Phone
522-1206 Area 303

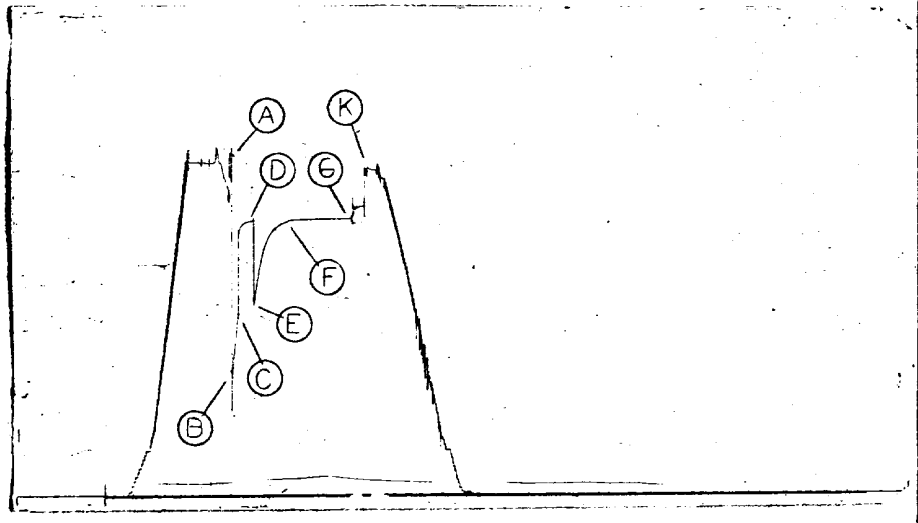
LYNES, INC.

Box 712
Sterling, Colo. 80751

Operator Dome Petroelum Corporation
Address See Distribution
Well Name and No. Santa Fe 20-21-8 #6
Ticket No. 1787
Date 7-14-77
DST No. 1
No. Final Copies 12

Contractor	Four Corners Drlg.	Top Choke	1/4"	Flow No. 1	15 Min.
Rig No.	3	Bottom Choke	1/2"	Shut-in No. 1	30 Min.
Spot	NW-NE	Size Hole	8 3/4"	Flow No. 2	60 Min.
Sec.	20	Size Rat Hole	--	Shut-in No. 2	120 Min.
Twp.	21 N	Size & Wt. D. P.	4 1/2" 16.60	Flow No. 3	-- Min.
Rng.	8 W	Size Wt. Pipe	180'	Shut-in No. 3	-- Min.
Field	Snake Eyes-Entrada	I. D. of D. C.	--		
County	San Juan	Length of D. C.	608'	Bottom Hole Temp.	137°F
State	New Mexico	Total Depth	5850'	Mud Weight	9.1
Elevation	--	Interval Tested	4630-4646'	Gravity	--
Formation	Dakota	Type of Test	Inflate Straddle	Viscosity	65

Tool opened @ 8:32 AM.



Outside Recorder

PRD Make Kuster K-3
No. 13139 Cap. 3000 @ 4640'

Press		Corrected
Initial Hydrostatic	A	2245
Final Hydrostatic	K	2202
Initial Flow	B	784
Final Initial Flow	C	1237
Initial Shut-in	D	1854
Second Initial Flow	E	1291
Second Final Flow	F	1843
Second Shut-in	G	1867
Third Initial Flow	H	--
Third Final Flow	I	--
Third Shut-in	J	--

Lynes Dist.: Hobbs, NM.
Our Tester: Bill Wallace
Witnessed By: H. Hollingsworth

Did Well Flow – Gas No Oil No Water No

RECOVERY IN PIPE: 4382' Mud & water

1st Flow - Tool opened with a weak blow, increased to a strong blow. Gas to surface in 3 minutes.

2nd Flow - Tool opened with strong blow, gas to surface in 1 minute.

REMARKS:

Form 1

LYNES, INC.

