

# Spearfish Oil Project

Saskatchewan | Manitoba | North Dakota

## Introduction

The Triassic Spearfish/Amaranth Formation is quickly emerging as another important Williston Basin light oil resource play. Situated at the northeastern flank of the basin at sub 1,000m depths, the zone contains 9 to 15 million barrels of oil per section and upward of two billion barrels of OOIP. The play was initially discovered at Newburg, North Dakota in the late 50s and extended updip in the 80s and 90s at Waskada and Pierson, Manitoba. The application of horizontal wells and multi-stage fracs to the tighter, broadly distributed facies belts has broken the play open. However, understanding the full extent of the play is not without its challenges.

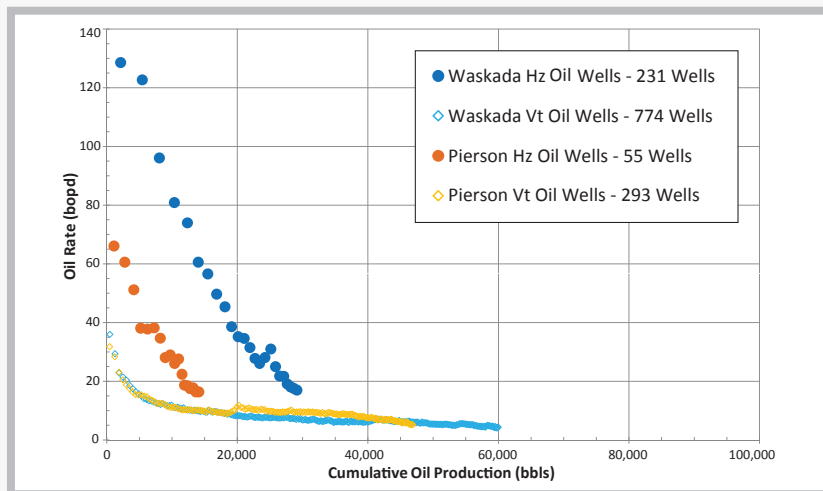
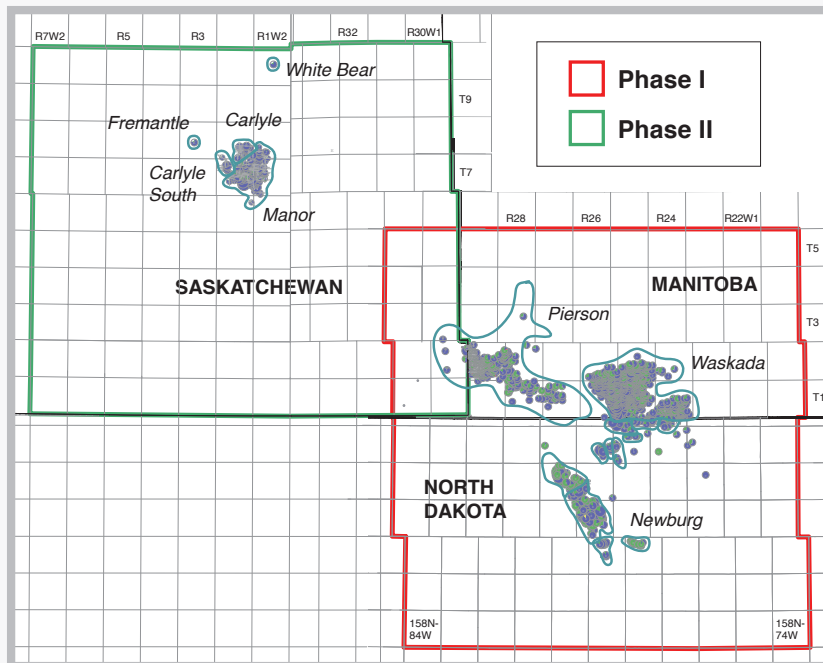
## Proposed Study

After its highly successful Bakken and Three Forks Projects, Canadian Discovery's initial investigation has suggested that there may be two key factors controlling the play extent: reservoir facies distribution and the transition from conventional to unconventional. The dolomitic sandstones, silts and shales of the Spearfish Formation were deposited in an erosive, cyclical supratidal to sabkha environment, strongly influenced by Mississippian paleotopography. Variable dolomite and anhydrite content coupled with high gamma radiation make it difficult to identify reservoir and pay on petrophysical logs. This study focuses on integrating hydrodynamics with reservoir mapping to identify regional water lines, transition zones, pay zones and play extent.

## Deliverables

### HYDROGEOLOGY

- » DST Recovery/Hydraulic System Map (Spearfish & Miss.)
- » Pressure vs. Elevation Map (P/E)
- » Resistivity Map
- » Hydraulic Head Map (Spearfish & Miss.)
- » Hydrostratigraphic Cross-Section (schematic)
- » Production Trends
- » Spearfish & Miss. Salinity Maps



Pierson/Waskada – Type production decline curves

### GEOLOGY

- » 10 Petrophysical Type Well Logs
- » Structure and Residual Map(s)
- » Geologic Model
- » Net Reservoir Map (10% cutoff)
- » Regional and Detailed Cross-Sections

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