Case No
3112

Large Exhibits

V.N.M.C.P. MICROGRAPHICS

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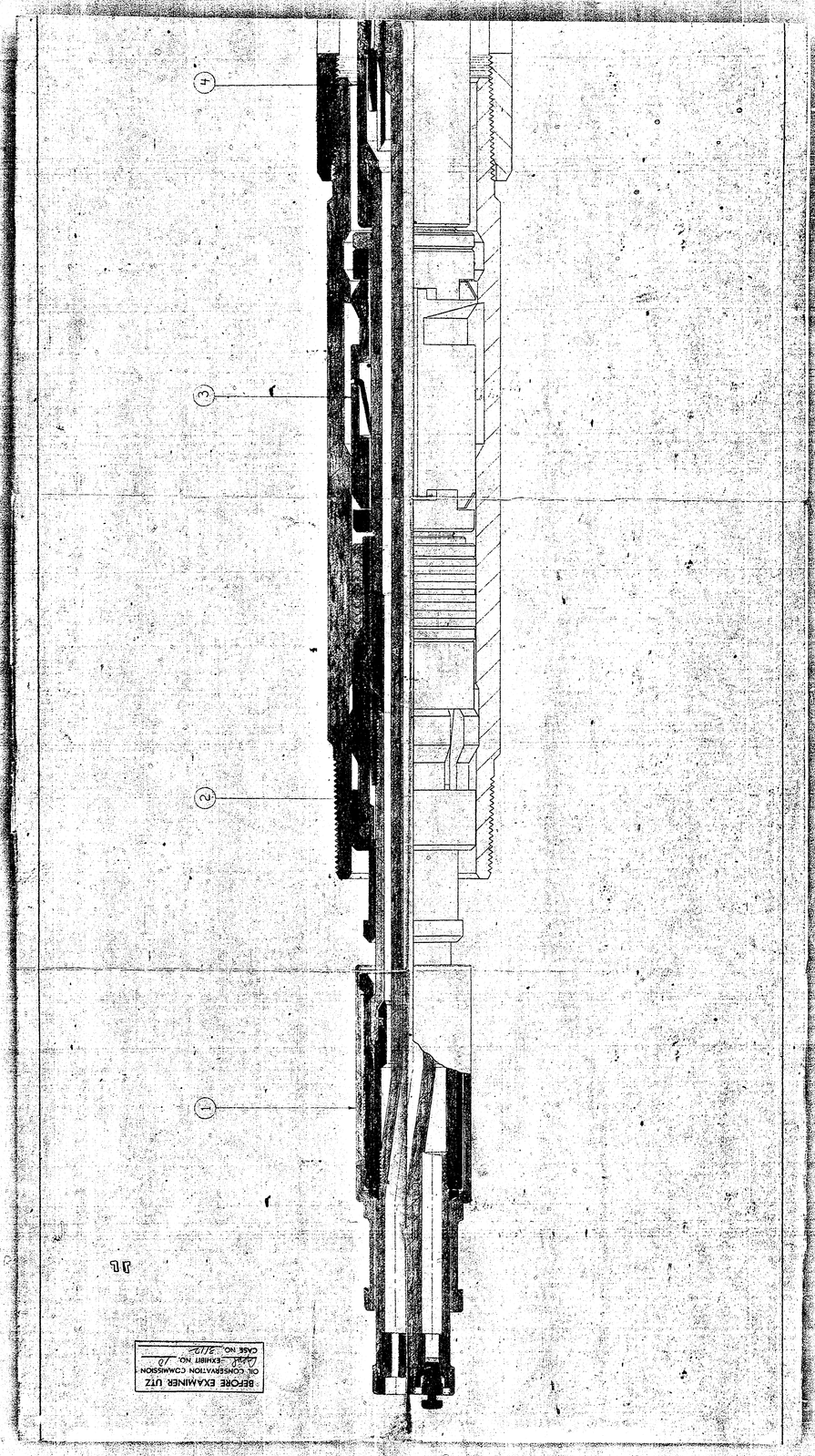

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 10
CASE NO. 3179

10

N.M.O.C.C. HOBBS, NEW MEXICO
JAN 29 1962
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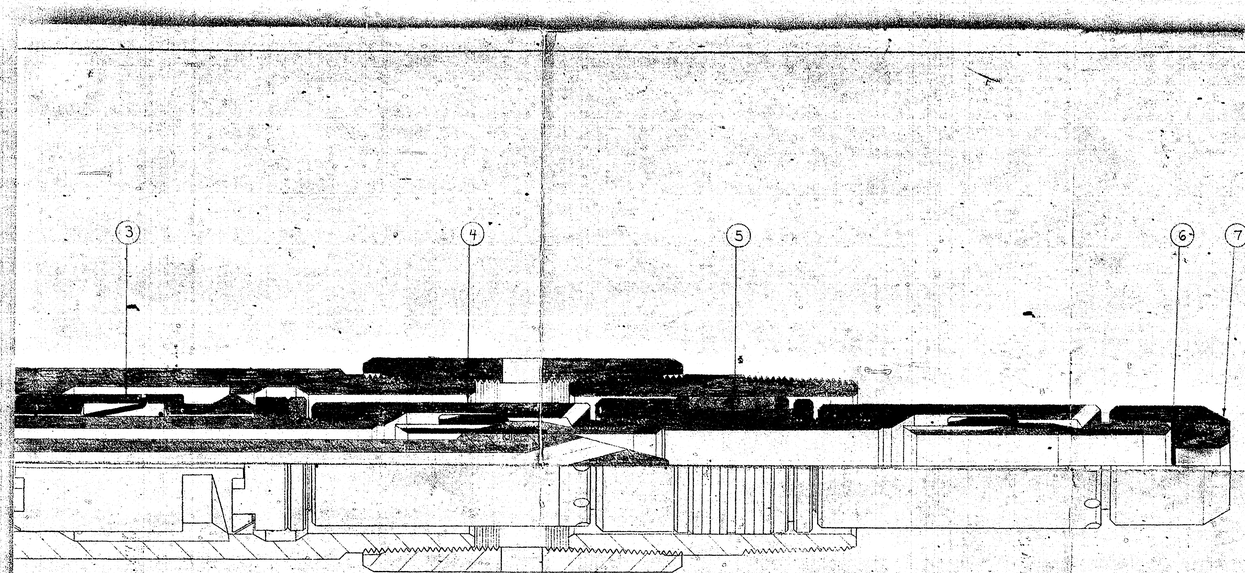


	ORIFICE HEAD PULLING TOOL		40833	40873	
	ORIFICE HEAD RUNNING TOOL		41302	41302	
	CHOKE PULLING TOOL		40873	40833	
	CHOKE RUNNING TOOL		41371	41371	
	PULLING TOOL FISHN.		495520	495520	
	TEST FIXTURE		817351	817359	
	MATERIAL		STAINLESS STEEL	STAINLESS STEEL	
	LENGTH		47 3/4	48 1/4	
	OUTSIDE DIAMETER		2 7/8	2 3/4	
	INSIDE DIAMETER		1 5/16	1 5/8	
7	BOTTOM SUB	1	1051123	1051123	
6	SHEAR DISC	1	1051129	1051129	
5	PACKING MANDREL	1	1050281	1050281	
4	CHECK VALVE	2	1050279	1050279	
3	LOCATOR MANDREL	1	1050271-A	1050281	
2	LOCKING MANDREL	1	1050282	1050282	
1	ORIFICE HEAD	1	21SC15	21SC15	
DETAIL	PART NAME	QTY.	PART NO.	DWG. NO.	
	ASSEMBLY NUMBER:		21SC17-A	21TC17	
	NOMINAL SIZE:		3" S	3" T	

