

OIL CONSERVATION COMMISSION

Capitan DISTRICT

OIL CONSERVATION COMMISSION
BOX 2088
SANTA FE, NEW MEXICO

DATE 11-9-77

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

Gentlemen:

I have examined the application dated 11-2-77
for the Energy Services Group, Inc. Lease and Well No. Unit, S-T-R
Operator P-14-28N-12W
and my recommendations are as follows:

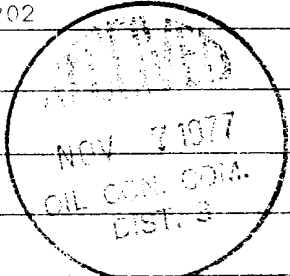
Approved

Yours very truly,

Bill Kendrick

NEW MEXICO OIL CONSERVATION COMMISSION

APPLICATION TO DISPOSE OF SALT WATER BY INJECTION INTO A POROUS FORMATION

OPERATOR Energy Resources Group, Inc.		ADDRESS P. O. Box 3283, Gallup, N.M. 87302	
LEASE NAME Gallegos Canyon Unit	WELL NO. 259	FIELD Pinon Gallup	COUNTY San Juan
LOCATION UNIT LETTER <u>P</u> ; WELL IS LOCATED <u>740</u> FEET FROM THE <u>South</u> LINE AND <u>810</u> FEET FROM THE <u>East</u> LINE, SECTION <u>14</u> TOWNSHIP <u>28N</u> RANGE <u>12W</u> NMPM. San Juan County, New Mexico			
CASING AND TUBING DATA			
NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMENT
SURFACE CASING	8-5/8"	258'	150
INTERMEDIATE			
LONG STRING	4-1/2"	5830'	1650
TUBING		NAME, MODEL AND DEPTH OF TUBING PACKER	
NAME OF PROPOSED INJECTION FORMATION Mesa Verde		TOP OF FORMATION 3,205'	BOTTOM OF FORMATION 4,410'
IS INJECTION THROUGH TUBING, CASING, OR ANNULUS? Tubing		PERFORATIONS OR OPEN HOLES? Perforations	PROPOSED INTERVAL(S) OF INJECTION 3,320'-3,350'
IS THIS A NEW WELL DRILLED FOR DISPOSAL? No	IF ANSWER IS NO, FOR WHAT PURPOSE WAS WELL ORIGINALLY DRILLED? Water Injection		HAS WELL EVER BEEN PERFORATED 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. 5,728'-5,736' Squeezed with 20 sacks			
DEPTH OF BOTTOM OF DEEPEST FRESH WATER ZONE IN THIS AREA 107'	DEPTH OF BOTTOM OF NEXT HIGHER OIL OR GAS ZONE IN THIS AREA 1820'		DEPTH OF TOP OF NEXT LOWER OIL OR GAS ZONE IN THIS AREA 5307'
ANTICIPATED DAILY INJECTION VOLUME (BBLs.) 400	MINIMUM 200	MAXIMUM 600	OPEN OR CLOSED TYPE SYSTEM Open
IS INJECTION TO BE BY GRAVITY OR PRESSURE? Pressure		APPROX. PRESSURE (PSI) 700	
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		NATURAL WATER IN DISPOSAL ZONE Yes	ARE WATER ANALYSES ATTACHED? Yes
NAME AND ADDRESS OF SURFACE OWNER (OR LESSEE, IF STATE OR FEDERAL LAND) Federal - U.S.G.S.			
LIST NAMES AND ADDRESSES OF ALL OPERATORS WITHIN ONE-HALF (1/2) MILE OF THIS INJECTION WELL Amoco Production Company Security Life Building Denver, CO 80202			
			
HAVE COPIES OF THIS APPLICATION BEEN SENT TO EACH OF THE FOLLOWING?	SURFACE OWNER Yes	EACH OPERATOR WITHIN ONE-HALF MILE OF THIS WELL Yes	THE NEW MEXICO STATE ENGINEER Yes
ARE THE FOLLOWING ITEMS ATTACHED TO THIS APPLICATION (SEE RULE 701-B)?	PLAT OF AREA Yes	ELECTRICAL LOG Yes	DIAGRAMMATIC SKETCH OF WELL Yes

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

Tony J. Cox
(Signature)

Production Engineer

(Title)

11-02-77

(Date)

NOTE: Should waivers from the State Engineer, 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.

