

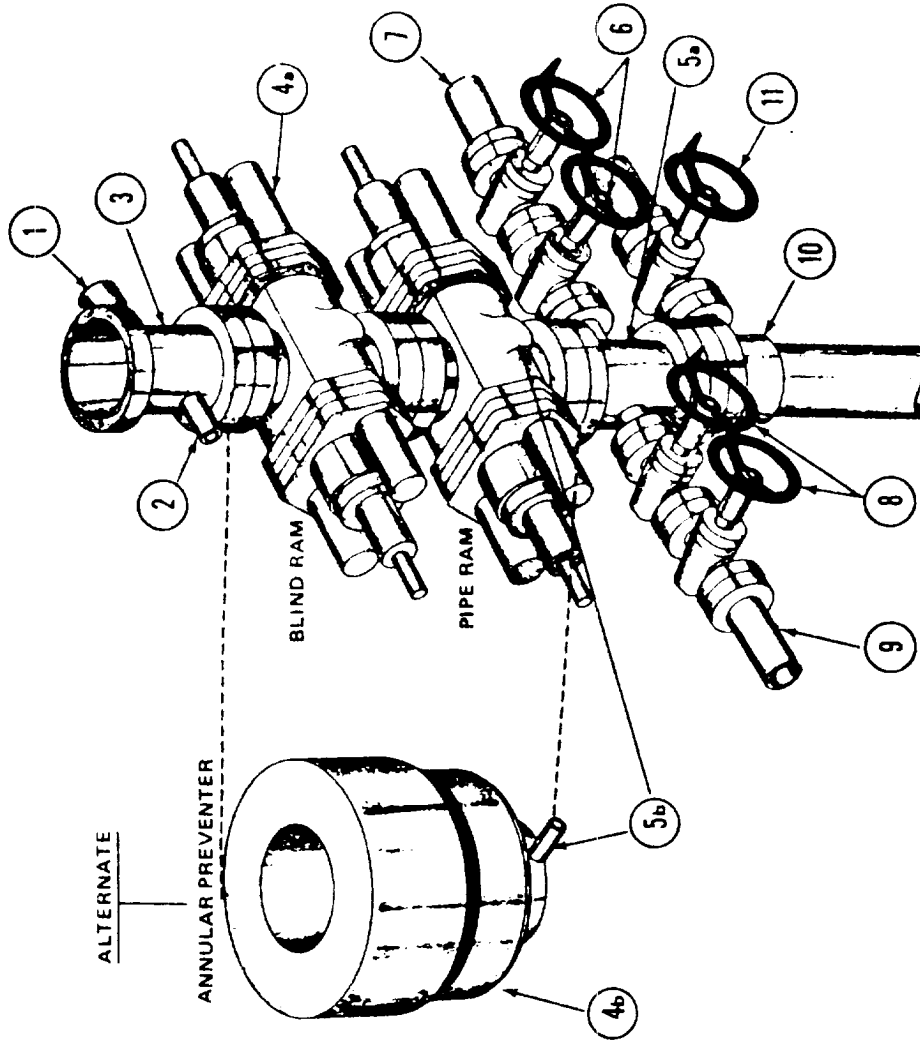
TO BE INSTALLED AT 450'

DRAWING & CHECK LIST 102
SHELL CLASS 2M
SURFACE INSTALLATIONS NORMAL

SHELL MINIMUM BOP STACK REQUIREMENTS				
No.	Item	Min. I.D.	Min. Nominal	
1	Flowline			
2	Fill up line		2"	
3	Drilling nipple			
4a	Two single or one dual hydraulically operated rams*			
4b	Annular Preventer			
5a	Drilling spool with 2" and 2" outlets			
5b	2" outlets in ram or annular preventer. Run kill line and choke line from these outlets. (Alternate to 5a above.)			
6	Gate Valves	2-1/16"		
7	Line to choke manifold		2"	
8	Gate Valves	2-1/16"		
9	Line to rig mud pump manifold		2"	
10	Casing spool			
11	Gate Valve	1-13/16"		

