Identification of Coal Seams in North America
Survey "Site A"

1.2 Data Processing – Workflow 4

1 – Preprocessing QAQC

- **WARR image selection.**
- **P-Scan image selection**
- **Stare image selection**

2- Processing Scan Data

- **WARRs:**
Depth Conversion
Dielectric Constant
- **P-Scan:**
Amplitude extraction
Structure identifiers
- **Stares:**
Harmonic logs
Frequency Logs
Correlation Method

3 – Field data comparison

- **Stares:**
Rank Matching
Compare Spectra

4 – Project Assurance

- Dielectrics
- Harmonics
- Spectral Data

Each work package was processing by using the same tools and procedures within the workflows.

1.3 Data Analysis – Coal Seam Identification

- This method uses several sources of processed data to identify distinct lithological zones in the V-Bore.
- The following slides will display the results of the zonation for the stare data based on:

1) Rank Matching	2) Dielectric Constant	3) Compare Spectra	4) MinMax Lines	5) MinMax Boxes	6) Bandwidth harmonics	7) Coal seams	8) P-Scan Analysis	9) End Result

- The following slides will show the procedure step by step.

A

The ADR data

B

The Interpretation for ADR Zones

?
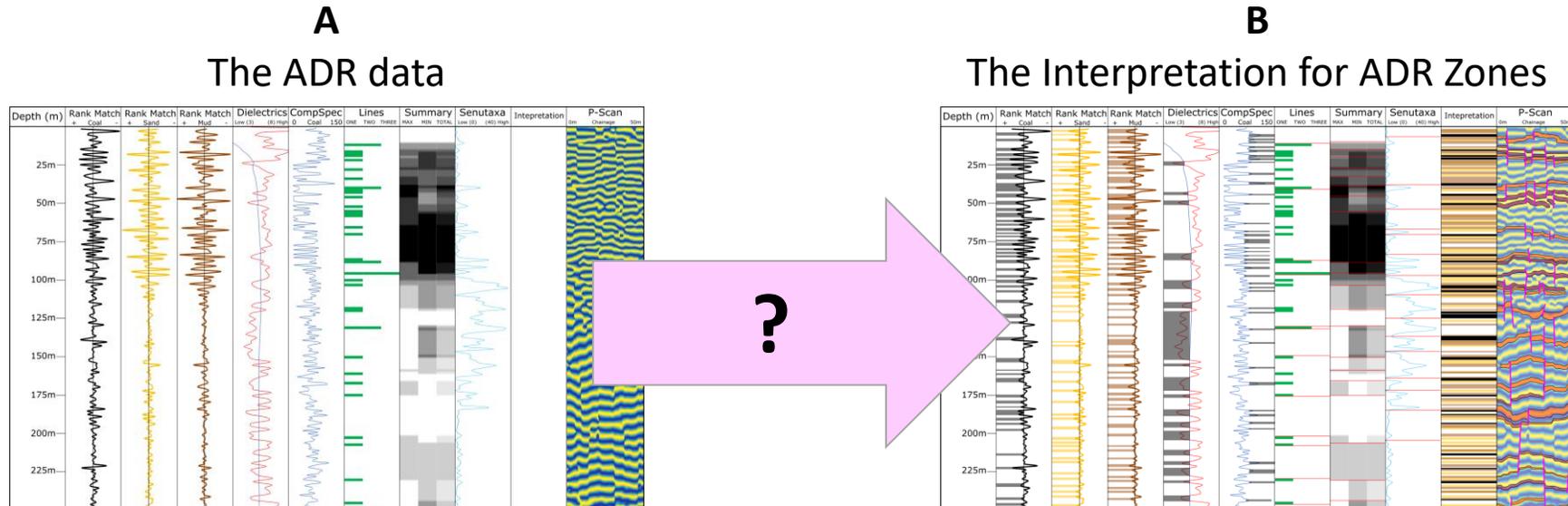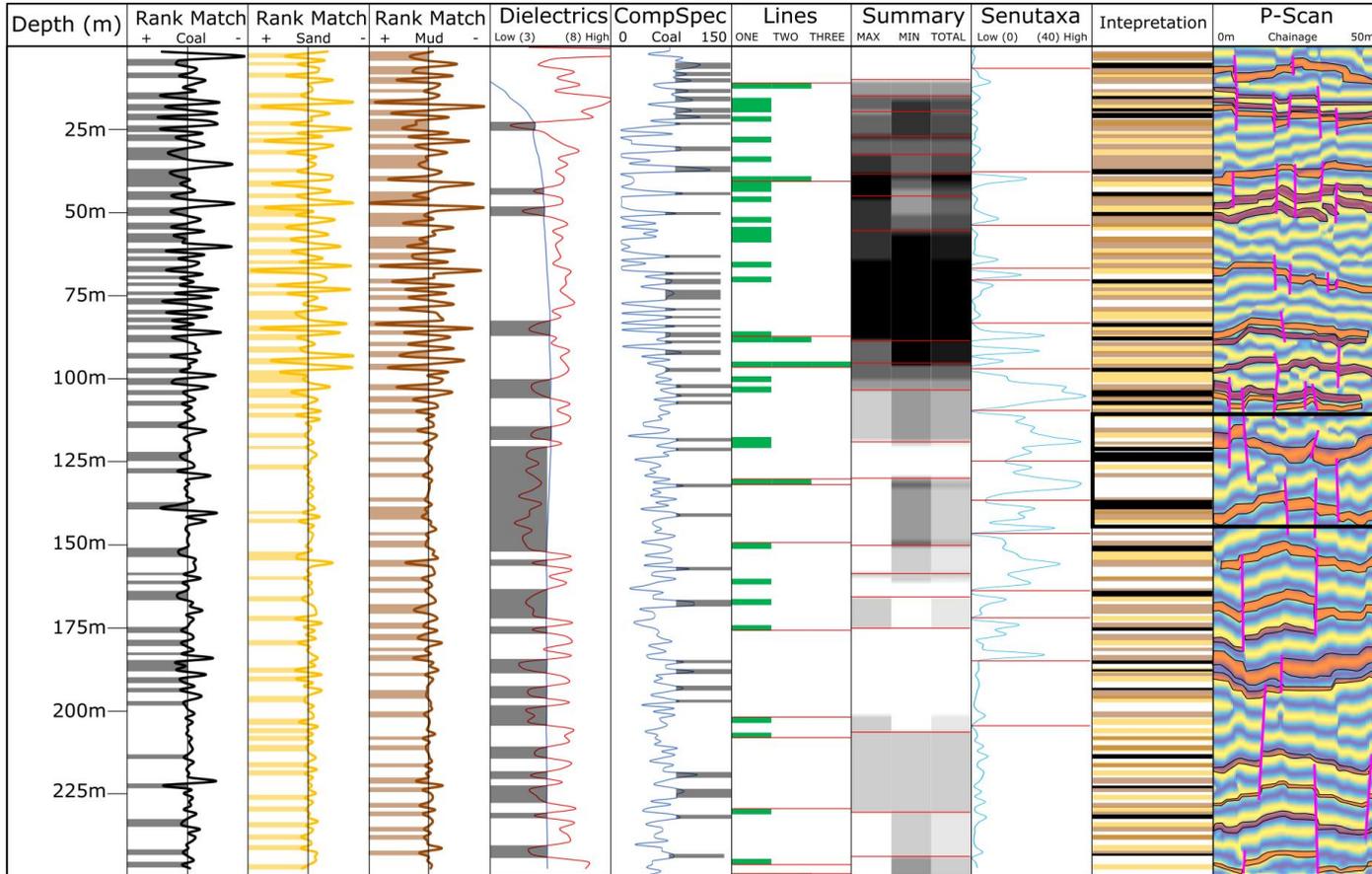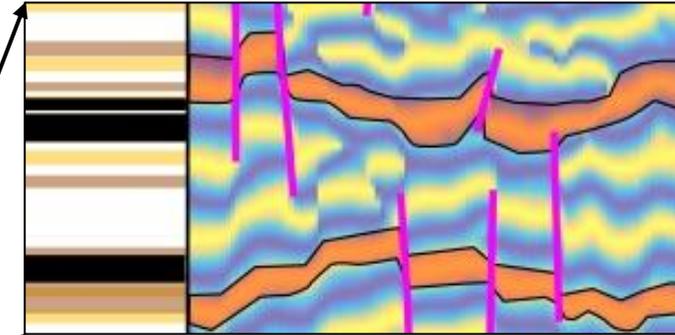
Potential faults and fractures are marked with a bright pink.

