

EXHIBITS FOR CASE NO. 3003  
CABOT CORPORATION'S APPLICATION  
FOR ORDER  
CREATING NEW FIELD,  
TEMPORARY RULES AND 80-ACRE SPACING

SIGNAL STATE NO. 1  
Section 29, T8S, R33E  
Chaves County, New Mexico

BEFORE EXAMINER NUTTER	
OIL CONSERVATION COMMISSION	
<i>Applicant</i>	EXHIBIT NO. _____
CASE NO.	3003



CABOT CORPORATION

SIGNAL-STATE NO.1

WELL HISTORY

**Location:** 660' FNL and 660' FEL Section 29, T8S, R33E,  
Chaves County, New Mexico

**Total Depth:**

**Casing:** 13-3/8" surface at 237', 350 sacks. Cement circulated.  
8-5/8" intermediate at 3,650', 350 sacks.  
5-1/2" production at 10,332', 300 sacks. Recemented  
through perforations 9,200' with 100 sacks.

**Drill Stem Test:** Pennsylvanian Bough "C" tested from 90570-9080'.  
Open 1 hour, gas to surface in 3 minutes, mud in 17  
minutes, oil and water in 24 minutes, estimated 50% water.  
Flowed 15 barrels fluid per hour.  
Initial shut-in pressure - 3083#/30 minutes  
Initial flow pressure - 1490#  
Final flow pressure - 2976#  
Final shut-in pressure - 3083#/45 minutes.

**Perforations:** 9058-9068', 4 holes per foot

**Formation Treatment:** 1,000 gallons mud acid

**Potential Test:** Flowed 462 barrels oil plus 52 barrels water through  
20/64" choke, flowing tubing pressure of 650#.  
GOR 1,275/l. Gravity 44 degrees API.

**Initial Reservoir Pressure:** 3055 psig at 9066' datum

6 hr. test  
220 BOPD  
10/14 chke  
11/10/40

**COMPARISON OF ROCK AND FLUID PROPERTIES**  
**ALLISON PENN POOL VERSUS SIGNAL-STATE NO. 1**

	<b><u>Allison Penn Pool</u></b>	<b><u>Cabet Signal-State #1</u></b>
<b>Producing Formation</b>	<b>Bough "C"</b>	<b>Bough "C"</b>
<b>Gross Pay, Feet</b>	<b>30-50</b>	<b>25</b>
<b>Net Pay, Feet</b>	<b>9</b>	<b>24</b>
<b>Porosity, Percent</b>	<b>7</b>	<b>5 (log)</b>
<b>Water Saturation, Percent</b>	<b>25</b>	<b>35</b>
<b>Permeability, md.</b>	<b>200</b>	<b>190 (DST)</b>
<b>Original Reservoir Pressure, psig</b>	<b>3363</b>	<b>3055</b>
<b>Saturation Pressure, psig</b>	<b>3150</b>	<b>3050</b>
<b>Original Gas in Solution, cu.ft./bbl</b>	<b>1,517</b>	<b>1,275</b>
<b>Reservoir Temperature, °F</b>	<b>156</b>	<b>151</b>
<b>Formation Volume Factor</b>	<b>1.821</b>	<b>1.74</b>
<b>Oil Viscosity, cp.</b>	<b>0.19</b>	<b>0.22</b>
<b>Oil Gravity, °API</b>	<b>48</b>	<b>44</b>

OIL RECOVERY CALCULATIONS

BOUGH "C" FORMATION

CABOT CORPORATION  
SIGNAL-STATE NO.1

Reservoir Volume Calculation

Porosity (from log analysis)	5%
Water Saturation (from log analysis)	35%
Net Pay	24 feet

Oil in Place (Bbl/Ac.Ft.)

$$(7,758 \text{ bbl/Ac.Ft.})(0.05)(1 - 0.35)\left(\frac{1}{1.74}\right) = 145$$

Recoverable Oil (Bbl/Ac.Ft.)

