



TIONG B PUMPING OPERATION

Revision: 4
Prepared for: Hashimi
Date Prepared: 11 June 2024
Well: B-01 to B-15
Field: Tiong
Operation Region: PMA
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 DIMENSION BID WELL INTERVENTION PERFORATION SERVICES	DIMENSION BID COILED TUBING SERVICES		
	Tiong B	Bullheading Operation	

DESIGN VERIFICATION

PREPARED BY DB CTS Operation Engineer	 ----- Muhammad Hafiz Saharuddin	11/6/2024 ----- Date
REVIEWED BY DB CTS Technical Advisor	 ----- Kung Yee Han	11/6/2024 ----- Date
APPROVED BY DB CTS General Manager	 ----- Alif Amirul Adenan	11/6/2024 ----- Date
APPROVED BY PCSB Tiong Well Intervention Engineer	----- Hashimi	----- Date
APPROVED BY PCSB Technical Professional Well Intervention, PMA	----- Azwan Kifli	----- Date
APPROVED BY PCSB Head of Cluster 1 Well Intervention, PMA	----- Asraf M Nazri	----- Date

 DIMENSION BID WELL INTERVENTION PERFORATION SERVICES	DIMENSION BID COILED TUBING SERVICES		
	Tiong B	Bullheading Operation	

Remark: Do not execute the procedures in this document if it is not fully approved and signed by all parties.

DISTRIBUTION LIST

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Prepared By: Muhammad Hafiz	Reviewed By: Kung Yee Han	Date: 11/6/2024	Rev. Rev.4	Controlled Document DB-CT-MHS-24001	Pg. 3
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 DIMENSION BID WELL INTERVENTION PERFORATION SERVICES	DIMENSION BID COILED TUBING SERVICES		
	Tiong B	Bullheading Operation	

PERSONNEL CONTACT

Any means of following doubt / unusual parameters / Emergency, please contact Dimension Bid personnel in onshore immediately.

No	Name	Position	Company	Location	Contact No
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2	Mohammad Faizal Ali	Operation Engineer	DB	Kemaman	013 – 736 1046
3	Kung Yee Han	Technical Advisor	DB	Kemaman	019 – 610 2088
4	Mohd Khairul Ridhwan	Field Services Manager	DB	Kemaman	014 – 515 4452
5	Alif Adenan	General Manager	DB	Kemaman	011 – 1225 7044

REVISION HISTORY

Rev. No	Section	Date	Revised By
0	All	28/2/2024	Muhammad Hafiz Saharuddin
1	Additional Bullheading Pumping 1.5 x (Tubing + Annulus volume)	2/5/2024	Muhammad Hafiz Saharuddin
2	Additional remarks, in the event during bullheading, pumping pressure reach to MASTP– To get town approval before proceed with Pumping above MASTP.	15/5/2024	Muhammad Hafiz Saharuddin
3	Include monitor period after complete 1.5x tubing / Annulus volume	4/6/2024	Muhammad Hafiz Saharuddin
4.	Revise first bullheading pumping to injectivity test	11/6/2024	Muhammad Hafiz Saharuddin

Prepared By: Muhammad Hafiz	Reviewed By: Kung Yee Han	Date: 11/6/2024	Rev. Rev.4	Controlled Document DB-CT-MHS-24001	Pg. 4
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	Tiong B	Bullheading Operation	

TABLE OF CONTENT

DESIGN VERIFICATION	2
DISTRIBUTION LIST	3
REVISION HISTORY	4
TABLE OF CONTENT	5
OBJECTIVES	6
WELL DIAGRAM	7
PRESSURE CALCULATION	22
MASTP CALCULATION	22
SAFETY OPERATIONAL PROCEDURES	25
HEALTH, SAFETY & ENVIRONMENT	26
EQUIPMENT RIG-UP PROCEDURE	27
OPERATIONAL PROCEDURE	29
BULLHEADING PUMPING - INJECTIVITY	29
ANNULUS PUMPING LUBRICATION (IF REQUIRED)	34
SURFACE PUMPING LINE RIG-DOWN PROCEDURE	37

Prepared By: Muhammad Hafiz	Reviewed By: Kung Yee Han	Date: 11/6/2024	Rev. Rev.4	Controlled Document DB-CT-MHS-24001	Pg. 5
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 DIMENSION BID WELL INTERVENTION PERFORATION SERVICES	DIMENSION BID COILED TUBING SERVICES		PETRONAS CARIGALI 	
	Tiong B	Bullheading Operation		

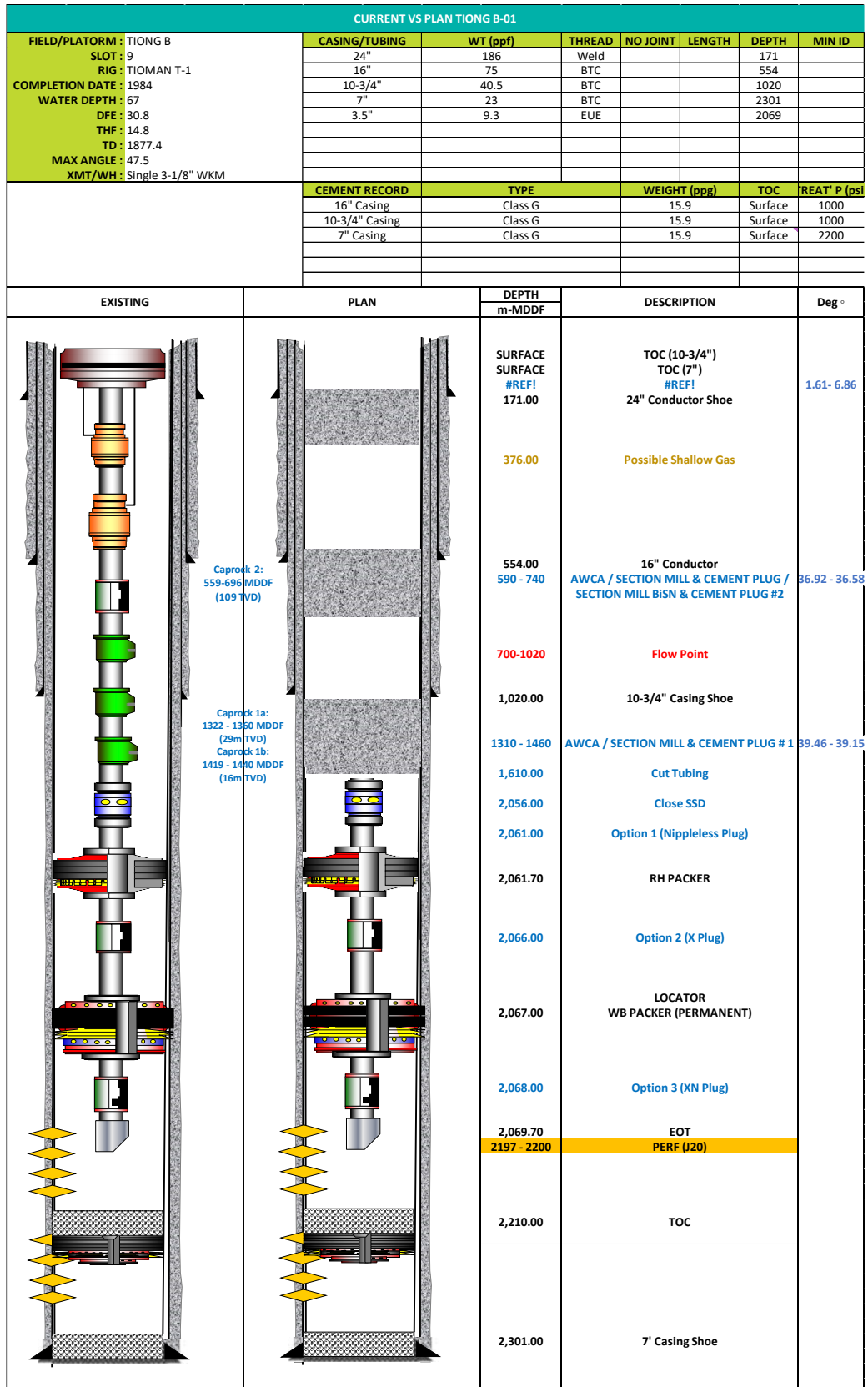
OBJECTIVES

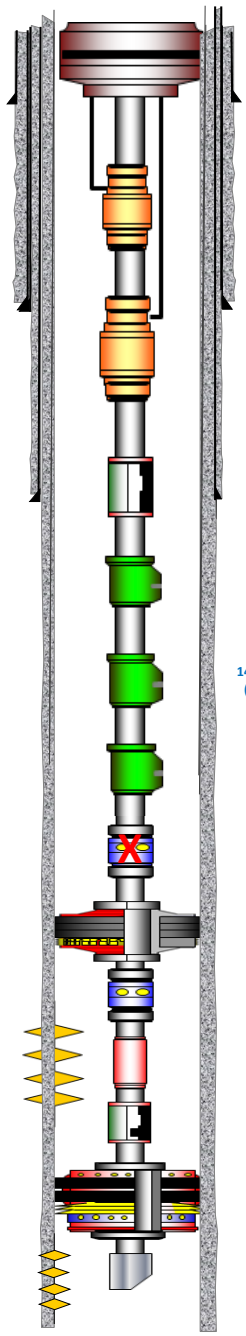
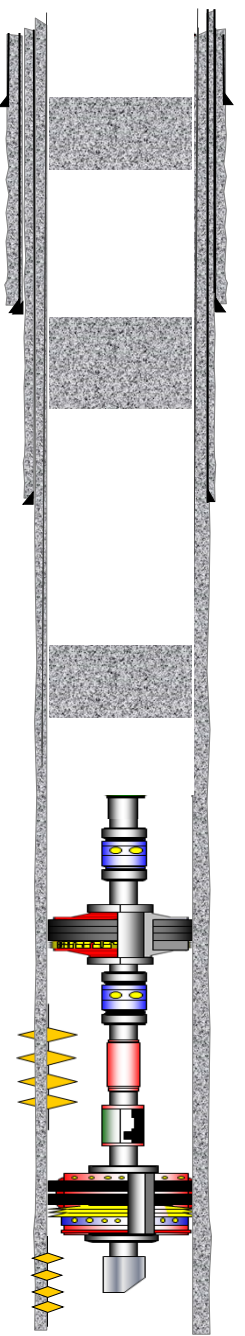
The objective of this job is;

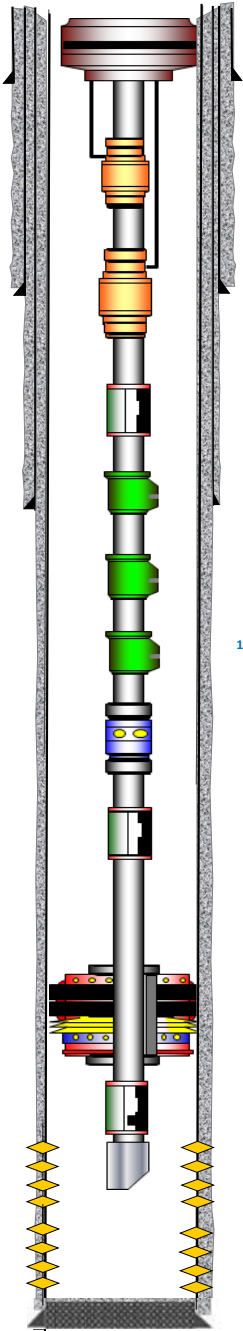
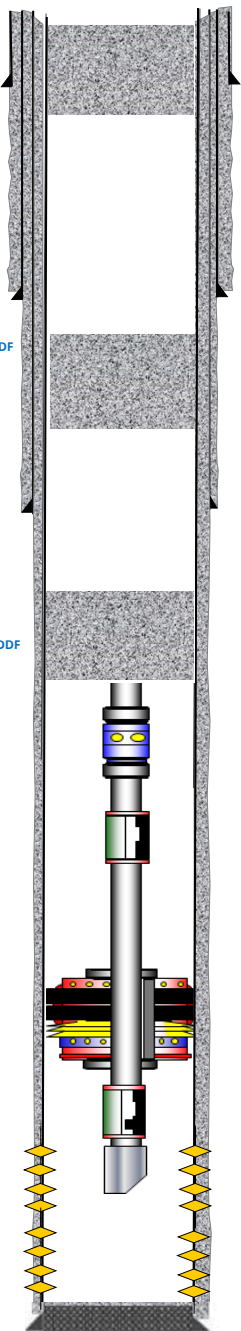
1. To perform injectivity test and pressure test plug after slickline set.
2. To displace fluid in A-Anulus with TSW (if required).

