November 20th, 2025

10th Dutch Exploration Day

ebn State Energy Company of the Netherlands

one dyas

"How a fresh pair of exploration eyes almost led to the M07-B field rejuvenation"

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A sustainable **gas system**

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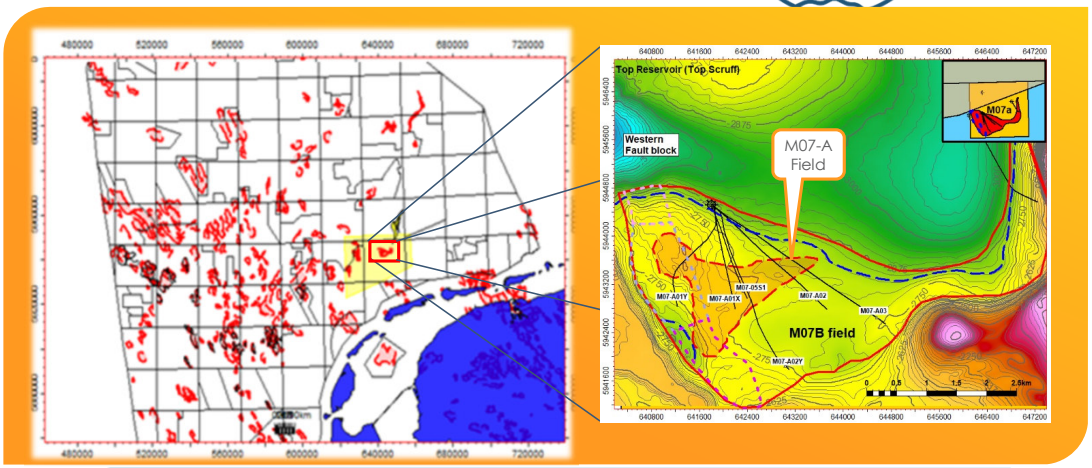
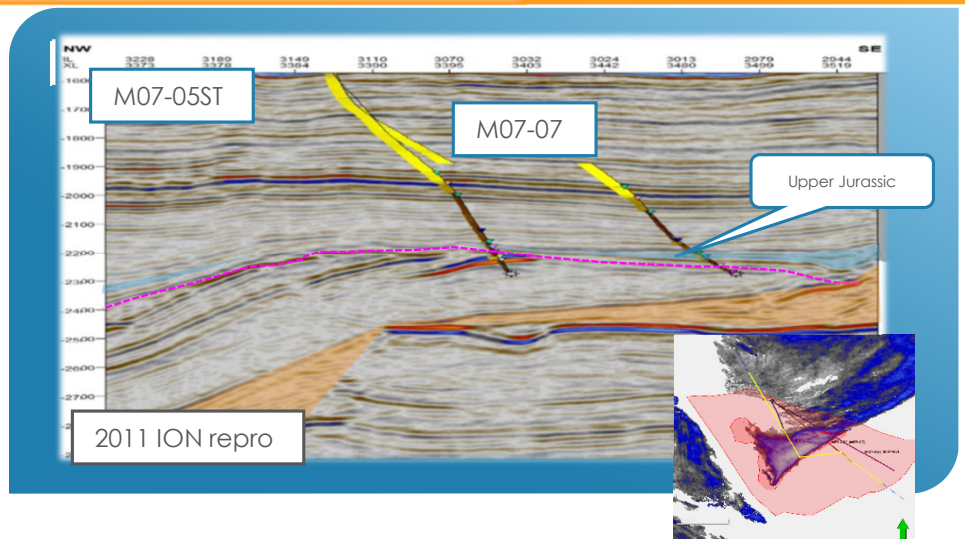
Introduction

M07-AB Field History

- **1996: M07-05ST:** L-Triassic discovery **M07-A field**
  - Also encountered: thin U-Jurassic sandstone
- **2009:** 1st Gas **M07-A** with production well **M07-A01X**
- **2010:** Appraisal well **M07-07** drilled downdip:
  - Found thicker U-Jurassic sst
  - Renamed section to **M07-B field**
- **2013:** 1st Gas **M07-B**
- **2014:** Appraisal well **M07-08** (ONE) near salt wall:
  - Confirmed reservoir thickening
- **2016:** Production well **M07-A02Y**
- **2016:** Appraisal well **M07-10**:
  - P&A, reservoir tight





