

A photograph of a white and green helicopter with the registration 'N351EV' on its side, parked on a vast, flat, grassy field. Several people are standing near the helicopter. In the background, there is a body of water and distant hills under a cloudy sky.

# **Geology and Hydrocarbon Potential of the Kotzebue (including Selawik) Basin, Northwest Alaska**

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# Kotzebue Basin Location



- ▶ Basin 350 x 80 miles
- ▶ Onshore NW AK and offshore Chukchi Sea
- ▶ Separated from Hope Basin by Kotzebue Arch
- ▶ Depocenters ~ 20,000 ft Tertiary & probably Cretaceous



# Basin Comparison



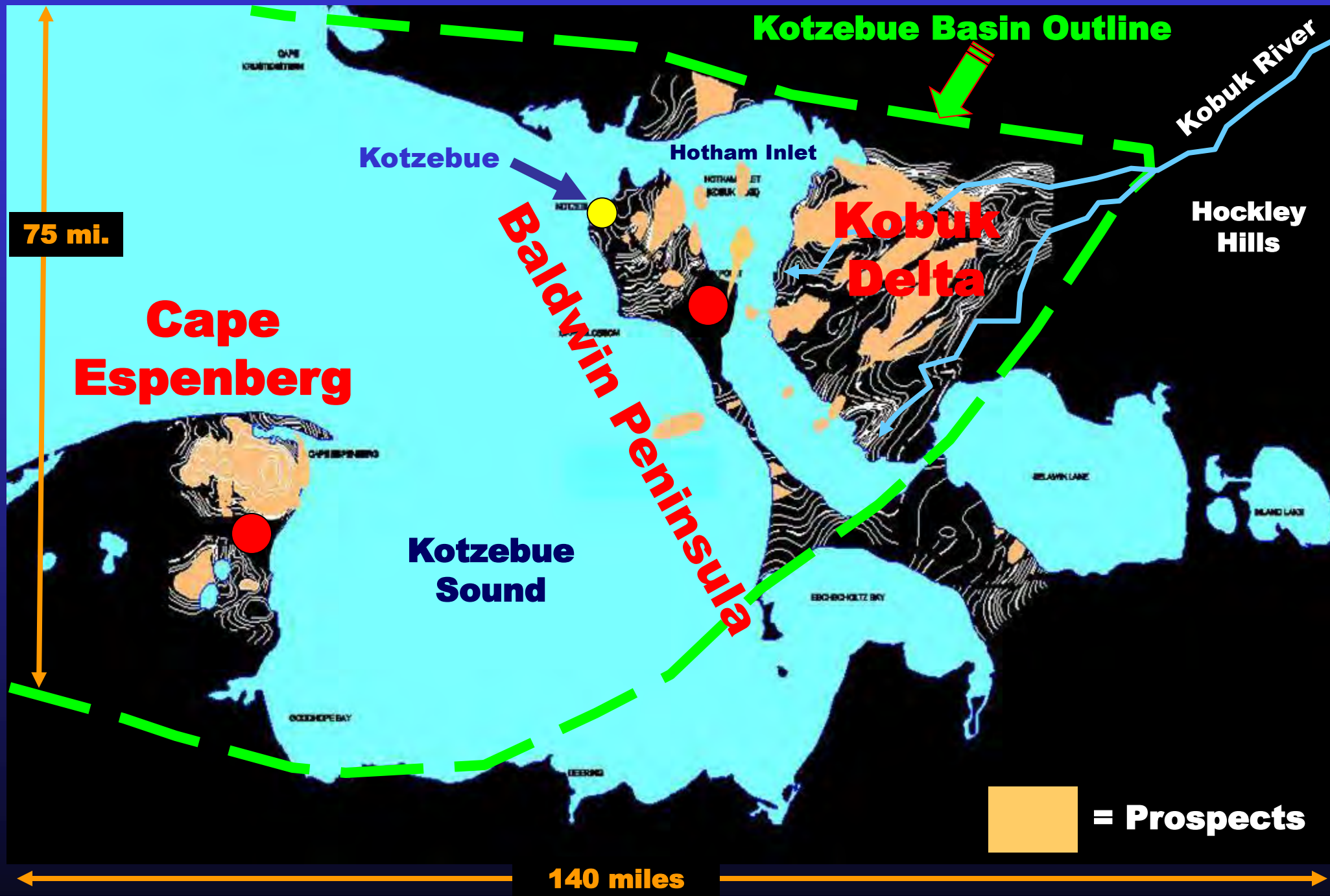
▶ Kotzebue Basin

▶ Cook Inlet Basin