Operator Dome Petroleum Corp. Lease & No. Santa Fe 20-21-8 #6 DST No. 1

Recorder No. 13139 @ 4640'

FIRST SHUT IN PRESSURE:

TIME(MIN) PHI	(T"PHI) /PHI	PSIG
0.0	0.0000	1237
3.0	6.0000	1800
6.0	3.5000	1816
9.0	2.6667	1829
12.0	2.2500	1836
15.0	2.0000	1840
18.0	1.8333	1844
21.0	1.7143	1848
24.0	1.6250	1850
27.0	1.5556	1852
30.0	1.5000	1854

EXTRAPLN OF FIRST SHUT IN : 1873.5

SECOND SHUT IN PRESSURE:

TIME(MIN) PHI	(T"PHI) /PHI	PSIG
0.0	0.0000	1843
12.0	7.2500	1858
24.0	4.1250	1862
36.0	3.0833	1863
48.0	2.5625	1864
60.0	2.2500	1865
72.0	2.0417	1866
84.0	1.8929	1867
96.0	1.7813	1867
108.0	1.6944	1867
120.0	1.6250	1867

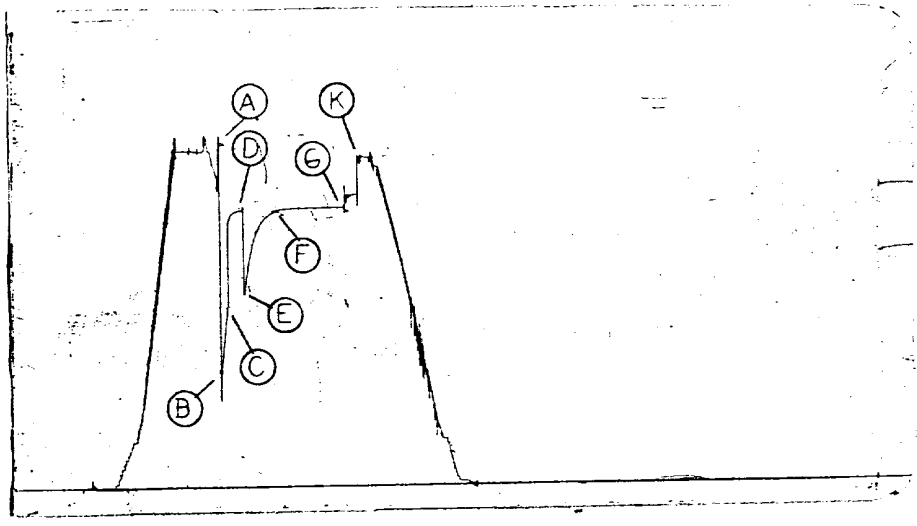
EXTRAPLN OF SECOND SHUT IN : 1867.9 M : 4.5

Extrapolations of reservoir pressures should be used as indicators only.

Form 2

LYNES, INC.

Operator Dome Petroleum Corporation Lease & No. Santa Fe 20-21-8 #6 DST No. 1



Outside Recorder

PRD Make Kuster K-3

No. 13138 Cap. 3000 @ 4640'

Press		Corrected
Initial Hydrostatic	A	2244
Final Hydrostatic	K	2194
Initial Flow	B	735
Final Initial Flow	C	1216
Initial Shut-in	D	1843
Second Initial Flow	E	1284
Second Final Flow	F	1836
Second Shut-in	G	1857
Third Initial Flow	H	--
Third Final Flow	I	--
Third Shut-in	J	--
Pressure Below Bottom Packer Bled To		

PRD Make_____

No._____ Cap._____ @_____

Press		Corrected
Initial Hydrostatic	A	
Final Hydrostatic	K	
Initial Flow	B	
Final Initial Flow	C	
Initial Shut-in	D	
Second Initial Flow	E	
Second Final Flow	F	
Second Shut-in	G	
Third Initial Flow	H	
Third Final Flow	I	
Third Shut-in	J	
Pressure Below Bottom Packer Bled To		

Form 3

LYNES, INC.

Fluid Sample Report

Date 7-14-77 Ticket No. 1787

Company Dome Petroleum Corp.

Well Name & No. Santa Fe 20-21-8 #6 DST No. 1

County San Juan State Colorado

Sampler No. -- Test Interval 4630-4646'

Pressure in Sampler 10 PSIG BHT 137 °F

Total Volume of Sampler: 3000 cc.

Total Volume of Sample: 100 cc.

Oil: None cc.

Water: None cc.

Mud: 100 cc.

Gas: None cu. ft.

Other: None

Resistivity

Water: ____ @ ____ of Chloride Content ____ ppm.

Mud Pit Sample 9.1 @ 65°F of Chloride Content 1200 ppm.

