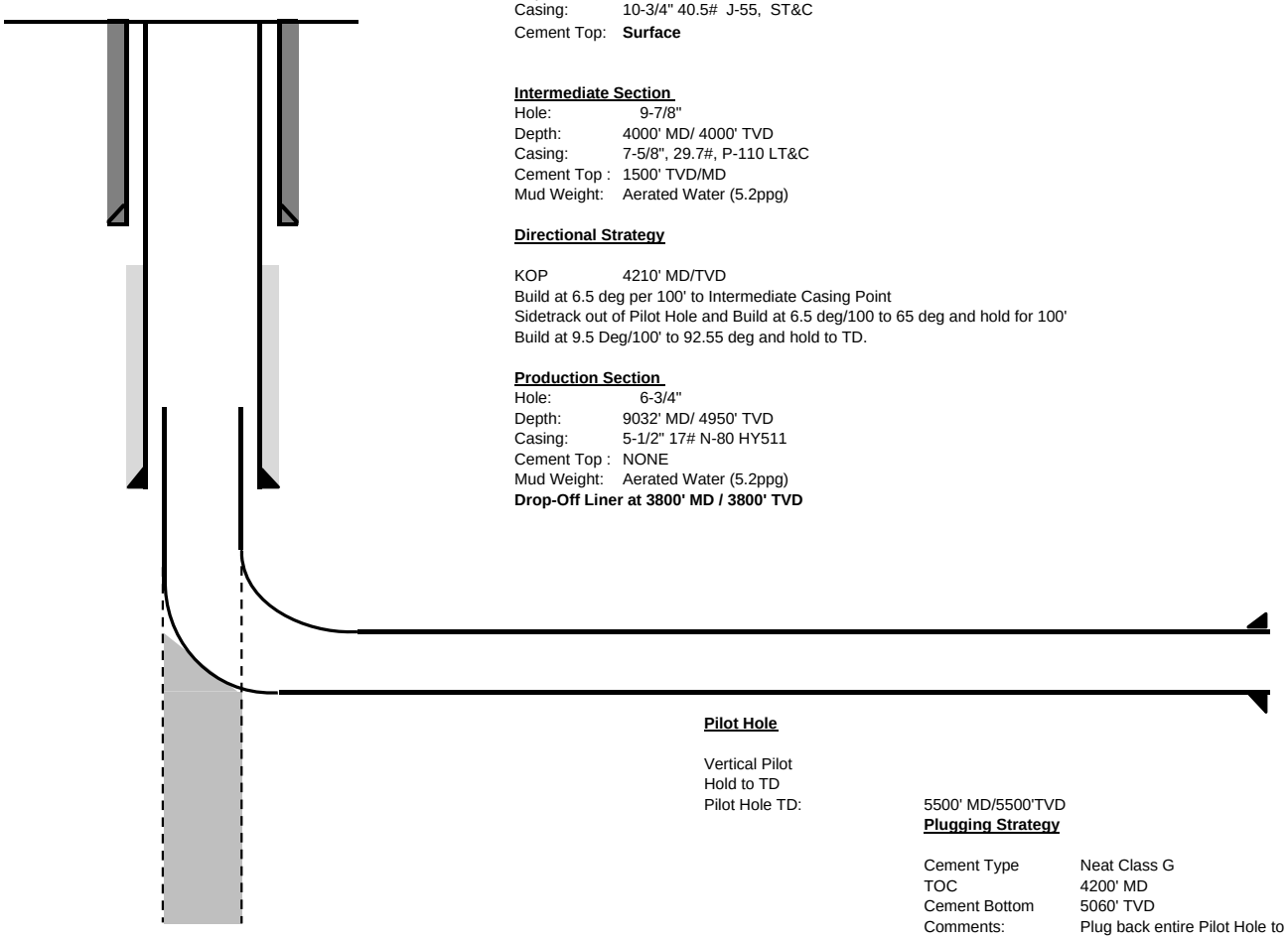
North Castor Gulch 1-16

T5N, R91W, SEC16
Wellbore Diagram

Updated: 2/9/2012
Location: Section 16 Township 5N Range 91W Moffat County, Colorado
Unit Williams Fork Unit
API Number: Pending Elevation: 6986 GL
Target Zone: Niobrara Shale 6998 KB



