

NINE POINT DRILLING PLAN

UNION PACIFIC 150X16

Rangely Weber Sand Unit

Directional Well

Surface: 2067' FSL & 132' FWL, Section 16, T2N, R103W

Bottomhole: 1419' FSL & 191' FWL, Section 16, T2N, R103W

Rio Blanco County, CO

a. NAMES & ESTIMATED TOPS OF GEOLOGIC GROUPS:

Name	Estimated Tops
Mancos group	Surface

b. NAMES, ESTIMATED TOPS & THICKNESS OF FORMATIONS:
(based upon est. surface elev. of 5,417')

Name	Estimated Tops	Thickness
Mancos	Surface	3,461'
Frontier	3,461' TVD/ 3,471' MD	355'
Dakota	3,816' TVD/ 3,828' MD	94'
Morrison	3,910' TVD/ 3,922' MD	696'
Curtis	4,606' TVD/ 4,622' MD	145'
Entrada	4,751' TVD/ 4,768' MD	102'
Carmel	4,853' TVD/ 4,871' MD	65'
Navajo	4,918' TVD/ 4,936' MD	595'
Chinle	5,513' TVD/ 5,534' MD	130'
Shinarump	5,643' TVD/ 5,665' MD	94'
Moenkopi	5,737' TVD/ 5,760' MD	672'
Weber	6,409' TVD/ 6,435' MD	166'
TD	6,575' TVD/ 6,603' MD	

c. PRESSURE CONTROL EQUIPMENT:

For drilling surface hole to 2000':

No BOP equipment required. A diverter will be utilized if a Surface Hole Drilling Rig equipped to drill with air/air mist is used to preset surface casing.

For drilling through 9 5/8" surface casing to TD:

Maximum anticipated surface pressure is <3000 psi.

Pressure control equipment shall be in accordance with BLM minimum standards.

A casing head with an 11", 3000 psi flange will be welded onto the 9 5/8" surface casing.

BOP stack will consist of either 2 single gate or a double gate and annular preventer. The gate preventers will be equipped with pipe rams on bottom and blind rams on top. The choke and kill lines will be connected to outlets below the bottom rams, utilizing either the ram body outlet or a drilling spool with side outlets. Co-flex hose will be utilized from the BOP to the choke manifold. The BOP stack will be 11" or 13.625" bore, 3000 psi working pressure or greater. The choke and kill lines will be 3" bore, 3000 psi working pressure or greater. Please refer to attached schematic.

Test procedure and frequency shall be in accordance with BLM minimum standards for 3000 psi equipment, per BLM Oil & Gas Order #2.

d. **PROPOSED CASING PROGRAM, DRILLED HOLE SIZE:**

Casing Information: All casing will be new pipe and tested to 1500 psi.

Casing	Weight	Grade	Conn.	Stage	Centralizers
9 5/8"	36.0#/ft	K-55	LTC	No	*
7"	23.0#/ft	J-55	LTC	No	As Needed

*Centralizers will be placed on the bottom three joints and every fourth joint thereafter.

Casing Design Information (9 5/8" casing @ 2000'):

Collapse value for new pipe: 2020 psi Actual Load: 915 psi S.F.: 2.2

Burst value for new pipe: 3520 psi Actual Load: 731 psi* S.F.: 4.8

Tension value for new pipe: 489,000# Actual Load: 72,000# S.F.: 6.8

*Surface casing burst load based on a formation fracture gradient of 1.0 psi/ft.

(7" casing @ top of Weber at 6409' TVD):

Collapse value for new pipe: 3270 psi Actual Load: 3062 psi S.F.: 1.1

Burst value for new pipe: 4360 psi Actual Load: 3000psi S.F.: 1.5

Tension value for new pipe: 313,000# Actual Load: 148,005# S.F.: 2.1

Surface Hole (0'-2000')

Drilling of the surface hole will be with a Surface Hole drilling rig equipped to drill with air/air mist if the rig is available. Hole size will be in the 12 ¼" - 11" range at the discretion of the drilling contractor.

Variance to Onshore Oil and Gas Order No. 2 III -E. Special Drilling Operations which addresses additional drilling equipment required for drilling with air/gas is requested for the Surface Hole drilling rig which may be used to preset surface casing. To our knowledge, it is possible (but not probable) that minor amounts of shallow gas (<2000') could be encountered while drilling in this area. The Mancos formation was oil productive in the 1920's but has been mostly depleted and there are no productive Mancos wells with ¼ mile of the proposed well. Consequently, the majority of the equipment specified in the Special Drilling Operations is not necessary to drill surface holes (<2000') in this area. Auxiliary Equipment to be used is outlined in Section 8. Air/gas will not be used to drill below surface casing.