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WELL DIAGRAM



CURRENT VS PLAN TIONG B-02							
FIELD/PLATFORM : TIONG B SLOT : 17 RIG : TIOMAN T-1 COMPLETION DATE : 1984 WATER DEPTH : 67 DFE : 30.8 THF : 14.8 TD : 2,428.60 MAX ANGLE : 43.5 @ 931.7 XMT/WH : Single 3-1/8" WKM	CASING/TUBING	WT (ppf)	THREAD	NO JOINT	LENGTH	DEPTH	MIN ID
	24"	186	Weld			171	
	16"	75	BTC			553.8	
	10-3/4"	40.5	BTC			1150.6	
	7"	23	BTC			2428.6	
	3.5"	9.3	EVE			2358.2	
	CEMENT RECORD	TYPE		WEIGHT (ppg)		TOC	TREAT' P (psi)
	16" Casing	Class G		15.9		Surface	
	10-3/4" Casing	Class G		15.9		Surface	
	7" Casing	Class G		15.9		Surface	
EXISTING	PLAN	DEPTH m-MDDF	DESCRIPTION			Deg °	
		SURFACE 76.00	TOC (10-3/4") TOC (7")				
		171.00 115 - 175	24" Conductor Shoe Surface Plug			7.61 - 11.61	
		553.80 800 - 950	16" Conductor AWCA / SECTION MILL & CEMENT PLUG / SECTION MILL BSN & CEMENT PLUG #2			46.25 - 47.0	
		1,150.60 1120 - 1200	10-3/4" Casing Shoe Flow Point				
		1378 - 1528	AWCA / SECTION MILL & CEMENT PLUG # 1			43.00 - 40.45	
		1,678.00 2,305.00 2,310.00	Tubing Cut Option 1 (Nippleless Plug) Separation Sleeve / C'Sub				
		#REF!	RH PACKER				
			PERF				
		#REF!	LOCATOR WB PACKER (PERMANENT)				
		2,358.20 2361 - 2363 2,428.60	EOT PERF (J20/21) 7' Casing Shoe (TOC: TBA)				

CURRENT VS PLAN TIONG B-03							
FIELD/PLATFORM : TIONG B SLOT : 12 RIG : TIOMAN T-1 COMPLETION DATE : 1984 WATER DEPTH : 67 DFE : 30.8 THF : 14.8 TD : 2615.1 MAX ANGLE : 57.25 XMT/WH : Single 3-1/8" WKM	CASING/TUBING	WT (ppf)	THREAD	NO JOINT	LENGTH	DEPTH	MIN ID
	24"	186	Weld			171	
	16"	75	BTC			582.4	
	10-3/4"	40.5	BTC			1114	
	7"	23	BTC			2613.5	
	3.5"	9.3	EUE			2404.3	
	CEMENT RECORD	TYPE		WEIGHT (ppg)		TOC	TREAT' P (psi)
	16" Casing	Class G		15.9		Surface	1000
	10-3/4" Casing	Class G		15.9		Surface	1000
	7" Casing	Class G		15.9		Surface	2200
EXISTING	PLAN		DEPTH m-MDDF	DESCRIPTION		Deg °	
			SURFACE SURFACE 115 -175 171.00	TOC (10-3/4") TOC (7") Surface Plug 24" Conductor Shoe		7.06 - 7.79	
			180 - 535 388.00	Flow Point Possible Shallow Gas			
			582.40	16" Conductor			
			660 - 810	AWCA / SECTION MILL & CEMENT PLUG / SECTION MILL BSN & CEMENT PLUG #2		46.66 - 50.25	
			1,114.00	10-3/4" Casing Shoe			
			1503 - 1653	AWCA / SECTION MILL & CEMENT PLUG # 1		56.50 - 56.96	
			1,803.00	Tubing Cut			
			2,392.00	Close SSD			
			2,397.00	Option 1 (Nippleless Plug)			
			2,398.00	Option 2 (X Plug)			
		2,400.00	LOCATOR WB PACKER (PERMANENT)				
		2,402.00	Option 3 (XN Plug)				
		2,404.30	EOT				
		2532-2536	PERF (J20/21) Top of Perf (2539)				
		2361-2363	PERF (J20/21)				
		2,613.50	7' Casing Shoe (TOC: Surface)				



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Tiong B

Bullheading Operation

**PETRONAS
CARIGALI**



CURRENT VS PLAN TIONG B-04							
FIELD/PLATORM : TIONG B SLOT : 13 RIG : TIOMAN T-1 COMPLETION DATE : 1984 WATER DEPTH : 67 DFE : 30.8 THF : 14.8 TD : 2,391.20 MAX ANGLE : 46 XMT/WH : Single 3-1/8" WKM	CASING/TUBING	WT (ppf)	THREAD	NO JOINT	LENGTH	DEPTH	MIN ID
	24"	186	Weld			171	
	16"	75	BTC			600.5	
	10-3/4"	40.5	BTC			1057.7	
	7"	23	BTC			2391.2	
	3.5"	9.3	EVE			2215	
	CEMENT RECORD	TYPE	WEIGHT (ppg)		TOC	TREAT' P (psi)	
	16" Casing	Class G	15.9		Surface		
	10-3/4" Casing	Class G	15.9		Surface		
	7" Casing	Class G	15.9		Surface		

Prepared By:
Muhammad Hafiz

Reviewed By:
Kung Yee Han

Date:
11/6/2024

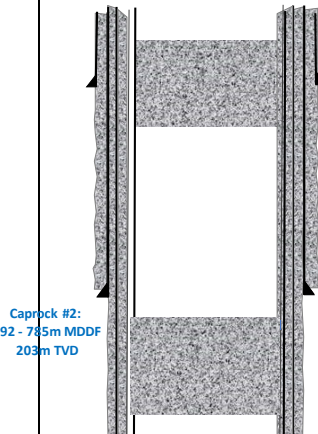
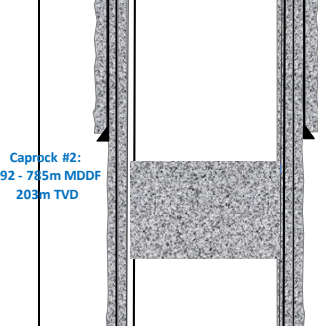
Rev.
Rev.4

Controlled Document
DB-CT-MHS-24001

Pg.
10

		CURRENT VS PLAN TIONG B-05						
FIELD/PLATFORM: TIONG B SLOT: 13 RIG: TIOMAN T-1 COMPLETION DATE: 1984 WATER DEPTH: 67 DFE: 30.8 THF: 14.8 TD: 2,392.20 MAX ANGLE: 48.5 XMT/WH: Single 3-1/8" WKM	CASING/TUBING	WT (ppf)	THREAD	NO JOINT	LENGTH	DEPTH	MIN ID	
	24"	186	Weld			171		
	16"	75	BTC			566.3		
	10-3/4"	40.5	BTC			1039		
	7"	23	BTC			2392.2		
	3.5"	9.3	EVE			2216		
	CEMENT RECORD	TYPE	WEIGHT (ppg)		TOC	TREAT' P (psi)		
	16" Casing	Class G	15.9		Surface			
	10-3/4" Casing	Class G	15.9		Surface			
	7" Casing	Class G	15.9		Surface			

		CURRENT VS PLAN TIONG B-06						
FIELD/PLATFORM : TIONG B SLOT : 14 RIG : TIOMAN T-1 COMPLETION DATE : 1984 WATER DEPTH : 67 DFE : 30.8 THF : 14.8 TD : 2,307.00 MAX ANGLE : 48.5 XMT/WH : Single 3-1/8" WKM		CASING/TUBING	WT (ppf)	THREAD	NO JOINT	LENGTH	DEPTH	MIN ID
	24"	186	Weld				171	
	16"	75	BTC				581	
	10-3/4"	40.5	BTC				1008	
	7"	23	BTC				2307	
	3.5"	9.3	EVE				2135	
		CEMENT RECORD	TYPE		WEIGHT (ppg)		TOC	TREAT' P (psi)
		16" Casing	Class G		15.9		Surface	
		10-3/4" Casing	Class G		15.9		Surface	
		7" Casing	Class G		15.9		Surface	

CURRENT VS PLAN TIONG B-07							
FIELD/PLATFORM : TIONG B SLOT : 18 RIG : TIOMAN T-1 COMPLETION DATE : 1984 WATER DEPTH : 67 DFE : 30.8 THF : 14.8 TD : 2,739.00 MAX ANGLE : 56.5 XMT/WH : Single 3-1/8" WKM	CASING/TUBING	WT (ppf)	THREAD	NO JOINT	LENGTH	DEPTH	MIN ID
	24"	186	Weld			171	
	16"	75	BTC			576.7	
	10-3/4"	40.5	BTC			1154	
	7"	23	BTC			2739	
	3.5"	9.3	EVE			2529	
	CEMENT RECORD	TYPE	WEIGHT (ppg)	TOC	TREAT' P (psi)		
	16" Casing	Class G	15.9	Surface			
	10-3/4" Casing	Class G	15.9	Surface			
	7" Casing	Class G	15.9	Surface			
EXISTING	PLAN	DEPTH m-MDDF	DESCRIPTION			Deg °	
		SURFACE TBA #REF! 171.00	TOC (10-3/4") TOC (7") #REF! 24" Conductor Shoe			7.17 - 10.50	
		134.00	FXE VALVE				
		576.70 750 - 900	16" Conductor AWCA / SECTION MILL & CEMENT PLUG / SECTION MILL BISN & CEMENT PLUG #2			56.25 - 55.25	
		TBA	Flow Point				
		1,154.00	10-3/4" Casing Shoe				
		1562 - 1712	AWCA / SECTION MILL & CEMENT PLUG # 1			51.25 - 55.00	
		1,862.00	Tubing Cut				
		2,519.00	Close SSD				
		2,522.00	Option 1 (Nippleless Plug)				
		#REF!	LOCATOR WB PACKER (PERMANENT)				
2,528.00	Option 2 (XN Plug)						
2,529.00	EOT						
2590 - 2595	PERF (J-18)						
#REF!	BRIDGE PLUG						
2,739.00	7' Casing Shoe (TOC: TBA)						



DIMENSION BID
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DIMENSION BID COILED TUBING SERVICES

Tiong B

Bullheading Operation



FIELD/PLATFORM : TIONG B		CURRENT VS PLAN TIONG B-08					
SLOT : 10 RIG : TIOMAN T-1 COMPLETION DATE : 1984 WATER DEPTH : 67 DFE : 30.8 THF : 14.8 TD : 2,114.00 MAX ANGLE : 33.3 XMT/WH : Single 3-1/8" WKM		CASING/TUBING	WT (ppf)	THREAD	NO JOINT	LENGTH	DEPTH
		24"	186	Weld			171
		16"	75	BTC			561
		10-3/4"	40.5	BTC			977
		7"	23	BTC			2114
		3.5"	9.3	EVE			1896
		CEMENT RECORD		TYPE	WEIGHT (ppg)	TOC	TREAT' P (psi)
		16" Casing		Class G	15.9	Surface	
		10-3/4" Casing		Class G	15.9	Surface	
		7" Casing		Class G	15.9	Surface	
EXISTING	PLAN	DEPTH m-MDDF		DESCRIPTION		Deg °	
Caprock #2: 602 - 717m MDDF 98m TVD Caprock #1: 1170 - 1316m MDDF 125m TVD		SURFACE TBA 115 - 175 171.00		TOC (10-3/4") TOC (7") #REF! 24" Conductor Shoe		2.67 - 10.50	
		142.00		FXE VALVE			
		275 - 300 360 - 425		Flow Point Flow Point			
		561.00		16" Conductor			
		650 - 800		AWCA / SECTION MILL & CEMENT PLUG / SECTION MILL BiSN & CEMENT PLUG #2		32.25 - 31.25	
		960 - 980 977.00		Flow Point 10-3/4" Casing Shoe TOC (TBA)			
		1186 - 1336		AWCA / SECTION MILL & CEMENT PLUG #1		31.25 - 30.5	
		1,486.00		Tubing Cut			
		1,902.00		Close SSD			
		1,905.00		Option 1 (Nippleless Plug)			
		1,909.00		LOCATOR WB PACKER (PERMANENT)			
		1,913.00		Option 2 (XN Plug)			
		1,914.00		EOT			
		2017 - 2023 2030 - 2033		PERF (J20) PERF (J21)			
		2,056.00 2,114.00		PBSD 7' Casing Shoe			

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Reviewed By:
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DB-CT-MHS-24001

Pg.
14



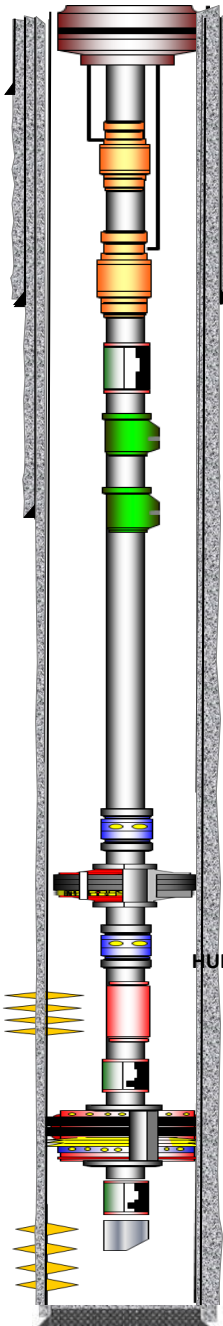
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DIMENSION BID COILED TUBING SERVICES

Tiong B

Bullheading Operation



CURRENT VS PLAN TIONG B-09							
FIELD/PLATFORM: TIONG B SLOT: 2 RIG: TIOMAN T-1 COMPLETION DATE: 1984 WATER DEPTH: 67 DFE: 30.8 THF: 14.8 TD: 2,483.00 MAX ANGLE: 33.3 XMT/WH: Single 3-1/8" WKM	CASING/TUBING	WT (ppf)	THREAD	NO JOINT	LENGTH	DEPTH	MIN ID
	24"	186	Weld			171	
	16"	75	BTC			579	
	10-3/4"	40.5	BTC			1136	
	7"	23	BTC			2507	
	3.5"	9.3	EVE			2334.1	
	16" Casing	Class G			15.9	Surface	TREAT' P (psi)
	10-3/4" Casing	Class G			15.9	Surface	
	7" Casing	Class G			15.9	Surface	
EXISTING	OPTION 1		DEPTH m-MDDF	DESCRIPTION		Deg °	
 Caprock #2: 486 - 751 m MDDF 265m TVD Caprock #1: 1396.3-1586.5m MDDF 125m TVD HUD @ 2,014 m			SURFACE SURFACE 115 -175 171.00	TOC (10-3/4") TOC (7") SURFACE PLUG 24" Conductor Shoe		2.17 - 6.75	
			579.00	16" Conductor			
			700 - 850	AWCA / SECTION MILL & CEMENT PLUG / SECTION MILL BSN & CEMENT PLUG #3		48.5 - 53.00	
			1,136.00	10-3/4" Casing Shoe			
			TBC	Flow Point			
			1466 - 1616	AWCA / SECTION MILL & CEMENT PLUG # 2		48.75 - 48.50	
			1,992.00 1,997.00	Tubing Cut Close SSD			
			2,004.00	RH PACKER			
			2,020.00	CLOSE SSD			
			1892 - 2483 2032-2033.5	ZONAL ISOLATION Plug # 1 PERF (I-100)		44.00 - 29.25	
			2,043.00	Bridge Plug			
			#REF!	LOCATOR WB PACKER (PERMANENT)			
			2,334.10	EOT			
			2124 - 2433	PERF			
			2,483.00 2,507.00	PBSD 7' Casing Shoe			

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Muhammad Hafiz

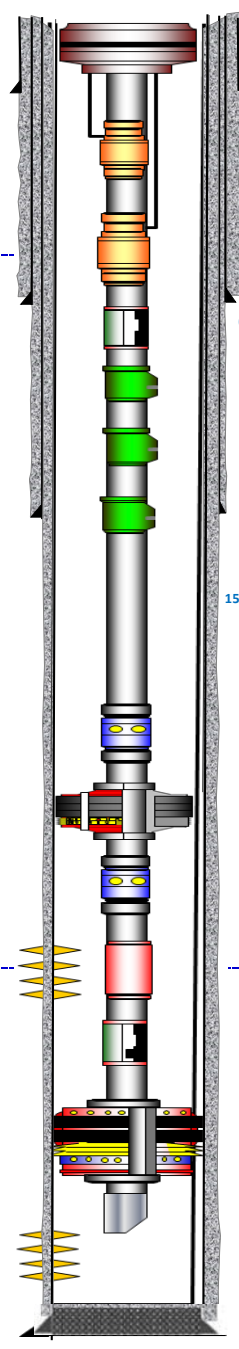
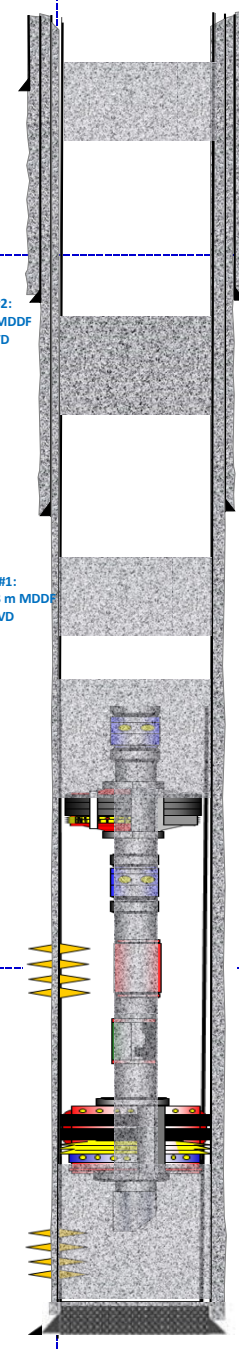
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Pg.
15

CURRENT VS PLAN TIONG B-10							
FIELD/PLATFORM : TIONG B	CASING/TUBING	WT (ppf)	THREAD	NO JOINT	LENGTH	DEPTH	MIN ID
SLOT : 16	24"	186	Weld			173	
RIG : TIOMAN T-1	16"	75	BTC			612.6	
COMPLETION DATE : 1984	10-3/4"	40.5	BTC			1125.6	
WATER DEPTH : 67	7"	23	BTC			2470	
DFE : 30.8	3.5"	9.3	EUE			2384	
THF : 14.8							
TD : 2470							
MAX ANGLE : 50.7							
XMT/WH : Single 3-1/8" WKM							
CEMENT RECORD	TYPE		WEIGHT (ppg)		TOC	TREAT' P (psi)	
16" Casing	Class G		15.9		Surface		
10-3/4" Casing	Class G		15.9		Surface		
7" Casing	Class G		15.9		No return		
EXISTING	PLAN	DEPTH m-MDDF	DESCRIPTION			Deg °	
		SURFACE No return 115 - 175 173.00	TOC (10-3/4") TOC (7") SURFACE PLUG 24" Conductor Shoe			9.34 - 13.75	
		476.00 565 - 877	Possible Shallow Gas Flow Point				
		612.60 700 - 850	16" Conductor AWCA / SECTION MILL & CEMENT PLUG / SECTION MILL BISN & CEMENT PLUG #3			46.75 - 48.75	
		1,125.60	10-3/4" Casing Shoe TOC (Surface)				
		1456 - 1591	AWCA / SECTION MILL & CEMENT PLUG # 2			48.25 - 46.25	
		2,312.00 2,317.00	Tubing Cut Close SSD				
		2302 - 2445 2,323.30	Cement Plug #1 RH PACKER			16.3 - 9.50	
		2,335.00	CLOSE SSD				
		2372 - 2380	PERF (J19)				
		#REF! 2,384.00	LOCATOR WB PACKER (PERMANENT) EOT				
		2388 - 2391	PERF (J20)				
		2,445.00 2,470.00	PBD 7" Casing Shoe				



DIMENSION BID
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DIMENSION BID COILED TUBING SERVICES

Tiong B

Bullheading Operation



CURRENT VS PLAN TIONG B-11							
FIELD/PLATFORM : TIONG B SLOT : 11 RIG : TIOMAN T-1 COMPLETION DATE : 1984 WATER DEPTH : 67 DFE : 30.8 THF : 14.8 TD : 2233 MAX ANGLE : 47 XMT/WH : Single 3-1/8" WKM	CASING/TUBING	WT (ppf)	THREAD	NO JOINT	LENGTH	DEPTH	MIN ID
	24"	186	Weld			173	
	16"	75	BTC			542.5	
	10-3/4"	40.5	BTC			974.8	
	7"	23	BTC			2232.7	
	3.5"	9.3	EUE			2029.1	
	CEMENT RECORD	TYPE	WEIGHT (ppg)		TOC	TREAT' P (psi)	
	16" Casing	Class G	15.9		Surface		
	10-3/4" Casing	Class G	15.9		Surface		
	7" Casing	Class G	15.9		865		

Prepared By:
Muhammad Hafiz

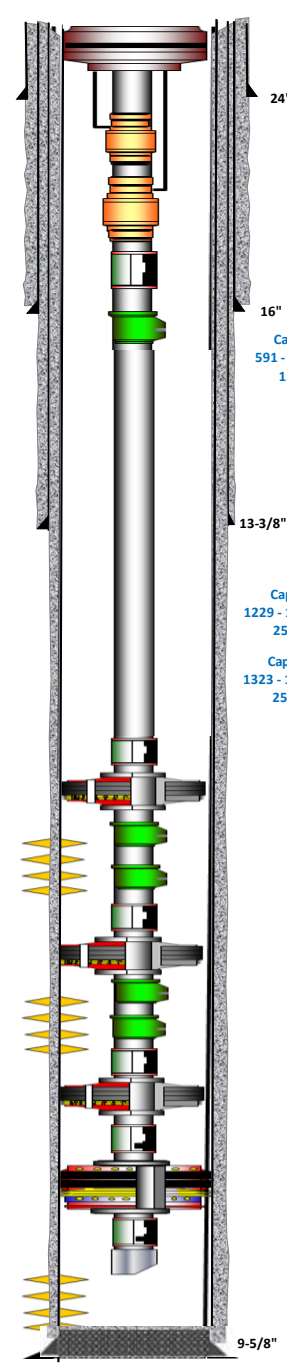
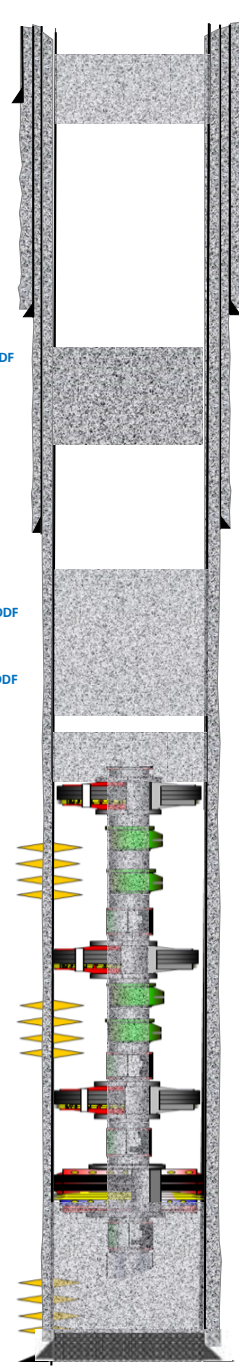
Reviewed By:
Kung Yee Han