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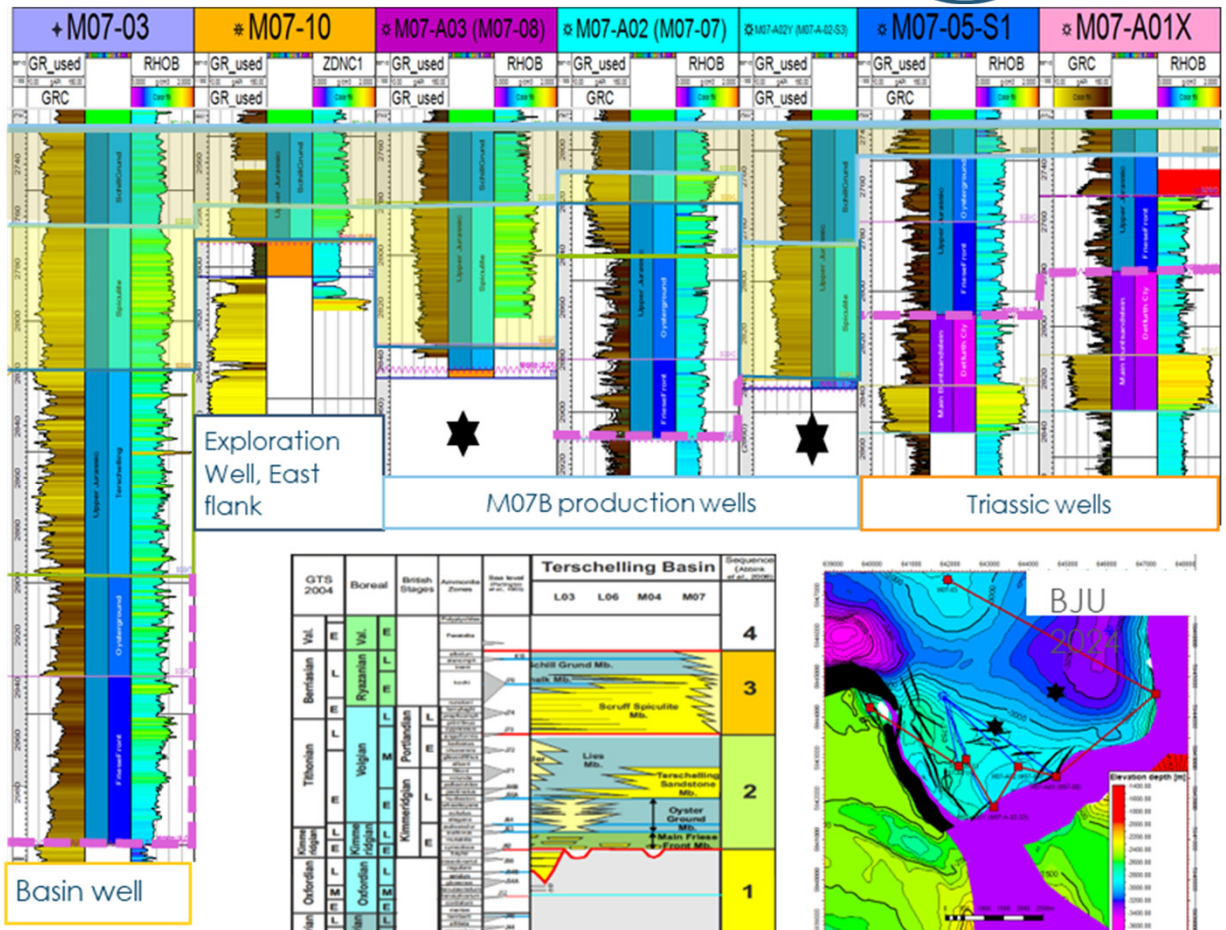
Introduction

Jurassic Reservoir

- **Schill Grund Member**
  - Decent porosity but low permeability (<0.5 mD)
  - classified as "slow" GIIP in dynamic modeling
- **Spiculite Member**
  - Best reservoir in the field
  - Porosity up to 24%, avg K ~2-4 mD
  - Thickness varies, increasing toward salt diapir rim syncline
- **Terschelling Member**
  - Low-quality sands with low permeability
  - Absent toward the SW near the salt diapir



M07-B field: Tectonics

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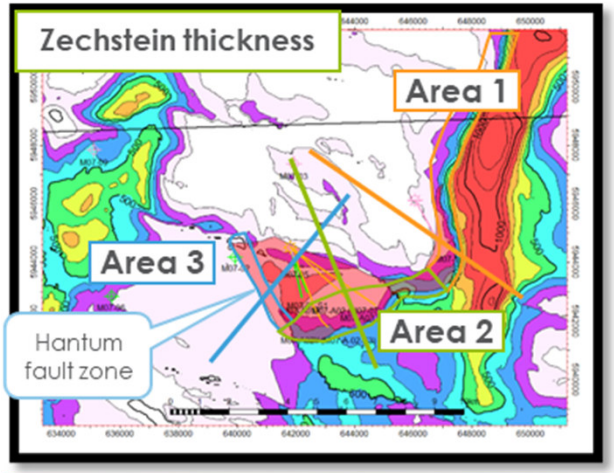
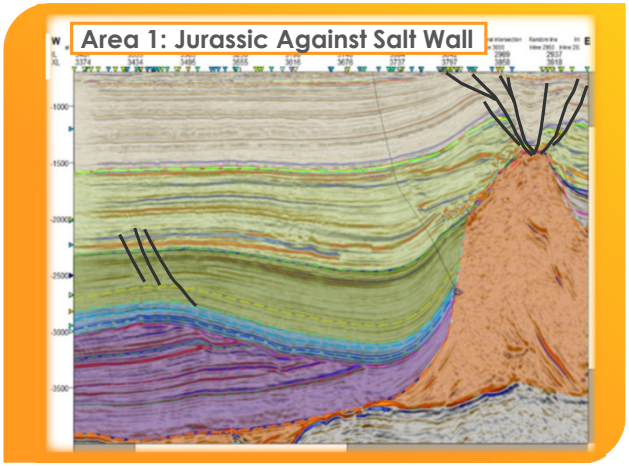
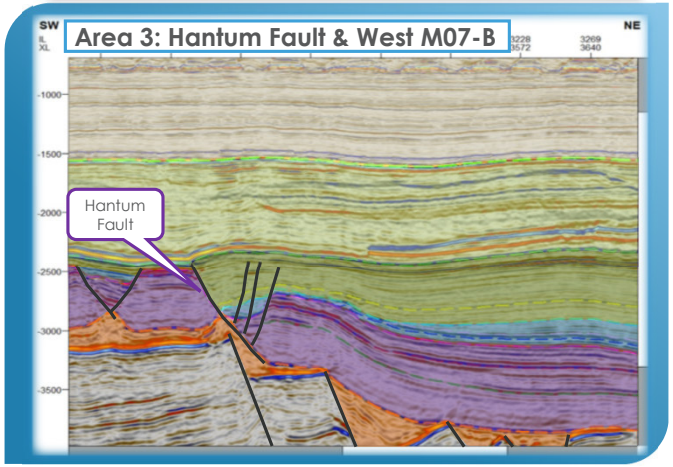
Interplay of Halokinesis, Sedimentation, and Extensional Faulting

