

API Specification

16D

Annexes A, B

Second Edition, July 2004
 Specification for Control Systems for Drilling Well Control
 Equipment and Control Systems for Diverter Equipment

API Monogram[®] Required Yes No

Annex A

(Informative)

Table A.1—Control System —Control System Operating and Interface Requirements for Surface Bop Stack

Regulatory Agency Compliance Required	Yes _____	No _____
Regulatory Agency(s) MMS _____	HSE _____	NPD _____ Other _____
BOP Stack — Size _____		Working Pressure _____
BOP Stack —Rams _____	Annular BOP(s) _____	Valves _____
—Valves Failsafe Open _____		Failsafe Close _____
Annular BOP _____	Quantity _____	Size _____
Manufacturer _____		Working Pressure _____
		Model _____
Ram BOPs _____	Quantity _____	Size _____
Ram Locks Yes <input type="checkbox"/>	No <input type="checkbox"/>	Working Pressure _____
Pipe Rams Closing Ratio _____		Type _____
Shear Ram Operating Pressure _____	Size _____	Type _____ Grade _____
Shear Rams Closing Ratio* _____	Pipe to Shear _____	Shearing Pressure _____
Manufacturer _____		Model _____
Choke Valve(s) _____	Quantity _____	Size _____
Operating Pressure (Against Working Pressure)	Open _____	Working Pressure _____
Manufacturer _____		Close _____
		Model _____
Kill Valve(s) _____	Quantity _____	Size _____
Operating Pressure (Against Working Pressure)	Open _____	Working Pressure _____
Manufacturer _____		Close _____
		Model _____
Hydraulic Pump Systems		
Electric Powered	Quantity _____	Size _____
Electricity Available: V _____		A _____
		Working Pressure _____
		Type _____ Grade _____
Air Powered	Quantity _____	Size _____
Air Pressure _____		CFM _____
		Working Pressure _____
Remote Panel(s) _____	Quantity _____	Area Classification _____

Location of Choke Connection(s) (to Show on Panel Graphic) _____		
Location of Kill Connection(s) (to Show on Panel Graphic) _____		

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Table A-2—Surface Stack Hydraulic Control System Control Function List (Select as Applicable)

No.	Control Function	Open	Close	Closing Ratio	2 Pos.	
					Gallons Required	
1	Annular BOP	Open	Close	N/A	_____	_____
2	Upper Pipe Rams	Open	Close	_____	_____	_____
3	Middle Pipe Rams	Open	Close	_____	_____	_____
4	Lower Pipe Rams	Open	Close	_____	_____	_____
5	Choke Valve	Open	Close	N/A	_____	_____
6	Kill Valve	Open	Close	N/A	_____	_____

Table A-3—Diverter System Hydraulic Control System Control Function List (Select as Applicable)

Diverter Model _____

No.	Control Function	Open	Close	Gallons Required	2 Pos.	
					Operating Pressure	
					Max	Min
1	Diverter Unit	Open	Close	_____	_____	_____
		Close		_____	_____	_____
2	Port/Starboard Selector	Port		_____	_____	_____
		Starboard		_____	_____	_____
3	Vent Valve	Open	Close	_____	_____	_____
		Close		_____	_____	_____
4	Port Overboard Valve	Open	Close	_____	_____	_____
		Close		_____	_____	_____
5	Starboard Overboard Valve	Open	Close	_____	_____	_____
		Close		_____	_____	_____
6	Flowline Valve	Open	Close	_____	_____	_____
		Close		_____	_____	_____
7	Diverter Lockdown Dogs	Latch	Unlatch	_____	_____	_____
		Unlatch		_____	_____	_____
8	Insert Packer Lockdown Dogs	Latch	Unlatch	_____	_____	_____
		Unlatch		_____	_____	_____
9	Flowline Seal	Energize	Vent	_____	_____	_____
		Vent		_____	_____	_____
10	Filling Line Valve	Open	Close	_____	_____	_____
		Close		_____	_____	_____
11	Overshot Packer Seal	Energize	Vent	_____	_____	_____
		Vent		_____	_____	_____
12	Other (Specify)	(Specify)	(Specify)	_____	_____	_____
		(Specify)		_____	_____	_____

Note which functions (if any) are to be interconnected for sequencing.

