Alaska Legislature

House and Senate
Natural Resources Committees

Interior Oil and Gas Exploration

Part of "Middle Earth"

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Juneau, Alaska

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DOYON
Limited®

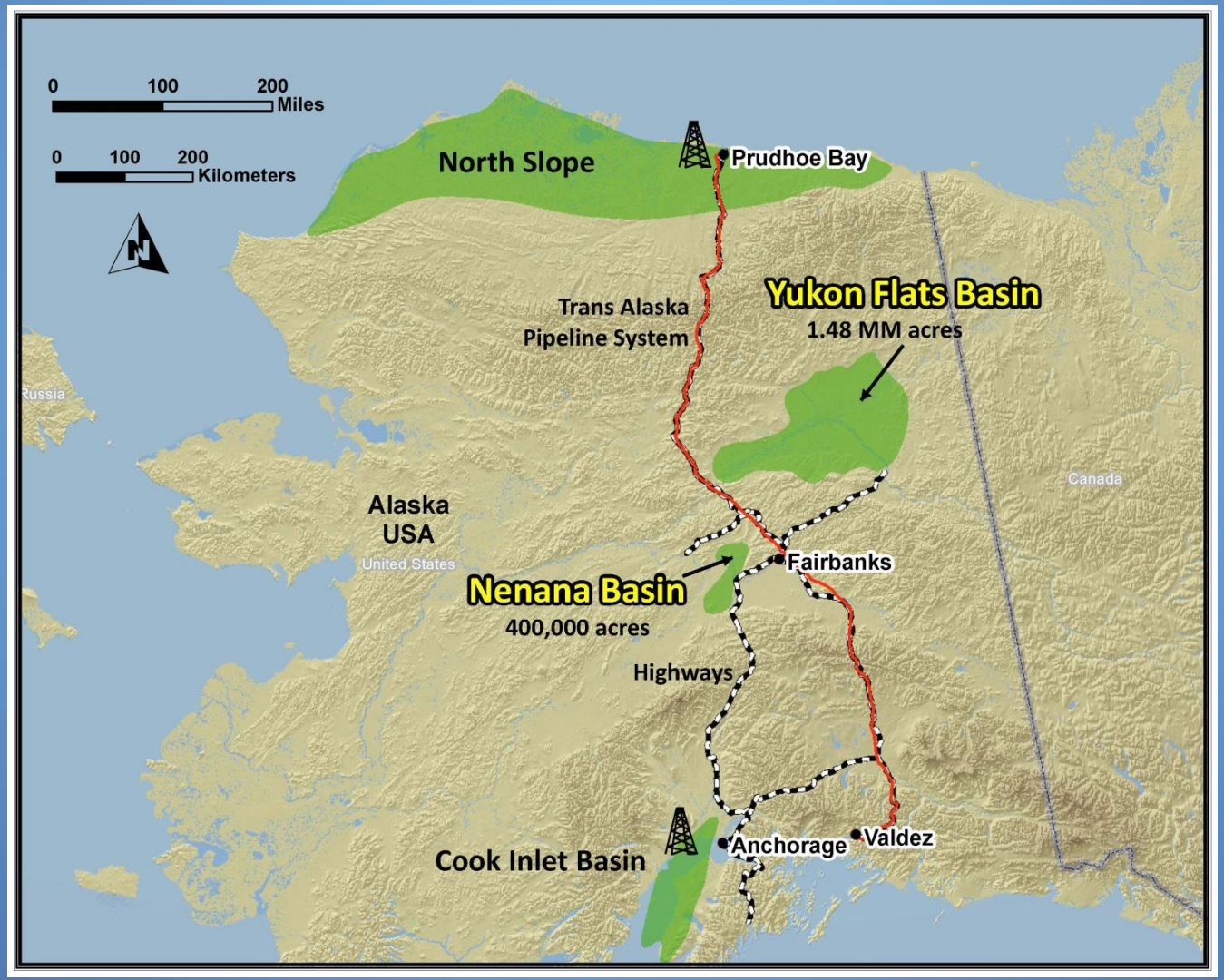
Overview

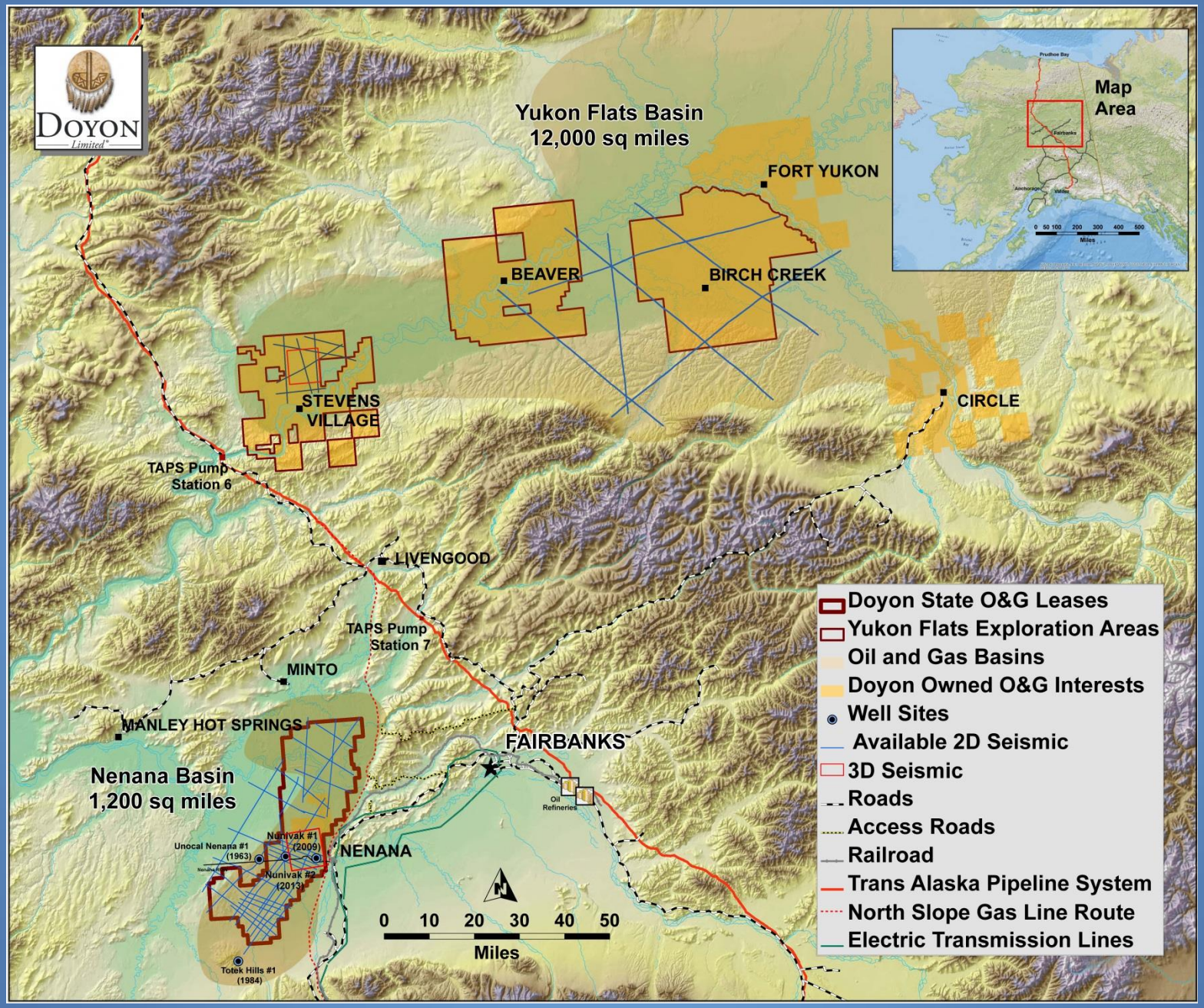
- Doyon exploration in Nenana and Yukon Flats
- Similarities and differences
- Focus on Nenana
  - Doyon 100% efforts over past 3 years include drilling and two seismic programs, including 3D in fall 2014
  - All elements of prolific hydrocarbon system present—source, traps and seals
    - Extensive column of wet gas in non-commercial 2013 well
- Importance of exploration credits program

Doyon, Limited
Who are we?