Base map from USGS: Geologic Map of North America

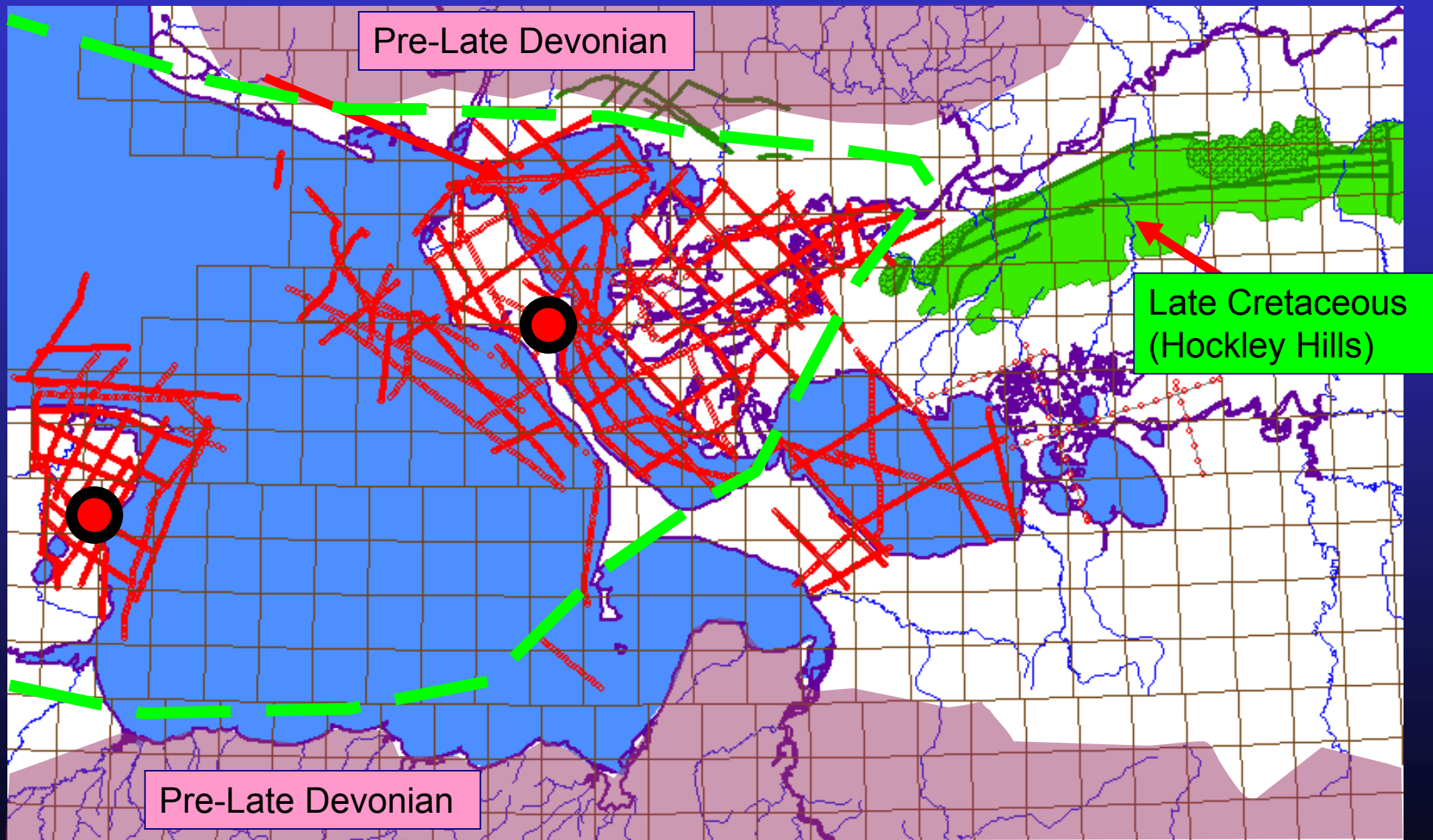


# Local Geography

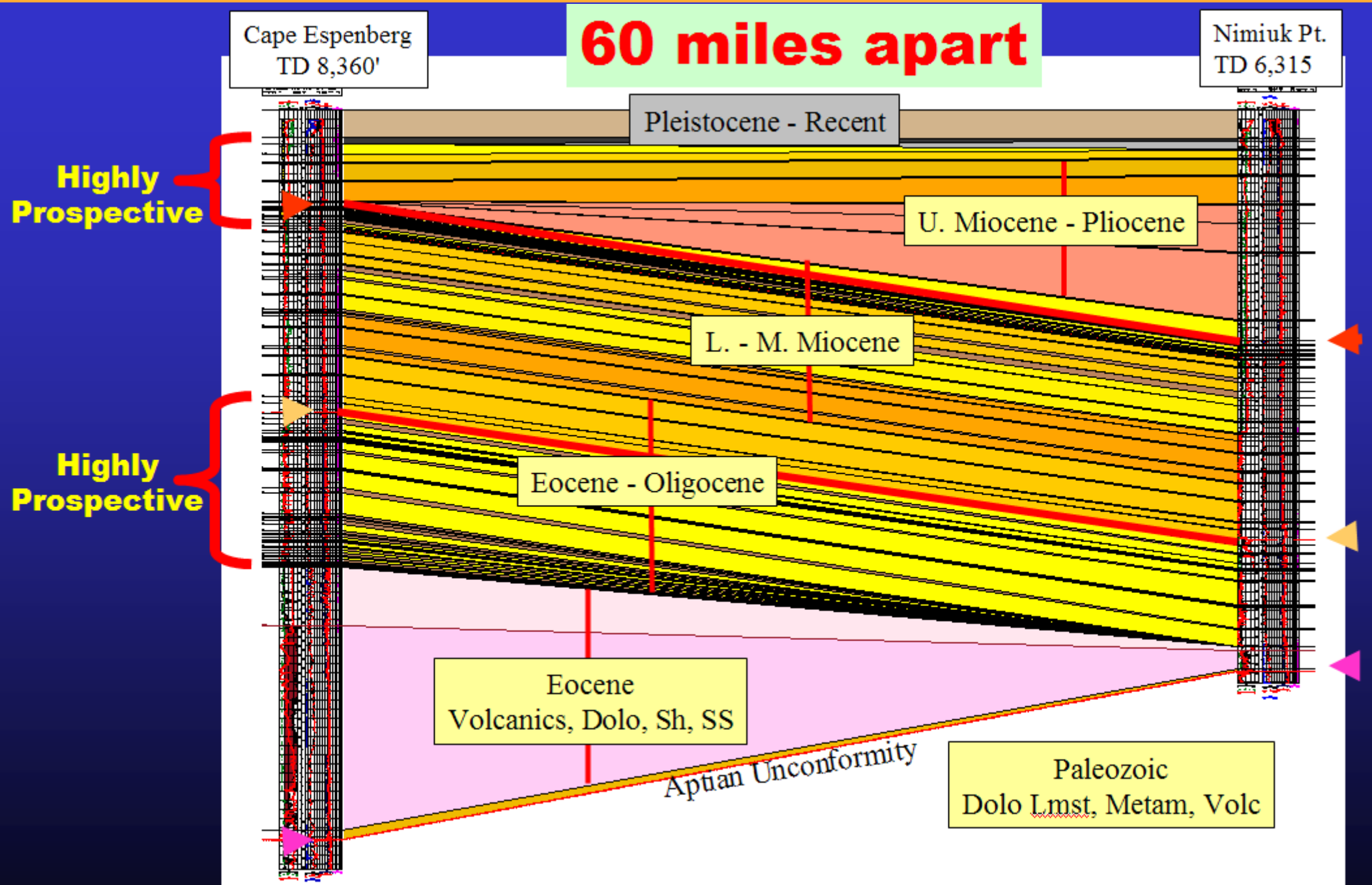


# Exploration History and Data

- ▶ SOCAL (now Chevron): frontier exploration - early to mid 1970s
- ▶ 1500 miles 2D seismic, gravity and aeromagnetic data
- ▶ Outcrop and subsurface studies and two stratigraphic test wells 1974