If the Surface Hole drilling rig is not available to preset the surface casing a conventional rotary drilling rig will be used to drill the surface hole. A 12 ¼" hole will be drilled utilizing fresh water mud.

Production Hole (2000' - 6409' TVD)

Drilling below surface casing will be with conventional rotary equipment utilizing fresh water mud. Hole size will be 8 ¾".

Open Hole (6409' TVD - TD)

The Weber Payzone will be drilled and completed open hole utilizing NaCl brine. Hole size will be 6-1/8".

e. AMOUNT AND TYPES OF CEMENT TO BE USED SETTING CASING STRING:

Casing	Cement
9 5/8"	Two slurry system with oilfield type cement circulated in place. Lead: 35:65 Poz: Class "G" cement mixed at 12.7 ppg with an yield of 1.9 cf/sx. Theoretical volume of lead cement is 499 sacks including 80% excess in the open hole. Tail: Class "G" cement mixed at 15.8 ppg with an yield of 1.15 cf/sx. Theoretical volume of tail cement is 290 sacks. Volumes based on calculated plus 100% excess. Tail plug used. Allowed to set under pressure. Theoretical open hole annular volume is 598 cu ft.
7"	Two slurry system with oilfield "light weight" cement with additives ahead of oilfield premium cement with additives circulated in place. Lead: Class G cement mixed at 11.0 ppg with a yield of 3.49 cf/sx. Theoretical volume of lead cement is 306 sacks including 80% excess in the open hole. Tail: CemCRETE Blend 54/46 mixed at 12.5 ppg with a yield of 1.63 cf/sx. Theoretical volume of tail cement is 349 sacks including 80% excess in the open hole. If cement does not

reach the surface in cementing the production string, a bond log will be run to determine the top of cement (TOC) to ensure isolation between the Frontier formation and the surface casing shoe.

f. TYPES AND CHARACTERISTICS OF PROPOSED CIRCULATING MEDIUM:

Surface Hole (0'-2000')

Surface hole will be drilled with air/air mist if a Surface Hole drilling rig is utilized to preset surface casing prior to moving in and rigging up a conventional rotary drilling rig.

Mud circulating equipment and materials as specified in Onshore Order #2, III - E will not be kept on location due to the fact that the Surface Hole drilling rig equipped to drill with air/air mist is not equipped to circulate mud.

If a Surface Hole drilling rig is not utilized to preset the surface casing a conventional rotary rig will be used to drill the surface hole. Water based drilling fluids consisting primarily of fresh water, bentonite, lignite, caustic, lime, soda ash, and polymers will be used. No chromate's will be used. It is not intended to use oil in the mud, however, in the event it is used, oil concentration will be less than 4% by volume. Maximum anticipated mud weight is ± 9.0 ppg.

A minimum quantity of weighting material will be kept on location

Production Hole (2000'-6409' TVD')

Drilling below surface casing will be with water based drilling fluids consisting primarily of fresh water, bentonite, lignite, caustic, lime, soda ash, and polymers. No chromate's will be used. It is not intended to use oil in the mud, however, in the event it is used, oil concentration will be less than 4% by volume. Maximum anticipated mud weight is ± 10.0 ppg.

A minimum quantity of weighting material will be kept on location.

H2S and CO2 detector will be used at all times during drilling operation.

Open Hole (6409' TVD'-TD)

The Weber Payzone will be drilled and completed open hole utilizing NaCl brine.

g. TESTING, LOGGING AND CORING PROCEDURES:

Logging:

Electric Logging: Cased Hole logs / gamma ray and porosity
Open Hole logs (possible)

Coring: None planned.

Testing: None planned.

h. EXPECTED BOTTOM HOLE PRESSURES, ABNORMAL PRESSURES, TEMPERATURES OR POTENTIAL HAZARDS:

Normal pressure gradient to top of Weber. Offset pressure history indicates that the pressure gradient in the Weber should be between a minimum of 0.32 psi/ft to a maximum of 0.50 psi/ft.

Maximum expected BHP @ TD: ~ 2700 psi

Maximum expected BHT @ TD: ~ 160° F

Hydrogen Sulfide:

Hydrogen sulfide (H₂S) gas exists in the Weber Formation within the Rangely Field. Concentrations vary across the Field (+/- 100-700 ppm) due to a long history of production in conjunction with water and CO₂ injection.

Chevron's "H₂S Contingency Plan" will be adhered to minimize any potential hazard.

Possible Aquifers: None

Oil: Probable in Weber @ 6409' – 6575' TVD

Gas: Probable minor gas in Weber @ 6409' TVD decreasing to TD.

