

OIL CONSERVATION COMMISSION

Order DISTRICT

OIL CONSERVATION COMMISSION
BOX 2088
SANTA FE, NEW MEXICO

DATE February 26, 1980

RE: Proposed MC _____
Proposed DHC _____
Proposed NSL _____
Proposed SWD X _____
Proposed WFX _____
Proposed PMX _____

Gentlemen:

I have examined the application dated February 15, 1980
for the Energy Resource Group Salinas Canyon Unit # 126, K-2378-12
Operator Lease and Well No. Unit, S-T-R

and my recommendations are as follows:

Approve

Yours very truly,

Frank E. Davy

Gallegos Canyon Unit #126

K-23-28N-12W

Energy Reserves Group, Inc.
P.O. Box 3280
Casper, Wyoming 82601
Phone 307 265 7331



February 15, 1980

Oil Conservation Commission
State of New Mexico
P.O. Box 2088
Sante Fe, New Mexico 87501

Re: Application of Energy Reserves Group, Inc. for permission permitting the disposal of produced water from the Pictured Cliffs Formation into the Mesa Verde Formation, Gallegos Canyon Unit.

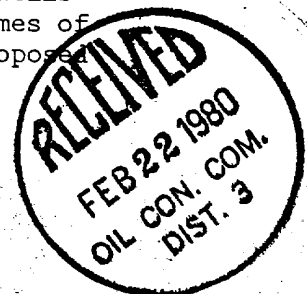
Gentlemen:

Energy Reserves Group, Inc. presents to the Oil Conservation Commission the following applications and requests that administrative approval be granted. The following data is submitted:

- A. Applicant is a working interest owner and the operator of the Gallegos Canyon Unit, West Kutz Pictured Cliffs Field, located in Townships 27,28 and 29 North, Ranges 11,12, and 13 West, San Juan County, New Mexico. Federal Lease Number SF-078904.
- B. The applicant desires to dispose of water produced from the Pictured Cliffs formation from the Gallegos Canyon Unit into the Mesa-Verde formation into the wellbore of the following Gallegos Canyon Unit Wells:
Number 260 located 1910' FSL, 745' FEL Sec 15 T28N-R12W, No. 126 located 1980' FWL, 1980' FSL, Sec 23-T28N-R12W and No. 225 located 1620' FNL, 2030' FEL Sec 17-T28N-R12W, San Juan County, New Mexico.

Applicant presents the following in support of the application:

1. Exhibit A-Plat showing the location of the proposed input wells and location of all oil and gas wells including abandoned and dry holes and the names of operators within a two mile radius of the proposed input well.





Oil Conservation Commission
State of New Mexico
Page Two

2. Exhibit B - Water analysis of the Pictured Cliffs water. Approximately 1500 barrels per day will be disposed.
3. It is proposed to inject the produced Pictured Cliffs water into the Mesa Verde formation: in the Gallegos Canyon Unit Number 260 through perforations from 3797'-4030', the Gallegos Canyon unit Number 126 through perforations from 3750'-4115' and in the Gallegos Canyon Unit Number 225, through perforations from 3873'-4128'. Exhibits C, D, and E are the log sections of well numbers 260, 126, and 225 respectively.
4. Exhibit F - Water analysis of the water contained in the Mesa Verde formation.
5. Exhibits G-I - Schematic diagrams of the wellbores of well numbers: 260, 126, 225 and showing all pertinent data.
6. Injection will be through 2-3/8" steel tubing with an injection packer set at about 50 feet above the top of the injection zone. Anticipated maximum injection pressure will be 900 psig in the Mesa Verde wells. The tubing casing annulus will be filled with water containing a corrosion inhibitor, oxygen scavenger and bactericide.
7. Exhibit J - Diagrammatic wellbore sketches of all wells within one half mile radius that penetrate the Mesa Verde formation adjacent to the proposed Mesa Verde injection well number 260.
8. Exhibit K - Diagrammatic wellbore sketches of all wells within one half mile radius that penetrate the Mesa Verde formation adjacent to the proposed Mesa Verde injection well number 126.



Oil Conservation Commission
State of New Mexico
Page Three

9. Exhibit L - Diagramatic well bore sketches of all wells within one half mile radius that penetrate the Mesa Verde formation adjacent to the proposed Mesa Verde injection well number 225.

Sincerely,

A handwritten signature in cursive script that reads "Curtis J. MacIntyre".

Curtis J. MacIntyre
Production Engineer

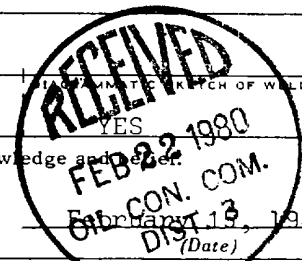
CJM/bac

NOTE: Should waivers from the surface owner and all operators within one-half mile of the proposed injection well not accompany this application, the New Mexico Oil Conservation Commission will hold the application for a period of 15 days from the date of receipt by the Commission's Santa Fe office. If at the end of the 15-day waiting period no protest has been received by the Santa Fe office, the application will be processed. If a protest is received, the application will be set for hearing, if the applicant so requests. SEE RULE 701.

NEW MEXICO OIL CONSERVATION COMMISSION
APPLICATION TO DISPOSE OF SALT WATER BY INJECTION INTO A POROUS FORMATION

OPERATOR ENERGY RESERVES GROUP, INC		ADDRESS P.O. BOX 3280 CASPER, WYOMING 82602	
LEASE NAME GALLEGOS CANYON UNIT	WELL NO. 126	FIELD UNDESIGNATED GALLUP	COUNTY SAN JUAN
LOCATION UNIT LETTER <u>K</u> ; WELL IS LOCATED <u>1980</u> FEET FROM THE <u>SOUTH</u> LINE AND <u>1980</u> FEET FROM THE <u>WEST</u> LINE, SECTION <u>23</u> TOWNSHIP <u>28N</u> RANGE <u>12W</u> NMPM. <u>SAN JUAN CO., NEW MEXICO</u>			
CASING AND TUBING DATA			
NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMENT
SURFACE CASING	8-5/8"	207	190
INTERMEDIATE			
LONG STRING	4-1/2"	5674	350
TUBING			1000'
NAME, MODEL AND DEPTH OF TUBING PACKER			
NAME OF PROPOSED INJECTION FORMATION MESA VERDE		TOP OF FORMATION 2520'	BOTTOM OF FORMATION 4308'
IS INJECTION THROUGH TUBING, CASING, OR ANNULUS? TUBING		PERFORATIONS OR OPEN HOLE? PERFORATIONS	PROPOSED INTERVAL(S) OF INJECTION 3750-65, 3775-3815, 3838-58, 4040-4115
IS THIS A NEW WELL DRILLED FOR DISPOSAL? NO	IF ANSWER IS NO, FOR WHAT PURPOSE WAS WELL ORIGINALLY DRILLED? GALLUP PRODUCTION		HAS WELL EVER BEEN PERFORMED IN ANY ZONE OTHER THAN THE PROPOSED INJECTION ZONE? YES
LIST ALL SUCH PERFORATED INTERVALS AND SACKS OF CEMENT USED TO SEAL OFF OR SQUEEZE EACH GALLUP 5581'-85', 5591'-95' WELL IS CURRENTLY TA'D			
DEPTH OF BOTTOM OF DEEPEST FRESH WATER ZONE IN THIS AREA 100'		DEPTH OF BOTTOM OF NEXT HIGHER OIL OR GAS ZONE IN THIS AREA 1765'	DEPTH OF TOP OF NEXT LOWER OIL OR GAS ZONE IN THIS AREA 6000'
ANTICIPATED DAILY INJECTION VOLUME (BBL/S.) 200	MINIMUM 700	MAXIMUM OPEN	OPEN OR CLOSED TYPE SYSTEM PRESSURE
ANSWER YES OR NO WHETHER THE FOLLOWING WATERS ARE MINERALIZED TO SUCH A DEGREE AS TO BE UNFIT FOR DOMESTIC, STOCK, IRRIGATION, OR OTHER GENERAL USE - YES		WATER TO BE DISPOSED OF YES	NATURAL WATER IN DISPOSAL ZONE YES
NAME AND ADDRESS OF SURFACE OWNER (OR LESSEE, IF STATE OR FEDERAL LAND) FEDERAL		APPROX. PRESSURE (PSI) 500	
LIST NAMES AND ADDRESSES OF ALL OPERATORS WITHIN ONE-HALF (1/2) MILE OF THIS INJECTION WELL AMOCO PRODUCTION COMPANY - SECURITY LIFE BUILDING- DENVER, COLORADO 80202			
HAVE COPIES OF THIS APPLICATION BEEN SENT TO EACH OF THE FOLLOWING? YES			
SURFACE OWNER YES		EACH OPERATOR WITHIN ONE-HALF MILE OF THIS WELL YES	
ARE THE FOLLOWING ITEMS ATTACHED TO THIS APPLICATION (SEE RULE 701-B) YES		ELECTRICAL LOG YES	

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

Curtis J. Mac Intyre
(Signature)Production Engineer
(Title)

NOTE: Should waivers from the surface owner and all operators within one-half mile of the proposed injection well not accompany this application, the New Mexico Oil Conservation Commission will hold the application for a period of 15 days from the date of receipt by the Commission's Santa Fe office. If at the end of the 15-day waiting period no protest has been received by the Santa Fe office, the application will be processed. If a protest is received, the application will be set for hearing, if the applicant so requests. SEE RULE 701.

san juan testing laboratory, inc.

909 WEST APACHE • P.O. BOX 2079 • FARMINGTON, NEW MEXICO

PHONE:

327-9944

EXHIBIT B

Date October 6, 1976

Report to Energy Reserves Group, Inc.
Requested by T.C. Durham Sampled by Energy Reserves Group Personnel
Project GCU #123 Location Farmington, New Mexico
Source of Material Geological Formations Association, with GCU #123 - Pictured Cliffs

Lab No. 22419 Water Analysis for Petroleum Engineering

TEST RESULTS

WATER ANALYSIS FOR PETROLEUM ENGINEERING

Constituent:

Total Solids 52,745ppm or
5.3% Salt Solu.
PH 6.8
Sp. Gravity 1.043 @ 72°F
Resistivity 0.113 ohms/meter @ 72°F
Conductivity 88,472 Micromhos/cm.
Organic Sulfides Present

Constituents:

<u>Cations</u>	<u>Meq/L</u>	<u>ppm</u>
Sodium	831	19,113
Calcium	48	960
Magnesium	24	287
Iron	neg.	1**
Barium	0	0

Hypothetical Combinations

<u>Constituent</u>	<u>ppm</u>
Sodium Chloride	48,580
Calcium Chloride	2,657
Magnesium Chloride	585
Magnesium Bicarbonate	918

Anions

Chloride	890	31,600
Bicarbonate	13	780
Sulphate	neg.	4
Carbonate	0	0
Hydroxide	0	0

** In addition, a trace of iron hydroxide was present as a brown sediment.

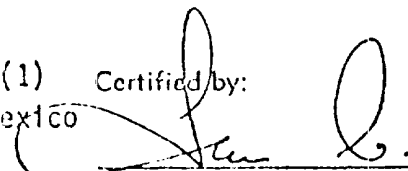
Copies to Energy Reserves Group, Inc. (2)

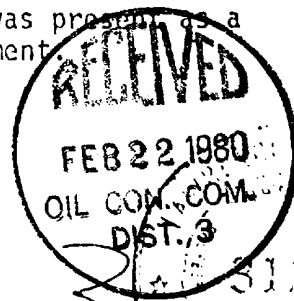
Box 3280 Casper, Wyoming

Energy Reserves Group, Inc. (1)

Box 977 Farmington, New Mexico

TEST NO. 20030

Certified by: 





BAROID DIVISION
NL Industries, Inc.
P.O. Box 1675 Houston, Texas 77001

WATER ANALYSIS TEST REPORT

BAROID TREATING CHEMICALS

- EXHIBIT F -

RECEIVED

SHEET NUMBER

COMPANY

Energy Reserves

DATE

6-10-77

FIELD

BASIN DAKOTA

COUNTY OR PARISH

SAN JUAN

STATE

N MEXICO

LEASE OR UNIT

King Gas Corrm.

WELL(S) NAME OR NO.

#1

WATER SOURCE (FORMATION)

MESAVERDE - CLIFFHOUSE

DEPTH, FT.

