APPENDIX X

Drilling Plans

APPENDIX X-1

Drilling Plan for

Minerva South CCS No.001

TABLES

FIGURES

FACILITY INFORMATION

Facility Name: Minerva Facility

Injection Wells: Minerva South CCS Well No. 001 (MS CCS 1)
Minerva South CCS Well No. 002 (MS CCS 2)

Facility Contact: David Cook, CEO
5599 San Felipe St., Ste. 1450, Houston, Texas 77056
(713) 419-6808; dcook@gcscarbon.com

Well Locations: Sec 3, T12S, R13W, Cameron Parish, Louisiana
MS CCS 1 (NAD 1927)
Surface: 30° 02' 34.10"N, 93° 40' 20.63"W
Bottom-Hole: 30° 02' 34.10"N, 93° 40' 20.63"W
MS CCS 2 (NAD 1927)
Surface: 30° 02' 33.84"N, 93° 40' 20.48"W
Bottom-Hole: 30° 02' 13.74”N, 93° 40' 42.07"W

PROPOSED DRILLING PLAN FOR MS CCS 1

The procedure below outlines the proposed drilling operations for Minerva South CCS No. 001 (MS CCS 1). The following documents are included to support the drilling plan:

- The proposed wellbore schematic for MS CCS 1 is depicted in Figure X.1-1. It includes the well profile, casing depths and details, cementing specifics and the proposed perforation depth range.
- The directional plan for MS CCS 1 is provided in Figure X.1-2.
- The above ground wellhead schematic that represents the proposed design for MS CCS 1 is found in Figure X.1-3.
- Table X.1-1 lists the proposed pre-operational testing schedules for MS CCS 1. See Pre-Operational Logging and Testing Program (Attachment C) for more details.

All depths are referenced from Kelly Bushing (KB), an assumed height of 38 feet (ft) above mean sea level.

1. An 8’ diameter cellar will be installed on location. The 30” conductor will be pre-installed at ~ 150’ MD/TVD in the middle of the cellar before the rig move. 30” 1.0” WT, 28” ID, 310.3 lb/ft, X56.
2. Move rig into the well pad location and rig up. Install mud logging equipment. Conduct function test and pick up/make up (PU/MU) 26” bit - bottom hole assembly (BHA). In case of natural drift tendency, a directional BHA with Measurement While Drilling (MWD) tool will be used if vertical control is required.
3. Drill the surface hole section using Water-based Mud (WBM) with 9 ppg mud weight

(MW) control ROP until BHA exits the 30" conductor casing. (Subject to the pore pressure calibration, all MW may be adjusted as needed to maintain wellbore conditions).

4. Continue drilling 26" hole vertically to 3,000' MD/TVD (section TD) monitoring full circulation and or partial circulations, additional torque while drilling, and extra drag while pulling out for connections.
5. Circulate wellbore until the well is clean, then pull out of hole (POOH).
6. Install wireline equipment and MU logging tools as per Pre-Operational Testing schedule, detailed in Table X.1-1.
    a. If tight hole conditions are observed during logging operations or tagging out of the bottom, PU & MU bit and run in the hole (RIH) to condition wellbore before running the casing.
7. Install Tubular Running (TRS) equipment and PU 20" 133 lb/ft, L80, ER casing. RIH to 3,000' MD/TVD with 1 joint as shoe track and 120' spacing between centralizers (75% stand-off). Space out and circulate in preparation for cementing operations.
8. Install cement unit. Conduct cement job mixing and pumping 50 bbls of 8.34 ppg spacer fluid followed by 1,262 bbls (2,616 sacks) of 11.8 ppg Type-1 lead slurry + 337 bbls (1,421 sacks) of 14.8 ppg Type-1 Tail Slurry, release displacement plugs and displace with 9.0 ppg WBM up to 20" landing collar depth, ensure cement return at surface. Pressure up to at least 500 psi confirming set plug.
9. Release pressure and rig down (RD) cementing equipment.
10. Cut and bevel casing and install Section A 20 ¾" 3M psi Flange, W/ two 2 $^{1}/_{16}$" 3M psi gate valve wellhead section. Conduct pressure test. Note: All Pressure Tests referenced throughout this drilling plan will be performed with a surface readout pressure gauge and a chart or digital recorder.
11. Install 5 kpsi BOP stack and conduct pressure test.
12. Install wireline equipment and run as per Pre-Operational Testing schedule, detailed in Table X.1-1.
13. PU/MU 17 ½" Bit and directional BHA with MWD. RIH and tag Top of Cement (TOC). Displace and adjust WBM with the weight (ppg) required as per proposed MW window.
14. Drill out collar, casing shoe track and to the top of casing shoe. Install high pressure pump. Close BOP annular rams. Test integrity of surface casing with at least 500 psi for 1 hour, pressure loss limited to 5%, release pressure, open BOP rams, drill out shoe and drill 10-15' into new formation. Circulate out and ensure 9.00 ppg in and out.
15. Install high pressure pump, conduct Formation Integrity Test (FIT). Close BOP annular rams, apply 671 psi (EMW-13.3 ppg) of surface pressure for 1 hour, pressure loss limited to 5%. Minimum formation strength required 13.2 ppg MW Equivalent at 3,000'. (13 ⅜" casing cement job hydraulic simulation). Release pressure, open BOP rams.

16. Synthetic based mud (SBM) displacement. Condition the fluid to be displaced by adjusting the rheological properties to achieve the lowest possible practical YP. Prepare a spacer that will cover 500' of the largest annular section. Transfer 25-30 bbls of the SBM to the slug tank. Add half a drum of emulsifier, 5 gal of wetting agent and one sack of viscosifier. Flush and clean all lines, tanks and manifolds that will be in contact with the displacement fluid. Secure all water outlets to prevent contamination of displacement fluid. Run drill string to desired depth. Begin pumping treated SBM spacer followed by the displacement fluid. Once the displacement begins it is very important to maintain a constant flow rate throughout the displacement. Do not shut pumps off for any reason until completely displaced. Reciprocate and rotate the string at least one joint every 15mins to prevent channeling in the annulus. The mud engineer will be located near the shakers and have the circulating time calculated to check the return of the spacer. Once the spacer returns divert contaminated inter-phase to separate tank. This fluid can be re-incorporated into the system later on to avoid disposal costs. The mud engineer will be monitoring the electrical stability (ES) of the return fluid at the shakers. Once the return fluid reaches 100 volts ES, start incorporating the return fluid back into the active system. Start mixing emulsifier and wetting agent in the suction tank to compensate for the low ES of the return fluid. Circulate, normalize SBM system to 9.0 ppg.

17. If FIT is successful, continue drilling 17 ½" hole section with an initial 9.00 ppg increasing to 10.00 ppg SBM. Drill vertical from 3,015' MD/TVD maintaining with no more than a 1.5° as maximum inclination and lower than 1.5 deg/100ft DLS if required a vertical correction. Continue drilling, monitoring drilling parameters, and potential partial circulations and ensure the wellbore is clean.

18. Continue drilling vertically monitoring extra torque and drag (T&D) on the BHA and ensure proper hole cleaning. Real-time monitoring with logging while drilling (LWD) tools (GR – resistivity) and GR at bit to determine the desired TD at 8,991' MD/TVD (~900' inside the Anahuac (CZ),150' above upper Frio (IZ)).

19. Circulate bottoms-up ensure hole is clean and MW in-out. POOH.

20. Install wireline logging unit and run as per Pre-Operational Testing schedule, detailed in Table X.1-1. Keep monitoring well static.

    a. If tight hole conditions are observed during logging operations or tagging out of the bottom, PU & MU bit and RIH to condition wellbore before running the casing.

21. RD wireline logging unit. RU TRS and prepare for casing run for 13 ⅜" casing.

22. Install 13 ⅜" shoe + 1 joint 13 ⅜", 68 lb/ft, L80, BTC + landing collar + 13 ⅜", 68 lb/ft, L80, BTC, installing 26 centralizers (Bow Type) with 120' spacing in between as per cement program to ensure 70% standoff. The 13 ⅜" casing string is planned to run to 8,991' MD/TVD monitoring full displacement and values of drag according to the T&D simulation.

23. Once the casing is at the bottom, circulate bottoms up, meanwhile install cementing equipment.

24. Conduct cement job. Pump a spacer fluid of 11.50 ppg at 6 bpm, followed by 1255 bbls (3,356 sacks) of 12.8 ppg Cement Class H lead Slurry at 7 bpm, followed by 339 bbls (1,433 sacks) of 14.80 ppg of cement Class H tail slurry at 5 bpm. Continue to release displacement plug and start displacement with 10.0 ppg fluid. Volume to displace ~ 1,335 bbls. Estimated TOC of tail slurry at 7,200' MD/TVD. Final pump pressure at 2 bpm ~1,175 psi. Pressure up with at least 500 psi as casing test for 15mins. Release pressure. Ensure Cement returns at surface.

    a. Cement program could be varied depending on wellbore conditions observed while drilling. Excess torque or tight spots while drilling and/or excess of drag while tripping BHA would require adjustments on volumes, slurry densities or program a cement in stages using DV tool.

25. Install Section B: 20 ¾ 3M psi X 13 ⅝ 5M psi, W/2 2 $^{1}/_{16}$ 5M wellhead section with 2 $^{1}/_{16}$" x 5 kpsi wing valves.

26. Conduct BOP and wellhead pressure test as per requirements and company policies.

27. Install wireline equipment and run as per Pre-Operational Testing schedule, detailed in Table X.1-1.

28. PU/MU 12 ¼" Bit, directional BHA, and MWD. RIH and tag TOC. Circulate and condition drilling fluid (SBM) to a 10.0 ppg.

