

**FORSPAN ASSESSMENT MODEL FOR CONTINUOUS  
ACCUMULATIONS--BASIC INPUT DATA FORM (NOGA, Version 6, 12-30-00)**

**IDENTIFICATION INFORMATION**

Assessment Geologist:...	D.K. Higley	Date:	4/12/2001
Region:.....	North America	Number:	5
Province:.....	Denver Basin	Number:	5039
Total Petroleum System:..	Cretaceous Composite	Number:	503906
Assessment Unit:.....	Dakota Group Basin-Center Gas	Number:	50390662
Based on Data as of:.....	PI Production Data, First Quarter 1999		
Notes from Assessor:.....			

**CHARACTERISTICS OF ASSESSMENT UNIT**

**Assessment-Unit type:** Oil (<20,000 cfg/bo) or Gas (≥20,000 cfg/bo) 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:..... 2673

Number of tested cells with total recovery per cell ≥ minimum: ..... 2566

Established (>24 cells ≥ min.) X Frontier (1-24 cells)                      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>0.31</u>	2nd 3rd	<u>0.30</u>	3rd 3rd	<u>0.22</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>

**Assessment-Unit GEOLOGIC Probability** (Product of 1, 2, and 3):..... 1.0

4. **ACCESS:** Adequate location for necessary petroleum-related activities for an untested cell with total recovery ≥ minimum ..... 1.0

**NO. OF UNTESTED CELLS WITH POTENTIAL FOR ADDITIONS TO RESERVES IN THE NEXT 30 YEARS**

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

minimum <u>1,200,000</u>	median <u>1,400,000</u>	maximum <u>1,600,000</u>
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2. Area per cell of untested cells having potential for additions to reserves in next 30 years (acres):  
(values are inherently variable)

minimum <u>10</u>	median <u>80</u>	maximum <u>240</u>
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3. Percentage of total assessment-unit area that is untested (%): (uncertainty of a fixed value)

minimum <u>73</u>	median <u>83</u>	maximum <u>90</u>
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4. Percentage of untested assessment-unit area that has potential for additions to reserves in next 30 years (%): ( a necessary criterion is that total recovery per cell ≥ minimum)  
(uncertainty of a fixed value)

minimum <u>20</u>	median <u>30</u>	maximum <u>45</u>
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**TOTAL RECOVERY PER CELL**

Total recovery per cell for untested cells having potential for additions to reserves in next 30 years:

(values are inherently variable)

(mmbo for oil A.U.; bcfg for gas A.U.)      minimum   0.02        median   0.2        maximum   2.5  

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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	median	maximum
Gas/oil ratio (cfg/bo).....	<u>                  </u>	<u>                  </u>	<u>                  </u>
NGL/gas ratio (bngl/mmcfg).....	<u>                  </u>	<u>                  </u>	<u>                  </u>
<u>Gas assessment unit:</u>			
Liquids/gas ratio (bliq/mmcfg).....	<u>      5      </u>	<u>      10      </u>	<u>      15      </u>

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**SELECTED ANCILLARY DATA FOR UNTESTED CELLS**

(values are inherently variable)

<u>Oil assessment unit:</u>	minimum	median	maximum
API gravity of oil (degrees).....	<u>                  </u>	<u>                  </u>	<u>                  </u>
Sulfur content of oil (%).....	<u>                  </u>	<u>                  </u>	<u>                  </u>
Drilling depth (m) .....	<u>                  </u>	<u>                  </u>	<u>                  </u>
Depth (m) of water (if applicable).....	<u>                  </u>	<u>                  </u>	<u>                  </u>
<u>Gas assessment unit:</u>			
Inert-gas content (%).....	<u>                  </u>	<u>                  </u>	<u>                  </u>
CO <sub>2</sub> content (%).....	<u>                  </u>	<u>      2.60      </u>	<u>                  </u>
Hydrogen-sulfide content (%).....	<u>                  </u>	<u>                  </u>	<u>                  </u>
Drilling depth (m).....	<u>      2000      </u>	<u>      2500      </u>	<u>      3100      </u>
Depth (m) of water (if applicable).....	<u>                  </u>	<u>                  </u>	<u>                  </u>

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

1. Federal Lands represents 1.2 areal % of the assessment unit

<u>Oil in oil assessment unit:</u>	minimum	median	maximum
Volume % in entity.....	_____	_____	_____
Portion of volume % that is offshore (0-100%)..	_____	_____	_____