BHT, F

SAMPLE SOURCE

TEMP, F

WATER, BBL/DAY

OIL, BBL/DAY

GAS, MMCF/DAY

TYPE OF OIL

API GRAVITY

0

TYPE OF WATER

☒ PRODUCED WATER

☐ INJECTION WATER

OTHER

WATER ANALYSIS PATTERN

(NUMBER BESIDE ION SYMBOL INDICATES mg/l * SCALE UNIT)

Na ⁺ 20	15	10	5	0	5	10	15	20 Cl ⁻
Ca ⁺⁺								HCO ₃ ⁻
Mg ⁺⁺								SO ₄ ⁼
Fe ⁺⁺⁺								CO ₃ ⁼

DISSOLVED SOLIDS

CATIONS

Total Hardness

Sodium, Na⁺ (calc.)

Calcium, Ca⁺⁺

Magnesium, Mg⁺⁺

Iron (Total), Fe⁺⁺⁺

ANIONS

Chloride, Cl⁻

Sulfate, SO₄⁼

Carbonate, CO₃⁼

B carbonate, HCO₃⁻

Hydroxyl, OH⁻

Sulfide, S⁼

Phosphate - Meta, PO₃⁼

Phosphate - Ortho, PO₄⁼

me/l *

8

2

6

242.6

1.9

40

232

572.5

8

564.5

mg/l *

39,139

12,484

40

73

1.9

10,600

90

1,200

14,152

-0-

DISSOLVED GASES

Hydrogen Sulfide, H₂S

Carbon Dioxide, CO₂

Oxygen, O₂

mg/l *

mg/l *

mg/l *

PHYSICAL PROPERTIES

pH

8.4

Eh (Redox Potential)

MV

Specific Gravity

Turbidity, JTU Units

Total Dissolved Solids (Calc.)

mg/l *

Stability Index

0 F

0 F

CaSO₄ Solubility

0 F

0 F

Max. CaSO₄ Possible (Calc.)

mg/l *

Max. BaSO₄ Possible (Calc.)

mg/l *

Residual Hydrocarbons

ppm (Vol/Vol)

SUSPENDED SOLIDS (QUALITATIVE)

Iron Sulfide ☐ Iron Oxide ☐ Calcium Carbonate ☐ Acid Insoluble ☐

REMARKS AND RECOMMENDATIONS:

* NOTE: me/l are commonly used interchangeably for ppm and ppm respectively. Where ppm and ppm are used, corrections should be made for specific gravity.

BTC ENGINEER

Max Woolery

DIST. NO.

ADDRESS

Farmington, NM

OFFICE PHONE

375-9901

HOME PHONE

TESTED BY

Woolery

DATE

6-10-77

DISTRIBUTION

☐ CUSTOMER

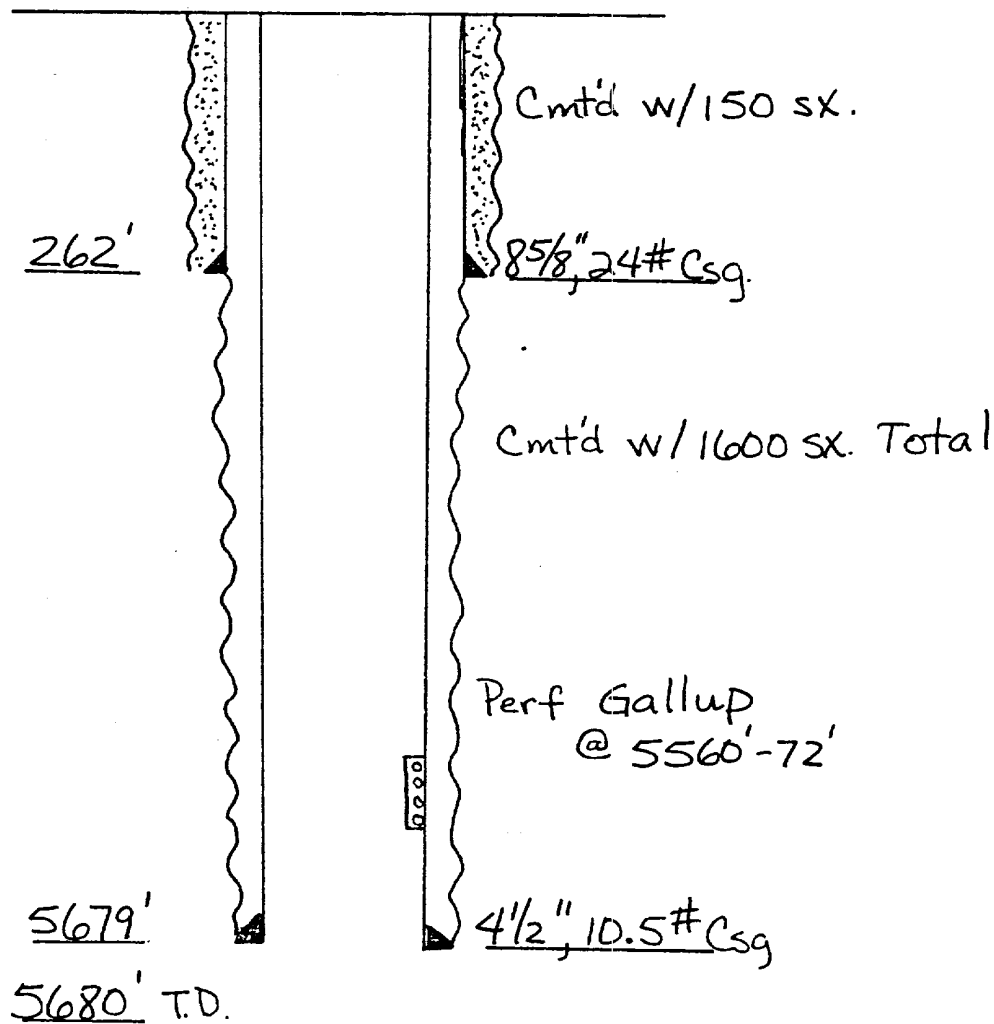
☐ BTC ENGINEER OR ☐ BTC LAB

☐ AREA OR

☐ DISTRICT OFFICE

☐ BTC SALES SUPERVISOR

EXHIBIT G
Amoco Gallegos Canyon Unit Well No. 260
NESE Sec 15-T28N-R12W
San Juan County, New Mexico
Pinion Gallup



Plugged w/ 20 SX @ 5504',
15 SX @ 4340',
15 SX @ 3168',
20 SX @ 2532',
20 SX @ 1714',
20 SX @ 264' to surface

Exhibit H
ERG Gallegos Canyon Unit Well No. 126
NE SW Sec 23-T28N-R12W
San Juan County, New Mexico
Undesignated Gallup

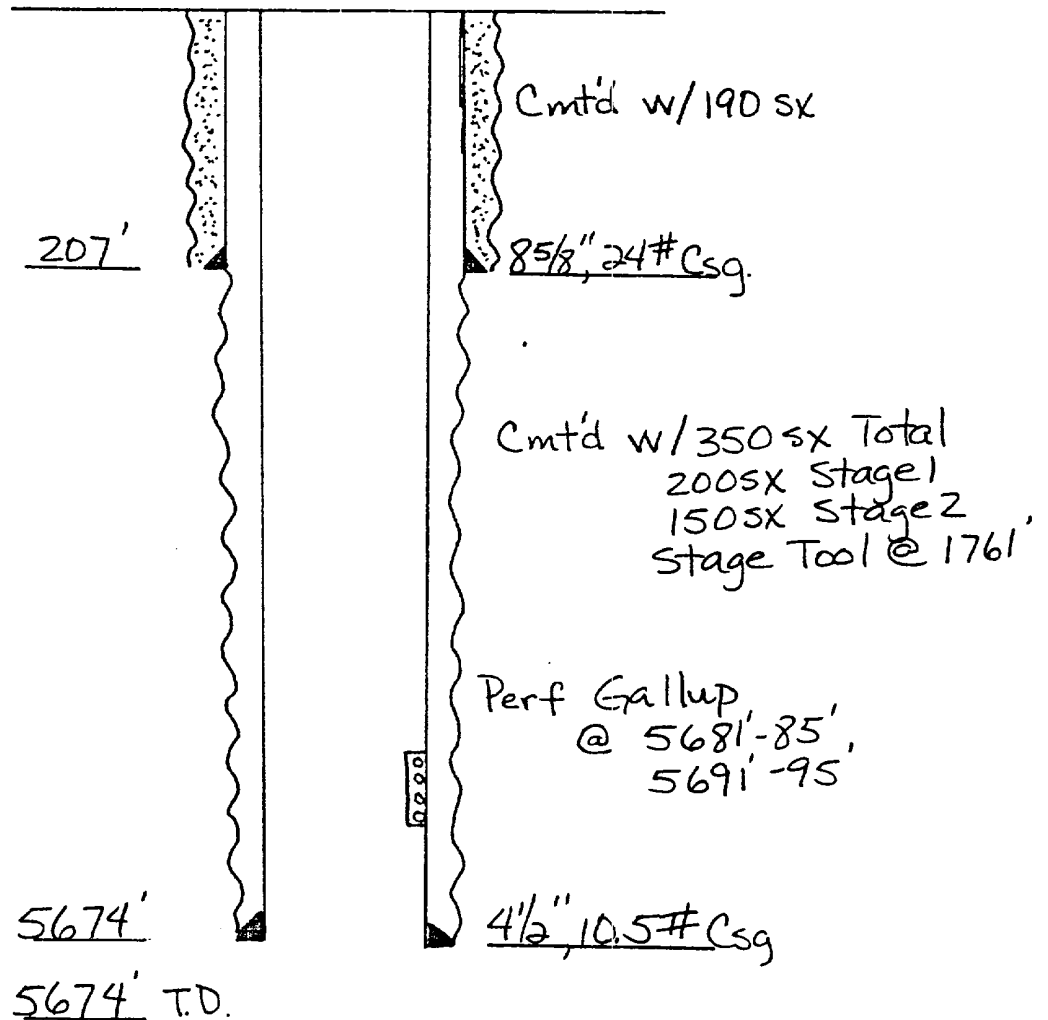
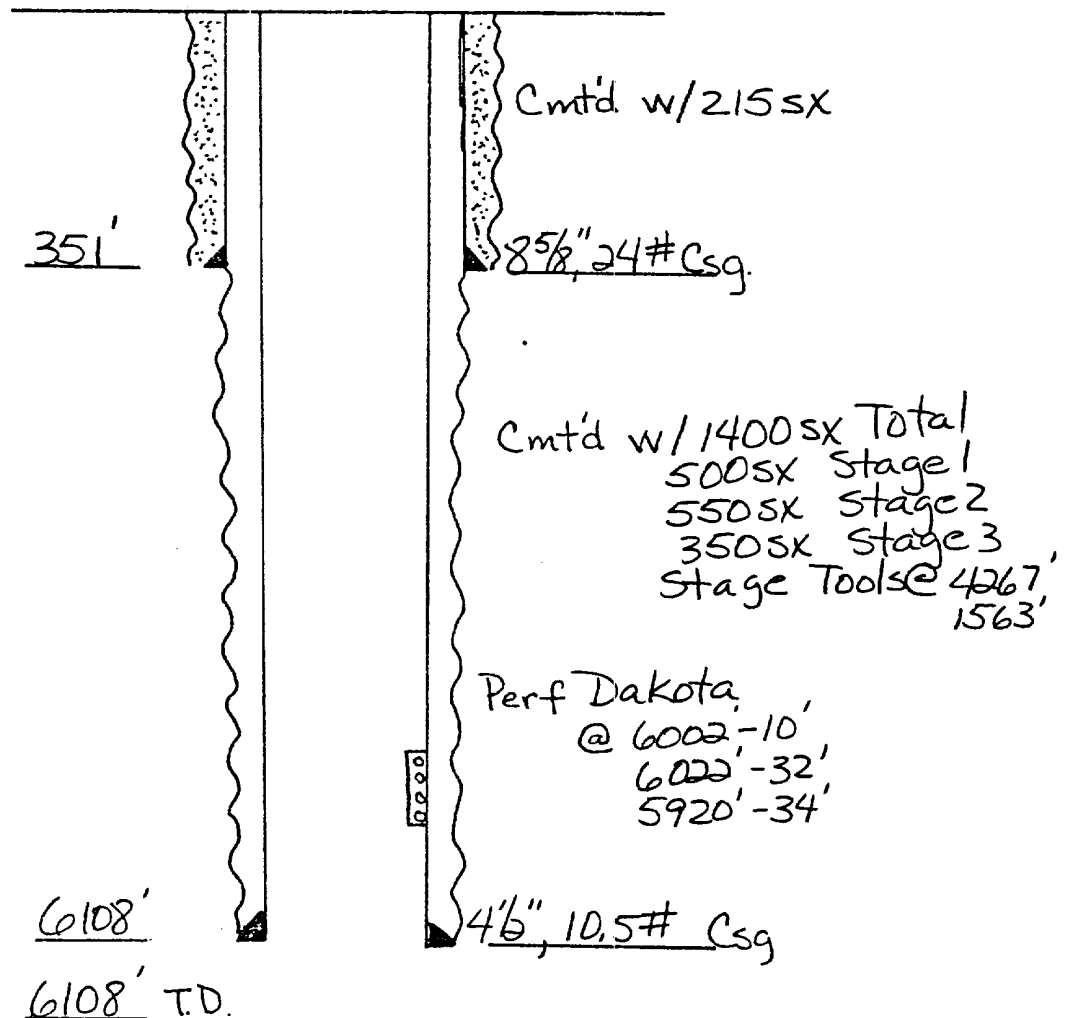


