CASE NO.

70

APPlication, Transcripts, Small Exhibits,

ETC.



STATE OF NEW MEXICO ENERGY AND MINERALS DEPARTMENT OIL CONSERVATION DIVISION

BRUCE KING GOVERNOR LARRY KEHOE SECRETARY

April 21, 1981

POST OFFICE BOX 2088 STATE LAND OFFICE BUILDING SANTA FE, NEW MEXICO 87501 (505) 827-2434

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Nucoro Energy, Inc. 700 Crown Tower 8700 Crown Hill Boulevard San Antonio, Texas 78209

Attention: R. H. Denman

Re: Case 7047 Order R-6503

Dear Mr. Denman:

Based upon the data supplied by your letters of March 20 and April 17, 1981, the special 10,000 to one gas-oil ratio limitation for the East Caprock-Pennsylvanian Pool will be continued.

Yours very truly,

JOE D. RAMEY Director

JDR/RLS/fd

Nucorp Energy, Inc. 200 Crown Holt Boulecard • San Automo, Texas (820) • (512) 828 8927 (TEXAS)



April 17, 1981

State of New Mexico Energy & Minerals Department P. O. Box 2088 Santa Fe, New Mexico 87501

Attention: Mr. R. L. Stamets Technical Support Chief

Re: Division Order No. R-6503

File 70477

Dear Mr. Stamets: E Coprock Penn

The subject division order was issued November 6, 1980 and provided for a limiting Gas/Oil Ratio of 10,000 cubic feet per barrel for Nucorp Energy, Inc.'s State Well No. 23-1, Lea County, New Mexico.

Attached hereto is Nucorp Energy, Inc.'s best engineering estimate of projected GOR performance versus cumulative gas production. This projection was prepared and is being furnished pursuant to my recent telephone conversation with you regarding the subject division order. Plotted concurrently with this projection is the actual performance, which on the average, has somewhat exceeded the estimated performance.

Nucorp Energy continues to feel that the Core Laboratories's analysis of the recombined separator samples of liquid and gas offers the best evidence that the produced fluid exists in the reservoir in a vapor state. Their analysis also indicated that retrograde liquid remaining in the reservoir at depletion is really very minimal.

Again I wish to thank you for your consideration in holding this matter open, and we respectfully request that the 10,000 cubic feet per barrel GOR granted by the subject order be permitted to continue in effect.

Yours very truly,

R. H. Denman

R. H. Denman, Vice President Engineering Administration

RHD/jr Encl.

cc: Mr. W. Thomas Kellahin Post Office Box 1769 Santa Fe, New Mexico 87501

611 COME 1931 SIO

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March 20, 1981

State of New Mexico Energy & Minerals Department P. 0. Box 2088 Santa Fe, New Mexico 87501

Attention: Mr. R. L. Stamets Technical Support Chief

COARTIN

Re: Division Order No. R-6503

Dear Mr. Stamets:

Thank you for your letter of March 6, 1981 regarding the subject division order and your consideration in extending the filing date for additional information to March 31, 1981.

We have updated the production information as presented at the October, 1980 Hearing, and although the well produces in excess of the permitted Gas/Oil Ratio, the gross volume permitted on the basis of top pool allowable is considerably greater than the actual volume produced.

The allowable subsequent to the Hearing was held at a low level through September, 1980 due to some difficulty in getting the approved Gas/Oil Ratio into the state's computer, and this was reflected in our producing the well within the assigned allowable rate. Low oil production in January, 1981, after the allowable was corrected, was due to freezing problems.

I am also enclosing another copy of the reservoir fluid study for the subject well performed by Core Laboratories, Inc. in October, 1980. This is the same study that was presented as an exhibit at the October Hearing, and is based upon a recombination of separator samples of oil and gas from the State 23-1 Well. We feel that this report shows conclusively that the original reservoir fluid was a single phase gas system and that the retrograde liquid left in the reservoir at the time of sampling was negligible, being only approximately 0.4% of the total hydrocarbon pore volume. The curve on page six of this re-port shows that at reservoir temperature of 170 degrees Fahrenheit a maximum of only 6% retrograde will occur as reservoir pressure drops to 1700 psig. As a further pressure drop takes place in the reservoir, even a portion of that 6% will re-vaporize and be produced.



Page #2 Mr. R. L. Stamets State of New Mexico Energy & Minerals Department March 20, 1981

We believe that this is sufficient evidence that the State 23-1 is completed in a gas reservoir and that no waste is occurring by producing the well at the 10,000/1 Gas/Oil Ratio granted by the subject order.

As regards reservoir size, geological data, of course, indicates a somewhat limited reservoir. The bottom hole pressure buildup data has been utilized to simulate computer models of idealized sizes and shapes of the reservoir as well as possible location of the well in relation to the boundaries. By trial and error, and relating the simulations to actual production, we now feel that the reservoir covers between 200 and 250 acres.

It is hoped that the foregoing will satisfy the provisions and requirements of Division Order No. R-6503 and that the GOR limitation of 10,000/1 can be continued in effect in this pool.

Yours very truly,

Denman

R. H. Denmán Vice President

RHD/jr Encl.

cc: Mr. W. Thomas Kellahin Post Office Box 1769 Santa Fe, New Mexico 87501

STATE 23-1 LEA COUNTY, NEW MEXICO

1980	Monthly Qil Allowable	Actual BBls. Produced	Gas Produced MCF	Gas/Dil Ratio	FTP	ВНР
April	5760	2294	17953	7.826		4000
May	5952	5521	42892	7.769	1400	
June	5760	4428	43975	9.931	1700	
July	5952	4411	45714	10.364	1700	
August .	5952	4496	45122	10.036	1600	
September	3060	3003	34148	11.371	1510	3370
October	3162	3412	43503	12.750	*	
November	3060	2648	44137	16.668	*	
December	3162	1766	32839	18.595	1525	
1981						1
January	5890	2678	39251	14.656	1500	
Total	47,710	34,657	389,534	11.240		

*None recorded

Reservoir Fluid Study for NUCORP ENERGY, INC.

State 23 No. l Well East Caprock Penn Field Lea County, New Mexico

7501 STEMMONS FREEWAY BOX 47547 DALLAS TEXAS 25247 214 631 8220

October 13, 1980

OIL CONSTINUE VOIVISION SANTA FE



P. L. Moses Manager Reservor Fullo Analytic

Nucorp Energy, Inc. 700 Crown Tower 8700 Crown Hill Blvd. San Antonio, TX 78209

Attention: Mr. R. H. Denman

Subject: Reservoir Fluid Study State 23 No. 1 Well East Caprock Penn Field Lea County, New Mexico Our File Number: RFL 80709

Gentlemen:

Samples of separator gas and liquid were collected from the subject well on September 27, 1980, and were delivered to our laboratory in Dallas. A reservoir fluid study was performed using these samples, and the results are presented in this report.

The separator products were physically recombined in the producing gasliquid ratio of 10621 standard cubic feet of separator gas per barrel of separator liquid. The mixture was examined in a visual cell at the reservoir temperature of 170°F., and was found to have a retrograde dew point pressure of 3990 psig. This is essentially the same as the original reservoir pressure, 4000 psig.

A constant-volume depletion was performed, and the maximum retrograde liquid observed was 6.0 percent of the volume at the dew point. At the current reservoir pressure of 3370 psig, the retrograde liquid volume was very small, approximately 0.4 percent. We interpret this to mean that the original reservoir fluid was a single-phase gas system, and that some retrograde liquid has accumulated in the reservoir at this time.

The separator gas and liquid compositions were measured by gas chromatography and low temperature fractional distillation, respectively. The well stream composition was calculated on the basis of the producing gas-liquid ratio. All of the compositional data are presented on page two. Nucorp Energy, Inc. State 23 No. 1 Well

It was a pleasure to perform this reservoir fluid study for you. Please let us know if you have any questions or comments concerning the data or if we may be of any further assistance.

Very truly yours,

CORE LABORATORIES, INC.

ames R. Fortun

James R. Fortner Assistant Manager Reservoir Fluid Analysis

JRF:JB:bt 5 cc: Addressee

			Page 1 of 6
	v		File
Company_	Nucorp Energy, Inc.	Date Sampled	September 27, 1980
Well	State 23 No. 1	County	Lea
Field	East Caprock Penn	State	New Mexico

FORMATION CHARACTERISTICS

Formation Name	Pennsylvanian
Date First Well Completed	February , 1980
Original Reservoir Pressure (Approx.)	4000 PSIG @ Ft.
Original Produced Gas-Liquid Ratio (Approx.	.) 6318 SCF/Bb1
Production Rate	192 Bbls/Day
Separator Pressure and Temperature	PSIG °F.
Liquid Gravity at 60°F.	54 °API
Datum	Ft. Subsea
WELL CHARA	ACTERISTICS
Elevation	4335.3 GL Ft.
Total Depth	11264 Ft.
Producing Interval	10353-10361 Ft.
Tubing Size and Depth	2-3/8 In. to 10244 Ft.
Open Flow Potential	MISCF/Day
Last Reservoir Pressure	3370 PSIG @ 10200 Ft.
Date	September 23 , 1980
Reservoir Temperature*	168 °F. @ 10200 Ft.
Status of Well	Shut in 5 days
Pressure Gauge	Amerada
SAMPLING (CONDITIONS
Flowing Tubing Pressure	1510 PS10
Flowing Bottom Hole Pressure	2465 PSIC
Primary Separator Pressure	715 PSIC
Primary Separator Temperature	· 72 °F.
Secondary Separator Pressure	PSIC
Secondary Separator Temperature	°F.
Field Stock 'fank Liquid Gravity	63.6 °API @ 60°F.
Primary Separator Gas Production Rate	1660 MSCF/Day
Pressure Base 14.65	PSIA
Temperature Base 60	°F.
Compressibility Factor (F _{pv}) 1.096	
Gas Gravity (Laboratory) 0.721	
Gas Gravity Factor (Fg) 0.9122	
Separator Liquid Production Rate @ 72°F.	156.3 Bbls/Day
Primary Separator Gas/Separator Liquid Rat	
or	94.15 Bbls/MiSC
Sampled by	Clementson Engrs., Inc.

