

**SEVENTH APPROXIMATION  
DATA FORM FOR CONVENTIONAL ASSESSMENT UNITS (Version 6, 9 April 2003)**

**IDENTIFICATION INFORMATION**

Assessment Geologist:	D.K. Higley-Feldman	Date:	1-Sep-10
Region:	North America	Number:	5
Province:	Anadarko Basin	Number:	5058
Total Petroleum System:	Pennsylvanian Composite	Number:	505802
Assessment Unit:	Greater Granite Wash Composite	Number:	50580204
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): Gas

What is the minimum accumulation size? 0.5 mmbœ grown  
(the smallest accumulation that has potential to be added to reserves)

No. of discovered accumulations exceeding minimum size: Oil: 13 Gas: 57  
Established (>13 accums.) X Frontier (1-13 accums.)            Hypothetical (no accums.)           

Median size (grown) of discovered oil accumulations (mmbœ):  
1st 3rd 3.39 2nd 3rd 2.07 3rd 3rd           

Median size (grown) of discovered gas accumulations (bcfg):  
1st 3rd 25.72 2nd 3rd 14.49 3rd 3rd 12.82

**Assessment-Unit Probabilities:**

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

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

**UNDISCOVERED ACCUMULATIONS**

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

Oil Accumulations:	minimum (>0) <u>1</u>	mode <u>5</u>	maximum <u>15</u>
Gas Accumulations:	minimum (>0) <u>5</u>	mode <u>20</u>	maximum <u>70</u>

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

Oil in Oil Accumulations (mmbœ):	minimum <u>0.5</u>	median <u>1.5</u>	maximum <u>30</u>
Gas in Gas Accumulations (bcfg):	minimum <u>3</u>	median <u>9</u>	maximum <u>800</u>

**AVERAGE RATIOS FOR UNDISCOVERED ACCUMS., TO ASSESS COPRODUCTS**

(uncertainty of fixed but unknown values)

<u>Oil Accumulations:</u>	minimum	mode	maximum
Gas/oil ratio (cfg/bo)	<u>2800</u>	<u>5600</u>	<u>8400</u>
NGL/gas ratio (bngl/mmcf)	<u>16</u>	<u>32</u>	<u>48</u>
<u>Gas Accumulations:</u>	minimum	mode	maximum
Liquids/gas ratio (bliq/mmcf)	<u>19</u>	<u>38</u>	<u>57</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	mode	maximum		
API gravity (degrees)	<u>33</u>	<u>45</u>	<u>55</u>		
Sulfur content of oil (%)	<u>0</u>	<u>1</u>	<u>3</u>		
Depth (m) of water (if applicable)	<u>          </u>	<u>          </u>	<u>          </u>		
Drilling Depth (m)	minimum	F75	mode	F25	maximum
	<u>250</u>		<u>2100</u>		<u>4300</u>
<u>Gas Accumulations:</u>	minimum	mode	maximum		
Inert gas content (%)	<u>0.6</u>	<u>2.3</u>	<u>20</u>		
CO <sub>2</sub> content (%)	<u>0</u>	<u>0.1</u>	<u>11</u>		
Hydrogen-sulfide content (%)	<u>0</u>	<u>0</u>	<u>0.1</u>		
Depth (m) of water (if applicable)	<u>          </u>	<u>          </u>	<u>          </u>		
Drilling Depth (m)	minimum	F75	mode	F25	maximum
	<u>335</u>		<u>2750</u>		<u>5000</u>

