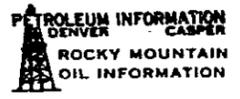


Crest Oil Santa Fe
NE/4 SW/4 Sec. 33 Twp 20N R27E
Apache, County

P-W

ARIZONA
APACHE CO.
PINTA DOME (D)

OPR: Crest Oil Co
ELEV: 5759 Gr
*TOPS: Los ~~Santa~~
Coconino 1062



DSTS. & CORES:

Contr: C. C. Smith

TwP 20n-27e
Section 33
c ne sw
1980 n/s 1980 e/w

WELL #: 2 Santa Fe
SPUD: 5-6-60 COMPL: 5-17-60
TD: 1140 PB: 1105
CSG: 4 1/2" @ 220 w/50
2-7/8" @ 1107 w/50
PERF:

PROD. ZONE: Coconino 1062-72
INIT. PROD: IPF 306 MCFGPD,
pitot tube, SICP 105#.

WELL COMPLETION OR RECOMPLETION REPORT AND WELL LOG

DESIGNATE TYPE OF COMPLETION:

New Well Work-Over Deepen Plug Back Same Reservoir Different Reservoir Oil Gas Dry

DESCRIPTION OF WELL AND LEASE

Operator Crest Oil Company		Address P. O. Box 57, Alton, Illinois			
Lease Name Santa Fe		Well Number 2	Field & Reservoir Wildcat		
Location 1980° N of S line & 1980° E of W line					Sec.—TWP-Range or Block & Survey 33 20N 27E
County Apache	Permit number 110	Date Issued March 1, 1960	Previous permit number	Date Issued	
Date spudded May 6, 1960	Date total depth reached May 11, 1960	Date completed, ready to produce June 24, 1960	Elevation MMX RKB, XXXXXXX 5761 feet	Elevation of casing hd. flange 1* above G.L. feet	
Total depth 1140	P.B.T.D. 1105	Single, dual or triple completion? Single		If this is a dual or triple completion, furnish separate report for each completion.	
Producing interval (s) for this completion 1062 - 1072			Rotary tools used (Interval) Surface to T.D.	Cable tools used (interval)	
Was this well directionally drilled? No		Was directional survey made? No		Was copy of directional survey filed? No	
Type of electrical or other logs run (check logs filed with the commission) Electrical-Induction					Date filed

CASING RECORD

Casing (report all strings set in well—conductor, surface, intermediate, producing, etc.)

Purpose	Size hole drilled	Size casing set	Weight (lb./ft.)	Depth set	Sacks cement	Amt. pulled
Surface	5 1/2	4 1/2		220	50	
Production	4 3/4	2 7/8		1107	50	

TUBING RECORD

LINER RECORD

Size	Depth set	Packer set at	Size	Top	Bottom	Sacks cement	Screen (ft.)
In.	ft.	ft.	In.	ft.	ft.		

PERFORATION RECORD			ACID, SHOT, FRACTURE, CEMENT SQUEEZE RECORD	
Number per ft.	Size & type	Depth Interval	Am't. & kind of material used	Depth Interval
2	3/8" Jet	1062 - 72	20 gals. MCA	1062 - 72

INITIAL PRODUCTION

Date of first production : **Shut In** Producing method (indicate if flowing, gas lift or pumping—if pumping, show size & type of pump): **Flowing**

Date of test 6-25-60	Hrs. tested 4	Choke size None	Oil prod. during test None bbls.	Gas prod. during test 12.75 MCF	Water prod. during test None bbls.	Oil gravity * API (Corr)
Tubing pressure 105 Psig	Casing pressure	Cal'ed rate of Production per 24 hrs.	Oil None bbls.	Gas 306 MCF	Water None bbls.	Gas-oil ratio

Disposition of gas (state whether vented, used for fuel or sold):

Presently shut-in, during the test period the gas was vented.

CERTIFICATE: I, the undersigned, under the penalty of perjury, state that I am the Owner of the Crest Oil Company (company), and that I am authorized by said company to make this report; and that this report was prepared under my supervision and direction and that the facts stated therein are true, correct and complete to the best of my knowledge.

C. F. Swain
Signature **C. F. Swain**

STATE OF ARIZONA STATE LAND COMMISSIONER
Well Completion or Recompletion Report and Well Log
Form No. P-7 File two copies
Authorized by Order No. 4-6-59
Effective April 6 1959

110

DETAIL OF FORMATIONS PENETRATED

Formation	Top	Bottom	Description*
Chinle	20	915	<p>Core No. 1: 1075 - 1091, Cut 16'</p> <p>10' Sandstone, buff, fine grained, round to angular, good porosity, excellent permeability, bubbling gas, vertical fractures in the upper 4'.</p> <p>4' Sandstone, white to buff, very fine to fine grained, clay cement, subround to subangular, highly fractured.</p> <p>2' Sandstone, white, very fine to fine grained, clay cement, very hard, poor porosity and permeability.</p> <p>Core No. 2: 1091 - 1106', Cut 15'.</p> <p>14½' Sandstone, buff, fine grained, subround to subangular, fair porosity and permeability.</p> <p>Core No. 3: 1106 - 1126', Cut 20'.</p> <p>20' Sandstone, buff, fine grained, subround to subangular. Salt water level by tasting at 1122'.</p> <p>DST No. 1: 1062½ - 1075.</p> <p>Open 60 minutes, very strong blow gas to surface immediately. Gauged at 30 minutes: 589 MCFGPD. Gauged at the end of 60 minutes: 589 MCFGPD. Gas chromatograph readings shows: 7.3% helium. Recovered 20 feet drilling mud. IFP: 45 psig, FFP: 60 psig, IHP: 500 psig, FHP: 500 psig, FSP: 105 Psig, Estimated temperature: 85°F. Shut-in time: 60 Min.</p> <p>DST No. 2: 1075 - 1106</p> <p>Open 104 minutes, fair blow, died in 20 minutes. Tried to swab through drill pipe; failed. Recovered 220 feet of drilling mud, IFP: 15 psig, FFP: 105 psig, FSP: 105 psig, IHP: 635 psig, FHP: 605 psig, Estimated temperature: 85°F. Shut-in time: 30 Minutes.</p> <p>DST No. 3: 1094 - 1106</p> <p>Open 120 minutes, very weak blow, died in 5 minutes, tried to swab the drill pipe, failed. Recovered 22 feet of drilling fluid. IFP: 105 psig, FFP: 105 psig, FSP: 105 psig, IHP: 550 psig, FHP: 550 psig, Estimated temperature: 85°F. Shut-in time: 15 minutes.</p>
Shinarump	915	949	
Moenkopi	949	1062	
Coconino	1062	T.D.	

* Show all important zones of porosity, detail of all cores, and all drill-stem tests, including depth intervals, gas used, time tool open, flowing and shut-in pressures, and recoveries.

INSTRUCTIONS:

Attach driller's log or other acceptable log of well.

This Well Completion or Recompletion report and well log shall be filed with the State Land Commissioner not later than thirty days after project completion.

DETAILS OF FORMATIONS PENETRATED

Formation	Top	Bottom	Description*
Chinie	20	915	<p>Core No. 1: 1075 - 1091, Cut 16" 10' Sandstone, buff, fine grained, round to angular, good porosity, excellent permeability, bubbling gas, vertical fractures in the upper 4'. 4' Sandstone, white to buff, very fine to fine grained, clay cement, subround to subangular, highly fractured. 2' Sandstone, white, very fine to fine grained, clay cement, very hard, poor porosity and permeability.</p> <p>Core No. 2: 1091 - 1106', Cut 15". 14½' Sandstone, buff, fine grained, subround to subangular, fair porosity and permeability.</p> <p>Core No. 3: 1106 - 1126', Cut 20". 20' Sandstone, buff, fine grained, subround to subangular. Salt water level by tasting at 1122'.</p> <p>DST No. 1: 1062½ - 1075. Open 60 minutes, very strong blow gas to surface immediately. Gauged at 30 minutes: 589 MCFGPD. Gauged at the end of 60 minutes: 589 MCFGPD. Gas chromatograph readings shows: 7.3% helium. Recovered 20 feet drilling mud. IFP: 45 psig, FFP: 60 psig, IHP: 500 psig, FHP: 500 psig, FSP: 105 Psig, Estimated temperature: 85°F. Shut-in time: 60 Min.</p> <p>DST No. 2: 1075 - 1106 Open 104 minutes, fair blow, died in 20 minutes. Tried to swab through drill pipe; failed. Recovered 220 feet of drilling mud, IFP: 15 psig, FFP: 105 psig, FSP: 105 psig, IHP: 635 psig, FHP: 605 psig, Estimated temperature: 85°F. Shut-in time: 30 Minutes.</p> <p>DST No. 3: 1094 - 1106 Open 120 minutes, very weak blow, died in 5 minutes, tried to swab the drill pipe, failed. Recovered 22 feet of drilling fluid. IFP: 105 psig, FFP: 105 psig, FSP: 105 psig, IHP: 550 psig, FHP: 550 psig, Estimated temperature: 85°F. Shut-in time: 15 minutes.</p>
Shinarump	915	949	
Moenkopi	949	1062	
Coconino	1062	T.D.	

* Show all important zones of porosity, detail of all cores, and all drill-stem tests, including depth intervals, tool used, time tool open, flowing and shut-in pressures, and recoveries.

INSTRUCTIONS:

Attach driller's log or other acceptable log of well.

This Well Completion or Recompletion report and well log shall be filed with the State Land Commissioner not later than thirty days after project completion.

APPLICATION TO ABANDON AND PLUG

FIELD Navajo Springs Coconino Sand Unit
 OPERATOR Eastern Petroleum Company ADDRESS Box 291, Carmi, Illinois 62821
 Federal, State, or Indian Lease Number or Lessor's Name if Fee Lease Santa Fe WELL NO. 2
 LOCATION 1980' NSL; 1980' EWL; Section 33-20N-27E, Apache County
 TYPE OF WELL Gas-Helium TOTAL DEPTH 1105
(Oil, Gas or Dry Hole)
 ALLOWABLE (If Assigned) _____
 LAST PRODUCTION TEST OIL -- (Bbls.) WATER -- (Bbls.)
 GAS 306 (MCF) DATE OF TEST 6/25/60
 PRODUCING HORIZON Coconino PRODUCING FROM 1062 TO 1072

1. COMPLETE CASING RECORD.

4½" @ 220' w/50 sks.
 2 7/8" @ 1107' w/50 sks.

2. FULL DETAILS OF PROPOSED PLAN OF WORK

Plug casing top to bottom w/cement slurry

DATE COMMENCING OPERATIONS 10/12/77
 NAME OF PERSON DOING WORK Petroleum Consultants ADDRESS Denver, Colorado
 Signature _____
 Title Secretary
 Address P. O. Box 291, Carmi, Illinois 62821
 Date November 1, 1977

Date Approved _____
 STATE OF ARIZONA
 OIL & GAS CONSERVATION COMMISSION
 By: _____

STATE OF ARIZONA
 OIL & GAS CONSERVATION COMMISSION
 Application to Abandon and Plug
 File Two Copies
 Form No. 9

COPY

SUNDRY NOTICES AND REPORTS ON WELLS

1. Name of Operator Eastern Petroleum Company

2. Oil Well GAS Well OTHER (Specify) _____

3. Well Name Crest-Santa Fe #2

Location NE NW

Sec. 33 Twp. 20N Rgn. 27E County Apache Arizona.

4. Federal, State or Indian Lease Number, or lessor's name if fee lease _____
Santa Fe Pacific Railroad Co. fee

5. Field or Pool Name Navajo Springs Unit

6. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:			SUBSEQUENT REPORT OF:		
TEST WATER SHUT-OFF	<input type="checkbox"/>	PULL OR ALTER CASING	<input type="checkbox"/>	WATER SHUT-OFF	<input type="checkbox"/>
FRACTURE TREAT	<input type="checkbox"/>	DIRECTIONAL DRILL	<input type="checkbox"/>	FRACTURE TREATMENT	<input type="checkbox"/>
SHOOT OR ACIDIZE	<input type="checkbox"/>	PERFORATE CASING	<input type="checkbox"/>	SHOOTING OR ACIDIZING	<input type="checkbox"/>
REPAIR WELL	<input type="checkbox"/>	CHANGE PLANS	<input type="checkbox"/>	MONTHLY PROGRESS	<input type="checkbox"/>
(OTHER) _____				REPAIRING WELL	<input type="checkbox"/>
				ALTERING CASING	<input type="checkbox"/>
				ABANDONMENT	<input type="checkbox"/>
				(OTHER) <u>Shut-in</u>	<input checked="" type="checkbox"/>

(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

7. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

This well is part of Navajo Springs Unit and production from
 this well is not required to maintain monthly allowable take.

RECEIVED

MAR 15 1974

O & G CONS. COMM.

8. I hereby certify that the foregoing is true and correct.

Signed J. E. Edwards Title Secretary Date March 12, 1974

STATE OF ARIZONA
 OIL & GAS CONSERVATION COMMISSION
 Sundry Notices and Reports On Wells
 File Two Copies
 Form No. 28

Permit No. 110

1 - State of Arizona ✓
 1 - File

SUNDRY NOTICES AND REPORTS ON WELLS

1. Name of Operator Eastern Petroleum Company
 2. OIL WELL GAS WELL OTHER (Specify) _____
 3. Well Name Crest Oil Santa Fe No. 1
 Location NE/SW
 Sec. 33 Twp. 20 Rge. 27 County Apache Arizona.

4. Federal, State or Indian Lease Number, or lessor's name if fee lease: Santa Fe Lease

5. Field or Pool Name ~~East Navajo~~ Navajo Spring Cocconino

6. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:			SUBSEQUENT REPORT OF:		
TEST WATER SHUT-OFF	<input type="checkbox"/>	PULL OR ALTER CASING	<input type="checkbox"/>	WATER SHUT-OFF	<input type="checkbox"/>
FRACTURE TREAT	<input type="checkbox"/>	DIRECTIONAL DRILL	<input type="checkbox"/>	FRACTURE TREATMENT	<input type="checkbox"/>
SHOOT OR ACIDIZE	<input type="checkbox"/>	PERFORATE CASING	<input type="checkbox"/>	SHOOTING OR ACIDIZING	<input type="checkbox"/>
REPAIR WELL	<input type="checkbox"/>	CHANGE PLANS	<input type="checkbox"/>	MONTHLY PROGRESS	<input type="checkbox"/>
(OTHER) <u>Semi Annual Report</u>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	REPAIRING WELL	<input type="checkbox"/>
				ALTERING CASING	<input type="checkbox"/>
				ABANDONMENT	<input type="checkbox"/>
				(OTHER)	<input type="checkbox"/>

(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

7. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

Status: Shut In.

RECEIVED

JUL 0 2 1973

O & G CONS. COMM.

8. I hereby certify that the foregoing is true and correct.

Signed Kabert G. Dwyer Title Vice President Date June 27, 1973

Permit No. 110

STATE OF ARIZONA
 OIL & GAS CONSERVATION COMMISSION
 Sundry Notices and Reports On Wells
 File Two Copies
 Form No. 25

Att #2



EASTERN PETROLEUM CO.
EASTERN DRILLING, INC.

TELEPHONE 39-2304 - P. O. BOX 281 - JARVIS, ILLINOIS

October 16, 1970

Arizona Oil & Gas Conservation Commission
1624 West Adams
Room 202
Phoenix, Arizona 85007

Attention: Mr. John Bannister
Executive Secretary

Dear John:

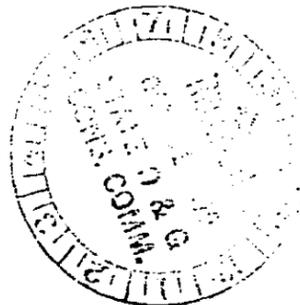
Enclosed please find the Engineering Report which I promised
you.

Best regards,

Henry Fullop
EASTERN PETROLEUM CO.
By: Henry Fullop

HF:jsh

Enclosure



ENGINEERING REPORT

of

Well Tests and Gas Flow Calculations
Shut-in Gas Wells, Navajo Springs Area
Apache County, Arizona

For

Western Helium Corporation

by

John W. Keller



JOHN M. HELLER

REGISTERED ENGINEER

P. O. Box 1507
1727 Forest Ave
DURANGO, COLORADO
81301

September 22, 1970

Phone 247-3846
AREA CODE (303)

Western Helium Corporation
P. O. Box 1358
Scottsdale, Arizona 85252

Gentlemen:

Submitted herewith is an engineering report of well tests and flow rate calculations on shut-in gas wells in the Navajo Springs Unit area.

This report is made at the request of Mr. R. E. Lauth. I wish to express my appreciation to him and also Mr. Henry Fullop of Eastern Petroleum Corporation for their cooperation in obtaining the field information and the accommodations they furnished while obtaining the field information.

I believe the data shown herein is sufficient for your needs. Do not hesitate to contact me if there are any questions about this report.

