time. One can delay this process by controlling environmental parameters such as temperature and humidity, but one cannot stop this process. Typically, 20 to 40 % of all tape libraries suffer from "stiction" problems. Similarly, paper becomes brittle with time. In fact some paper can be so brittle that it crumbles under the scanner.

- Improve data access by moving data nearline: It is anticipated that by having large volumes of processed seismic data in a nearline robotic system will enhance utilisation of these datasets by improving the speed of access. Also having exploration documents (seismic sections, maps, well logs, reports, etc.) available nearline as scanned images allows users to rapidly examine various items and collect datasets.

- Improve quality of data by better indexing: In the process of transcription and scanning, existing attributes are augmented with those collected during the transcription and scanning exercise. This results in further integration of the datasets and more flexible ways of querying the data.

5.5 Other Data Types

In the course of the construction of the databank, one tends to find new data items covering a variety of domains, particularly in use within functional departments and asset teams. These data items have to be mapped and loaded (if they are of significant additional value).

Some new data items need to be defined owing to the particular reference entity requirements of the Epicentre. For instance, data related to the organization of the company, data security policies, partners and so on, may need to be extracted from user interviews and written documentation.

Global reference naming conventions may have to be defined for some items such as wells, seismic lines, instruments, partners, facilities, equipment, etc.

5.6 Ongoing Data Conditioning/Loading

As old data is being loaded into the environment, new data is continually arriving from current operations. This requires periodical (routine) data loading of new data arrivals. The strategy for this depends on the anticipated phase-over of the legacy systems to new systems. Invariably one tends to run the old library management systems and therefore, in practical terms the ongoing data loading may be regarded as very similar to legacy data loading.

5.7 Data Capture and Input/Output Software

In the absence of reliable, quality controlled data, the PetroVision databank environment would be of little practical use. It is therefore extremely important that the data capture and loading operations are carried out in a methodical, consistent and coherent manner. To aid these activities, PECC has developed specialized data loaders and modified its standard line of data capture products[2] to effect easy exchanges between the databank environment, bulk data capture activities (such as tape transcription and scanning) and physical data stores.

5.8 Near line Data Storage

The effectiveness and usability of a databank environment is directly dependent on the availability of data to the end users in reasonable time frames. For this reason, in many instances where digital data may be in the order of terabytes, the utilisation of near line storage devices is a practical precondition of an effective databank. The PetroVision family of products currently supports the Hierarchical Storage Management Software (HSM) from IBM, EMC etc. All systems provide the end user with the ability to seamlessly extract data from a robotic mass storage device and deliver to a specified destination.

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[2] These products include:
- Media Manager – a management system for large libraries used for cataloguing and tracking of objects, which are rewritten or rescanned and are put into the Data Bank.
- Geostore – a program for data transcription from tapes to media of higher density (SEG RODE format is used for the initial format encapsulation) and delivery into a near-line storage.

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6. PETROVISION SOFTWARE

Once the E&P databank has been built, PetroVision allows the end user to browse, query, view, extract, deliver and reformat (if necessary) all attribute and raw data within it.

PetroVision is based entirely on the POSC Epicentre data model (V.2) and the following data domains enjoy substantial coverage:

- geopositioning (cultural, permits, well location, seismic navigation etc),

- processed seismic data,

- field seismic data,

- wells,

- reservoirs,

- production data,

- organisational information (contractors, partners, access rights, etc.).

For all the data domains, the emphasis is on rapid access to data in its original format. For example, a typical interaction with the system would be as follows:
1. Starting with a map, select seismic lines of interest.
2. View nearline processed data (such as SEG-Y files).
3. View scanned images of observer's logs and other supporting documentation.
4. Select the items of interest for either on-line delivery into user applications, or off-line delivery via printing, plotting or reverse transcription.

PetroVision was developed in strict adherence to industry standards. In addition to POSC compliance, all other standards such as SEG (RODE, SEG-Y), LAS, LIS, DLIS, ESRI shape etc. are observed.

PetroVision is made up of a number of modules, logically related.
The main modules of PetroVision are:

- Map module designed for selecting the desired object on the map and executing a query, incorporating GIS-like query and extract functions.
- Data navigator providing access to information of three basic types – seismic information (both acquisition and processing), well log information, documents not related to the seismic or wells.
- Delivery module, allowing the user to select and transfer the selected data objects from the Data Bank to the destination by different means.
- User controlling module, responsible for the system of roles and users, definition of access right and authorized actions in the system.

PetroVision is based on scaleable client/server architecture. The server part includes the Epicentre data model implemented on an Oracle RDMS and PostgreSQL.

Below you will find the description of the basic features and peculiarities of PetroVision.

Up-to-date User Interface

PetroVision is designed with the use of modern approaches in the sphere of graphical user interface. The program has a multi-windows unified interface within one application. In **PetroVision,** generally accepted graphical objects are used, such as menus, tool bars, status lines etc. In all the modules, there is a common approach to the work with tables, which allows the user working with similar tables in different modules, once got acquainted with it in one module.
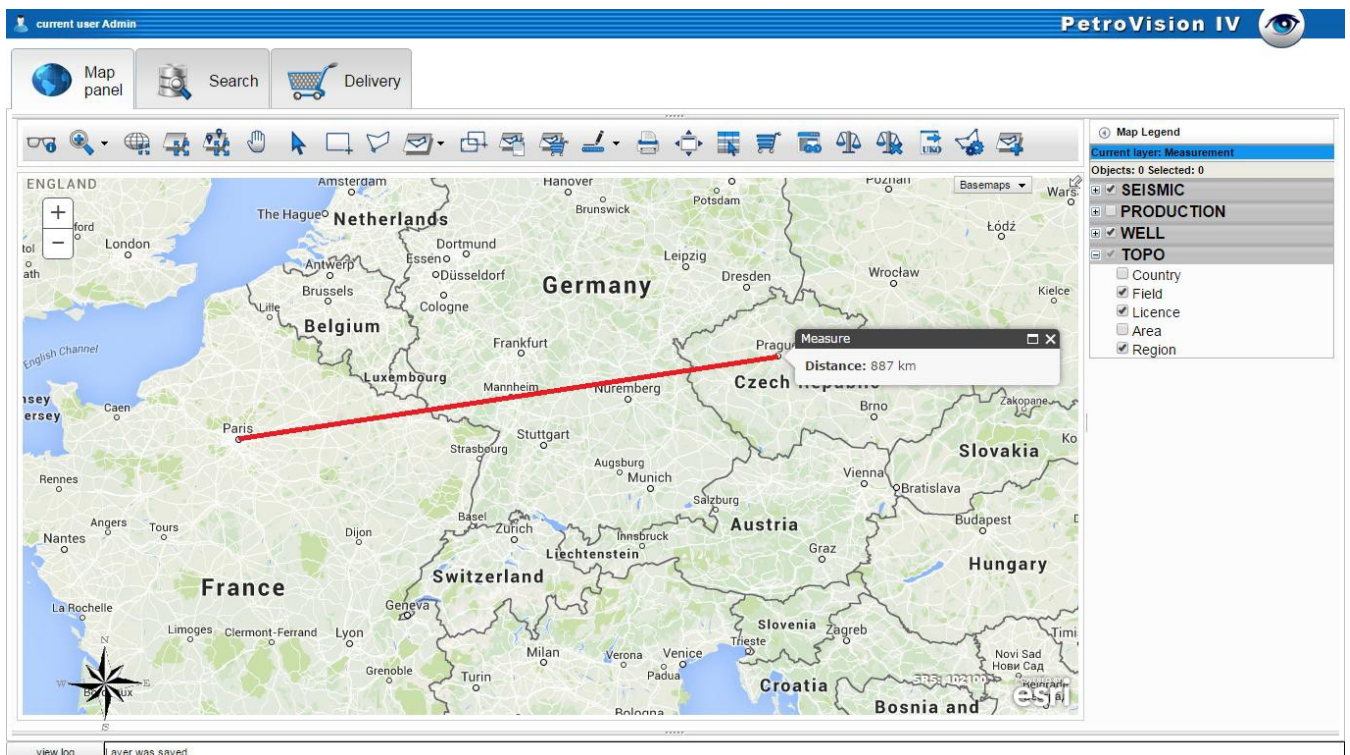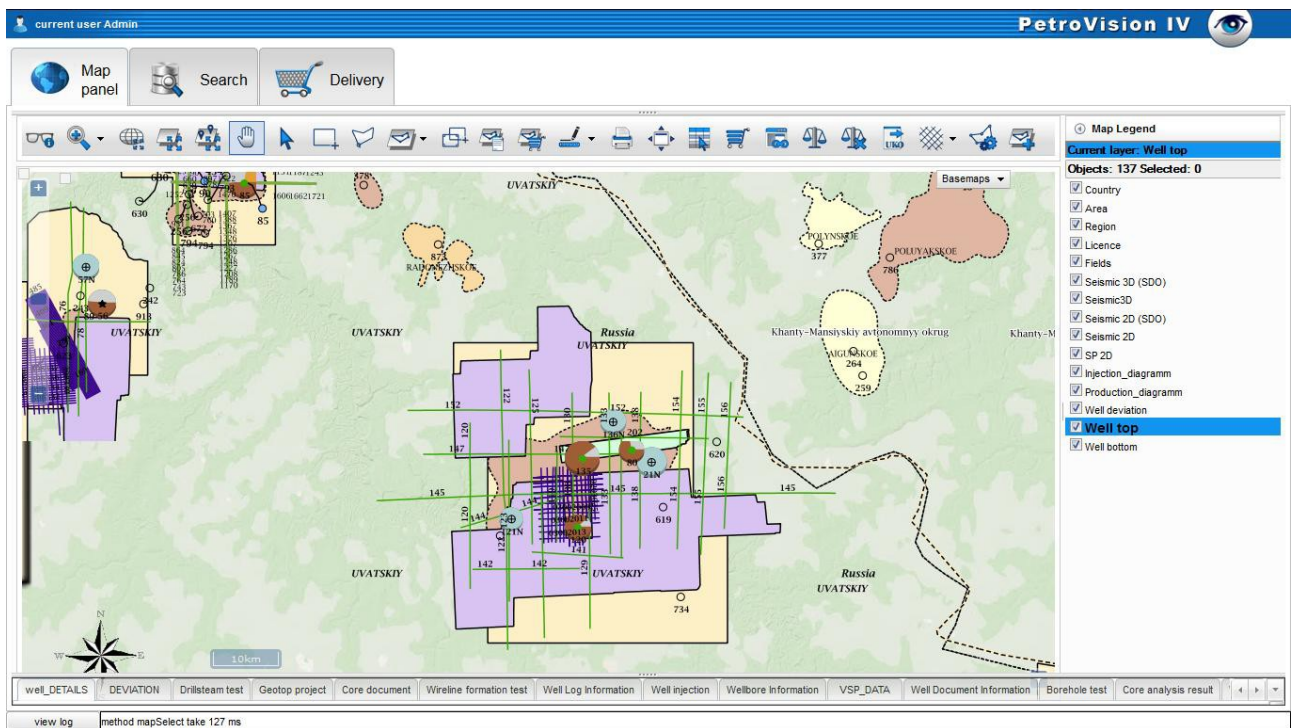
6.1 Map Module