---

**THIS PAGE IS INTENTIONALLY BLANK**

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

1.	<u>Oklahoma</u>	represents	<u>32.53</u>	area % of the AU
	<u>Oil in Oil Accumulations:</u>	minimum	mode	maximum
	Volume % in entity	_____	<u>30.00</u>	_____
	<u>Gas in Gas Accumulations:</u>			
	Volume % in entity	_____	<u>60.00</u>	_____
2.	<u>Texas</u>	represents	<u>67.47</u>	area % of the AU
	<u>Oil in Oil Accumulations:</u>	minimum	mode	maximum
	Volume % in entity	_____	<u>70.00</u>	_____
	<u>Gas in Gas Accumulations:</u>			
	Volume % in entity	_____	<u>40.00</u>	_____
3.	_____	represents	_____	area % of the AU
	<u>Oil in Oil Accumulations:</u>	minimum	mode	maximum
	Volume % in entity	_____	_____	_____
	<u>Gas in Gas Accumulations:</u>			
	Volume % in entity	_____	_____	_____
4.	_____	represents	_____	area % of the AU
	<u>Oil in Oil Accumulations:</u>	minimum	mode	maximum
	Volume % in entity	_____	_____	_____
	<u>Gas in Gas Accumulations:</u>			
	Volume % in entity	_____	_____	_____
5.	_____	represents	_____	area % of the AU
	<u>Oil in Oil Accumulations:</u>	minimum	mode	maximum
	Volume % in entity	_____	_____	_____
	<u>Gas in Gas Accumulations:</u>			
	Volume % in entity	_____	_____	_____
6.	_____	represents	_____	area % of the AU
	<u>Oil in Oil Accumulations:</u>	minimum	mode	maximum
	Volume % in entity	_____	_____	_____
	<u>Gas in Gas Accumulations:</u>			
	Volume % in entity	_____	_____	_____

7.	_____	represents	_____	area % of the AU
<u>Oil in Oil Accumulations:</u>	minimum		mode	maximum
Volume % in entity	_____		_____	_____
<u>Gas in Gas Accumulations:</u>				
Volume % in entity	_____		_____	_____
8.	_____	represents	_____	area % of the AU
<u>Oil in Oil Accumulations:</u>	minimum		mode	maximum
Volume % in entity	_____		_____	_____
<u>Gas in Gas Accumulations:</u>				
Volume % in entity	_____		_____	_____
9.	_____	represents	_____	area % of the AU
<u>Oil in Oil Accumulations:</u>	minimum		mode	maximum
Volume % in entity	_____		_____	_____
<u>Gas in Gas Accumulations:</u>				
Volume % in entity	_____		_____	_____
10.	_____	represents	_____	area % of the AU
<u>Oil in Oil Accumulations:</u>	minimum		mode	maximum
Volume % in entity	_____		_____	_____
<u>Gas in Gas Accumulations:</u>				
Volume % in entity	_____		_____	_____
11.	_____	represents	_____	area % of the AU
<u>Oil in Oil Accumulations:</u>	minimum		mode	maximum
Volume % in entity	_____		_____	_____
<u>Gas in Gas Accumulations:</u>				
Volume % in entity	_____		_____	_____
12.	_____	represents	_____	area % of the AU
<u>Oil in Oil Accumulations:</u>	minimum		mode	maximum
Volume % in entity	_____		_____	_____
<u>Gas in Gas Accumulations:</u>				
Volume % in entity	_____		_____	_____

---

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

<u>1. Federal Lands</u>	represents	<u>1.34</u>	area % of the AU
<u>Oil in Oil Accumulations:</u>	minimum	mode	maximum
Volume % in entity	_____	<u>1.33</u>	_____
<u>Gas in Gas Accumulations:</u>			
Volume % in entity	_____	<u>1.33</u>	_____
<u>2. Private Lands</u>	represents	<u>97.73</u>	area % of the AU
<u>Oil in Oil Accumulations:</u>	minimum	mode	maximum
Volume % in entity	_____	<u>97.87</u>	_____
<u>Gas in Gas Accumulations:</u>			
Volume % in entity	_____	<u>97.87</u>	_____
<u>3. Tribal Lands</u>	represents	<u>0.03</u>	area % of the AU
<u>Oil in Oil Accumulations:</u>	minimum	mode	maximum
Volume % in entity	_____	<u>0.00</u>	_____
<u>Gas in Gas Accumulations:</u>			
Volume % in entity	_____	<u>0.00</u>	_____
<u>4. Other Lands</u>	represents	_____	area % of the AU
<u>Oil in Oil Accumulations:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____
<u>Gas in Gas Accumulations:</u>			
Volume % in entity	_____	_____	_____
<u>5. OK State Lands</u>	represents	<u>0.82</u>	area % of the AU
<u>Oil in Oil Accumulations:</u>	minimum	mode	maximum
Volume % in entity	_____	<u>0.80</u>	_____
<u>Gas in Gas Accumulations:</u>			
Volume % in entity	_____	<u>0.80</u>	_____
<u>6. TX State Lands</u>	represents	<u>0.09</u>	area % of the AU
<u>Oil in Oil Accumulations:</u>	minimum	mode	maximum
Volume % in entity	_____	<u>0.00</u>	_____
<u>Gas in Gas Accumulations:</u>			
Volume % in entity	_____	<u>0.00</u>	_____

