

# The Buzzard Field, Outer Moray Firth, Central North Sea

John Robbins & Graham Doré



**nexen**

Nexen Petroleum U.K. Limited



**BG Group**

EDINBURGH  
OIL & GAS plc

**Buzzard discovered May 2001 with the drilling of 20/6-3.**

**Encountered 400 ft oil column in Upper Jurassic deep marine sands.**

**Tested at constrained rate of 6547 bbls/day. 32 deg API oil**

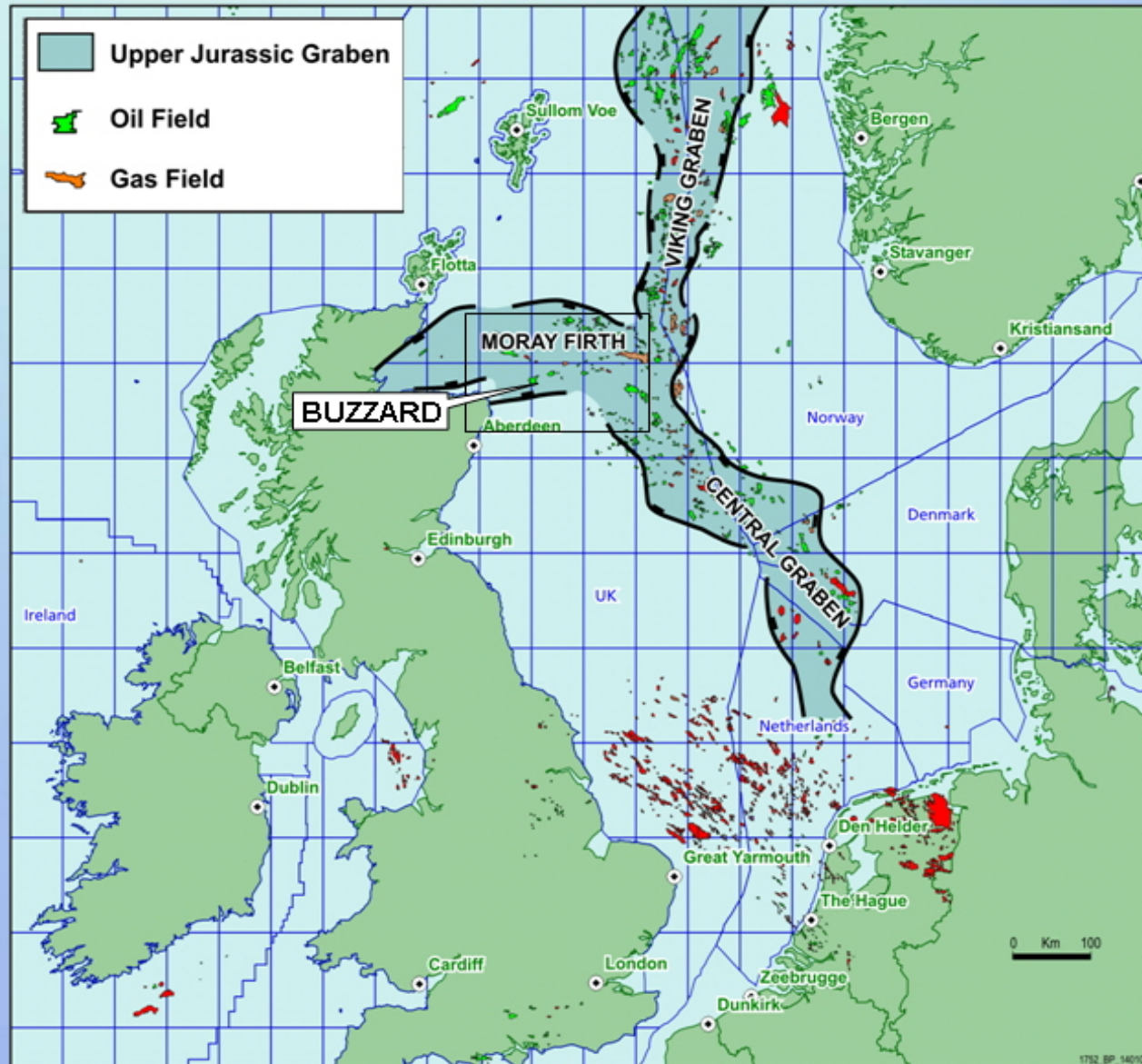
**Sidetrack, 1500 m. to east, intersected oil-water contact and extended column height to at least 750 ft.**

**Subsequent appraisal programme of 6 wells and 2 sidetracks confirmed a STOIP of 760 - 1220 mmbo, making it the largest discovery in the UKCS for at least 10 years.**

**Sanction for development granted within 30 months of discovery and first production scheduled for late 2006. Production rates expected to be 180-190,000 barrels per day, representing about 10% of UK oil production.**



