

Data Management

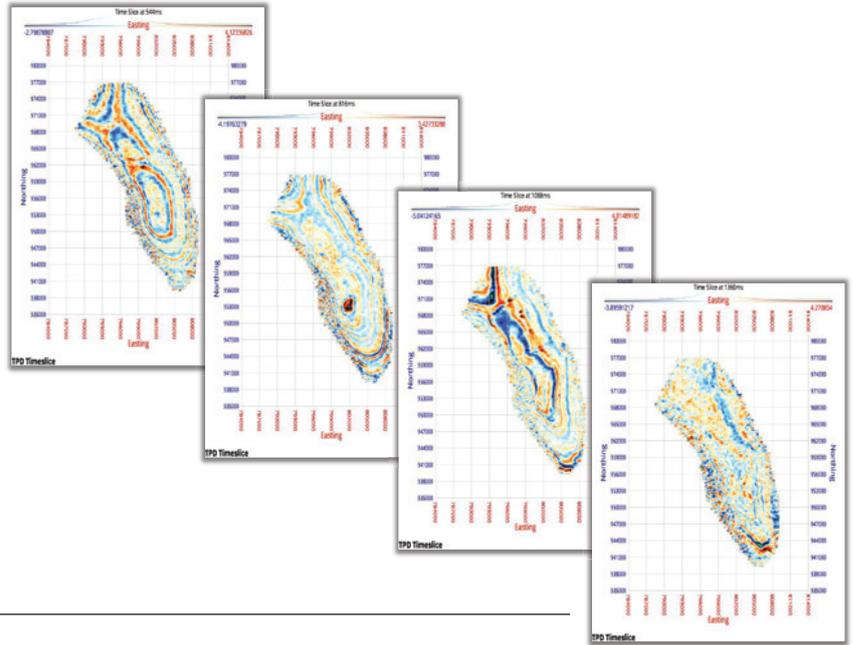
in
2015

Troika International is established in the industry as a supplier of data transcription software to a wide range of oil companies, contractors and national data repositories. Over the years it has become apparent that with the loss of expertise on formats etc. a more automated approach to managing seismic data assets is required. To address this Troika has spent time developing a range of tools which are built into an interlinked group of modules that provide the user with complete control of all of their SEG formatted data. These tools are driven by configuration and extraction files that are completely configurable by the user. Some companies have likened these to a scripting language with the inclusion of the header maths that allow you to carry out calculations on the data header entries.

Data Governance

Using different products from Troika's toolset, seismic data may be read from disk, tape, libraries, robots, across networks and also from ftp. The control files are pre-set for standard data types, but by applying business rules, data can be created or edited for data governance and assurance. Databases can be matched or populated by extracting information from the textual and binary headers; for the visualisation of data, either as image intervals or as a movie; it may also be created for live trace outline and GIS ready shape files. Information is a valuable asset and managing it in this way will facilitate the Data Managers task for promoting and preserving the data, improve business efficiency and can help towards a company's risk management strategy as rules for compliance with legal and regulatory obligations can be met.

Time Slice QC Displays from the TeaPot Dome Dataset



Finding Your Data

When searching, the first task is to find and know what data you have. Many companies use some method of encapsulation, but the only SEG encapsulation is RODE. Often this has not been implemented because of its complexity and even then, by those that have, it is not always correct. Troika, in over 21 years of operation, has built up a library of both standard and non-standard

encapsulations which are used in all of our software with automatic selection options which can be performed to un-encapsulate and look at the data. This method is used by Troika's Marlin trawler which looks through the encapsulation and opens the header to take a quick first pass at identifying the data stored either on tape or disk.

