pTitle	Service Quality Improvement Project (SQIP)					
Target Population	Field Engineers & Field Specialists					
This requirement is applicable to:	✓	JFE	✓	FST		EOT
	✓	FE1	✓	FS1		EO1
	✓	FE2	✓	FS2		EO2
			✓	FS3		EO3
					✓	GEO

Objective:

The objectives of this task are:

- To assess employee's ability in applying critical thinking and problem solving
- To develop employee's communication and organizational skills
- To evaluate employee's ability to collect and study data, and draw substantive conclusion
- To create an opportunity for the FE and FS to improve his presentation skills by practicing with a large and critical audience.

Tasks:

- The FE / FS is to prepare a proposal on Service Quality Improvement Project to Line Management. The objective of the project must focus on improving operational performance such as recommendations on equipment modification, leaner working environment, cost reduction initiatives for efficient operations etc.
- To obtain approval and support from respective mentor and FSM.
- Prepare a presentation slides and present the project to the Line Management and technical team (Operation Engineer). You will have 20 minutes for presentation and 30 minutes for question and answer session.

REQUIRED EVIDENCE:

1	Slide Presentation	✓
2	CTS-FORM-84 CTS Improvement Project Abstract Template	✓
3	CTS-FORM-85 SQIP/Breakout Project Evaluation Form	✓
4	Attendance Form	✓

MENTOR / ASSESSOR's Comments & Recommendation:			
Objective met. Tasks completed.			
Signature	[signature]	Assessment Date	15/10/24.
Name	KUNG YEE HAN	Position	TECH ADVISOR

FSM / OM Comments & Recommendation:			
Task completed			
Signature	[signature]	Assessment Date	15/10/24
Name	RIDHWAN AZIZAN	Position	FSM

DIMENSION BID

SQIP/BREAKOUT PROJECT EVALUATION FORM

COILED TUBING SERVICES

PERSONNEL DETAILS

FULL NAME	POSITION
Muhammad Hafiz Saharuddin	Field Engineer 2

PROJECT NAME	Long Deployment BHA inside Casing section through Short string
PROJECT FOCUS LEVEL	Design and execution
DATE OF PROJECT APPROVAL	15/10/2024.
DATE OF PROJECT PRESENTATION	15/10/2024.
PROMOTION STEP	FE2 to GFE
PROJECT OVERALL SCORE	90%

EVALUATION CRITERIA	Rating *(Please √ where appropriate)*									COMMENTS
	STRONG			ADEQUATE			IMPROVEMENT NEEDED			
	10	9	8	7	6	5	4	3	2	
PROJECT PRESENTATION										
1 Audibility & Speech			✓							
2 Clarity & Organization		✓								
3 Visual Presentation		✓								
4 Hand-outs/Publication		✓								
PROJECT EVALUATION										
1 Project Objectives		✓								
2 Project Implementation		✓								
3 Costing Beneficial			✓							
4 Project Impact on DB		✓								
5 Project Impact on Client		✓								
6 Continuos Monitoring and Improvement		✓								
OTHERS										
1 Proposal		✓								
2 Project Communication		✓								
3 Risk Control		✓								
4 Resources Management		✓								

PROJECT EVALUATOR

Task completed

CANDIDATE'S SIGNATURE	INSTRUCTOR'S SIGNATURE	MANAGER'S SIGNATURE	DATE
[signature]	[signature] 15/10/24.	[signature]	15/10/24

Neu Dimension

ATTENDANCE FORM

Purpose: ☐ **Meeting** ☑ **Training / Seminar / Workshop**

Type of Training: ☐ Classroom ☐ Practical / Hands On ☑ Technical Sharing

Training Facilitator / Trainer: Hafiz.

Topic/Subject	SQIP / Breakout Project – Hafiz	**Date**	15/10/2024
Venue	BK office.	**Time**	
Meeting Coordinator	Hafiz	**Meeting/ Training Duration**	

No.	Name	Position	Signature
1	Hafiz.	FE 2.	[signature]
2	Faizal Ali	SOE	[signature]
3	KUNG YEE HAW	TA.	[signature]
4	RIDHWAN AZIZAN	FSM	[signature]
5	ShahFARIZ	FE	[signature]
6	Zaeem	FE	[signature]
7			
8			
9			
10			
12			
13			
14			
15			

Remark / Comment

Clean-out inside casing through short string Long Deployment BHA to avoid risk of stuck inside Casing Section

Muhammad Hafiz, CTS, Kemaman
14/10/2024

Abstract

Coiled Tubing (CT) cleanout is a standard procedure performed after a well has been producing for a certain period. Typically, sand accumulation inside the tubing can be cleaned without significant issues when the proper techniques are applied. However, when sand accumulates and restricts reservoir flow or pressure at the perforation interval within the casing or tubing section, a more focused intervention may be needed. To help restore production, a CTU sand cleanout can be performed to remove the sand that has buried the perforation tunnel. In single-string well completions, cleanout operations involving CT strings exiting the tubing usually proceed without complications. However, in multiple-string completions—especially when focusing on the short string—cleanout operations outside the casing become more complex and riskier due to the potential for the CT string to become entangled with the tubing in long-string completions.

Introduction

In line with the abstract, performing Coiled Tubing (CT) cleanout inside the short string, specifically outside the casing section, is typically avoided by many service providers due to the high risk of the CT becoming entangled with the production tubing in the long string. This risk can lead to the CT string and the bottom hole assembly (BHA) being lost inside the casing. Furthermore, if the CT string becomes entangled with the production tubing, the chances of successfully dropping a ball to disconnect at the mechanical head assembly (MHA) are low. This situation would then require the mobilization of additional external or internal cutters to sever the CT string, resulting in additional costs for the client, including standby charges while waiting for the cutter to be delivered offshore—making the operation economically unviable.

Sand accumulation inside the casing is a routine issue faced by clients and has a high potential for recurrence in other wells or fields. To ensure higher success rates for sand cleanout (SCO) operations and to reduce the risk of CT getting stuck during cleanout, this proposal has been developed to meet client objectives effectively. CT strings tend to bend, especially after exiting the End of Tubing (EOT), due to reduced restriction from the tubing wall. This bending can cause the CT string to shift towards a horizontal trajectory, leading to entanglement with the long string completion.

In 2020, DB conducted a CT cleanout through the short string inside the casing section. During the operation, the CT string encountered several issues, including high pulling weight, which indicated that it had likely entangled with the long string. Fortunately, after multiple cycles of reciprocation and overpull over four hours, the CT string was eventually released.

The main idea behind this proposal is to ensure that the lower BHA remains as stiff as possible to guide the CT string downward in a vertical direction towards the perforation interval. It would be best to prevent MHA from exiting the EOT. Using a long, straight bar BHA can help reach the target depth of the perforation interval. In the event of a CT string becoming stuck during the operation, the ability to drop a ball to release the CT from the MHA without deploying additional resources (e.g., external/internal cutters) can significantly reduce standby and mobilization costs for the client.

Problem Definition

To prevent the CT from becoming entangled with the long string in the casing section and to avoid unable to release the CT string in event of CT stuck happen, a long BHA setup is proposed. This will ensure that the BHA remains as stiff as possible, preventing the mechanical head assembly (MHA) from exiting the End of Tubing (EOT). If the distance from the EOT to the perforation tunnel is significant, a longer BHA is needed to ensure the nozzle reaches the target depth. However, there are limitations to deploying a long BHA, such as the main deck height and jacking frame height. To overcome these challenges and proceed with the operation, a specialized deployment package is required for deploying the long BHA into the well.

Benefit to Dimension Bid and to Client

As outlined in the introduction, this project will enable the client to regain production by removing accumulated sand in the casing section, which will result in increased production rates. By reducing the risk of the CT string becoming stuck inside the well, the need to mobilize a cutter to sever the CT string in the event of a release failure is minimized, thus avoiding additional costs. This, in turn, secures a steady stream of work for Dimension Bid, helping to sustain operations at the client's facilities. Moreover, preventing the CT string—especially new strings—from getting stuck and left in the well eliminates the need for Dimension Bid to purchase new strings, allowing the company to continue its operations efficiently at other locations

Project Objectives

The objective of this proposal is to reduce the risk of Coiled Tubing (CT) becoming stuck during interventions inside the short string within the casing section. By minimizing this risk, the company can ensure a continuous stream of potential jobs from the client, maintaining long-term collaboration and operational efficiency.

Project Deliverables, Resources and timelines

The project is expected to be executed within three weeks of receiving notice from the client, with support from the PCE in Package #3 for the deployment setup. If the PCE is unavailable, outsourcing to another company, such as Dimension Bid's technical partner, Schlumberger (referencing the Angsi A-25 case study), would be necessary. The additional BHA required for the job includes the straight bars needed to reach the target depth (perforation interval). This requirement can be fulfilled by either renting from another downhole tool service provider or manufacturing through a local fabrication company, with a lead time of less than two weeks. As per the contract with PCSB, the additional cost for the deployment setup is MYR 293,400 per month.

Conclusion

This project will greatly benefit the company by reducing the risk of Coiled Tubing (CT) becoming stuck or entangled, ensuring successful release during interventions inside the casing section through the short string, particularly for cleanout operations. By mitigating these risks, the project will help build client trust, encouraging continued collaboration and future interventions. This, in turn, will contribute to increased revenue for Dimension Bid.