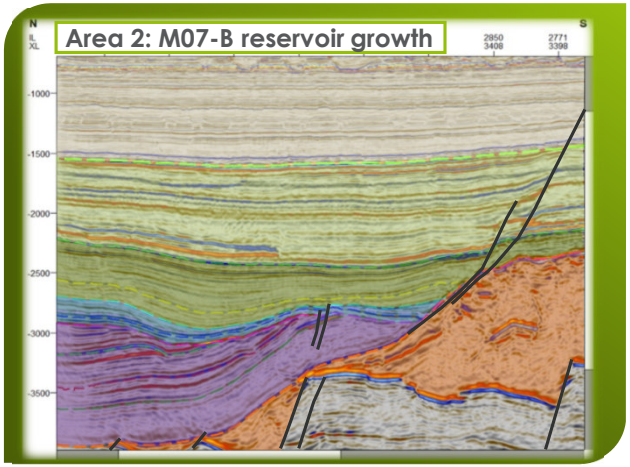
Three tectono-stratigraphic areas

- **Area 1:** Reservoir against Salt Wall
  - Salt diapir pierced Jurassic and Cretaceous sections
- **Area 2:** M07-B reservoir growth (Salt Withdrawal)
  - Salt migrated laterally toward areas with reduced stratigraphic load
- **Area 3:** M07-B-West Hantum fault displacement + salt withdrawal
  - Depression between M07-A Triassic high and Hantum caused by salt withdrawal and antithetic faulting









M07-B-West prospect

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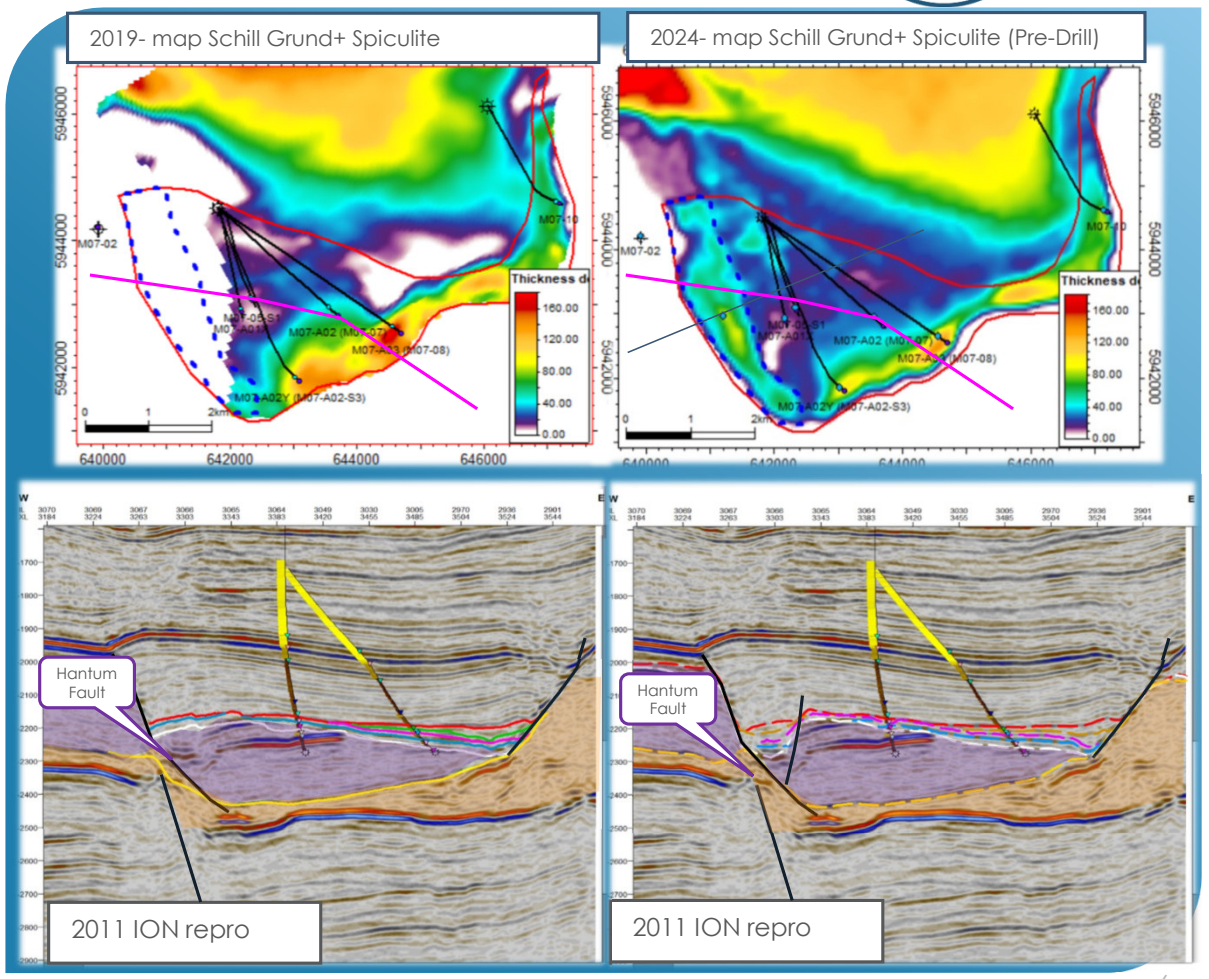
Why a fresh pair of eyes?

- 2023, reinterpretation of M07B field: identification of the M07-West opportunity
  - Earlier interpretation assumed no Jurassic in this area
  - Structural timing suggests U-Jurassic likely present
- Interpretation challenging due to poor seismic image quality
  - **Main risks:** reservoir presence and effectiveness
- The prospect was attractive enough to justify seismic reprocessing



