Corvelle Service Offering - Seismic Tape Stiction

Corvelle recently executed a successful Seismic Tape Stiction assessment project for a major Canadian oil and gas company.

Business Value

The goal of a Seismic Tape Stiction project is to rescue seismic data that is at risk of being irretrievably lost due to deterioration of the tape media (called stiction) on which the data is stored. Losing seismic data that the producer has invested significant capital to acquire:

1. Prevents further evaluation of related explorations prospects.
2. Eliminates the possibility of further licensing revenue from the data.

Audience

Building an understanding seismic tape stiction will typically interest professionals in the geophysical and technical records sections of an oil and gas explorer. Seismic processors and storage vendors will also benefit.

Technical Background

The performance and deterioration of all magnetic tape is affected by temperature, age, humidity, the manufacturing process and the storage method.

Stiction (STatic frICTION) is the widely-accepted term that refers to the deterioration in magnetic tape media that occurs when the binder or glue that holds the oxide or magnetic data layer to the structural layer (Mylar) breaks down over time.

When stiction occurs, it causes adjacent layers of magnetic tape to bind together or to stick to the tape drive heads. This event makes it nearly impossible for the media to unroll or rewind when mounted on a tape drive. Even if the media can be unrolled, stiction creates unsuccessful reads. If excessive force is applied to a tape with stiction by the tape drive operator, the tape will stretch or tear.

Industry Background

The petroleum industry is a data intensive industry. Magnetic tape is the most common media used for seismic data acquisition. Prior to the 1990's, 9-track tape was the most prevalent tape technology is use. Although disk based data archives are

MAIN 403 249 5255 SUITE 300, 400 – 5 AVENUE SW
WWW.CORVELLE.COM CALGARY, AB, CANADA T2P 0L6

becoming more popular, most organizations still hold significant inventories of seismic tape media.

In the early 1980's, tape drive manufacturers changed the tape read/write head design. This hardware change drove changes in the tape composition, more specifically the softening of the tape binder or glue. The impact of the softer glue was not understood and corrected for several years. Coincidentally this change occurred during a period of economic downturn when government incentives to shoot seismic led to the ill-fated use of cheap tape. The convergence of these factors compounded the problem for the seismic industry.

Consequently, stiction is most prevalent in certain brands of 9-track tapes produced in the 1980's.

Additional Business Drivers

In addition to the primary goal of preserving the seismic data for future interpretation or sale, secondary benefits of the seismic tape stiction project may include:

1. Verification of the oil and gas company's seismic data catalogue.
2. Reorganization of the seismic data by line, prospect area or some other preferred methodology.
3. Review of seismic media offsite storage requirements and vendor arrangements.
4. Reacquisition of lost or unrecoverable seismic data.
5. Creation of an online or near-line data archive.

Approach to Executing a Seismic Tape Stiction Project

Seismic data can be recovered from stiction-afflicted tapes, although it should be understood that not all data is necessarily recoverable. Data recovery is a specialized service provided by a number of seismic data service vendors who report generally excellent recovery rates in Canada.

The data contained on a stiction tape is normally recovered by copying it to new media. Since the only way to tell if a tape has a stiction problem is to attempt to read it, seismic tape stiction projects therefore typically consist of replacing large numbers of older tape media with newer media.

An effective approach to executing a Seismic Tape Stiction project is to define and execute the following phases:

1. Assessment
2. Vendor Selection
3. Planning
4. Execution
5. Evaluation and Review

For organizations that are unsure about the value of executing a Seismic Tape Stiction project, performing the assessment only will provide a useful perspective on the value of undertaking this project.