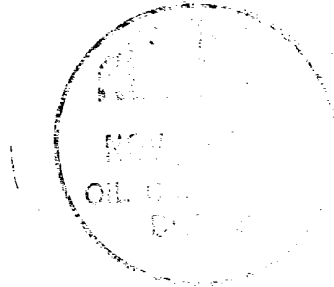
Energy Reserves Group, Inc.
P.O. Box 3290
Casper, Wyoming 82601
Phone 307 265 7331



November 2, 1977

Oil Conservation Commission
State of New Mexico
P. O. Box 2088
Santa Fe, New Mexico 87501
Attn: Joe D. Ramey

RE: Application of Energy Reserves
Group, Inc. for Permission Permitting
the Disposal of Produced Water from
the Pictured Cliffs Formation into the
Mesaverde Formation, Gallegos Canyon
Unit.



Gentlemen:

Energy Reserves Group, Inc. presents to the Oil Conservation Commission the following application 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, Kutz, West, Pictured Cliffs Field, located in Townships 27, 28 and 29 North, Ranges 11, 12 and 13 West, San Juan County, New Mexico. Federal Lease No. SF-078904.
- B. The applicant desires to dispose of water produced from the Pictured Cliffs formation from the subject Gallegos Canyon Unit into the Mesa Verde formation in the wellbore of the Gallegos Canyon Unit No. 259, located Unit letter P, 740' FSL & 810' FEL, Section 14, T-28N, R-12W, San Juan County, New Mexico.

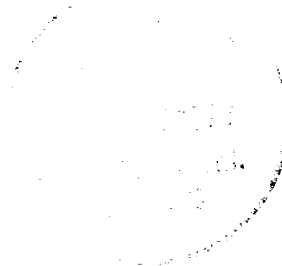
Applicant presents the following in support of the application:

1. Exhibit A - Plat showing the location of the proposed input well 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.
2. Exhibit B - Water analysis of the Pictured Cliffs produced water. Approximately 400 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 No. 259 through perforations at 3,320'-3,350'.



Oil Conservation Commission
Joe D. Ramey
Page 2

4. Exhibit C - Water analysis of the water contained in the Mesa Verde formation.
5. Exhibit D - Schematic diagram of the wellbore of Well No.259 showing all pertinent data.
6. Injection will be through 2-3/8" steel tubing with an injection packer set at about 3,270'. Anticipated maximum injection pressure is 700 psig. The tubing casing annulus will be filled with water containing a corrosion inhibitor, oxygen scavenger and bactericide.
7. Exhibit E - Diagrammatic wellbore sketches of all wells within one-half mile radius that penetrate the Mesa Verde formation.
8. Exhibit F - Tabulation of wellbore data of offset wells.
9. Exhibit G - Log of Well No.259 showing the proposed zone of injection.



7-28-11

TSZ
R 10 61

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

Lob 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

Certified by:

TEST NO. 20030



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

WATER ANALYSIS TEST REPORT

BAROID TREATING CHEMICALS

- EXHIBIT C -

COMPANY Energy Resources					SHEET NUMBER		
FIELD Basin Dakota					COUNTY OR PARISH SAN JUAN		DATE 6-10-77
LEASE OR UNIT Wind Gap Comm.			WELL(S) NAME OR NO. #1		WATER SOURCE (FORMATION) MESAVERDE - CLIFFHOUSE		STATE N MEXICO
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	me/l *	mg/l *
Total Hardness		
Sodium, Na ⁺ (calc.)	2	40
Calcium, Ca ⁺⁺	6	73
Magnesium, Mg ⁺⁺		1.9
Iron (Total), Fe ⁺⁺⁺		
ANIONS		
Chloride, Cl ⁻		10,600
Sulfate, SO ₄ ⁼		50
Carbonate, CO ₃ ⁼		1,200
Bicarbonate, HCO ₃ ⁻	232	14,752
Hydroxyl, OH ⁻		-0-
Sulfide, S ⁼		
Phosphate - Meta, PO ₃ ⁼		
Phosphate - Ortho, PO ₄ ⁼		

DISSOLVED GASES

Hydrogen Sulfide, H ₂ S	mg/l *
Carbon Dioxide, CO ₂	mg/l *
Oxygen, O ₂	mg/l *

PHYSICAL PROPERTIES

pH	8.4
Eh (Redox Potential)	MV
Specific Gravity	
Turbidity, JTU Units	
Total Dissolved Solids (Calc.)	mg/l *
Stability Index @ F	
CaSO ₄ Solubility @ F	mg/l *
Max. CaSO ₄ Possible (Calc.)	mg/l *
Max. BaSO ₄ 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 and mg/l are commonly used interchangeably for epm and ppm respectively. Where epm and ppm are used, corrections should be made for specific gravity.

