AMERADA HESS CORPORATION

STANDARD PROCEDURES

FOR

BLOW OUT PREVENTION

AND CONTROL

EQUIPMENT

The following blow out prevention, monitoring and control equipment is to be installed on all AHC operated drilling wells.*

1. Minimum of 2 ram type B.O.P.'s with pipe rams in lower preventor and blind rams in the upper preventor with a flow cross flanged between. A third B.O.P. should be required when operating with a tapered drill string. The B.O.P.'s should have at lease the same pressure rating as the well head on which they are installed. The preventors are to be operated hydraulically by an adequate opening and closing system. Manual hand wheels with extensions are to be attached to the B. O. P. 's.
2. 1-bag type B.O.P., hydraulically operated as above, with an element in good condition, and to be of at least the same pressure rating as the ram type B.O.P. -- up to 10,000 PSI.
3. B.O.P. manifold with hydraulic and manual inside valves and with two choke lines and one open line with proper block valves. All piping and valves to be of at least the same pressure rating as the B.O.P. stack.
4. Pit level monitoring device with at least one read out device at the driller's station.
5. Flow rate monitoring device with pump stroke counters connected to both pumps and with automatic trip fill up device with total read out device at the driller's station.

In addition to the equipment listed above, the following equipment is to be installed on any AHC operated drilling well that expects to drill an abnormally pressured zone, or is considered a wildcat well:

6. Hydraulically operated adjustable choke of at least the same pressure rating as the manifold to which it is connected.
7. Adequate mud gas atmospheric separator and mechanical degasser.
8. Automatic mud weighing device with chart read out recording at least the return mud weight.

(EQUIPMENT-cont'd.)

9. Chart read out of the flow rate, and pit volume totalizer devices listed above.

10. At least a portable mud gas detector and shale density kit, or when conditions or expectations warrant -- a complete mud logging unit is to be installed.

11. Adequate mixing facilities and storage for bulk barite materilas.

* Items 1through 5 may be subject to some variations, as unusual conditions arise.

PRECAUTIONS

1. Properly rated and perfectly operating blow out preventors and control equipment are installed on the well.
2. At least the following devices are installed and monitored; Pit volume totalizer, flow rate recorder, and trip fill up counter. In addition, pump strokes, pump pressure, mud weight, and bit weight are analyzed for unusual values. On some of the more complex wells, an adjustable choke, degasser, mud weighing device, mud logging unit and bulk barite facilities will also be installed and monitored.
3. Drilling breaks are checked for flow at 3 feet and 10 feet into the break. If the break is of considerable magnitude, it is circulated out, especially if drilling in the proximity of a transition zone.
4. Gas cut mud is considered as a warning, and its cause and extent examined to satisfaction.
5. The hole is filled each 5 stands while pulling out of the hole and pump strokes and pit level decrease are measured and compared against calculated displacement values.
6. Formation pore pressures and fracture pressures are calculated from electric logs and used to aid in proper casing seat selection and mud weight ranges.