EXHIBIT I
Amoco Gallegos Canyon Unit Well No. 225
SWNE Sec 17-T28N-R12W
San Juan County, New Mexico
Basin Dakota



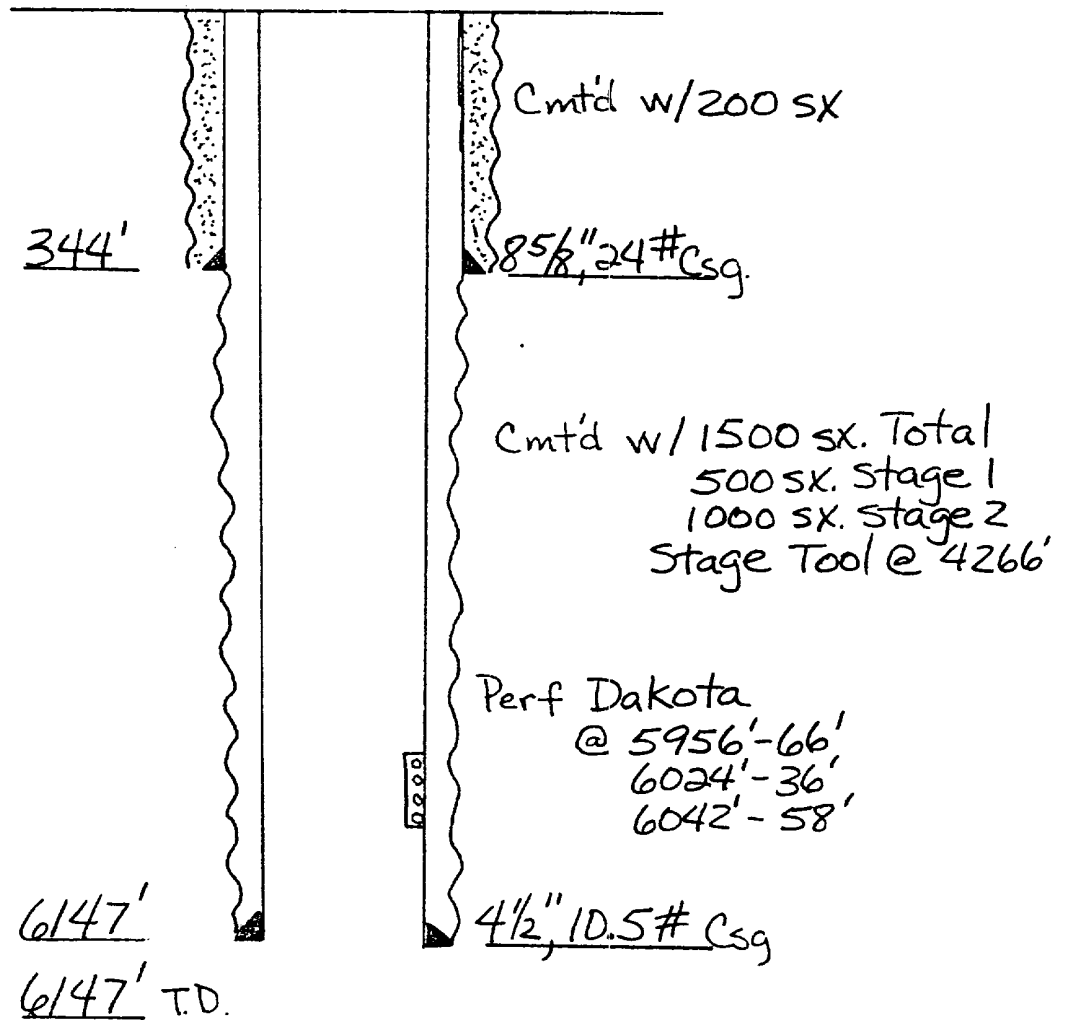
Plugged w/40sx @ 6075'-5700'
5sx @ 50' - surface



EXHIBIT J

WELLS ADJACENT TO WELL NUMBER 260

Amoco Gallegos Canyon Unit Well No. 209
NE SW Sec 15 - T28N-R12W
San Juan County, New Mexico
Basin Dakota