M07-B-West prospect

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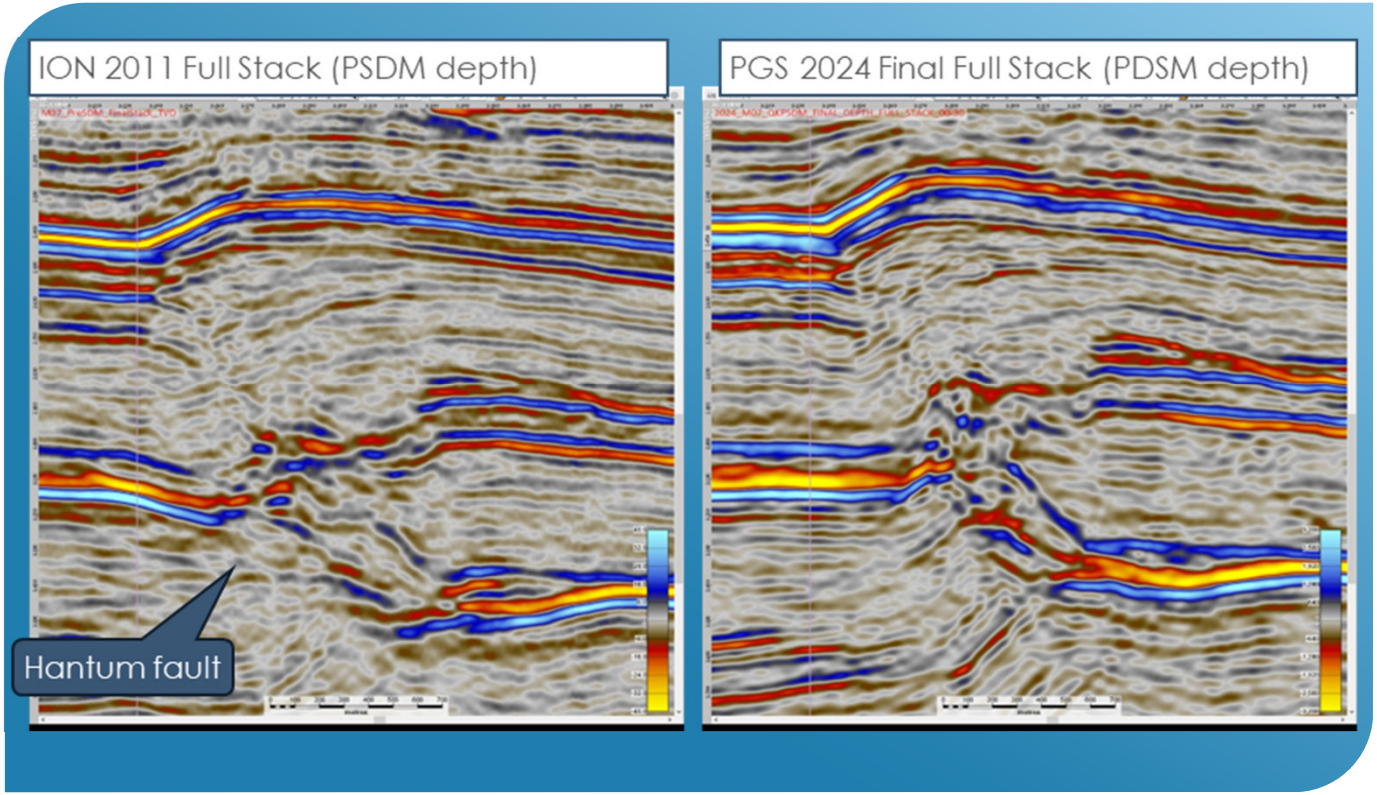
The view was not clear enough: Seismic processing needed!

- Seismic data reprocessed in 2023-2024 by PGS
- **Interpretation outcome:** Seismic results aligned with the 2023 interpretation
  - however, reservoir presence and effectiveness remain the main risk

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Exploration well

Exploration well M07-A01Y

A fresh look at collaboration

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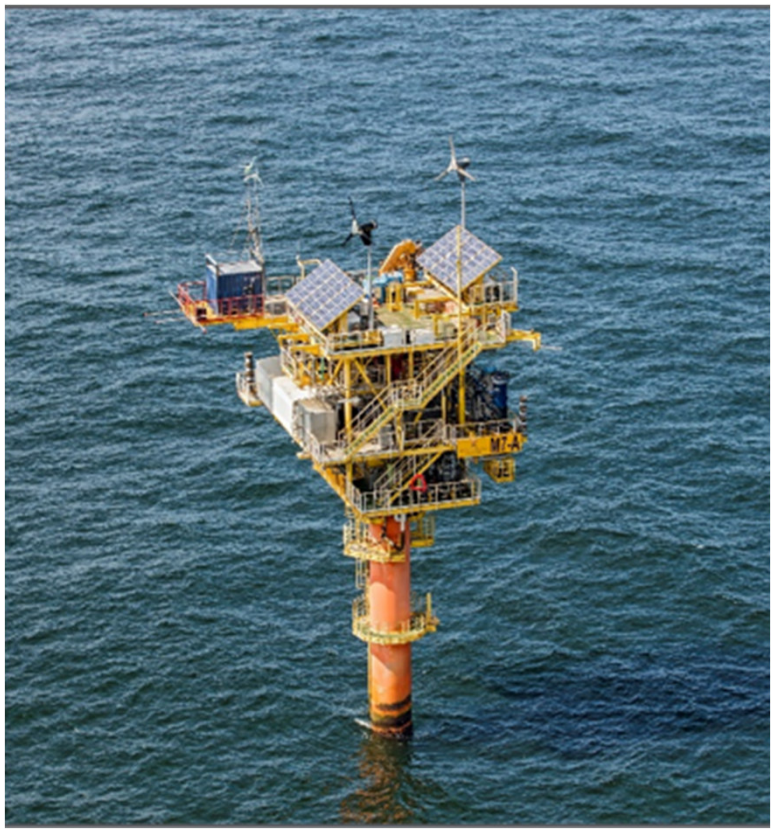
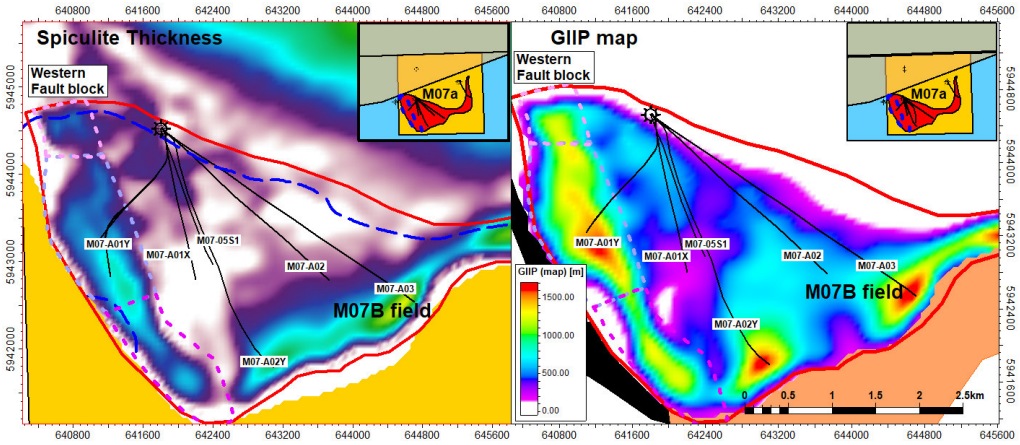
- **Objective:** Extend M07-B field life
- M07-B-West: **now-or-never**
  - However, risk too high with respect to the marginal economics
  - But… could extend lifetime of not only M07-B field, but also for the host platform
  - Can we share the risk among all that benefit from a successful well?
- The M07-B-West well was **made possible due to cooperation between upstream-midstream-downstream**: new way of working