7.	_____	represents	_____	area % of the AU
<u>Oil in Oil Accumulations:</u>	minimum		mode	maximum
Volume % in entity	_____		_____	_____
<u>Gas in Gas Accumulations:</u>				
Volume % in entity	_____		_____	_____
8.	_____	represents	_____	area % of the AU
<u>Oil in Oil Accumulations:</u>	minimum		mode	maximum
Volume % in entity	_____		_____	_____
<u>Gas in Gas Accumulations:</u>				
Volume % in entity	_____		_____	_____
9.	_____	represents	_____	area % of the AU
<u>Oil in Oil Accumulations:</u>	minimum		mode	maximum
Volume % in entity	_____		_____	_____
<u>Gas in Gas Accumulations:</u>				
Volume % in entity	_____		_____	_____
10.	_____	represents	_____	area % of the AU
<u>Oil in Oil Accumulations:</u>	minimum		mode	maximum
Volume % in entity	_____		_____	_____
<u>Gas in Gas Accumulations:</u>				
Volume % in entity	_____		_____	_____
11.	_____	represents	_____	area % of the AU
<u>Oil in Oil Accumulations:</u>	minimum		mode	maximum
Volume % in entity	_____		_____	_____
<u>Gas in Gas Accumulations:</u>				
Volume % in entity	_____		_____	_____
12.	_____	represents	_____	area % of the AU
<u>Oil in Oil Accumulations:</u>	minimum		mode	maximum
Volume % in entity	_____		_____	_____
<u>Gas in Gas Accumulations:</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	_____	area % of the AU
<u>Oil in Oil Accumulations:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____
<u>Gas in Gas Accumulations:</u>			
Volume % in entity	_____	_____	_____
2. <u>BLM Wilderness Areas (BLMW)</u>	represents	_____	area % of the AU
<u>Oil in Oil Accumulations:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____
<u>Gas in Gas Accumulations:</u>			
Volume % in entity	_____	_____	_____
3. <u>BLM Roadless Areas (BLMR)</u>	represents	_____	area % of the AU
<u>Oil in Oil Accumulations:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____
<u>Gas in Gas Accumulations:</u>			
Volume % in entity	_____	_____	_____
4. <u>National Park Service (NPS)</u>	represents	0.57	area % of the AU
<u>Oil in Oil Accumulations:</u>	minimum	mode	maximum
Volume % in entity	_____	0.57	_____
<u>Gas in Gas Accumulations:</u>			
Volume % in entity	_____	0.57	_____
5. <u>NPS Wilderness Areas (NPSW)</u>	represents	_____	area % of the AU
<u>Oil in Oil Accumulations:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____
<u>Gas in Gas Accumulations:</u>			
Volume % in entity	_____	_____	_____
6. <u>NPS Protected Withdrawals (NPSP)</u>	represents	_____	area % of the AU
<u>Oil in Oil Accumulations:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____
<u>Gas in Gas Accumulations:</u>			
Volume % in entity	_____	_____	_____

