Formerly Reference Well #24

Amoco proposes to drill the well to further develop the Dakota reservior.

The well will be drilled to the surface casing point using native mud.

The well will then be drilled to the intermediate casing point with a non-dispersed mud system. The protective hole will be drilled with air to the top of the Greenhorn were protective casing will

The production hole will be drilled with a non-dispersed mud system to TD.

Surface Casing:

Cement program Wt. (ppf) Description Quanity (ft) Size (in) 13 375 61 J-55, ST&C 625 cf Class B, 2% CaCl2 400 + 0.25 #/sx Flocele. 1.18 cf/sx, 15.6 ppg

Hole size 17.5", 125% excess, circulate cement to surface.

Intermediate Casing:

Wt. (ppf) Description Cement program Quanity (ft) Size (in) 36 J-55, LT&C * 2 stage 3268 9.625

586 cf Class B, 0.4% CFR-3, 0.4% Halad 344, 5 #/sx Gilsonite, * 1st Stg Tail:

+ 0.25 #/sx Flocele. 1.29 cf/sx, 15.11 ppg.

Top of Fruitland Coal

2518 ft 2418 ft, 100' above top of Fruitland Coal. Stage tool depth

1537 cf Class B, 65:35:6, 7#/sx salt, 0.375 #/sx Flocele, 5% Calseal, * 2nd Stg Lead:

2% Microbond. 1.8 cf/sx, 13.0 ppg.

129 cf Class B, 0.4% CFR-3, 0.4% Halad 344, 5 #/sx Gilsonite, * 2nd Stg Tail:

+ 0.25 #/sx Flocele. 1.29 cf/sx, 15.6 ppg.

Hole size 12.25", 120% excess, circulate cement to surface.

Protective Casing:

Cement program Wt. (ppf) Description Quanity (ft) Size (in) 23 J-55, LT&C * 2 stage 7171

717 cf Class B, 50/50 poz, 2% gel, 0.4% Halad 413, 0.1% SCR 100, * 1st Stg Tail:

5 #/sx Gilsonite, 5% Microbond HT, 0.4% VersaSet, 0.25 #/sx Flocele.

1.35 cf/sx, 13.4 ppg.

2918 ft Est TCMT 2818 **Top Picture Cliffs**

4688 ft Top of Mesa Verde

4188 ft, 500' above top of Mesa Verde. Stage tool depth

296 cf Class B, 50/50 poz, 2% gel, 0.4% Halad 413, * 2nd Stg Tail:

5 #/sx Gilsonite, 5% Microbond HT, 0.4% VersaSet, 0.25 #/sx Flocele.

1.35 cf/sx, 13.4 ppg.

Hole size 8.75*, 60% excess, circulate cement to surface.

Production Liner:

Wt. (ppf) Description Cement program Size (in) Quanity (ft) * single stage 11.6 N-80, LT&C

124 cf Class G, 35% SSA 1, 1.0% CFR 3, 0.5% Halad 24, * 1st Stg Tail:

0.25 #/sx Flocele. 1.56 cf/sx, 15.6 ppg.

Estimated Total Depth

6971 ft 200' overlap into intermediate casing. Estimated Top of Liner

Hole size 6.25", 60% excess, tie cement back.

BY: FRANK SEIDEL/BARRY PEISER 10/11/93

= input depths from form 46 in shaded areas to calculate cement volumes.

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