OTIS ENGINEERING CORPORATION
DALLAS, TEXAS

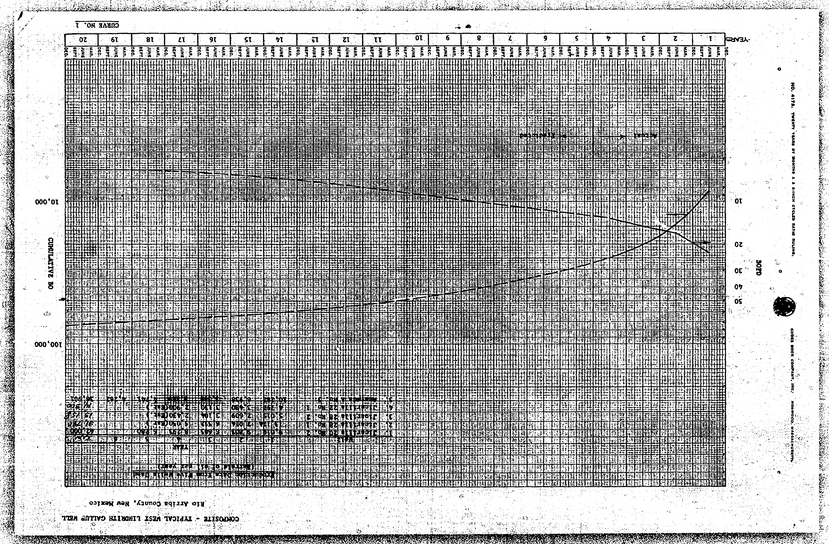
DATE 7-30-63
DRAWN BY DFH
CHECKED BY
APPROVED BY
DWG. NO. 21SC17

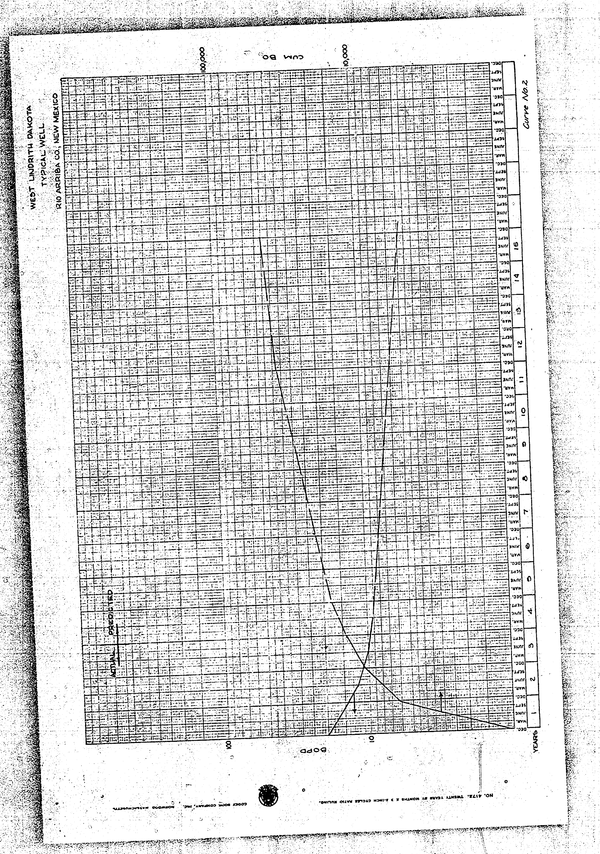
3" S DUAL FLOW CHOKE

NOV 14 1969

M.M.M.C.F. MICROGRAPHICS
BEST AVAILABLE COPY

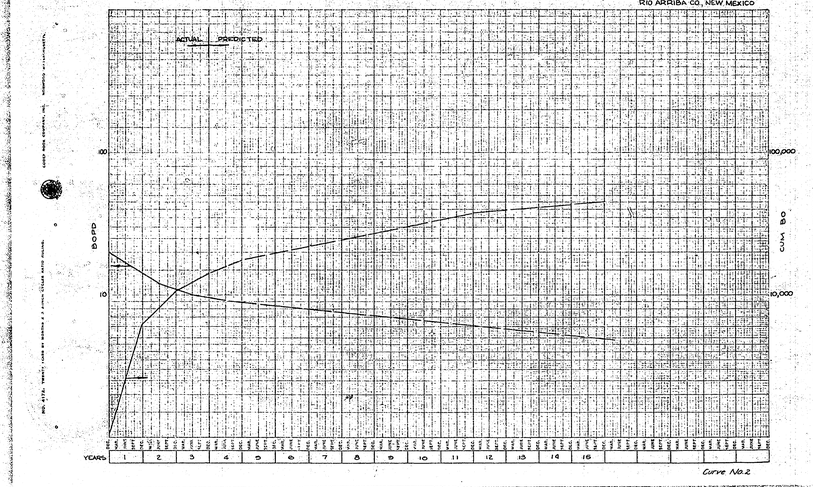
U.S.B.M.-C.E.R. MORGANTOWN
BEST AVAILABLE COPY


CURVE NO. 1
YEARS
CUMULATIVE OIL
10,000
100,000
RATE
10
20
30
40
50
COMPOSITE - TYPICAL WEST LINDRITH CAZZE WELL
Rio Arriba County, New Mexico


WEST LAURITA DAKOTA
TYPICAL WELL
RIO ARRIBA CO., NEW MEXICO
Curve No. 2
BOPD
YEARS

M.R.A.C.P. MICROFILMED

WEST LINDRITH DAKOTA
TYPICAL WELL
RIO ARRIBA CO., NEW MEXICO



Curve No. 2

N.M.O.C.D. MICROGRAPHICS

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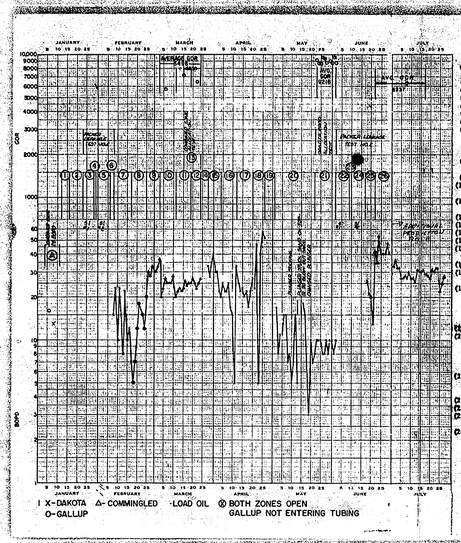