29. Drill out collar, casing shoe track and casing shoe. Clean out below shoe and drill 10-15' of new formation. Circulate out and ensure 10.0 ppg in and out.

30. Install high-pressure pump and conduct FIT in Anahuac (CZ) as per the formation evaluation program. Close BOP annular rams apply 1,873 psi (EMW-14.0 ppg) of surface pressure for 1 hour, pressure loss limited to 5%, release pressure, open BOP rams, SH-min value at 9,006' MD/TVD ~ 16.00 EMW.

31. If FIT is a success, continue drilling 12 ¼" hole section with SBM as per density schedule. Stage MW starting at 10.8 ppg increasing to 11.5 ppg, with final MW planned at 13.50 ppg SBM. Drill vertical from 9,006' MD/TVD to the coring point #1. Circulate and ensure hole is clean. POOH for coring operations.

32. PU/MU coring BHA. Trip into the hole with control parameters to bottom hole. Break circulation with slow pump rate and start operations as per Coring-engineer instruction. Core 60' length of 12 ¼" core bit x 9 ½" barrel x 4" core, inside Anahuac (CZ). Burn core and POOH in controlled speed as per coring program.

33. Install 12 ¼" bit and directional BHA and RIH. Back-ream coring interval ensuring wellbore is in good condition. Continue drilling 12 ¼" hole section to the second coring point inside Frio formation correlating with GR-Resistivity logs. Circulate and ensure hole is clean. POOH for coring operations.

34. PU/MU second coring BHA. Trip into the hole with control parameters to bottom hole.

Break circulation with slow pump rate and start operations as per Coring-engineer instruction. Core 75' length of 12 ¼" Core bit x 9 ½" barrel x 4" core, inside upper Frio (IZ). Burn core and POOH in controlled speed as per coring program.

35. Install 12 ¼" bit and directional BHA and RIH. Back-ream coring interval ensuring wellbore is in good condition. Continue drilling 12 ¼" vertical with no more than a 1.5° as maximum inclination and lower than 1.5 deg/100ft DLS if required a vertical correction, monitoring extra torque and drag on the BHA and ensure proper hole cleaning. Real-time monitoring with LWD tools (GR – resistivity) and GR at bit to ensure do not drill below Mid Frio Formation. Drill at TD to 10,770' MD/TVD.
36. Reach Total Depth (TD), circulate, and equalize 13.50 ppg SBM in and out; subject to the pore pressure calibration MW will be increased as needed to maintain wellbore conditions. Perform a short trip to evaluate wellbore conditions. If extra drag is observed, perform back-reaming to eliminate it and if necessary, adjust the MW.
37. POOH with drilling BHA monitoring smooth tripping conditions.
38. Install wireline logging unit and run as per Pre-Operational Testing schedule, detailed in Table X.1-1.
    a. After logging, evaluate wellbore conditions, if tight hole conditions, RIH 12 ¼" bit and BHA to recondition the wellbore before running casing.
39. Install the casing running system with Chrome casing handle tools (non-marking technology). PU/MU 9 ⅝" casing shoe + 2 joints of 9 ⅝", 53.5 lb/ft, 25CRW-125 VAM-21 + 9 ⅝" float collar + 2,758' of 9 ⅝" casing 53.5 lb/ft, 25CRW-125, VAM-21 (70 joints) + 9 ⅝" DV tool (Stage collar) + 9 ⅝" crossover (if needed) +7,932' of 9 ⅝" casing 53.5 lb/ft, L80 VAM-21.
    a. Install 9 ⅝" chrome casing centralizers, with 120' spacing in between to maintain 95% stand-off in open hole section.
40. Once the casing is on depth, space out and install 9 ⅝" casing hanger. Circulate and condition mud in/out monitoring possible partial circulation. Record pump rate vs pressure.
41. Install cementing unit and perform pre-job safety meeting.
42. Conduct cement operations as follows:
    a. Stage one: 50 bbls of 14.0 ppg spacer + 202 bbls (1,013 sacks) of 14.8 ppg CO_2 compatible cement (PermaSet or equivalent) unique slurry + 785 bbls of 10.8 ppg SBM (or higher as needed as per pore pressure calibration) as displacement. TOC at 7,932' MD/TVD.
    b. Stage Two: 45 bbls of spacer + 454bbls (2,055 sacks) of 14.3 ppg Class H cement lead slurry + 20 bbls (100 sacks) of 14.8 ppg CO_2 compatible cement tail slurry + bump displacement plug + 584 bbls of displacement fluid (9.3 ppg $CaCl_2$ Inhibited Brine)

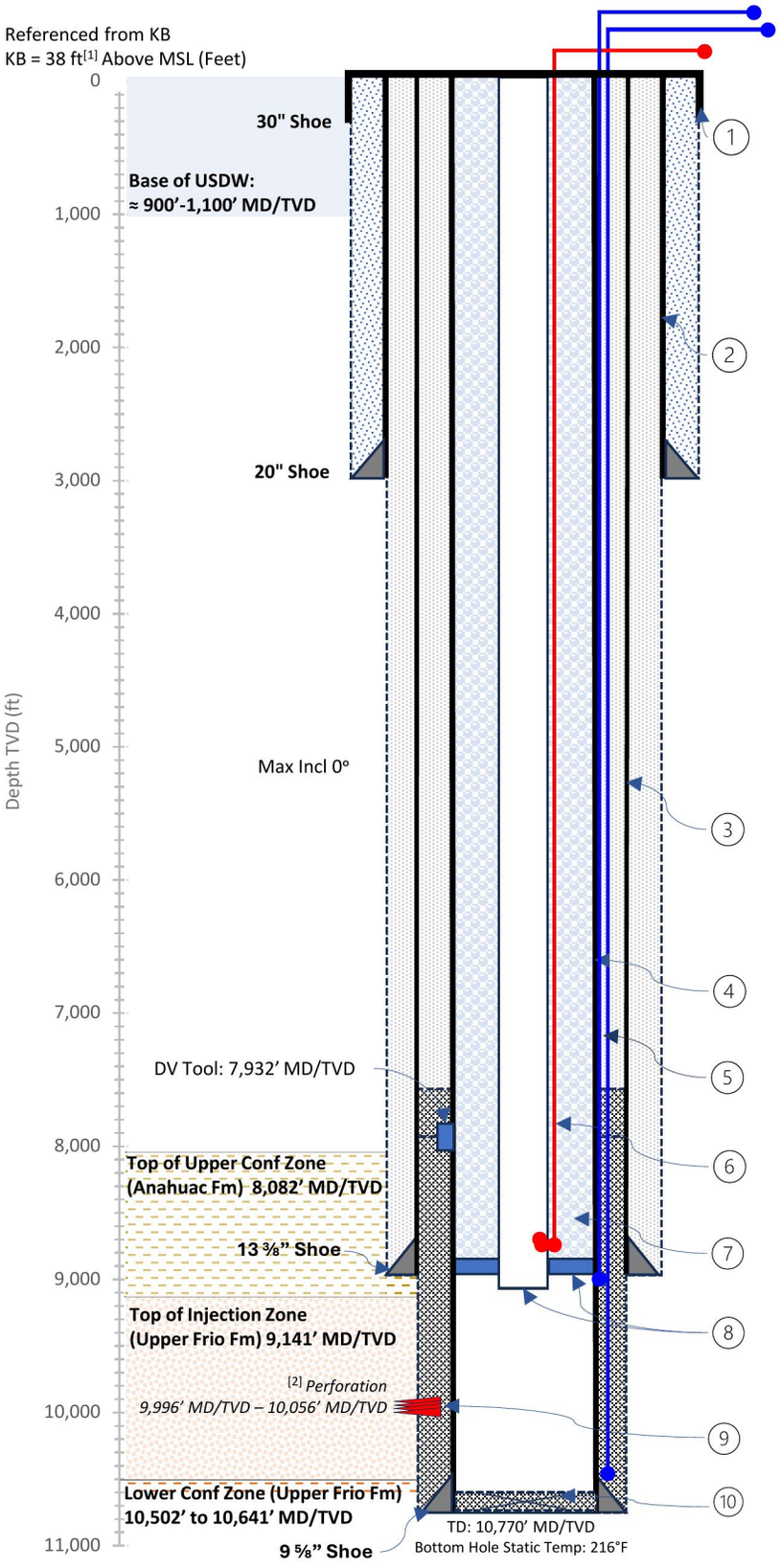
43. On final displacement, ensure to record final pump pressure and maintain with at least 500 psi as an indication that the Diverter Toll (DV) is in close position. Then proceed to release pressure.
44. RD cementing equipment.
45. Clean Up Trip – WOC. PU slick BHA and RIH to top of collar, circulate, normalize packer fluid, 9.3 ppg. Close annular rams, pressure test casing with 1,000 psi surface pressure for 60 mins, pressure loss limited to 5%. Release pressure, open BOP rams. POH cleaning BHA.
46. Rig up (RU) wireline unit. PU/MU logging tools and run as per Pre-Operational Testing schedule, detailed in Table X.1-1.
47. RD logging unit. Install C section of the wellhead: 9 ⅝”, 13 ⅝ 5M psi X 11 5M psi, W/TWO $2^{1}/_{16}$ 5M psi. Conduct pressure test.
48. Rig down and move out drilling rig.
49. Secure and temporarily abandon well for delayed completion.
50. After evaluation of core and associated data, return to well with a workover rig.
51. RU wireline unit. PU/MU logging tools to run perforation correlation log.
52. Run perforation correlation log from TD to top of injection interval. Rig down logging unit once complete.
53. RU tubing running system with 4 ½” chrome tubing handling tools.
54. PU/MU injection tubing string and RIH as follow: Pup joint 4 ½” Tubing, 15.1 lb/ft, 25CRW-125, Prem Connection end tail at 9,100’ MD/TVD + Nipple profile 4 ½” x 3.826” ID + Pup joint 4 ½” 15.1 lb/ft, 25CRW-125, Prem Connection + 4 ½” x 9 ⅝” Removable Production packer at 9,050’ MD/TVD + Pup joint 4 ½” Tubing, 15.1 lb/ft, 25CRW-125, Prem Connection + Nipple profile 4 ½” x 3.6” ID + 34 joints of 4 ½”, 15.1 lb/ft, 25CRW-125, Prem Connection (~1,018’ length) + 4 ½”, 15.1 lb/ft, 25CRW-125, Prem Connection (~7,867’ length) + 7 joints of 4 ½”, 15.1 lb/ft, 25CRW-125, Prem Connection + Tubing hanger.
55. Space out and set up the packer following service company’s operational procedure.
56. RU wireline unit and make up perforating guns and run in hole to perforate approved Completion Interval #1. Oriented perforation will be used to avoid the DTS/DAS Fiber Optic cable. Once complete, RD wireline unit and conduct pressure test.
57. Land tubing hanger in wellhead. Install “H” valve on tubing hanger, RD BOP’s stack and install 4 ⅛” 5M psi Christmas tree. Conduct pressure test.
58. Rig down and move out workover rig.

