


DIMENSION BID



DULANG A-12 CT MILLING & ADD PERFORATION ADDENDUM #3

Revision: 0
Prepared for: Ellisa Suzrin Shamsul
Date Prepared: 3th September 2024
Well: A-12
Field: Dulang A
Operation Region: PMA
Prepared by: Muhammad Ameerul Zaeem
Phone: +6011 2903 3294
Email: ameerul@neudimension.com

DIMENSION BID	DIMENSION BID COILED TUBING SERVICES		 PETRONAS
	DULANG A-12	CT MILLING & ADD PERF	

DESIGN VERIFICATION

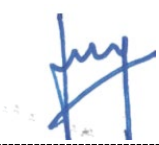


PREPARED BY DB
CTS Field Engineer

Muhammad Ameerul Zaeem

03/9/2024

Date



REVIEWED BY DB
CTS Technical Advisor

Kung Yee Han

03/9/2024

Date



APPROVED BY DB
CTS Operation Manager

Aliff Amirul Adenan

03/9/2024

Date

APPROVED BY PCSB
Dulang A
Well Intervention Engineer

Ellisa Suzrin Shamsul

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.

Prepared By: Muhd Ameerul Zaeem	Reviewed By: Kung Yee Han	Date: 3/9/2024	Rev. Rev.0	Controlled Document DB-CT-MAZ-24019	Pg. 2
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	DULANG A-12	CT MILLING & ADD PERF	

OBJECTIVES

The objective of this addendum is;

- 1) To continue milling on fish (parted tubing stop sleeve) with a 2.28" OD Flat Bottom Junk Mill Bit.

Prepared By: Muhd Ameerul Zaeem	Reviewed By: Kung Yee Han	Date: 3/9/2024	Rev. Rev.0	Controlled Document DB-CT-MAZ-24019	Pg. 3
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WELL DIAGRAM