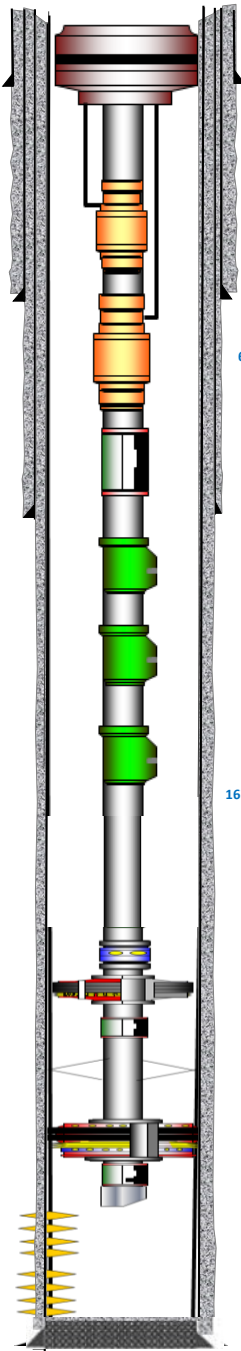
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11/6/2024

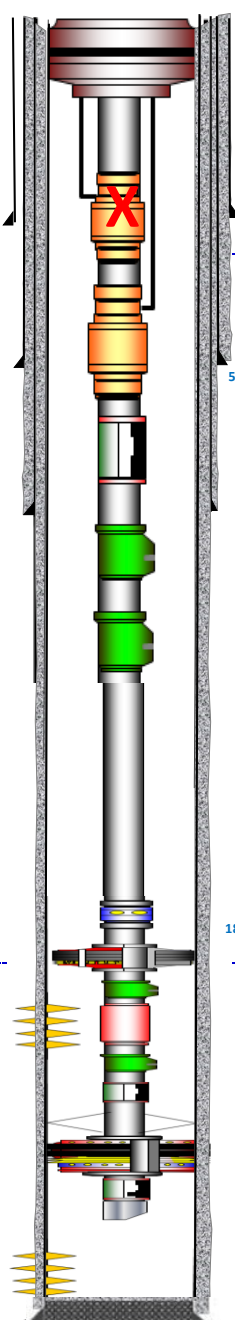
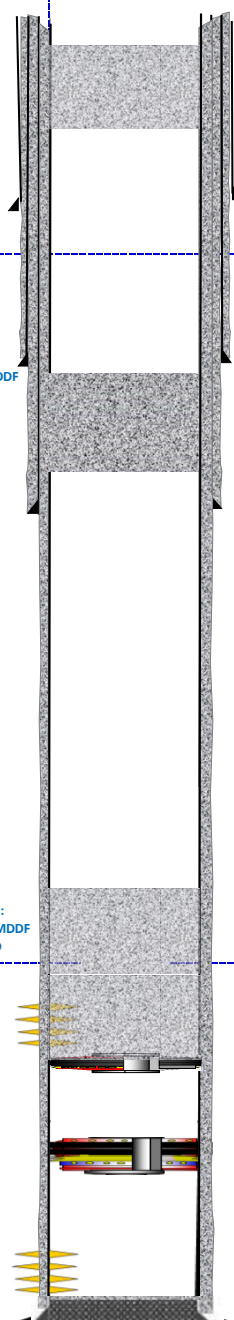
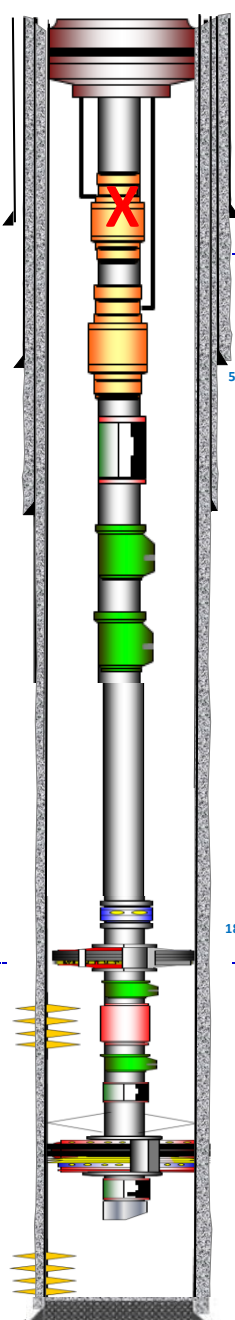
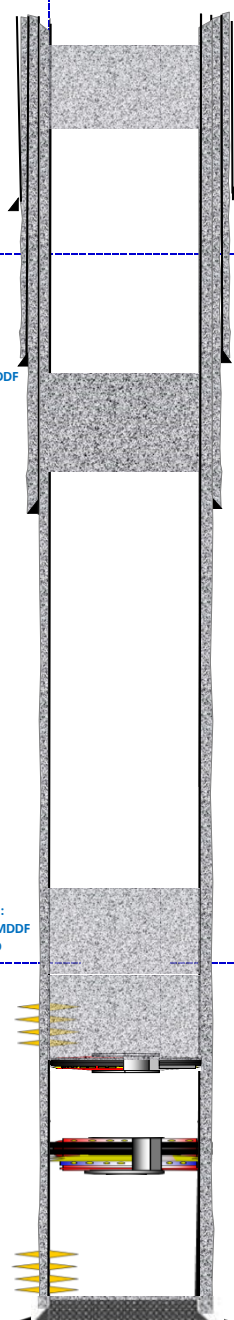
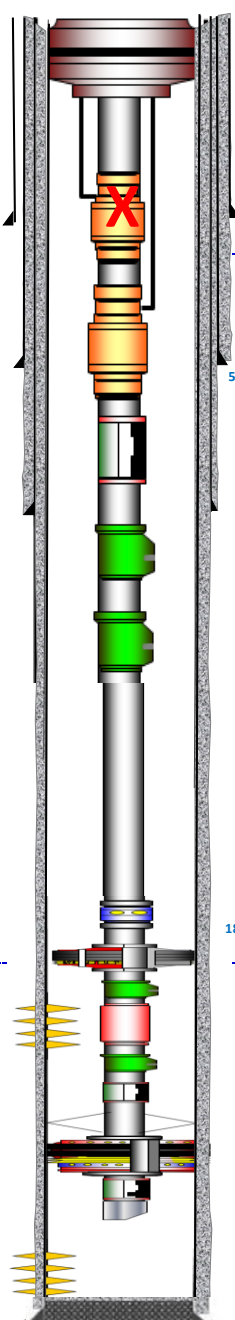
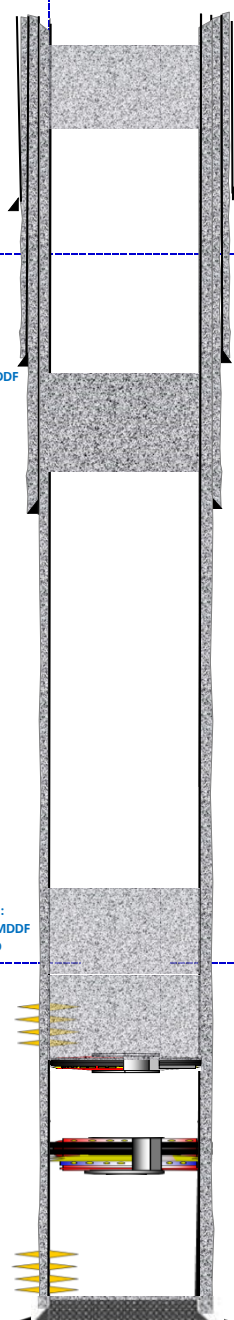
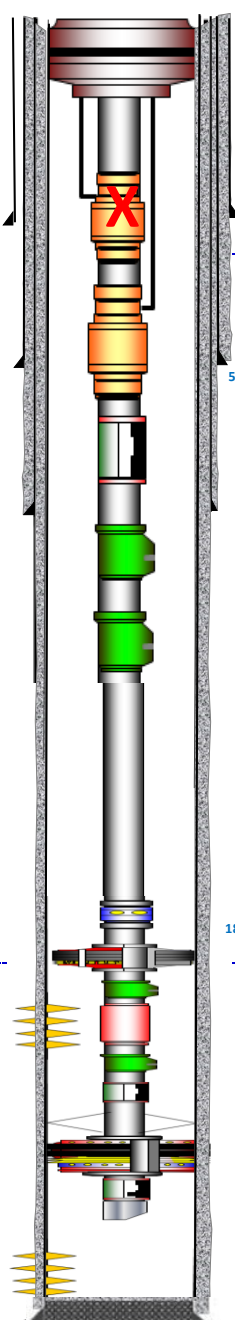
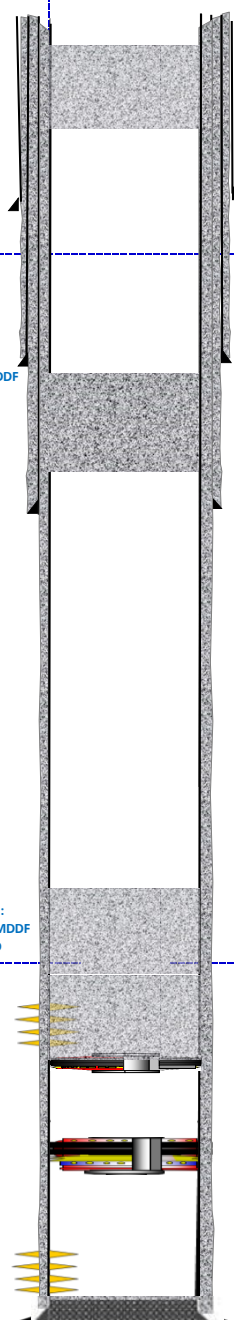
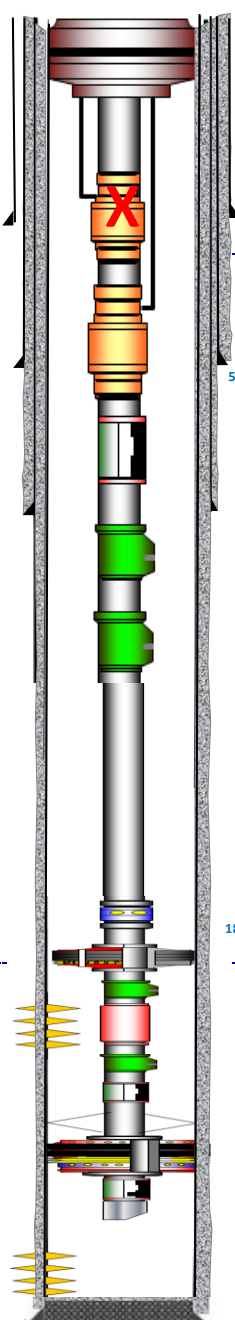
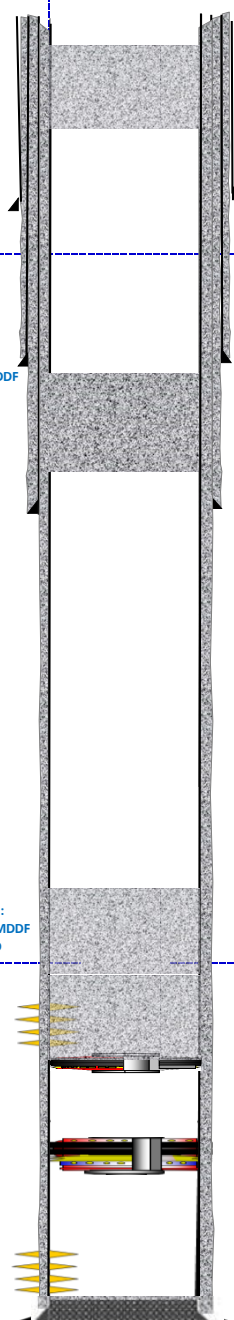
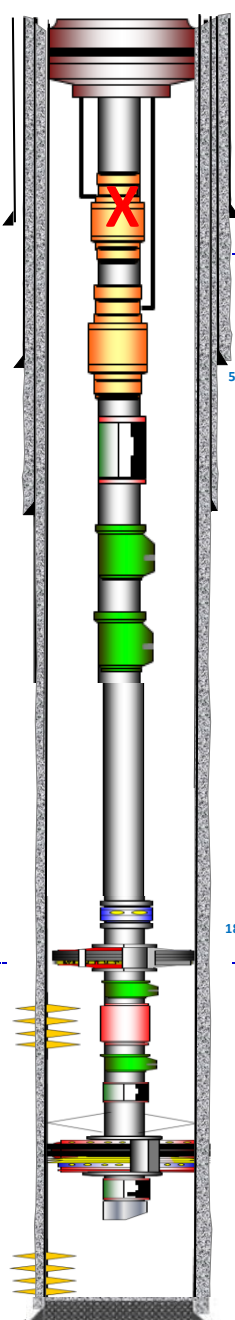
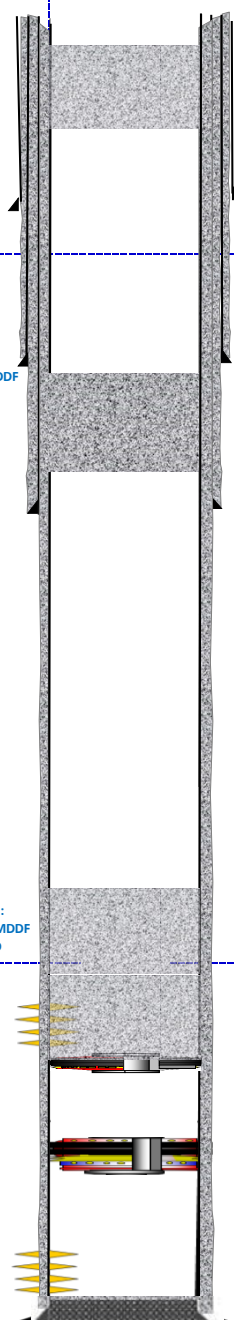
Rev.
Rev.4