GCS

Table X.1-1 Proposed Pre-Operational Testing Schedule for MS CCS 1

Section	Hole	Trip	Logging Suite	Target Data Acquisition/Objectives	Open/ Cased Hole Diameter	Depth of Survey (Ref KB=38' above MSL)
Surface Section	Open	While Drilling	Mud Logs	Drilling parameters, any fluid shows, formation cuttings. Assist with well correlation and casing seating depths decision.	26"	150' MD/TVD - 3,000' MD/TVD
		While Drilling	MWD - Directional Survey	Directional survey to determine the location of the borehole		
		Wireline	Spontaneous Potential, Gamma-ray, Resistivity, Multi-Arm Caliper, Temperature	Formation characterization; lithology and rock properties Borehole condition and diameter to aid casing and cementation operations. and baseline borehole temperature.		
	Cased	Wireline	Cement Quality and Variable density log	Determine cement bond integrity around casing to assess hydraulic isolation	20" OD CSG 18.730" ID	3,000'MD/TVD to Surface
			GR – Temperature Log	Stratigraphic correlation and cased hole temperature base line		
Intermediate Section	Open	Drilling BHA	Formation Integrity test (FIT)	Basis to assess fracture gradient to calibrate geo-mechanical model	17 ½"	~3,015' MD/TVD
		While Drilling	Mud Logs	Drilling parameters, any fluid shows, formation cuttings. Assist with well correlation and casing seating depths decision.		3,000' MD/TVD - 8,991' MD/TVD
			MWD - Directional Survey	Directional survey - deviation checks during drilling		
			PWD (pressure while drilling)	Pressure while drilling – used for pore pressure and fracture gradient calibration		8,082' MD/TVD - 8,991' MD/TVD
			LWD (GR - Resistivity)	Formation characterization and support to set intermediate casing in the Anahuac (CZ)		
		Wireline	Spontaneous Potential, Gamma-ray, Resistivity, Neutron, Density, Acoustic (Compressional and Shear). Multi-Arm Caliper,Temperature	Formation characterization: lithology and rock (petrophysical and geo-mechanical) properties, Support to generate synthetic seismic log for well to seismic ties, Borehole condition and diameter to aid casing and cementation operations, Baseline borehole temperature		3,000' MD/TVD - 8,991' MD/TVD
			Borehole Image Log (Includes capability for fracture identification)	Structural and stratigraphic features including fracture detection, borehole shape and input for geo-mechanical analysis		8,082' MD/TVD - 8,991' MD/TVD
			Side Wall Coring (rotary or percussion)	Recover rock samples for geological, petrophysical and geo-mechanical characterization		TBD Coring Point (acquire ~ 60')
	Cased	Wireline	Cement Quality and Variable density log	Determine cement bond integrity around your casing to assess hydraulic isolation	13 ⅜" OD CSG 12.415" ID	8991' MD/TVD to Surface
			Casing Inspection	Assess baseline condition of casing to assess any potential future corrosion		
			GR – Temperature/Noise Log	Stratigraphic correlation, Cased hole temperature and noise base line		
			Oxygen activation	Detect and measure water flow in or around a borehole		
		Drilling BHA	Casing Pressure Test	Evaluate the mechanical integrity of a well's casing. The test monitors for pressure loss, which indicates the presence of mechanical integrity, or the absence of leaks		
Long String Section	Open	Drilling BHA	Formation Integrity Test (FIT)	Basis to assess fracture gradient to calibrate geo-mechanical model	12 ¼"	~9,006' MD/TVD
		Coring	Whole core (Upper Confining Zone)	Porosity and permeability, other petrophysical and sedimentological information in Upper Confining Zone		TBD Coring Point (acquire ~ 60')
		While Drilling	Mud Logs MWD - Directional Survey LWD (GR - Resistivity)	Drilling parameters, any fluid shows, formation cuttings. Assist with well correlation and casing seating depths decision. Directional survey - deviation checks during drilling LWD - Identify the core points		8,991' MD/TVD to Well TD
		Coring	Whole core (Injection Zone)	Porosity and permeability, other petrophysical and sedimentological information in Injection Zone and Lower Confining Zone		TBD Coring Points (acquire ~ 75')
		Wireline	Spontaneous Potential, Gamma-ray, Resistivity, Neutron, Density, Acoustic (Compressional and Shear). Multi-Arm Caliper, Temperature	Formation characterization: lithology and rock (petrophysical and geo-mechanical) properties, Support to generate synthetic seismic log for well to seismic ties, Borehole condition and diameter to aid casing and cementation operations, Baseline borehole temperature		8,991' MD/TVD to 10,770' MD/TVD
			Borehole Image Log Resistivity	Structural and stratigraphic features including fracture detection, borehole shape and input for geo-mechanical analysis		
			Wireline Formation Tester	Formation pressures Fluid sample to obtain fluid properties (PVT) and geochemical analysis.		Target proposed Injection Intervals
			Nuclear Magnetic Resonance (NMR)	Formation porosity and permeability.		8,991' MD/TVD to 10,770' MD/TVD
			Side Wall Coring (rotary or percussion)	Recover rock samples for geological, petrophysical and geo-mechanical characterization		Targets defined by real-time drilling data
	Cased	Wireline	Cement Quality and Variable density log (Cement evaluation)	Determine cement bond integrity around your casing to assess hydraulic isolation	9 ⅝" OD CSG 8.535" ID	10,690' MD/TVD (Plug back depth) to Surface
			Casing Inspection	Assess baseline condition of casing to assess any potential future corrosion		
			GR – Temperature/Noise Log	Stratigraphic correlation, Cased hole temperature and noise base line		
			Oxygen activation	Detect and measure water flow in or around a borehole		
			Pulsed Neutron Log	Baseline assessment of thru casing formation saturation for comparison to post injection logging runs		
		Test BHA	Casing Pressure Test	Evaluate the mechanical integrity of a well casing		

Figure X.1-1 Proposed Wellbore Schematic for Minerva South CCS Well No. 001



1. 30" Conductor Pipe: 1.0" WT, 28" ID, 310.3 lb/ft, X56 Welded, plain-end, beveled conductor with drive shoe driven to refusal at 150' MD/TVD

2. 20" Surface Casing: 133 lb/ft, L80, ER at 3,000' MD/TVD
26" Hole, expected MW 9.00 ppg
Cemented with Type-1 cement up to the surface
Lead slurry 11.80 ppg (2,616 sacks, 2.71 cuft/sack); Tail slurry 14.8 ppg (1,421 sacks, 1.33 cuft/sack)
Assumed 100% excess volume.

3. 13 ⅜" Intermediate Casing: 13 ⅜", 68 lb/ft, L80 BTC from section TD to surface. 17 ½" Hole at 8,991' MD/TVD. Expected MW 10.00 ppg SBM. Cemented with Class H cement up to surface. Lead slurry 12.80 ppg (3,356 sacks; 2.10 cuft/sack); Tail slurry 14.8 ppg (1,433 sacks; 1.33 cuft/sack)
Assumed 50% excess volume in open hole section.

4. 9 ⅝" Injection Casing: 9 ⅝", 53.5 lb/ft, 25CRW-125 VAM-21, Prem Connection from 10,770' MD/TVD (Well TD) to 7,932' MD/TVD (150' above Top of Confining Zone) & 53.5 lb/ft, L80 VAM-21, Premium connection from 7,932' MD/TVD to surface. 12 ¼" Hole to 10,770' MD/TVD. Expected MW 13.50 ppg SBM.

Cemented in two stages:
Stage #1: Specialized CO_2 compatible cement slurry (PermaSet or equivalent) 14.8 ppg (1,013 sacks; 1.12 cuft/sack). Expected TOC at 7,932' MD/TVD. (DV tool). Assumed 20% excess.
Stage #2: 14.3 ppg (2,055 sacks; 1.24 cuft/sack) Class H cement lead slurry + 14.8 ppg (100 sacks; 1.12 cuft/sack) specialized CO_2 compatible cement tail slurry (PermaSet or equivalent). Cement up to the surface. No volume excess is assumed.

5. DTS/DAS Fiber Optic Cable: Downhole cable with a 150 °C temperature rating, 2 single-mode fiber acrylate clamped outside the 9 ⅝" casing from surface to TD.
Back-up fiber optic cable will be set up from surface to the depth of the 13 ⅜" casing shoe.

6. TEC (Electrical Line): Downhole cable attached outside of the tubing, with pressure/temperature gauge carriers. Downhole measurements in two locations – annulus and tubing; minimum pressure and temperature ratings of 10k psi and 150° C.

