

CCOP  
EPPM P1W5 :  
North Sumatra – Mergui Basin Case Study :  
Petroleum Play and Prospect Analysis

12<sup>th</sup> – 14<sup>th</sup> October 2011,  
Yogyakarta, Indonesia

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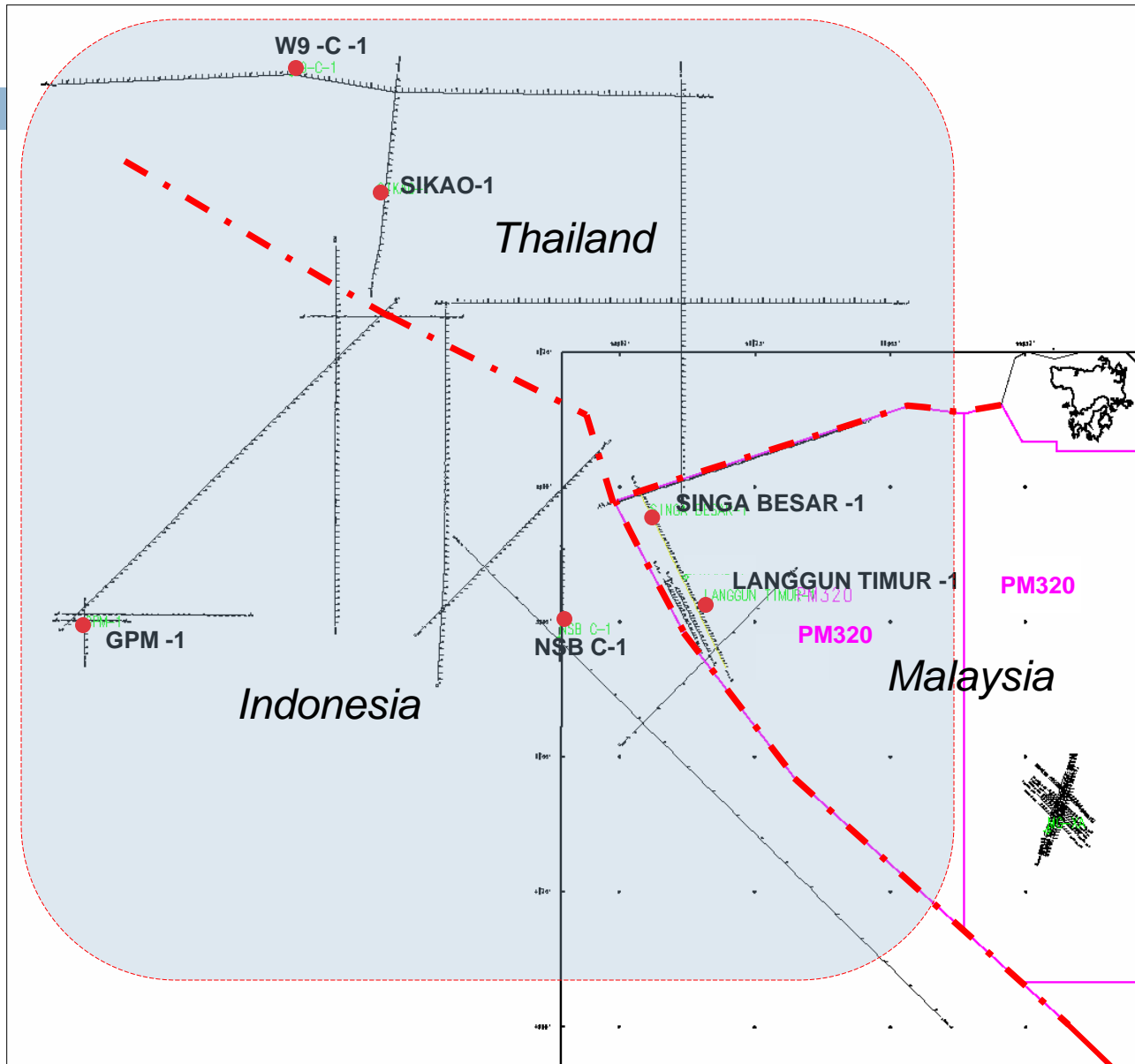
# Presentation Outline



- Objective
- Study Area
- General Information
- Project Progress:
  - Well Correlation
  - Chronostratigraphic Chart
  - Seismic Facies Analysis and Facies Mapping
  - Common Risk Segment (CRS) Mapping

## Objective

- ❑ To generate facies maps for Keutapang and Baong Formations that covers Malaysia, Indonesia and Thailand.
- ❑ To firm-up general understanding of the environment of deposition of Keutapang & Baong Formations throughout the cross-border study area.
- ❑ To generate chronostratigraphic chart and Common Risk Segment (CRS) maps for Baong and Keutapang

# Study Area



-  Study Area
-  Malaysia Boundary

# General Information

- Well Control:
  - Singa Besar-1 (Malaysia)
  - Langgun Timur-1 (Malaysia)
  - NSB C-1 (Indonesia)
  - GPM-1 (Indonesia)
  - W9C-1 (Thailand)
  - Sikao-1 (Thailand)
  
- Seismic Lines:
  - Key Seismic Lines: 12 seismic lines from Indonesia, 4 seismic lines from Thailand and 2 seismic lines from Malaysia