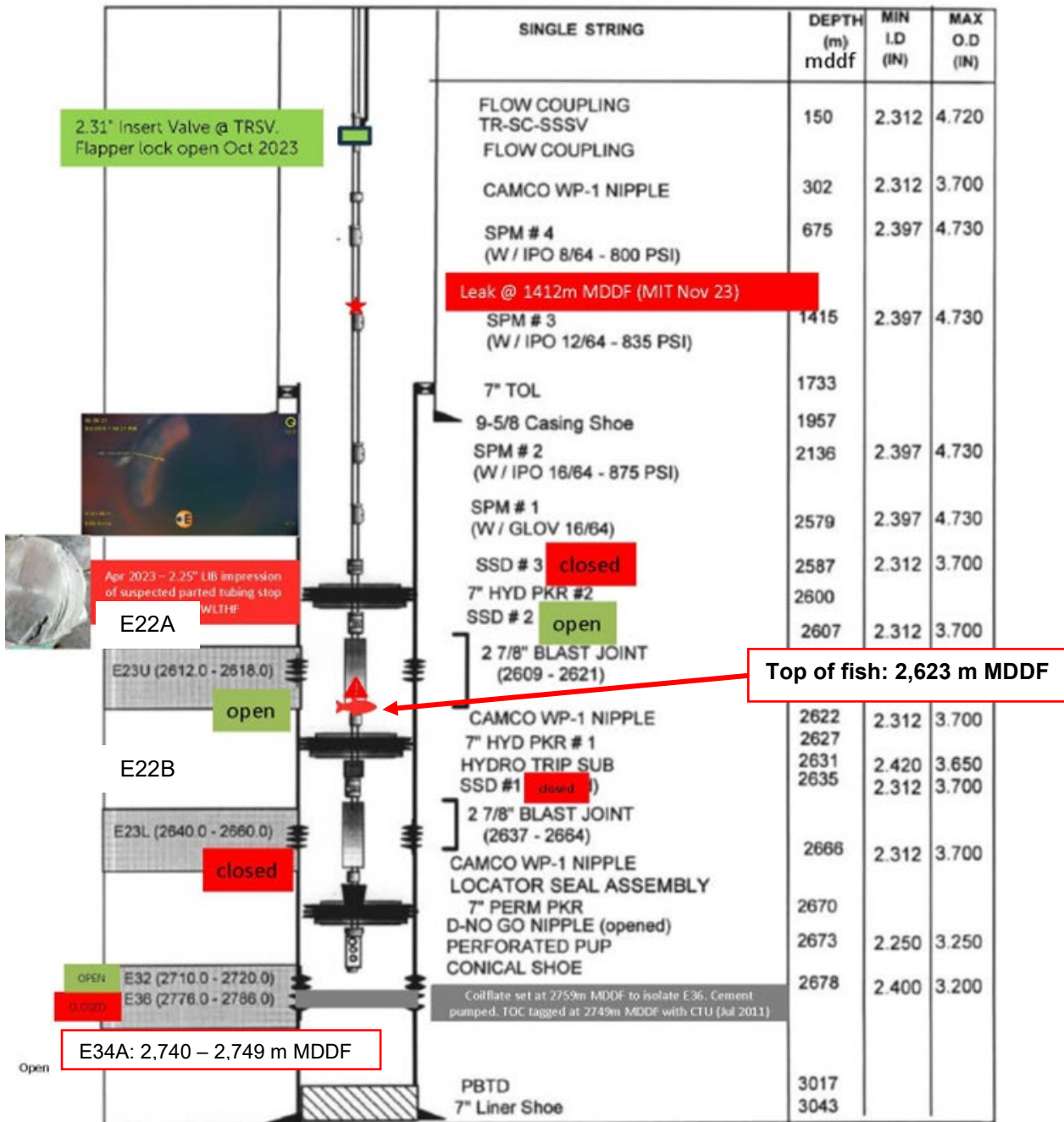
Latest Update: MAR 2023 by Pravin Nair

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FB – SE2

A-12ST1 WELL COMPLETION DIAGRAM SELECTIVE SINGLE OIL PRODUCER

Well No. : A-12ST1	Date : 22 January 2002
Location : Dul-A	All Depth in : m-MDDF
Wellhead: Cooper Cameron, 3-1/8", 3000 psi	RKB-THF : 11.635m
Tubing : 2 7/8", 6.4ppf, L-80, Vam Ace	Max Deviation : 73.88 @ 1567 m-MDDF



OPERATIONAL PROCEDURE

All depths specified below are in m-MDDF (**RKB to THF is 11.635-m as per well diagram**)

CT RUN#3: MILLING TOP OF FISH (PARTED TUBING STOP SLEEVE) UNTIL 'D' NOGO NIPPLE

1. Make up 2-1/8" PDM Motor c/w 2.28" Flat Bottom Junk Mill Bit tool as per **BHA#1: 2.28" Flat Bottom Junk Mill Bit BHA** in Appendix 1.
2. Perform function test of the Milling Motor to determine at which pump rate and pressure the tool start to operate / rotate. Record the data in the table below and include in daily report. Refer to the Motor Performance data for the operating envelope. Recommended flowrate is **0.7 bpm to 1.3 bpm** (refer to the motor performance data as per advise from RG Tool Specialist).

Flow rates (bpm)		Pressure (psi)	Remark
GPM	BPM		
21.0	0.50		
30.0	0.70		
37.8	0.90		
46.2	1.10		
50.0	1.20		
55.0	1.30		

3. For reference, flow rate range to operate the motor is between 0.70 – 1.30 bpm (as per PDM technical specification). RG Tool Specialist will be on site to advise on milling tool function and performance.
4. Pick up CT and tag the stripper with the BHA.
5. Make up the Injector Head and Stripper to the stack up.
6. CT stack up pressure test against Wellhead Swab valve. Pumping IW through the CT, 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.
 - 6.1. 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.
 - 6.2. 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.
7. Pressure test the BHA Check Valve with **3,000 psi** in the CT stack up, bleed off the stack up pressure to **1,500 psi** via pump-in sub; and bleed off pressure in the CT to zero (0) psi via reel manifold.
 - 7.1. 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 10.2 and 11.
8. Upon successful test, bleed off the pressure in the CT stack up to zero through the pump-in sub.
9. Zero both depth counters at reference point.
10. Confirm all wellhead and BOP valves are in open position via physical check.

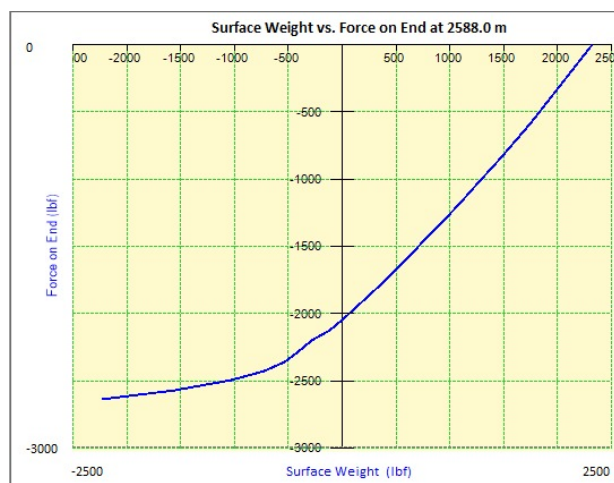
- 10.1. Prior to opening the wellhead valve pressure up above master valves to a pressure equal to the expected shut-in wellhead pressure.
- 10.2. Count wellhead valves turns while opening and record it the treatment report for reference in future.
- 10.3. Manipulate surface valve to the following position:

Valve	Position
Reel Manifold	OPEN
Flow Cross Return Valve (Cetco lines)	OPEN
Wing Valve	CLOSE

11. Start RIH CT to **10m above last known HUD (2,578 m MDDF)** while pumping **Injection Water** at 0.3 bpm.
 - 11.1. Refer to CT Tubing Force simulation (Orpheus modelling), refer Appendix III.
 - 11.2. Ensure Milling Tool Specialist from RG is inside control cabin all the time during operation.
 - 11.3. 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.](#)
 - 11.4. Maximum coil speed running in hole is **30-50 ft/min**.
 - 11.5. Slow down coil speed to **10 ft/min**, 50 ft before and after passing through completion accessories.
 - 11.6. Closely observe weight indicator in control cabin while running in hole.
 - 11.7. Observe return all the times.
 - 11.8. Regularly inform WSS on job status at all times.
 - 11.9. Do not exceed operating safety limits **5,000 psi**.
 - 11.10. If the well condition differs from original job design, contact appropriate personnel in charge before proceeding.
 - 11.11. At all time, while run-in hole, the injector torque control shall be set at the minimum pressure required to move the CT at specified speed.
12. Once CT reach **2,578 m (10 m above HUD)**, conduct pull test **a minimum** of 10m/30ft with pumping rate 0.3 bpm and record the pulling weight both static and dynamic (**IMPORTANT**).

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

13. Continue RIH slowly without pumping to tag HUD (TOF) at **2,588 m**. Do not slack off more than -500 lbf at downhole. Please refer below available set down force reference:



14. Record the depth at which the HUD was tagged. Pick up CT to the normal weight and flag the CT string on surface (Flag #1).

Flag Number	Colour
Flag#1	

15. Pick up 10 m above HUD at **2,578 m** & start pumping IW to start the Milling Motor. Record all the parameter (Flow Rate, Pumping Pressure). Refer to the Motor Performance Data. Record the “Off Bottom” pump pressure prior milling.

- 15.1. The pressure is considered No Load Pressure (**P No Load**). No Load Pressure will increase as milling in progress.

Flow rates (bpm)		Pressure (psi)	Remark
GPM	BPM		
21.0	0.50		
30.0	0.70		
37.8	0.90		
46.2	1.10		
50.0	1.20		
55.0	1.30		

16. Once “Off Bottom” parameters have been recorded, increase pumping rate as per RG Tool Specialist recommendation and record the circulating pressure.

16.1. Do not exceed the maximum CT working pressure of 5,000 psi.

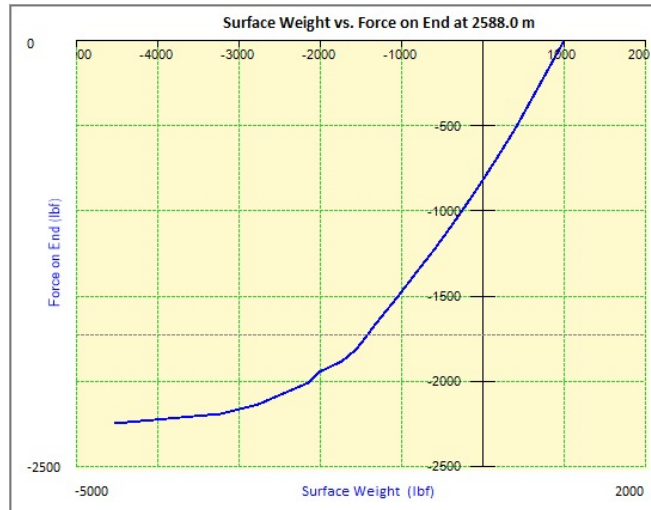
16.2. Flow rate range for the motor to operate is 0.50 – 1.20 bpm.

17. Continue to RIH until loss in weight (by increment of 100 lbf slack off) is observed on fish and start milling while maintaining -100 lbf weight on bit (or as advised on site by RG Tool Specialist) once observe milling pattern (Circulating Pressure slightly increase). Record the on bottom circulating pressure and start milling with minimum WOB.