- ANCSA regional corporation for Interior Alaska
- Alaska's largest private landowner
- 19,000 Native American shareholders
- Alaska operations focus
  - Several oil field services companies: Doyon Drilling, Doyon Universal, Doyon Associated, Doyon Anvil, Doyon Remote Facilities & Services
  - Interior oil, gas and hard minerals exploration
- 2014 after tax profits of $23MM on revenues of $363MM

Interior Basins
Where are they?




DOYON
Limited
Yukon Flats Basin
12,000 sq miles
FORT YUKON
BEAVER
BIRCH CREEK
STEVENS
VILLAGE
CIRCLE
TAPS Pump
Station 6
LIVENGOOD
TAPS Pump
Station 7
MINTO
MANLEY HOT SPRINGS
FAIRBANKS
Nenana Basin
1,200 sq miles
Unocal Nenana #1
(1963)
Nunivak #1
(2009)
Nunivak #2
(2013)
NENANA
Totek Hills #1
(1984)
Oil
Refineries
0 10 20 30 40 50
Miles
Map
Area
Prudhoe Bay
Fairbanks
Anchorage
Valdez
0 50 100 200 300 400 500
Miles
Doyon State O&G Leases
Yukon Flats Exploration Areas
Oil and Gas Basins
Doyon Owned O&G Interests
Well Sites
Available 2D Seismic
3D Seismic
Roads
Access Roads
Railroad
Trans Alaska Pipeline System
North Slope Gas Line Route
Electric Transmission Lines

Two Basins-Land Tenure

Nenana/Minto

- 400,000 acres in 78 Doyon/State leases
  - 7 year primary term (year 2 now); yearly rentals of $1.2 million
- 42,000 acres Doyon ANCSA lands--all Nenana ANCSA village surface
- No federal ownership nearby
  - northern third of leases in State refuge, O&G allowed conditionally

Yukon Flats

- 1.4 million acres Doyon ANCSA lands in three separate sub-basins
  - No time constraints/holding costs
- Some surface ownership by 3 ANCSA villages--about half village, half Doyon
- Adjacent federal areas off-limits
  - federal wildlife refuge

Two Basins-Similar Geology

Common characteristics

- 20-25,000' non-marine Tertiary sedimentary section
- Abundant hydrogen-rich coals, coaly shales and *possibly* lake bed shales
- Traps