# Project Progress

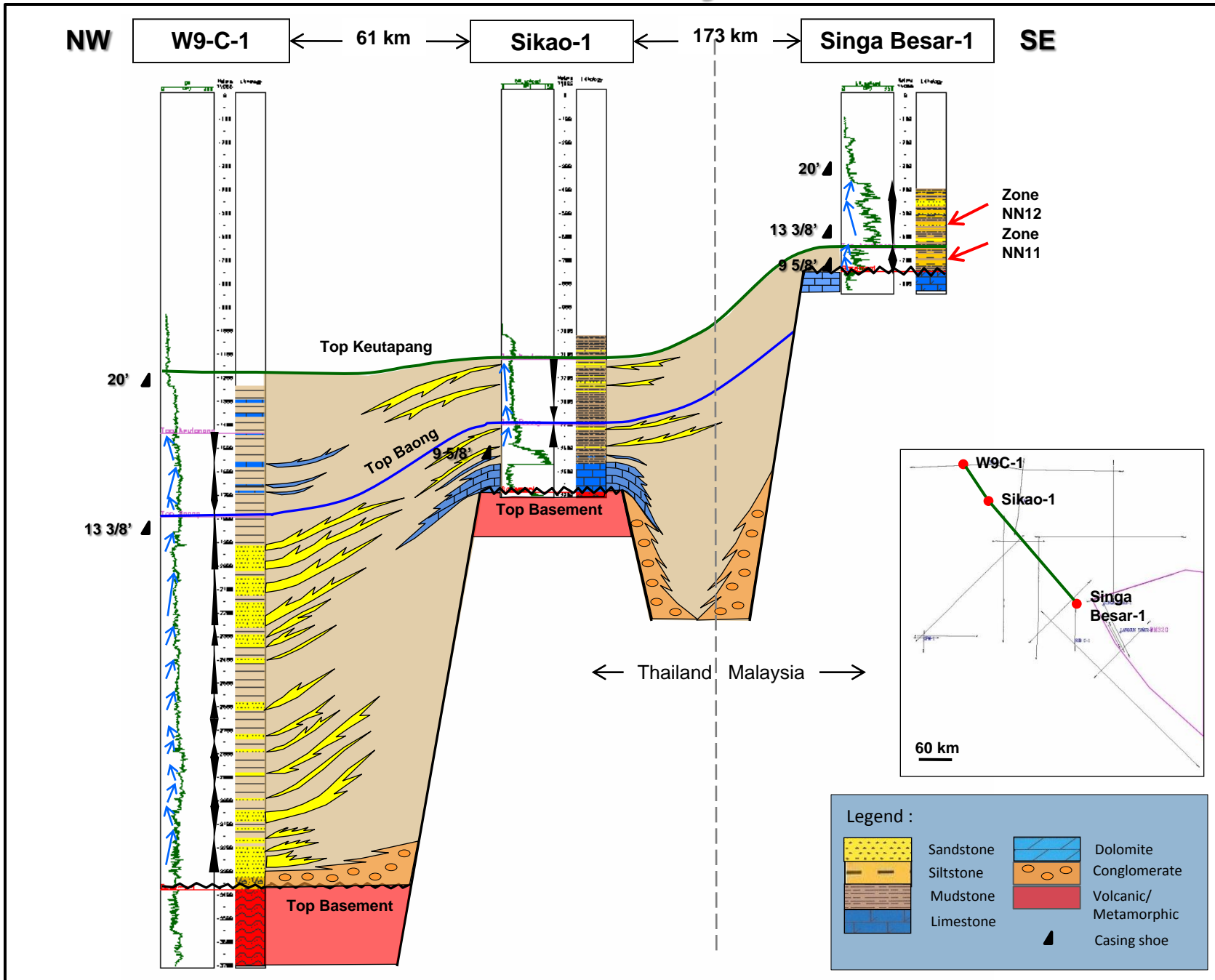
- Well Correlation:
  - Singa Besar-1 – Sikao-1 – W9C-1
  - Langgun Timur-1 – NSBC-1 – GPM-1
  
- Seismic Facies Map:
  - Two (2) seismic facies map – Top Keutapang and Top Baong that covers Indonesia & Thailand
  - Four (4) Geoseismic sections
  
