FORSPAN ASSESSMENT MODEL FOR CONTINUOUS ACCUMULATIONS--BASIC INPUT DATA FORM (NOGA, Version 7, 6-30-00)

IDENTIFICATION INFORMATION

Assessment Geologist:…	T.M. Finn and R.C. Johnson	Date:	8/26/2002
Region:……	North America	Number:	5
Province:…….	Southwestern Wyoming	Number:	5037
Total Petroleum System:.	Niobrara	Number:	503703
Assessment Unit:…….	Niobrara Continuous Oil	Number:	50370361
Based on Data as of:……	PI/Dwights 2001, NRG 2001 (data current through 1999), Wyoming Oil and Gas Conservation Commission		
Notes from Assessor…..			

CHARACTERISTICS OF ASSESSMENT UNIT

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

What is the minimum total recovery per cell?… 0.001 (mmbo for oil A.U.; bcfg for gas A.U.)

Number of tested cells:…… 337

Number of tested cells with total recovery per cell ≥ minimum: …….. 133

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 0.15 2nd 3rd 0.06 3rd 3rd 0.02

Assessment-Unit Probabilities:

Attribute	Probability of occurrence (0-1.0)
1. **CHARGE:** Adequate petroleum charge for an untested cell with total recovery ≥ minimum ……	1.0
2. **ROCKS:** Adequate reservoirs, traps, seals for an untested cell with total recovery ≥ minimum.	1.0
3. **TIMING:** Favorable geologic timing for an untested cell with total recovery ≥ minimum……..	1.0

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 2,622,000 median 2,914,000 maximum 3,205,000

2. Area per cell of untested cells having potential for additions to reserves in next 30 years (acres): (values are inherently variable)
   calculated mean 173 minimum 40 median 160 maximum 400

3. Percentage of total assessment-unit area that is untested (%): (uncertainty of a fixed value)
   minimum 97 median 98 maximum 99

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 2 median 5 maximum 8

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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 0.001 median 0.08 maximum 1.6

AVERAGE COPRODUCT RATIOS FOR UNTESTED CELLS, TO ASSESS COPRODUCTS

(uncertainty of fixed but unknown values)

Oil assessment unit:	minimum	median	maximum
Gas/oil ratio (cfg/bo)……..…….	300	600	900
NGL/gas ratio (bngl/mmcfg)…….….	30	60	90
Gas assessment unit:			
Liquids/gas ratio (bliq/mmcfg)….……..……			

SELECTED ANCILLARY DATA FOR UNTESTED CELLS

(values are inherently variable)

Oil assessment unit:	minimum	median	maximum
API gravity of oil (degrees)…….…….	35	39	45
Sulfur content of oil (%)……..…	0.02	0.1	0.5
Drilling depth (m) ……...…….……	610	1500	2750
Depth (m) of water (if applicable)…….			
Gas assessment unit:			
Inert-gas content (%)……....…..			
CO_2 content (%)……..…..			
Hydrogen-sulfide content (%)……...…….			
Drilling depth (m)…….			
Depth (m) of water (if applicable)…….			

Success ratios:	calculated mean	minimum	median	maximum
Future success ratio (%)..	60	50	60	70

Historic success ratio, tested cells (%) 40

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

1. Colorado represents 67.18 areal % of the assessment unit

Oil in oil assessment unit:	minimum	median	maximum
Volume % in entity……		75	
Portion of volume % that is offshore (0-100%)..		0	
Gas in gas assessment unit:			
Volume % in entity……			
Portion of volume % that is offshore (0-100%)..			

2. Wyoming represents 32.82 areal % of the assessment unit

Oil in oil assessment unit:	minimum	median	maximum
Volume % in entity……		25	
Portion of volume % that is offshore (0-100%)..		0	
Gas in gas assessment unit:			
Volume % in entity……			
Portion of volume % that is offshore (0-100%)..			

3. _____ represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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%)..			

4. _____ represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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%)..			

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5. _____ represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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%)..	_____	_____	_____

6. _____ represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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%)..	_____	_____	_____

7. _____ represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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%)..	_____	_____	_____

8. _____ represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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%)..	_____	_____	_____

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

1. Federal Lands represents 40.68 areal % of the assessment unit

Oil in oil assessment unit:	minimum	median	maximum
Volume % in entity……		33	
Portion of volume % that is offshore (0-100%)..		0	
Gas in gas assessment unit:			
Volume % in entity……			
Portion of volume % that is offshore (0-100%)..			

2. Private Lands represents 52.66 areal % of the assessment unit

Oil in oil assessment unit:	minimum	median	maximum
Volume % in entity……		60	
Portion of volume % that is offshore (0-100%)..		0	
Gas in gas assessment unit:			
Volume % in entity……			
Portion of volume % that is offshore (0-100%)..			

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

Oil in oil assessment unit:	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%)..			

4. Other Lands represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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%)..			

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5. CO State Lands represents 4.18 areal % of the assessment unit

Oil in oil assessment unit:	minimum	median	maximum
Volume % in entity……		5	
Portion of volume % that is offshore (0-100%)..		0	

Gas in gas assessment unit:			
Volume % in entity……			
Portion of volume % that is offshore (0-100%)..			