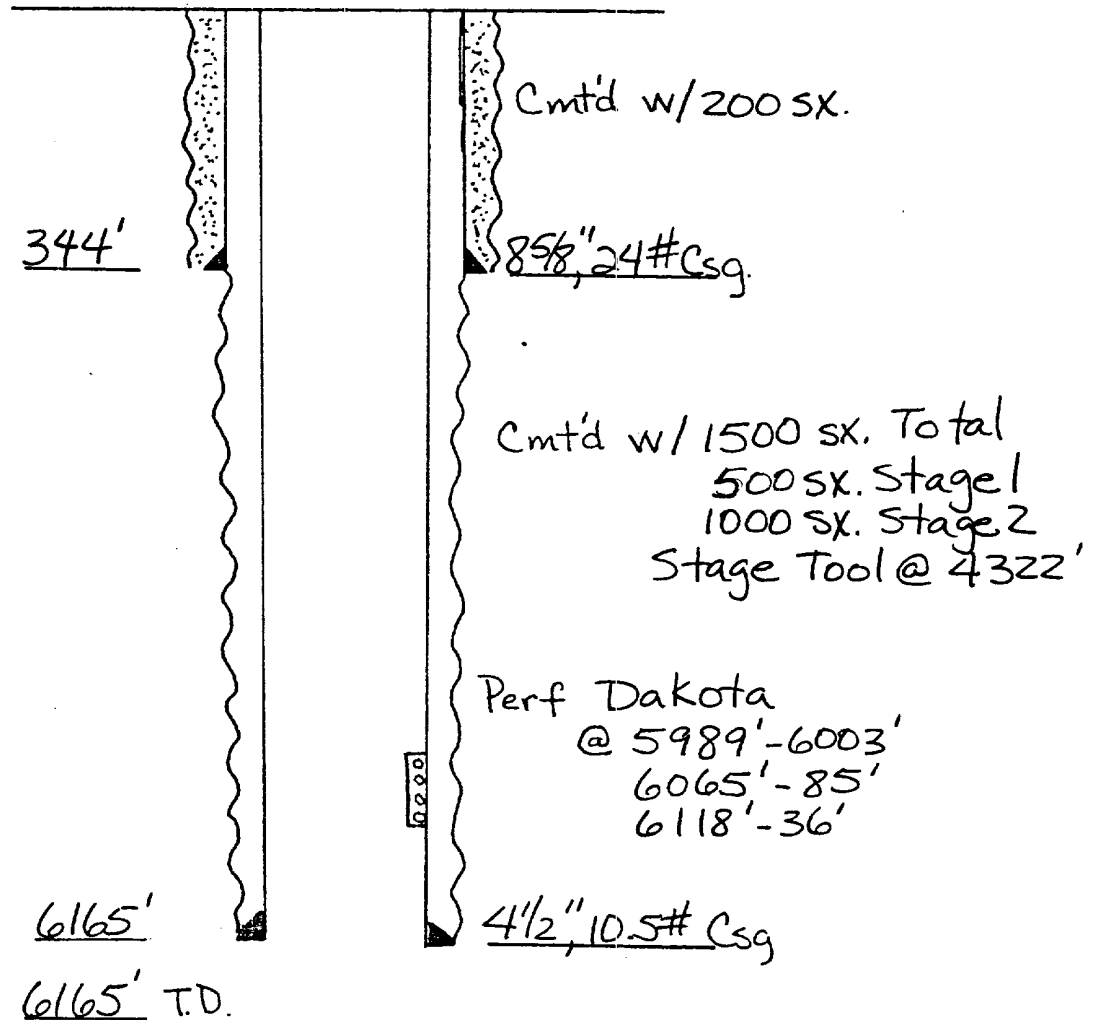


Amoco Gallegos Canyon Unit Well No. 208

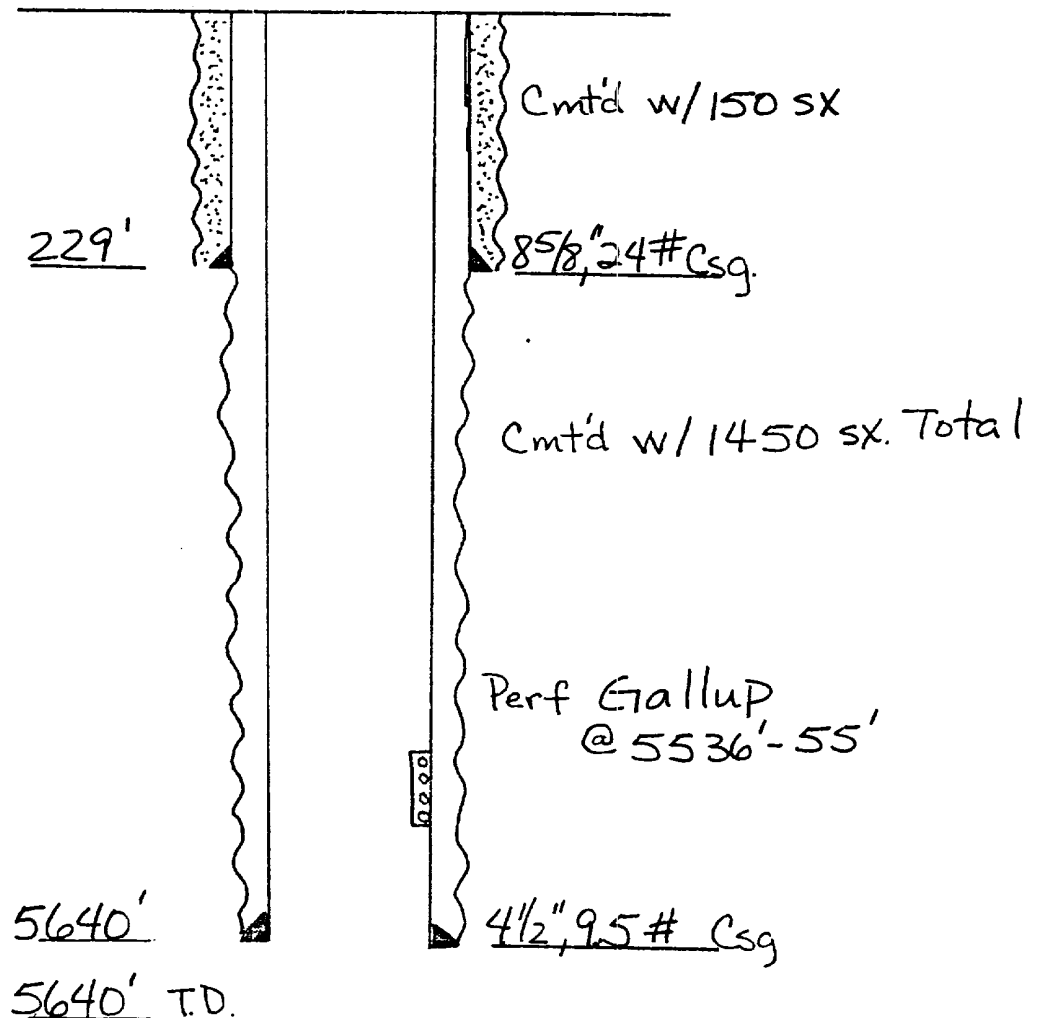
SENE Sec 15-T28N-R12W

San Juan County, New Mexico

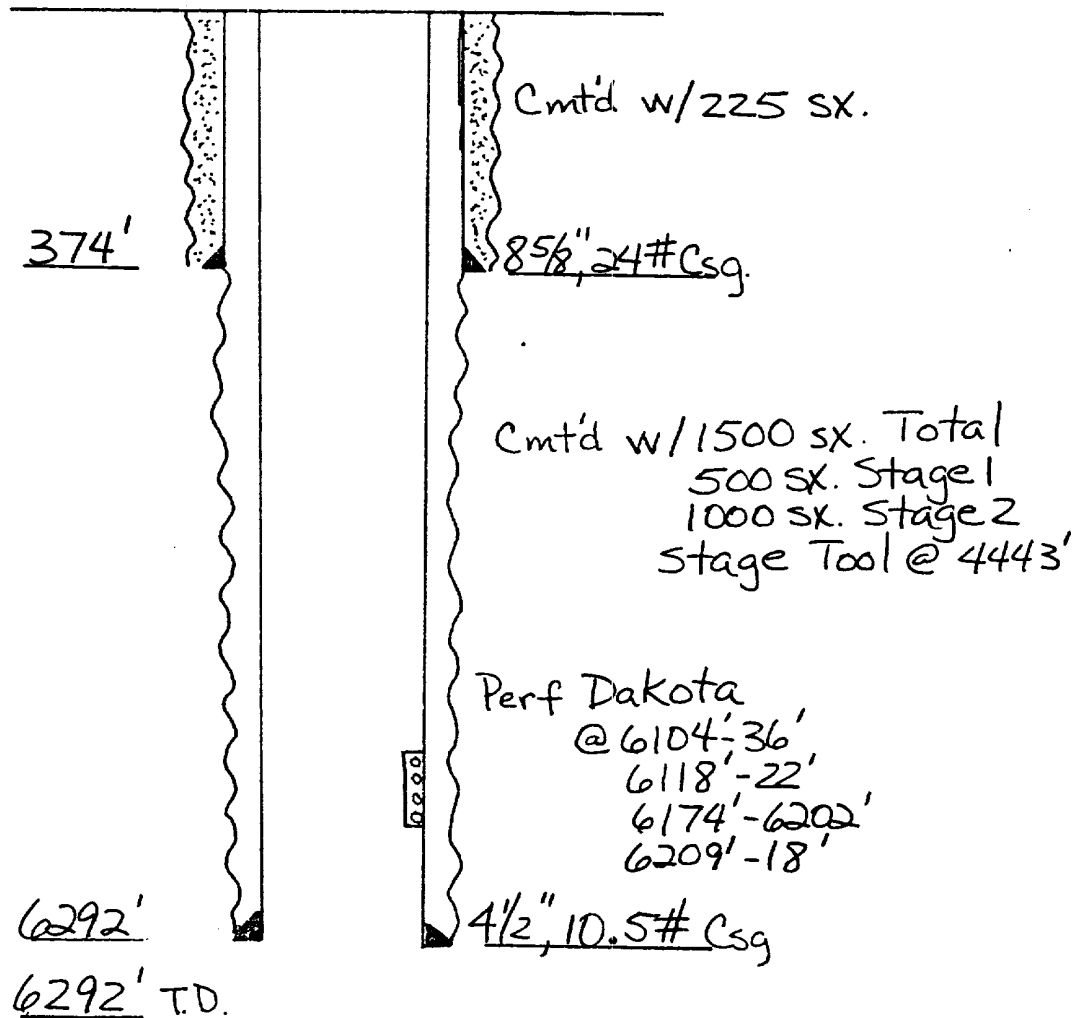
Basin Dakota



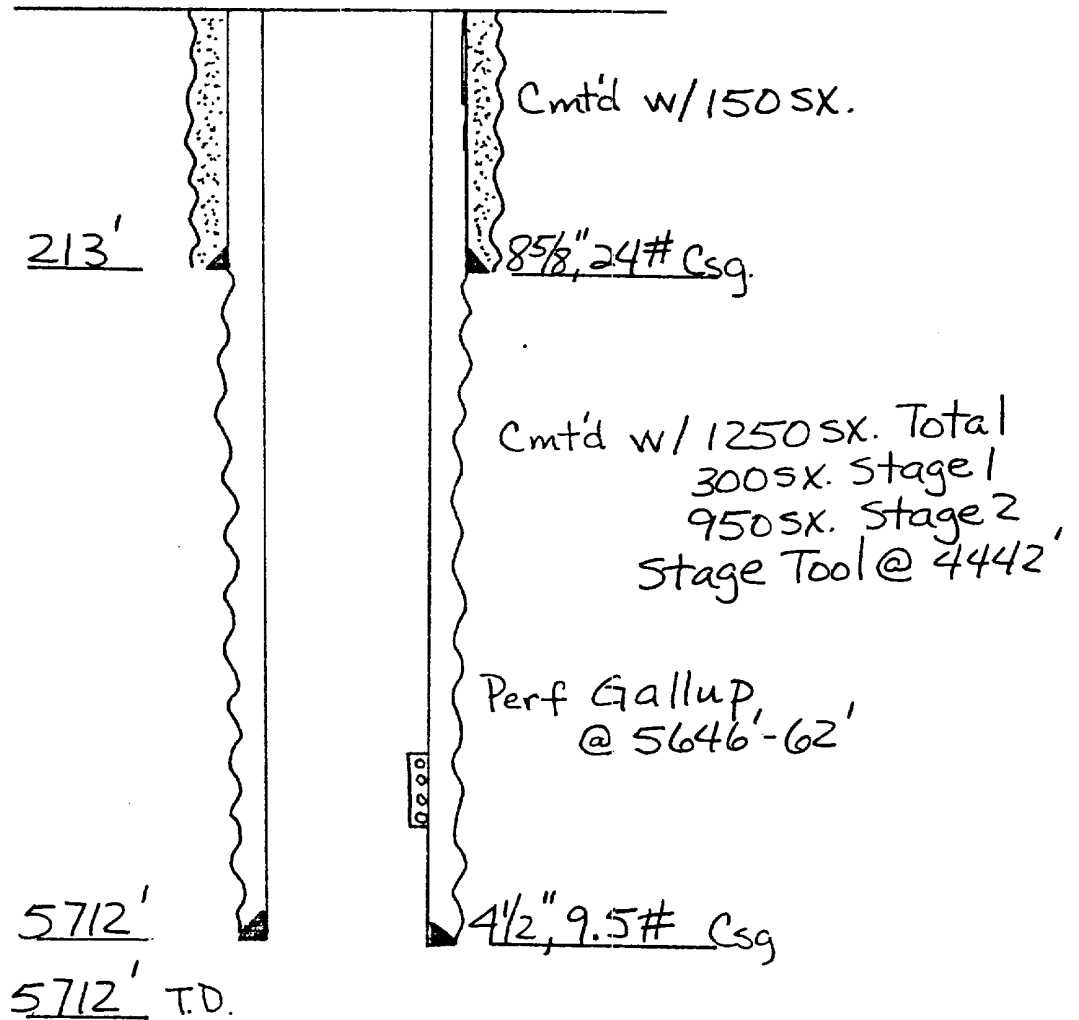
Amoco Gallegos Canyon Unit Well No. 252
NENE Sec 15-T28N-R12W
San Juan County, New Mexico
Undesignated Gallup



Amoco Gallegos Canyon Unit Well No. 216
SESW Sec 14-T28N-R12W
San Juan County, New Mexico
Basin Dakota



Amoco Gallegos Canyon Unit Well No. 250
SESW Sec 14-T28N-R12W
San Juan County, New Mexico
Undesignated Gallup