7. Annular Fluid: 9.3 ppg $CaCl_2$ inhibited brine with corrosion control (98% MgO, magnesium oxide).

8. Tubing and Packer: 4 ½" Tubing, 15.1 lb/ft, 25CRW-125, VAM-21. End of tail at 9,100' MD/TVD; Removable Production packer at 9,050' MD/TVD; Tubing hanger at ground level.

9. Perforation Interval: From 10,056' MD/TVD to 9,996' MD/TVD. Oriented perforation system.

10. Plug back TD: From 10,770' MD/TVD (Shoe Depth) to 10,690' MD/TVD (Float Collar). Shoe Track

[1] *Assumed KB height of 38' above MSL, value will be updated when rig is selected*
[2] *Exact perforation locations TBD.*

LEGEND

USDW	Type 1 Cement	[2] Oriented Perforation System, included to avoid damage to fiber optic cable	
Upper Confining Zone (Anahuac Fm)	Class H Cement with additives		
Injection Zone (Upper Frio Fm)	CO_2 compatible cement		
Lower Confining Zone (Upper Frio Fm)	$CaCl_2$ Inhibited Brine with Corrosion Control		

STATE OF LOUISIANA
PETER ERPELDING
License No. 49937
PROFESSIONAL ENGINEER
Digitally signed by Peter Erpelding
Date: 2026.04.29 11:53:05 -05'00'

Figure X.1-2 Proposed Directional Plan for Minerva South CCS Well No. 001

Minerva South CCS No. 001
Rev1_10/4/2024

GULF COAST SEQUESTRATION, LLC

Location:	CAMERON PARISH, LOUISIANA	Slot:	No. 001
Field:	Wildcat- So LA Lafayette Dist	Well:	Minerva South CCS Well No. 001
Facility:	MINERVA SOUTH	Wellbore:	Well No. 001

Well Profile Data

Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	0.00	0.000	0.000	0.00	0.00	0.00	0.00	0.00
TD	10770.10	0.000	0.000	10770.10	0.00	0.00	0.00	0.00

Targets

Name	MD (ft)	TVD (ft)	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
<No.001>Confining Zone (Rev.1)	N/A	8082.00	0.00	0.00	1259965.87	507978.59	30°02'34.1042"N	93°40'20.6300"W
<No.001>Injection Zone (Rev.1)	N/A	9141.00	0.00	0.00	1259965.87	507978.59	30°02'34.1042"N	93°40'20.6300"W
<No.001>Lower Confining Zone (Rev.1)	N/A	10828.00	0.00	0.00	1259965.87	507978.59	30°02'34.1042"N	93°40'20.6300"W

Bottom Hole Location

MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
10770.10	0.000	0.000	10770.10	0.00	0.00	1259965.87	507978.59	30°02'34.1042"N	93°40'20.6300"W

Location Information

Facility Name			Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
MINERVA SOUTH			1259869.000	507991.000	30°02'34.2075"N	93°40'21.7349"W
Slot	**Local N (ft)**	**Local E (ft)**	**Grid East (US ft)**	**Grid North (US ft)**	**Latitude**	**Longitude**
No. 001	-12.41	96.88	1259965.870	507978.590	30°02'34.1042"N	93°40'20.6300"W
OH (RT) to Ground level (At Slot: No. 001)					30ft	
Mean Sea Level to Ground level (At Slot: No. 001)					-8ft	
OH (RT) to Mean Sea Level					38ft	

Plot reference wellpath is Minerva South CCS Well No. 001 (REV-G1) 8/22/2024	Grid System: NAD27 /Lambert Louisiana SP, Southern Zone (1702), US feet
True vertical depths are referenced to OH (RT)	North Reference: Grid north
Reference wellpath measured depths are referenced to OH (RT)	Scale: True distance
OH (RT) to Mean Sea Level: 38 feet	Coordinates are in feet referenced to Slot
Mean Sea Level to Ground level (At Slot: No. 001): -8 feet	Depths are in feet
Offset wellpath MDs are referenced to each path's default MD datum	Created by: mendgeoi on 2024-08-22; Database: WA_BRO_DEFN

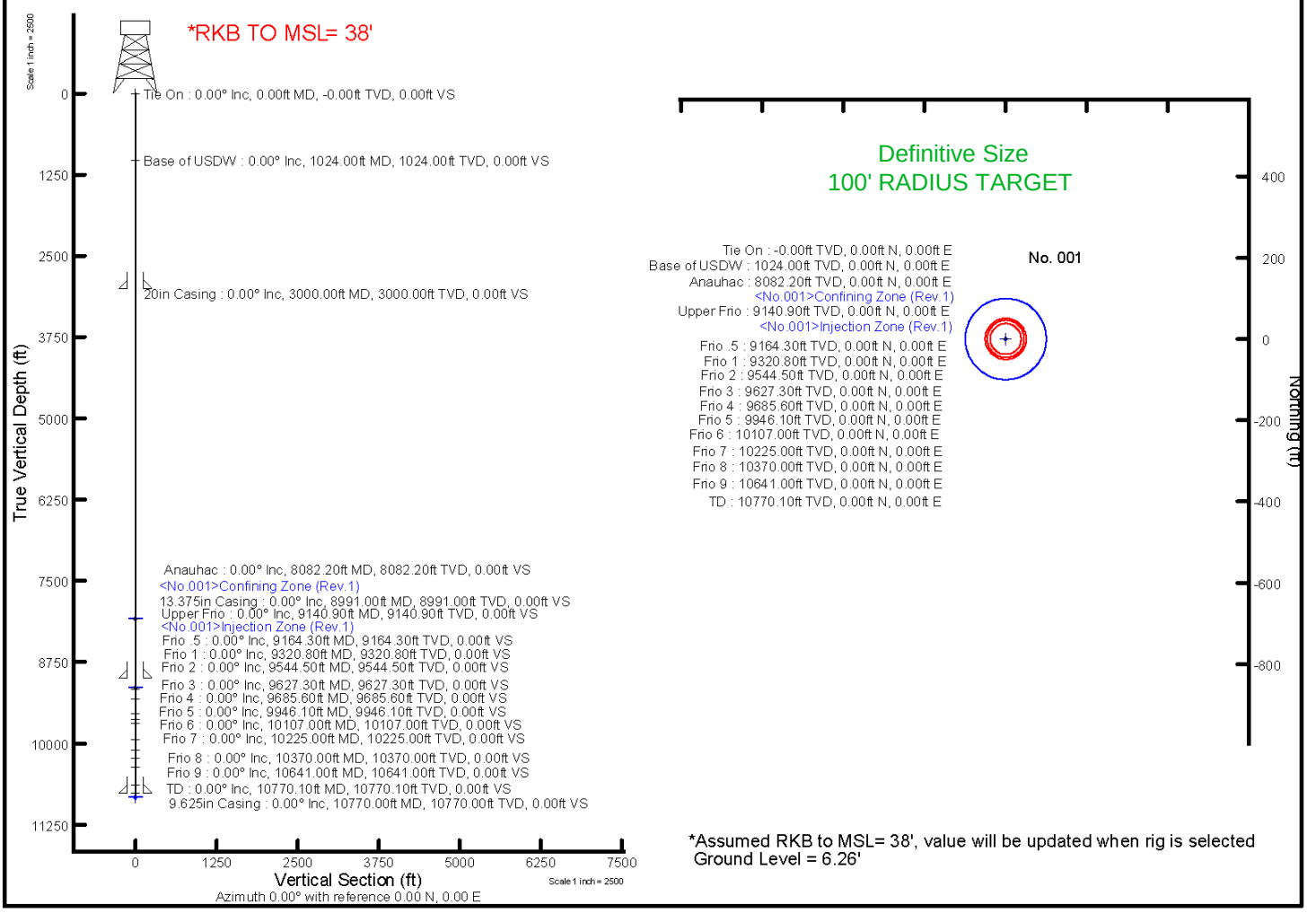
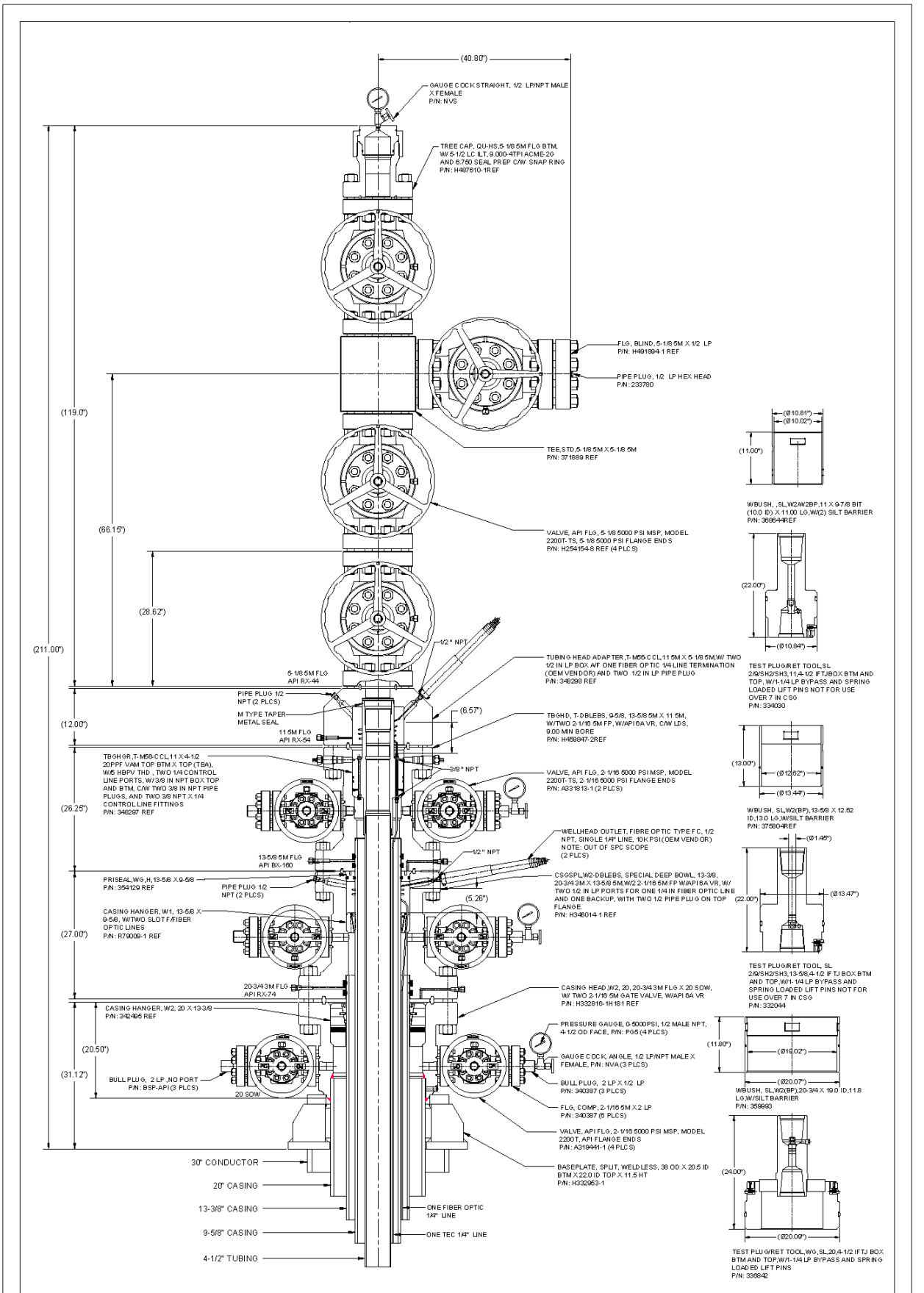


