IADC WellCAP Well Control Worksheet
Subsea Stack - Wait and Weight Method

Well Name: _____ **Completed By:** _____ **Date:** ____ / ____ / ____

PRE-RECORDED INFORMATION

TRUE PUMP OUTPUT: _____ (m³/Stk @ 100%) x _____ (% Efficiency) = _____ TPO (m³/Stk)

Surface Line: _____ (Liters) Surface Line Capacity ÷ _____ True Pump Output (m³/Stk) = _____ Strokes to Pump

DRILL STRING CAPACITY:

	Size (mm)	Weight (kg/m)	m³/m		Length (m)			
Drill Pipe #1:				x		=		m³ DP
Drill Pipe #2:				x		=		m³ DP
HWDP:				x		=		m³ HWDP
Drill Collars #1:				x		=		m³ DC
Drill Collars #2:				x		=		m³ DC

_____ Total Drill String Capacity (m³)

STROKES FROM SURFACE TO BIT:

_____ Total Drill String Capacity (m³) ÷ _____ True Pump Output (m³/Stks) = _____ Strokes, Surface to Bit

ANNULAR CAPACITY

Between CSG and DP:	_____ m³/m	x	_____ m	=	_____ m³
Between Liner #1 and DP:	_____ m³/m	x	_____ m	=	_____ m³
Between Liner #2 and DP:	_____ m³/m	x	_____ m	=	_____ m³
Between OH and DP/HWDP:	_____ m³/m	x	_____ m	=	_____ m³
Between OH and DC:	_____ m³/m	x	_____ m	=	_____ m³
Choke line capacity:	_____ m³/m	x	_____ m	=	_____ m³

STROKES FROM BIT TO SHOE:

_____ Open Hole Annular Vol. (m³) ÷ _____ True Pump Output (m³/Stks) = _____ Strokes, Bit to Shoe

STROKES FROM BIT TO SURFACE:

_____ Total Annular Volume (m³) ÷ _____ True Pump Output (m³/Stks) = _____ Strokes, Bit to Surface

ANNULAR VOL. BETWEEN DRILL PIPE & RISER:

(_____ Riser ID² – _____ Drill Pipe OD²) ÷ 1273 = _____ Capacity Drill Pipe/Riser (m³/m)

_____ Capacity Drill Pipe/Riser (m³/m) x _____ Riser Length m = _____ Volume between Drill Pipe & Riser (m³)

STROKES TO DISPLACE RISER:

_____ Volume between Drill Pipe & Riser (m³) ÷ _____ True Pump Output (m³/Stks) = _____ Strokes

CURRENT WELL DATA

PRESENT MUD WEIGHT: _____ kg/m³

SLOW CIRCULATION RATE (SCR):

SCR taken @ _____ (m)

	Stks/min	Pressure(bar)	m³/min	Pressure(bar)
Pump #1				
Pump #2				
Pump #3				

CASING DATA:

CASING _____ size , _____ ID , _____ weight

SHOE DEPTH @ MD / TVD _____ / _____ m

SHOE TEST DATA:

Depth #1 _____ (kPa) @ Test MW of _____ (kg/m³)

Depth #2 _____ (kPa) @ Test MW of _____ (kg/m³)

Depth #3 _____ (kPa) @ Test MW of _____ (kg/m³)

LINER #1 _____ size , _____ ID , _____ weight

LINER #2 _____ size , _____ ID , _____ weight

LINER #1 TOP DEPTH _____ m

LINER #2 TOP DEPTH _____ m

LINER #1 SHOE DEPTH _____ m

LINER #2 SHOE DEPTH _____ m

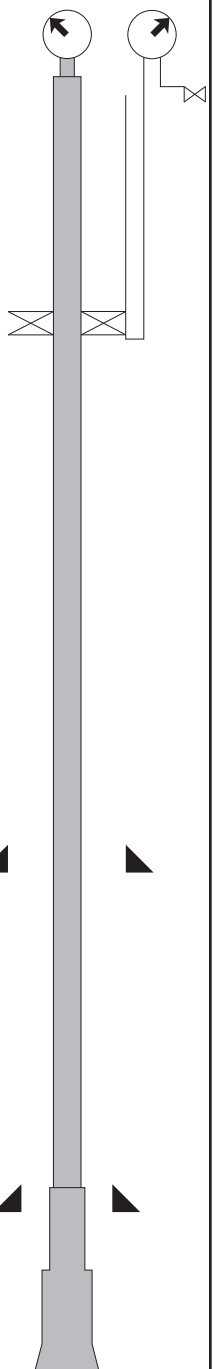
TVD CASING or LINER _____ m

HOLE DATA:

TOTAL DEPTH (MD) _____ m

TOTAL DEPTH (TVD) _____ m

BIT DEPTH @ MD / TVD _____ / _____ m



BIT SIZE _____ inches

KICK DATA

SIDPP: _____ kPa **SICP:** _____ kPa **PIT GAIN:** _____ m³ **Time of Incident:** ____ : ____

CALCULATIONS

KILL FLUID DENSITY (kg/m³)

[_____ ÷ (_____ x 0.00981)] + _____ = _____ kg/m³ KILL FLUID DENSITY

SIDPP (kPa) | TVD (m) | Original Fluid Density (kg/m³)

INITIAL CIRCULATING PRESSURE (ICP)

_____ + _____ = _____ kPa INITIAL CIRCULATING PRESSURE

SIDPP (kPa) | Pump Pressure (kPa) @ SCR of _____SPM

FINAL CIRCULATING PRESSURE (FCP)

_____ x _____ ÷ _____ = _____ kPa FINAL CIRCULATING PRESSURE

Pump Pressure (kPa) @ SCR of _____SPM | Kill Mud Weight (kg/m³) | Present Mud Weight (kg/m³)

MAXIMUM ALLOWABLE FLUID DENSITY (kg/m³)

[_____ ÷ (_____ x 0.00981)] + _____ = _____ kg/m³ MAX. ALLOWABLE FLUID DENSITY

Surface LOT Pressure (kPa) | Shoe TVD (m) | LOT Fluid Density (kg/m³)

MAXIMUM ALLOWABLE ANNULAR SURFACE PRESSURE (MAASP) (kPa)

(_____ - _____) x 0.00981 x _____ = _____ kPa MAX. ALLOWABLE ANNULAR SURFACE PRESSURE

Max. Allowable Fluid Density (kg/m³) | Current Fluid Density (kg/m³) | Shoe TVD (m)

SELECTED KILL PUMP DATA

	Kill Rate Speed (STKS/MIN)	Pump Output (M³/STK)	Circ. Rate (M³/MIN)	Slow Pump Pressure (Circ. Down DP & Up Riser)	Circ. Pres thru Choke Line (kPa)	Circ. Pres thru Choke & Kill Line (kPa)	CLFP Choke Line (kPa)	CLFP Choke & Kill Line (kPa)
PUMP No. 1								
PUMP No. 2								
PUMP No. 3								

PRESSURE CHART

Stroke or Volume	Theoretical Drill Pipe Pressure	Actual Drill Pipe Pressure	Actual Casing Pressure	Actual Pit Volume Deviation
SURFACE 0	ICP			
BIT	FCP			

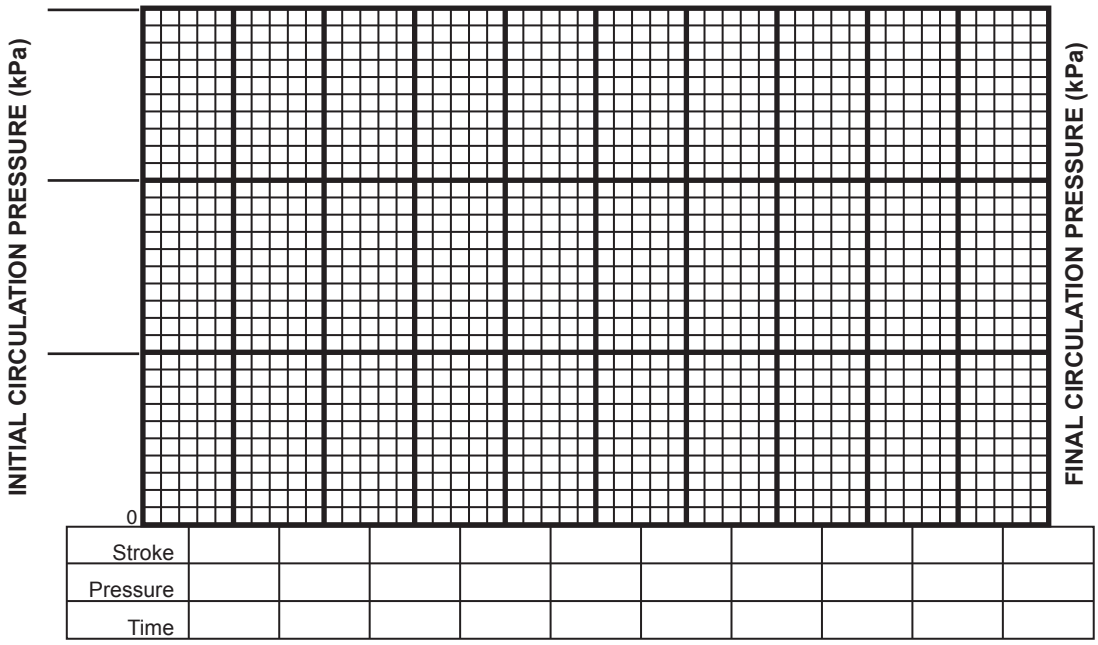
_____ ÷ 10 = _____ Strokes Surface to Bit | Strokes per Step