This proposal should be kept to a maximum of 6 pages.
Any supporting documentation should be attached in the abstract

	Prepared and Submitted By:	Verified By:	Approved By:
Sign:			
Name:	Muhammad Hafiz Saharuddin	KUNG YEE HAN	RIDHWAN AZIZAN
Position:	Field Engineer 2	TECH ADVISOR	PSM
Date:	14th October 2024	15/10/24	15/10/24

Neu Dimension
Your Integrated Solutions Partner

BREAKOUT PROJECT / SQIP PRESENTATION DULANG B07S SAND CLEANOUT

Neu Dimension
Your Integrated Solutions Partner

Table of content:

Neu Dimension
Your Integrated Solutions Partner

Introduction & well overview

➢ Problem statement

Decline in production rate, suspected sand accumulate outside of the tubing in short string

➢ Operation objective

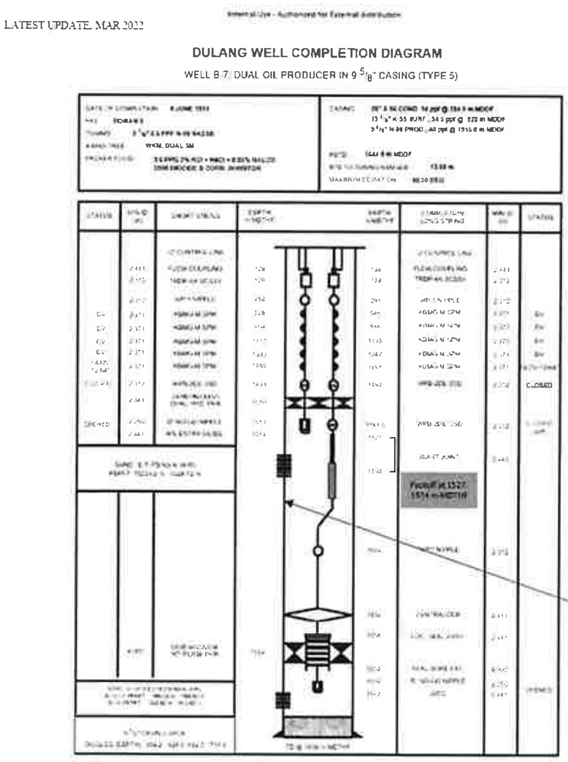
1. To perform CT Sand/Scale cleanout inside casing until 17 m below btm perforation, depth 1,545 m,

Note:

All depth stated is m-MDTHF

Neu Dimension
Your Integrated Solutions Partner

Well schematic

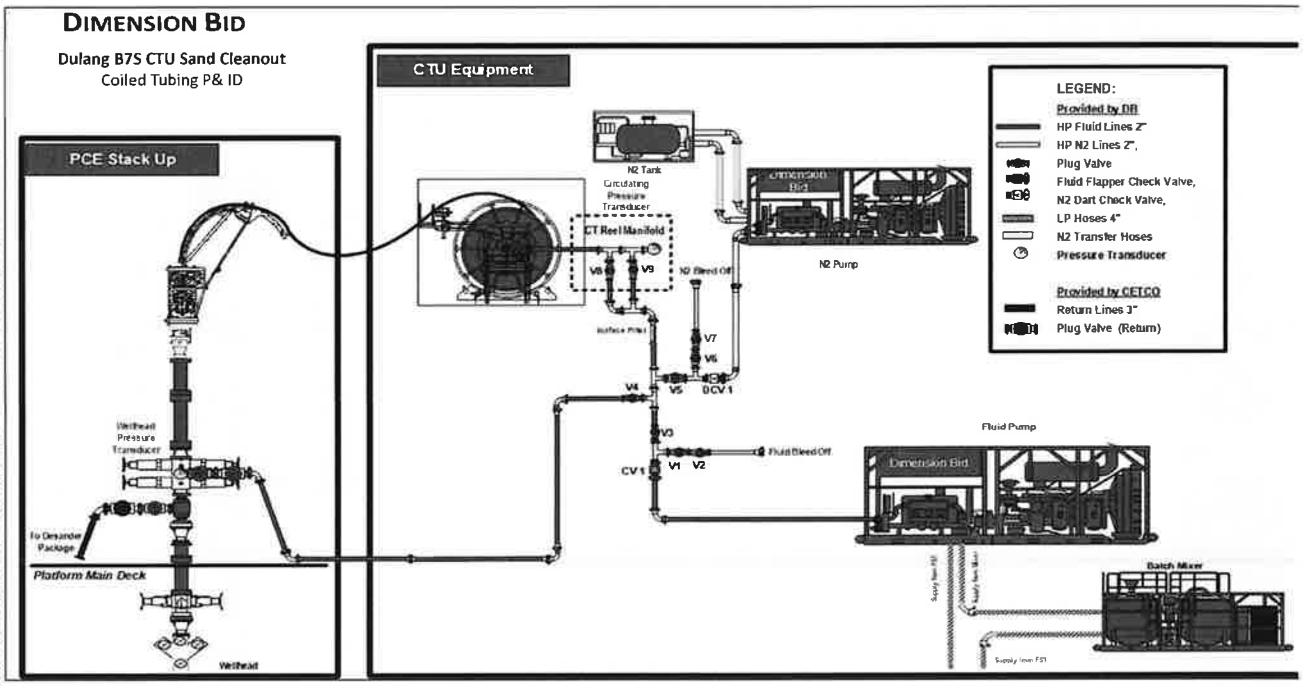


Input Parameter	Parameter Value
Field	Dulang Bravo
Max. Deviation (degrees)	48.3 degree
Min. Restriction (inch)	2.25" @ No Go nipple
Type of Fluid & Density	9.6 ppg (based on data in Well Diagram)
Top of Fluid	N/A
Current Well Status	Production decline, assume sand accumulated outside of the tubing
Reservoir Pressure	1600-1900 psi
Fracture Gradient	0.72
H2S Content	H2S - 0 ppm
CO2 Content	CO2 - 15-30 mole% (oil), 50-60 mole% (gas)
Mercury, HG	N/A

Target depth 1,545m

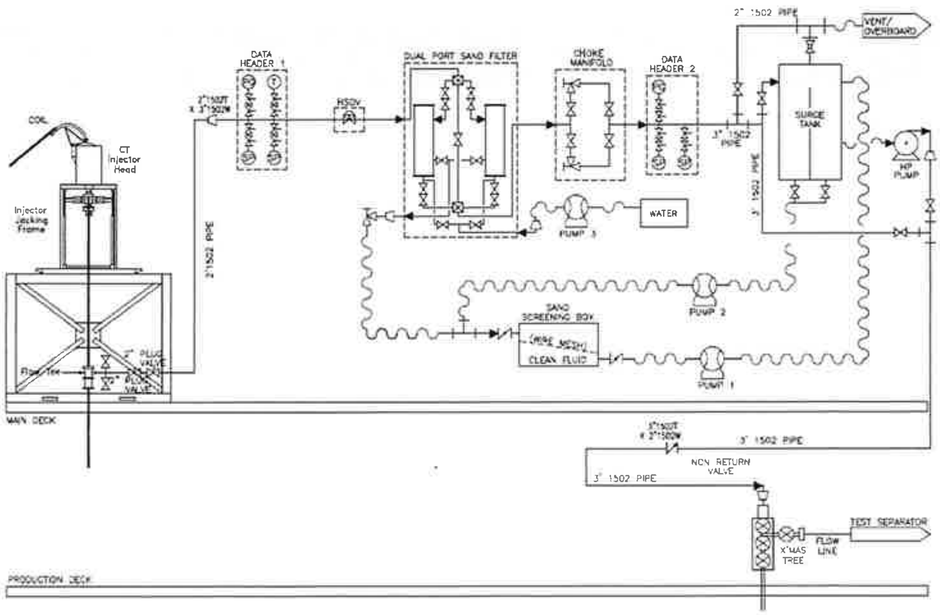
Neu Dimension
Your Integrated Solutions Partner

P&ID – CTU cleanout



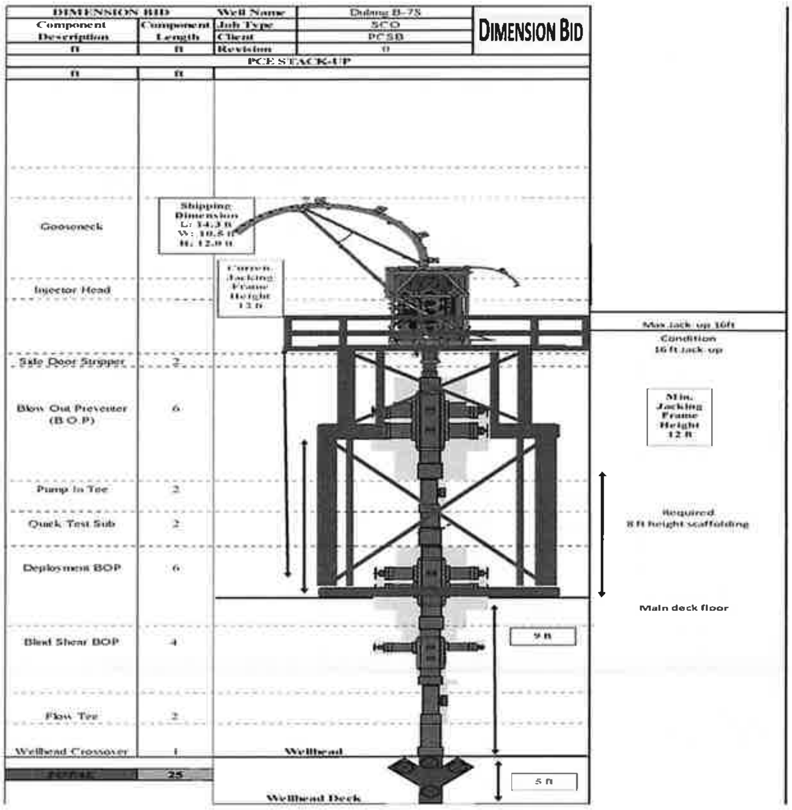
Neu Dimension
Your Integrated Solutions Partner

P&ID – CTU cleanout



Neu Dimension
Your Integrated Solutions Partner

Well stack-up



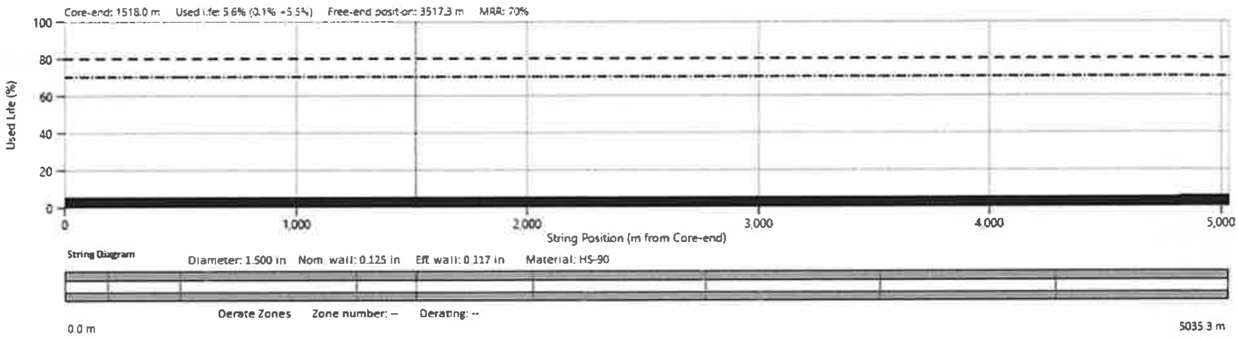
Neu Dimension
Your Integrated Solutions Partner

Volume calculation

Volume																
Type	External Pipe			Internal Pipe 1			Internal Pipe 2			Capa	From	To	From	To	Length	Total Volume (bbls)
	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	
Tubing volume until EOT	2 7/8	2.441								0.00579	0	1,514	0	4,967	4,967	**28.75**
Wellbore volume	9 5/8	8.835		2 7/8						0.07582	1,510	1,558	4,954	5,112	157	**11.94**
PCP volume	9 5/8	8.835		2 7/8			2 7/8			0.05977	0	1,510	0	4,954	4,954	**296.10**

Neu Dimension
Your Integrated Solutions Partner

String details



Neu Dimension
Your Integrated Solutions Partner

String details

CT String Details

String	#40423
Manufacturer	TENARIS
OD	1.5"
Grade	HS 90
Initial Spooled Length, ft	16,520
Cable (length/ID Num)	
Weld Type	BIAS WELD
Tubing Weight	30399lbs
Commision Date	18-Apr-23