Very truly yours,

John M. Heller
John M. Heller

Copies to:
Mr. Henry Fullop
Mr. R. E. Lauth



PURPOSE

To determine the productive capacity of shut-in gas wells in the Navajo Springs Unit and surrounding area, Apache County, Arizona.

To project flow rates at field gathering line pressures of 10, 20, 30, and 40 psig.

SUMMARY

Five wells, Santa Fe Nos. 14, 17, and 21-2; Weese No. 2; and Crest No. 7, were tested. These tests and calculated data indicate the wells are capable of producing at this time. A test was attempted on Santa Fe No. 35 but results are not valid because of fluid entry into the well bore during the flow periods. This well does have the capacity to produce some gas at limited rates before remedial work is necessary.

Calculated delivery rates at various back pressures are summarized by individual wells:

Lease and Well Number	Producing Zone	Delivery Rates - MCFD			
		10 psig.	20 psig.	30 psig.	40 psig.
Santa Fe No. 14	Cocconino	935	940	945	725
Santa Fe No. 17	"	350	340	300	200
Santa Fe No. 21-2	Shinarump	525	510	500	450
Weese No. 2	Cocconino	730	690	645	550
Crest No. 7	"	120	175	180	140
Total Volume - MCFD		2770	2655	2457	2100

Santa Fe No. 35 could possibly produce at a rate of 100 MCFD without such difficulty.

PROGRAM and PROCEDURE

Information and data required to make the flow rate projections were obtained by individual well tests. Gas flow measurements were taken through a 2" Critical Flow Prover and a 2" Orifice Well Tester at critical flow. Pressures were obtained by dead weight and test gauges to the nearest one pound increment. Assumptions were made on the gravity of the gas and the barometric pressure.

Calculations were made to a base pressure of 14.65 psia. @ 60° F. The back pressure curves are drawn on values of P_c and P_w , surface shut-in and working pressures, corrected for flow friction where it was significant.

Two four point tests were satisfactorily completed and the slope of the back pressure curve on these wells was applied to the other wells where one point tests were taken.

The projected delivery rates shown in this report were obtained by analyzing the back pressure curves, calculating the flow friction and adjusting the flow volume.

DISCUSSION

Santa Fe Wells No. 14, 17, and 21-2; Reese No. 2; and Crest No. 1 were favorably tested. Reese No. 2 did show a slight amount of moisture at the end of the test period but does not appear to affect the delivery potential at this time. Santa Fe No. 35 test is not considered valid because of the fluid entry into the well bore during the test period. This well can be produced to some extent and could show a sizable cumulative production before it becomes necessary to recondition. It is suggested that this well be produced at a rate of about 100 MCF per day initially and checked closely for the fluid build up in the well bore, unloading by blowing full open to the atmosphere for only short periods of time when necessary.

Other wells in the Navajo Springs Unit were checked but flow tests were not taken. They would not test in a satisfactory manner. Details of these wells are shown on page number 14 of this report.

The total GOR of the five wells considered productive at this time is 3,173 MCF. It would be prudent to start initial deliveries at approximately 25% of the GOR or about 794 MCF. This does not include the 100 MCF that may be produced from Santa Fe No. 35. That individual wells be checked closely for performance and the producing rates adjusted accordingly.

Wells Not Tested

- Santa Fe No. 31 Sec. 29-20N-27E.
9/12/70 Shut-in well head pressure - 92 psig. Started flow test and well started dying. Dropped soap stick and shut-in overnight.
9/13/70 Shut-in 17¹/₂ hrs. Well head pressure - 80 psig. Opened well to blow. Fluid in 5 minutes. Blaw well for 20 minutes. Making water at end of blow period. Too wet to test. Well head pressure 1¹/₂ hours after blowing was 60 psig.
- Santa Fe No. 32 Sec. 23-20N-27E.
9/12/70 Shut-in well head pressure - 27 psig. Opened to blow. Lead. Dropped soap stick and shut-in overnight.
9/13/70 Shut-in well head pressure after 14 hours - TSTW Opened well - Lead.
- Trest No. 7 Sec. 33-20N-27E.
9/13/70 Shut-in well head pressure - 12 psig. Opened to blow. Very light blow - lead.
- Santa Fe No. 13 Sec. 31-20N-27E.
Producing into Verr-Noclee System. Well flowing with a well head pressure of 70 psig. Flow controlled by a pinched valve. Orifice Meter - American L-10-S chart; 10" x 250 psi. range; 4" x 2.5" plate; readings; 1-3.0; 1-1.0; 1-0.8; Test gauge reads 32.5 psig. Flow had been fluctuating. Check readings indicate well was at that time flowing at approximately 20 MCF. There was no indication of any water being produced at this rate.
- Parfait State No. 1 Sec. 33-20N-27E.
Producing into Verr-Noclee System. Well flowing with a well head pressure of 24 psig. Not restricted. Orifice Meter - American L-10-S chart; 10" x 250 psi. range; 4" x 2.5" plate; readings; 1-2.5 to 4.0; 1-3.7; 1-7.2. Test gauge reads 24 psig. Flow had been fluctuating. Check readings indicate well was at that time flowing at a rate between 12.5 and 20 MCF. The differential pen was sweeping in the range of 2.5 to 4.0 on the chart. This may have been an indication of some fluid being present in the well bore.

**OPERATOR'S CERTIFICATE OF COMPLIANCE AND AUTHORIZATION
TO TRANSPORT OIL OR GAS FROM LEASE**

Federal, State or Indian Lease Number, or lessor's name if fee lease Santa Fe fee & State	Field Navajo Springs	Reservoir Coconino
Survey or Sec-Twp-Rge Navajo Springs Unit	County Apache	State Arizona
Operator Eastern Petroleum Company		
ADDRESS ALL CORRESPONDENCE CONCERNING THIS FORM TO:		
Street Box 291	City Carmi	State Illinois
Above named operator authorizes (name of transporter) Kerr-McGee Oil Industries, Inc.		
Transporter's street address Kerr-McGee Building	City Oklahoma City	State Oklahoma
Field address Navajo, Arizona		
Oil, condensate, gas well gas, casinghead gas		
To transport 100	% of the	gas from the Navajo Springs Unit
OTHER GATHERERS TRANSPORTING FROM THIS LEASE ARE AS FOLLOWS:		
Name of gatherer	% transported	Product transported
Indicate whether or not this certificate is for a new lease. If not a new lease, indicate whether or not it is a change of operator, change of lease name, change of gatherer, or a consolidation or subdivision of leases and give effective date of change.		
<p align="center">Certificate is to allow for the hookup of an additional well to the Kerr-McGee transmission line. Effective September 7, 1965.</p>		

The undersigned certifies that the rules and regulations of the State of Arizona Oil & Gas Conservation Commission have been complied with in drilling and producing operations on this lease, except as noted above, and that the above transporter is authorized to transport the above specified percentage of the allowable oil or gas produced from the above described property, and that this authorization will be valid until further notice or until cancelled by the State of Arizona Oil & Gas Conservation Commission.

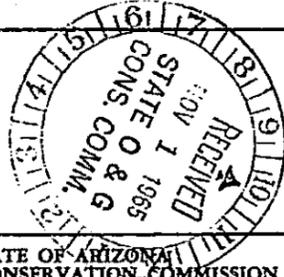
CERTIFICATE: I, the undersigned, under the penalty of perjury, state that I am the Secretary of the Eastern Petroleum Company (company), and that I am authorized by said company to make this report; and that this report was prepared under my supervision and direction and that the facts stated therein are true, correct and complete to the best of my knowledge.

Date October 27, 1965

Signature *J. Medwa*

Date approved: Nov 1, 1965

By: *John Bannister*
Permit No. Navajo Springs Unit



STATE OF ARIZONA
OIL & GAS CONSERVATION COMMISSION
Operator's Certificate of Compliance & Authorization to
Transport Oil or Gas from Lease
File Two Copies

4

Open Flow Test Record

Producers Name Crest Oil Company Date 10-10-63
 Lease Name Santa Fe No. 2 Time 3:45 pm
 Location Sec. 33-20N-27E Apache County, Arizona
 Shut in pressure on 10-9-63 107.3 psig
 Shut-In Pressure 100.3 psig Unloading Period 15 min.

Test Point	Time From	Time To	Flow Period	Orifice Size	Prover Press.	Wellhead Pressure	Flow Gas Temp.
1	4:00 pm	4:20 pm	20 min	1/4"	10" H2O	80.7 psig	77°
2	4:20 pm	4:35 pm	15 min	1/2"	15" H2O	77.7 psig	78°
3	4:45 pm	5:05 pm	20 min	3/4"	10" H2O	68.0 psig	73°

Remarks: It should be noted that this was the third of a series of tests, all of which failed to show leveling off of final flow periods.

At 4:55 pm pressure on wellhead gave no indication of leveling off during flow rate of approx. 50 mcf/d, rate was cut to approx. 43 mcf/d in an attempt to stab. back pressure. At 5:05 pm wellhead pressure was still dropping as in past tests. These tests were discontinued until further notice.

Note: Final test rate indicated above is based on this unstab. condition.

Sample gas was taken after final flow period with gas venting at same rate.

~~NEW MEXICO~~ OIL CONSERVATION COMMISSION

Form C-122

Revised 12-1-55

MULTI-POINT BACK PRESSURE TEST FOR GAS WELLS

Pool PINTA Formation Co Ca Nms SANATONE County APACHE
 Initial _____ Annual _____ Special X Date of Test SEPT. 16, 1960
 Company CREST OIL CO. Lease CREST OIL - SANTA FE Well No. 2
 Unit _____ Sec. 2 Twp. 20N Rge. 27E Purchaser _____
 Casing _____ Wt. 33 I.D. _____ Set at _____ Perf. _____ To _____
 Tubing 2 1/2 Wt. _____ I.D. _____ Set at 1105 Perf. 1062 To 1072
 Gas Pay: From _____ To _____ L _____ xG .921 -GL 1018 Bar.Press. 12
 Producing Thru: Casing _____ Tubing _____ Type Well _____
 Date of Completion: SEPT. 12, 1960 Packer _____ Reservoir Temp. Est. 75°
 Single-Bradenhead-G. G. or G.O. Dual

OBSERVED DATA

Tested Through (Prover) (Orifice) (Manometer) Type Taps _____

No.	Flow Data			Tubing Data		Casing Data		Duration of Flow Hr.	
	(Prover) (Line) Size	(Choke) (Orifice) Size	Press. psig	Diff. h _w	Temp. °F.	Press. psig	Temp. °F.		Press. psig
SI	2"							108.4	
1.	2"	1/4"						53.7	84
2.	2"	3/8"						20.0	79
3.	2"	3/16"						57.0	60
4.									
5.									

FLOW CALCULATIONS

No.	Coefficient (24-Hour)	$\sqrt{h_w P_f}$	Pressure psia	Flow Temp. Factor F _t	Gravity Factor F _g	Compress. Factor F _{pv}	Rate of Flow Q-MCFPD @ 15.025 psia
1.	1.4030		65.7	.9777	.8076	TSTM	73
2.	3.0591		32.0	.9822	.8076	TSTM	78
3.	.7851		69.0	1.0000	.8076	TSTM	44
4.							
5.							

PRESSURE CALCULATIONS

Gas Liquid Hydrocarbon Ratio _____ cf/bbl.
 Specific Gravity Separator Gas _____
 Gravity of Liquid Hydrocarbons _____ deg.
 Specific Gravity Flowing Fluid _____
 P_c 5.551 (1-e^{-S}) .071 P_c 120.4 P_c 14.49616

No.	P _t (psia)	P _t ²	F _c Q	(F _c Q) ²	(F _c Q) ² (1-e ^{-S})	P _w ²	P _c ² -P _w ²	Cal. P _w	P _w /P _c
1.	65.7	4.316	.405	.164	.012	4.328	10.168		
2.	32.0	1.024	.433	.187	.013	1.037	13.459		
3.	69.0	4.761	.244	.060	.004	4.765	9.731		
4.									
5.									

Absolute Potential: _____ 91 MCFPD; n .68 Est.
 COMPANY GELECTRIC, INC.
 ADDRESS Box 842 103 N. MAIN AZTEC, NEW MEXICO
 AGENT and TITLE Resident Agent
 WITNESSED _____
 COMPANY _____

REMARKS

No. 1 POINT IS THE BEST POINT AS IT IS LEAST AFFECTED BY WATER

INSTRUCTIONS

This form is to be used for reporting multi-point back pressure tests on gas wells in the State, except those on which special orders are applicable. Three copies of this form and the back pressure curve shall be filed with the Commission at Box 871, Santa Fe.

The log log paper used for plotting the back pressure curve shall be of at least three inch cycles.

NOMENCLATURE

Q = Actual rate of flow at end of flow period at W. H. working pressure (P_w).
MCF/da. @ 15.025 psia and 60° F.

P_c = 72 hour wellhead shut-in casing (or tubing) pressure whichever is greater.
psia

P_w = Static wellhead working pressure as determined at the end of flow period.
(Casing if flowing thru tubing, tubing if flowing thru casing.) psia

P_t = Flowing wellhead pressure (tubing if flowing through tubing, casing if flowing through casing.) psia

P_f = Meter pressure, psia.

h_w = Differential meter pressure, inches water.

F_g = Gravity correction factor.

F_t = Flowing temperature correction factor.

F_{pv} = Supercompressibility factor.

n = Slope of back pressure curve.

Note: * If P_w cannot be taken because of manner of completion or condition of well, then P_w must be calculated by adding the pressure drop due to friction within the flow string to P_t .

207 CENTURY BLDG.

OFFICE CHERRY 7-0025
RESIDENCE CHERRY 7-3190

ROBERT E. LAUTH
GEOLOGICAL CONSULTANT
P. O. BOX 774
DURANGO COLORADO

July 5, 1960

Dr. C.F. Swain
Crest Oil Company
P.O. Box 57
Alton, Illinois

Re: Completion- Crest Oil
Company No 2 Santa Fe
Sec. 33-20N-27E
Apache Co., Arizona

Dear Doc:

The above captioned well was completed as a shut-in Helium-Nitrogen producer on June 24, 1960.

The interval 1062 to 1072 feet was perforated with two holes per foot using Schlumberger's 2-inch, 17 gram, Scallop gun.

Twenty gallons of 15% (MCA) Mud Acid was placed opposite the perforations and the hole loaded with water. This was allowed to set for 8 hours. The acid and water was then swabbed back. The well unloaded and started cleaning itself.

After blowing for four hours the well gauged (Pitot tube test) 306 MCFG/D. Shut-in pressure (36 hours) was 105 psig. After the shut-in pressure was taken another pitot tube test gauge was taken. On a 15 minute blowdown the well gauged 306 MCFG/D. All pitot tube tests taken showed the well stabilized at this amount in less than three minutes after the well was opened.

Sincerely,

R. E. Lauth
R. E. Lauth

cc C.F. Swain(2)
W.D. Barnes(2)
J.W. Dean (2)

HA-1 Revised 6-26-58

REPORT OF ANALYSIS

State Arizona F. S. No. 7539
 County Apache Field Wildcat
 Well Owner Crest Oil Company Name Santa Fe No. 2
 Location: Sec. 35 T. 27N R. 27E Date Completed 1960
 Open Flow MCF/D 539 Wellhead Pressure P.S.I.G. 1054

Producing Stratum:

Depth to (feet): 1063 Thickness (feet): 12

Stratigraphic Position of Producing Formation Coconino Sandstone

DST #1

Sampled: Date: 5-9-60 By: R. E. Leuth
 Mass Spectrometer Run No. 8251 Date of Run 5-26-60

Analysis:

Methane <u>0.2</u> %	Normal Pentane <u>0.0</u> %	Oxygen <u>0.1</u> %
Ethane <u>Trace</u> %	Isopentane <u>0.0</u> %	Argon <u>0.7</u> %
Propane <u>0.1</u> %	Cyclopentane <u>0.0</u> %	Helium <u>9.16</u> %
Normal Butane <u>0.0</u> %	Hexanes Plus <u>0.0</u> %	Hydrogen <u>Trace</u> %
Isobutane <u>0.0</u> %	Nitrogen <u>89.9</u> %	H ₂ S <u>0.0</u> %
		CO ₂ <u>0.9</u> %

Calculated gross B.t.u./cu.ft., dry at 60° F. and 30" mercury 4.6 Total

CHECK OF DATA: The well data are accurate:
 Without correction As corrected above

PERMISSION FOR PUBLICATION:

Permission is hereby granted for the Bureau of Mines to publish the above data, together with similar data released by other operators, as part of a series of papers on analyses of gases from various fields, states, or regions.

Form 10433
 Rev. 7-13-49

Company _____
 By _____
 Title _____

APPLICATION FOR PERMIT TO DRILL, DEEPEN OR PLUG BACK

APPLICATION TO DRILL DEEPEN PLUG BACK

NAME OF COMPANY OR OPERATOR

DATE

CREST OIL COMPANY

February 9, 1960

Address

City

State

P. O. Box 57

Alton

Illinois

DESCRIPTION OF WELL AND LEASE

Name of lease

Well number

Elevation (ground)

Santa Fe

No. 2

5758.6' Est.

