dugan production corp.

July 11, 1983

Joe D. Ramey, Director
Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

Re: Request for Administrative Approval to Downhole Commingle
Dugan Production Corp.
Divide #1
Unit H, Sec. 35, T-26N, R-2W NMPM
Undesignated Mancos and Blanco Mesaverde Fields
Federal Lease No. NM-28709
Rio Arriba County, New Mexico

Dear Mr. Ramey:

By this letter we request administrative approval to commingle production from the Mesaverde and Mancos formations within the wellbore of the captioned well.

The Divide #1 was spudded on October 26, 1981, and 4½" casing cemented at 7727' on November 12, 1981. The Mancos formation was perforated 7266-7670', and stimulated with 60,000# 20-40 sand carried in 82,000 gals. slickwater. The Mesaverde interval 5862-74' and 6234-44' was then perforated and stimulated using 89,200# 20-40 sand and 99,500 gals. of slickwater. Production testing began December 8, 1981 and continued through December 27, at which time the well was shut in, testing gas, oil, and water, however, the well would not flow continuously due to the amount of water being produced. Remedial efforts to reduce the water production began in May 1983, and it was determined that the upper set of Mesaverde perforations 5862-74' was contributing a majority of the water. These perforations were isolated and a rate of 822 MCFD with a light spray of oil and water was tested on May 22, 1983. A copy of our daily drilling and completion report, along with the C-122 for the May 22, 1983 test is attached for your review.

This well is very remote with respect to established production (3¼ miles east of Blanco Mesaverde production, and 4½ miles west of Mancos production at West Puerto Chiquito). The Mancos is currently being produced approximately 3/4 mile to the northeast in Dugan Production's Tapacitos #2, however,

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this well averages less than 1 BOPD and has produced approximately 500 barrels of oil since completion in October 1980, and is not believed to be representative of Mancos productivity in the Divide #1.

It is anticipated that obtaining a pipeline connection will require an additional expenditure on the part of Dugan Production, as we are located approximately 2½ miles from the nearest pipeline, and without some production performance, additional development in this general area is very unlikely in the near future. The productivity of the Divide #1 is not likely to entice much interest from the pipeline companies in view of the current gas market.

The subject well is located on Dugan Production's Federal Lease No. NM-28709 which comprises all of Sec. 35, T-26N, R-2W. The ownership (working interest and royalty) of both zones is common and the value of the gas and oil of both zones is approximately the same. Dugan Production also has the leases immediately adjacent to the subject well. We have attached a plat on which all of the offset acreage ownership is indicated.

Also attached for your consideration is a summary of our estimate of reserves for both formations utilizing the open hole logs and volumetric calculations. Recoverable reserves for the Mancos are estimated to be 20,800 STB and 212 MMCF. Estimates are based upon a detailed evaluation of the open hole logs throughout the perforated interval 7266-7670'. A total of 71 feet of pay averaging 4.4% porosity and 40% water saturation was calculated to exist throughout the 404' interval. The average gas-oil ratio was established utilizing production data from the Gallup completion in Northwest Exploration's Gavilan #1 located approximately 5 miles to the south in the NE/4 of Sec. 26, T-25N, R-2W, and a well in the SE/4 of Sec. 20, T-24N, R-2W approximately 11 miles to the southwest (Frank Yockey's Ingwerson #4).

Reserves in the Mesaverde were also calculated using volumetric data from open hole logs and determined to be 347 MMCF plus 7,150 barrels of condensate. The condensate ratio was determined from actual production performance of 3 wells located to the west; the Davis #2 operated by W. M. Gallaway, and the Lindrith #1 and #1A operated by Merrion Oil & Gas (Reference Figure No. 2).

Also presented on this reserve evaluation data sheet is a summary of recoverable reserves. As can be seen, 62% of the gas along with 26% of the oil is attributable to the Mesaverde and 38% of the gas plus 74% of the oil will come from the Mancos based upon reserve estimates. We propose to use these factors in order to allocate the commingled stream between the Mancos and Mesaverde.