To a **PetroVision** user, the most general way of working in the program is an access through a positional query on the map through the GIS interface, which coincides with a dynamic query to the data base. This interface can be adjusted in many parameters. Data can be tied to any layer of the map (such as wells, seismic profiles, areas, project areas, concessions etc.) both at the loading stage and at later stages. The number of the queries tied to any map layer is unlimited. For example, having chosen an object on the map, you can send a query for general well information, well logs and intervals available, core analysis, test data, scanned well log reports, digitized LIS or LAS data etc. Similarly, you can send a query for seismic lines about processed data, processing stages, digitized data available and stored near-line, data on hard (paper) media etc.

**PetroVision** works both with ESRI ArcGIS and QGIS&Geoserver.
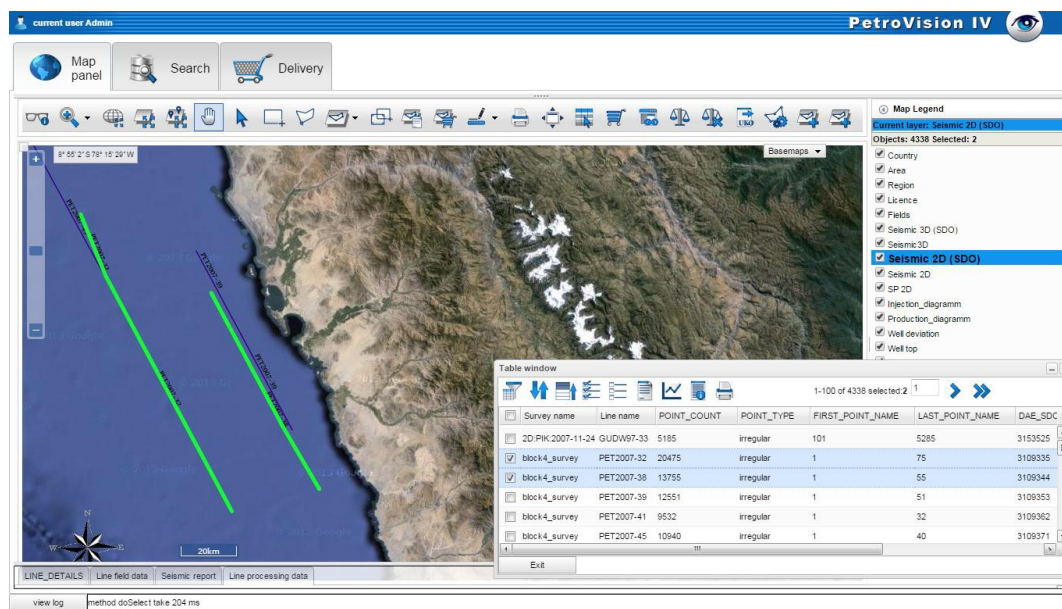
Fig. 2 Example of a map in PetroVision

6.2 Data navigator

In addition to the GIS interface of the map module in **PetroVision,** the user can work with the data navigator. It comprises the whole process of data acquisition. Starting from the detection of desired territorial objects through the selection hierarchy, then to data category selection (seismic, wells, documents) and object selection from these categories (seismic acquisition, seismic profiles, wells etc.) and finishing with a query to the database with viewing the result.
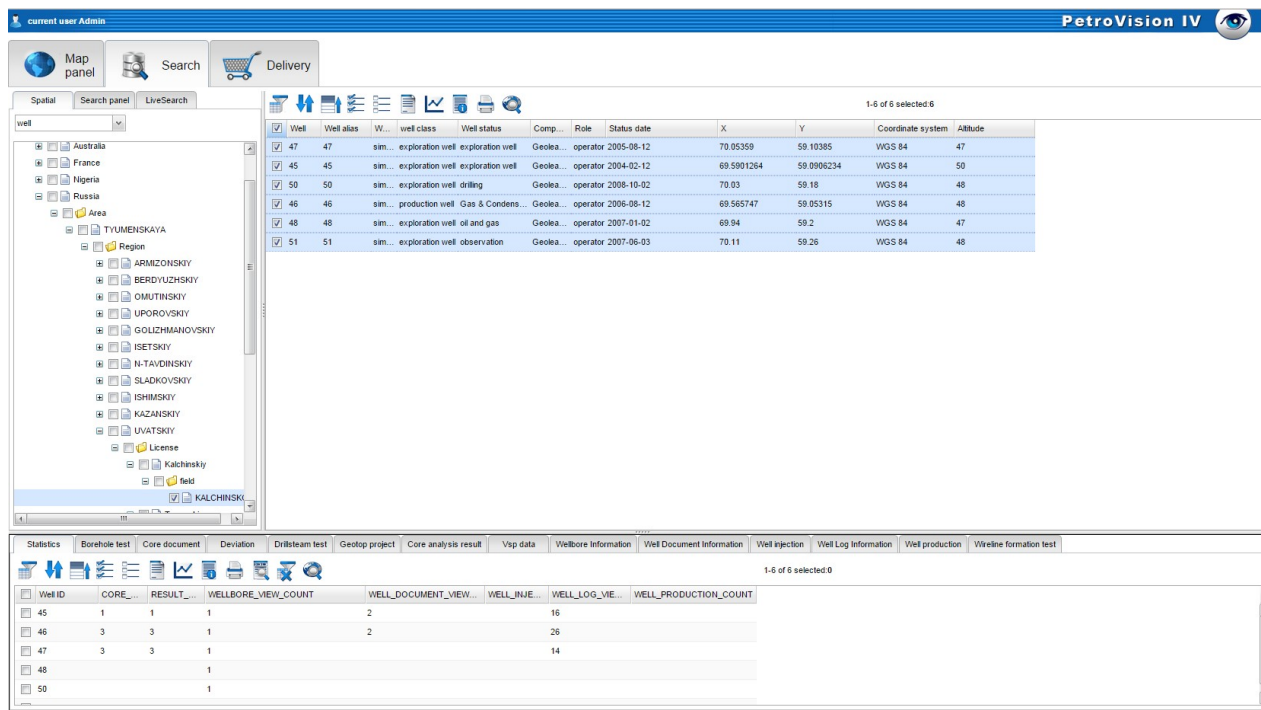

