BOP AND RELATED EQUIPMENT CHECK LIST

3M SYSTEM:

Annular preventer, double ram, or two rams with one being blind and one being a pipe ram

Kill line (2-inch minimum)

1 kill line valve (2-inch minimum)

1 Choke line valve

2 Chokes (refer to diagram in Attachment 1) on Choke Manifold

Upper Kelly cock valve in open position with handle available

Safety valve (in open position) and subs to fit all drill strings in use (with handle available)

Pressure gauge on choke manifold

2 inch minimum choke line

Fill-up line above the uppermost preventer

The BOPs will be pressure tested according to Onshore Order #2 III, A 1 and 30% safety factor.

Attachment I

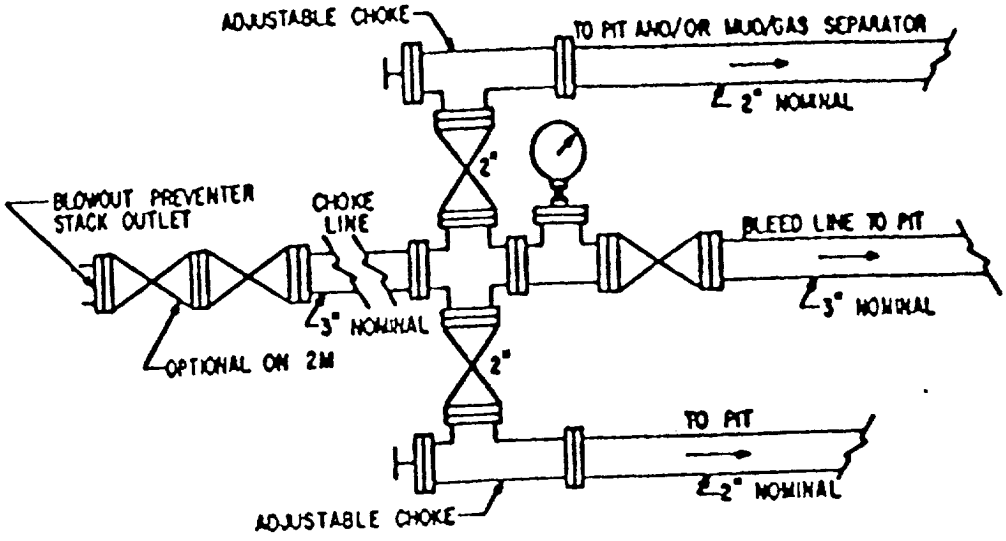
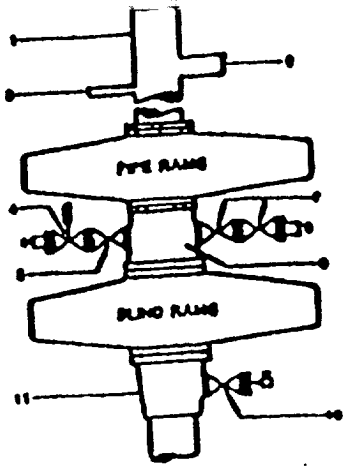


FIG. 3.A.1

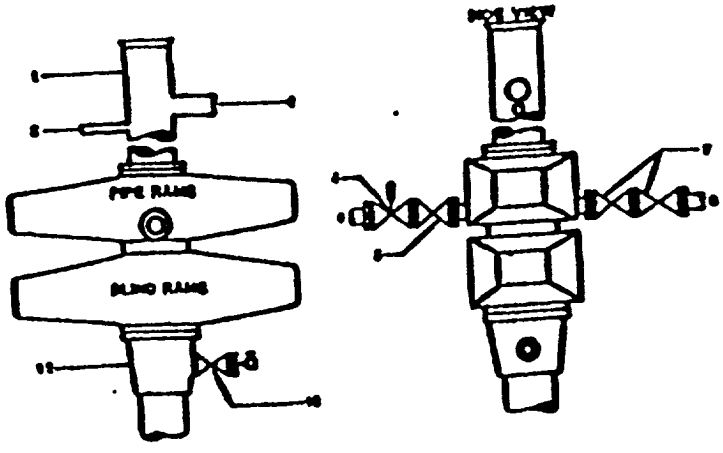
TYPICAL CHOKE MANIFOLD ASSEMBLY
FOR 2M AND 3M RATED WORKING
PRESSURE SERVICE – SURFACE INSTALLATION



1. BELL NIPPLE
2. FLOW LINE
3. FILL-UP LINE
4. 3" M PRESSURE OPERATED CHOKE LINE VALVE
5. 3" M GATE VALVE
6. 3" M CHOKE LINE TO MANIFOLD
7. 3" M GATE VALVE
8. 3" M KILL LINE
9. DRILLING SPOOL
10. 2" M OR M GATE VALVE WITH NEEDLE VALVE
11. CASING HEAD HOUSING

NOTE: THE DRILLING SPOOL MAY BE LOCATED BELOW BOTH SETS OF RAMS IF A DOUBLE PREVENTER IS USED AND IT DOES NOT HAVE SUITABLE OUTLETS BETWEEN RAMS

Figure 7-9. Standard Hydraulic Blowout Preventer Assembly
3 M Working Pressure Alternative 1



1. BELL NIPPLE
2. FLOW LINE
3. FILL-UP LINE
4. 3" M PRESSURE-OPERATED CHOKE LINE VALVE
5. 3" M GATE VALVE
6. 3" M CHOKE LINE TO MANIFOLD
7. 3" M GATE VALVE
8. 3" M KILL LINE
10. 2" M OR M GATE VALVE WITH NEEDLE VALVE
11. CASING HEAD HOUSING

Figure 7-10. Standard Hydraulic Blowout Preventer Assembly
3 M Working Pressure Alternative 3 (without Drilling Spool)

2.8 TESTING BLOWOUT PREVENTER EQUIPMENT

2.8.1 Pressure Test Frequency

All rams, annulars, valves, choke and kill lines, choke manifold, kelly valves, and safety valves should be pressure tested at the following frequencies:

1. On installation of blowout preventers.

2. After setting casing and before drilling cement.

3. Every 7 days or on first trip out of hole after 7 days since previous pressure test.

4. After any component of the blowout preventer assembly is disassembled, replaced, or repaired (this includes lines, valves, or choke manifold). In this case, the component changed may be the only component tested.