OPTIONAL	
12	Wear flange or bore protector

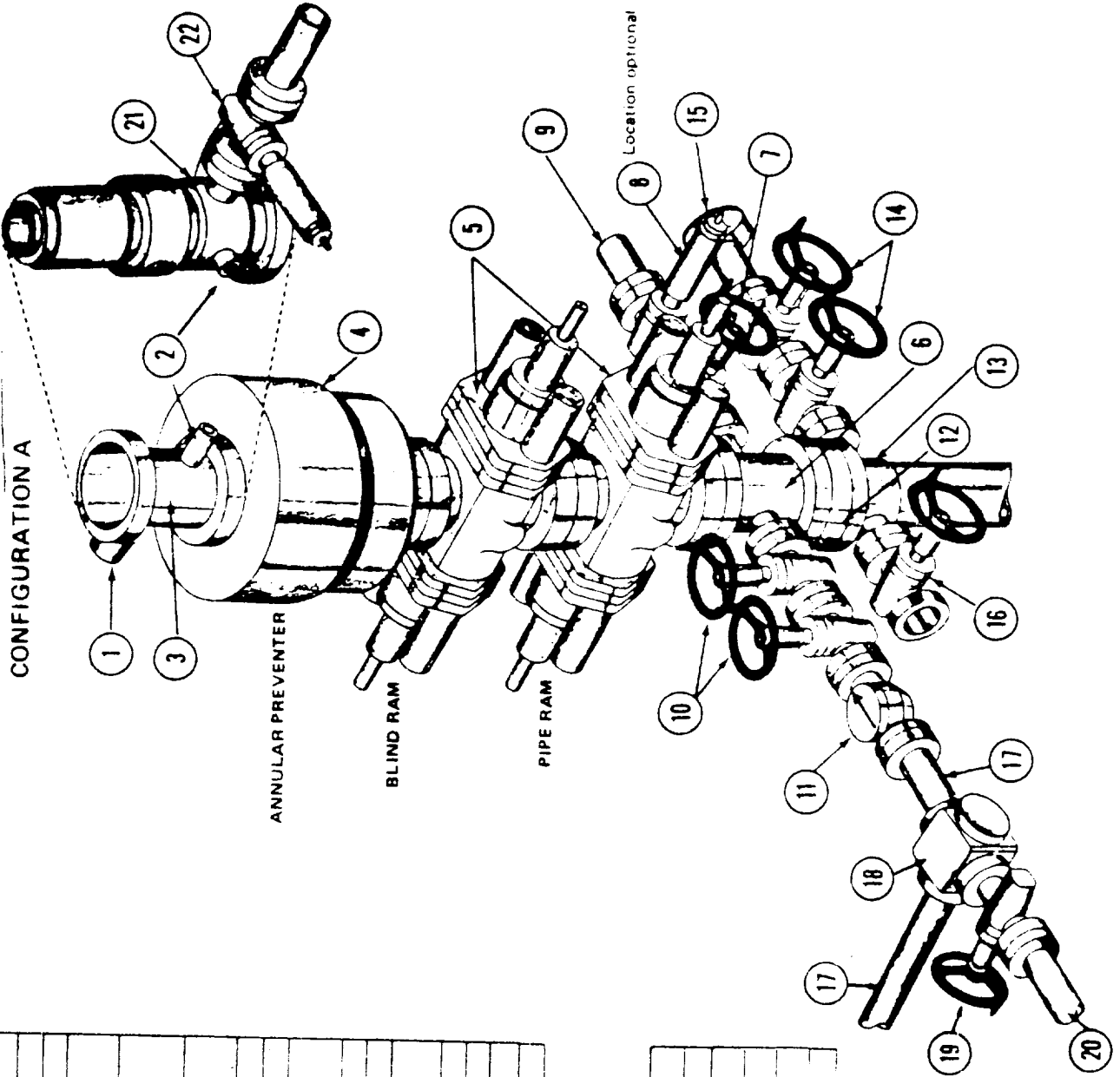
* For well servicing -- not mandatory to be hydraulically operated.



