CCOP
Malacca Straits

2nd – 5th August 2010,
Langkawi Island, Malaysia

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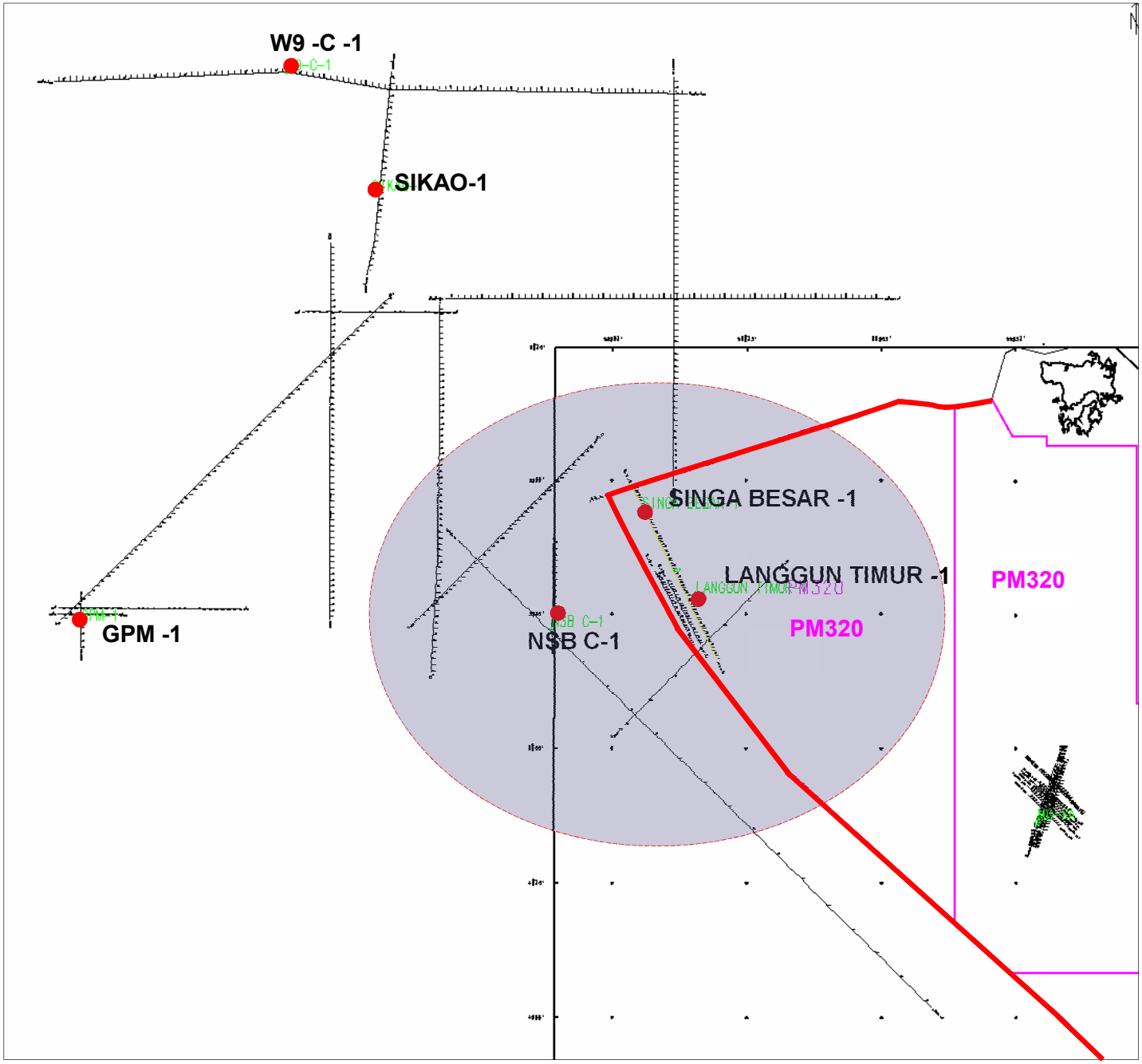
Presentation Outline

- Objective
- Study Area
- General Information
- General Stratigraphy
- Well Correlation
- Seismic Facies Analysis
- Depth Structure Map
- Summary

Objective

- To carry out the seismic facies mapping for Keutapang and Baong Formations.
- To firm up the general understanding of the environment of deposition for Keutapang & Baong Formations.
- To observe the continuity of Keutapang & Baong Formations over Indonesia & Thailand.

Study Area


W9 -C -1
SIKAO-1
SINGA BESAR -1
LANGGUN TIMUR -1
PM320
PM320
GPM -1
NSB C-1
Study Area
Malaysia Boundary

General Information

- Well Control:
  - Singa Besar-1
  - Langgun Timur-1
  - NSB C-1

- Seismic Lines:
  - Key Seismic Lines: 83-MS-02, 83-MS-09, NSO69-46, NSO80-503, NSO81-13

- Previous study/ projects:
  - Straits of Malacca Regional Study, 2000 (Shell & PRSS)

General Information (Exploration History)

- Mobil (1971 – 1975)
  - Acquired 5500 km of 2D seismic and drilled 2 wells – MSS-AX and MG-AX.
  - Both wells tested potential Pre-Tertiary Tampur Carbonate basement plays.
  - Good reservoirs were encountered at both wells but failed due to lack of top seal.

- PETRONAS (1983)
  - Acquired 2000 km of 2D seismic data in 1983.

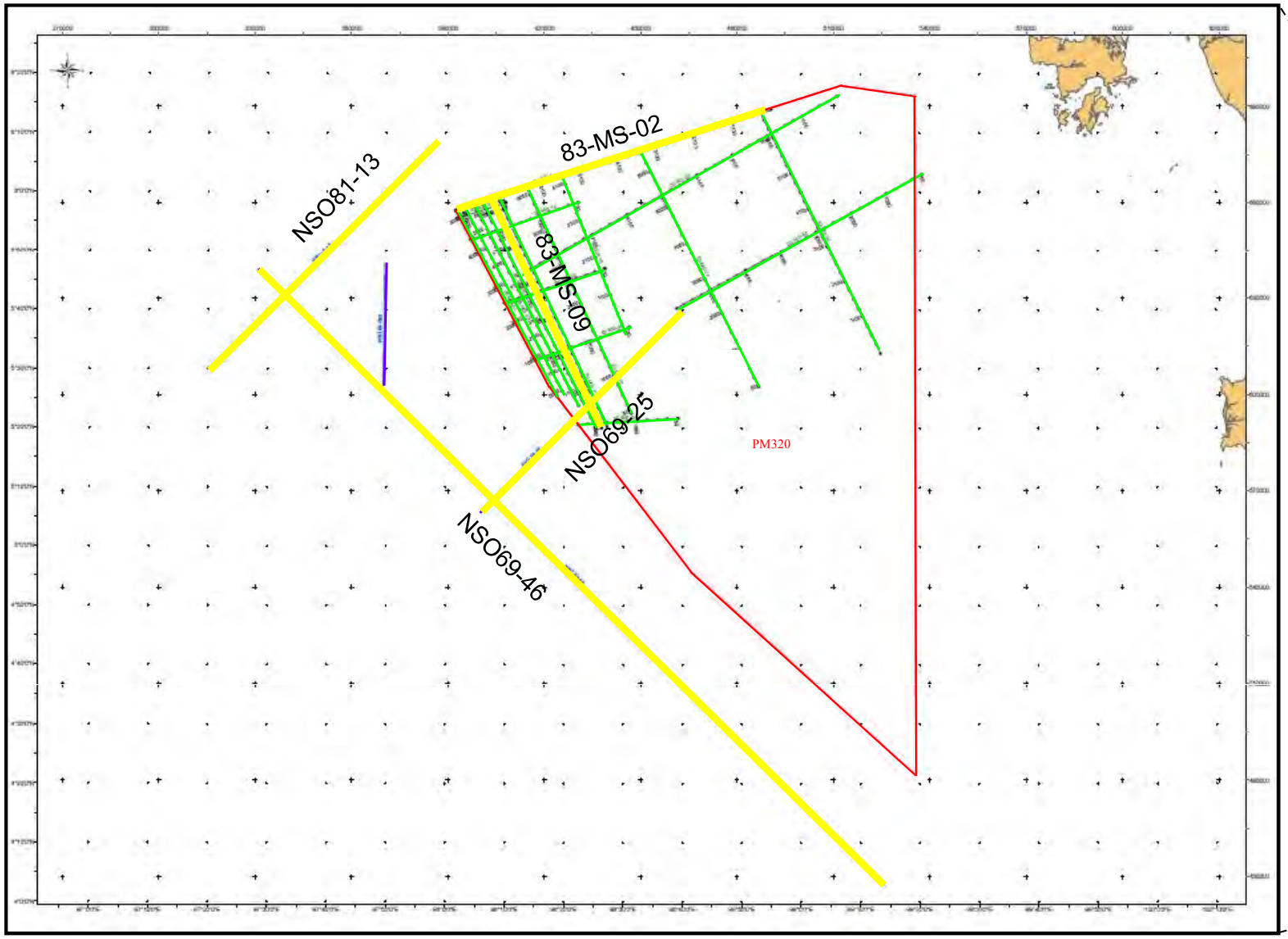
- SUN MALAYSIA PETROLEUM (1987 – 1992)
  - Acquired 5657 km 2D seismic and drilled 3 exploration wells in the Western most part of the block.
  - Singa Besar-1 and Langgun Timur-1 had minor gas shows and the third well, Dayang-1 was dry.
  - The acreage was relinquished in December 1992 upon the expiry of the exploration period.

