

**SEVENTH APPROXIMATION
DATA FORM FOR CONVENTIONAL ASSESSMENT UNITS (NOGA, Version 4, 4-10-01)**

IDENTIFICATION INFORMATION

Assessment Geologist:.....	<u>D. K. Higley</u>	Date:	<u>4/10/2001</u>
Region:.....	<u>North America</u>	Number:	<u>5</u>
Province:.....	<u>Denver Basin</u>	Number:	<u>5039</u>
Total Petroleum System:.....	<u>Lower Cretaceous</u>	Number:	<u>503904</u>
Assessment Unit:.....	<u>Subthrust Structural</u>	Number:	<u>50390402</u>
Based on Data as of:.....	_____		
Notes from Assessor:.....	_____		

CHARACTERISTICS OF ASSESSMENT UNIT

Oil (<20,000 cfg/bo overall) **or** Gas (≥20,000 cfg/bo overall):... Oil

What is the minimum accumulation size?..... 0.5 mmmboe grown
(the smallest accumulation that has potential to be added to reserves in the next 30 years)

No. of discovered accumulations exceeding minimum size:.....	Oil:	<u>0</u>	Gas:	<u>0</u>
Established (>13 accums.)	Frontier (1-13 accums.)	Hypothetical (no accums)		<u>X</u>

Median size (grown) of discovered oil accumulation (mmbo):			
	1st 3rd _____	2nd 3rd _____	3rd 3rd _____
Median size (grown) of discovered gas accumulations (bcfg):			
	1st 3rd _____	2nd 3rd _____	3rd 3rd _____

Assessment-Unit Probabilities:

<u>Attribute</u>	<u>Probability of occurrence (0-1.0)</u>
1. CHARGE: Adequate petroleum charge for an undiscovered accum. ≥ minimum size.....	<u>1.0</u>
2. ROCKS: Adequate reservoirs, traps, and seals for an undiscovered accum. ≥ minimum size.....	<u>0.5</u>
3. TIMING OF GEOLOGIC EVENTS: Favorable timing for an undiscovered accum. ≥ minimum size.....	<u>1.0</u>

Assessment-Unit GEOLOGIC Probability (Product of 1, 2, and 3):..... 0.5

4. ACCESSIBILITY: Adequate location to allow exploration for an undiscovered accumulation ≥ minimum size.....	<u>1.0</u>
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UNDISCOVERED ACCUMULATIONS

No. of Undiscovered Accumulations: How many undiscovered accums. exist that are ≥ minimum size?:
(uncertainty of fixed but unknown values)

Oil Accumulations:.....min. no. (>0)	<u>1</u>	median no. <u>5</u>	max no. <u>12</u>
Gas Accumulations:.....min. no. (>0)	<u>1</u>	median no. <u>2</u>	max no. <u>4</u>

Size of Undiscovered Accumulations: What are the anticipated sizes (**grown**) of the above accums?:
(variations in the sizes of undiscovered accumulations)

Oil in Oil Accumulations (mmbo):.....min. size	<u>0.5</u>	median siz <u>3</u>	max. size <u>100</u>
Gas in Gas Accumulations (bcfg):.....min. size	<u>3</u>	median siz <u>18</u>	max. size <u>600</u>

AVERAGE RATIOS FOR UNDISCOVERED ACCUMS., TO ASSESS COPRODUCTS

(uncertainty of fixed but unknown values)

<u>Oil Accumulations:</u>	minimum	median	maximum
Gas/oil ratio (cfg/bo).....	<u>250</u>	<u>500</u>	<u>750</u>
NGL/gas ratio (bnl/mmcf).....	<u>50</u>	<u>100</u>	<u>150</u>
<u>Gas Accumulations:</u>	minimum	median	maximum
Liquids/gas ratio (bnl/mmcf).....	<u>33</u>	<u>66</u>	<u>99</u>
Oil/gas ratio (bo/mmcf).....	<u> </u>	<u> </u>	<u> </u>

SELECTED ANCILLARY DATA FOR UNDISCOVERED ACCUMULATIONS

(variations in the properties of undiscovered accumulations)

<u>Oil Accumulations:</u>	minimum	median	maximum
API gravity (degrees).....	<u>20</u>	<u>35</u>	<u>50</u>
Sulfur content of oil (%).....	<u>0.1</u>	<u>0.2</u>	<u>0.4</u>
Drilling Depth (m)	<u>2000</u>	<u>3500</u>	<u>4500</u>
Depth (m) of water (if applicable).....	<u> </u>	<u> </u>	<u> </u>
<u>Gas Accumulations:</u>	minimum	median	maximum
Inert gas content (%).....	<u>0</u>	<u>4</u>	<u>8</u>
CO ₂ content (%).....	<u>0</u>	<u>0.9</u>	<u>1.8</u>
Hydrogen-sulfide content (%).....	<u>0</u>	<u>0.1</u>	<u>1</u>
Drilling Depth (m).....	<u>3000</u>	<u>3500</u>	<u>4500</u>
Depth (m) of water (if applicable).....	<u> </u>	<u> </u>	<u> </u>

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

1. Federal Lands represents 34.9 areal % of the total assessment unit

<u>Oil in Oil Accumulations:</u>	minimum	median	maximum
Richness factor (unitless multiplier):.....	_____	_____	_____
Volume % in parcel (areal % x richness factor):...	_____	<u>34.9</u>	_____
Portion of volume % that is offshore (0-100%):.....	_____	<u>0</u>	_____