"DUAL FLOW CHOKE" INSTALLATION
JICARILLA 28 WELL NO. 1

(A) 8-Day average individual producing rates prior to installation of Dual Flow Choke. Gallup (pumping) Dakota (Plunger Lift)
(1) Shut-in. Pulled tubing and installing "Dual Flow Choke" w/Dakota check valve removed.
(2) Recovering load oil used to kill well.
(3) Shut-in for packer-leakage test No. 1.
(4) Flow period No. 1. Flow Gallup up annulus. 180 MCF gas, 0 oil.
(5) Shut-in period No. 1 - packer-leakage.
(6) Flow period No. 2. Produce Dakota up tubing.
(7) Pulled tool. Blanked off Gallup zone. Ran seven-day pressure bomb recorder above tool for production distribution test. Tried both pressure control and time control to stabilize producing rates. Unable to obtain stabilized rates in clock period. 4-17-65. Pulled bomb and orifice head. Bomb clock failure. No data obtained.
(8) Ran orifice. Both zones producing commingled. Gas to pit. FTP 1000#. Drawing Dakota down. Gallup not entering tubing."
(9) Gallup production entering tool. Gas continued to pit. FTP 1000#.
(10) Gas to sales. 2550# system pressure. Plunger 12 trips daily. Begin combined zone stabilized production test. 8-day gas chart period. Average 24 BOPD, GOR 3788.
(11) 8-day gas chart period. Combined zones. 8-day period. Average 24 BOPD, GOR 7337. Increase plunger trips to 16 daily 3-16-65.
(12) 5-day period. Combined zones. Average 25 BOPD, GOR 6416.
(13) Combined zone stabilized rate @ 16 plunger trips daily. Average 25 BOPD, GOR 6599.
(14) Pulled orifice assembly. Installed blank in Gallup choke to produce Dakota only.
(15) Begin stabilize Dakota zone for subtraction method allocation.
(16) 8-day average production 20.5 BOPD, GOR 5713. High stabilized rate and low GOR indicates Gallup blank possibly not shutting off Gallup.
(17) Produced another 8-days. Average 22 BOPD, GOR 6624.
(18) Put gas to pit to draw down producing bottom-hole pressure. Gallup casing pressure decreased from 575# to 475# indicating Gallup zone was not blanked off by blanking plug.
(19) Pulled orifice assembly. Found slightly damaged and had not seated in check assembly. Ordered new orifice assembly. Pulled and inspected check assembly. Re-ran check. Could not get new orifice to seat in check assembly. Attempted to retrieve check assembly. Could not retrieve after two days fishing. Killed well with oil and pulled tubing. Ran tubing and tool with Gallup zone blanked off.
(20) Dakota producing load oil up tubing. Gas to pit. FP 50-100#.
(21) Load oil recovered from lower Dakota zone. Begin stabilized production test on Dakota for subtraction method allocation.
11-day stabilized average Dakota producing rate - 9.3 BOPD, GOR 9216.
Stabilized combined production rate from both zones -
(3-15-65 to 3-26-65) - 25 BOPD, GOR 6599.
(22) Pulled orifice assembly. Filled tubing and pressure tested check valves to 1600#. Did not leak. Knocked out lower plug in check assembly. Ran orifice assembly with Gallup zone blanked off. Shut-in. Commenced test. Termination packer-leakage test No. 2.
(23) Flow period No. 1. Gallup (upper) zone through casing.
(24) Shut-in period No. 2.
(25) Flow period No. 2. Dakota (Lower) zone up tubing. Produced Dakota to 6-22-65 and obtained final deadweight gauge for packer-leakage. No leaks indicated.
(26) Pulled entire "Dual Flow Choke" assembly. Replace lower knockout plug in check assembly. Ran assembly and plunger lift. Continue to produce both zones till test period termination . . .

EXHIBIT No. 4

N.M.O.C.D. MICROGRAPHICS
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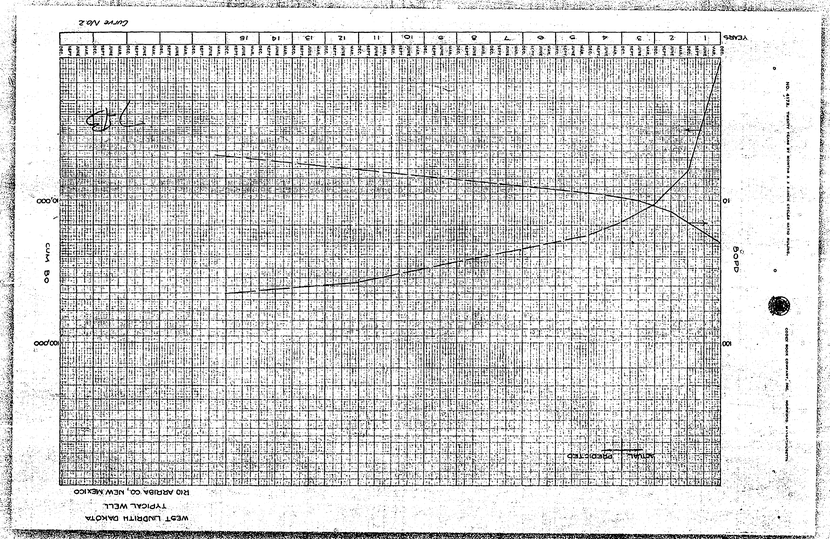
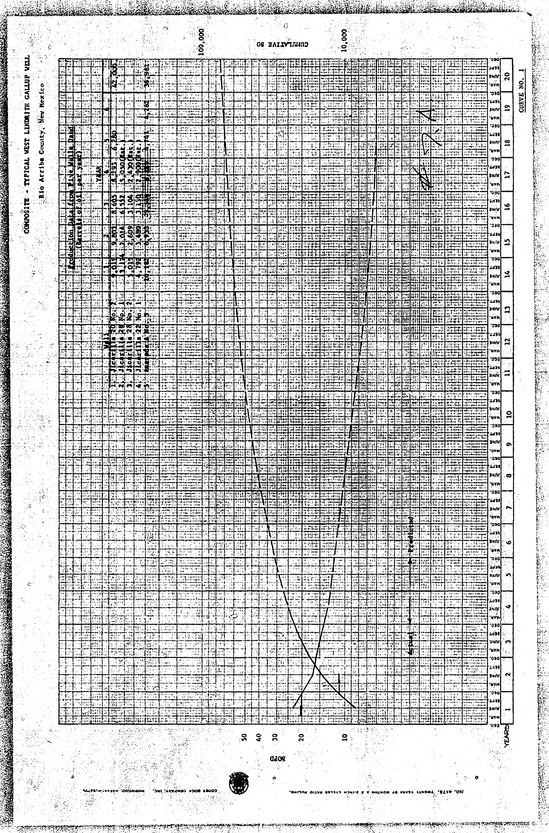
U.S.M.C.E. HEADQUARTERS
ROCK ISLAND, ILL.




COMPOSITE - TYPICAL WEST LUNGTH GALLUP WELL
Rio Arriba County, New Mexico
CUMULATIVE MD
100,000
10,000
CURVE NO.
1
2
3
4
5
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11
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13
14
15
16
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BOPD
50
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30
20
10

N.M.O.C.D. MICROGRAPHICS
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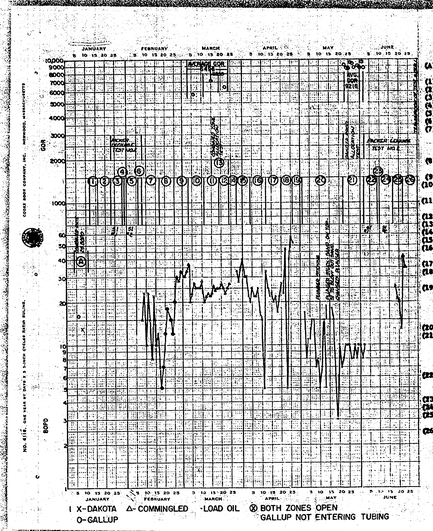

"DUAL FLOW CHOKE" INSTALLATION
JICARILLA 28 WELL NO. 1

(A) 8-Day average individual producing rates prior to installation of Dual Flow Choke. Gallup (pumping) Dakota (Plunger Lift)

(1) Shut-in. Pulled tubing and installing "Dual Flow Choke" w/Dakota check valve removed.

(2) Recovering load oil used to kill well.

(3) Shut-in for packer-leakage test No. 1.

(4) Flow period No. 1. Flow Gallup up annulus: 180 MCF gas, 0 oil.