Amoco Gallegos Canyon Unit Well No. 218

NENE Sec 22-T28N-R12W

San Juan County, New Mexico

Basin Dakota

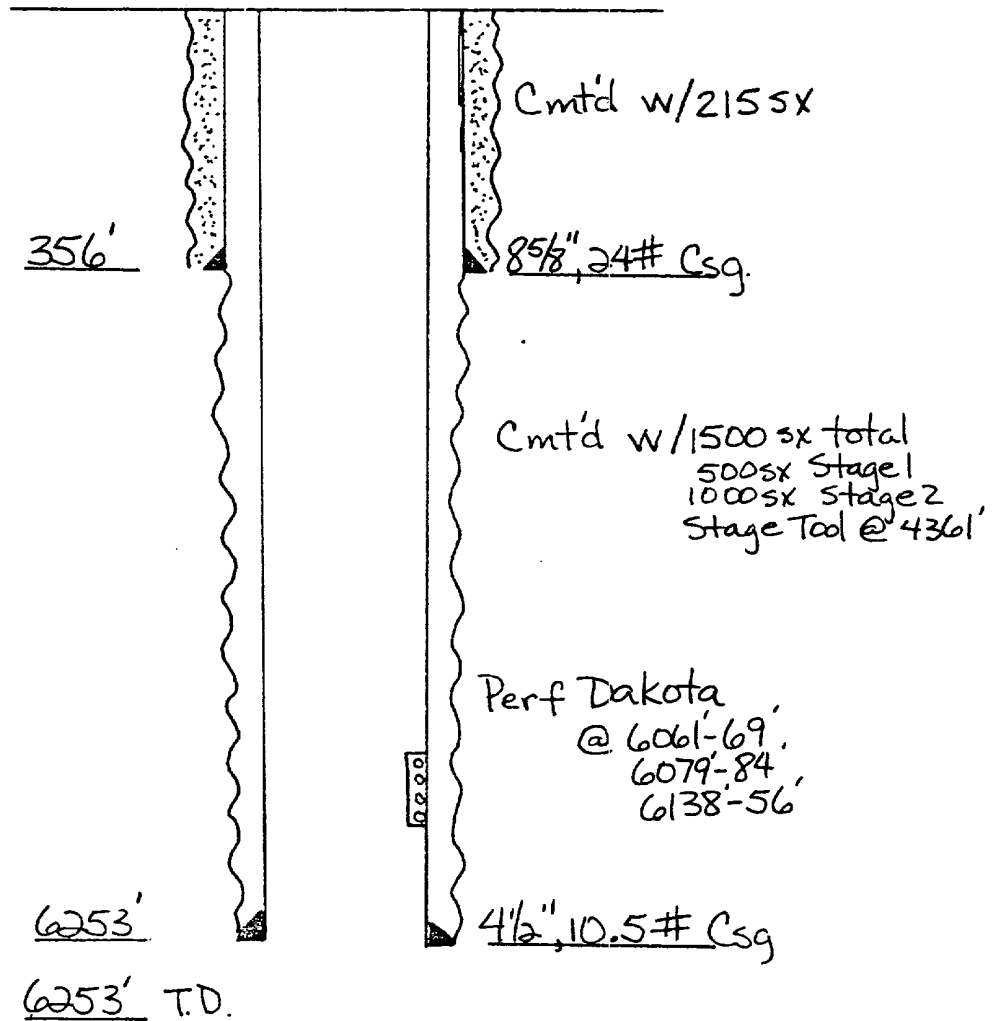




EXHIBIT K

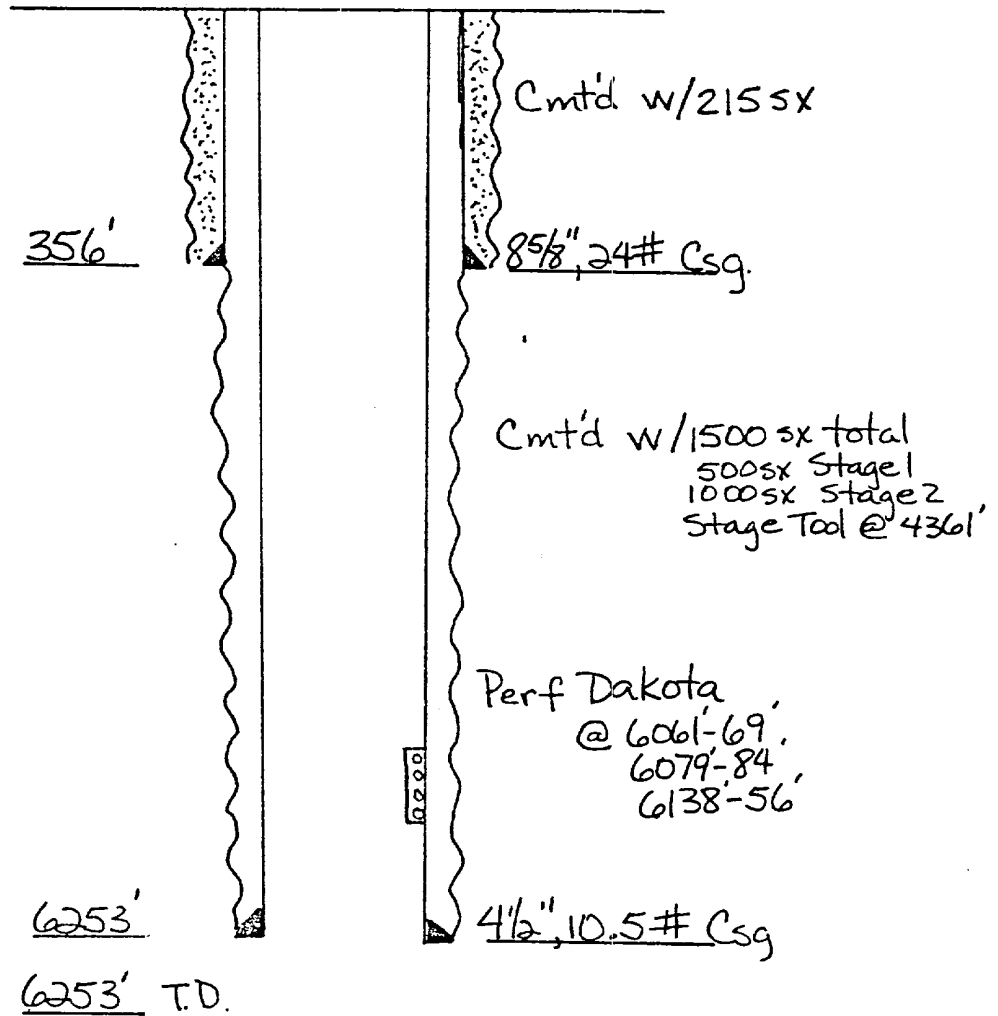
WELLS ADJACENT TO WELL NUMBER 126

Amoco Gallegos Canyon Unit Well No. 218

NENE Sec 22-T28N-R12W

San Juan County, New Mexico

Basin Dakota

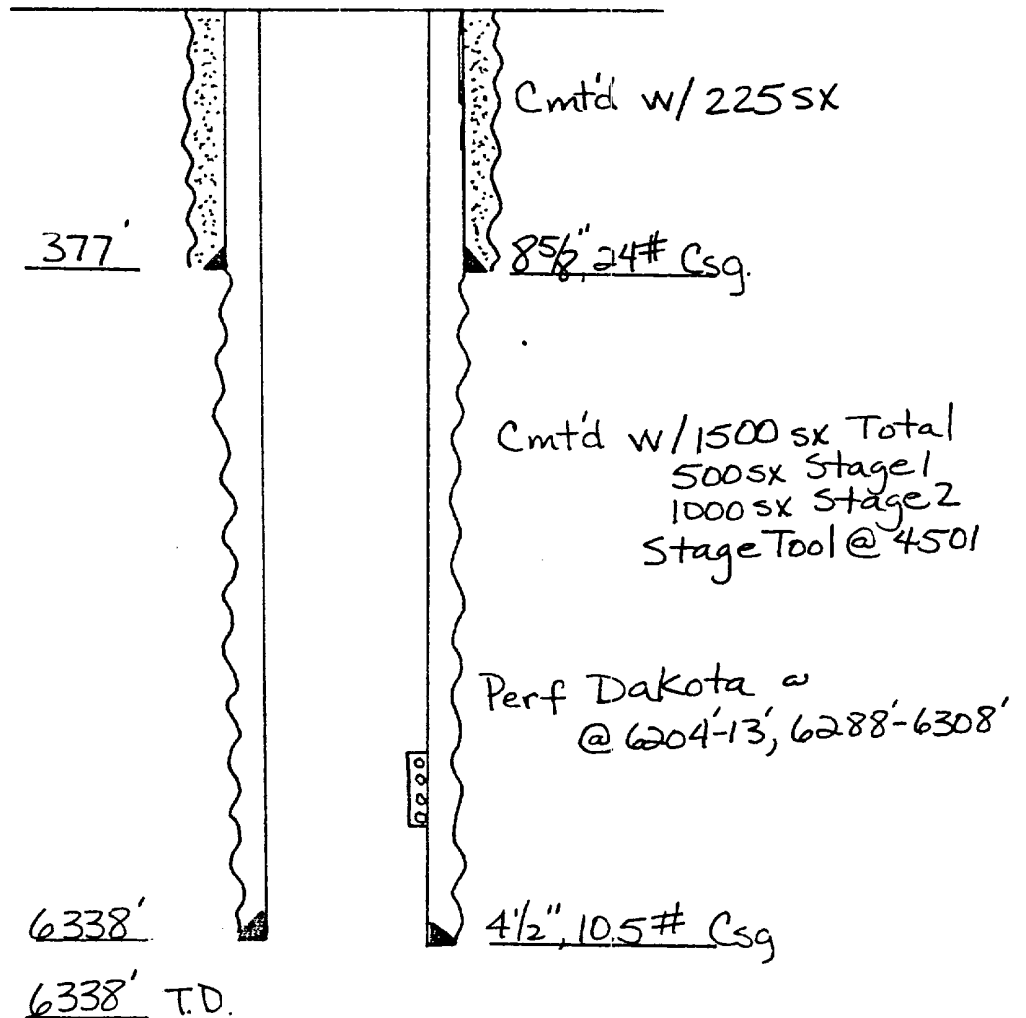


Amoco Gallegos Canyon Unit Well No. 219

NENE Sec 23-T28N-R12W

San Juan County, New Mexico

Basin Dakota

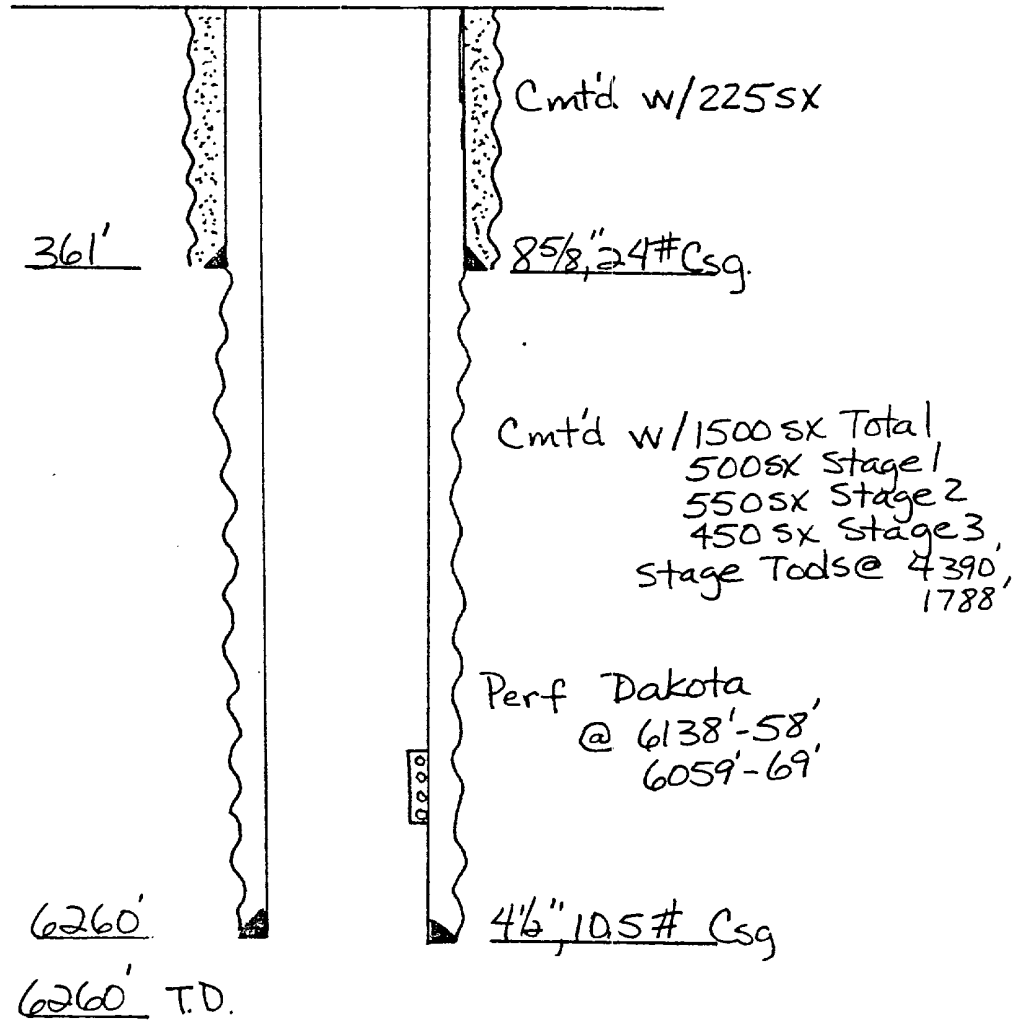


Amoco Gallegos Canyon Unit Well No. 230

SWSW Sec 23-T28N-R12W