# Primary Reservoir Targets





# Basin Overview

- ▶ Time Structure: Top Acoustic Basement

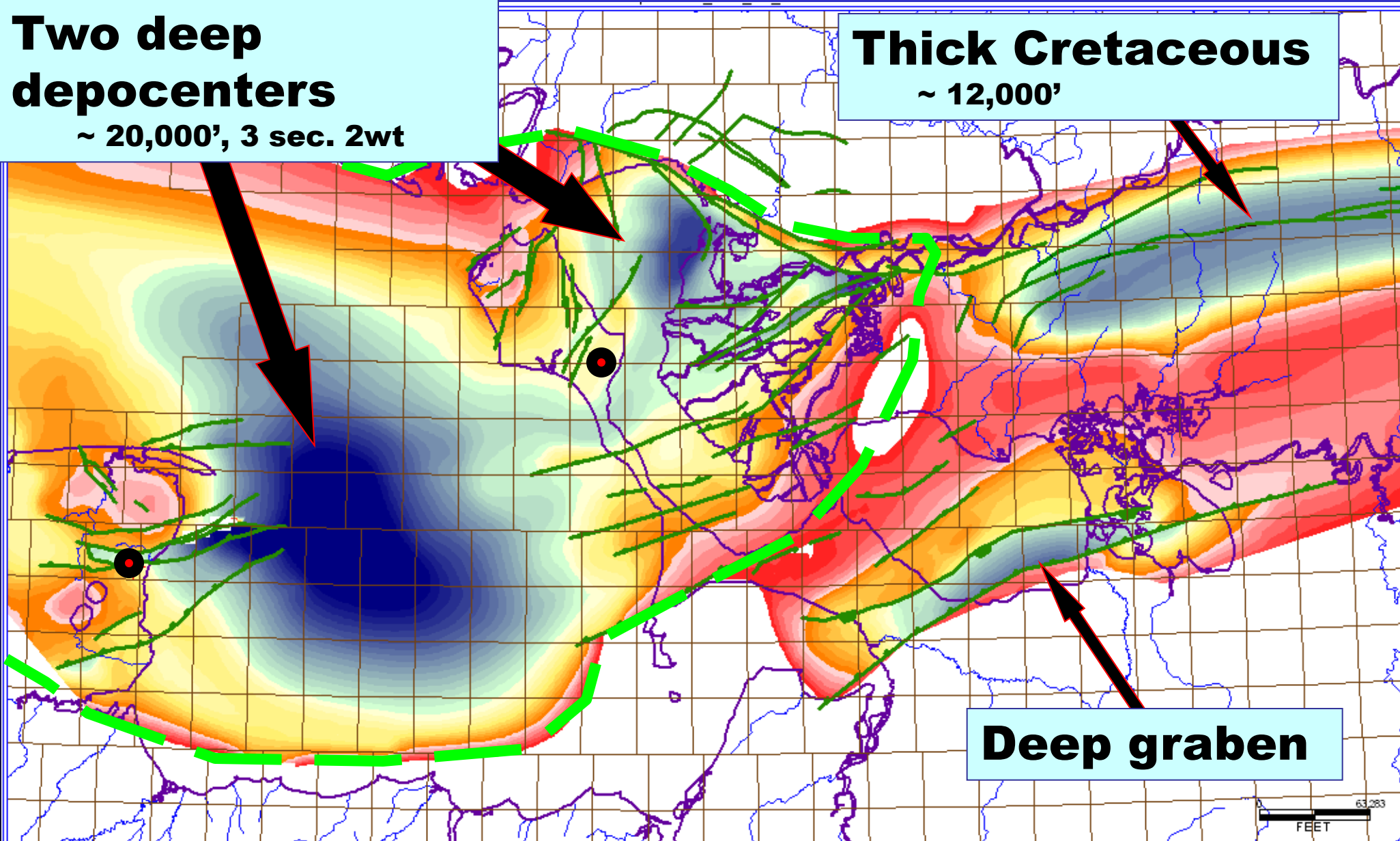
**Two deep depocenters**

~ 20,000', 3 sec. 2wt

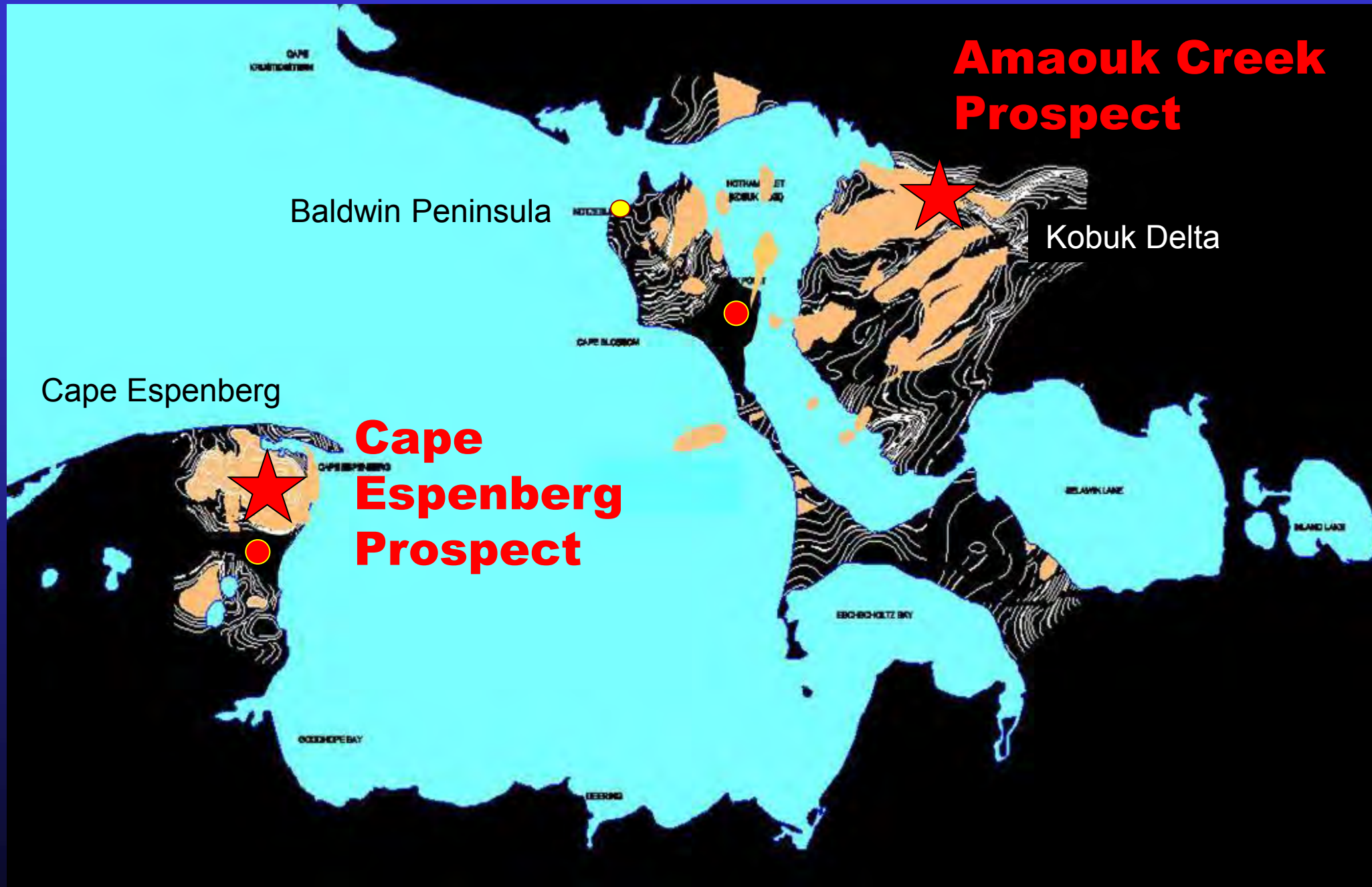
**Thick Cretaceous**

~ 12,000'

**Deep graben**



# ★ 2 of the 30 Prospects





# Amaouk Creek Prospect

► PSTM

NW

5 mi.

