	Black & T	Tan 27 Federal Com	306H	
CEMENT: SURFACE				
Stage Tool Depth: <u>N</u>	J/A			
Lead:				×
Top MD of Segment:	0	Btm MD of Segment:	1285.47	
Cmt Type: C		Cmt Add	ditives:	4% Bentonite + 1% CaCl2
Quantity (sk Yield (cu/ft/ Density (lbs/	sk): 1.73 Volu	me (cu/ft): ent OH Excess:	<u>1124.5</u> 25%	
Tail:				
Top MD of Segment:	1285.47	Btm MD of Segment:	1700	
Cmt Type: <u>C</u>		Cmt Add	ditives:	1% CaCl2
Quantity (sk Yield (cu/ft/ Density (lbs/	sk): 1.33 Volu	me (cu/ft): ent OH Excess:	399 25%	
CEMENT: INTERMED	DIATE			
Single Stage				
Lead:				
Top MD of Segment:	0	Btm MD of Segment:	5144.38	
		Contract	111	5% NaCl + 6% Bentonite + 2 Ib/sk Kolseal + 0.125 Ib/sk
Cmt Type: <u>C</u>		. Cmt Add	ditives:	Celloflake + 0.4% Retarder
Quantity (sk Yield (cu/ft/ Density (lbs/	sk): 1.885 Volu	me (cu/ft): ent OH Excess:	1966.06 25%	
Tail:				/

	Top MD ofBtm MD ofSegment:5144.38Cmt Type:CCmt Type:Cmt AdditQuantity (sks):200Yield (cu/ft/sk):1.34Volume (cu/ft):Density (lbs/gal):14.8Percent OH Excess:	5780 ives: 0.2% Retarder 268 25%
2 Stage	ge Cement Job	
propor above *If lost	tool depth(s) will be adjusted based on hole conditions and ce ortionally. DV tool will be set a minimum of 50 feet below prev e current shoe. Lab reports with 500psi compressive strength t st circulation is encountered, Apache may 2-stage Interm csg. may be placed below DVT.	vious casing and a minimum of 200 feet time for cmt will be onsite for review.
1st Sta	tage	
Lead:	:	
	Top MD ofBtm MD ofSegment:3500Segment:	5144.38
	Cmt Type:CCmt AdditQuantity (sks):345Yield (cu/ft/sk):1.885Density (lbs/gal):12.9Percent OH Excess:	5% NaCl + 6% Bentonite + 2 Ib/sk Kolseal + 0.125 Ib/sk ives: Celloflake + 0.4% Retarder
Tail:		
	Top MD ofBtm MD ofSegment:5144.38Segment:	5780
	Cmt Type: C Cmt Addit	ives: 0.3% Retarder
	Quantity (sks):200Yield (cu/ft/sk):1.34Density (lbs/gal):14.8Percent OH Excess:	268 25%

Stage T	bol / ECP Depth: <u>± 3500'</u>	
2nd Sta	ge	
Lead:		
	Top MD of Btm MD of Segment: 0 Segment: 2815.44	
	Cmt Type: C Cmt Additives: 5% NaCl + 6% Bentonit	e
	Quantity (sks):565Yield (cu/ft/sk):1.868Volume (cu/ft):1055.42Density (lbs/gal):12.9Percent OH Excess:25%	
Tail:		
	Top MD ofBtm MD ofSegment:2815.44Segment:3500	
	Cmt Type: C Cmt Additives: 0.3% Retarder	
	Quantity (sks):200Yield (cu/ft/sk):1.34Density (lbs/gal):14.8Percent OH Excess:25%	

CENAEN	TOPOPULCTION	
CEIVIEN	T: PRODUCTION	
		· · · · · ·
Single S	itage	
0		
Lead:		
	Top MD of	Btm MD of
	Segment: 3000	Segment: 10450.03
		101000
	Cmt Type: H	Cmt Additives: 10% gel + 5% Salt
	Quantity (sks):	923
	Yield (cu/ft/sk):	2.32 Volume (cu/ft): 2141.36
	Density (lbs/gal):	11.9 Percent OH Excess: 20%
Taile		
Tail:		
	Top MD of	Btm MD of
	Segment: 10450.03	Segment: 15758.95
	10430.03	

Cmt Type: TXI Lite Cmt Additives: 0.3% Fluid Loss + 0.2% Retarder
Quantity (sks):1124Yield (cu/ft/sk):1.44Volume (cu/ft):1618.56Density (lbs/gal):12.8Percent OH Excess:20%
2 Stage Cement Job
* DV tool depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. Lab reports with the 500 psi compressive strength time for the cement will be onsite for review.
*If lost circulation is encountered, Apache may 2-stage Interm csg. A DVT may be used in the 7" csg & ECP may be placed below DVT.
1st Stage
Lead:
Top MD of Btm MD of Segment: 5830 Segment: 10450.03
Cmt Type: H Cmt Additives: 10% gel + 5% Salt
Quantity (sks):604Yield (cu/ft/sk):2.32Density (lbs/gal):11.9Percent OH Excess:20%
Tail:
Top MD of Btm MD of Segment: 10450.03 Segment: 15758.95
Cmt Type: TXI Lite Cmt Additives: 0.3% Fluid Loss + 0.2% Retarder
Quantity (sks):1092Yield (cu/ft/sk):1.44Density (lbs/gal):12.8Percent OH Excess:20%
Stage Tool / ECP Depth: ± 5830'
2nd Stage

