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PROVED AND POTENTIAL OIL AND GAS TRAPS OF THE SAN JUAN BASIN

By Frank C. Barnes and Emery Arnold
New Mexico Oil Conservation Commission

The following table represents a compilation of all the better known "structures" of the San Juan Basin of Colorado and New Mexico. The list is not exhaustive and is by no means final, as there are probably many "structures" not included on this list which may be known to various companies and individuals who are familiar with local or special details of the geology of the basin.

The 93 "structures" listed include anticlines, fault structures, stratigraphic traps, and at least one syncline. Actual commercial production has come mostly from anticlines, but fault traps, and a considerable number of stratigraphic traps are also included. Stratigraphic conditions may be as important a factor in oil and gas production in the San Juan Basin as structure.

Traps that have produced commercial oil or gas are indicated with an asterisk in the table, and the drilled structures are differentiated from the undrilled structures. However, the fact that a structure has been drilled does not necessarily indicate that it has been completely or adequately tested, and many of the drilled structures still have excellent possibilities of deeper production, even though the shallow horizons have not been productive. In some places the drilling has not adequately tested even the shallow objectives, and a second well may be warranted. In addition, holes that have been drilled on some structures do not appear to have reached the originally stated objectives.

On the other hand, many of the untested structures are not worth drilling because of highly unfavorable structural or stratigraphic conditions, or because most or all of the possible producing horizons have been eroded from the top of the structure. Others are unfavorable because of extensive drilling carried on in adjacent areas that has indicated probable lack of commercial accumulation within the area.

OIL AND GAS TRAPS OF THE SAN JUAN BASIN

Name	Location	Status	Remarks
		Archuleta County, Colorado	
Blanco Basin area	34, 35n-1, 2e	Drilled	Possible geophysical high (?). Drilled to 3,060 feet in Mancos shale (?). Valley fill and landslide debris at surface. P. and A.
Blue Creek anticline	34n-1e and 1w	Untested	Mancos shale and Mesaverde at surface.
Boon Creek anticline	33n-1e and 1w	Drilled	Drilled to Morrison formation. Mesaverde at surface. Oil shows in Mancos, sulphur water in Dakota sandstone. P. and A.
Camado anticline	32n-3w	Untested	Animas formation at surface.
Cat Creek anticline	32, 33n-3w	Untested	Animas formation at surface.
Chromo anticline*	32n-1, 2e	Drilled	Drilled to pre-Cambrian, no Pennsylvanian present. Produces small amount of oil from Mancos shale.
Coal Creek anticline	36n-1e	Untested	Volcanic at surface.
Coyote Park	33n-1e and 1w	Untested	A syncline along the northwest side of the Chromo anticline.
Eight-Mile Mesa	34n-1, 2w	Untested	A faulted structure. Mesaverde and Dakota at surface.
Montezuma anticline	33n-1w	Untested	Lewis shale at surface.

Name	Location	Status	Remarks
Navajo River anticline	32n-3w	Untested	Animas formation at surface.
Newton Mesa anticline	33, 34n-2w	Drilled	Drilled to Dakota sandstone (?). Mesaverde at surface. Sulphur water. P. and A.
Pagosa dome	36n-1w	Drilled	Drilled to Dakota sandstone. Mancos shale at surface. Sulphur water in Dakota. P. and A.
Price anticline*	33n-1, 2e	Drilled	Produces 32° gravity oil from the Dakota sandstone. Reported also producing oil from two wells completed in Morrison formation.
Quartz Creek anticline	36n-1, 2e	Untested	Asphaltic "veins" in volcanics at surface.
Stinking Springs anticline	34, 35n-2w	Untested	Dakota sandstone and Morrison at surface
Sunetha anticline	35n-2w	Drilled	Drilled to granite. P. and A. 1,668 ft. Dakota sandstone and Mancos shale at surface.
			Dolores County, Colorado
Glade anticline	41n-17w	Drilled	Drilled to 7,680' in igneous rock. No shows oil or gas reported. Pennsylvanian thin. Dakota sandstone at surface. P. and A.
			La Plata County, Colorado
Bayfield area	34n-7w	Drilled	Drilled to 1962' in Lewis shale (?). Strong gas shows in Pictured Cliffs sandstone. P. and A. Possible stratigraphic trap in Pictured Cliffs.
Bondad area	33n-9w	Drilled	Drilled to 4,835' in Mesaverde. Wasatch at surface. Gas in Pictured Cliffs (?) or sand above. Made over 1,000,000 cu. ft. gas/day. Now abandoned. Stratigraphic trap (?).
Ignacio	33n-7, 8w	Drilled	Wasatch at surface. Drilled to Morrison. Possible commercial gas in sand above Pictured Cliffs sandstone. Shows gas in Dakota sandstone and 10,000,000 cu. ft. gas/day in Morrison.
Thompson Park anticline	35n-12w	Drilled	Drilled to Morrison (?). P. and A.
			Montezuma County, Colorado
Cortez anticline	36n-15w	Drilled	Surface and seismograph structure. Drilled through Dakota sandstone. No production.
Dove Creek anticline*	38, 39n-19w	Drilled	Test well made 1,700,000 cu. ft. gas and 254 bbl. distillate per day from Pennsylvanian. Two dry holes drilled subsequent to discovery well.
Mancos Creek	32n-18w	Drilled	Drilled to Dakota sandstone. Mancos shale at surface. Oil shows in Mancos. A monocline. Abandoned.