Run #	Date	Client Name	Field Name	Well Num	Job type	CT leng ft	Job Fatigue %	Job Corrosion %	Cum Fatigue	Cum. Corrosion %	Used String Life %
	15/7/2023	PCSB	OPEN YARD	NA	Received CT String from Manufacturer	16520	0	0	0	0	0
	1/9/2023	PCSB	OPEN YARD	NA	1 Month storage at Open yard	16,520	0	0.5	0	0.5	0.5
	1/10/2023	PCSB	OPEN YARD	NA	1 Month storage at Open yard	16,520	0	0.5	0	1	1
	1-Nov-23	PCSB	OPEN YARD	NA	1 Month storage at Open yard	16,520	0	0.5	0	1.5	1.5
	1-Dec-23	PCSB	OPEN YARD	NA	1 Month storage at Open yard	16,520	0	0.5	0	2	2
	1-Jan-24	PCSB	OPEN YARD	NA	1 Month storage at Open yard	16,520	0	0.5	0	2.5	2.5
	1-Feb-24	PCSB	OPEN YARD	NA	1 Month storage at Open yard	16,520	0	0.5	0	3	3
	1-Mar-24	PCSB	OPEN YARD	NA	1 Month storage at Open yard	16,520	0	0.5	0	3.5	3.5
	1-Apr-24	PCSB	OPEN YARD	NA	1 Month storage at Open yard	16,520	0	0.5	0	4	4
	1-May-24	PCSB	OPEN YARD	NA	1 Month storage at Open yard	16,520	0	0.5	0	4.5	4.5
	1-Jun-24	PCSB	OPEN YARD	NA	1 Month storage at Open yard	16,520	0	0.5	0	5	5
	13-Jul-24	PCSB	OPEN YARD	NA	SPOOLING INTO CTR DRUM	16,520	0	0.5	0	5.5	5.5
	14-Jul-24	PCSB	OPEN YARD	NA	DROB BALL/MAKE UP/PT/CI/PURGE	16,513	0	0	0	5.5	5.5

Neu Dimension
Your Integrated Solutions Partner

Job execution summary

Operation	Job summary
Slickline operation	1. TCC (depends on client job execution plan)
CT operation	1. Sand cleanout from EOT(1,514 m) until 17 m below perforation zone (1,545m)
Slickline operation	1. TCC (depends on client job execution plan)

Neu Dimension
Your Integrated Solutions Partner

Job execution plan – Deployment BOP

- Run#1 – Sand cleanout from EOT at 1,514m until 1,545m using multi-jet nozzle;
  1. Make up BHA consist of the following tool:

#	Description (OPTION 1 BHA)	$OD_{(max)}$	Length, ft	Length, m
1	End connector: Internal dimple	1.69"	0.3	0.1
2	Motorhead assembly (MHA)	1.69"	2.3	0.7
3	Carsac	1.69"	1.6	0.49
4	Kelly Cock Valve	1.69"	1.6	0.49
5	Deployment bar	1.5"	6	1.83
6	Straight Bar	1.69"	90	27.4
7	Multi jet nozzle	1.69"	1.0	0.3
		Cumulative Length	102.8	32.61

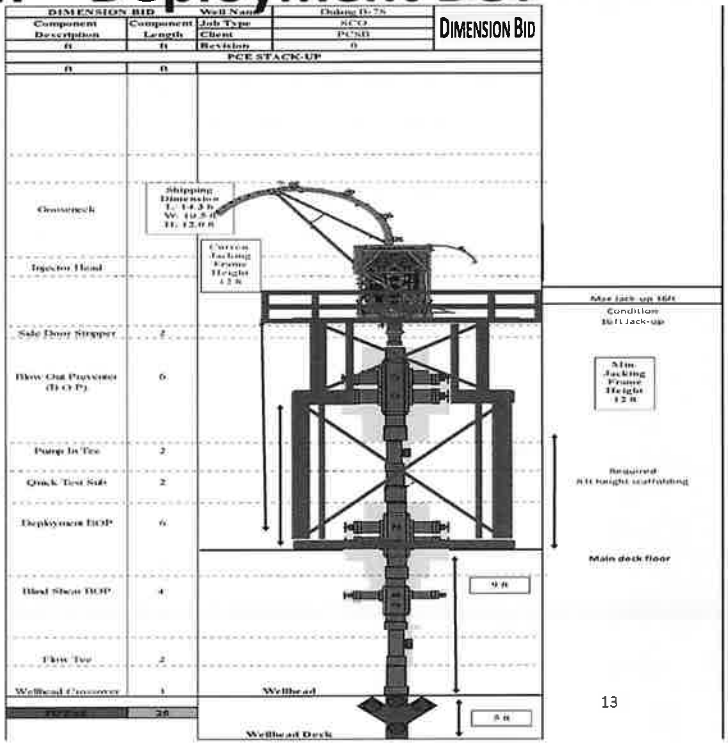
First section (items 3–7)

  2. Refer to next slide for Rig-up/rig-down procedure

Job execution plan – Deployment BOP

Neu Dimension
Your Integrated Solutions Partner

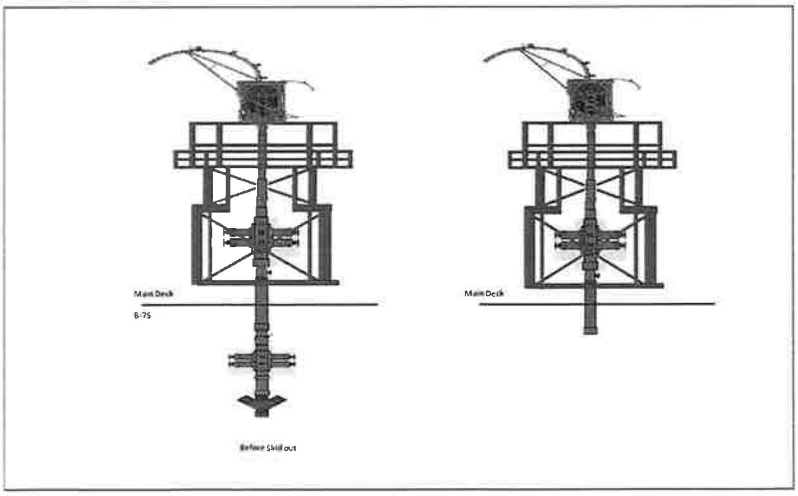
- Run#1 – Continue..
  - After perform pressure test stack-up, break off at QTS as per diagram below



Job execution plan – Deployment BOP

Neu Dimension
Your Integrated Solutions Partner

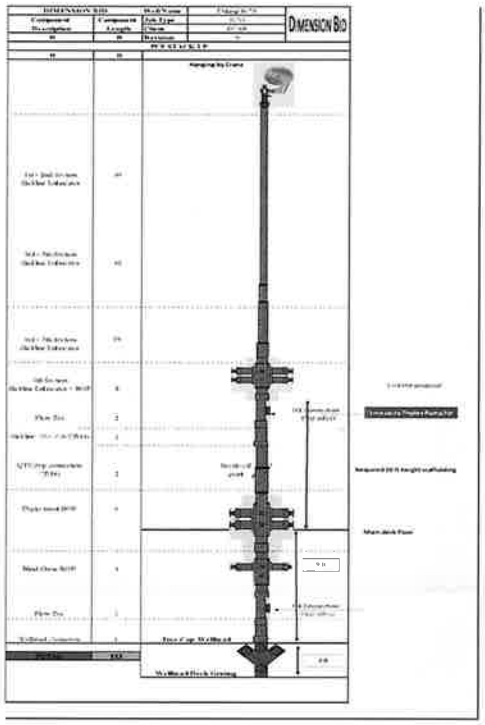
- Run#1 – Continue..
  - After skid out from B-7S, place the CT PCE stack up into other well slot by opening the hatch cover in order to hang the riser (below main deck) temporarily



Neu Dimension
Your Integrated Solutions Partner

Job execution plan – Deployment BOP (option 1)

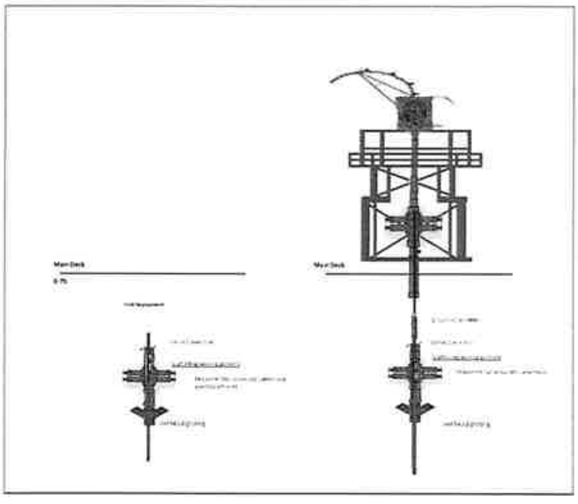
- Run#1 – Continue..(*Note, total lubricator height subject to discussion with slickline*)
  - Make-up slickline lubricator on top of Lower QTS
  - Deploy the BHA using Slickline
  - Slowly RIH and open well, once the first deployment bar section at Deployment BOP, stop RIH



Neu Dimension
Your Integrated Solutions Partner

Job execution plan – Deployment BOP (option 1)

- Run#1 – Continue..
  - Active deployment BOP to anchor and hold at deployment bar.
  - Break-off at QTS, rig-down slickline PCE, and rig up full CTU stack-up.
  - Connect MHA with the Carsac, and Open Kelly cock valve on BHA section.
  - Perform pressure test at QTS.