Figure X.1-3 Proposed Injector Well Head System for Minerva South CCS Well No. 001



APPENDIX X-2

Drilling Plan for

Minerva South CCS No.002

TABLES

FIGURES

FACILITY INFORMATION

Facility Name: Minerva Facility

Injection Wells: Minerva South CCS Well No. 001 (MS CCS 1)
Minerva South CCS Well No. 002 (MS CCS 2)

Facility Contact: David Cook, CEO
5599 San Felipe St., Ste. 1450, Houston, Texas 77056
(713) 419-6808; dcook@gcscarbon.com

Well Locations: Sec 3, T12S, R13W, Cameron Parish, Louisiana
MS CCS 1 (NAD 1927)
Surface: 30° 02' 34.10"N, 93° 40' 20.63"W
Bottom-Hole: 30° 02' 34.10"N, 93° 40' 20.63"W
MS CCS 2 (NAD 1927)
Surface: 30° 02' 33.84"N, 93° 40' 20.48"W
Bottom-Hole: 30° 02' 13.74"N, 93° 40' 42.07"W

PROPOSED DRILLING PLAN FOR MS CCS 2

The procedure below outlines the proposed drilling operations for Minerva South CCS No. 002 (MS CCS 2). The following documents are included to support the drilling plan:

- The proposed wellbore schematic for MS CCS 2 is depicted in Figure X.2-1. It includes the well profile, casing depths and details, cementing specifics and the proposed perforation depth range.
- The directional plan for MS CCS 2 is provided in Figure X.2-2.
- The above ground wellhead schematic that represents the proposed design for MS CCS 2 is found in Figure X.2-3.
- Table X.2-1 lists the proposed pre-operational testing schedules for MS CCS 2. See Pre-Operational Logging and Testing Program (Attachment C) for more details.

All depths are referenced from Kelly Bushing (KB), an assumed height of 38 feet (ft) above mean sea level.

1. An 8’ diameter cellar will be installed on location. The 30” conductor will be pre-installed at ~ 150’ MD/TVD in the middle of the cellar before the rig move. 30” 1.0” WT, 28” ID, 310.3 lb/ft, X56.
2. Move rig into the well pad location and rig up (RU). Install mud logging equipment. Conduct function test and pick up/make up (PU/MU) 26” bit with directional bottom hole assembly (BHA). A directional BHA with Measurement While Drilling (MWD) tool will be used if vertical control is required.
3. Drill the surface hole section using Water-based Mud (WBM) with 9 ppg mud weight

(MW) control ROP until BHA exits the 30" conductor casing. (Subject to the pore pressure calibration, all MW may be adjusted as needed to maintain wellbore conditions).

4. Continue drilling vertically to 2,238' MD/TVD. Start drilling directional at 2,238' MD / TVD with a 2.0 deg/100ft DLS increasing inclination (Inc) angle, up to 3,000' MD / 2,991' TVD with a 15.43° Inc. Drill monitoring full circulation and or partial circulations, additional torque while drilling, and extra drag while pulling out for connections
5. Reach section TD at 3,000' MD / 2,991' TVD. Circulate the hole ensuring the hole is clean, then POOH.
6. Install wireline equipment and MU logging tools as per Pre-Operational Testing schedule, detailed in Table X.2-1.
    a. If tight hole conditions are observed during logging operations or tagging out of the bottom, PU & MU bit and RIH to condition wellbore before running the casing.
7. Install Tubular Running (TRS) equipment and PU 20" 133 lb/ft, L80, ER casing. RIH to 3,000' MD / 2,991' TVD with 1 joint as shoe track and 120' spacing between centralizers (75% stand-off). Space out and circulate in preparation for cementing operations.
8. Install cement unit. Conduct cement job mixing and pumping 50 bbls of 8.34 ppg spacer fluid followed by 1,262 bbls (2,616 sacks) of 11.8 ppg Type-1 lead slurry + 337 bbls (1,421 sacks) of 14.8 ppg Type-1 Tail Slurry, release displacement plugs and displace with 9.0 ppg WBM up to 20" landing collar depth, ensure cement return at surface. Pressure up to at least 500 psi confirming set plug.
9. Release pressure and rig down cementing equipment.
10. Cut and bevel casing and install Section A 20 ¾" 3M psi Flange, W/ two 2 $^{1}/_{16}$" 3M psi gate valve wellhead section. Conduct pressure test. Note: All Pressure Tests referenced throughout this drilling plan will be performed with a surface readout pressure gauge and a chart or digital recorder.
11. Install 5 kpsi BOP stack and conduct pressure test.
12. Install wireline equipment and run as per Pre-Operational Testing schedule, detailed in Table X.2-1.
13. PU/MU 17 ½" Bit and directional BHA with MWD. RIH and tag TOC. Displace and adjust WBM with the weight (ppg) required as per proposed MW window.
14. Drill out collar, casing shoe track and to the top of casing shoe. Install high pressure pump. Close BOP annular rams. Test integrity of surface casing with at least 500 psi for 1 hour, pressure loss limited to 5%, release pressure, open BOP rams, drill out shoe and drill 10-15' new formation. Circulate out and ensure 9.00 ppg in and out.
15. Install high pressure pump, conduct Formation Integrity Test (FIT). Close BOP annular rams, apply 669 psi (EMW-13.3 ppg) of surface pressure for 1 hour, pressure loss limited

to 5%. Minimum formation strength required 13.2 ppg MW Equivalent at 3,000' MD / 2,991' TVD (13 ⅜" casing cement job hydraulic simulation). Release pressure, open BOP rams.

16. Synthetic Based Mud (SBM) displacement. Condition the fluid to be displaced by adjusting the rheological properties to achieve the lowest possible practical YP. Prepare a spacer that will cover 500' of the largest annular section. Transfer 25-30 bbls of the SBM to the slug tank. Add half a drum of emulsifier, 5 gal of wetting agent and one sack of viscosifier. Flush and clean all lines, tanks and manifolds that will be in contact with the displacement fluid. Secure all water outlets to prevent contamination of displacement fluid. Run drill string to desired depth. Begin pumping treated SBM spacer followed by the displacement fluid. Once the displacement begins it is very important to maintain a constant flow rate throughout the displacement. Do not shut pumps off for any reason until completely displaced. Reciprocate and rotate the string at least one joint every 15 mins to prevent channeling in the annulus. The mud engineer will be located near the shakers and have the circulating time calculated to check the return of the spacer. Once the spacer returns divert contaminated inter-phase to separate tank. This fluid can be re-incorporated into the system later on to avoid disposal costs. The mud engineer will be monitoring the electrical stability (ES) of the return fluid at the shakers. Once the return fluid reaches 100 volts ES, start incorporating the return fluid back into the active system. Start mixing emulsifier and wetting agent in the suction tank to compensate for the low ES of the return fluid. Circulate, normalize SBM system to 9.0 ppg
17. If FIT is successful, continue drilling 17 ½" hole section with an initial 9.00 ppg increasing to 10.00 ppg SBM. Drill vertical until BHA is out of the casing, then continue increasing hole angle with a 2.0 deg/100ft DLS until reaching 36.00° inclination at 4,038' MD / 3,922' TVD. Continue drilling, monitoring drilling parameters, and potential partial circulations and ensure the wellbore is clean.
18. Continue directional drilling 17 ½" hole section, holding 36.00° inclination to 7,090' MD / 6,391' TVD, monitoring drilling parameters and values of torque while drilling and drag when tripping in/out. Continue drilling, dropping angle at 2.5 deg/100ft DLS to reach vertical at 8,530' MD / 7,738' TVD. Monitor full circulation ensuring hole is clean.
19. Continue drilling vertically monitoring extra torque and drag (T&D) on the BHA and ensure proper hole cleaning. Real-time monitoring with logging while drilling (LWD) tools (GR – resistivity) and GR at bit to determine the desired TD at 9,636' MD / 8,844' TVD (~900' inside the Anahuac Formation, 150' above Upper Frio Formation).
20. Circulate bottoms-up ensure hole is clean and MW in-out. POOH.
21. Install wireline logging unit and run as per Pre-Operational Testing schedule, detailed in Table X.2-1. Keep monitoring well static.
    a. If tight hole conditions are observed during logging operations or tagging out of the bottom, PU & MU bit and RIH to condition wellbore before running the casing.