BTC ENGINEER Max Woolery	DIST. NO.	ADDRESS Albuquerque, NM	OFFICE PHONE 775-2000	HOME PHONE
TESTED BY Woolery	DATE 6-10-77	DISTRIBUTION ☐ CUSTOMER ☐ AREA OR ☐ DISTRICT OFFICE ☐ BTC ENGINEER OR ☐ BTC LAB ☐ BTC SALES SUPERVISOR		

COMPLETION DATA SHEET

- EXHIBIT D -

PRODUCTION DEPARTMENT

ENERGY RESERVES GROUP, INC.

Lease GALLEGOS CANYON UNIT
Well No. 259 Sec. 19 T. 23N R. 12E
SAN JUAN Co. N.M.

DIVISION

FIELD

PINON GALLUP

LOCATION

740' FSL 810' FEL OF SECTION 14

WELL PROFILE

TO	5,830	LOG
PBTD	5,175	GAMMA RAY

ELEVATION	DATUM POINT (GND. FB. OF)
	RDB
	DATUM POINT ELEVATION
	5770

CASING DESIGN

SIZE	WEIGHT	GRADE	THREAD	COUPLING	MAKE	NO. JOBS	FOOTAGE	SACKS
8 1/8"	24"						258'	15
4 1/2"	10.5"						5830	165

PERFORATED INTERVAL	FORMATION	REMARKS
5,128'-5,736'	GALLUP	SQUEEZED W/ 20 SX CLASS 'A'

COMMENTS:

- WELL PLUGGED & ABANDONED MARCH 17, 1973 BY AMOCO PRODUCTION COMPANY AS FOLLOWS:
1. CUT OFF TUBING AT 5,640'
 2. SPOTTED 50 SX CLASS 'A' CEMENT AT 5,640' & SQUEEZED 20 SX INTO FORMATION THRU PERFS 5,728' - 5,736'.
 3. SPOTTED 15 SX CLASS 'A' AT 4,170'.
 4. SPOTTED 15 SX CLASS 'A' AT 3,338'.
 5. SPOTTED 20 SX CLASS 'A' AT 2,692'.
 6. SPOTTED 20 SX CLASS 'A' AT 1,864'.
 7. SPOTTED 20 SX CLASS 'A' AT 264' TO SURFACE.
 8. CUT OFF WELLHEAD 6' BELOW GROUND LEVEL & WELDED ON CAP.