Gas/Oil Ratio ____ Gravity ____ °API @ ____ °F

Where was sample drained ____

Remarks: ____

LYNES, INC.

Distribution of Final Reports

Operator Dome Petroleum Corp. Lease Santa Fe 20-21-8 Well No. 6

Original: Mineral Management, Inc., 105 Petr. Center Bldg., 501 Airport Drive, Farmington, New Mexico 87401

1 copy: Dome Petr. Corp., 1500 Colorado State Bank Bldg., 1600 Broadway, Denver, Colorado 80202

1 copy: Filon Expl. Corp., 2216 United Bank Center, 1700 Broadway, Denver, Colorado 80202

1 copy: Trend Expl. Corp., 600 Capitol Life Bldg., 1600 Sherman St., Denver, Colorado 80203

1 copy: Gene Blasdel, % Oil Developement Co. of Texas, Box 12058, Amarillo, Texas 79701

1 copy: Dave Walsh, Suite 310, Citizens Bank Bldg., 2580 Louisiana NE, Albuquerque, New Mexico 87110

6 copies: New Mexico Oil & Gas Comm., 1000 Rio Brazos Rd., Aztec, New Mexico 87410

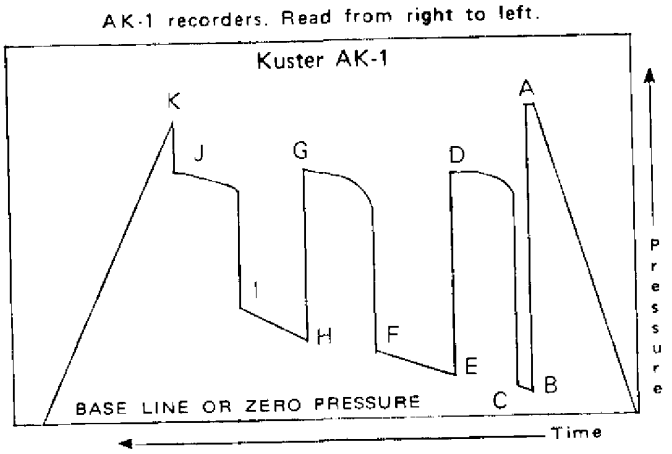
Form 6

LYNES

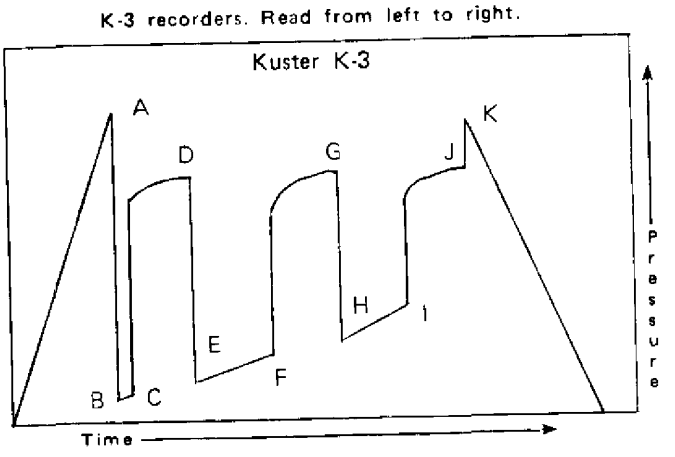
GUIDE TO INTERPRETATION AND IDENTIFICATION OF LYNES DRILL STEM TEST PRESSURE CHARTS

In making any interpretation, our employees will give Customer the benefit of their best judgment as to the correct interpretation. Nevertheless, since all interpretations are opinions based on inferences from electrical, mechanical or other measurements, we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not be liable or responsible, except in the case of gross or wilful negligence on our part, for any loss, costs, damages or expenses incurred or sustained by Customer resulting from any interpretation made by any of our agents or employees.

