Capture Your Assets (CYA)
Data Retention Policies in E&P

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The E&P (and everywhere else) Data Explosion

Technical data is one of the most valuable assets of any E&P company, providing a critical point of competitive differentiation—and identifying, capturing, and protecting critical technical data throughout the E&P lifecycle is an ongoing concern. Companies must face the many challenges of technical data management including acquisition of new data, digitization of legacy data, and security of this data with daily replication. The need for data integration across workflows, domains, business units, and regions further complicates data management efforts. Operational environments are also becoming more complex. This means ensuring data quality, integrity, and security while delivering data availability to a geographically diverse set of end users.

How fast are E&P data volumes growing in your company? One major oil company estimates that its data volumes increase by 2 terabytes per day. [1] Do you have easy and fast access to the right data at the right time? Or do you spend a large percentage of your time searching for data? Are you confident that you have all the data that exists over a particular area? Or are you missing critical information that could help you in your technical analysis?

If asked to defend a drilling decision, could you produce all of the data throughout the evaluation lifecycle, including an audit trail?

Why do we need data retention policies for E&P data?

“Because our world is continually changing, time-stamped data cannot be recreated once abandoned or lost. New and old data, addressed in new combinations and in new ways, enable us to increasingly understand our physical world.” [2]

Most companies have stringent data retention policies to support legal and regulatory obligations. However, processes concerning data used in technical evaluations do not meet the same level of scrutiny. This paper will discuss different types of data retention processes and explore ways that industry practices might be improved.

The requirements on data retention can be categorized in three ways:

- Data retained to meet governmental requirements
- Data retained as part of the company’s document retention policies
- Data retained for internal company use

Data retained to meet governmental requirements

More and more oil and gas service companies are venturing into unfamiliar territories with unique business practices where they have less experience or limited knowledge of that business climate. Particularly challenging for international E&P companies is the increasingly complex and often stringent regulatory demands such as environmental protection measures, accounting and reporting practices, and control
requirements. In addition, corruption and bribery issues have received more focus as more aggressive international enforcement, changes to anti-bribery and corruption laws, and greater visibility increases. Regardless of the country of operation, data that is created and collected during the life of a project is submitted to the various local governmental agencies for compliance review and permission. Data and information supplied to these agencies must be retained by companies, often for the life of the project—and in some cases must be passed on to other companies if the license/lease changes hands. In addition, companies must know and track when proprietary technical data like seismic must become “public” within each country where they operate.

Examples of data that needs to be tracked and retained include:

- Financial and cost accounting data
- Statutory and tax compliance requirements
- Environmental impact data
- Technical project plans and raw technical data acquired during the life of an asset

Data retention creates significant storage requirements for companies, and has been alleviated in part by country repositories like Diskos in Norway and the Common Data Access Limited group in the United Kingdom.

Most E&P companies have internal policies around project milestones that must be followed by all project teams. This can include everything from capturing a project report at a specific decision point to capturing an entire project snapshot, including all technical data. Typically internal policies are driven, at least to some extent, by external forces such as government agencies. A global technical data retention policy can set a minimum expectation for all project teams, which can then be augmented as necessary to comply with country-specific requirements.

Data retained as part of the company’s documents retention policy

Different types of data require different lengths of retention. A company’s documents retention policies document how long various types of information must be maintained, describe the procedures for archiving the information, and provides guidelines for destroying the information when the time limit has been exceeded. Special consideration is given to the methods for handling information that may be used in litigation.

While retention policies for physical media have been in place for some time, retention of electronic data and documents is a very hot topic in the legal industry as companies are creating and storing enormous quantities of electronic data. According to IDC, 99 percent of all documents created and stored are electronic, with over 60 billion emails created each day. [3]

Complicating the issue is the fact that document retention guidelines vary among industries. Third parties such as the Internal Revenue Service in the U.S. and other country-specific regulatory agencies often provide regulations for how long important records should be kept. Despite these variations, many guidelines cut across industry lines. For example, anything having to do with taxes in the U.S. should be
kept for seven years. Auditors’ reports, annual financial statements, and general ledger information should be kept on a permanent basis.