Exploration well: M07-A01Y

Target and plan

- **Target:** Close to donner borehole, far from main field and thickest reservoir above GWC
- **Constrains:** well should be use as producer
- **Contingency Plan:** If the reservoir is found +25 deeper drill to an up-dip position



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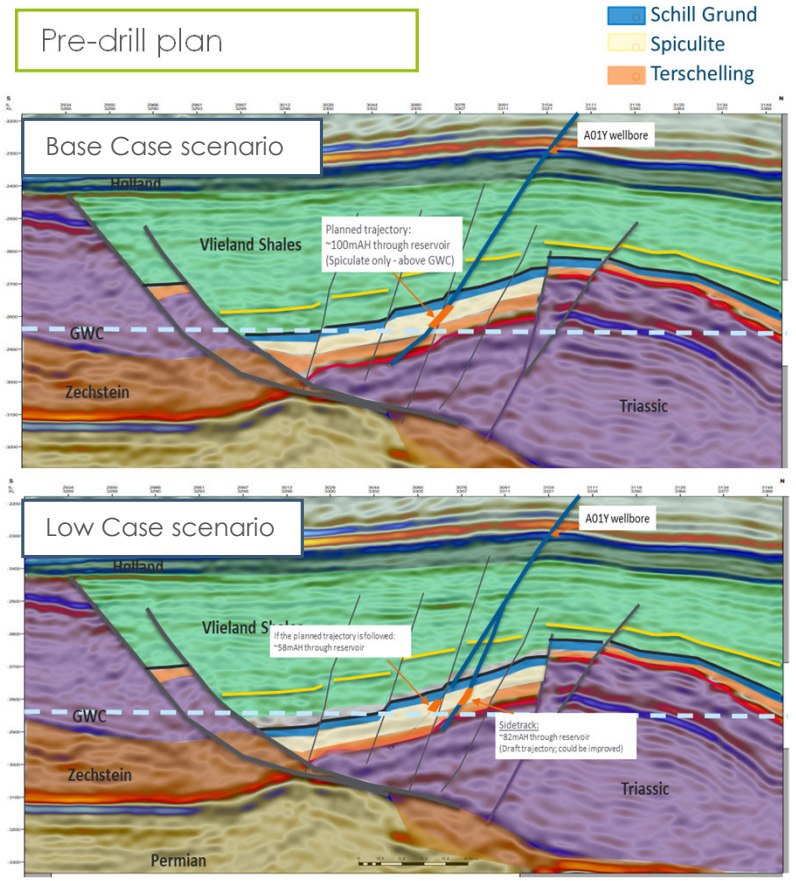

Exploration well: M07-A01Y

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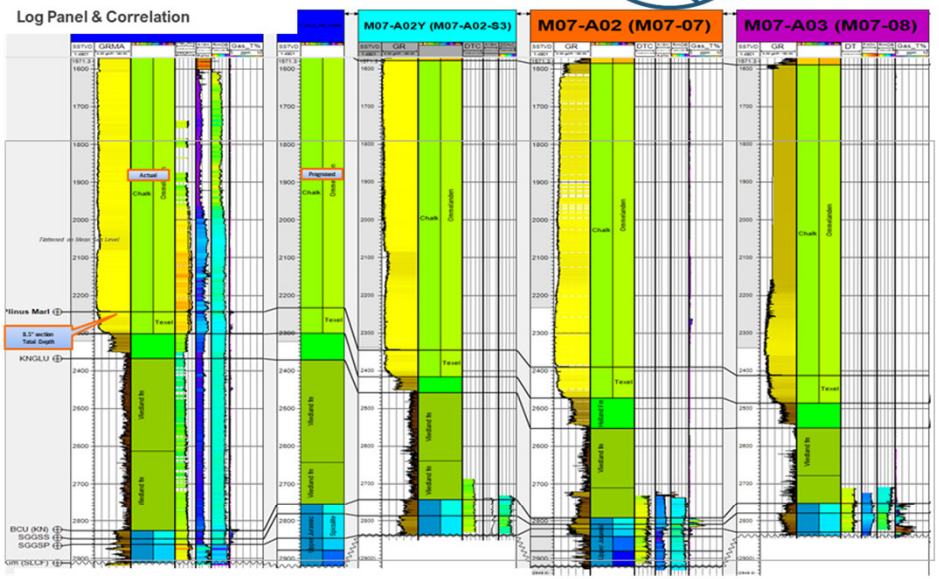
Operational summary and results

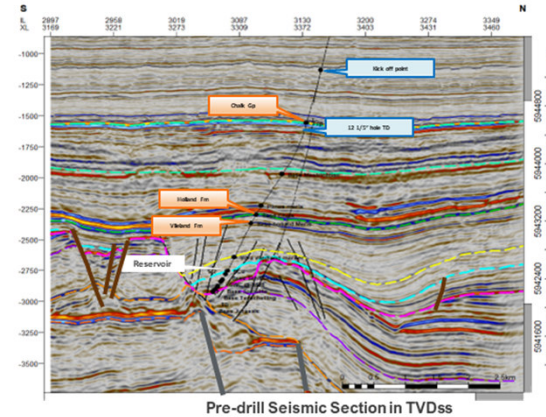
M07-A01Y summary:

- The well M07-A01Y was drilled from the M07-A platform, using the existing M07-A01X well as donor.
- The well M07-A01X was side-tracked at a depth of 1255 m, heading SW towards the western fault block

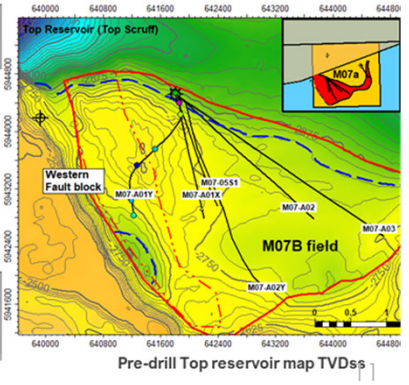
M07-A01Y Results:

- Reservoir encountered deeper, thinner, and poorer quality than prognosed
- Residual gas below BC GWC with good gas shows
- Decision to sidetrack up-dip





Pre-drill Seismic Section in TVDss



Pre-drill Top reservoir map TVDss

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Exploration well: M07-A01Y

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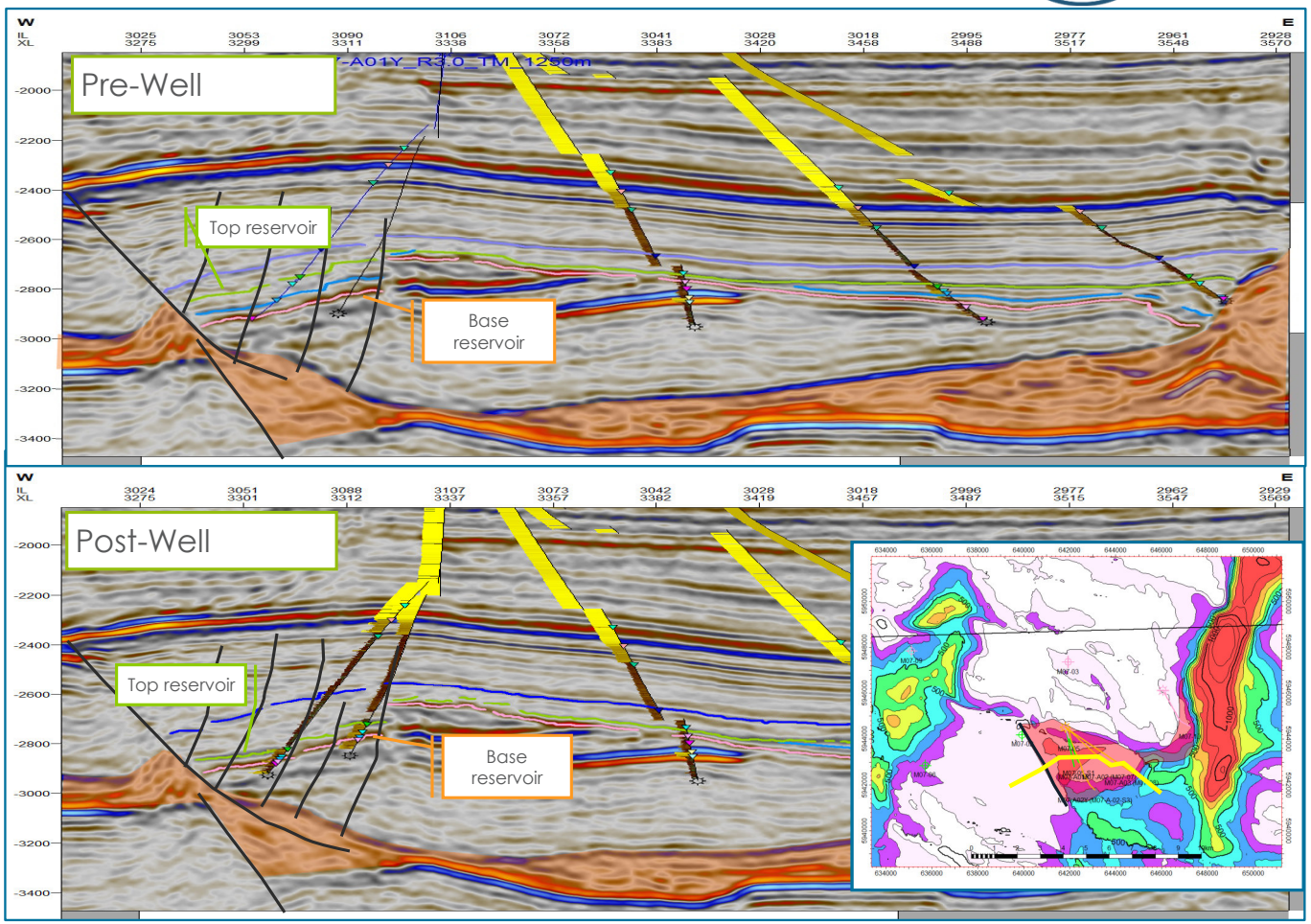
- **Well M07-A01Y:** Depth and Interpretation Update
  - Well-to-seismic tie shows reservoir top correlates with a deeper seismic reflector
  - Revised interpretation indicated greater reservoir thickness in the North
- **Geological Consequences**
  - Hantum Fault likely reactivated during Jurassic rifting
  - Lack of syn-sedimentary growth in the central fault block attributed to late salt withdrawal