Fig. 3 Data navigator

6.3 Delivery module

The delivery module is based on the well-know principle of shop "baskets" widely used in internet shops. It permits the users, as they work with the Data Bank, to put the selected files into a kind of basket. Having finished the selection, the user passes to the delivery module, chooses an appropriate way of delivery and receives and selected files.

Delivery methods can be automated or require an operator to sort the requests. Among the automated modes, there is delivery by FTP or e-mail. Also there is so-called deliver to another application input, which allows automation of the process of data transfer form the Data Bank to other programs.

More than that, in **PetroVision** there is a system of delivery audit allowing the administrator to follow what information was received from the Data Bank, by whom and what way.

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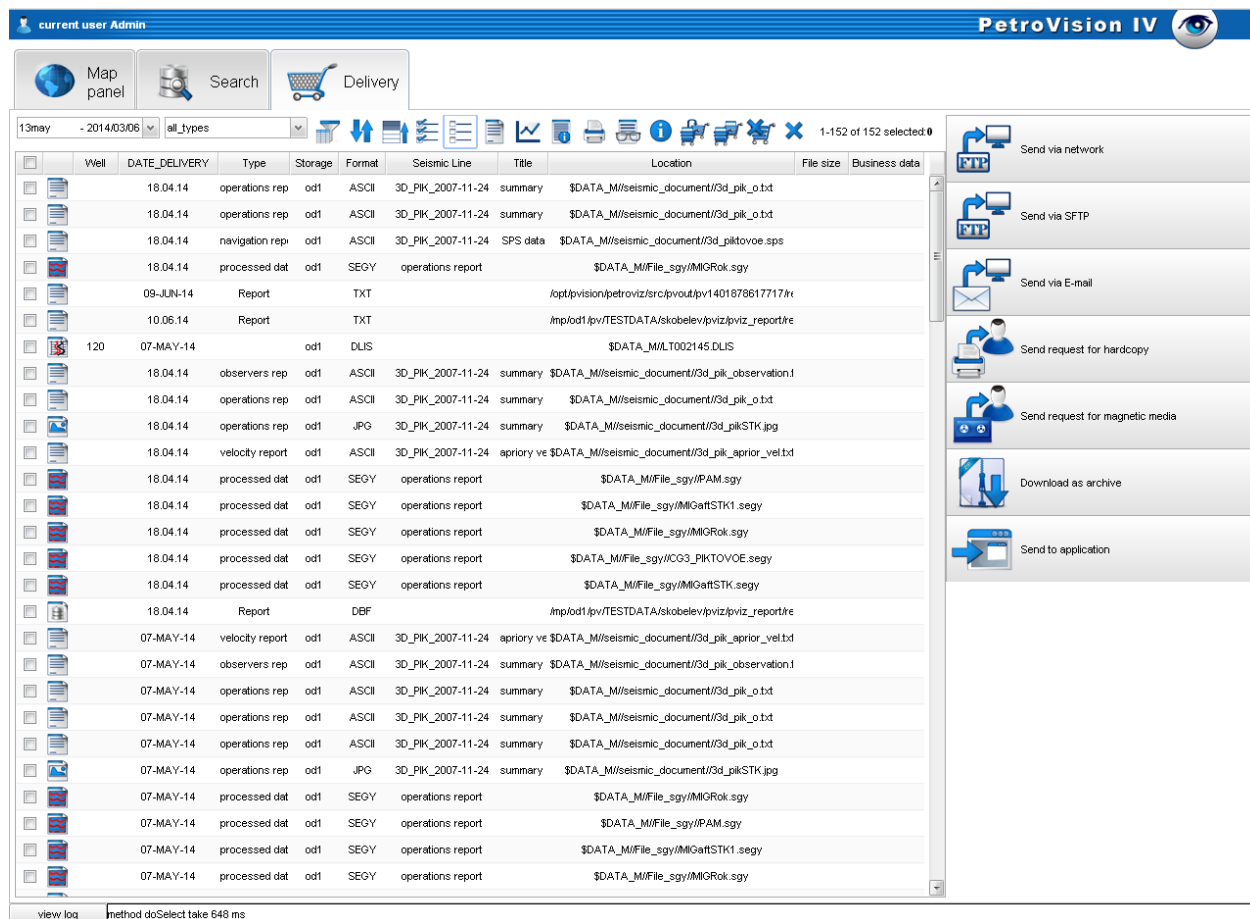
Fig. 4 Delivery module

6.4 Security system

In **PetroVision,** there is a multi-profile security system built with the use of the "Role-User" model. It allows the system administrator to define both the user's authorized functions and the data, which the user can work with, limited both by the data category and territorially.
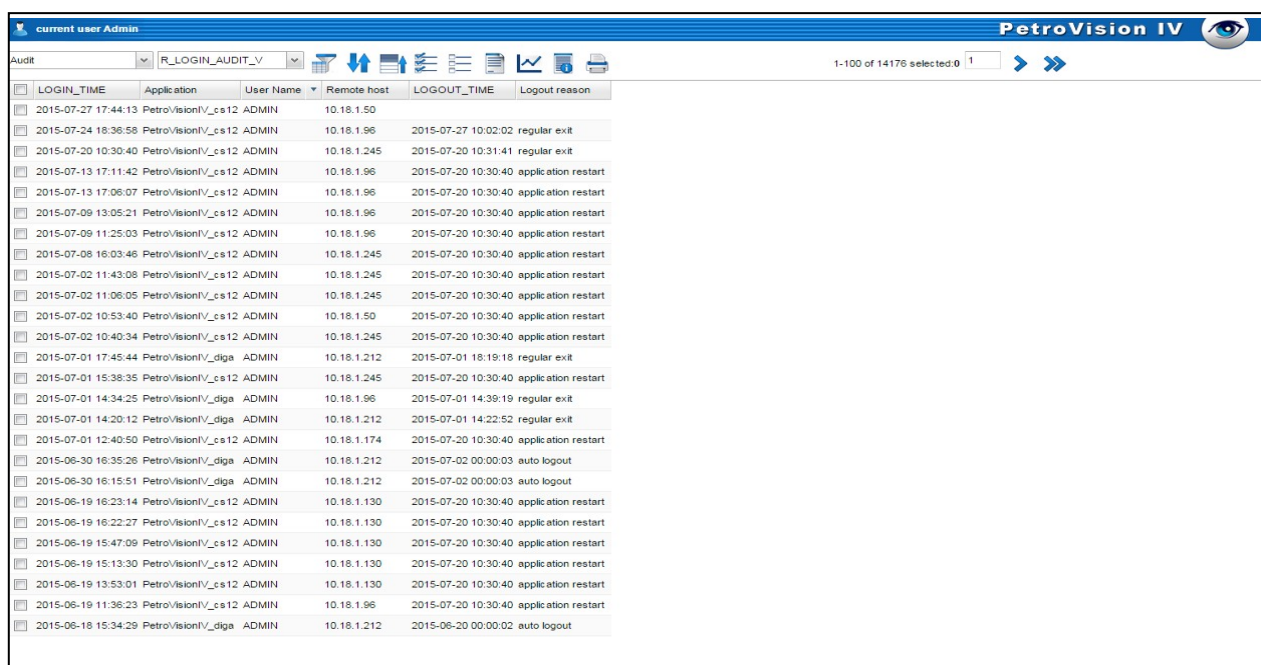
For each **PetroVision** user there is created an Oracle/PostgeSQL user with the same name, with all the security attributes of this RDMS.