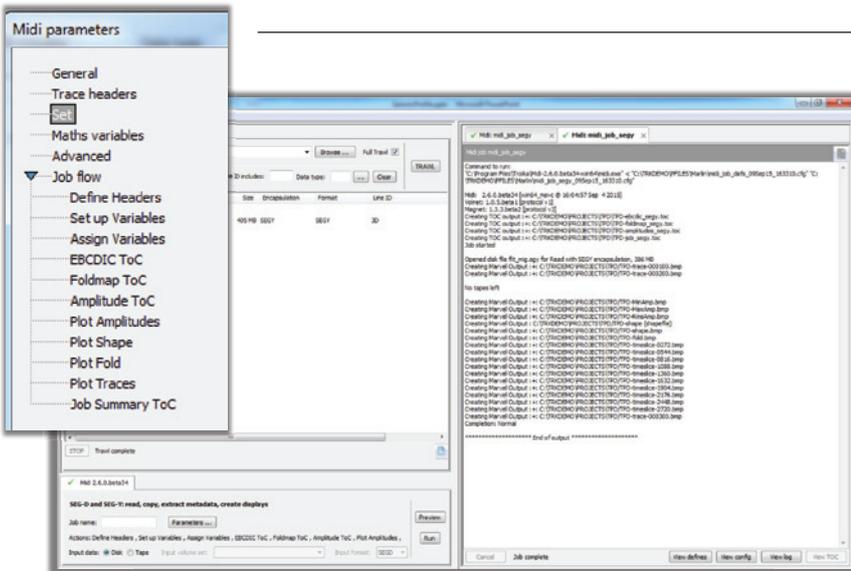
Extracting Optimum Information

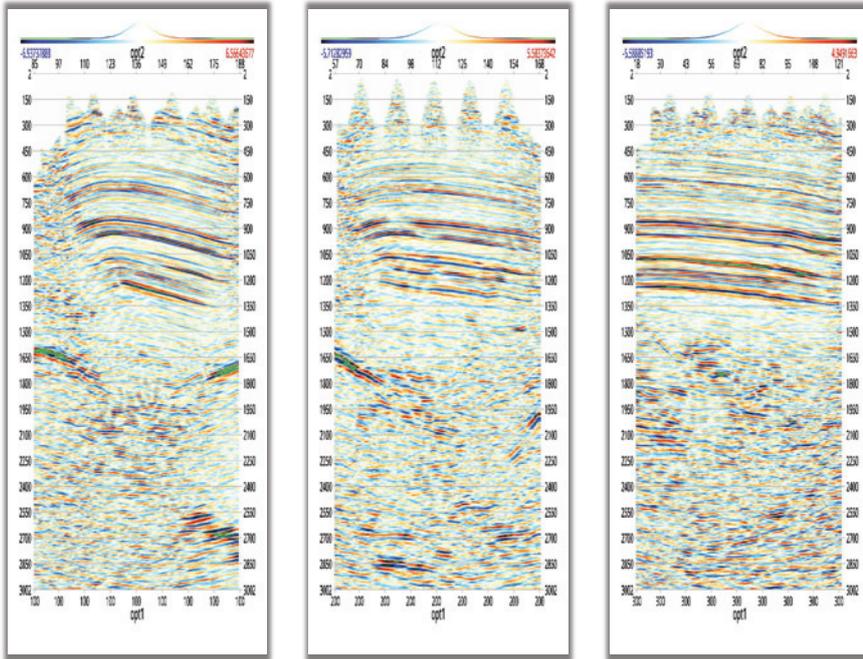
Once data has been found, Troika's software then offers the ability for the data to be organised, classified and validated through specified commands that can be configured and easily incorporated into workflows. As the software runs on both tape and disk, these setups can be generic and can have built-in tolerance checks and be pre-set for both 2D and 3D field and processed data.

Marlin with Midi Launch and Job Flow

Geophysical aspects of the data can also be analysed for such things as frequencies, amplitude and fold which is always useful for general QC purposes. It is also the case that legacy data sometimes needs a little extra attention and enhancement. Repair tools are incorporated which provide the ability for such things as editing and correcting trace headers, reconciling and merging navigation files into the post-stack data. This is useful and cost effective as it prepares the data, speeding up delivery and providing quality controlled workstation-ready data for the geoscientist.

Troika is committed to alleviating the problems faced with managing all types of seismic data and our aim is to automate the receipt, QC, delivery, selection and provision of data for onward use. This is achievable with our Data Management Utility Suite which consists of three main modules, MARLIN, MIDI and MINIMA. MARLIN is a





A note from Jill Lewis, SEG Technical Standards Committee, Chair

As an industry we rely on seismic information to find hydrocarbons and maximise the recovery of our commodity. It is therefore very hard to understand why we use data exchange formats from 1975 especially as we would not use values, BOP's, computer technology or anything else from that era that would make us inefficient and compromise safety. The use of SEG Y (1975 format) for a great deal of our exchange, disk storage and input to applications requires a level of expertise and knowledge that would not be necessary with the SEG Y1 (2001 format). SEG Y1 binary header has two flags to make the data automatically readable, one to indicate SEG Y1 which has a fixed layout for trace headers and the other ensure that the number of samples in the binary header matches the value in the trace header for writing data to disk. There is also the option to create computer readable meta-data in additional textual headers.

The SEG are now working on a SEG Y2 format and we would most appreciate input so that the time of various experts is not wasted. It takes a great deal of effort for this voluntary group to do the necessary market research, testing, authoring and ratification to create a new format. To create efficient exchange formats please attend the SEG Technical Standards Committee meeting where this will be discussed.

data crawler and GUI frontend utility used to discover data and set-up workflows; MIDI a data governance, mathematics, content extraction and viewing tool which includes the provision of true live trace outline and GIS ready data; MINIMA a QC, NAV Merge and repair tool for seismic and positioning data. MAGMA is a standalone product used for full blown transcription and quality control and is also the front end to ProMax SeisSpace. All products are Linux & Windows 32 & 64 bit compatible with access to data on disk, via FTP, tape robotics stackers and libraries anywhere on your network.

References:

<http://www.seg.org/web/seg-new-orleans-2015/committee-meetings>
Troika gratefully acknowledges the use of data and information supplied for demonstration purposes by the Rocky Mountain Oilfield Test Center (US Department of Energy). <http://www.rmotc.doe.gov>

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It is strange to consider that as an industry we continue to use formats which are no longer appropriate for our data. Whilst we have so much data in historic format it is necessary to have tools or expertise that can manage the information efficiently and yet, even though there have been a number of updates to the SEG standards, we still insist on using the 1975 SEG Y data exchange format for a great deal of our exchange, storage of master data and input to applications. This approach often means that we need to have a level of expertise and historic knowledge which makes the job of the Data Manager more complex than it probably needs to be. For example, the 1975 Recommended Standards for Digital Tape Formats was written for the old

format tapes and specifies that, "Either the NRZI encoded data at 800-bpi density, or the phase encoded (PE) data at 1600-bpi density may be used for recording." <http://www.seg.org/resources/publications/misc/technical-standards> This statement is referring to nine track tape and although the standard does allow that there is an active working group that will introduce 6250bpi there is no reference to modern media or disk as these did not exist in 1975. It is also worth noting that at this time we were only processing 2D data and the necessary trace headers for 3D data are not accommodated within this format. Shouldn't we now be looking to update the data to a more modern exchange method such as SEG Y1?