7.	<u>US Forest Service (FS)</u>	represents	<u>0.43</u>	area % of the AU
	<u>Oil in Oil Accumulations:</u>	minimum	mode	maximum
	Volume % in entity	<u>                    </u>	<u>0.43</u>	<u>                    </u>
	<u>Gas in Gas Accumulations:</u>			
	Volume % in entity	<u>                    </u>	<u>0.43</u>	<u>                    </u>
8.	<u>USFS Wilderness Areas (FSW)</u>	represents	<u>                    </u>	area % of the AU
	<u>Oil in Oil Accumulations:</u>	minimum	mode	maximum
	Volume % in entity	<u>                    </u>	<u>                    </u>	<u>                    </u>
	<u>Gas in Gas Accumulations:</u>			
	Volume % in entity	<u>                    </u>	<u>                    </u>	<u>                    </u>
9.	<u>USFS Roadless Areas (FSR)</u>	represents	<u>                    </u>	area % of the AU
	<u>Oil in Oil Accumulations:</u>	minimum	mode	maximum
	Volume % in entity	<u>                    </u>	<u>                    </u>	<u>                    </u>
	<u>Gas in Gas Accumulations:</u>			
	Volume % in entity	<u>                    </u>	<u>                    </u>	<u>                    </u>
10.	<u>USFS Protected Withdrawals (FSP)</u>	represents	<u>                    </u>	area % of the AU
	<u>Oil in Oil Accumulations:</u>	minimum	mode	maximum
	Volume % in entity	<u>                    </u>	<u>                    </u>	<u>                    </u>
	<u>Gas in Gas Accumulations:</u>			
	Volume % in entity	<u>                    </u>	<u>                    </u>	<u>                    </u>
11.	<u>US Fish and Wildlife Service (FWS)</u>	represents	<u>                    </u>	area % of the AU
	<u>Oil in Oil Accumulations:</u>	minimum	mode	maximum
	Volume % in entity	<u>                    </u>	<u>                    </u>	<u>                    </u>
	<u>Gas in Gas Accumulations:</u>			
	Volume % in entity	<u>                    </u>	<u>                    </u>	<u>                    </u>
12.	<u>USFWS Wilderness Areas (FWSW)</u>	represents	<u>                    </u>	area % of the AU
	<u>Oil in Oil Accumulations:</u>	minimum	mode	maximum
	Volume % in entity	<u>                    </u>	<u>                    </u>	<u>                    </u>
	<u>Gas in Gas Accumulations:</u>			
	Volume % in entity	<u>                    </u>	<u>                    </u>	<u>                    </u>

13. <u>USFWS Protected Withdrawals (FWSP)</u>	_____	represents	_____	area % of the AU
<u>Oil in Oil Accumulations:</u>	minimum		mode	maximum
Volume % in entity	_____		_____	_____
<u>Gas in Gas Accumulations:</u>				
Volume % in entity	_____		_____	_____
14. <u>Wilderness Study Areas (WS)</u>	_____	represents	_____	area % of the AU
<u>Oil in Oil Accumulations:</u>	minimum		mode	maximum
Volume % in entity	_____		_____	_____
<u>Gas in Gas Accumulations:</u>				
Volume % in entity	_____		_____	_____
15. <u>Department of Energy (DOE)</u>	_____	represents	_____	area % of the AU
<u>Oil in Oil Accumulations:</u>	minimum		mode	maximum
Volume % in entity	_____		_____	_____
<u>Gas in Gas Accumulations:</u>				
Volume % in entity	_____		_____	_____
16. <u>Department of Defense (DOD)</u>	_____	represents	0.05	area % of the AU
<u>Oil in Oil Accumulations:</u>	minimum		mode	maximum
Volume % in entity	_____		0.05	_____
<u>Gas in Gas Accumulations:</u>				
Volume % in entity	_____		0.05	_____
17. <u>Bureau of Reclamation (BOR)</u>	_____	represents	0.28	area % of the AU
<u>Oil in Oil Accumulations:</u>	minimum		mode	maximum
Volume % in entity	_____		0.28	_____
<u>Gas in Gas Accumulations:</u>				
Volume % in entity	_____		0.28	_____
18. <u>Tennessee Valley Authority (TVA)</u>	_____	represents	_____	area % of the AU
<u>Oil in Oil Accumulations:</u>	minimum		mode	maximum
Volume % in entity	_____		_____	_____
<u>Gas in Gas Accumulations:</u>				
Volume % in entity	_____		_____	_____

