

NORTHERN NATURAL GAS COMPANY
 BACK-PRESSURE TEST RESULTS

OPERATOR: LEASE: KRUPP NO 1
 LOCATION: 02 32 15S 3W CO: STATE: STA NO: 242026
 FIELD: ELLSWORTH RESERVOIR: POOL 3
 TYPE TEST: INITIAL & STATE TEST DATE 10 24 84 GA SYS:

PRODUCING THRU: TUBING API GRAVITY 0 GAS GRAVITY 0.650 BARA PRESS 14.40
 METERING DEVICE: ORIFICE METER METER RUN SIZE 2 TYPE TAPS: FLANGE-

RATE NO	ORIFICE SIZE IN.	FLOW TEMP F	METER PRESS PSIA	DIFF IN	WATER PROD 3BLS/D	LIQUID HYDC 3BLS/D	GOR MCF/33L	WH FLOWING CASING PSIA	PRESSURES TUBING PSIA
1	0.6250	60	35.4	20.0	3			244.4	71.4

SHUT-IN PRESS TYPE CODE: M CUM. PRODUCTION 0 MMCF
 SHUT-IN PRESS CASING 449.4 PSIA TUBING 449.4 PSIA HOURS SHUT-IN 72
 AVERAGE VERTICAL DEPTH 1745 FT LIQUID LEVEL FT CALC 3HP/Z 511.2 PSIA

RATE NO	O/O STATIC COLUMN	DRAW-DOWN FLOWING COLUMN	-----PLOTTING PC2-PT2	DATA----- PC2-PW2	FLOW LENGTH MCF/D	C FACTOR HOURS	WELL HEAD POTENTIAL MCF/D
1	54.4	15.9	196.9	142.2	63	21	0.01246155

ESTIMATED FACTOR 21 HOURS TO 21 HOURS = 1.000 DATED 10 24 84
 WH SLOPE 0.700 ABS SLOPE 0.700 ABS POTENTIAL 81 MCF/D AFTER 21 HOURS
 STABL ABS DEL 81 MCF/D AT 35 PSIA STABL WH DEL 64 MCF/D AT 35 PSIA
 STABILIZED WELLHEAD POTENTIAL 64.5 MCF/D

* * * * *	FILE 10 COMPARISON	* * * * *	LINE PRESS. PSIA	MAX. ABILITY, Q MCF/D
STAB. C FACTOR FROM FILE 10	0.00000000	*	35.4	64
STAB. WH DEL 0 MCF/D AT 35 PSIA		*	164.4	58
STAB. WELLHEAD POTENTIAL 0.0 MCF/D		*	114.4	62
		*	64.4	64
		*	39.4	64

TESTED BY: S. BELANGER

WITNESS: BOB TLOUT

Preliminary Field Calculations
 Have Not Been Evaluated By
 Reservoir Engineering.

BACK PRESSURE CURVE

Operator Comanche Lease Krupp Well No. _____

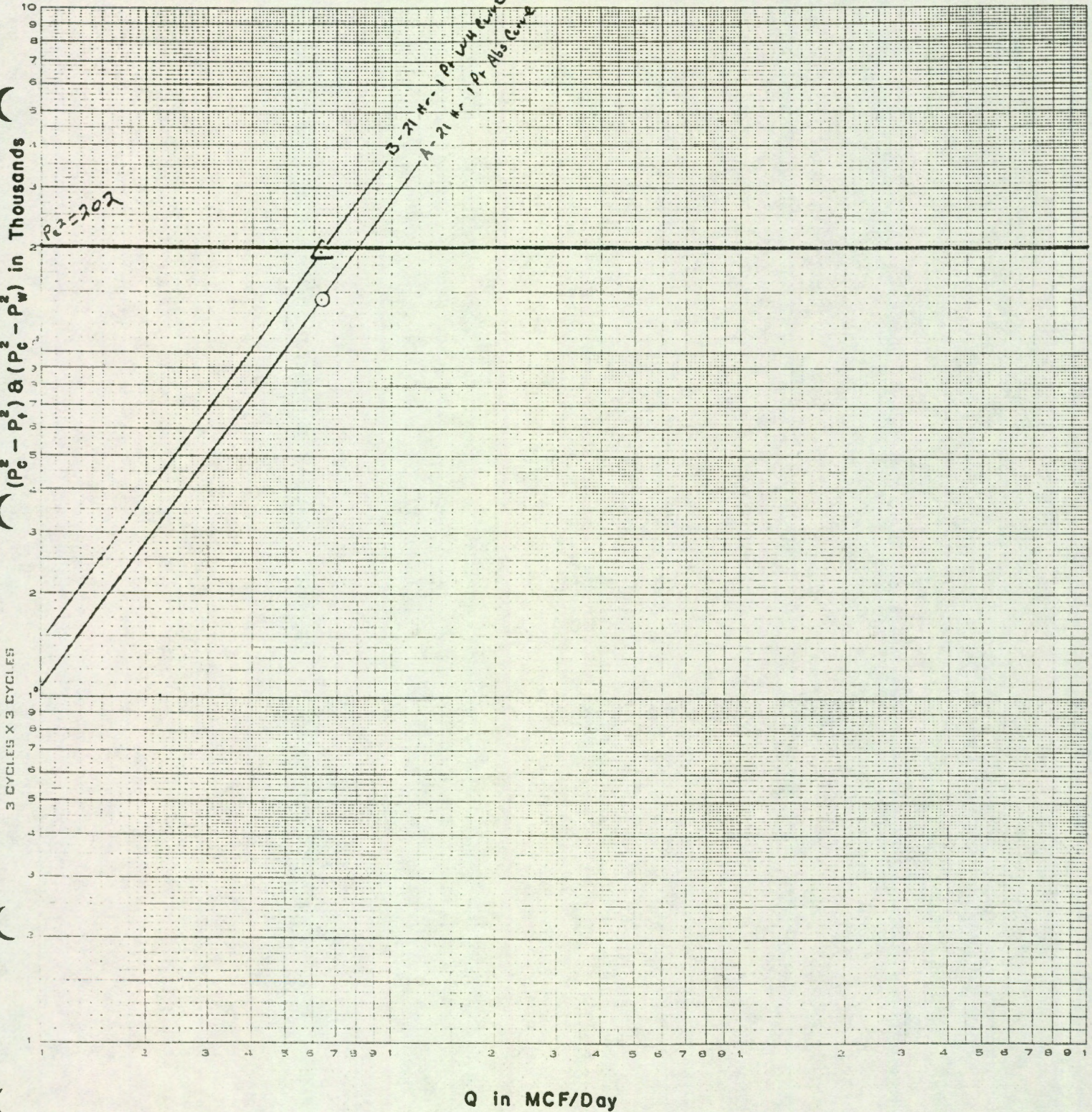
County Ellsworth Field _____ Location 32-15-B

Date of Test 10-24-54 Slope "n" .700 W.H. .700 Abs.

Calc. W.H. Potential 64.5 MCF/D Calc. Abs. Potential 81 MCF/D

DIETZGEN CORPORATION
MADE IN U.S.A.

NO. 341-L33 DIETZGEN GRAPH PAPER
LOGARITHMIC
3 CYCLES X 3 CYCLES



Q in MCF/Day