Protection of oil, gas, water, or other mineral bearing formations:

Protection shall be accomplished by cementing surface casing back to the surface. Production casing will be cemented with a sufficient cement volume to attempt to bring cement back to surface. If cement does not reach the surface in cementing the production string, a bond log will be run to determine the top of cement (TOC) to ensure isolation between the Frontier formation and the surface casing shoe.

i. OTHER INFORMATION:

Auxiliary Equipment

Conventional Rotary Drilling Rig

Geolograph

PVT-Flowmeter

Desilter

Desander

Full Opening Safety Valve

Upper Kelly Valve

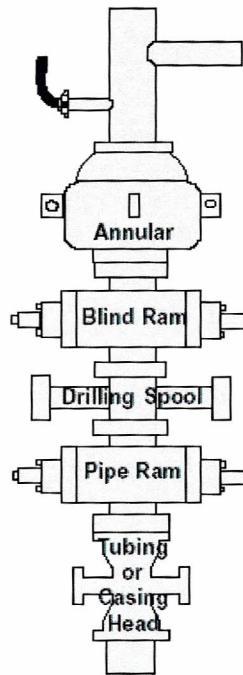
Lower Kelly Valve

Surface Hole Rig Equipped to Drill with Air/Air Mist

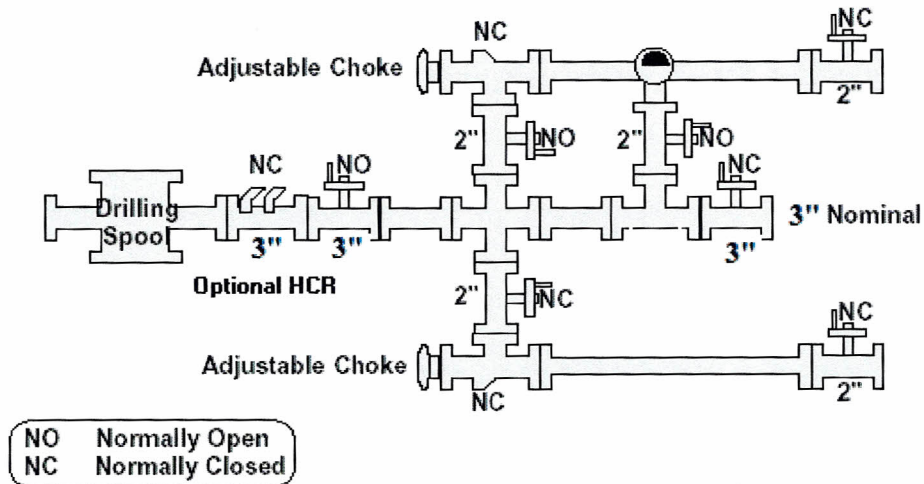
Diverter; 100' Discharge Line

BOP Schematic

Class III BOP Stack



Class III Choke Manifold

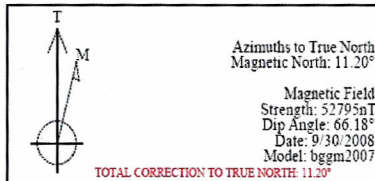




CHEVRON
UP150X16
RIO BLANCO COUNTY, COLORADO
SHL: LAT 40°8'28.320"N LON 108°51'26.424"W



Weatherford®



FIELD DETAILS
Rio Blanco, Colorado
Colorado, Northern Zone
Geodetic System: US State Plane Coordinate System 1983
Ellipsoid: GRS 1980
Zone: Colorado, Northern Zone
Magnetic Model: bggm2007
System Datum: Mean Sea Level
Local North: True North

SECTION DETAILS									
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	IFace	VSec Target
1	0.00	0.00	173.82	0.00	0.00	0.00	0.00	0.00	0.00
2	500.00	0.00	173.82	500.00	0.00	0.00	0.00	173.82	0.00
3	700.00	3.00	173.82	699.91	-5.20	0.56	1.50	173.82	5.23
4	2102.01	3.00	173.82	2100.00	-78.15	8.46	0.00	0.00	78.61
5	2261.51	6.19	173.82	2258.96	-90.86	9.84	2.00	-0.01	91.39
6	6602.86	6.19	173.82	6575.00	-556.24	60.27	0.00	0.00	559.49 PBHL-150

WELL DETAILS							
Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slor
UP150X16	0.00	0.00	1312051.93	2061604.93	40°08'28.320N	108°51'26.424W	N/A

TARGET DETAILS						
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
PBHL-150	6575.00	-556.24	60.27	40°08'22.823N	108°51'25.648W	Point

SITE DETAILS
UP150X16 PAD
Site Centre Latitude: 40°08'28.320N
Longitude: 108°51'26.424W
Ground Level: 5385.00
Positional Uncertainty: 0.00
Convergence: -2.17