Name	Location	Status	Remarks
McElmo anticline	36n-17, 18w	Drilled	Drilled to 7, 112 ft. Oil shows in Pennsylvanian. P. and A. CO_2 in Mississippian and Devonian.
Point Lookout*	36n-14w	Drilled	Drilled to Dakota sandstone and produces 250, 000 cu. ft. gas/day from the Dakota.
Red Mesa	33n-12w	Drilled	Drilled to Morrison. Shows of oil in Mancos shale and Dakota sandstone with small production. A broad dome.
Thompson Park anticline	35n-12w	Drilled	Drilled to Morrison (?). P. and A.
Lone dome anticline		Untested	Dakota sandstone at surface.

McKinley County, New Mexico

Ambrosia anticline	15n-10w	Drilled	Drilled to Morrison formation. Mancos shale at surface.
Bonita anticline	20n-10w	Drilled	Drilled to 3, 275 ft. in Mancos shale. Mesaverde formation at surface.
Carica anticline	17n-7w	Drilled	Drilled to 3, 190 ft. in Morrison. Mesaverde formation at surface.
Cedar Butte anticline	14n-18w	Untested	Mesaverde at surface.
Chavez anticline	15, 16n-6w	Drilled	Drilled to Morrison. Mesaverde formation at surface.
Chico anticline	17n-5, 6w	Drilled	Drilled to Dakota sandstone.
Defiance anticline	14, 15n-19, 20w	Drilled	Drilled to 1, 405 ft. No oil or gas in Dakota sandstone.
Gallup dome	15n-18w	Drilled	Drilled through Dakota to 2412'. No oil or gas.
Hospah anticline*	17, 18n-8, 9w	Drilled	Produces 30° gravity oil from the Mesaverde.
Mariano dome	15n-13w	Drilled	Drilled to granite. Mancos shale at surface. P. and A. with no shows oil or gas.
McGaffey anticline	13n-17w	Untested	Triassic (?) at surface.
Meyers dome	11n-11w	Untested	Permian at surface.
Red Mountain*	20n-9w	Drilled	Produces oil from the Mesaverde. A fault structure.
San Mateo dome	14n-8w	Drilled	Drilled to Morrison. Mancos shale at surface.
Seven Lakes	18n-10, 11w	Drilled	Has produced oil from the Mesaverde. Stratigraphic trap.
South Ambrosia Lake anticline	14n-10w	Drilled	Drilled to Morrison.

Name	Location	Status	Remarks
Vogt anticline	16n-9, 10w	Drilled	Drilled to Dakota sandstone. Mesaverde at surface.