SUBMITTED BY

TERRY J. Cox

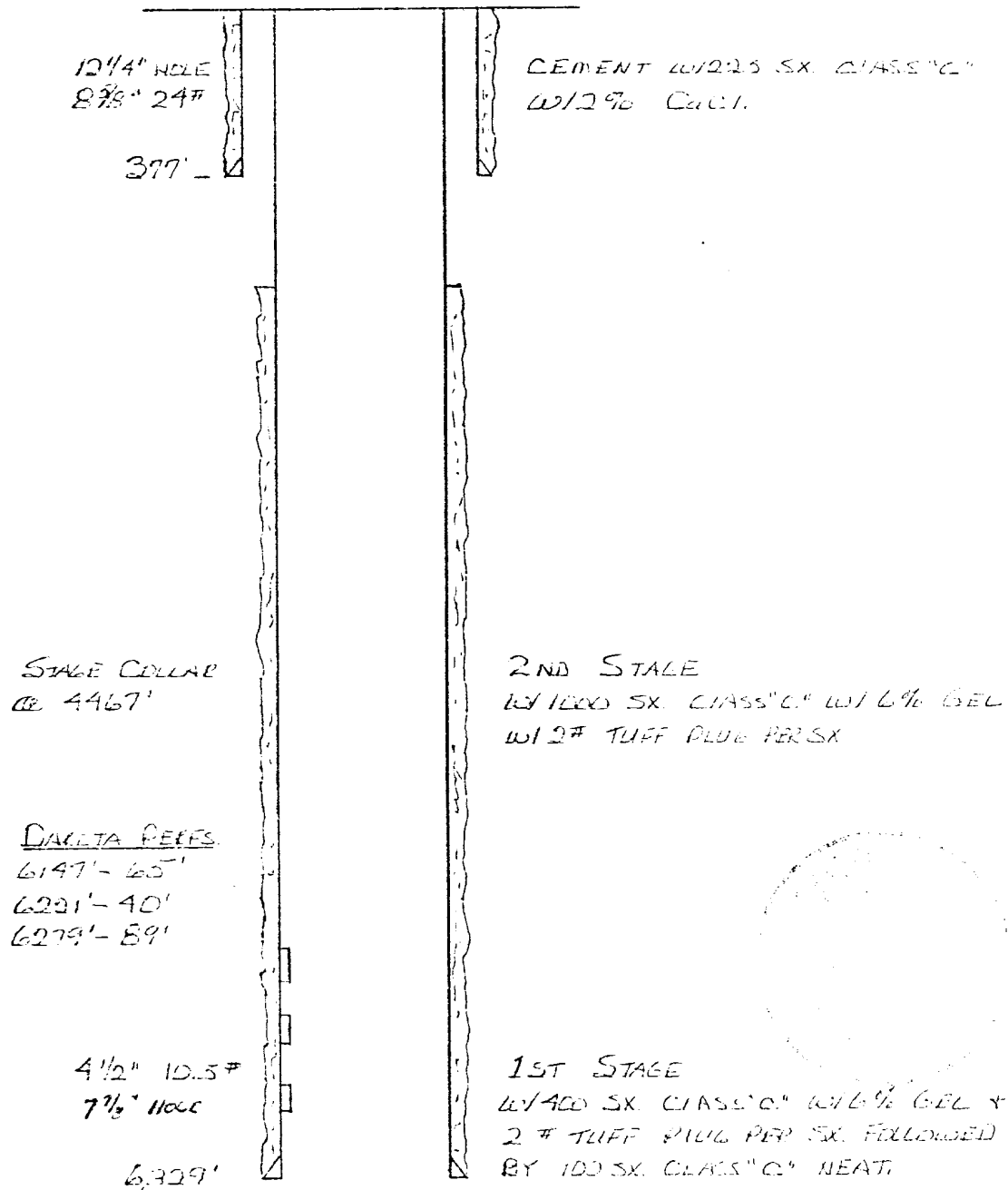
DATE

10-31-77

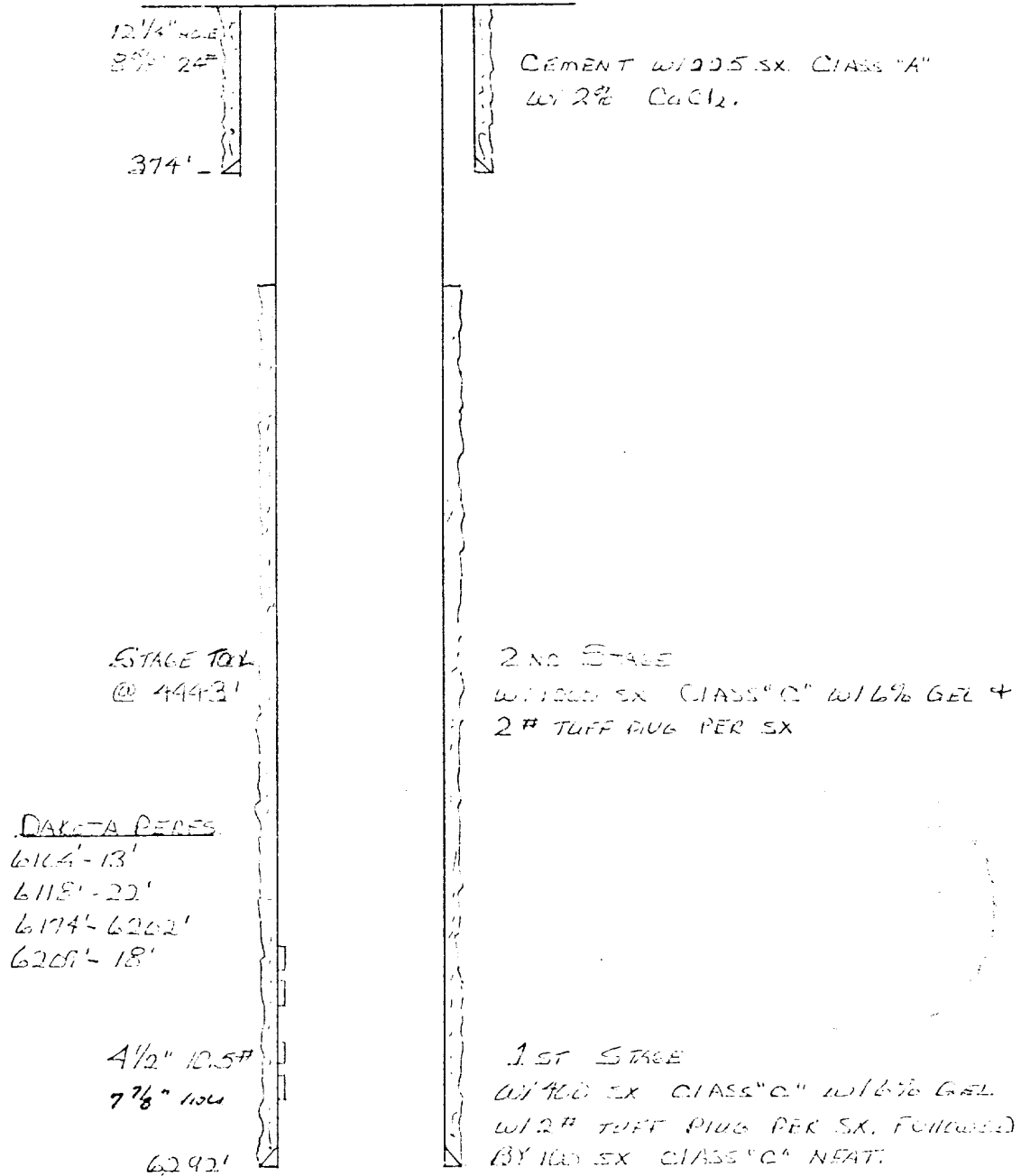
APPROVED BY

- EXHIBITS E -