Exploration well: Sidetrack M07-A01YX

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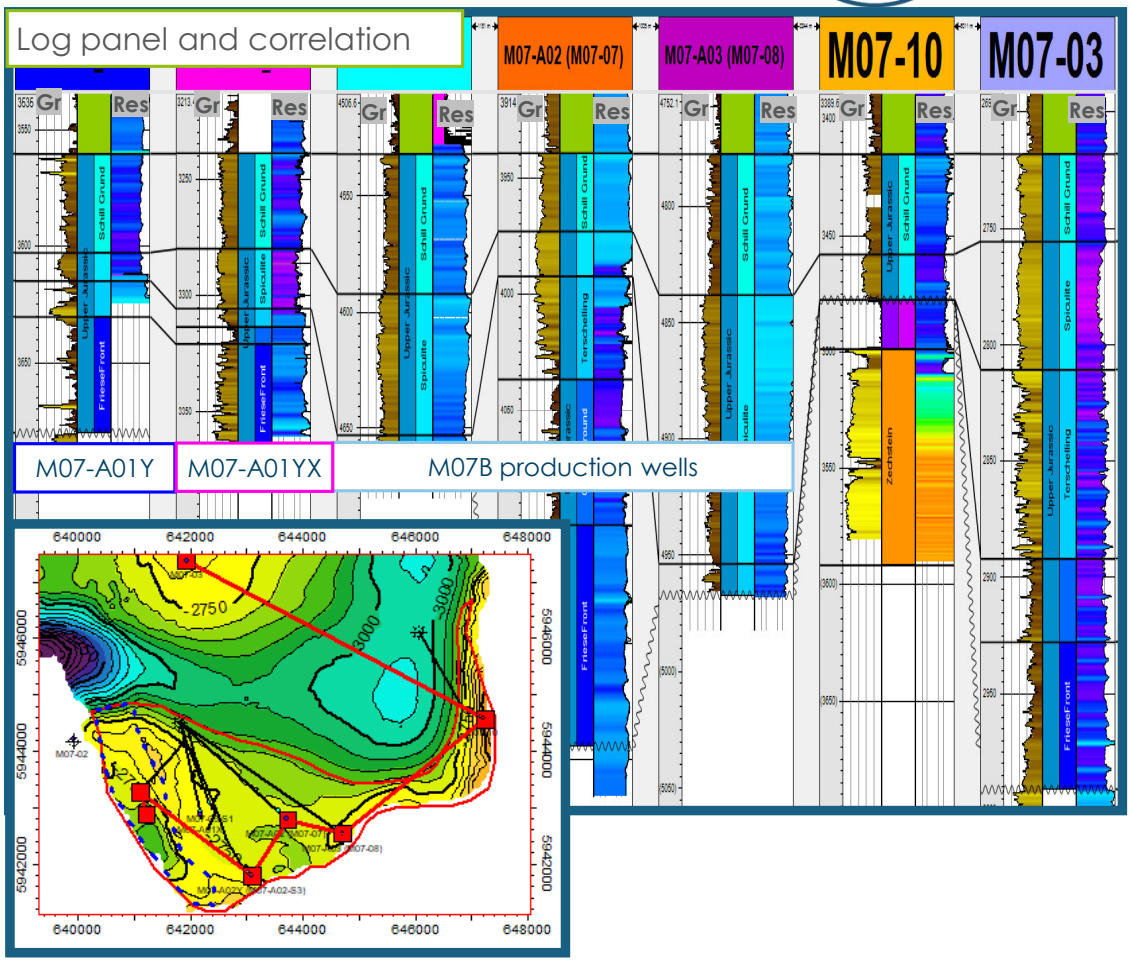
Operational summary and results

- **M07-A01YX sidetrack summary:**
  - Open hole Sidetrack in Lower Chalk formation, directed to a northern target
  - Reservoir encountered at prognosed depth and thickness
- **M07-A01YX Result** → Gas uneconomic
  - Good porosity & Gas shows, however low resistivity indicating high water saturation
  - Decision to P&A based on Real time logs
    - Volumes and estimated productivity deemed insufficient for economic recovery



Exploration well: M07-A01Y & sidetrack M07-A01YX

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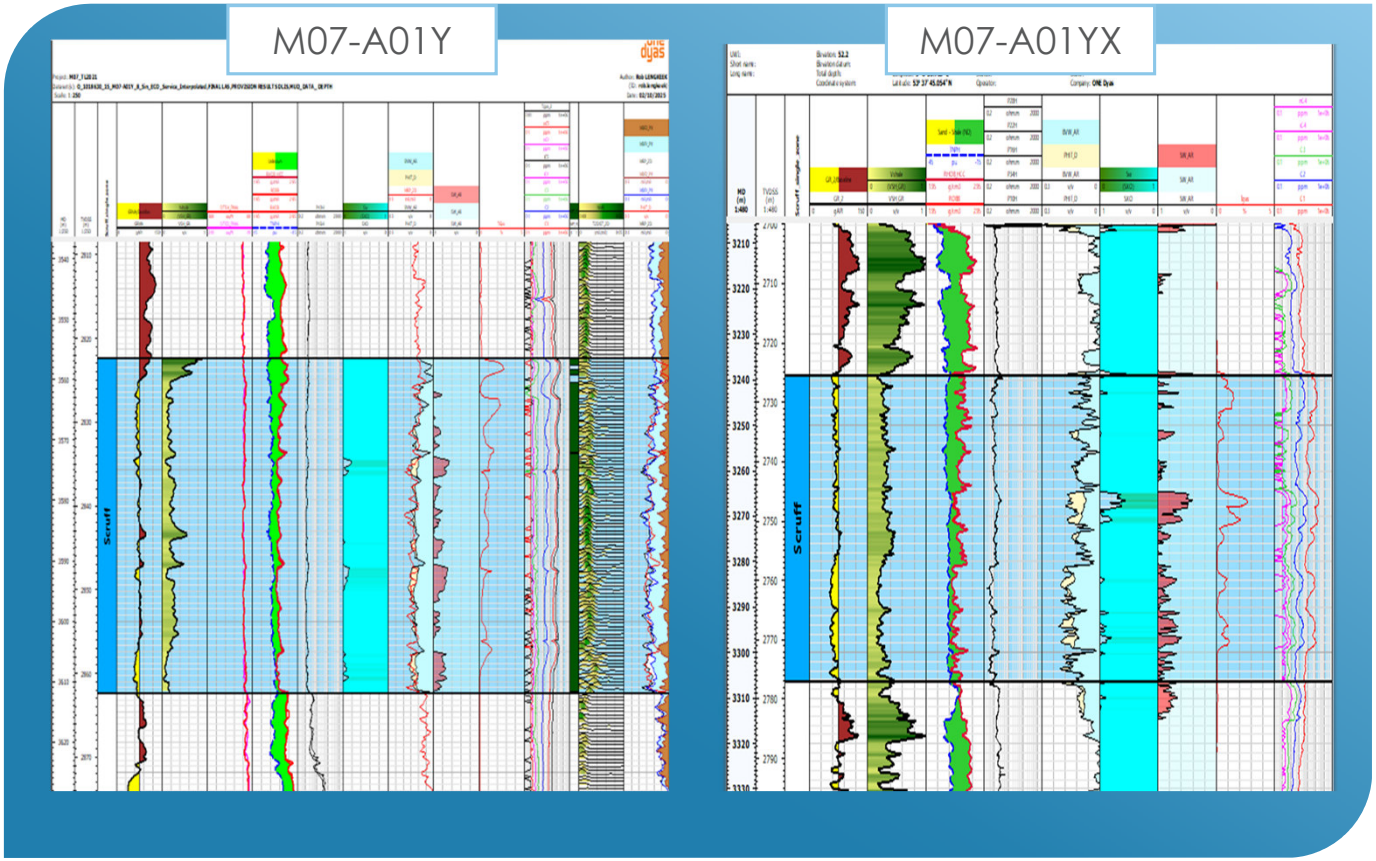
Petrophysics