The P-Scan is interpreted by following the reflectors that correspond to the coal seams interpreted, those reflectors are marked with red and outlined.

■ Coal
■ Sandstone
■ Mudstone

1.3 ADR Zones: 9) End Result
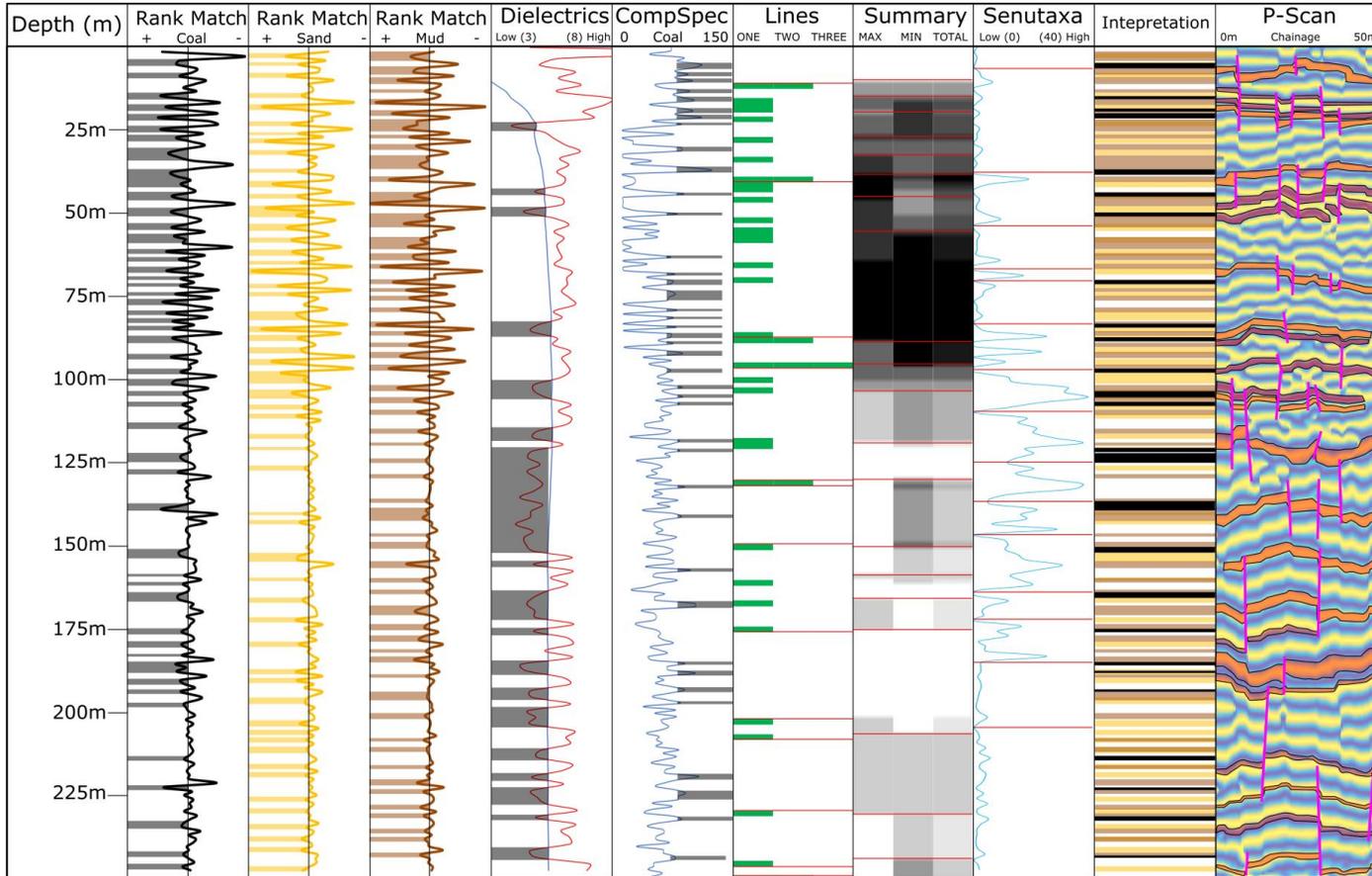
Coal
Sandstone
Mudstone

To complete the process, the ADR Zones are coloured based on equivalent Training Data. In this case, using the petrophysical interpretation of the downhole logs.