Well location

(give footage from section lines)

Section—township—range or block & survey

1980' No of S line & 1980' E of W line

33 20N 27E

Field & reservoir (if wildcat, so state)

County

Wildcat

Apache

Distance, in miles, and direction from nearest town or post office

Four Miles from Navajo, Arizona

Nearest distance from proposed location to property or lease line:

Estimated 2000

feet

Distance from proposed location to nearest drilling, completed or applied—for well on the same lease:

None

feet

Proposed depth:

1100 feet

Rotary or cable tools

Rotary

Approx. date work will start

March 14, 1960

Number of acres in lease:

3,840.00

Number of wells on lease, including this well, completed in or drilling to this reservoir:

If lease, purchased with one or more wells drilled, from whom purchased:

Name

Address

Status of bond

XXXXXX Individual Bond No. 92-676089 \$2,500.00

Remarks: (If this is an application to deepen or plug back, briefly describe work to be done, giving present producing zone and expected new producing zone)

This location application is for a STRATIGRAPHIC CORE HOLE TEST and is filed as a courtesy of Crest Oil Company for the Oil & Gas Conservation Commission and its files.

* Fill in Proposed Casing Program on other side

CERTIFICATE: I, the undersigned, under the penalty of perjury, state that I am the **OWNER** of the **Crest Oil Company** (company), and that I am authorized by said company to make this report; and that this report was prepared under my supervision and direction and that the facts stated therein are true, correct and complete to the best of my knowledge.

February 9, 1960

Date

Signature

C. F. Swain

Permit Number: **# 110**

Approval Date: **March 1, 1960**

Approved By: *[Signature]*

Notice: Before sending in this form be sure that you have given all information requested. Much unnecessary correspondence will thus be avoided.

See Instruction on Reverse Side of Form

STATE OF ARIZONA OIL & GAS CONSERVATION COMMISSION

Application to Drill, Deepen or Plug Back

Form No. P-1

File two copies

Authorized by Order No. _____

4-6-59

Effective _____

April 6,

19 59

110

INSTRUCTIONS

READ CAREFULLY AND COMPLY FULLY

For the purpose of this determination attach hereto a neat, accurate plat, map or sketch of this lease, section, block or lot locating thereon the proposed site for this location. Plat shall be drawn to a scale which will permit the facile observation of all pertinent data. Show distances of the proposed well from the two nearest lease and section lines, and from the nearest wells on the same lease completed in or drilling to the same reservoir. If the location requested is not in conformance with the applicable well-spacing rules, show all off-setting wells to the proposed well, and the names and addresses of all adjoining lease or property owners.

In event plat is filed for the purpose of designating the drilling and producing unit, or proration unit, on which the proposed well is to be drilled, the boundaries of such unit shall be shown, also the boundaries of all other such units attributed to other wells on the same lease completed in or drilling to the same reservoir. The acreage contained within each unit shall also be shown.

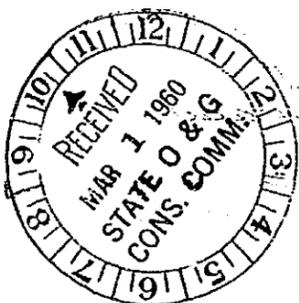
Do not confuse survey lines with lease lines. The sketch or plat should show your entire lease if possible. If it is not practical to show the entire lease and the plat shows only a section, block or lot out of your lease, you should clearly show that same is only a part of the lease.

Designate scale to which plat or sketch is drawn. Also designate northerly direction on the sketch or plat.

PROPOSED CASING PROGRAM

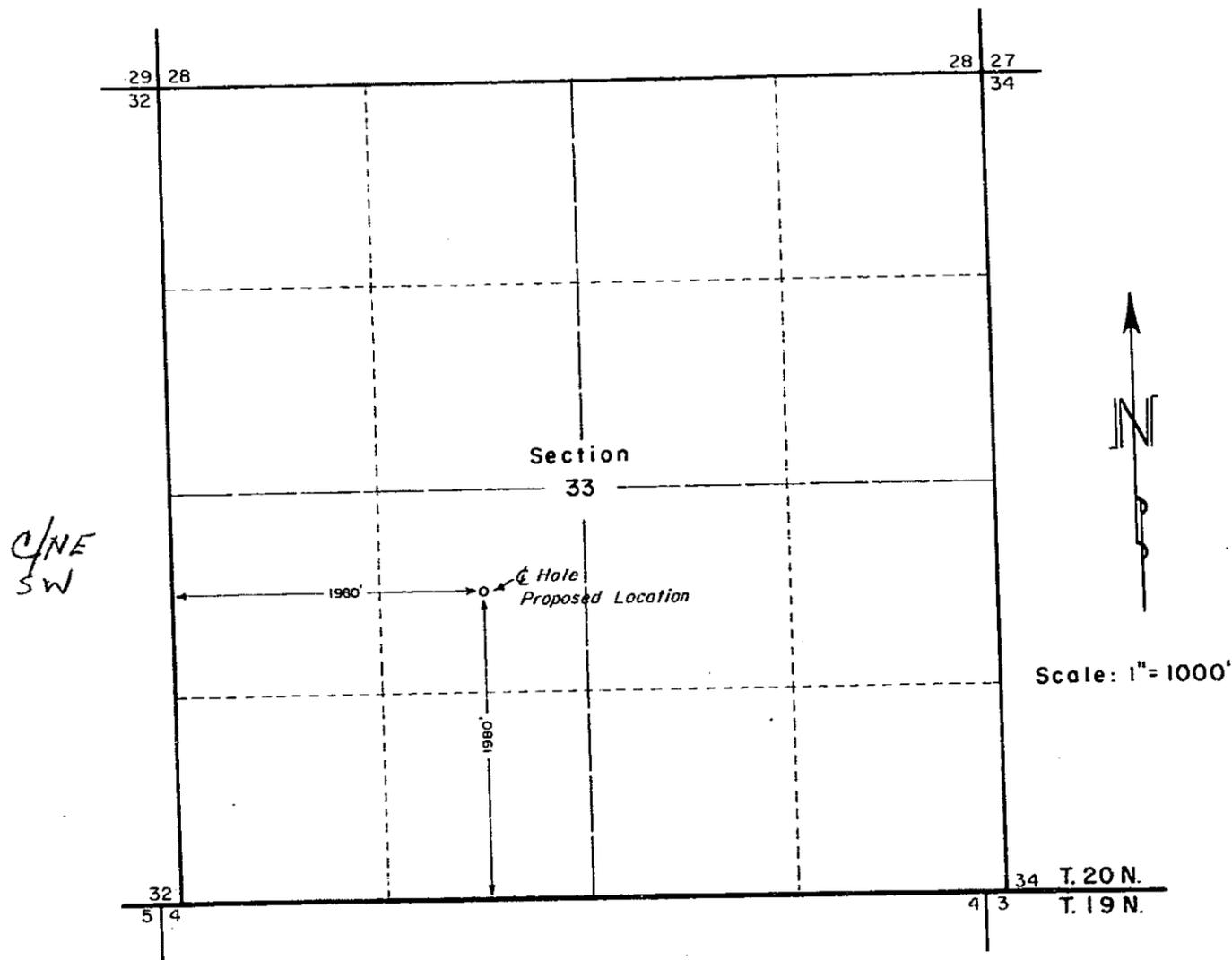
Size of Casing	Weight	Grade & Type	Top	Bottom	Cementing Depths	Sacks Cement
2 1/2"	120	API 5L	100'	100'		100
2 1/2"				100'		100

Form No. P-1



February 2, 1960

CERTIFICATE OF SURVEY

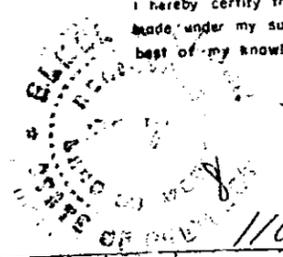


WELL LOCATION: Crest Oil Co. — Santa Fe No. 2

Located 1980 feet East of the West line and 1980 feet North of the South line of Section 33,
 Township 20 North, Range 27 East, Gila & Salt River Meridian.

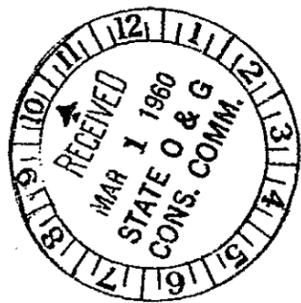
Existing ground elevation determined at 5758.6 feet based on Arizona State Highway Datum.

I hereby certify the above plat represents a survey made under my supervision and is accurate to the best of my knowledge and belief.



Elmer M. Clark
 ELMER M. CLARK
 Registered Land Surveyor
 Colo. No. 2279

E.M. CLARK & ASSOCIATES
 Durango, Colorado
 February 12, 1960



110

SANTA FE
LEASEHOLD

WELL NO. 2

YEAR NO. 1

CREST OIL COMPANY
LEASE OWNER

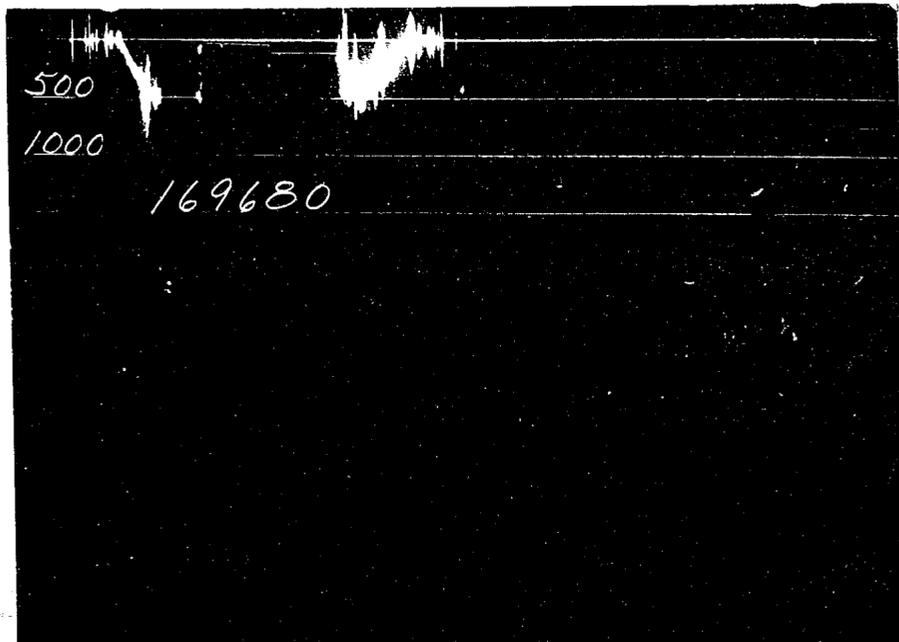
ARIZONA
OWNERS DISTRICT

Your.....

Formation Testing Service Report



OIL WELL CEMENTING CO.



Each Horizontal Line Equal to 1000 p.s.i.

Initial Closed In Time	None	Minutes	Date	5-9-60
Tool Open Flow Period	60	1st 2nd Minutes	Ticket No.	169680
Final Closed In Time	60	Minutes	HOWCO DISTRICT	Farmington
Depth Top Gauge	1055	Ft. Blanked Off No	Kind of Job	Open Hole
BT. P.R.D. No	786	12 Hr. Clock	CONTRACTOR	C. C. Smith
Pressure Readings	Field	Office Corrected	HOLE & TOOL DATA	
Initial Hydro Mud Pressure	500	502	Elevation	5759
Initial Closed in Pres.			Total Depth	1075
Initial Flow Pres.	45	32	Casing or Hole Size	4 3/4"
Final Flow Pres.	60	37	Size & Type Well Packer	4 1/2" B.S.A.
Final Closed in Pres.	105	108	Size Bottom Choke	5/8"
Final Hydro Mud Pressure	500	472	Casing Perforations	Top Bottom
Depth Center Gauge			Interval Tested	1062 1/2 to 1075
BT. P.R.D. No			ID & Length Air Chamber	C.I.P.
Pressure Readings	Field	Office Corrected	ID & Length Drill Collars	None
Initial Hydro Mud Pressure			Formation Tested	Coconino
Initial Closed in Pres.			Est. Gauge Depth Temp.	85 F
Initial Flow Pres.			Size Drill Pipe	2 3/8" I.F.
Final Flow Pres.			MUD DATA Weight	926
Final Closed in Pres.			Viscosity	50
Final Hydro Mud Pressure			All depths measured from	Rotary Table
Depth Bottom Gauge	1072	Ft. Blanked Off Yes	No. Folders Reproduced	5
BT. P.R.D. No	1254	24 Hr. Clock	REMARKS: Tool opened with strong blow.	
Pressure Readings	Field	Office Corrected	Helium gas to surface. Measured 589 m.c.f.	
Initial Hydro Mud Pressure	500		Note: tight hole. No information to be released.	
Initial Closed in Pres.			NO P.R.D. WAS SENT IN.	
Initial Flow Pres.	50		Recovered	20 Feet of Drilling Fluid
Final Flow Pres.	60		Recovered	Feet of
Final Closed in Pres.	100		Recovered	Feet of
Final Hydro Mud Pressure	500		Recovered	Feet of
Amount-Type of Cushion	None		Witnessed By	Howard Kirby
			Tester	A. P. Clark & Jones

HOWCO No. 1295 R 1

LOCATION SECTION 33 - 20N - 27E

WELL NO. 2

FIELD WILDOAT

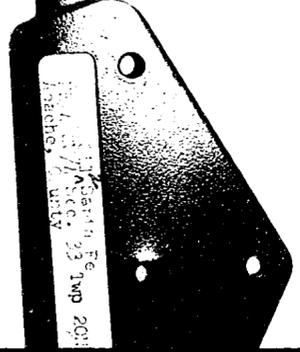
COUNTY APACHE

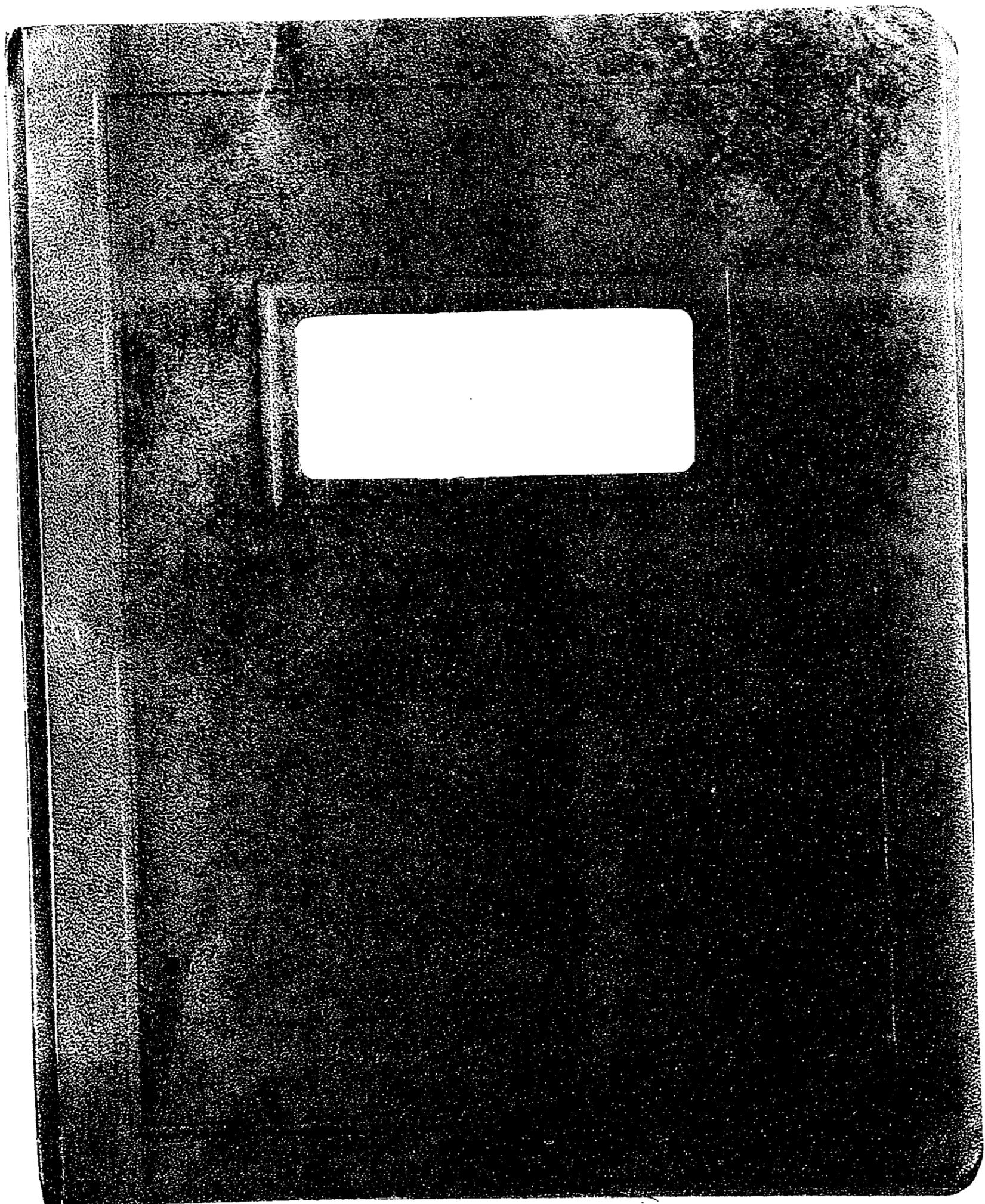
STATE ARIZONA

SANTA FE LEASE NAME
GREST OIL COMPANY LEASE OWNER
ARTIZONA OWNERS DISTRICT



OFFICE OF THE STATE ENGINEER





GEOLOGICAL COMPLETION REPORT
CREST OIL COMPANY
NO. 2 SANTA FE
SECTION 33, TOWNSHIP 20 NORTH, RANGE 27 EAST
APACHE COUNTY, ARIZONA

