DIMENSION BID

PETRONAS

DULANG A 04S
N2 KICK-OFF
ADDENDUM#1

Revision:	0
Prepared for:	Haris Hamzah
Date Prepared:	20th July 2022
Well:	A-04S
Field:	DULANG
Operation Region:	PMA
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DESIGN VERIFICATION

PREPARED BY DB CTS Operation Engineer	Muhammad Hafiz saharuddin	20/7/2022 Date
APPROVED BY DB CTS Operation Manager	Alif Amirul Adenan	20/7/2022 Date
APPROVED BY PCSB Dulang Well Intervention Engineer	M Haris Hamzah	Date
APPROVED BY PCSB Technical Professional Well Intervention, PMA	M. Izwan B. A. Jalil	Date
APPROVED BY PCSB Head of Cluster 2 Well Intervention, PMA	Ahmad Hafizi B Ahmad Zaini	Date

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

OVERVIEW

This addendum is created in case after SCO inside A04S, the oil still unable to flow. Nitrogen gas introduced to kick off the flow of the oil.

OBJECTIVES

The objective of this addendum is;

1. To unload liquid inside tubing in order to create underbalance condition in order to enable the reservoir flow inside the short string

COILED TUBING OPERATION – CONTINGENCY RIH TO CLEAN AND DRIFT INSIDE TUBING UNTIL NEW BRIDGE PLUG TARGET DEPTH

1. Make up 2-1/8" 45 Deg Upward nozzle as per attached **BHA#5 45 Deg Upward Nozzle** in **Appendix I**.
2. Perform function test of the Nozzle to determine pump rate and pressure Parameter. Record the data in the table below, do not exceed 5,000psi.

Flow rates (bpm)	Pressure (psi)	Remark
0.3		
0.5		
0.6		
0.7		
0.8		
0.9		
1.0		
1.1		
1.2		
1.3		
1.4		
1.5		

3. Pick up coiled tubing and tag the stripper with the BHA.
4. Make up the Injector Head and Stripper to the stick up.
5. Coiled tubing stack up pressure test against Wellhead Swab valve. Pumping treated sea water through the coiled tubing, apply low pressure test of **300 psi for 5 minutes** and high-pressure test of **3,000 psi for 15 minutes** after stabilization. Record the pressure test. Record test on a chart. Upon successful pressure test, bleed off pressure via Pump-In Sub.

   5.1. For low pressure:

   Acceptance criteria: No visible leaks. Pressure drop is less than 10% (above 270 psi) over 5-minutes test interval after the pressure stabilizes.

   5.2. For high pressure:

   Acceptance criteria: No visible leaks. Pressure drop is less than 10% (above 2,700 psi) over the 15- minutes test interval after the pressure stabilizes.

6. Pressure test the BHA Check Valve. With **3,000 psi** in the coiled tubing stack up, bleed off the stack up pressure to **1,500 psi** via pump-in sub; and bleed off pressure in the coiled tubing to zero (0) psi via reel manifold.

   6.1. Acceptance criteria: **Pressure drop is less than 10% (above 1,350 psi) over the 15- minute test interval after the pressure stabilizes.** Observe for any pressure changes in the stack up. If the BHA check valve is not holding, proceed to replace the MHA; do not run in hole with leaking check valve; repeat steps 8.2, and 9.

7. Upon successful test, bleed off the pressure in the coiled tubing stack up to zero through the pump-in sub.
8. Zero both depth counters at reference point.
9. Confirm all wellhead and BOP valves are in open position via physical check.

10. Prior to opening the wellhead valve pressure up above master valves to a pressure equal to the expected shut in wellhead pressure.
11. Count wellhead valves turns while opening and record it the treatment report for reference in future.
12. Manipulate surface valve to the following position:

Valve	Position
Reel Manifold	OPEN
Lower Master Valve	OPEN
Swab Valve	OPEN
Flow Cross Return Valve	OPEN
Wing Valve	CLOSE

13. Start running in hole coil tubing to first circulation point depth at **763.12m /2,503.8 ft MDDF** while pumping N2 at minimum rate permissible. First circulation point is calculated based on assuming fluid level at depth **398.9m /1,309 ft MDDF** (Hydrostatic pressure = reservoir pressure). Circulation point start at **763.12m /2,503.8 ft MDDF** to clear out fluid column inside tubing in order to create 500 psi underbalance. Maximum depth to circulate is at **2,796m/9175ft MDDF** (1,000 ft above top perf of I-15) if well still unable to flow.
    - 13.1. Refer to CT Tubing Force simulation (Orpheus modelling), refer Appendix III (in original job program).
    - 13.2. Conduct pull test as per for every 300m (1,000ft), use CT Fatigue graph as reference. Ensure the CT Fatigue graph is available at location before RIH. Record RIH, Hanging and POOH weight in treatment report.
    - 13.3. After performing pull test every 1,000ft, pump 2 bbls of friction reducer solution through the kill port line to lubricate through annulus of CT String.
    - 13.4. Maximum coil speed running in hole is **30-50 ft/min.**
    - 13.5. Slow down coil speed to **10 ft/min**, 50 ft before and after passing through completion accessories.
    - 13.6. Closely observe weight indicator in control cabin while running in hole.
    - 13.7. Observe return all the times.
    - 13.8. Regularly inform WSS on job status at all times.
    - 13.9. Do not exceed operating safety limits **5,000 psi.**
    - 13.10. If the well condition differs from original job design, contact appropriate personnel in charge before proceeding.
    - 13.11. At all time, while run-in hole, the injector torque control shall be set at the minimum pressure required to move the Coiled Tubing at specified speed.
14. At **748.12 m MDDF (15m before first circulation depth)**, stop coil and conduct pull test of 10m/30ft and record the pulling weight both static and dynamic (IMPORTANT).