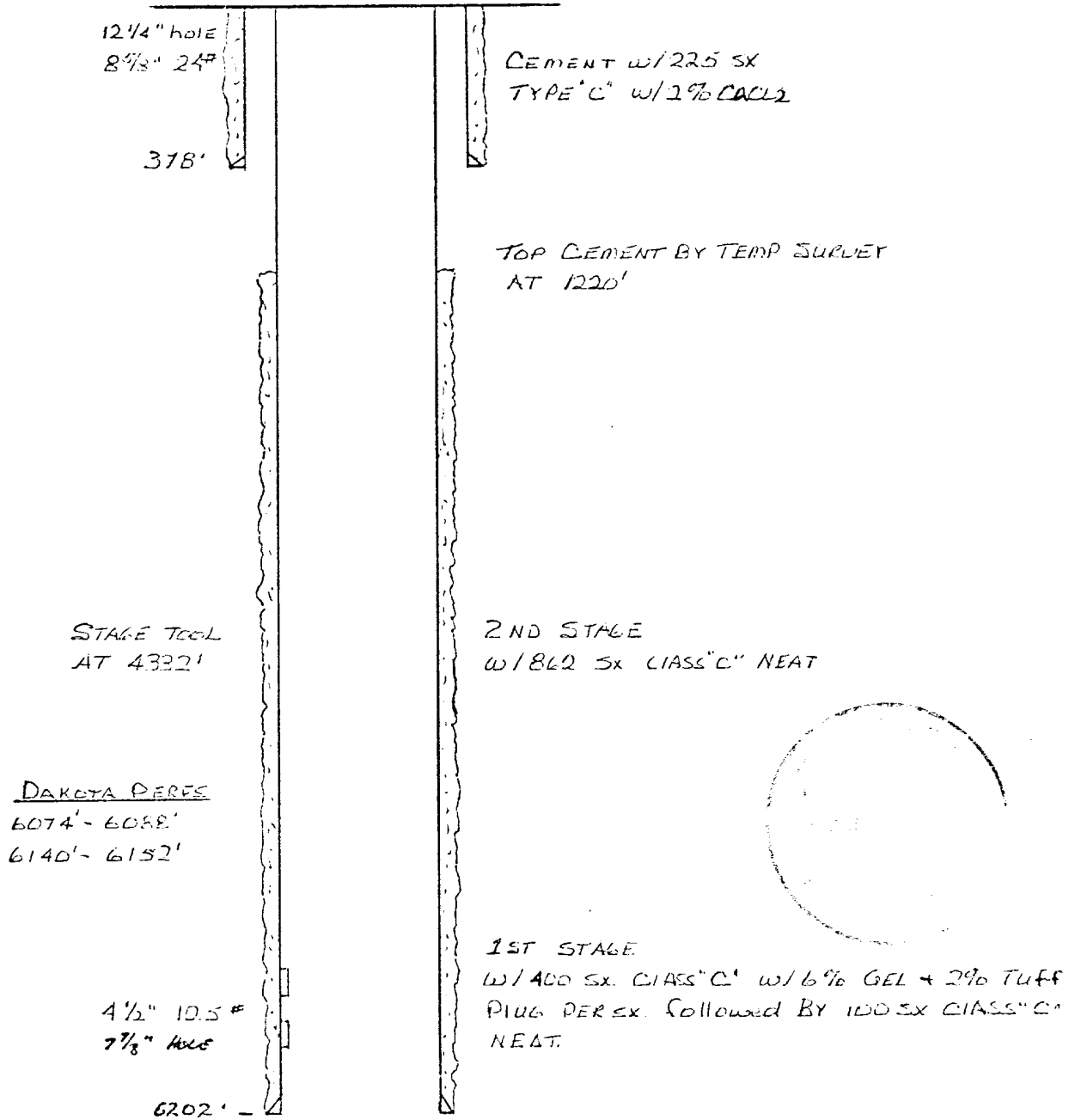
GALLEGO CANYON LN - WELL NO. 2011
1585' FILL - 1980' FEL, SEP 19 - TORN - P. 120
BASIN DAKOTA FIELD
SAN JUAN COUNTY, NEW MEXICO