22. RD wireline logging unit. RU TRS and prepare for casing running for 13 ⅜" casing.
23. Install 13 ⅜" shoe + 1 join 13 ⅜", 68 lb/ft, L80, BTC + landing collar + 13 ⅜", 68 lb/ft, L80, BTC, installing centralizers (Bow Type) with ~ 60' spacing in between from 9,636' MD / 8,844' TVD to 8,330' MD / 7,538' TVD as per cement program then 40' spacing from 8,330' MD / 7,538' TVD to 3,000' MD / 2,991' TVD and 120' spacing between centralizers on casing hole section. The 13 ⅜" casing string casing string is planned to run to 9,636' MD / 8,844' TVD monitoring full displacement and values of drag according to the T&D simulation.
24. Once the casing is on bottom, circulate bottoms up, while installing cementing equipment.
25. Conduct cement job. Pump a spacer fluid of 11.50 ppg at 7 bpm, followed by 1,350 bbls (3,609 sacks) of 12.8 ppg Cement Class H Lead Slurry at 7 bpm, followed by 364 bbls (1,538 sacks) of 14.80 ppg of cement Class H tail slurry at 5 bpm. Continue to release displacement plug and start displacement with 10.0 ppg fluid. Volume to displace ~ 1,440 bbls. Estimated TOC of tail slurry at 7,709' MD / 6,934' TVD. Final pump pressure at 2 bpm ~1,178 psi. Pressure up to at least 500 psi as casing test for 15 mins. Release pressure. Ensure Cement returns at surface.
    a. Cement program could be varied depending on wellbore conditions observed while drilling. Excess of torque or tight spots while drilling and/or excess of drag while tripping BHA would require adjustments on volumes, slurry densities or program a cement in stages using DV tool.
26. Install Section B: 20 ¾ 3M psi X 13 ⅝ 5M psi, W/2 2 $^{1}/_{16}$ 5M wellhead section with 2 $^{1}/_{16}$" x 5k psi wing valves.
27. Conduct BOP and wellhead pressure test as per requirements and company policies.
28. Install wireline equipment and run as per Pre-Operational Testing schedule, detailed in Table X.2-1.
29. PU/MU 12 ¼" Bit, directional BHA, and MWD. RIH and tag TOC. Circulate and condition drilling fluid (SBM) to a 10.0 ppg.
30. Drill out collar, casing shoe track, and casing shoe. Clean out below shoe and drill 10-15'' of new formation. Circulate out and ensure 10.0 ppg in and out.
31. Install a high-pressure pump and conduct FIT in Anahuac Formation as per the formation evaluation program. Close BOP annular rams apply 1,842 psi (EMW-14.0 ppg) of surface pressure for 1 hour, pressure loss limited to 5%, release pressure, open BOP rams, SH-min value at 9,650' MD / 8,858' TVD ~ 16.07 EMW.
32. If FIT is a success, continue drilling 12 ¼" hole section with SBM as per density schedule. Stage MW starting at 10.8 ppg increasing to 11.5 ppg, with final MW planned at 13.50 ppg SBM. Drill vertical from 9,650' MD / 8,858' TVD continue drilling 12 ¼" vertical maintaining with no more than a 1.5° as maximum inclination and lower than 1.5 deg/100ft DLS if required a vertical correction, monitoring extra T&D on the BHA and

ensure proper hole cleaning. Real-time monitoring with LWD tools (GR – resistivity) and GR at bit to ensure do not drill below Mid Frio Formation. Drill at TD to 11,409 MD / 10,617' TVD. (~400' below Frio-8 Formation).

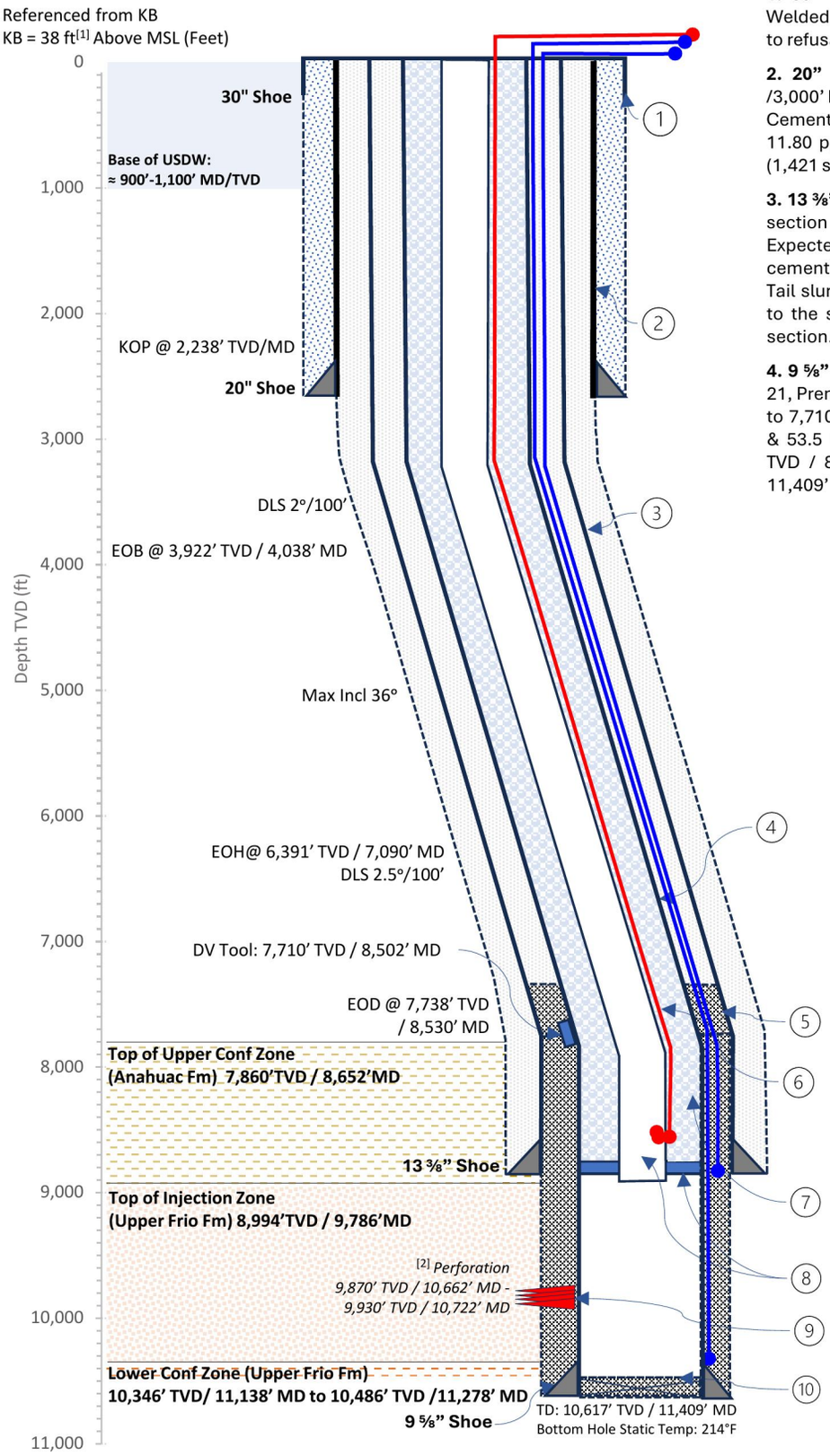
33. Reach well TD, circulate, and equalize 13.50 ppg SBM in and out; subject to the pore pressure calibration MW will be increased as needed to maintain wellbore conditions. Perform a short trip to evaluate wellbore conditions. If extra drag is observed, perform back-reaming to eliminate it and if necessary, adjust the MW.
34. POOH with drilling BHA monitoring smooth tripping conditions.
35. Install wireline logging unit and run as per Pre-Operational Testing schedule, detailed in Table X.2-1.
    a. After logging, evaluate wellbore conditions, if tight hole conditions, RIH 12 ¼" bit and BHA to recondition the wellbore before running casing.
36. Install the casing running system with Chrome casing handle tools (non-marking technology). PU/MU 9 ⅝" casing shoe + 2 joints of 9 ⅝", 53.5 lb/ft, 25CRW-125, VAM-21 + 9 ⅝" float collar + 2,827' of 9 ⅝" casing 53.5 lb/ft, 25CRW-125, VAM-21 (71 joints) + 9 ⅝" DV tool (Stage collar) + 9 ⅝" cross over (if needed) 8,502' of 9 ⅝" casing 53.5 lb/ft, L80, VAM-21.
    a. Install 9 ⅝" chrome casing centralizers, with 120' spacing in between to maintain 95% stand-off in the open hole section. Following with 270, 9 ⅝" x 12 ¼" Bow Type centralizers in the cased hole section to reach 60% standoff.
37. Once the casing is on depth, space out and install a 9 ⅝" casing hanger. Circulate and condition mud in/out monitoring possible partial circulation. Record pump rate vs pressure.
38. Install cementing unit and perform pre-job safety meeting.
39. Conduct cement operations as follows:
    a. Stage one: 45 bbls of 14.0 ppg spacer + 205 bbls (1,029 sacks) of 14.8 ppg CO_2 compatible cement (PermaSet or equivalent) unique slurry + 843 bbls of 10.8 ppg SBM (or higher as needed as per pore pressure calibration) as displacement. TOC at 8,502' MD / 7,710' TVD.
    b. Stage two: 50 bbls of spacer + 488bbls (2,209 sacks) of 14.3 ppg Class H cement lead slurry + 20 bbls (100 sacks) of 14.8 ppg CO_2 compatible cement (PermaSet or equivalent) tail slurry + bump displacement plug + 621bbls of displacement fluid (9.3 ppg $CaCl_2$ Inhibited Brine).
40. On final displacement, ensure to record final pump pressure and maintain at least 500 psi as an indication that the Diverter Toll (DV) is in close position. Then proceed to release pressure.
41. RD cementing equipment.