NOTE: Second wing valve on choke (6) and kill (8) lines
not mandatory unless drilling below 2,000'.

TO BE INSTALLED AT 5200'

DRAWING & CHECK LIST 104A
SHELL CLASS 5M
SURFACE INSTALLATIONS NORMAL



SHELL MINIMUM BOP STACK REQUIREMENTS				
No.	Item	Min. I.D.	Min. Nominal	
1	Flowline		7"	
2	Fill up Line		2"	
3	Drilling Nipple			
4	Annular Preventer			
5	Two single or one dual hydraulically operated rams			
6	Drilling spool with 2" and 3" min. outlets			
7	Gate Valve	3 1/8"		
8	Gate Valve Power Operated	3 1/8"		
9	Line to choke manifold		3"	
10	Gate Valve	2 1/16"		
11	Check Valve	2 1/16"		
13	Casing Spool			
14	Valves Gate	1 13/16"		
15	Compound Pressure Gauge connector			
16	Control plug or valve	1 13/16"		
17	Kill line to rig mud pump manifold		2"	
18	2" X 2" X 2" cross			

NOTE: Additional specifications for Air/Gas Service are given in Shell
Well Control Manual, Appendix 6.18.
A rotating head shall be provided on Air/Gas Service

OPTIONAL				
2	Wear flange or bore protector			
9	Gate valve			
20	Line to roadside connection		2"	
21	Rotating blowout preventer			
22	Gate valve power operated	6"		

TO BE INSTALLED AT 11,750'