- The next slide shows a very detailed breakdown of the behaviour of each of the 5 parameters within each of the 15 detected ADR Zones.

- For the blind holes, the relationships between the ADR Zones and the petrophysical stablished in this training zones will be used to define the lithology of the ADR Zones.

The trends are shared, as well as the general thicknesses of the interpreted seams.

The deep settings appear more useful on differentiating the thickest seams.

Coal
Sandstone
Mudstone
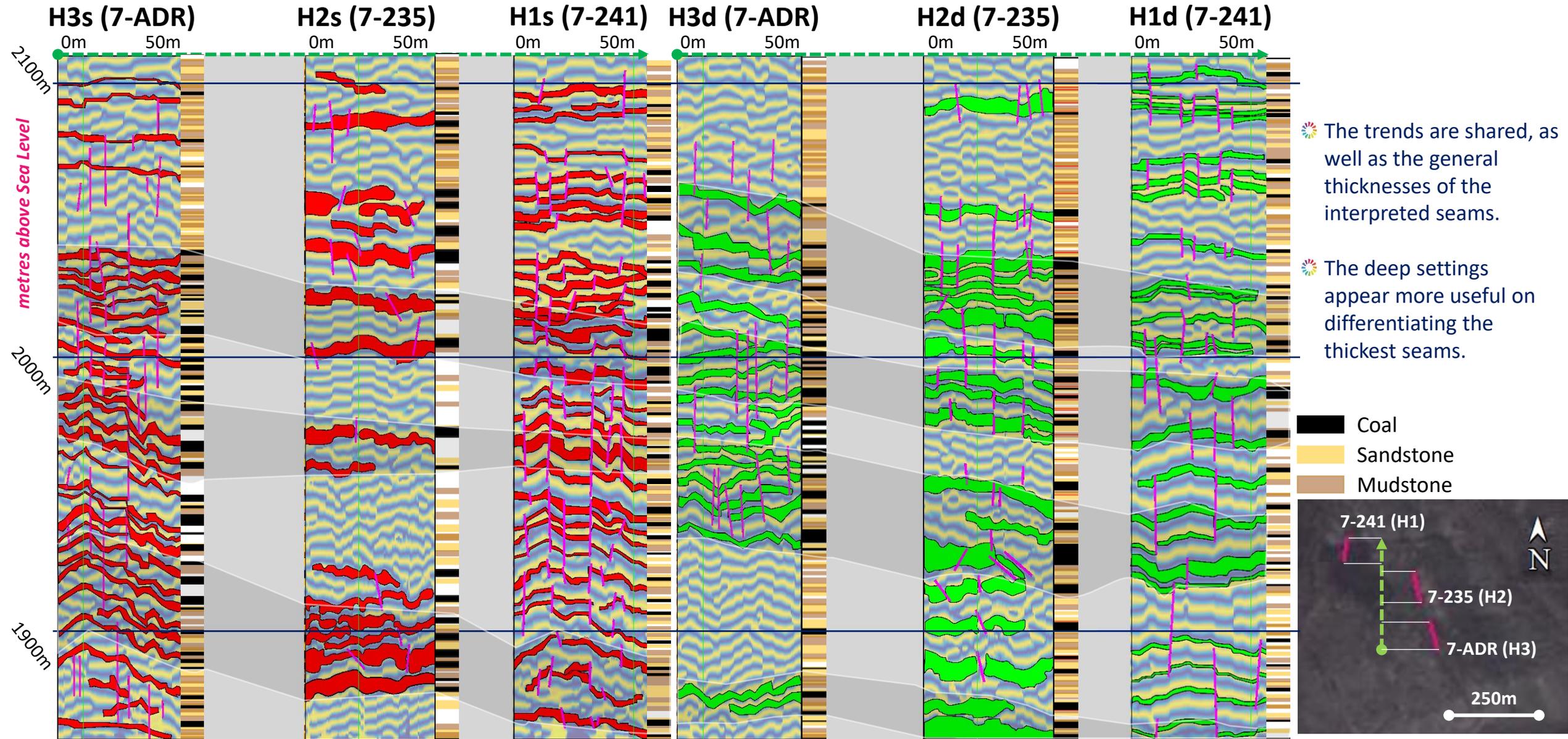
3. Conclusions: Site A

