

**FORSPAN ASSESSMENT MODEL FOR CONTINUOUS  
ACCUMULATIONS--BASIC INPUT DATA FORM (NOGA, Version 9, 2-10-03)**

**IDENTIFICATION INFORMATION**

Assessment Geologist:	<u>R.C. Johnson</u>	Date:	<u>9/19/2005</u>
Region:	<u>North America</u>	Number:	<u>5</u>
Province:	<u>Wind River Basin</u>	Number:	<u>5035</u>
Total Petroleum System:	<u>Cretaceous-Lower Tertiary Composite</u>	Number:	<u>503502</u>
Assessment Unit:	<u>Lance-Fort Union Sandstone Gas</u>	Number:	<u>50350265</u>
Based on Data as of:	<u>tested cells based on IHS Energy Data 2002, EUR based on first quarter 2005?</u>		
Notes from Assessor:	<u></u>		

**CHARACTERISTICS OF ASSESSMENT UNIT**

**Assessment-unit type:** Oil (<20,000 cfg/bo) or Gas (≥20,000 cfg/bo), incl. disc. & pot. additions Gas

**What is the minimum total recovery per cell?** 0.02 (mmbo for oil A.U.; bcfg for gas A.U.)

Number of tested cells: 346

Number of tested cells with total recovery per cell ≥ minimum: 216

Established (discovered cells): X Hypothetical (no cells):

Median total recovery per cell (for cells ≥ min.): (mmbo for oil A.U.; bcfg for gas A.U.)

1st 3rd discovered	<u>0.9</u>	2nd 3rd	<u>1.9</u>	3rd 3rd	<u>0.4</u>
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**Assessment-Unit Probabilities:**

<u>Attribute</u>	<u>Probability of occurrence (0-1.0)</u>
1. <b>CHARGE:</b> Adequate petroleum charge for an untested cell with total recovery ≥ minimum.	<u>1.0</u>
2. <b>ROCKS:</b> Adequate reservoirs, traps, seals for an untested cell with total recovery ≥ minimum.	<u>1.0</u>
3. <b>TIMING:</b> Favorable geologic timing for an untested cell with total recovery ≥ minimum.	<u>1.0</u>
<b>Assessment-Unit GEOLOGIC Probability</b> (Product of 1, 2, and 3):	<u>1.0</u>

**NO. OF UNTESTED CELLS WITH POTENTIAL FOR ADDITIONS TO RESERVES**

1. Total assessment-unit area (acres): (uncertainty of a fixed value)

calculated mean	<u>887,000</u>	minimum	<u>798,000</u>	mode	<u>887,000</u>	maximum	<u>976,000</u>
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2. Area per cell of untested cells having potential for additions to reserves (acres): (values are inherently variable)

calculated mean	<u>80</u>	minimum	<u>20</u>	mode	<u>60</u>	maximum	<u>160</u>
uncertainty of mean:	minimum	<u>40</u>	maximum	<u>100</u>			

3. Percentage of total assessment-unit area that is untested (%): (uncertainty of a fixed value)

calculated mean	<u>96.3</u>	minimum	<u>95</u>	mode	<u>96.6</u>	maximum	<u>97.4</u>
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**NO. OF UNTESTED CELLS WITH POTENTIAL FOR ADDITIONS TO RESERVES**  
**(Continued)**

4. Percentage of untested assessment-unit area that has potential for additions to reserves (%):  
( a necessary criterion is that total recovery per cell  $\geq$  minimum; uncertainty of a fixed value)

calculated mean 6 minimum 2 mode 4 maximum 12

Geologic evidence for estimates: At minimum at least one more sweet spot of 5000 acres,  
at mode about 5 more sweet spots,  
at maximum include some non-structurally controlled sweet spots

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**TOTAL RECOVERY PER CELL**

Total recovery per cell for untested cells having potential for additions to reserves:  
(values are inherently variable; mmo for oil A.U.; bcfg for gas A.U.)

calculated mean 1.14 minimum 0.02 median 0.6 maximum 20

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**AVERAGE COPRODUCT RATIOS FOR UNTESTED CELLS, TO ASSESS COPRODUCTS**

(uncertainty of fixed but unknown values)

<u>Oil assessment unit:</u>	minimum	mode	maximum
Gas/oil ratio (cfg/bo)	<u>                    </u>	<u>                    </u>	<u>                    </u>
NGL/gas ratio (bnlq/mmcf)	<u>                    </u>	<u>                    </u>	<u>                    </u>
<u>Gas assessment unit:</u>			
Liquids/gas ratio (bliq/mmcf)	<u>0</u>	<u>5</u>	<u>35</u>

**SELECTED ANCILLARY DATA FOR UNTESTED CELLS**

(values are inherently variable)