Rio Arriba County, New Mexico

Agua Zarca anticline	22, 23n-2e	Untested	Triassic at surface.
Arroyo Blanco anticline	24n-1w	Untested	Nacimiento at surface.
Azotea anticline	31n-2e	Drilled	Drilled to 2, 300 ft. with shows of oil in the Dakota sandstone. Mancos shale at surface.
Barella dome	32n-3w	Drilled	Drilled to Mesaverde(?). Animas formation at surface.
Coyote anticline	22, 23n-3e	Untested	Permian at surface.
Dulce dome	31n-1w	Drilled	Drilled to Morrison. Mesaverde and Mancos shale at surface.
El Vado anticline	27, 28n-2e	Drilled	Drilled to pre-Cambrian. Dakota sandstone at surface. Oil shows in Entrada. No Pennsylvanian section present.
French Mesa anticline	24n-1, 2e	Drilled	Drilled to granite at 4, 846 ft. Pennsylvanian at 3, 500 ft. No oil or gas.
Gallina Mtn. anticline	26n-2e	Untested	Pennsylvanian at surface.
Garcia anticline	30n-1e	Untested	Mesaverde at surface.
Gavilan area*	25n-2w	Drilled	Drilled to Pictured Cliffs sandstone. Shows gas and oil in Farmington sandstone (?). Possible stratigraphic trap with some structural control. Commercial gas in Pictured Cliffs.
Horse Lake anticline	29n-1, 2e	Drilled	Drilled to 1, 785 ft.
Monero dome	30, 31n-1e, 1w	Drilled	Drilled to Dakota sandstone. Mancos shale at surface.
N. Horse Lake anticline	30n-1e	Drilled	Mancos shale at surface. Drilled to 1, 195' in Entrada. No oil or gas.
Poleo Creek anticline	22, 23n-2, 3e	Untested	Permian at surface.
Puente anticline	29n-3e	Untested	Dakota sandstone and Mancos shale at surface.
Rosa area	31n-5, 6w	Drilled	Drilled to 8, 087' in Morrison. Oil shows in Farmington sandstone, gas in Pictured Cliffs and gas in Dakota. Temporarily abandoned. A large anticline based primarily on geophysical data.
Willow Creek anticline	29, 30n-2e	Drilled	Drilled to granite at 2, 054 ft.

Name	Location	Status	Remarks
San Juan County, New Mexico			
Aztec	30n-11w	Drilled	Has produced gas from Farmington sandstone stratigraphic trap.
Barker dome*	32n-14w	Drilled	Produces gas from the Dakota sandstone and Pennsylvanian.
Beautiful Mtn. anticline	25n-19w	Drilled	Drilled to 3,290 ft. in Triassic. Reported shows of oil in the Entrada sandstone (Jurassic).
Biltabito dome	12, 13n-5w, Navajo Meridian	Drilled	Entrada sandstone at surface. Drilled to 4,840 ft. in Cambrian quartzite. P. and A. with no substantial shows of oil or gas.
Blanco*	30n-9w	Drilled	Produces gas from the Pictured Cliffs sandstone and Mesaverde formation. Some gas in Farmington sandstone. Stratigraphic trap.
Bloomfield*	29n-11w	Drilled	Produces oil from the Farmington sandstone.
Chimney Rock dome	31n-17w	Drilled	Drilled to Morrison; Mancos shale at surface. Reported shows of gas in Tocito sandstone. Water in Dakota.
Hogback anticline*	29n-16, 17w	Drilled	Produces 65° gravity oil from the Dakota.
Kutz Canyon-Fulcher Basin*	27, 28, 29, 30n-10, 11, 12, 13w	Drilled	Produces gas from the Pictured Cliffs sandstone and a little oil from the Dakota sandstone. A stratigraphic trap.
Oswell*	30n-11, 12w	Drilled	Has produced gas and distillate from the Farmington sandstone, stratigraphic trap.
Rattlesnake dome*	29, 30n-19w	Drilled	Produces oil from the Dakota sandstone and Hermosa (Pennsylvanian).
Stoney Butte anticline*	21, 22n-13, 14w	Drilled	Produced oil from the Mesaverde. Drilled recently to Dakota sandstone and made about 45 to 50 bbls. oil per day.
Table Mesa dome*	27n-17w	Drilled	Produces 56° gravity oil from the Dakota sandstone. Currently being drilled to test Pennsylvanian.
Tocito dome	26n-18w	Drilled	Drilled to 6897'. Mancos shale at surface. Shows of gas in Ouray-Leadville limestone.
Ute dome*	32n-14w	Drilled	Produces gas from the Dakota sandstone. Mesaverde at surface. One deep test has found commercial gas in the Pennsylvanian.
Sandoval County, New Mexico			
Cabezon anticline	16n-2w	Untested	Mancos shale at surface.
Canada de las Milpas anticline	15n-13w	Untested	Jurassic at surface.

