INEXCO
OIL COMPANY

GEOLOGY OF THE PROPOSED
MADE WELL ANTICLINE UNIT
CHAVES COUNTY, NEW MEXICO

JOEL C. CARLISLE

SEPTEMBER 6, 1984

Prospect - NM-165

Exploration Memo #95-80

ENCLOSURES AND ATTACHMENTS

Exhibit A----------Glorieta Structure Map

Exhibit B----------Cross Section A-A'

Exhibit C----------Isolith Abo Sand

Exhibit D----------Unit Well #1 Prognosis

Exhibit E----------Unit Well #2 Prognosis

Exhibit F----------Current Well Cost Estimate For Unit Well #1

Exhibit G----------Current Well Cost Estimate For Unit Well #2

G E O L O G I C A L R E P O R T

PROPOSED MADE WELL ANTICLINE UNIT

CHAVES COUNTY, NEW MEXICO

PURPOSE:

This report summarizes the reasons for forming a 39,278.45 acre Federal unit in Chaves County, New Mexico, and its testing by two 5500 foot wildcat basement test (Exhibit A). The first test will be drilled in the SW/4 of the NE/4 of the NE/4 Section 28-T12S-R22E.

LOCATION:

The proposed unit is approximately 8 miles southwest of Roswell, New Mexico, in Chaves County. Units of Upper and Middle San Andres formation outcrop in the area which are locally masked by Quaternary gravels associated with the Pecos River drainage system. The Pecos River is some 16 miles east of the proposed unit.

GENERAL GEOLOGY:

Geologically the proposed unit is located on the northwest flank of the Midland Basin and the southeast flank of the Pedernal Landmass. The Pedernal landmass is a cratonic element partially delineated by subcrop of Pre-Pennsylvanian rocks in the subsurface and marked by Pre-Cambrian and younger igneous outcrops in central Lincoln and Torrance Counties, New Mexico. The southeast flank of the Pedernal landmass is marked by

the three northeast - southwest trending right latteral wrench faults (Exihibt A). These faults from west to east are known as the Border Buckle, six mile Buckle and the Y-O Buckle.

The faults are probably high angle normal or reverse faults which formed during Pennsylvanian and Permian (Wolfcampian) time. Fifty to less than 200 feet of displacement can be mapped on surface outcrops along these faults. However, we anticipate as much as 400-500 feet of displacement in Pre-Wolfcampian rocks.

During the late Cretaceous - early Tertiary Laramide orogeny, the Permain basin was subjected to northerly tilting of approximately one degree per mile. This tilt is observed along the Captain Reef Outcrop between Guadalupe Peak 8757 feet (Culberson County, Texas) and White City, New Mexico, 47 miles to the northeast where it goes into the subsurface at an elevation of 4050 feet. The northward tilting is considered a combination of both Quachita and Larmide orogenys which rejuvenated older basement fault patterns set up by regional compressional forces. Those compressional forces working against resistant basement blocks outside the Permian basin produced a wrench system which has been translated into lateral movement along many faults throughout the region.

LOCAL GEOLOGY:

Commonly, wrench faults produce drag folds of varying magnitude which are sub-parallel to the primary fault. It appears the the Made Well Anticline, located in T12 and 13S-R22E, was produced in this manner and

is one of the largest structures mapped in the area. No petroleum tests have been drilled on or within 6 miles of this 10 mile long structure. Inexco proposes to drill two basement tests on this feature for testing the Abo Fluvial Deltaic Sands (Exhibit C) which is considered our primary objective. Secondary objectives are present in the Yeso shelf dolomites, the Wolfcamp granite wash section and in older Paleozoic units. Exhibit "B" illustrates the general stratigraphic section anticipated in the area.

UNIT OUTLINE:

The unit outline, as illustrated on the Glorieta Structure (Exhibit A) and Abo sand isolith (Exhibit C), is designed to include all acreage above the subsurface datum of 3200 feet above sea level. Formation of this unit would permit the most orderly and efficient exploration of this large untested structure in an area where little exploration has taken place. We also consider the formation of the proposed unit to be in the best public interest environmentally and economically.

Joel C. Carlisle

9/6/84

/lh

WELL PROGNOSIS

Prospect/Field: Made Well Lease # 32202
Well Name & No. Inexco - #1 Made Well Unit
State or Province New Mexico
County or Parish Chaves

Location 1980' FNL & FEL Sec. 17 Twp. 13S Rge. 22E

Proposed T.D & Objective Formation 5500' Precambrian granite
Elevation Gr. 4205' est. - 4215' est. Kb 4216' est.