0.000

0.200

0.400

0.600

0.800

1.000

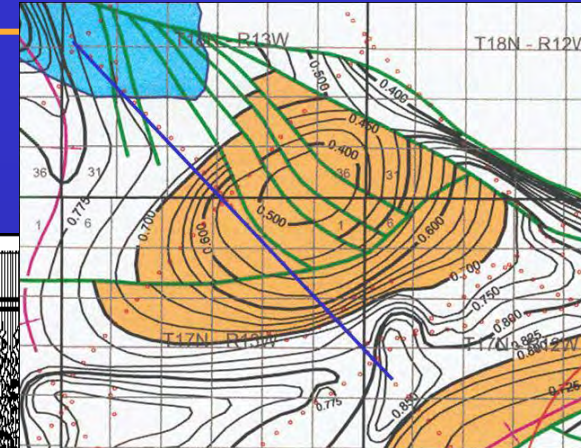
1.200

1.400

1.600

1.800

2.000



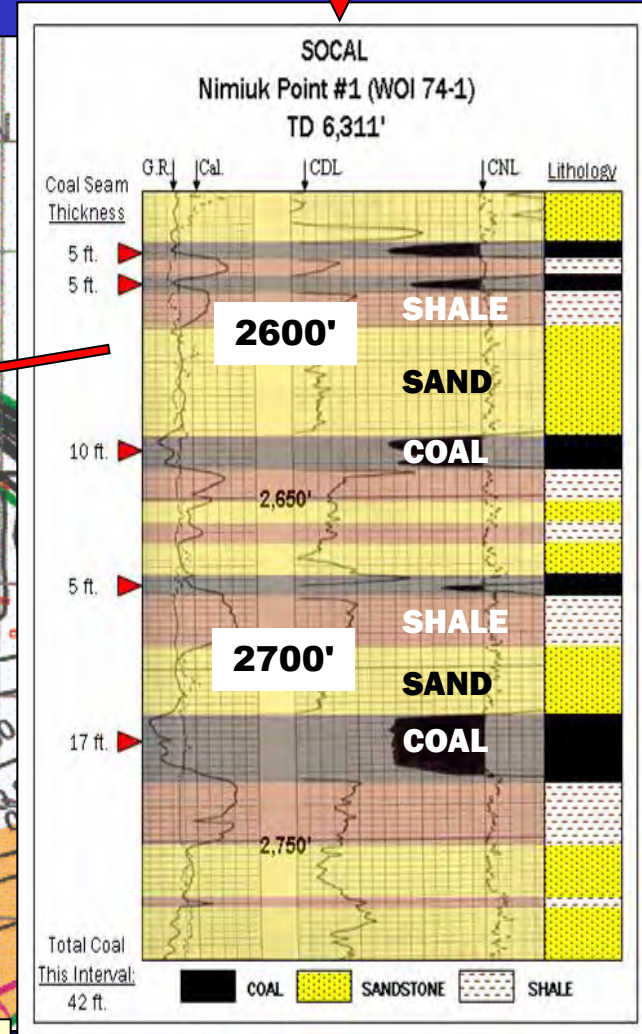
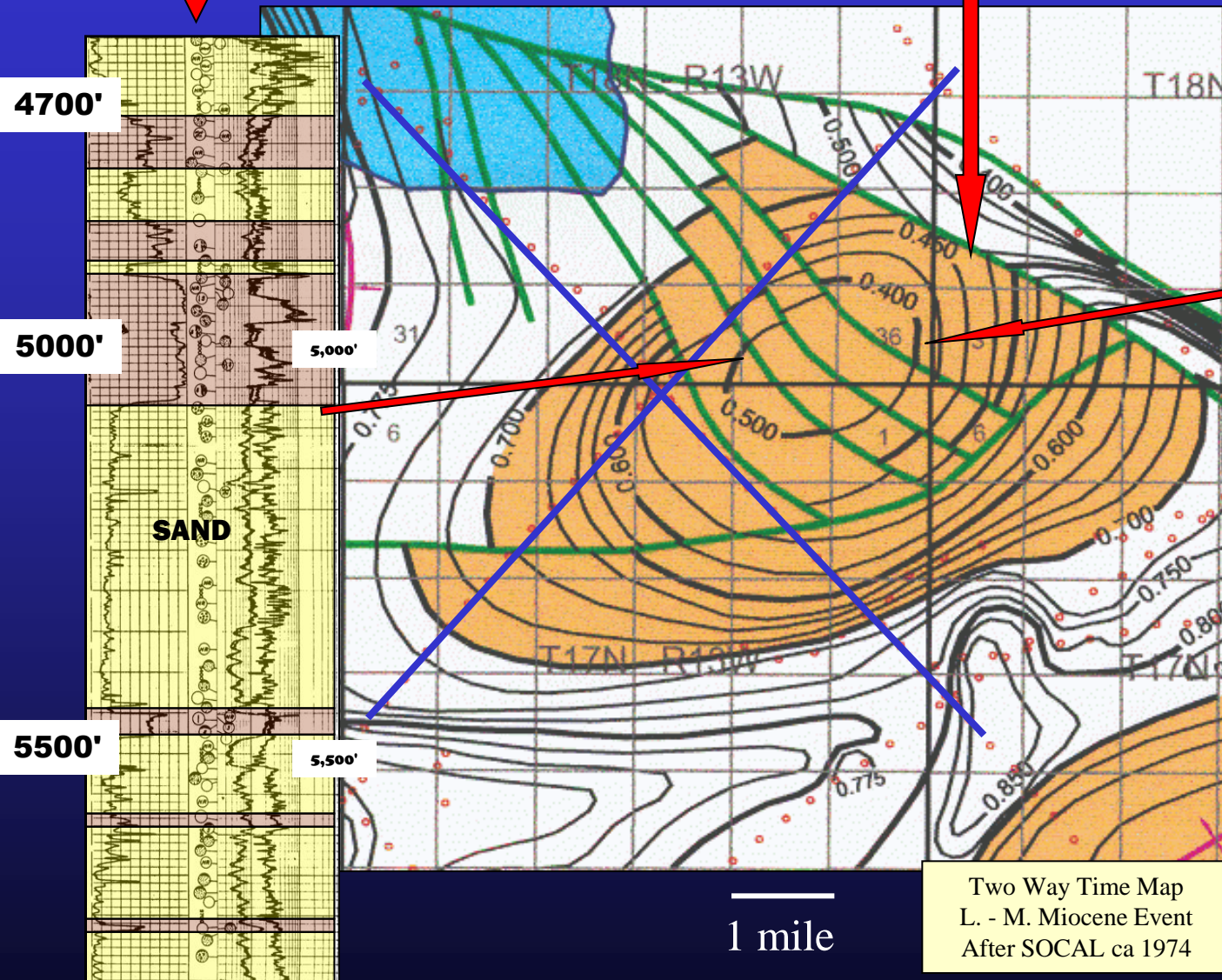


# Amaouk Creek Prospect

## Eocene – Oligocene Objectives

27 square miles closure

## Miococene Objectives

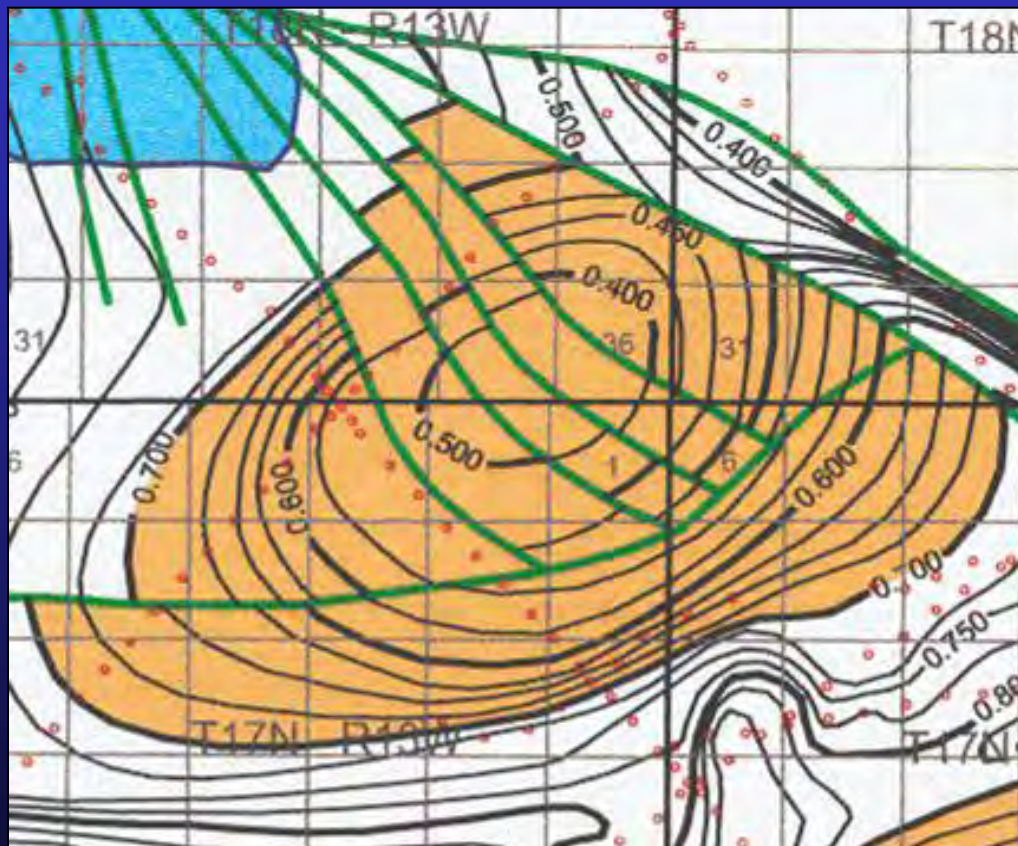


Two Way Time Map  
L. - M. Miocene Event  
After SOCAL ca 1974



# Amaouk Creek Prospect: Comparison to Partial Analogues

## Amaouk Creek Prospect

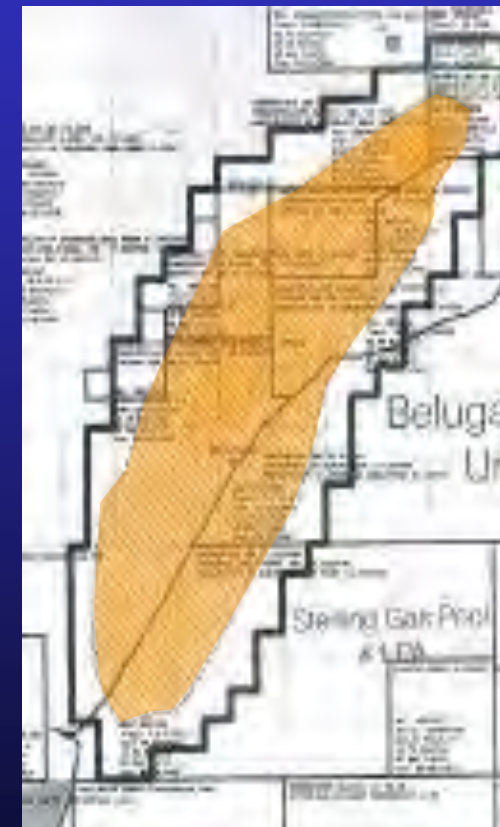


## Cook Inlet Gas Fields

**Kenai Gas Field**  
**Structure Map**  
**Top Beluga Fm.**  
**Cum.: 2.4 TCF**



**Beluga River Gas Field**  
**Structure Map**  
**Top Sterling Fm.**  
**Cum.: 1.2 TCF**



Maps at same horizontal scale

# Key Points

- ▶ Major unexplored deep (20,000') sedimentary basin
  - ▶ similar in size to Cook Inlet & San Joaquin-Sacramento Basins
- ▶ Potential significant petroleum producing province
- ▶ Favorable hydrocarbon system
- ▶ Many large targets – structural and stratigraphic
- ▶ Has proved difficult to attract exploration financing
- ▶ This is a wildcat play
- ▶ Incentives will help with local, regional and perhaps statewide energy solutions



# Contacts

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