CURRENT FOCUS ON NENANA BASIN

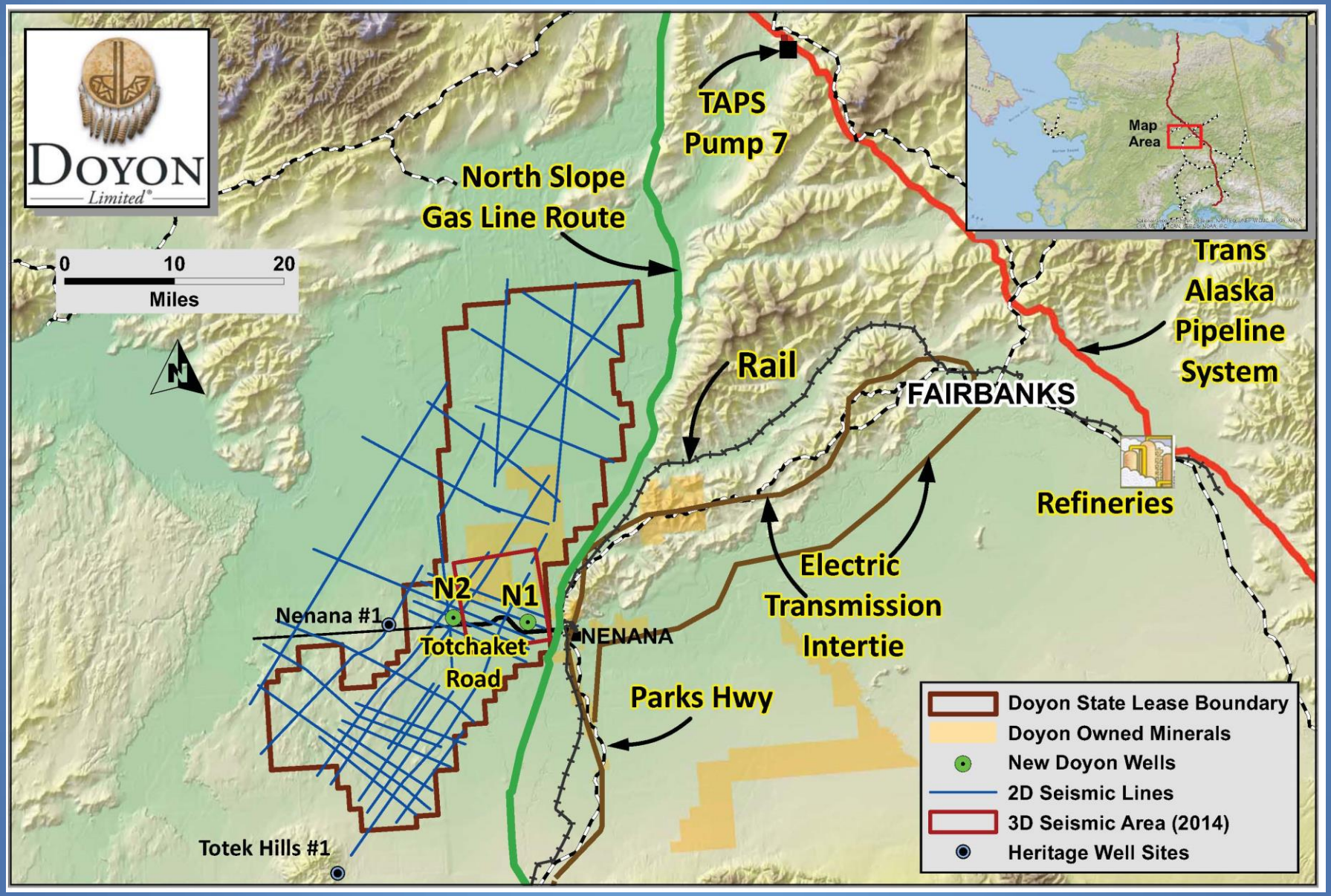
  - Oil primary target, gas secondary

Exploration Overview and History

Nenana Basin

- **Prior exploration—1960s and 80s**
  - Seismic in central/south basin and two shallow wells on basin flanks--majors
- **Recent exploration campaigns—2005 to 2014**
  - Three seismic programs--basin wide (2005, 2012 and 2014)
  - Two central basin exploration wells (2009 and 2013)—Nunivak #1 and #2
- **Multiple other studies, including**
  - Surface geochemical surveys, airborne and ground gravity data
  - Re-evaluated licensed heritage data—Shell and ARCO Alaska
- **Doyon has accelerated the pace of exploration**
  - **Three major programs since Doyon took over exploration in 2012—one well and 2 seismic programs, including 3D**

