



2017 Image Log Processing Summary

Background

As an independent image log processor I have processed around 100 image logs in 2017. I am presenting here my opinions on what I have seen. The majority of image logs have been from the Continental US.

Summary

1. There are some excellent new technologies about.
2. Service is too often hampered by poor tool maintenance, inexperienced field engineers and inexperienced computer centre personnel.
3. The smaller independent logging companies appear much more concerned and proactive about the quality of their image data.
4. DLIS deliverables often leave a lot to be desired.
5. Of the big 4 service companies, one lags far behind the other 3 in volume of image logs recorded and it has nothing to do with the quality of their service offering.

Data Quality Issues

I have seen repetitive and non-repetitive data issues.

The best example of a repetitive data issue is one tool which has been going from well to well in the Permian with the same set of failed buttons. On another tool from another contractor I have seen the pads fail in one well and then have the same tool be logged in another well without those pads replaced, then more pads failing during the run. These two tools suggest any or all of the following:

1. The tools are not being adequately maintained.
2. Backup tools are not available as the same tool is being run again and again without maintenance.
3. Tool failure/issues are not being reported by the field engineer or are not acted upon.



4. There is a risk of an image log not being available due to lack of tools/maintenance.

In terms of non-repetitive issues, I was seeing a lot of problems with poorly calibrated calipers at the start of the year and this was far more common with one particular contractor. More recently magnetization of the magnetometers has become common.

A few image logs have shown issues with noise and for some reason elapsed time curves seem particularly difficult to get right.

I have seen the same tool in similar environments perform very well and perform very badly. I believe that some tools (e.g. acoustic imaging) are more dependent on the field engineer than others and this will typically be the reason behind the variation in quality.

Some data quality issues can be resolved in processing (e.g. recalibration of calipers), some you can do nothing about.

Finally, one image of note was speed corrected in the field, then that speed corrected data was run through the speed correction software in the computer centre, further degrading an image not speed corrected well in the field. This shows some serious issues in data flow and training.

New Technologies

I am not going to single out any acquisition company in any way in this report. I have seen continuous improvement in the wireline field and some step changes in LWD. I am encouraged by the fact that I am seeing hardware development/deployment continue during this downturn.

DLIS Deliverables

DLIS deliverables appear to be getting too bloated or too skinny.

On more than one occasion I have received a deliverable from a service company with all the curves present except the actual images; this includes curves derived from the images but not the images themselves. If this happened once it would



not be too bad, but to have the same mistake happen repeatedly is poor and points to poor computer centre backup.

Some DLIS deliverables have too many repeated curves in them. I am not talking about the same curve repeated with different delays for different sondes (that is good); I am talking about multiple versions of the same curve with the different names and a numeric suffix for the different versions or variation in the name.

It took one service company 4 attempts to get the right data out. In this case portions of image or portions of curve in an LWD job were missing. In another case I received 3 DLIS deliverables for a job and not one was correct. Some mysterious splicing had occurred in the field and the contractor could not deliver a correct dataset. We are seeing problems in both the field and the computer centres.

I spend a lot of time making sure the correct curves are loaded for work I perform and often I have to go into the information tables to extract the curve delays to make sure all data is shifted properly.

Where have calibration tables gone?

Calibration tables used to routinely be a part of a field print. Now they are not, the data may be hidden in a DLIS file. I would like to see these included on field prints again, it can make caliper recalibration so much easier. It can only add to the accuracy of the service.

And Finally, Some Thanks

I process with TerraScience's TerraStation. They have helped support me throughout the year and together we have evolved the software. Some enhancements have come in data QC as well as new options for processing which have often made my life much easier, or in other cases have improved the final images. They have always responded rapidly to fix any bugs or pointed me in the right direction when required. On many occasions their speed correction has been better than that from the service companies. Thank you Andy, Fred, Keith and Nigel.