_____ - _____ ÷ 10 = _____ Initial Circulation Pressure | Final Circulation Pressure | kPa per Step

BIT	FCP			
SURFACE				

_____ ÷ 10 = _____ Strokes Bit to Surface | Strokes per Step

GRAPHIC ANALYSIS



1. Pressure Gradient (kPa/m) = Fluid Density (kg/m³) x 0.00981

2. Hydrostatic Pressure (kPa) = Fluid Density (kg/m³) x 0.00981 x TVD (m)

3. Capacity (m³/m) = Inside Diameter² (mm) ÷ 1273

4. Annular Capacity (m³/m) = (Inside Diameter of Casing² (mm) or Hole Diameter²(mm) - Outside Diameter of Pipe² (mm)) ÷ 1273

5. Pipe Displacement (m³/m) = (Outside Diameter of pipe² (mm) - Inside Diameter of pipe² (mm)) ÷ 1273

6. Maximum Allowable Fluid Density (kg/m³) = $\frac{\text{Surface LOT Pressure (kPa)}}{\text{Shoe TVD (m) x 0.00981}}$ + LOT Fluid Density (kg/m³)

7. MAASP (kPa) = [Maximum Allowable Fluid Density (kg/m³) - Current Fluid Density (kg/m³)] x 0.00981 x Shoe TVD (m)

8. Pressure Drop per Metre Tripping Dry Pipe (kPa/m) = $\frac{\text{Drilling Fluid Density (kg/m³) x 0.00981 x Metal Displacement (m³/m)}}{\text{Riser/Casing Capacity (m³/m) - Metal Displacement (m³/m)}}$

9. Pressure Drop per Metre Tripping Wet Pipe (kPa/m) = $\frac{\text{Drilling Fluid Density (kg/m³) x 0.00981 x Closed End Displacement (m³/m)}}{\text{Riser/Casing Capacity (m³/m) - Closed End Displacement (m³/m)}}$

10. Formation Pressure (kPa) = Hydrostatic Pressure Mud in Hole (kPa) + SIDPP (kPa)

11. Equivalent Circulating Density (kg/m³) = $\frac{\text{Annular Pressure Loss (kPa)}}{\text{TVD (m) x 0.00981}}$ + Fluid Density (kg/m³)

12. Kg of Barite Needed to Weight-Up Mud = $\frac{\text{m}^3 \text{ of Mud in System x 4250 x (KMW - OMW)}}{\text{(4250 - KMW)}}$

13. Volume Increase from Adding Barite (m³) = $\frac{\text{Kg of Barite Needed to Weight-Up Mud}}{4250}$

14. Estimated New Pump Pressure at New Pump Rate (kPa) = Old Pump Pressure (kPa) x $\left[\frac{\text{New Pump Rate (SPM)}}{\text{Old Pump Rate (SPM)}}\right]^2$

15. Estimated New Pump Pressure with New Mud Weight (kPa) = Old Pump Pressure (kPa) x $\frac{\text{New Mud Weight (kg/m³)}}{\text{Old Mud Weight (kg/m³)}}$