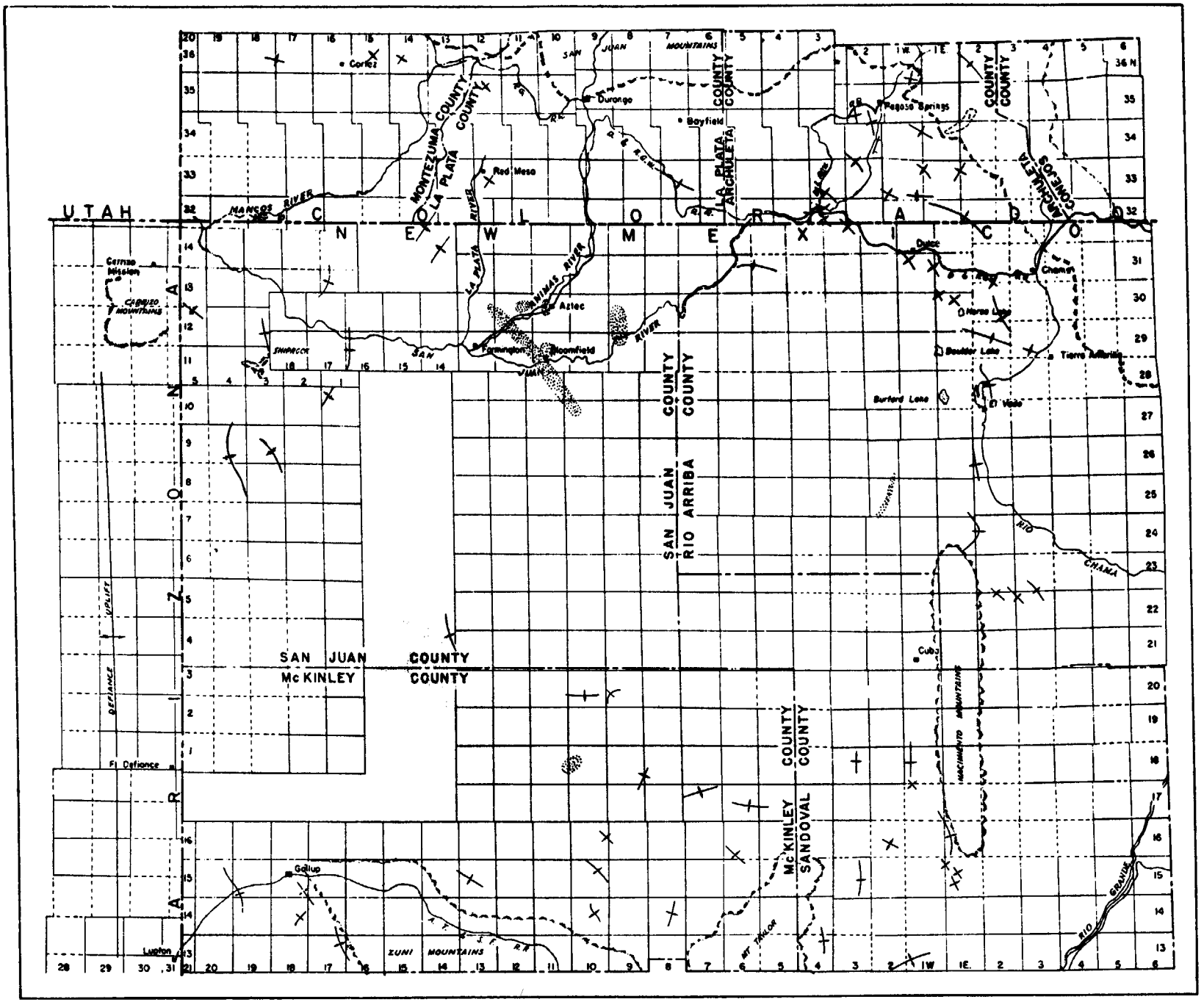
Name	Location	Status	Remarks
Guadalupe anticline	15n-3w	Untested	Mancos shale at surface.
La Gunitas anticline	13, 14n-4w	Drilled	Drilled to pre-Cambrian. Mancos shale at surface.
La Ventana anticline	18n-1w	Drilled	Drilled to Morrison, Mancos shale at surface. Water in Dakota sandstone.
Olguin anticline	17, 18n-1w	Untested	Mancos shale at surface.
Rio Puerco anticline	12, 13n-1, 2w	Untested	Mancos shale at surface.
Rio Salado anticline	16n-1e	Drilled	Drilled to granite. Chinle at surface. P. and A. at 2,562 ft. No shows.
San Ysidro anticline	15n-1e, 1w	Untested	Jurassic at surface.
Tierra Amarilla anticline	15n-1e	Untested	Jurassic (?) at surface.
Torreones anticline	18n-3w	Drilled	Drilled to Dakota (?). Oil shows in Mesaverde. Water in Dakota. Mesaverde at surface.