Neu Dimension
Your Integrated Solutions Partner

Rig-up procedure with barrier (Option 1)

No.	Job step	Primary / Active barrier	Secondary Barrier	Tertiary Barrier
1.	Disconnect at slickline crossover that attached together with QTS	1. Crown Valve 2. Master Valve ~~3. SCSSV~~ 4. SSV	1. SBOP (Blind/shear)	
2.	Make-up 100 ft BHA consist of Nozzle, Straight bar, DKCV and Carsac. Swallow all first section BHA into slickline lubricator.	1. Crown Valve 2. Master Valve ~~3. SCSSV~~ 4. SSV	1. SBOP (Blind/shear)	
3.	Box in and connect slickline XO and flow tee into top QTS XO to slickline PCE. Perform pressure test.	1. Crown Valve 2. Master Valve ~~3. SCSSV~~ 4. SSV	1. SBOP (Blind/shear)	
4.	Open CV and MV, RIH until deployment Bar at Deployment BOP section	~~1. SCSSV~~ 2. DKCV 3. Stuffing box - Slickline	1. SBOP (Blind/shear)	
5.	Engage deployment BOP to hold deployment bar in first section BHA	~~1. SCSSV~~ 2. DKCV 3. Stuffing box - Slickline	1. SBOP (Blind/shear)	
6.	Disconnect at slickline crossover	~~1. SCSSV~~ 2. DKCV 3. Deployment BOP (Dual Pipe/slip ram)	1. SBOP (Blind/shear)	

Neu Dimension
Your Integrated Solutions Partner

Rig-up procedure with barrier (Option 1)

No.	Job step	Primary / Active barrier	Secondary Barrier	Tertiary Barrier
7.	Rig-up CT PCE on top of QTS	~~1. SCSSV~~ 2. DKCV 3. Deployment BOP (Dual Pipe/slip ram)	1. SBOP (Blind/shear)	
8.	Make-up CT connector and MHA	~~1. SCSSV~~ 2. DKCV 3. Deployment BOP (Dual Pipe/slip ram)	1. SBOP (Blind/shear)	
9.	RIH MHA and connect to the Carsac at first deployment BHA section	~~1. SCSSV~~ 2. DKCV 3. Deployment BOP (Dual Pipe/slip ram)	1. SBOP (Blind/shear)	
10.	Open DKCV and Box-in to connect PCE, perform pressure test stack-up	~~1. SCSSV~~ 2. Deployment BOP (Dual Pipe/slip ram) 3. Stripper	1. SBOP (Blind/shear)	
11.	Disengage deployment BOP	~~1. SCSSV~~ 2. Stripper	1. SBOP (Blind/shear) 2. COMBI BOP (Pipe/Slip) + (Blind/Shear)	
12.	Start RIH	1. Stripper	1. SBOP (Blind/shear) 2. COMBI BOP (Pipe/Slip) + (Blind/Shear)	

Job execution plan – Deployment BOP (option 1)

- Reverse deployment method

a. Once CT at surface, proceed for reverse deployment for dummy/Gun using same approach during deployment rig-up.
b. Once CT tag stripper, RIH back slowly until deployment bar at deployment BOP
c. Cross the pipe slips ram, of the deployment BOP, Manually lock it.
d. Bleed the remaining pressure inside riser through flowback line.
e. Close the DKCV
f. Secure the 1st section BHA with C- plate and disconnect at Carsac connection.
g. Skid aside injector head, stripper, combi BOP and riser.
h. Rig- up back the lubricator as per agreed with slickline (Geowell)
i. RIH slickline wire and connect at Carsac connection. Remove the C-Plate.
j. Box-in and pressure test at QTS.
k. Open pipe slip/ram of the deployment BOP
l. POOH until tag stuffing box
m. Secure the well.
n. Break-off QTS connection and retrieve the gun.

Job execution plan

- Run#1 – Continue..

3. Open up well and start RIH (pump idle rate TSW / IW (Fluid selection subject to client Approval)) until reaching 10m above EOT at depth 1,514m. Slow down coil speed to 10ft/min, 50ft before and after passing through completion accessories.
4. Perform pull test and pump 2bbls of drag reducer for every 1000ft interval .
5. At EOT, increase pump rate to **1.1bpm with 300scfm** nitrified TSW/IW. Establish return at surface first prior to entering the casing section and to penetrate the HUD.
   - During establishing the return at surface, line up the flowback line to surge tank and monitor the return volume and calculate the flowrate. (bbl/min)
   - If unable to establish the return, stop pumping N2 and continue to fill up tubing + wellbore and re-attempt to establish the circulation with nitrified TSW / IW
   - Mark the flowrate as baseline and fill up the additional flowback data monitoring table

Neu Dimension Your Integrated Solutions Partner

Job execution plan

- Run#1 – Continue..

5. Penetrate the HUD with 1ft/min as per CIRCA simulation. Monitor the THP, return and RIH weight. (Start Cleanout from EOT, assume Sand at EOT)
6. Circulate 5 bbls of gel (D801) for every 5 m penetration. Perform pull test 5ft/min to previous HUD for each bite taken. Repeat the step until 1,545m .
7. *Note: after every 5m bite, pull test to EOT as a precautionary steps.*
8. In the event of lost return, POOH CT to 10m above EOT at depth 1,505m and re-establish the circulation before resume the cleanout
9. Once at 1,545m, flag coil at surface as Flag#1. Do not set down more than 200lbf if experience hard tag. (downhole force)
10. Pump 30 bbl of gel and continue CBU for 3 hours as per CIRCA. To perform pull test 10m for every 30 minutes.
11. Once completed CBU, POOH to EOT at depth 1,545m with 5 ft/min of tripping speed and using pump rate 1.1bpm, 300scfm.
12. At EOT, CBU for another 2 hours, continue to POOH to surface with 30-50ft/min of tripping speed, stop N2 and continue pumping TSW with 1.4bpm.

Neu Dimension Your Integrated Solutions Partner

Job execution plan

- Cleanout table until 1,545m

No.	Stage	Fluid	Liquid Rate BPM	Total Liquid BBL	N2 Rate SCFM	CT Speed ft/min	Duration Minute	Depth m	Remarks
1	CT at 10m above EOT	TSW / IW	1.1	16.5	300	0	15	10m above EOT	Establish return on surface
2	RIH to HUD and Penetrate HUD/Fill	TSW / IW	1.1	17.6	300	1	16	HUD + 5m	Monitor return & CT weight on surface
3	Circulate	Gel	1.1	5.0	300	0	5		Provide suspension to the fill and lift to surface
Pull Test to EOT after 5m bites									
4	RIH to last HUD and Penetrate HUD/Fill	TSW / IW	1.1	17.6	300	1	30	HUD + 5m	Monitor return & CT weight on surface
5	Circulate	Gel	1.1	5.0	300	0	5		Provide suspension to the fill and lift to surface
Pull Test to previous HUD									
Repeat above step until reached 1,545m. Flag CT at surface.									
6	At depth 1,545 m	Gel	1.1	30	300	0		Stationary at 3160m	Pump 1tbg volume of D801 gel
7	Bottoms Up (Circulate)	TSW / IW	1.1		300	0	180	Stationary at 3160m	CBU remaining 3 hrs
POOH to EOT while maintaining 5 ft/min and pump rate 1.1bpm, 300scfm, Continue CBU for another 2 hours									
stop N2, continue POOH to surface with 30-50ft/min tripping speed by pumping high rate TSW / IW only									

Neu Dimension
Your Integrated Solutions Partner

Loss return scenario

1. Procedure for loss return during cleanout operation;
   - Pick-up CT to less deviated section at range of 400m or attempt at 10m above EOT.
   - Re-establish the circulation until stable return is observed.
   - During establishing the return at surface, line up the flowback line to surge tank and monitor the return volume and calculate the flowrate. (bbl/min)
   - Mark the flowrate as our new baseline and fill up the flowback data monitoring as per below table;

CTS FLOWBACK DATA LOGSHEET									
Job Type		Date		Run Details		DIMENSION BID			
Run No.		Location		Shift					
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

   - RIH back to last penetrated HUD and resume cleanout operation.

Neu Dimension
Your Integrated Solutions Partner

Reduction in THP during cleanout

1. Procedure for addressing the reduction in THP during cleanout operation:
   - Pick-up CT 10m above 1st HUD
   - Vary the;
     - Decrease the liquid rate
     - Increase nitrogen rate
   - Manipulate choke size
   - Re-establish continuous return and stable THP
   - Resume cleanout operation

Neu Dimension Your Integrated Solutions Partner

Job execution plan

- Run#1 – BHA Diagram – Deployment

DIMENSION BID

BHA DIAGRAM #1 - 1.69" MULTIJET NOZZLE

Client	Petronas Carigali
Field	Dulang Bravo
Job Type	
Job No.	Run#1

Well	B7S
Min Restriction	
BHP	
BHT	

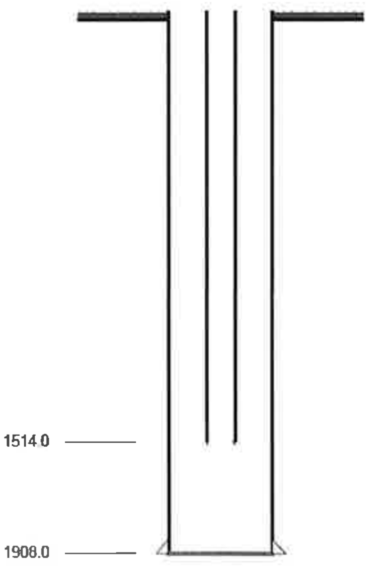
BHA DRAWING	DESCRIPTION	CONNECTION		ID	OD	TOOL LENGTH	CUMULATIVE LENGTH
		UPHOLE	DOWNHOLE	INCH	INCH	FT	FT
	Dimple Connector	1 5" CT	1 0" AMMT PIN		1 690	0 3	0 3
	MHA Disconnect drop ball 5/8"	1 0" AMMT BOX	1 0" AMMT PIN		1.690	2 3	2 6
	Circulating drop ball 1/2"						
	Burst Disc 5000 psi						
	Carsac	1 0" AMMT BOX	1 0" AMMT PIN		1 690	1 8	4 18
	Kelly Cock Valve	1 0" AMMT BOX	1 0" AMMT PIN		1 690	1 8	5 76
	6 ft Deployment Bar	1 0" AMMT BOX	1 0" AMMT PIN		1 500	6.0	11 76
	Straight Bar	1 0" AMMT BOX	1 0" AMMT PIN		1 690	92.0	103 76
	MultiJet	1 0" AMMT BOX			1 690	1 0	104 8

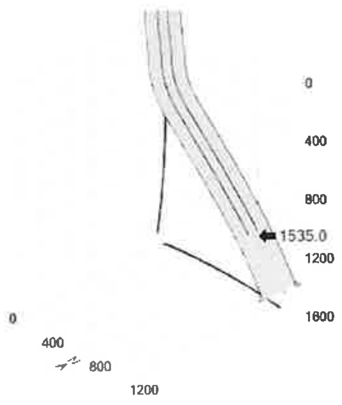
BHA LENGTH	104.76
MAXIMUM OD	1.69
MINIMUM ID	

Neu Dimension Your Integrated Solutions Partner

Tubing force analysis-well geometry

A1 ■ The job can probably be performed with the current input parameters.





