4/8/2024

575 N Dairy Ashford, Suite 800
Houston, TX. 77079

AES DRILLING FLUIDS

Report 12 pm

TEL: (888) 556-4533

83.5° **9,931' TVD**

Operator	Contractor	County / Parish / Block	AES Start Date	24 hr ftg.	Drilled Depth
AVANT OPERATING LLC	**HELMERICH & PAYNE, INC.**	**LEA COUNTY**	**03/09/24**		**14,652 ft**
Well Name and No.	Rig Name and No.	State	Spud Date	Current ROP	Activity
CUTBOW 36 1 FEDERAL COM 502H	**H&P 460**	**NEW MEXICO**	**03/09/24**	**65 ft/hr**	**Drilling**
Report for	Report for	Field / OSC-G #	Fluid Type	Circulating Rate	Circulating Pressure
Jeff/Mondo/Brandon/Dustin	**Cody/Ricky**	**SEC 25 T19S R32E**	**AES VERT**	**722 gpm**	**4,035 psi**

MUD PROPERTY SPECIFICATIONS						
Weight	PV	YP	E.S.	CaCl2	GELS	HTHP
9-9.3	**12-20**	**8-12**	**>300**	**±200K**	**<8 <12**	**<10**

MUD PROPERTIES				
Time Sample Taken	7:40		19:00
Sample Location	Suction		Suction
Flowline Temperature °F	120 °F		126 °F
Depth (ft)	13,620'		14,652'
Mud Weight (ppg)	9.0		9.0
Funnel Vis (sec/qt) @ 112 °F	49		47
600 rpm	29		28
300 rpm	18		17
200 rpm	14		13
100 rpm	9		9
6 rpm	4		4
3 rpm	3		3
Plastic Viscosity (cp) @ 150 °F	11		11
Yield Point (lb/100 ft²) T0 = 2	7		6
Gel Strength (lb/100 ft²) 10 sec / 10 min	5/7		5/7
Gel Strength (lb/100 ft2) 30 min	9		8
HTHP Filtrate (cm/30 min) @ 250 °F	10.8		9.6
HTHP Cake Thickness (32nds)	3.0		2.0
Retort Solids Content	9.8%		10.2%
Corrected Solids (vol%)	8.5%		8.9%
Retort Oil Content	63.2%		63.8%
Retort Water Content	27%		26%
O/W Ratio	70:30		71:29
Whole Mud Chlorides (mg/L)	37,000		35,000
Water Phase Salinity (ppm)	176,877		174,296
Whole Mud Alkalinity, Pom	3.0		2.4
Excess Lime (lb/bbl)	3.9 ppb		3.1 ppb
Electrical Stability (volts)	294 v		296 v
Average Specific Gravity of Solids	2.62		2.57
Percent Low Gravity Solids	7.1%		7.7%
ppb Low Gravity Solids	58 ppb		64 ppb
Percent Barite	1.4%		1.2%
ppb Barite	19 ppb		17 ppb
Estimated Total LCM in System pp			
Sample Taken By	J. Bare		J. Bare

MUD VOLUME (BBL)		PUMP #1		PUMP #2		PUMP #3	
In Pits	495 bbl	Liner Size	5.5	Liner Size	5.5	Liner Size	5.5
In Hole	991 bbl	Stroke	11	Stroke	11	Stroke	11
Active	1486 bbl	bbl/stk	0.0768	bbl/stk	0.0768	bbl/stk	0.0768
Storage	657 bbl	stk/min	112	stk/min	112	stk/min	
Tot. on Location	2143 bbl	gal/min	361	gal/min	361	gal/min	

Mud Wt. = 9.0 PV=11 YP=7 **CIRCULATION DATA** n = 0.688 K = 125.7

Bit Depth = 14,652 ' Washout = Pump Efficiency = 95%

Drill String Disp.							
105.9 bbl	Volume to Bit	324.7 bbl	Strokes To Bit	4,229	Time To Bit	19 min
	Bottoms Up Vol.	665.9 bbl	BottomsUp Stks	8,674	BottomsUp Time	39 min
	TotalCirc.Vol.	1485.6 bbl	TotalCirc.Stks	19,351	Total Circ. Time	86 min

DRILLING ASSEMBLY DATA

Tubulars	OD (in.)	ID (in.)	Length	Top
Drill Pipe	5.500	4.776	14,652'	
				14,652'
				14,652'
				14,652'

CASING & HOLE DATA

Casing	OD (in.)	ID (in.)	Depth	Top
Riser				
Surface	13 3/8		2,983'	
Int. Csg.	9 5/8	8.835	4,641'	
Washout 1				
Washout 2				
Open Hole Size		8.750	14,652'	

ANNULAR GEOMETRY & RHEOLOGY

annular section	depth	velocity ft/min	flow reg	ECD lb/gal
8.835x5.5	4,641'	370.3	turb	9.63
8.75x5.5	14,652'	382.2	turb	9.98

BIT DATA Manuf./Type REED / PDC

Size	Depth In	Hours	Footage	ROP ft/hr	Motor/MWD	Calc. Circ. Pressure
8 3/4	10,164 ft	33.0	4,488 ft	136.0	2,055 psi	4,035 psi

SOLIDS CONTROL

Unit	Screens	Hours
Shaker 1	4x200	12.0
Shaker 2	4x200	12.0
Shaker 3	4x200	12.0
Centrifuge 1	7800	12.0
Centrifuge 2	7800	3.0
Dryer Shaker 3	4x80	12.0

VOLUME ACCOUNTING (bbls)

Prev. Total on Location	2073.3
Transferred In(+)/Out(-)	
Oil Added (+)	
Barite Added (+)	
Other Product Usage (+)	
Water Added (+)	
Left on Cuttings (-)	
Centrifuges (-)	
Lost Returns (-)	
Est. Total on Location	2073.3
Est. Losses/Gains (-)/(+)	69.3

BIT HYDRAULICS DATA

Bit H.S.I.	Bit DP	Nozzles (32nds)		
2.83	403 psi	15	15	15
Bit Impact Force	Nozzle Velocity (ft/sec)	15	15	15
754 lbs	224			

Afternoon Remarks/Recommendations:

DIESEL: 2 sec/qt WATER: 4 sec/qt = 16.1 BPH dilution

LIME: mix 30 sacks CACL 2: mix 1 pallet

AES VIS LS/VIS III: mix 15 each FLR PLUS: mix 15 sacks

BARITE: A/N to maintain 9.0# AES WA II/MUL X: add 75 gal each

Post MW/vis every hour. Check screens on connections.

Afternoon Rig Activity:

Currently sliding lateral @ 65'/hr. Discontinued LCM sweeps since seepage has subsided. Keeping 40 bbls LCM sweep rolling in trip tanks. Building new volume in slug tank while diluting 15 BPH to maintain volume. Mixing chemicals as needed to maintain mud properties. Processing active mud with centrigue 3 hours/tour to maintain LGS%.