Valencia County, New Mexico

Devil Canyon anticline	11n-7w	Untested	Mesaverde formation and Mancos shale at surface.
Seco Canyon anticline	10n-7w	Untested	Mesaverde and Mancos shale at surface.
Wiley Ranch anticline	11n-7, 8w	Untested	Mesaverde and Mancos shale at surface.

* Producing oil or gas field. P. and A. - Plugged and abandoned.

NOTES



STRUCTURES OF
THE SAN JUAN BASIN OF NORTHWESTERN NEW MEXICO AND PARTS OF ARIZONA, COLORADO, AND UTAH

ANTICLINES OR DOMES
SYNCLINES
STRATIGRAPHIC TRAPS
NUMBER ON CHART

6 0 6 12 18 24 30
SCALE IN MILES

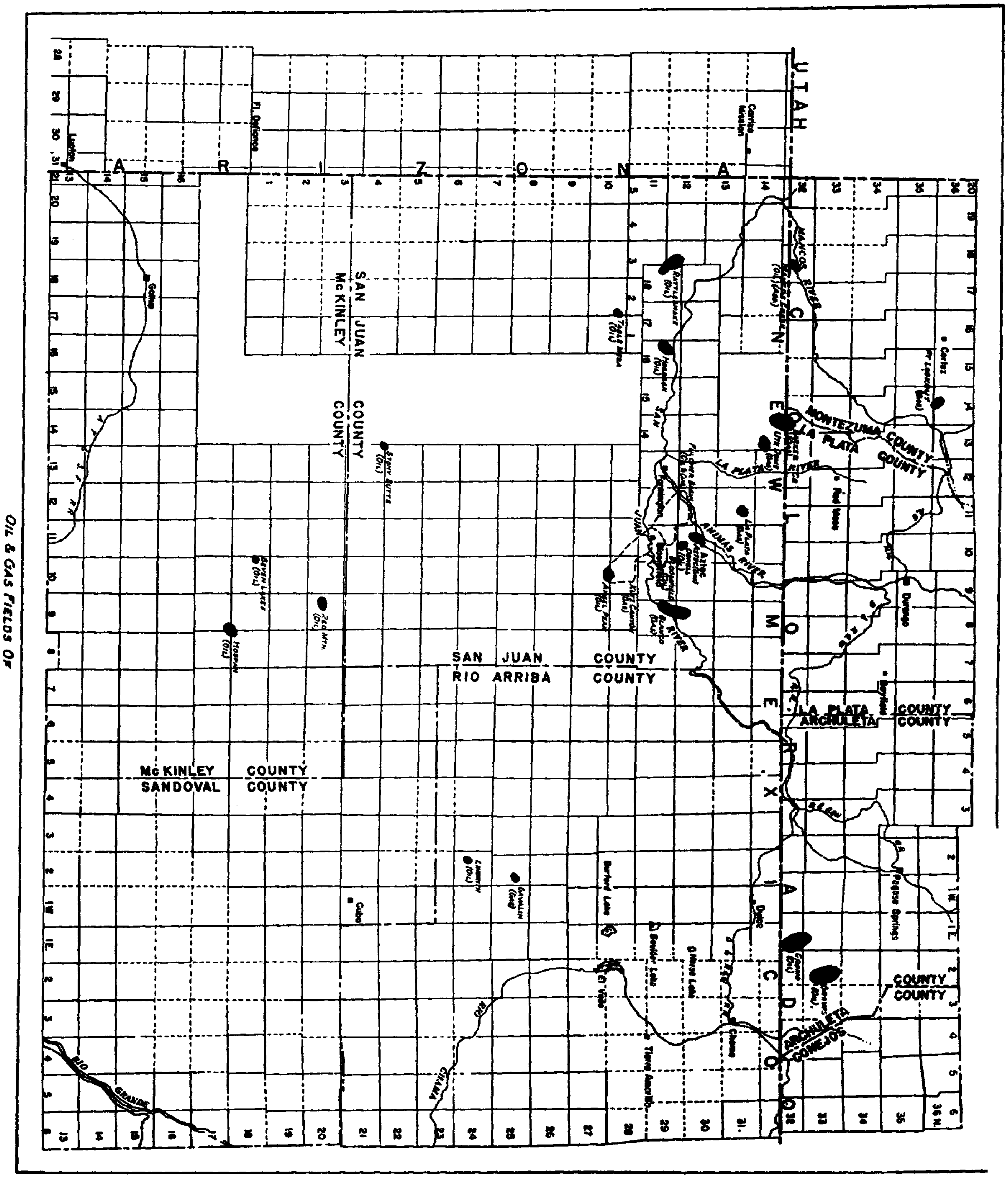
FRANK C. BARNES GEOLOGIST

SANTA FE, NEW MEXICO

NEW MEXICO OIL CONSERVATION COMMISSION
R. R. SPURRIER, DIRECTOR

AGE	FORMATION		CHARACTER		REMARKS
EOCENE AND PALEOCENE	Wasatch fm		250'-2000'	Gray to brn ss & varg. sh.	
PALEOCENE AND UPPER CRETACEOUS	Nacimiento grp (Torrejon & Puerco)		1200-3000'	Brn & gray ss. grnsh & gray sh	
	Animas Fm. / Ojo Alamo ss.		50'-300'	Brn ss with varg sh conglomeratic	
UPPER CRETACEOUS	McDermott fm		30'-240'	Andesitic ss & sh	
	Kirtland sh. (farmington ss)		630'-1180'	Gray sh & brn ss	Farmington ss. produces gas or oil at Aztec, Blanco, Bloomfield and Wyper.
	Fruitland fm		200'-525'	Gray sh with gray & brn ss Coal	
	Pictured Cliffs ss		30'-300'	Lt gray ss with sh	Pictured Cliffs ss produces gas at Blanco, Gavilan, Kutz Canyon-Fulcher Basin and Rosa.
	Lewis sh.		2000'	Gray sh with ss lenses	
	Mesaverde grp. Cliff House ss. Menefee sh. Point Lookout ss.		300'-1800'	Massive ss & brn.& gray sh with coal beds	Mesaverde produces oil or gas at Blanco, Hospah, Kutz Canyon-Fulcher Basin, La Plata, Red Mountain, Seven Lakes, and Stoney Butte.