By: Robert E. Lauth
Geological Consultant
Durango, Colorado
May 21, 1960

ROBERT E. LAUTH
Consulting Geologist

GEOLOGICAL COMPLETION REPORT

*Crest Oil Company
No. 2 Santa Fe
Sec. 33, T20N, R27E
Apache County, Arizona*

WELL DATA

Rotary: Surface to total depth - mud drilled

Spud date: May 6, 1960

Date drilling completed: May 11, 1960

Initial production: Testing

Surface casing: 4 1/2" @ 220 feet with 50 sacks plus 2% Ca Cl

Production casing: 2 7/8" @ 1107 feet with 50 sacks plus 2% Ca Cl

Contractor: C. C. Smith drilling Company

200 Leach Ave.

Grants, New Mexico

*Well location: NE-SW Section 33, Township 20 North, Range 27 East
(1980' FWL and 1980' FSL) Apache County, Arizona*

Elevation: 5759' Ground

5761' Rotary Bushing

Total depth: 1140 feet

Plugged back: 1105 feet

FORMATION TOPS

Formation	Depth	Elevation	Thickness
Chinle	20'	+5741	895'
Chinle congl.	852'	+4909	39'
Shinarump congl.	915'	+4846	34'
Moenkopi	949'	+4812	113'
Coconino	1062'	+4699	—

CORRELATION

Formation	Crest Oil Co. No. 2 Santa Fe S11-33-20N-27E	Eastern Petr. No. 3 Santa Fe S11-9-19N-27E	Crest Oil Co. No. 1 Santa Fe S11-19-20N-27E
Chinle congl.	+4909	+4957	+4704
Shinarump congl.	+4846	+4880	+4628
Coconino ss.	+4699	+4722	+4463

DISCUSSION

The purpose of this report is to present geological information and basic data concerning Crest Oil Company's No. 2 Santa Fe test well located in the NE-SW of Section 33, Township 20 North, Range 27 East, Apache County, Arizona.

Lost circulation problems were very minor. A little mud was lost in the Coconino while coring. A fresh water sand was noted from 82 to 110 feet.

Two and seven-eighths inch casing was set and cemented at 1107 feet with 50 sacks of cement. Three cores for a total footage of 51 feet and three drillstem tests were taken in the Coconino sandstone. Details of the cores and drillstem tests are included in this report. Careful examination of the sample cuttings were made at the wellsite at the time of drilling.

For inert gas (helium-nitrogen) detection, a special calibrated Varaid gas chromatograph unit was used from a depth of 640 feet to 1140 feet.

The highest show of helium recorded on this unit, while drilling and coring the Coconino, was 0.03% helium. A sample of the gas obtained on the first drillstem test had 7.3% helium.

A Schlumberger Electrical-Induction log was run from under surface casing to a depth of 1138 feet. A Schlumberger Electrical log was run from 980 to 1138 feet. No microlog was run on the well.

All sample, drillstem tests, and core measurements are from ground level. Schlumberger's logs are from rotary bushing which is two feet higher than ground level.

Final formation tops have been adjusted and picked from electrical log curves related to sample cutting examination and stratigraphic correlation.

STRATIGRAPHY

Attached to this report is the sample description made by the writer from 10 foot and five foot sample cuttings for the interval 0 to 1140 feet.

The lithology and correlation of the possible producing horizon, the Coconino sandstone, is discussed in the following paragraphs.

Coconino sandstone 1062 to 1140 (penetrated 78 feet)

The Coconino sandstone is massive, buff in color, and exhibits cross-bedding in the cones. A transition zone exists which is composed of dark red silty shales of the Moenkopi streaked with buff and tan colored nonbedded sandstones of the Coconino. This zone is present from 1053 feet to 1062 feet.

By log analysis and core analysis there is a maximum of 60 feet which carries helium-nitrogen gas. Of this, 46 feet is in the gas-water transition zone.

The upper fourteen foot zone has the following characteristics which are averaged from core and electrical log analysis:

1062 to 1076 feet - 14 feet

Average porosity 20%

Average permeability - estimated 50 millidarcies

Average water saturation - percent pore space 40%

The lower 46 foot zone has the following characteristics averaged from core analysis:

1076 to 1122 - 46 feet

Average porosity 17.1%

Average permeability 32.0 millidarcies

Average water saturation - percent pore space 66.5%

The above water saturations are probably much higher than exist in the reservoir due to the fact that the core diameter was small (2"), and the reservoir pressure is low. Considerable invasion of mud and filtrate water was very evident when the cores were taken from the core barrel.

A commercial helium-nitrogen producer can be made in the upper 14 feet of Coconino sandstone. An initial potential of one million cubic feet of gas per day would be reasonable to expect.

RECOMMENDED COMPLETION PROCEDURE

Two and seven-eighths inch (OD), J-55, 6.50 lbs., new casing was set and cemented at 1107 feet with 50 sacks of cement. The top of the float shoe is at 1105 feet. The plug was pumped down to the top of the float shoe with clear water.

The following procedure is recommended in completing the Coconino sandstone zone:

- 1) Perforate with two shots per foot the interval 1062 to 1072 feet.
- 2) Wash with mud acid sufficient enough to completely cover all perforations, approximately 18 gallons.
- 3) Load the hole with water and allow to set for 4 to 8 hours.
- 4) Surb water and acid back and allow the well to blow dry.

If the initial potential is not large enough, a very small sand-water frac might help. Too large of a frac treatment might break into the water zone.

CONCLUSIONS

This test is considered to have adequately tested all the formations penetrated.

The Coconino sandstone from 1062 to 1076 is indicated to be capable of commercial helium production.

It is recommended that only the interval 1062 to 1072 feet be perforated so as to stay completely above water. Completion should be a natural one.

The writer expresses his appreciation for the opportunity of making this well study and respectfully submits this report.

Robert E. Lauth
Robert E. Lauth
Geological Consultant
Durango, Colorado
May 21, 1960

DRILLING TIME RECORD

Crest Oil Company
No. 2 Santa Fe
Sec. 33, T20N, R27E
Apache County, Arizona
Elevation 5761' Rotary Bushing

From	To	Minutes Per Ten Feet
650	700	10-14-18-17-19
700	800	20-20-20-20-22-12-19-10-8-14
800	900	16-20-22-46-34-22-14-19-29-47
900	1000	29-29-40-48-48-40-28-41-24-29
1000	1070	28-28-24-26-28-20-55
1075	1126	See Coning Record

SAMPLE DESCRIPTION

Crest Oil Company
No. 2 Santa Fe
Sec. 33, T20N, R27E
Apache County, Arizona
Elevation 5761' Rotary Bushing

Samples start at ground level in surface sands.

0 - 10	100 Sand, surface blow sand.
10 - 20	100 Blow sand.
20 - 30	100 Shale pink, sandy.
30 - 40	100 Sandstone pink, white, very fine grained, very shaly, micaceous.
40 - 50	100 Sandstone ditto.
50 - 60	100 Sandstone light red, very shaly.
60 - 70	100 Sandstone white and red, as above, very shaly.
70 - 80	100 Sandstone red, fine grained, round to subround.
80 - 90	100 Shale red, very finely arenaceous.
90 - 100	50 Sandstone clear, floating grains, fine to medium grained. 50 Shale ditto.
100 - 110	30 Sandstone ditto. 70 Shale ditto.
110 - 120	100 Sandstone pink, white, fine to medium grained, round to angular. Some shale red and white.
120 - 130	100 Sandstone ditto.
130 - 140	100 Sandstone ditto.
140 - 150	100 Sandstone ditto, hard, tight.
150 - 160	50 Sandstone floating grains. 50 Shale red.
160 - 170	Sample ditto.
170 - 180	100 Sandstone white, red, fine grained, hard, tight, subround to angular.
180 - 190	50 Sandstone ditto. 50 Shale mixed with sandstone, red.
190 - 200	Sample ditto.
200 - 210	20 Sandstone ditto. 80 Shale ditto.
210 - 220	Sample ditto.

220 - 230	10 Sandstone. 90 Shale light red.
230 - 240	100 Shale ditto.
240 - 250	100 Shale dark red. Trace of white dense limestone.
250 - 260	100 Shale ditto.
260 - 270	100 Shale ditto. Trace of white sandstone.
270 - 280	100 Shale brown, ditto.
280 - 290	100 Shale brown and white, finely arenaceous.
290 - 300	40 Limestone white, gray, finely crystalline, dense. 60 Shale red.
300 - 310	100 Shale brown to red and light green.
310 - 320	100 Shale ditto.
320 - 330	100 Shale ditto.
330 - 340	100 Shale ditto. Trace of limestone.
340 - 350	100 Shale ditto. Trace of limestone white, dense.
350 - 360	30 Limestone white, pink, finely crystalline, dense. 70 Shale ditto.
360 - 370	10 Limestone ditto. 90 Shale ditto.
370 - 380	100 Shale ditto.
380 - 390	100 Shale ditto. Trace of anhydrite. Trace of limestone.
390 - 400	100 Shale ditto, red, finely arenaceous.
400 - 410	100 Shale green and red.
410 - 420	100 Shale green and red, intermixed.
420 - 430	100 Shale green and red.
430 - 440	100 Shale ditto.
440 - 450	100 Shale ditto.
450 - 460	100 Shale ditto.
460 - 470	100 Shale green, waxy, floating sand grains.
470 - 480	20 Sandstone white, fine to medium grained, loose. 80 Shale ditto.
480 - 490	Sample ditto.
490 - 500	Sample ditto.
500 - 510	Sample ditto.
510 - 520	10 Sandstone clear. 90 Shale ditto, predominately green shale.
520 - 530	Sample ditto.
530 - 540	100 Shale green with floating sand grains, some dark red.

540 - 550 100 Shale ditto, some brown, green, and red.
 550 - 560 100 Shale ditto, some brown.
 560 - 570 10 Sandstone. 90 Shale red, green, brown, and gray.
 570 - 580 Trace of sandstone. 100 Shale brown, ditto.
 580 - 590 Trace of sandstone red, fine grained. 100 Shale ditto,
 brown.
 590 - 600 30 Sandstone red to white, fine grained. 70 Shale ditto.
 600 - 610 70 Sandstone white, red, fine grained. 30 Shale ditto,
 much bentonite.
 610 - 620 20 Sandstone ditto. 80 Shale ditto.
 620 - 630 Sample ditto. Some limestone nodules.
 630 - 640 100 Shale gray, green.
 640 - 650 20 Sandstone clear, fine to coarse grained, loose, sub-
 round. 80 Shale brick red to gray.
 650 - 660 40 Sandstone ditto, predominately medium grained. 60 Shale
 ditto.
 660 - 670 30 Sandstone ditto. 70 Shale ditto.
 670 - 680 20 Sandstone ditto. 80 Shale predominately gray.
 680 - 690 10 Sandstone ditto, loose. 90 Shale ditto, some brick red.
 690 - 700 10 Sandstone ditto. 10 Limestone dense. 80 Shale ditto.
 700 - 710 Trace of sandstone. 100 Shale pale green, some brick red.
 710 - 720 10 Limestone white crystalline and red. 90 Shale ditto.
 720 - 730 20 Limestone ditto. 80 Shale ditto.
 730 - 740 20 Sandstone white, green, fine grained, angular.
 80 Shale pale green and red.
 740 - 750 100 Shale green, finely arenaceous.
 750 - 760 100 Shale ditto.
 760 - 770 Trace of limestone. 30 Sandstone pale green, staly.
 70 Shale green, some brick red.
 770 - 780 10 Sandstone clear, medium grained, loose. 90 Shale
 pale green and brick red.
 780 - 790 10 Sandstone ditto. Trace of pyrite. 90 Shale ditto.
 790 - 800 40 Sandstone white with black, fine to medium grained,
 subround to angular, micaceous. 60 Shale red and green.
 800 - 810 70 Sandstone ditto, white clay cement. 30 Shale brick
 red and gray.

810 - 820 60 Sandstone ditto. 40 Shale ditto.
 820 - 830 10 Sandstone ditto. Much red chert. 90 Shale ditto,
 much gray.
 830 - 840 10 Sandstone ditto, micaceous. Trace of red crystalline
 limestone. 90 Shale red, gray, and green, micaceous.
 840 - 850 20 Sandstone white, very fine to medium grained, hard,
 micaceous. 80 Shale purple, green, red.
 850 - 860 10 Sandstone ditto. 90 Shale purple, gray.
 860 - 870 20 Sandstone white, fine to coarse grained. 80 Shale
 ditto, becoming brown, micaceous.
 870 - 880 100 Sandstone gray, fine to coarse grained. Some chert.
 Trace of shale.
 880 - 890 90 Sandstone gray, very fine to very coarse grained,
 conglomerate, round to angular. 10 Shale green, red.
 890 - 900 80 Sandstone ditto. Trace of red chert and limestone.
 20 Shale red, green.
 900 - 910 40 Sandstone ditto. 60 Shale red, gray.
 910 - 920 80 Sandstone ditto, loose. 20 Shale red, gray.
 920 - 930 60 Sandstone ditto. 40 Shale. Trace of limestone.
 930 - 940 50 Sandstone ditto, becoming fine grained, consolidated.
 50 Shale ditto, becoming brick red, micaceous.
 940 - 950 20 Sandstone ditto, loose. 80 Shale red, micaceous.
 950 - 960 10 Sandstone ditto. 90 Shale red to chocolate, finely
 micaceous.
 960 - 970 20 Sandstone clear, fine grained, angular, loose.
 80 Shale ditto.
 970 - 980 100 Shale ditto, some green.
 980 - 990 Trace of sandstone. 100 Shale ditto, some green.
 990 - 1000 Trace of sandstone. 100 Shale ditto, some purple.
 1000 - 1010 Trace of red, very fine grained sandstone. Trace of
 anhydrite. 100 Shale ditto.
 1010 - 1020 Trace of sandstone ditto. 100 Shale ditto, predominately
 red, silty, micaceous.
 1020 - 1030 Trace of chert. 100 Shale red to chocolate, silty, finely
 micaceous.
 1030 - 1040 10 Sandstone red, very fine grained. 90 Shale ditto.

1040 - 1050	Trace of sandstone. 100 Shale ditto.
1050 - 1055	20 Sandstone red, very fine grained, silty, round to sub-round. 80 Shale ditto.
1055 - 1060	30 Sandstone buff, fine to medium grained, subround to subangular, fair porosity. 70 Shale ditto.
1060 - 1065	40 Sandstone ditto. 30 Shale ditto.
1065 - 1070	80 Sandstone ditto, predominately fine grained. 20 Shale ditto.
1070 - 1075	60 Sandstone ditto. 40 Shale ditto.
1075 - 1126	See Core Description.
1126 - 1140	100 Sandstone buff, fine grained, subround to subangular, good porosity - water wet.
Total Depth	1140 feet.