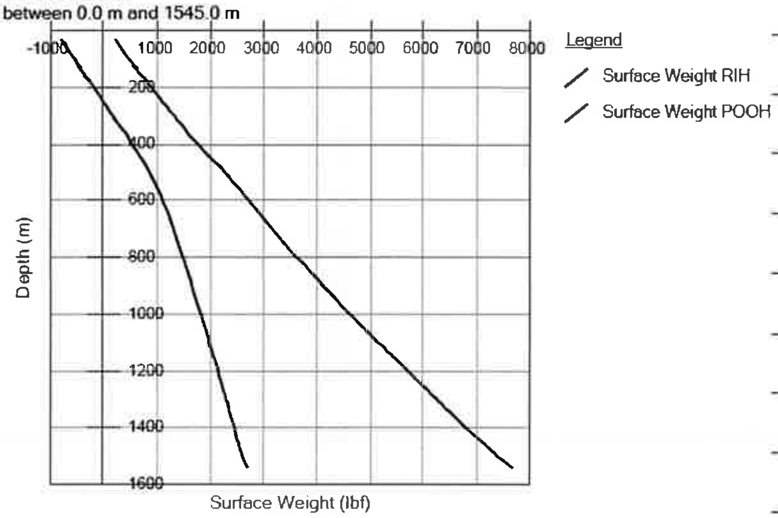
Well name: Dulang B07S
Total depth: 1908.0 m
Max Inclination: 48.4° at 1353.0 m
Max DLS: 4.678 °/100ft at 371.0 m
Min ID: 2.250 in at 1513.0 m
WHP: 150 psi

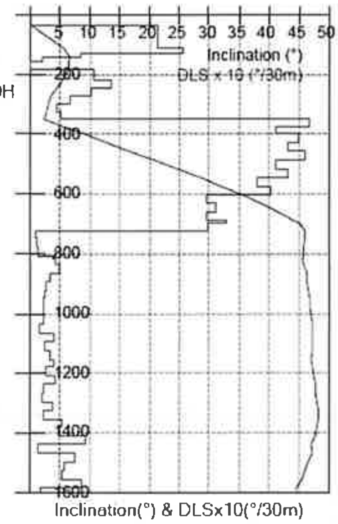
Neu Dimension
Your Integrated Solutions Partner

Tubing force analysis- till 1,545m (1.1bpm 300scfm)

Reaching Depth

RIH and POOH
between 0.0 m and 1545.0 m

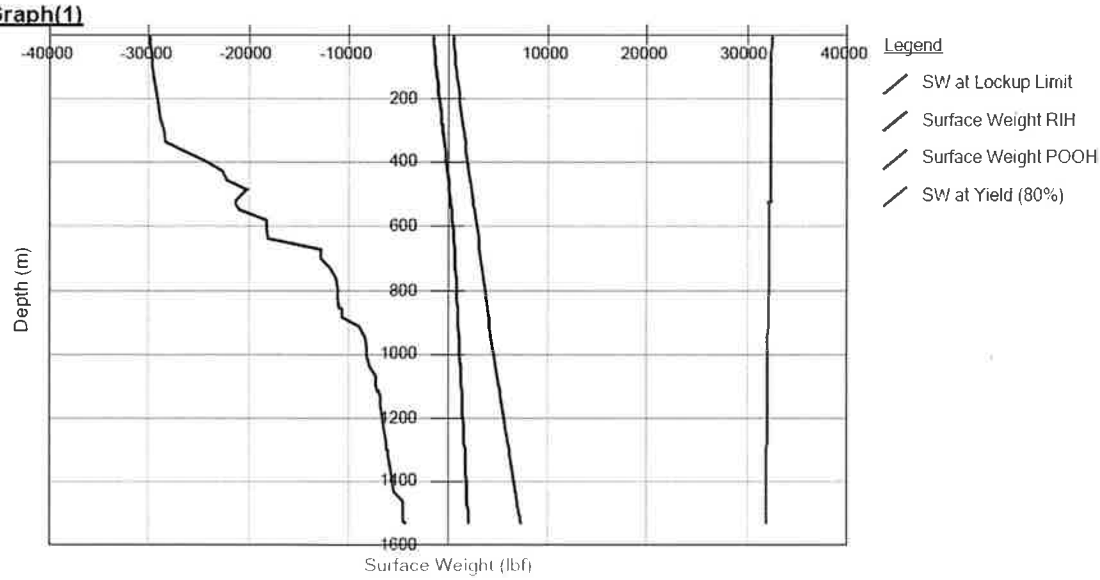




Neu Dimension
Your Integrated Solutions Partner

Tubing force analysis- till 1,545m (1.1bpm 300scfm)

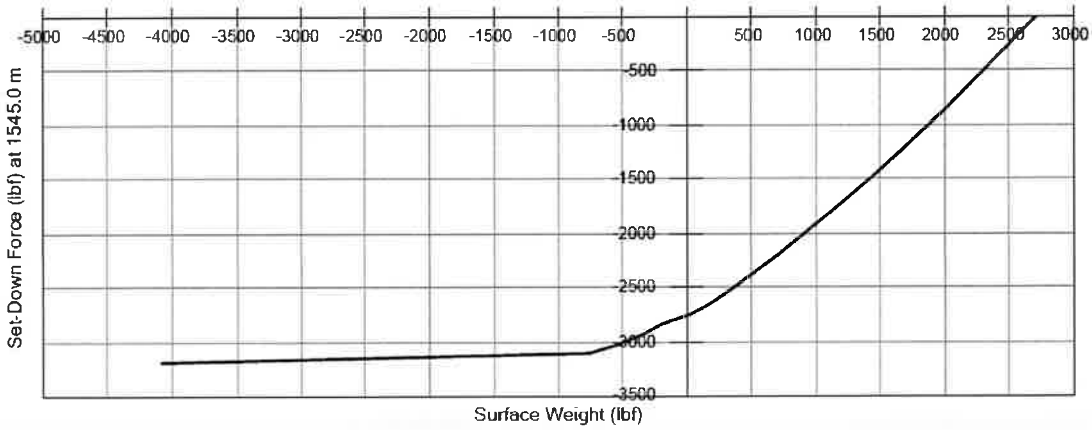
Graph(1)



Neu Dimension
Your Integrated Solutions Partner

Tubing force analysis-set down graph

MD3 ■ The available set-down force at 1545.0 m is -3272 lbf at the end of the string.
The weight indicator reading will be -4090 lbf on surface.
The minimum available set-down force is -3159 lbf at 1433.7 m.

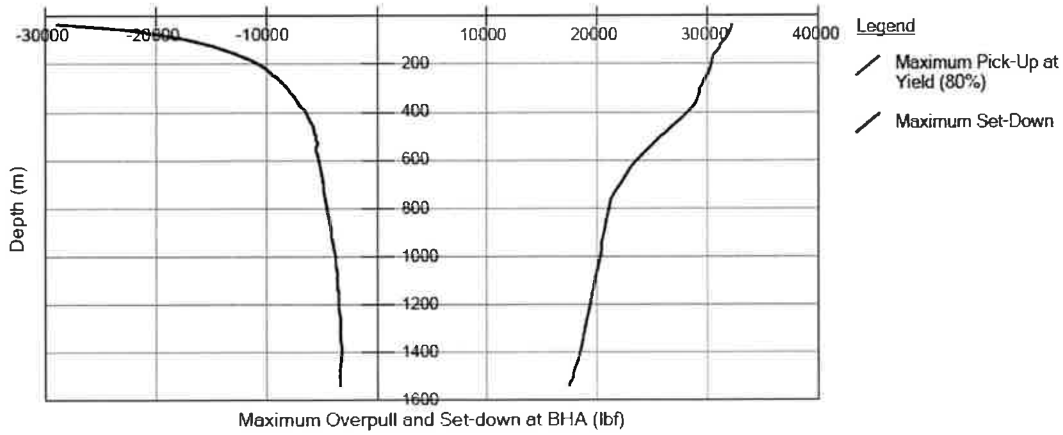


Neu Dimension
Your Integrated Solutions Partner

Tubing force analysis- overpull graph

Calculations at 1545.0 m

MD1 ■ The available pick-up at 1545.0 m based on 80% of yield strength is 17502 lbf.
The weight indicator reading will then be 31786 lbf.



Neu Dimension
Your Integrated Solutions Partner

CIRCA simulation- 1.1bpm, 300scfm

Project: New Project Field-Well: Unknown

Flow Summary

SUMMARY OF FLOW RESULTS

Produced Fluids	
Pressure known at:	Perforations
Production Mode:	No Production
Fluid Composition:	Oil and Gas
Circulated Fluids	
Fluid Composition:	Ni[illegible] Water
Liquid:	1.10 bbl/min
Solids:	0.00 bbl/min
Gas:	300.0 scf/min
Circulation Point	1544.00 m
HHP Required	79.86 KW

COMPLETION:

Wellhead Pressure	129.9 psi g
Hydrostatic pressure loss	253.8 psi
Friction pressure loss	514.5 psi
Kinetic pressure loss	-0.4 psi
Restriction pressure loss	2.2 psi
Equivalent Circulation Density[ECD]	7.07 lb/gal (US)
Perforation Pressure	1600.0 psi g
Hydrostatic pressure loss	386.4 psi
Friction pressure loss	0.1 psi
Bottom Hole Pressure	1986.5 psi g

FROM CIRCULATION POINT TO WELLHEAD:

Liquid transit time	8 min
Gas transit time	8 min
Annular volume	21.0 bbl
Volume below circulation point	41.2 bbl
Total liquid volume	53.1 bbl
Total gas volume	9.1 bbl
(Surface equivalent)	2465.0 scf

WORKSTRING:

Liquid:	1584.0 bbl/day
Gas:	0.43 MMscf/day
Pressure at reel rotating joint	3959.0 psi g
Friction pressure loss on reel	1941.6 psi
Pressure inside WS at Gooseneck	2017.3 psi g
Hydrostatic pressure loss	-1103.9 psi
Friction pressure loss	1012.3 psi
Equivalent Circulation Density[ECD]	1.46 lb/gal (US)
BHA total pressure loss	487.3 psi
BHA Hydrostatic loss	-18.5 psi
BHA Friction loss	226.6 psi
BHA Kinetic loss	6.8 psi
Nozzle	272.4 psi
Circulation Point pressure	1621.6 psi g

FROM REEL ROTATING JOINT TO CIRCULATION POINT:

Liquid transit time	12 min
Gas transit time	15 min
Displacement Volume	11.1 bbl
Internal Volume	19.6 bbl
Internal liquid volume	13.2 bbl
Internal gas volume	5.4 bbl
(Surface equivalent)	4439.2 scf
Length of Workstring on reel	2131.78 m