The bottom hole pressure was calculated to be 1778 psig at 6240' (mid perf in the Mesaverde) and 2128 psig at 7468' (mid perf in the Mancos) utilizing an initial shut in wellhead pressure of 1485 psig. Based upon this pressure and our general experience in the area, we believe that cross

flow between zones will not occur.

The production from the Mancos is anticipated to be primarily oil at a fairly high GOR, while production from the Mesaverde is expected to be gas with an associated condensate based upon production from both zones in the general area. We believe that all gas, oil and water from both formations is compatible and that there will be no damage as a result of mixing production from Mancos and Mesaverde formations. The gas produced from the Mancos and Mesaverde is of similar heating value and will qualify for the same NGPA category, and thus, the value of the commingled stream will be equal to the sum of the value of production from individual zones.

Attached for your consideration is Figure No. 1 which presents our prediction of the production performance of the individual zones as well as the commingled stream. The performance prediction for the Mesaverde is based upon data presented on Figure No. 2 which presents the performance of 4 wells completed in the Mesaverde in the general area of the Divide #1. The predicted performance for the Mancos is based upon data presented in Figure No. 3 and No. 4 which presents actual production performance of 6 wells plus the predicted performance of 2 wells in the general area of the Divide #1. The data presented on Figures No. 3 and No. 4 represents a commingled stream of the Gallup and Dakota, however, it should be noted that the Gallup represents 75-90% of the total production for any individual well, and thus, utilizing this data, is believed to represent fairly well, performance from the Mancos formation.

With reference to Figure No. 1, it is anticipated that the Mesaverde will produce with an initial rate of 275 MCFD and decline at an annual rate of 40% per year for 3 years and then stabilize at 10% per year. This performance will give the reserves that are estimated volumetrically. The condensate forecast is made utilizing an average condensate ratio of 20.6 bbl/million cubic feet throughout the life of the well. The Mancos is expected to produce at an initial rate of 20 BOPD and decline at an annual rate of 40% for 3½ years prior to stabilizing at a 9% per year decline. The average GOR of 10,200 SCF/bbl was utilized to forecast gas production.

By copy of this letter, we have notified the BLM of our plans to commingle production from the Mesaverde and Mancos in the Divide #1. There are no offset operators other than Dugan Production.

In summary, production from the Mesaverde and the Mancos in the Divide #1 is anticipated to be fairly marginal, and thus, it is requested that Dugan Production be permitted to commingle these zones within the wellbore and proceed in an effort to secure a pipeline connection which is likely to necessitate an additional expenditure to install approximately 2½ miles of line. It is our belief that the economics of this well will, at best, be marginal, and the requested commingling will permit this well to be produced, and to the benefit of all involved. It is also our belief that this commingling will not violate correlative rights and will maximize hydrocarbon recoveries

from this lease.

Should you have any questions regarding this application, please feel free to contact us.

Sincerely,

John D. Roe

John D. Roe
Petroleum Engineer

JDR:mba

Attachments

xc: Bureau of Land Management

dugan production corp.

DUGAN PRODUCTION CORP.
Divide #1
1570' FNL - 1030' FEL
Sec 35 T26N R2W
Rio Arriba County, NM

MORNING REPORT

10-27-81 312' W.O.C. 1° at 312'
MI & RU Four Corners Drilling Co. Rig #2. Spudded 12¼" hole at 12:00 noon 10-26-81. Drilled to 312'. Ran 7 jts. 9-5/8" OD, 8 Rd, ST&C , "B" Cond. casing. T.E. 291' set at 303' RKB.

Cemented w/ 175 sx class "B" plus 2% CaCl. P.O.B. at 10:30 p.m. 10-26-81. Cement circulated.

10-28-81 1284' - drlg. Wt. 8.7 Vis 29 W.L. 11.0
1½° at 713'

10-1/2 hrs - drlg.
1/4 hr - rig service
8 hrs - W.O.C.
1/2 hr - drill cement
3-1/2 hrs - lost circ.
1-1/4 hrs - repairs

10-29-81 2706' - Drlg. Wt. 9.0 Vis 40 W.L. 11.0 10% LCM
1° at 1336, 1° at 2214

3-1/4 hrs - trip
18-1/2 hrs - drlg.
3/4 hr - rig service
1/2 hr - survey
1 hr - L.C. at 2527

10-30-81 3500' - Drlg. Wt. 9.0 Vis 40 W.L. 11 10% LCM
1° at 2214, 1° at 3119'

4 hrs - trip
3/4 hr - rig service
1/2 hr - rig service
18-3/4 hrs - drlg.