GALLERON CANYON UNIT Well No. 212
 1126451-18-21212, 1126451-18-21212
 BASIN DAKOTA FIELD
 SAN JUAN COUNTY, NEW MEXICO



GALLEGO CANYON UNIT WELL NO. 217
2275' FSL-1635' FUDL, SEC. 13-T28N-R12W
BASIN DAKOTA FIELD
SAN JUAN COUNTY, NEW MEXICO



GILLEGOS CANYON UNIT Well No. 219
 970' FNL. 790' FEL. SEC. 23 T28N. R12W
 BASIN DAKOTA FIELD
 SAN JUAN COUNTY, NEW MEXICO

12 1/4" HOLE
 8 5/8" 21#

377 -

Cem. w/ 225 SK
 w/ 2% CAL

TOP CEMENT BY TEMP. SURVEY
 @ 1350'

STAGE TACK
 @ 4501'

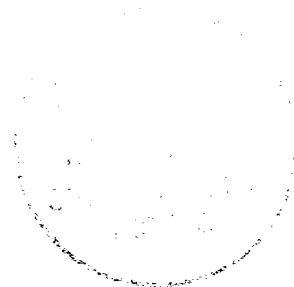
2ND STAGE w/
 1000 SK CLASS "C" w/ 6% GEL + 21# TUFF PLUG
 PER SK.

DAKOTA PERES

6204-13
 6288-6308

4 1/2" 105#
 7 7/8" HOLE
 6338' -

1ST STAGE w/
 400 SK CLASS "C" w/ 6% GEL + 2# TUFF PLUG PER SK.
 FOLLOWED BY 100 SK CLASS "C" NEAT



GALLEGO CANYON UNIT WELL NO. 250
 970' FSL-1800' FWL, SEL. 14-TDSN-R1260
 UNDESIGNATED GALLUP
 SAN JUAN COUNTY, NEW MEXICO