1. Adrok has identified the thickness and amount of coal seams at the Site A survey for the 3 V-Bores investigated. This analysis was carried out using both Shallow Settings (10mV gain) and Deep Settings (2mV gain).

2. The cumulative coal thickness is estimated at an average of 49.6m, only 1.2m below the measured coal thickness provided by the Client in NI 43-011 Technical report.

3. The shallow settings Stare scan works best to identify the cumulative coal thickness, while the deep settings Stare scans are more accurate when determining the amount of coal seams.

4. The structure mapped by Adrok shows common subvertical faulting along with a slight dip northwards. Both shallow and deep P-Scans point towards this assessment.

5. The deep settings Profile scan works best to identify and trace areas in the geological section that bear more coal seams.

Coal Estimations for Seams thicker than 1m

Per V-Bore

	7-241 (H1s)	7-241 (H1d)	7-235 (H2s)	7-235 (H2d)	7-ADR (H3s)	7-ADR (H3d)
Acc. Thickness (m)	53.0	30.3	52.0	50.7	63.3	48.6
Economic Seams	32	20	21	21	31	24

Shallow Settings · Deep Settings

Coal ■
Sandstone ▬
Mudstone ▬

Coal Comparison for Seams thicker than 1m

	FRO ADR	Client
Acc. Thickness (m)	49.6	50.8
Economic Seams	25	13
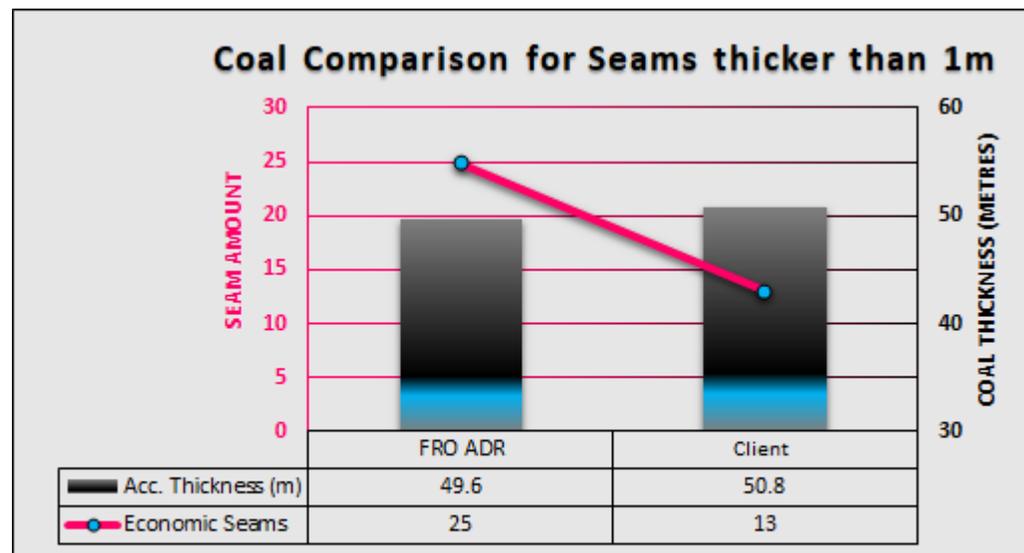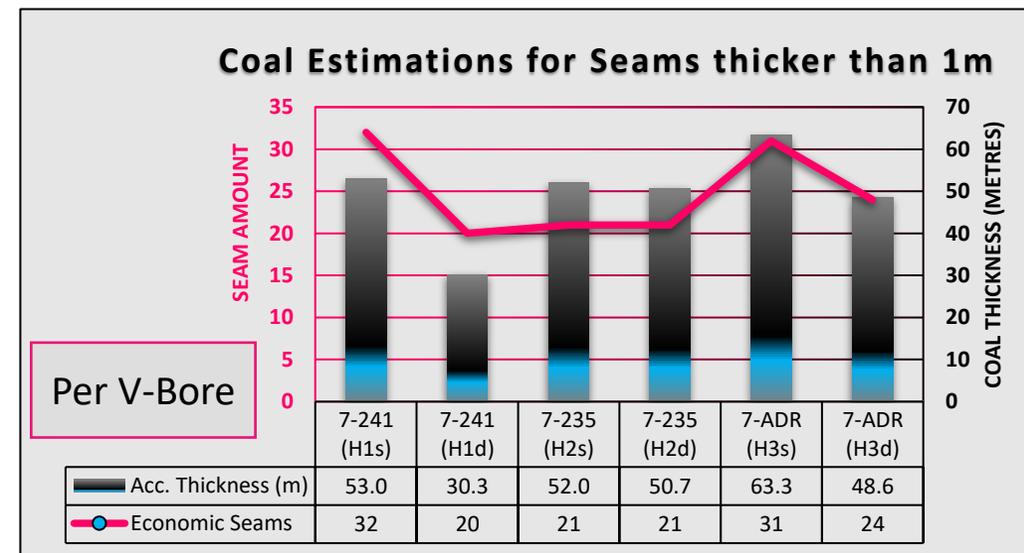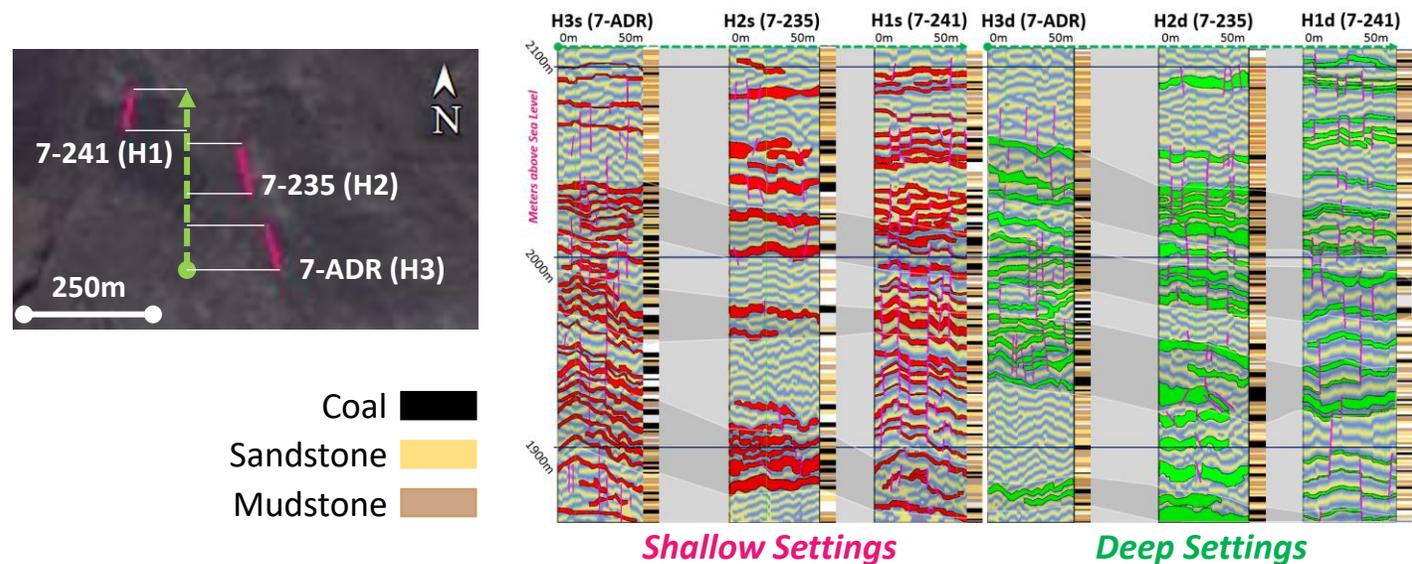
FRO is Final Review Operation