



**WEATHERFORD LABORATORIES  
X-RAY DIFFRACTION  
(WEIGHT %)**

**Client:** Cabot Oil & Gas Corporation  
**Well:** Reconnaissance No. 2  
**Area:** Wayne County, West Virginia  
**Sample Type:** Conventional Core

**File No:** HH-75056  
**Date:** 02/11/15  
**Analyst:** R. Schulze

Barcode Number	Well Name	Sample Number	Sample Depth (ft)	CLAYS				CARBONATES				OTHER MINERALS						TOTALS		
				Chlorite	Kaolinite	Illite/Mica	Mx I/S*	Calcite	Dolomite <sup>1</sup>	Dolomite(Fe/Ca) <sup>2</sup>	Siderite	Quartz	K-spar	Plag.	Pyrite	Bassanite	Barite	Clays	Carb.	Other
101730640	JP Smith	1 CK	11136.50	8	Tr	13	7	16	5	3	0	18	10	16	2	2	0	28	24	48
101730650	JP Smith	6 CK	11150.80	7	Tr	13	9	33	3	3	0	13	6	11	1	1	0	29	39	32
101730662	JP Smith	12 CK	11167.80	13	1	28	11	12	2	3	0	16	5	7	1	1	0	53	17	30
101730672	JP Smith	17 CK	11200.00	8	Tr	25	12	24	Tr	2	0	13	7	6	1	2	0	45	26	29
			<b>Average</b>	<b>9</b>	<b>Tr</b>	<b>20</b>	<b>10</b>	<b>21</b>	<b>2</b>	<b>3</b>	<b>0</b>	<b>15</b>	<b>7</b>	<b>10</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>39</b>	<b>26</b>	<b>35</b>

\* Ordered interstratified mixed-layer illite/smectite; Approximately 20-30% expandable interlayers. Illite peaks not suitable for Kubler Index measurement.

<sup>1</sup> Dolomite species interpretation based on the d-spacing of the highest intensity peak of dolomite group minerals; other dolomite species may be present.

<sup>2</sup> Dolomite species interpretation based on the d-spacing of the highest intensity peak of dolomite group minerals (which increases with calcium in excess of 50:50 Ca:Mg or substitution of Fe for Mg).