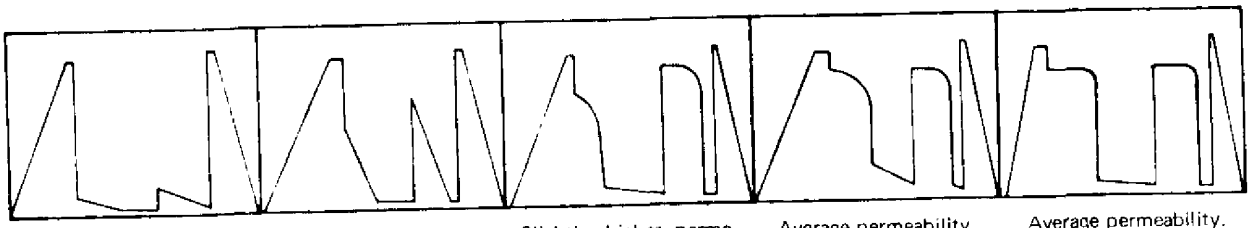
AK-1 recorders. Read from right to left.



K-3 recorders. Read from left to right.



A – Initial Hydrostatic
B – First Initial Flow
C – First Final Flow
D – Initial Shut-in
E – Second Initial Flow
F – Second Final Flow
G – Second Shut-in
H – Third Initial Flow
I – Third Final Flow
J – Third Shut-in
K – Final Hydrostatic



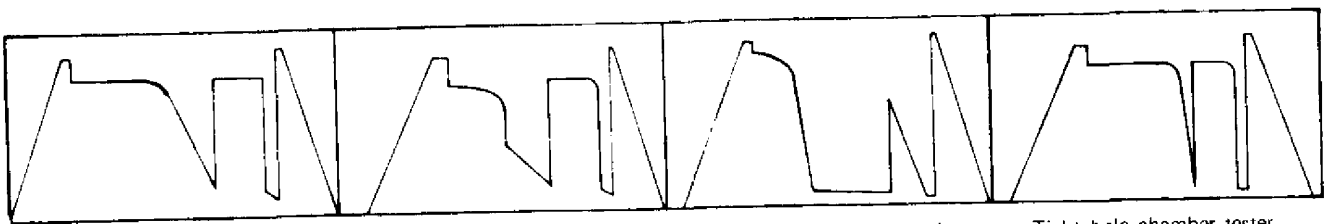
Very low permeability. Usually only mud recovered from interval tested. Virtually no permeability.

Slightly higher permeability. Again usually mud recovered.

Slightly higher permeability. Small recovery, less than 200 ft).

Average permeability. Final and initial shut-ins differ by 50 psi.

Average permeability. Strong damage effect. High shut-in pressure, low flow pressure.



Excelent permeability where final flow final shut-in pressure.

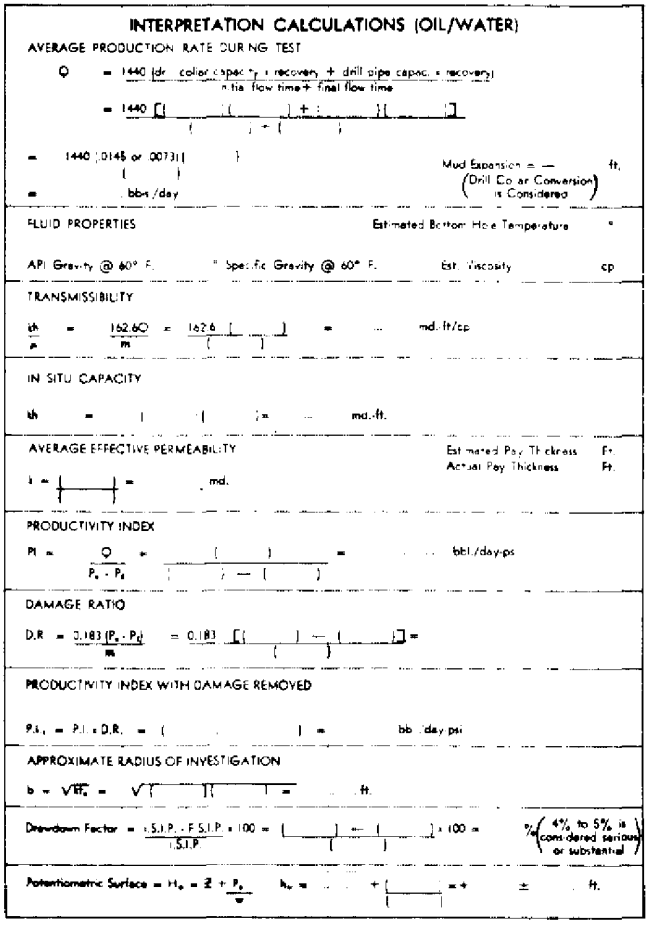
High permeability where ISIP and FSIP are within 10 psi.