# Location Map



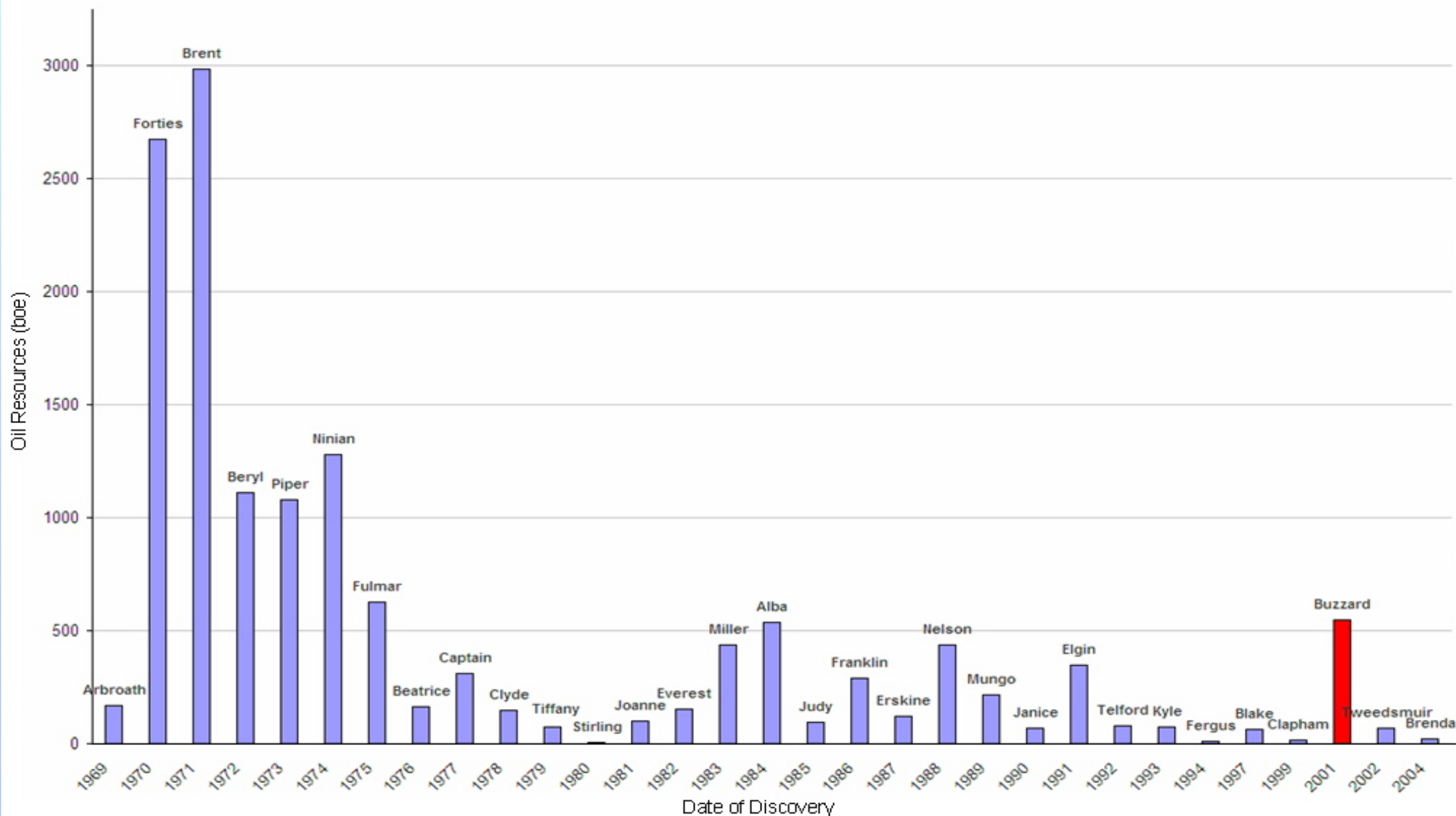


# North Sea Basins – Superimposed on Alberta

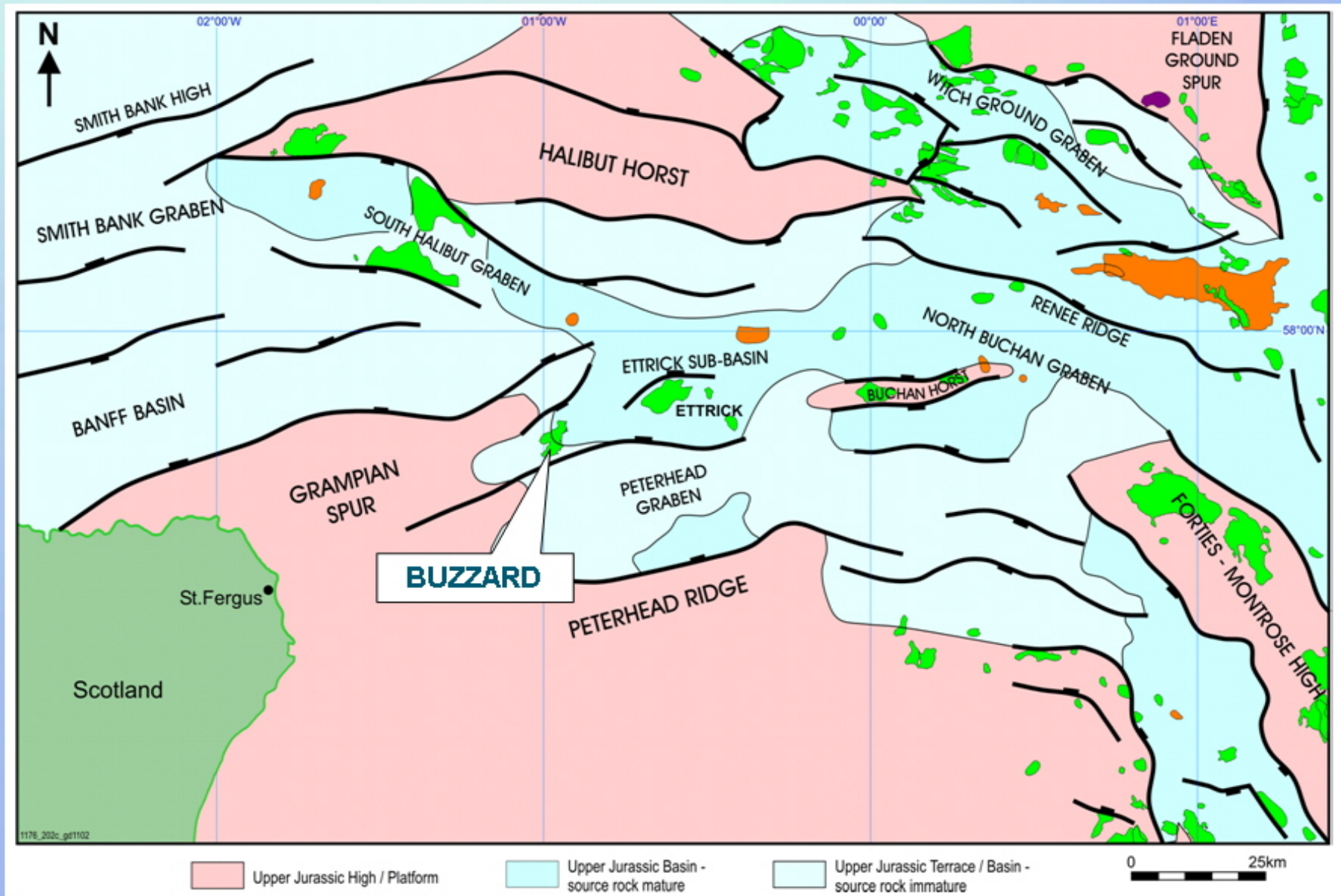




# Field Resources by Year (Mature Oil Province)

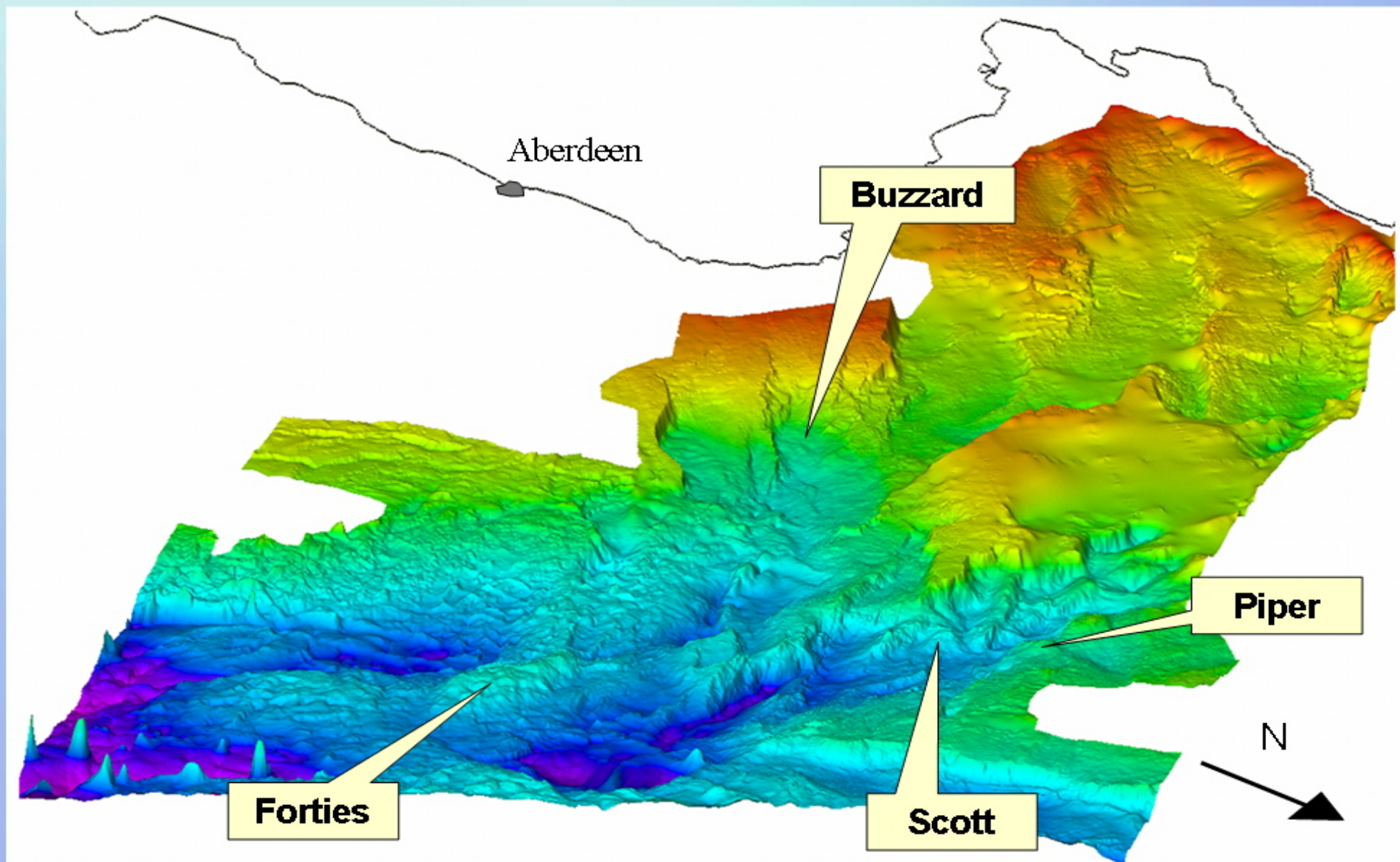


# Location Map

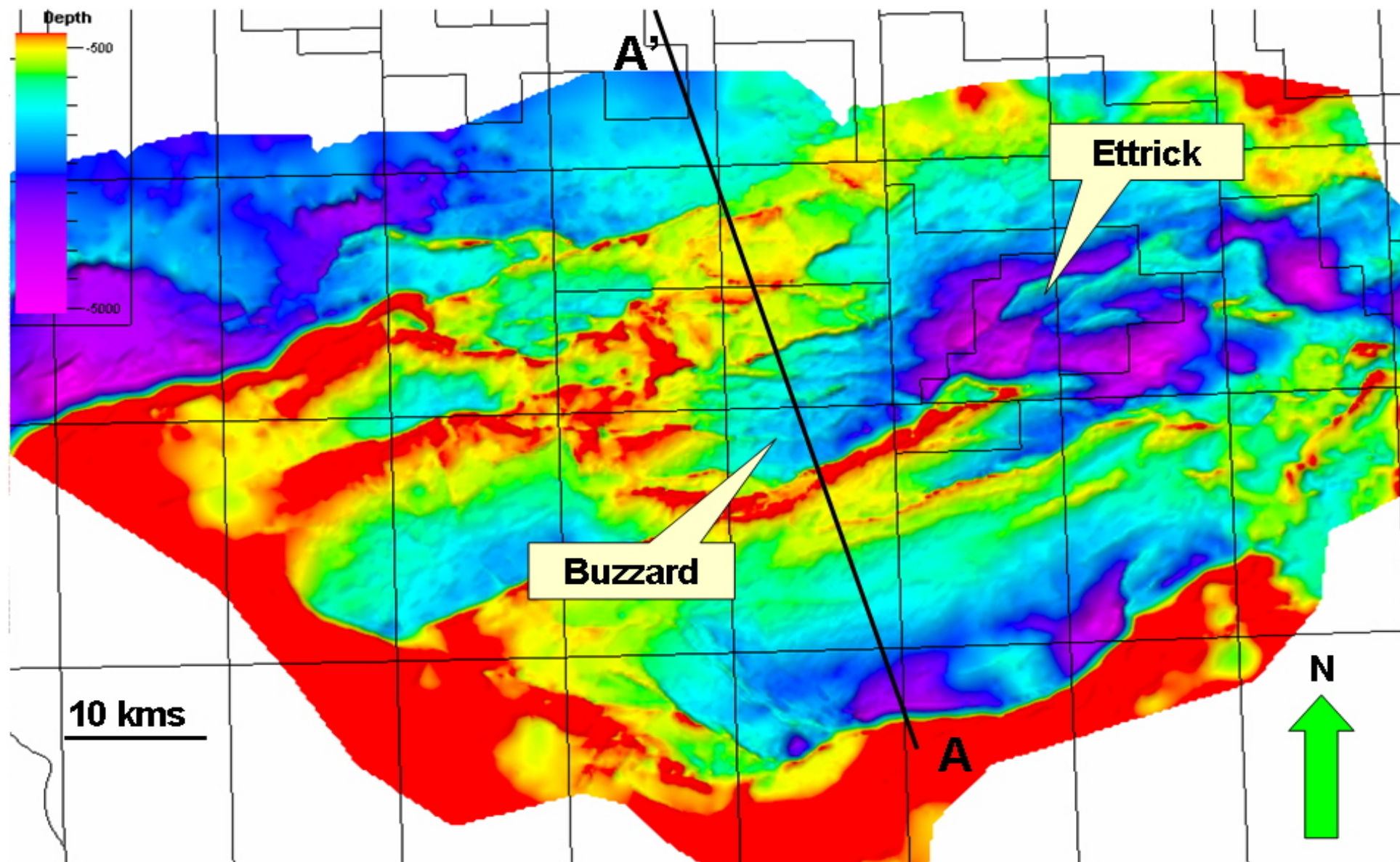




# Base Cretaceous 3D view

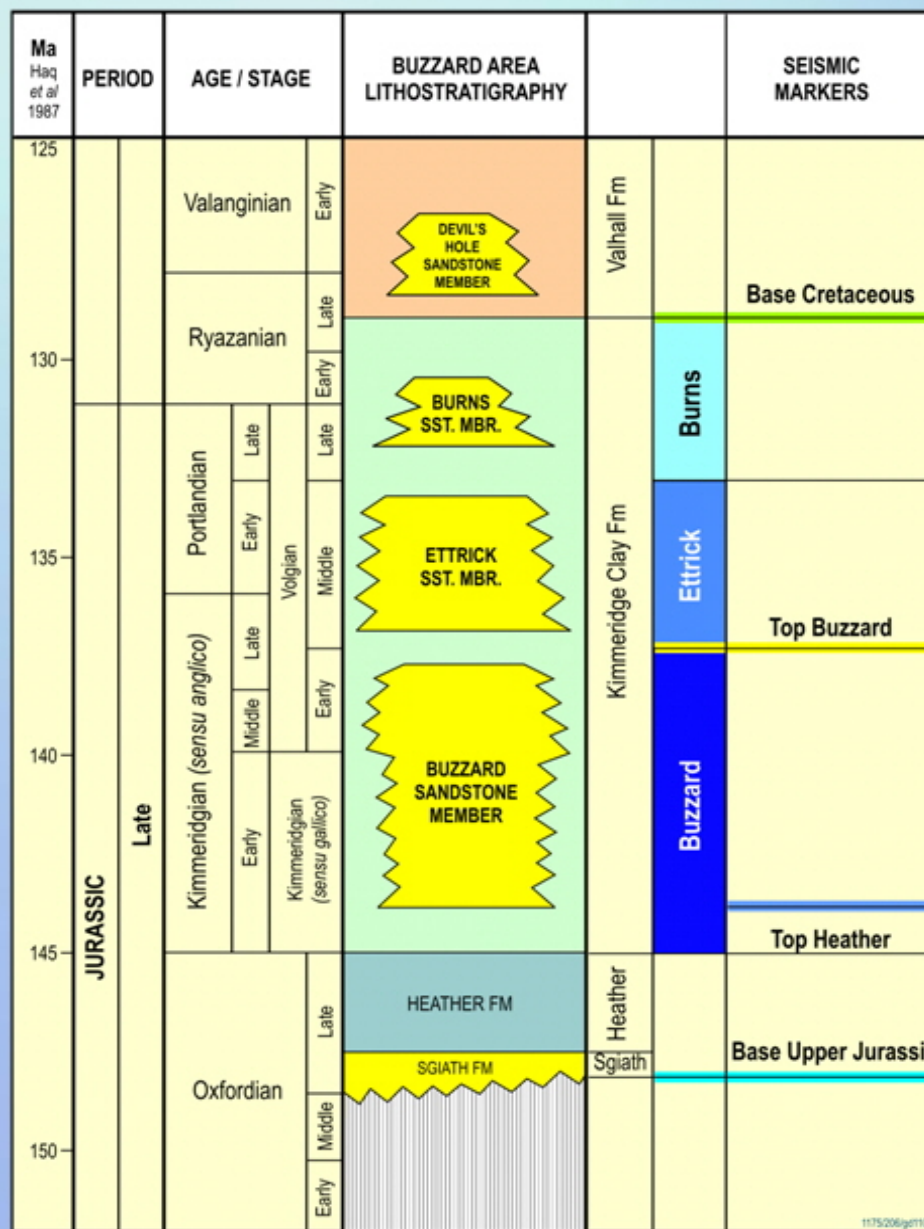


# Upper Jurassic Isopach





# Buzzard Area Stratigraphy



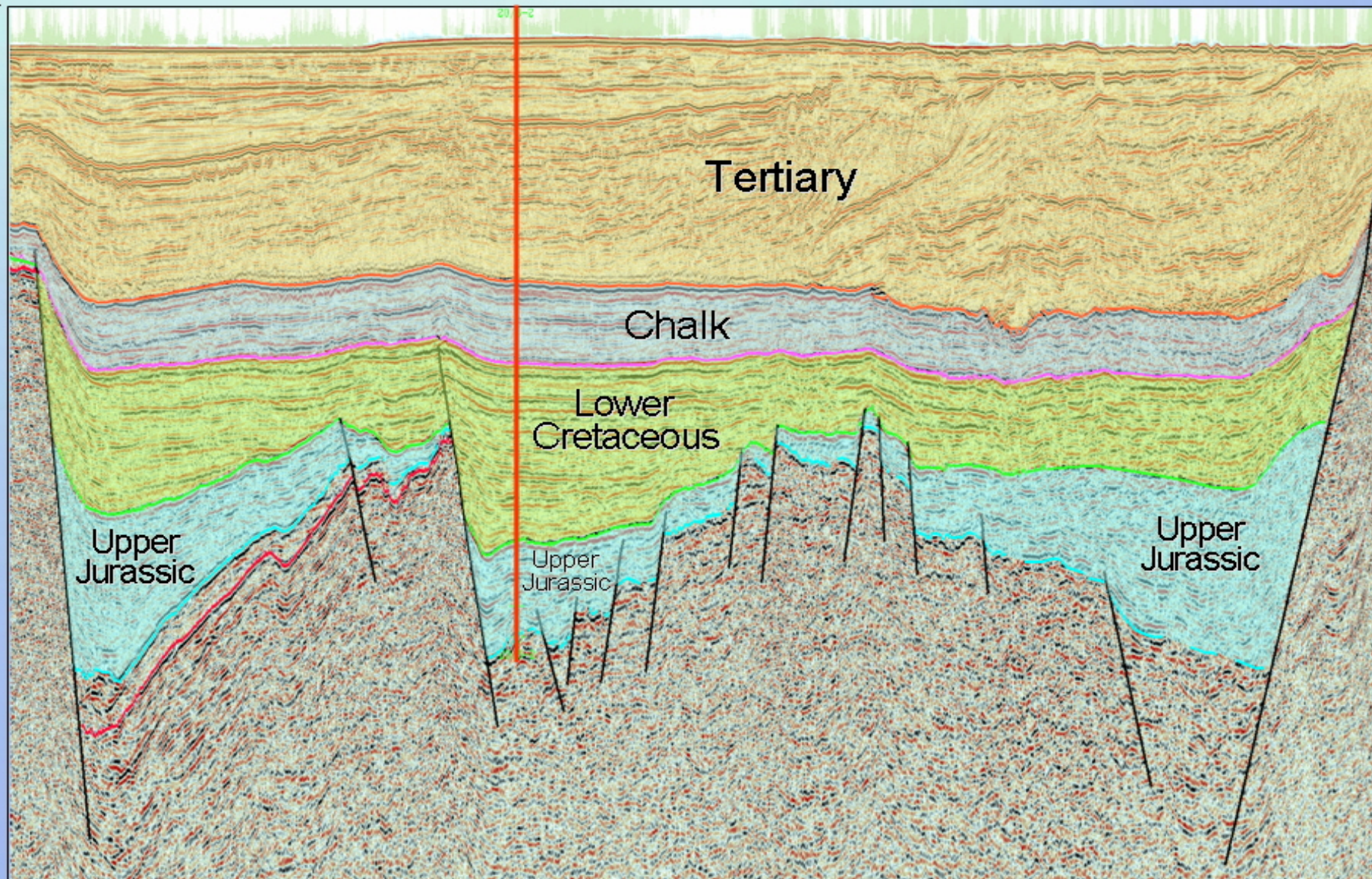


# Regional North-South Line

A

20/6-2

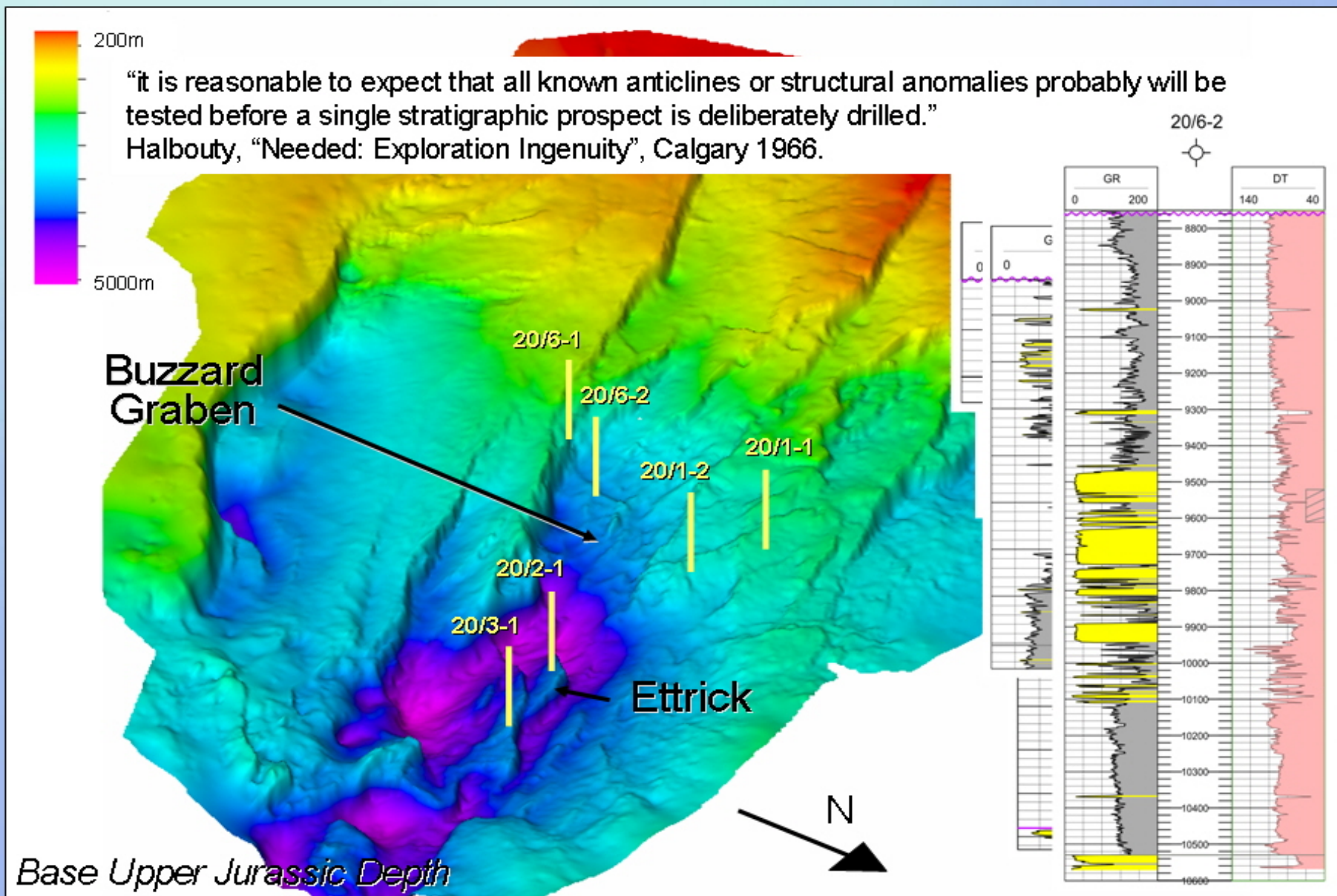
A'