CORE DESCRIPTION

Crest Oil Company
No. 2 Santa Fe
Sec. 33, T20N, R27E
Apache County, Arizona
Elevation 5761' Rotary Bushing

- Core No. 1 1075 - 1091 (cut 16 feet, recovered 16 feet)
Coring time (minutes per foot) 11, 8, 6, 7, 8, 8, 8, 8, 7, 8, 7,
9, 10, 9, 7, 9 Barrel jammed.
10' Sandstone, buff, fine grained, round to
angular, good porosity, excellent permeability,
bubbling gas, vertical fractures in the upper 4
feet.
4' Sandstone, white to buff, very fine to fine grained, clay
cement, subround to subangular, highly fractured.
2' Sandstone, white, very fine to fine grained, clay cement,
very hard, poor porosity and permeability.
- Core No. 2 1091 - 1106 (cut 15 feet Recovered 14½ feet)
Coring time (minutes per foot) 8, 11, 9, 10, 7, 11, 8, 7, 10,
7, 7, 8, 7, 8, 6.
14½' Sandstone, buff, fine grained, subround to subangular,
fair porosity and permeability.
- Core No. 3 1106 to 1126 (cut 20 feet, recovered 20 feet)
Coring time (minutes per foot) 9, 9, 9, 8, 8, 8, 7, 9, 6, 6, 7,
6, 6, 7, 7, 4, 4, 4, 4, 10 Barrel jammed.
20' Sandstone, buff, fine grained, subround to subangular.
Salt water level by tasting at 1122'

DRIILLSTEM TEST RECORD

Crest Oil Company
No. 2 Santa Fe
Sec. 33, T20N, R27E
Apache County, Arizona
Elevation 5761' Rotary Bushing

- DST No. 1 1062 $\frac{1}{2}$ to 1075 (Coconino sandstone)
Open 60 minutes, very strong blow gas to surface immediately.
Gauged at 30 minutes: 589 MCF/D. Gauged at the end of 60
minutes: 589 MCF/D. Gas chromatograph readings showed:
7.3% helium.
Recovered 20 feet drilling mud
Initial flowing pressure: 45 psig
Final flowing pressure: 60 psig
Final shut-in pressure: 105 psig
Initial hydrostatic pressure: 500 psig
Final hydrostatic pressure: 500 psig
Estimated temperature: 85°F
Shut-in time: 60 minutes
- DST No. 2 1075 to 1106 (Coconino sandstone)
Open 104 minutes, fair blow, died in 20 minutes. Tried to sub
through drill pipe; failed.
Recovered 220 feet of drilling mud
Initial flowing pressure: 15 psig
Final flowing pressure: 105 psig
Final shut-in pressure: 105 psig
Initial hydrostatic pressure: 635 psig
Final hydrostatic pressure: 605 psig
Estimated temperature: 85°F
Shut-in time: 30 minutes

DST No. 3 1094 to 1106 (Coconino sandstone)
Open 120 minutes, very weak blow, died in 5 minutes; tried to
sub the drill pipe but failed. Recovered 22 feet of drilling
fluid.
Initial flowing pressure: 105 psig
Final flowing pressure: 105 psig
Final shut-in pressure: 105 psig
Initial hydrostatic pressure: 550 psig
Final hydrostatic pressure: 550 psig
Estimated temperature: 85°F
Shut-in time: 15 minutes

SUNDRY NOTICES AND REPORTS ON WELLS

1. Name of Operator Eastern Petroleum Company

2. Oil Well GAS Well OTHER (Specify) _____

3. Well Name Crest-Santa Fe #2

Location NE NW

Sec. 33 Twp. 20N Rge. 27E County Apache Arizona.

4. Federal, State or Indian Lease Number, or lessor's name if fee lease _____
Santa Fe Pacific Railroad Co. fee

5. Field or Pool Name Navajo Springs Unit

6. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF <input type="checkbox"/>	PULL OR ALTER CASING <input type="checkbox"/>	WATER SHUT-OFF <input type="checkbox"/>	MONTHLY PROGRESS <input type="checkbox"/>
FRACTURE TREAT <input type="checkbox"/>	DIRECTIONAL DRILL <input type="checkbox"/>	FRACTURE TREATMENT <input type="checkbox"/>	REPAIRING WELL <input type="checkbox"/>
SHOOT OR ACIDIZE <input type="checkbox"/>	PERFORATE CASING <input type="checkbox"/>	SHOOTING OR ACIDIZING <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
REPAIR WELL <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	(OTHER) <u>Shut-in</u>	ABANDONMENT <input type="checkbox"/>
(OTHER) _____			<input checked="" type="checkbox"/>

(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

7. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

This well is part of Navajo Springs Unit and production from
 this well is not required to maintain monthly allowable take.

RECEIVED

O & G CONS. COMMISSION

8. I hereby certify that the foregoing is true and correct.

Signed J. Edwards Title Secretary Date March 12, 1974

STATE OF ARIZONA
 OIL & GAS CONSERVATION COMMISSION
 Sundry Notices and Reports On Wells
 File Two Copies
 Form No. 25

Permit No. 110

1 - State of Arizona ✓
 1 - File



OFFICE OF
Oil and Gas Conservation Commission
STATE OF ARIZONA
1645 WEST JEFFERSON, SUITE 420
PHOENIX, ARIZONA 85007
PHONE: (602) 271-5161

January 3, 1978

The Maryland
Suite 270
10 Broadway
St. Louis, Missouri 63102

Attention: Doris Swift
Bond Department

Re: Crest Oil Company, Alton, Illinois
Bond No. 92-676089
Center of Section 33, Township 20 North,
Range 27 East, Apache County, Arizona

Gentlemen:

Since Crest Oil Company has complied with all the rules and regulations of the Arizona Oil and Gas Conservation Commission in plugging and abandonment of Crest Oil Company Santa Fe No. 2 Well, we authorize release of the subject bond as of this date.

Very truly yours,

W. E. Allen
Director
Enforcement Section

WEA/vb
cc - Dr. C. F. Swain ✓

Note - Dr. Swain:

If you wish the release of bonds covering other wells drilled by you in Navajo County, please advise.

W.E.A.

The Maryland

NEAL R. WILLEN
RESIDENT VICE-PRESIDENT

Suite 270 - 10 Broadway - St. Louis, Missouri 63102
TELEX: 4-4837 MDCAS CO STL
Telephone: (314) 621-8600

DONALD R. ZACHRITZ
CLAIM MANAGER

December 20, 1977

State of Arizona
Phoenix, Arizona

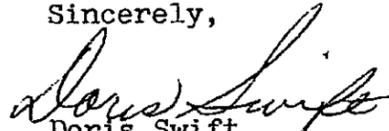
Re: Crest Oil Company, Alton, Illinois
Bond No. 92-676089
Center of Section 33, Township 20 North
Range 27 East, Apache County, Arizona

Gentlemen:

The above captioned bond was executed effective February 17, 1960. We would appreciate your advising if the bond must continue in force or if our liability may be terminated. If the bond may be terminated, please advise us of a date on which we may close our file.

Thank you.

Sincerely,


Doris Swift
Bond Department

ds

(WD) Bond No. 92-676089
KNOW ALL MEN BY THESE PRESENTS,

That we: Crest Oil Company, Alton

of the County of: Madison in the State of: Illinois

as Principal, and Maryland Casualty Company

of Baltimore, Maryland authorized to do business within the State of Arizona,

as surety, are held and firmly bound unto the State of Arizona in the penal sum as indicated, lawful money of the United States, for which payment, well and truly to be made, we bind ourselves, and each of us, and each of our heirs, executors, administrators or successors, and assigns jointly and severally, firmly by these presents.

The condition of this obligation is that whereas the above bounden principal proposes to drill a well or wells for oil, gas or stratigraphic purposes in and upon the following described land situated within the State, to wit:

Center of Section 33, Township 20 North Range 27 East, Apache County,
(May be used as blanket bond or for single well)
Arizona.

NOW, THEREFORE, if the above bounden principal shall comply with all of the provisions of the laws of this State and the rules, regulations and orders of the Oil & Gas Conservation Commission, especially with reference to the requirements of A. R. S. 27-516, providing for the proper drilling, casing and plugging of said well or wells, and filing with the Oil & Gas Conservation Commission all notices and records required by said Commission, in the event said well or wells do not produce oil or gas in commercial quantities, or cease to produce oil or gas in commercial quantities, then this obligation is void; otherwise, the same shall be and remain in full force and effect.

Penal sum of Two Thousand, Five Hundred and 00/100 - - - - -

Witness our hands and seals, this 17th day of February, 1960.

CREST OIL COMPANY

BY: _____ Principal

Witness our hands and seals, this _____ day of _____

Countersigned by: MARYLAND CASUALTY COMPANY
James M. Lankford BY: J. W. [Signature] Surety
Arizona Agent Attorney-in-fact

(If the principal is a corporation, the bond should be executed by its duly authorized officers, with the seal of the corporation affixed. When principal or surety executes this bond by agent, power of attorney or other evidence of authority must accompany the bond.)

Approved _____ Date _____ STATE OF ARIZONA
OIL & GAS CONSERVATION COMMISSION

P-2

CANCELLED

DATE 1-3-78 by W&C

INCREASE RIDER

WHEREAS, the Arizona Oil and Gas Conservation Commission, has required C. F. SWAIN d/b/a CREST OIL COMPANY to increase the amount of their OIL WELL DRILLING bond, effective April 23, 1969.

NOW, THEREFORE, for and in consideration of an increase in premium, it is hereby stipulated and agreed that effective from April 23, 1969 that certain bond of which this rider shall form a part, in the amount of TWO THOUSAND, FIVE HUNDRED AND NO/100 Dollars, shall be and it is hereby increased to the amount of FIVE THOUSAND AND NO/100 Dollars, but in no event shall the aggregate liability of the MARYLAND CASUALTY COMPANY for any one or more defaults occurring prior to April 23, 1969, exceed TWO THOUSAND FIVE HUNDRED AND NO/100 Dollars, or for any one or more defaults occurring subsequent to April 23, 1969, exceed FIVE THOUSAND AND NO/100 Dollars, or in any event exceed the larger amount stated herein.

PROVIDED, HOWEVER, that nothing contained herein shall be construed to alter, amend or modify any of the terms and conditions and provisions of said bond as originally executed, except as herein expressly amended.

This rider shall become attached to and form a part of Bond No. 92-676089 issued by the MARYLAND CASUALTY COMPANY on February 17, 1960 in favor of the State of Arizona, and on behalf of C. F. SWAIN d/b/a CREST OIL COMPANY.

Signed, Sealed and Dated this 29th day of May, 1969.

MARYLAND CASUALTY COMPANY

BY: J. D. Hamlett
Attorney-in-Fact

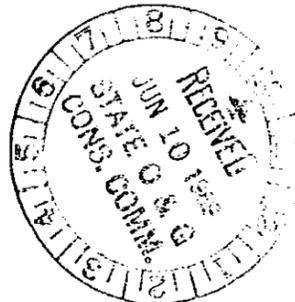
C. F. SWAIN d/b/a
CREST OIL COMPANY

BY: C. F. Swain
Owner

CANCELLED

DATE 1-3-78 by W.C.L.

110





OFFICE OF
Oil and Gas Conservation Commission

STATE OF ARIZONA
8686 NORTH CENTRAL, SUITE 106
PHOENIX, ARIZONA 85020
PHONE: (602) 271-5161

April 19, 1977

Mr. Warren E. Richardson
Kerr-McGee Corporation
Kerr-McGee Center
Oklahoma City, Oklahoma 73125

Dr. C. F. Swain
Crest Oil Company
Box 57
Alton, Illinois 62002

Mr. J. F. Schlafly
Crest Oil Company
Box 57
Alton, Illinois 62002

Re: Navajo Springs Unit, Apache County, Arizona

Gentlemen:

You are aware that Kerr-McGee Corporation suspended operations on their helium extraction plant located at Navajo, Arizona in February, 1976. This plant was supplied with raw helium from wells in the Pinta Dome Unit and also from two wells in the Navajo Springs Unit, namely: Eastern Petroleum Company's Santa Fe No. 13 located in the NE/4 SW/4 Section 31, T20N, R27E, and Kerr-McGee Barfoot No. 1 located in the NE/4 SW/4 Section 32, T20N, R27E.

Not only has Kerr-McGee Corporation suspended operations of its extraction plant, it has recently plugged all the remaining wells in the Pinta Dome Unit.

Records of the Oil and Gas Commission indicate there are ten wells in the Navajo Springs Unit that are classified as shut in helium wells. Only a few of these wells ever produced or were ever connected to the Kerr-McGee plant or the plant formerly operated by Western Helium.

Mr. Warren E. Richardson
Dr. C. F. Swain
Mr. J. F. Schlafly
April 19, 1977
Page 2

In order to protect the fresh water zones in this area from any possibility of contamination and because there is no market now or in the foreseeable future for any raw helium gas that may remain within the Navajo Springs Unit, Coconino Formation, it is the opinion of this Commission that all remaining unplugged wells in this unit be properly plugged and abandoned.

Mr. Henry Fullop with Eastern Petroleum Company, the operator of the Navajo Springs Unit, has been advised of the Commission's position on this matter. He was first notified by letter and, more recently, by long distance telephone. A response to the letter was never received. Mr. Fullop did indicate by telephone that, at the present time, it would pose a severe financial strain on him to plug these wells.

Unless the Commission can receive some positive assurance within 60 days from the date of this letter that the remaining shut in wells in the Navajo Springs Unit will be properly plugged and abandoned, the Commission will find it necessary to request the bonding company to fulfill their obligations and plug the subject wells.

This letter is addressed to you only for the purpose of acquainting you, as working interest owners in the unit, with the situation as it presently exists and also to inform you of the Commission's position.

Very truly yours,



William E. Allen
Director
Enforcement Section

WEA/vb

cc - Mr. Henry Fullop
Eastern Petroleum Company

Mr. Swain - Two of the wells in the Navajo Springs Unit - the Crest Santa Fe No. 2 and the Crest Oil Company No. 7 - are covered by Maryland Casualty's Bonds numbered 92-787-379 and 94-474782.



EASTERN PETROLEUM CO.
EASTERN DRILLING, INC.

TELEPHONE (312) 287-4100 P.O. BOX 32 CARMILL, ILLINOIS 60021

September 10, 1974

Mr. W. E. Allen
Oil & Gas Conservation Comm.
4515 North 7th Avenue
Phoenix, Arizona 85013

Re: Navajo Springs Unit

Dear Mr. Allen:

Your letter of September 9 requested that we submit Form 9 for two wells, Crest-Santa Fe #2, Sec. 33-20N-27E and Kiva #1, Sec. 13-20N-28E.

Yesterday in your office I pencilled in an application for Kiva #1.

Crest #2 is in the Navajo Springs Unit along with these shut-in wells:

Santa Fe #14	-	Section 5-19-27	206
Santa Fe #17	-	Section 4-19-27	236
Crest #7	-	Section 6-19-27	204
Santa Fe #31	-	Section 29-20-27	255
Santa Fe #32	-	Section 28-20-27	258
Santa Fe #35	-	Section 27-20-27	263

As Unit Operator we feel it our obligation to seek approval of the various unit owners before proceeding to plug. You will recall that Nos. 14, 17 and 35 produced about 154,000 MCF before Western Helium Corporation shut down. The best well is #17. At this time it is not known whether Kerr would want to produce it.

I am notifying the several owners today of the Commission's request.

Yours very truly,

EASTERN PETROLEUM COMPANY

J. N. Edwards
J. N. Edwards

JNE:sjn

cc: Mr. Harold E. Uhrig
Foster & Messick, Mgrs.
456 N. Meridian Street
Indianapolis, Indiana 46209

RECEIVED

SEP 13 1974

110



EASTERN PETROLEUM CO.
EASTERN DRILLING, INC.

TELEPHONE (818) 382-4104 · P. O. BOX 291 · CARMEL, ILLINOIS 62821

September 10, 1974

Kerr-McGee Corporation ✓
Kerr-McGee Center
Oklahoma City, Oklahoma 73102
Attn: John Fisher

Crest Oil Company
P. O. Box 57
Alton, Illinois 62002

Re: Navajo Springs Unit
Shut-in Wells

Mr. J. F. Schlafly
First Nat'l. Bank Bldg.
Alton, Illinois 62002

Estate of G. R. Barfoot
Ehmann, Olsen & Lane
2500 First Fed. Savings Bldg.
3003 N. Central Avenue
Phoenix, Arizona 85013

Gentlemen:

There are seven shut-in wells in the Unit; Eastern-Santa Fe Nos. 14, 17, 31, 32 and 35 and Crest-Santa Fe Nos. 2 and 7.

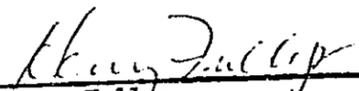
We have been advised by the Oil & Gas Conservation Commission that unless these wells are activated and produced the Commission will of necessity order all wells plugged and abandoned. The Commission is pressing this issue very hard. The best well, No. 17, produced around 70,000 MCF in 1972 and 1973.

On August 15 we notified the Commission that it was possible these wells may be required to sustain the normal take in the future. However, if arrangements are not made to produce it is our opinion that we will be forced to plug them.

Before proceeding further with the Commission we need to know your decision. Please give us your views or decision within seven days of receipt of this letter.

Yours very truly,

EASTERN PETROLEUM COMPANY
Unit Operator


Henry Fullop

HF:sjn

RECEIVED

SEP 12 1974

O & G Cons. Comm.

September 9, 1974

Mr. Henry Fullop
Eastern Petroleum Company
P. O. Box 291
Carmi, Illinois 62821

Re: Navajo Springs Area Wells

Dear Mr. Fullop:

We are returning the approved applications to abandon and plug on the several wells you have submitted.

On the list of wells that you have previously submitted to be abandoned and plugged, which we tentatively approved in our letter of August 22, 1974, you omitted two of these wells on your applications to abandon and plug. The two wells are Crest Oil Santa Fe #2, Permit 110, Sec 33-T20N-R27E and Kiva Santa Fe #1, Permit #560, Sec 13-T20N-R28E. Please forward the applications to abandon and plug these wells for our approval as quickly as possible.