General Information (Exploration History)

- SHELL (1999 – 2001)
  - Acquired and processed 1053 line-km 2D seismic data.
  - Re-processed 1000 line-km vintage 2D seismic data.
  - Conducted a regional study of the Straits of Melaka comprising evaluation of the hydrocarbon habitat and tectonic framework.

- 2002 onwards – no exploration activities.

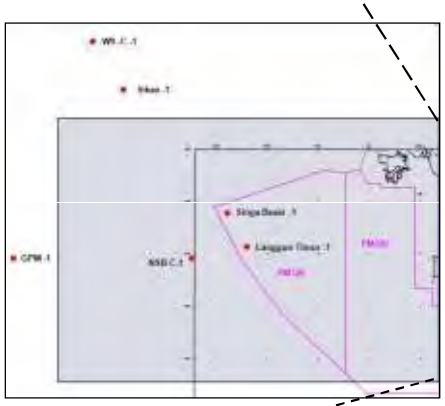
General Information (2D Seismic Lines Used)



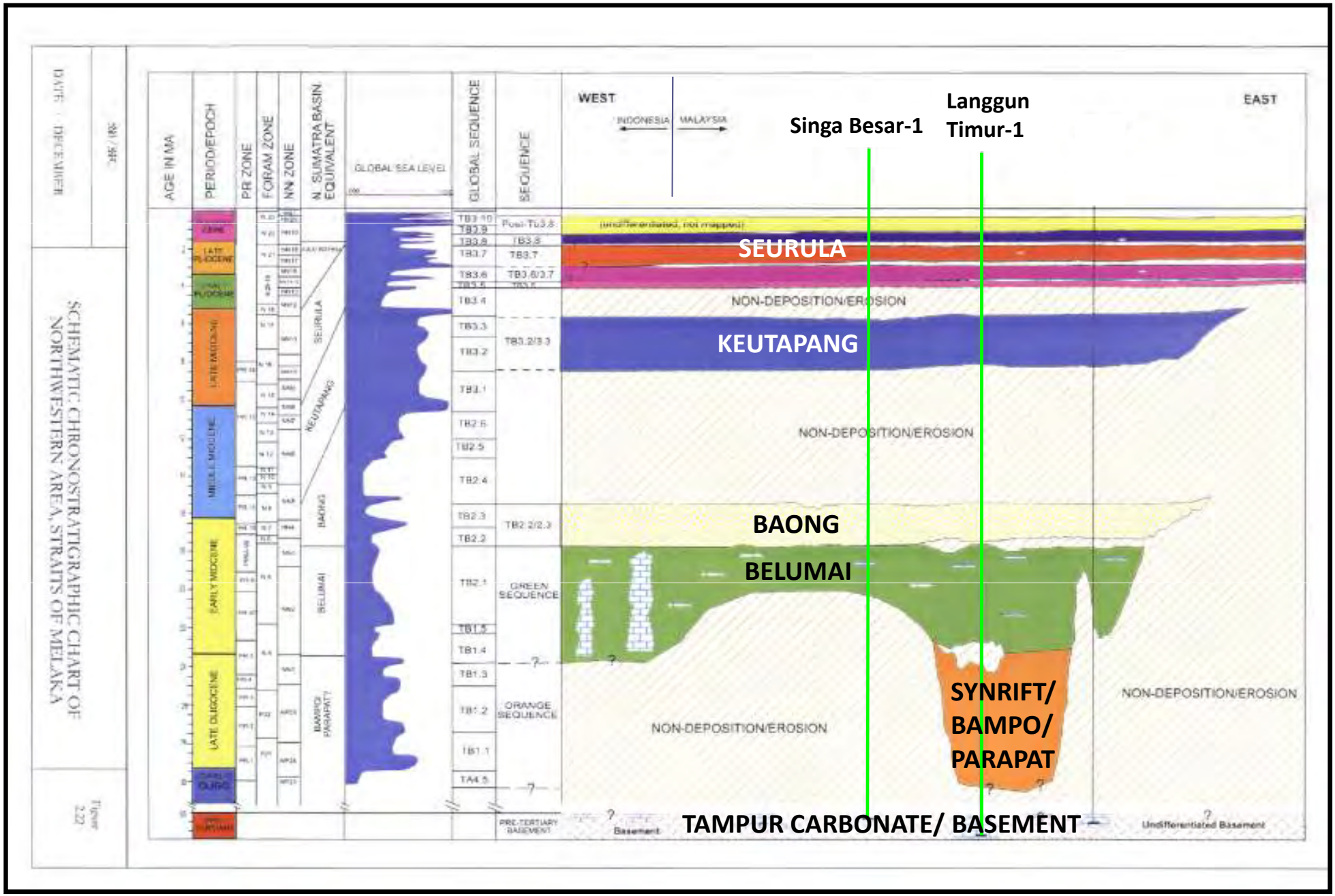
Legend:

Key Line

Other lines used for correlation

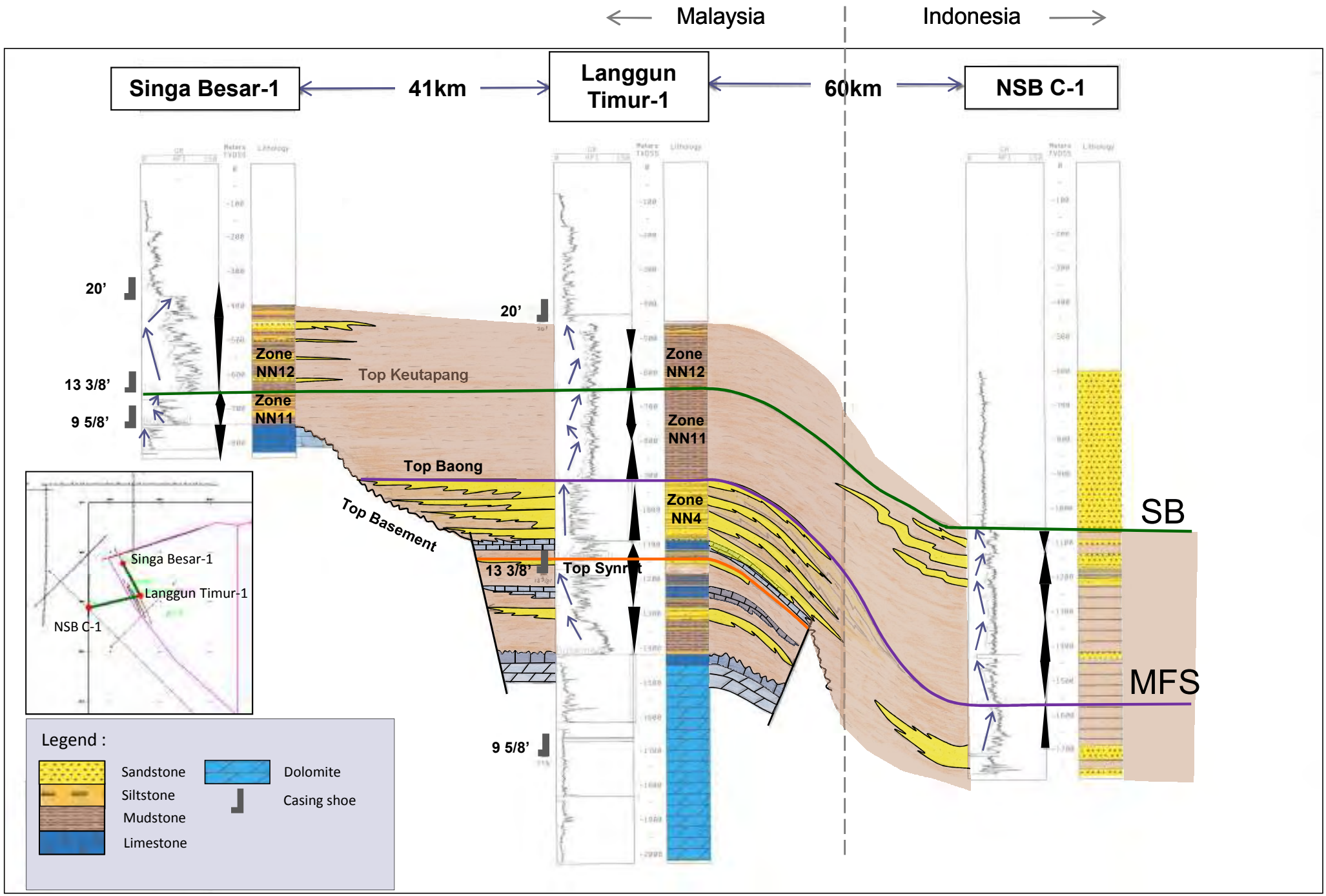


General Stratigraphy of Northern Malacca Straits

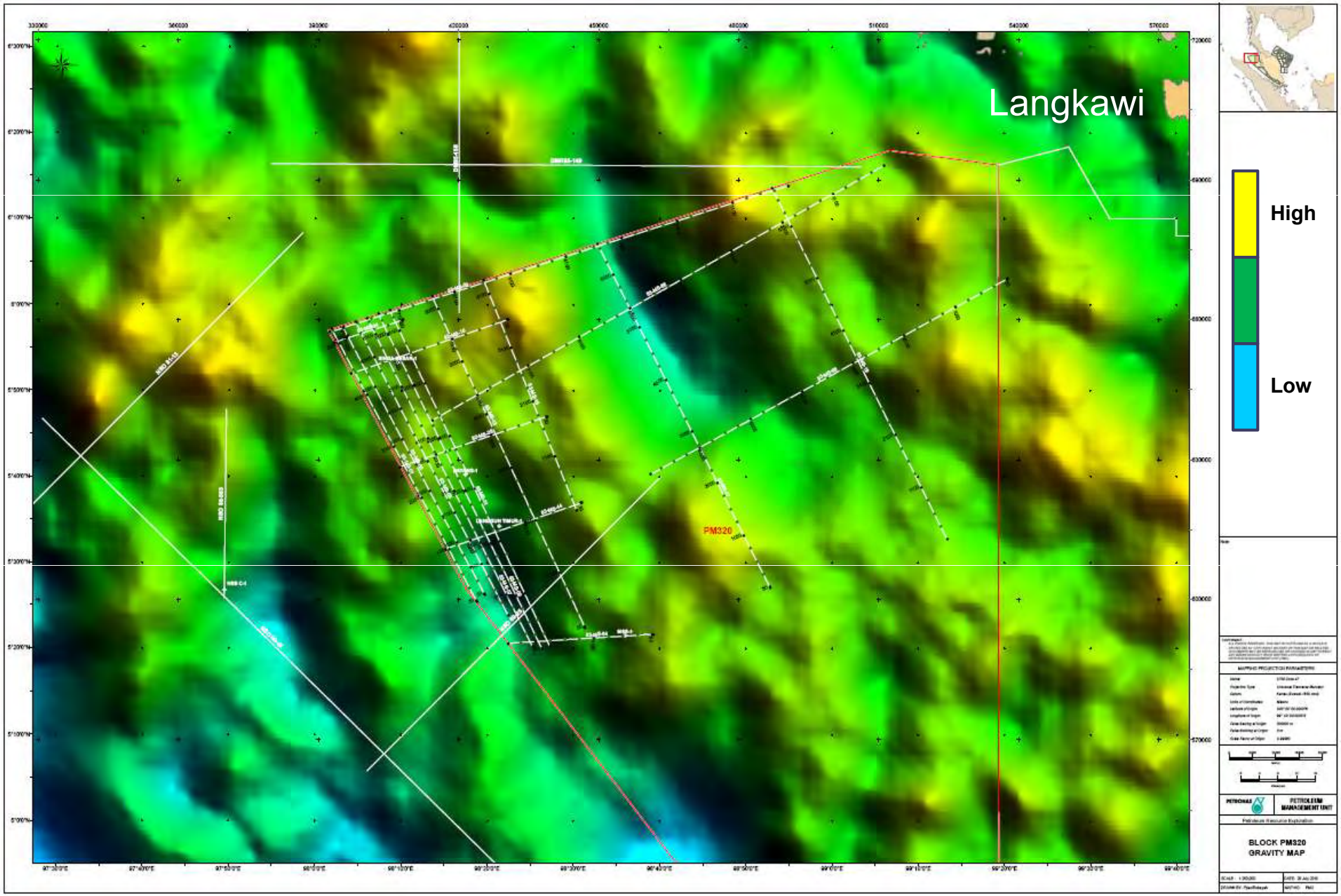


Well Correlation

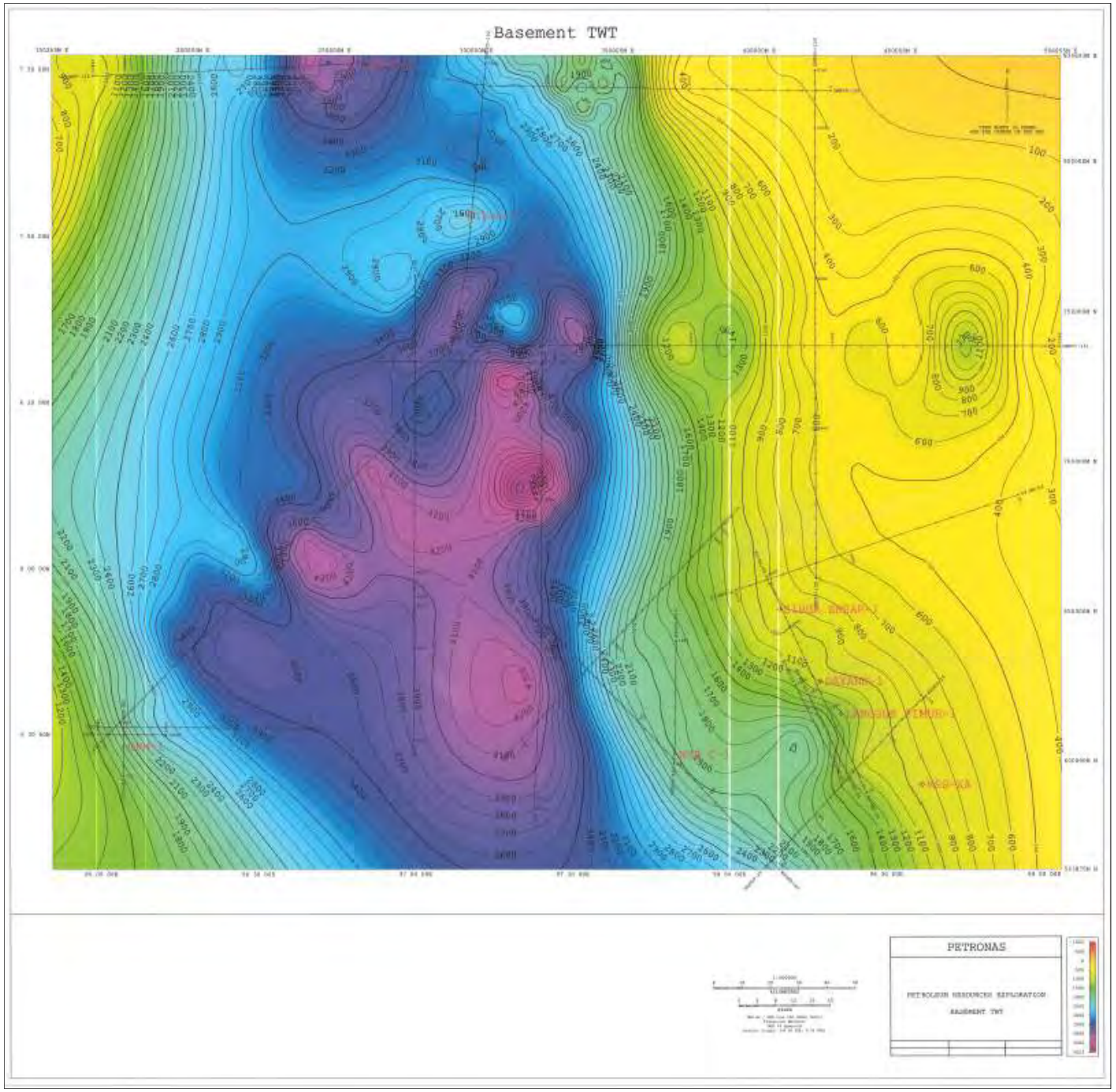
PETRONAS

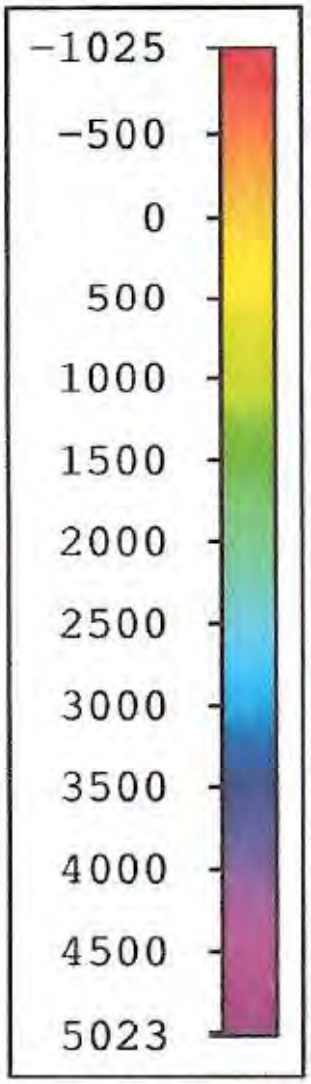


Gravity Map of Study Area

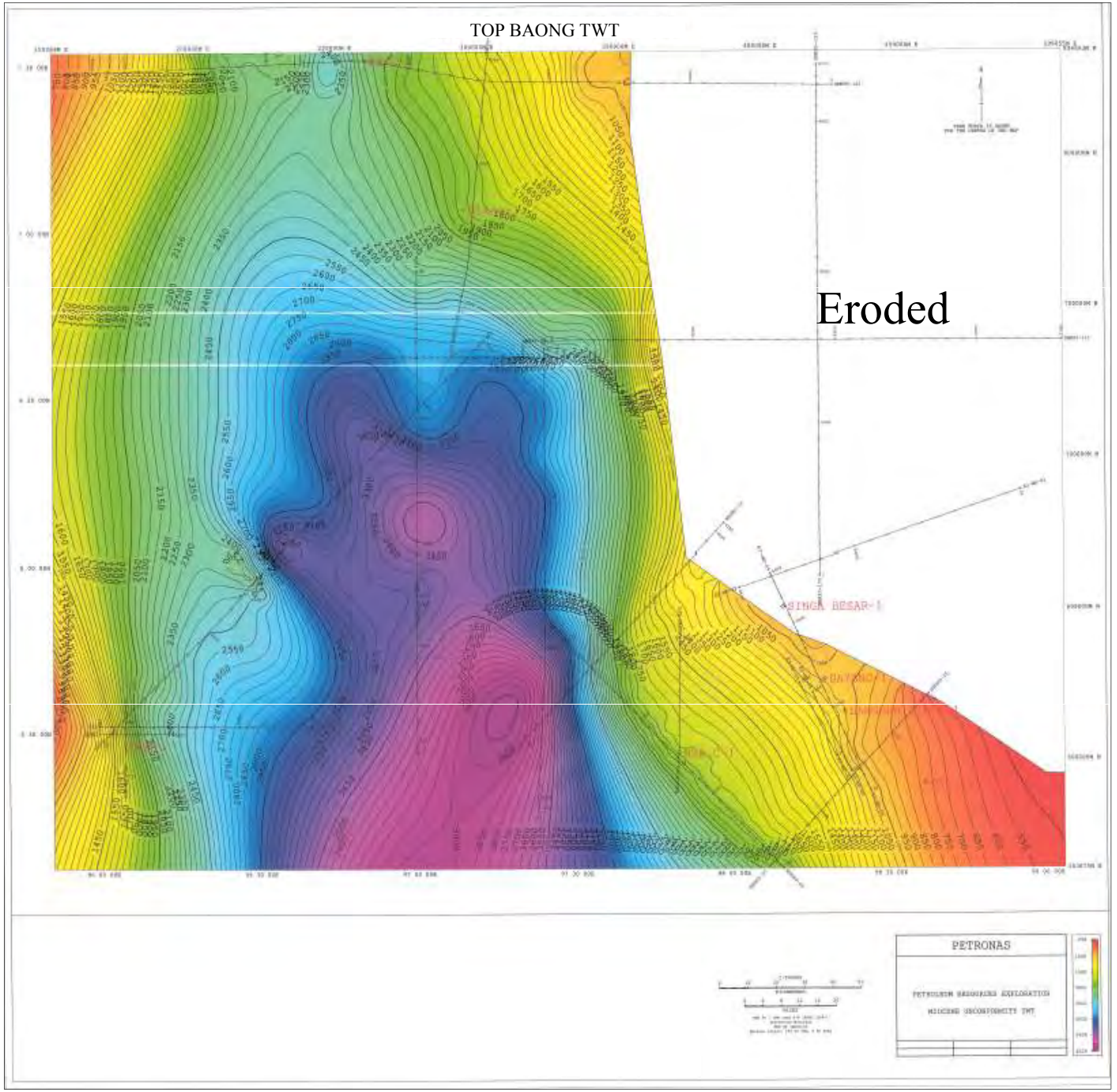