DRAWING AND CHECK LIST 107

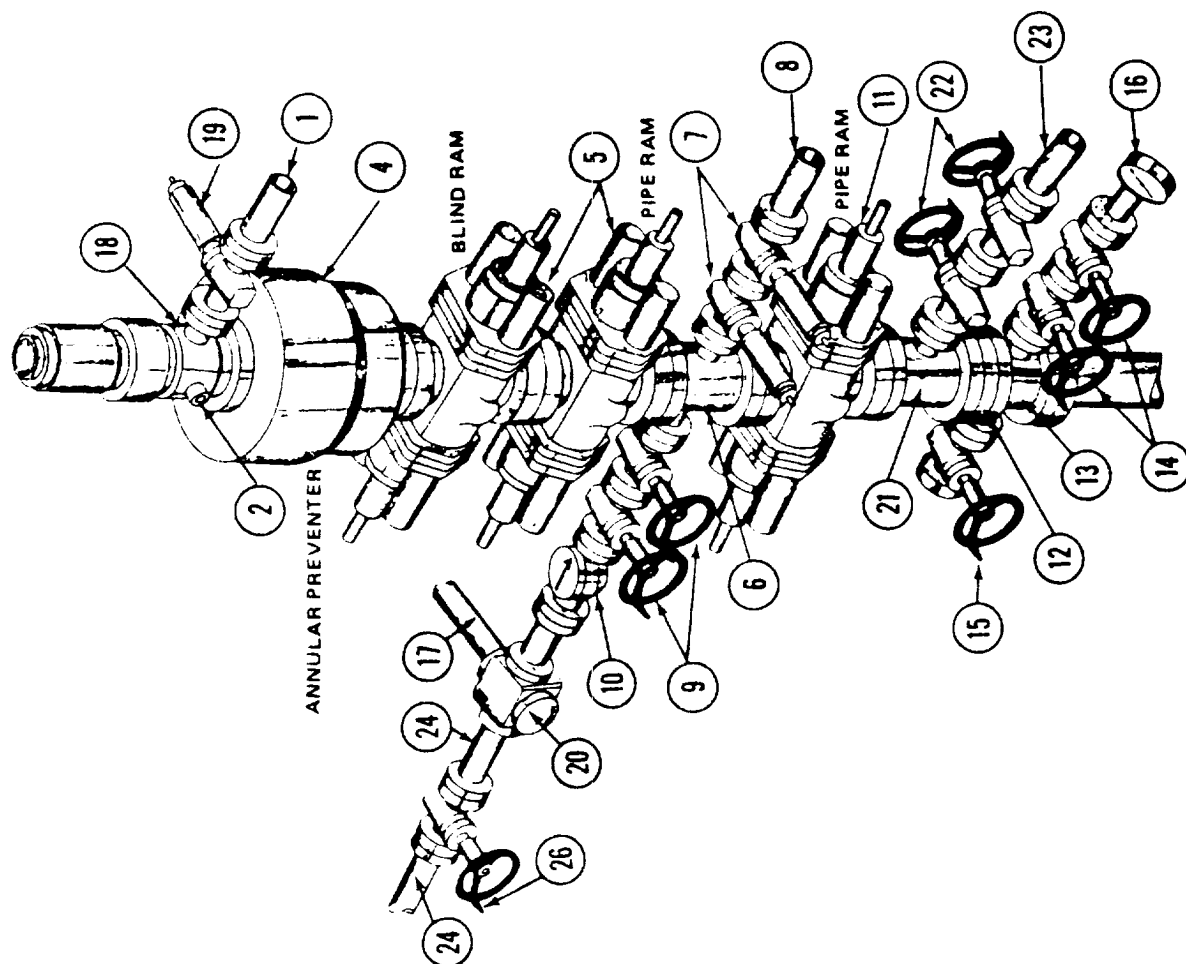
SHELL CLASS 10M

SURFACE INSTALLATIONS NORMAL



SHELL MINIMUM BOP STACK REQUIREMENTS			
No.	Item	Min. I.D.	Min. Nominal
1	Flowline		7"
2	Fill up line		
3	Drilling Nipple		
4	Annular Preventer *		
5	Two single or one dual hydraulically operated rams		
6	Drilling spool with 2" and 3" min. outlets		
7	Gate Valves - Power operated	3-1/8"	
8	Line to choke manifold		3"
9	Gate Valves	2-1/16"	
10	Check Valve	2 1/16"	
11	Single hydraulically operated ram		
13	Casing Spool		
14	Gate Valves	1-13/16"	
15	Control plug or valve	1-13/16"	
16	Compound pressure gauge connector		
17	Kill line to rig mud pump manifold		2"
18	Rotating head		
19	Power operated gate valve	6"	
20	2" X 2" X 2" cross		

OPTIONAL	
12	Wear flange or bore protector
21	Rotating head
22	Gate valves
23	Auxiliary choke line
24	Roadside connection to kill line
25	Shear ram blocks for blind rams
26	Gate valve

