

ENGINEERING METHOD

From source file to asset decision

Five engineering habits inside WellogIQ Nexus - and why they matter when work moves between geoscience, petrophysics, reservoir, production and commercial teams.

Nexus is useful only if a technical result still makes sense after it leaves the specialist who produced it.

About this publication

This paper draws on Petroniq's WellogIQ Nexus evaluations using public upstream data. It is a product-development publication, not customer work, investment advice, a reserves statement or a field-development recommendation.

Why this problem is harder than it looks

Most upstream teams already have capable technical applications. The recurring problem appears between them. A source file is selected, an interpretation is updated, a forecast moves and a commercial case changes - often across separate systems and review cycles.

The danger is not simply lost documentation. A perfectly valid calculation can answer the wrong asset question if it uses the wrong well, an unsuitable curve, an unexamined unit conversion or an assumption that belonged to another field.

The thirteen public-data cases gave us repeated examples of those failure modes. They shaped five habits in Nexus.

1. Select by engineering purpose, not by file readability

A file that opens cleanly can still be wrong for the job. In the Volve package, an early selection found a valid geochemistry LAS from the right field. It did not contain the interpreted porosity, water-saturation and shale-volume curves required for the Hugin screen.

Nexus therefore treats source selection as an engineering choice. The well identity, curve purpose, interval and acquisition condition must match the question before the calculation begins.

A readable file is not necessarily the right file.

2. Keep asset identity through every join

Well names, completion identifiers, lease numbers and regulator keys often vary between products. The D12-A-02 case was useful only after the gas sample, production history and LWD records were tied to the same well family. The Teapot Dome and BOEM cases required equally careful joins.

The system should make identity changes visible. Silent fuzzy matching may make a dashboard look complete while moving a measurement to the wrong well.

3. Put the assumption beside the answer

The Kansas case returned 201.5 ft at the central formation-water resistivity assumption. Plausible alternatives moved the screen from 26 ft to 303.5 ft. In that case the sensitivity is more important than the central number.

Nexus keeps cutoffs, unit conversions, denominators and scenario dates beside the result so a reviewer can see which assumption is carrying the conclusion.

4. Let missing information change the outcome

The UKCS 15/13b-5 logs cover the named sandstone intervals with gamma ray, sonic and deep resistivity. They do not contain neutron-density coverage in those intervals. The professional answer is a retrieval and calibration plan, not a synthetic porosity curve.

A system that always produces an answer rewards false precision. Nexus must be able to stop, name the missing input and show why that input matters.

5. End with an engineering action

A technical report is not finished when it lists calculations. It is finished when the team understands the recommended action, the competing explanations and the information that could change the recommendation.

For Volve 15/9-F-1 C, the public records establish high late-life water. Because the available production log was acquired shut in, the next action is flowing zonal surveillance - not selective isolation design.

The best result may be a decision to measure before acting.

How those habits appear in Nexus

Stage	What the specialist does	What the asset team can see
Asset context	Selects the well, interval, records and technical question	Why those sources belong to this decision
Technical work	Applies the discipline method with its calibration and assumptions	Which inputs and choices materially change the answer
Review	Tests alternatives and checks physical sense	Where specialists agree, disagree or need another measurement
Decision	Recommends the action and states remaining uncertainty	What happens next and what could change the recommendation

A review checklist for working teams

- Can every decision-bearing input be tied to the right well, field and date?
- Are units, reference conditions and denominators stated where they affect the answer?
- Which assumption moves the result most?
- What alternative explanation still fits the observation?
- Is the next action clear, and is the team honest about the information still missing?

Closing view

Petroniq is not trying to remove specialist judgment from upstream work. We are building the shared technical context that lets that judgment travel safely from one discipline to the next.