Gas in gas assessment unit:

Volume % in entity.....	_____	<u>0.5</u>	_____
Portion of volume % that is offshore (0-100%)..	_____	<u>0</u>	_____

2. Private Lands represents \_\_\_\_\_ areal % of the assessment unit

<u>Oil in oil assessment unit:</u>	minimum	median	maximum
Volume % in entity.....	_____	_____	_____
Portion of volume % that is offshore (0-100%)..	_____	_____	_____

Gas in gas assessment unit:

Volume % in entity.....	_____	_____	_____
Portion of volume % that is offshore (0-100%)..	_____	_____	_____

3. Tribal Lands represents 0 areal % of the assessment unit

<u>Oil in oil assessment unit:</u>	minimum	median	maximum
Volume % in entity.....	_____	_____	_____
Portion of volume % that is offshore (0-100%)..	_____	_____	_____

Gas in gas assessment unit:

Volume % in entity.....	_____	<u>0</u>	_____
Portion of volume % that is offshore (0-100%)..	_____	<u>0</u>	_____

4. Colorado State Lands represents \_\_\_\_\_ areal % of the assessment unit

<u>Oil in oil assessment unit:</u>	minimum	median	maximum
Volume % in entity.....	_____	_____	_____
Portion of volume % that is offshore (0-100%)..	_____	_____	_____

Gas in gas assessment unit:

Volume % in entity.....	_____	_____	_____
Portion of volume % that is offshore (0-100%)..	_____	_____	_____

Assessment Unit (name, no.)  
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5. Colorado Total represents 100 areal % of the assessment unit

<u>Oil in oil assessment unit:</u>	minimum	median	maximum
Volume % in entity.....	_____	_____	_____
Portion of volume % that is offshore (0-100%)..	_____	_____	_____

<u>Gas in gas assessment unit:</u>	minimum	median	maximum
Volume % in entity.....	_____	100	_____
Portion of volume % that is offshore (0-100%)..	_____	0	_____

6. Other (Private and State) represents 98.8 areal % of the total assessment unit

<u>Oil in Oil Accumulations:</u>	minimum	median	maximum
Volume % in parcel (areal % x richness factor):...	_____	_____	_____
Portion of volume % that is offshore (0-100%).....	_____	_____	_____

<u>Gas in Gas Accumulations:</u>	minimum	median	maximum
Volume % in parcel (areal % x richness factor):...	_____	99.5	_____
Portion of volume % that is offshore (0-100%).....	_____	0	_____

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9. Other Federal Lands represents 1.2 areal % of the total assessment unit

<u>Oil in Oil Accumulations:</u>	minimum	median	maximum
Volume % in parcel (areal % x richness factor):...	_____	_____	_____
Portion of volume % that is offshore (0-100%).....	_____	_____	_____
 <u>Gas in Gas Accumulations:</u>	 minimum	 median	 maximum
Volume % in parcel (areal % x richness factor):...	_____	0.5	_____
Portion of volume % that is offshore (0-100%).....	_____	0	_____

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

1. <u>Northern Parks and Ranges (NPRN)</u>	represents	<u>8.91</u>	areal % of the assessment unit
<u>Oil in oil assessment unit:</u>			
	minimum	median	maximum
Volume % in entity.....			
Portion of volume % that is offshore (0-100%)..			
<u>Gas in gas assessment unit:</u>			
Volume % in entity.....		5	
Portion of volume % that is offshore (0-100%)..		0	
2. <u>Central High Plains (CNHP)</u>	represents	<u>91.09</u>	areal % of the assessment unit
<u>Oil in oil assessment unit:</u>			
	minimum	median	maximum
Volume % in entity.....			
Portion of volume % that is offshore (0-100%)..			
<u>Gas in gas assessment unit:</u>			
Volume % in entity.....		95	
Portion of volume % that is offshore (0-100%)..		0	
3. _____	represents		areal % of the assessment unit
<u>Oil in oil assessment unit:</u>			
	minimum	median	maximum
Volume % in entity.....			
Portion of volume % that is offshore (0-100%)..			
<u>Gas in gas assessment unit:</u>			
Volume % in entity.....			
Portion of volume % that is offshore (0-100%)..			
4. _____	represents		areal % of the assessment unit
<u>Oil in oil assessment unit:</u>			
	minimum	median	maximum
Volume % in entity.....			
Portion of volume % that is offshore (0-100%)..			
<u>Gas in gas assessment unit:</u>			
Volume % in entity.....			
Portion of volume % that is offshore (0-100%)..			