- Chronostratigraphic chart across Malaysia, Thailand and Indonesia
  
- Common Risk Segment (CRS) map for Baong and Keutapang

# Well-Log Correlation

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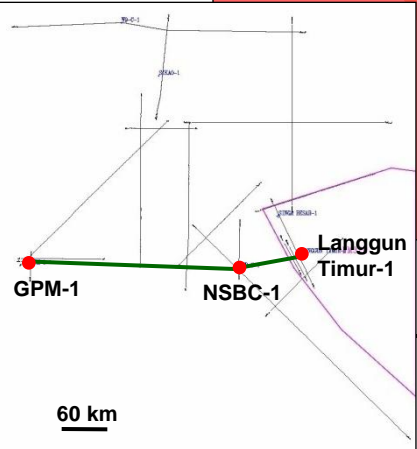
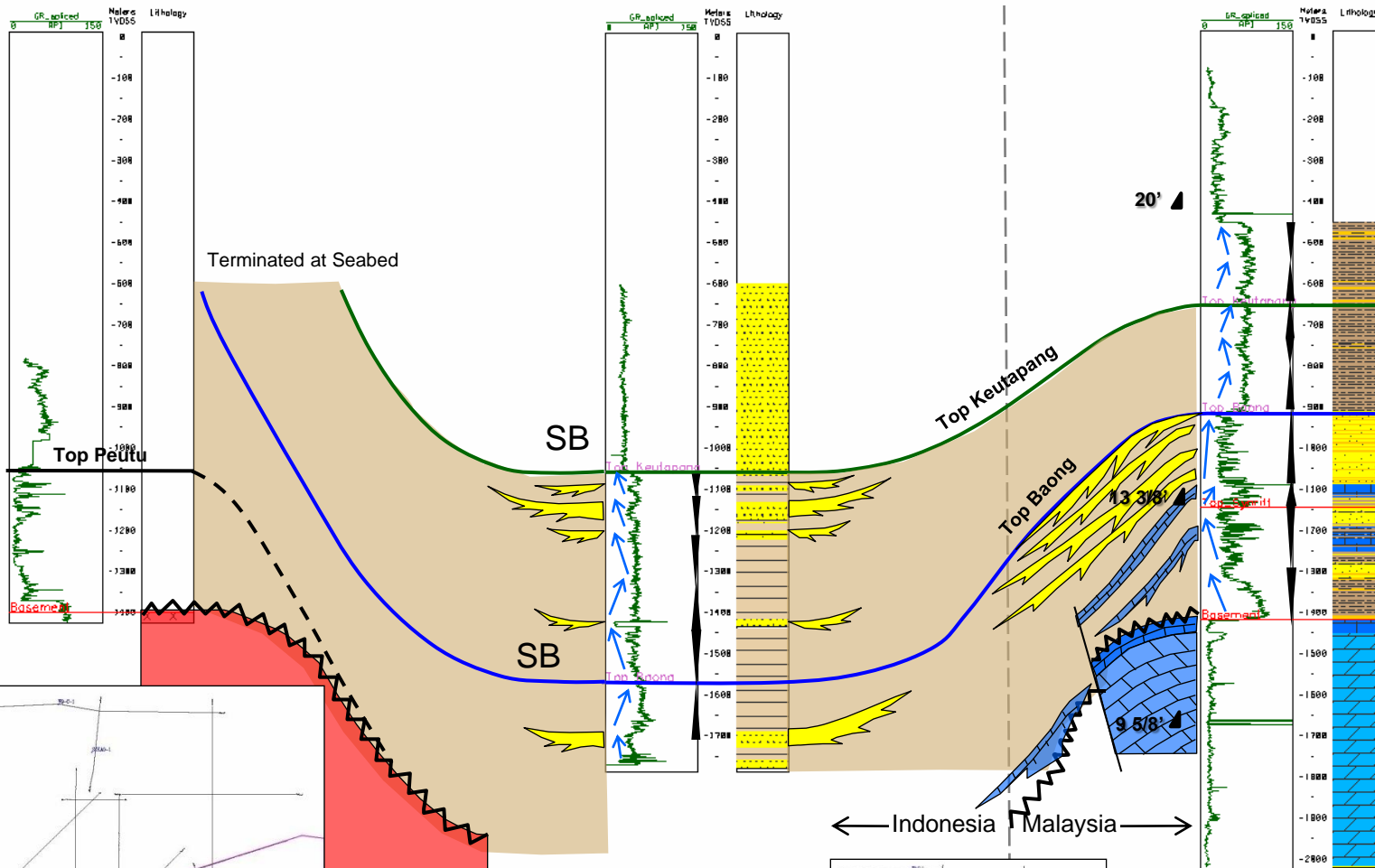
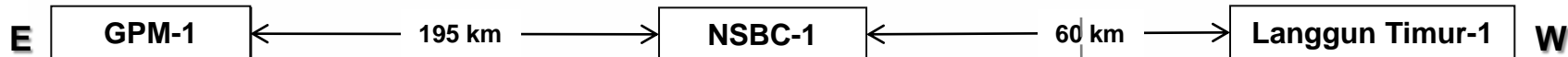
- Chronostratigraphic Chart