REMARKS:

*Temperature extrapolated to 10357 Ft. = 170°F.

These analyses, opinions or interpretations are based on observations and material supplied by the client to whom, and for whose exclusive and confidential use, this report is made. The interpretations or opinions expressed represent the best judgement of Core Laboratories, Inc. (all errors and omissions excepted); but Core Laboratories, Inc. and its officers and employees, assume no responsibility and make no warranty or representations as to the productivity, proper operation, or profitableness of any oil, gas or other mineral well or sand in connection with which such report is used or relied upon.

Page 2 of 6

File RFL 80709

Well State 23 No. 1

HYDROCARBON ANALYSES OF SEPARATOR PRODUCTS AND CALCULATED WELL STREAM

Component	Separator Liquid Mol Percent	Separator Mol Percent	Gas <u>GPM</u>	Well Stre Mol Percent	GP11
Hydrogen Sulfide Carbon Dioxide Nitrogen Methane Ethane Propane iso-Butane n-Butane iso-Pentane n-Pentane Hexanes Heptanes plus	$\begin{array}{c} 0.00\\ 0.17\\ 0.13\\ 19.81\\ 12.01\\ 15.23\\ 3.71\\ 9.84\\ 3.58\\ 4.10\\ 5.70\\ \underline{25.72}\\ 100.00\\ \end{array}$	0.00 0.33 2.77 77.28 11.36 5.49 0.66 1.36 0.27 0.26 0.12 0.10 100.00	3. 021 1. 502 0. 215 0. 426 0. 098 0. 094 0. 049 0. 049 0. 045 5. 450	0.00 0.31 2.49 71.20 11.43 6.52 0.98 2.26 0.62 0.67 0.71 2.81 100.00	3.039 1.784 0.319 0.708 0.226 0.241 0.290 1.450 8.057

Properties of Heptanes plus			
API gravity @ 60°F.	49.5		
Specific gravity @ 60/60°F.	0.7818		0.782
Molecular weight	128	103	128

Calculated separator gas gravity (air=1.000) = 0.721Calculated gross heating value for separator gas = 1213 BTU per cubic foot of dry gas @ 14.65 psia and 60°F.

Primary separator gas collected @ 715 psig and 72 °F. Primary separator liquid collected @ 715 psig and 72 °F.

Primary separator gas/separator liquid ratio10621SCF/Bbl @ 72°F.Primary separator gas/well stream ratio894.06MSCF/MMSCF

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Page 3 of 6

File RFL 80709

Well State 23 No. 1

PRESSURE-VOLUME RELATIONS OF RESERVOIR FLUID AT 170°F. (Constant Composition Expansion)

Pressu re	Relative	Deviation Factor
PSIG	Volume	<u>Z</u>
5000	0.8945	0.928
4700	0.9197	0.897
4400	0.9495	0.867
4315	0 . 9595	0.859
3990 Dew Point Pressu	re 1.0000	0.829
3850	1.0202	
3700	1.0448	
3500	1.0823	
32,50	1.1367	
2950	1.2265	
2600	1.3718	
2100	1.7173	
1800	2.0443	
1660	2.2447	
1400	2.7279	
1200	3.2497	
1070	3.7076	
905	4.4765	

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Page	40f6	
File	RFL 80709	
Well	State 23 No. 1	

RETROGRADE CONDENSATION DURING CAS DEPLETION AT 170°F.

Pressure	Retro	ograde Liquid '	Volume
PSIG	Percent o	of Hydrocarbon	Pore Space
	int Pressure	0.0	
3850		Trace	
3700		0.1	
3500		0.2	
3300 First	Depletion Level	0.4	
2700	-	2.8	
2200		5.2	
1700		6.0	
1200		5.9	
700		5.5	
0		4.0	

These analyses, opinions or interpretations are based on observations and material supplied by the client to whom, and for whose exclusive and confidential use, this report is made. The interpretations or opinions expressed represent the best judgement of Core Laboratories, Inc. (all errors and omissions excepted); but Core Laboratories, Inc. and its officers and employees, assume no responsibility and make no warranty or representations as to the productivity, proper operation, er profitableness of any oil, gas or other mineral well or sand in connection with which such report is used or relied upon.

 Page
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 File
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 80709
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DEVIATION FACTOR Z AT 170°F.



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RETROGRADE LIQUID VOLUME DURING DEPLETION AT 170°F.



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STATE OF NEW MEXICO ENERGY AND MINERALS DEPARTMENT OIL CONSERVATION DIVISION

BRUCE KING GOVERNOR LARRY KEHOE SECRETARY

POST OFFICE BOX 2008 STATE LAND OFFICE BUILDING SANTA FE, NEW MEXICO 87501 (505) 827-2434

March 6, 1981

Nucorp Energy, Inc. 700 Crown Tower 8700 Crownhill Boulevard San Antonio, Texas 78209

Re: Division Order No. R-6503

Gentlemen:

Upon the application of Nucorp Energy, Inc. the Division entered the subject order establishing a special 10,000 to 1 gas-oil ratio limitation for the East Caprock-Pennsylvanian Pool in Lea County, New Mexico.

The order provided further that on or before March 1, 1981, Nucorp was to submit data to the Director of the Division demonstrating that said pool could continue to be produced at a gasoil ratio of 10,000 to 1 without waste and establishing the size of the reservoir being drained.

To date we have no record of receipt of this material and we have administratively extended the filing date to March 31, 1981. If the required data is not received by that time the Division will take action to rescind the special gas-oil ratio limit returning the pool to the regular 2000 to 1 limitation of our general rules.

Sincerely,

R. L. STAMETS Technical Support Chief

RLS/fd

cc: OCD Hobbs Tom Kellahin

STATE OF NEW MEXICO ENERGY AND MINERALS DEPARTMENT DIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION DIVISION FOR THE PURPOSE OF CONSIDERING:

> CASE NG. 7047 Order No. R=6503

1

APPLICATION OF NUCORP ENERGY INC. For a special gas-oil ratio Limitation, lea county, New Mexico.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on October 15, 1980, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this <u>6th</u> day of November, 1980, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Nucorp Energy Inc., seeks a special gas-oil ratio limitation of 10,000 to one, retroactive to April 18, 1980, for the East Caprock-Pennsylvanian Pool, Les County, New Mexico.

(3) That said East Caprock-Pennsylvanian Pool is currently a one-well pool of unknown extent being developed only by applicant's State 23 Well No. 1 located in Unit K of Section 23, Township 12 South, Range 32 East, NMPM, Lea County, New Mexico.

(4) That the evidence presently available indicates that said East Caprock-Pennsylvanian Pool may be produced at a limiting gas-oil ratio of 10,000 to one without waste.

(5) That the applicant, on or before March 1, 1981, should submit data to the Director of the Division as to the size of the reservoir being drained by said State 23 Well No. 1, and -2-Case No. 7047 Order No. R-6503

demonstrating that the East Caprock-Pennsylvanian Pool may continue to be produced at a gas-oil ratio of 10,000 to one without waste. 1

(6) That the Director of the Division should be permitted to reopen this case, at his option, for further testimony relative to the proper gas-oil ratio limitation or spacing unit size following receipt of the data required in Finding No. (5) above.

(7) That the application for special gas-oil ratio limitation should be approved effective May 1, 1980.

IT IS THEREFORE ORDERED:

(1) That effective May 1, 1980, a special gas-oil ratio of 10,000 cubic feet of gas per barrel of oil is hereby established for the East Caprock-Pennsylvanian Pocl, as heretofore defined and described, in Lea County, New Mexico.

IT IS FURTHER ORDERED:

(1) That the applicant, Nucorp Energy Inc., on or before March 1, 1981, shall submit data to the Director of the Division demonstrating that the East Caprock-Pennsylvanian Pool may continue to be produced at a gas-oil ratio of 10,000 to one without waste and establishing the size of the reservoir being drained by said State 23 Well No. 1.

(2) That following receipt of the data required in Finding No. (5) of this order the Director of the Division may, at his option, reopen this case for further testimony relative to the proper gas-oil ratio limitation or spacing unit size.

(3) That jurisdiction of this cause is retained for the entry of such further orders as the Division may deem nucessary.

DONE at Santa Fe, New Mexico, on the day and year hereinaboy<u>e Admaa</u>gnated.

S Bfd/

STATE OF NEW MEXICO OIL CONSERVATION DIVISION

JOE D. RAMEY / Director



STATE OF NEW MEXICO ENERGY AND MINERALS DEPARTMENT OIL CONSERVATION DIVISION

BRUCE KING GOVERNOR LARRY KEHOE BEDRETARY

November 10, 1980

POST OFFICE BOX 2088 STATE LAND OFFICE BUILDING SANTA FE NEW MEXICO 87501 1505) 827-2434

Re: CASE NO. ORDER NO

Mr. Thomas Kellahin Kellahin & Kellahin Attorneys at Law Post Office Box 1769 Santa Fe, New Mexico ORDER NO. <u>R-6503</u>

7047

Nucorp Energy Inc.

Applicant:

Dear Sir:

Enclosed herewith are two copies of the above-referenced Division order recently entered in the subject case.