Controlled Document
DB-CT-MHS-24001

Pg.
17

CURRENT VS PLAN TIONG B-12					
FIELD/PLATFORM : TIONG B SLOT : 5 RIG : TIOMAN T-1 COMPLETION DATE : 1984 WATER DEPTH : 67 DFE : 30.8 THF : 14.8 TD : 2217.9 MAX ANGLE : 41.25 XMT/WH : Single 3-1/8" WKM	CASING/TUBING	WT (ppf)	THREAD	DEPTH	MIN ID
	24"	186	Weld	173	
	16"	75	BTC	542.5	
	13-3/8"	54.5	BTC	890	
	9-5/8"	47	BTC	2024	
	3.5"	9.3	EUE	1769	
	CEMENT RECORD	TYPE	TOC	TREAT' P (psi)	
	16" Casing	Class G	Surface		
	13-3/8"	Class G	Surface		
	9-5/8"	Class G	No Return		
EXISTING	PLAN	DEPTH m-MDDF	DESCRIPTION	Deg °	
 24" 16" Caprock #3: 591 - 684m MDDF 150m TVD 13-3/8" Caprock #2: 1229 - 1254m MDDF 25.1m TVD Caprock #1: 1323 - 1347m MDDF 25.1m TVD 9-5/8"		SURFACE No Return 115 - 175 173.00	TOC (13-3/8") TOC (9-5/8") Surface Plug 24" Conductor Shoe	1.50 - 2.90	
		492.00	Possible Shallow Gas		
		542.50	16" Conductor		
		650 - 700	AWCA / SECTION MILL & CEMENT PLUG / SECTION MILL BiSN & CEMENT PLUG #3	0.75 - 0.50	
		890.00	13-3/8" Casing Shoe TOC (Surface)		
		TBC	Flow Point		
		1217 - 1367	AWCA / SECTION MILL & CEMENT PLUG # 2	30.75 - 30.00	
		1470 - 1759 1,480.00	Cement Plug #1 Tubing Cut	27.75 - 36.75	
		1,498.80	Retrievable Hydraulic Packer		
		1530 - 1546	PERF (I110)		
		1566.80	Retrievable Hydraulic Packer		
		1597.5 - 1613.5	PERF (I120)		
		1,773.80	BWB Packer		
		1,779.80	LOCATOR WB PACKER (PERMANENT)		
		1,783.80	EOT		
		1933 - 1942	PERF (J20)		
		2,009.00	PBTD		
		2,024.00	9-5/8" Casing Shoe		

CURRENT VS PLAN TIONG B-13							
FIELD/PLATFORM : TIONG B SLOT : 1 RIG : TIOMAN T-1 COMPLETION DATE : 1984 WATER DEPTH : 67 DFE : 30.8 THF : 14.8 TD : 2255 MAX ANGLE : 43.5 XMT/WH : Single 3-1/8" WKM	CASING/TUBING	WT (ppf)	THREAD	NO JOINT	LENGTH	DEPTH	MIN ID
	24"	186	Weld			173	
	16"	75	BTC			597.1	
	10-3/4"	40.5	BTC			1048.5	
	7"	23	BTC			2254.9	
	3.5"	9.3	EUE			2106.2	
	CEMENT RECORD	TYPE		WEIGHT (ppg)		TOC	TREAT' P (psi)
	16" Casing	Class G		15.9		Surface	
	10-3/4" Casing	Class G		15.9		Surface	
	7" Casing	Class G		15.9		No Return	
EXISTING	PLAN		DEPTH m-MDDF	DESCRIPTION		Deg °	
 							

		CURRENT VS PLAN TIONG B-14						
FIELD/PLATFORM : TIONG B SLOT : 6 RIG : TIOMAN T-1 COMPLETION DATE : 1984 WATER DEPTH : 67 DFE : 30.8 THF : 14.8 TD : 2562 MAX ANGLE : 50 XMT/WH : Single 3-1/8" WKM	CASING/TUBING	WT (ppf)	THREAD	NO JOINT	LENGTH	DEPTH	MIN ID	
	24"	186	Weld			171		
	16"	75	BTC			606.9		
	10-3/4"	40.5	BTC			1106.4		
	7"	23	BTC			2525.9		
	3.5"	9.3	EUE			2252.2		
		CEMENT RECORD	TYPE	WEIGHT (ppg)	TOC	TREAT' P (psi)		
		16" Casing	Class G	15.9	Surface			
		10-3/4" Casing	Class G	15.9	Surface			
		7" Casing	Class G	15.9	Surface			
EXISTING	PLAN	DEPTH m-MDDF		DESCRIPTION		Deg °		
		Surface Surface 115 -175		TOC (10-3/4") TOC (7") Surface Plug		0.75 - 11.25		
		131.00 171.00		FISH (TUBING STOP) 24" Conductor Shoe				
		606.90 630 - 780 539.00		16" Conductor AWCA / SECTION MILL & CEMENT PLUG / SECTION MILL BiSN & CEMENT PLUG #3 Possible Shallow Gas		49.75 - 48.75		
		1,106.40 TBA		10-3/4" Casing Shoe TOC (Surface) Flow Point				
		1770 - 1920 1,909.50		AWCA / SECTION MILL & CEMENT PLUG # 2 Retrievable Hydraulic Packer		41.25 - 41.75		
		1920 - 1969 1945 - 1948.5		Isolation Plug # 1 (49 m) PERF (I110)		41.75 - 41.25		
		1,969.00		Bridge Plug				
		2,247.50		LOCATOR WB PACKER (PERMANENT)				
		2,525.90		EOT				
		2380 - 2390		PERF (J20)				
		2380 - 2390		PERF (J20)				
		2,500.00 2,525.90		PBD 7" Casing Shoe				

CURRENT VS PLAN TIONG B-15							
FIELD/PLATFORM : TIONG B SLOT : 15 RIG : TIOMAN T-1 COMPLETION DATE : 1984 WATER DEPTH : 67 DFE : 30.8 THF : 14.8 TD : 2000 MAX ANGLE : 27 XMT/WH : Single 3-1/8" WKM	CASING/TUBING	WT (ppf)	THREAD	NO JOINT	LENGTH	DEPTH	MIN ID
	24"	186	Weld			171	
	16"	75	BTC			535	
	10-3/4"	40.5	BTC			891	
	7"	23	BTC			1940	
	3.5"	9.3	TKC4040			1862	
	CEMENT RECORD	TYPE		WEIGHT (ppg)		TOC	TREAT' P (psi)
	16" Casing	Class G		15.9		Surface	
	10-3/4" Casing	Class G		15.9		Surface	
	7" Casing	Class G		15.9		Surface	

 DIMENSION BID WELL INTERVENTION PERFORATION SERVICES	DIMENSION BID COILED TUBING SERVICES		
	Tiong B	Bullheading Operation	

OPERATION SUMMARY

Item	Job Description	Remark
A	Slickline Activity	- Set plug at first packer area - Tubing Cut
B	Bullheading Operation	- Perform Injectivity test for potential donor well - Perform pressure test plug - Perform pumping through Annular casing (Reverse circulation) if required.

PRESSURE CALCULATION

MASTP CALCULATION

Well	TVD, ft	Fluid, ppg	Hydrostatic Pressure, psi	Fracture Gradient	Fracture Pressure	STP, psi	MSTP, psi
B-1	5,758	8.4	2,515	0.7	4,031	1,516	1,212
B-2	5,879	8.4	2,568	0.7	4,116	1,547	1,238
B-3	5,676	8.4	2,479	0.7	3,973	1,494	1,195
B-4	4,940	8.4	2,158	0.7	3,458	1,300	1,040
B-5	5,889	8.4	2,573	0.7	4,122	1,549	1,240
B-6	5,800	8.4	2,533	0.7	4,060	1,527	1,222
B-7	5,679	8.4	2,481	0.7	3,976	1,494	1,195
B-8	5,843	8.4	2,552	0.7	4,090	1,538	1,230
B-9	5,532	8.4	2,416	0.7	3,872	1,456	1,165
B-10	5,930	8.4	2,590	0.7	4,151	1,561	1,248
B-11	5,905	8.4	2,579	0.7	4,134	1,555	1,244
B-12	5,905	8.4	2,579	0.7	4,134	1,555	1,244
B-13	5,939	8.4	2,594	0.7	4,157	1,563	1,250
B-14	5,939	8.4	2,594	0.7	4,157	1,563	1,250
B-15	5,811	8.4	2,538	0.7	4,067	1,529	1,224

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 DIMENSION BID WELL INTERVENTION PERFORATION SERVICES	DIMENSION BID COILED TUBING SERVICES		
	Tiong B	Bullheading Operation	

TREATMENT VOLUME

Description	Detail
Tubing Specification	3-1/2" 9.2ppf#
Prod. Casing Specification	7", 23ppf#

Tubing Volume and A-Annulus Volume (for circulation)