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5. _____	represents	_____	areal % of the assessment unit
<u>Oil in oil assessment unit:</u>			
Volume % in entity.....	minimum	median	maximum
Portion of volume % that is offshore (0-100%)..	_____	_____	_____
<u>Gas in gas assessment unit:</u>			
Volume % in entity.....	_____	_____	_____
Portion of volume % that is offshore (0-100%)..	_____	_____	_____
6. _____	represents	_____	areal % of the assessment unit
<u>Oil in oil assessment unit:</u>			
Volume % in entity.....	minimum	median	maximum
Portion of volume % that is offshore (0-100%)..	_____	_____	_____
<u>Gas in gas assessment unit:</u>			
Volume % in entity.....	_____	_____	_____
Portion of volume % that is offshore (0-100%)..	_____	_____	_____
7. _____	represents	_____	areal % of the assessment unit
<u>Oil in oil assessment unit:</u>			
Volume % in entity.....	minimum	median	maximum
Portion of volume % that is offshore (0-100%)..	_____	_____	_____
<u>Gas in gas assessment unit:</u>			
Volume % in entity.....	_____	_____	_____
Portion of volume % that is offshore (0-100%)..	_____	_____	_____
8. _____	represents	_____	areal % of the assessment unit
<u>Oil in oil assessment unit:</u>			
Volume % in entity.....	minimum	median	maximum
Portion of volume % that is offshore (0-100%)..	_____	_____	_____
<u>Gas in gas assessment unit:</u>			
Volume % in entity.....	_____	_____	_____
Portion of volume % that is offshore (0-100%)..	_____	_____	_____

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9. _____	represents	_____	areal % of the assessment unit
<u>Oil in oil assessment unit:</u>			
Volume % in entity.....	minimum	median	maximum
Portion of volume % that is offshore (0-100%)..	_____	_____	_____
<u>Gas in gas assessment unit:</u>			
Volume % in entity.....	_____	_____	_____
Portion of volume % that is offshore (0-100%)..	_____	_____	_____
10. _____	represents	_____	areal % of the assessment unit
<u>Oil in oil assessment unit:</u>			
Volume % in entity.....	minimum	median	maximum
Portion of volume % that is offshore (0-100%)..	_____	_____	_____
<u>Gas in gas assessment unit:</u>			
Volume % in entity.....	_____	_____	_____
Portion of volume % that is offshore (0-100%)..	_____	_____	_____
11. _____	represents	_____	areal % of the assessment unit
<u>Oil in oil assessment unit:</u>			
Volume % in entity.....	minimum	median	maximum
Portion of volume % that is offshore (0-100%)..	_____	_____	_____
<u>Gas in gas assessment unit:</u>			
Volume % in entity.....	_____	_____	_____
Portion of volume % that is offshore (0-100%)..	_____	_____	_____
12. _____	represents	_____	areal % of the assessment unit
<u>Oil in oil assessment unit:</u>			
Volume % in entity.....	minimum	median	maximum
Portion of volume % that is offshore (0-100%)..	_____	_____	_____
<u>Gas in gas assessment unit:</u>			
Volume % in entity.....	_____	_____	_____
Portion of volume % that is offshore (0-100%)..	_____	_____	_____

**ALLOCATIONS OF POTENTIAL ADDITIONS TO RESERVES TO LAND ENTITIES**  
**Subsurface Allocations** (uncertainty of a fixed value)

Based on Data as of: Data not available

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1. All Federal Subsurface represents \_\_\_\_\_ areal % of the assessment unit

<u>Oil in oil assessment unit:</u>	minimum	median	maximum
Volume % in entity.....	_____	_____	_____
Portion of volume % that is offshore (0-100%)..	_____	_____	_____

<u>Gas in gas assessment unit:</u>			
Volume % in entity.....	_____	_____	_____
Portion of volume % that is offshore (0-100%)..	_____	_____	_____

2. Other Subsurface represents \_\_\_\_\_ areal % of the assessment unit

<u>Oil in oil assessment unit:</u>	minimum	median	maximum
Volume % in entity.....	_____	_____	_____
Portion of volume % that is offshore (0-100%)..	_____	_____	_____

<u>Gas in gas assessment unit:</u>			
Volume % in entity.....	_____	_____	_____
Portion of volume % that is offshore (0-100%)..	_____	_____	_____