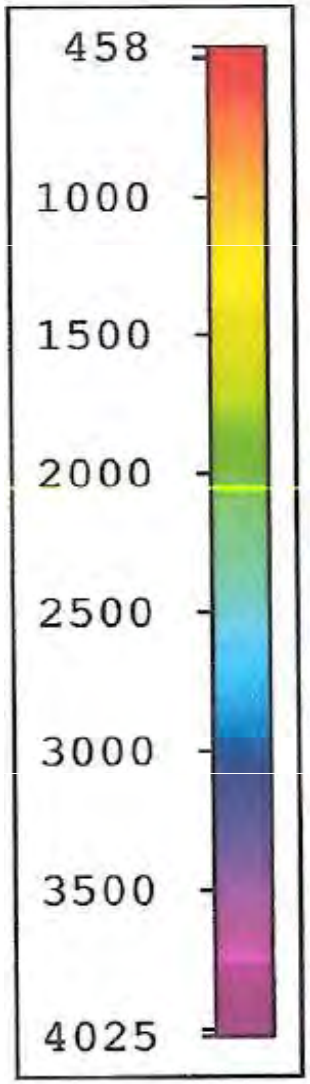
TWT Structure Map – Top Basement



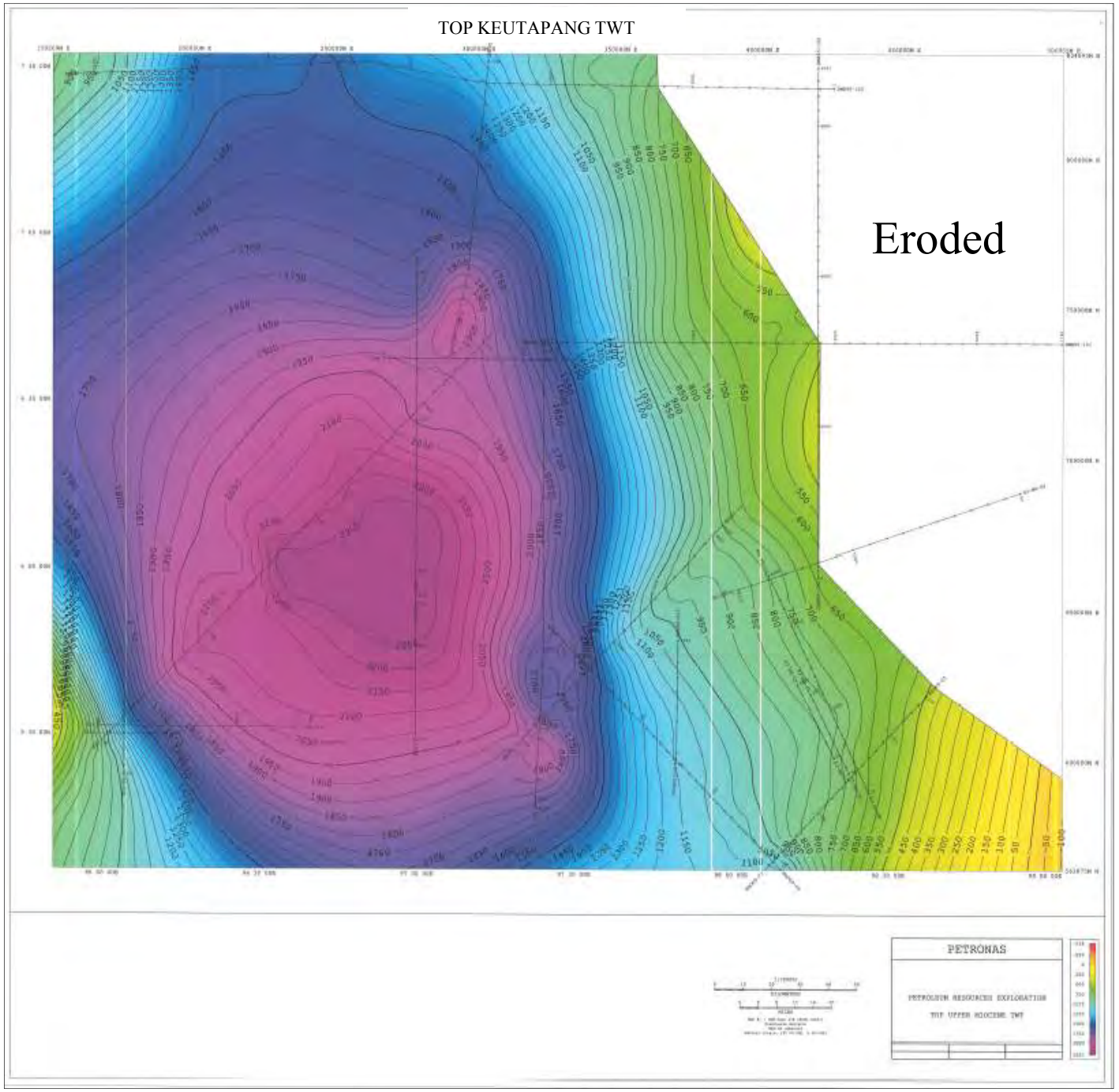


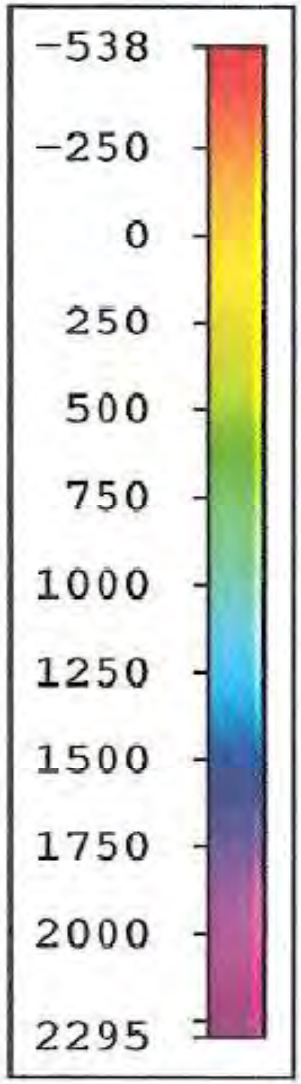
TWT Structure Map – Top Baong



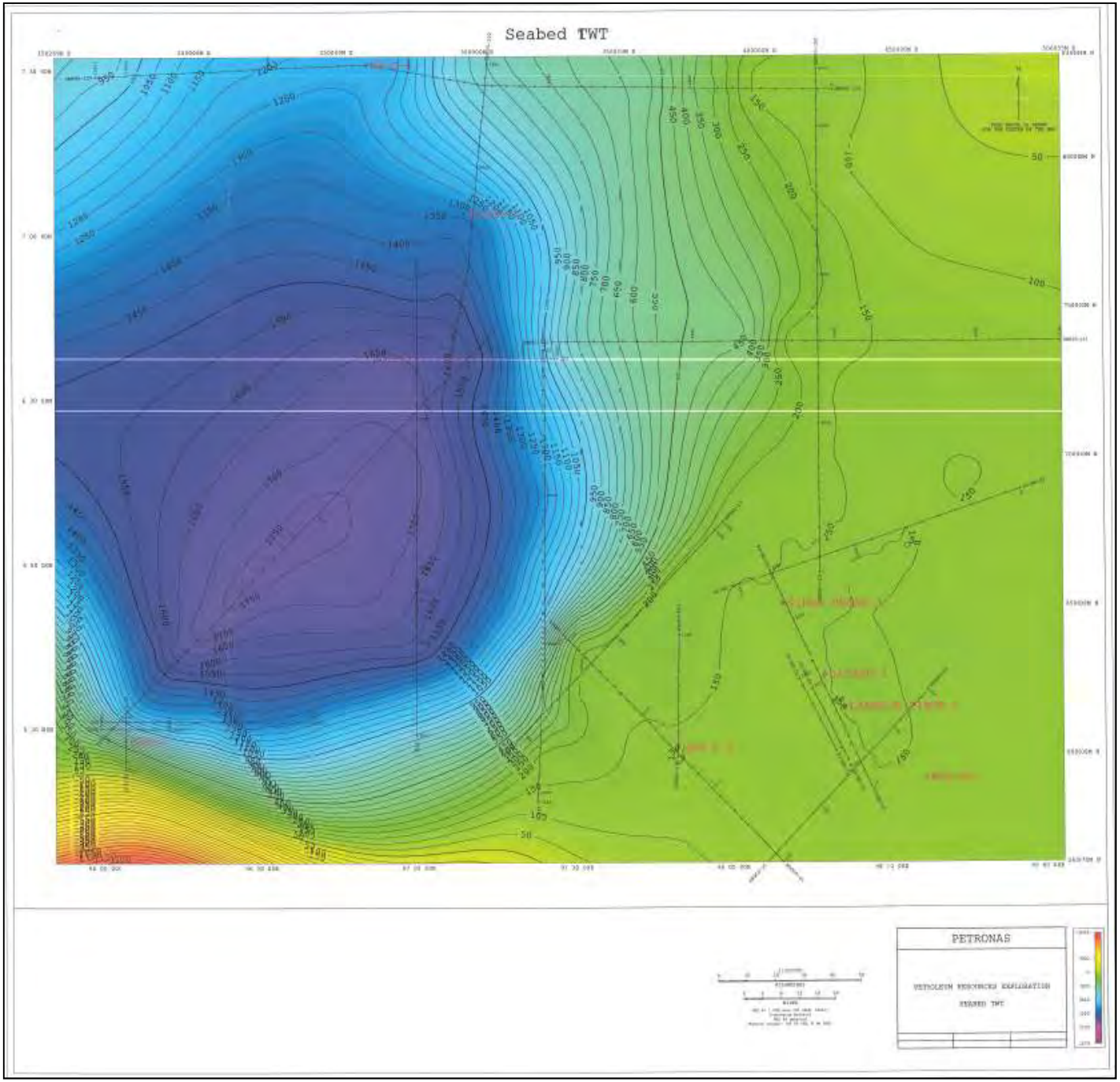


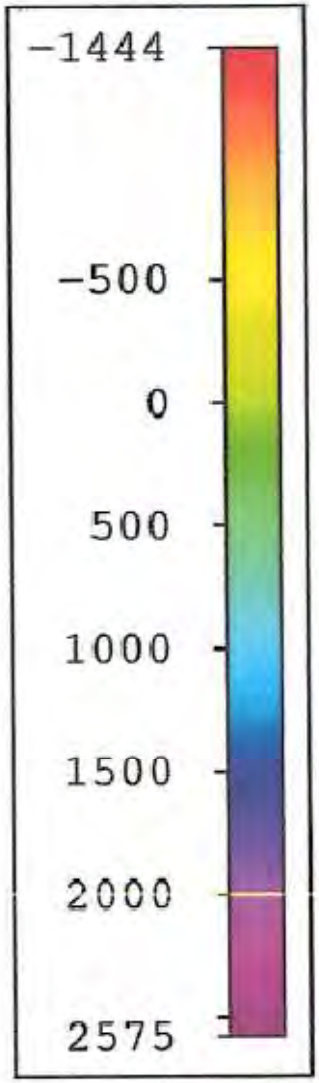
TWT Structure Map – Top Keutapang





TWT Structure Map – Seabed



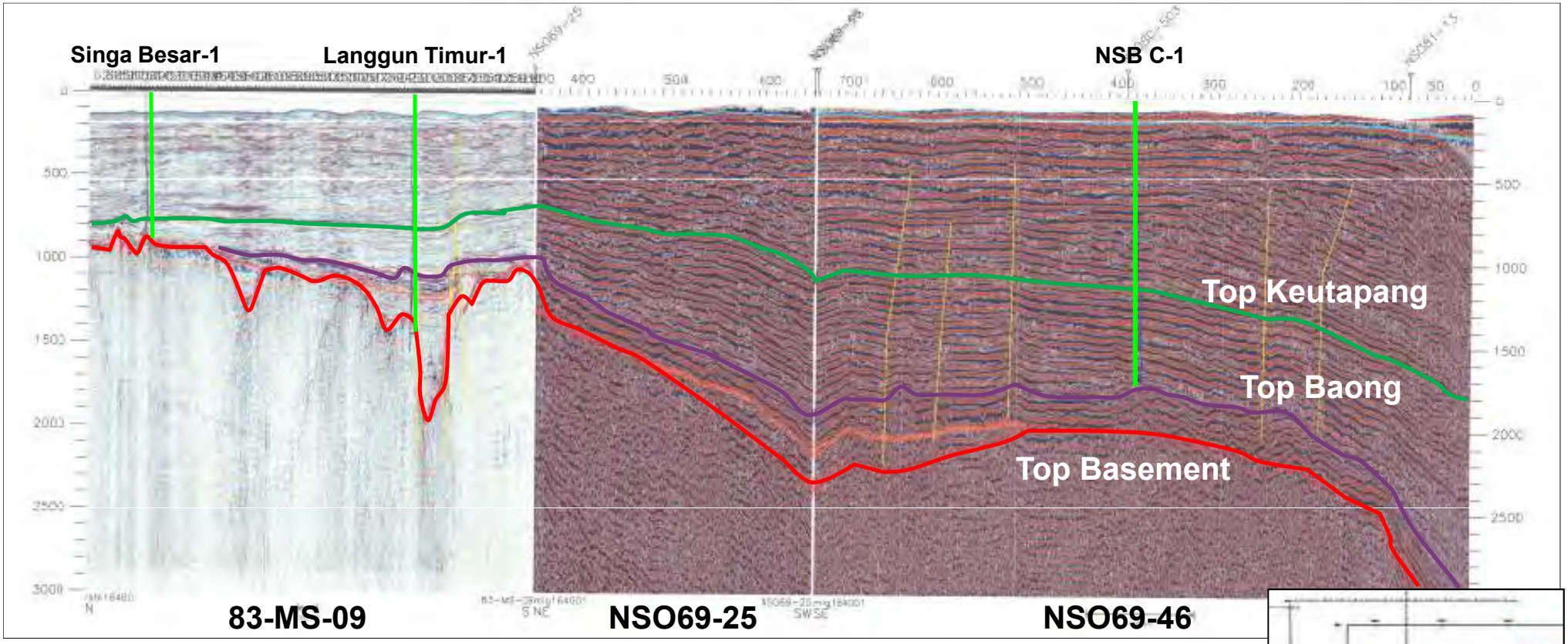