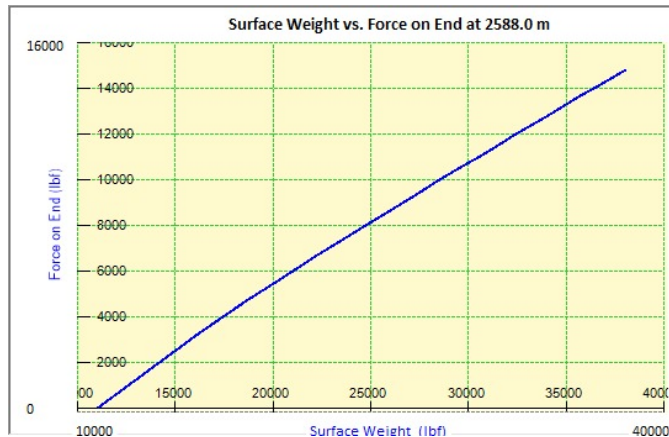
Note 1: At this point, **patience is critical**. Motor stalls can occur repeatedly until milling pattern is established. Set down weight should be applied until approximately **300 – 700 psi** differential pressure above the “Off Bottom” circulating pressure is maintained. RG Tool Specialist onsite will further asses and advise to address the condition during milling operation.

Note 2: There’s possibility that no differential pressure observes due to surface contact of the fish one 1 side of the tubing wall.

- 17.1. Continue slacking off weight as differential pressure and ROP (Rate of Penetration) indicates the progress of fish milling. Keep WOB within limit while pumping as per RG Tool Specialist recommendation.



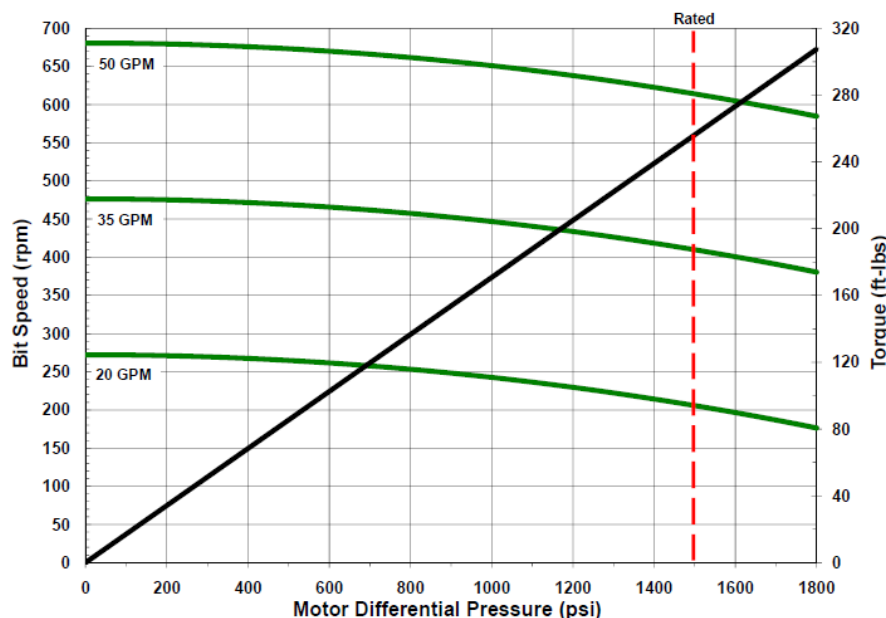
- 17.2. **Set down weight between 300 to 500 lb_f, in 100 lb_f incremental. Maximum set down weight is -1,000 lb_f at downhole. Motor work is indicated by differential pressure not the WOB.**
- 17.3. Please record the bottom hole circulating pressure. **Keep the DP between 300 – 700 psi. Maximum DP is 1,300 psi (P_{Load} – P_{No Load}).**
- 17.4. Pick up force for reference:



- 17.5. If motor stall, reduce pumping rate by stages, bleed off pressure, wait for 15 minutes, and pick up CT 10 m above the current depth. Resume the pumping and note the pressure and compare to the previous pressure. Refer to the Motor Performance Curve below as guideline.
- 17.6. RG Tool Specialist to **record all the parameter before milling and during milling manually in log sheet.**
- 17.7. Please refer below Bico PDM Motor technical specification for reference:

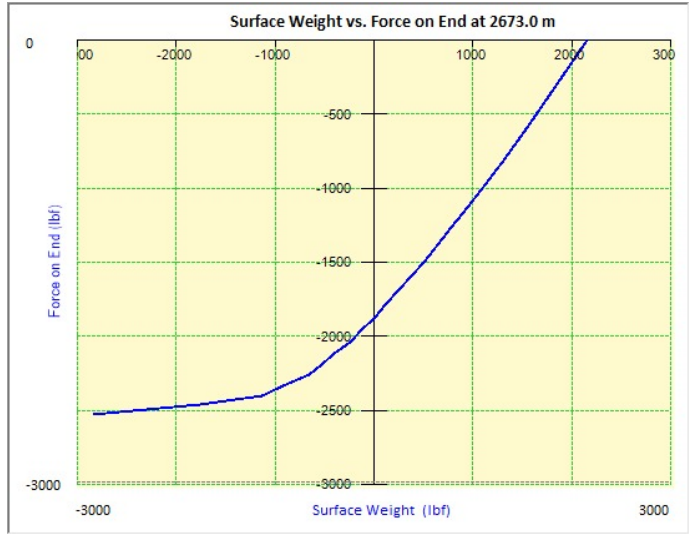
Performance Curves Based on Dynamometer Test Data

Operating Data			
Flow Range	gpm (lpm)		20 - 50 (76 - 190)
Motor Pressure	psi (bar)		1,500 (103)
Bit Speed	rpm		270 - 680
Displacement	rev/gal (rev/l)		13.612 (3.630)
Torque	ft-lbs (Nm)		256 (347)
Power	HP (Kw)		33 (25)
Physical Dimensions			
Power Section Configuration	Stages	6	
	Lobes	5/6	
Overall Motor Length	ft (m)	11.0 (3.4)	
Weight	lbs (kg)	86 (39)	
Connections	Standard	Box	1-1/2" Reg, Top and Bottom
	Optional	Box	Available Upon Request
Mill Size	in (mm)	3-1/2 Max (88.9 mm Max)	
Bit Size	in (mm)	2-3/16 to 3-1/4 (55.6 - 82.6)	



18. Once milling pattern is established (indication of circulating pressure slightly increase), continue milling for at least 15 minutes (more if necessary) before proceeding to vary the [set down weight between 300 to 500 lbf until achieve 300– 700 psi differential pressure](#). Maximum DP is 1,300 psi.
19. Continue milling the fish / HUD depth until encounter lost in weight that indicate the fish has been milled or fell downhole.
 - 19.1. Pay close attention to the weight indicator and circulation pressure gauge
 - 19.1.1. The weight indicator will indicate the amount of WOB applied.
 - 19.1.2. The circulation pressure can be used to calculate the DP at which motor is functioning optimally.
 - 19.2. Continue milling to clear the fish until **2,673 m ('D' Nogo Nipple)**.
 - 19.3. If no movement or progress after 30 minutes milling, gradually increase the downhole force max to 1,000 lbs, and increase the circulating pressure Max DP 1,300 psi (P load – P no load), **subject to recommendation by RG Tool Specialist**.
20. Once indication of the fish has been clear until **2,663 m (10 m above 'D' Nogo Nipple)**, slowly RIH to tag 'D' Nogo Nipple at 2,673 m. Do not slack off more than -500 lbf at downhole. Flag the CT string on surface (Flag#2).

Flag Number	Colour
Flag#2	




21. Once confirm tag 'D' Nogo Nipple at 2,673 m, POOH CT to surface. Prepare BHA for next run.

BHA#1: 2.28" FLAT BOTTOM JUNK MILL BIT BHA

DIMENSION BID

BHA DIAGRAM #1 -2.28" Flat Bottom Junk Mill Bit

Client Petronas Carigali	Well A-12
Field Dulang A	Min Restriction 2.25
Job Type CT Milling & Add Perf	BHP
Job No.	BHT

BHA DRAWING	DESCRIPTION	CONNECTION		ID INCH	OD INCH	TOOL LENGTH FT	CUMULATIVE LENGTH FT
		UPHOLE	DOWNHOLE				
	External Dimple CT Connector	1.5" CT	1.5" AMMT Pin		2.000	0.41	0.4
	2-1/8" Motorhead Assembly Disconnect drop ball 3/4" Circulating drop ball 5/8" Burst Disc 5,000 psi	1.5" AMMT Box	1.5" AMMT Pin		2.125	3.00	3.4
	2-1/8" BICO PDM Motor	1.5" AMMT Box	1.5" AMMT Box		2.125	11.4	14.81
	2.28" Flat Bottom Junk Mill bit	1.5" AMMT Pin			2.280	1.42	16.23

BHA LENGTH	16.23
MAXIMUM OD	2.28
MINIMUM ID	

Prepared by: M. Ameerul Zaem	ADDITIONAL INFORMATION:
Review by:	
Revision:	
Date:	