SPE-217669-MS

Blind Trust: Challenges in Data Sharing for Oil and Gas Well Construction

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Abstract ❯

The drilling and completion of oil and gas wells is a collaborative business, involving employees from many contractors working together. Well construction generates many documents that are shared cross-functionally between these different groups. A regulator may receive an as-drilled plat from a well planner, using surveys from an MWD operator, based on a pipe tally from a rig contractor. In this scenario, the person legally specifying the well location has likely never physically seen the wellhead or the equipment used to define the location. The regulatory database might later be used by a different operator for identifying offset wells on a nearby drilling program, further confounding matters. While document sharing is critical for successful well construction, there is often little opportunity for verification before use or transmission to another party.

A review of documents related to well construction was performed. This included plats, well plans, bottom hole assembly reports, directional surveys, and other drilling records. The examination was performed on which data was contained in these documents, how it might be verified by a third party using it, and the potential for errors to arise when the data is received or transmitted. Of particular concern were documents such as well locations and directional surveys which are not only difficult to verify but are also likely to be further shared with additional parties. These documents are frequently the basis for critical decisions related to well construction, implying a strong potential for erroneous data to be used when making those decisions.

For most of the document types investigated, there was little to no standardization on the content or format of the data presented. Similarly, when documents contained redundant data (such as a well name across a directional survey record, bottom hole assembly reports, and well plans) there was often inconsistency in how that data was presented. While in many cases the accuracy of the data may still be unverifiable, several good practices for identifying gross errors in documentation and preventing erroneous data from entering a curated database are presented. Examples include ensuring personnel are trained in the significance of the data being received and requesting redundant data whenever possible so internal cross-validation can be performed for data consistency.

Data quality processes for internal workflows have long been a focus for the industry. As more systems become increasingly connected, a similar amount of attention must be paid to external workflows, where if care is not taken data of unknown and unverifiable quality may be used to make critical decisions.

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