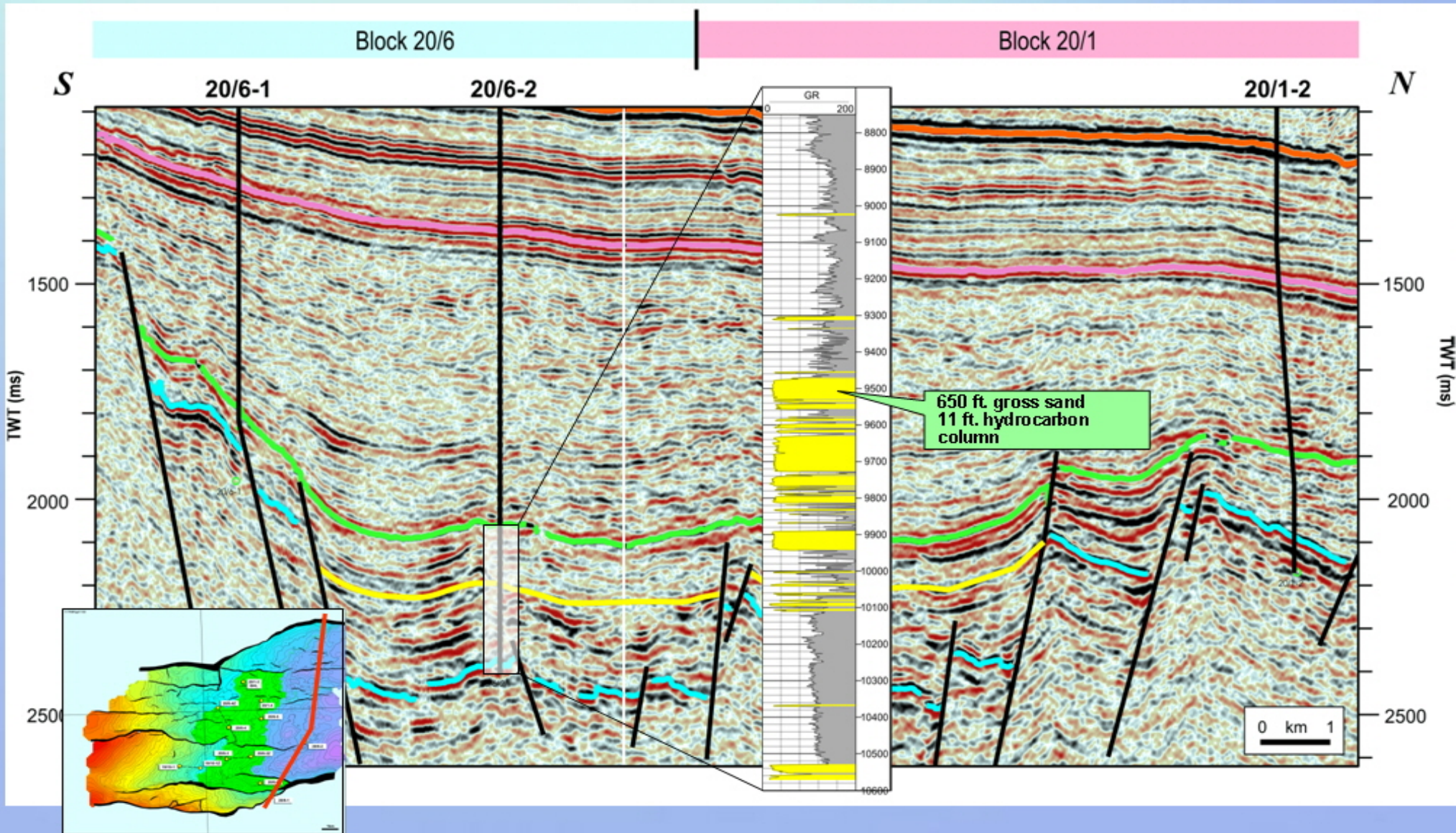
# Exploration history up to 1986

“it is reasonable to expect that all known anticlines or structural anomalies probably will be tested before a single stratigraphic prospect is deliberately drilled.”  
Halbouty, “Needed: Exploration Ingenuity”, Calgary 1966.