5. Any time the Wellsite Supervisor requests testing.

7. In addition to the above tests, subsea BOPs shall be tested on test stump, prior to installation or reinstallation of the blowout preventer assembly. Operating chambers are to be tested in addition to all pipe rams, valves etc.

2.8.2 Function Test Frequency

Surface BOPS

All rams, annulars, valves, and other items specified below, should be function-tested at the following intervals:

1. On initial installation from all control panels.

2. After each trip out of hole alternating between driller's and remote control panel but not more than once every twenty-four (24) hours. Close pipe/blind rams only.

   NOTE: Pipe rams will only be closed with pipe in the hole.

Sub-Surface BOPs

All rams, pipe ram locks, fail-safe valves, or other subsea items specified below should be function-tested at the following intervals:

1. Prior to running the assembled blowout preventer stack, function test all components with both control pods from the drillers and remote control panels.

2. After initial installation of the blowout preventer stack or after any control components have been repaired or replaced. Function test all components, except wellhead connector, using both control pods from the drillers and remote control panels.

3. Blind/shear rams each trip out of the hole alternating between Drillers and remote control panels.

   NOTE: Do not leave blind/shear rams closed while out of the hole.

2.8.3 Test Pressures

The following Tables 2.3 and 2.4 shall be used to identify which test is appropriate and at what pressure shall be applied for surface and subsea BOPs.

Table 2.3
SURFACE BOPE PRESSURE TEST

TEST	INTERVAL
Low Pressure	Test to 200-300 psi prior to each high pressure test.
Initial Installation	Test all rams, annulars, valves, choke manifold, kelly valves, and safety valves to the lesser of the following pressures. • Rated working pressure of the component in the blowout preventer assembly with the exception of annular preventer which is to be tested to 70% of the rated working pressure. • The API rated casing burst pressure of the last casing to be utilized in the well with the BOP assembly being tested. • Rated working pressure of the casing head. • If "Cup Tester" is used, do not exceed 80% of the API rated burst pressure of the casing.
Repair	Repaired or replaced components are to be tested to the same pressures used in the Initial Test.
Weekly and After Setting Casing	Test all rams, annulars, valves, choke and kill lines, choke manifold, kelly valves, and safety valves, to the lesser of the following pressures. • 50% of the rated working pressure of the component to be tested. • 80% of the API rating of the casing burst pressure then in the well. • Test blind rams during internal casing pressure test. (Refer to drilling program for test pressures.)
Accumulator	Test accumulator to the manufacturer's rated working pressure. Test the accumulator for time to pump up to specifications. A accumulator performance test as per Section 2.8.7 should be performed on initial installation and subsequently as deemed necessary.

Table 2.4
SUBSURFACE BOPE PRESSURE TEST

TEST	INTERVAL
Low Pressure	Test to 200-300 psi prior to each high pressure test.
Test Stump	Test all rams, annulars, fail-safe valves, operating chambers, choke manifold, kelly valves, and safety valves to the lesser of the following pressures. • Rated working pressure of the component in the blowout preventer assembly with the exception of annular preventer which is to be tested to 70% of the rated working pressure. • The API rated casing burst pressure of the last casing to be utilized in the well with the BOP assembly being tested.
Initial Installation	Test connector seal, choke line, and kill line to that pressure specified for testing the pipe rams during the stump test. Test remainder of the BOP stack to that pressure specified during weekly tests.
Repair Test	Same as Stump Test. Surface component repairs or replacements can be tested separately.
Weekly and After Setting Casing	Test all rams, annulars, fail-safe valves, choke and kill lines, choke manifold, kelly valves, and safety valves, to the lesser of the following pressures: • 50% of the rated working pressure of the component to be tested. • 80% of the API rating of the casing burst pressure then in the well. • Test blind rams during internal casing pressure test. (Refer to drilling program for test pressures).

2.8.4 Blowout Preventer Test Practices

All pressure tests shall be witnessed by Wellsite Supervisor on location. Charts shall be certified by the Wellsite Supervisor. All tests shall be recorded on Phillips' Daily Drilling Report, the IADC Report, and the Phillips BOP Test Form. A reproducible copy of the Phillips BOP Test Forms can be found in Chapter 9.

Drilling Contractor form can be acceptable if comparable to the Phillips BOP form.

Hold all low-pressure tests for three minutes and high pressure tests for five minutes or until the Wellsite Supervisor is satisfied that there are no leaks.

The following items should be addressed:

1. Prior to testing, all lines and valves will be thoroughly flushed to ensure that the system is clear. Test all opening and closing control lines to 1500 psi and inspect for leaks.

2. If necessary, run a stand of drill collars below the test plug to properly seat the test tool.

3. Precautions should be taken to avoid pressuring the casing below the test tool.

4. The running string is to be full of fluid (or antifreeze solution) for immediate indication of test tool leakage.

5. All pipe rams, blind/shear rams, blind rams, annular preventers, valves, fail-safe valves, choke and kill lines are to be tested at the frequencies and pressures outlined in this section.

6. Drillpipe safety valve and lower and upper kelly valves, inside BOP are to be tested from below at pressures and frequencies outlined in this section.

7. Test fluids are to be bled back to pump unit in a safe manner.