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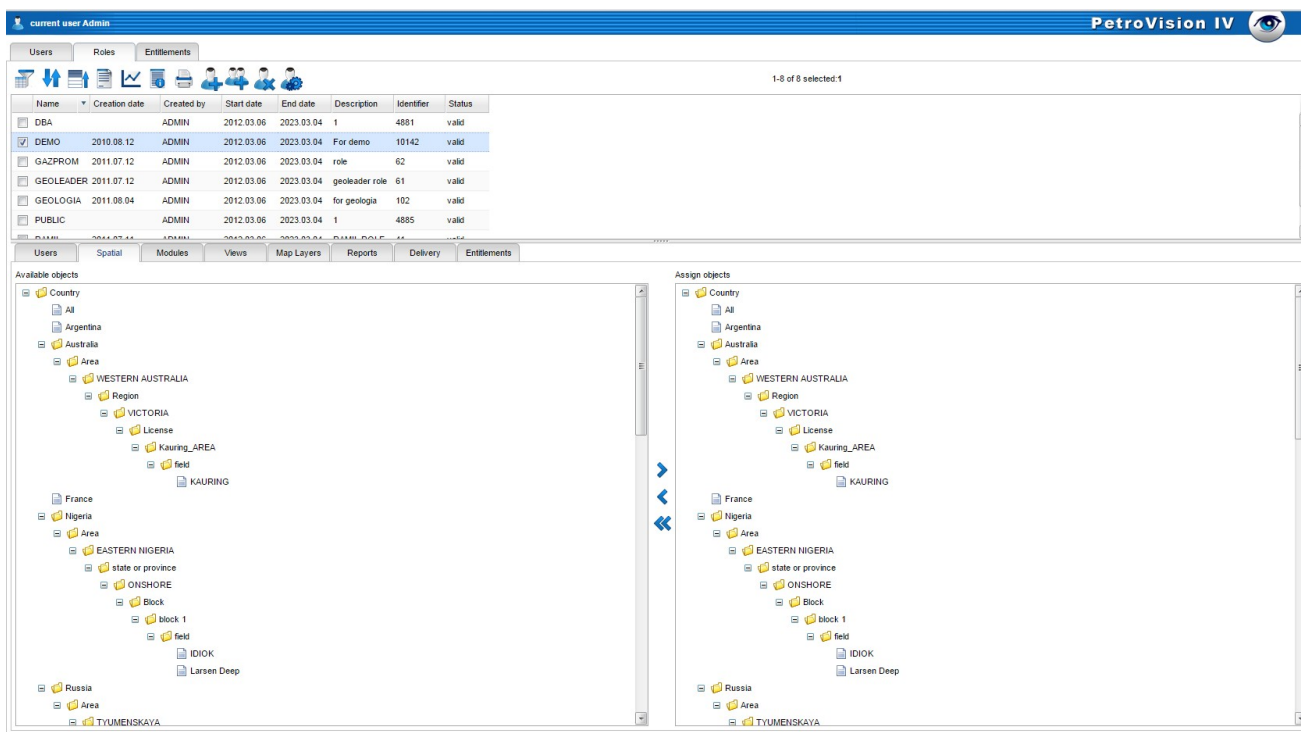
Fig. 5 Module of Users Control

6.5 Reference module

In **PetroVision,** there is a separate *reference* module. It allows the user to work with reference tables available in the Data Bank.

Fig. 6 Reference module

Independence on POSC version

Thanks to a new approach in the query system, **PetroVision** can work with any database, regardless the version of this model. The following data models are tested: Energistics POSC 2.0, 2.1, 2.2, 3.0, PPDM 3.9, PODS 6.0.

Configuration system based on XML

In **PetroVision,** a system of program configuration is used based on XML settings files. This system allows changing both the program's behaviour and queries to the database according to the specification of a concrete Data Bank without modifying the program code.

