MINIMUM BLOWOUT PREVENTER REQUIREMENTS

2.,000 psi Working Pressure

2 MWP

Min. Min. Nominal 1.0. Item No Flowline 1 2" 2 Fill up line Drilling nipple 3 4 Annular preventer Two single or one dual hydraulically 5 operated rams Drilling spool with 2" min. kill line and 6a 2"Choks 3" min choke line outlets 2" min. kill line and 3" min. choke line 6b outlets in ram. (Alternate to 6a above.) Gale 0 3-1/8" 7 Valve Plug 🛛 8 Gate valve-power operated 3-1/8" Line to choke manifold 3* 9 Gate 🗋 2-1/18" 10 Valves Plug C 2-1/16* Check valve 11 12 Casing head Gale D 1-13/16* 13 Valve Plug 🛛 Pressure gauge with needle valve 14 2" Kill line to rig mud pump manifold 15



		OPTIONAL		
16	Flanged valve		1-13/16"	

CONTRACTOR'S OPTION TO FURNISH:

- 1. All equipment and connections above bradenhead or casinghead. Working pressure of preventers to be 2,000 psl, minimum.
- 2.Automatic accumulator (80 gallon, minimum) capable of closing BOP in 30 seconds or less and, holding them closed against full rated working pressure.
- 3.BOP controls, to be located near drillers position.
- 4.Kelly equipped with Kelly cock.
- Inside blowout prevventer or its equivalent on derrick floor at all times with proper threads to fit pipe being used.
 Kelly saver-sub equipped with rubber
- casing protector at all times.
- 7.Plug type blowout preventer tester.
- Extra set pipe rams to fit drill pipe in use on location at all times.
- 9. Type RX ring gaskets in place of Type R.

MEC TO FURNISH:

- 1.Bradenhead or casinghead and side valves.
- 2.Wear bushing, if required.

GENERAL NOTES:

- 1.Deviations from this drawing may be made only with the express permission of MEC's Drilling Manager.
- 2.All connections, valves, fittings, piping, etc., subject to well or pump pressure must be flanged (suitable clamp connections acceptable) and have minimum working pressure equal to rated working pressure of preventers up through chore. Valves must be full opening and suitable for high pressure mud service.
- 3. Controls to be of standard design and each marked, showing opening and closing position.
- 4. Chokas will be positioned so as not to hamper or delay changing of choke beans. Replaceable parts for adjustable choke, other bean sizes, retainers, and choke wrenches to be conveniently located for immediate use.
- All values to be equipped with handwheels or handles ready for immediate use.
- 6. Choke lines must be suitably anchored.

- 7.Handwheels and extensions to be connected and ready for use.
- Valves adjacent to drilling spool to be kept open. Use outside valves except for emergency.
- 9.All seamless steel control piping (2000 psi working pressure) to have flexible joints to avoid stress. Hoses will be permitted.
- 10.Casinghead connections shall not be used except in case of emergency.
- 11.Do not use kill line for routine fill-up operations.

STACK REQUIREMENTS

MACK ENERGY CORPORATION EXHIBIT #1-A