<u>Gas in Gas Accumulations:</u>	minimum	median	maximum
Richness factor (unitless multiplier):.....	_____	_____	_____
Volume % in parcel (areal % x richness factor):...	_____	<u>34.9</u>	_____
Portion of volume % that is offshore (0-100%):.....	_____	<u>0</u>	_____

2. Private Lands represents _____ areal % of the total assessment unit

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

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

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

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

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

4. CO State Lands represents _____ areal % of the total assessment unit

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

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

5. NE State Lands represents _____ areal % of the total assessment unit

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

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

6. SD State Lands represents _____ areal % of the total assessment unit

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

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

7. WY State Lands represents _____ areal % of the total assessment unit

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

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

8. Colorado Total represents 87.3 areal % of the total assessment unit

<u>Oil in Oil Accumulations:</u>	minimum	median	maximum
Richness factor (unitless multiplier):.....	_____	_____	_____
Volume % in parcel (areal % x richness factor):...	_____	87.3	_____
Portion of volume % that is offshore (0-100%).....	_____	0	_____

<u>Gas in Gas Accumulations:</u>	minimum	median	maximum
Richness factor (unitless multiplier):.....	_____	_____	_____
Volume % in parcel (areal % x richness factor):...	_____	87.3	_____
Portion of volume % that is offshore (0-100%).....	_____	0	_____

9. Nebraska Total represents _____ areal % of the total assessment unit

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

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

10. South Dakota Total represents _____ areal % of the total assessment unit

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

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

11. Wyoming Total represents 12.7 areal % of the total assessment unit

<u>Oil in Oil Accumulations:</u>	minimum	median	maximum
Richness factor (unitless multiplier):.....	_____	_____	_____
Volume % in parcel (areal % x richness factor):...	_____	12.7	_____
Portion of volume % that is offshore (0-100%):.....	_____	0	_____

<u>Gas in Gas Accumulations:</u>	minimum	median	maximum
Richness factor (unitless multiplier):.....	_____	_____	_____
Volume % in parcel (areal % x richness factor):...	_____	12.7	_____
Portion of volume % that is offshore (0-100%):.....	_____	0	_____

12. Other (Private and State) represents 65.1 areal % of the total assessment unit

<u>Oil in Oil Accumulations:</u>	minimum	median	maximum
Richness factor (unitless multiplier):.....	_____	_____	_____
Volume % in parcel (areal % x richness factor):...	_____	65.1	_____
Portion of volume % that is offshore (0-100%):.....	_____	0	_____

<u>Gas in Gas Accumulations:</u>	minimum	median	maximum
Richness factor (unitless multiplier):.....	_____	_____	_____
Volume % in parcel (areal % x richness factor):...	_____	65.1	_____
Portion of volume % that is offshore (0-100%):.....	_____	0	_____

13. BLM represents 1.4 areal % of the total assessment unit

<u>Oil in Oil Accumulations:</u>	minimum	median	maximum
Richness factor (unitless multiplier):.....	_____	_____	_____
Volume % in parcel (areal % x richness factor):...	_____	<u>1.4</u>	_____
Portion of volume % that is offshore (0-100%):.....	_____	<u>0</u>	_____

<u>Gas in Gas Accumulations:</u>	minimum	median	maximum
Richness factor (unitless multiplier):.....	_____	_____	_____
Volume % in parcel (areal % x richness factor):...	_____	<u>1.4</u>	_____
Portion of volume % that is offshore (0-100%):.....	_____	<u>0</u>	_____

14. USFS represents 33.2 areal % of the total assessment unit

<u>Oil in Oil Accumulations:</u>	minimum	median	maximum
Richness factor (unitless multiplier):.....	_____	_____	_____
Volume % in parcel (areal % x richness factor):...	_____	<u>33.2</u>	_____
Portion of volume % that is offshore (0-100%):.....	_____	<u>0</u>	_____

<u>Gas in Gas Accumulations:</u>	minimum	median	maximum
Richness factor (unitless multiplier):.....	_____	_____	_____
Volume % in parcel (areal % x richness factor):...	_____	<u>33.2</u>	_____
Portion of volume % that is offshore (0-100%):.....	_____	<u>0</u>	_____

15. Other Federal Lands represents 0.3 areal % of the total assessment unit

<u>Oil in Oil Accumulations:</u>	minimum	median	maximum
Richness factor (unitless multiplier):.....	_____	_____	_____
Volume % in parcel (areal % x richness factor):...	_____	<u>0.3</u>	_____
Portion of volume % that is offshore (0-100%):.....	_____	<u>0</u>	_____

<u>Gas in Gas Accumulations:</u>	minimum	median	maximum
Richness factor (unitless multiplier):.....	_____	_____	_____
Volume % in parcel (areal % x richness factor):...	_____	<u>0.3</u>	_____
Portion of volume % that is offshore (0-100%):.....	_____	<u>0</u>	_____

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

1. Northern Parks and Ranges (NPRN) represents 100 areal % of the total assessment unit

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

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

2. _____ represents _____ areal % of the total assessment unit

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

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

3. _____ represents _____ areal % of the total assessment unit

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

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

4. _____ represents _____ areal % of the total assessment unit

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

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

5. _____ represents _____ areal % of the total assessment unit

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

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

6. _____ represents _____ areal % of the total assessment unit

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

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

7. _____ represents _____ areal % of the total assessment unit

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

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

8. _____ represents _____ areal % of the total assessment unit

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

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

9. _____ represents _____ areal % of the total assessment unit

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

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

10. _____ represents _____ areal % of the total assessment unit

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

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

11. _____ represents _____ areal % of the total assessment unit

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

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

12. _____ represents _____ areal % of the total assessment unit

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

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