Pours very truly, JOE D. RAMEY Director

JDR/fd

Copy of order also sent to:

Hobbs OCD_____ Artesia OCD_____ Aztec OCD_____

Other



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INDEX

RICHARD	DENMAN

RICHARD DE	enman
	Direct Examination by Mr. Kellahin
	Cross Examination by Mr. Stamets
	EXHIBITS
Applicant	Exhibit One, C-102
Applicant	Exhibit Two, Tabulation

`pplicant Exhibit Three, Pressure

Applicant Exhibit Four, Lab Report

SALLY W. BOYD, C.S.R. Rt. 1 Box 193-B Santa Fe, New Mexico 87501 Phone (505) 455-7409

		Page 3				
	1	MR. STAMETS: We will call next Case 7047.				
	2	MR. PADILLA: Application of Nucorp				
	3	Energy, Inc., for a special gas/oil ratio limitation, Lea				
	4	County, New Mexico.				
	5	MR. KELLAHIN: Tom Kellahin of Santa Fe,				
	6	New Mexico, appearing on behalf of the applicant, and I have				
	7	one witness.				
	8	MR. STAMETS: I'd like to have the witness				
	9	stand and be sworn, please.				
87501 09	10					
v Mexico (5) 455-74	11	(Witness sworn.)				
Santa Fc, New Mexico 87501 Phone (505) 455-7409	12					
Sant	13 14	RICHARD DENMAN				
	15	being called as a witness and having been duly sworn upon his				
	16	oath, testified as follows, to-wit:				
	17	DIDIGE EVANINATION				
	18	DIRECT EXAMINATION BY MR. KELLAHIN:				
	19	0. Mr. Denman, would you please state your				
	20	name and occupation and by whom you're employed?				
	21	A. My name is Richard H. Denman. I'm Vice-				
	22	President in charge of engineering administration of the				
	23	Nucorp Energy, Inc., in San Antonio, Texas.				
	24	Q. You're a petroleum engineer by profession				
	25	A. That's right.				

SALLY W. BOYD, C.S.R. Rt. I Box 193-B

		Page 4
	1	Q And have you previously testified before
	2	the Division as a petroleum engineer?
	3	A. I have.
	4	MR. KELLAHIN: We tender Mr. Denman as an
	5	expert witness.
	6	MR. STAMETS: He's considered qualified.
	7	Q. Mr. Denman, would you please refer to
	8	what we've marked as Applicant Exhibit Number One and identify
	9	that for us?
	10	A. This is a New Mexico State Form C-102,
	11	which would be our application to drill the subject well, the
	12	well in question. It's Section 23, Township 12 South, Range
	13	32 East, in Lea County, New Mexico.
	14	Q. Has this well been drilled and completed?
	15	A. It has.
	16	Q. And when was it completed for first pro-
	17	duction?
	18	A. It was ready for production on February
	19	25th, this year, 1980.
	20	0. Why have you sought this particular ap-
	21	plication before the Oil Conservation Division, Mr. Denman?
	22	A. The well is a high ratio or was
2	23	classified as a high ratio oil well, and as such, is limited
	24	to the 2000-to-1 cubic feet per barrel requirement, and we
	25	have gotten it pretty badly over produced and we need some
	1	

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SALLY W. BOYD, C.S.R. Rt. 1 Box 193-B Santa Fc, New Mexico 87501 Phone (505) 455-7409

Dena		G
Page	 	

relief is the problem.

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SALLY W. BOYD, C.S.R.

2 Q In that regard, Mr. Denman, let me direct
3 your attention to Exhibit Number Two and have you identify
4 that.

A. This is just a tabulation of the oil and gas production since the well first went on production in April.

First production was April the 18th, so it didn't produce the full month of April, but you can see by the 2000-to-1, based on that oil allowable, we were not over produced in April but we've been badly over produced every other month.

Q. What is the pool or formation that this well produces from?

Q. And what is the pool designation for this Pennsylvanian formation?

This is from the Pennsylvanian.

A. It's East Caprock Pennsylvanian.

Q. Are there any other wells completed in

the East Caprock Pennsylvanian Pool?

A. No, sir.

Q. Would you refer to Exhibit Number Three and identify that?

A. This is a build-up pressure which was run in September, just last month, and indicates a maximum pres-

1 sure of 3268 at the depth of -- test depth of 10,200. It's 2 somewhat more than that at the mid-point of the perforations. 3 The perforations are 10,353 to 61 and we figure that the bottom hole pressure really is about 3380 at the perforations. 5 Q. Mr. Denman, do you have an opinion as to 6 whether or not the subject well can be effectively and effi-7 ciently produced at gas/oil ratio rates in excess of 2000-to-1 8 A. We believe it can. 9 And do you have an opinion as to what 0. 10 that rate ought to be?

Page

A. We feel that a gas/oil ratio of 10,000-tol is not unreasonable.

Q. Let me direct your attention to Exhibit Number Four and have you explain this exhibit.

A At the time the build-up pressure was run in September, once we'd run a preliminary build-up we did some drawdown work. We produced the well at a constant rate, and during this drawdown we obtained companion separator samples, oil and gas, which were forwarded to CORE Laboratory in Dallas Q. What was the purpose of having the CORE

Laboratories analyze the reservoir fluid?

A. We wanted to find out what phase or what condition the fluid was in in the reservoir.

Q. And what conclusion is reached by the laboratory analysis?

SALLY W. BOYD, C.S. Rt. 1 Box 193-8 Santa Fe, New Mexico 87501 Phone (505) 455-7409

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The laboratory in their cover letter, 1 A. 2 paragraph three, makes the statement that the current reservoir pressure of 3370 psig, the retrograde liquid line was very 3 small, approximately .4 of 1 percent, and we interpret this ۸ to mean that the original reservoir fluid was a single phase 5 gas system and that some retrograde liquid has accumulated. 6 in the reservoir at this time, 7

Paragraph two of the cover letter indicates Q. 8 original reservoir pressure of 2000 psig. Is that a calculated 9 or a measured pressure? 10

That was from a build-up which was run A. 12 very shortly after the well was completed and it was 4000 pounds, not 2000.

I'm sorry.

Ã. This was from a build-up pressure that was run very shortly after that. We are not real satisfied with the validity of that pressure; however, it's in the ballpark; it's very close.

Would you turn to page three of Exhibit Q. Four and indicate for us the gas/oil ratio used in the sample conditions?

A. It's down at the bottom. The primary separator gas -- gas/oil ratio is 10,621 cubic feet per barrel Q. In your opinion, Mr. Denman, is the production from that well most effectively and efficiently pro-

BOYD, C.S.R ≥ SALLY

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8 Page

duced at that GOR ratio?

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We think it can be produced efficiently A. at that ratio. In fact, even if we pulled the well harder, I'm not sure that that ratio would be any greater than that, appreciably greater.

In your opinion is production of this well Q. at a GOR ratio of 10,000-tc-1 causing liquids to otherwise be loft and abandoned in the reservoir?

A. The very, very small percentage mentioned in the cover letter, which in turn as the pressure drops, this is in the retrograde phase, or retrograde region of the phase envelope, and as the pressure drops, this small amount of liquid would again vaporize as it -- as the pressure comes on down.

Do you have any more comments or obser-Q. vations concerning Exhibit Number Four?

No, just I think it points up the fact A. that really this is -- is not an oil reservoir; it's a gas reservoir, and I think it's pretty plainly shown from this combined sample analysis.

Were Exhibits One through Four prepared 0. by you or obtained or compiled under your supervision and direction?

A.

Q.

They were.

And in your opinion, Mr. Denman, will

SALLY W. BOYD, C.S.R. Rt. 1 Box 193-B nta Fe, New Mcxico 875 Phone (505) 455-7409

		Page 9						
	1	approval of this application be in the best interests of con-						
	2	servation, the prevention of waste, and the protection of						
	3	correlative rights?						
	4	Λ. Yes, sir.						
	5	MR. KELLAHIN: We move the introduction						
	6	of Exhibits One through Four.						
	7	MR. STAMETS: These exhibits will be ad-						
	8	mitted.						
	9							
C.S.R.	10	CROSS EXAMINATION						
	11	BY MR. STAMETS:						
SALLY W. BOYD, Rt. 1 Box 193-B Santa Fe, New Mexico Phone (503) 455-74	12	Ω Mr. Denman, do you have any idea of the						
Santa Ph	13	reservoir size?						
0	14	A. No. That was one of the reasons for the						
	15 build-up test in September. The build-up test that							
	16	in March was very inconclusive. The reservoir had not been						
	17	produced but just a very few days to clean it up and about						
	18	a 12-hour test in an attempt to see what the well would do						
	19	so we could file for completion and an allowable, but as far						
	20	as determining any boundaries, we were unable to do so, and						
	21	this information is not we've not had a chance to analyze						
	22	the latter information.						
	23 24	Q. But it is your intention to analyze this?						
		A. That was the purpose of taking it, yes,						
	25	sir.						

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)			Page 10
	1		<u>Q</u> .	And I presume you would be willing to
	2	submit that	at informat	tion to the Division when you've obtained
	3	it?		
	4		A.	Certainly would.
	5		Q.	In your application you've asked that this
	6	be retroad	ctive to Ap	pril the 18th, 1930. What what's so
	7	special al	pout April	the 18th?
	8		А.	April 18th was the date of first delivery
	9	to El Paso	o, and woul	ld completely wipeout our over production
•	10	situation		
455-740	11		Q.	That's kind of an odd date to fit into
Phone (505) 455-7409	12	our prora	tion system	π
ť.	13		А.	We could live with the 1st of May, I'm
	14	sure.		
	15		Q.	Okay.
	16			MR. STAMETS: Any other questions of this
	17	witness?	He may be	excused,
	18			Anything further in this case?
	19			The case will be taken under advisement.
	20			
	21			(Hearing concluded.)
	22			
	23			
	24			
	25			
	11			

SALLY W. BOYD, C.S.R. Rt. 1 Box 193-B Santa Fc. New Mexico 87501 Phone 76051 455,7400

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1. A. A.