Depth, ft	RIH weight, lbf	Static weight, lbf	Pick up weight, lbf

15. Upon completion pull test, continue RIH until **763.12m /2,503.8 ft MDDF (first circulation point depth)** and start pumping nitrogen with rate 400 scf/min until 600 scf/min for 30 minutes while monitoring the returns on surface.

15.1. If fluid is observed at surface at a good flow rate, continue lifting until all fluid is recovered.

15.2. Constantly monitor & record the return from the well and THP. Periodically take fluid sample and verify the salinity.

15.3. If there is no fluid return at surface, continue pumping nitrogen and RIH to the next depth as per table below:

No.	Stage	Liquid Rate	Total Liquid	N2 Rate	Total N2	Duration	Coiled Tubing					
		BPM	BBL	SCFM	SCF	Minute	ft/min	From (ft)	From (m)	To (ft)	To (m)	Total Footage (ft)
1	RIH	0	0	300	10007	33	30	0	0	1001	305	1001
2	Pull test	0	0	300	492	2	30	1001	305	951	290	49
3	RIH	0	0	300	10007	33	30	951	290	1952	595	1001
4	Pull test	0	0	300	492	2	30	1952	595	1903	580	49
5	RIH	0	0	300	6004	20	30	1903	580	2503	763	600
13	**Circulation***	0	0	400	12000	30	0	2503	763	2503	763	0
14	RIH	0	0	400	13343	33	30	2503	763	3504	1068	1001
15	Pull test	0	0	400	656	2	30	3504	1068	3455	1053	49
16	**Circulation**	0	0	400	12000	30	0	3504	1068	3504	1068	0
17	RIH	0	0	400	13343	33	30	3504	1068	4505	1373	1001
18	Pull test	0	0	400	656	2	30	4505	1373	4456	1358	49
19	**Circulation**	0	0	400	12000	30	0	4456	1358	4456	1358	0
20	RIH	0	0	400	13343	33	30	4456	1358	5456	1663	1001
21	Pull test	0	0	400	656	2	30	5456	1663	5407	1648	49
22	**Circulation**	0	0	400	12000	30	0	5456	1663	5456	1663	0
23	RIH	0	0	400	13343	33	30	5456	1663	6457	1968	1001
24	Pull test	0	0	400	656	2	30	6457	1968	6408	1953	49
25	**Circulation**	0	0	400	12000	30	0	6457	1968	6457	1968	0
26	RIH	0	0	400	13343	33	30	6457	1968	7458	2273	1001
27	Pull test	0	0	400	656	2	30	7458	2273	7408	2258	49
28	**Circulation**	0	0	400	12000	30	0	8143	2482	8143	2482	0
29	POOH	0	0	300	81434	271	30	8143	2482	0	0	8143
			Total N2, SCF		**250,432**							
			Total N2, Gallon		**2,689**							

16. Please note the maximum depth of circulation is at 10 m above EOT, **2,481.9m / 8,143 ft MDDF.** This is to ensure no nitrogen losses into formation.

17. Stop pumping N2 once get continuous gas return on surface.

18. Once the well start flowing, stop pumping nitrogen and monitor the well flow for **one hour.**

    18.1. If the well continues flowing naturally, start to pull coiled tubing out of the hole to surface.

    18.2. If the well stops flowing naturally, repeat **step 15** by pumping nitrogen again.

    18.3. In the event that after unloading the well was unsuccessful, consult town for further assistance whether to repeat nitrogen unloading.

19. Upon well commencing to flow satisfactorily, POOH CT to surface.

    19.1. Pump N2 at minimum permissible rate while POOH. Do not exceed 4,500 psi pumping pressure.

    19.2. Maximum coil speed while POOH is 50ft/min.

    19.3. Slow down coil speed before and after passing through completion accessories.

    19.4. Do not exceed CT Operating Limit.

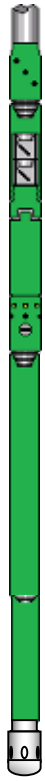
BHA #5: 45 Deg Upward Nozzle

DIMENSION BID
WELL INTERVENTION | PERFORATION SERVICES

BHA DIAGRAM #5- 2.125" UPWARD NOZZLE

Client	**Petronas Carigali**
Field	**Dulang A**
Job Type	**SCO**
Job No.	

Well	**A-04S**
Min Restriction	**2.64"**
BHP	**2100 psia**
BHT	**208 deg F**

BHA DRAWING	DESCRIPTION	CONNECTION		ID	OD	TOOL LENGTH	CUMULATIVE LENGTH
		UPHOLE	DOWNHOLE	INCH	INCH	FT	FT
	Dimple CT Connector	1.5" CT	1.5 AMMT		2.125	0.6	0.6
	MHA Disconnect drop ball 5/8" Shear pressure 5,456 psi Circulating drop ball 0.5" Shear pressure 2,520 psi Burst Disc 5000 psi	1.5 AMMT BOX	1.5 AMMT PIN		2.125	2.5	3.1
	5 ft Straight Bar	1.5 AMMT BOX	1.5 AMMT PIN		2.125	5.0	8.10
	3 ft Straight Bar	1.5 AMMT BOX	1.5 AMMT PIN		2.125	3.0	11.1
	Upward Nozzle	1.5 AMMT Box			2.125	0.80	11.9

BHA LENGTH	**11.90**
MAXIMUM OD	**2.125"**
MINIMUM ID	

Prepared by:	Muhammad Hafiz
Review by:	
Revision:	
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ADDITIONAL INFORMATION: