NEW MEXICO ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
2040 South Pacheco Street
Santa Fe, New Mexico 87505
(505) 827-7131

October 17, 1997

Conoco Inc.
10 Desta Drive, Suite 100W
Midland, TX 79705-4500
Attention: Jerry Hoover

Administrative Order TX-275

Dear Mr. Hoover:

Reference is made to your request for an exception to the tubing setting requirements as contained in Division Rule 107 (j) for the below-named well.

Pursuant to the authority granted me by Rule 107 (d) (4), you are hereby authorized to make a tubingless completion in the following well:

Well Name, Number and Location:

State Com J Well No. 6, API No. 30-045-10070, Unit I, Section 36, Township 31 North, Range 9 West, NMPM, San Juan County, New Mexico.

The Division reserves the right to rescind this authority in the event that waste appears to be resulting therefrom.

Sincerely,

William J. LeMay
Director

WJL/RJ/kv

cc: Oil Conservation Division - Aztec

pVEV2005730877

conoco

Midland Division
Exploration Production

Conoco Inc.
10 Desta Drive, Suite 100W
Midland, TX 79705-4500
(915) 686-5400

Called Hoover 10/17/97 For API #

RECEIVED
SEP - 5 1997
OIL CONSERVATION DIVISION

Mr. Roy Johnson
New Mexico Oil Conservation Division
2040 S. Pacheco
Santa Fe, New Mexico 87504

Re: ADDENDUM to
Application for Tubingless Completion
in Conoco's State Com J No. 6 Well
located 1650' FSL & 900' FEL,
Section 36, Township 31N, Range 9W

API # 30-045-10070

Dear Mr. Johnson:

In an application dated March 25, 1997, Conoco requested approval to produce this well as a tubingless completion. This wellbore has historically continued to periodically bridge off in the tubing with sand produced from the formation. In an attempt to keep the well producing, and with the permission of the OCD, the tubing was perforated to allow production both up the tubing and the annulus. Since the tubing still continued to bridge off, the well has essentially been producing as a tubingless completion but with a restricted flow through the tubing perforations.

With the temporary approval of the Aztec OCD Office, this restrictive and bridged off string of tubing was removed from the well early in April, 1997 to test it as a tubingless completion. The monthly producing volumes below show the effect of the tubing plugging off in March and the increase in production in the following months as it returned to its pre-plugged producing rate:

	1/97	2/97	3/97	4/97	5/97	6/97
MCFGPD	1879	1946	646	1432	2292	1968

These average monthly producing rates should support the need to produce the well with out tubing to keep the wellbore from plugging off with sand and causing the periodic reductions in production as illustrated by the average March rate.

If there are any further questions, please contact me at (915) 686-6548. Thank you.

Very truly yours,

Jerry W. Hoover
Sr. Conservation Coordinator

cc: Ernie Busch, Aztec OCD Office

NEW MEXICO ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
2040 South Pacheco Street
Santa Fe, New Mexico 87505
(505) 827-7131

June 24, 1997

Conoco Inc.
10 Desta Drive
Suite 100W
Midland, Tx 79705-4500

Attention: Mr. Jerry Hoover

Re: Tubingless Completion
State Com J Well No. 6

Dear Mr. Hoover:

This office is in receipt of the above-referenced application and it is our understanding that Conoco has received verbal approval to produce this well from our Aztec office as a tubingless completion on a test basis. Due to the fact that this well has in excess of over 60 days production as a tubingless completion, this office will require appropriate production analysis showing that this method will not result in waste.

In order to complete this application, please supply this office with the legal description and API number of the well.

Should you have any question pertaining to this matter, please contact me at this office (505 827-8198).

Sincerely,

ROY E. JOHNSON,
Sr. Petroleum Geologist

cc: OCD Aztec
Attention: Frank Chavez

Hold For 30 days
May 7, 1996

Roy Johnson

From: Frank Chavez
To: Roy Johnson
Subject: Conoco Tubingless completion application
Date: Monday, April 07, 1997 12:00PM
Priority: High

The Conoco State Com J #6 has the 3rd highest gas cumulative for MV wells in theSJB. It is completed in a large natural fracture system and could conceivably produce up to near the rates Hoover suggested. Water production is 2 to 4 bpd and oil varies from 1 to 4 bpd.

It wouldn't hurt to ask them for data showing that the anticipated rate of production achieves the velocity necessary to remove liquids from the well bore.