Deep well bore invasion or damage. Final shut-in higher than the initial shut-in.

Tight hole chamber tester. Permeability very difficult to interpret unless the recovery is less than chamber length. Flow pressure builds up rapidly if recovery is large, similar to a shut-in.

NOMENCLATURE (Definition of Symbols)

- Q = average production rate during test, bbls./day
- Q_g = measured gas production rate during test, MCF/day
- k = permeability, md
- h = net pay thickness, ft. (when unknown, test interval is chosen)
- μ = fluid viscosity, centipoise
- Z = compressibility factor
- T_r = reservoir temperature, ° Rankine
- m = slope of final SIP buildup plot, psig/cycle (psig²/cycle for gas)
- b = approximate radius of investigation, feet
- r_w = wellbore radius, feet
- t_p = total flowing time, minutes
- P_o = Extrapolated maximum reservoir pressure, psig
- P_f = final flowing pressure, psig
- P.I. = productivity index, bbls./day/psi
- $P.I._t$ = theoretical productivity index with damage removed, bbl./day/psi
- D.R. = damage ratio
- E.D.R. = estimated damage ratio
- AOF = absolute open flow potential, MCF/D
- AOF_t = theoretical absolute open flow if damage were removed
- Z = subsea depth
- W = water gradient based on salinity
- H_w = potentiometric surface



INTERPRETATION CALCULATIONS (OIL/WATER)

AVERAGE PRODUCTION RATE DURING TEST

Q = 1440 [(dr. collar capac. × recovery + drill pipe capac. × recovery) / total flow time + final flow time]

= 1440 [( ) + ( )] / [( ) + ( )]

= 1440 (.0145 or .0073) ( ) / ( )

= bbls./day

Mud Expansion = — ft. (Drill Co. or Conversion is Considered)

FLUID PROPERTIES — Estimated Bottom Hole Temperature °

API Gravity @ 60° F. ° Specific Gravity @ 60° F. Est. Viscosity cp

TRANSMISSIBILITY

$\frac{kh}{\mu} = \frac{162.6Q}{m} = \frac{162.6 [\ ]}{[\ ]} =$ ... md.-ft/cp

IN SITU CAPACITY

kh = [ ] [ ] = ... md.-ft.

AVERAGE EFFECTIVE PERMEABILITY — Estimated Pay Thickness Ft. / Actual Pay Thickness Ft.

$k = \frac{[\ ]}{[\ ]} =$ ... md.

PRODUCTIVITY INDEX

$PI = \frac{Q}{P_o - P_f} = \frac{[\ ]}{[\ ] - [\ ]} =$ ... bbl./day-psi

DAMAGE RATIO

$D.R. = \frac{0.183(P_o - P_f)}{m} = 0.183 \frac{[\ ] - [\ ]}{[\ ]} =$

PRODUCTIVITY INDEX WITH DAMAGE REMOVED

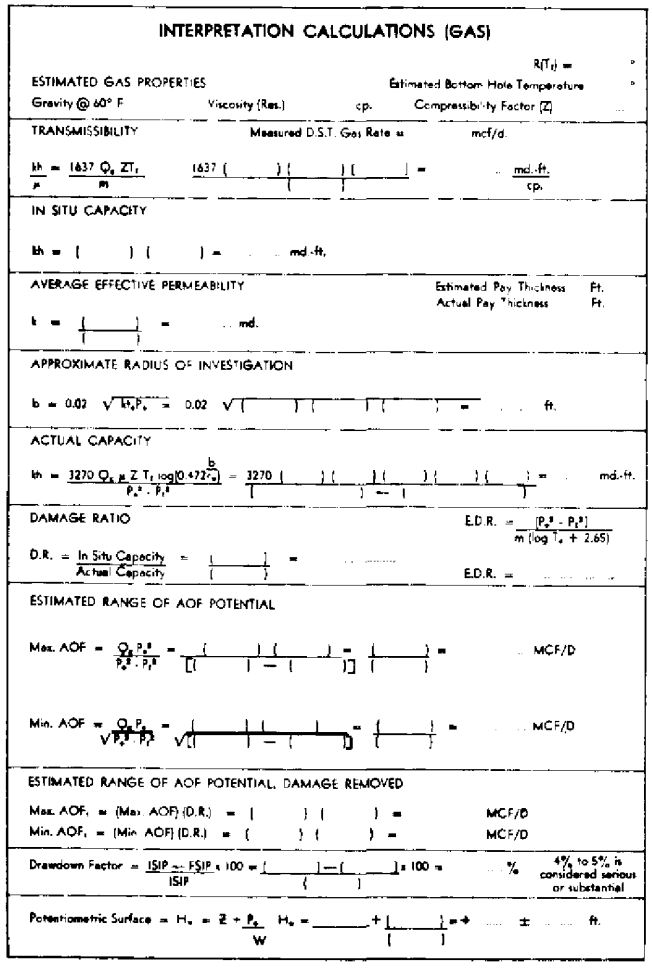
$P.I._t = P.I. \times D.R. = [\ ] \times [\ ] =$ bbl./day-psi