(5) Shut-in period No. 2 - packer-leakage.

(6) Flow period No. 2. Produce Dakota up tubing.

(7) Pulled tool. Blanked off Gallup zone. Ran seven-day pressure bomb recorder above tool for production distribution test. Tried both pressure control and time control to stabilize producing rates. Unable to obtain stabilized rates in clock period. 3-17-65. Pulled bomb and orifice head. Bomb clock failure. No data obtained.

(8) Ran orifice. Both zones producing commingled. Gas to pit. FTP 100#. Drawing Dakota down. Gallup not entering tubing.

(9) Gallup production entering tool. Gas continued to pit. FTP 100#.

(10) Gas to sales. 250# system pressure. Plunger 12 trips daily. Begin combined zone stabilized production test. 8-day gas chart period. Average 24 BOPD, GOR 5788.

(11) 8-day gas chart period. Combined zones. 8-day period. Average 24 BOPD, GOR 7337. Increase plunger trips to 16 daily 3-16-65.

(12) 5-day period. Combined zones. Average 25 BOPD, GOR 6416.

(13) Combined zone stabilized rate @ 16 plunger trips daily. Average 25 BOPD, GOR 6599.

(14) Pulled orifice assembly. Installed blank in Gallup choke to produce Dakota only.

(15) Begin stabilize Dakota zone for subtraction method allocation.

(16) 8-day average production 20.5 BOPD, GOR 6711. High stabilized rate and low GOR indicates Gallup blank possibly not shutting off Gallup.

(17) Produced another 8-days. Average 22 BOPD, GOR 6624.

(18) Put gas to pit to draw down producing bottom-hole pressure. Gallup casing pressure decreased from 575# to 475# indicating Gallup zone was not blanked off by blanking plug.

(19) Pulled orifice assembly. Found slightly damaged and had not seated in check assembly. Ordered new orifice assembly. Pulled and inspected check assembly. Re-ran check. Could not get new orifice to seat in check assembly. Attempted to retrieve check assembly. Could not retrieve after two days fishing. Killed well with oil and pulled tubing. Ran tubing and tool with Gallup zone blanked off.

(20) Dakota producing load oil up tubing. Gas to pit. FP 50-100#.

(21) Load oil recovered from lower Dakota zone. Begin stabilized production test on Dakota for subtraction method allocation.
11-day stabilized average Dakota producing rate - 9.3 BOPD, GOR 9216.
Stabilized combined production rate from both zones.
(3-11-65 to 3-24-65) - 25 BOPD, GOR 6599.

(22) Pulled orifice assembly. Filled tubing and pressure tested check valves to 1600#. Did not leak. Knocked out lower plug in check assembly. Ran orifice assembly with Gallup zone blanked off. Shut-in. Commenced test. Termination packer-leakage test No. 2.

(23) Flow period No. 1. Gallup (upper) zone through casing.

(24) Shut-in period No. 2.

(25) Flow period No. 2. Dakota (Lower) zone up tubing. Produced Dakota to 6-22-65 and obtained final deadweight gauge for packer-leakage. No leaks indicated.

(26) Pulled entire "Dual Flow Choke" assembly. Replace lower knockout plug in check assembly. Ran assembly and plunger lift. Continue to produce both zones till test period termination.

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. _____
CASE NO. _____

EXHIBIT #4

V.N.M.C.P. MICROGRAPHICS
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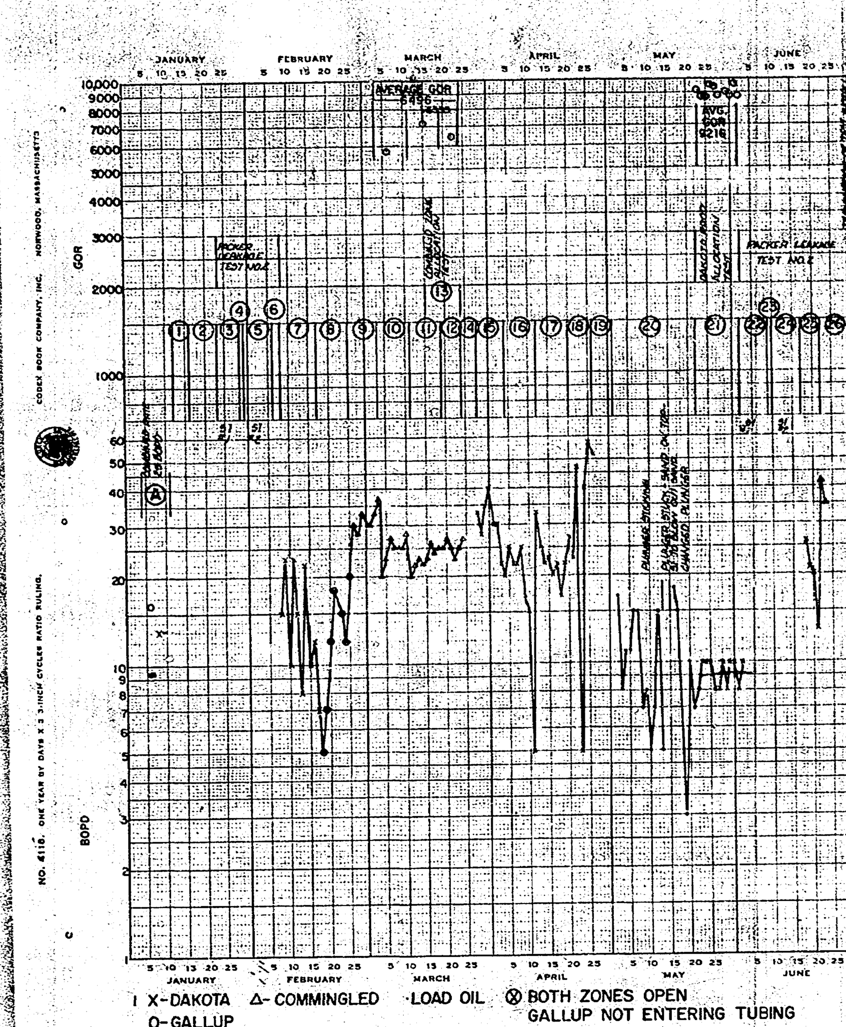