Neu Dimension
Your Integrated Solutions Partner

CLEANOUT ANALYSIS

Flow State

Measured Depth[Flow] m	Temperature	Completion Pressure	Workstring Pressure	Concentric Pressure	Completion Liquid Velocity ft/min	Workstring Liquid Velocity ft/min	Concentric Liquid Velocity ft/min
0.0	95.0	129.9	2017.3	0.0	1622	1163	0
4.0	95.4	135.2	2018.4	0.0	1638	1163	0
29.0	97.7	168.0	2025.2	0.0	1422	1164	0
54.0	100.1	194.7	2032.0	0.0	1278	1165	0
79.0	102.5	222.3	2038.7	0.0	1173	1166	0
104.0	104.8	249.1	2045.5	0.0	1092	1168	0
129.0	107.2	275.4	2052.1	0.0	1232	1169	0
132.0	107.4	278.9	2052.9	0.0	1019	1170	0
157.0	109.8	304.9	2059.5	0.0	967	1171	0
182.0	112.1	330.6	2066.1	0.0	923	1172	0
207.0	114.5	356.3	2072.7	0.0	885	1173	0
232.0	116.8	381.9	2079.3	0.0	853	1174	0
257.0	119.2	407.6	2085.9	0.0	824	1175	0
282.0	121.5	433.3	2092.6	0.0	956	1176	0
303.1	123.5	455.3	2098.2	0.0	779	1177	0
328.1	125.9	481.1	2104.8	0.0	758	1178	0
353.0	128.2	507.1	2111.4	0.0	739	1179	0
378.0	130.6	533.1	2117.9	0.0	722	1181	0
403.0	132.9	559.1	2124.3	0.0	706	1183	0
428.0	135.2	585.2	2130.4	0.0	693	1187	0
453.0	137.5	611.3	2136.2	0.0	681	1191	0
478.0	139.8	637.4	2141.6	0.0	670	1195	0
503.0	142.0	663.3	2146.4	0.0	660	1201	0

Flow State (continued)

Measured Depth[Flow] m	Temperature	Completion Pressure	Workstring Pressure	Concentric Pressure	Completion Liquid Velocity ft/min	Workstring Liquid Velocity ft/min	Concentric Liquid Velocity ft/min
528.0	144.1	689.2	2150.7	0.0	781	1206	0
534.1	144.6	695.7	2151.7	0.0	650	1209	0
559.1	146.7	721.2	2155.1	0.0	642	1213	0
584.1	148.7	746.3	2158.0	0.0	636	1218	0
609.1	150.6	770.7	2160.1	0.0	631	1222	0
634.1	152.5	794.6	2161.5	0.0	626	1225	0
659.1	154.3	817.9	2162.3	0.0	621	1228	0
684.0	156.0	840.7	2162.5	0.0	617	1230	0
709.0	157.7	862.9	2162.0	0.0	613	1232	0
734.0	159.3	885.0	2161.2	0.0	609	1233	0
759.0	160.9	907.0	2160.3	0.0	604	1235	0
784.0	162.6	929.2	2159.5	0.0	599	1236	0
809.0	164.2	951.4	2158.6	0.0	594	1237	0
834.0	165.9	973.7	2157.7	0.0	590	1239	0
859.0	167.5	995.9	2156.7	0.0	702	1240	0
867.1	168.0	1003.2	2156.3	0.0	585	1240	0
892.1	169.7	1025.5	2155.2	0.0	581	1242	0
917.1	171.3	1047.7	2154.0	0.0	577	1243	0
942.0	172.9	1069.9	2152.7	0.0	574	1245	0
967.0	174.5	1092.2	2151.4	0.0	571	1246	0
992.0	176.1	1114.4	2150.0	0.0	568	1247	0
1017.0	177.7	1136.7	2148.5	0.0	565	1249	0
1042.0	179.3	1158.9	2146.9	0.0	562	1250	0

Neu Dimension
Your Integrated Solutions Partner

CLEANOUT ANALYSIS

Flow State (continued)

Measured Depth[Flow] m	Temperature	Completion Pressure	Workstring Pressure	Concentric Pressure	Completion Liquid Velocity ft/min	Workstring Liquid Velocity ft/min	Concentric Liquid Velocity ft/min
1067.0	180.9	1181.2	2145.3	0.0	559	1251	0
1092.0	182.5	1203.6	2143.6	0.0	556	1253	0
1117.0	184.1	1225.9	2141.9	0.0	663	1254	0
1128.0	184.8	1236.0	2141.2	0.0	552	1255	0
1153.0	186.5	1258.5	2139.5	0.0	549	1256	0
1178.0	188.1	1280.9	2137.7	0.0	547	1258	0
1203.0	189.6	1303.4	2135.8	0.0	545	1259	0
1228.0	191.2	1325.8	2133.9	0.0	542	1260	0
1253.0	192.8	1348.3	2131.9	0.0	540	1262	0
1278.0	194.4	1370.7	2129.8	0.0	538	1263	0
1303.0	196.0	1393.2	2127.8	0.0	643	1264	0
1315.0	196.7	1404.2	2126.5	0.0	536	1265	0
1340.0	198.3	1426.6	2124.3	0.0	534	1266	0
1365.0	199.9	1449.0	2121.9	0.0	532	1268	0
1390.0	201.5	1471.6	2119.6	0.0	530	1269	0
1415.0	203.0	1494.2	2117.3	0.0	527	1271	0
1440.0	204.6	1517.0	2115.1	0.0	524	1272	0
1465.0	206.2	1539.9	2112.9	0.0	626	1274	0
1468.0	206.4	1542.8	2112.7	0.0	522	1274	0
1493.0	208.0	1565.9	2110.5	0.0	622	1276	0
1513.0	209.3	1584.6	2108.9	0.0	682	1277	0
1513.2	209.4	1585.1	2108.9	0.0	517	1277	0
1514.0	209.4	1585.8	2096.9	0.0	616	1157	0

Flow State (continued)

Measured Depth[Flow] m	Temperature	Completion Pressure	Workstring Pressure	Concentric Pressure	Completion Liquid Velocity ft/min	Workstring Liquid Velocity ft/min	Concentric Liquid Velocity ft/min
1515.0	209.5	1588.0	2090.3	0.0	85	3159	0
1526.0	210.2	1600.0	2016.7	0.0	84	3182	0
1543.7	211.4	1621.2	1896.0	0.0	89	3222	0
1544.0	211.4	1621.6	1893.9	0.0	88	13354	0
1558.1	212.3	1635.0	0.0	0.0	0	0	0
1583.1	214.0	1659.1	0.0	0.0	0	0	0
1608.1	215.7	1683.4	0.0	0.0	0	0	0
1633.1	217.3	1707.7	0.0	0.0	0	0	0
1658.1	219.0	1732.0	0.0	0.0	0	0	0
1683.1	220.7	1756.7	0.0	0.0	0	0	0
1708.1	222.5	1781.6	0.0	0.0	0	0	0
1733.0	224.2	1806.9	0.0	0.0	0	0	0
1758.0	226.0	1832.3	0.0	0.0	0	0	0
1783.0	227.8	1857.9	0.0	0.0	0	0	0
1808.0	229.5	1883.6	0.0	0.0	0	0	0
1833.0	231.3	1909.3	0.0	0.0	0	0	0
1858.0	233.1	1935.1	0.0	0.0	0	0	0
1883.0	234.9	1960.9	0.0	0.0	0	0	0
1908.0	236.7	1986.5	0.0	0.0	0	0	0

Neu Dimension
Your Integrated Solutions Partner

CLEANOUT ANALYSIS

Ciran Summary

SUMMARY OF HOLE CLEANING RESULTS

Initial Condition:
% of fill interval occupied by solids before cleanout ... 100.0 %
Top of fill ... 1515.01 m
Deepest Circulation point ... 1543.99 m
Bottom of fill ... 1543.99 m
Initial Volume of Solids ... 3.3 bbl
Initial Mass of Solids ... 1682.4 lb
Solids type: Mud Residue/Formation Fines
Fluid Description: Nitrified Water

Penetration Hole Cleaning Mode:
Penetration rate ... 1.0 ft/min
Penetration time ... 1.59 hr
Solids volume in the well after penetration ... 2.7 bbl
Solids mass in the well after penetration ... 1370.4 lb

Circulation Hole Cleaning Mode:
Hole circulation time ... 3.25 hr
Solids volume in the well after circulation ... 0.5 bbl
Solids mass in the well after circulation ... 245.4 lb

Wiper Trip Hole Cleaning Mode:
Wiper Trip Scheme: User Specified rate, Tornado not
Wiper trip time ... 0.20 hr
Solids volume in the well after wiper trip ... 0.5 bbl
Solids mass in the well after wiper trip ... 245.4 lb

Volume of Fluids Pumped During Penetration, Circulation & Wiper Trip:
Gas volume ... 90679.2 scf
Liquid Volume ... 332.5 bbl
Penetration, Circulation & Wiper Trip time ... 5.04 hr

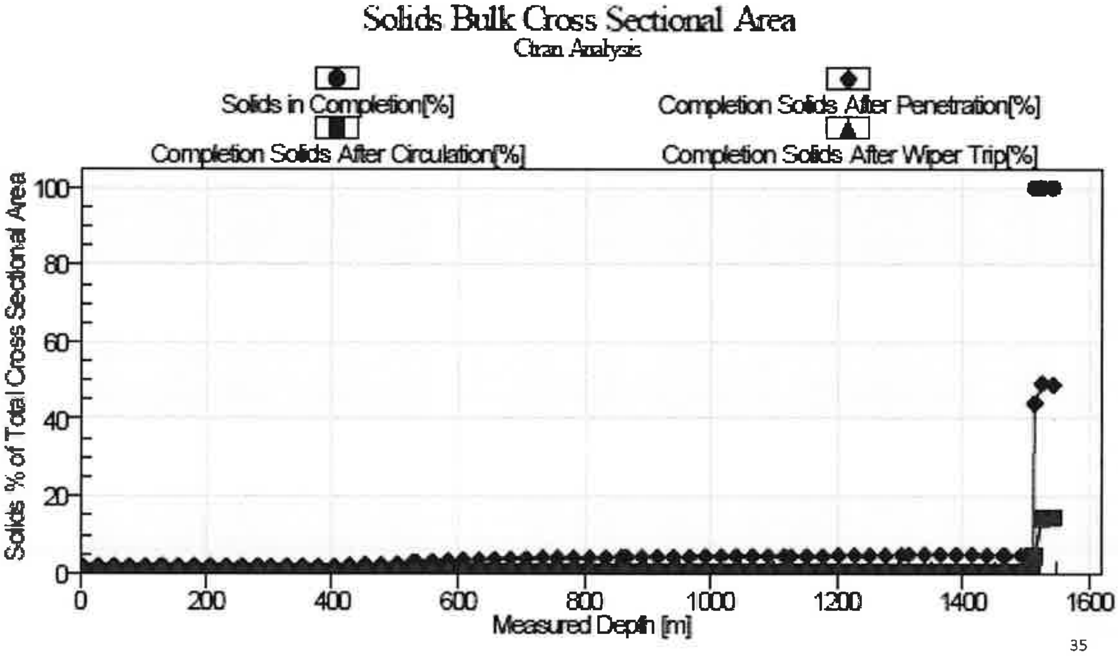
Circulation results at point of Maximum Solids Head:

Percentage initial fill	% Left in hole after CBU
100%	14.6
90%	16.9
50%	30.1

Cleanout unable to lift 100% solid inside well!