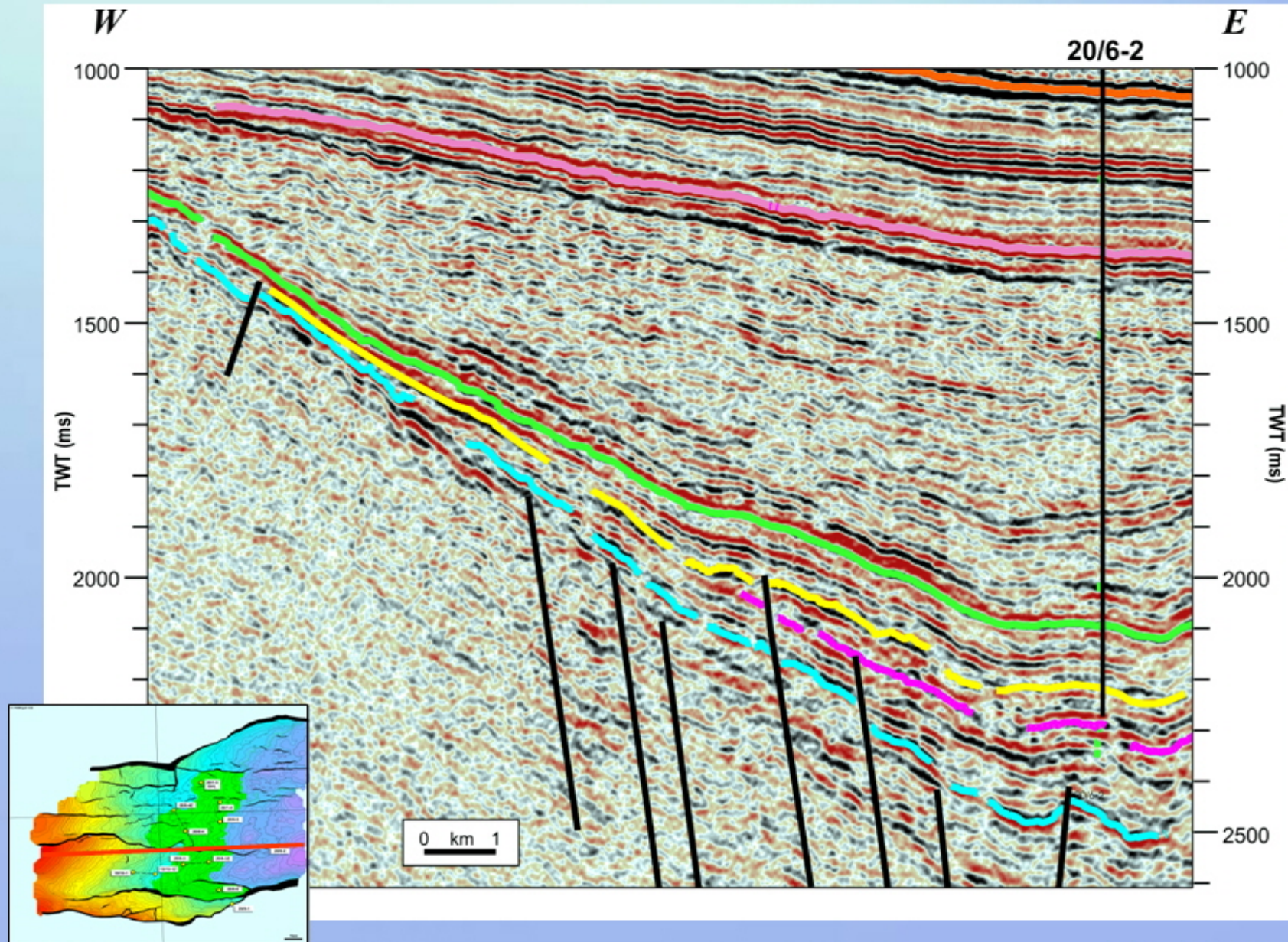


# North – South Line Through 20/6-2

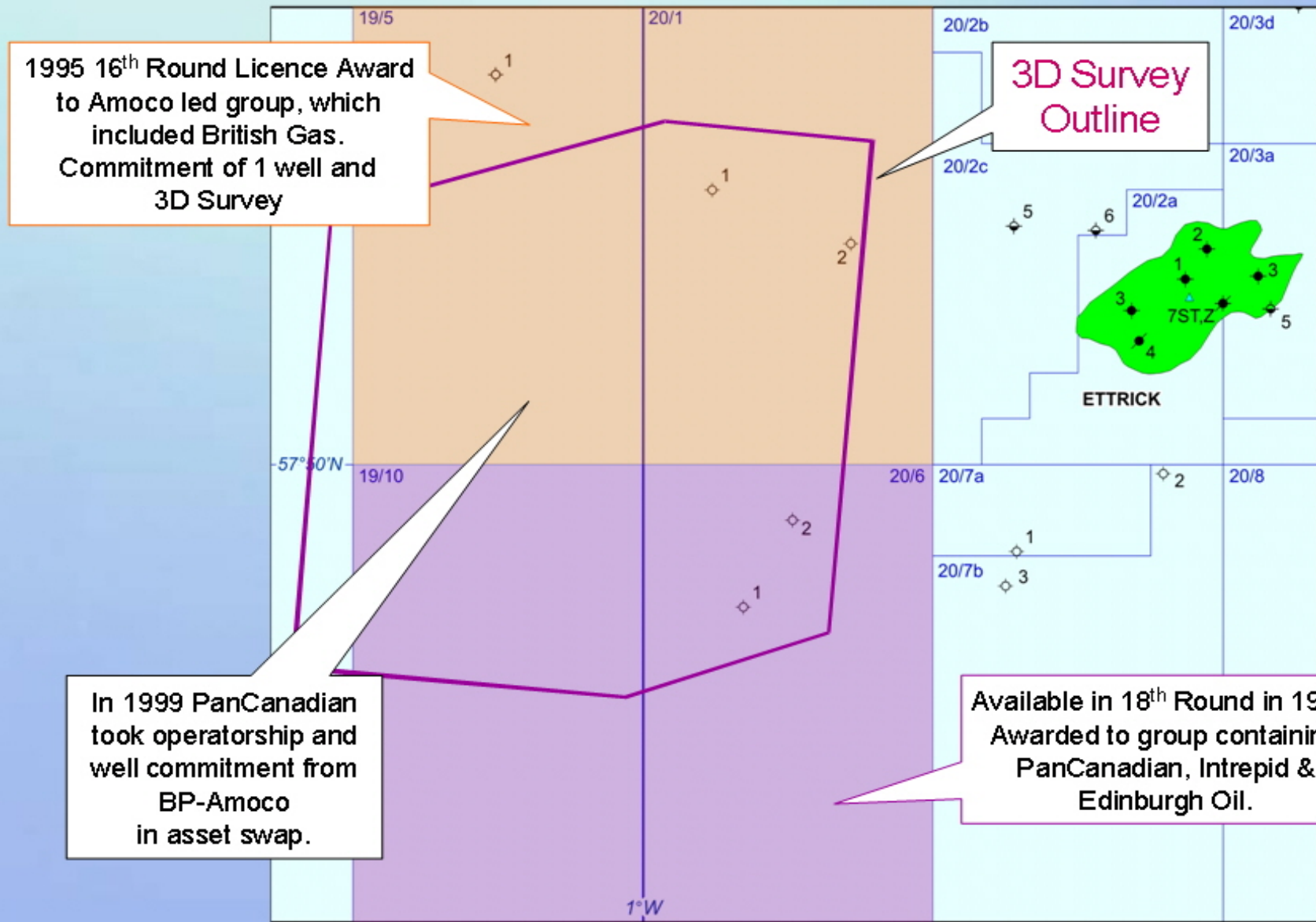




# East – West Line Through Buzzard

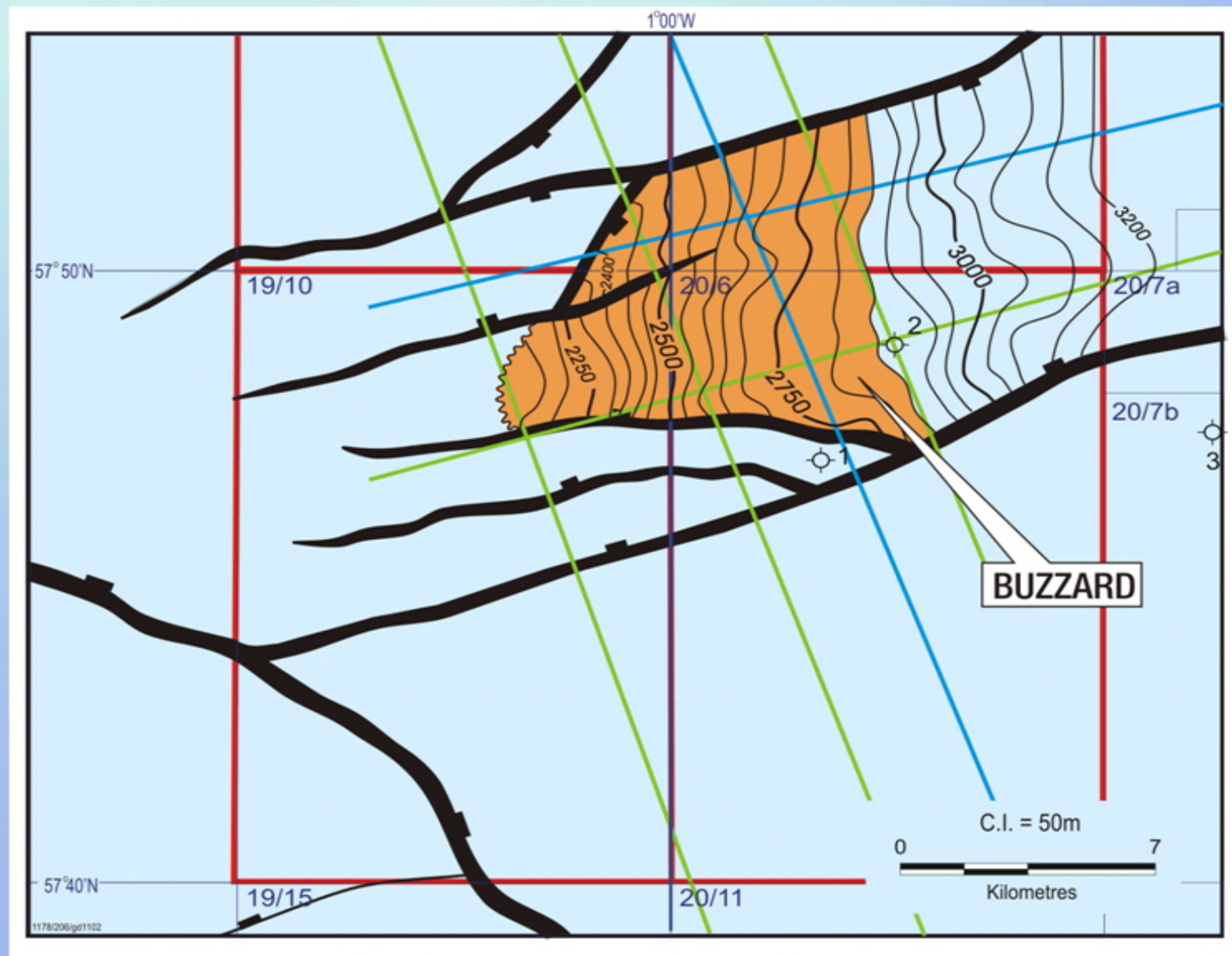


# Recent Licence History



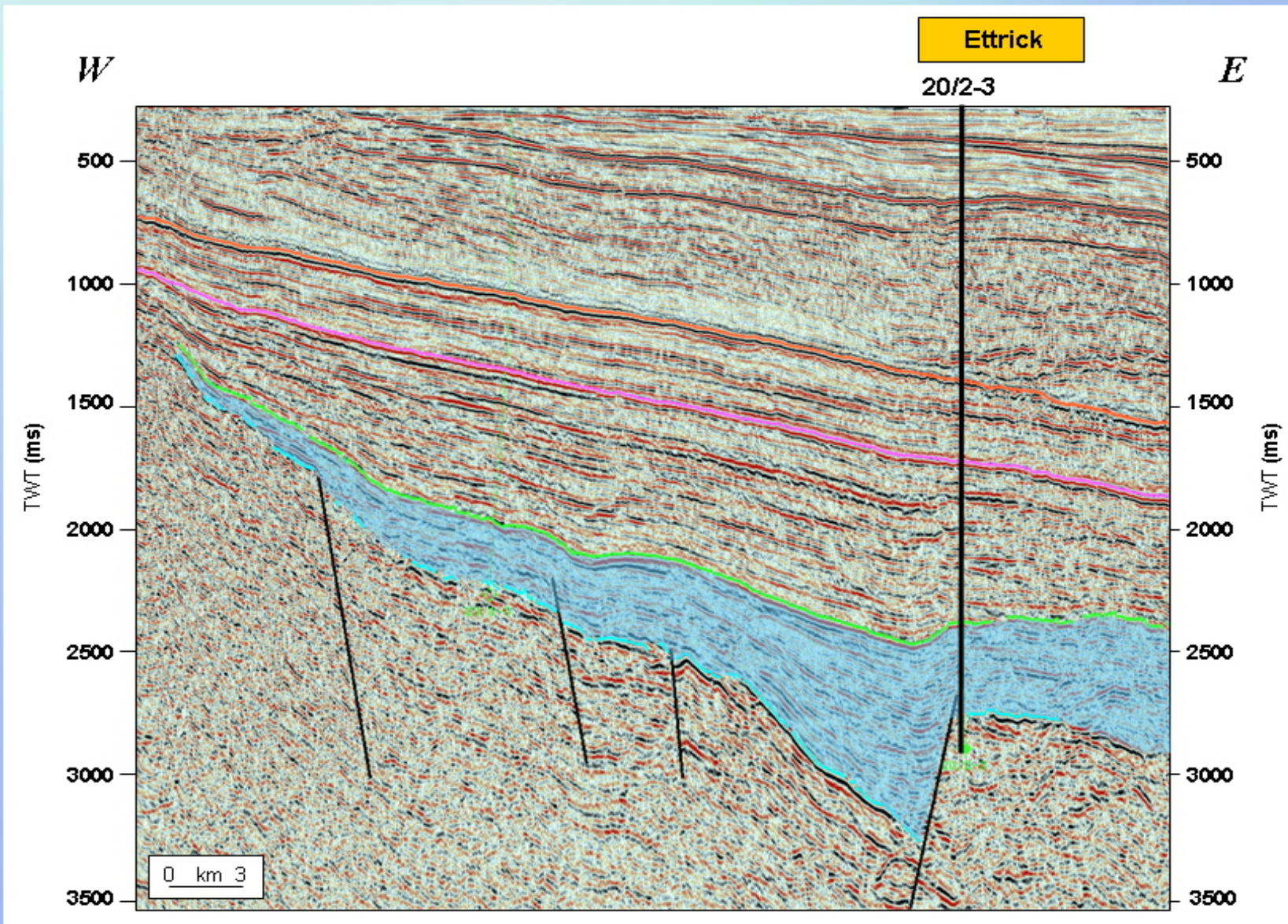


# 18<sup>th</sup> Round Top Buzzard Map



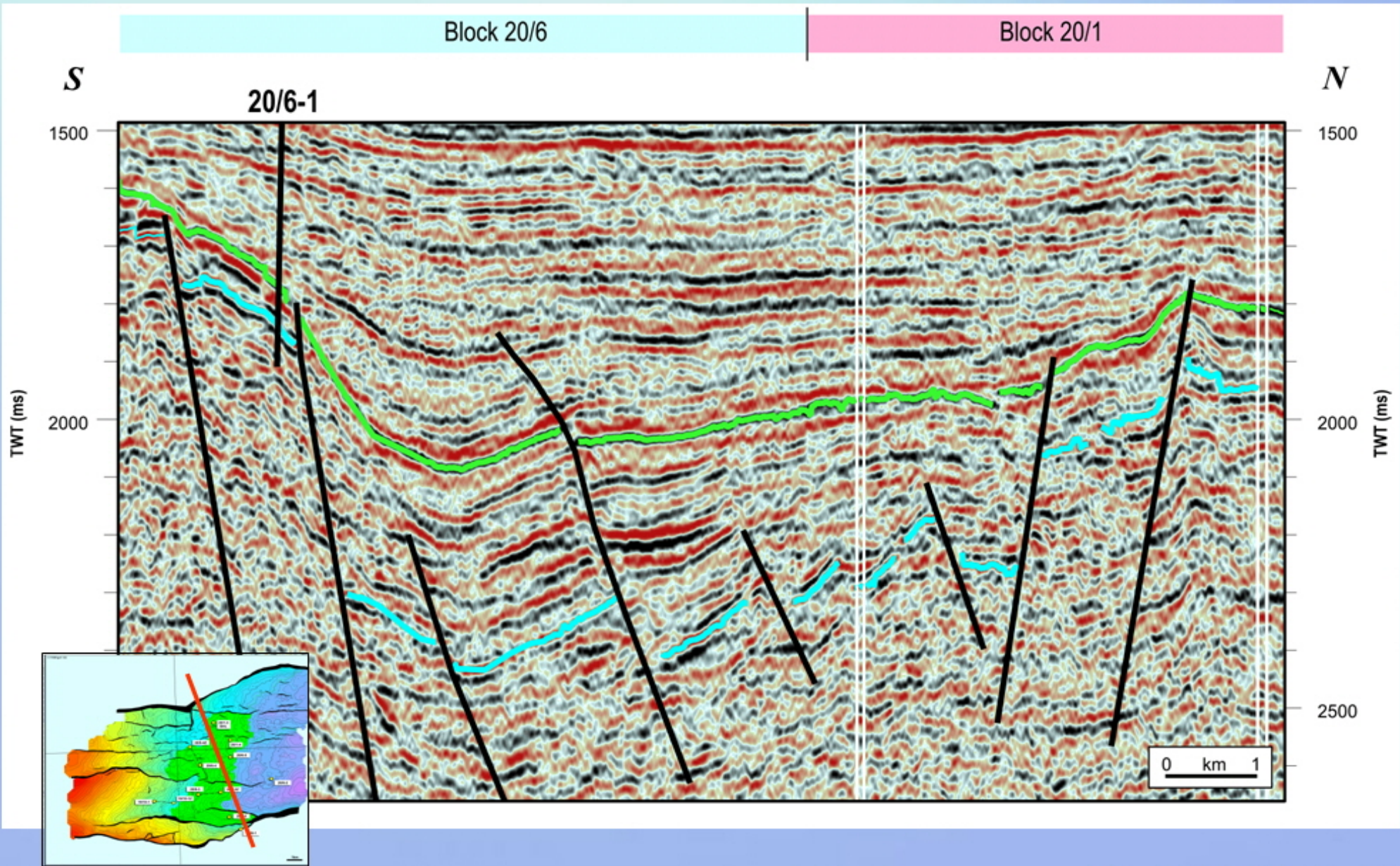


