

Name: Date: Level:

Measured Depth:ft. True Vertical Depth:ft.

Measured Depth to Casing Shoe:ft. Casing Shoe TVD:ft.

CAPACITIES AND VOLUMES

DRILL STRING DATA

	O.D. (in)	I.D. (in)	Wt. (lb/ft)	CAPACITY (bbl/ft)	x	LENGTH (ft)	=	VOLUME (bbls)
DRILL PIPE								
HWDP								
DRILL COLLARS 1								
DRILL COLLARS 2								

CHECK THAT TOTAL LENGTH = MEASURED DEPTH



Total Length (ft)	Total Drill string (bbls)
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ANNULUS DATA

	CAPACITY (bbl/ft)	x	LENGTH (ft)	=	VOLUME (bbls)
DRILL PIPE IN CASING					
DP/HWDP IN OPEN HOLE					
COLLARS IN OPEN HOLE 1					
COLLARS IN OPEN HOLE 2					

**Bit to Shoe
Volume**

(bbls)

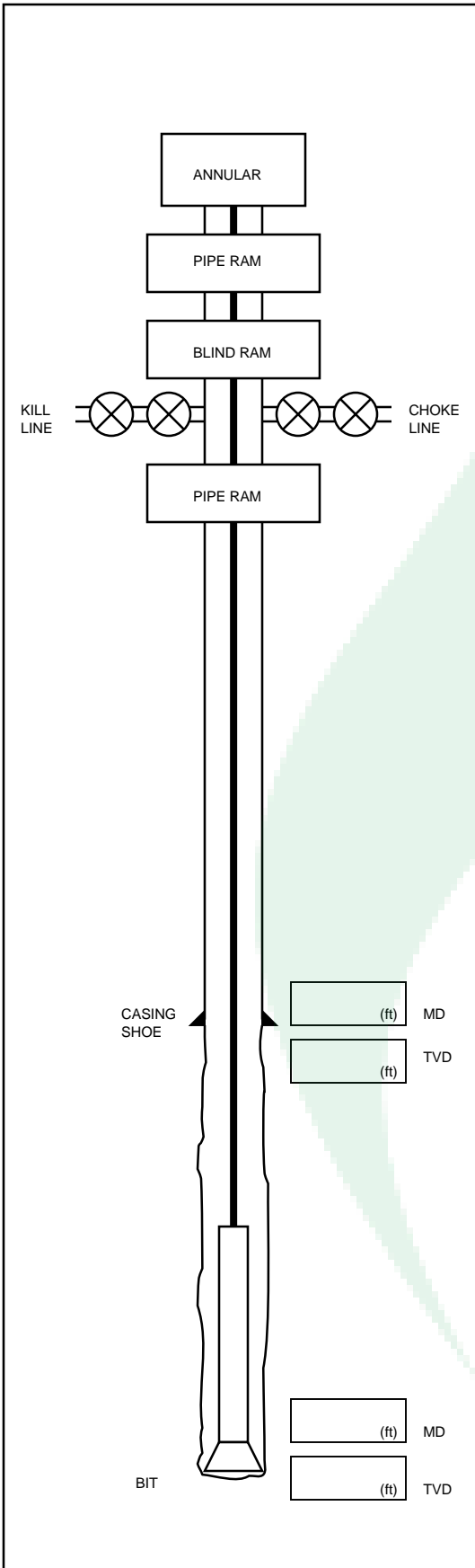
CHECK THAT TOTAL LENGTH = MEASURED DEPTH.