Openness for integration with third parties' software

PetroVision has a system allowing to transfer files stored in the Data Bank to third parties' software input in order to view them or process in the automatic mode. Thus, for instance, in case if there are files of a specific format kept in the Data Bank, which are inaccessible for viewing by programs delivered with **PetroVision** or standard programs of the operating system, then the system can use other viewers available.
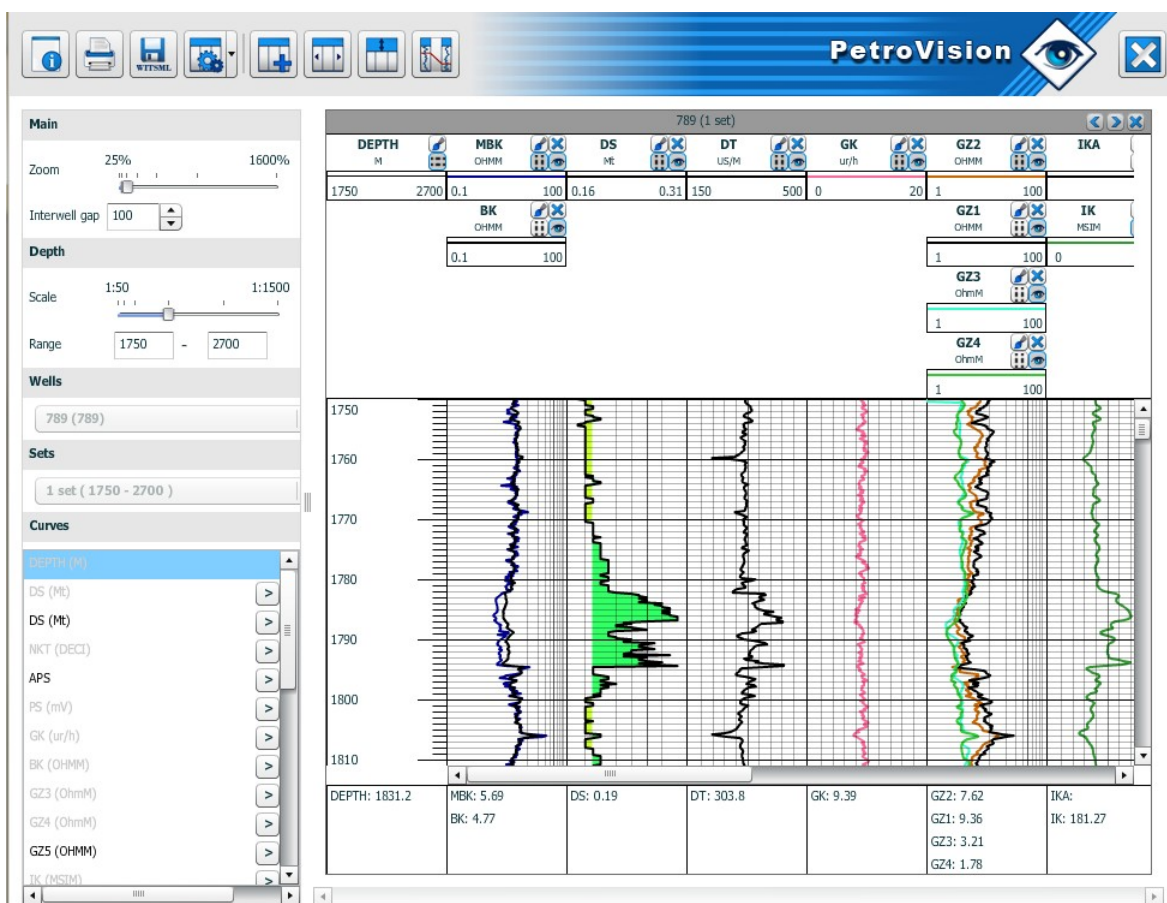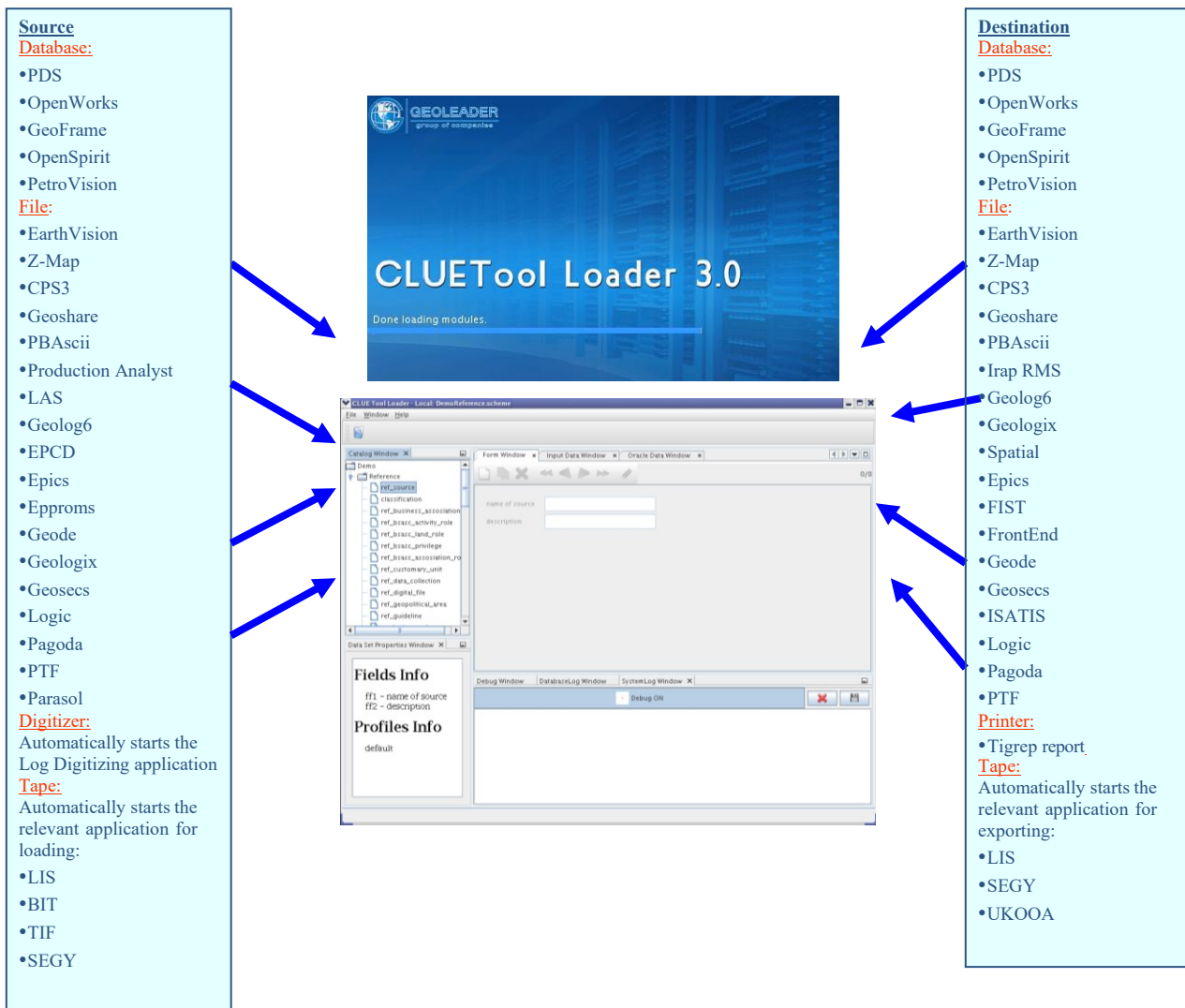

Fig. 7 LasViewer window

Multi platforms

The whole range of products delivered with **PetroVision** Data Bank supports the Linux Red Hat platform. This allows the users to acquire a solution of high productivity.

Client side application written on JavaScript can be used on any operation system. The only requirement is modern web-browser.

DATA EXCHANGE SCHEME

Source
Database:
• PDS
• OpenWorks
• GeoFrame
• OpenSpirit
• PetroVision
File:
• EarthVision
• Z-Map
• CPS3
• Geoshare
• PBAscii
• Production Analyst
• LAS
• Geolog6
• EPCD
• Epics
• Epproms
• Geode
• Geologix
• Geosecs
• Logic
• Pagoda
• PTF
• Parasol
Digitizer:
Automatically starts the
Log Digitizing application
Tape:
Automatically starts the
relevant application for
loading:
• LIS
• BIT
• TIF
• SEGY

Destination
Database:
• PDS
• OpenWorks
• GeoFrame
• OpenSpirit
• PetroVision
File:
• EarthVision
• Z-Map
• CPS3
• Geoshare
• PBAscii
• Irap RMS
• Geolog6
• Geologix
• Spatial
• Epics
• FIST
• FrontEnd
• Geode
• Geosecs
• ISATIS
• Logic
• Pagoda
• PTF
Printer:
• Tigrep report
Tape:
Automatically starts the
relevant application for
exporting:
• LIS
• SEGY
• UKOOA

7. RELEASE NOTES

PetroVision IV version Q2 2017

Feature	Description
UKOOA export of seismic line	Now PetroVision exports selected seismic lines into UKOOA P1/90 format, using specified coordinate system.
View history of client log messages	It's possible to see several console messages, previously only last one was visible.
Show error message if configuration XML file is broken or doesn't exist	Previously if configuration file PetroVision.xml was broken, SessionManager was shown to user. Now PetroVision shows error.
Filtering in UserManagement	It's possible to filter view list, module list, report list in UserManagement.
Support of several conditions for SearchString	Now it's possible to set several conditions for one search string – it gives you availability to do the search in two or more components
Store layer cache locally during session	Obtaining layer information from ArcGIS Server can take much time. Now map layers are cached, so obtaining layer data second time is faster.
Scroll to first selected line after table update	It's easier to find selected data, if table is automatically shows first selected row in the center of visible area.

PetroVision IV version Q3 2017

Feature	Description
Automatic logout	If user closes browser session is automatically destroyed
New x64 version of Oracle Weblogic Server 12g	Now PetroVision IV is based on x64 web server, it allows to utilize > 3Gb of RAM
Segy polygon filter in delivery	It's possible to specify polygon to intersect with SEGY files during delivery

Feature	Description
New interface	PetroVision obtains new images, icons, drawn in fashionable style.
Enhanced session isolation	In this release session isolation was increased. Now each session has it's own error registration, local variables and dictionary
Single Sign On (SSO) support	Single sign-on (SSO) is a property of access control of multiple related, but independent software systems. With this property a user logs in once and gains access to all systems without being prompted to log in again at each of them. PetroVision IV has an option to obtain operating system username automatically and log in without entering of credentials. Supported browsers: • InternetExplorer • Mozilla Firefox • Google Chrome
New viewers for images and archives	2 new web viewers for images and archives of different type are included in this release

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PetroVision IV version Q4 2017

Feature	Description
Table pre-filtration	Table pre-filtration allows filling table only after filter specification. It reduces loading of database and allows user showing only required data. For example, there are 1 000 000 wells, it's too slow to obtain all of them and only after this apply the filter. Now filter condition will be added to SQL query and PetroVision will work only with short list of wells, satisfying this filter.
Map selection style	Now it's possible to set properties of selection on the map – color and width of 3 main object types: • Points • Lines • Areas This setting is stored locally for user in browser Cookies.
Map Dynamic layer	Allows creating user-defined temporary layer from selected objects. Also it's possible to set different color highlighting for each new dynamic layer. All usual actions are available – selection, intersection, data view etc. It's useful if you have a layer with a big amount of overlapping area or line objects – in this case you can select part of them and visualize it independently.
Map area measuring.	Now it's possible to draw a shape on the map and calculate its area size.
Tree folder selection	If user selects folder node it the tree, it's automatically expanded and all children are selected.
UserManagement – batch operations	Now user management module allows changing of several roles at a time
UKOOA export with datum shift support	Now during the UKOOA file export of seismic lines from SDO it's possible to specify transformation option (datum shift).

