

Navigating Seismic Data Management



Gloria Adebo

Presenting at the Digital Energy Journal Seismic Data-management Event

26/11/2013

Agenda



- ✦ CDA Deal/ Pon 9
- ✦ Storing and indexing seismic data
- ✦ Physical copy seismic data- Digital Media
- ✦ Hard copy- scanning and resolutions

Common Data Access- CDA



- ✦ Common Data Access Limited (CDA) is a not-for-profit subsidiary of Oil & Gas UK, set up in 1995 to provide data management services to its members and to the UK oil industry.
- ✦ <http://www.cdal.com/cda-home/> CDA website
- ✦ www.ukoilandgasdata.com CDA data store

Services include:

- ✦ Seismic data store
- ✦ Well data store
- ✦ UK Oil and Gas Data
- ✦ Data management

PON9: Petroleum Operations Notices



- ✦ Issued by the Department of Energy and Climate Change
phil.harrison@decc.gsi.gov.uk
- ✦ Were agreed in principle through consultation with industry, Oil & Gas UK and PILOT in the “PILOT Data Lifecycle Initiative” endorsed in May 2003.

Deciding what age of seismic data to keep and what to throw away with seismic data- Guidelines Pon 9



Licensees' Obligation to Keep License Data

“Licensees must retain License Data in an accurate (**useable, accessible and reproducible**) form in perpetuity, even where such License Data has also been published by DECC. This obligation survives the life of the License and the license agreement. Storage and maintenance of License Data in an accurate and useable form is regarded as an expense that should be borne by Licensees as part of their normal on-going License obligations to DECC.”

However, the obligation to keep License Data ceases to apply only in the following circumstances:

- where transfer of License interests to another party is executed by a Deed of Assignment in a form approved by the Secretary of State; or
- where relief from this obligation is given in writing by DECC; or
- data is archived with the National Hydrocarbons Data Archive (Section 6.1)
- Data Redundancy(section 6.4)

An Ideal Seismic data Cataloguing System



- ✦ Managing big data with open connectivity and user control level/ permissions
- ✦ Internal data management systems with mapping capabilities / reporting functionality, high connectivity and user friendly data platforms
- ✦ Good metadata capture functionality- free text entry OR auto key word generation from meta data captured
- ✦ Meaningful naming conventions/ Uid's that will map readily with internal standards (company databases and applications) and external standards (regulatory body standards/ public data stores CDA/DECC)
- ✦ Elaborate mapping functionality optional with use of navigation with ability to support a data federation overview of owned data and publicly available data
- ✦ Live links to report documentation on data acquisition- particularly regional reports

Physical copy seismic data- Digital Media



Typical Formats include:

- ✦ 3592
- ✦ LTO3 to LTO6 tapes
- ✦ DLT/ Exabyte (relatively old)
- ✦ More recently USB'S – Advisable to copy to tape for longevity

- ✦ Storage could be done in house or contracted but check that the service providers
 - keep an up to date detailed catalogue OR YOU SHOULD
 - Conditions of storage are optimal
 - Inspect storage sites and conduct regular random retrieval and data inspection
- *** Necessary periodic transcription of storage media to ensure the data remains readable and readily available

Hard copy seismic



How much use these days with digital seismic data- scanned vs. SEG-Y data?

Hard copy seismic scanning/ shot point base maps and vectorizing:

- ✦ Scanning produces a raster image file
- ✦ Vectorizing converts them into industry-standard exchange formats SEG-Y
 - Various software in the market with this functionality to conduct in house or better still enlist specialist services: Major oil and gas software leaders and relatively smaller players are in the market.

Hard copy-scanned seismic sections



Hardcopy Seismic

DECC has arranged for a backup copy of all scanned seismic sections from its Edinburgh collection to be placed in the NHDA for disaster recovery purposes only.

Theoretically...

“Once this has been done, Licensees may dispose of any sections or associated scanned images that it holds that have been placed in the NHDA by this route”

However in reality some authority from internal management supervisors is required for go ahead of disposal of scanned images

Hard Copy Seismic Scanning- Recommendations and Standards



National Hydrocarbon Data Archive (NHDA) handbook developed with CDA **Appendix D: NHDA Data Standards and Formats

- ✦ Conventional Seismic Sections - scan at a minimum resolution of 400dpi (preferably 600dpi) in black/white (monochrome) mode using dynamic thresholding if available.
- ✦ The file format should be TIFF with CCITT Group IV compression. If it is difficult to choose a scanning threshold that gives good results with both the label information and the seismic traces, then priority should be given to obtaining a good image of the seismic traces.
- ✦ Variable-Density/Dual-Polarity/Rectified Seismic Sections - scan at a minimum resolution of (preferably 600dpi) in greyscale mode. The file format should be TIFF

- ✦ Recognizable characteristics of a good seismic data store
- ✦ The value inherent in CDA, NHDA and the PILOT initiatives- Forward planning incorporating data release costs from time of data acquisition
- ✦ Use the PON9 guidelines as a starting point- has potential for quality DM
 - License data CAN be disposed of- following the necessary protocols
 - Hard copy seismic can be a good resource if harnessed correctly
- ✦ Keep an eye on digital media format of seismic data in fulfilling the obligation to keep License Data

Useful Links



- ✦ <http://www.bgs.ac.uk/nhda/home.html>
- ✦ www.ukoilandgasdata.com or <http://www.ukdeal.co.uk/> (old)
- ✦ <https://www.gov.uk/oil-and-gas-digital-data-exchange-format>
- ✦ http://www.bgs.ac.uk/nhda/docs/NHDA_Handbook.pdf
- ✦ <http://www.bgs.ac.uk/nhda/>

- ✦ PILOT Data Lifecycle Initiative- unites senior management of operators, contractors, suppliers, unions and relevant govt departments to address reduction of cost base of UKCS activities
- ✦ NHDA- A PILOT initiative allowing licensees at DECC discretion, after data archiving, relief from obligation to retain data
- ✦ Vectorizing- In computer graphics, vectorization refers to the process of converting raster graphics into vector graphics.
[http://en.wikipedia.org/wiki/Vectorization_\(image_tracing\)](http://en.wikipedia.org/wiki/Vectorization_(image_tracing))
- ✦ DECC- Department of Energy and Climate Change: formerly DTI
- ✦ UIDs- Unique Identifiers
- ✦ CDA- Common Data Access
- ✦ DEAL- www.ukdeal.co.uk launched in Sept 2003 managed by CDA. A PILOT initiative
- ✦ PON9- Petroleum Operations Notices, record and sample requirements for seaward surveys and wells