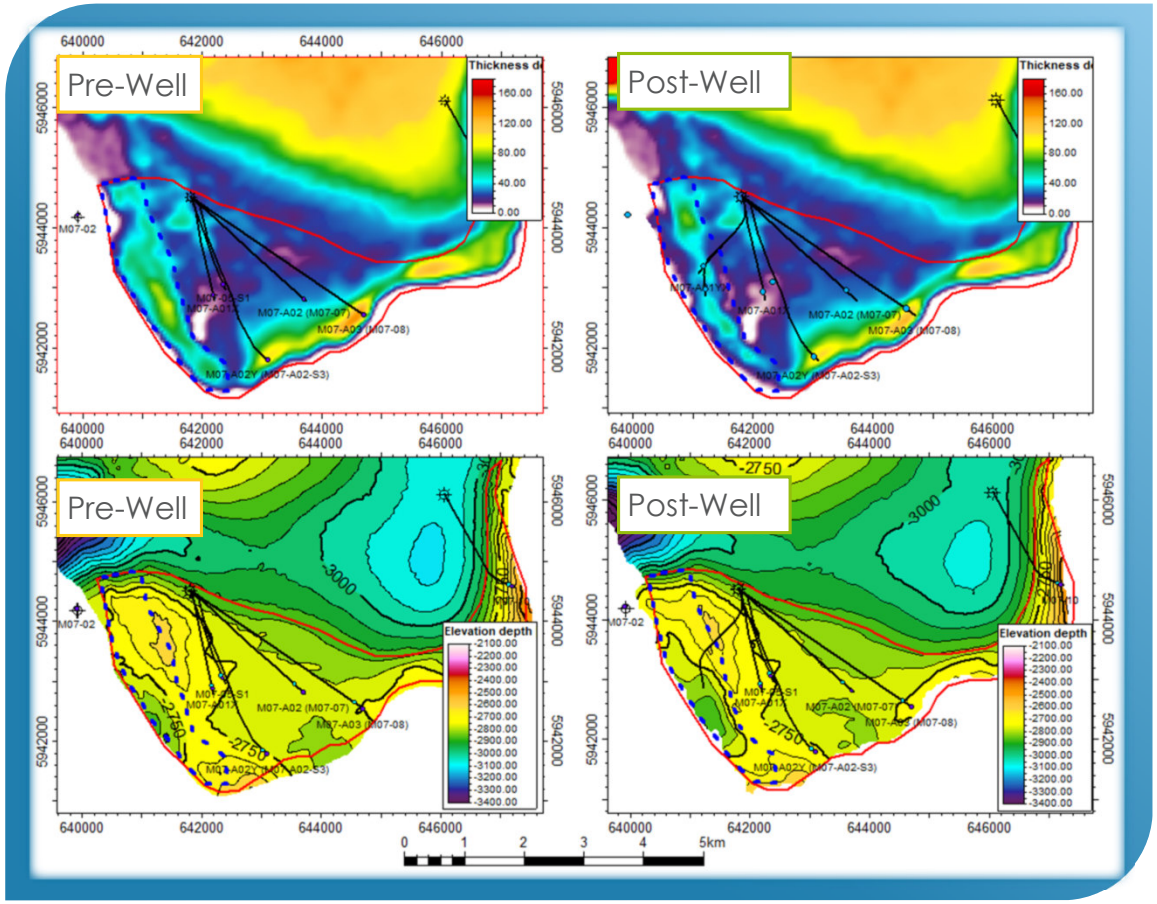
- **M07-A01Y Reservoir Properties**:
  - Thickness 40 m
  - Porosity ~10%
  - Sw 90%
    - NMR reveals total porosity filled almost entirely with bound fluids
    - Sparse free fluid volume filled with gas
- **M07-A01YX Reservoir Properties**:
  - Thickness 53 m, Net 8 m
  - Porosity ~15%
  - Net Sw ~55%



M07-B-West

Postmortem analysis

- M07-A01YX **High water saturation**
  - ~100 m above M07-B GWC
- Most likely **explanation**:
  - Tight reservoir → capillary-bound water
- **Volumetric:** small attic volume
  - With Net-to-Gross (NtG) as the main driver of volume reduction
- **Producibility:** Only the 8m zone in the middle of the Scruff (with high gas saturation) was regarded producible, but at too low rates



Conclusion

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- **A fresh pair of eyes discovered indeed newly interpreted U-Jurassic reservoir, but unfortunately of poor quality**
- M07-A01YX Well is a gas discovery, but volumes and productivity estimates were insufficient for economic recovery
- The Jurassic depositional behavior in the Terschelling Basin is salt and fault controlled and good reservoir quality remains hard to predict
- There is still remaining prospectivity in the M7 block, not reachable from platform
- On challenging days, when opportunities seem scarce, it is only through collaboration and shared effort among industry partners that even the smallest prospects can be targeted


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Thank you for your attention!
Any questions?
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