San Juan County, New Mexico

Basin Dakota



Amoco Gallegos Canyon Unit Well No. 83

NENE Sec 26-T28N-R12W

San Juan County, New Mexico

Undesignated Gallup

Undesignated Dakota

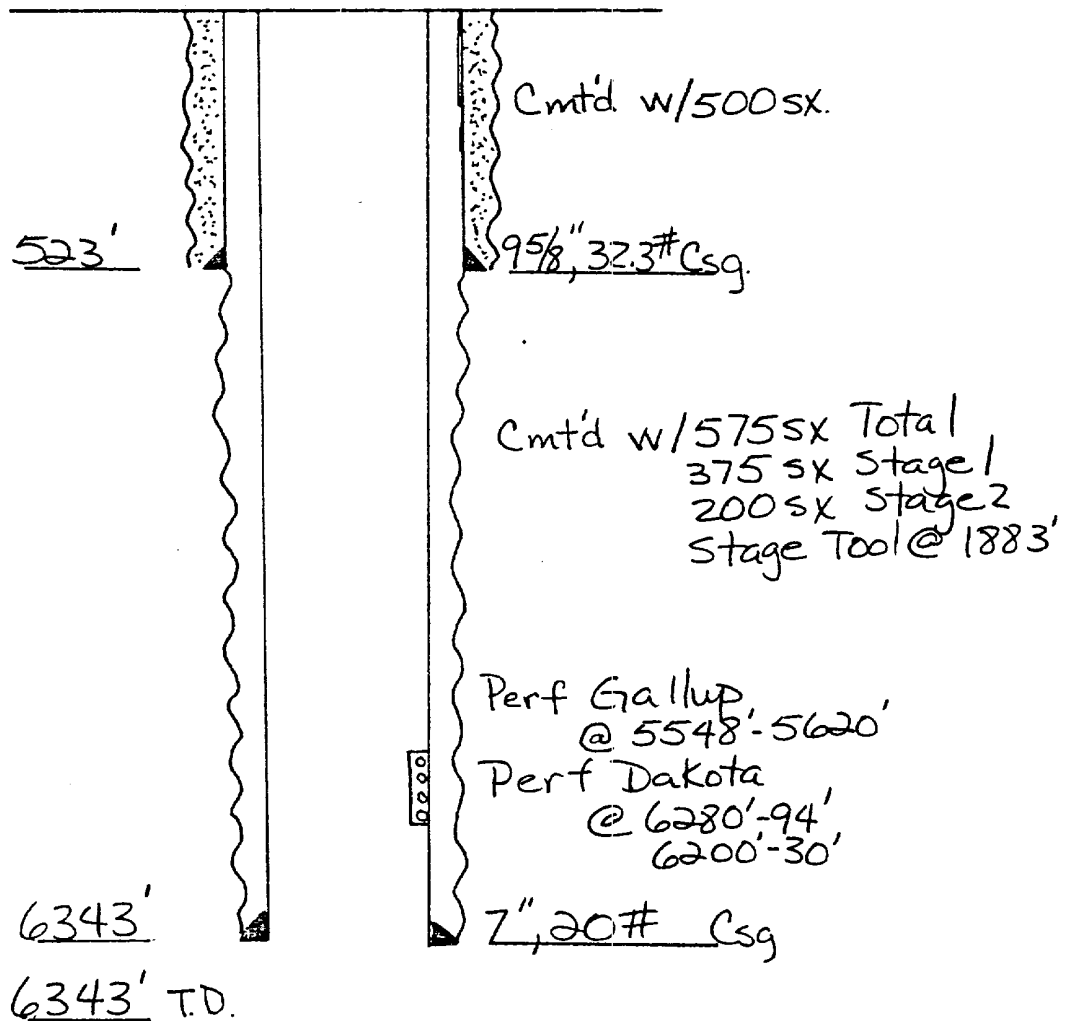




EXHIBIT L

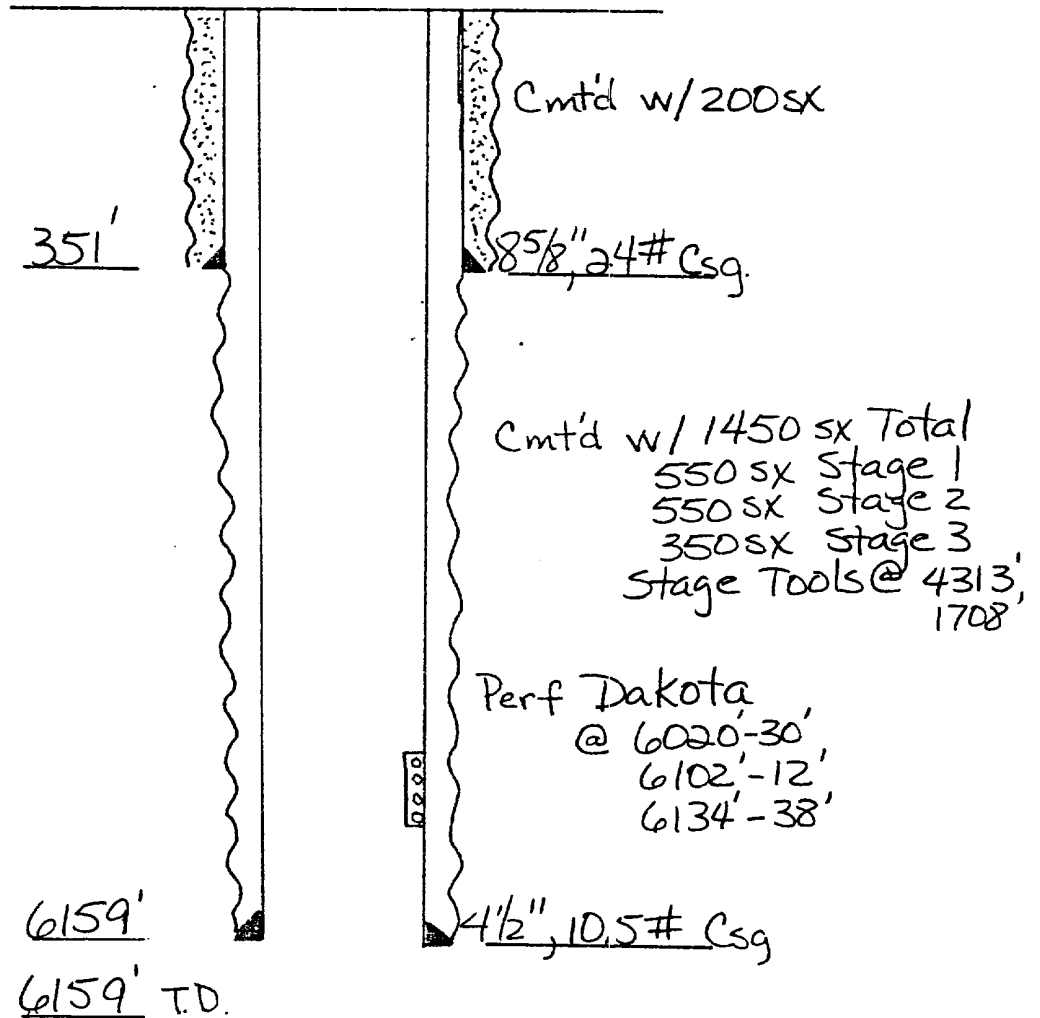
WELLS ADJACENT TO WELL NUMBER 225

Amoco Gallegos Canyon Unit Well No. 264

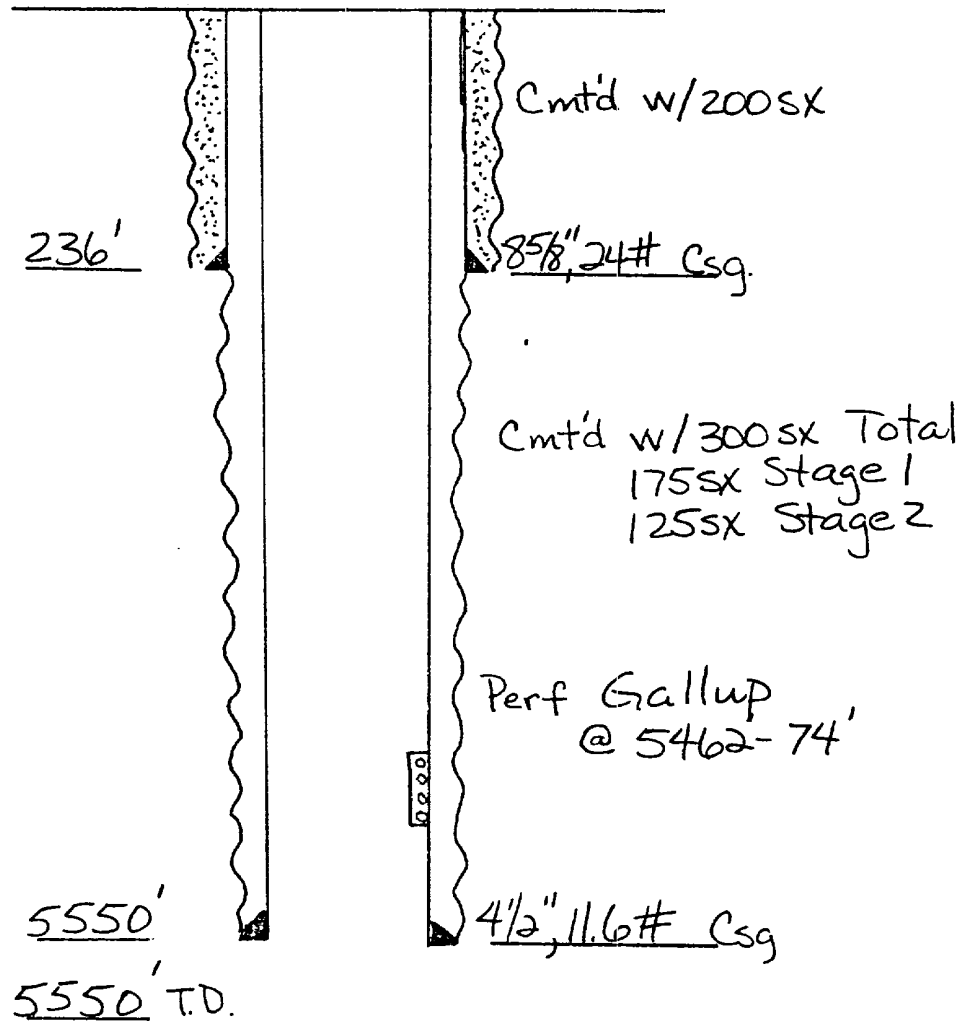
SWNW Sec 17-T28N-R12W

San Juan County, New Mexico

Basin Dakota

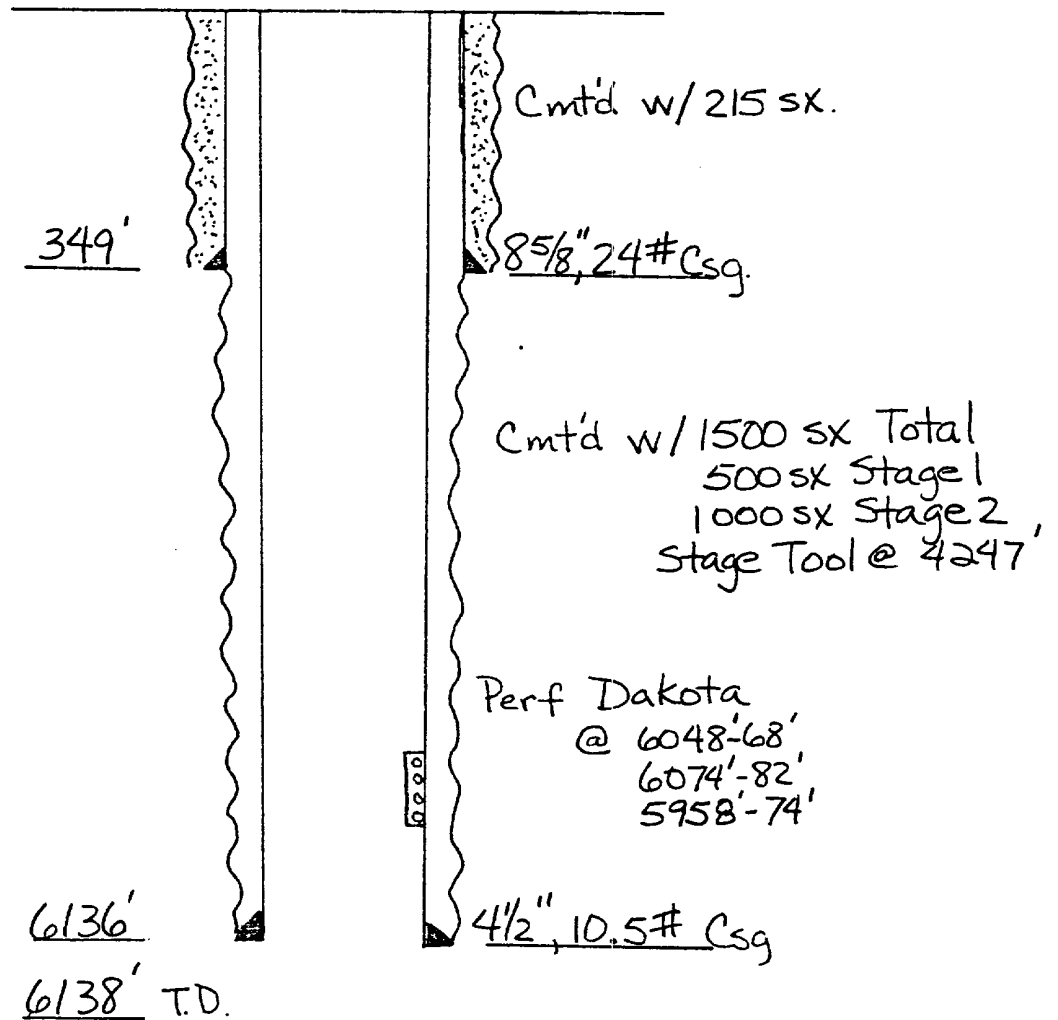


Sun Gallegos Canyon Unit Well No. 149
SWNW Sec 17-T28N-R12W
San Juan County, New Mexico
Totah Gallup