<u>Oil assessment unit:</u>		minimum	mode	maximum
API gravity of oil (degrees)		_____	_____	_____
Sulfur content of oil (%)		_____	_____	_____
Depth (m) of water (if applicable)		_____	_____	_____

Drilling depth (m)

minimum	F75	mode	F25	maximum
_____	_____	_____	_____	_____

Gas assessment unit:

		minimum	mode	maximum
Inert-gas content (%)		0.10	1.00	2.00
CO <sub>2</sub> content (%)		0.50	3.00	7.00
Hydrogen sulfide content (%)		0.00	0.00	0.00
Heating value (BTU)		900	1000	1125
Depth (m) of water (if applicable)		_____	_____	_____

Drilling depth (m)

minimum	F75	mode	F25	maximum
1500	3021	4000	4146	5200

Success ratios:

	calculated mean	minimum	mode	maximum
Future success ratio (%)	48.3	30	50	65

Historic success ratio, tested cells (%) 62

Completion practices:

- |                                                                                    |                     |
|------------------------------------------------------------------------------------|---------------------|
| 1. Typical well-completion practices (conventional, open hole, open cavity, other) | <u>conventional</u> |
| 2. Fraction of wells drilled that are typically stimulated                         | <u>1</u>            |
| 3. Predominant type of stimulation (none, frac, acid, other)                       | <u>hydro/foam</u>   |
| 4. Fraction of wells drilled that are horizontal                                   | <u>0</u>            |

**ALLOCATIONS OF POTENTIAL ADDITIONS TO RESERVES TO STATES**  
**Surface Allocations** (uncertainty of a fixed value)

1.	<u>Wyoming</u>	represents	<u>100</u>	area % of the AU
	<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
	Volume % in entity	_____	_____	_____
	<u>Gas in gas assessment unit:</u>			
	Volume % in entity	_____	<u>100</u>	_____
2.	_____	represents	_____	area % of the AU
	<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
	Volume % in entity	_____	_____	_____
	<u>Gas in gas assessment unit:</u>			
	Volume % in entity	_____	_____	_____
3.	_____	represents	_____	area % of the AU
	<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
	Volume % in entity	_____	_____	_____
	<u>Gas in gas assessment unit:</u>			
	Volume % in entity	_____	_____	_____
4.	_____	represents	_____	area % of the AU
	<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
	Volume % in entity	_____	_____	_____
	<u>Gas in gas assessment unit:</u>			
	Volume % in entity	_____	_____	_____
5.	_____	represents	_____	area % of the AU
	<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
	Volume % in entity	_____	_____	_____
	<u>Gas in gas assessment unit:</u>			
	Volume % in entity	_____	_____	_____
6.	_____	represents	_____	area % of the AU
	<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
	Volume % in entity	_____	_____	_____
	<u>Gas in gas assessment unit:</u>			
	Volume % in entity	_____	_____	_____

Assessment Unit (name, no.)  
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7. \_\_\_\_\_ represents \_\_\_\_\_ area % of the AU

<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____

<u>Gas in gas assessment unit:</u>			
Volume % in entity	_____	_____	_____

8. \_\_\_\_\_ represents \_\_\_\_\_ area % of the AU

<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____

<u>Gas in gas assessment unit:</u>			
Volume % in entity	_____	_____	_____

9. \_\_\_\_\_ represents \_\_\_\_\_ area % of the AU

<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____

<u>Gas in gas assessment unit:</u>			
Volume % in entity	_____	_____	_____

10. \_\_\_\_\_ represents \_\_\_\_\_ area % of the AU

<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____

<u>Gas in gas assessment unit:</u>			
Volume % in entity	_____	_____	_____

11. \_\_\_\_\_ represents \_\_\_\_\_ area % of the AU

<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____

<u>Gas in gas assessment unit:</u>			
Volume % in entity	_____	_____	_____

12. \_\_\_\_\_ represents \_\_\_\_\_ area % of the AU

<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____

<u>Gas in gas assessment unit:</u>			
Volume % in entity	_____	_____	_____

**ALLOCATIONS OF POTENTIAL ADDITIONS TO RESERVES TO GENERAL LAND OWNERSHIPS**  
**Surface Allocations** (uncertainty of a fixed value)