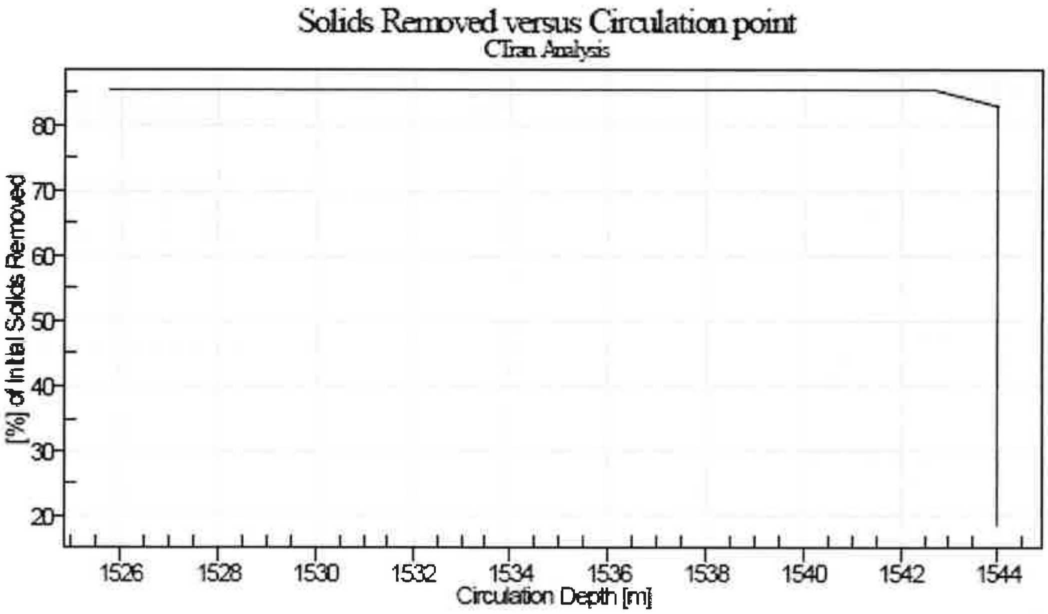
Neu Dimension
Your Integrated Solution

CLEANOUT ANALYSIS



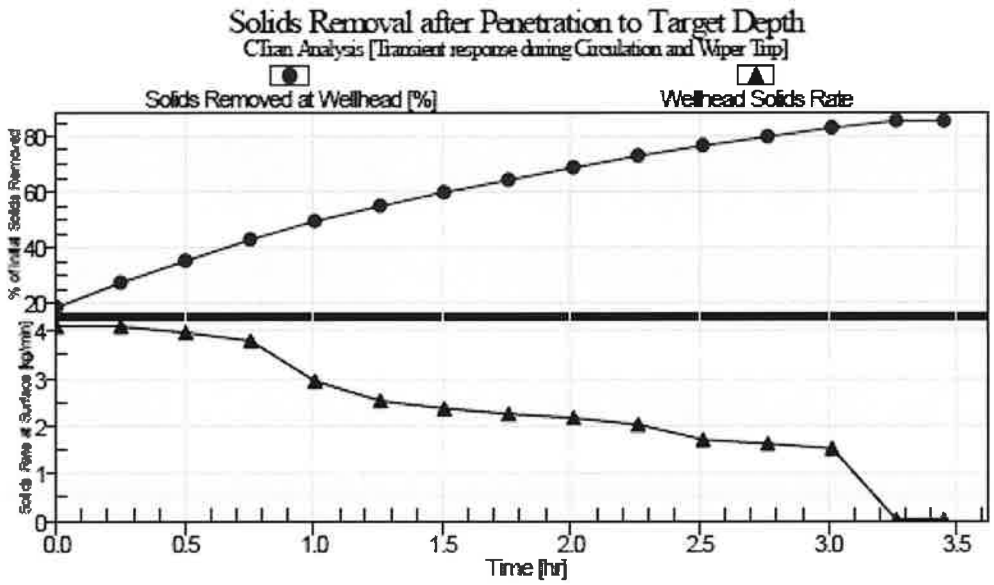
Neu Dimension
Your Integrated Solutions Partner

CLEANOUT ANALYSIS



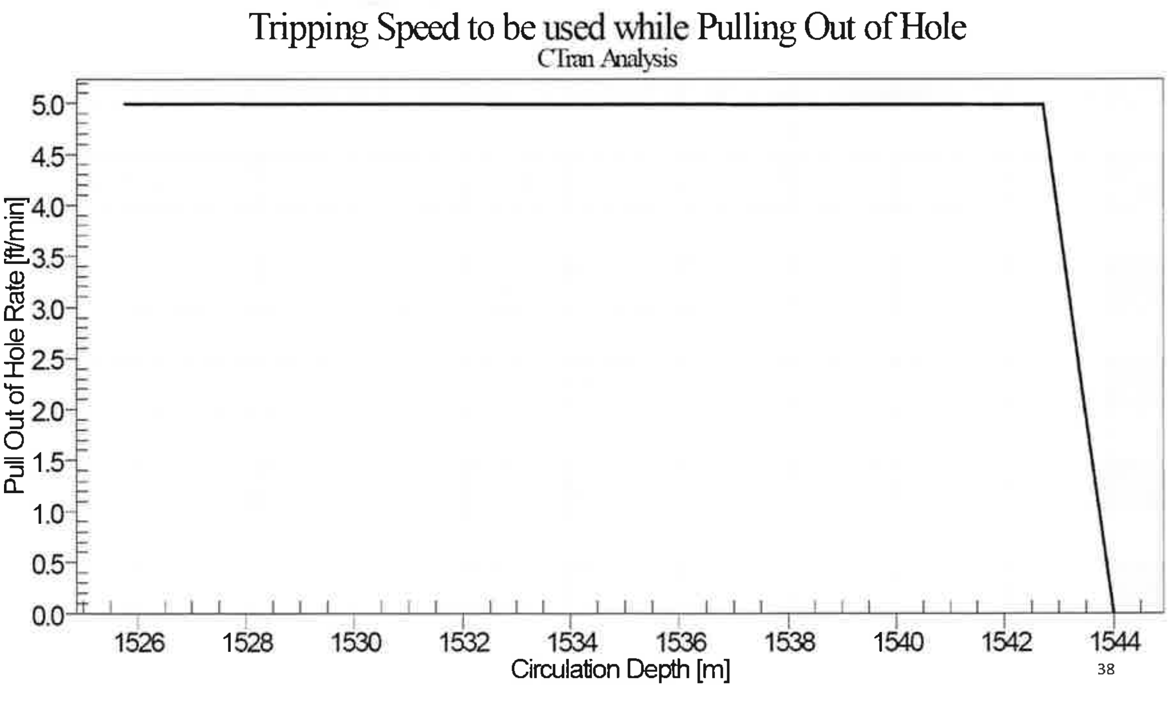
Neu Dimension
Your Integrated Solutions Partner

CLEANOUT ANALYSIS



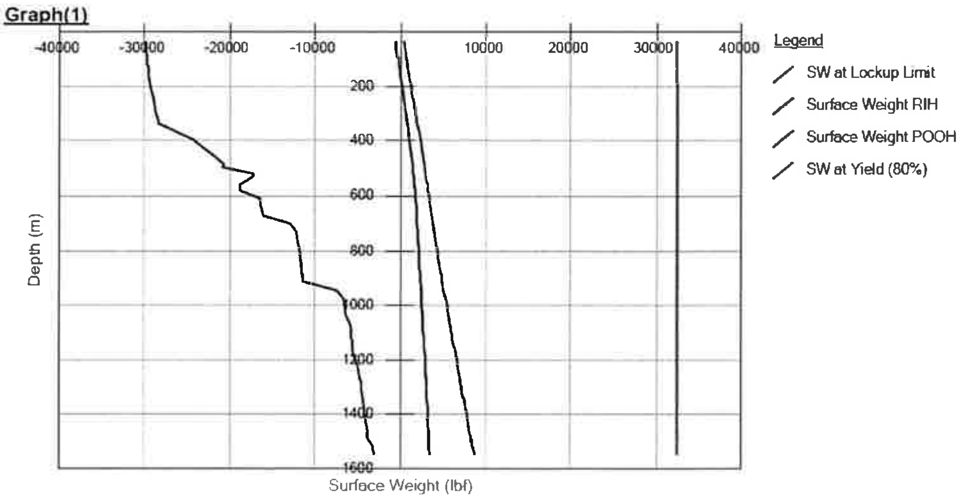
Neu Dimension
Your Integrated Solutions Partner

CLEANOUT ANALYSIS



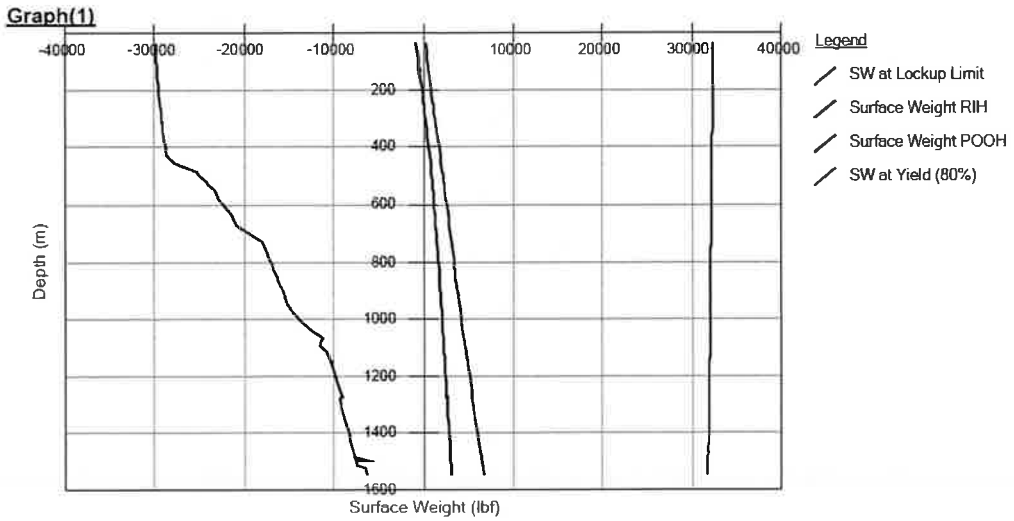
TFA SENSITIVITY ANALYSIS

TFA SENSITIVITY ANALYSIS – IDLE RATE



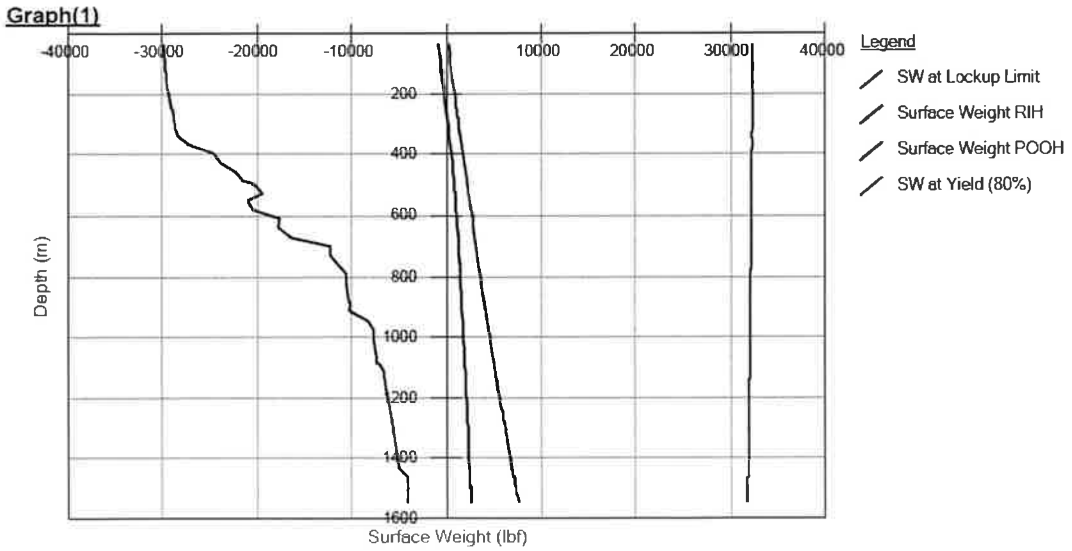
Neu Dimension
Your Integrated Solutions Partner