# W-E 2D regional line



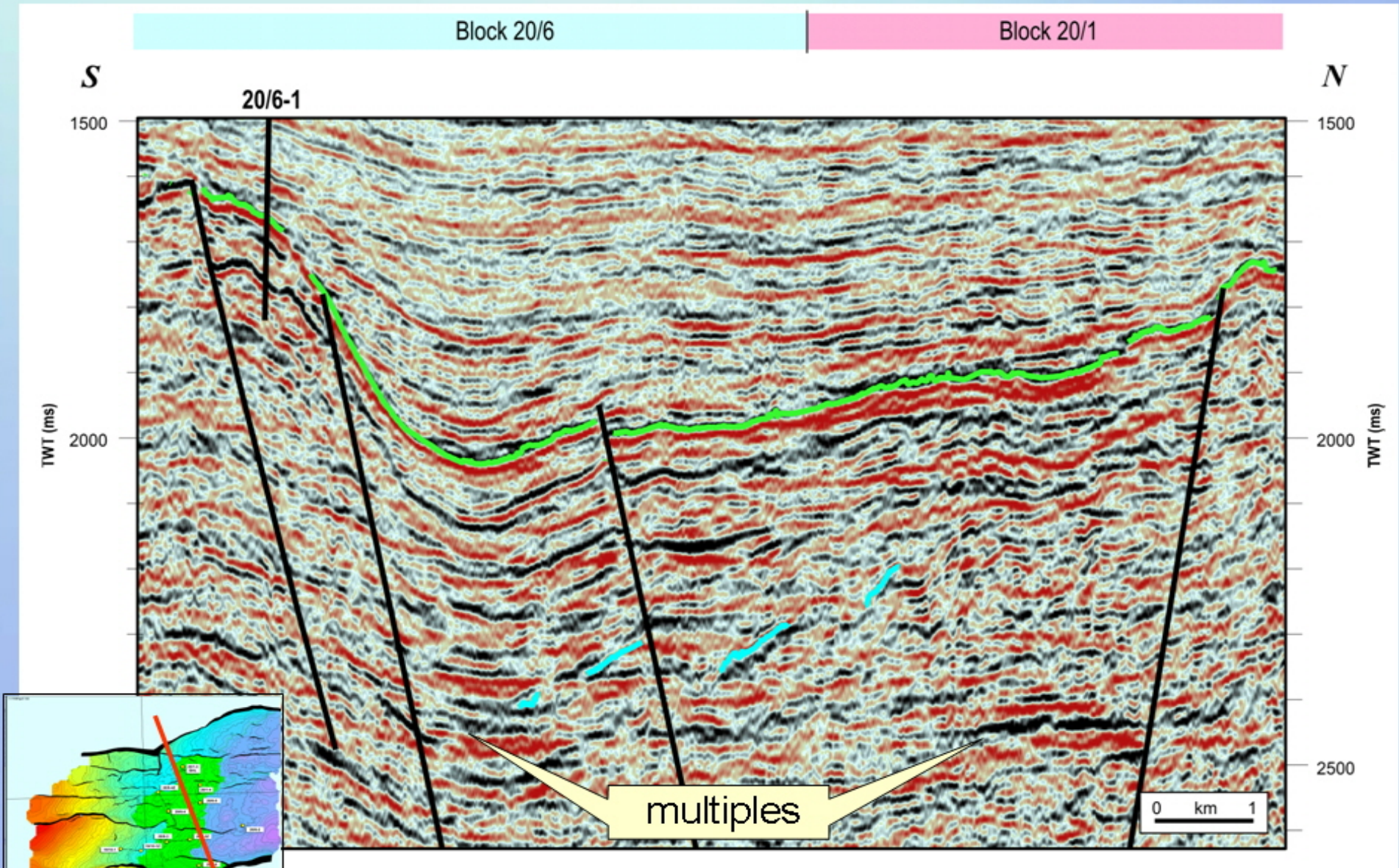


# 2D Seismic line





# Original 3D Comparison



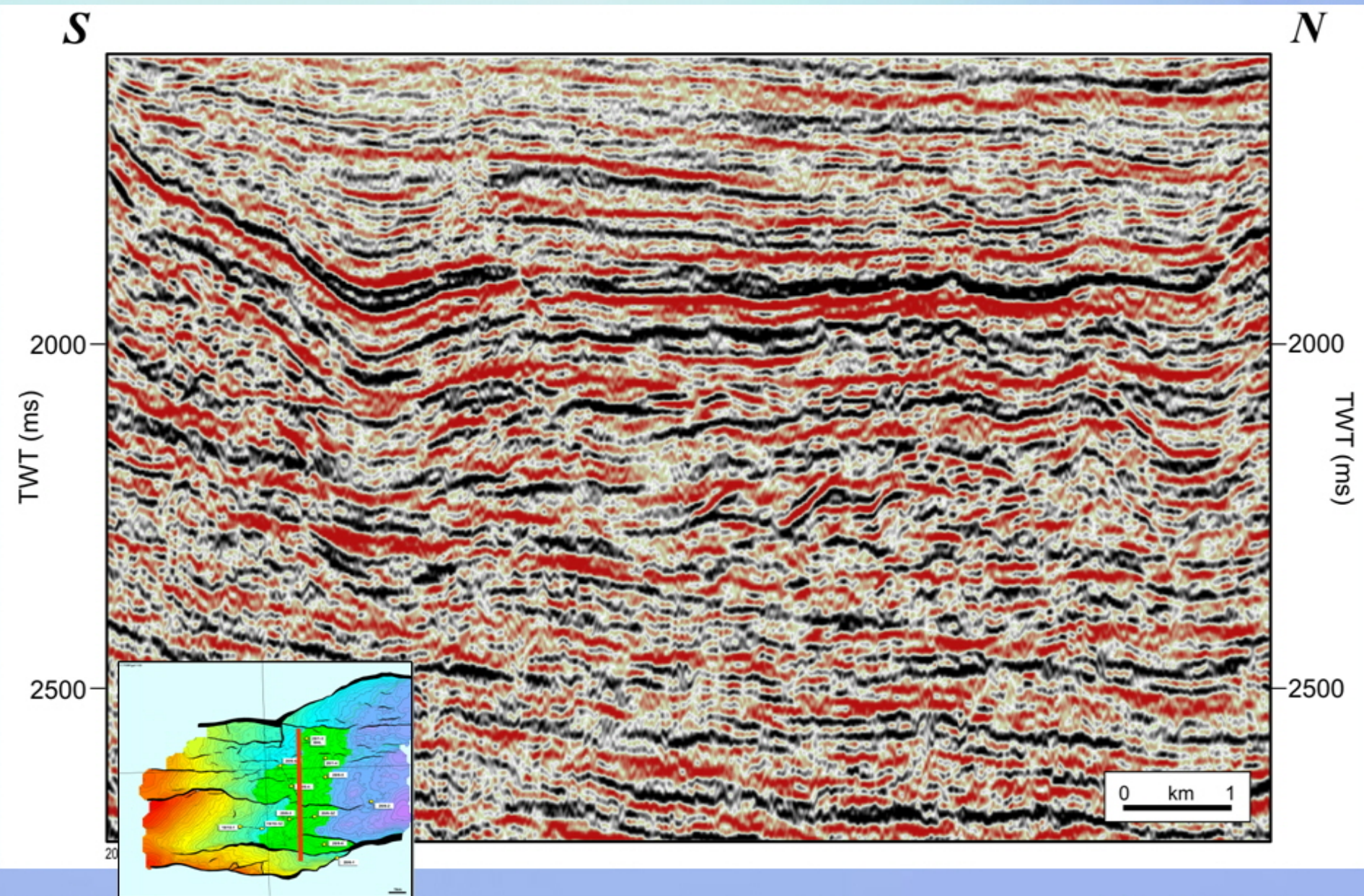


# What Swell Noise?



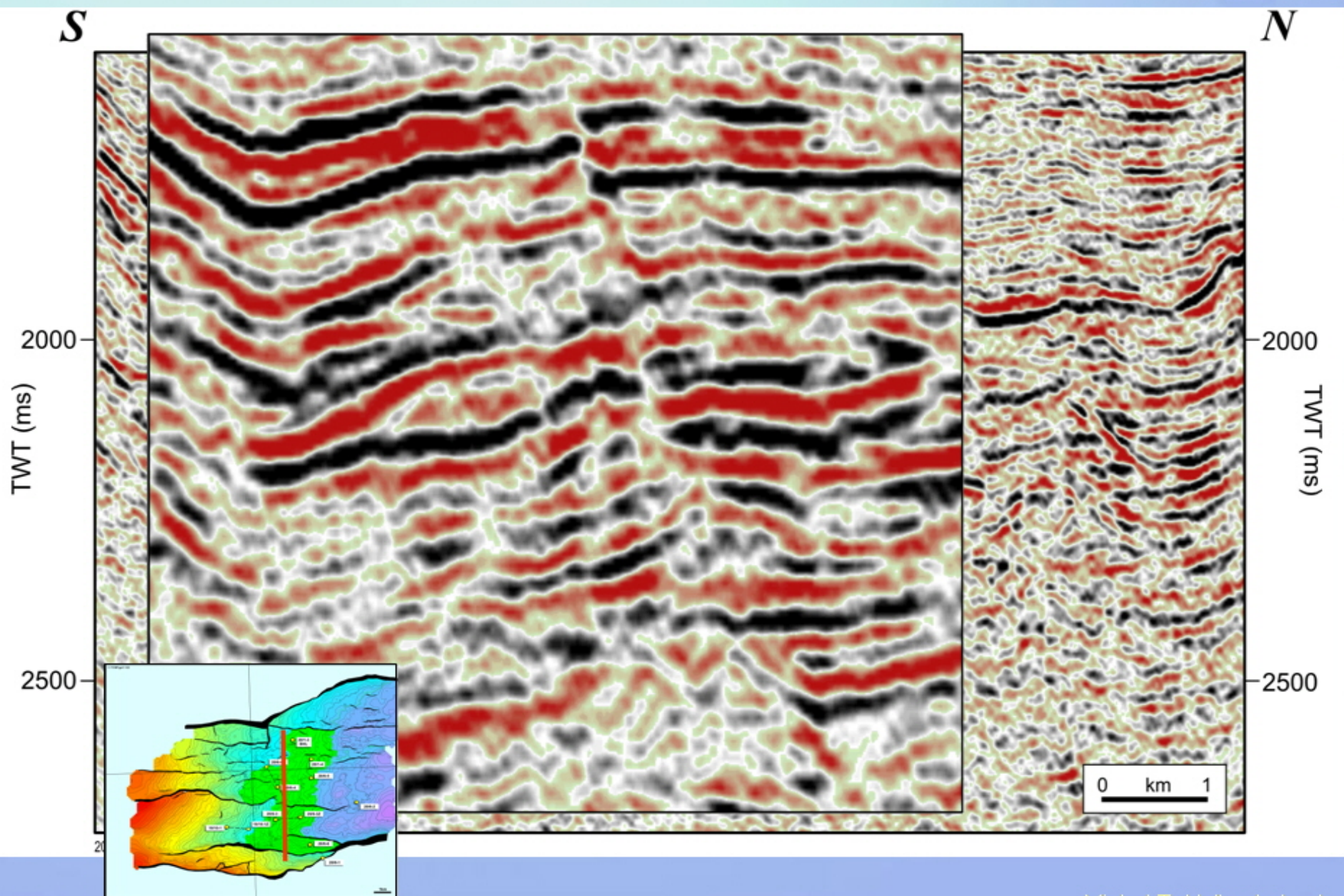


# 3D Comparison: Inline 1640 - original



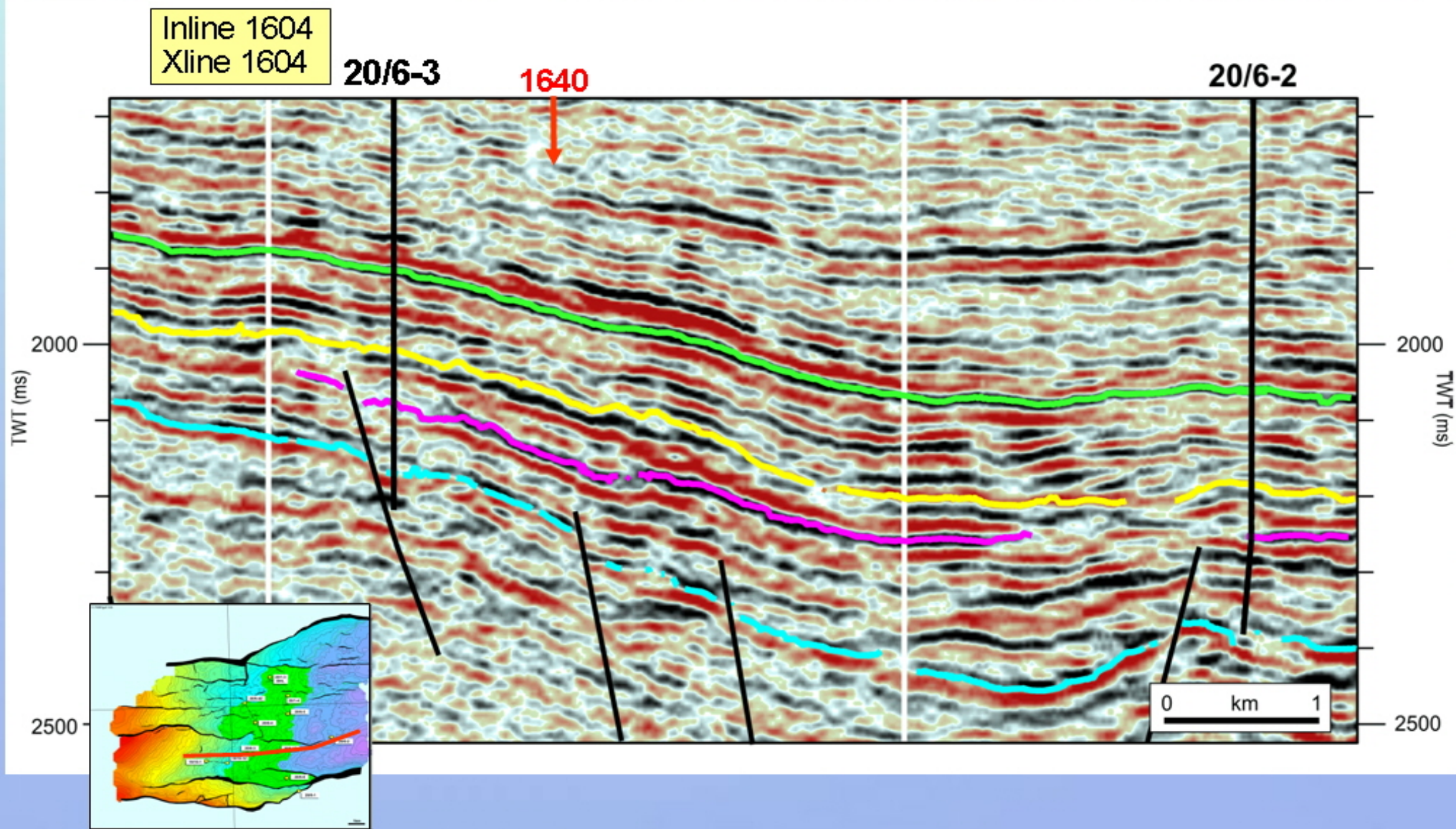


# 3D Comparison: Inline 1640 - reprocessed



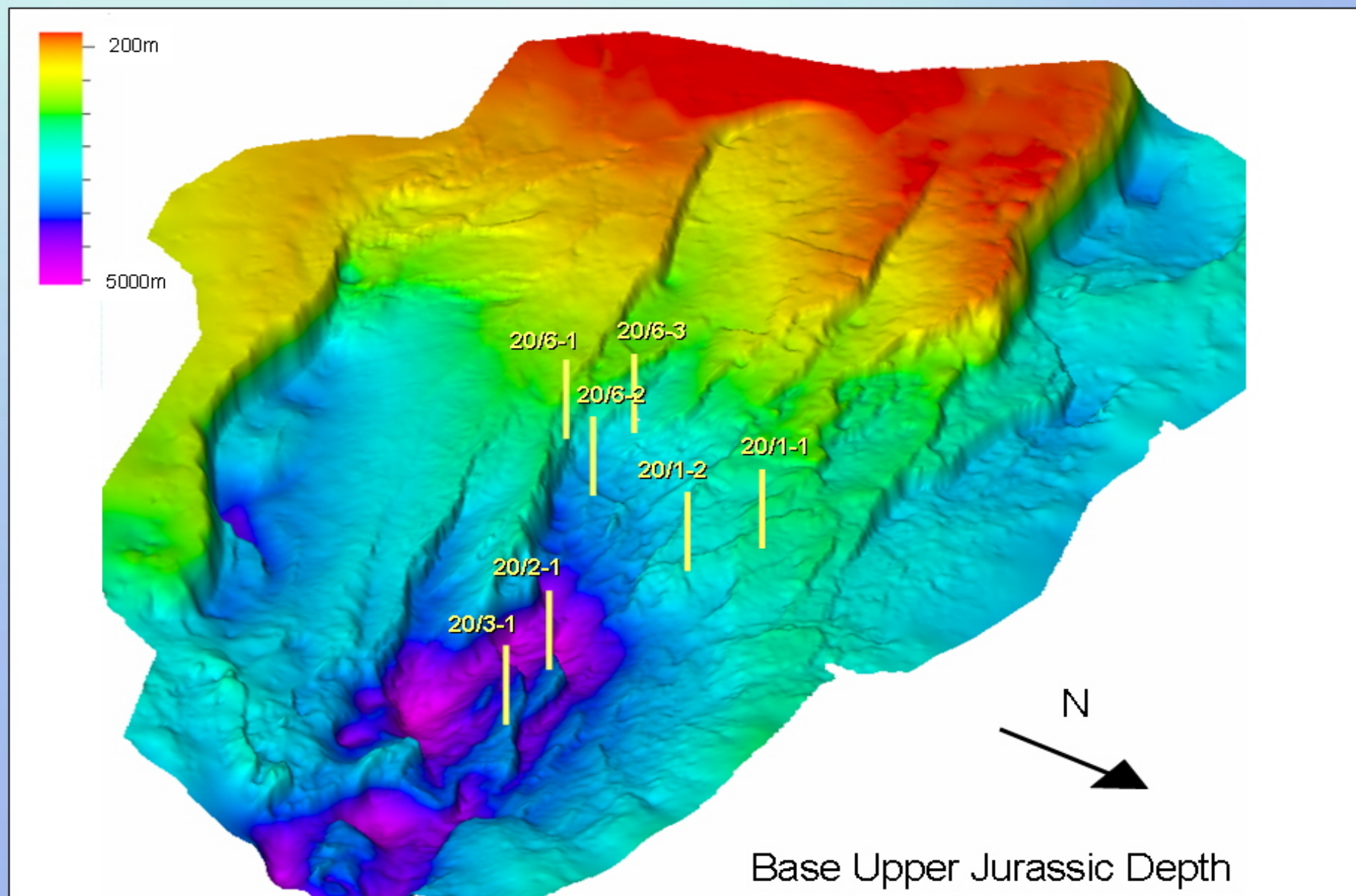