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Page 11

CERTIFICATE

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SALLY W. BOYD, C.S.

I, SALLY W. BOYD, C.S.R., DO HEREPY CERTIFY that the foregoing Transcript of Hearing before the Oil Conservation Division was reported by me; that the said transcript is a full, true, and correct record of the hearing, prepared by me to the best of my ability.

Sally W. Boyd C.S.R.

a is I do hereby 1.1 C CO the. her Examiner

Oil Conservation Division

			Page1
		1 2 3 4	STATE OF NEW MEXICO ENERGY AND MINERALS DEPARTMENT OIL CONSERVATION DIVISION STATE LAND OFFICE BLDG. SANTA FE, NEW MEXICO 15 October 1980
		5	EXAMINER HEARING
- -	-	8 a sp	OF: ication of Mucorp Energy Inc. for) ecial gas/oil ratio limitation,) CASE County, New Mexico.) 7047
	OYD, C.S.R. (193-B Mexico 87301 (433-7409	9 10 BEFORE: Richar))
	SALLY W. BC Rt. 1 Box Santa Fe, New J Phone (903)	12 13 14	TRANSCRIPT OF HEARING
		15	APPEARANCES
		 16 For the Oil Control 17 Division: 18 19 	onservation Ernest L. Padilla, Esq. Legal Counsel to the Divisior State Land Office Bldg. Santa Fe, New Mexico 87501
		20 For the Applic 21 22	cant: W. Thomas Kellahin, Esq. KELLAHIN & KELLAHIN 500 Don Gaspar Santa Fe, New Mexico 87501
	Ö	23 24	
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RICHARD DERMAN

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Direct	Examination by Mr. Kellahin	3
Cross	Examination by Mr. Stamets	õ

EXHIBITS

Applicant Exhibit One, C-102	4
Applicant Exhibit Two, Tabulation	5
Applicant Exhibit Three, Pressure	5
Applicant Exhibit Four, Lab Report	6

4

UR. STATTO: No will call pert Case 7047. WR. DADIMA: Application of Nucorp Energy, Inc., for a special scaled rabio limitation, Lea

County, New Mexico.

MR. KELLAHIN: Top Kellahin of Santa Fe, New Mexico, appearing on behalf of the applicant, and I have one witness.

Ma. Summer: I'd Like to have the witness stand and be sworn, please.

(Witness sworn.)

RICHARD DENMAN

being called as a witness and having been duly sworn upon his oath, testified as follows, to-wit:

DIFECT EXAMINATION

BY MR. KELLAHIN:

A.

Mr. Denman, would you please state your Q. name and occupation and by whom you're employed?

My name is Richard H. Denman. I'm Vice-A. President in charge of engineering administration of the Nucorp Energy, Inc., in San Antonio, Texas.

> You're a petroleum engineer by profession? Q. That's right.

Q. And have you pareviously testified before the Division as a petroleum engineer?

2. lave.

ER. HIDLAUID: De conder Mr. Denman as an expert witness.

MR. SWAPETS: Re's considered gualified. Q. Mr. Donman, would you please refor to what we've marked as Applicant Dishible Humber One and identify that for us?

A. This is a New Mexico State Form C-102, which would be our application to drill the subject well, the well in question. It's Section 23, Township 12 South, Range 32 East, in Lea County, New Mexico.

A It has.

Q And when was it completed for first pro-

A. It was ready for production on February
 25th, this year, 1980.

Q Why have you sought this particular application before the Oil Conservation Division, Mr. Denman?
 A The well is a high ratio -- or was

classified as a high ratio oil well, and as such, is limited to the 2000-to-1 cubic feet per barrel requirement, and we have gotten it pretty badly over produced and we need some relief is the problem.

A.

Q in that regard, Mr. Penman, let me direct your attention to Exhibit Number Two and have you identify that.

A This is just a tabulation of the oil and gas production since the well first wont on production in April.

Pirst production was April the 18th, so it didn't produce the full month of April, but you can see by the 2000-to-1, based on that oil allowable, we were not over produced in April but we've been badly over produced every other month.

Q What is the pool or formation that this well produces from?

This is from the Pennsylvanian.

Q. And what is the pool designation for this Pennsylvanian formation?

A. It's East Caprock Pennsylvanian.

Q Are there any other wells completed in the East Caprock Pennsylvanian Pool?

A. No, sir.

Q Would you refer to Exhibit Number Three and identify that?

A. This is a build-up pressure which was run in September, just last month, and indicates a maximum pres-
sure of 3208 at the depth of -- test depth of 10,200. It's somewhat more than that at the mid-point of the perforations. The perforations are 10,313 to 03 and we figure that the bottom hole pressure really is about 3380 at the perforations.

Q Ur. Denman, do you have an opinion as to whether or not the subject well can be effectively and efficiently produced at gas/cil ratio rates in encess of 2000-to-1?

L Ve believe it can.

9 And do you have an opinion as to what that rate ought to be?

N We feel that a gas/oil ratio of 10,000-to1 is not unreasonable.

Q Let me direct your attention to Exhibit Number Four and have you explain this exhibit.

A At the time the build-up pressure was run in September, once we'd run a preliminary build-up we did some drawdown work. We produced the well at a constant rate, and during this drawdown we obtained companion separator samples, oil and gas, which were forwarded to CORE Laboratory in Dallas.

Q What was the purpose of having the CORE Laboratories analyze the reservoir fluid?

A. We wanted to find out what phase or what condition the fluid was in in the reservoir.

And what conclusion is reached by the laboratory analysis?

€

the Inhorstory in their cover letter, λ. paragraph three, makes the statement that the current reservoir pressure of 3370 bsis, the retrograde liquid line was very small, approximately .4 of 1 percent, and we interpret this to mean that the original reservoir fluid was a single phase gas system and that some retrograde liquid has accumulated in the reservoir at this time.

Paragraph two of the cover letter indicates С. original reservoir pressure of 2000 psig. Is that a calculated or a measured pressure?

That was from a build-up which was run λ. very shortly after the well was completed and it was 4000 pounds, not 2000.

> I'm sorry. 0.

This was from a build-up pressure that was Ά. run very shortly after that. We are not real satisfied with the validity of that pressure; however, it's in the ballpark; it's very close.

Would you turn to page three of Exhibit 0. Four and indicate for us the gas/oil ratio used in the sample conditions?

It's down at the bottom. The primary A. separator gas -- gas/oil ratio is 10,621 cubic feet per barrel. In your opinion, Mr. Denman, is the pro-0 duction from that well most effectively and efficiently pro-

duced at that GOR rable?

A The thick is can be produced efficiently at that matio. In fact, even if we produce the well hander, I'm not such that their ratio would be any greater than that, appreciably greater.

Q. In your opinion is production of this well at a GOR ratio of 10,000-to-1 causing liquids to otherwise be left and abandoned in the reservoir?

A. The very, very small percentage mentioned in the cover letter, which in turn as the pressure drops, this is in the retrograde phase, or retrograde region of the phase envelope, and as the pressure drops, this small amount of liquid would again vaporize as it — as the pressure comes on down.

Q Do you have any more comments or observations concerning Exhibit Number Four?

A No, just I think it points up the fact that really this is -- is not an oil reservoir; it's a gas reservoir, and I think it's pretty plainly shown from this combined sample analysis.

Q Were Exhibits One through Four prepared by you or obtained or compiled under your supervision and direction?

They were.

A.

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And in your opinion, Mr. Denman, will

approval of this application is the least interests of conservation, the prevention of write, and the pretection of convelative rights?

Berne Marty mitre.

MR. XHILAHTH: He move the introduction of Unhibits One through Pour.

MP. STANDYS: These exhibits will be ad-

CROSS EXAMIMATION

BY MR. STAMETS:

Q Mr. Denman, do you have any idea of the reservoir size?

A. No. That was one of the reasons for the build-up test in Septembor. The build-up test that we took in March was very inconclusive. The reservoir had not been produced but just a very few days to clean it up and about a 12-hour test in an attempt to see what the well would do so we could file for completion and an allowable, but as far as determining any boundaries, we were unable to do so, and this information is not -- we've not had a chance to analyze the latter information.

> But it is your intention to analyze this? That was the purpose of taking it, yes,

sir.

Q.

Α.

9 and a pressure for welling to the willing to submit that information as the Willing time you've obtained is?

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a tertaboly would.

Q In your application you've asked that this be retroactive to April the 19th, 1987. What -- what's so special about April the 19th?

A April 18th way the date of first delivery to El Paso, and would completely wipcout our over production situation.

Q That's kind of an odd date to fit into our proration system --

A. We could live with the 1st of May, I'm sure.

Q.

Okay.

MR. STAMITS: Any other questions of this witness? He may be excused.

Anything further in this case?

The case will be taken under advisement.

(Hearing concluded.)

CERTIFICATE

SALLY W. BOYD, C.S.R Rt. 1 Box 193-B Santa Fc, New Mexico 87501 Phone (505) 455-7409 I, SALLY W. BOYD, C.S.R., DO HEREPY CERTIFY that the foregoing Transcript of Hearing before the Oil Conservation Division was reported by me; that the said transcript is a full, true, and correct record of the hearing, prepared by me to the best of my ability.