Total Length (ft)	Total Annulus (bbls)
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TOTAL WELL SYSTEM VOLUME

TOTAL DRILLSTRING (SURFACE TO BIT) <div style="border: 1px solid black; width: 100%; height: 40px; display: flex; justify-content: center; align-items: center;"> (bbls) </div>	+	TOTAL ANNULUS (BIT TO SURFACE) <div style="border: 1px solid black; width: 100%; height: 40px; display: flex; justify-content: center; align-items: center;"> (bbls) </div>	=	TOTAL SYSTEM VOLUME (ONE COMPLETE CIRCULATION) <div style="border: 1px solid black; width: 100%; height: 40px; display: flex; justify-content: center; align-items: center;"> (bbls) </div>
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Read and record SLOW CIRCULATING RATES

Pump No.	Pump Output
<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/> (bbls/stk)

Pump No.	Pump Output
<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/> (bbls/stk)

<u>S.C.R</u>	<u>PUMP No.1</u>	<u>PUMP No.2</u>
.....spm	<input style="width: 100%;" type="text"/> (psi)	<input style="width: 100%;" type="text"/> (psi)
..... spm	<input style="width: 100%;" type="text"/> (psi)	<input style="width: 100%;" type="text"/> (psi)
..... spm	<input style="width: 100%;" type="text"/> (psi)	<input style="width: 100%;" type="text"/> (psi)

Drill String Data

Drill String Volume (bbls)	Pump Output (bbls/stk)	Surface to Bit Strokes
<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>
÷		=
Surface to Bit Strokes	Slow Circulating Rate (spm)	Surface to Bit Time
<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/> (min)
÷		=

Open Hole Data

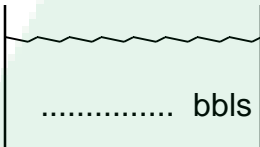
Bit to Shoe Volume (bbls)	Pump Output (bbls/stk)	Bit to Shoe Strokes
<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>
÷		=
Bit to Shoe Strokes	Slow Circulating Rate (spm)	Bit to Shoe Time
<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/> (min)
÷		=

Annulus Data

Bit to Surface Volume (bbls)	Pump Output (bbls/stk)	Bit to Surface Strokes
<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>
÷		=
Bit to Surface Strokes	Slow Circulating Rate (spm)	Bit to Surface Time
<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/> (min)
÷		=

Name:

Read and record SIDPP, SICP and PIT GAIN

<p><u>S.I.D.P.P.</u></p> <div style="border: 1px solid black; border-radius: 50%; width: 100px; height: 100px; margin: 0 auto; display: flex; align-items: center; justify-content: center;"> psi </div>	<p><u>PIT GAIN</u></p> <div style="border: 1px solid black; width: 100px; height: 100px; margin: 0 auto; display: flex; align-items: center; justify-content: center;">  </div>	<p><u>S.I.C.P.</u></p> <div style="border: 1px solid black; border-radius: 50%; width: 100px; height: 100px; margin: 0 auto; display: flex; align-items: center; justify-content: center;"> psi </div>
Day: Date: Time:		

Max. Mud Wt.

Surface Leak Off Test <input style="width: 100%; height: 30px;" type="text"/> (psi)	÷	Casing Shoe T.V.D. <input style="width: 100%; height: 30px;" type="text"/> (ft)	÷	<div style="border: 1px solid black; padding: 2px; display: inline-block;">0.052</div>	}	+	Leak Off Test Mud Weight <input style="width: 100%; height: 30px;" type="text"/> (ppg)	=	Maximum Mud Weight <input style="width: 100%; height: 30px;" type="text"/> (ppg)
<u>OR</u>									
				Formation Breakdown Gradient <input style="width: 100%; height: 30px;" type="text"/> (psi/ft)	÷	<div style="border: 1px solid black; padding: 2px; display: inline-block;">0.052</div>	=	Maximum Mud Weight <input style="width: 100%; height: 30px;" type="text"/> (ppg)	

M.A.A.S.P.

Maximum Mud Weight <input style="width: 100%; height: 30px;" type="text"/> (ppg)	-	Drilling Mud Weight <input style="width: 100%; height: 30px;" type="text"/> (ppg)	} X	<div style="border: 1px solid black; padding: 2px; display: inline-block;">0.052</div>	X	Casing T.V.D. <input style="width: 100%; height: 30px;" type="text"/> (ft)	=	Maximum Allowable Annulus Surface Pressure <input style="width: 100%; height: 30px;" type="text"/> (psi)
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Kill Mud Wt.