# E – W Seismic Line Showing 20/6-3 Well Location





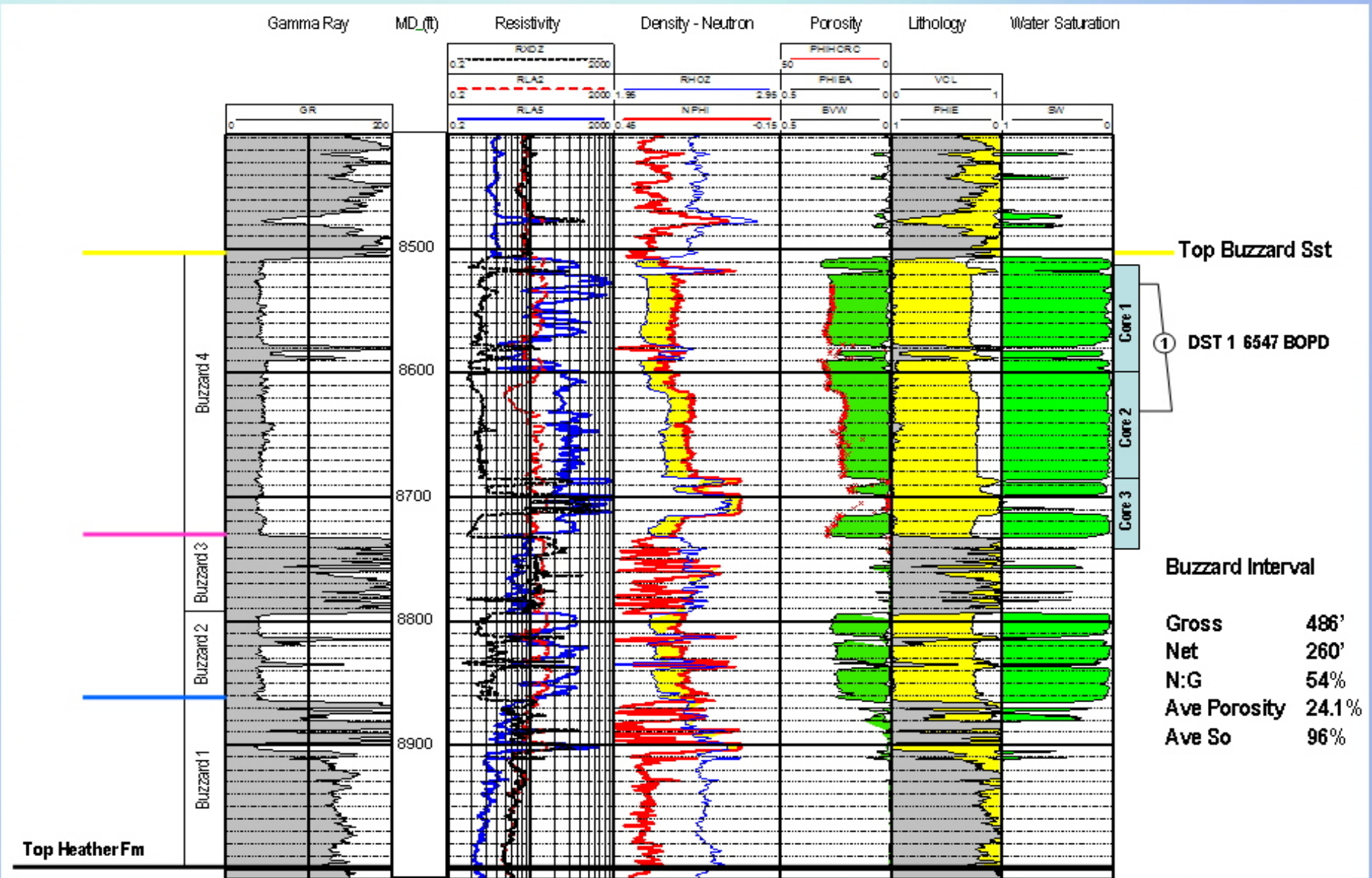
# Location of 20/6-3



Base Upper Jurassic Depth



# Discovery Well 20/6-3 CPI

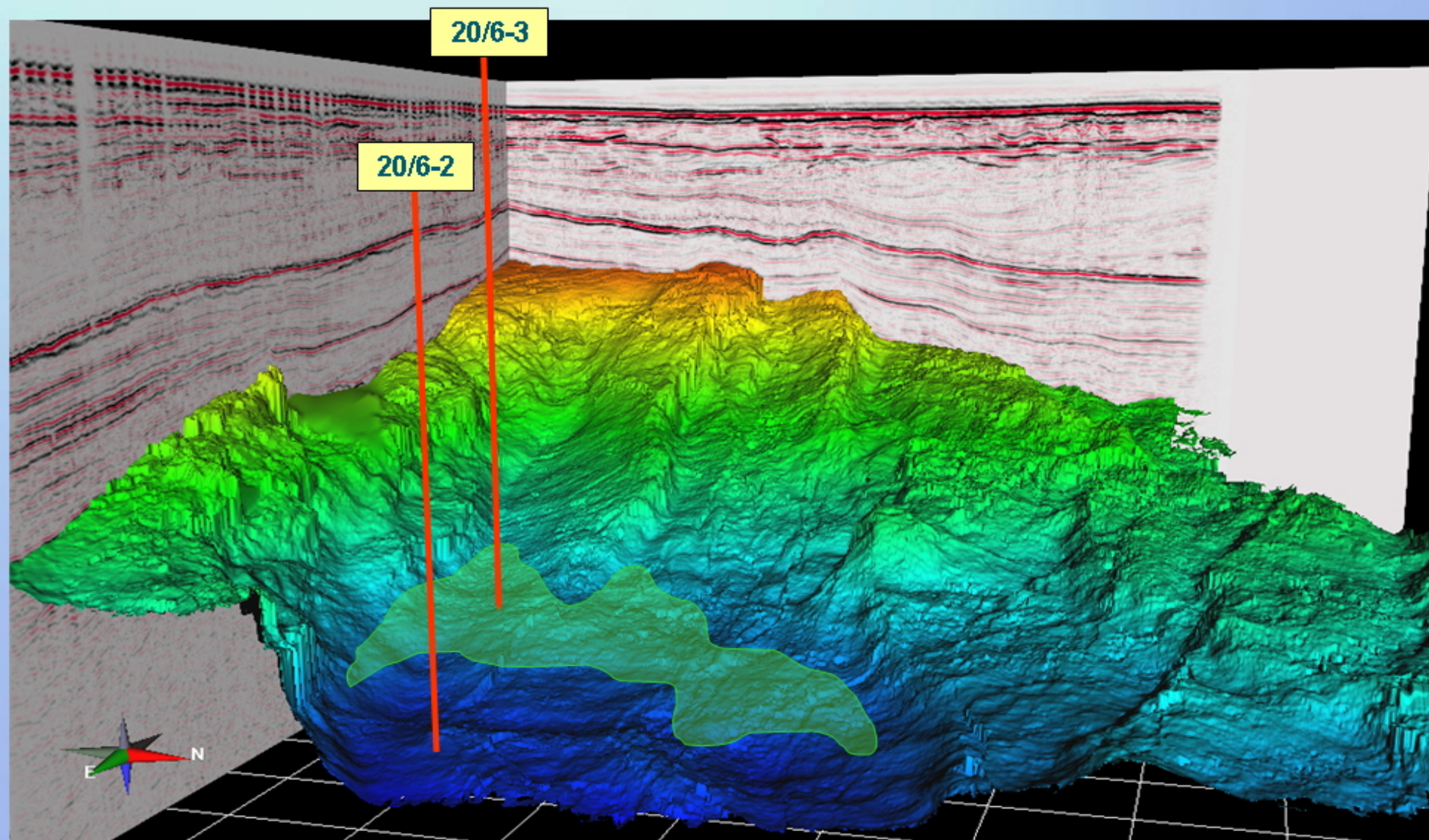






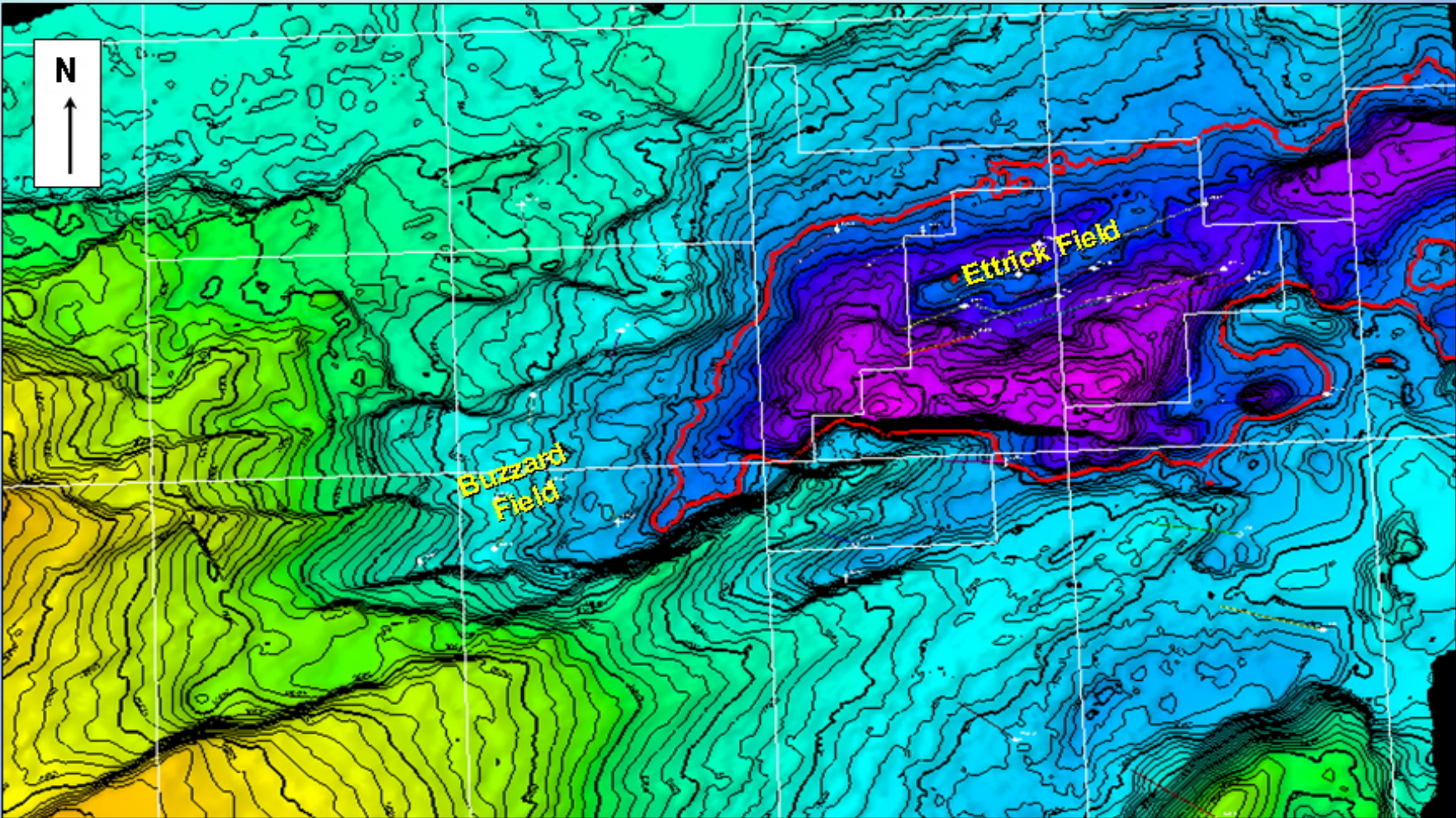


# Base Cretaceous 3D View





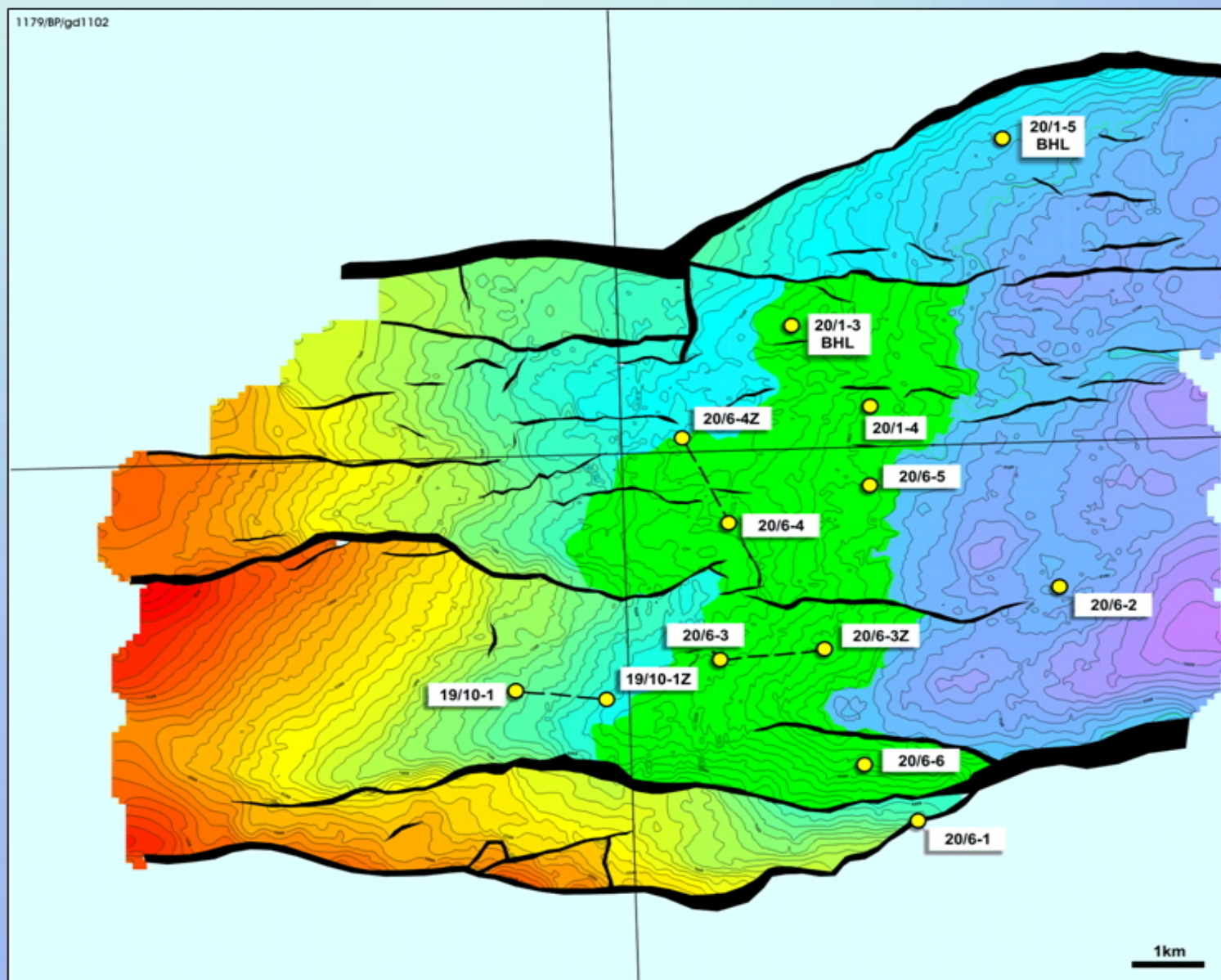
# Oil source kitchen



10300' tvdss  