# Well Correlation – Malaysia to Thailand



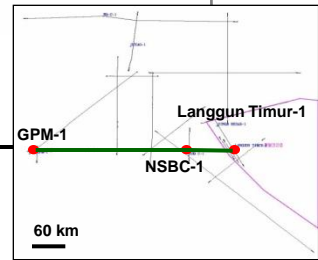


# Well Correlation – Malaysia to Indonesia

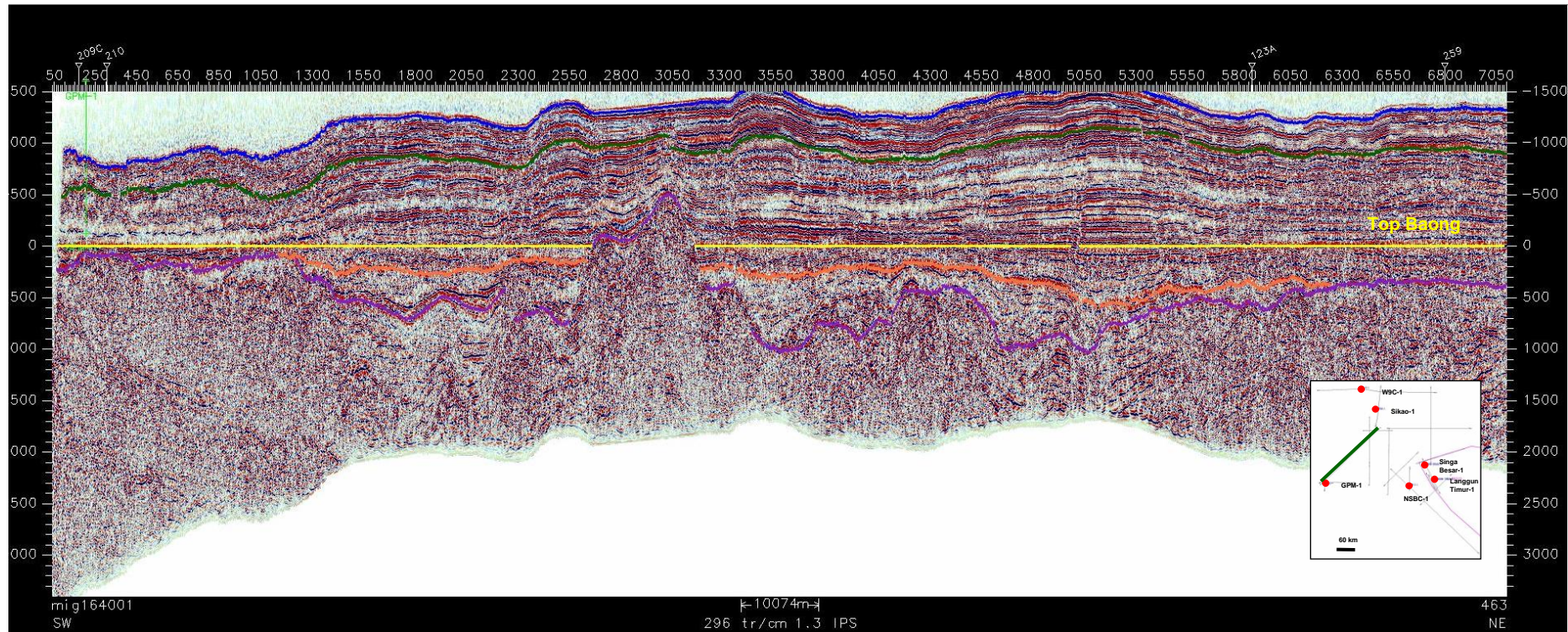


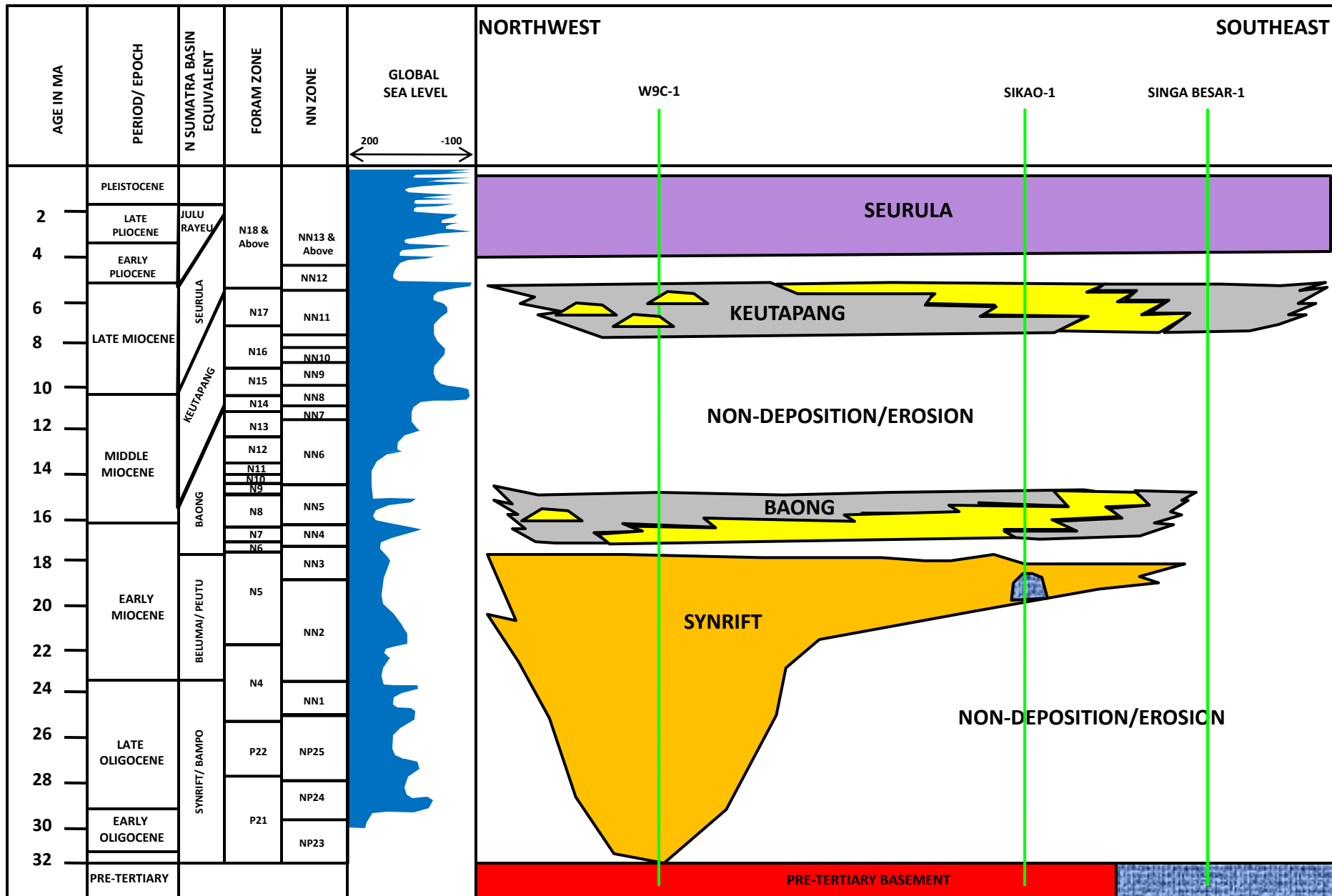
**Legend :**

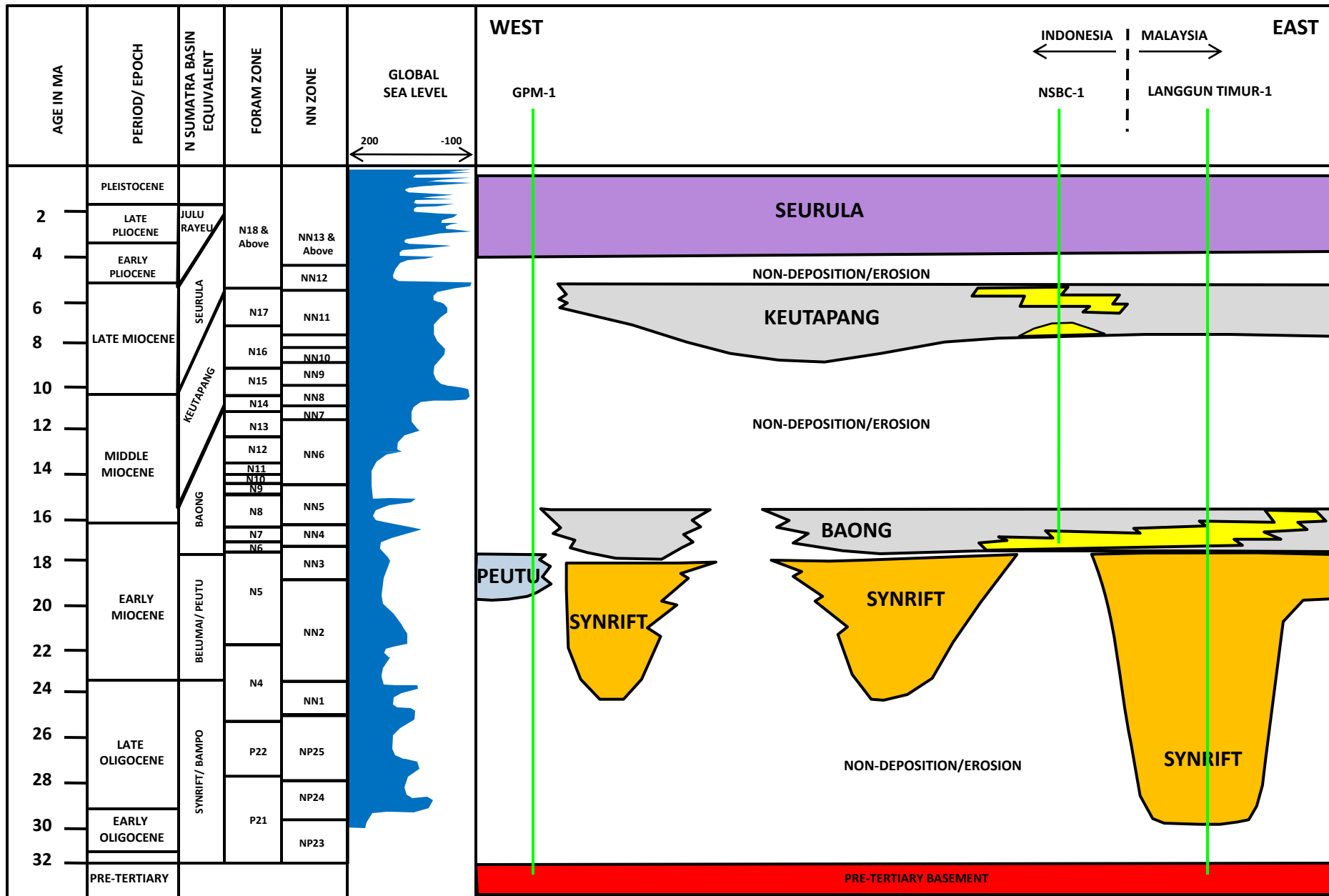
|  |           |  |                          |
|--|-----------|--|--------------------------|
|  | Sandstone |  | Dolomite                 |
|  | Siltstone |  | Conglomerate             |
|  | Mudstone  |  | Volcanic/<br>Metamorphic |
|  | Limestone |  | Casing shoe              |