My instincts are that their approach is not wise. Hold off on the approval for a bit. Because of our doubts we allowed them 30 days to test the well without tubing and if it is successful we can continue to process their application.

Prod. History – esp. w/ last 60 days
S-T-R ?
API # ?

Mid-Continent Region
Exploration/Production

Conoco Inc.
10 Desta Drive, Suite 100W
Midland, TX 79705-4500
(915) 686-5400

March 25, 1997

New Mexico Oil Conservation Division
2040 S. Pacheco
Santa Fe, New Mexico 87504

Re: Application for Tubingless Completion
in Conoco's State Com J No. 6 Well

Gentlemen:

The subject Mesaverde gas well has a history of production problems that make it impossible to produce efficiently by means of a tubing completion. This completion has continued to produce sand and formation rubble, apparently as a result of the original nitroglycerine treatment of the interval 4,520'-5,122' in 1952.

Since the tubing continued to fillup with sand, bridging off production, verbal approval had been received from the Aztec OCD Office to perforate the tubing and allow production simultaneously through the tubing and casing. However, sand continues to fillthe tubing and is now thought to cover much of the perforated interval inside the casing. Apparently production is primarily from the casing annulus as the tubing continues to bridge off and restrict flow even into the casing. A current wellbore diagram is attached.

The production potential of this well, which should range from 4-6 MMCFPD, has been currently reduced to 1.5-2 MMCFPD by these problems. As the wellbore continues to fillwith sand the producing efficiency continues to decrease and significant Mesaverde gas reserves are being lost to this well. The only way to return this well to its potential producing rate and to maintain an efficient recovery is to remove the tubing and produce up the 5 inch casing so the perforations can be kept open and sand bridging in the tubing can be eliminated.

A pressure test was performed in March 1997 (and witnessed by the Aztec OCD) verifying casing integrity in the well. Therefore, it is proposed to rig up on this well and convert it to a tubingless completion as follows:

1. Pull the 2-3/8" tubing and clean out the wellbore of sand fillto PBTD of 5,195'.
2. If the tubing does not pull free of the sand fill,cut off 10 feet above the top of the sand, wash over the remaining tubing, and clean out sand to 5,195'.
3. Continue to clean out and flow until sand production drops off.
4. Pressure test casing to 500 psi.
5. Return to production up the casing.

Considerable production and royalties are being delayed, if not lost, pending this work. Thank you for your prompt consideration of this request for a tubingless completion. Not only will waste not be caused by this action, but waste will actually be avoided by its approval.

Very truly yours,

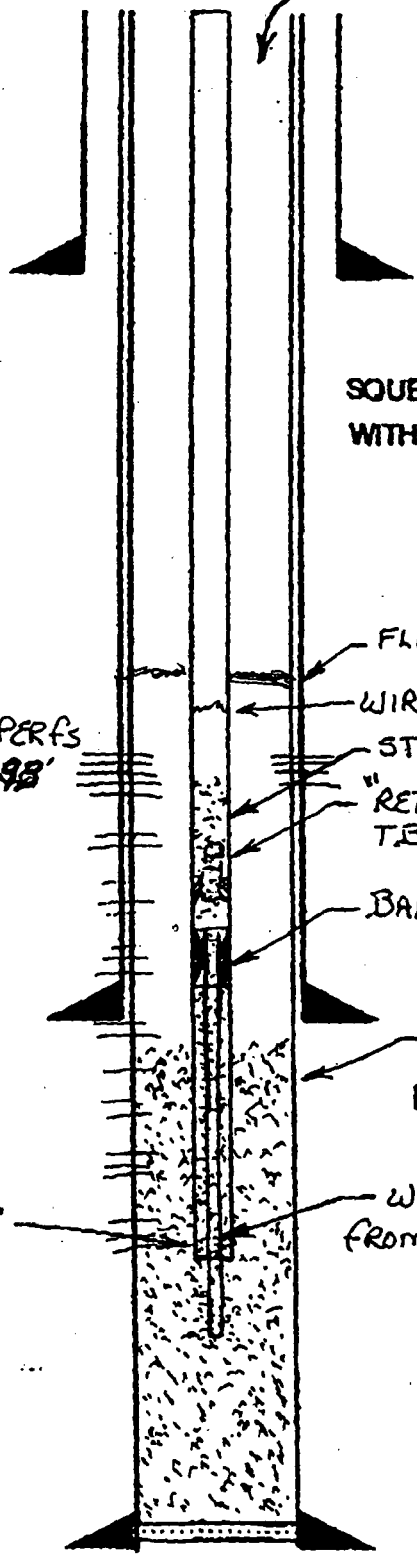
Jerry W. Hoover

Jerry W. Hoover
Sr. Conservation Coordinator

STATE COM J #6

SAN JUAN OU

CURRENT COMPLETION



WELL PRODUCED 1900 MCF/D VIA CSG.