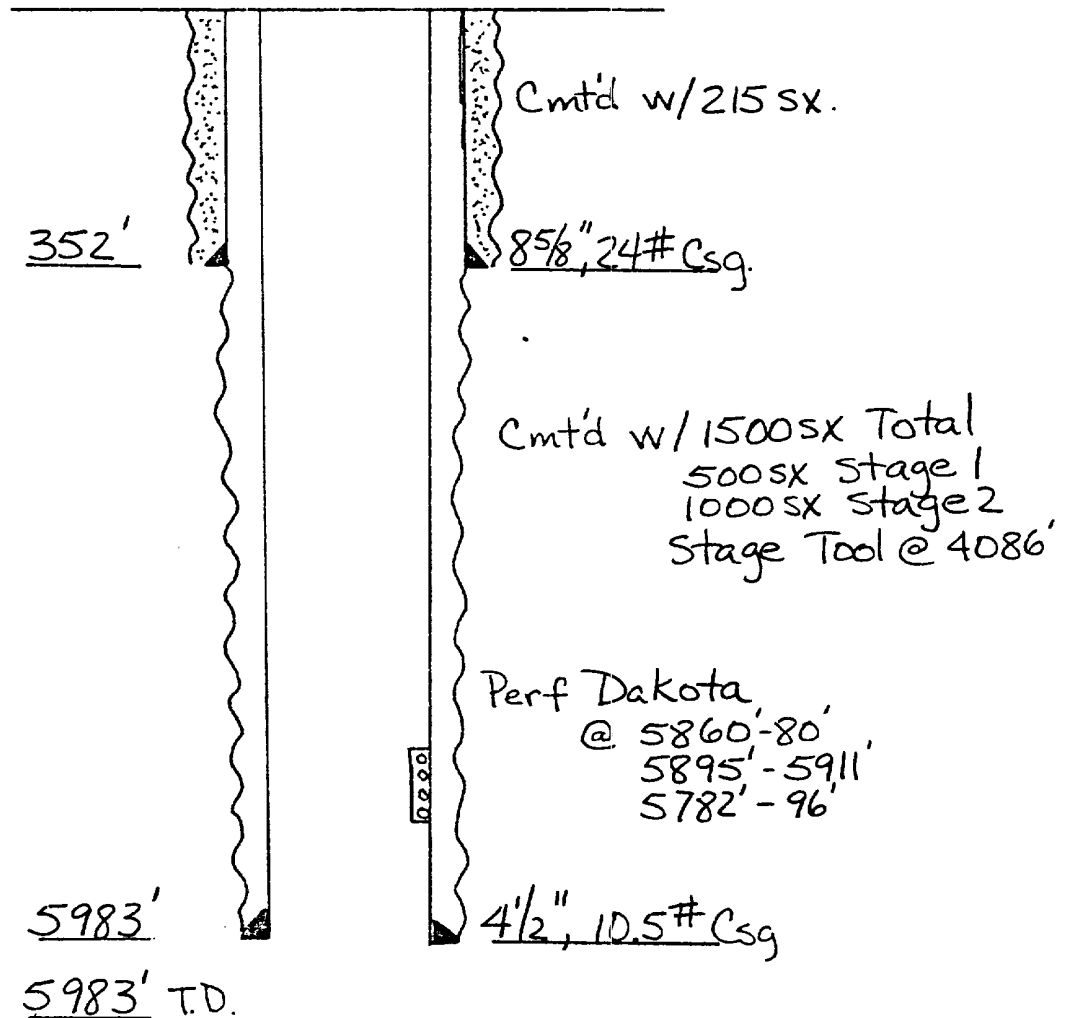


Plugged w/ 25 SX @ 5522'-5526'
10 SX @ surface

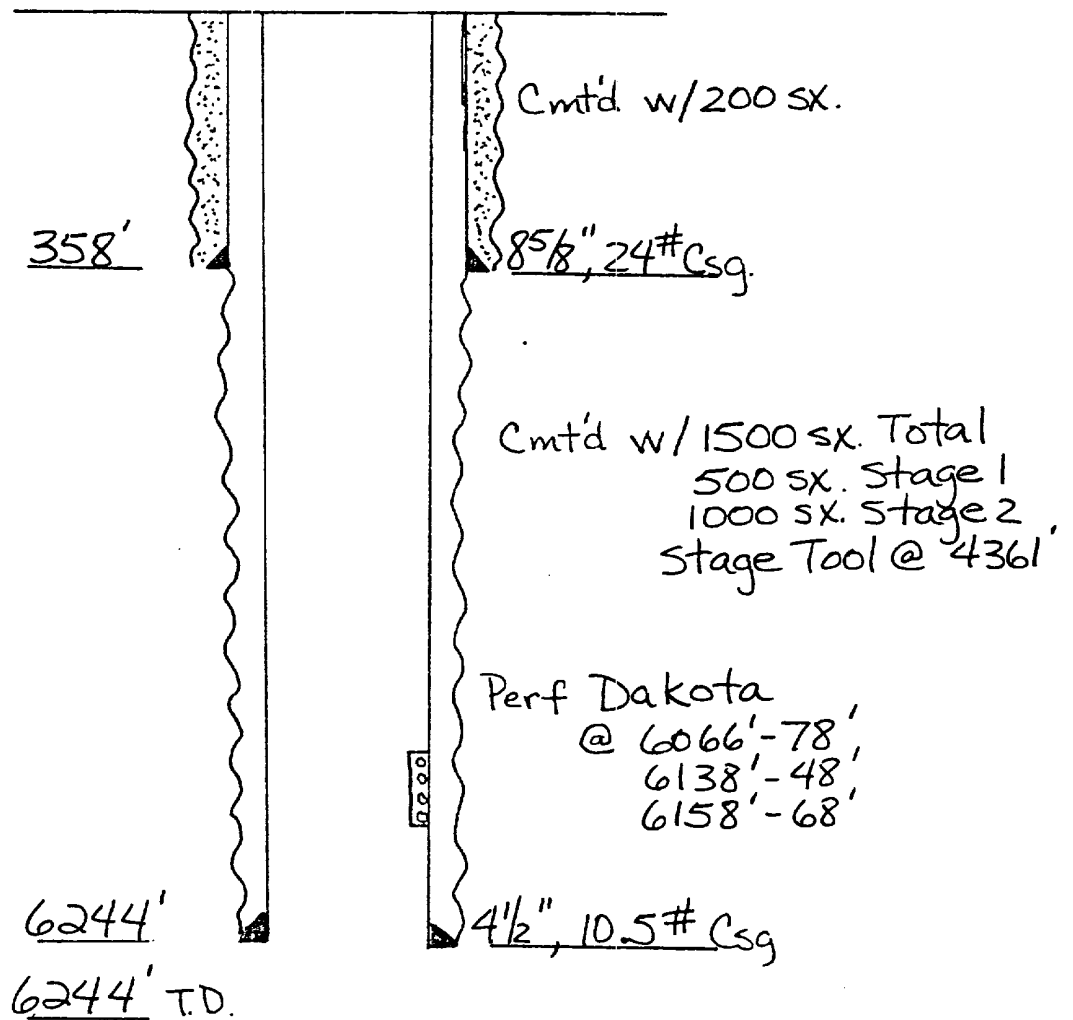
Amoco Gallegos Canyon Unit Well No. 205
SE SW Sec 17-T28N-R12W
San Juan County, New Mexico
Basin Dakota



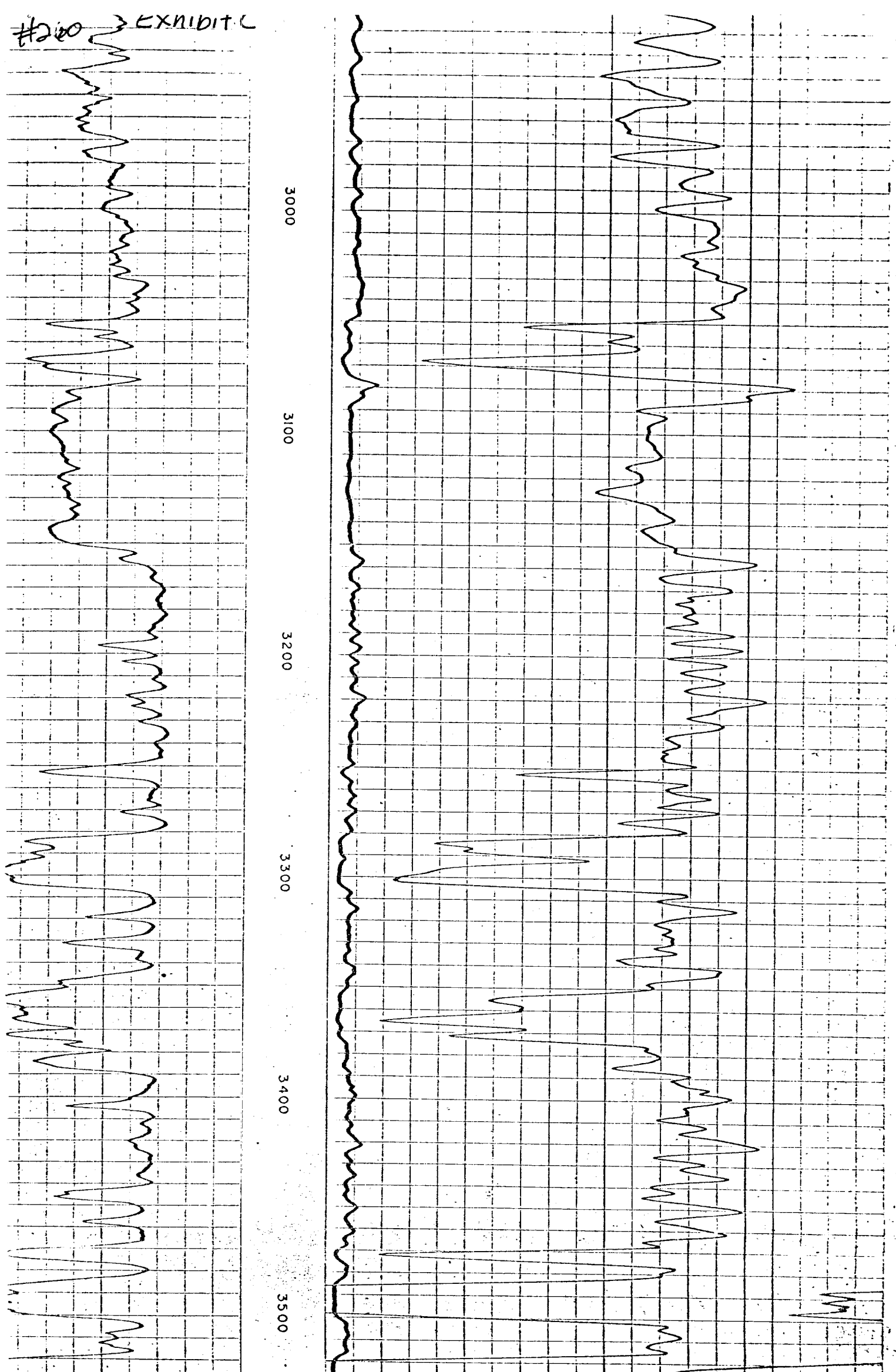
Amoco Gallegos Canyon Unit Well No. 215
SWSW Sec 16-T28N-R12W
San Juan County, New Mexico
Basin Dakota



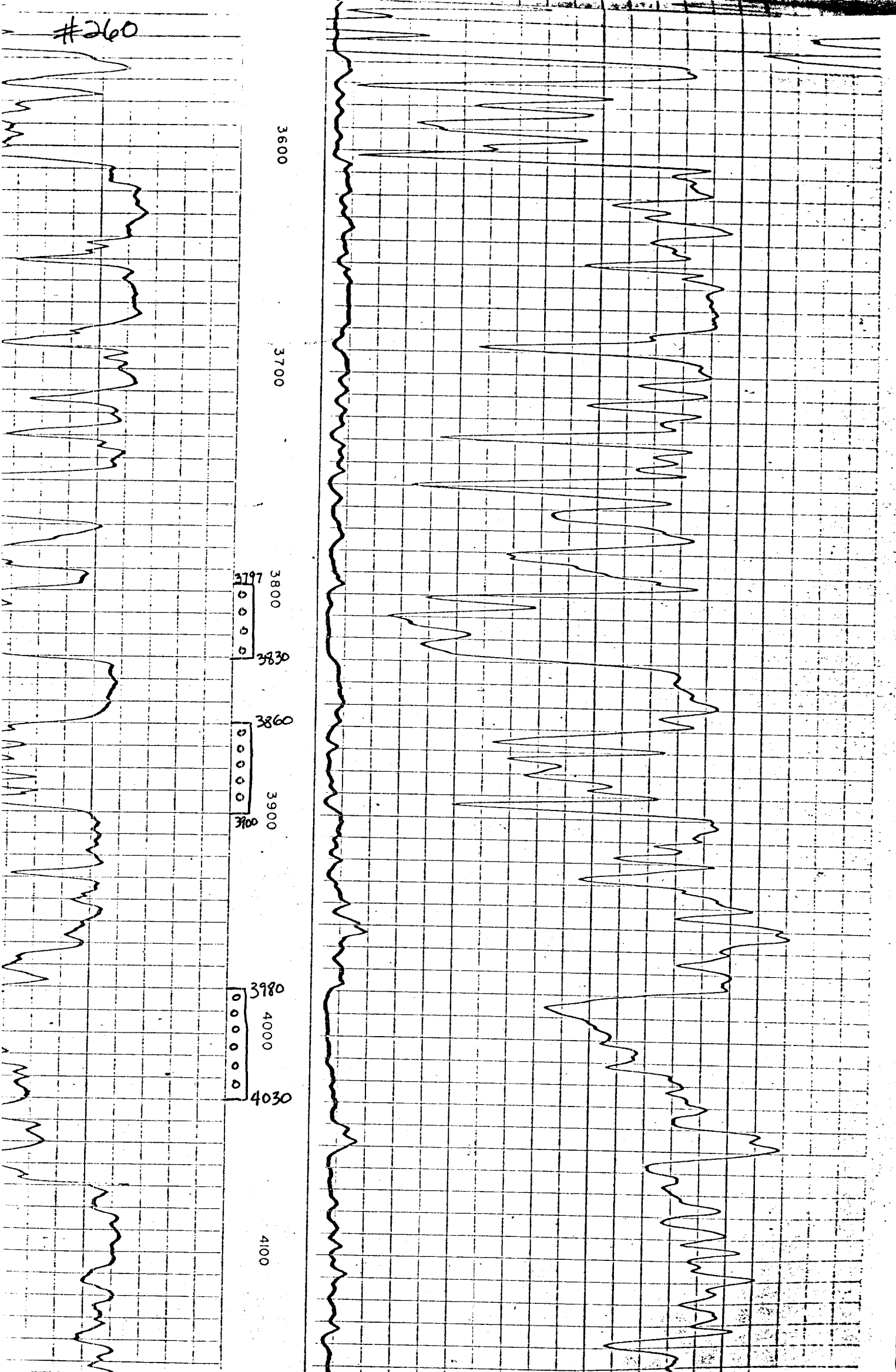
Amoco Gallegos Canyon Unit Well No. 213
NW NE Sec 8-T28N-R12W
San Juan County, New Mexico
Basin Dakota