Type	Volume															Total Volume (bbls)
	External Pipe			Internal Pipe 1			Internal Pipe 2			Caps	From	To	From	To	Length	
	OD (inch)	ID (inch)	W(lb/ft)	OD (inch)	ID (inch)	W(lb/ft)	OD (inch)	ID (inch)	W(lb/ft)	Barrel/lin (ft)	m	m	ft	ft	ft	
B-01																
Tubing volume until first packer / Plug	3 1/2	2.992								0.00870	0	2,061	0	6,762	6,762	58.80
PCP volume	7	6.366		3 1/2						0.02747	0	2,061	0	6,762	6,762	185.74
1.5 Total Volume																366.81
B-02																
Tubing volume until first packer / Plug	3 1/2	2.992								0.00870	0	2,318	0	7,605	7,605	66.14
PCP volume	7	6.366		3 1/2						0.02747	0	2,318	0	7,605	7,605	208.90
1.5 Total Volume																412.55
B-03																
Tubing volume until first packer / Plug	3 1/2	2.992								0.00870	0	2,400	0	7,874	7,874	68.48
PCP volume	7	6.366		3 1/2						0.02747	0	2,400	0	7,874	7,874	216.29
1.5 Total Volume																427.15
B-04																
Tubing volume until first packer / Plug	3 1/2	2.992								0.00870	0	1,890	0	6,201	6,201	53.92
PCP volume	7	6.366		3 1/2						0.02747	0	1,890	0	6,201	6,201	170.33
1.5 Total Volume																336.38
B-05																
Tubing volume until first packer / Plug	3 1/2	2.992								0.00870	0	1,903	0	6,244	6,244	54.30
PCP volume	7	6.366		3 1/2						0.02747	0	1,903	0	6,244	6,244	171.50
1.5 Total Volume																338.69
B-06																
Tubing volume until first packer / Plug	3 1/2	2.992								0.00870	0	2,109	0	6,920	6,920	60.17
PCP volume	7	6.366		3 1/2						0.02747	0	2,109	0	6,920	6,920	190.06
1.5 Total Volume																375.35
B-07																
Tubing volume until first packer / Plug	3 1/2	2.992								0.00870	0	2,525	0	8,285	8,285	72.04
PCP volume	7	6.366		3 1/2						0.02747	0	2,525	0	8,285	8,285	227.55
1.5 Total Volume																449.39
B-08																
Tubing volume until first packer / Plug	3 1/2	2.992								0.00870	0	1,909	0	6,263	6,263	54.47
PCP volume	7	6.366		3 1/2						0.02747	0	1,909	0	6,263	6,263	172.04
1.5 Total Volume																339.76
B-09																
Tubing volume until first packer / Plug	3 1/2	2.992								0.00870	0	2,004	0	6,575	6,575	57.18
PCP volume	7	6.366		3 1/2						0.02747	0	2,004	0	6,575	6,575	180.60
1.5 Total Volume																356.67
B-10																
Tubing volume until first packer / Plug	3 1/2	2.992								0.00870	0	2,323	0	7,622	7,622	66.28
PCP volume	7	6.366		3 1/2						0.02747	0	2,323	0	7,622	7,622	209.35
1.5 Total Volume																413.44
B-11																
Tubing volume until first packer / Plug	3 1/2	2.992								0.00870	0	1,750	0	5,742	5,742	49.93
PCP volume	7	6.366		3 1/2						0.02747	0	1,750	0	5,742	5,742	157.71
1.5 Total Volume																311.46
B-12																
Tubing volume until first packer / Plug	3 1/2	2.992								0.00870	0	1,499	0	4,918	4,918	42.77
PCP volume	7	6.366		3 1/2						0.02747	0	1,499	0	4,918	4,918	135.09
1.5 Total Volume																266.79
B-13																
Tubing volume until first packer / Plug	3 1/2	2.992								0.00870	0	2,060	0	6,759	6,759	58.78
PCP volume	7	6.366		3 1/2						0.02747	0	2,060	0	6,759	6,759	185.65
1.5 Total Volume																366.63
B-14																
Tubing volume until first packer / Plug	3 1/2	2.992								0.00870	0	1,909	0	6,263	6,263	54.47
PCP volume	7	6.366		3 1/2						0.02747	0	1,909	0	6,263	6,263	172.04
1.5 Total Volume																339.76
B-15																
Tubing volume until first packer / Plug	3 1/2	2.992								0.00870	0	1,778	0	5,834	5,834	50.73
PCP volume	7	6.366		3 1/2						0.02747	0	1,778	0	5,834	5,834	160.23
1.5 Total Volume																316.44

Prepared By: Muhammad Hafiz	Reviewed By: Kung Yee Han	Date: 11/6/2024	Rev. Rev.4	Controlled Document DB-CT-MHS-24001	Pg. 23
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Tubing Volume and Annulus Volume (for injectivity test)

Volume																
Type	External Pipe			Internal Pipe 1			Internal Pipe 2			Caps Barrel/lin (ft)	From m	To m	From ft	To ft	Length ft	Total Volume (bbls)
	OD (inch)	ID (inch)	W(lb/ft)	OD (inch)	ID (inch)	W(lb/ft)	OD (inch)	ID (inch)	W(lb/ft)							
B-01																
Tubing volume until EOT	3 1/2	2.992								0.00870	0	2,070	0	6,792	6,792	59.06
Annulus volume	7	6.366		3 1/2						0.02747	2,067	2,210	6,782	7,251	469	12.89
1.5 Total Volume																107.92
B-02																
Tubing volume until EOT	3 1/2	2.992								0.00870	0	2,358	0	7,737	7,737	67.28
Annulus volume	7	6.366		3 1/2						0.02747	2,318	2,428	7,605	7,966	361	9.91
1.5 Total Volume																115.79
B-03																
Tubing volume until EOT	3 1/2	2.992								0.00870	0	2,404	0	7,888	7,888	68.59
Annulus volume	7	6.366		3 1/2						0.02747	2,400	2,613	7,874	8,573	699	19.20
1.5 Total Volume																131.68
B-04																
Tubing volume until EOT	3 1/2	2.992								0.00870	0	2,215	0	7,267	7,267	63.20
Annulus volume	7	6.366		3 1/2						0.02747	2,212	2,230	7,258	7,317	59	1.62
1.5 Total Volume																97.23
B-05																
Tubing volume until EOT	3 1/2	2.992								0.00870	0	2,211	0	7,254	7,254	63.08
Annulus volume	7	6.366		3 1/2						0.02747	2,211	2,364	7,254	7,756	502	13.79
1.5 Total Volume																115.31
B-06																
Tubing volume until EOT	3 1/2	2.992								0.00870	0	2,135	0	7,005	7,005	60.92
Annulus volume	7	6.366		3 1/2						0.02747	2,131	2,307	6,992	7,569	577	15.86
1.5 Total Volume																115.16
B-07																
Tubing volume until EOT	3 1/2	2.992								0.00870	0	2,529	0	8,298	8,298	72.16
Annulus volume	7	6.366		3 1/2						0.02747	2,520	2,650	8,268	8,695	427	11.72
1.5 Total Volume																125.81
B-08																
Tubing volume until EOT	3 1/2	2.992								0.00870	0	1,914	0	6,280	6,280	54.61
Annulus volume	7	6.366		3 1/2						0.02747	1,909	2,056	6,263	6,746	482	13.25
1.5 Total Volume																101.79
B-09																
Tubing volume until EOT	3 1/2	2.992								0.00870	0	2,334	0	7,658	7,658	66.59
Annulus volume	7	6.366		3 1/2						0.02747	2,330	2,483	7,645	8,147	502	13.79
1.5 Total Volume																120.57
B-10																
Tubing volume until EOT	3 1/2	2.992								0.00870	0	2,334	0	7,658	7,658	66.59
Annulus volume	7	6.366		3 1/2						0.02747	2,323	2,445	7,622	8,022	400	10.99
1.5 Total Volume																116.38
B-11																
Tubing volume until EOT	3 1/2	2.992								0.00870	0	2,029	0	6,657	6,657	57.89
Annulus volume	7	6.366		3 1/2						0.02747	2,024	2,203	6,641	7,228	587	16.13
1.5 Total Volume																111.03
B-12																
Tubing volume until EOT	3 1/2	2.992								0.00870	0	1,783	0	5,850	5,850	50.87
Annulus volume	7	6.366		3 1/2						0.02747	1,779	2,009	5,837	6,592	755	20.73
1.5 Total Volume																107.40
B-13																
Tubing volume until EOT	3 1/2	2.992								0.00870	0	2,106	0	6,910	6,910	60.09
Annulus volume	7	6.366		3 1/2						0.02747	2,101	2,229	6,893	7,313	420	11.54
1.5 Total Volume																107.43
B-14																
Tubing volume until EOT	3 1/2	2.992								0.00870	0	2,450	0	8,038	8,038	69.90
Annulus volume	7	6.366		3 1/2						0.02747	2,247	2,500	7,372	8,203	830	22.80
1.5 Total Volume																139.05
B-15																
Tubing volume until EOT	3 1/2	2.992								0.00870	0	1,862	0	6,109	6,109	53.13
Annulus volume	7	6.366		3 1/2						0.02747	1,860	1,914	6,103	6,280	177	4.87
1.5 Total Volume																86.99

 DIMENSION BID WELL INTERVENTION PERFORATION SERVICES	DIMENSION BID COILED TUBING SERVICES		
	Tiong B	Bullheading Operation	

SAFETY OPERATIONAL PROCEDURES

Prior to commencement of the pumping operation, a pre-job meeting will be held. This should be attended by the following parties as a minimum:

OIM, WSS, Pumping Supervisor, Representatives of other service companies involved and others as necessary.

Safety meetings should be held at the start of every shift and risk assessments must be evaluated during this time. Tool box talks should be held immediately prior to the job execution.

Note: The safety meeting must be driven by DB Supervisor addressing the following topics as a minimum:

1. Muster point.
2. Take list of personnel on site (Head count)
3. All personnel should review and be familiar with escape routes and emergency procedures.
4. Describe the **job objective, fluids and volumes to be pumped, pressures expected** during the job, and others.
5. Review **Dimension Bid Operations Policy and Procedure Manual**.
 - 5.1. Ensure at all steps carried out during the operations comply with this Manual.
 - 5.2. Management of change **MUST** be applied any time there is a need to deviate from the steps contained this procedure.
 - 5.3. A document **MUST** be created describing each the step of the deviation. This document shall also include the deviation Risk Assessment and it **MUST** be approved and signed by PCSB – Head of Well Intervention and Dimension Bid Operations Manager.
6. Exercise stops work authority if unsafe condition occurs and assess situation with all team members, resume operation after mitigation plan is in place.
7. Personnel responsibilities throughout the job.
8. Spills, fire, blow out, unexpected well behaviour.
9. Emergency shower station and eye wash station location.
10. Trapped potential energy such as pressure or coiled tubing stiffness.
11. Prepare related Job Hazard Analysis (JHA) prior commencement of any work, get approval from Client Site Representative (CSR) and review it with all personnel involved as well as to review Risk Assessment.
12. Discuss the well H₂S, CO₂, Hg (Mercury) content (if applicable).
13. Adhere all **PCSB Zeto Rules** and other guidelines.
14. Take a physical count of inventory and make sure all required materials are available on site.
15. **Barricade** the work area and display the appropriate **warning sign**.
16. On chemical mixing and handling; all personnel involved shall hold **safety meeting** and review **Safety Data Sheet** (SDS).
 - 16.1. Personnel involve during chemical handling shall be briefed by DB Chemical Specialist onsite and extra precautions must be taken. All SDS must be available on site and reviewed prior chemical handling.
 - 16.2. All non-essential personnel shall stay away from mixing site.
 - 16.3. Use PPE including respirators, hard hats, eye protection and steel-toed boots.
 - 16.4. Verify if there is any **dead volume** in the mixing tanks and adjust volumes to account for non-usable volume in the blender / mix tank.
 - 16.5. Consider wind direction and note all trip hazards in the mix / pumping area.

Prepared By: Muhammad Hafiz	Reviewed By: Kung Yee Han	Date: 11/6/2024	Rev. Rev.4	Controlled Document DB-CT-MHS-24001	Pg. 25
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 DIMENSION BID WELL INTERVENTION PERFORATION SERVICES	DIMENSION BID COILED TUBING SERVICES		
	Tiong B	Bullheading Operation	

- 16.6. Prior to mixing chemicals, clean and verify the tank/batch mixer and lines are free of any debris and or contaminants.
- 16.7. In case of spill; wash the place where any chemical has been spilt with available spill kit.
- 16.8. Take care to prevent leakage due to ejection from valves, fittings, flanges, or other joints flexible chemical hoses and pumps. Never repair the equipment during transfer into mixing tank/container.
17. Take reading of Shut in / Flowing Tubing Head Pressure (SI/F/THP), Casing Head Pressure (CHP) and fluid sample (if available) prior to operation.
18. Check gas lift condition and capability with Site Operation Representative (SOR).
19. Ensure fitness prior to perform duties assigned.
20. Ensure all barriers are in place and followed.