$$(145)(0.30) = 43.5$$

Oil in Place (Bbl/Acre)

$$(145 \text{ bbl/Ac.Ft.})(24 \text{ feet}) = 3,480$$

Recoverable Oil (Bbl/Acre)

$$(43.5 \text{ bbl/Ac.Ft.})(24 \text{ ft.}) = 1,044$$

	<u>40 acres</u>	<u>80 acres</u>
Oil in Place, Barrels	139,200	278,400
Recoverable Oil, Barrels	41,760	83,520

DRILLING ECONOMICS - BOUGH "C" FORMATION

CABOT CORPORATION SIGNAL-STATE NO. 1

	<u>40 Acres</u>	<u>80 Acres</u>
<u>Income</u>		
1. Recoverable Oil, bbl	41,760	83,520
2. Operator's Net Recoverable Oil (87.5%)	36,540	73,080
3. Operator's Gross Income (\$2.72 X 2)*	\$99,389	\$198,778
<u>Costs</u>		
1. Drilling and Completion (flowing well)	\$115,000	
2. Flow Lines and Tank Battery	<u>\$ 10,000</u>	
Total Cost Flowing Well and Battery	\$125,000	
3. Pumping Unit (Hydraulic)	<u>\$ 20,000</u>	
Total Cost Pumping Well and Battery	\$145,000	
Operating Cost (5 years at \$3,000/year)	\$ 15,000	
 *Before Tax Profit (Loss)	 (\$60,611)	 \$38,778

CLARENCE E. HINKLE  
W. E. BONDURANT, JR.  
HOWARD C. BRATTON  
S. B. CHRISTY IV  
LEWIS C. COX, JR.  
PAUL W. EATON, JR.  
CONRAD E. COFFIELD  
HAROLD L. HENSLEY, JR.  
MICHAEL R. WALLER

12 3003  
LAW OFFICES  
HINKLE, BONDURANT, BRATTON & CHRISTY  
HINKLE BUILDING  
ROSWELL, NEW MEXICO

February 24, 1964

1964 MAR 2 AM 28  
TELEPHONE 622-6510  
AREA CODE 505  
POST OFFICE BOX 1028

New Mexico Oil Conservation Commission  
P.O. Box 2088  
Santa Fe, New Mexico

Gentlemen:

Cabot Corporation respectfully requests that a new pool for production of oil from the Bough C Formation in the NE $\frac{1}{4}$  of Section 29, Township 8 South, Range 33 East, N.M.P.M., Chaves County, New Mexico, be established. The pool was discovered by Cabot Corporation's Signal State No. 1 well in the NE $\frac{1}{4}$ NE $\frac{1}{4}$  of Section 29.

It is further respectfully requested that the hearing include the establishment of special pool rules and regulations including provisions for 80 acre spacing and proration units with 80 acre allowables. It is further requested that the 80 acre units consist of any two contiguous 40 acre tracts in a quarter section, and that the well locations be within 150 feet from the center of either 40 acre tract.

If there is any further information which you need in connection with the above application, please let us hear from you.

Very truly yours,

HINKLE, BONDURANT, BRATTON & CHRISTY

Howard C. Bratton

HCB:bb

cc: Mr. William Sargent  
Cabot Corporation  
P.O. Box 1101  
Pampa, Texas

DOCKET FILED

Date 2-28-64  
TC



BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING  
CALLED BY THE OIL CONSERVATION  
COMMISSION OF NEW MEXICO FOR  
THE PURPOSE OF CONSIDERING:

CASE No. 3003  
Order No. R-2685

APPLICATION OF CABOT CORPORATION  
FOR THE CREATION OF A NEW OIL POOL  
AND FOR SPECIAL POOL RULES, CHAVES  
COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on March 11, 1964, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 31st day of March, 1964, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

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

(2) That the applicant, Cabot Corporation, seeks the creation of a new oil pool for Pennsylvanian production and the promulgation of temporary special rules and regulations governing said pool, including a provision for 80-acre proration units.

(3) That the Signal State Well No. 1, located in Unit A of Section 29, Township 8 South, Range 33 East, NMPM, Chaves County, New Mexico, has discovered a separate common source of supply which should be designated the Tobac-Pennsylvanian Pool; that the vertical limits of said pool should be the Pennsylvanian formation and the horizontal limits of said pool should be the SE/4 of Section 20, the SW/4 of Section 21, the NW/4 of Section 28, and the NE/4 of Section 29, Township 8 South, Range 33 East, NMPM, Chaves County, New Mexico.

