Eight Point Technical Plan

1. **Geologic Tops** -

Formation	Top - MD	Top- TVD	Substance
Nacimiento	596’	596’	Possible water flows
Ojo Alamo	1801’	1801’	Water
Kirtland	1986’	1986’	
Casing Exit Lateral B	2515’	2515’	NA
Casing Exit Lateral A	2637’	2637’	NA
Fruitland	2666’ Lat A 2675’ Lat B	2666’	Gas/Water
TD (Lateral B)	3885’	2810’	Gas/Water
TD (Lateral A)	4008’	2921’	Gas/Water

2. **Pressure control equipment**

- BOP stack will include
  - 3M Double Ram with outlets between rams for choke and kill lines
  - 3M Annular
  - Rotating Head

- Estimated min vertical depth = 2500 ft TVD.
- Bottom Hole Pressure = 1400 psi (estimated).
- Minimum BOP Working Pressure = 1400 psi - .22 psi/ft * 2500 ft = 850 psi
- BOPE of 2,000 psi (2M) working pressure is required, but well will be drilled with 3M stack.
- See attached BOP diagram

3. **Complete information on the drilling equipment, casing and cementing program –**

Proposed Casing And Cementing Program				
Size of Hole	**Size of Casing**	**Weight/Foot**	**Proposed Setting Depth (MD)**	**Quantity of Cement**
Lat A 6-1/4”	4-1/2” liner	11.6#, L-80, BTC, New	2637-4008’	Pre-perforated liners left un-cemented
Lat B 6-1/4”	4-1/2” liner	11.6#, L-80, BTC, New	2515-3885’	Pre-perforated liners left un-cemented

4. **Information on Mud System -**

Mud Program				
Interval (MD)	**Mud Type**	**Weight (ppg)**	**Water/Fluid Loss**	**Additives**
All Drilling out of casing exits	LSND	8.4-8.7	Some control	Polymer, and LCM as required

5. **Testing, Logging, Coring** -

- Logs: Cased hole GR-CCL-CBL will be run in existing 7" casing
- MWD LWD(GR) outside casing exit to both laterals TD
- Mudlog from Casing Exits to TD, taking samples every 10'
- Coring: No coring is planned
- DST: No planned drill stem test

6. **Expected BHP, abnormal temperatures and pressures, and hazards –**

- No overpressured intervals expected
- No H2S anticipated
- Possible lost circulation in Fruitland to be handled if it occurs with standard LCM products

7. **Other information** –

This is a dual lateral Horizontal re-entry out of existing 7" casing. Both laterals will be drilled in the same direction in different coal seams. Lateral A will be drilled first out of the casing exit. The liner will be run in Lateral A. Lateral B will be drilled out of a second casing exit. Lateral B will be lined.