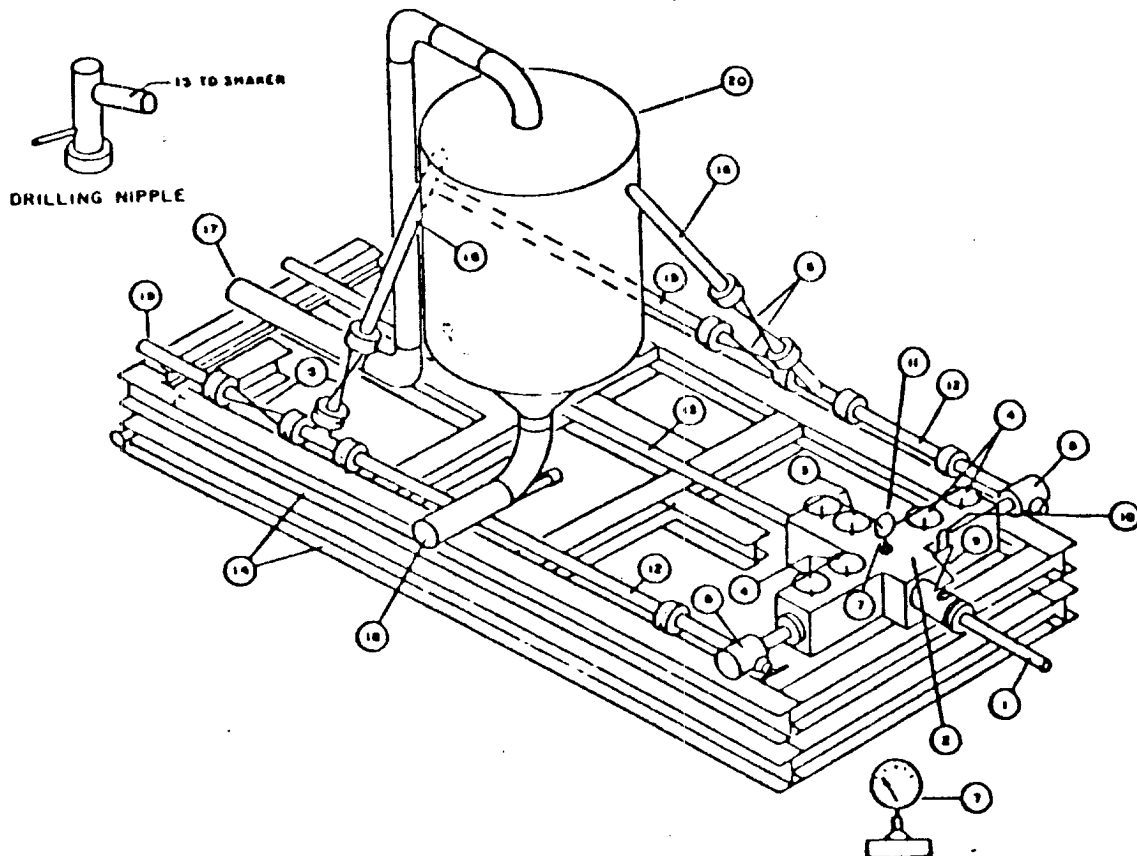


*NOTE If design criteria indicate 7,000 psi or greater, a 10,000 psi w.p. annular preventer should be used, otherwise a 5,000 psi unit is satisfactory.

**NOTE Additional specifications for Sour Service and Air/Gas Services are given in Shell Well Control Manual Appendix 6 18 A rotating head shall be provided for Air/Gas Service.

MINIMUM BLOWOUT PREVENTER CHOKE MANIFOLD FOR DEEP-HIGH PRESSURE WELLS
3000 psi API Class 3MS
 SPECIFICATIONS FOR WELL NO. _____ CASING SIZE 10 3/4", 7 5/8"

GENERAL LAYOUT
 CHOKE MANIFOLD, CHOKE DISCHARGE LINES & GAS SEPARATOR



NOTE: The above drawing shows use of Cameron block valves, and a compact, unitized, choke manifold separator adjustable bore unit. Although such equipment is preferred, Operator will consider alternate non unitized equipment with equivalent pressure ratings.

Contractor and Operator to furnish items checked "X"

No.		Min. Size	Type	Press. Rating	Furnished by	
					Contr.	Oper.
1	Line from drilling spool	3"		3000		X
2	Cross <u>3 x 3 x 2</u> x <u>2</u> x <u>2</u> x <u>2</u>			3000		X
3	Gate valves	3"	"CIW F"	3000		
4	Gate valves	2"	"CIW F"	3000		X
5	Gate valves	2"	"CIW F"	3000		X
6	Power operated choke			N/A		
7	Pressure gauge from stand pipe	1/2"		5000		X
8	Adjustable choke	2"	"H-2"	3000		X
9	Gate valve	3"	"CIW F"	3000		X
10	Pressure sensor					
11	Pressure gauge	1/2"		5000		X
12	Lines to res. pit	2"		3000		X

x equivalent

No.		Min. Size	Type	Press. Rating	Furnished by	
					Contr.	Oper.
13	Line to res. pit	3"		1000		X
14	Base for separator and choke manifold (adj.)					
15	Flowline to shaker	3"		1000		X
16	Lines to gas separator	2"		3000		X
17	Line to res. pit	6"		1000		X
18	Line to shakers	8"		1000		X
19	Lines to res. pit	3"		1000		X
20	Gas Separator	8" X 36"	X	200		X

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