This office must be notified several days prior to commencing work on these wells. You will recall that September 30, 1974 is the deadline for operations to commence.

Very truly yours,

W. E. Allen, Director
Enforcement Section

WEA/rlb

Encs.

cc - J. N. Edwards
Harold E. Uhrig, Foster & Messick, Mgrs.

*Personally gave letter to Mr. Fullope. Filled out
P&A form on 560. Sent approval of 560 back 9-10-74.*

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OFFICE OF

Oil and Gas Conservation Commission

STATE OF ARIZONA

4515 NORTH 7TH AVE.
PHOENIX, ARIZONA 85013

PHONE: (602) 271-5161

June 21, 1974

CERTIFIED MAIL

Mr. Henry Fullop
Eastern Petroleum Company
P. O. Box 291
Carmi, Illinois 62821

Re: Navajo Springs Area

Dear Mr. Fullop:

This Commission has requested several times to be advised of your plans for further operations on your unplugged wells in the Navajo Springs area.

Mr. Edwards submitted some Sundry Notices and Reports on Wells, Form 25, indicating that you planned to plug some of the wells. Some others were to be transferred to Dan Schwetz. Still others, some of which have never produced commercially, apparently were to maintain their present status.

You are aware that several wells in this area have never indicated any ability to produce and others that are carried as shut-in helium wells have never produced commercially and no attempt to produce some of these wells was ever made.

At a meeting of the Commission on this date we were instructed to direct you to properly plug, by August 31, 1974, all wells in this area not now producing. Prior to plugging any well, the plugging program must be approved by the Commission and all operations relating to the plugging and abandonment will be witnessed by a member of the Commission staff.

Within this time frame, this Commission will consider any feasible plan that you might have to place whatever wells that are capable of producing back on production.

Very truly yours,

W. E. Allen, Director
Enforcement Section

WEA/r1b

cc - J. N. Edwards and U.S.F. & G.



OFFICE OF

Oil and Gas Conservation Commission

STATE OF ARIZONA

4515 NORTH 7TH AVE.

PHOENIX, ARIZONA 85013

PHONE: (602) 271-5161

April 12, 1974

CERTIFIED MAIL

Mr. Henry Fullop
Eastern Petroleum Company
P. O. Box 291
Carmi, Illinois 62821

Re: Navajo Springs Area

Dear Mr. Fullop:

We have received Mr. Edward's letter dated March 12, 1974 together with Form 25, Sundry Notice and Reports, on 16 wells in the Navajo Springs area. We are aware that a number of your wells are in the Navajo Springs Coconino Unit. According to our records, several of the wells that are in the Unit have never produced except during testing and are being carried as shut-in helium wells. A number of wells outside the Unit have never produced, and your completion reports indicate the production on the potential test to be zero or TSM. Other wells have been taken off production for various reasons.

The possibility of some of these wells ever being produced commercially again appears negligible. As you know, Western Helium has not taken gas from your wells since December 31, 1973. This company is now in the process of dismantling and moving their plant out of the area. There is a possibility that Kerr-McGee might arrange to take gas from some of the wells in the Navajo Springs Unit as they are now doing from your Santa Fe No. 13 and Barfoot.

It is the opinion of this Commission that all non-commercial wells in the Navajo Springs area, whether in the Unit or not, should be permanently plugged and abandoned as quickly as possible. These wells would include, within the Navajo Springs Coconino Unit, the Crest Santa Fe No. 2, Santa Fe Nos. 31 and 32, and the Reese No. 2. No production has been reported from any of these wells. Also to be plugged should be your Ancon Santa Fe Nos. 21 and 21-1A, Connelly KM State No. 1, Merde No. 1 and all the non-producers that have been drilled within the past three years. Your Merde No. 2 must be plugged immediately. The hole in the casing at approximately 750' has never been repaired and the well is flowing water. Also your Dreck No. 1 has been reported plugged and abandoned, a copy of your plugging report is attached. It is possible that this well has been partially plugged, however there is definitely no plug in the top of the casing and fluid is several hundred feet from the surface. The dry hole marker was never installed. It is on

110

Mr. Henry Fullop
April 12, 1974
Page 2

location but the casing had a bucket inverted over the open end. The hole you drilled on the original location for the Chambers No. 1 for a "water well" is open with wire line and other junk around the open hole. Mr. Tom Pelton, the owner or holder of the surface rights of the land on which the two Chamber holes are located has expressed the desire to assume responsibility of both the holes for water wells. Mr. Pelton's address is P. O. Box 7, Sanders, Arizona 86512, phone: (602) 688-2930. Our Form No. 24, when executed by Mr. Pelton, will satisfy our requirements. Also Wayne Wallace has some interest in some of the holes on his place for use as water wells.

Recently we found a well some 700' + in a northerly direction of the Merde No. 2, a copy of a photograph is attached. We have no records of a well being drilled at this location. Any information that you could give us on this well would be appreciated. It is being used as a water well.

Either Mr. Bannister or myself will be happy to discuss the above mentioned situation with you. However, we are determined to have the existing conditions in the area brought into complete compliance with the rules and regulations of the Oil and Gas Conservation Commission in the very near future.

We would appreciate your thoughts on the above.

Very truly yours,



W. E. Allen, Director
Enforcement Section

WEA/rlb

Encs.

cc John Fisher, Kerr-McGee, Oklahoma
Richard J. Gasdaska, Western Helium, Pennsylvania
C. F. Swain, Crest Oil, Illinois
Jess Edwards, Eastern, Illinois
U.S.F. &G., Indiana

January 8, 1974

Mr. Robert Fullop
Eastern Petroleum Company
P. O. Box 226
Farmington, New Mexico 87401

Re: Crest Oil Santa Fe No. 2
NE/SW Sec 33-20N-27E
Permit #110

Santa Fe Fee No. 24
SE/NW Sec 24-20N-27E.
Permit #536

Ancon 21-1A
Sec 31-20N-28E
Permit #537

Santa Fe Fee Kiva No. 1
NE/SW Sec 13-20N-28E
Permit #560

Santa Fe Fee 6x-1
SE/NW Sec 25-20N-28E
Permit #565

Chambers Santa Fe No. 1
NE/SW Sec 21-21N-28E
Permit #567

Sanders No. 2 Santa Fe Fee
NE/SW Sec 15-21N-28E
Permit #568

Szar State No. 1
NE/NW Sec 36-20N-27E
Permit #578

Merde Indian #1
Sec 30-20N-28E
Permit #592

Merde No. 2
SW/SE Sec 30-20N-28E
Permit #596

Santa Fe Kiva #2
NE/SW Sec 24-20N-28E
Permit #599

Beacon No. 1
Sec 29-20N-29E
Permit #600

Santa Fe Fee No. 1-11
NW/SE Sec 11-20N-28E
Permit #601

Crest Oil Company #7 Santa Fe
SW/NE Sec 6-19N-27E
Permit #204
Santa Fe Fee 431
C N/2 SE/4 Sec 29-20N-27E
Permit #255

Santa Fe Fee #32
SW/NE/SW Sec 28-20N-27E
Permit #258

Dear Mr. Fullop:

As we have previously advised, semi-annual status reports are required on the above referenced wells. This report was due in this office

Page 2
Mr. Robert Fullop
January 8, 1974

January 1, 1974. Please forward these reports as quickly as possible,
and indicate any work that you anticipate performing on these wells
within the next six months.

Please submit Completion Reports for your Indian Allotted Merde No. 1
and Santa Fe Beacon No. 1.

Very truly yours,

W. E. Allen, Director
Enforcement Section

WEA/rlb

Encs.

June 13, 1973

Mr. Robert Fullop
Eastern Petroleum Company
P. O. Box 226
Farmington, New Mexico 87401

Re: Crest Oil Santa Fe No. 2
NE/SW Sec 33-T20N-R27E
Permit No. (110)

Santa Fe Fee No. 24
SE/NW Sec 24-T20N-R27E
Permit No. 536

Ancon 21-A
Sec 31-T20N-R28E
Permit No. 537

Santa Fe Fee Kiva No. 1
NE/SW Sec 13-T20N-R28E
Permit No. 560

Santa Fe Fee 6X-1
SE/NW Sec 25-T20N-R28E
Permit No. 565

Chambers Santa Fe No. 1
NE/SW Sec 21-T21N-R28E
Permit No. 567

Sanders No. 2 Santa Fe Fee
NE/SW Sec 15-T21N-R28E
Permit No. 568

Szar State No. 1
NE/NW Sec 36-T20N-R27E
Permit No. 578

Merde Indian #1
Sec 30-T20N-R28E
Permit No. 592

Merde No. 2
SW/SE Sec 30-T20N-R28E
Permit No. 596

Santa Fe Kiva #2
NE/SW Sec 24-T20N-R28E
Permit No. 599

Beacon No. 1
Sec 29-T20N-R29E
Permit No. 600

Santa Fe Fee No. 1-11
NW/SE Sec 11-T20N-R28E
Permit No. 601

Dear Mr. Fullop:

No action of any kind has been reported on the above referenced wells for quite some time. We have completion reports for some of these wells, but no production has been indicated. Others are carried in a temporarily abandoned status.

June 13, 1973

Mr. Robert Fullop
Eastern Petroleum Company
P. O. Box 226
Farmington, New Mexico 87401

Re: Crest Oil Santa Fe No. 2
NE/SW Sec 33-T20N-R27E
Permit No. 110

Santa Fe Fee No. 24
SE/NW Sec 24-T20N-R27E
Permit No. 536

Ancon 21-A
Sec 31-T20N-R28E
Permit No. 537

Santa Fe Fee Kiva No. 1
NE/SW Sec 13-T20N-R28E
Permit No. 560

Santa Fe Fee 6X-1
SE/NW Sec 25-T20N-R28E
Permit No. 565

Chambers Santa Fe No. 1
NE/SW Sec 21-T21N-R28E
Permit No. 567

Sanders No. 2 Santa Fe Fee
NE/SW Sec 15-T21N-R28E
Permit No. 568

Szar State No. 1
NE/NW Sec 36-T20N-R27E
Permit No. 578

Merde Indian #1
Sec 30-T20N-R28E
Permit No. 592

Merde No. 2
SW/SE Sec 30-T20N-R28E
Permit No. 596

Santa Fe Kiva #2
NE/SW Sec 24-T20N-R28E
Permit No. 599

Beacon No. 1
Sec 29-T20N-R29E
Permit No. 600

Santa Fe Fee No. 1-11
NW/SE Sec 11-T20N-R28E
Permit No. 601

Dear Mr. Fullop:

No action of any kind has been reported on the above referenced wells for quite some time. We have completion reports for some of these wells, but no production has been indicated. Others are carried in a temporarily abandoned status.

Page 2
Robert Fullop
June 13, 1973

Please refer to our letter of October 26, 1972 by which you were advised that the Commission would require a semi-annual report listing the present status of subject wells and also any plans that you might have to complete, re-complete, workover, or plug said wells. Also note that the previously mentioned letter indicated the first semi-annual report would be due June 1, 1973. Please submit this report on form 25, Sundry Notices and Reports on Wells, immediately.

Very truly yours,

W. E. Allen, Director
Enforcement Section

WEA/r1b

Encs.



OFFICE OF
Oil and Gas Conservation Commission
STATE OF ARIZONA
4515 NORTH 7TH AVE.
PHOENIX, ARIZONA 85013
PHONE: (602) 271-5161

October 26, 1972

Mr. Robert Fullop
Eastern Petroleum Company
P. O. Box 226
Farmington, New Mexico 87401

Re: Crest Oil Santa Fe No. 2
NE/SW Sec 33-T20N-R27E
Permit No. 110

Sanders No. 2 Santa Fe Fee
NE/SW Sec 15-T21N-R28
Permit No. 568

Santa Fe Fee Kiva No. 1
NE/SW Sec 13-T20N-R28E
Permit No. 560

Szar State No. 1
NE/NW Sec 36-T20N-R27E
Permit No. 578

Chambers Santa Fe No. 1
NE/SW Sec 21-T21N-R28E
Permit No. 567

Santa Fe Fee 6X-1
SE/NW Sec 25-T20N-R28E
Permit No. 565

Santa Fe Fee No. 24
SE/NW Sec 24-T20N-R27E
Permit No. 536

Merde No. 2
SW/SE Sec 30-T20N-R28E
Permit No. 596

Dear Mr. Fullop:

You have indicated the above referenced wells to be temporarily abandoned. Rule 202, paragraph B, requires a well to be plugged and abandoned after work has been suspended for 60 days unless written permission for temporary abandonment is obtained from the Commission.

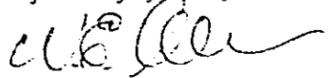
This letter will indicate the Commission's approval to temporary abandon the above referenced wells, until such time as final plugging and abandonment is required.

The Commission will require a Form 25, Sundry Notice and Reports, on the wells to be filed on a semi-annual basis giving the current status. Also should you perform any work, treating, perforating and so forth on any of these wells, the Commission must be advised of your plans in advance. The first regular semi-annual report will be due June 1, 1973.

Page 2
Mr. Robert Fullop
October 26, 1972

In the future, please request a temporary abandonment status on any well not producing that you do not wish to plug.

Very truly yours,



W. E. Allen, Director
Enforcement Section

WEA/rlb

Encs.

DEPARTMENT OF LAW
OFFICE OF THE
Attorney General
STATE CAPITOL
Phoenix, Arizona 85007

GARY K. NELSON
THE ATTORNEY GENERAL
FRANK SAGARINO
CHIEF ASSISTANT ATTORNEY GENERAL

December 16, 1970

WA

Mr. W. E. Allen, Director
Enforcement Section
Oil and Gas Conservation Commission
4515 North Seventh Avenue
Phoenix, Arizona 85013

9171
493
234
110

Dear Mr. Allen:

If you do not hear in a reasonable time from Eastern Petroleum Company, Crest Oil Company and Western Helium Corporation, please notify this office, and we will write a follow-up letter.

Sincerely,

GARY K. NELSON
The Attorney General

John M. McGowan, II
JOHN M. MCGOWAN, II *by ell*
Special Assistant Attorney General

JMM:ell

RECEIVED
DEC 17 1970
O & G CONS. COMM.

WA

C.F. SWAIN

Crest
OIL COMPANY

P. O. BOX 57
ALTON, ILLINOIS 62002

AREA CODE 618-462-5346

December 15, 1970

110
204
471
473

W. E. Allen, Director Enforcement Section
Oil and Gas Conservation Commission
4515 North 7th Avenue
Phoenix, Arizona 85013

Re: Your letter December 9, 1970
Identifying Well Signs
Navajo Springs Area

Dear Mr. Allen:

In paragraph two of your letter of December 9, you state,
"A good number of your wells have no identifying signs."

Crest has four (4) gas wells in the Navajo Springs Area:

- (All in Apache County)
- #2 Santa Fe.....Section 33-20N-27E, Unit Tract V, Navajo Springs Unit
- #7 Santa Fe.....Section 6-19N-27E, Unit Tract II, " " "
- Crest-Arizona Helium #1 Santa Fe...SE/4 SE/4 Section 25-20N-27E
- Crest-Arizona Helium #8-X Santa Fe...SE/4 NW/4 " "

In conjunction with a similar inspection with Eastern Petroleum Company personnel, these installations will be checked in the near future, and any obliterated or missing signs will be replaced.

Sincerely yours,

C. F. Swain
C. F. Swain
Crest Oil Company

cc: Eastern Petroleum Company
Attn: Henry Fullop, Pres.

RECEIVED

DEC 21 1970

O & G CONS. COMM.

C. F. SWAIN

CREST
OIL COMPANY

P.O. BOX 57
ALTON, ILLINOIS 62002

PHONE 462-5346

June 5, 1969

James A. Lambert, Adm Asst
Oil and Gas Conservation Commission
1624 W. Adams Rm 202
Phoenix, Arizona 85007

Dear Mr. Lambert:

7
Enclosed herewith are the Riders received this date from Maryland Casualty Company, covering the Crest Santa Fe #2 and #7 wells, thereby increasing the respective bonds on each to the amount of \$5,000.00.

Sincerely yours,

C. F. Swain
C. F. Swain
Crest Oil Company

CFS:fs



110 ✓
204

June 5, 1969

Mr. J. N. Edwards
Eastern Petroleum Company
P. O. Box 231
Carmi, Illinois 62821

Re: Navajo Springs Unit Wells

Dear Mr. Edwards:

This letter constitutes permission from this Commission to suspend the annual testing for the captioned wells as provided by Rule 401 during June, 1969.

Sincerely,

John Bannister
Executive Secretary

JAL:jf

cc: Mr. Henry Fullop, Eastern Petroleum Company



EASTERN PETROLEUM CO.
EASTERN DRILLING, INC.

TELEPHONE 303-2104 • P. O. BOX 231 • CARMEL, ILLINOIS

June 3, 1969

Mr. John Bannister
Oil & Gas Conservation Comm.
1624 West Adams, Room 202
Phoenix, Arizona 85007

Re: Capacity Tests of Gas Wells

Dear Mr. Bannister:

Reference is made to Mr. Lambert's letter of May 22 relative to annual testing of gas wells under Rule 401.

