

To use RSS-NMR technology as the ultimate assessment tool (the "absolute means") to reveal hidden or poorly imaged reservoirs by 2D/3D seismic, it should not be seen as a simple replacement, but as a disruptive technology that changes the rules of the game.

Where traditional seismics forces you to "bet to see" (like in poker) based on indirect geometric forms, RSS-NMR brings scientific certainty of the presence of fluids.

Here is the strategy to structure and leverage this technology to map your entire deposit:

1. Paradigm changer: Passer from the "Geometry" to the "Fluid Signature"

Seismic 2D/3D mapping of structures (potential traps) does not directly detect oil. It can miss reservoirs due to shadow zones, variations in lithology, or weak acoustic contrasts.

- The RSS-NMR application: You must configure your study to find the magnetic resonance of hydrogen particles and hydrocarbons. The RSS (Resonance Spectral Survey) captures the direct spectral anomalies that link with accumulations, while NMR (MRI) confirms the porosity and presence of fluid mobility.
- The result: Even if a reservoir is masked on the seismic by a complex fault or a layer of salt, the NMR signature crosses these barriers to prove that the fluid is there.

2. The Integration Protocol to "Illuminate" the Shadow Areas

To reveal the full extent of the deposit, you must cross-reference the data according to a strict protocol:

[Existing 2D/3D Seismic] (Structural Model/Fuzzy Zones)



[RSS-NMR Survey] (Direct Fluid Detection & Sweet Points)



[Overlay & Reinterpretation] — ► Revelation of the ignored reservoirs

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Stage 1: Mapping of the "Blind Zones" of the seismic

Identify on your current 3D pads the low-resolution areas, bevels, thin layered tanks, or compartments isolated by failures that were not tested because they were deemed "too uncertain".

Stage 2: Targeting RSS-NMR Scan

Deploy the technology on the set of permissions to obtain a card of resonance.

- **Check the "Sweet Points":** the zones or the NMR signal indicate a strong saturation in mobile hydrocarbons and a good porosity, regardless of whether the seismic structure is mounted.

Stage 3: The Superposition (The "Interpretation Centre")

Superimpose the card of RSS-NMR fluids on your 3D structural model.

- If the RSS-NMR shows a strong fluid anomaly or the seismic monitoring of a "grey" zone or a compact supposed sediment, you will see a reservoir leak.

3. Key Criteria for Making the Proof "Absolute"

Because the evidence is incontestable and justifies a drilling of deviation (side (track) or a new well, the RSS-NMR must validate three parameters:

1. **Effective porosity:** NMR must prove that the rock contains pores large enough to store the fluid.
2. **Saturation and mobility (Mobile Fluid vs. Bound Fluid) :** This is the strength of NMR. It eliminates the risk of misinterpretation by distinguishing bound (non-productive) water from mobile hydrocarbons ready to be extracted.
3. **The continuity of the reservoir:** In analyzing the spectral variations of the RSS, you can trace the exact limits of the deposit (the extensions that the seismic activity does not travel), guaranteeing that you do not pass beyond a pocket that is isolated and unprofitable.

4. Argue the Economic Decision

Using RSS-NMR as an absolute means allows us to reverse the financial approach to field management:

- **Elimination of " Pay to See " :** Instead of drilling blindly in a seismic shadow zone hoping to cross the reservoir, you use the certainty of magnetic resonance to validate the existence of the oil column before investing in the derrick.

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- **Asset valuation** : By demonstrating that the deposit is larger or contains secondary productive levels not originally taken into account, you immediately increase the proven reserves (2P/3P) of the field and extend its economic life.