> I do hereby control that the forecoing is a complete many many many many in the same of the hyperbolic sector is heard by a complete many is a sector in the sector is a sector of the sector is a sector in the sector in the sector is a sector in the sector in the sector is a sector in the sector is a sector in the sector in the sector is a sector in the sector in the sector is a sector in the sector in the sector is a sector in the sector in the sector is a sector in the sector in the sector in the sector in the sector is a sector in the sector is a sector in the sector in t

Oil Conservation Division

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4335.3 1 1 Outline the acreage definition of subject on the potential of the	and an arrest state of the sta
2. If more than one lease is the area to the well of the second s	e de la companya de l
3. If more than our lease of difference encosing on the set of the dated by communitization, enclosed on the powers of the	sts statistics and the second statistics and the
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If answer is "not" list the exects at the description of the second state of the secon	
this form if necessary <u>and a second prime</u> in the second provided and the second provided by the second provided	
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BEFORE EXAMINER STAMETS	
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NUCORO EXHIBIT NO	is the state of the intervence of the cost
CASE NO.	
CASE NO. <u>7047</u>	
- Submitted by	· · · · · · · · · · · · · · · · · · ·
Submitted by	
- Submitted by	
- Submitted by	
	a hereby and the sty well to us on
Submitted by Hearing Date 015 1980	a large and to an well for the standard for the second standard from the second from the second second from the second se
	a hereage error to the well targe on show not a strange and from froid ontes of a total surveys mode by the or
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Submitted by Hearing Date (98)	a hereage error to the well targe on show not a strange and from froid ontes of a total surveys mode by the or
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Submitted by Hearing Date OC 15 1980	2. Thereas are not in any well target on show to a transported from the d ontes of a transported from the d order by some reason, and that the same of true provide the transfer best of my branchedge is a real of the same target is a real of
Submitted by Hearing Date C 15 (580	2. Thereby record to any well target an show out to a transported from field ontes of a to it success made by the unit order by succession, and that the same of true provide to the best of my manifester control of the succession.

NUCORP ENERGY, INC.

STATE 23-1 LEA COUNTY, NEW MEXICO

	Monthly Ofi <u>Allowable</u>	Actual Bbls. Produced	Gas Produced MCF
April	5760	2294	17953
May	5952	5521	41820
June	5760	4428	43975
July	5952	4411	45714
August	5952	4496	43994
September	3060	3003	N/A
Total	32,436	24,153	193,456

	A TARABATINA CONTRACTOR AND A TARAB
4	OMPONE EXAMINER STAMETS OIL CONSERVATION DIVISION
	CASE NO. 2033
فالاستنقاب كالترجير والمري	Submitted by Hearing Date OCT 15, 1980

PETROLEUM AND NATURAL GAS

Engineers, Inc.

D-309 PETROLEUM CENTER SAN ANTONIO, TEXAS 78209

well is flowing.

15,1980

TELEPHONE NO. 824-6192

October 7, 1980

For : NUCORP ENERGY, INC. 700 Crown Tower 8700 Crownhill Boulevard San Antonio, TX 78209

Clementson

Test Dates: September 19-23, 1980

Well: State No. 23 - Well No. 1

Field : East Caprock Pen Field

BOTTOM HOLE PRESSURE BUILDUP TEST

Time	Hours	PSIG @ 10200'	Remarks:
<u></u>			
			Instruments to bottom; well is f
1:30 pm			Well shut-in.
			Test Depth = 10200 '
			Amerada 10,000# BHP Gauge
			Serial No. 45313
2:30 pm			
			Perforations = 10,353-61
	4.0	3149	
7:30 pm	6.0	3162	
	10		BEFORE EXAMINER STAMETS
1:30 am	12	3191	OIL CONSERVATION DIVISION
	15	3191	11
	18	3198	NUCINO EXHIBIT NO. 3
	21	3206	CASE NO. 7047
1:30 pm	24	3213	
	28	3216	Submitted by
	32	3223	Hearing Date 0. 15,198
1:30 am	36	3226	
	40	3231	
	44	3236	
1:30 pm	48	3242	
	54	3248	
	60	3253	
	66	3258	
10:30 am	69	3261	Instruments off bottom
	-	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c c c c c c c c c c c c c c c c c c c $

(Continued on page two)

Clementson

PETROLEUM AND NATURAL GAS

Engineers, Inc.

TELEPHONE NO. 824-6192

s. Fr

October 7, 1980

D-309 PETROLEUM CENTER SAN ANTONIO, TEXAS 78209

For : NUCORP ENERGY, INC. Well: State No. 23 - Well No. 1 Test Dates: September 19-23, 1980 Field : East Caprock Pen Field

(Page two)

BOTTOM HOLE PRESSURE BUILDUP TEST

Date	Time	Hours	PSIG @ 10200'	Remarks:
9–22	3:00 pm	73.5 78.5	3263 3265	Instruments on bottom.
		84.5	3267	
9 –23	10:00 am	91.5	3268	Instruments off bottom.

Certified: CLEMENTSON ENGINEERS, INC.

Fix c climentes

Reservoir Fluid Study for NUCORP ENERGY, INC.

State 23 No. 1 Well East Caprock Penn Field Lea County, New Mexico October 13, 1980

CORE LABORATORIES, INC.



P. L. Moses Manager Reservoir Fauld Analysis

Nucorp Energy, Inc. 700 Crown Tower 8700 Crown Hill Blvd. San Antonio, TX 78209

Attention: Mr. R. H. Denman

Subject: Reservoir Fluid Study State 23 No. 1 Well East Caprock Penn Field Lea County, New Mexico Our File Number: RFL 80709

Gentlemen:

Samples of separator gas and liquid were collected from the subject well on September 27, 1980, and were delivered to our laboratory in Dallas. A reservoir fluid study was performed using these samples, and the results are presented in this report.

The separator products were physically recombined in the producing gasliquid ratio of 10621 standard cubic feet of separator gas per barrel of separator liquid. The mixture was examined in a visual cell at the reservoir temperature of 170° F., and was found to have a retrograde dew point pressure of 3990 psig. This is essentially the same as the original reservoir pressure, 4000 psig.

A constant-volume depletion was performed, and the maximum retrograde liquid observed was 6.0 percent of the volume at the dew point. At the current reservoir pressure of 3370 psig, the retrograde liquid volume was very small, approximately 0.4 percent. We interpret this to mean that the original reservoir fluid was a single-phase gas system, and that some retrograde liquid has accumulated in the reservoir at this time.

The separator gas and liquid compositions were measured by gas chromatography and low temperature fractional distillation, respectively. The well stream composition was calculated on the basis of the producing gas-liquid ratio. All of the compositional data are presented on page two. Nucorp Energy, Inc. State 23 No. 1 Well

Page Two

Å

It was a pleasure to perform this reservoir fluid study for you. Please let u know if you have any questions or comments concerning the data or if we may be of any further assistance.

Very truly yours,

CORE LABORATORIES, INC.

James L. Fortun

James R. Fortner Assistant Manager Reservoir Fluid Analysis

JRF:JB:bt 5 cc: Addressee

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			Page	1	of	6
			File	RFL	8070 9	
Company_	Nucorp Energy, Inc.	Date Sampled	Septembe	r 27	1980	•
Well	State 23 No. 1	County	Lea	·		~
Field	East Caprock Penn	State	New Mexi	<u>co</u>		

FORMATION CHARACTERISTICS

Formation Name	Pennsylvanian	
Date First Well Completed	February	, 1980
Original Reservoir Pressure (Approx.)	4000 PSIG	
Original Produced Gas-Liquid Ratio (App	rox.) 6318	SCF/Bb1
Production Rate	192	Bbls/Day
Separator Pressure and Temperature	PSIG	°F.
Liquid Gravity at 60°F.	54	°API
Datum		Ft. Subsea
WELL C	HARACTERISTICS	
Elevation	4335.3 GL	Ft.
Total Depth	11264	Ft.
Producing Interval	10353-10361	Ft.
Tubing Size and Depth	2-3/8 In. t	to 10244 Ft.
Open Flow Potential		MMSCF/Day
Last Reservoir Pressure	3370 PSIG	
Date	September 23	, 1980
Reservoir Temperature*	168 °F. (10200 Ft.
Status of Well	Shut in 5 days	<u></u>
Pressure Gauge	Amerada	
	NG CONDITIONS	
Flowing Tubing Pressure	1510	PSIG
Flowing Bottom Hole Pressure	2465	PSIG
Primary Separator Pressure	715	PSIG
Primary Separator Temperature	72	°F.
Secondary Separator Pressure		PSIG
Secondary Separator Temperature		°F.
Field Stock Tank Liquid Gravity	63.6	°API @ 60°F.
Primary Separator Gas Production Rate	1660	MSCF/Day
Pressure Base 14.	65 PSIA	
Temperature Base 60	°F.	
Compressibility Factor (F _{DV}) 1.0	96	
Gas Gravity (Laboratory) 0.7	21	
	122	
Separator Liquid Production Rate @ 7	2°F. 156.3	Bbls/Day
	Ratio 10621	SCF/Bbl
	or 94.15	Bb1s/M1SCF
Sampled by	Clementson Eng	
		×

REMARKS:

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*Temperature extrapolated to 10357 Ft. = 170°F.

These analyses, opinions or interpretations are based on observations and material supplied by the client to whom, and for whose exclusive and confidential use, this report is made. The interpretations or opinions expressed represent the best judgement of Core Laboratories, Inc. (all errors and omissions excepted); but Core Laboratories, Inc. and its officers and employees, assume no responsibility and make no warranty or representations as to the productivity, proper operation, or profitableness of any oil, gas or other mineral well or sand in connection with which such report is used or relied upon.