HEALTH, SAFETY & ENVIRONMENT

1. Evaluate possible risks to arise during the job execution.
2. Evaluate risk assessment. Report any abnormal or insecure condition on site, taking into account all the steps or procedures to follow. Discuss with PCSB HSE coordinator, the execution or suspension of the job.
3. Review SDS of each product that will be used. Verify that all personnel on location handling toxic or corrosive products have the proper PPE.
4. Review the contingency plan for spills.
5. Do not vent / release any hydrocarbons from the well to atmosphere.

Notes: - Prior to DB personnel walking on upper deck, DB Supervisor to inspect upper deck and ensure that the area it is in good condition (Gratings, Hatches, etc.)

Prepared By: Muhammad Hafiz	Reviewed By: Kung Yee Han	Date: 11/6/2024	Rev. Rev.4	Controlled Document DB-CT-MHS-24001	Pg. 26
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 DIMENSION BID WELL INTERVENTION PERFORATION SERVICES	DIMENSION BID COILED TUBING SERVICES		
	Tiong B	Bullheading Operation	

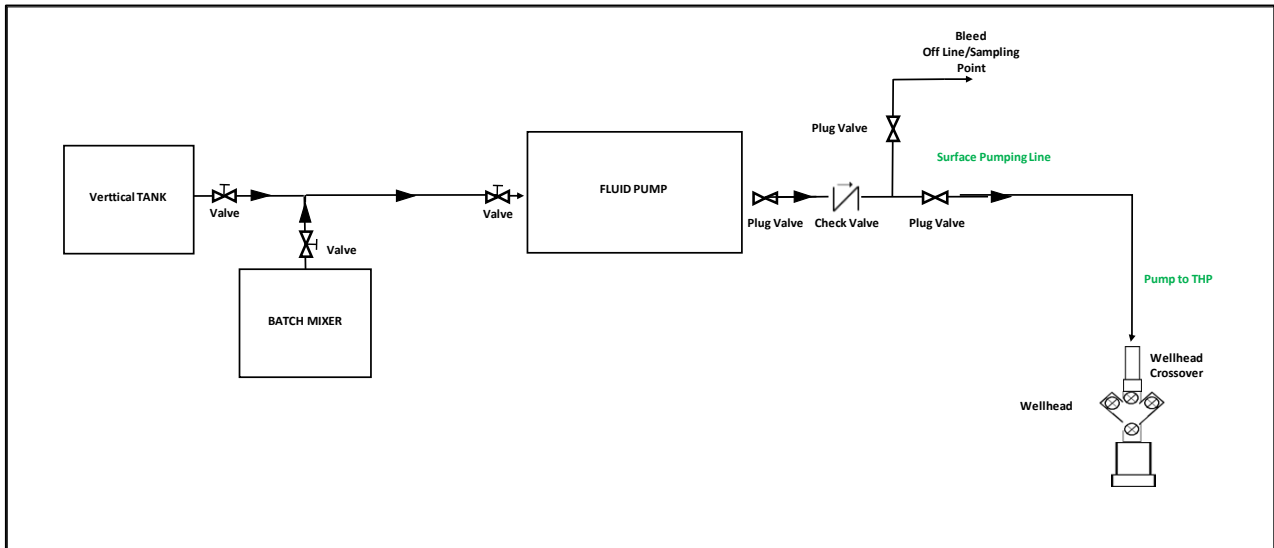
EQUIPMENT RIG-UP PROCEDURE

1. Hold a pre-job safety meeting. Discuss the rig up activities including the equipment lay out, lifting operations, crew roles and responsibilities and review the JHA as well.
2. Spot the equipment accordingly to space availability. Delegate only one personnel as the signalman and ensure every equipment has at least two tag line tied perpendicularly.
3. Rig up the LP hoses from fluid storage tanks to single pump unit.
4. Rig up 2" HP treating line as per DB Technical Standard from single pump to the Annular casing connection. Ensure a bleed off line is installed in the line and secure it firmly. (As per P&ID in appendix)
5. Check the THP and PCP, record it accordingly if any. Bleed off all pressure to as low as possible (if required).
6. Make up correct Annular Casing (production casing) crossover to the main treating line. (if required)
**Job Supervisor to confirm with Client Representative on well handover status prior to rigging up on the wellhead.*
7. Install a plug valve after the crossover then secure all line with safety cable.
9. Proceed to prepare for pressure test as per below.

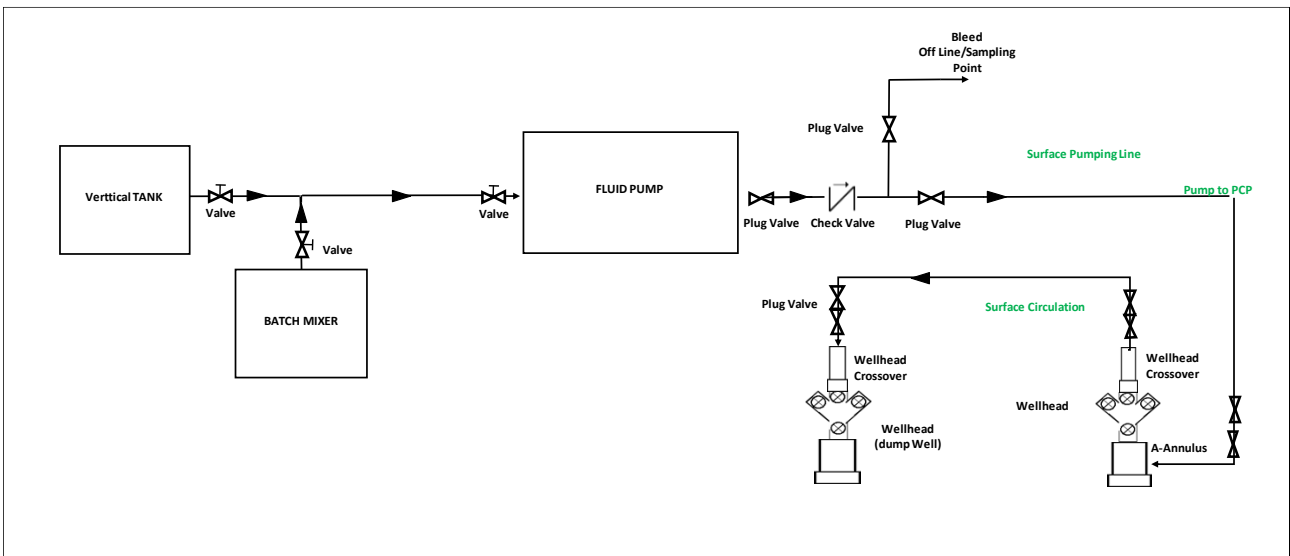
PRESSURE TEST PROCEDURE

1. Job Supervisor to hold a pre-pressure testing safety meeting.
2. Prime the unit completely.
3. Start flush the treating lines with treated seawater.
4. Ensure the swab valve and master valve at the x-mas tree are closed.
5. Perform pressure test for the treating lines up to 500 psi and hold for 5 minutes. Inspect the lines for leaks and observe any pressure drop.
6. Increase pressure to 3000 psi and hold for 10 minutes. Inspect the lines for leaks and observe any pressure drop.
7. Once completed, bleed off pressure through the bleed off line by fully opening the master plug valve (2x1 plug valve) then slowly open the control valve (2x1 plug valve). Ensure pressure is bled to zero.

Prepared By: Muhammad Hafiz	Reviewed By: Kung Yee Han	Date: 11/6/2024	Rev. Rev.4	Controlled Document DB-CT-MHS-24001	Pg. 27
--------------------------------	------------------------------	--------------------	---------------	--	-----------



Bullheading setup for Injectivity test and pressure test plug



Bullheading setup for circulation (if required)

DIMENSION BID	DIMENSION BID COILED TUBING SERVICES		 PETRONAS
	TIONG - B	INJECTIVITY TEST	

OPERATIONAL PROCEDURE

Conduct safety meeting with all personnel on location detailing the program, pressure limitations, personnel responsibilities, emergency well control drill, and safety precautions.

BULLHEADING PUMPING - INJECTIVITY

1. Ensure that treating line up to pump into the production tubing.
2. Manipulate surface valve to the following position prior pumping activity;

Description	Position
Flow Cross Pumping Valve (DB lines)	Open
Swab Valve	Open
Lower Master Valve	Open
Production Wing Valve	Close
A - Annular casing	Close

2.1. While opening up lower master valve, count turns for future reference.

3. Prior start pumping activity, complete the following:

3.1. Record shut in tubing head pressure (THP) and Annular casing pressure, Include in daily report.

Annular casing pressure (psi)	SITHP (psi)

3.2. Bleed off tubing and casing pressure to low as possible.

4. Open plug valve at the surface line that connects to pump-in tee and start pumping to flush 1.5 x Tubing and Annulus volume, if during pumping operation MASTP spike before complete 1.5 x Tubing volume. Stop pump and bleed off the pressure, wait for 10-15 minutes before re-attempt to pumping to complete pumping. Repeat for at least 3 Cycle. If after 3 Cycle unable to pump 1.5 volume, stop pump and proceed to next well.

Notes: - for injectivity well candidate, consult with WSS/EIC at town.

Pumping Schedule for Injectivity Test								
WELL	Description	Fluid	Vol	Vol (1.5)	Pump Rates	Remarks	MASTP	Remarks
			(bbl)	bbls	(BPM)		(psi)	
B-01	Flushing	TSW	72	110	0.5 – 3.0	To flushing 1.5x Tubing Annulus Volume	1,212	
B-02	Flushing	TSW	78	116	0.5 – 3.0	To flushing 1.5x completion volume	1,238	
B-03	Flushing	TSW	88	132	0.5 – 3.0	To flushing 1.5x completion volume	1,195	
B-04	Flushing	TSW	65	98	0.5 – 3.0	To flushing 1.5x completion volume	1,040	

Prepared By: Muhammad Hafiz	Reviewed By: Kung Yee Han	Date: 11/6/2024	Rev. Rev4	Controlled Document DB-CT-MHS-24002	Pg. 29
--------------------------------	------------------------------	--------------------	--------------	--	-----------

DIMENSION BID	DIMENSION BID COILED TUBING SERVICES		
	TIONG - B	INJECTIVITY TEST	

B-05	Flushing	TSW	77	116	0.5 – 3.0	To flushing 1.5x completion volume	1,240	
B-06	Flushing	TSW	77	116	0.5 – 3.0	To flushing 1.5x completion volume	1,222	
B-07	Flushing	TSW	84	126	0.5 – 3.0	To flushing 1.5x completion volume	1,195	
B-08	Flushing	TSW	68	102	0.5 – 3.0	To flushing 1.5x completion volume	1,230	
B-09	Flushing	TSW	81	121	0.5 – 3.0	To flushing 1.5x completion volume	1,165	
B-10	Flushing	TSW	78	117	0.5 – 3.0	To flushing 1.5x completion volume	1,248	
B-11	Flushing	TSW	75	112	0.5 – 3.0	To flushing 1.5x completion volume	1,244	
B-12	Flushing	TSW	72	108	0.5 – 3.0	To flushing 1.5x completion volume	1,244	
B-13	Flushing	TSW	72	108	0.5 – 3.0	To flushing 1.5x completion volume	1,250	
B-14	Flushing	TSW	93	140	0.5 – 3.0	To flushing 1.5x completion volume	1,250	
B-15	Flushing	TSW	58	87	0.5 – 3.0	To flushing 1.5x completion volume	1,224	

Well	TVD, ft	Fluid, ppg	Hydrostatic Pressure, psi	Fracture Gradient	Fracture Pressure	STP, psi	MSTP, psi
B-1	5,758	8.4	2,515	0.7	4,031	1,516	1,212
B-2	5,879	8.4	2,568	0.7	4,116	1,547	1,238
B-3	5,676	8.4	2,479	0.7	3,973	1,494	1,195
B-4	4,940	8.4	2,158	0.7	3,458	1,300	1,040
B-5	5,889	8.4	2,573	0.7	4,122	1,549	1,240
B-6	5,800	8.4	2,533	0.7	4,060	1,527	1,222
B-7	5,679	8.4	2,481	0.7	3,976	1,494	1,195
B-8	5,843	8.4	2,552	0.7	4,090	1,538	1,230
B-9	5,532	8.4	2,416	0.7	3,872	1,456	1,165

Prepared By: Muhammad Hafiz	Reviewed By: Kung Yee Han	Date: 11/6/2024	Rev. Rev4	Controlled Document DB-CT-MHS-24002	Pg. 30
--------------------------------	------------------------------	--------------------	--------------	--	-----------

DIMENSION BID	DIMENSION BID COILED TUBING SERVICES		 PETRONAS
	TIONG - B	INJECTIVITY TEST	

B-10	5,930	8.4	2,590	0.7	4,151	1,561	1,248
B-11	5,905	8.4	2,579	0.7	4,134	1,555	1,244
B-12	5,905	8.4	2,579	0.7	4,134	1,555	1,244
B-13	5,939	8.4	2,594	0.7	4,157	1,563	1,250
B-14	5,939	8.4	2,594	0.7	4,157	1,563	1,250
B-15	5,811	8.4	2,538	0.7	4,067	1,529	1,224

5. After complete fill up 1.5 tubing volume, proceed to perform injectivity test from 0.5 bpm – 3.0 bpm, sustain each rate for at least 10 minutes each rate.
6. Once complete injectivity test, proceed to next well.
7. In the event unable to complete injectivity test, report to town and proceed to next well.