S.I.D.P.P. <input style="width: 100%; height: 30px;" type="text"/> (psi)	÷	T.V.D. from RKB <input style="width: 100%; height: 30px;" type="text"/> (ft)	÷	<div style="border: 1px solid black; padding: 2px; display: inline-block;">0.052</div>	}	+	Drilling Mud Weight <input style="width: 100%; height: 30px;" type="text"/> (ppg)	=	Kill Mud Weight <input style="width: 100%; height: 30px;" type="text"/> (ppg)
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M.A.C.P.

If Casing Yield is known		Casing Yield <input style="width: 100%; height: 30px;" type="text"/>	X	<div style="border: 1px solid black; padding: 2px; display: inline-block;">0.8</div>		Maximum Allowable Casing Pressure <input style="width: 100%; height: 30px;" type="text"/>
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NEW M.A.A.S.P.

Maximum Mud Weight <input style="width: 100%; height: 30px;" type="text"/> (ppg)	-	Kill Mud Weight <input style="width: 100%; height: 30px;" type="text"/> (ppg)	} X	<div style="border: 1px solid black; padding: 2px; display: inline-block;">0.052</div>	X	Casing T.V.D. <input style="width: 100%; height: 30px;" type="text"/> (ft)	=	New Maximum Allowable Annulus Surface Pressure <input style="width: 100%; height: 30px;" type="text"/> (psi)
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Pressure Step Down Chart

- 1) Calculate I.C.P.
- 2) Calculate F.C.P
- 3) Calculate Stepdown
- 4) In the left hand column record strokes in 100 stroke intervals, until final circulating pressure is reached.
- 5) Record I.C.P. in top right column, and deduct pressure ΔP until F.C.P. is reached.
- 6) Calculate complete circulation, in strokes and time.

$\Delta P \times 100$

_____ (psi/100 stks)

Strokes to Bit

Minimum D.P. psi

Safety Margin

0	_____ ICP	_____

I.C.P.

$$\begin{matrix} \text{SCR} \\ \square \\ \text{(psi)} \end{matrix} + \begin{matrix} \text{SIDPP} \\ \square \\ \text{(psi)} \end{matrix} = \begin{matrix} \text{Initial Circulating Pressure} \\ \square \\ \text{(psi)} \end{matrix}$$

F.C.P.

$$\begin{matrix} \text{SCR} \\ \square \\ \text{(psi)} \end{matrix} \times \left[\begin{matrix} \text{Kill Mud} \\ \square \\ \text{(ppg)} \end{matrix} \div \begin{matrix} \text{Drilling Mud} \\ \square \\ \text{(ppg)} \end{matrix} \right] = \begin{matrix} \text{Final Circulating Pressure} \\ \square \\ \text{(psi)} \end{matrix}$$

ΔP

$$\left[\begin{matrix} \text{ICP} \\ \square \\ \text{(psi)} \end{matrix} - \begin{matrix} \text{FCP} \\ \square \\ \text{(psi)} \end{matrix} \right] \div \begin{matrix} \text{Surface to Bit strokes} \\ \square \\ \text{(stks)} \end{matrix} = \begin{matrix} \text{Pressure Stepdown} \\ \square \\ \text{(psi/stk)} \end{matrix}$$

Complete Circulation Data

$$\begin{matrix} \text{Surface to Bit Strokes} \\ \square \end{matrix} + \begin{matrix} \text{Bit to Surface strokes} \\ \square \end{matrix} = \begin{matrix} \text{Total Strokes to Kill Well} \\ \square \end{matrix}$$

$$\begin{matrix} \text{Surface to Bit Time} \\ \square \end{matrix} + \begin{matrix} \text{Bit to Surface Time} \\ \square \end{matrix} = \begin{matrix} \text{Total Time to Kill Well} \\ \square \\ \text{(min)} \end{matrix}$$