1. <u>Federal Lands</u>		represents	<u>56.29</u>	area % of the AU
<u>Oil in oil assessment unit:</u>	minimum		mode	maximum
Volume % in entity	_____		_____	_____
<u>Gas in gas assessment unit:</u>				
Volume % in entity	_____		<u>61</u>	_____
2. <u>Private Lands</u>		represents	<u>24.48</u>	area % of the AU
<u>Oil in oil assessment unit:</u>	minimum		mode	maximum
Volume % in entity	_____		_____	_____
<u>Gas in gas assessment unit:</u>				
Volume % in entity	_____		<u>21</u>	_____
3. <u>Tribal Lands</u>		represents	<u>10.21</u>	area % of the AU
<u>Oil in oil assessment unit:</u>	minimum		mode	maximum
Volume % in entity	_____		_____	_____
<u>Gas in gas assessment unit:</u>				
Volume % in entity	_____		<u>8</u>	_____
4. <u>Other Lands</u>		represents	<u>2.21</u>	area % of the AU
<u>Oil in oil assessment unit:</u>	minimum		mode	maximum
Volume % in entity	_____		_____	_____
<u>Gas in gas assessment unit:</u>				
Volume % in entity	_____		<u>2</u>	_____
5. <u>State 1 Lands</u>		represents	<u>6.81</u>	area % of the AU
<u>Oil in oil assessment unit:</u>	minimum		mode	maximum
Volume % in entity	_____		_____	_____
<u>Gas in gas assessment unit:</u>				
Volume % in entity	_____		<u>8</u>	_____
6. _____		represents	_____	area % of the AU
<u>Oil in oil assessment unit:</u>	minimum		mode	maximum
Volume % in entity	_____		_____	_____
<u>Gas in gas assessment unit:</u>				
Volume % in entity	_____		_____	_____

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7. \_\_\_\_\_ represents \_\_\_\_\_ area % of the AU

<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____

<u>Gas in gas assessment unit:</u>			
Volume % in entity	_____	_____	_____

8. \_\_\_\_\_ represents \_\_\_\_\_ area % of the AU

<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____

<u>Gas in gas assessment unit:</u>			
Volume % in entity	_____	_____	_____

9. \_\_\_\_\_ represents \_\_\_\_\_ area % of the AU

<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____

<u>Gas in gas assessment unit:</u>			
Volume % in entity	_____	_____	_____

10. \_\_\_\_\_ represents \_\_\_\_\_ area % of the AU

<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____

<u>Gas in gas assessment unit:</u>			
Volume % in entity	_____	_____	_____

11. \_\_\_\_\_ represents \_\_\_\_\_ area % of the AU

<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____

<u>Gas in gas assessment unit:</u>			
Volume % in entity	_____	_____	_____

12. \_\_\_\_\_ represents \_\_\_\_\_ area % of the AU

<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____

<u>Gas in gas assessment unit:</u>			
Volume % in entity	_____	_____	_____

**ALLOCATIONS OF POTENTIAL ADDITIONS TO RESERVES TO FEDERAL LAND SUBDIVISIONS**  
**Surface Allocations** (uncertainty of a fixed value)

1. <u>Bureau of Land Management (BLM)</u>	represents	46.55	area % of the AU
<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____
<u>Gas in gas assessment unit:</u>			
Volume % in entity	_____	56	_____
2. <u>BLM Wilderness Areas (BLMW)</u>	represents	_____	area % of the AU
<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____
<u>Gas in gas assessment unit:</u>			
Volume % in entity	_____	_____	_____
3. <u>BLM Roadless Areas (BLMR)</u>	represents	_____	area % of the AU
<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____
<u>Gas in gas assessment unit:</u>			
Volume % in entity	_____	_____	_____
4. <u>National Park Service (NPS)</u>	represents	_____	area % of the AU
<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____
<u>Gas in gas assessment unit:</u>			
Volume % in entity	_____	_____	_____
5. <u>NPS Wilderness Areas (NPSW)</u>	represents	_____	area % of the AU
<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____
<u>Gas in gas assessment unit:</u>			
Volume % in entity	_____	_____	_____
6. <u>NPS Protected Withdrawals (NPSP)</u>	represents	_____	area % of the AU
<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____
<u>Gas in gas assessment unit:</u>			
Volume % in entity	_____	_____	_____

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7. <u>US Forest Service (FS)</u>	_____	represents	_____	area % of the AU
<u>Oil in oil assessment unit:</u>	minimum		mode	maximum
Volume % in entity	_____		_____	_____
<u>Gas in gas assessment unit:</u>				
Volume % in entity	_____		_____	_____
8. <u>USFS Wilderness Areas (FSW)</u>	_____	represents	_____	area % of the AU
<u>Oil in oil assessment unit:</u>	minimum		mode	maximum
Volume % in entity	_____		_____	_____
<u>Gas in gas assessment unit:</u>				
Volume % in entity	_____		_____	_____
9. <u>USFS Roadless Areas (FSR)</u>	_____	represents	_____	area % of the AU
<u>Oil in oil assessment unit:</u>	minimum		mode	maximum
Volume % in entity	_____		_____	_____
<u>Gas in gas assessment unit:</u>				
Volume % in entity	_____		_____	_____
10. <u>USFS Protected Withdrawals (FSP)</u>	_____	represents	_____	area % of the AU
<u>Oil in oil assessment unit:</u>	minimum		mode	maximum
Volume % in entity	_____		_____	_____
<u>Gas in gas assessment unit:</u>				
Volume % in entity	_____		_____	_____
11. <u>US Fish and Wildlife Service (FWS)</u>	_____	represents	_____	area % of the AU
<u>Oil in oil assessment unit:</u>	minimum		mode	maximum
Volume % in entity	_____		_____	_____
<u>Gas in gas assessment unit:</u>				
Volume % in entity	_____		_____	_____
12. <u>USFWS Wilderness Areas (FWSW)</u>	_____	represents	_____	area % of the AU
<u>Oil in oil assessment unit:</u>	minimum		mode	maximum
Volume % in entity	_____		_____	_____
<u>Gas in gas assessment unit:</u>				
Volume % in entity	_____		_____	_____