"DUAL FLOW CHOKE" INSTALLATION
JICARILLA 28 WELL NO. 1

(A) 8-Day average individual producing rates prior to installation of Dual Flow Choke. Gallup (pumping) Dakota (Plunger Lift)
(1) Shut-in. Pulled tubing and installing "Dual Flow Choke" w/Dakota check valve removed.
(2) Recovering load oil used to kill well.
(3) Shut-in for packer-leakage test No. 1.
(4) Flow period No. 1. Flow Gallup up annulus. 180 MCF gas, 0 oil.
(5) Shut-in period No. 2 - packer-leakage.
(6) Flow period No. 2. Produce Dakota up tubing.
(7) Pulled tool. Blanked off Gallup zone. Ran seven-day pressure bomb recorder above tool for production distribution test. Tried both pressure control and time control to stabilize producing rates. Unable to obtain stabilized rates in clock period. 2-17-65. Pulled bomb and orifice head. Bomb clock failure. No data obtained.
(8) Ran orifice. Both zones producing commingled. Gas to pit. FTP 100#. Drawing Dakota down. Gallup not entering tubing.
(9) Gallup production entering tool. Gas continued to pit. FTP 100#.
(10) Gas to sales. 250# system pressure. Plunger 12 trips daily. Begin combined zone stabilized production test. 8-day gas chart period. Average 24 BOPD, GOR 5788.
(11) 8-day gas chart period. Combined zones. 8-day period. Average 24 BOPD, GOR 7337. Increase plunger trips to 16 daily 3-16-65.
(12) 5-day period. Combined zones. Average 25 BOPD, GOR 6416.
(13) Combined zone stabilized rate @ 16 plunger trips daily. Average 25 BOPD, GOR 6599.
(14) Pulled orifice assembly. Installed blank in Gallup choke to produce Dakota only.
(15) Begin stabilize Dakota zone for subtraction method allocation.
(16) 8-day average production 20.5 BOPD, GOR 6713. High stabilized rate and low GOR indicates Gallup blank possibly not shutting off Gallup.
(17) Produced another 8-days. Average 22 BOPD, GOR 6624.
(18) Put gas to pit to draw down producing bottom-hole pressure. Gallup casing pressure decreased from 575# to 475# indicating Gallup zone was not blanked off by blanking plug.
(19) Pulled orifice assembly. Found slightly damaged and had not seated in check assembly. Ordered new orifice assembly. Pulled and inspected check assembly. Re-ran check. Could not get new orifice to seat in check assembly. Attempted to retrieve check assembly. Could not retrieve after two days fishing. Killed well with oil and pulled tubing. Ran tubing and tool with Gallup zone blanked off.
(20) Dakota producing load oil up tubing. Gas to pit. FP 50-100#.
(21) Load oil recovered from lower Dakota zone. Begin stabilized production test on Dakota for subtraction method allocation.
11-day stabilized average Dakota producing rate - 9.3 BOPD, GOR 9216.
Stabilized combined production rate from both zones.
(3-15-65 to 3-24-65). - 25 BOPD, GOR 6599.
(22) Pulled orifice assembly. Filled tubing and pressure tested check valves to 1600#. Did not leak. Knocked out lower plug in check assembly. Ran orifice assembly with Gallup zone blanked off. Shut-in. Commenced test. Termination packer-leakage test No. 2.
(23) Flow period No. 1. Gallup (upper) zone through casing.
(24) Shut-in period No. 2.
(25) Flow period No. 2. Dakota (Lower) zone up tubing. Produced Dakota to 6-22-65 and obtained final deadweight gauge for packer-leakage. No leaks indicated.
(26) Pulled entire "Dual Flow Choke" assembly. Replace lower knockout plug in check assembly. Ran assembly and plunger lift. Continue to produce both zones till test period termination

29.5
9.3
20.2

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
Apld EXHIBIT NO. 4
CASE NO. 3112

EXHIBIT No. 4

N.M.O.C.D. MICROGRAPHICS
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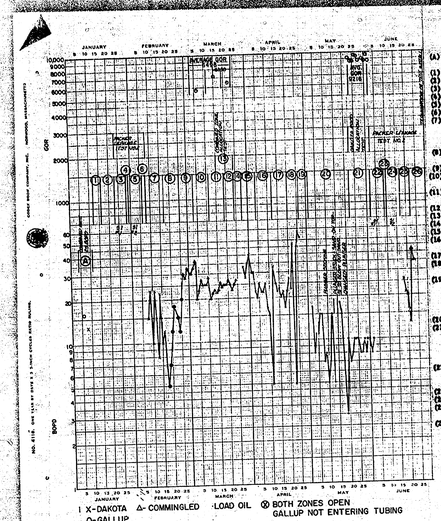

"DUAL FLOW CHOKE" INSTALLATION
JICARILLA 26 WELL NO. 1

(A) 6-Day average individual producing rates prior to installation of Dual Flow Choke. Gallup (pumping) Dakota (Plunger Lift)

(1) Shut-in. Pulled tubing and installing "Dual Flow Choke" w/Dakota check valve removed.

(2) Recovering load oil used to kill well.

(3) Shut-in for packer-leakage test No. 1.

(4) Flow period No. 1. Flow Gallup up annulus. 180 MCF gas, 0 oil.

(5) Shut-in period No. 2 - packer-leakage.

(6) Flow period No. 2. Produce Dakota up tubing.

(7) Pulled tool. Blanked off Gallup zone. Ran seven-day pressure bomb recorder above tool for production distribution test. Tried both pressure control and time control to stabilize producing rates. Unable to obtain stabilized rates in clock period. 2-17-65. Pulled bomb and orifice head. Bomb clock failure. No data obtained.

(8) Ran orifice. Both zones producing commingled. Gas to pit. FTP 1004. Drawing Dakota down. Gallup not entering tubing.

(9) Gallup production entering tool. Gas continued to pit. FTP 1009.

(10) Gas to sales. 250# system pressure. Plunger 12 trips daily. Begin combined zone stabilized production test. 8-day gas chart period. Average 26 MCFD, COR 5788.

(11) 8-day gas chart period. Combined zones. 8-day period. Average 24 BOPD, COR 7337. Increase plunger trips to 16 daily 3-16-65.

(12) 5-day period. (Combined zones) Average 25 BOPD, COR 6416.

(13) Combined zone stabilized rate @ 16 plunger trips daily. Average 25 BOPD, COR 6599.

(14) Pulled orifice assembly. Installed blank in Gallup choke to produce Dakota only.

(15) Begin stabilize Dakota zone for subtraction method allocation.

(16) 8-day average production 20.5 BOPD, COR 6713. High stabilized rate and low COR indicates Gallup blank possibly not shutting off Gallup.

(17) Produced another 8-days. Average 22 BOPD, COR 6624.

(18) Put gas to pit to draw down producing bottom-hole pressure. Gallup casing pressure decreased from 1759 to 675# indicating Gallup zone was not blanked off by blanking plug.

(19) Pulled orifice assembly. Found slightly damaged and bad set seated in check assembly. Ordered new orifice assembly. Pulled and inspected check assembly. Re-ran check. Could not get new orifice to seat in check assembly. Attempted to retrieve check assembly. Could not retrieve after two days fishing. Killed well with oil and pulled tubing. Ran tubing and tool with Gallup zone blanked off.

(20) Dakota producing load oil up tubing. Gas to pit. FP 50-1009.

(21) Load oil recovered from lower Dakota zone. Begin stabilized production test on Dakota for subtraction method allocation.

11-day stabilized average Dakota producing rate - 9.3 BOPD, COR 9216.

Stabilized combined production rate from both zones.

(3-15-65 to 3-24-65) - 25 BOPD, COR 6599.

(22) Pulled orifice assembly. Filled tubing and pressure tested check valves to 1600#. Did not leak. Knocked out lower plug in check assembly. Ran orifice assembly with Gallup zone blanked off. Shut-in. Commenced test. Termination packer-leakage test No. 2.

(23) Flow period No. 1. Gallup (upper) zone through casing.

(24) Shut-in period No. 2.

(25) Flow period No. 2. Dakota (lower) zone up tubing. Produced Dakota to 6-22-65 and obtained final deadweight gauge for packer-leakage. No leaks indicated.

(26) Pulled entire "Dual Flow Choke" assembly. Replace lower knockout plug in check assembly. Ran assembly and plunger lift. Continue to produce both zones till test period termination

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO.
CASE NO.