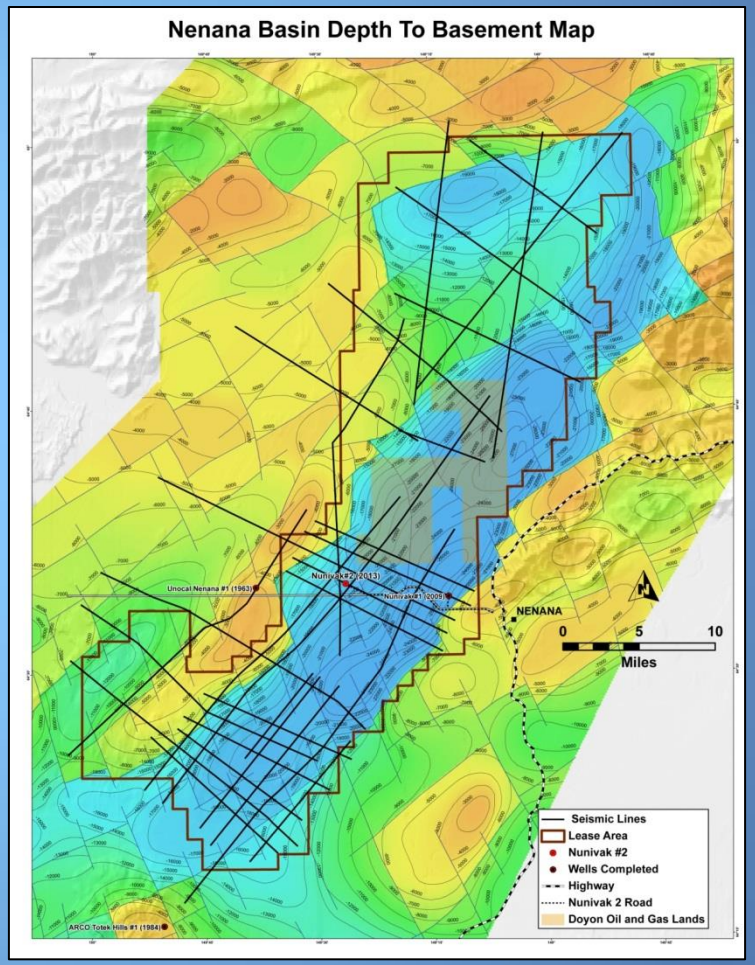
Nenana Basin *Plus* Infrastructure



Geophysics Define Nenana Basin

(Gravity and Seismic)

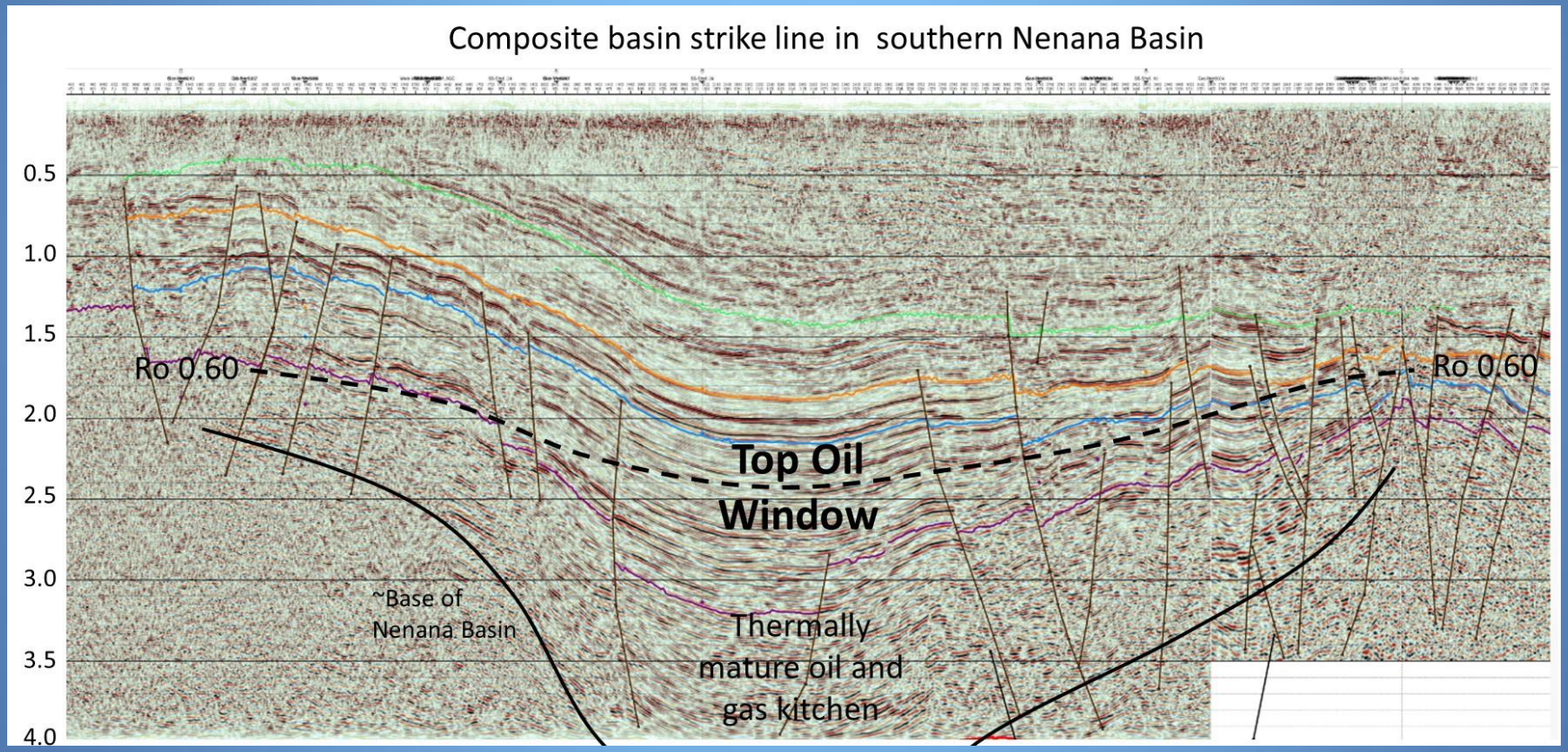
- 20-25,000’ sedimentary fill
- Narrow, broader at ends
- Over 50 miles long and up to 20 miles wide