Lead:		
	Top MD of Segment: <u>3000</u>	Btm MD of Segment: 4810.33
	Cmt Type: H	Cmt Additives: 10% gel + 5% Salt
	Quantity (sks): Yield (cu/ft/sk): Density (lbs/gal):	204 2.32 Volume (cu/ft): 473.28 11.9 Percent OH Excess: 20%
Tail:		
	Top MD of Segment: 4810.33	Btm MD of Segment: 5830
	Cmt Type: C	Cmt Additives: 0.3% Retarder
	Quantity (sks): Yield (cu/ft/sk): Density (lbs/gal):	200 1.34 Volume (cu/ft): 268 14.8 Percent OH Excess: 20%

		BLA	CK & TAN 2	27 FEDERAL COM 306	Н		
String:	SURFACE	2					
Hole Size:	17.5						
Top Setting Depth (MD):	0	Top Setting Depth (TVD):	0	Btm setting depth (MD):	1700	Btm setting depth (TVD):	1700
Size:	13-3/8"	Grade:	J-55	- Weight (lbs/ft): -	54.5	Joint (Butt,FJ, LTC,STC, SLH, N/A, Other):	Buttress
Condition (Ne	ew/Used):	New		Standard (API/Non-A	VPI):	API	
	ed spec attac	N chment					
Safety Factor	<u>s</u>						
Collapse Desi	gn Safety Fa	ictor:	2.15	Burst Design Safety F	actor:	1.82	
Body Tensile Body Tensile			pe?: Dry/B	Buoyant 3.79	Buoyant	-	
Joint Tensile I Joint Tensile I	-		pe?: Dry/B	Buoyant 4.04	Buoyant	-	
String:	INTERMED	DIATE					
Hole Size:	12.25						
Top Setting Depth (MD):	0	Top Setting Depth (TVD):	0	Btm setting depth (MD):	900	Btm setting depth (TVD):	900
						Joint	

J-55 Weight (lbs/ft):

(Butt,FJ,

LTC,STC, SLH, N/A, Other): Buttress

40

9-5/8" Grade:

Size:

Condition (New/Used): <u>New</u>		Standard (API/Non-A	API):	API	
Tapered String (Y/N)?: <u>N</u> If yes, need spec attachmer	t				
Safety Factors					
Collapse Design Safety Factor:	5.37	Burst Design Safety F	actor:	1.7	
Body Tensile Design Safety Fac Body Tensile Design Safety Fac		Buoyant 1.96	Buoyant	-	
Joint Tensile Design Safety Fact Joint Tensile Design Safety Fact		Buoyant2.24	Buoyant	-	
Top Setting 900 Set Depth (MD): De (TV	ting 900	Btm setting depth (MD):	5780	Btm setting depth (TVD):	5780
Size: 9-5/8" Gra	de: J-55	Weight (lbs/ft):	40	Joint (Butt,FJ, LTC,STC, SLH, N/A, Other):	LTC
Condition (New/Used): New		Standard (API/Non-A	API):	ΑΡΙ	
Tapered String (Y/N)?: <u>N</u> If yes, need spec attachmer					
Safety Factors					
Collapse Design Safety Factor:	1.54	Burst Design Safety F	actor:	1.87	
Body Tensile Design Safety Fac Body Tensile Design Safety Fac		Buoyant2.15	Buoyant	-	
Joint Tensile Design Safety Fact Joint Tensile Design Safety Fact		Buoyant1.8	Buoyant	-	
String: PRODUCTION					

Hole Size:	8.75						
Top Setting Depth (MD):	0	Top Setting Depth (TVD):	0	Btm setting depth (MD):	15758.95	Btm setting depth (TVD):	10985
Size:	5-1/2"	Grade:	P-110	Weight (lbs/ft):	17	Joint (Butt,FJ, LTC,STC, SLH, N/A, Other):	Buttress
Condition (Ne	w/Used):	New		Standard (API/Non-A	NPI):	API	
Safety Factors							
Collapse Desig	gn Safety Fa	actor:	1.35	Burst Design Safety F	actor:	1.28	
Body Tensile Design Safety Factor type?:Dry/BuoyantBuoyantBody Tensile Design Safety Factor:2.04							
Joint Tensile Design Safety Factor type?:Dry/BuoyantBuoyantJoint Tensile Design Safety Factor:2.13							
Tapered String If yes, need	g (Y/N)?: d spec atta	N chment					