8. NEW PRODUCTS IN THE PETROVISION FAMILY

8.1 CLUE Tool

This application package offers an intuitive interface to control and load data in interactive mode.
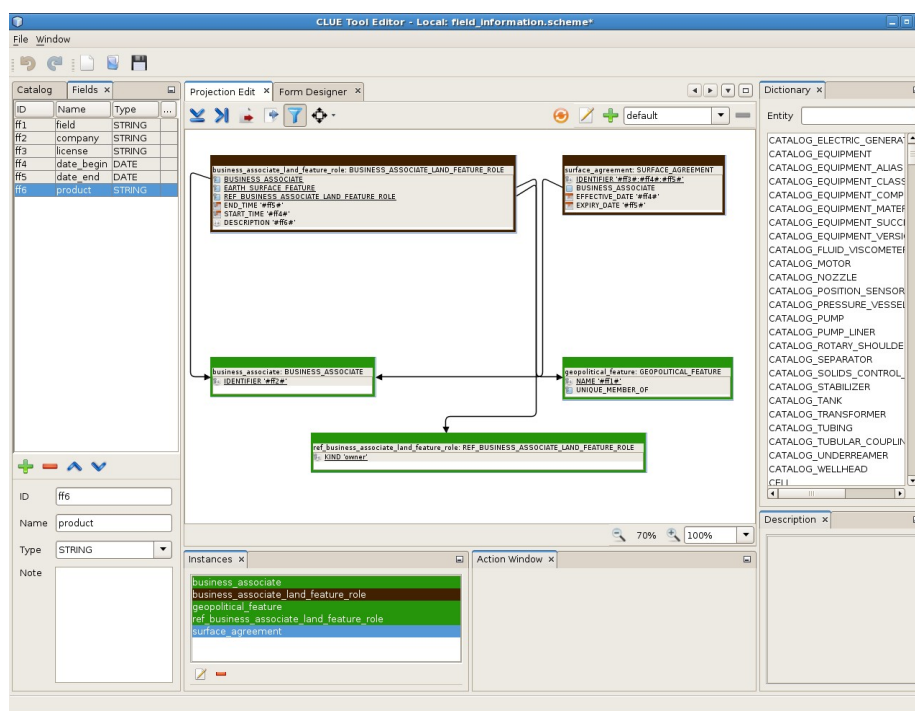
Fig. 8 CLUEtool Editor

By default, PetroVision offers a great number of predefined templates and forms with automatic QC and loading using CLUE Tool for the following well E&P data:

- Wells – Well Information
- Wells – Wellbore
- Wells – Wellbore Deviation
- Wells – Well Documents
- Well Test – Bit size and Casing string
- Well Test – Chrono- and lithostratigraphy
- Well Test – Claying
- Well Test – Mud Analysis
- Well Test - Drillstem Test/ Reservoir Fluid Test
- Well Log – Round trip process
- Well Log – Well Logs
- Well Log – Well Logs Store

– Well Data – Vertical Seismic Profiling
– Well Data – Synthetic Logs
– Core – Core Samples
– Core – Core Analysis
– Production – Fluid Analysis
– Production – Production Allocation
– Production – Production Field Measurements
– Production – Production Injection
– Production – Production Simulation

Any of these forms can be modified or additional forms can be created to suit user requirements. So generally, QC rules can be defined by a user – this provides an extremely flexible QC logics.

8.2 WellQC

Preliminary validity checks of data contents for well log files are done via WellQC. It's an application for the quality control of the geological and geophysical data.

This application automatically controls the data on all current types of research: baseline logs (a well after sinking), field research, directional survey, proving and calibration data. The application performs more than 400 different basic tests. And even provides the ability to configure criteria for quality control by internal standards of the Total.

WellQC provides:
- Correspondence analysis of the well logging data to the data presentation formats (LAS, DBF, report files ASCII, conclusions, etc.)
- The quality control of the well logging data contents in accordance to the actual work conditions (correctness of parameters, analysis of readings, data consistency and conclusions, etc.)

It should be exclusively noted that WellQC doesn't require any access to the DB storage for performing QC, and so, it can be used as a stand-alone application at log data provider's environment to ensure a high quality of exported data to Total.

All QC criteria in WellQC can be divided into 3 groups:
1. Check log data completeness
2. Control of format abidance :
    - Data fit to the specified format
    - The fit of a logical structure - data fit to the specified format
    - The check of a syntax correctness – fields spelling
3. Check log data rows for duplicates

For example, these criteria were implemented for well logging data after drilling:
- The availability and the fit of the data by the performed complex of well logging
- The fit and the correctness of the data by reservoir properties, petrophysical characteristics of the reservoir (optional)
- The availability of all result parameters by a complex of electronic logging
- The availability of reservoir properties by nuclear magnetic
- The results availability of cementing quality by acoustic cement bond logging, downhole GR-density fault detector.
- Fields matching to reference values
- The check of depths structure for the entire material. Consistency of the top and the bottom layers values in absolute and measured values.

QC for geological field data:
- The fields fit to the reference values for the entire material
- The occupancy of the mandatory fields
- The fit of data measurements to the data of funds flow

- The check of time and measurements numbers on the date
- The fit of the object category in the interdependent data
- The check of days calculation of well work
- The calculation check of growth and production of the oil per month
- The calculation check of accumulated injection per month
- The calculation check of the average expected injection capacity
- The fit of information input dates, reservoir pressure, laboratory number to well data and selection conditions
- The dependence check of the qualitative and quantitative analysis of sediment samples
- The check of content calculation of chlorine, calcium, magnesium, etc.
- The calculation check of the amount of mineralization according to the full chemical water analysis
- The check of the content calculation of calcium cations, chlorine anions, HCO3, etc.
- The check of the content calculation of carbon monoxide, nitrogen oxide, nitrogen dioxide, sulfur dioxide, etc.

