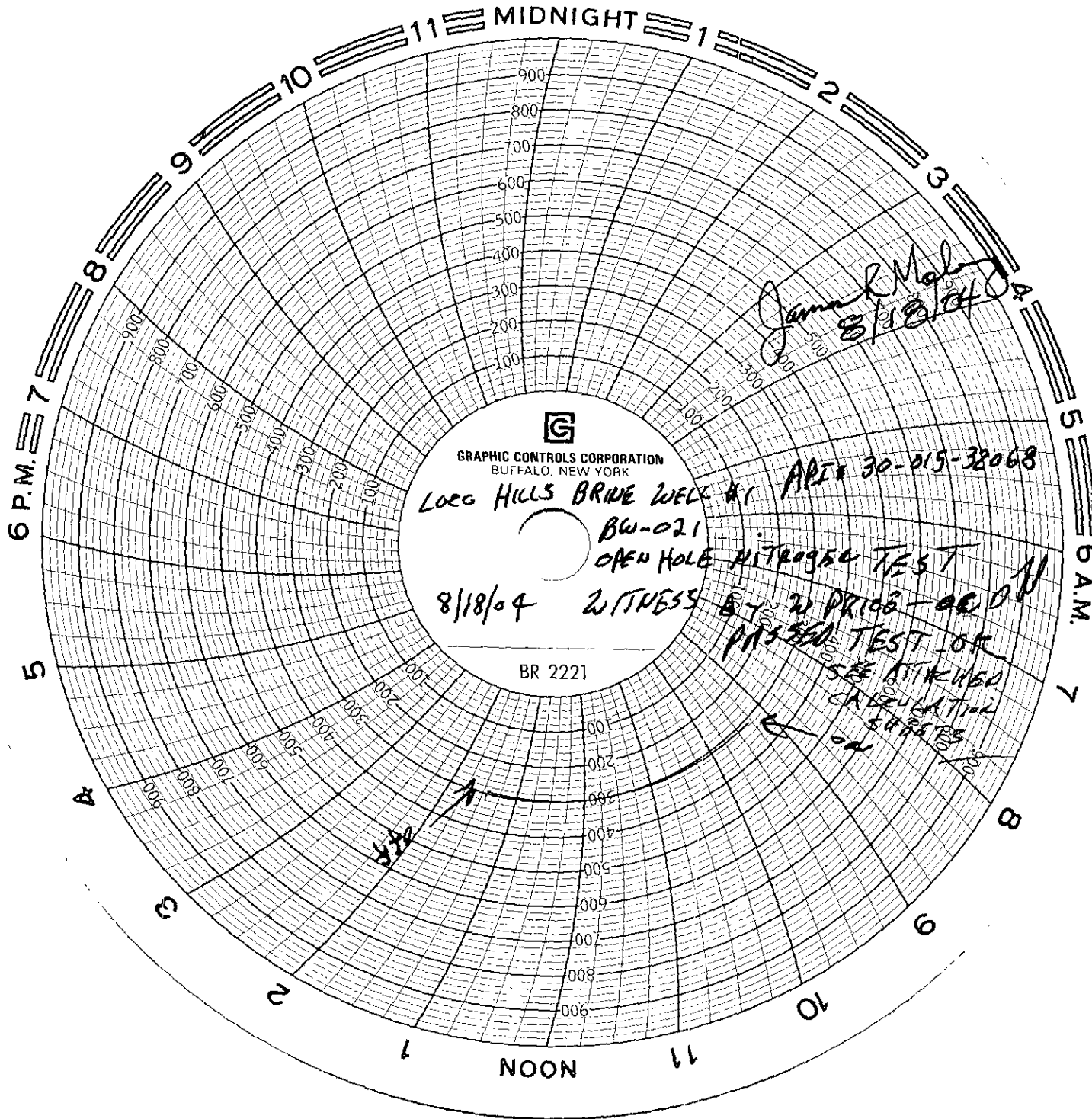




G
GRAPHIC CONTROLS CORPORATION
BUFFALO, NEW YORK

LOGG HILLS BRINE WELL #1 API# 30-015-32068

BW-021

OPEN HOLE NITROGEN TEST

8/18/04 2 WITNESS BY 2 PRIOR - OED

PASSED TEST OK

BR 2221

SEE ATTACHED
CALCULATION
SHEETS

James R. Mohr
8/18/04

Nitrogen Brine Well Test

Loss allowed in BBL's/year

1000

Loss allowed in BBL's/day

2.74

Loss allowed in BBL's/hour

0.11

Input start pressure (psig)

