

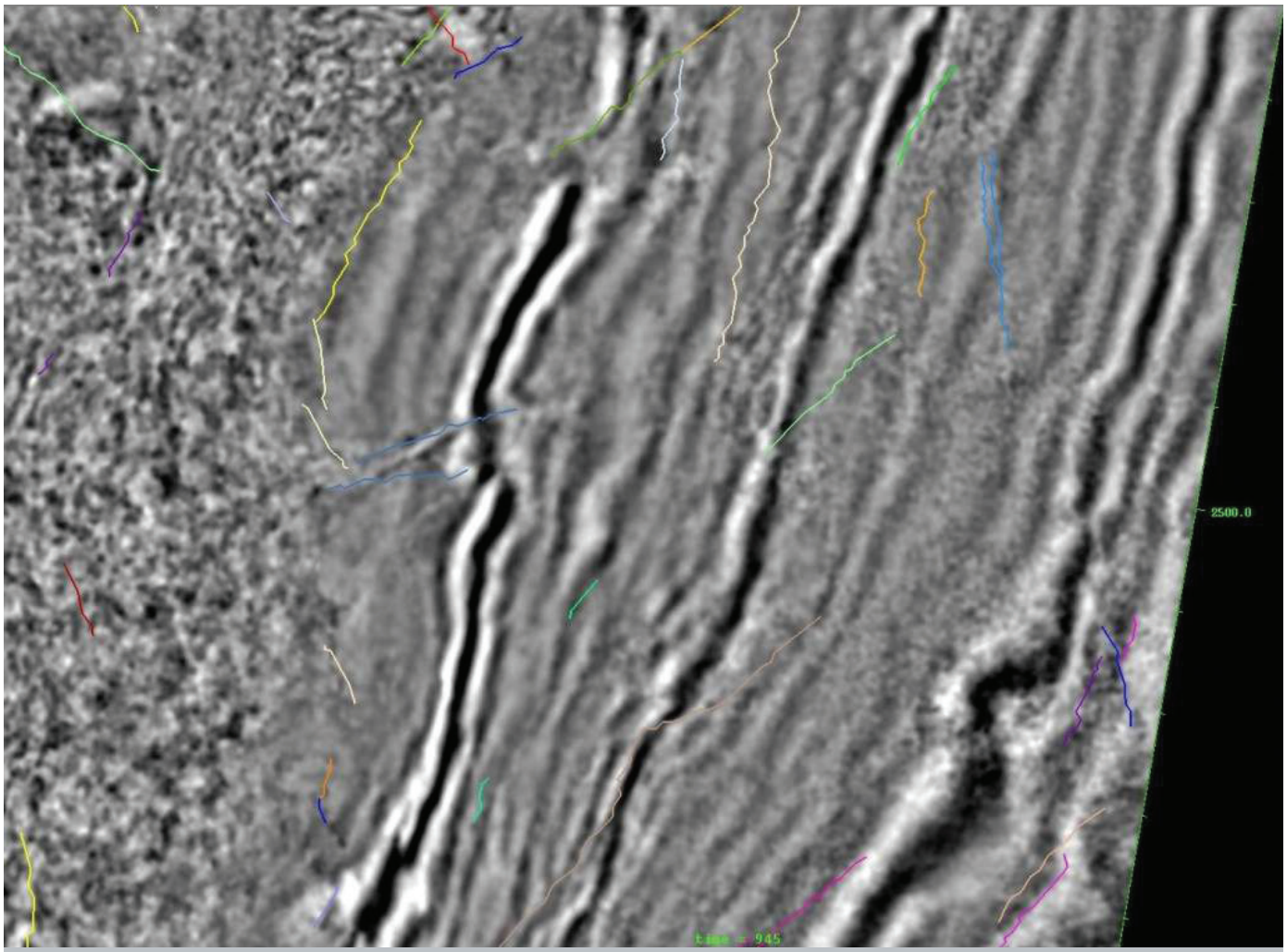
Faults Impacting Drilling Costs

The Challenge

An independent oil company in the Middle East was incurring considerable cost associated with loss of well control when unexpectedly encountering faults. It was routine to encounter problems on most wells, resulting in days spent pumping loss circulation material to re-gain control of the well. Additional costs were consistently in excess of \$150,000 per day.

The Assessment

This reservoir is located in a highly faulted area. Due to technological limitations and time constraints, the fault interpretation had to be simplified. Consequently, the structural information used for well planning was often incomplete.