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13. <u>USFWS Protected Withdrawals (FWSP)</u>	represents	_____	area % of the AU
<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____
<u>Gas in gas assessment unit:</u>			
Volume % in entity	_____	_____	_____
14. <u>Wilderness Study Areas (WS)</u>	represents	_____	area % of the AU
<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____
<u>Gas in gas assessment unit:</u>			
Volume % in entity	_____	_____	_____
15. <u>Department of Energy (DOE)</u>	represents	_____	area % of the AU
<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____
<u>Gas in gas assessment unit:</u>			
Volume % in entity	_____	_____	_____
16. <u>Department of Defense (DOD)</u>	represents	_____	area % of the AU
<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____
<u>Gas in gas assessment unit:</u>			
Volume % in entity	_____	_____	_____
17. <u>Bureau of Reclamation (BOR)</u>	represents	9.74	area % of the AU
<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____
<u>Gas in gas assessment unit:</u>			
Volume % in entity	_____	5	_____
18. <u>Tennessee Valley Authority (TVA)</u>	represents	_____	area % of the AU
<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____
<u>Gas in gas assessment unit:</u>			
Volume % in entity	_____	_____	_____

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19. Other Federal represents \_\_\_\_\_ area % of the AU

<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____

<u>Gas in gas assessment unit:</u>			
Volume % in entity	_____	_____	_____

20. \_\_\_\_\_ represents \_\_\_\_\_ area % of the AU

<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____

<u>Gas in gas assessment unit:</u>			
Volume % in entity	_____	_____	_____

**ALLOCATIONS OF POTENTIAL ADDITIONS TO RESERVES TO ECOSYSTEMS**  
**Surface Allocations** (uncertainty of a fixed value)

1.	<u>Central Basin and Hills (CNBH)</u>	represents	<u>100</u>	area % of the AU
	<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
	Volume % in entity	_____	_____	_____
	<u>Gas in gas assessment unit:</u>			
	Volume % in entity	_____	<u>100</u>	_____
2.	_____	represents	_____	area % of the AU
	<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
	Volume % in entity	_____	_____	_____
	<u>Gas in gas assessment unit:</u>			
	Volume % in entity	_____	_____	_____
3.	_____	represents	_____	area % of the AU
	<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
	Volume % in entity	_____	_____	_____
	<u>Gas in gas assessment unit:</u>			
	Volume % in entity	_____	_____	_____
4.	_____	represents	_____	area % of the AU
	<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
	Volume % in entity	_____	_____	_____
	<u>Gas in gas assessment unit:</u>			
	Volume % in entity	_____	_____	_____
5.	_____	represents	_____	area % of the AU
	<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
	Volume % in entity	_____	_____	_____
	<u>Gas in gas assessment unit:</u>			
	Volume % in entity	_____	_____	_____
6.	_____	represents	_____	area % of the AU
	<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
	Volume % in entity	_____	_____	_____
	<u>Gas in gas assessment unit:</u>			
	Volume % in entity	_____	_____	_____

7. \_\_\_\_\_ represents \_\_\_\_\_ area % of the AU

<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____

<u>Gas in gas assessment unit:</u>			
Volume % in entity	_____	_____	_____

8. \_\_\_\_\_ represents \_\_\_\_\_ area % of the AU

<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____

<u>Gas in gas assessment unit:</u>			
Volume % in entity	_____	_____	_____

9. \_\_\_\_\_ represents \_\_\_\_\_ area % of the AU

<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____

<u>Gas in gas assessment unit:</u>			
Volume % in entity	_____	_____	_____

10. \_\_\_\_\_ represents \_\_\_\_\_ area % of the AU

<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____

<u>Gas in gas assessment unit:</u>			
Volume % in entity	_____	_____	_____

11. \_\_\_\_\_ represents \_\_\_\_\_ area % of the AU

<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____

<u>Gas in gas assessment unit:</u>			
Volume % in entity	_____	_____	_____

12. \_\_\_\_\_ represents \_\_\_\_\_ area % of the AU

<u>Oil in oil assessment unit:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____

<u>Gas in gas assessment unit:</u>			
Volume % in entity	_____	_____	_____

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