	Mancos sh.		600'-2100'	Dk. gray, sh with ss lenses, calc at base	Mancos shale has produced small quanities of oil at Cromo, Mancos Creek and Red Mesa
	Dakota ss.		150'-250'	Lt brn ss with sh lenses	Dakota ss has produced oil or gas at Angeles Peak, Barker Creek, Hogback, Lindrith, Price, Rattlesnake, Table Mesa and Ute Dome.
JURASSIC	Morrison fm.		300'-600'	Gray & brn ss with varg sh	
	San Rafael group: Summerville equiv		80'	Red-brn gypsif sh	
	San Rafael group: Wanakah fm		0'-100'	Gypsum & ls.	
	San Rafael group: Entrada ss		50'-200'	Red & orange red ss with dk red sh.	
	San Rafael group: Carmel fm		25'-100'	Sft red-brn sdy sh	
	Glen Canyon group: Navajo ss		0'-300'	Buff & red ss	
	Glen Canyon group: Kayenta fm		0'-40'	Red-brn sdy sh locally calc.	
	Glen Canyon group: Wingate ss		0'-750'	Dk. red-brn sft ss.	
TRIASSIC	Chinle fm		1500'	Red sh & ss	
	Shinarump cong.		0'-125'	Crm to red-brn crs. ss & cong	
	Moenkopi fm.		0'-200'	Red-brn choc & gray sh locally calc.	
PERMIAN	Cutler fm.		1400'	Red ss & red sh.	
	Rico fm		0'-150'	Red-brn. sh with thin ls.	
PENNSYLVANIAN	Hermosa fm.		1000'-2000'	Ls. ss. & sh	
	Paradox fm		0'-3000'	Salt, gypsum & blk sh with thin ls.	The Pennsylvanian has produced oil or gas at Barker Cr, Dove Cr, Rattlesnake and Ute Dome.
	Molas fm		25'-100'	Dk gray & purple sh	
MISSISSIPPIAN	Leadville ls.		100'	White & brn ls.	The Ouray-Leadville lst series have produced substantial gas shows at Rattlesnake & Tocito Dome. This gas is high in helium
DEVONIAN	Ouray ls.		100'	Gray ls.	
	Elbert fm.		0'-150'	Lst, ss & sh.	
CAMBRIAN	Ignacio quartzite		0'-80'	Quartzite, sdy sh & cong	
PRE CAMBRIAN				Granite & schist	