# Seismic cross section through GPM-1







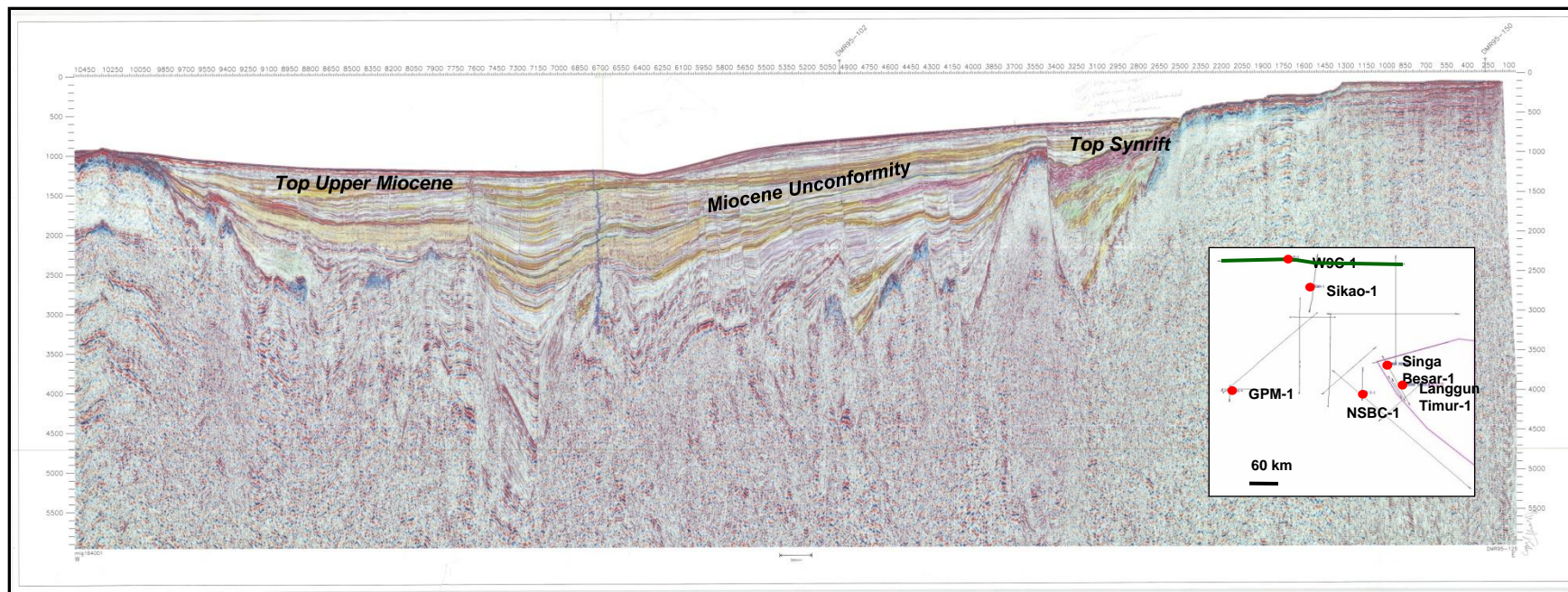
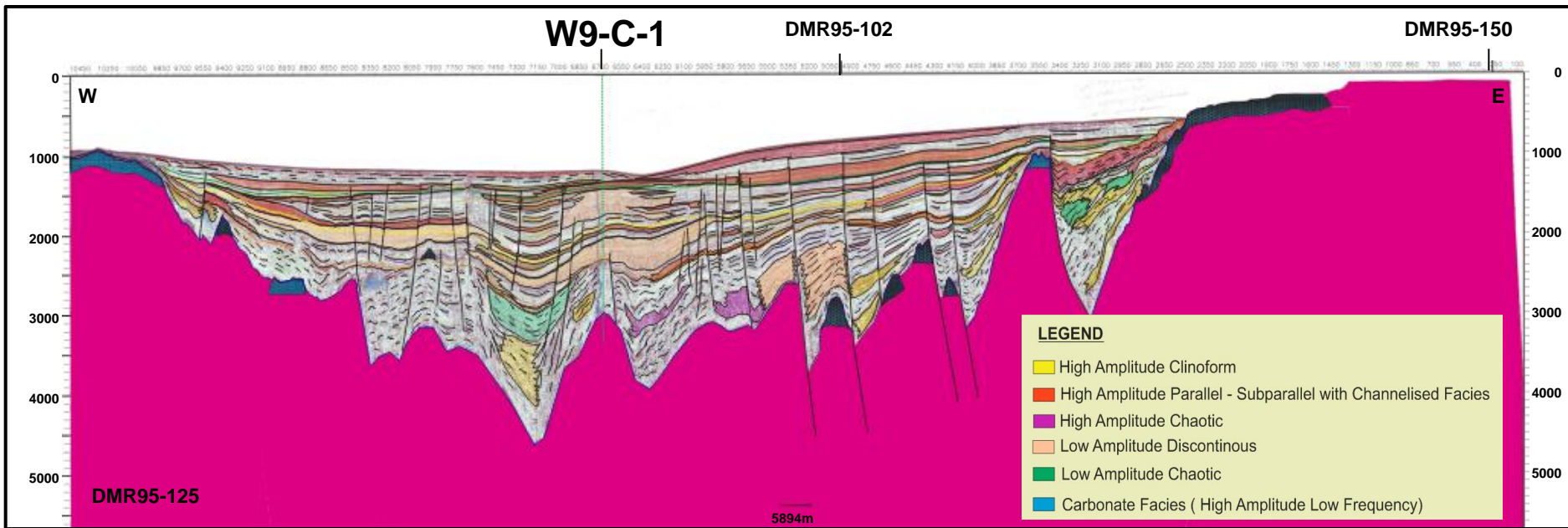
# Facies Mapping

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- Seismic Facies
- Facies Map