Nenana Petroleum System

- **Source**
  - Excellent oil and wet gas source rocks in coals, coaly shales
    - From wells (immature), lake bed geochemistry of seeps, outcrop
    - Source rocks generate lots of oil in lab; analog basins
    - Deep lacustrine algal shales?
  - Thermal maturity, down-dip thermal “kitchen”
    - From wells, seismic, other geophysics
    - Plenty of heat in basin to generate oil and gas from deeper source rocks
  - Migrated wet gases (propane, butane et al.) at Nunivak #2, plus methane—indicative of an “oily” system
- **Seal/Reservoir**
  - Excellent, thick sandstones
    - 20-24% porosity; clean, quartz sand
  - Attractive sand/shale ratio in target Healy Creek formation
- **Traps**
  - Intra basin highs and fault blocks

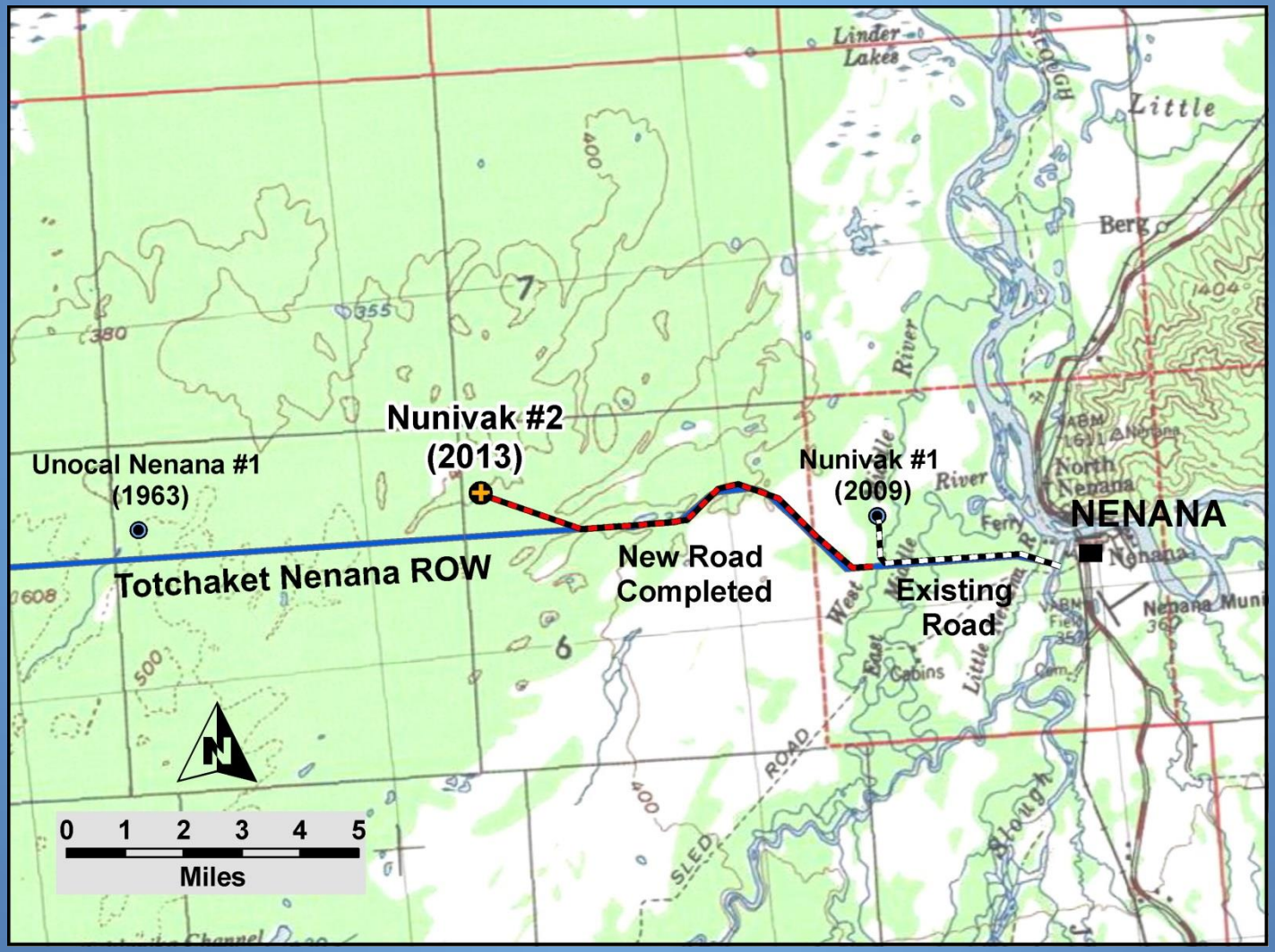
Oil and Gas “Kitchen”