You will recall that last year this requirement was waived for Kerr-McGee's Pinta Dome Unit for various reasons and for Navajo Springs. Please refer to my letter of July 5, 1968 and yours of June 21.

Is there any particular reason why this cannot be waived this year. Please advise at an early date.

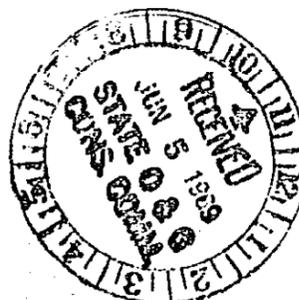
Didn't take long for you to get the Corporation Commission on the ball. Thanks.

Yours very truly,

EASTERN PETROLEUM COMPANY

J. N. Edwards
J. N. Edwards

JNE:sjn



110

C. F. SWAIN

Crest
OIL COMPANY

P. O. BOX 57
ALTON, ILLINOIS 62002

PHONE 462-5346

June 2, 1969

James A. Lambert, Adm Asst
Oil and Gas Conservation Commission
1624 W. Adams Rm 202
Phoenix, Arizona 85007

Re; Increased Bond requirement, Crest S. F. #2
and Crest S. F. #7 wells, Navajo Springs Unit
Apache County, Arizona

Dear Mr. Lambert:

Several phone calls today, ending with conversation with Mr. J. D. Hamlet, Bond Department Maryland Casualty Company, St. Louis, Missouri, brings out that riders were issued covering the above captioned wells increasing the principal amount on each well to \$5,000.00, effective as of April 23rd, 1969.

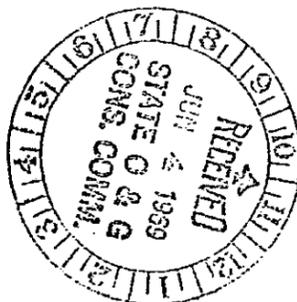
Mr. Hamlet could not understand why we had not received them.

If I do not have them in tomorrows mail he requests that I call him for further action. In the meantime be assured the requirements have been met, and I will hasten your receipt of the riders as much as possible.

Sincerely yours,

C. F. Swain
C. F. Swain
Crest Oil Company

CFS:fs



110

110

204

X-Lambert
X-Chrono

May 27, 1969

Dr. C. F. Swain
Crest Oil Company
P. O. Box 57
Alton, Illinois 62002

Re: Crest Oil Santa Fe #2
T20N, R27E, G & SRM
Sec. 33: NE/4 SW/4
Apache County
Permit #110

Crest Oil Santa Fe #7
T19N, R27E, G & SRM
Sec. 6: SE/4 NE/4
Apache County
Permit #204 X

Dear Dr. Swain:

We received your recent letter and the photocopy of your letter to your bonding company. We require immediate action on your part as to increasing the bonds pertaining to the two captioned wells. This matter has drug out more than a month.

Yours truly,

James A. Lambert
Administrative Assistant

JAL:jf

110

X-Lambert
X-Chrono

May 27, 1969

Dr. C. F. Swain
Crest Oil Company
P. O. Box 57
Alton, Illinois 62002

Re: Crest Oil Santa Fe #2
T20N, R27E, G & SRM
Sec. 33: NE/4 SW/4
Apache County
Permit #110

Crest Oil Santa Fe #7
T19N, R27E, G & SRM
Sec. 6: SE/4 NE/4
Apache County
Permit #204 X

Dear Dr. Swain:

We received your recent letter and the photocopy of your letter to your bonding company. We require immediate action on your part as to increasing the bonds pertaining to the two captioned wells. This matter has drug out more than a month.

Yours truly,

James A. Lambert
Administrative Assistant

JAL:jf

110

OFFICE OF
Oil and Gas Conservation Commission
STATE OF ARIZONA
ROOM 202
1624 WEST ADAMS
Phoenix, Arizona 85007
PHONE: 271-5161

X - Lambert
X - Chero

May 22, 1969

Mr. Henry Fullop
Eastern Petroleum Company
P. O. Box 291
Carmi, Illinois 62821

Re: Eastern Santa Fe #13
Eastern Santa Fe #14
Eastern Santa Fe #17
Eastern Santa Fe #31
Eastern Santa Fe #32
Eastern Santa Fe #35
Eastern Ancon Santa Fe #21
Eastern Reese #2
Kerr-McGee Barfoot State #1
Crest Santa Fe #2
Crest Santa Fe #7

Permit #194
Permit #206
Permit #236
Permit #255
Permit #258
Permit #263
Permit #284
Permit #348
Permit #238
Permit #110
Permit #204 X

Dear Mr. Fullop:

In accordance with Rule 401 the Oil and Gas Conservation Commission, State of Arizona, has adopted procedures for the annual testing for all gas and/or helium wells.

The Commission's procedure is based upon and must be used in conjunction with the Manual of Back-pressure Testing of Gas Wells as issued by Interstate Oil Compact Commission, P. O. Box 53127, Oklahoma City, Oklahoma 73105.

The Commission has prepared, in addition, a supplement to the IOCC manual inasmuch as that manual is based upon a pressure base other than the 15.025 required by the State of Arizona. The supplement to the IOCC manual has made all necessary corrections to the IOCC manual to reflect the 15.025 pressure base.

Page 2
Mr. Henry Fullop
May 22, 1969

The tests as required by Rule 401 shall be conducted during the month of June each year and reported in duplicate by July 10th of each year. Forms 18 and 20 will be used for this purpose.

Yours truly,

James A. Lambert
Administrative Assistant

JB:jf
Enc.
copy to Mr. J. N. Edwards

C. F. SWAIN

Crest
OIL COMPANY

P. O. BOX 57
ALTON, ILLINOIS 62002

PHONE 462-5346

May 16, 1969

James A. Lambert, Adm Asst
Oil and Gas Conservation Commission
1624 West Adams Rm 202
Phoenix, Arizona 85007

42

Re: Increased Bond requirement, Crest Santa #2
and Crest Santa Fe #7, Apache Co., Arizona

Dear Mr. Lambert:

In response to your letter written May 13, please be advised I am proceeding as fast as I can to increase the bonds on the captioned wells to \$5,000.00.

I first wrote the insurance company (who have provided all my bonds for the past ten years) relative to the increased requirements on May 5th. Enclosed is copy of my follow up letter sent this date.

Should I fail to get prompt response, I will get on the long distance phone routine and resolve the matter as quickly as possible.

Sincerely yours,

C. F. Swain

C. F. Swain
Crest Oil Company

CFS:fs



110
204

C. F. SWAIN

Crest
OIL COMPANY

P. O. BOX 57
ALTON, ILLINOIS 62002

PHONE 462-5346

May 16, 1969

Illinois Mercantile Agency, Inc.
3210 Nameoki Road
Granite City, Illinois 62040

Attention: Lois M. Bowers

Dear Mrs. Bowers:

42
Please refer to my letter written to you dated 5/5/69 concerning increasing the principal amount of the bonds on Crest Santa Fe #2 and #7 wells from \$2,500.00 each to \$5,000.00 each.

I have received another letter from the Arizona Oil and Gas Conservation Commission requesting that I bring myself "into compliance" with Commission rules, and that they will expect to hear from me within ten days (from May 15).

Will you please do what you can to expedite and advise.

Sincerely yours,

C. F. Swain

C. F. Swain
Crest Oil Company

CFS:fs



X-Lambert
X-Cheeno

May 13, 1969

Dr. C. F. Swain
Crest Oil Company
P. O. Box 57
Alton, Illinois 62002

Re: Crest Oil Santa Fe #2
T20N, R27E, G & SRM
Sec. 33: NE/4 SW/4
Apache County
Permit #110

Crest Oil Santa Fe #7
T19N, R27E, G & SRM
Sec. 6: SE/4 NE/4
Apache County
Permit #204 X

Dear Dr. Swain:

Please bring yourself into compliance with the Rules and Regulations of the Oil & Gas Conservation Commission of the State of Arizona. Rule 101-A allows you to furnish a blanket bond in the principal sum of \$25,000 or individual bonds in the amount of \$5,000 for each well. The bonds covering the captioned wells are in the principal amount of \$2,500 each. We will expect to hear from you within ten days.

Yours truly,

James A. Lambert
Administrative Assistant

JAL:jf

C.F. SWAIN

CREST OIL COMPANY

P. O. BOX 57
ALTON, ILLINOIS 62002

PHONE 462-5346

April 29, 1969

James A. Lambert, Mr. Asst
Oil and Gas Conservation Commission
1624 West Adams Room 202
Phoenix, Arizona 85007

Re: Increase in Bond requirement, Crest
Santa Fe #2 well, Sec 53-20N-27E, &
Crest Santa Fe #7 well, Sec 6-19N-27E,
Apache County, Arizona

Dear Mr. Lambert:

Wish to acknowledge receipt of your letter written April 25,
1969 relative to increasing the Bond on above captioned wells to the
principal amount of \$5,000.00 each.

44 Thank you for your suggestion concerning the Blanket Bond.
I will consider all angles, and contact my bonding company as soon
as possible.

Sincerely yours,

C.F. Swain
C. F. Swain
Crest Oil Company

CFS:fs

X-Chrono
X-Lambert

April 23, 1969

Dr. C. F. Swain
Crest Oil Company
P. O. Box 57
Alton, Illinois 62002

Re: Crest Oil Santa Fe #2
T20N, R27E, G & SRM
Sec. 33: NE/4 SW/4
Apache County
Permit #110

Crest Oil Co. Santa Fe #7
T19N, R27E, G & SRM
Sec. 6: SW/4 NE/4
Apache County
Permit #204 X

Dear Dr. Swain:

In reviewing our files we find that each of the two captioned wells are covered by bonds in the principal amount of \$2,500. This no longer fills the bonding requirements of the Commission. Each well must be covered with a bond in the principal amount of \$5,000.

Rule 101-A allows you to furnish a blanket bond to cover all wells in the principal sum of \$25,000. At the present time we have four bonds, each in the principal amount of \$5,000, covering Permits 471, 472, 473, and 442. Perhaps you would prefer to substitute the blanket bond for these four wells plus the bonds that we are asking you to replace in the larger amount of \$5,000 each.

Please advise this office of your wishes. We are willing to release the four aforementioned bonds and the two captioned bonds on evidence that a new blanket bond in the principal

Page 2
Dr. C. F. Swain
4-23-69

sum of \$25,000 payable to the Oil & Gas Conservation Commission, State of Arizona, is in effect.

Yours truly,

James A. Lambert
Administrative Assistant

JAL:jf

June 21, 1968

Mr. J. N. Edwards
Eastern Petroleum Company
P. O. Box 291
Carmi, Illinois

Dear Mr. Edwards:

In reponse to your request of June 10, 1968, this letter constitutes permission from this commission to exempt annual gas Capacity Test on the Ancon Santa Fe #21 well and the following shut-in helium wells in Navajo Springs Unit:

<u>Well No.</u>	<u>Tract No.</u>	<u>Location</u>
Santa Fe #14	III	5-19-27
Santa Fe #17	IV	4-19-27
Santa Fe #31	X	29-20-27
Santa Fe #32	XI	28-20-27
Santa Fe #35	XII	27-20-27
Reese #2	VII	1-19-26
Crest S.F. #7	II	7-19-27
Crest S.F. #2	V	33-20-27

Very truly yours,

John Bannister
Executive Secretary
ir

June 6, 1968

Eastern Petroleum Company
P.O. Box 291
Carmi, Illinois

Attention: Mr. Henry Fullop

Gentlemen:

Your attention is referred to our letter of May 13, 1968 and Directive D-2-68 dated May 1, 1968, concerning capacity testing of all gas and/or helium wells.

As you are aware, you as operator of the Navajo Springs Unit are responsible for compliance on all wells in the Unit, both producing and non-producing (shut-in).

Should good and sufficient reasons be stated for deferment of this testing on specified wells, this Commission would give due consideration.

Very truly yours,

John Bannister
Executive Secretary
mr
enc



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
HELIUM ACTIVITY

May 24, 1960

BOX 911
AMARILLO, TEXAS

Great Oil Company
P. O. Box 57
Alton, Illinois

Gentlemen:

Enclosed are two copies of a report on the analysis of a gas sample which was analyzed as a part of the Bureau of Mines survey for helium-bearing natural gases. This sample was obtained from your Santa Fe No. 2 well located in Section 33, Township 10 North, Range 27 East, Apache County, Arizona.

The Bureau of Mines plans to publish a series of papers on the analyses of gases from the various states and would like to obtain a release of the enclosed data for publication with similar data released by other operators. It will be appreciated if the owner of the well from which this sample was obtained, or his representative, will sign the "Permission for Publication" on one copy of the report and return it to us. A self-addressed stamped envelope is enclosed. If the owner desires permission to publish or circulate the analytical results, please communicate directly with the Director, Bureau of Mines, Washington, D. C.

To be sure that the well data are accurate, please check the information on the report of analysis and indicate in the appropriate square whether they are accurate without correction or as corrected on the sheet. If the data sheet is not complete, please supply the missing information.

We wish to thank you for your cooperation in furnishing us with samples of gas for analysis.

Sincerely yours,

R. D. Munnerlyn, Chief
Branch of Reserves-Planning-Contracts
Division of Gas Fields Operations

Enclosure

Copy to: Mr. R. E. Lauth
P.O. Box 776
Durango, Colorado

June 21, 1965

Maryland Casualty Company
Suite 1201 Pierce Building
St. Louis, Mo. 63102

Attention: Mr. Richard A. White, Bond Department

Re: Crest Oil Company, Alton, Illinois

Gentlemen:

This will acknowledge receipt of your letter of June 15, 1965 in which you mention a letter dated June 9, 1965 addressed to this Commission at its old address. Please be advised that this letter has not been received by this office.

Below listed, please find a breakdown of each well drilled by Crest Oil and the necessary requirements to be met:

Santa Fe Fee #1, NE/4SW/4 19-T20-R27K, Apache County.
Your bond 92-676130. Our File 112

Our records reveal that captioned bond was released January 23, 1965 and that all necessary reports have been filed.

Santa Fe Fee #2, NE/4SW/4 39-T20N-R27K, Apache County.
Your bond 92-676089. Our File 110

This well is in the Navajo Springs Unit and consequently the bond must remain in force. Would you please send us a copy of this bond?

Santa Fe Fee #3, SW/4NE/4 3-T19N-R27K, Apache County.
Your bond 920677167. Our File 124

This well was completed as a dry hole and all our requirements have been met. This bond was released May 16, 1961.

June 21, 1965

Santa Fe Fee #4, NE/4SW/4 27-T20N-R27E, Apache County
Our File 131

This particular location was never drilled and our file does not reveal that it was ever bonded.

Santa Fe Fee #5, NE/4SW/4 26-T20N-R27E, Apache County
Our File 129

The bond covering this location was executed August 25, 1960 by Mr. J.M. Johnson on behalf of Maryland Casualty Company. The number of the bond is not known.

Our file does not reveal that this bond has been released, and, further, the Well Completion Report must be filed with this office before this bond may be released.

Santa Fe Fee #5A, NE/4SW/4 26-T20N-R27E, Apache County
Our File 131

The bond number is not known. Our file reveals this bond was released May 22, 1962.

Santa Fe Fee #6, NE/4NE/4 35-T20N-R27E, Apache County
File 130. Bond number unknown.

Our file reveals this bond was released May 22, 1962.

Santa Fe Fee #7, SW/4NE/4 6-T19N-R27E, Apache County
Your Bond 92-78 7379. Our File 204

Our record reveals that this well is in the Fiesta Dome Unit. Consequently this bond must be kept in force and we request that you furnish us with a copy of same.

Santa Fe Fee #8, NE/4SW/4 25-T20N-R27E, Apache County
Our File 134. Bond number unknown.

Our records reveal that this is a shallow balance well and consequently this bond must be kept in force. You are requested to furnish us with copy of same.

Santa Fe Fee #9, NE/4SW/4 24-T20N-R27E, Apache County
Our File 203. Your Bond 92-787378

This bond was released November 7, 1962. However the necessary Well Completion Report has not been filed with this office.

Santa Fe Fee #10, NE/4SW/4 11-T20N-R27E, Apache County
Our File 170. Your Bond 92-781148

Our file indicates that this location was not drilled by Crest under Permit 175, but apparently turned over by Eastern Petroleum and drilled as their Santa Fe Fee #12. However,

Maryland Casualty Company Page 3

June 21, 1965

until such time as Crest files with us a Well Completion Report showing that this well was not drilled under Permit 170, this bond may not be cancelled.

Santa Fe Fee #11, SW/4NE/4 26-T20N-127E, Apache County
Our File 182. Your Bond 92-786510

Our file reveals that this well has been completed and this bond released May 22, 1962.

Should you have any further questions concerning the Crest Oil Company bonds, please advise.

Yours very truly,

John Bannister
Executive Secretary

cc: Crest Oil Company, P.O. Box 57, Alton, Ill.