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Annex B

Table B-1—Control Operating and Interface Requirements Subsea BOP Stack

Regulatory Agency Compliance Required		Yes _____	No _____
Regulatory Agency(s) MMS _____	HSE _____	NPD _____	Other _____
Control System Type _____	Hydraulic _____	EH _____	MUX _____
Maximum Water Depth _____	Hydraulic Control Pressure _____		
BOP Stack—Size _____	Working Pressure _____		
BOP Stack—Ram _____	Annular BOP(s) _____	Failsafe Valves _____	
Valves are: _____ FSO _____	FSC _____	FAO _____	FAC _____
Subsea Umbilicals			
Manufacturer _____	Model _____	Length _____	
Subsea Hydraulic Supply Lines			
Umbilical Hose	Quantity & Length _____	Size _____	Working Pressure _____
Supply Hose	Quantity & Length _____	Size _____	Working Pressure _____
Hydraulic Conduit	Quantity & Length _____	Size _____	Working Pressure _____
Annular BOP(s) _____	Quantity _____	Size _____	Working Pressure _____
Manufacturer _____			Model _____
Shear Ram BOP(s)	Quantity _____	Size _____	Working Pressure _____
Shear Ram Locks	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Type _____
Closing Ratio		Pipe Size and Grade _____	Shear Pressure for Specified Pipe (Surface) _____
Ram BOPS	Quantity _____	Size _____	Working Pressure _____
Ram Locks	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Type _____
Closing Ratio _____			Model _____
Manufacturer _____			Model _____
Riser Connector		Size _____	Working Pressure _____
Manufacturer _____			Model _____
Wellhead Connector		Size _____	Working Pressure _____
Manufacturer _____			Model _____
Choke Valve(s)	Quantity _____	Size _____	Working Pressure _____
Manufacturer _____			Model _____
Choke Outlet Location(s) _____			
Kill Valve(s)	Quantity _____	Size _____	Working Pressure _____
Manufacturer _____			Model _____
Kill Outlet Location(s) _____			
LMRP Accumulators			
Quantity _____	Size _____	Working Pressure _____	Banks _____
BOP Accumulators			
Quantity _____	Size _____	Working Pressure _____	Banks _____

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Table B-1 (continued)—Control Operating and Interface Requirements Subsea BOP Stack

Hydraulic Pump Systems			
Electric Powered	Quantity _____	Size _____	Working Pressure _____
Electricity Available:	V _____	A _____	Hz _____
			Phase _____
Air Powered	Quantity _____	Size _____	Working Pressure _____
	Air Pressure Required _____		
	Air Volume Required _____		
Remote Panels			
Hazardous Location	Quantity _____		Area Classification _____
Safe Location	Quantity _____		Area Classification _____

Table B-2—Subsea Stack Hydraulic Control System Control Function List (Select as Applicable)

No.	Control Function			Gallons	Control Pressure	Pos.
1	Pod Select	Blue	Yellow	_____	_____	3
2	Upper Annular BOP	Open	Close	_____	_____	3
3	Lower Annular BOP	Open	Close	_____	_____	3
4	Riser Connector	Unlock	Lock	_____	_____	2
5	Riser Connector Secondary	Unlock	Vent	_____	_____	3
6	Upper Pipe Rams	Open	Close	_____	_____	3
7	Shear Rams	Open	Close	_____	_____	3
8	High Pressure Shear Rams	Close	Vent	_____	_____	1
9	Upper Pipe Rams	Open	Close	_____	_____	3
10	Middle Pipe Rams	Open	Close	_____	_____	3
11	Lower Pipe Rams	Open	Close	_____	_____	3
12	Wellhead Connector	Unlock	Lock	_____	_____	3
13	Wellhead Connector Secondary	Unlock	Vent	_____	_____	2
14	Pod Latch	Latch	Unlatch	_____	_____	2
15	Blue Hydraulic Stabs	Extend	Retract	_____	_____	3
16	Yellow Hydraulic Stabs	Extend	Retract	_____	_____	3
17	Choke & Kill Stabs	Extend	Retract	_____	_____	3
18	Annular BOP Outer Bleed	Open	Close	_____	_____	2
19	Annular BOP Inner Bleed	Open	Close	_____	_____	2
20	LMRP Choke & Kill Test Valve	Close	Open	_____	_____	2
21	Upper Outer Choke	Open	Close	_____	_____	2
22	Upper Inner Choke	Open	Close	_____	_____	2
23	Lower Outer Choke	Open	Close	_____	_____	2
24	Lower Inner Choke	Open	Close	_____	_____	2
25	Upper Outer Kill	Open	Close	_____	_____	2
26	Upper Inner Kill	Open	Close	_____	_____	2
27	Lower Outer Kill	Open	Close	_____	_____	2
28	Lower Inner Kill	Open	Close	_____	_____	2
29	Shear Rams Locks	Lock	Unlock	_____	_____	2
30	Upper Rams Locks	Lock	Unlock	_____	_____	2
31	Middle Rams Wedgelocks	Lock	Unlock	_____	_____	2
32	Middle Rams Wedgelocks	Lock	Unlock	_____	_____	2

