INTRODUCTION AND EARLY HISTORY OF THE BAKKEN PLAY IN MONTANA

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<th></th>
<th>OFFSHORE</th>
<th>SHOREFACE</th>
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<tr>
<td>Sea Level</td>
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<td>Farweather wave base, 10 m depth</td>
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<td>Storm wave base, 200 m depth</td>
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<td>Nerites ichnofacies</td>
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<td>MUD</td>
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<td>MUD/SAND/DOLomite</td>
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<td>High tide level</td>
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<td>Low tide level</td>
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**Diagram Description:**
- The diagram illustrates the depositional model for the Bakken Middle Member.
- It categorizes the environment into Offshore, Shoreface, and Foreshore zones.
- Each zone is further divided into LWR, MID, and UPR sections.
- The chart highlights the transition between different sedimentary facies and ichnofacies.
CENEX ALBIN 1-33
NE NE SECTION 33, T 24 N - R 57 E
RICHLAND COUNTY, MONTANA

PERF: 10,468 -10,490
SOTR WITH 152,500 SAND AND 92,000 GALS OIL
IPF: 58 SBPD, 7 BWPD
HORIZONTAL POTENTIAL

- Although two wells have attempted to test the Bakken in a horizontal well bore at SW\^4 Section 13, T23N – R56E and NW\^4 Section 27, T25N – R54E with poor results, the Sleeping Giant Project may still be ideal to use this promising technology. Both of these wells were drilled at a time when the play targeting the fractured Upper Shale was being rapidly developed in North Dakota. It is not known at this time where the horizontal well bores were drilled in these wells but is most likely in the Upper Shale. It may be that since the Middle Member is also over pressured that a horizontal well bore drilled under balanced targeting the porosity in the Middle Member may prove to be a valid technique to exploit the reserves in the Sleeping Giant Project. A test of this theory may be attempted in the Sleeping Giant Project. If two 160 locations can be combined into one horizontal well bore for less than the cost of two vertical wells, then the cost savings effect on the economics could be significant.
GEOLOGIST REPORT – "NO FRACTURES EVIDENT IN THE CORE."

CANADIAN HORIZONTAL WELLS

- Core data confirms a 6 foot porous zone with 37 md of perm in the Middle Member.
- Fracturing was confirmed by core and log data and the orientation was determined prior to drilling horizontal perpendicular to the fracture orientation.
- Bakken Shales in this area of Canada are immature source rocks. Oil migrated into reservoir from down dip thermally mature Bakken.
- Two wells were drilled with noncommercial results due to water production.

- **Well 1**
  - Drilled with invert system (70% diesel and 30% water)
  - Drilled 2,420' horizontal leg in both the Upper Shale and Middle Member.
  - Lost 190 bbls mud while drilling (overbalanced).
  - Initial rate was 1,026 barrels per day of fluid (mostly water)
  - Produced 114,000 barrels of fluid in first two years (150 barrels per day average).

- **Well 2**
  - Drilled with invert system (90% diesel and 10% water).
  - Drilled 3,280' horizontal leg in the Middle Member only.
  - Gained fluid while drilling (underbalanced).
  - Produced 278,000 barrels of fluid in 1.5 years (500 barrels per day average).