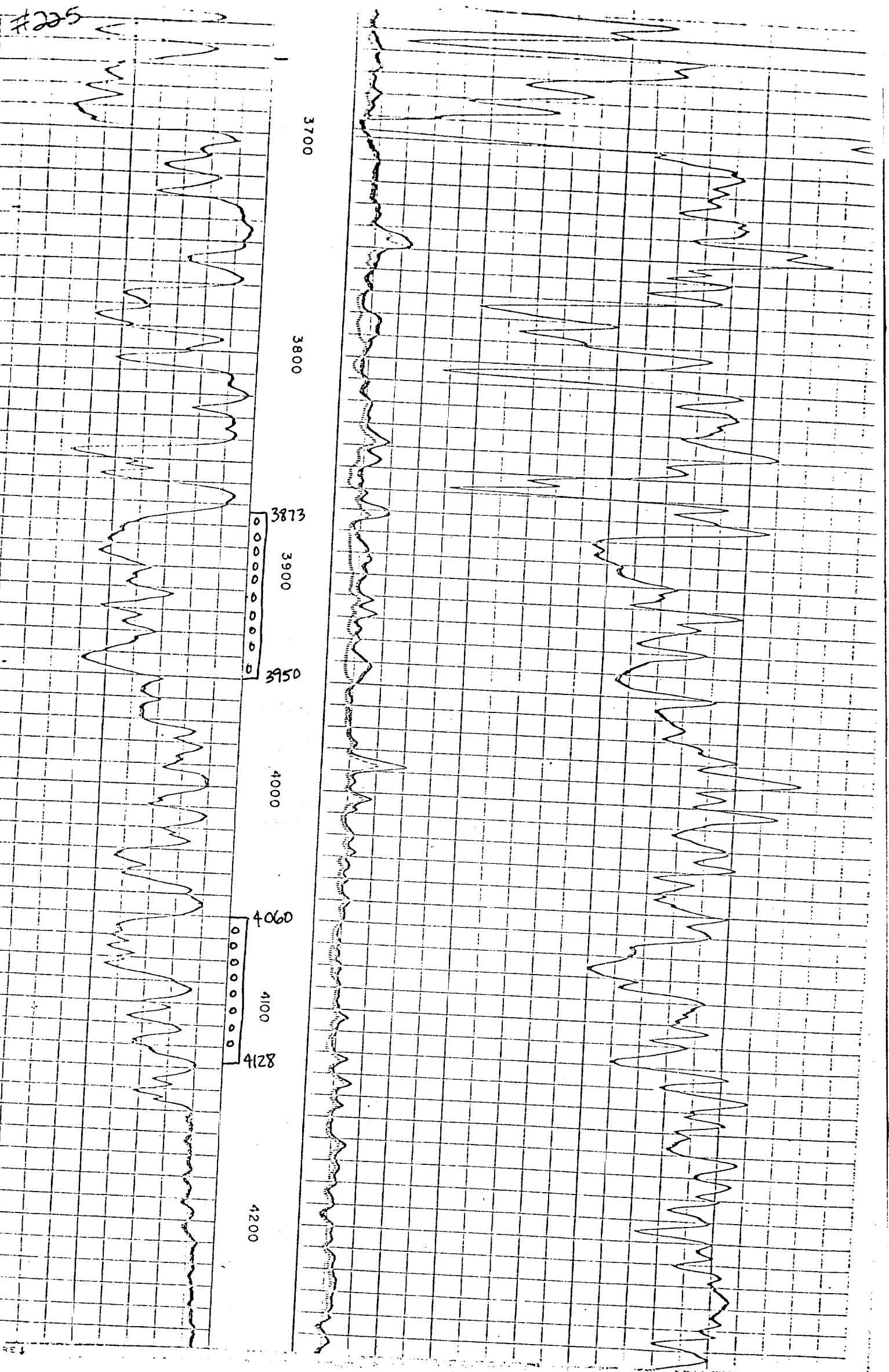
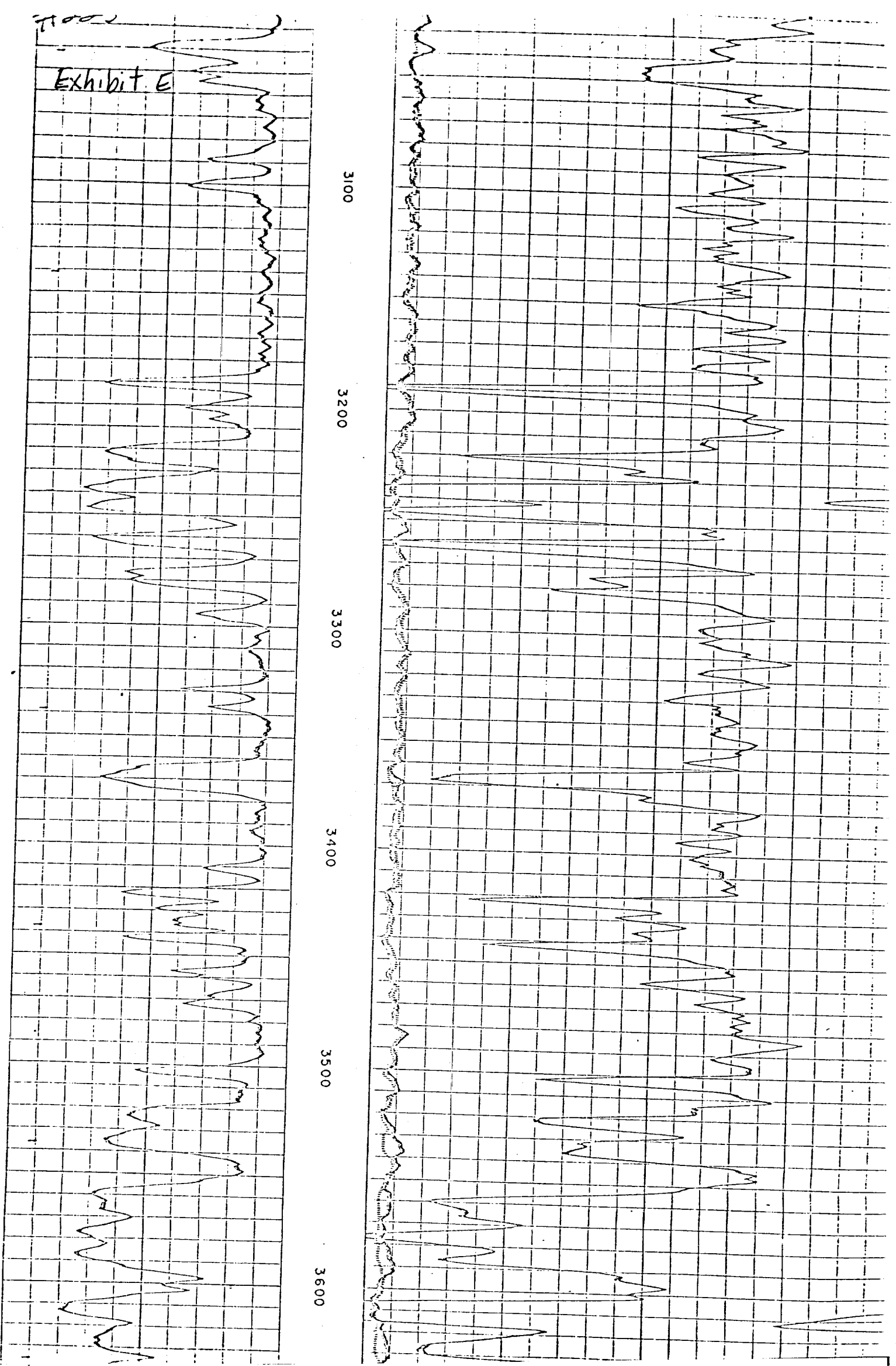
#260 EXHIBIT C



#260





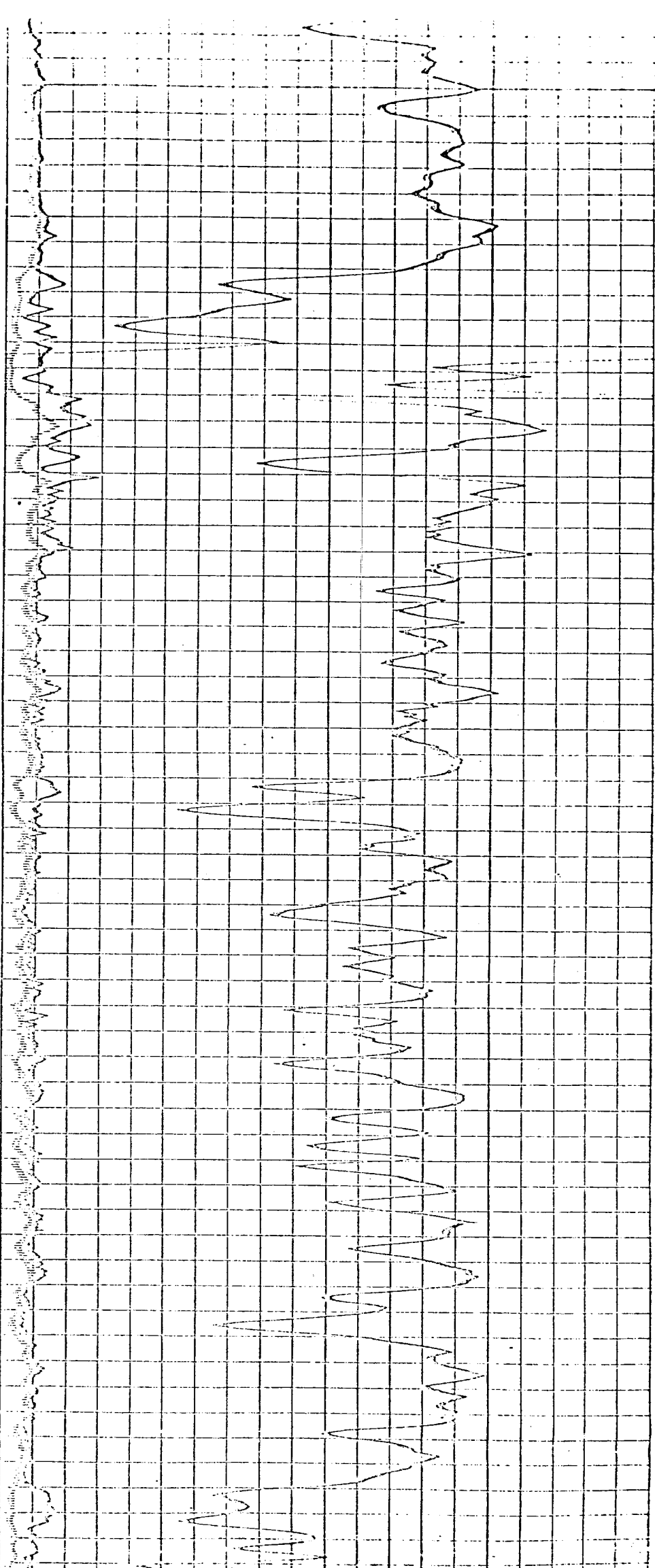




#126

Exhibit D

3100 3200 3300 3400 3500 3600



#126

3750 3765 3775 3800 3815 3838 3858 3900 4000 4040 4100 4115 4200 4300