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No.	Control Function			Gallons	Control Pressure	Pos.
33	Lower Rams Locks	Lock	Unlock	_____	_____	2
34	Blue Supply Pilot Check	Vent	Check	_____	_____	2
35	Yellow Supply Pilot Check	Vent	Check	_____	_____	2
36	LMRP Accum Isolator	Open	Close	_____	_____	2
	LMRP Accum Dump	Open	Close	_____	_____	2
37	Lower Stack Accum Isolator	Open	Close	_____	_____	2
	Lower Stack Accum Dump	Open	Close	_____	_____	2
38	LMRP Failsafe Supply	Open	Close	_____	_____	2
39	Lower Stack Failsafe Supply	Open	Close	_____	_____	2
40	Acoustic Accum Isolator	Open	Close	_____	_____	2
	Acoustic Accum Dump	Open	Close	_____	_____	2
41	Subsea Manifold Regulator	Incr	Decr	_____	_____	2
42	Failsafe Assist Regulator	Incr	Decr	_____	_____	2
43	Upper Annular BOP Regulator	Incr	Decr	_____	_____	2
44	Lower Annular BOP Regulator	Incr	Decr	_____	_____	2

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HOSE REEL “LIVE” FUNCTIONS

- 1 _____
- 2 _____
- 3 _____

ACOUSTIC FUNCTIONS

- 1 _____
- 2 _____
- 3 _____
- 4 _____

ROV FUNCTIONS

- 1 _____
- 2 _____
- 3 _____
- 4 _____

Table B-3—Subsea Stack Hydraulic Control System Control Readback Function List (Select as Applicable)

No.	Readback Function	Required
1	Surface Accumulator Supply Pressure	_____
2	Surface Pilot Supply Pressure	_____
3	Rig Air Supply Pressure	_____
4	Subsea manifold Regulator Pilot Pressure	_____
5	Subsea Manifold Regulated Pressure	_____
6	Failsafe Assist Regulator Pilot Pressure	_____
7	Failsafe Assist Regulated Pressure	_____
8	Upper Annular BOP Regulator Pilot Pressure	_____
9	Upper Annular BOP Regulated Pressure	_____
10	Lower Annular BOP Regulator Pilot Pressure	_____
11	Lower Annular BOP Regulated Pressure	_____
12	Other (Specify)	_____

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Table B-4—Subsea Diverter Hydraulic Control System Control Function List (Select as Applicable)

No.	Control Function			2 Pos.
1	Diverter Unit	Open	Close	
2	Flow Selector	Port	Starboard	
3	Diverter Lockdown	Latch	Unlatch	
4	Vent Valve	Open	Close	
5	Port Overboard Valve	Open	Close	
6	Starboard Overboard Valve	Open	Close	
7	Flowline Valve	Open	Close	
8	Insert Packer Lockdown Dogs	Latch	Unlatch	
9	Flowline Seal	Energize	Vent	
10	Filling Line Valve	Open	Close	
11	Ball Joint Pressure		Range	
12	Overshot Packer	Energize	Vent	
13	Trip Tank	Open	Close	
14	Support Ring	Open	Close	
15	Other (Specify)			

Note which functions (if any) are to be interconnected for sequencing.