Surface Section:
Hole: 13-1/2"
Depth: 800' MD/TVD
Casing: 10-3/4" 40.5# J-55, ST&C
Cement Top: **Surface**

Intermediate Section
Hole: 9-7/8"
Depth: 4000' MD/ 4000' TVD
Casing: 7-5/8", 29.7#, P-110 LT&C
Cement Top : 1500' TVD/MD
Mud Weight: Aerated Water (5.2ppg)

Directional Strategy

KOP 4210' MD/TVD
Build at 6.5 deg per 100' to Intermediate Casing Point
Sidetrack out of Pilot Hole and Build at 6.5 deg/100 to 65 deg and hold for 100'
Build at 9.5 Deg/100' to 92.55 deg and hold to TD.

Production Section
Hole: 6-3/4"
Depth: 9032' MD/ 4950' TVD
Casing: 5-1/2" 17# N-80 HY511
Cement Top : NONE
Mud Weight: Aerated Water (5.2ppg)
Drop-Off Liner at 3800' MD / 3800' TVD

Pilot Hole

Vertical Pilot
Hold to TD
Pilot Hole TD: 5500' MD/5500'TVD

Plugging Strategy

Cement Type	Neat Class G
TOC	4200' MD
Cement Bottom	5060' TVD
Comments:	Plug back entire Pilot Hole to previous casing string. Dress off plug until MWD readings allow for an open hole sidetrack. This is estimated at 4200' MD

Drilling and Completion Plan – Pilot and Horizontal Hole

This well is a “toe-up” horizontal well with a pilot hole. See attached directional plan for well.

The surface hole will be 13-1/2” with a 10-3/4” casing cemented from the bottom to the surface. The intermediate hole will be a 9-7/8” with a 7-5/8” casing. The production section will be a 6-3/4” hole with a 5-1/2” casing. Depths of casing strings will vary by hole and are detailed on Form 2. All casing will be new, range 3 casing.

After setting 7-5/8” intermediate casing on this well, a vertical or near-vertical pilot hole will be drilled penetrating the Niobrara, into the underlying Carlisle formation. After obtaining appropriate geological data from the pilot hole, the main lateral borehole will be sidetracked away from the pilot hole and drilled to TD.

The purpose of the pilot hole is to obtain subsurface data that cannot easily be obtained in the horizontal production section. The pilot hole provides the following:

- Wellbore for obtaining core samples
- The near-vertical trajectory of pilot hole is preferred for open hole logs over the toe-up horizontal section
- Formation data obtained from the pilot hole greatly improves accuracy of depth control during drilling of the subsequent horizontal section.

Subsequent to obtaining all necessary subsurface data from pilot hole, the pilot hole will be plugged back with cement and an open-hole sidetrack will be performed to drill the lateral portion of the wellbore.

Completion of the main horizontal (lateral) borehole will consist of an open-hole section covered by a perforated or slotted liner run to the well TD by the drilling rig. The producing interval will be the Niobrara Formation and will start below the intermediate casing string set point near the top of the Niobrara Formation. If drilling with casing is required, a contingency will be to perforate the liner once landed in the well.

Artificial lift will consist of a sucker rod and pump jack system. The tubing will be run near the low spot of the well, the “heel”, and anchored above the producing interval. The sucker rods will be run with the pump set near the end of the tubing. All tubing and sucker rod equipment will be run with a BOP package and a kill weight completion fluid system. The well will be initially swabbed for fluid clean up and flow testing. Frac'ing or additional reservoir stimulation methods are not anticipated to be necessary.