298.37

Input stop pressure (psig)

296

Input volume in BBL's ***

53

Length of test in hours

4.25

Ans Loss in BBL's/hour

0.099056851

Ideal Gas Law for N2

Temp $R^0 = 459.69 + F^0$

P = pressure psig

V = Volume FT^3

n = number of moles

R = 55.15 constant for N2

MW of N2 is 28.016

Input T1 Deg F

180

Input T2 Deg F

160

Set V1=V2

Input P1 PSIG

308

Solve P2 PSIG

298.3703356

Pressure Drop due to Leakage

$$\frac{5000}{93} = 53$$

*** N2 SCF divided by compressibility number from engineering charts

*** Example: 20,000 scf / 111 = 180 bbls of N2, 300 psig @ 80 f see page 11-2 BJ engr. book

$$< V_1 \cdot V_1 \cdot (P_1/P_2) > / \text{time}$$

ANSWER OH John

$$PV=nRT$$

$$(P_1 \cdot V_1) / T_1 = (P_2 \cdot V_2) / T_2$$

P in PSIG

V in FT^3

T in degrees Rankin

< 0.11 per salt institute guidelines!

Pressure Drop due to Temp Change

8/18/04 W/Phon - drop
API # 30-015-32068
LOCO HILLS BRINE WELL
MIT TEST - OPER TO FORMATION



TREATMENT REPORT

8/18/04
API 30-05-32068

Page ____ of ____

Date 8-18-04 District DDCT F. Receipt 395810044 Customer Ray Winstall
Lease Ryan Well No. #1 Field Long Hills Water Location
County Eddy State N.M. Stage Number _____ This Zone ☐ This Well ☐

WELL DATA OG ☐ NG ☐ NO ☐ OO ☐ WD ☐ IW ☐ Misc. ☐ Depth TD/PB _____ Formation _____
Tubing Size 2 1/4 WT. _____ Set at: 650 Type Packer _____ Set At _____
Casing Size 6 1/4 WT. _____ Set From 0 To 590 Liner Size _____ Wt. _____
Liner Set From _____ To _____ Open Hole: Size _____ From _____ To _____ Casing Perforations: Size _____
Holes Per Foot _____ Intervals _____
Previous Treatment _____ Prior Production _____

TREATMENT DATA Pad Used: Yes ☐ No ☐ Pad Type _____
Treating Fluid Type: Water ☐ Acid ☐ Oil ☐ Treat. Fluid Vol. _____ Gal.
Prop Type: Sand ☐ ISP ☐ Resin ☐ Baux. ☐ Other _____ Total Prop. Qty. _____ Lbs.
Prop Mesh Sizes, Types and Quantities _____
Hole Loaded With WATER Treat Via: Tubing ☐ Casing ☐ Anul. ☐ Tubing & Anul. ☒
Ball Sealers: 2 In 2 Stages of _____
Types and Number of Pumps Used _____
Auxiliary Materials 1- Nitrogen

LIQUID PUMPED AND CAPACITIES IN BBLs.
Tubing Cap. _____
Casing Cap. _____
Annular Cap. _____
Open Hole Cap. _____
Fluid to Load _____
Pad Volume _____
Treating Fluid _____
Flush _____
Overflush _____
Fluid to Recover 2

PROCEDURE SUMMARY

Time AM/PM	Treating Pressure-Psi		Surface Slurry BBLs. Pumped		Slurry Rate BPM	Comments
	STP	Annulus	Stage	Total		
8:00	STP					ADL
8:15						Hold Safety Meeting
8:30	1500					TEST LINES
8:45	280					OPEN WELLHEAD
8:46	280			0	300	START N2
8:47	310	0	0	5,000	300	SHUTDOWN - PRESSURE LIMIT ACHIEVED
8:11:00	310			1		Rig down - END OF TREATMENT
				SCF		
				AP		
						PER BS TEMP IN = 180°F
						LAST MEASURED T = 160°F
						20° F
						W for
						8/18/04

Treating Pressure		Injection Rates	Shut In Pressures	Customer Rep.
Minimum		Treating Fluid	ISDP	BJ Rep.
Maximum		Flush	5 Min.	Job Number
Average		Average	10 Min.	Rec. ID No.
Operator's Max. Pressure			15 Min.	Distribution
			Final in Min.	
			Flush Dens. lb./gal.	