Seismic Correlation Crossing the Border

PETRONAS

Malaysia

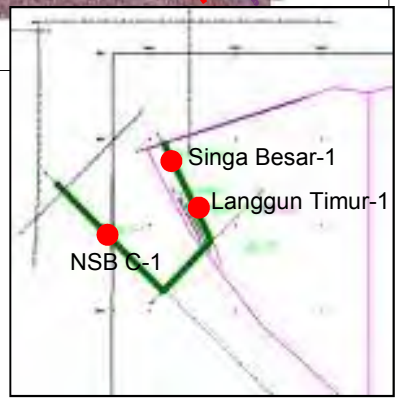
Indonesia



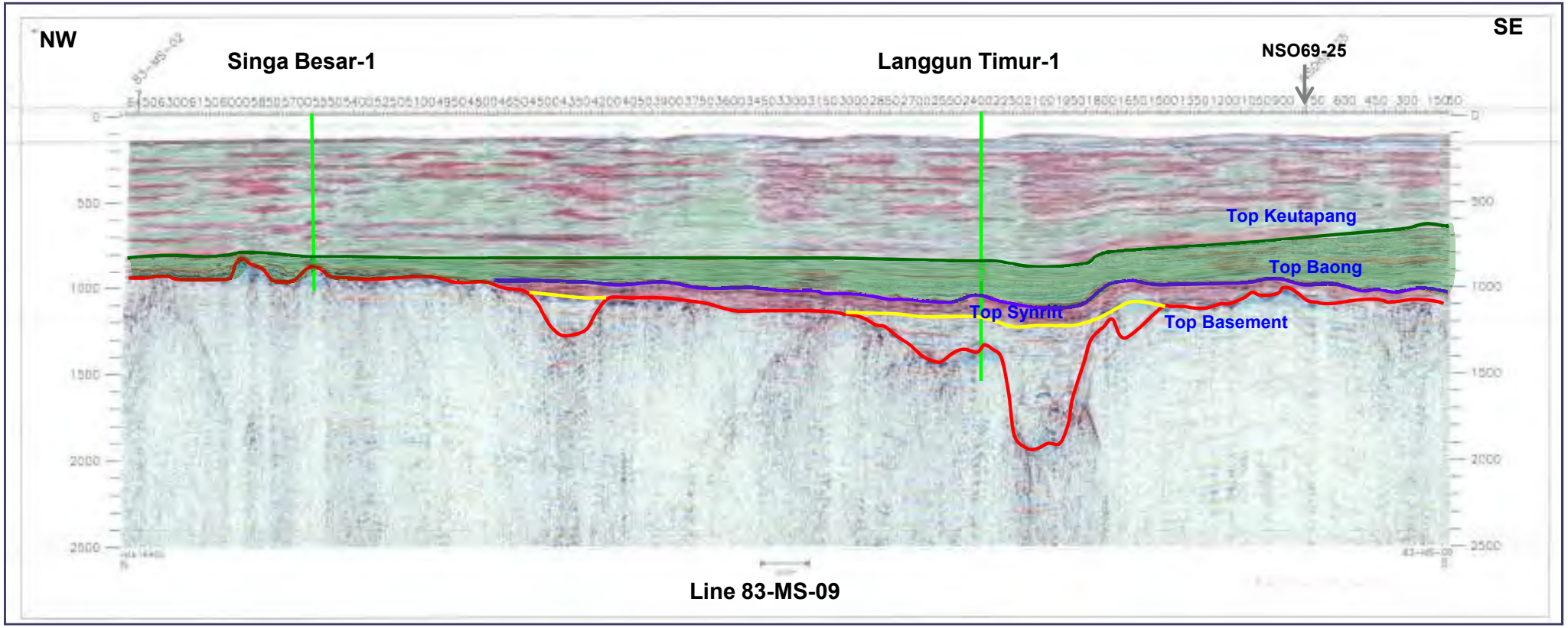
Strike Line

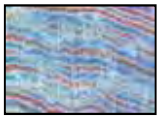
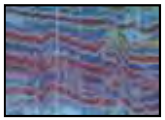
Dip Line

Strike Line

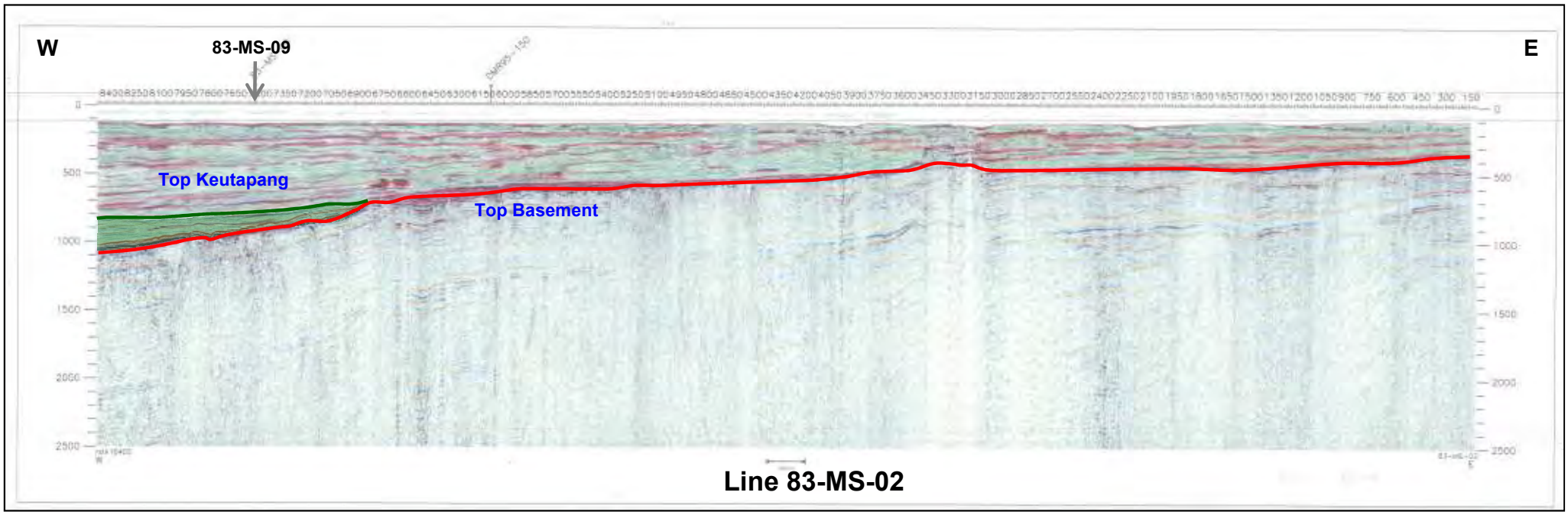


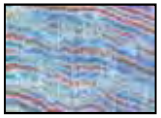