Legal groups within companies mandate policies to handle the retention of business and office documents, but does that extend universally to the technical data as well? While many energy-related government agencies dictate the retention of raw E&P data, can companies also track key decisions like reserve calculations?

**Data retained for internal company use**

E&P technical data is an extremely valuable asset. It represents a significant investment by the corporation—both in dollars and in time spent in data analysis and interpretation.

If misplaced, raw data sometimes can be restored. If deleted in error, raw data can typically be restored from a backup if loss is discovered in a timely manner. However, if this data loss has aged more than a month or two, recovery could be problematic. Often the original acquirer of the data still has a copy, or the contractor who handled post-processing might retain the raw data for a period of time. But, this is becoming more unlikely as contracts often specify that once data is delivered, the contractor must destroy all copies.

Derived data and interpretations, on the other hand, only reside within the owner corporation. According to a recent study commissioned by the Common Data Access Limited group in the United Kingdom, interpretation data (horizons, markers, faults, geological models, reservoir models, analyses, and reports) often are not retained at the end of an analysis. [4] This is particularly true if the development of an asset is interrupted for a period of time or moves between teams. Of course, you don’t want to retain all interpretations and derived data – this would be costly and impractical. Focus should be on information that contributes to a critical decision or milestone within the asset lifecycle.

![Figure 1: E&P asset technical lifecycle.](image)
Technical data should possess a certain confidence level to qualify for retention. The concept of digital trustworthiness is central to a corporation’s “ability to plan, strategize, and operate its business.”[5] Maintaining E&P technical data integrity and trustworthiness is complicated by factors such as:

- Complexity of E&P technical data
- Movement of data around the corporation
- Change over the lifecycle of E&P technical data
- Necessity of special software to view and/or understand the data

“Trustworthiness suggests that a court, regulator, or auditor – and the organization itself – can rely upon the content of the record.”[5] An audit trail capability for technical data can provide valuable confidence in the history of E&P technical data. Process history, interpreter comments, and metadata should be captured over the life of the technical data, providing a rich picture of the evolution of the interpretation. A corporation should not attempt to retain data that is not of proven quality or that does not have sufficient metadata to ensure trustworthiness.
Figure 3: Example of process history as part of an audit trail, automatically captured during the interpretation process.

Figure 4: Interpreter comments (Interpretation Notes) displayed in context during the interpretation process.
Scientists within E&P companies evaluate and interpret technical data in different ways during the data lifecycle. In addition, data crosses domain boundaries. For example, well logs are used in geophysical interpretation, geological interpretation, and earth modeling workflows. It is critical to the quality of the overall E&P asset lifecycle that scientists work with the same data within and across domains and that the history of the technical data is known and can be substantiated through metadata.

Retention policies can make it easier for users to find and access data. If certain data types are routinely captured, quality tagged, and stored in a specific location, then users will be able to find the appropriate data more quickly than if they had to search multiple locations and sort out which is the best or most current data. In addition, this data can be used more easily for advanced analyses such as data mining and analytics, which according to the IDC will become more important in predicting potential drilling failures, improving geosteering, and in reducing non-productive time. [6]

**Conclusion**

Most companies have some type of retention policy in place today, but most are designed around business documents, such as contracts, email, and financial papers. In addition, multi-national E&P companies must abide by policies in the country of operation, and data that is created and collected during the life of a project must be submitted to the various local governmental agencies for compliance review and permission.
However, there is a need for company-specific global E&P technical data retention policies, which set minimum expectations for all project teams and can provide the following benefits:

- Improved data security
- Data integrity & trustworthiness
- Data consistency within and across domains
- Easy access within and across domains

The policy should cover, at a minimum, the critical E&P data types such as:

- Wells
- 2D & 3D seismic data
- Interpretation data, including horizons, markers, faults, geological models, reservoir models, analyses, and reports
- Real-time data
- Production information
- History and metadata to ensure trustworthiness

This policy could then be augmented as necessary to comply with country-specific requirements.

References