Interface features:
- Possible to work with several documents
- Quick navigation by errors
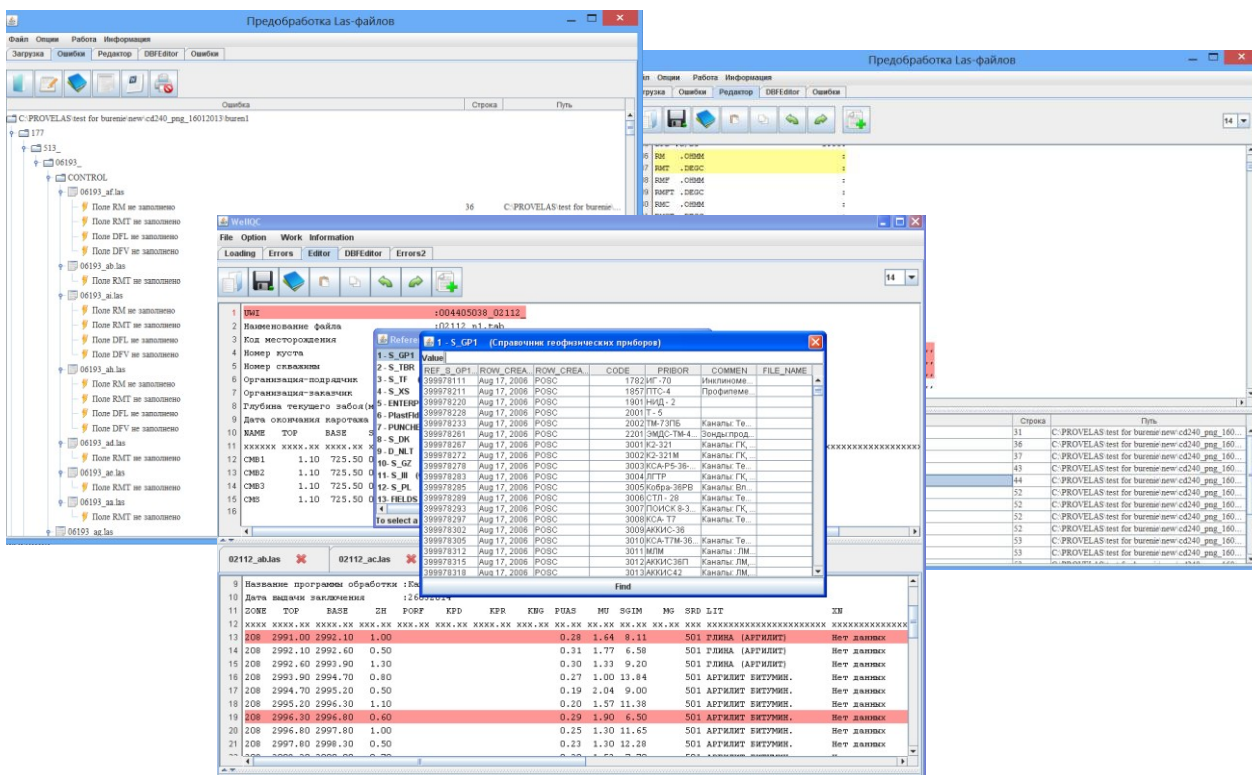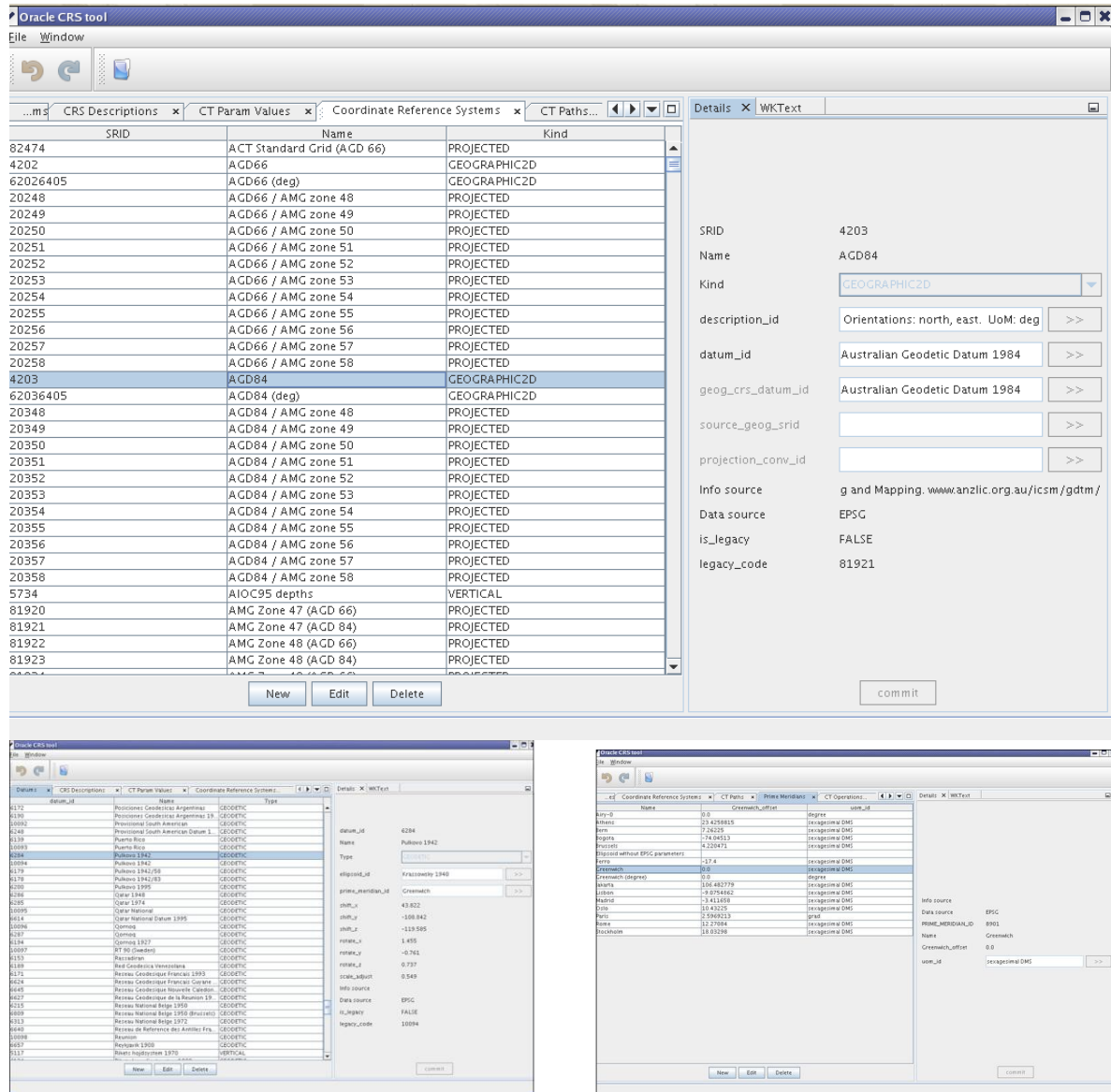- Built-in test editor for data correction in the text form

Fig. 9 Well QC

8.3 CRS tool

The program is designed to create, edit and import coordinate systems

Fig. 10 CRS tool

It allows converting one coordinate system to another.

Concat operation ▼	Atomic operation	Source SRID	Target SRID	Sequence number
South Yemen to WGS 84 (1)	Yemen NGN96 to WGS 84 (1) (EPSG OP 1540)	Yemen NGN96	WGS 84	2
S-JTSK (Ferro) to WGS 84 (1)	S-JTSK (Ferro) to S-JTSK (EPSG OP 1884)	S-JTSK (Ferro)	S-JTSK	1
S-JTSK (Ferro) to WGS 84 (1)	S-JTSK to WGS 84 (1) (EPSG OP 1623)	S-JTSK	WGS 84	2
Segara (Jakarta) to WGS 84 ...	Segara (Jakarta) to Segara (EPSG OP 1883)	Segara (Jakarta)	Segara	1
Segara (Jakarta) to WGS 84 ...	Segara to WGS 84 (1) (EPSG OP 1897)	Segara	WGS 84	2
RT90 to WGS 84 (1)	RT90 to ETRS89 (1) (EPSG OP 1437)	RT90	ETRS89	1
RT90 to WGS 84 (1)	ETRS89 to WGS 84 (1) (EPSG OP 1149)	ETRS89	WGS 84	2
RGF93 to WGS 84 (1)	RGF93 to ETRS89 (1) (EPSG OP 1591)	RGF93	ETRS89	1
RGF93 to WGS 84 (1)	ETRS89 to WGS 84 (1) (EPSG OP 1149)	ETRS89	WGS 84	2
Pulkovo 1942 to WGS 84 (2)	Pulkovo 1942 to LKS94(ETRS89) (1) (EPSG OP...	Pulkovo 1942	LKS94 (ETRS89)	1
Pulkovo 1942 to WGS 84 (2)	LKS94(ETRS89) to WGS 84 (1) (EPSG OP 1283)	LKS94 (ETRS89)	WGS 84	2
Pulkovo 1942 to WGS 84 (1...	Pulkovo 1942 to ETRS89 (1) (EPSG OP 1310)	Pulkovo 1942	ETRS89	1
Pulkovo 1942 to WGS 84 (1...	ETRS89 to WGS 84 (1) (EPSG OP 1149)	ETRS89	WGS 84	2
Puerto Rico to WGS 84 (2)	Puerto Rico to NAD83 (1) (EPSG OP 1461)	Puerto Rico	NAD83	1
Puerto Rico to WGS 84 (2)	NAD83 to WGS 84 (35) (EPSG OP 1731)	NAD83	WGS 84	2
Puerto Rico to WGS 84 (1)	Puerto Rico to NAD83 (1) (EPSG OP 1461)	Puerto Rico	NAD83	1