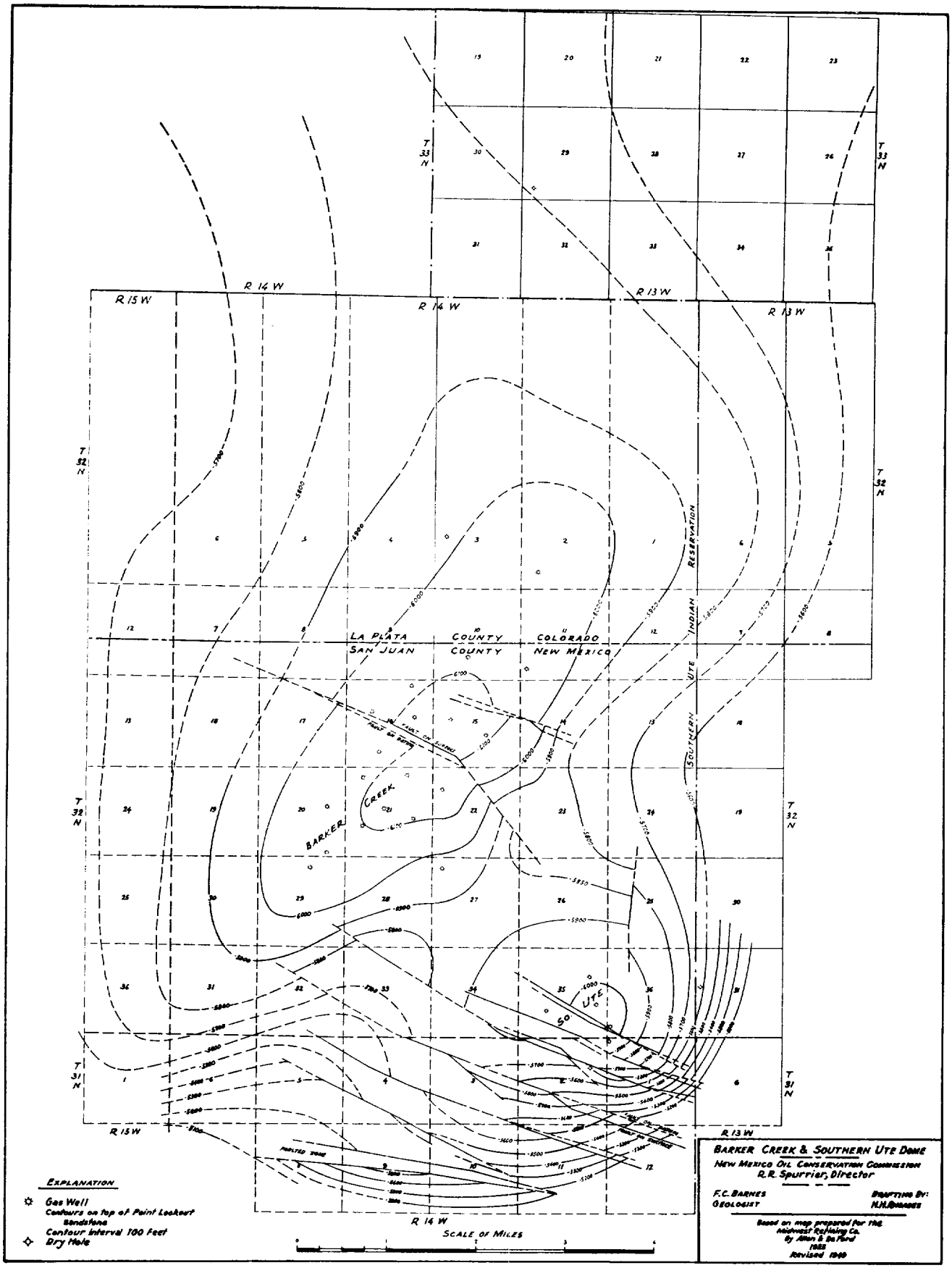
GENERALIZED GEOLOGIC COLUMN OF THE SAN JUAN BASIN
Compiled by Frank C. Barnes and George Hemenway