ARKANSAS LOUISIANA GAS COMPANY

SHREVEPORT, LOUISIANA

August 14, 1964

Arizona Oil and Gas Commission
162 West Adams
Phoenix, Arizona
Attention: Mr. John Barnister

Gentlemen:

In accordance with your request to receive the test results on the wells in the Navajo Springs Field, Apache County, Arizona, we are enclosing herewith, in duplicate, the results of these tests.

Each well was tested at what we speak of as a maximum rate of flow - that is, the maximum rate at which we produced the well; and the rates of flow where the wellhead pressure approached 100 pounds. This is indicated under Column 2 where it says, "Well Subing Pressure-PSIG." You will note that a volume of 1800 MCFPD was measured from eight wells, testing these wells from 15 to 18 1/2 hours each. These are our field calculations, and there may be a slight change in the total volume when the final calculations are determined. The volumes of gas in MCFPD have been corrected to indicate the standard conditions of measuring gas at 15.025 pressure base.

I would like to take this opportunity to express to you how much I appreciate you and your staff turning over the records of the conservation office and the assistance which was given to me on my two trips to Phoenix. If the volumes are any different on our final calculations, I will forward a copy to your office.

Yours very truly,

ARKANSAS LOUISIANA GAS COMPANY

P. B. Emmons
P. B. Emmons
Proration Engineer



PBE:kt
Enclosure

Capital



Faint, illegible text, possibly bleed-through from the reverse side of the page.



EYE EASE 45 806
20120 BUFF 45-926

Prepared By	Initials	Date
Approved By		

FLOW RATES ON WELLS
IN NAVAJO SPRINGS FIELD, APACHE COUNTY, ARIZONA

RATES WITH PRESSURE CLOSE TO 100#

SIP	WELL NAME	ORIFICE	WELL	2"	HOURS	VOLUME			
		SIZE	TUBING	PROVER					
PSIG		2" PROVER	PRESS-PSIG	PRESS - PSIG	TESTED	MCFPD			
1	106.7	Santa Fe 35	7/16	96.0	91.5	15 1/2	365	1	
2	106.7	" " 31	3/16	95.9	95.9	17 1/2	68	2	
3	106.6	" " 32	1/8*	105.7	105.7	17 1/2	39	3	
4	133.8	" " 21	1/16	59.5	59.5	18 1/2	4	4	
5	105.6	" " 13		99.8	42.9	15	980	5	
6	105.4	" " 7	1/8*	99.9	99.9	15 1/4	4	6	
7	105.4	" " 14	3/8	97.4	97.4	15 1/2	270	7	
8	105.5	" " 17	3/16	98.5	98.5	16 3/4	70	8	
9	201.5	" " 8		91 - 93	12-13 1/2	18 1/4	7 bbls. salt water/hr.	9	
10	105.5	" " 2	Well pulled down 1# small vol. water & gas, slightly salty.						10
11							1800 MCFPD	11	
12		* Orifice well tester.						12	
13								13	
14	After Testing		MAXIMUM RATE OF FLOW						14
15	106.6	Santa Fe 35	3/4	80.1	55.1	1 1/2	668	15	
16	106.6	" " 31	1/2	76	76	1 1/2	394	16	
17	106.5	" " 32	1/2	Well tight pressure kept falling			39	17	
18	133.9	" " 21	Same as No. 2 above.					18	
19	105.6	" " 13		94.1	94.1	4	1900	19	
20	105.4	" " 7	1/2	33.9	33.9	2 1/4	28	20	
21	105.4	" " 14	7/8	71.6	39.7	3 1/4	700	21	
22	105.5	" " 17	7/8	19.7	19.7	2	435	22	
23	Not Taken	" " 8		9	13	18 1/4	448	23	
24	Not Taken	" " 2	Same as No. 2 above.						24
25								25	
26								26	
27								27	
28								28	
29								29	
30								30	
31								31	
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43								43	
44								44	

Phillip B. Emmons
August 13, 1964



C.F. SWAIN

Crest
OIL COMPANY

E.L. SISS

BOX 57
ALTON, ILLINOIS

PHONE 462-5346

September 14, 1963

Mr. John K. Petty, Executive Secretary
Oil and Gas Conservation Commission
State Of Arizona

Re: Crest #2 Santa Fe and Crest #7
Santa Fe, Apache County, Arizona

Dear Mr. Petty:

Thank you very much for your letter of September 11th.

I regret that I do not have all the data requested on above captioned wells, but have enclosed copies of data that I do have, and hope same will be sufficient for the time being.

In the meantime I will request copies of the log on the #2 and the back pressure test on the #7, and if I can obtain in time to forward before meeting, will certainly do so. All wells were natural completions, and none were fractured or acidized, except the small amount of acid used to clean up perforations.

I plan to attend the Unitization Hearing on the 25th, and will probably fly out with Henry Fullop of Eastern if weather permits. So will be looking forward to seeing you then.

In the meantime I would appreciate it very much if you would call me, if in your opinion additional data is needed, or if there are developments you feel should come to my attention.

Sincerely yours,



C. F. Swain
Crest Oil Company

CFS:bs

Enclosures

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XXXXXXXXXX
XXXXXXXXXX

September 11, 1963

Dr. C. F. Swain, President
Crest Oil Company
P. O. Box 57
Alton, Illinois

Re: Navajo Springs Wells, Apache County, Arizona

Dear Dr. Swain:

I surely enjoyed conversing with you a few days ago.

In view of the Unitization Hearing, September 25, I am checking our "haves" and have nots" on the Apache County wells involved and find the following items lacking in the commission files.

Crest #2 Santa Fe, Sec. 33, T20N, R27E - we lack the electrical and micro logs, any other logs run, core analysis, any back pressure or other tests not shown on Completion form, and gas analysis. If possible, I would like a copy of fracing or acidizing details. A copy of the fracing or acidizing company's report to you, if possible.

Crest #7 Santa Fe, Sec. 6, T19N, R27E - we lack the micro log, core analysis, any back pressure or other tests not shown on the completion form and the gas analysis. Frac or acidizing information as above will be appreciated.

Any other information you would care to send; i.e., sample description, drilling time, etc. will be appreciated.

Dr. Swain, I will cooperate with you to the fullest extent on any problems you may have or anticipate having on any of your wells, and the information I receive from you will be filed in the well records. I am doing my best to have complete information in each file.

Thanking you for the above information as soon as you can reasonably send it as the Unitization Hearing will be very soon, I am

Yours truly,

John E. Petty
Acting Executive Secretary

116

January 23, 1961

C
O
P
Y

Maryland Casualty Company
Pierce Building
St. Louis, Missouri

Attention: Mr. Ernst W. Kuhn
Bonding Department

Dear Sir:

In re: Crest Oil Company, Bond 92-676089, we wish to advise you that well #2 is a completed well; i.e., completed as a shut-in helium gas well and now awaits a market. Therefore, the bond continues in force and effect.

With respect to Bond 92-676130, you may release the same on Crest Oil #1, Sec. 33, T. 20N, R. 27E, Apache County, since this well is plugged and abandoned as a dry hole, as of 8/9/60.

Yours very truly,

D. A. Jerome
Executive Secretary

DAJ/ew

MARYLAND CASUALTY COMPANY

WILLIAM T. HARPER, CHAIRMAN OF THE BOARD AND PRESIDENT

E. H. CALLIOTTE
ASSISTANT RESIDENT MANAGER
RAY DELARBER
MANAGER CASUALTY DEPARTMENT

ST. LOUIS OFFICE
HOBART A. MARTIN, RESIDENT VICE-PRESIDENT
Pierce Building ST. LOUIS 2, MO.
Telephone Main 8600

VINCENT A. BAYER
MANAGER BONDING DEPARTMENT
JEROME J. HELMER
MANAGER FIRE & MARINE DEPARTMENT

January 18, 1961

Oil and Gas Conservation Commission,
State of Arizona,
3500 N. Central - Suite 312,
Phoenix, Arizona

Bond 92-676089 - Crest Oil Company, Alton
located - Center of Section 33,
Township 20 North Range 27 East, #4
Apache County, Arizona

Bond 92-676130 - Crest Oil Company, Alton
located - Center of Section 19,
Township 20 North, Range 27 East, #1
Apache County, Arizona

Gentlemen:

On or about February 17, 1960, our Company executed the above bonds in the penalty of \$2500.00 each. We have been advised that our bonds are no longer needed as dry hole has been plugged.

Please let us know the date our liability can be terminated under these bonds.

Yours very truly,

Ernst W. Kuhn
BONDING DEPARTMENT

EWK:lh

August 15, 1960

Mr. C. F. Swain
Crest Oil Company
P. O. Box 57
Alton, Illinois

Dear Mr. Swain:

We enclose herewith an approved copy of your Well Completion Report.

Also enclosed are three copies of Plugging Record, as we have not received a plugging record on your Crest Number 3.

Yours very truly,

W. F. Maule
Petroleum Engineer

WFM/ew
Enclosures (4)

Crest
OIL COMPANY
BOX 57
ALTON, ILLINOIS

August 9, 1960

W. F. Maule, Petroleum Engineer
Oil and Gas Conservation Commission
3500 N. Central Ave.
Phoenix, Arizona

Re: Well Completion Report
Crest Oil Company's Santa Fe #2

Dear Mr. Maule:

On July 15th last, we submitted in triplicate Form No. P-7 Well Completion Report on Crest Oil Company's Santa Fe #2, Apache County, Arizona. On July 18th you returned same to us with a letter pointing out certain errors.

After carefully checking all data we have prepared the report again and are submitting same enclosed herewith.

Respectfully yours,

C. F. Swain
C. F. Swain
Crest Oil Company

OFS:BS
Enclosures



Crest
OIL COMPANY
BOX 57
ALTON, ILLINOIS

21 July 1960

W. F. Maule, Petroleum Engineer
Oil and Gas Conservation Commission
3500 N. Central
Phoenix, Arizona

Re: Returned completion report (P-7)
Crest's Santa Fe #2, Apache Co., Arizona

Dear Mr. Maule:

Wish to acknowledge receipt of your letter dated July 18th wherein you point out certain contradictions of figures in Form P-7 filed on Crest's Santa Fe #2 well, Apache County, Arizona. Also acknowledge receipt of returned Forms.

Before refileing on this well, I wish to consult with officials of Eastern Petroleum Company with offices in Carmi, Illinois and Denver, Colorado; also Mr. Robert E. Lauth, Geologist, Durango, Colorado. These people have given us invaluable assistance in the drilling of our wells in Arizona. As a matter of fact it is becoming more apparent daily that it probably would not be possible for us to operate in your State without such assistance.

I imagine the check mark you have placed in the "Date Filed" box opposite the "Type of log" box, indicates that you note we have not filed a copy of the Electrical-Induction log with the Commission. Inasmuch as the old, as well as the new contested regulations extend the courtesy of a delay of six months in the filing of such logs, we prefer at this time to take advantage of this courtesy.

I truly regret any inconvenience or embarrassment caused your office, but you may be comforted in the knowledge that same has been considerably greater to me.

Respectfully yours,

C. F. Swain
C. F. Swain
Crest Oil Company

CFS:BS

CC: James W. Dean
Robert E. Lauth

July 18, 1960

Mr. C. F. Swain
Crest Oil Company
P. O. Box 57
Alton, Illinois

Dear Mr. Swain:

I am returning the Form P-7 you filed on your Crest Oil Company Santa Fe #2 well, Apache County, Arizona, and ask that you examine the items encircled. I believe there is a typographical error in the two items, Gas Produced and Calculated Rate per 24 Hours. Further, the drill stem test indicates a final shut-in pressure of 105 PSIG. Form P-7 indicates 136 PSIG. Not knowing the method you used to determine the productive capacity of the well, I cannot deduce which number is correct; i.e., 306 MCF gas produced during test or 306 MCF per 24 hours.

Your prompt reply will be appreciated.

Yours very truly,

W. F. Maule
Petroleum Engineer

WFM/ew
Encs.

Crest
OIL COMPANY
BOX 57
ALTON, ILLINOIS



July 15, 1960

State Of Arizona
Oil and Gas Conservation Commission
Phoenix, Arizona

Gentlemen:

Enclosed please find completed in triplicate Well Completion Report Form
No. P-7 on Crest Oil Company Santa Fe #2.

Respectfully yours,

C. F. Swain
Crest Oil Company

CFS:BS



EASTERN PETROLEUM CO.
EASTERN DRILLING, INC.

1ST NATIONAL BANK BLDG.
DENVER 2, COLORADO

June 10, 1960

Mr. D. A. Jerome, Executive Secretary
Oil and Gas Conservation Commission
Suite 312 - 3500 North Central Avenue
Phoenix, Arizona

Dear Don:

I am sorry that time did not allow for us to have a more lengthy visit when I was in Phoenix earlier this week. There are several items that I do wish to sit down and visit with you about and will attempt to arrange to do so by a return visit to Phoenix the latter part of this coming week.

We are preparing to complete the Crest Oil #2 Santa Fe within approximately one week and will upon completion of that well file the appropriate information with your agency.

Respectfully yours,

EASTERN PETROLEUM COMPANY
Rocky Mountain Division

James W. Dean

JWD:JS

VIA AIR MAIL

File

March 30, 1960

Mr. R. E. Molitor, Manager
Oil Field Division
Credit Managers Assn. of So. California
1501 W. 8th Street
Los Angeles 17, California

RE: Crest Petroleum
Crest Petroleum, Inc. - 6427 E. Kellogg,
Wichita, Kansas

Dear Mr. Molitor:

With regard to your inquiry regarding Crest Petroleum Company, we desire to advise you that the Crest Oil Company, which is drilling in Apache County, Arizona is a resident of Alton, Illinois and whose Post Office Box is No. 57.

You were inquiring regarding the Crest Petroleum, Inc. and their address, or connection with the company drilling in Apache County and I do not have any information or knowledge regarding such a company.

Yours very truly,

D. A. Jerome,
Executive Secretary

DAJ:mar

CREDIT MANAGERS ASSOCIATION
of Southern California

1501 1509 West Eighth Street - Los Angeles 17, California

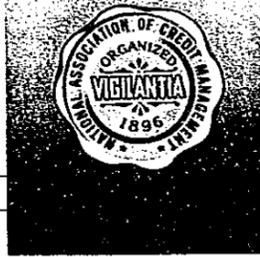
State of Arizona
Phoenix, Arizona

*Route 312
3500 N Central*

Attn: Division of Oil & Gas



CREDIT MANAGERS ASSOCIATION
of Southern California



1501-1509 West Eighth Street - Los Angeles 17, California - Hubbard 3-5151

March 22, 1960

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LEE J. FORTNER

SECRETARY
M. W. ENGLEMAN

State of Arizona
Phoenix, Arizona

Attn: Division of Oil & Gas

Gentlemen:

It has been reported to us Crest Petroleum is drilling Santa Fe #1 in Section 19-20n-27e, NE $\frac{1}{4}$, SW $\frac{1}{4}$, Section 19 and Santa Fe #2 in Section 33-20n-27e center NE $\frac{1}{4}$, SW $\frac{1}{4}$, Section 33 in Apache County.

We desire to know the full and complete name of Crest Petroleum and their address. We have a record of Crest Petroleum, Inc. at 6427 E. Kellogg, Wichita, Kansas. Is this the same company as Crest Petroleum which is drilling the above mentioned wells in your State.

Should we have any further inquiries of this nature, we desire to know the name of the proper Department and address to write to in the future.

We are enclosing a self addressed stamped envelope for your convenience.

Very truly yours,

OIL FIELD DIVISION

Ray E. Molitor
Manager

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JAESER & BRANCH

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MUNT FOODS AND INDUSTRIES, INC.

E. S. KARLOW
THE NATIONAL SUPPLY CO.

SIGMUND T. RICH
RICH STEEL COMPANY

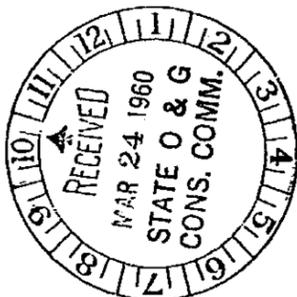
CHARLES L. RUTZ
YOUNGSTOWN STEEL PRODUCTS
COMPANY OF CALIFORNIA

C. HOWARD STOKES
THE QUAKER OATS COMPANY

RICHARD VAN VORST
C. B. VAN VORST CO.

GEORGE L. WOODFORD, JR.
SECURITY-FIRST NATIONAL BANK

REM:c
Enc.



March 2, 1960

Crest Oil Company
P.O. Box 57
Alton, Illinois

Re. Application for Permit to Drill
Santa Fe # 1 - Apache County
Sec. 19 T.20N., R. 27E.
Application for Permit to Drill
Santa Fe # 2 - Apache County
Sec. 33 T.20N., R. 27E.

Gentlemen:

Enclosed herewith, is your Applications for Permit
to Drill, and your receipt for Drilling Permit No. 110
112, in the amount of twenty-five dollars (\$25.00)
each, dated March 1, 1960.

Good Luck,

W. F. Haule,
Petroleum Engineer

WFM:gg