42. Clean Up Trip – WOC. PU slick BHA and RIH to top of collar, circulate, normalize packer fluid, 9.3 ppg. Close annular rams, pressure test casing with 1,000 psi surface pressure for 60 mins, pressure loss limited to 5%. Release pressure, open BOP rams. POH cleaning BHA.
43. Rig up (RU) the wireline unit. PU/MU logging tools and run as per Pre-Operational Testing schedule, detailed in Table X.2-1.
44. RD logging unit. Install section C of the wellhead: 9 ⅝, 13 ⅝ 5M psi X 11 5M psi, W/TWO 2 $^{1}/_{16}$ 5M psi. Conduct pressure test.
45. Rig down and move out drilling rig.
46. Secure and temporarily abandon well for delayed completion.
47. After evaluation of core and associated data, return to well with a workover rig.
48. RU wireline unit. PU/MU logging tools to run perforation correlation log.
49. Run perforation log from TD to top of injection interval. Rig down logging unit once complete.
50. RU the tubing running system with 4 ½" chrome tubing handling tools.
51. PU/MU injection tubing string and RIH as follow: Pup joint 4 ½" Tubing, 15.1 lb/ft, 25CRW-125, Prem Connection end tail at 9,730' MD / 8,938' TVD + Nipple profile 4 ½" x 3.826" ID + Pup Joint 4 ½" 15.1 lb/ft, 25CRW-125, Prem Connection + 4 ½" x 9 ⅝" Removable Production packer at 9,680' MD / 8,888' TVD + Pup joint 4 ½" Tubing, 15.1 lb/ft, 25CRW-125, Prem Connection + Nipple profile 4 ½" x 3.6" ID + 4 ½" tubing, 15.1 lb/ft, 25CRW-125, Prem Connection (~9,390' length) + + 7 joints of 4 ½", 15.1 lb/ft, 25CRW-125, Prem Connection + Tubing hanger.
52. Space out and set up the packer following service company's operational procedure.
53. RU wireline unit and make up perforating guns and run in hole to perforate approved Completion Interval #1. Oriented perforation will be used to avoid the DTS/DAS Fiber Optic cable. Once complete, RD wireline unit and conduct pressure test.
54. Land tubing hanger in wellhead. Install "H" valve on tubing hanger. RD BOP's stack and install 4 ⅛" 5M psi Christmas tree. Conduct pressure test.
55. Rig down and move out workover rig.

Table X.2-1 Proposed Pre-Operational Testing Schedule for MS CCS 2

Section	Hole	Trip	Logging Suite	Target Data Acquisition/Objectives	Open/ Cased Hole Diameter	Depth of Survey (Ref KB=38' above MSL)
Surface Section	Open	While Drilling	Mud Logs	Drilling parameters, any fluid shows, formation cuttings. Assist with well correlation and casing seating depths decision.	26"	150' MD/TVD - 3,000' MD / 2,991' TVD
			MWD - Directional Survey	Directional survey to determine the location of the borehole		
		Wireline	Spontaneous Potential, Gamma-ray, Resistivity, Multi-Arm Caliper, Temperature	Formation characterization; lithology and rock properties Borehole condition and diameter to aid casing and cementation operations. and baseline borehole temperature.		
	Cased	Wireline	Cement Quality and Variable density log	Determine cement bond integrity around casing to assess hydraulic isolation	20" OD CSG 18.730" ID	3,000'MD / 2,991'TVD to Surface
			GR – Temperature Log	Stratigraphic correlation Cased hole temperature base line		
Intermediate Section	Open	Drilling BHA	Formation Integrity test (FIT)	Basis to assess fracture gradient to calibrate geo-mechanical model	17 ½"	~3,015' MD / 3,005' TVD
		While Drilling	Mud Logs	Drilling parameters, any fluid shows, formation cuttings. Assist with well correlation and casing seating depths decision.		9,636' MD / 8,844' TVD - 3,000' MD / 2,991' TVD
			MWD - Directional Survey	Directional survey - deviation checks during drilling		
			PWD (pressure while drilling)	Pressure while drilling – used for pore pressure and fracture gradient calibration		
			LWD (GR - Resistivity)	Formation characterization and support to set intermediate casing in the Upper Confining Zone		
		Wireline	Spontaneous Potential, Gamma-ray, Resistivity, Neutron, Density, Acoustic (Compressional and Shear). Multi-Arm Caliper,Temperature	Formation characterization: lithology and rock (petrophysical and geo-mechanical) properties, Support to generate synthetic seismic log for well to seismic ties, Borehole condition and diameter to aid casing and cementation operations, Baseline borehole temperature		
			Side Wall Coring (rotary or percussion)	Recover rock samples for geological, petrophysical and geo-mechanical characterization		TBD Coring Point (acquire ~ 60')
	Cased	Wireline	Cement Quality and Variable density log	Determine cement bond integrity around your casing to assess hydraulic isolation	13 ⅜" OD CSG 12.415" ID	9,636' MD / 8,844' TVD to Surface
			Casing Inspection	Assess baseline condition of casing to assess any potential future corrosion		
			GR – Temperature/Noise Log	Stratigraphic correlation, Cased hole temperature and noise base line		
			Oxygen activation	Detect and measure water flow in or around a borehole		
		Drilling BHA	Casing Pressure Test	Evaluate the mechanical integrity of a well's casing. The test monitors for pressure loss, which indicates the presence of mechanical integrity, or the absence of leaks		
Long String Section	Open	Drilling BHA	Formation Integrity Test (FIT)	Basis to assess fracture gradient to calibrate geo-mechanical model	12 ¼"	~9,650' MD / 8,858' TVD
		While Drilling	Mud Logs	Drilling parameters, any fluid shows, formation cuttings. Assist with well correlation and casing seating depths decision.		9,636' MD / 8,844' TVD - 11,409' MD/10,617' TVD
			MWD - Directional Survey	Directional survey - deviation checks during drilling		
			PWD (pressure)	Pressure while drilling – used for pore pressure and fracture gradient calibration		
			LWD (GR - Resistivity)	Formation characterization and identify the core points		
		Wireline	Spontaneous Potential, Gamma-ray, Resistivity, Neutron, Density, Acoustic (Compressional and Shear). Multi-Arm Caliper, Temperature	Formation characterization: lithology and rock (petrophysical and geo-mechanical) properties, Support to generate synthetic seismic log for well to seismic ties, Borehole condition and diameter to aid casing and cementation operations, Baseline borehole temperature		9,636' MD / 8,844' TVD - 11,409' MD/10,617' TVD
			Side Wall Coring (rotary or percussion)	Recover rock samples for geological, petrophysical and geo-mechanical characterization		Targets defined by real-time drilling data
	Cased	Wireline	Gyro Deviation Survey	Cased Hole deviation check	9 ⅝" OD CSG 8.535" ID	~ 2,200' MD/TVD -
			Cement Quality and Variable density log (Cement evaluation)	Determine cement bond integrity around your casing to assess hydraulic isolation		
			Casing Inspection	Assess baseline condition of casing to assess any potential future corrosion		
			GR – Temperature/Noise Log	Stratigraphic correlation. Cased hole temperature and noise base line		11,329' MD / 10,537' TVD (Plug back depth) to Surface
			Oxygen activation	Detect and measure water flow in or around a borehole		
			Pulsed Neutron log	Baseline assessment of thru casing formation saturation for comparison to post injection logging runs		
		Test BHA	Casing Pressure Test	Evaluate the mechanical integrity of a well's casing. The test monitors for pressure loss, which indicates the presence of mechanical		

Figure X.2-1 Proposed Wellbore Schematic for Minerva South CCS Well No. 002



[1] *Assumed KB height of 38' above MSL, value will be updated when rig is selected*

[2] *Exact perforation locations TBD.*

1. 30" Conductor Pipe: 1.0" WT, 28" ID, 310.3 lb/ft, X56 Welded, plain-end, beveled conductor with drive shoe driven to refusal at 150' MD/TVD.

2. 20" Surface Casing: 133 lb/ft, L80, ER at 2,991' TVD /3,000' MD. 26" Hole, expected MW 9.00 ppg .
Cemented with Type-1 cement up to the surface. Lead slurry 11.80 ppg (2,616 sacks; 2.71 cuft/sack); Tail slurry 14.8 ppg (1,421 sacks; 1.33 cuft/sack). Assumed 100% volume excess.

3. 13 ⅜" Intermediate Casing: 13 ⅜", 68 lb/ft, L80 BTC from section TD to surface. 17 ½" Hole at 8,844' TVD / 9,636' MD. Expected MW 10.00 ppg SBM. Cemented with Class H cement. Lead slurry 12.80 ppg (3,609 sacks; 2.10 cuft/sack) + Tail slurry 14.8 ppg (1,538 sacks; 1.33 cuft/sack). Cement up to the surface. Assumed 50% excess volume in open hole section.