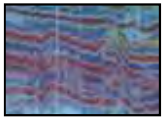
Seismic Facies Analysis

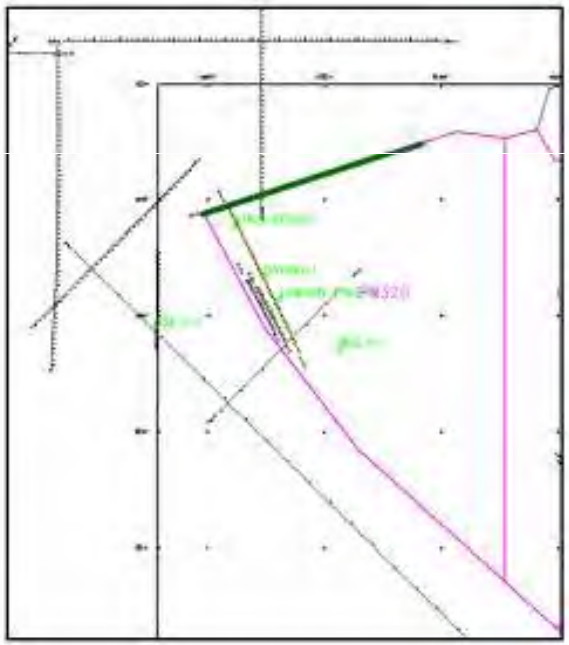


Seismic	Seismic Attributes	Colour
	Good reflection and low continuity, sub-parallel	
	Moderate to low reflection, low continuity, sub-parallel	
	Moderate to poor reflection, low continuity, slightly divergent	
	Good reflection and continuity, slightly mounded	