[X] Exploratory [ ] Development

Date 9/10/84

GEOLOGICAL REQUIREMENTS

SAMPLE PROGRAM

30	' samples	0	' to	1065	'
10	' samples	1065	' to	TD	'
	' samples		' to		'
	' samples		' to		'

Samples to MIDLAND SAMPLES LIBRARY
Samples to other partners

LOGGING PROGRAM (1 run only at TD)

IES		' to		'
Dual Induction		' to		'
BHC Acoustic		' to		'
BHC Density - Nuetron	0	' to	TD	'
Laterolog XX	1065	' to	TD	'
Microlaterolog		' to		'
SNP	0	' to	TD	'
Gamma Ray Neutron		' to		'
Dipmeter		' to		'
Other		' to		'
		' to		'

CORING PROGRAM One 50' core based on shows 4800' - TD

DST PROGRAM Two based on shows 4200 - TD

SIDE WALL SAMPLING PROGRAM 60 sidewall cores in ABO-Wolfcamp between 3215' & 4100' after logging at TD.

Mud Logger Required: Yes XX No
Type 2 man 0 - TD
Geologist: From Surface ' to TD '

Prepared by (Geological) J.C. Carlisle Date 9-19-83

Formation Tops	Depth
Glorieta 1005'	(+3210)
Yeso 1245'	(+2970)
Tubb 2515'	(+1700)
Abo 3215'	(+1000)
Wolfcamp 3836'	(+ 370)
Cisco 4115'	(+ 100)
Mississipian 4945'	(- 730)
Montoya 4975'	(- 760)
Ellenburger 5155'	(- 940)
Granite Wash. 5175'	(- 960)
Precambrian Granite 5515'	(-1300)

Co-owners and Participants

DRILLING PROGRAM

HOLE SIZE			CASING PROGRAM			
			Size	Weight	Depth	Cement
17 1/2	" to 400 '		13 3/8 "	48 #	400 '	w/ to surface sax
12 1/4	" to 1200 '		9 5/8 "	36 & 40 #	1200 '	w/ to surface sax
	" to '		"	#	'	w/ sax
	" to '		"	#	'	w/ sax
	" to '		"	#	'	w/ sax
	" to '		"	#	'	w/ sax
	" to '		"	#	'	w/ sax
	" to '		"	#	'	w/ sax
	" to '		"	#	'	w/ sax
	" to '		"	#	'	w/ sax

MUD PROGRAM

Type	Depth		Characteristics					
	From	To	Wt.	Vis.	% Oil	W.L.		
Brine	-	3200'						
Salt Gel	3200'	5500'	9.0-9.6	33-34	3-4	10cc		

Engr. Portion Prepared by Ron Blount Date October 4, 1983

Approved Land Date Exploration Date

WELL PROGNOSIS

Prospect/Field: Made Well Lease # 32194
Well Name & No. Inexco - #2 - Made Well Unit
State or Province New Mexico
County or Parish Chaves

☒ Exploratory ☐ Development

Location 660' FNL & 1980' FEL Sec. 28 Twp. 12S Rge. 22E

Proposed T.D & Objective Formation

Date 9/6/84 Elevation Gr. 4095' est DF-4105' est Kb 4106' est

GEOLOGICAL REQUIREMENTS

SAMPLE PROGRAM

30	' samples	0	' to	945	'
10	' samples	945	' to	TD	'
	' samples		' to		'
	' samples		' to		'

Samples to MIDLAND SAMPLE LIBRARY
Samples to other partners

LOGGING PROGRAM (1 run only at TD)

IES		' to		'
Dual Induction		' to		'
BHC Acoustic		' to		'
BHC Density	Neutron 0	' to	TD	'
Laterolog XX	945	' to	TD	'
Microlaterolog		' to		'
SNP	0	' to	TD	'
Gamma Ray Neutron		' to		'
Dipmeter		' to		'
Other		' to		'
		' to		'

CORING PROGRAM One 50' core based on shows 4800' to TD

DST PROGRAM Two based on shows 4000' to TD

SIDE WALL SAMPLING PROGRAM 60 sidewall cores in ABO-Wolfcamp between 3100' & 4000' after logging at TD

Mud Logger Required: Yes XX No
Type 2 man 0' - TD
Geologist: From Surface ' to TD

Prepared by J.C. Carlisle Date 9-19-83
(Geological)

Formation Tops		Depth
Glorieta	885'	(+3220)
Yeso	1135'	(+2970)
Tubb	2405'	(+1700)
Abo	3105'	(+1000)
Wolfcamp	3720'	(+ 385)
Cisco	3980'	(+ 125)
Cisco Sand	4230'	(- 125)
Montoya	4830'	(- 725)
Granite Wash.	4965'	(- 860)
Precambrian	5505'	(-1400)