(4) That in order to prevent the economic loss caused by the drilling of unnecessary wells, to avoid the augmentation of risk arising from the drilling of an excessive number of wells,



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Order No. R-2685

to prevent reduced recovery which might result from the drilling of too few wells, and to otherwise prevent waste and protect correlative rights, temporary special rules and regulations providing for 80-acre spacing units should be promulgated for the Tobac-Pennsylvanian Pool.

(5) That the temporary special rules and regulations should provide for limited well locations in order to assure orderly development of the pool and protect correlative rights.

(6) That the top of the perforations in the Pennsylvanian formation in the Signal State Well No. 1 is at 9058 feet; that the special rules and regulations should therefore provide for an 80-acre proportional factor of 4.77 for allowable purposes.

(7) That the temporary special rules and regulations should be established for a one-year period in order to allow the operators in the subject pool to gather reservoir information to establish the area that can be efficiently and economically drained and developed by one well.

(8) That this case should be reopened at an examiner hearing in April, 1965, at which time the operators in the subject pool should be prepared to appear and show cause why the Tobac-Pennsylvanian Pool should not be developed on 40-acre spacing units.

IT IS THEREFORE ORDERED:

(1) That a new pool in Chaves County, New Mexico, classified as an oil pool for Pennsylvanian production is hereby created and designated the Tobac-Pennsylvanian Pool, with vertical limits comprising the Pennsylvanian formation and horizontal limits comprising the SE/4 of Section 20, the SW/4 of Section 21, the NW/4 of Section 28, and the NE/4 of Section 29, Township 8 South, Range 33 East, NMPM, Chaves County, New Mexico.

(2) That temporary Special Rules and Regulations for the Tobac-Pennsylvanian Pool are hereby promulgated as follows, effective April 1, 1964.

SPECIAL RULES AND REGULATIONS  
FOR THE  
TOBAC-PENNSYLVANIAN POOL

RULE 1. Each well completed or recompleted in the Tobac-Pennsylvanian Pool or in the Pennsylvanian formation within one mile of the Tobac-Pennsylvanian Pool, and not nearer to or within the limits of another designated Pennsylvanian pool, shall be spaced, drilled, operated, and produced in accordance with the Special Rules and Regulations hereinafter set forth.

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RULE 2. Each well completed or recompleted in the Tobac-Pennsylvanian Pool shall be located on a standard unit containing 80 acres, more or less, consisting of the N/2, S/2, E/2, or W/2 of a single governmental quarter section; provided, however, that nothing contained herein shall be construed as prohibiting the drilling of a well on each of the quarter-quarter sections in the unit.

RULE 3. The Secretary-Director of the Commission may grant an exception to the requirements of Rule 2 without notice and hearing when an application has been filed for a non-standard unit comprising a single quarter-quarter section or lot. All operators offsetting the proposed non-standard unit shall be notified of the application by registered or certified mail, and the application shall state that such notice has been furnished. The Secretary-Director may approve the application upon receipt of written waivers from all offset operators or if no offset operator has entered an objection to the formation of the non-standard unit within 30 days after the Secretary-Director has received the application.

RULE 4. Each well projected to or completed in the Tobac-Pennsylvanian Pool shall be located within 150 feet of the center of a single governmental quarter-quarter section.

RULE 5. The Secretary-Director may grant an exception to the requirements of Rule 4 without notice and hearing when an application has been filed for an unorthodox location necessitated by topographical conditions or the recompletion of a well previously drilled to another horizon. All operators offsetting the proposed unorthodox location shall be notified of the application by registered or certified mail, and the application shall state that such notice has been furnished. The Secretary-Director may approve the application upon receipt of written waivers from all offset operators or if no offset operator has entered an objection to the unorthodox location within 20 days after the Secretary-Director has received the application.