Beginning of  
Oil expulsion

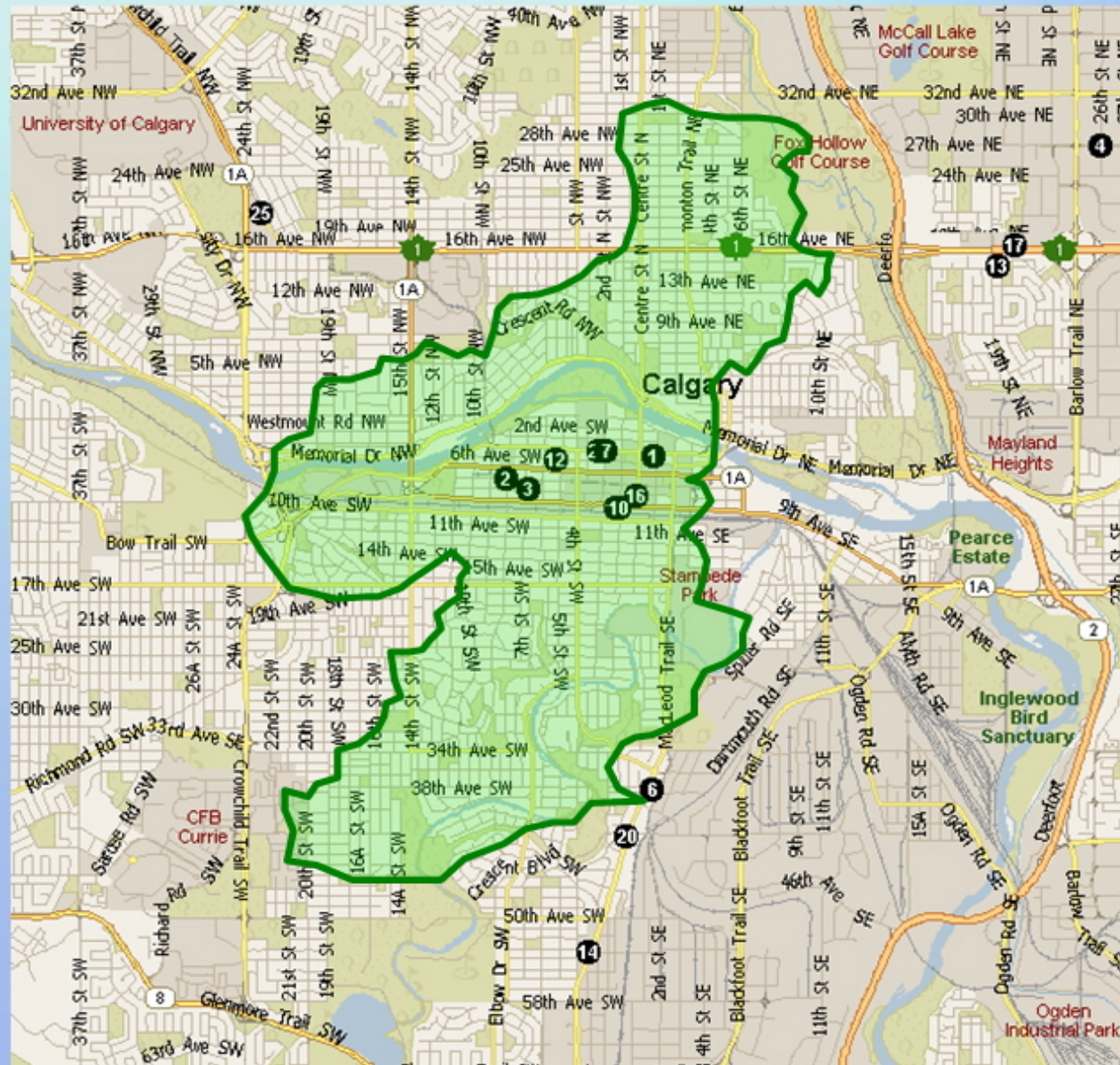


# Top Buzzard Depth Structure Map



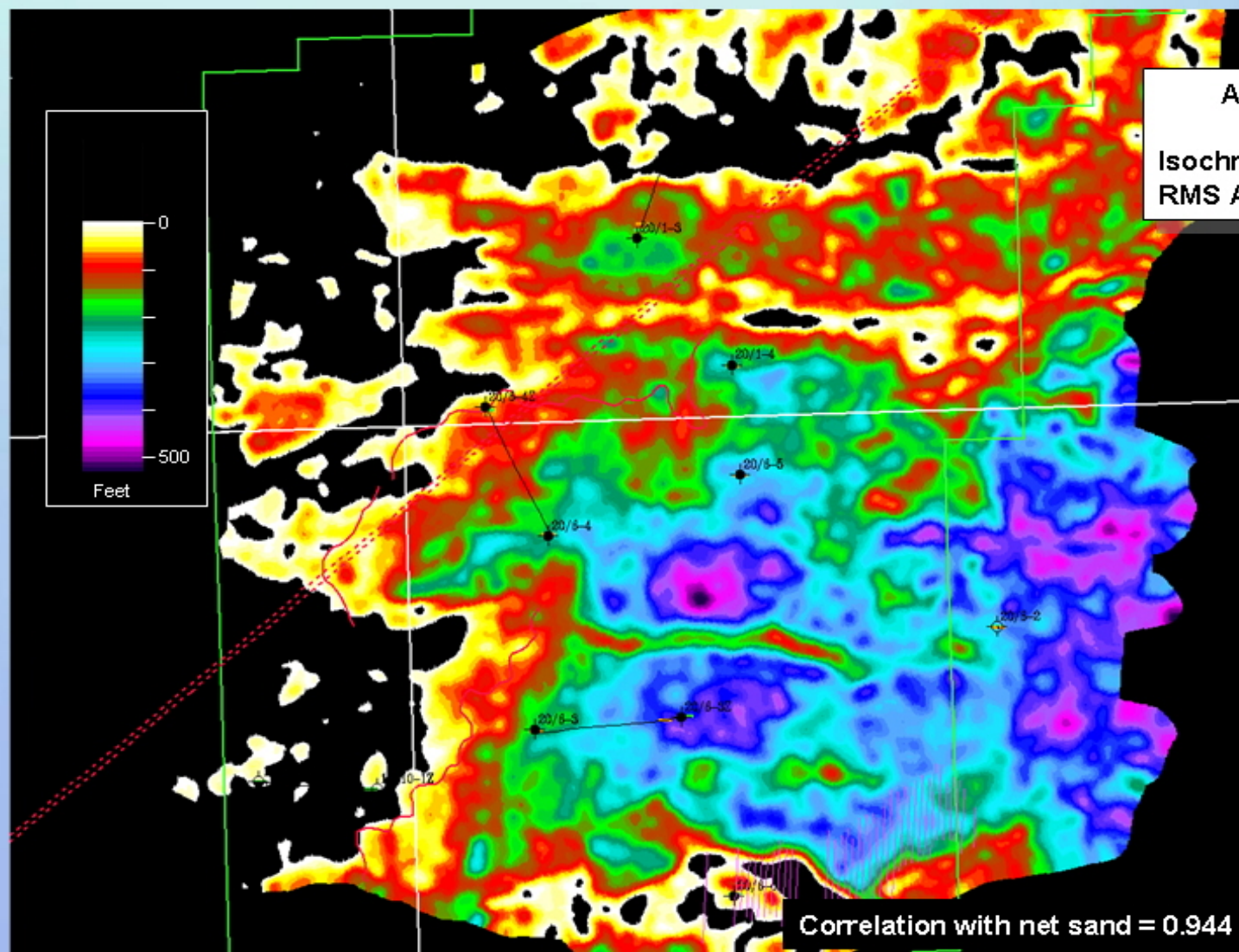


# Buzzard Field – Superimposed on Calgary

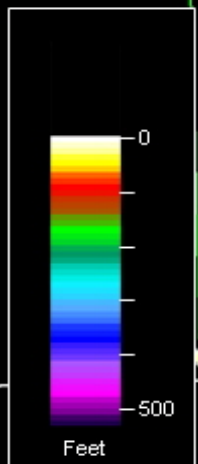




# Net Sand Prediction



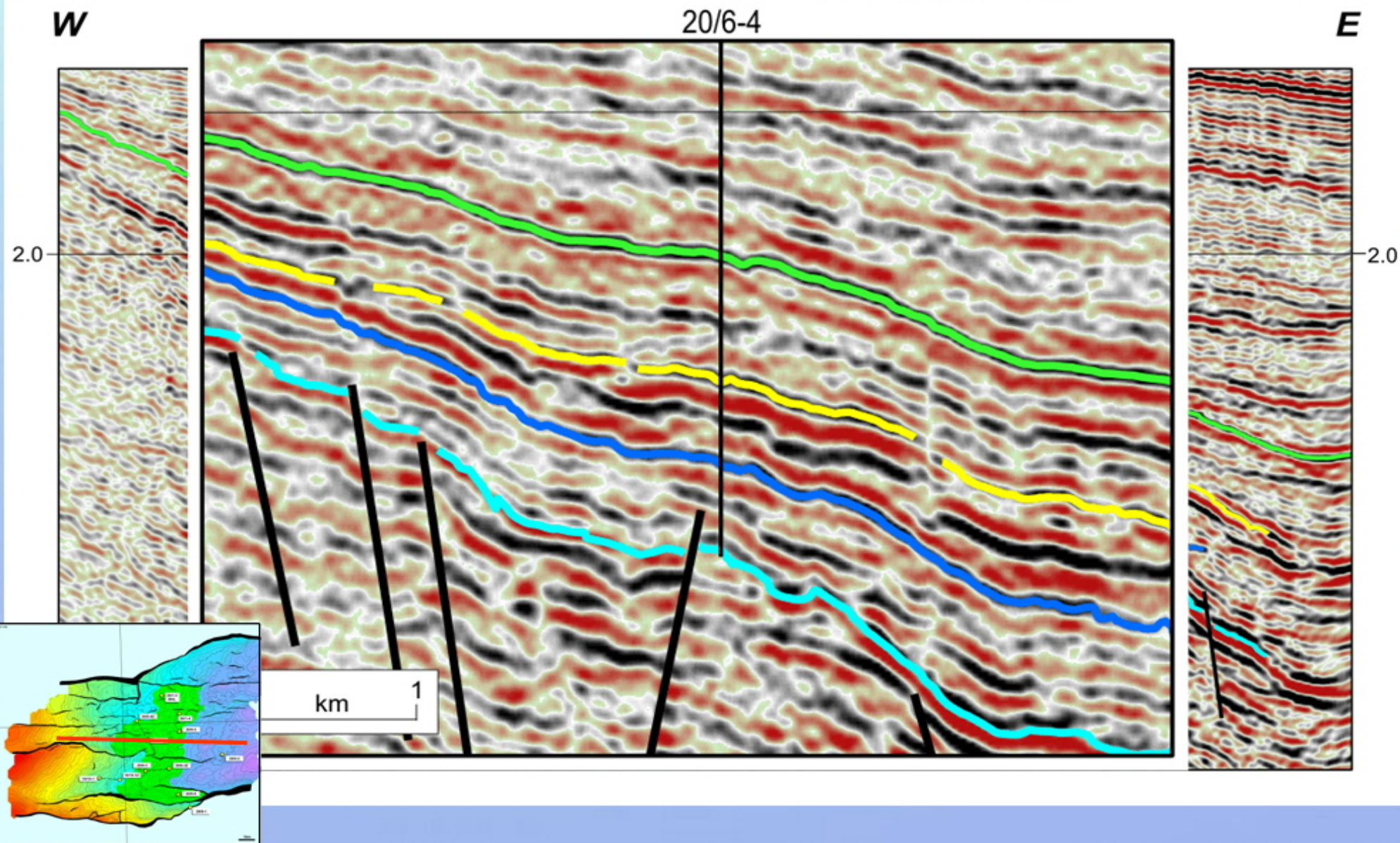
Attributes combined are:  
Isochron  
RMS Amplitude