PREPARATIONS

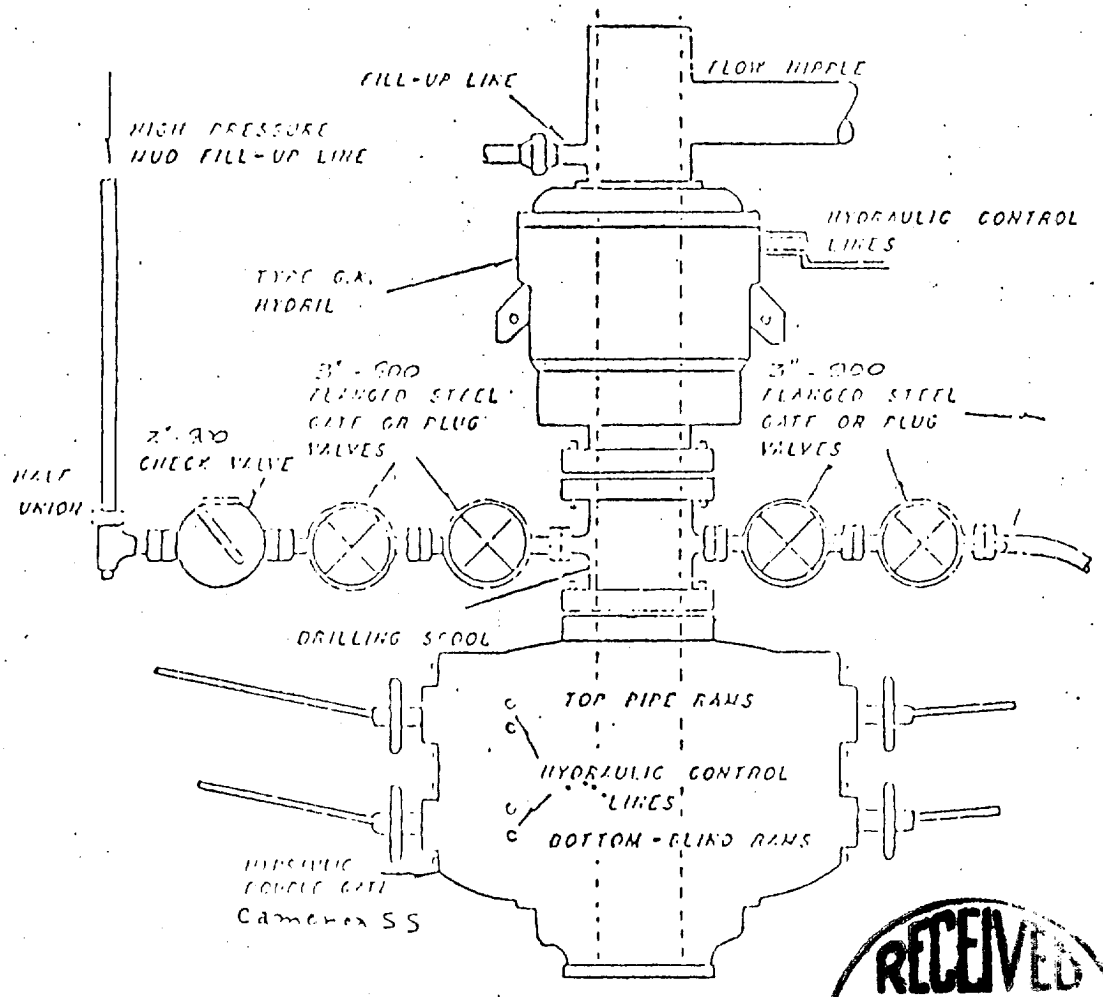
1. Maximum safe pressure valves are calculated and made known for surface equipment and all casing strings, along with fracture pressure at deepest casing shoe or weakest exposed formation.
2. Conduct regularily scheduled (every 5-7 days or as conditions warrant) pressure tests of blow out preventors and control equipment to maximum working pressure with clear water. Check flange bolts for tightness.
3. Work blow out preventors, hydraulic valves, and adjustable choke every trip and pump through choke manifold every other trip.
4. Have choke lines tied into a stack (atmospheric) separator.
5. Establish who has the responsibility for detecting a kick and shutting the well in. This should include checking fill up on trips and watching the hole while other operations are being conducted.
6. Establish who will do what during the killing operations explain to all why each job is important to the success of killing the well.
7. Conduct surprise drills on kick detection and shut in procedures.
8. For maximum safety it is important that pipe rams be placed in the bottom ram type preventor so the well can be shut in if something cuts out in the upper section of the B.O.P. stack or if it is necessary to change rams.
9. Use clean hydraulic oil in the accumulator unit and check level weekly.
10. Each person who is to operate the hydraulic adjustable choke should be completely familiar with the mechanics and operation of the choke.
11. In order to provide necessary data for the killing operation, pump pressures are recorded each tour for pump speeds of 20 and 30 strokes per minute. This data is also repeated if the mud weight is increased during a tour.

DETECTION

The importance of rapid kick detection and fast shut in cannot be over-stressed. Kicks can be detected by the following indications, or combinations thereof:

1. Increase in surface pit volume as detected by pit volume totalizer or a man on the pits.
2. Increase in return mud flow rate as detected by the flow rate monitor.
3. Decrease in drill pipe pressure, caused by oil, gas, or salt water entering the annulus and unbalancing the hole.
4. Gas or salt water cut mud returns caused by a kelly cut, shale gas, drilled pore volume, trip bottoms up, or drilling a high pressure-low volume formation.
5. Rate of penetration increase, especially if drilling in the proximity of an abnormally pressured zone.
6. Hole swabbing on trips as detected by the hole taking an insufficient amount of mud for the calculated pipe displacement, or the occurence of a high concentration of gas upon circulating bottoms up after a trip.

12" - 900 BOP Stack



CHOKE MANIFOLD ASSEMBLY
5000 Psi W. P. 10,000