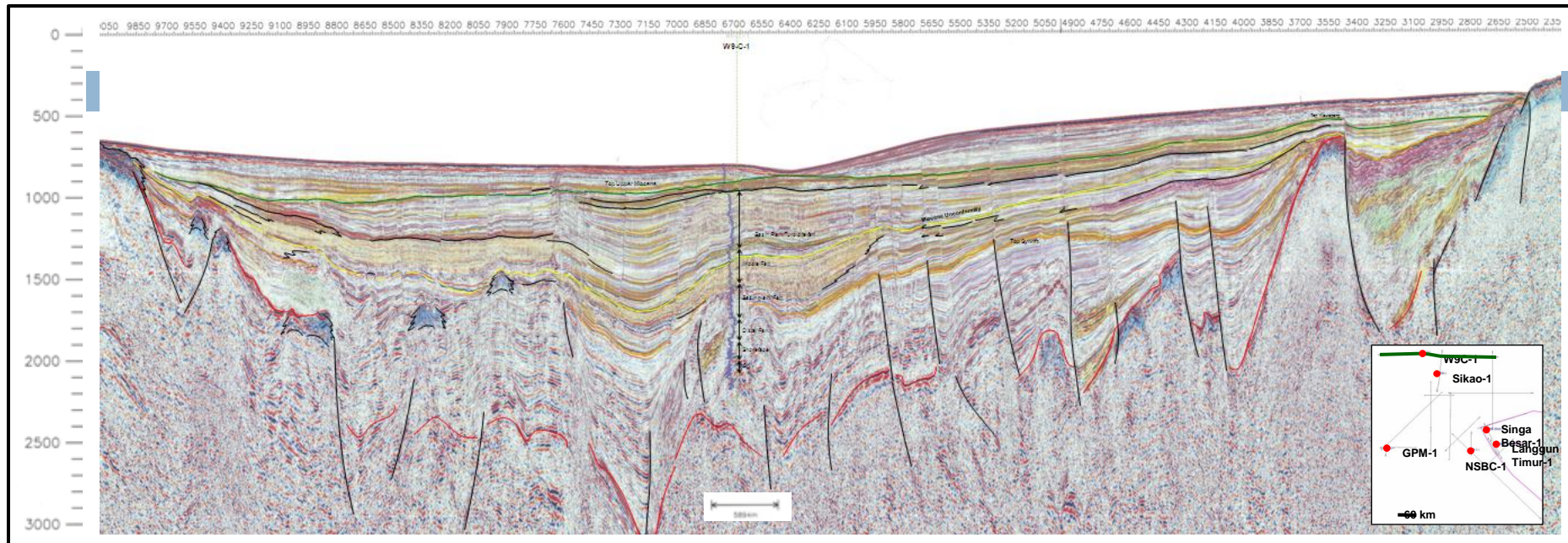


# Seismic Facies Analysis



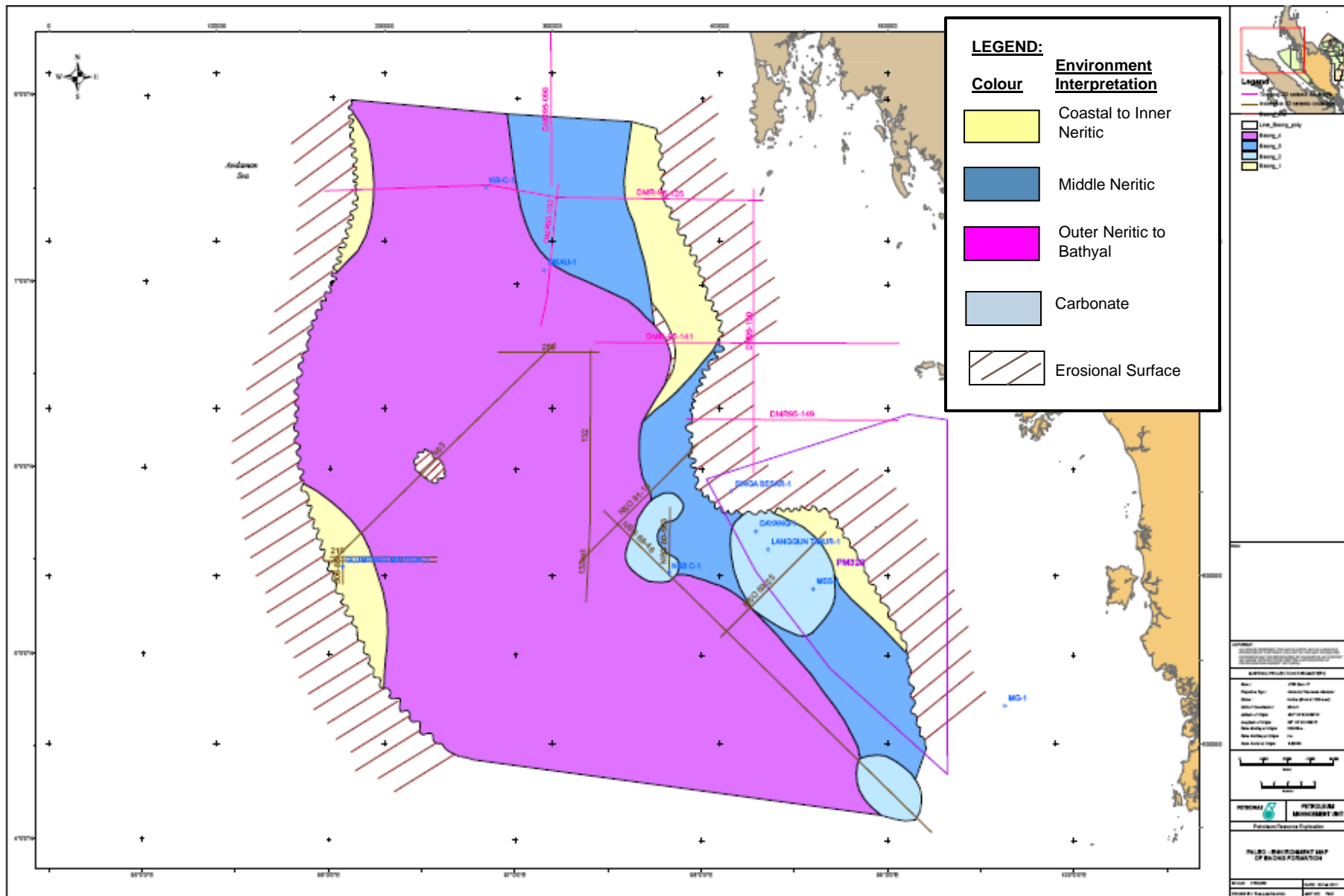


# Seismic Facies Interpretation



|  | SEISMIC FACIES  | GEOLOGICAL INTERPRETATION             |  | SEISMIC FACIES   | GEOLOGICAL INTERPRETATION    |
|--|---|---------------------------------------|--|--|------------------------------|
|  | High amplitude-low frequency occasionally chaotic with/without mounded form | Carbonate buildup/platform            |  | Semi-chaotic subparallel wt mounded & channelised            | Turbidite fan                |
|  | Subparallel moderate amplitude with occasionally channelised-mounded        | shelf platform-silty/sandy shale      |  | Alternate of low & high amplitude of high frequency parallel | shaly basinal & drape facies |
|  | High amplitude-parallel-continuous clinoform occasionally wedging           | Slope shale & drapes                  |  | High to low amplitude semichaotic to subparallel clinoform   | Fan delta                    |