KB: 5930'
GLE: 5922'

SURFACE CASING
10 3/4" @ 221'
150 SACKS CEMENT
TOC: N/A

SQUEEZE 612-642'
WITH 300 SXS CEMENT

FL @ 136 JTS. = 4160'

WIRELINE TAGGED FL @ 4300'

TOP PERFS 4498'

START BAILING FILL @ 5105'

"RETIEVED" SLIP STOP from TBG @ 5114'

BAKER "F" NIPPLE 5115'

PRODUCTION CASING
7", J-55, 20.0/23.0# @ 4444'
455 SACKS CEMENT
TOC: N/A

TOP of FILL IN CSG UNKNOWN

MESA VERDE
4493-5191'

TUBING
2 3/8" @ 5146'

WIRELINE BAILED FILL (1¼" OD) from TBG to 5154'

PRODUCTION CASING
5", J-55, 15.0# @ 5200'
100 SXS CEMENT
TOC: 4610' (TS)

PBTD: 5195'

TD: 5211'

** TOTAL PAGE.002 **

DATE IN	SUSPENSE	ENGINEER	LOGGED BY	TYPE

ABOVE THIS LINE FOR DIVISION USE ONLY

NEW MEXICO OIL CONSERVATION DIVISION

- Engineering Bureau -

ADMINISTRATIVE APPLICATION COVERSHEET

THIS COVERSHEET IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS

Application Acronyms:

[NSP-Non-Standard Proration Unit] [NSL-Non-Standard Location]
[DD-Directional Drilling] [SD-Simultaneous Dedication]
[DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling]
[PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement]
[WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion]
[SWD-Salt Water Disposal] [IPI-Injection Pressure Increase]
[EOR-Qualified Enhanced Oil Recovery Certification] [PPR-Positive Production Response]

RECEIVED
MAR 27 1997
OIL CONSERVATION DIVISION

[1] **TYPE OF APPLICATION** - Check Those Which Apply for [A]

[A] Location - Spacing Unit - Directional Drilling
❑ NSL ❑ NSP ❑ DD ❑ SD

Check One Only for [B] and [C]

[B] Commingling - Storage - Measurement
❑ DHC ❑ CTB ❑ PLC ❑ PC ❑ OLS ❑ OLM

[C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery
❑ WFX ❑ PMX ❑ SWD ❑ IPI ❑ EOR ❑ PPR

[D] Other Tubingless Completion

[2] **NOTIFICATION REQUIRED TO:** - Check Those Which Apply, or ❑ Does Not Apply

[A] ❑ Working, Royalty or Overriding Royalty Interest Owners

[B] ❑ Offset Operators, Leaseholders or Surface Owner

[C] ❑ Application is One Which Requires Published Legal Notice

[D] ❑ Notification and/or Concurrent Approval by BLM or SLO
U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office

[E] ❑ For all of the above, Proof of Notification or Publication is Attached, and/or,

[F] ❑ Waivers are Attached

[G] ☒ None

[3] **INFORMATION / DATA SUBMITTED IS COMPLETE** - Statement of Understanding

I hereby certify that I, or personnel under my supervision, have read and complied with all applicable Rules and Regulations of the Oil Conservation Division. Further, I assert that the attached application for administrative approval is accurate and complete to the best of my knowledge and where applicable, verify that all interest (WI, RI, ORRI) is common. I understand that any omission of data, information or notification is cause to have the application package returned with no action taken.

Note: Statement must be completed by an individual with supervisory capacity.

Jerry W. Hoover	Jerry W. Hoover	Sr. Conservation Coordinator	3/25/97
Print or Type Name	Signature	Title	Date

MEMO From ERNIE BUSCH

DISTRICT GEOLOGIST/DEPUTY OIL & GAS INSPECTOR

10-2-97

TO: Roy Johnson

RE: TUBING EXCEPTION

HERES A COPY OF THE INFO WE ASKED FOR ON THE CONOCO STATE COM J #6 - LOOKS GOOD! THE CORROSION MUST HAVE BEEN ELECTROLYSIS, THEY NOW HAVE CATHODIC PROTECTION ON THE WELL. GO AHEAD AND APPROVE.