4. 9 ⅝" Injection Casing: 9 ⅝", 53.5 lb/ft, 25CRW-125 VAM-21, Prem Connection from 10,617' TVD / 11,409' MD (Well TD) to 7,710' TVD / 8,502' MD (150' above Top of Confining Zone) & 53.5 lb/ft, L80 VAM-21, Premium connection from 7,710' TVD / 8,502' MD to surface. 12 ¼" Hole to 10,617' TVD / 11,409' MD. Expected MW 13.50 ppg SBM.

Cemented in two stages:
Stage #1: Specialized CO_2 compatible cement slurry (PermaSet or equivalent) 14.8 ppg (1,029 sacks; 1.12 cuft/sack). Expected TOC at 7,710' TVD / 8,502' MD. (DV tool). Assumed 20% excess volume in open hole section.
Stage #2: 14.3 ppg (2,209 sacks; 1.24 cuft/sack) Class H cement lead slurry + 14.8 ppg (100 sacks; 1.12 cuft/sack) specialized CO_2 compatible cement tail slurry (PermaSet or equivalent). Cement up to the surface. No excess volume was considered.

5. DTS/DAS Fiber Optic Cable: Downhole cable with a 150 °C temperature rating, 2 single-mode fiber acrylate clamped outside the 9 ⅝" casing from surface to TD.
Back-up fiber optic cable will be set up from surface to the depth of the 13 ⅜" casing shoe.

6. TEC (Electrical Cables): Downhole cable attached outside of the tubing, with pressure/temperature gauge carriers. Downhole measurements in two locations – annulus and tubing; minimum pressure and temperature ratings of 10k psi and 150° C.

7. Annular Fluid: 9.3 ppg $CaCl_2$ inhibited brine with corrosion control (98% MgO, magnesium oxide).

8. Tubing and Packer: 4 ½" Tubing, 15.1 lb/ft, 25CRW-125, VAM-21, End of tail at 8,938' TVD / 9,730' MD; Removable Production packer at 8,888' TVD / 9,680' MD; Tubing hanger at ground level.

9. Perforation Interval: From 9,870' TVD / 10,662' MD to 9,930' TVD / 10,722' MD. Oriented perforation system.

10. Plug back TD: From 11,409' MD / 10,617' TVD (Shoe Depth) to 11,329' MD / 10,537' TVD (Float Collar). Shoe Track

LEGEND

USDW	Type 1 Cement	[2] Oriented Perforation System, included to avoid damage to fiber optic cable	
Upper Confining Zone (Anahuac Fm)	Class H Cement with additives		
Injection Zone (Upper Frio Fm)	CO_2 compatible cement		
Lower Confining Zone (Upper Frio Fm)	$CaCl_2$ Inhibited Brine with Corrosion Control		

Figure X.2-2 Proposed Directional Plan for Minerva South CCS Well No. 002

Minerva South CCS No. 002
Rev1_10/4/2024

GULF COAST SEQUESTRATION, LLC

Location:	CAMERON PARISH, LOUISIANA	Slot:	No. 002
Field:	Wildcat- So LA Lafayette Dist	Well:	Minerva South CCS Well No. 002
Facility:	MINERVA SOUTH	Wellbore:	Well No. 002

Well Profile Data

Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	0.00	0.000	224.228	0.00	0.00	0.00	0.00	0.00
KOP	2238.00	0.000	224.228	2238.00	0.00	0.00	0.00	0.00
End of Build	4038.27	36.005	224.228	3922.10	-392.17	-381.74	2.00	547.28
End of Hold	7089.86	36.005	224.228	6390.72	-1677.64	-1633.01	0.00	2341.20
End of Drop	8530.08	0.000	224.228	7738.00	-1991.38	-1938.40	2.50	2779.03
Injection Zone	9786.08	0.000	224.228	8994.00	-1991.38	-1938.40	0.00	2779.03
TD	11409.08	0.000	224.228	10617.00	-1991.38	-1938.40	0.00	2779.03

Targets

Name	MD (ft)	TVD (ft)	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
<No.002>Confining Zone (Rev.1)	N/A	7860.00	-1991.38	-1938.40	1258040.06	505960.09	30°02'13.7364"N	93°40'42.0672"W
<No.002>Injection Zone (Rev.1)	9786.08	8994.00	-1991.38	-1938.40	1258040.06	505960.09	30°02'13.7364"N	93°40'42.0672"W
<No.002>Lower Confining Zone (Rev.1)	N/A	10661.00	-1991.38	-1938.40	1258040.06	505960.09	30°02'13.7364"N	93°40'42.0672"W

Bottom Hole Location

MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
11409.08	0.000	224.228	10617.00	-1991.38	-1938.40	1258040.06	505960.09	30°02'13.7364"N	93°40'42.0672"W

Location Information

Facility Name			Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
MINERVA SOUTH			1259869.000	507991.000	30°02'34.2075"N	93°40'21.7349"W
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
No. 002	-39.68	109.32	1259978.310	507951.320	30°02'33.8368"N	93°40'20.4822"W

OH (RT) to Ground level (At Slot: No. 002)	30ft
Mean Sea Level to Ground level (At Slot: No. 002)	-8ft
OH (RT) to Mean Sea Level	38ft

Plot reference wellpath is Minerva South CCS Well No. 002 (REV-F.2) 9/6/2024	Grid System: NAD27 / Lambert Louisiana SP, Southern Zone (1702), US feet
True vertical depths are referenced to OH (RT)	North Reference: Grid north
Reference wellpath measured depths are referenced to OH (RT)	Scale: True distance
OH (RT) to Mean Sea Level: 38 feet	Coordinates are in feet referenced to Slot
Mean Sea Level to Ground level (At Slot: No. 002): -8 feet	Depths are in feet
Offset wellpath MDs are referenced to each path's default MD datum	Created by: mendgeol on 2024-09-06; Database: WA_BR0_DEFN

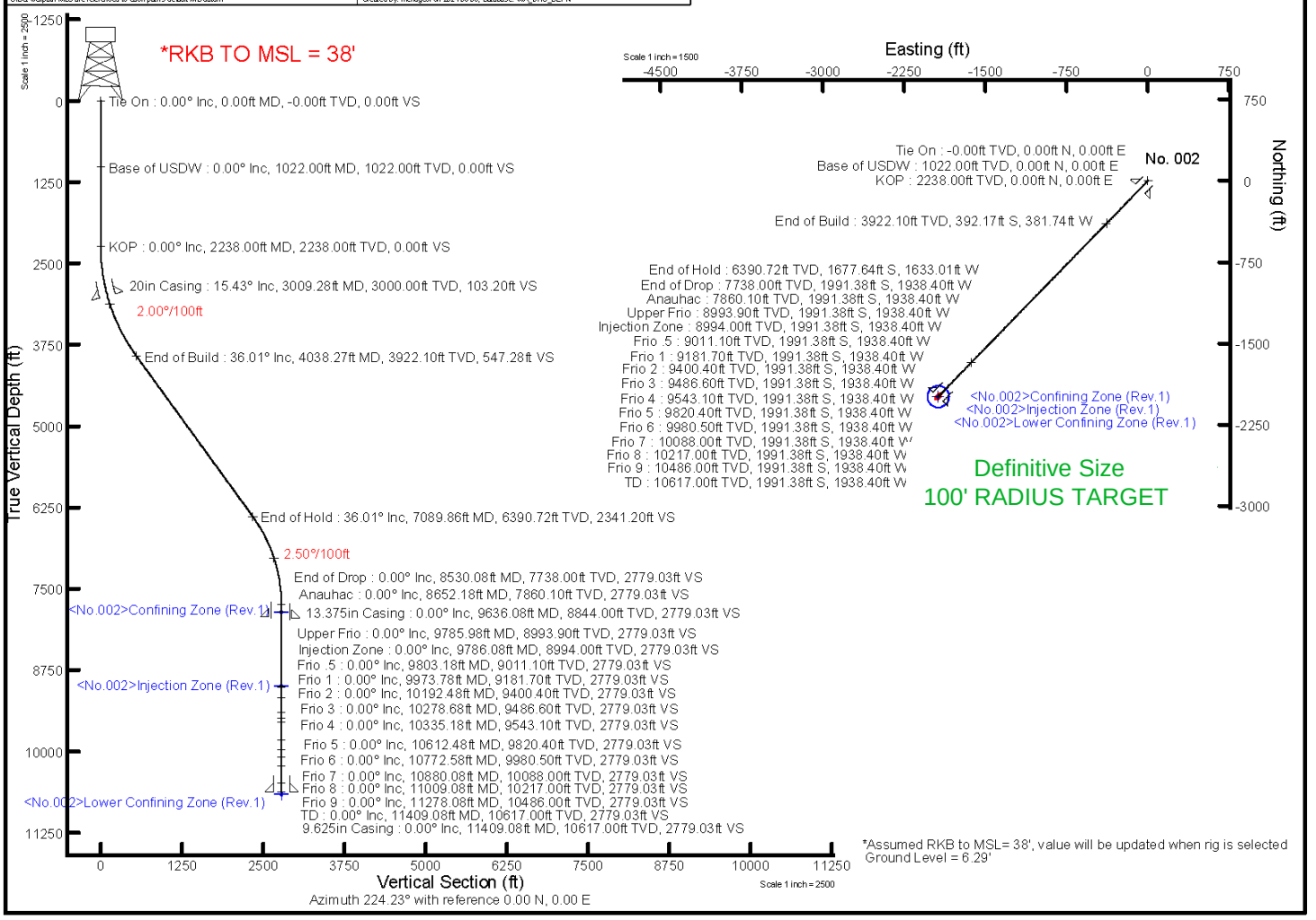


Figure X.2-3 Proposed Injector Well Head System for Minerva South CCS Well No. 002