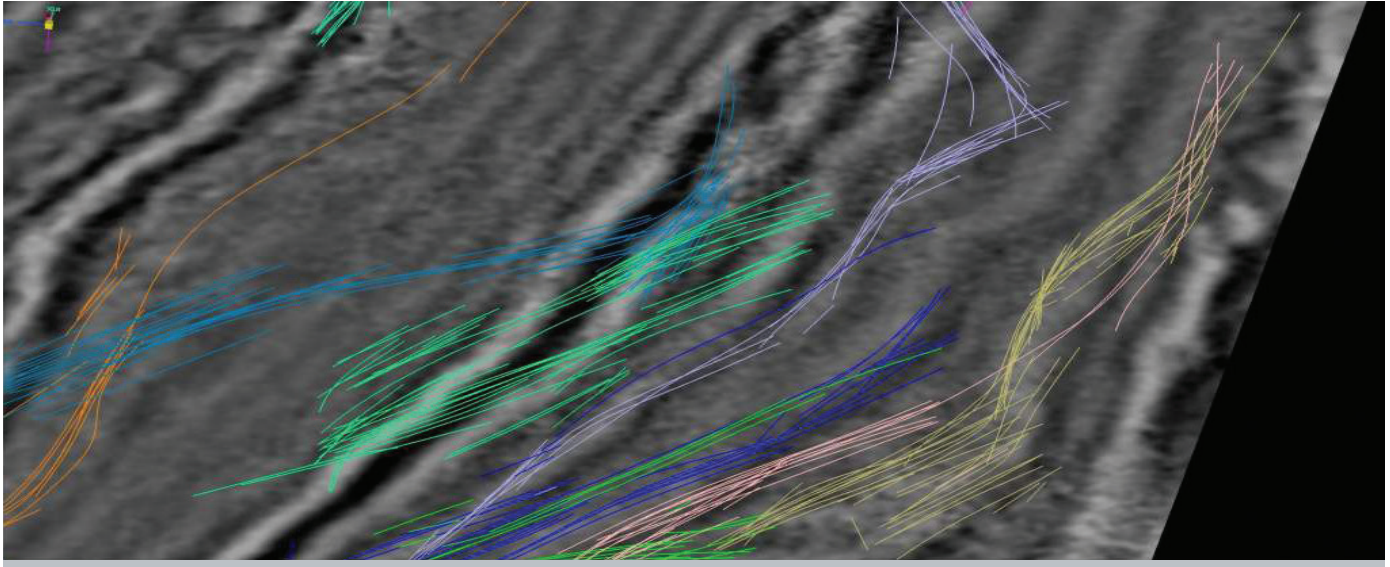


▲ Simplified initial interpretation.

The Solution

A more detailed fault interpretation was achieved using Paradigm™ Automated Fault Extraction in a workflow that takes discontinuity or Paradigm Coherence Cube data as an input. After noise reduction and discontinuity enhancement, the fault

segments are interpreted automatically on time slices and vertical segments throughout the volume. This initial interpretation is subsequently optimized by use of azimuth masks and size filters. The cleaned segments are then linked into separate faults.



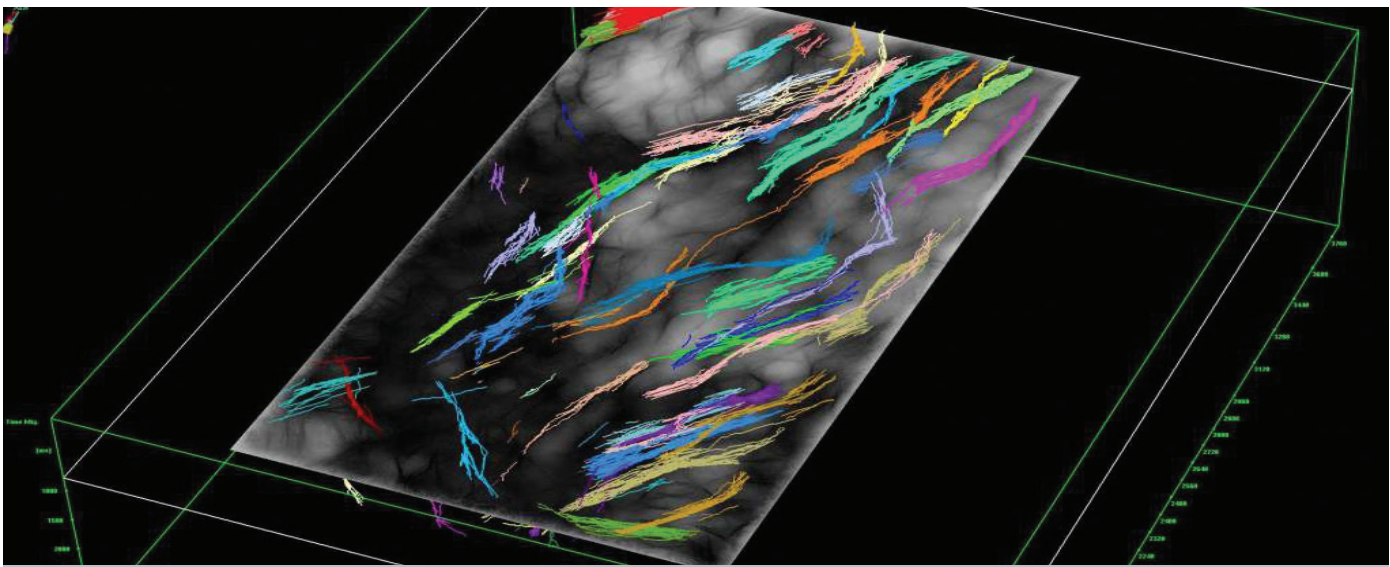
▲ Cleaned segments linked into separate faults.

The Results

By using Automated Fault Extraction, results include:

- More detailed fault interpretation
- Elimination of subjectivity
- Reduced cycle time

By applying the Automated Fault Extraction technique, the risk of encountering unexpected faults while drilling was dramatically reduced. The average time to drill wells improved significantly, while the recourse to costly loss control procedures diminished. This resulted in saving many millions of dollars of unbudgeted expenditure annually.



▲ Smooth picks provide more detailed interpretation.