I N T E G R A T E D G E O P H Y S I C S C O R P O R A T I O N

FOOTNOTES
ON INTERPRETATION

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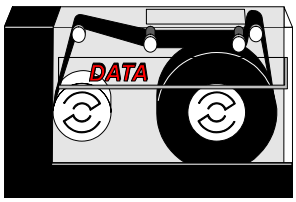
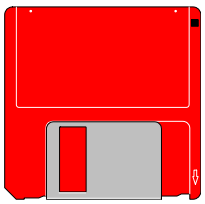
Data: An Asset for Today and the Future ? ? ?

Your Assets !!





Introduction

For many years our industry has recognized that there is much more information in geophysical data than has been used in conventional interpretations. In the current upstream oil and gas environment, squeezing the last bit of resolution and value from that data is good business practice. For example IGC sees the need for and has the capability to do more detailed velocity interpretation for depth conversion, post-/pre-stack migration, or lithologic interpretation. However, as we respond to our client needs for high quality, high resolution velocity interpretation, we sometimes find that the digital data files necessary to make these interpretations cost effective have not been properly saved.

Gravity and magnetic surveys, whether airborne, marine, or land, also provide a valuable data base for standalone or integrated interpretations. To achieve maximum benefit of this resource, it must be well documented as to coverage area, quality, and critical parameters; readily retrievable; and in a format which allows it to be easily correlated with or integrated with other data sets.

The Seismic Case

Almost every exploration and production company today has workstation capability/ability to use digital data. Interactive workstation processing of seismic data using digital files has been routine in the data processing industry for many years. Unfortunately, software developers and data processors have not recognized the need to save most, if any, of the intermediate digital information. Often they are only a switch away from the capability to transfer digital screen images to digital tape files. But processors must be asked to do this step by their clients.

If digital semblance files are saved we can re-pick for high resolution velocity analysis for depth conversion, re-stack, and/or re-migration. Re-stacking is relatively easy when DEMUXed data and observer's notes are saved. When stacked seismic is saved re-migration is easy. If digital migrated data are saved, Time/Amplitude (T-Amp) tuning thickness estimates are easy. When digital seismic gathers are saved, an interpreter can make Amplitude versus Offset (AVO) interpretations of potential gas prospects or lithology prediction.

Storage Savings

A digital semblance file (in a SEG-Y format) requires 200,000 bytes, so more than 20,000 of these files could be stored on a 5 gigabyte 8mm tape (8 cubic inches). If the same number of paper records, 18 inches by 36 inches and .01 inch thick, were stored they would require 94 cubic feet; that is a stack of paper 20 feet tall.

Archive/Storage

A. For complete expeditious *flexibility*;
Save the following digitally

1. CDP gathers
2. Velocity Semblances (SEG-Y)
3. Stacked Seismic, relative amplitude processed
4. Migrated Seismic, relative amplitude processed.

B. For *simplicity* -- i.e. the minimal requirement;
Save the CDP gathers in digital format.

The Gravity/Magnetic Case

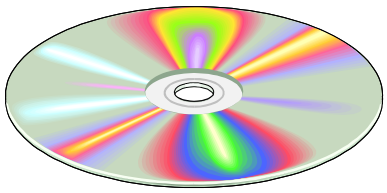
Almost all modern (post-1970) marine and airborne gravity/magnetic data have been digitally recorded, although for some surveys the key ancillary data (e.g., positioning, bathymetry, diurnal monitor records) were recorded separately, recorded too coarsely, or never merged with the primary data. Most modern land gravity surveys have fully digitized principal facts, but few of the older data sets - which might otherwise be high-quality data - have been fully and properly digitized.

Modern reprocessing, enhancement mapping, interpretation, and modeling techniques provide the explorationist with new and more powerful uses for these older data sets provided they have been suitably archived. They are not only a valuable supplement to seismic or imagery data, but in some politically or environmentally sensitive areas they may be the only geophysical data available for advanced reconnaissance. However, with primary emphasis on new seismic data, many explorationists may be unaware of the gravity and magnetic data already in company files.

Archive/Storage

For maximum efficiency and benefit, the archived data should be:

1. Readily and economically retrievable
2. Well-documented as to date, type, geographical location, ownership
3. Well-edited
4. In a common format
5. Easily interfaced with workstation mapping, modeling, and interpretation software.



For More Information Contact

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