Page 2 of 6

File RFL 80709

Well State 23 No. 1

HYDROCARBON ANALYSES OF SEPARATOR PRODUCTS AND CALCULATED WELL STREAM

	Separator Liquid	Separator	Gas	Well Str	eam
Component	Mol Percent	Mol Percent	GPM	Mol Percent	<u>GP11</u>
Hydrogen Sulfide	0.00	0.00		0.00	
Carbon Dioxide	0.17	0.33		0.31	
Nitrogen	0.13	2.77		2.49	
Methane	19.81	77.28		71.20	
Ethane	12.01	11.36	3.021	11.43	3.039
Propane	15.23	5.49	1.502	6.52	1.784
iso-Butane	3.71	0.66	0.215	0.98	0.319
n-Butane	9.84	1.36	0.426	2.26	0.70 8
iso-Pentane	3.58	0.27	0.098	0.62	0.226
n-Pentane	4.10	0.26	0.094	0.67	0.241
Hexanes	5.70	0.12	0.049	0.71	0.290
Heptanes plus	25.72	0.10	0.045	2.81	1.450
	100.00	100.00	5.450	100.00	8.057

Properties of Heptanes plus			
API gravity @ 60°F.	49.5		
Specific gravity @ 60/60°F.	0.7818		0.782
Molecular weight	128	103	128

Calculated separator gas gravity (air=1.000) = 0.721Calculated gross heating value for separator gas = 1213 BTU per cubic foot of dry gas @ 14.65 psia and 60°F.

Primary separator gas collected @ 715 psig and 72 °F. Primary separator liquid collected @ 715 psig and 72 °F.

Primary separator gas/separator liquid ratio10621SCF/Bbl @ 72°F.Primary separator gas/well stream ratio894.06MSCF/MMSCF

These analyses, opinions or interpretations are based on observations and material supplied by the client to whom, and for whose exclusive and confidential use, this report is made. The interpretations or opinions expressed represent the best judgement of Core Laboratories, Inc. (all errors and omissions excepted); but Core Laboratories, Inc. and its officers and employees, assume no responsibility and make no warranty or representations as to the projuctivity, proper operation, or profitableness of any oil, gas or other mineral well or sand in connection with which such report is used or relied upon.

Page	<u>3 of 6</u>
File	RFL 80709
Well	State 23 No. 1

PRESSURE-VOLUME RELATIONS OF RESERVOIR FLUID AT 170°F. (Constant Composition Expansion)

Pressure PSIG	Relative Volume	Deviation Factor
5000	0.8945	C - 928
4700	0.9197	0.897
4400	0.9495	0.867
4315	0.9595	0.859
3990 Dew Point Pressure	e 1.0000	0.829
3850	1.0202	
3700	1.0448	
3500	1.0823	
3250	1.1367	
2950	1.2265	
2600	1.3718	
2100	1.7173	
1800	2.0443	
1660	2.2447	
1400	2.7279	
1200	3.2497	
1070	3.7076	
9 05	4.4765	

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Page	_40f	6
File	RFL 80709	
Well	State 23 No.	1

RETROGRADE CONDENSATION DURING GAS DEPLETION AT 170°F.

Pressure	Retrograde Liquid Volume
PSIG	Percent of Hydrocarbon Pore Space
3990 Dew Point P	ressure 0.0
3850	Trace
3700	0.1
3500	0.2
3300 First Deple	tion Level 0.4
2700	2.8
2200	5.2
1700	6.0
1200	5.9
700	5.5
0	4.0

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DEVIATION FACTOR Z AT 170°F.



 Page
 6
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RETROGRADE LIQUID VOLUME DURING DEPLETION AT 170°F.



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NUCORP ENERGY, INC.

<u>STATE 23-1</u> LEA COUNTY, NEW MEXICO

	Monthly Oil Allowable	Actual Bbls. Produced	Gas Produced <u>MCF</u>
April	5760	2294	17953
May	5952	5521	41820
June	5760	4428	43975
July	5952	4411	45714
August	5952	4496	43994
September	3060	3003	N/A
Total	32,436	24,153	193,456

5

Exhibit 2 Case 704> Clementson

PETROLEUM AND NATURAL GAS

Engineers, Inc.

D-309 PETROLEUM CENTER SAN ANTONIO, TEXAS 78209

TELEPHONE NO. 824-6192

October 7, 1980

For : NUCORP ENERGY, INC. Test Dates: September 19-23, 1980 700 Crown Tower 8700 Crownhill Boulevard San Antonio, TX 78209 : East Caprock Pen Field Field Well: State No. 23 - Well No. 1

BOTTOM HOLE PRESSURE BUILDUP TEST

Date	Time	Hours	PSIG @ 10200'	Remarks:
	12:00 NN		2509	Instruments to bottom; well is flowing.
9-19	1:30 pm	0.0	2494	Well shut-in.
	1:30 рш	.0167	2564	
		.0333	2586	
		.0667	2684	Test Depth = $10200'$
		.1333	2761	
		.2500	2927	Amerada 10,000# BHP Gauge
		.5000	3043	Serial No. 45313
9-19	2:30 pm	1.0	3100	
9-19	2.30 pm	2.0	3127	10.053.61
		3.0	3141	Perforations = 10,353-61
		4.0	3149	
9-19	7:30 pm	6.0	3162	
y ~17	7130 F-	8.0	3173	
		10	3180	
9–20	1:30 am	12	3191	
, ,	-	15	3191	
		18	3198	
		21	3206	
9-20	1:30 pm	24	3213	
		28	3216	
		32	3223	
9-21	1:30 am	36	3226	
-		40	3231	
		44	3236	
9-21	1:30 pm	48	3242	
		54	3248	
		60	3253	
	_	66	3258 3261	Instruments off bottom
9 –22	10:30 am	69	5201	
			Continued on	page two)

(Continued on page two)

Exhibit 3 Case 7047

Clementson

PETROLEUM AND NATURAL GAS

Engineers, Inc.

D-309 PETROLEUM CENTER SAN ANTONIO, TEXAS 78209

For : NUCORP ENERGY, INC. Well: State No. 23 - Well No. 1

€

TELEPHONE NO. 824-6192

Test Dates: September 19=23, 1980 Field : East Caprock Pen Field

(Page two)

October 7, 1980

BOTTOM HOLE PRESSURE BUILDUP TEST

Date	Time	Hours	PSIG @ 10200'	Remarks:
9 –22	3:00 pm	73.5	3263	Instruments on bottom.
	-	78,5	3265	
		84.5	3267	
9-23	10:00 am	91.5	3268	Instruments off bottom.

Certified: CLEMENTSON ENGINEERS, INC.

Ky C chin

Reservoir Fluid Study for NUCORP ENERGY, INC. *Exhibit Y* State 23 No. 1 Well (*ase* > *oy* > East Caprock Penn Field Lea County, New Mexico L

October 13, 1980

CORE LABORATORIES, INC.



P. L. Moses Manager Reservoir Fluid Analysis

Nucorp Energy, Inc. 700 Crown Tower 8700 Crown Hill Blvd. San Antonio, TX 78209

Attention: Mr. R. H. Denman

Subject: Reservoir Fluid Study State 23 No. 1 Well East Caprock Penn Field Lea County, New Mexico Our File Number: RFL 80709

Gentlemen:

Samples of separator gas and liquid were collected from the subject well on September 27, 1980, and were delivered to our laboratory in Dallas. A reservoir fluid study was performed using these samples, and the results are presented in this report.

The separator products were physically recombined in the producing gasliquid ratio of 10621 standard cubic feet of separator gas per barrel of separator liquid. The mixture was examined in a visual cell at the reservoir temperature of 170° F., and was found to have a retrograde dew point pressure of 3990 psig. This is essentially the same as the original reservoir pressure, 4000 psig.

A constant-volume depletion was performed, and the maximum retrograde liquid observed was 6.0 percent of the volume at the dew point. At the current reservoir pressure of 3370 psig, the retrograde liquid volume was very small, approximately 0.4 percent. We interpret this to mean that the original reservoir fluid was a single-phase gas system, and that some retrograde liquid has accumulated in the reservoir at this time.

The separator gas and liquid compositions were measured by gas chromatography and low temperature fractional distillation, respectively. The well stream composition was calculated on the basis of the producing gas-liquid ratio. All of the compositional data are presented on page two. Nucorp Energy, Inc. State 23 No. 1 Well Page Two

It was a pleasure to perform this reservoir fluid study for you. Please let us know if you have any questions or comments concerning the data or if we may be of any further assistance.

Very truly yours,

CORE LABORATORIES, INC.

ne h. Joitan

James R. Fortner Assistant Manager Reservoir Fluid Analysis

JRF:JB:bt 5 cc: Addressee

			Page of6
			F(le
Company_	Nucorp Energy, Inc.	Date Sampled_	September 27, 1980
Well	State 23 No. 1	County	Lea
Field	East Caprock Penn	State	New Mexico

FORMATION CHARACTERISTICS

Formation Name		Pennsylvanian	
Date First Well Completed		February	, 1980
Original Reservoir Pressure (Appr	ox.)	4000 PSIG @	Ft.
Original Produced Gas-Liquid Rati		6318	SCF/Bb1
Production Rate		192	Bbls/Day
Separator Pressure and Temper	ature	PSIG	°F.
Liquid Gravity at 60°F.		54	API
Datum	н. Т		Ft. Subsea
	WELL CHARACTERI	ISTICS	
Elevation		4335.3 GL	Ft.
Total Depth		11264	Ft.
Producing Interval		10353-10361	Ft.
Tubing Size and Depth		2-3/8 In. to	10244 Ft.
Open Flow Potential			Mt1SCF/Day
Last Reservoir Pressure		3370 PSIG @	
Date		September 23	, 1980
Reservoir Temperature*		168 °F. @	10200 Ft.
Status of Well		Shut in 5 days	
Pressure Gauge		Amerada	
	SAMPLING CONDIT		
Flowing Tubing Pressure		1510	PSIG
Flowing Bottom Hole Pressure		2465	PSIG
Primary Separator Pressure		715	PSIG
Primary Separator Temperature		72	°F.
Secondary Separator Pressure			PSIG
Secondary Separator Temperature			°F.
Field Stock Tank Liquid Gravity		63.6	°API @ 60°F.
Primary Separator Gas Production	Rate	1660	MSCF/Day
Pressure Base	14.65	PSIA	
Temperature Base	60	°F.	
Compressibility Factor (F _{DV})	1.096		
Gas Gravity (Laboratory)	0.721		
Cas Gravity Factor (F_g)	0.9122		
Separator Liquid Production Ra	te @ 72°F.	156.3	Bbls/Day
Primary Separator Gas/Separator		10621	SCF/Bb1
	or	94.15	Bbls/MMSCF

REMARKS:

*Temperature extrapolated to 10357 Ft. = 170° F.