EXHIBIT #4

W.N.M.C.P. MICROGRAPHICS
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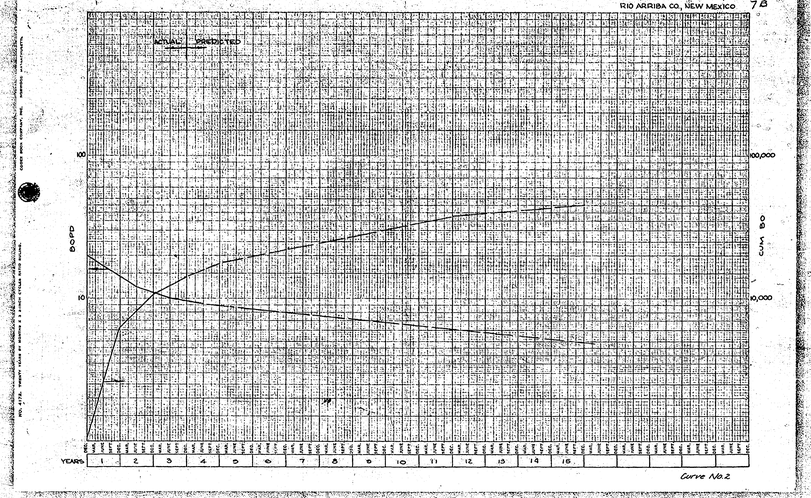
WEST LINDRITH DAKOTA
TYPICAL WELL
RIO ARRIBA CO, NEW MEXICO

Exhibit 7B



Curve No 2

U.N.M.C.P. MICROGRAPHICS
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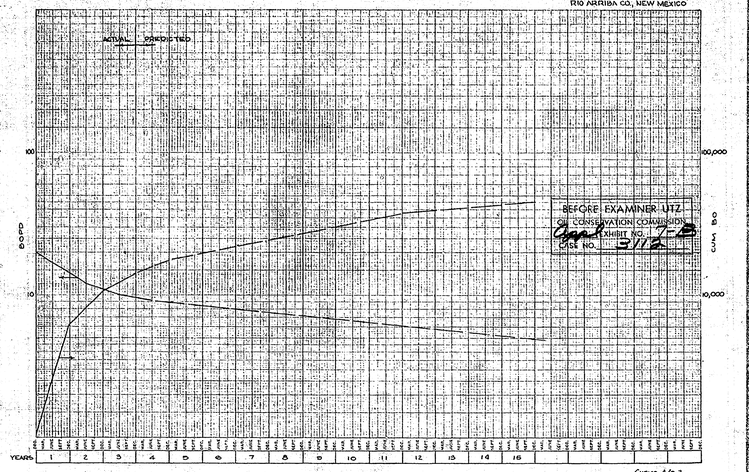
WEST LINDRITH DAKOTA
TYPICAL WELL
RIO ARRIBA CO, NEW MEXICO



BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 7-B
CASE NO. 5112

Curve No 2

W.N.M.C.P. MICROGRAPHICS
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U.S.B.C.F. MONOGRAMS

BEST AVAILABLE COPY

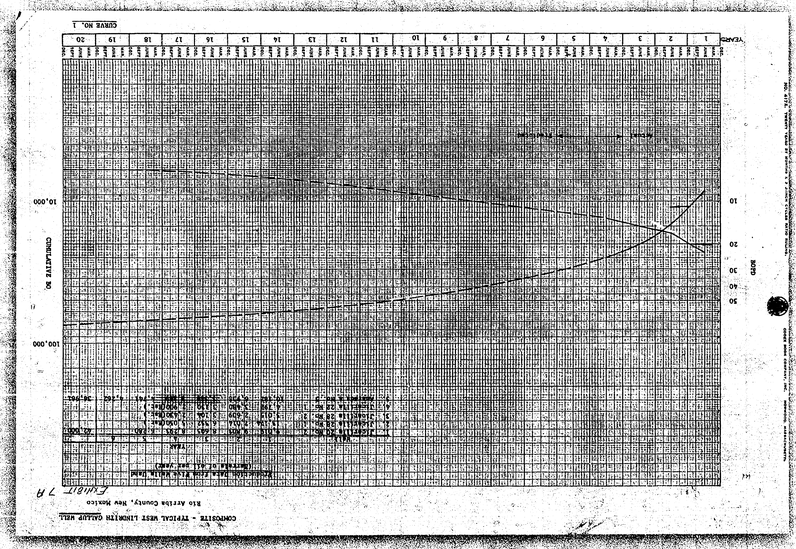
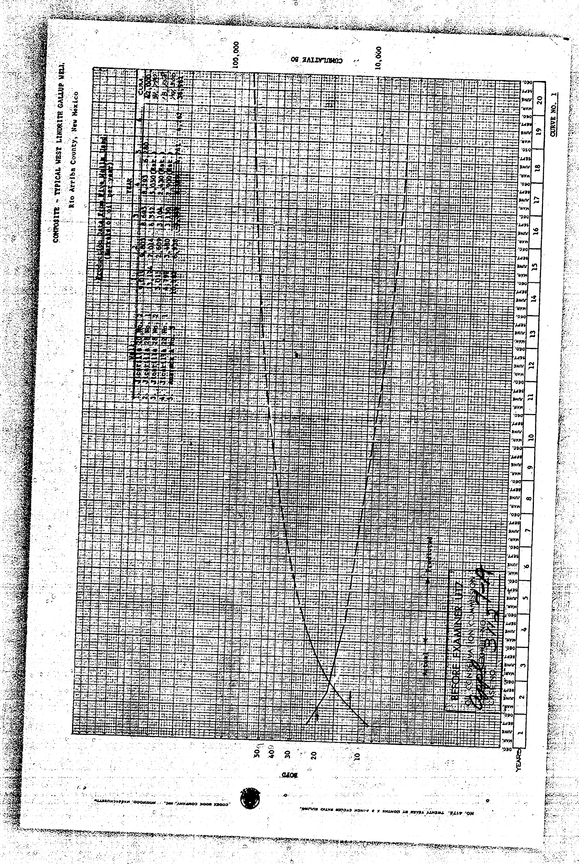


EXHIBIT 7A

RIO ARRIBA County, New Mexico

COMPOSITE - TYPICAL WEST LINDRITH GALLUP WELL



N.M.M.C.F. MICROGRAPHICS
BEST AVAILABLE COPY

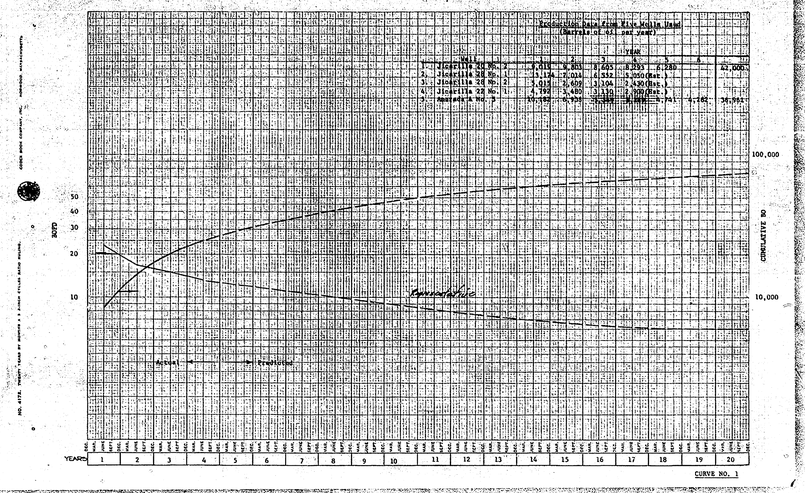
EXHIBIT 7 A

COMPOSITE - TYPICAL WEST LINDRITH GALLUP WELL

Rio Arriba County, New Mexico

Production Data from Rito Molle Field
(Barrels of Oil per year)