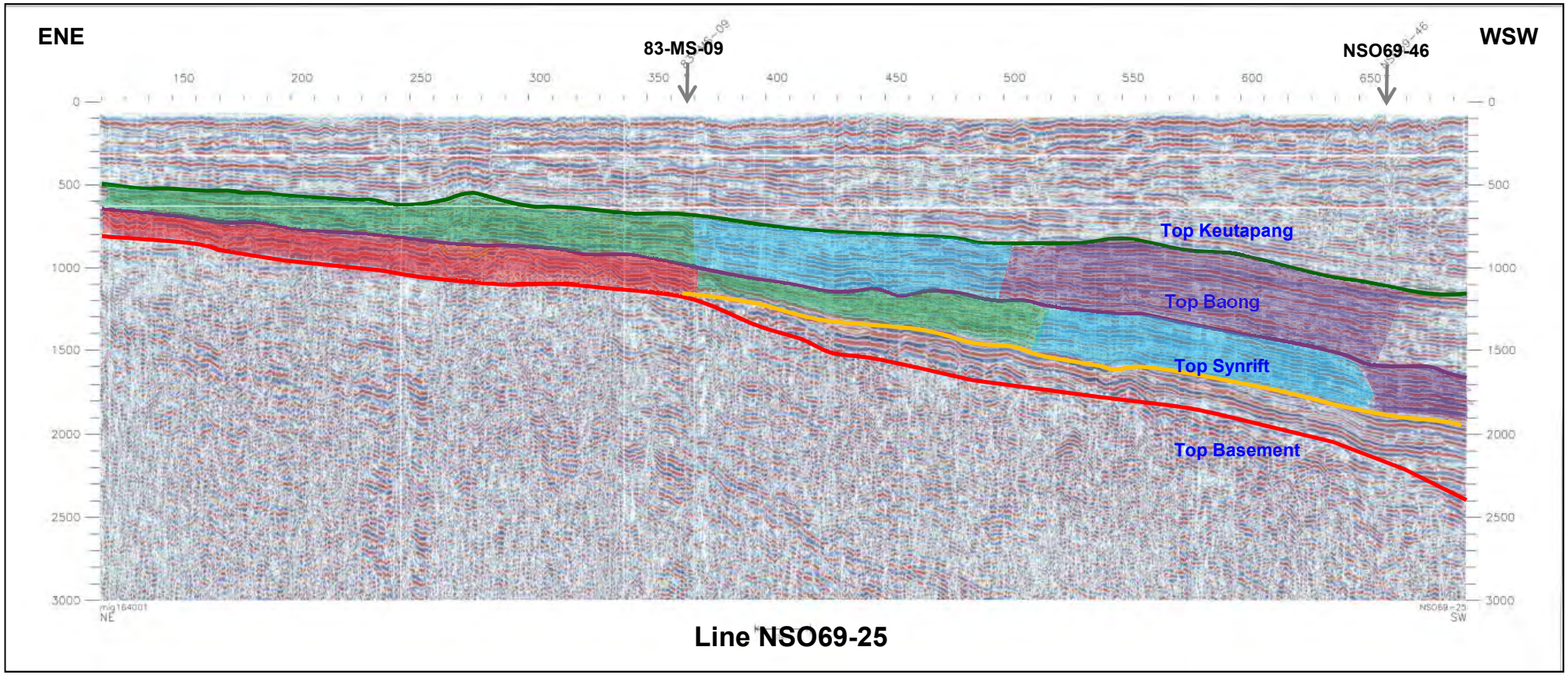
Seismic Facies Analysis

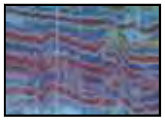


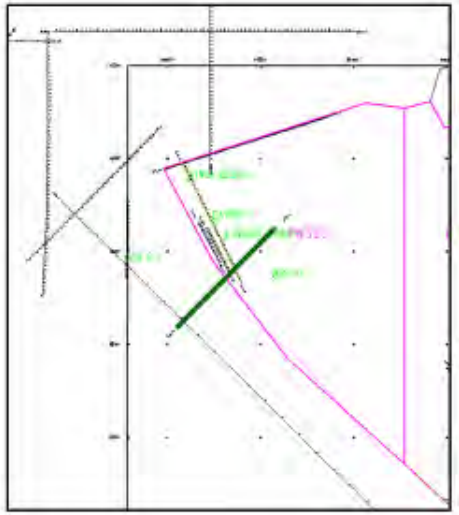
Seismic	Seismic Attributes	Colour
	Good reflection and low continuity, sub-parallel	
	Moderate to low reflection, low continuity, sub-parallel	
	Moderate to poor reflection, low continuity, slightly divergent	
	Good reflection and continuity, slightly mounded	



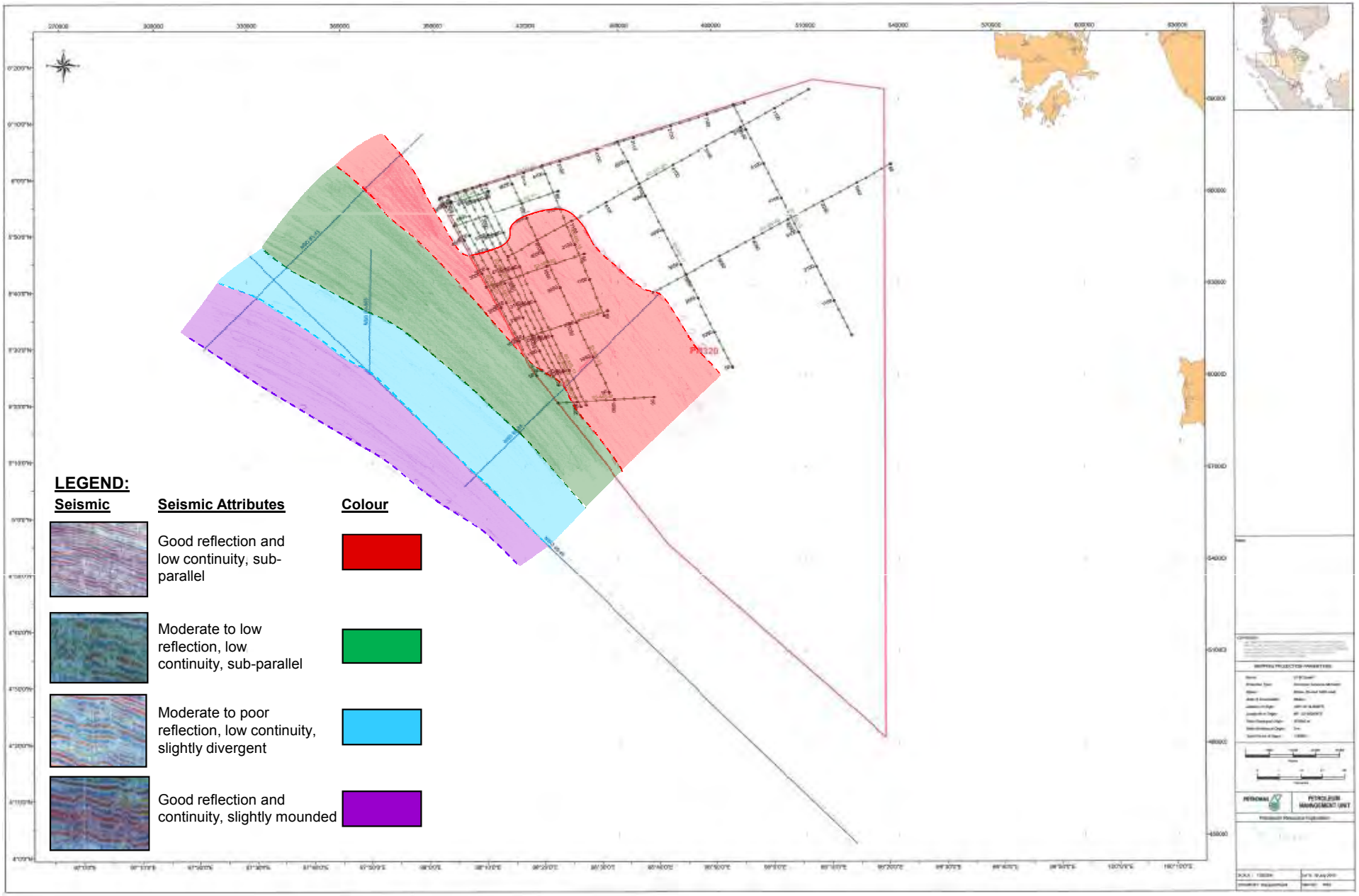
Seismic Facies Analysis Across Border



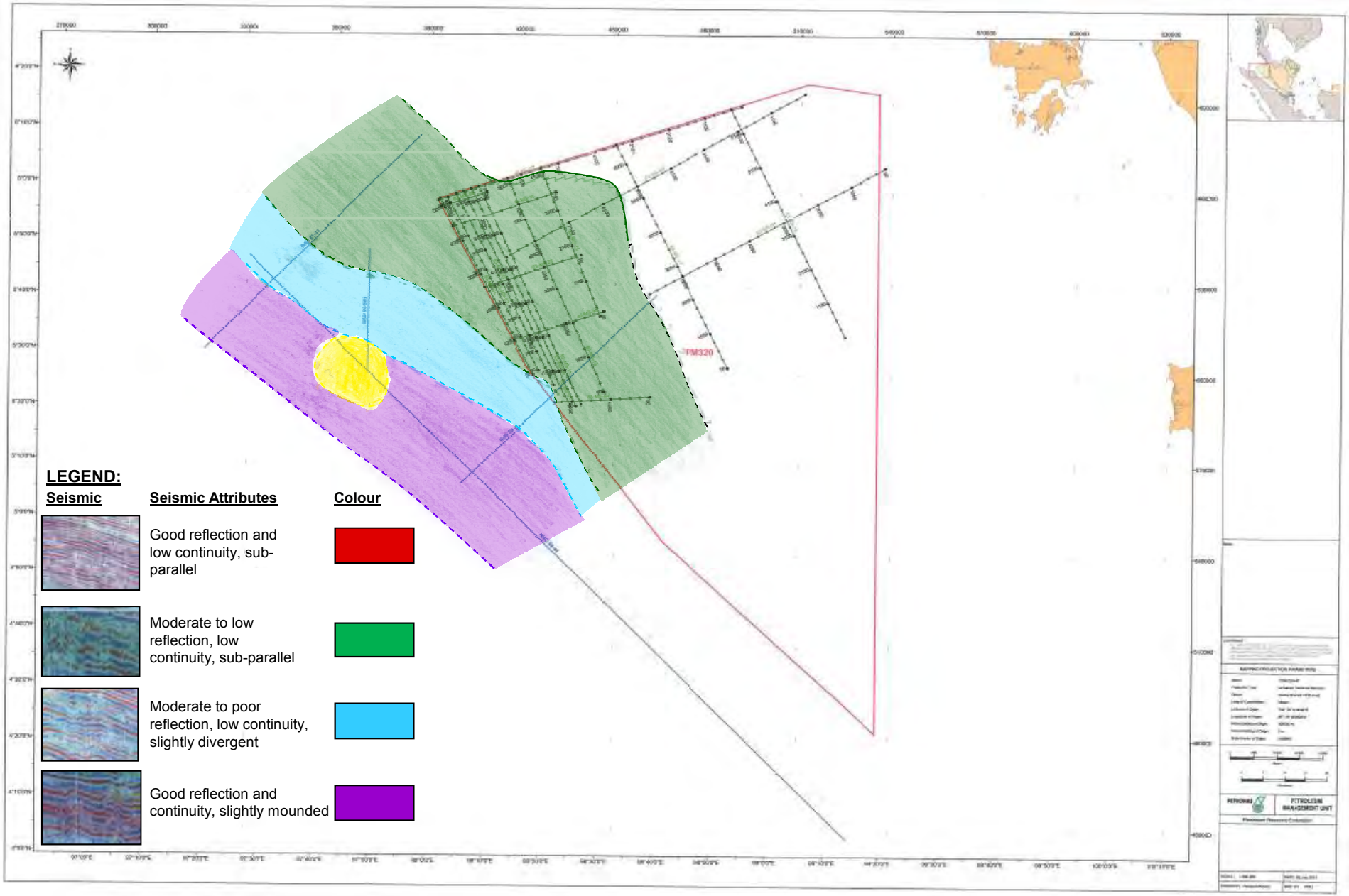
Seismic	Seismic Attributes	Colour
	Good reflection and low continuity, sub-parallel	
	Moderate to low reflection, low continuity, sub-parallel	
	Moderate to poor reflection, low continuity, slightly divergent	
	Good reflection and continuity, slightly mounded	