TFA SENSITIVITY ANALYSIS – 1.1 BPM 300 SCFM 0.2 FF



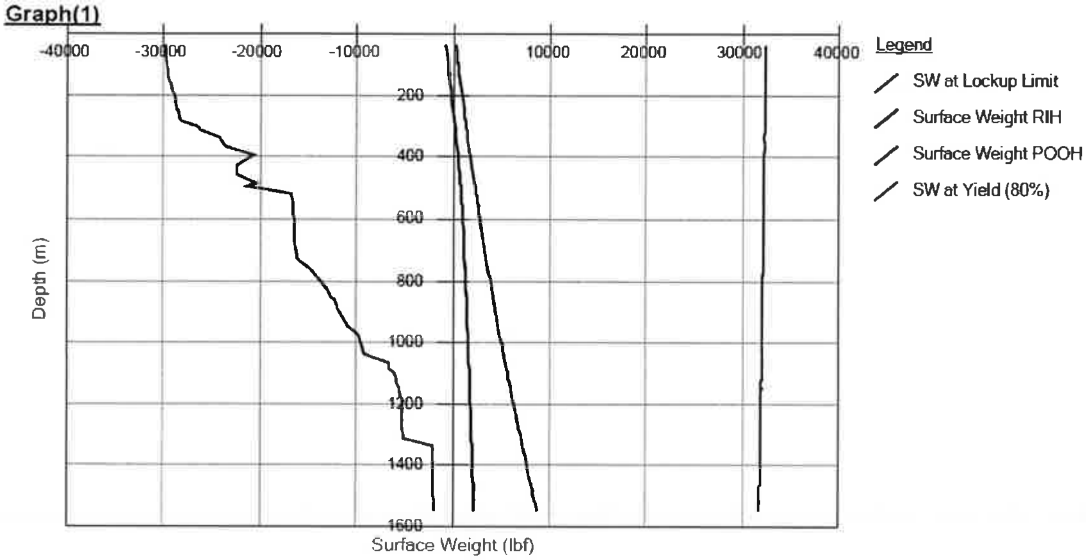
Neu Dimension
Your Integrated Solutions Partner

TFA SENSITIVITY ANALYSIS – 1.1 BPM 300 SCFM 0.3 FF



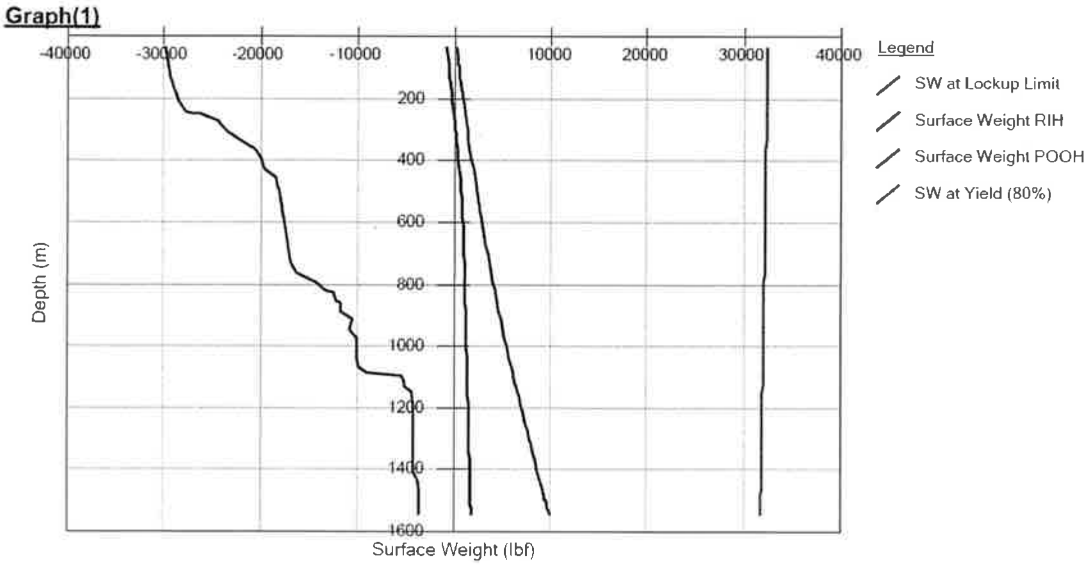
Neu Dimension
Your Integrated Solutions Partner

TFA SENSITIVITY ANALYSIS – 1.1 BPM 300 SCFM 0.4 FF



Neu Dimension
Your Integrated Solutions Partner

TFA SENSITIVITY ANALYSIS – 1.1 BPM 300 SCFM 0.5 FF



Neu Dimension
Your Integrated Solutions Partner

TFA SENSITIVITY ANALYSIS – SUMMARY

Friction Factor	Depth (m)	Lock-up Limit (lbf)	RIH Weight (lbf)	POOH Weight (lbf)	Max Pulling Weight at 80% Yield Limit
0.2	500	-25,230	903	2,167	32,214
	1000	-13,788	2,066	4,273	32,034
	1,545	-6,300	3,178	6,794	31,773
0.3	500	-20,439	843	2,240	32,230
	1000	-7,675	1,819	4,653	32,010
	1,545	-4,089	2,710	7,707	31,786
0.4	500	-21,369	786	2,317	32,213
	1000	-9,586	1,587	5,077	32,019
	1,545	-1,968	2,286	8,758	31,774
0.5	500	-18,142	136	2,392	32,213
	1000	-9,954	1,363	5,553	32,043
	1,545	-3,635	1,893	9,963	31,784

Neu Dimension
Your Integrated Solutions Partner

Pro & Cons Deployment vs conventional

Neu Dimension
Your Integrated Solutions Partner

Conventional BHA

Pro	Cons
1. Crew familiarity 2. Minimal rig up/down time (1 additional item – Deployment BOP +/- xover) 3. Faster BHA makeup / strip down 4. Regular CT operational/standby charges	1. Does not address likelihood of CT string entangled and helical lock against well long string. 2. Unable to disconnect using MHA disconnect. IF stuck in completion annulus, disconnect will likely be below entanglement depth. 3. Will be forced to use chemical cutters if desire to disconnect on stuck. Expansive, difficult and very time-consuming intervention. 4. Extremely difficult/almost impossible to retrieve whole FISH if forced to sever the CT string using plasma cutter. 5. CT string will be left downhole. If cut is only feasible at depth inside the completion tubing, additional resistance to producing well with fish left in hole. 6. Additional lost in hole charges for CT string. 7. If extended lengths of CT string is left in hole, the remaining string will no longer be usable as is. Time, effort and additional cost to demob reel, spool out remaining string, spool in new string, reinspect and mob back to location etc.

Neu Dimension
Your Integrated Solutions Partner

Extended BHA

Pro	Cons
1. Addresses likelihood of CT string entanglement and helical lock against well long string. 2. Gain ability to disconnect IF stuck in completion annulus 3. Disconnecting is a fast and easy process. 4. Only BHA will be left downhole if disconnect. Lesser resistance to producing well with fish left in hole. 5. Easier to retrieve FISH if disconnect at MHA. 6. CT string can be immediately used for subsequent wells with zero additional effort, time or cost. As such no delay to subsequent CT intervention plan after disconnect.	1. Minimal rig up/down time (1 additional item – Deployment BOP) 2. Additional extended BHA makeup / strip down. 3. Additional CT operational/standby charges.

Neu Dimension
Your Integrated Solutions Partner

Previous History for Dulang B7S

Neu Dimension
Your Integrated Solutions Partner

Summary

9 May 2020

1. CT RIH to Tag No-GO nipple.
2. CT able to tag the NO-GO without any issue after slickline fish has been retrieved.

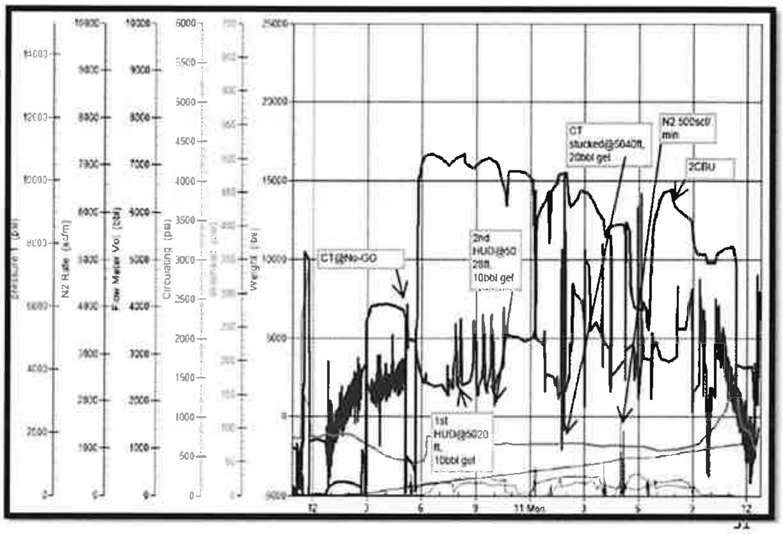
10 May 2020

1. CT RIH to perform SCO inside casing.
2. CT weight during entering casing RW:2200lbs
3. CT get return 0.3% sand with D801 gel at depth 5020ft
4. CT continue RIH at HUD at depth 5028ft and continue penetrate and experienced HPW at depth 5040ft. CT able to release with overpull 14500lbs. (Target SCO depth: 5052ft)
5. After CT is free, straight POOH inside tubing and CBU6
6. POOH to surface

Summary

10 May 2020

1. 4 hours stuck during cleanout stage inside casing
2. Overpull 9,500 lbs
3. Normal pick-up weight, 5,000 lb



Thank you