Nunivak #2 Well (N2)

- Began planning summer 2012
- First Doyon “operated” well
  - Totchaket Road extension--about 8 miles
    - Completed Winter 2013
- Drilled Summer 2013
    - 12 miles west of Nenana
    - 8 miles west of Nunivak #1
    - 1 vertical hole and a “sidetrack”
- Over 45 permits
  - State, federal, local
- Local city and tribal government consultation
- Meetings, newsletters, hotline, information officer
- Local hire and contracting

N2 Wellsite and Road Extension



N2 Nenana River Ferry

Bridge under construction now

N2 Totchaket Road

N2 Wellsite

What Do We Think We Know Now?

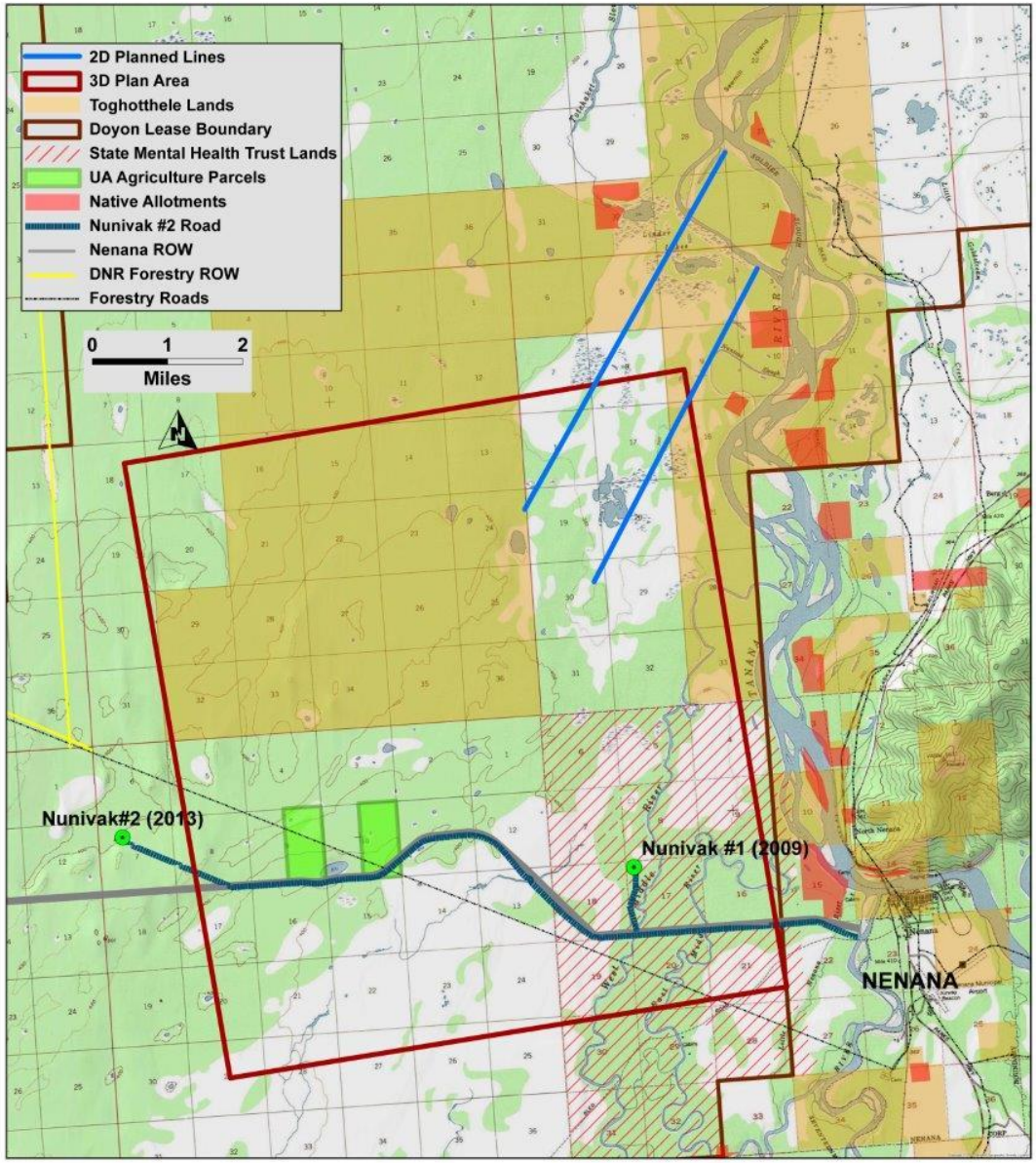
Hydrocarbon Promise

- Through Nenana drilling we know we have all the elements of an active and prolific oil and wet gas/condensate system
  - Source, reservoir and seal
- Through Nenana seismic and other geophysical tools we know that the hydrocarbon system should be extensive
- Through modeling this basin should have produced billions of barrels of oil and trillions of cubic feet of gas
  - Lots of wet gas in N2 well bore, not so for oil
    - Gas promise substantially de-risked
  - How much gas and oil has been trapped and recoverable?
  - With location and nearby infrastructure, North Slope size accumulations not needed (though $50 bbl oil not helpful)

What's Next?

- **More seismic needed**
  - Multiple prospective areas we see from 2D seismic
  - Better define areas that may be worth drilling
- **Next up is area of promise between N1 and N2**
  - Goals: identify lower risk traps and develop new drill targets
  - 55 square miles of 3D seismic
  - Gathered in fall 2014
  - Processing and interpretation now
  - Multiple land owners—Doyon/Toghotthele, State, MHT and some UA
- **Drill in 3D area in winter or summer 2016?**
- **More seismic needed to develop drill targets from multiple "leads" in 2012 2D program**

Nenana 2014 3D and 2D Seismic Area



2014 Nenana 3D

How Define Success?

- **Oil discovery is best economic case for Doyon and State**
  - Start-up minimum economic field size is a modest (for Alaska) 25 million bbls to 50 million bbls, dependent on oil price
  - Plenty of room in nearby TAPS via truck, rail or feeder pipeline
  - Chance of success here with next well is perhaps 1 in 5 to 1 in 10
- **Gas only discovery is a head scratcher**
  - Could be stranded for a decade or more
  - Likely no Fairbanks market for many years due to Cook Inlet trucking and/or rail projects in motion
  - Will the producers and State allow Nenana gas into an export line and liquefaction plant, and if so under reasonable terms?
  - Yet gas has been so de-risked at Nenana that the next well has a 50/50 chance of commercial success

Special Thanks

Alaska Legislature and State of Alaska

State Exploration Credits Programs are essential to hydrocarbon exploration in Interior Alaska.

Middle Earth exploration would not have happened without State support.

Questions and Comments

For More Information:
www.doyonoil.com

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