Fig. 11 Converting of Pulkovo 1942 to WGS 84

It can be used to import coordinate systems from GTF or PRJ files.
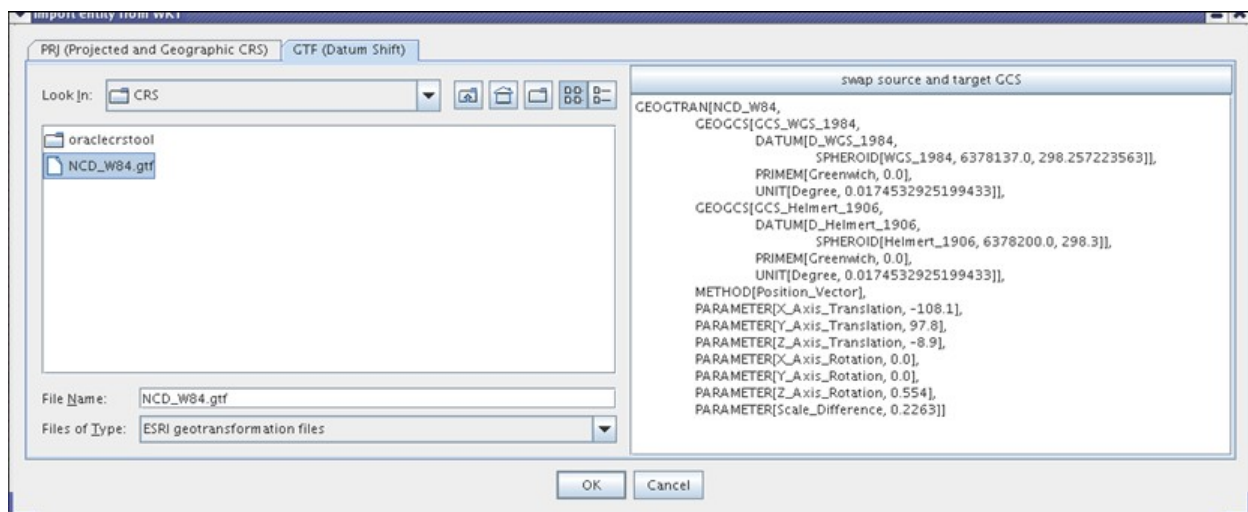
Fig. 12 Import of coordinate systems

8.4 Seismic Loader

The application is designed for quality control and loading of seismic, navigation and topographic data to the PetroVision Data Bank. The input files of different formats (SEG-Y, UKOOA, SPS, ASCII) should contain data about the acquisition geometry.
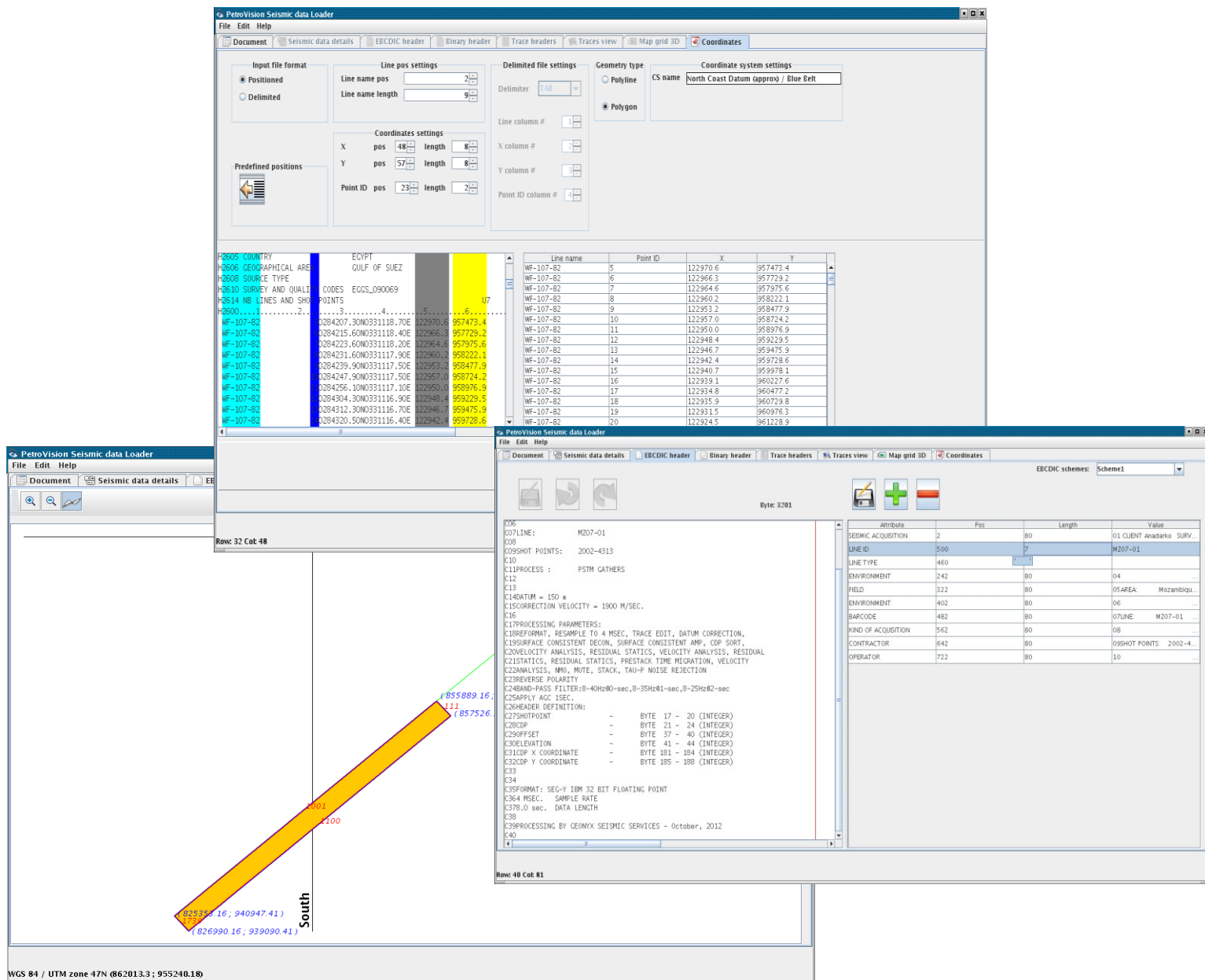

Fig. 13 Seismic Loader

EXAMPLES OF LOADED INFORMATION

Reference information about areas, deposits, concessions, and their belonging to administrative territories

- Topographic information
- Wells data
  - General information
  - Wells and their relations with areas, deposits and measurement points
  - Project wells
  - Well bore
  - Well bore deviations
  - Well documents
  - Well log
  - Well log trip
  - Well log diagram store
  - Casing and bit-sizing
  - Chronostratigraphy and lithostratigraphy
  - Claying
  - Mud analysis
  - Protecting wells from corrosion
  - Pump equipment – rotary pump
  - Pump equipment – hydraulic pump
  - Perforation, well repair
  - Water analysis
- Seismic data
  - General information about acquisition
  - Acquisition geometry
  - 3D acquisition angles
  - Seismic profiles
  - Final points of 2D profile
  - Additional information
  - Documents and files
  - Scanned reports
  - Seismic data visualization
  - VSP
  - Microseismic
- Non seismic data
  - Gravity data
  - Magnetics data
  - Aeromagnetic data
  - Electrical field data

- Production data

- Core samples analysis
- Production/pumping Oil sample analysis
- Fluid sample analysis
- Hydro and salt formations
- Fluid laboratory test
- Increasing oil productivity

➢Documents

- General reports
- Maps
- Licenses
- General entitlements
- Entitlements for a seismic profile segment
- Entitlements for 3D polygon