10-31-81 4231' - Drlg. Wt. 9.0 Vis 35 W.L. 6.0 5% LCM
1° at 4061

4-1/2 hrs - trip
18-1/4 hrs - drlg.
1/2 hr - rig service
1/4 hr - survey
1/2 hr - wash to btm.

11-1-81 4553' - Drlg. Wt. 8.7 Vis 45 W.L. 4.4 12% LCM
Lost circ. at 4453'.

18-3/4 hrs - drlg.
1/2 hr - rig service
2-3/4 hrs - mix mud and LCM
2 hrs - circ.

11-2-81 5016' - Drlg. Wt. 8.8 Vis 40 W.L. 9.0

22-3/4 hrs - drlg.
3/4 hr - rig service
1/2 hr - change oil in draw-works motors

11-3-81 5406' - Drlg. Wt. 9.0 Vis 36 W.L. 9.2 6% LCM
1° at 5330'

23 hrs - drlg.
3/4 hr - rig service
1/4 hr - survey

11-4-81 5818' - Drlg. Wt. 9.0 Vis 43 W.L. 9.8 5% LCM

22-3/4 hrs - drlg.
3/4 hr - rig service
1/2 hr - level derrick

11-5-81 6139' - Trip Wt. 9.1 Vis 40 W.L. 11.4 5% LCM

23 hrs - drlg.
3/4 hr - rig service
1/4 hr - trip

11-6-81 6477' - Drlg. Wt. 9.0 Vis 41 W.L. 10.2 9% LCM
1° at 6139

4-1/4 hrs - trip
18-3/4 hrs - drlg.
3/4 hr - rig service
1/4 hr - wash to btm.

11-7-81 6756' - Drlg. Wt. 9.0 Vis 40 W.L. 8.8 10% LCM
1° at 6661

22-3/4 hrs - drlg.
3/4 hr - rig service
1/2 hr - survey

11-8-81 7075' - Drlg. Wt. 9.0 Vis 42 W.L. 8.4 9% LCM

23-1/4 hrs - Drlg.
3/4 hr - rig service

11-9-81 7410' - Drlg. Wt. 9.0 Vis 40 W.L. 10.4 7% LCM
1° at 7161

22-3/4 hrs - drlg.
3/4 hr - rig service
1/2 hr - survey

11-10-81 7725' - Drlg. W.t 9.0 Vis 69 W.L. 10.4 7% LCM
1° at 7660

22-3/4 hrs - drlg.
3/4 hr - rig service
1/2 hr - survey

11-11-81 7750' - logging Wt. 9.0 Vis 65 W.L. 10.8 6% LCM
¼° at 7750'

10-3/4 hrs trip
2-1/4 hrs - drlg.
1/4 hrs - survey
2-1/4 hrs - circ.
8-1/2 hrs - logging

11-12-81 TD 7759' - Finished running IES and CDL logs by Welex. T.I.H. with drill pipe. Rigged up and ran 4½" csg. Cemented first stage. Now circulating. Prep. to cement 2nd stage. Detailed csg. report will follow.

11-13-81 Ran 190 jts. 4½" OD, 10.5# & 11.5#, K-55, 8 R, ST&C seamless condition A Csg. T.E. 7729.07' set at 7727' RKB.. Ran pipe without difficulty until preparing to circulate last joint down when pipe became stuck. Able to circulate OK. Pipe probably differentially stuck close to surface.

Set up Halliburton to cement 1st stage. Ran 10 bbls of mud flush and 75 sx of 65-35 plus 12% gel and ¼# of flocele per sk. and 100 sx of class "B" 12½# of Gilsonite per sk & ¼# flocele per sk. Slurry yeild 338 cu.ft. Good mud circulation while cementing. Pumped plug down and dropped bomb and opened lower stage tool at 6403' and circulated with rig pump 3 hrs.