6. WY State Lands represents 2.49 areal % of the assessment unit

Oil in oil assessment unit:	minimum	median	maximum
Volume % in entity……		2	
Portion of volume % that is offshore (0-100%)..		0	

Gas in gas assessment unit:			
Volume % in entity……			
Portion of volume % that is offshore (0-100%)..			

7. _____ represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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%)..			

8. _____ represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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%)..			

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9. _____ represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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%)..	_____	_____	_____

10. _____ represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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%)..	_____	_____	_____

11. _____ represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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%)..	_____	_____	_____

12. _____ represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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%)..	_____	_____	_____

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

1. Bureau of Land Management (BLM) represents 26.50 areal % of the assessment unit

Oil in oil assessment unit:	minimum	median	maximum
Volume % in entity……		23	
Portion of volume % that is offshore (0-100%)..		0	
Gas in gas assessment unit:			
Volume % in entity……			
Portion of volume % that is offshore (0-100%)..			

2. BLM Wilderness Areas (BLMW) represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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. BLM Roadless Areas (BLMR) represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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%)..			

4. National Park Service (NPS) represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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%)..			

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5. NPS Wilderness Areas (NPSW) represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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%)..			

6. NPS Protected Withdrawals (NPSP) represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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%)..			

7. US Forest Service (USFS) represents 13.27 areal % of the assessment unit

Oil in oil assessment unit:	minimum	median	maximum
Volume % in entity……		9	
Portion of volume % that is offshore (0-100%)..		0	

Gas in gas assessment unit:			
Volume % in entity……			
Portion of volume % that is offshore (0-100%)..			

8. USFS Wilderness Areas (USFSW) represents 0.91 areal % of the assessment unit

Oil in oil assessment unit:	minimum	median	maximum
Volume % in entity……		1	
Portion of volume % that is offshore (0-100%)..		0	

Gas in gas assessment unit:			
Volume % in entity……			
Portion of volume % that is offshore (0-100%)..			

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9. USFS Roadless Areas (USFSR) represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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%)..			

10. USFS Protected Withdrawals (USFSP) represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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%)..			

11. US Fish and Wildlife Service (USFWS) represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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%)..			

12. USFWS Wilderness Areas (USFWSW) represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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%)..			

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13. USFWS Protected Withdrawals (USFWSP) represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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%)..			

14. Wilderness Study Areas (WS) represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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%)..			

15. Department of Energy (DOE) represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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%)..			

16. Department of Defense (DOD) represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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%)..			

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17. Bureau of Reclamation (BOR) represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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%)..			

18. Tennessee Valley Authority (TVA) represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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%)..			

19. Other Federal represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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%)..			

20. _____ represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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%)..			

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

1. Central Basin and Hills (CNBH) represents 10.03 areal % of the assessment unit

Oil in oil assessment unit:	minimum	median	maximum
Volume % in entity……		5	
Portion of volume % that is offshore (0-100%)..		0	
Gas in gas assessment unit:			
Volume % in entity……			
Portion of volume % that is offshore (0-100%)..			

2. Greater Green River Basin (GGRV) represents 50.43 areal % of the assessment unit

Oil in oil assessment unit:	minimum	median	maximum
Volume % in entity……		50	
Portion of volume % that is offshore (0-100%)..		0	
Gas in gas assessment unit:			
Volume % in entity……			
Portion of volume % that is offshore (0-100%)..			

3. North-Central Highlands (NCHL) represents 35.85 areal % of the assessment unit

Oil in oil assessment unit:	minimum	median	maximum
Volume % in entity……		45	
Portion of volume % that is offshore (0-100%)..		0	
Gas in gas assessment unit:			
Volume % in entity……			
Portion of volume % that is offshore (0-100%)..			

4. Tavaputs Plateau (TPPT) represents 1.92 areal % of the assessment unit

Oil in oil assessment unit:	minimum	median	maximum
Volume % in entity……		0	
Portion of volume % that is offshore (0-100%)..		0	
Gas in gas assessment unit:			
Volume % in entity……			
Portion of volume % that is offshore (0-100%)..			

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5. Uinta Mountains (UTMT) represents 1.77 areal % of the assessment unit

Oil in oil assessment unit:	minimum	median	maximum
Volume % in entity……		0	
Portion of volume % that is offshore (0-100%)..		0	
Gas in gas assessment unit:			
Volume % in entity……			
Portion of volume % that is offshore (0-100%)..			

6. _____ represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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%)..			

7. _____ represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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%)..			

8. _____ represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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%)..			

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9. _____ represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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%)..	_____	_____	_____

10. _____ represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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%)..	_____	_____	_____

11. _____ represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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%)..	_____	_____	_____

12. _____ represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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%)..	_____	_____	_____

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

Based on Data as of: _____

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

Oil in oil assessment unit:	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%)..			

2. Other Subsurface represents _____ areal % of the assessment unit

Oil in oil assessment unit:	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%)..			

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