RULE 6. A standard proration unit (79 through 81 acres) in the Tobac-Pennsylvanian Pool shall be assigned an 80-acre proportional factor of 4.77 for allowable purposes, and in the event there is more than one well on an 80-acre proration unit, the operator may produce the allowable assigned to the unit from the wells on the unit in any proportion.

The allowable assigned to a non-standard proration unit shall bear the same ratio to a standard allowable in the Tobac-Pennsylvanian Pool as the acreage in such non-standard unit bears to 80 acres.

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IT IS FURTHER ORDERED:

(1) That any well presently drilling to or completed in the Pennsylvanian formation within the Tobac-Pennsylvanian Pool or within one mile of said pool that will not comply with the well location requirements of Rule 4 is hereby granted an exception to the requirements of said rule. The operator shall notify the Artesia District Office of the Commission in writing of the name and location of the well on or before May 1, 1964.

(2) That any operator desiring to dedicate 80 acres to a well presently drilling to or completed in the Tobac-Pennsylvanian Pool shall file a new Form C-128 with the Commission on or before May 1, 1964.

(3) That this case shall be reopened at an examiner hearing in April, 1965, at which time the operators in the subject pool may appear and show cause why the Tobac-Pennsylvanian Pool should not be developed on 40-acre spacing units.

(4) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

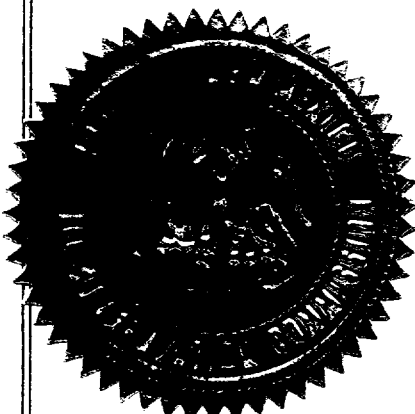
DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

*Jack M. Campbell*  
JACK M. CAMPBELL, Chairman

*E. S. Walker*  
E. S. WALKER, Member

*A. L. Porter, Jr.*  
A. L. PORTER, Jr., Member & Secretary



BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING  
CALLED BY THE OIL CONSERVATION  
COMMISSION OF NEW MEXICO FOR  
THE PURPOSE OF CONSIDERING:

CASE No. 3003  
Order No. R-2685-A

APPLICATION OF CABOT CORPORATION  
FOR THE CREATION OF A NEW OIL POOL  
AND FOR SPECIAL POOL RULES, CHAVES  
COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on April 26, 1965, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 6th day of May, 1965, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

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

(2) That by Order No. R-2685, Dated March 31, 1964, temporary Special Rules and Regulations were promulgated for the Tobac-Pennsylvanian Pool, Chaves County, New Mexico.

(3) That pursuant to the provisions of Order No. R-2685, this case was reopened to allow the operators in the subject pool to appear and show cause why the Tobac-Pennsylvanian pool should not be developed on 40-acre spacing units.

(4) That the evidence establishes that one well in the Tobac-Pennsylvanian Pool can efficiently and economically drain and develop 80 acres.

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Order No. R-2685-A

(5) That the Special Rules and Regulations promulgated by Order No. R-2685 have afforded and will afford to the owner of each property in the pool the opportunity to produce his just and equitable share of the oil in the pool.

(6) That to prevent the economic loss caused by the drilling of unnecessary wells, to avoid the augmentation of risk arising from the drilling of an excessive number of wells, to prevent reduced recovery which might result from the drilling of too few wells, and to otherwise prevent waste and protect correlative rights, the Special Rules and Regulations promulgated by Order No. R-2685 should be continued in full force and effect until further order of the Commission.

IT IS THEREFORE ORDERED:

(1) That the Special Rules and Regulations governing the Tobac-Pennsylvanian Pool promulgated by Order No. R-2685 are hereby continued in full force and effect until further order of the Commission.

(2) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

*Jack M. Campbell*  
JACK M. CAMPBELL, Chairman

*Guyton B. Hays*  
GUYTON B. HAYS, Member

*A. L. Porter, Jr.*  
A. L. PORTER, Jr., Member & Secretary