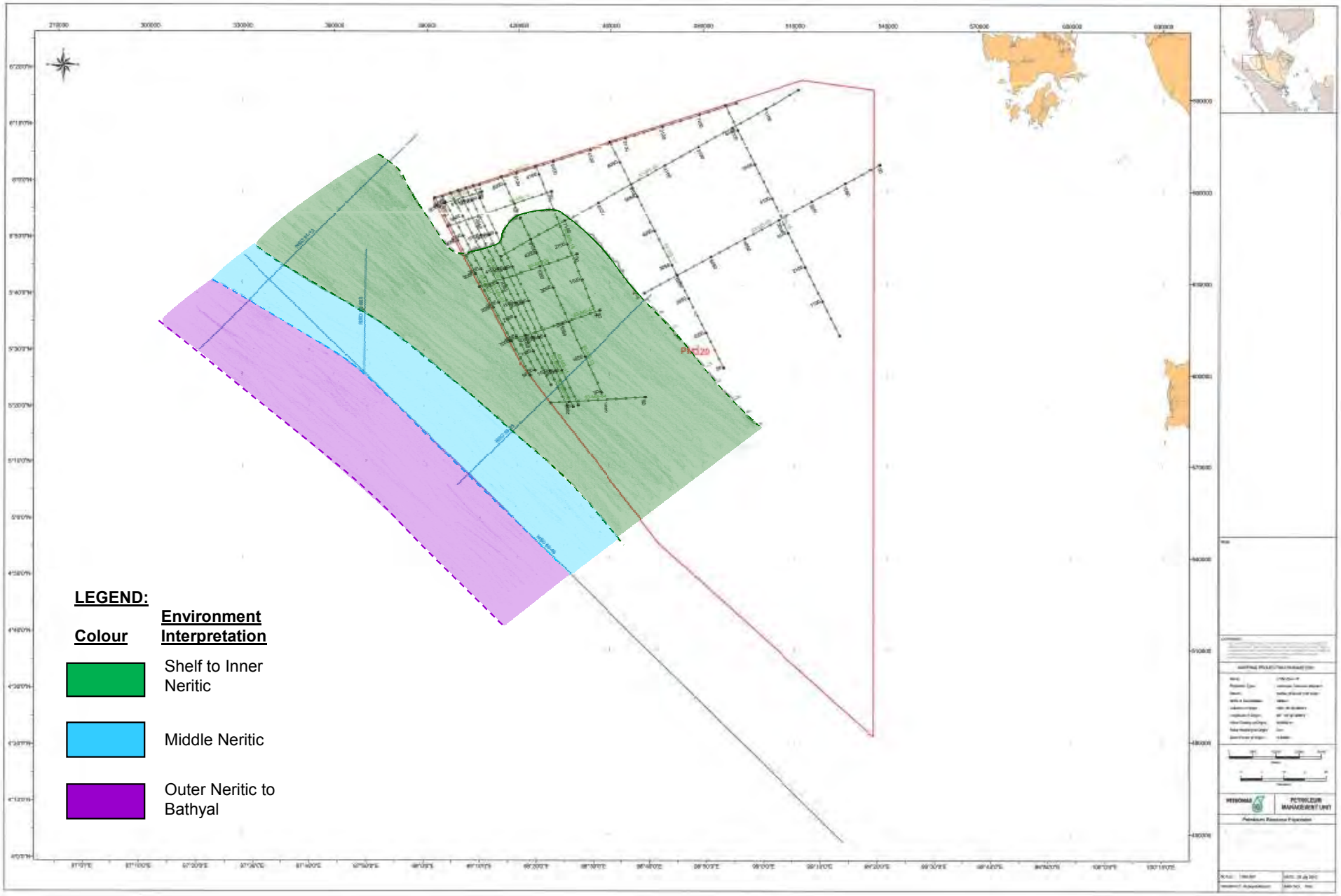
Seismic Facies Map of Baong Formation



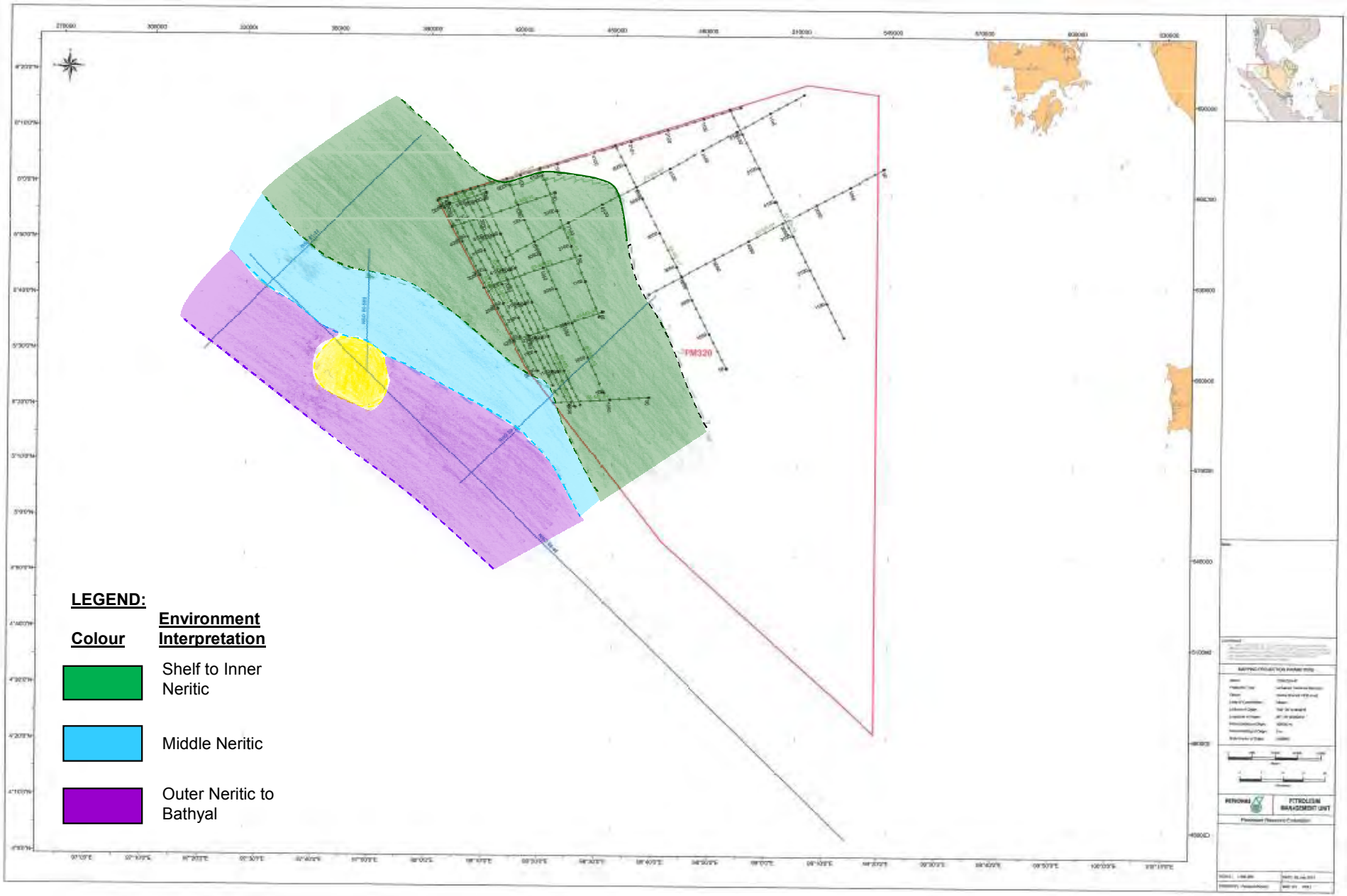
Seismic Facies Map of Keutapang Formation



Paleo-environment Map of Baong Formation (For Integration)



Paleo-environment Map for Keutapang Formation (For Intergration)



Summary

- Two Paleo-environment maps have been generated based on seimo-facies analysis of the existing 2D lines in Northern Straits of Malacca.
- Paleo-environment model of Keutapang & Baong Formation shows the environment deepens towards south west and shallows northeastward.
- Keutapang Formation is mainly shaly and the shale thickness is effective to provide seal potential for the underlying formation.
- Baong formation consist of sandy package that onlapped on basement and formed possible stratigraphic trap in the area.
- Sequence stratigraphy analysis shows generally the environment are deepening upwards from Baong Formation to Keutapang Formation.
- Correlation with Indonesian well (NSB C-1) found out that Baong Formation generally shales out towards the basinal area (North Sumatra Basin). Keutapang Formation generally more sandy towards Indonesian side .

Thank You