Thanks

EG

Mid-Continent Region
Exploration/Production

Conoco Inc.
10 Desta Drive, Suite 100W
Midland, TX 79705-4500
(915) 686-5400

October 1, 1997

Mr. Ernie Busch
New Mexico Oil Conservation Division
1000 Rio Brazos Rd.
Aztec, NM 87410

Subj.: Well Status of State Com J #6

Dear Mr. Busch:

According to the chromatographic gas analysis report (attached) performed by the El Paso Natural Gas Company, the content of carbon dioxide (CO_2) is 1.31 % by mole. With a bottom hole pressure of approximately 400 pounds, the partial pressure of CO_2 is less than 7 psi and the well environment is generally considered as non-corrosive* (attached). This is further supported by a water analysis (attached) performed on September 9, 1997 by BJ Services Company. Though the results of the water analysis indicate some corrosion activity with a pH of 6.62, the level of iron count (Fe^{++}) is below measurable limit.

Based on the available information about State Com J #6, my best judgement is that the degree of corrosion on current wellbore equipment is fairly insignificant. Corrosion on the casing string has also been mitigated externally by the application of cathodic protection.

Sincerely,

Steve C.K. Tsai
Chemical/Corrosion Advisor
Operations & Services

/Attachment

* Reference: L. Garverick, eds. Corrosion in the Petroleum Industry. ASM International, Metals Park, Ohio, 1994.

07-08-87

EL PASO NATURAL GAS COMPANY
MEASUREMENT DEPARTMENT
POST OFFICE BOX 1492
EL PASO, TEXAS 79978

RECEIVED
1987
PRODUCTION RECORDS

MAILEE
04515

CHROMATOGRAPHIC GAS ANALYSIS REPORT

MESA OPERATING LTD PARTNERSHIP
P. O. BOX 2009
AMARILLO, TX 79189

ANAL DATE 00-00-00

METER STATION NAME
STATE COM J #6

METER STA 70137
OPER 6014

TYPE CODE	SAMPLE DATE	EFF. DATE	USE MOS	H2S GRAINS	LOCATION
00 ***	06-18-87	06-28-87	06	0	4 F 12

	NORMAL MOL%	GPM
CO2	1.31	.000
H2S	.00	.000
N2	.28	.000
METHANE	85.56	.000
ETHANE	7.48	2.001
PROPANE	3.10	.854
ISO-BUTANE	.56	.183
NORM-BUTANE	.76	.240
ISO-PENTANE	.27	.099
NORM-PENTANE	.20	.072
HEXANE PLUS	.48	.209
	100.00	3.658

SPECIFIC GRAVITY	.677
MIXTURE HEATING VALUE (BTU/CF @14.73 PSIA, 60 DEGREES, DRY)	1167
RATIO OF SPECIFIC HEATS	1.288

NO TEST SECURED FOR H2S CONTENT

*** TYPE CODE EXPLANATION SINGLE METER ANALYSIS

GXC

DATE 8/10/87
REGULATORY
MARKETING
WF

RULES OF THUMB FOR EVALUATING CORROSION IN WILDCAT GAS/CONDENSATE DISCOVERIES

Generally when a discovery is remote from a pipeline connection, after testing, the well will be closed-in for an extended period. This is to determine the required processing plant for producing the reservoir and sizing the pipeline after reservoir evaluation, and possibly includes the drilling of additional wells. The major problem for the corrosion engineer is to obtain enough data in the well testing to evaluate the corrosivity of the well. This can be particularly important if a long closed in period is anticipated. With highly corrosive well fluids, an optimum corrosion inhibitor "mothballing" program may be required for protecting the wellbore equipment. Also, where additional wells are required for reservoir evaluation, and highly corrosive gas is produced, special alloys may be necessary for wellhead and wellbore equipment.

The primary objective of the operator in testing is to determine a well's productive capacity. Tests usually consist of measuring producing rates at various choke settings. If a major discovery is anticipated, tests will also determine approximations of the water and condensate to gas ratios. Frequently the produced gas is analyzed.

In addition to this test data measurements or reasonable estimates are available on surface and bottomhole pressure and temperature conditions. Generally this is the most data the corrosion engineer can expect for his corrosivity evaluation.

In a corrosion evaluation the volume of acid gas components, (H_2S and/or CO_2) are of major concern. These will normally be included in the analysis of the test gas. The following reviews the "rules of thumb" used in estimating the corrosivity of these acidic gas components.