Prepared By: Muhammad Hafiz	Reviewed By: Kung Yee Han	Date: 11/6/2024	Rev. Rev4	Controlled Document DB-CT-MHS-24002	Pg. 31
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DIMENSION BID	DIMENSION BID COILED TUBING SERVICES		 PETRONAS
	TIONG - B	INJECTIVITY TEST	

SLICKLINE OPERATION & PRE-PREPARATION PRIOR FOR ANNULUS PUMPING

8. Pumping supervisor to witness the following slickline intervention and record it in treatment and daily report.
9. Slickline to conduct TCC run to ensure the tubing path is clear from obstruction prior to installation of plug at first packer area.
10. Record any fluid level or any HUD encountered.

Description	Depth
Fluid level	
HUD	

11. Once slickline completed, proceed to assist slickline to pump and fill up tubing prior for tubing integrity test (TIT).
12. Perform Positive pressure test to ensure that the plug is holding.
13. Prepare treated sea water as per below for pumping activity;

Treated Sea Water (TSW)				100	BBL	Description
Seq.	Product	Concentration		Volume		
1	Sea Water	992	gptg	4,166	gal	Base Fluid
2	ACM H2S Clear 200	2	gptg	8	gal	CO2 & H2S Corrosion Inhibitor
3	ACM BACT 200	2	gptg	8	gal	Micro Biocide Control
4	ACM OXYFREE 100	2	gptg	8	gal	Oxygen Scavenger
Mixing Instruction: 1. Prepare Sea Water into the mixing tank. 2. Add ACM H2S Clear 200 into the tank and circulate the mixture. 3. Add ACM BACT 200 & ACM OXYFREE 100 into the tank and circulate the mixture until homogenous.						

Note: The above recipe is for 100bbls of TSW. Please prepare another batch of Treated Sea Water once needed.

14. Manipulate Surface valve to the following position prior pumping activity;

Description	Position
Flow Cross Pumping Valve (DB lines)	Open
Swab Valve	Open
Lower Master Valve	Open
Production Wing Valve	Close

- 14.1. While opening up Lower master valve, count turns for future reference.
15. Prior start pumping activity, complete the following:
 - 15.1. Record shut in tubing head pressure (SITHP) and Annular casing pressure. Include in daily report.

Annular Casing Pressure (psi)	SITHP (psi)
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Prepared By: Muhammad Hafiz	Reviewed By: Kung Yee Han	Date: 11/6/2024	Rev. Rev4	Controlled Document DB-CT-MHS-24002	Pg. 32
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DIMENSION BID	DIMENSION BID COILED TUBING SERVICES		 PETRONAS
	TIONG - B	INJECTIVITY TEST	

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- 15.2. Bleed off tubing and casing pressure to minimum as possible.
16. Open plug valve at the surface line that connects to pump-in tee and start pumping. Fill up completion tubing followed with pressure test.
- 16.1. Pressure test 500 psi and wait for 30 minutes.
- 16.2. If pressure holding good proceed to step 17, if not good wait for town decision (to re-set plug if required)
17. Once confirm the plug is holding, handover to slickline to enter next well.

Prepared By: Muhammad Hafiz	Reviewed By: Kung Yee Han	Date: 11/6/2024	Rev. Rev4	Controlled Document DB-CT-MHS-24002	Pg. 33
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DIMENSION BID	DIMENSION BID COILED TUBING SERVICES		 PETRONAS
	TIONG - B	INJECTIVITY TEST	

ANNULUS PUMPING LUBRICATION (IF REQUIRED)

18. If required to proceed for circulate the fluid after tubing cut, proceed as per below.
19. Ensure that treating line up to pump into the production tubing through A-Annulus.
20. Manipulate surface valve to the following position prior pumping activity;

Description	Position
Flow Cross Pumping Valve (DB lines)	Open
Swab Valve	Open
Lower Master Valve	Open
Production Wing Valve	Close
A - Annular casing	Open

- 20.1. While opening up lower master valve, count turns for future reference.

21. Prior start pumping activity, complete the following:

- 21.1. Record shut in tubing head pressure (THP) and Annular casing pressure, Include in daily report.

Annular casing pressure (psi)	SITHP (psi)

- 21.2. Bleed off tubing and casing pressure to low as possible.

22. Open plug valve at the surface line that connects to pump-in tee and start pumping to flush 1.5 x annular volume casing vs completion tubing, if after 1.5x. volume still got trace of hydrocarbon on surface, continue to flush until clean return.

Pumping Schedule for Injectivity Test								
WELL	Description	Fluid	Vol	Vol (1.5)	Pump Rates	Remarks	MASTP	A-Annulus Volume above first packer, bbl.
			(bbl)	bbls	(BPM)		(psi)	
B-01	Flushing	TSW	244	367	0.5 – 3.0	To flushing 1.5x completion volume	3,000	186
B-02	Flushing	TSW	275	413	0.5 – 3.0	To flushing 1.5x completion volume	3,000	209
B-03	Flushing	TSW	285	427	0.5 – 3.0	To flushing 1.5x completion volume	3,000	217
B-04	Flushing	TSW	224	336	0.5 – 3.0	To flushing 1.5x completion volume	3,000	170
B-05	Flushing	TSW	226	339	0.5 – 3.0	To flushing 1.5x completion volume	3,000	172
B-06	Flushing	TSW	250	376	0.5 – 3.0	To flushing 1.5x completion volume	3,000	190

Prepared By: Muhammad Hafiz	Reviewed By: Kung Yee Han	Date: 11/6/2024	Rev. Rev4	Controlled Document DB-CT-MHS-24002	Pg. 34
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DIMENSION BID	DIMENSION BID COILED TUBING SERVICES		 PETRONAS
	TIONG - B	INJECTIVITY TEST	

B-07	Flushing	TSW	300	449	0.5 – 3.0	To flushing 1.5x completion volume	3,000	228
B-08	Flushing	TSW	227	340	0.5 – 3.0	To flushing 1.5x completion volume	3,000	172
B-09	Flushing	TSW	238	357	0.5 – 3.0	To flushing 1.5x completion volume	3,000	181
B-10	Flushing	TSW	276	414	0.5 – 3.0	To flushing 1.5x completion volume	3,000	210
B-11	Flushing	TSW	208	311	0.5 – 3.0	To flushing 1.5x completion volume	3,000	158
B-12	Flushing	TSW	178	267	0.5 – 3.0	To flushing 1.5x completion volume	3,000	135
B-13	Flushing	TSW	245	367	0.5 – 3.0	To flushing 1.5x completion volume	3,000	186
B-14	Flushing	TSW	227	340	0.5 – 3.0	To flushing 1.5x completion volume	3,000	172
B-15	Flushing	TSW	211	317	0.5 – 3.0	To flushing 1.5x completion volume	3,000	160

23. For the return fluid pressure, ensure the pressure does not exceed MASTP below: -

Well	TVD, ft	Fluid, ppg	Hydrostatic Pressure, psi	Fracture Gradient	Fracture Pressure	STP, psi	MSTP, psi
B-1	5,758	8.4	2,515	0.7	4,031	1,516	1,212
B-2	5,879	8.4	2,568	0.7	4,116	1,547	1,238
B-3	5,676	8.4	2,479	0.7	3,973	1,494	1,195
B-4	4,940	8.4	2,158	0.7	3,458	1,300	1,040
B-5	5,889	8.4	2,573	0.7	4,122	1,549	1,240
B-6	5,800	8.4	2,533	0.7	4,060	1,527	1,222
B-7	5,679	8.4	2,481	0.7	3,976	1,494	1,195
B-8	5,843	8.4	2,552	0.7	4,090	1,538	1,230
B-9	5,532	8.4	2,416	0.7	3,872	1,456	1,165
B-10	5,930	8.4	2,590	0.7	4,151	1,561	1,248

Prepared By: Muhammad Hafiz	Reviewed By: Kung Yee Han	Date: 11/6/2024	Rev. Rev4	Controlled Document DB-CT-MHS-24002	Pg. 35
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DIMENSION BID	DIMENSION BID COILED TUBING SERVICES		 PETRONAS
	TIONG - B	INJECTIVITY TEST	

B-11	5,905	8.4	2,579	0.7	4,134	1,555	1,244
B-12	5,905	8.4	2,579	0.7	4,134	1,555	1,244
B-13	5,939	8.4	2,594	0.7	4,157	1,563	1,250
B-14	5,939	8.4	2,594	0.7	4,157	1,563	1,250
B-15	5,811	8.4	2,538	0.7	4,067	1,529	1,224

24. After complete flushing, handover the well to the production/slickline for next activity.

Prepared By: Muhammad Hafiz	Reviewed By: Kung Yee Han	Date: 11/6/2024	Rev. Rev4	Controlled Document DB-CT-MHS-24002	Pg. 36
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DIMENSION BID	DIMENSION BID COILED TUBING SERVICES		 PETRONAS
	TIONG - B	INJECTIVITY TEST	

SURFACE PUMPING LINE RIG-DOWN PROCEDURE

25. Conduct safety meeting with all relevant personnel and discuss the following but not limited to trapped pressure, heavy lift, simultaneous activities, standard rig down procedures.
26. Rig down surface treating lines as per following guidelines:
 - 26.1. Ensure that all wellhead valves are closed.
 - 26.2. Ensure that all surface lines are flushed with fresh or sea water.
 - 26.3. Bleed off pressure in all surface lines to zero (0) psi
 - 26.3.1. Verify that there is no pressure trapped between valves
 - 26.3.2. It is recommended to have all valves in surface line opened to atmosphere prior to breaking up connections.
 - 26.4. Remove restrain wire from surface lines.
 - 26.5. Proceed to break connection with hammer in good condition.
 - 26.6. Rig down pumping-tee, riser / lubricator and cross-over.
 - 26.7. Properly place the surface treating lines in the iron baske

Prepared By: Muhammad Hafiz	Reviewed By: Kung Yee Han	Date: 11/6/2024	Rev. Rev4	Controlled Document DB-CT-MHS-24002	Pg. 37
--------------------------------	------------------------------	--------------------	--------------	--	-----------

DIMENSION BID	DIMENSION BID COILED TUBING SERVICES		 PETRONAS
	TIONG - B	INJECTIVITY TEST	

Prepared By: Muhammad Hafiz	Reviewed By: Kung Yee Han	Date: 11/6/2024	Rev. Rev4	Controlled Document DB-CT-MHS-24002	Pg. 38
--------------------------------	------------------------------	--------------------	--------------	--	-----------