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December 23, 2016

**VIA HAND DELIVERY**

David Catanach  
Oil Conservation Division  
New Mexico Department of Energy,  
Minerals and Natural Resources  
1220 South Saint Francis Drive  
Santa Fe, New Mexico 87505

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**Re: Documentation requested pursuant to Commission Order R-14023-A  
Sneed 9 Federal Com No. 23H**

Case 15327

Dear Mr. Catanach:

The attached slides were prepared by COG Operating LLC pursuant to the Commission's Order R-14023-A, ¶ 21, to demonstrate that the final fracture configuration for the completion of the Sneed 9 Federal Com No. 23H Well has remained within the vertical limits of the spacing unit. These slides further demonstrate that the final fractures have not penetrated the Drinkard formation.

Your attention to this matter is appreciated.

Sincerely,

Jordan L. Kessler  
ATTORNEY FOR COG OPERATING LLC

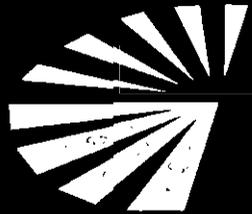
Enclosures

Holland & Hart LLP

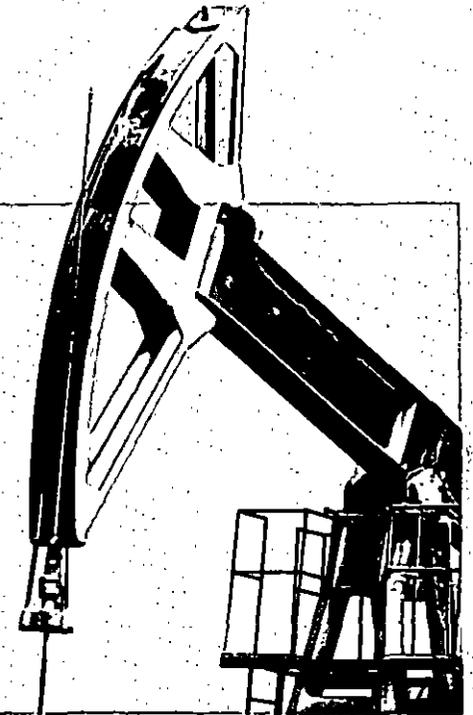
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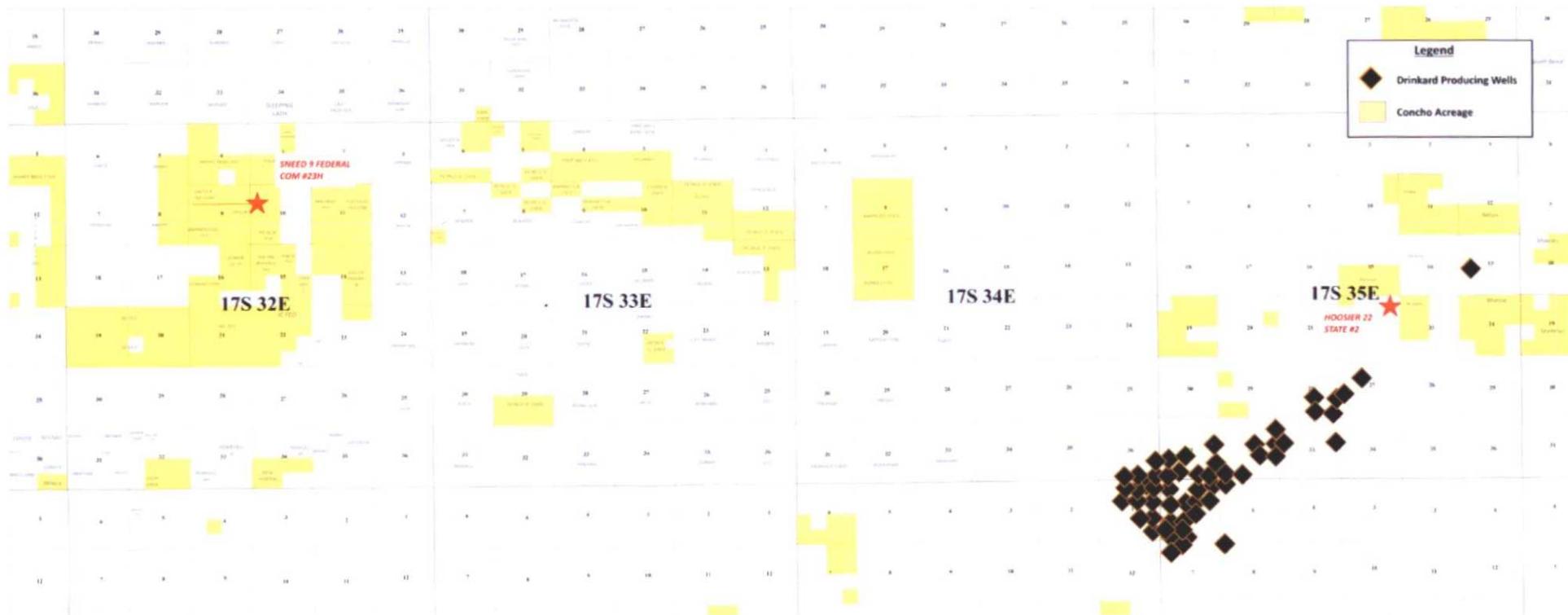
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Sneed 9 Federal COM #23H  
Area of Review  
NM Shelf Team  
December 16, 2016



# Sneed Federal #23H Area of Review



# Area of Review Analysis and Findings

Water Sample Analysis and Comparison	Martin Water Labs Historical Database for Blinebry	Sneed Fed COM 23H Blinebry Sample Collected 12/9/2016	Hoosier 22 State #2 Drinkard Sample	Difference Sneed #23H Blinebry vs Hoosier #2 Drinkard	Percentage Difference Sneed #23H Blinebry vs Hoosier #2 Drinkard
Total Hardness, as CaCO <sub>3</sub>	74,000	75,000	57,000	18,000	32%
Calcium, as Ca	22,950	22,400	15,876	6,524	41%
Magnesium, as Mg	4,239	4,617	4,200	417	10%
Sulfate, as SO <sub>4</sub>	342	839	560	279	50%
Chloride, as Cl	141,000	132,060	94,000	38,060	40%

## Discussion and Conclusions

- Detailed water analysis is believed to be the best method to establish clear separation of Blinebry and Drinkard formations
- Rely on Martin Water Labs experience concerning key water parameters used to establish water uniqueness
- Nearest available Drinkard test is Hoosier #2, approx. 18 Miles east of the Sneed #23H
- The 12/9/2016 Sneed Blinebry sample closely matches the Martin Water Labs database, confirming unique water properties coming from the Blinebry formation
- Significant differences between Sneed and Hoosier key water properties (see table above) demonstrate that the Sneed completion did not penetrate the Drinkard formation
- From the map it can be seen that the closest established Drinkard production is 2-1/2 Townships east of the Sneed well. If the Drinkard formation in the Sneed area were productive of hydrocarbons, then there would be wells producing from it in the area, which there are none found