	Well	1	2	3	4	5	6	
1.	Jicarilla 40 No. 2	4,015	4,015	4,015	4,015	4,015		42,000
2.	Jicarilla 38 No. 1	11,134	7,014	5,144	3,900(Est.)			
3.	Jicarilla 28 No. 2	5,015	5,029	5,104	3,430(Est.)			
4.	Jicarilla 32 No. 1	4,797	3,480	3,135	2,900(Est.)			
5.	Composite Well No. 3	30,000	9,930	5,000	3,000	Est.	4,745	36,951



CURVE NO. 1

V.N.M.C.F. MICROGRAPHICS

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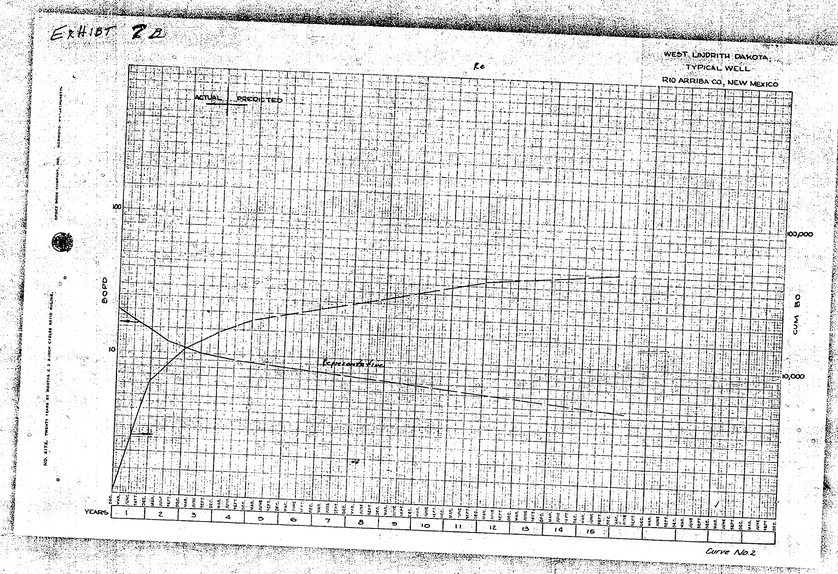
EXHIBIT 2D



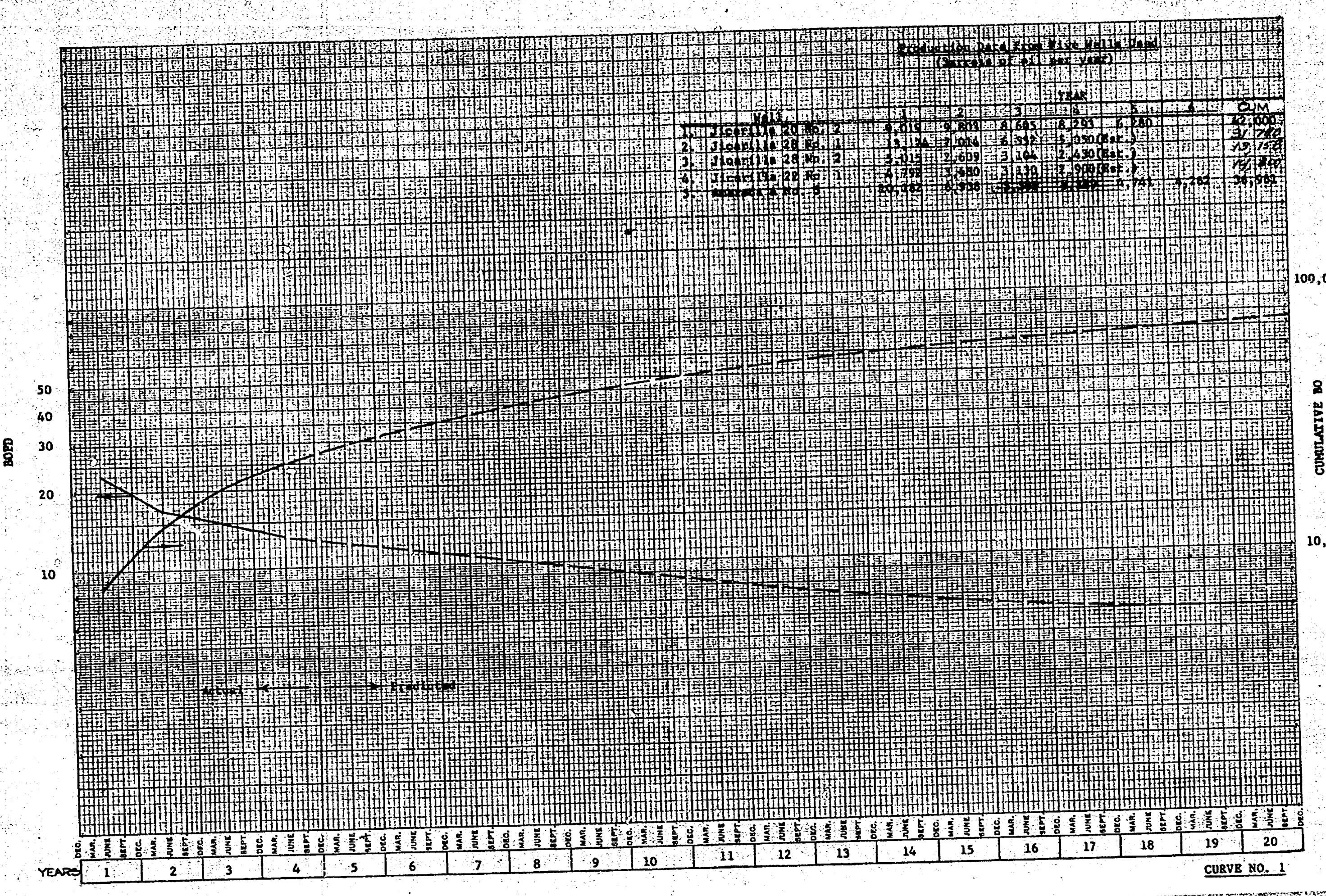
N.M.O.C.D. MICROGRAPHICS
BEST AVAILABLE COPY

COMPOSITE - TYPICAL WEST LINDRITH GALLUP WELL

Rio Arriba County, New Mexico

Production Data From Five Wells Used
(Barrels of oil per year)

Well	Year 1	2	3	4	5	6	CUM
1. Jicarilla 20 No. 2	9,019	9,803	8,605	8,293	6,280		42,000
2. Jicarilla 28 No. 1	[illegible]	7,024	6,552	5,050(Est.)			[illegible]
3. Jicarilla 28 No. 2	[illegible]	2,609	3,104	2,430(Est.)			[illegible]
4. Jicarilla 22 No. 1	[illegible]	3,480	3,130	2,900(Est.)			[illegible]
5. [illegible] No. 5	[illegible]	6,930	[illegible]	[illegible]	5,741	4,282	36,981

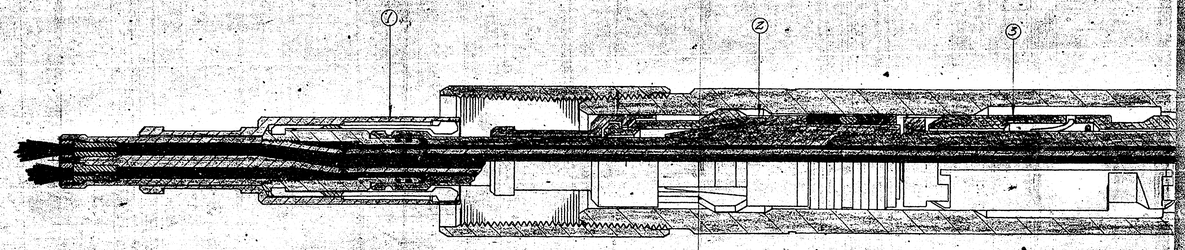


CURVE NO. 1

NO. 4172. TWENTY YEARS BY MONTHS X 3 3-INCH CYCLES RATIO RULING. CODEX BOOK COMPANY, INC. NORWOOD, MASSACHUSETTS.