Co-owners and Participants

DRILLING PROGRAM

HOLE SIZE			CASING PROGRAM			
			Size	Weight	Depth	Cement
0	to 400		13 3/8	48 #	400	w/ to surface sax
12 1/4	to 1200		8 5/8	24 #	1200	w/ to surface sax
7 7/8	to 5500		5 1/2	15.5 #	5500	w/ as required sax
	to			#		w/ sax
	to			#		w/ sax
	to			#		w/ sax
	to			#		w/ sax
	to			#		w/ sax
	to			#		w/ sax
	to			#		w/ sax

MUD PROGRAM

Type	Depth		Characteristics					
	From	To	Wt.	Vis.	% Oil	W.L.		
Brine	0'	3105'						
Salt Gel	3105'	5500'	9.0-9.6	33-34	3-4	10cc		

Engr. Portion Prepared by Wyndell R. Caviness Date October 4, 1983

Approved Date Exploration Date

INEXCO OIL COMPANY

AUTHORIZATION FOR EXPENDITURE

AFE No. (Inexco Property No.) _____
Prospect Made Well
Well Name and Number Inexco #1 Made Well Anticline Unit

Location: 1980'FNL&1980'FEI of sec. 17, T-13S-R-22E Chaves County, New Mexic

Estimated Days to Drill 15
Estimated Days to Complete 8

OBJECTIVES	SANDS	AND DEPTH
	Cisco	3980'
	Cisco Sand	4230'
	Montoya	4830'
	Granite Wash.	4965'

Est. T.D. 5,500'
Est. Spud _____
A F E Prepared 9/10/84
By: Mike Pavelka

( ) Drill ( ) Workover Same Zone ( ) Recomplete in New Zone

	DESCRIPTION	ESTIMATED COSTS DRILLING	ESTIMATED COSTS COMPLETION	ACTUAL COST
	INTANGIBLE COSTS (321)			
01	Access and Location Costs	10,500		
02	Move-in, Rig-up, Rig-down, Move-out			
	Contract Drilling			
03	Footage 5500 ft. at $ 15.00 ft.	82,500		
04	Daywork 2 days at $ 4,200 day	42,00	42,00	
05	Completion Unit 8 days at $ 1,400 day		11,200	
06	Fuel, Power, Water and Water Lines	13,400	2,400	
07	Bits, Reamers and Stabilizers		1,000	
08	Equipment Rental	3,000	1,000	
09	Cementing and Squeezing -			
	Conductor Casing			
	Surface Casing	5,000		
	Intermediate Casing	6,000		
	Production Casing		8,000	
	Liner			
	Other			
10	Drilling Mud and Chemicals	16,000	2,500	
10	Mud Logger	6,500		
11	Logging, Coring and Testing -			
	Cores 60 SWC's, 50' Conventional Core	8,500		
	DST's 2	8,000		
	Logs Dual Lateralog Intermediate CSG to TD	5,000		
	CNL Density Intermediate CSG to TD	5,000		
	GR/CBL		5,000	
12	Perforating & Wireline Work		5,000	
12	Acidizing and Fracturing		55,000	
13	Labor and Supervision		2,500	
13	Contract Labor	4,000	12,000	
14	Drilling Overhead	29,200		
15	Transportation Hauling	2,800	5,000	
16	Sales Tax	2,800	1,000	
17	Other Miscellaneous Intangible Costs	2,000	4,000	
18	Losses, Damages and Abandonment	6,000		
19	Fishing Tool Expense and/or Directional Drilling			
20	Dry Hole Contributions			
22	Well Control Insurance			
	TOTAL INTANGIBLE	$352,500	$ 220,400	$ 119,800	$

DESCRIPTION					ESTIMATED COSTS DRILLING	ESTIMATED COSTS COMPLETION	ACTUAL COST
ANGIBLE COSTS (313/314):							
Conductor Csg.	ft. of		at	/ft			
Surface Csg.	400 ft. of	13 3/8	at 48# H-40	/ft 15.90	6,400		
Intermediate Csg.	1200 ft. of	9 5/8	at 36# J-55	/ft 10.50	12,600		
Liner	ft. of		at	/ft			
Liner	ft. of		at	/ft			
Tieback	ft. of		at	/ft			
Production Csg.	5500 ft. of	5 1/2	at 15.50 J-55	/ft 5.00		27,500	
Tubing	5500 ft. of	2 7/8	at 6.50 J-55	/ft 2.50		13,750	
Installation Costs and Non-Controllable Well Equipment							
Casing Head Assembly					3,000		
Tubing Head Assembly ..& .Tree						10,000	
Pumping Unit							
Prime Mover							
Storage Tanks						8,000	
Separator						3,500	
Dehydrator							
Heater - Treater						8,500	
LACT Unit							
LTX or Production Unit							
Line Pipe						2,000	
Gas Recorders							
Installation Costs and Non-Controllable Lease Equipment						6,000	
TOTAL TANGIBLE					$101,250	$ 22,000	$ 79,250	$
TOTAL WELL					$441,450	$ 242,400	$199,050	$

It is recognized that the amounts herein are estimates only and approval of this authorization shall extend to the actual costs incurred in conducting the operation specified, whether more or less than that herein set out.