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Page 2 of 6

File RFL 80709

Well State 23 No. 1

HYDROCARBON ANALYSES OF SEPARATOR PRODUCTS AND CALCULATED WELL STREAM

	Separator Liquid	Separator	Gas	Well Stream		
Component	Mol Percent	Mol Percent	GPM	Mol Percent	GPM	
Undrogon Sulfido	0.00	0.00		0,00		
Hydrogen Sulfide	0.17	0.33		0.31		
Carbon Dioxide						
Nitrogen	0.13	2.77		2.49		
Nethane	19.81	77.28		71.20		
Ethane	12.01	11.36	3.021	11.43	3.039	
Propane	15.23	5.49	1.502	ó.52	1.784	
iso-Butane	3.71	0.66	0.215	0, 98	0.319	
n-Butane	9.84	1.36	0.426	2.26	0.708	
iso-Pentane	3.58	0.27	0.098	0.62	0.226	
n-Pentane	4.10	0.26	0.094	0.67	0.241	
Hexanes	5.70	0.12	0.049	0.71	0.290	
Heptanes plus	25.72	0.10	0.045	2.81	1.450	
-	100.00	100.00	5.450	100.00	8.057	

Properties of Heptanes plus			
API gravity @ 60°F.	49.5		
Specific gravity @ 60/60°F.	0.7818		0.782
Molecular weight	128	103	128

Calculated separator gas gravity (air=1.000) = 0.721Calculated gross heating value for separator gas = 1213 BTU per cubic foot of dry gas @ 14.65 psia and $60^{\circ}F$.

Primary	separator	gas	collected	0	715	psig	and	72	°F.
Primary	separator	liquid	collected	6	715	psig	and	72	_°F.

Primary separator gas/separator liquid ratio	10621 SCF/Bb1 @ 72°F.
Primary separator gas/well stream ratio	894.06 MSCF/MMSCF

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Page	<u> 3 of 6</u>	
File		
Well	State 23 No. 1	

PRESSURE-VOLUME RELATIONS OF RESERVOIR FLUID AT 170°F. (Constant Composition Expansion)

Pressure PSIG	Relative Volume	Deviation Factor
5000	0.8945	0.928
4700	0.9197	0.897
4400	0.9495	0.867
4315	0.9595	0.859
3990 Dew Point Pressure	1.0000	0.829
3850	1.0202	
3700	1.0448	
3500	1.0823	
3250	1.1367	
2950	1.2265	
2600	1.3718	
2100	1.7173	
1800	2.0443	
1660	2.2447	
1400	2.7279	
1200	3.2497	
1070	3.7076	
905	4.4765	

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 Page
 4
 of
 6

 File
 RFL 80709

 Well
 State 23 No. 1

RETROGRADE CONDENSATION DURING GAS DEPLETION AT 170°F.

Pressure	Retrograde Liquid Volume
PSIG	Percent of Hydrocarbon Pore Space
3990 Dew Point Pr	essure 0.0
3850	Trace
3700	0.1
3500	0.2
3300 First Deplet	ion Level 0.4
2700	2.8
2200	5.2
1700	6.0
1200	5.9
700	5.5
0	4.0

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 Page
 5
 of
 6

 File
 RFL
 80709

DEVIATION FACTOR Z AT 170°F.



Page6of6FileRFL80709

RETROGRADE LIQUID VOLUME DURING DEPLETION AT 170°F.



PRESSURE: PSIG

Dockets Nos. 34-80 and 35-80 are tentatively set for October 29 and November 12, 1980. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: EXAMINER HEARING - WEDNESDAY - OCTOBER 15, 1980

9 A.M. - OIL CONSERVATION DIVISION CONFERENCE ROOM, STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

The following cases will be heard before Richard L. Stamets, Examiner, or Daniel S. Nutter, Alternate Examiner:

- ALLCHABLE: (1) Consideration of the allowable production of gas for November, 1980, from fifteen prorated pools in Lea, Eddy, and Chaves Counties, New Mexico.
 - (2) Consideration of the allowable production of gas for November, 1980, from four prorated pools in San Juan, Rio Arriba, and Sandoval Counties, New Mexico.
- CASE 7044: Application of Harvey E. Yates Company for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the Travis Penn Unit Area, comprising 400 acres, more or less, of State and Federal lands in Township 18 South, Range 28 East.
- CASE 7045: Application of Texas Oil & Gas Corp. for downhole commingling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Atoka and Upper Morrow production in the wellbore of its Superior Federal Com. Well No. 1 located in Unit G of Section 8, Township 20 South, Range 29 Fast.
- CASE 7046: Application of Cotton Petroleum Corporation for downhole commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Chacra and Pictured Cliffs production in the wellbores of wells in the South Blanco-Pictured Cliffs Pool located in Sections 1, 2, 3, 4, 9, 10, 11, 13, 23, and 24, Township 24 North, Range 4 West.
- CASE 7047: Application of Nucorp Energy Inc. for a special gas-oil ratio limitation, Lea County, New Mexico. Applicant, in the above-styled cause, seeks a special gas-oil ratio limitation of 10,000 to one, retroactive to April 18, 1980, for the East Caprock-Pennsylvanian Pool.
- CASE 7033: (Continued from October 1, 1980, Examiner Hearing)

Application of Adams Exploration Inc. for three non-standard proration units, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of three 80-acre non-standard proration units in the Vada-Pennsylvanian Pool, comprising the following acreage: SE/4 NE/4 and NE/4 SE/4 of Section 12, N/2 NE/4 of Section 12, and S/2 SE/4 of Section 2, all in Township 9 South, Range 34 East.

CASE 7048: Application of Public Lands Exploration, Inc. for a pilot steam enhanced oil recovery project, Guadalupe County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pilot steam enhanced oil recovery project in the Santa Rosa formation by re-entering 2 wells and drilling 3 wells, all located in Unit A of Section 15, Township 11 North, Range 25 East.

CASE 7036: (Continued from October 1, 1980, Examiner Hearing)

Application of J. Gregory Merrion for compulsory pooling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Pictured Cliffs formation underlying the SE/4 of Section 34, Township 25 North, Range 6 West, to be dedicated to a well to te drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.

<u>CASE 7049</u>: Application of J. Gregory Merrion for compulsory pooling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Pictured Cliffs formation underlying the SW/4 of Section 35, Township 25 North, Range 6 West, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.

CASE 7050: Application of Maddox Energy Corporation for compulsory pooling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Wolfcamp-Pennsylvanian formations underlying the N/2 of Section 23, Township 24 South, Range 28 East, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.

Page 2 of 4 Examiner Hearing - Wednesday - October 15, 1980

Docket No. 33-80

- CASE 7051: Application of Petro Lewis Corporation for downhole commingling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Blinebry and Drinkard production in the wellbore of its L. G. Warlick "B" Well No. 2 located in Unit G of Section 19, Township 21 South, Range 37 East.
- CASE 7052: Application of Gulf Oil Corporation for compulsory pooling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Pennsylvanian formation underlying the S/2 of Section 36, Township 18 South, Range 31 East, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.

CASE 7024: (Continued from September 17, 1980, Examiner Hearing)

Application of Southland Royalty Company for compulsory pooling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Pennsylvanian formation underlying the E/2 of Section 35, Township 18 South, Range 29 East, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.

CASE 7038: (Continued from October 1, 1980, Examiner Hearing)

Application of Natura Energy Corporation for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the San Andres formation underlying the NE/4 NE/4 of Section 6, Township 19 South, Range 39 East, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.

- CASE 7053: Application of Amax Chemical Corporation for the amendment of Order No. R-111-A, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-111-A to extend the boundaries of the Potash-Oil Area to include the SE/4 NE/4 and NE/4 SE/4 of Section 24, Township 19 South, Range 29 East, and the S/2 NW/4 of Section 19, Township 19 South, Range 30 East.
- CASE 7054: In the matter of the hearing called by the Oil Conservation Division on its own motion for an order creating, abolishing, and extending the vertical and horizontal limits of certain pools in Chaves, Eddy, Lea, and Roosevelt Counties, New Mexico:

(a) CREATE a new pool in Chaves County, New Mexico, classified as a gas pool for Abo production and designated as the East Bitter Lakes-Abo Gas Pool. The discovery well is Bovd Operating Company Blakemore Federal Well No. 1 located in Unit D of Section 20, Township 9 South, Range 26 East, NMPM. Said pool would comprise:

TOWNSHIP 9 SOUTH, RANGE 26 EAST, NMPM Section 20: NW/4

(b) CREATE a new pool in Chaves County, New Mexico, classified as a gas pool for Wolfcamp production and designated as the East Bitter Lakes-Wolfcamp Gas Pool. The discovery well is Boyd Operating Company Blakemore Federal Well No. 1 located in Unit D of Section 20, Township 9 South, Range 26 East, NMPM. Said pool would comprise:

TOWNSHIP 9 SOUTH, RANGE 26 EAST, NMPM Section 20: W/2

(c) CREATE a new pool in Chaves County, New Mexico, classified as an oil pool for Fusselman production and designated as the South Elkins-Fusselman Pool. The discovery well is Enserch Exploration, Inc. J. G. O'Brien Well No. 1 located in Unit E of Section 31, Township 7 South, Range 29 East, NMPM. Said pool would comprise:

> TOWNSHIP 7 SOUTH, RANGE 29 EAST, NMPM Section 31: NW/4

(d) ABOLISH the Cary-San Andres Pool in Lea County, New Mexico, described as:

TOWNSHIP 22 SOUTH, RANGE 37 EAST, NMPM Section 17: NW/4

.