|  | Low amplitude parallel/subparallel  | transgressive shale of slope to shelf |  | Moderate amplitude subparallel divergent clinoform           | Fan delta                    |
|  | Semi-chaotic subparallel wt mounded & channelised                           | Turbidite fan                         |  | Mixed amplitude chaotic                                      | Mass Transport Complex(MTC)  |

# Paleo-environment Map of Baong Formation





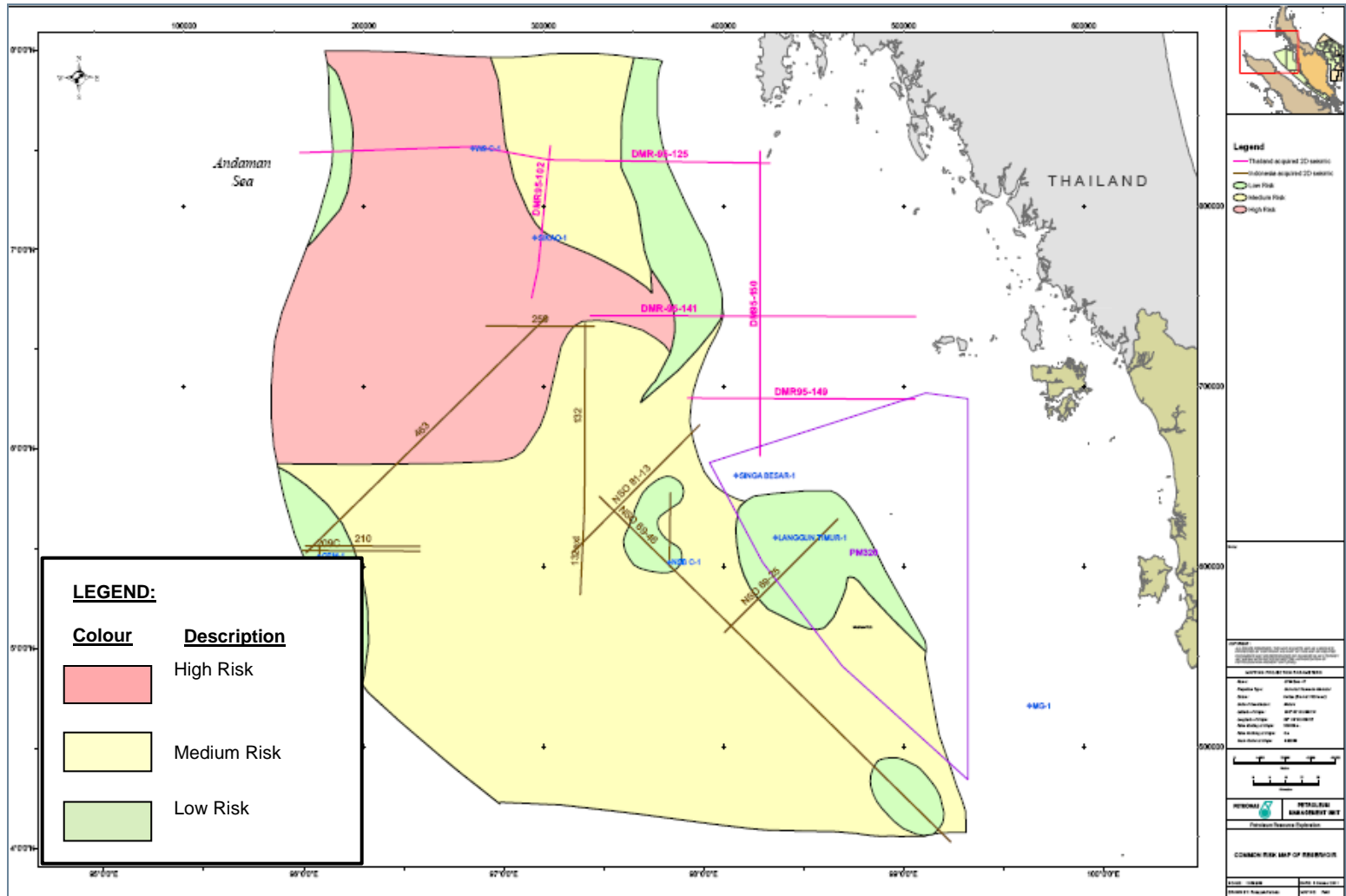


# CRS Mapping

- Based on facies maps and exploration data



# CRS map for Reservoir (Baong Formation)





# Summary

- Established two chronostratigraphic charts based on well correlation, seismic and well data
- Facies range from coastal to shallow marine, shelf with clastics and carbonate and deepwater turbiditic and pelagic facies.
- Reconstructed the paleo-environment through integration of seismic facies and well data and established facies maps for Baong and Keutapang Formations.
- The petroleum system elements for Baong and Keutapang formation were risked by integration of facies distribution and other exploration information to generate CRS maps

Thank You