OWNERSHIP APPROVALS:

	Interest:	$	Authorized Signature	Date:
INEXCO OIL COMPANY	100.00%	441,450.00		

INEXCO OIL COMPANY

AUTHORIZATION FOR EXPENDITURE

AFE No. (Inexco Property No.) _____
Prospect Made Well
Well Name and Number Inexco #2 Made Well Anticline Unit

Location: 660' FNL & 1980' FE Of Section 28, Township 12 Range 22E Chaves County, New Mexico

Estimated Days to Drill 15
Estimated Days to Complete 8

OBJECTIVES	SANDS	AND DEPTH
	Cisco	3980'
	Cisco Sand	4230'
	Montoya	4830'
	Granite Wash.	4965'

Est. T.D. 5,500'
Est. Spud _____
A F E Prepared 9/10/84
By: Mike Pavelka

( ) Drill ( ) Workover Same Zone ( ) Recomplete in New Zone

	DESCRIPTION		ESTIMATED COSTS DRILLING	ESTIMATED COSTS COMPLETION	ACTUAL COST
	INTANGIBLE COSTS (321)				
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02	Move-in, Rig-up, Rig-down, Move-out				
	Contract Drilling				
03	Footage 5500 ft. at $ 15.00 ft.		82,500		
04	Daywork 2 days at $ 4,200 day		42,00	42,00	
05	Completion Unit 8 days at $ 1,400 day			11,200	
06	Fuel, Power, Water and Water Lines		13,400	2,400	
07	Bits, Reamers and Stabilizers			1,000	
08	Equipment Rental		3,000	1,000	
09	Cementing and Squeezing -				
	Conductor Casing				
	Surface Casing		5,000		
	Intermediate Casing		6,000		
	Production Casing			8,000	
	Liner				
	Other				
10	Drilling Mud and Chemicals		16,000	2,500	
10	Mud Logger		6,500		
11	Logging, Coring and Testing -				
	Cores 60 SWC's, 50' Conventional Core		8,500		
	DST's 2		8,000		
	Logs... Dual Lateralog Intermediate CSG to TD		5,000		
	CNL Density Intermediate CSG to TD		5,000		
	GR/CBL			5,000	
12	Perforating & Wireline Work			5,000	
12	Acidizing and Fracturing			55,000	
13	Labor and Supervision			2,500	
13	Contract Labor		4,000	12,000	
14	Drilling Overhead		29,200		
15	Transportation Hauling		2,800	5,000	
16	Sales Tax		2,800	1,000	
17	Other Miscellaneous Intangible Costs		2,000	4,000	
18	Losses, Damages and Abandonment		6,000		
19	Fishing Tool Expense and/or Directional Drilling				
20	Dry Hole Contributions				
22	Well Control Insurance				
	TOTAL INTANGIBLE	$352,500	$ 220,400	$ 119,800	$

DESCRIPTION			ESTIMATED COSTS DRILLING	ESTIMATED COSTS COMPLETION	ACTUAL COST
TANGIBLE COSTS (313/314):					
Conductor Csg. ____ ft. of ____ at ____ /ft					
Surface Csg. 400 ft. of 13 3/8 at 48# H-40 /ft	15.90		6,400		
Intermediate Csg. 1200 ft. of 9 5/8 at 36# J-55 /ft	10.50		12,600		
Liner ____ ft. of ____ at ____ /ft					
Liner ____ ft. of ____ at ____ /ft					
Tieback ____ ft. of ____ at ____ /ft					
Production Csg. 5500 ft. of 5 1/2 at 15.50 J-55 /ft	5.00			27,500	
Tubing 5500 ft. of 2 7/8 at 6.50 J-55 /ft	2.50			13,750	
Installation Costs and Non-Controllable Well Equipment					
Casing Head Assembly			3,000		
Tubing Head Assembly & Tree				10,000	
Pumping Unit					
Prime Mover					
Storage Tanks				8,000	
Separator				3,500	
Dehydrator					
Heater - Treater				8,500	
LACT Unit					
LTX or Production Unit					
Line Pipe				2,000	
Gas Recorders					
Installation Costs and Non-Controllable Lease Equipment				6,000	
TOTAL TANGIBLE		$101,250	$ 22,000	$ 79,250	$
TOTAL WELL		$441,450	$ 242,400	$199,050	$

It is recognized that the amounts herein are estimates only and approval of this authorization shall extend to the actual costs incurred in conducting the operation specified, whether more or less than that herein set out.

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