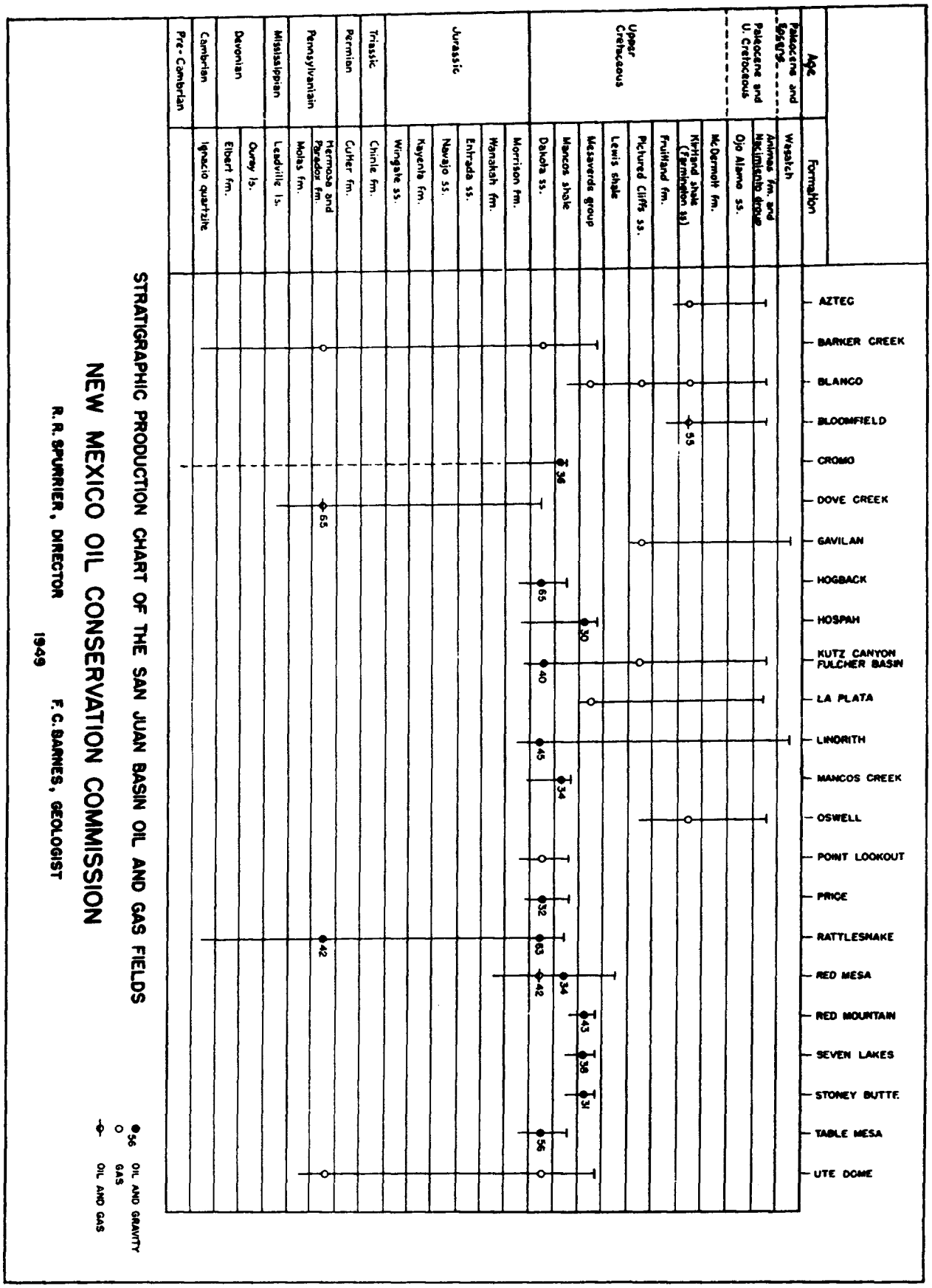
OIL & GAS FIELDS OF
THE SAN JUAN BASIN OF NORTHWESTERN NEW MEXICO AND PARTS OF ARIZONA, COLORADO, AND UTAH

ISSUED BY NEW MEXICO OIL CONSERVATION COMMISSION
R.R. SPURRIER STATE GEOLOGIST

SANTA FE, NEW MEXICO
1949



STRUCTURE-CONTOUR MAP OF THE BARKER CREEK AND SOUTHERN UTE DOMES



STRATIGRAPHIC PRODUCTION CHART OF THE SAN JUAN BASIN OIL AND GAS FIELDS

NEW MEXICO OIL CONSERVATION COMMISSION

R. R. SPURRIER, DIRECTOR

1949

F. C. BARNES, GEOLOGIST