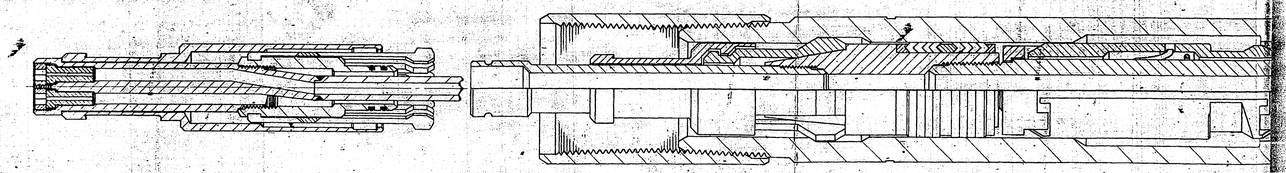
W.K.M.C.F. MICROGRAPHICS

BEST AVAILABLE COPY



ORIFICE HEAD IN LOCKED POSITION

TYPE 'S' MULTIPLE COMPLETION CHOKE WITH ORIFICE HEAD

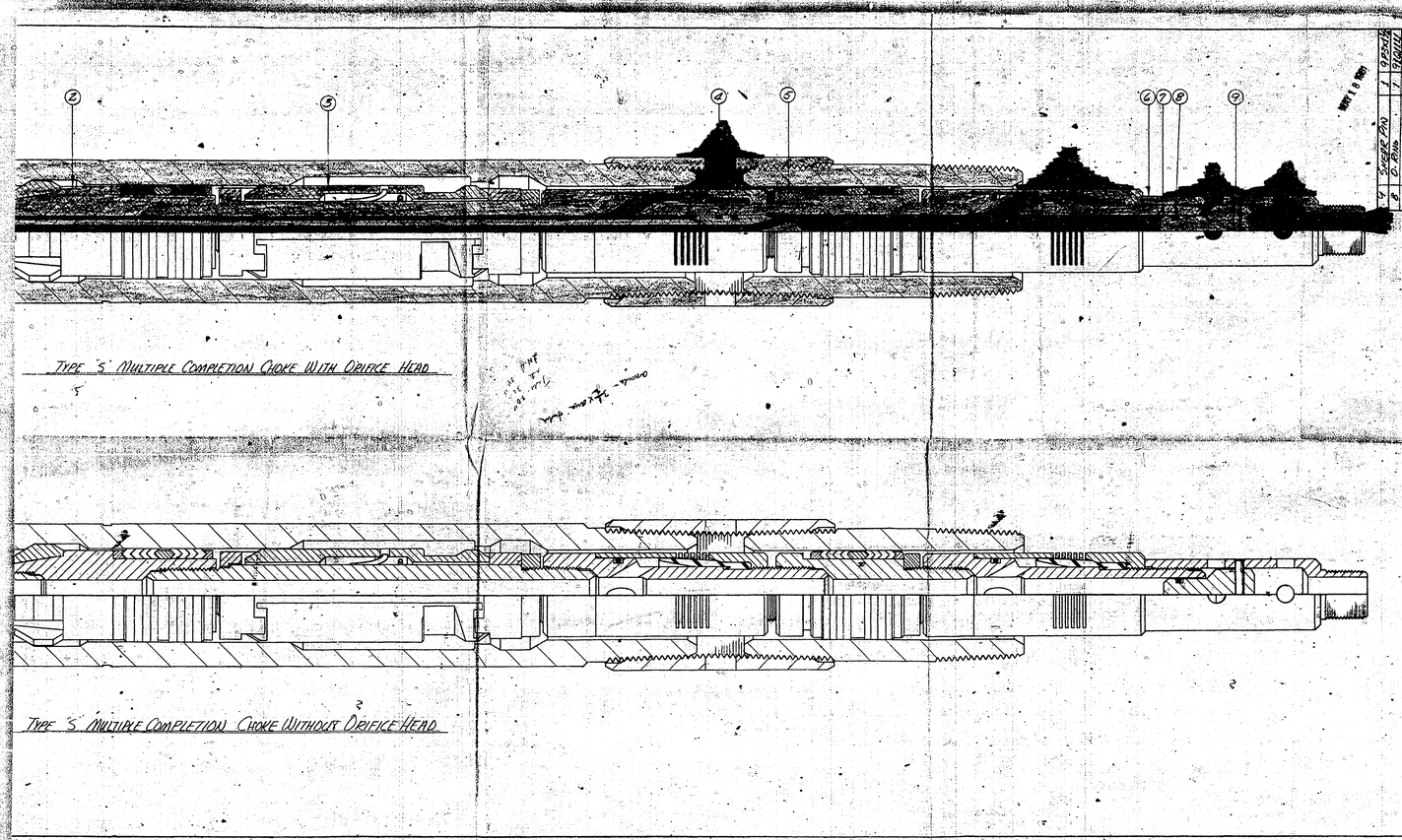


ORIFICE HEAD IN PULLING POSITION.

TYPE 'S' MULTIPLE COMPLETION CHOKE WITHOUT ORIFICE HEAD

W.N.M.C.F. MICROGRAPHICS

BEST AVAILABLE COPY



W.R.M.C.F. MICROGRAPHICS
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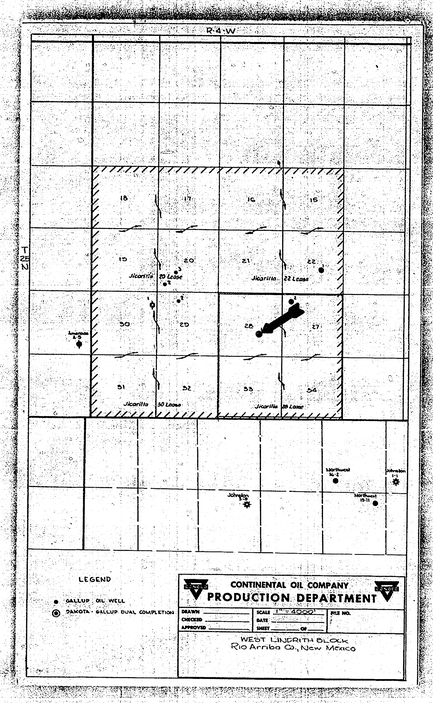

V.N.M.C.F. MICROGRAPHICS
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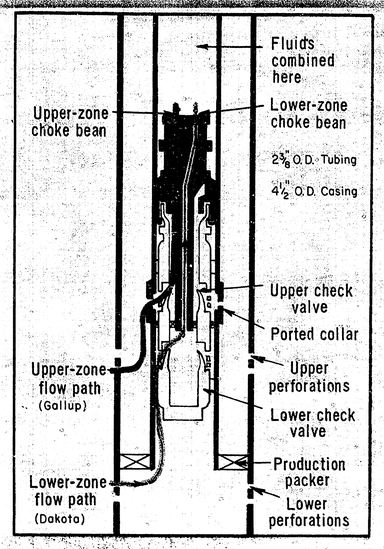

FIGURE NO. 7

Schematic diagram showing installation of Otis "Dual flow choke assembly" for dual zone downhole commingling.

V.R.M.C.F. MICROGRAPHICS
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