I - CARBON DIOXIDE

The most generally quoted "rules of thumb" for predicting corrosion in sweet (CO_2) gas wells were first published in the late fifties in the API Vocational Training Series, Book 2:

GAS/CONDENSATE WELLS
GUIDELINES FOR PREDICTING CORROSION

1. Partial Pressure of CO_2 over 30 psi Indicates Corrosion
2. Partial Pressure of CO_2 Between 7 & 30 psi May Indicate Corrosion
3. Partial Pressure of CO_2 Below 7 psi Considered Non-corrosive

Field experience has established the below 7 psi P.P. is generally valid. Unfortunately many of the wells drilled today have a 7 to 30 psi P.P., the range of uncertainty. Considering drilling and workover costs of today's wells, until proven otherwise, most corrosion engineers will assume wells are corrosive in the 7 to 30 psi P.P. range.

Another factor to be considered in applying the 7 psi P.P. limitation is the increase in Partial Pressure with increasing well depth and pressure. When available the Partial Pressure calculation should be based on bottomhole pressure. When not available this pressure can be estimated from Figure 1.

Using the example of the curve and a gas analysis indicating 0.23 Mol Percent CO_2;

Wellhead Partial Pressure = 0.0023 X 3000 = 6.9 psi
Bottomhole Partial Pressure = 0.0023 X 3630 = 8.4 psi

Based on Partial Pressure at Bottomhole conditions this well would be classified as corrosive.

Discounting stress cracking as a possibility, sweet corrosion (CO_2), is the more serious of the acidic gas type attacks. It will generally initiate as large, deep isolated pitting, frequently progressing to the typical ringworm form. When not controlled, tubing failures due to pit penetration can be very premature. Fortunately, sweet corrosion is easy to control with an adequate corrosion inhibition program.

II - HYDROGEN SULFIDE

Unfortunately from only gas analyses the seriousness of sour corrosion (H_2S) is more difficult to predict. This reflects the variety of forms in which it may occur. Corrosion affects can vary from a thin, impermeable, inhibiting film of iron sulfide (Fe_xS_y) through a general attack, to isolated, deep pitting. Also, in pitting, the tenacity and permeability of the corrosion product formed can vary widely. It may either reduce the rate of metal loss or with deep pitting increase the rate of penetration. Also, as reported in the 2nd Quarter issue in the item titled, "Iron Sulfide Precipitated as a Scale in Sour Gas Wells", occasionally a very serious type corrosion may occur in the lower tubing section.

In a sour gas well discovery, where the question is the degree of protection required during an extended shut-in period, and only a gas analysis is available, the following are suggested as the basis of judging corrosivity:

0 - 250 ppm H_2S = mild corrosion
250 & up ppm H_2S = serious corrosion

These limits are based on the curve in Figure 2, and the following assumptions.

While the pH of the produced water is unknown, most discovery wells will be completed above the water table. The water produced during testing, and probably for a reasonable period after the well is placed on production, will generally be the condensate type. The evolved condensate water is solids free with a neutral (pH = 7.0).

In all/gas condensate wells trace amounts of interstitial water are produced. This water is frequently high in solids and can have a low pH. However in new wells the volume is small compared to the condensate water and the pH of the mixture will generally be in the 6.0 - 7.0 range.

As noted from the curve in this pH range, the relative corrosion is low for 250 ppm of H_2S. With only a gas analysis available as a basis for predicting corrosion the allowable of up to 250 ppm H_2S is considered reasonable.

III - PRODUCED WATER INFORMATION

While a complete analysis of produced water is always desirable the two items that are particularly important in an initial corrosivity evaluation are pH and salinity.

The important of pH's is that when used in conjuction with the acidic components in the gas analyses it will further confirm the possibilities of corrosion.

As noted above, with sweet corrosion (CO_2), it is probable the attack will be of the deep pitting type. Also the corrosion product formed is often soft and flocculant. This is readily eroded by the flowing gas and liquids, increasing the possibility of a corrosion/erosion type attack. For this reason unless the Partial Pressure of the CO_2 is markedly below the 7 psi limit (P.P. = ±5 psi) it is suggested that:

Sweet Gas - pH below 7.0 indicates significant corrosion

With sour gas (H_2S) the pH can be directly related to the data of Figure II. For this type analysis it is suggested:

Sour Gas - pH below 6.5 indicates significant corrosion

The salinity of the produced water is an indication of amount of interstitial water being entrained in the gas as it enters the wellbore. The Slip and Hold-up of condensate water assures its presence, and dilution of interstitial water at the bottom of the hole. A salinity over 500 ppm indicates interstitial water will predominate in the lower section of the producing string. Under these conditions corrosion could be occurring in the bottom of the well even when other guidelines indicate no significant corrosion.