APPROXIMATE RADIUS OF INVESTIGATION

$b = \sqrt{kt_p} = \sqrt{[\ ][\ ]} =$ ... ft.

Drawdown Factor = $\frac{S.I.P. - F.S.I.P.}{S.I.P.} \times 100 = \frac{[\ ] - [\ ]}{[\ ]} \times 100 =$ ... % (4% to 5% is considered serious or substantial)

Potentiometric Surface = $H_w = Z + \frac{P_o}{W}$ H_w = ... + [ ] / [ ] = ... ± ... ft.



INTERPRETATION CALCULATIONS (GAS)

$R(T_r)$ = °

ESTIMATED GAS PROPERTIES — Estimated Bottom Hole Temperature °

Gravity @ 60° F. Viscosity (Res.) cp. Compressibility Factor (Z) ...

TRANSMISSIBILITY — Measured D.S.T. Gas Rate = mcf/d.

$\frac{kh}{\mu} = \frac{1637 Q_g ZT_r}{m}$ $\frac{1637 [\ ][\ ][\ ]}{[\ ]} =$ ... md.-ft. / cp.

IN SITU CAPACITY

kh = [ ] [ ] = ... md.-ft.

AVERAGE EFFECTIVE PERMEABILITY — Estimated Pay Thickness Ft. / Actual Pay Thickness Ft.

$k = \frac{[\ ]}{[\ ]} =$ ... md.

APPROXIMATE RADIUS OF INVESTIGATION

$b = 0.02\sqrt{kt_pP_o} = 0.02\sqrt{[\ ][\ ][\ ]} =$ ... ft.

ACTUAL CAPACITY

$kh = \frac{3270 Q_g \mu Z T_r \log(0.472\frac{b}{r_w})}{P_o^2 - P_f^2} = \frac{3270 [\ ][\ ][\ ][\ ][\ ]}{[\ ] - [\ ]} =$ ... md.-ft.

DAMAGE RATIO — E.D.R. = $\frac{[P_o^2 - P_f^2]}{m(\log T_r + 2.65)}$

$D.R. = \frac{\text{In Situ Capacity}}{\text{Actual Capacity}} = \frac{[\ ]}{[\ ]} =$ ... E.D.R. = ...

ESTIMATED RANGE OF AOF POTENTIAL

Max. AOF = $\frac{Q_g P_o^2}{P_o^2 - P_f^2} = \frac{[\ ][\ ]}{[\ ][\ ] - [\ ]} = \frac{[\ ]}{[\ ]} =$ ... MCF/D

Min. AOF = $\frac{Q_g P_o}{\sqrt{P_o^2 - P_f^2}} = \sqrt{\frac{[\ ]}{[\ ] - [\ ]}} = \frac{[\ ]}{[\ ]} =$ ... MCF/D

ESTIMATED RANGE OF AOF POTENTIAL, DAMAGE REMOVED

Max. AOF_t = (Max. AOF) (D.R.) = [ ] [ ] = MCF/D

Min. AOF_t = (Min. AOF) (D.R.) = [ ] [ ] = MCF/D

Drawdown Factor = $\frac{ISIP - FSIP}{ISIP} \times 100 = \frac{[\ ] - [\ ]}{[\ ]} \times 100 =$ ... % (4% to 5% is considered serious or substantial)

Potentiometric Surface = $H_w = Z + \frac{P_o}{W}$ H_w = ... + [ ] / [ ] = ... ± ... ft.