(e) EXTEND the Anderson Ranch-Wolfcamp Pool in Les County, New Mexico, to include therein:

TOWNSHIP 16 SOUTH, RANGE 32 EAST, NMPM Section 3: Lots 9, 10, 15 and 16

(f) EXTEND the Angell Ranch Atoka-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 27 EAST, NMPM Section 13: S/2

(g) EXTEND the Blinebry Oil and Gas Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 20 SOUTH, RANGE 38 EAST, NMPM Section 29: SW/4

(h) EXTEND the Boyd-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 24 EAST, NMPM Section 13: N/2

TOWNSHIP 19 SOUTH, RANGE 25 EAST, NMPM Section 1: W/2 Section 14: N/2

(i) EXTEND the Brown Queen-Grayburg Pool in Chaves County, New Mexico, to include therein:

TOWNSHIP 10 SOUTH, RANGE 26 EAST, NMPM Section 25: SE/4 SW/4 and S/2 SE/4

(j) EXTEND the Buffalo Valley-Pennsylvanian Gas Pool in Chaves County, New Mexico, to include therein:

TOWNSHIP 14 SOUTH, RANGE 27 EAST, NMPM Section 25: N/2

(k) EXTEND the Burton Flat-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 20 SOUTH, RANGE 28 EAST, NMPM Section 17: S/2 Section 20: N/2

(1) EXTEND the vertical limits of the Comanche Stateline Tansill-Yates Pool in Lea County, New Mexico, to include the Seven Rivers formation and redesignate said pool as the Comanche Stateline Tansill-Yates-Seven Rivers Pool, and extend the horizontal limits of said pool to include therein:

TOWNSHIP 26 SOUTH, RANGE 36 EAST, NMPM Section 27: W/2 NW/4

(m) EXTEND the Indian Flats-Delaware Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 22 SOUTH, RANGE 28 EAST, NMPM Section 2: S/2 NE/4

(n) EXTEND the Jenkins-San Andres Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 9 SOUTH, RANGE 35 EAST, NMPM Section 32: NW/4

(o) EXTEND the L E Ranch-San Andres Pool in Chaves County, New Mexico, to include therein:

TOWNSHIP 10 SOUTH, RANGE 28 EAST, NMPM

Section 29: N/2 NW/4 Section 30: N/2 NE/4

(p) EXTEND the Malaga-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 24 SOUTH, RANGE 28 EAST, NMPM Section 15: N/2

· • •

(q) EXTEND the South Millman-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 28 EAST, NMPH Section 8: All

(r) EXTEND the West Osudo-Morrow Gas Pool in Las County, New Mexico, to include therein:

TOWNSHIP 20 SOUTH, RANGE 35 EAST, NMPM Section 14: W/2 Section 23: All

(s) EXTEND the Penasco Draw-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 25 EAST, NMPM Section 6: W/2

(t) EXTEND the Penasco Draw San Andres-Yeso Associated Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 24 EAST, NMPM Section 1: W/2 NW/4 and NW/4 SW/4 Section 13: NW/4 NW/4 Section 14: NE/4 NE/4

(u) EXTEND the South Peterson-Pennsylvanian Pool in Roosevelt County, New Mexico, to include therein:

TOWNSHIP 6 SOUTH, RANGE 33 EAST, NMPM Section 2: Lots 1 and 2

(v) EXTEND the Rabbit Flats-Queen Pool in Chaves County, New Mexico, to include therein:

TOWNSHIP 10 SOUTH, RANGE 27 EAST, NMPM Section 30: SE/4 SE/4

(w) EXTEND the Railroad Mountain-San Andres Pool in Chaves County, New Mexico, to include therein:

TOWNSHIP 8 SOUTH, RANGE 28 EAST, NMPM Section 11: W/2 SW/4 Section 14: NW/4 NW/4

(x) EXTEND the Richard Knob Atoka-Norrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 24 EAST, NMPM Section 36: E/2

(y) EXTEND the Shugart Yates-Seven Rivers-Queen-Grayburg Pool in Eddy County, New Mexico, to include therein:

> TOWNSHIP 19 SOUTH, RANGE 31 EAST, NMPM Section 2: S/2 S/2

(z) EXTEND the Twin Lakes-San Andres Associated Pool in Chaves County, New Mexico, to include therein:

TOWNSHIP 8 SOUTH, RANGE 28 EAST, NMPM Section 26: SE/4 SE/4 Section 35: E/2 NE/4 and NE/4 SE/4

(aa) EXTEND the Wantz-Abo Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 22 SOUTH, RANGE 37 EAST, NMPM Section 3: SE/4 KELLAHIN and KELLAHIN Attorneys at Law 500 Don Gaspar Avenue Post Office Box 1769 Santa Fe, New Mexico 87501

Jason Kellahin W. Thomas Kellahin Karen Aubrey

Telephone 982-4285 Area Code 505

September 9, 1980

Mr. Joe Ramey Oil Conservation Division P.O. Box 2088 Santa Fe, New Mexico 87501

Re: Nucorp Energy

Case 7047

Dear Joe:

Please set the enclosed application for hearing on October 15 1980.

Very truly yours,

W. Thomas Kellahin

Encl. cc: Mr. Dick Denman

WTK:jm



ECEIV DEPARTMENT OF ENERGY AND MINERALS SANTA FE DIVISION

IN THE MATTER OF THE APPLICATION OF NUCORP ENERGY INC. FOR APPROVAL OF A SPECIAL GAS-OIL RATIO LIMIT FOR THE CAPROCK PENN EAST POOL, LEA COUNTY, NEW MEXICO

Case 7047

APPLICATION

COMES NOW NUCORP ENERGY INC., and applied to the New Mexico Oil Conservation Division for a Special Gas-Oil Ratio Limit for the Caprock Penn East Pool, Lea County, New Mexico of 10,000 cubic feet of gas per barrel of oil retroactive to April 18, 1980 and in support thereof would show:

Applicant is the operator of the State "23" Well
 No. 1, Unit K, Section 23, T12S, R36E, NMPM, Lea County, New
 Mexico.

2. That the subject well is the discovery well in the Caprock Penn East Pool and was completed with first sales on April 18, 1980.

3. That Order No. R-199 dated August 19, 1952 exempted the Caprock field in Lea County, New Mexico for Rule 506(d) of the New Mexico Oil Conservation Division Rules and Regulations.

4. That the subject well is capable of effectively and efficiently producing gas and oil at a GOR limit in excess of the state wide 2,000-1 limit.

5. Applicant requests that the subject well and proration unit be granted a special ORR limit not to exceed 10,000 to 1.

That the subject well is the only well in this pool. 6.

7. That approval of the application will protect correlative rights, prevent waste and be in the best interests of conservation.

WHEREFORE applicant requests that the application be set for hearing and that after notice and hearing the application be granted as requested.

KELLAHIN KELLAHIN Въ W. Thomas Kellahin P.O. Box 1769 Santa Fe, New Mexico (505) 982-4285

87501

STATE OF NEW MEXICO ENERGY AND MINERALS DEPARTMENT OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION DIVISION FOR THE PURPOSE OF CONSIDERING:

CASE NO. 7047

Order No. <u><u><u>R-6503</u></u></u>

APPLICATION OF NUCORP ENERGY INC. FOR A SPECIAL GAS-OIL RATIO LIMITATION, LEA COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

ROUGH

dr/

This cause came on for hearing at 9 a.m. on <u>October 15</u> 19_80, at Santa Fe, New Mexico, before Examiner <u>Richard L. Stamets</u> NOW, on this <u>day of October</u>, 19<u>80</u>, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Nucorp Energy Inc. seeks a special gas-oil ratio limitation of 10,000 to one, retroactive to April 18, 1980, for the East Caprock-Pennsylvanian Pool, Lea County, New Mexico.

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Case (No (7026 () Order No. - R-6484

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(%) That the evidence presently available indicates that said poet may be produced at a limiting gas-oil ratio of 10,000 to one without waste.

East Coprock - Pennsy Ivanian Pool

(b) That the applicant, on or before Finingy 1, 1981, should submit data to the Director of the Division as to the size of the reservoir being drained by said **Charger** Well No. (B, and demonstrating that the Fentan Bone Spring Pool may continue to be produced at a gas-oil ratio of 10,000 to one without waste.

(a) That the Director of the Division should be permitted to reopen this case, at his option, for further testimony relative to the proper gas-oil ratio limitation or spacing unit size following receipt of the data required in Finding No. (5) above.

() That the application for produce at an application special gas-oil ratio limitation should be approved affective May 1, 1980.

IT IS THEREFORE ORDERED:

(1) that effective May 1, 1980, a special gos-oil ratio of 10000 cubic deet of gos per barrel of oil the is here by established for the East Coprock - Pennsy luanian defined and described New Mexico

IT IS FURTHER ORDERED: (1) That the applicant, on or before dansary 1, 1981, shall submit data to the Director of the Division demonstrating that the **Sector Bone Spring** Pool may continue to be produced at a gas-oil ratio of 10,000 to one without waste and establishing the size of the reservoir being drained by **Set Bigs** Eddy Webl **State** 23 well Nol.

(2) That following receipt of the data required in Finding No. (5) of this order the Director of the Division may, at his option, reopen this case for further testimony relative to the proper gas-oil ratio limitation or spacing unit size.

(3) Junsdiction