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

<u>Oil in Oil Accumulations:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____

<u>Gas in Gas Accumulations:</u>			
Volume % in entity	_____	_____	_____

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

<u>Oil in Oil Accumulations:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____

<u>Gas in Gas Accumulations:</u>			
Volume % in entity	_____	_____	_____

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

1. <u>Redbed Plains (RBPL)</u>	represents	<u>31.74</u>	area % of the AU
<u>Oil in Oil Accumulations:</u>	minimum	mode	maximum
Volume % in entity	_____	<u>25.00</u>	_____
<u>Gas in Gas Accumulations:</u>			
Volume % in entity	_____	<u>50.00</u>	_____
2. <u>Rolling Plains (RLPL)</u>	represents	<u>0.71</u>	area % of the AU
<u>Oil in Oil Accumulations:</u>	minimum	mode	maximum
Volume % in entity	_____	<u>1.00</u>	_____
<u>Gas in Gas Accumulations:</u>			
Volume % in entity	_____	<u>1.00</u>	_____
3. <u>Texas High Plains (TXHP)</u>	represents	<u>67.55</u>	area % of the AU
<u>Oil in Oil Accumulations:</u>	minimum	mode	maximum
Volume % in entity	_____	<u>74.00</u>	_____
<u>Gas in Gas Accumulations:</u>			
Volume % in entity	_____	<u>49.00</u>	_____
4. _____	represents	_____	area % of the AU
<u>Oil in Oil Accumulations:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____
<u>Gas in Gas Accumulations:</u>			
Volume % in entity	_____	_____	_____
5. _____	represents	_____	area % of the AU
<u>Oil in Oil Accumulations:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____
<u>Gas in Gas Accumulations:</u>			
Volume % in entity	_____	_____	_____
6. _____	represents	_____	area % of the AU
<u>Oil in Oil Accumulations:</u>	minimum	mode	maximum
Volume % in entity	_____	_____	_____
<u>Gas in Gas Accumulations:</u>			
Volume % in entity	_____	_____	_____

7.	_____	represents	_____	area % of the AU
<u>Oil in Oil Accumulations:</u>		minimum	mode	maximum
Volume % in entity	_____	_____	_____	_____
<u>Gas in Gas Accumulations:</u>				
Volume % in entity	_____	_____	_____	_____
8.	_____	represents	_____	area % of the AU
<u>Oil in Oil Accumulations:</u>		minimum	mode	maximum
Volume % in entity	_____	_____	_____	_____
<u>Gas in Gas Accumulations:</u>				
Volume % in entity	_____	_____	_____	_____
9.	_____	represents	_____	area % of the AU
<u>Oil in Oil Accumulations:</u>		minimum	mode	maximum
Volume % in entity	_____	_____	_____	_____
<u>Gas in Gas Accumulations:</u>				
Volume % in entity	_____	_____	_____	_____
10.	_____	represents	_____	area % of the AU
<u>Oil in Oil Accumulations:</u>		minimum	mode	maximum
Volume % in entity	_____	_____	_____	_____
<u>Gas in Gas Accumulations:</u>				
Volume % in entity	_____	_____	_____	_____
11.	_____	represents	_____	area % of the AU
<u>Oil in Oil Accumulations:</u>		minimum	mode	maximum
Volume % in entity	_____	_____	_____	_____
<u>Gas in Gas Accumulations:</u>				
Volume % in entity	_____	_____	_____	_____
12.	_____	represents	_____	area % of the AU
<u>Oil in Oil Accumulations:</u>		minimum	mode	maximum
Volume % in entity	_____	_____	_____	_____
<u>Gas in Gas Accumulations:</u>				
Volume % in entity	_____	_____	_____	_____