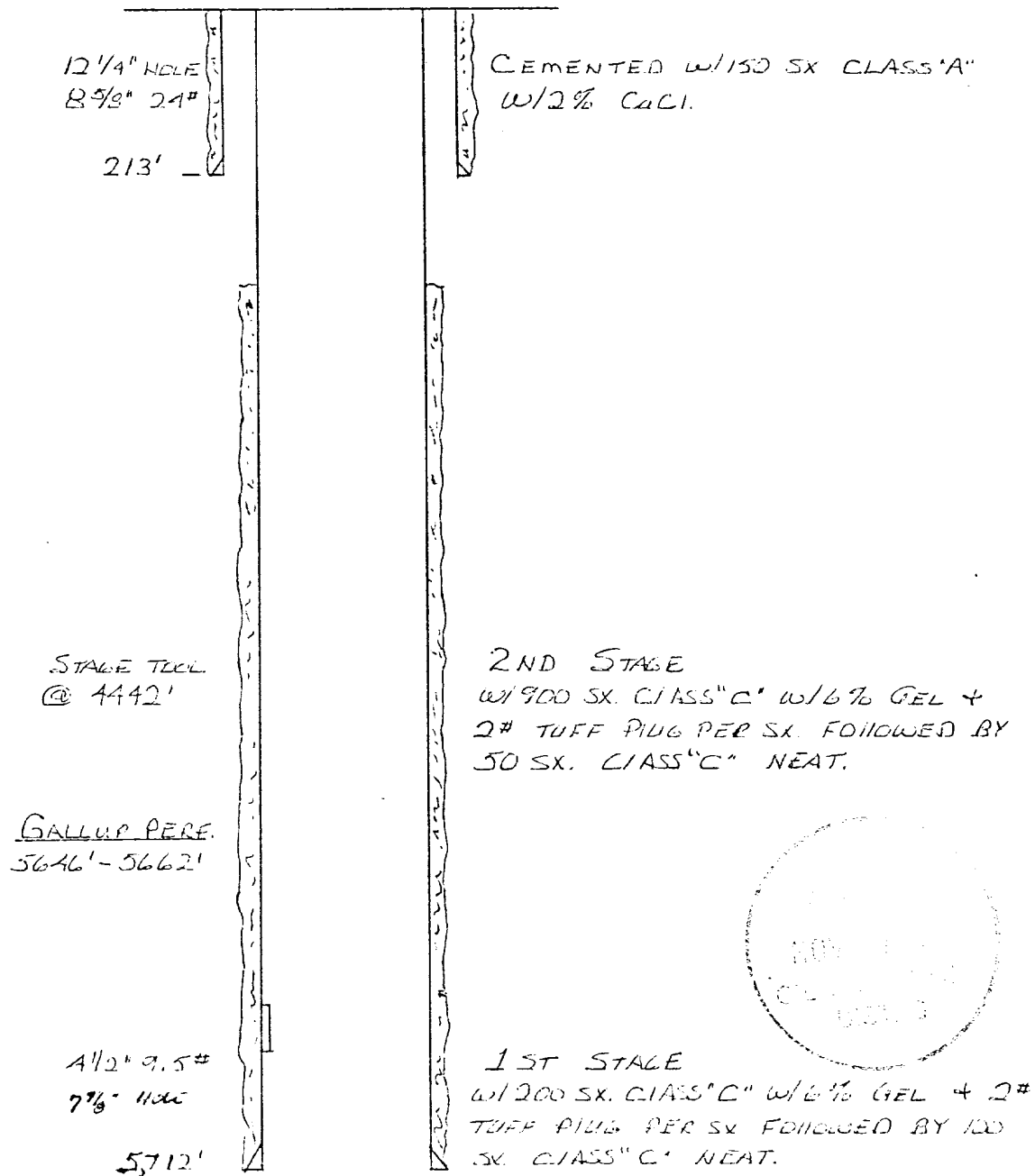


EXHIBIT F

- TABULATION OF WELLBORE DATA -

WELL NO.	LOCATION	SURFACE CASING		T.D.	PRODUCTION CASING		PRODUCING INTERVAL
		Depth	Cement		Depth	Cement	
207	1535' FNL - 1930' FEL Sec.14, T-28N, R-12W	377'	225	6,329	6,329	1,500	6,147 - 6,289
216	1150' FSL - 1950' FWL Sec.14, T-28N, R-12W	374'	225	6,292	6,292	1,500	6,104 - 6,218
217	2275' FSL - 1635' FWL Sec.13, T-28N, R-12W	378'	225	6,202	6,202	1,362	6,074 - 6,152
219	990' FNL - 790' FEL Sec.23, T-28N, R-12W	377'	225	6,338	6,338	1,500	6,204 - 6,308
250	990' FSL - 1800' FWL Sec.14, T-28N, R-12W	213'	150	5,712	5,712	1,200	5,646 - 5,662

TOP MESAVERT

GALLEGOS CANYON UNIT

GPA - "D" No. 259

740' FSL 810' FEL

SEC. 14 T-28-N, R-12-W

SAN JUAN, NEW MEXICO

PROPOSED
PERFORATIONS

TOP MANCOS