Correlation with net sand = 0.944

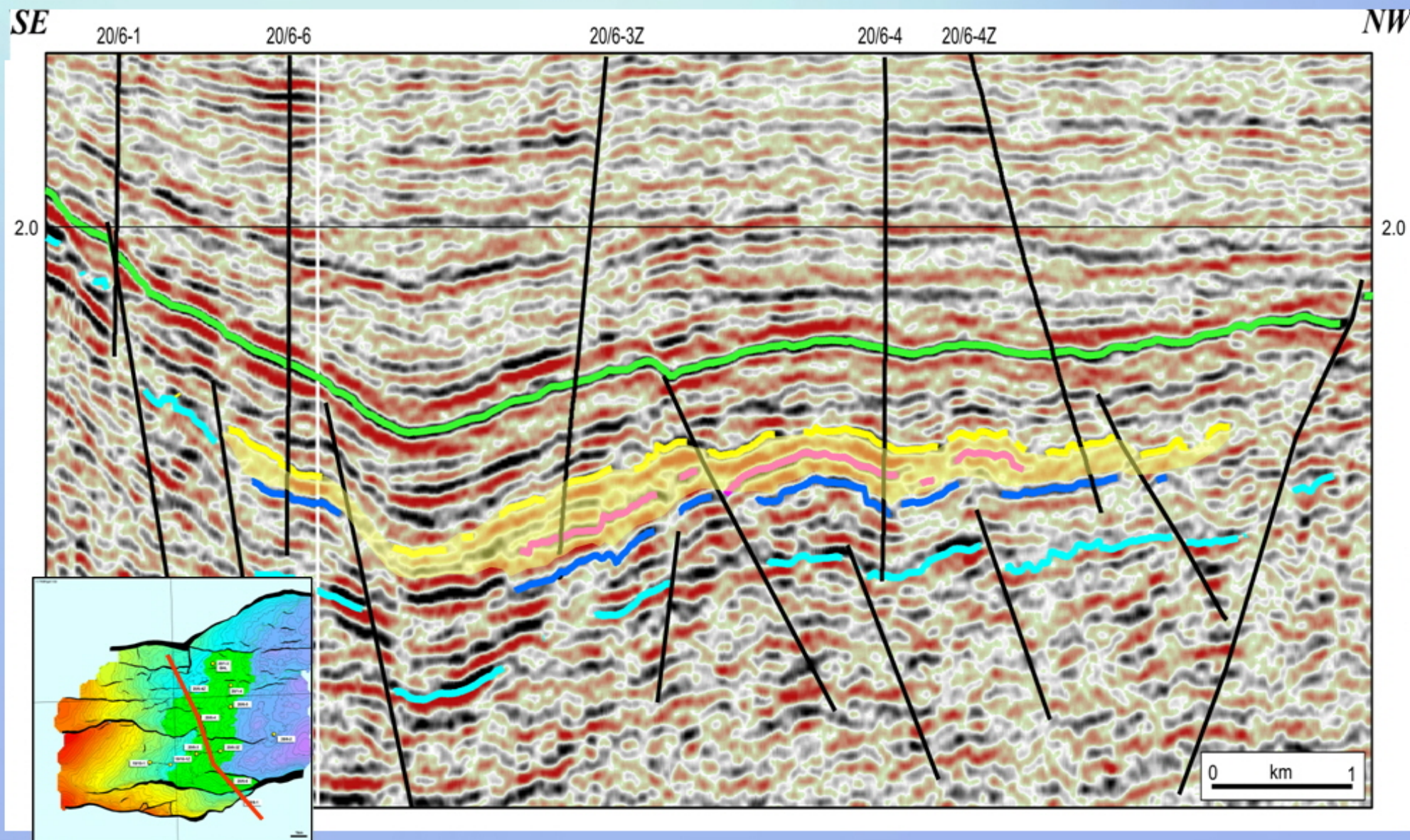


# Buzzard updip pinchout



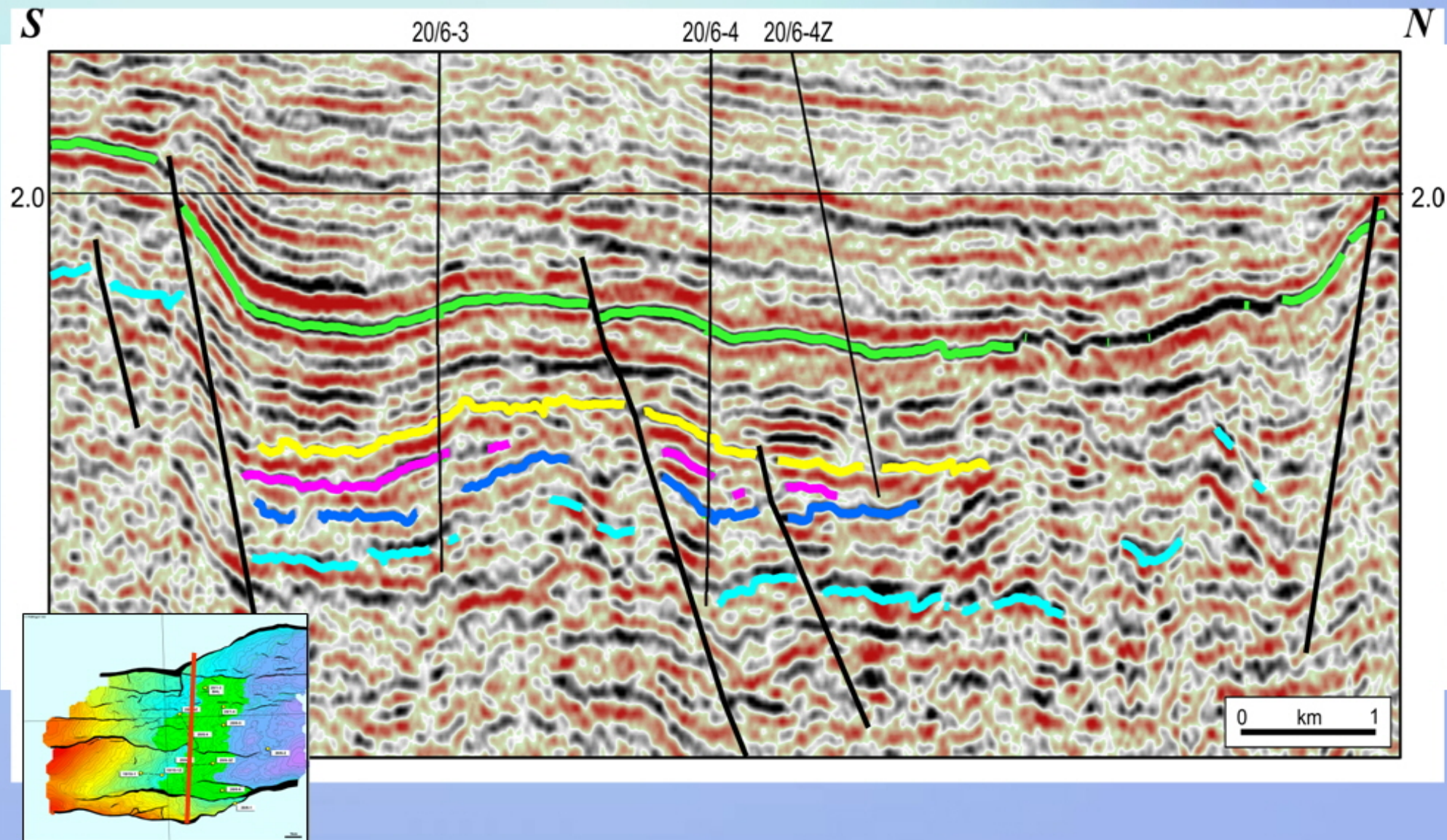


# Trapping styles



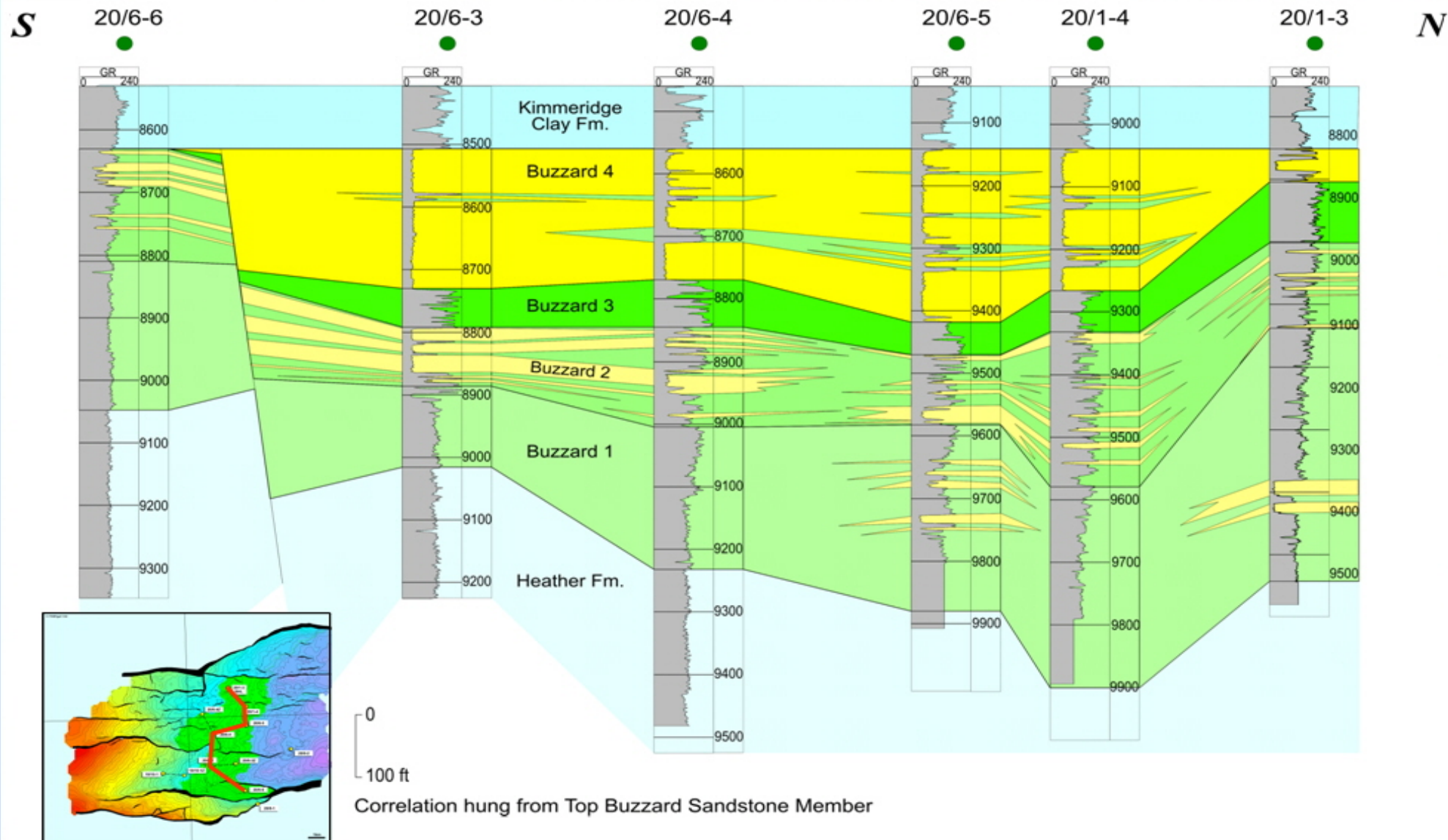


# Downthrown trap



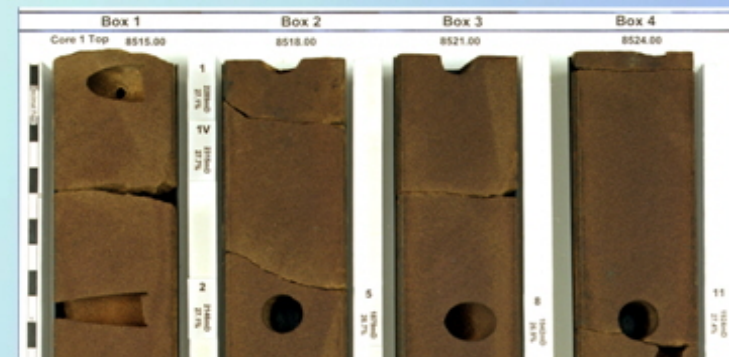
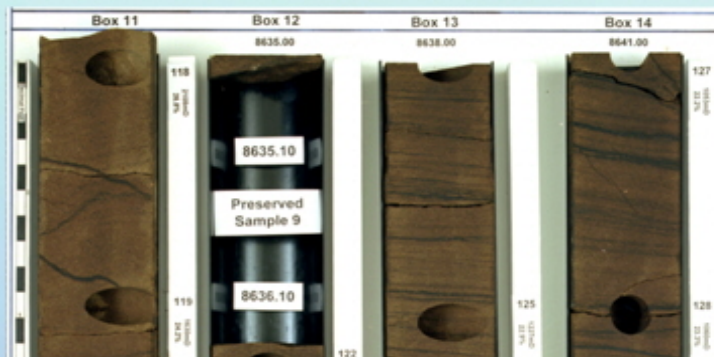


# Well Correlation across Buzzard

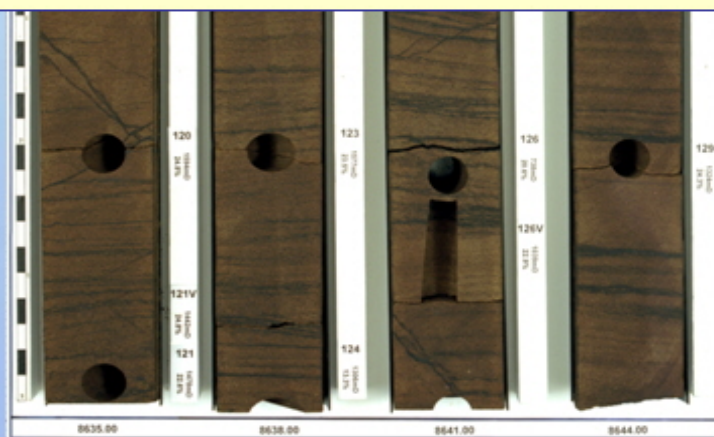




# Buzzard 4 Core Data

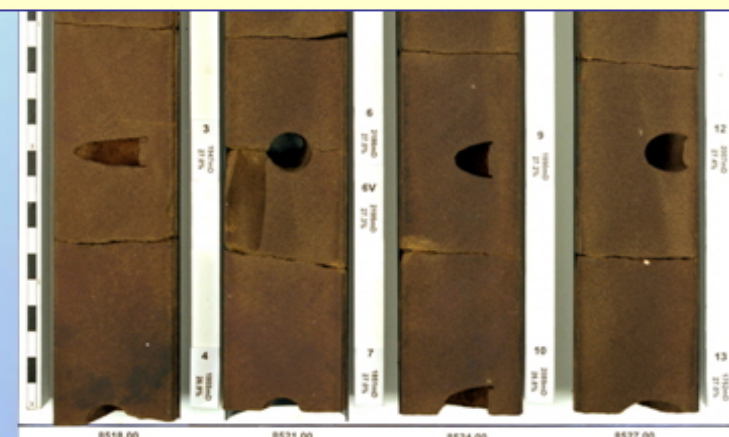


BUZZARD CORE IS ON DISPLAY AT **CSPG CORE CONFERENCE** ON THURSDAY & FRIDAY



## Laminated Sands

Fine to medium grained  
500mD – 2 Darcy permeability  
20 - 25% porosity

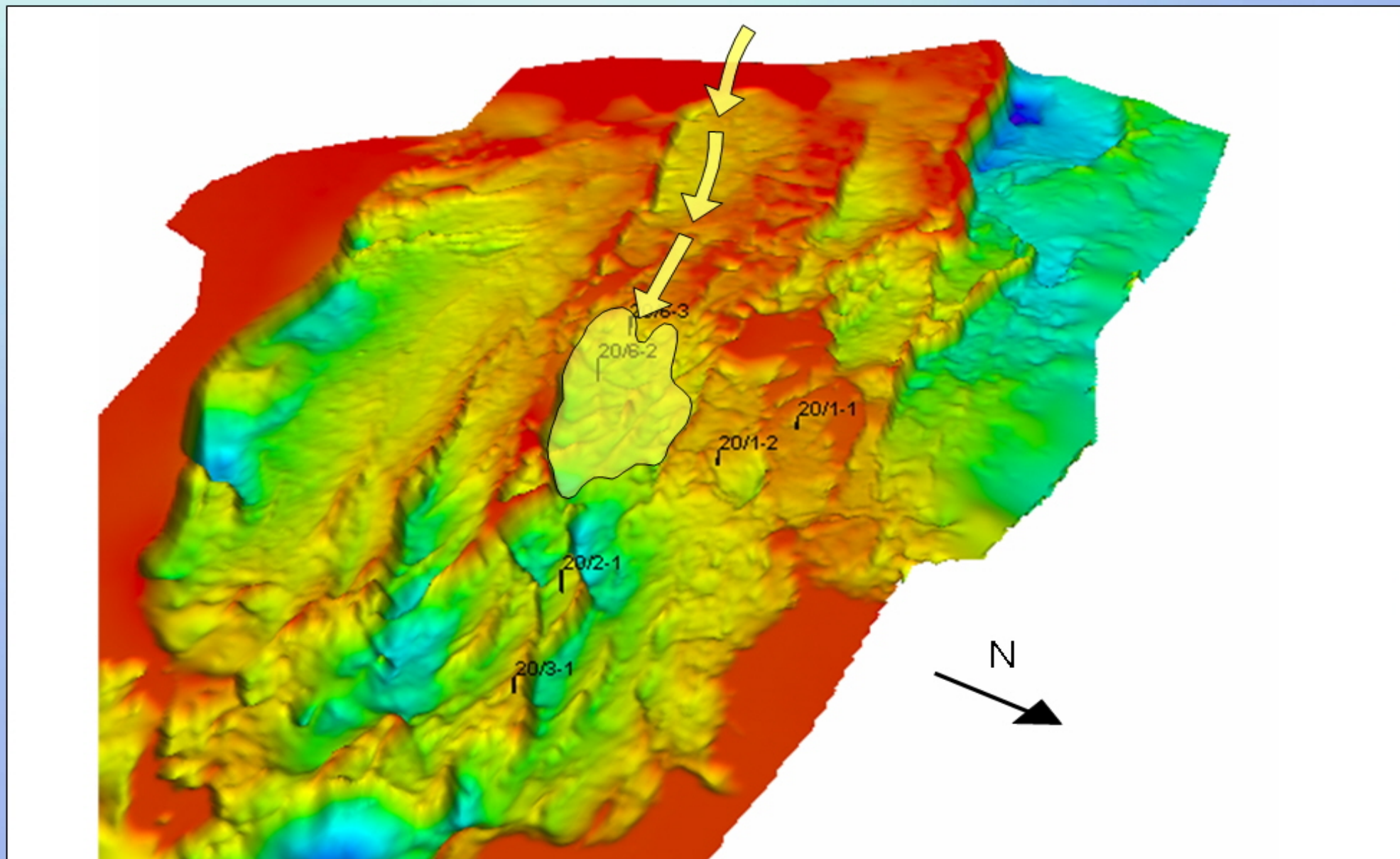


## Structureless, Amalgamated Massive Sands

Fine to medium grained – locally coarse grained  
1 – 3 Darcy permeability, but up to 15 Darcy  
23 -27% porosity

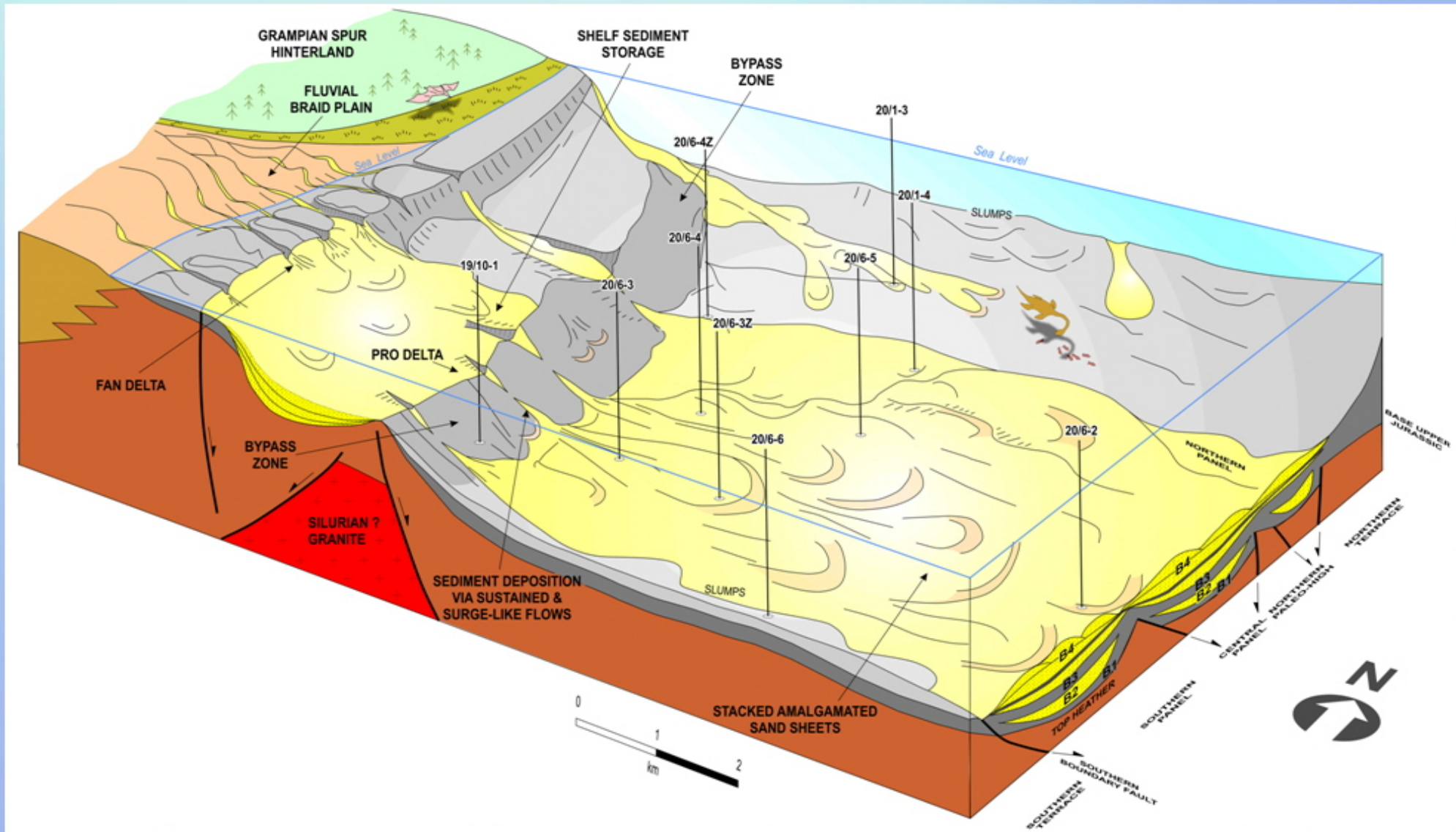


# Palaeotopographic reconstruction of Base Upper Jurassic





# Buzzard Sandstone Member Depositional Model







**Proximity to significant sand provenance area.**

**Location within embayment – focus for sand deposition.**

**Reservoir encased within source rock.**

**No evidence of late fault reactivation.**

**Adjacent to major oil generating kitchen.**

**Depositional slope sufficient for sediment bypass producing updip pinchout.**



**Buzzard was not a subtle trap, it was a large, unsubtle stratigraphic trap.**

**The updip potential was recognised by a significant number of major and large independent oil companies, but the perceived risks deterred them from drilling the prospect.**

**It took a group of companies comprising PanCanadian, Intrepid, BG and Edinburgh to find the resolve to get it drilled.**

**The Buzzard discovery is the result of high risk/high reward exploration based on a robust geological model and fit for purpose geophysics.**



# Thanks

**nexen**

Nexen Petroleum U.K. Limited

Graham Doré

Alan Booth

Bruce Brummitt

Donal O'Driscoll

Gerry Macey





- Movie animation