IV - WATER/GAS RATIO

Initial well tests are frequently through test separators to obtain approximations of the rates of condensate and water production. While individual measurements can vary widely, if a reasonable average can be obtained the

FW01W210

BJ SERVICES COMPANY

WATER ANALYSIS #FW01W210

FARMINGTON LAB

GENERAL INFORMATION			
OPERATOR:	CONOCO INC.	DEPTH:	
WELL:	STATE J-6	DATE SAMPLED:	05/19/97
FIELD:		DATE RECEIVED:	05/19/97
SUBMITTED BY:	TOMMY BROOKS	COUNTY:	STATE: NM
WORKED BY :	D. SHEPHERD	FORMATION:	
PHONE NUMBER:			

SAMPLE DESCRIPTION

SEPARATOR SAMPLE

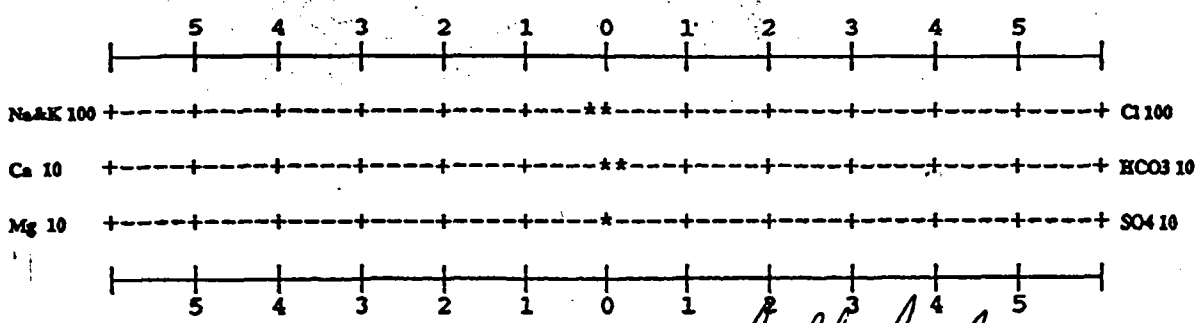
PHYSICAL AND CHEMICAL DETERMINATIONS

SPECIFIC GRAVITY:	1.000 @ 74°F	PH:	6.62
RESISTIVITY (MEASURED):	10.000 ohms @ 75°F		
IRON (FE++) :	0 ppm	SULFATE:	0 ppm
CALCIUM:	20 ppm	TOTAL HARDNESS	60 ppm
MAGNESIUM:	2 ppm	BICARBONATE:	134 ppm
CHLORIDE:	355 ppm	SODIUM CHLORIDE(Calc)	583 ppm
SODIUM+POTASS:	253 ppm	TOT. DISSOLVED SOLIDS:	802 ppm
H2S: NO TRACE		POTASSIUM CHLORIDE: 11 PPM	

REMARKS

SEPARATOR SAMPLE APPROX. 90% OIL
WELLHEAD SAMPLE CONSISTS OF PARRAFIN & EMULSIONS

STIFF TYPE PLOT (IN MEQ/L)



ANALYST D. Shepherd
D. SHEPHERD

API_WELL_N	LEASE_NAME	POOL_WELL	PROD_DATE	DAYS_PROD	GAS_PROD	OIL_PROD	WATER_PR
00451007000	STATE COM J	6	9708	31	85781	11	11
00451007000	STATE COM J	6	9707	27	81902	110	110
00451007000	STATE COM J	6	9706	26	59123	49	49
00451007000	STATE COM J	6	9705	25	71151	138	59
00451007000	STATE COM J	6	9704	18	43031	53	186

Memo

From

ROY JOHNSON
Sr. Petroleum Geologist

To Ernie Bush —

Have you seen or reviewed this application? This thing is a mess — especially w/ the Fluid level @ 4160'. Whats the H_2O prod. been like? I don't know if a tubingless completion would double to triple production ~~or not~~ as Hoover claims - I doubt it! Talk w/ Frank on this and advise

Thx

RJ

Oil Conservation Division
PO Box 2088, Santa Fe, New Mexico 87504