Cemented 2nd stage - ran 10 bbls of mud flush; mixed 175 sx of 65-35 plus 12% gel and ¼# flocele per sk; 100 sx class "B" plus 4% gel and ¼# flocele per sk. Total slurry 610 cu.ft. Had good circulation throughout second stage. Opened upper stage tool at 4208. Circulated with rig pump 3 hrs.

Cemented 3rd stage - pumped 10 bbls of mud flush; 375 sx 65-35 plus 12% gel & ¼# flocele per sk followed by 100 sx of class "B" w/ 4% gel and ¼# flocele per sk. Total slurry 1134 cu.ft. Pumping plug down. Lost return on last 6 bbls of displacement. Closed last tool, set slips, cut pipe off, set on well head. Released rig at 12:30 p.m. 11-12-81.

DAILY REPORT

11-20-81 MI & RU MTK Rig #2.

11-21-81 NU BOP. Go in hole w/ tubing and 3-7/8" bit. Drlg. on D.V. tool at 4207.'

11-23-81 Finish Drlg. D.V. tool at 4207'. Go in hole w/ tbg. to 6278'. Drlg. on iron and cement to 6338'.

11-24-81 Drlg. 50' cement and D.V. tool at 6402'.

11-25-81 Go in hole w/ tbg. to 7687'. Drlg. out to 7697'. Circulate clean.

11-27-81 Rigged up Western Co. and pressure tested 4½" csg. and B.O.P. to 4000 psi. Held OK. Spotted 350 gals 10% acetic acid. P.O.H. with tbg. Jetronics ran gamma-ray correlation and collar logs. PBTD 7671' to 7200' and 6300' to 5800'.

Perf w/ 3-1/8" cased gun. 7660-70 (5 holes), 7620-30 (5 holes), 7602-10 (4 holes), 7554-7562 (4 holes), 7480-90 (5 holes), 7442-56 (7 holes), 7415-21 (3 holes), 7310-22 (6 Holes), 7276-7282 (3 holes), 7266-72 (3 holes). Total Mancos perfs - 45. S.D.O.N.

11-28-81 Western Co. - rig up. Broke down Mancos Shale formation at 1600 psi. Ran 750 gal 15% HCL with 60 balls. Establish I.R. at 40 BPM at 3200 psi. Broke to 40 BPM at 2700 psi. Had good ball action and several breaks. Did not ball off. I.R. 18 BPM at 2450 psi before shut down. ISDP 600 psi. Bled pressure off. Jetronics ran junk basket to PBTD 767Ø'. Recovered 44 balls-32 balls with hits.

Western Co. fraced Mancos Shale Formation from 7272 to 7670. Start pad out at 51 BPM & 2100 psi. When ½# sand hit, pressure started to increase. Started 1#/gal; pressure continued to increase. Frac acted like it was going to sand off; cut sand, flushed hole, pressure leveled off. Started sand again at ½#; increased to 3/4# per gal. with 1090 bbls in. Increased sand to 1#/gal, fracing at 3400 psi and 28 BPM when ball injector started to leak badly. Decided to flush. Fraced with total of 1952 bbls water, 2½#/1000 gal FR-2, 60,000# 20-40 sand, 1 gal Aquaflow per 1000 gal frac water. I.F. 1800 psi, Min. 1800 psi, Max 3800 psi, Ave 3200 psi, Final 3500 psi. ISDP 900 psi. 15 min shut-in 450 psi. Max I.R. 51 BPM. Ave I.R. 31 BPM.

205# FR-2
82gal Aquaflow

Perf 1 jet SPF 6234-44 and 5862-74. Spearhead 250 gal 15% HCL. Pumped to Mesaverde perfs and shut down. Let acid soak 5 min. Start frac. Press at 2200 psi. I.R.46 BPM - confirming frac going into MV formation. Pressure increased gradually to 2900 psi, I.R. 44 BPM. Got small pressure break to 2750 psi. I.R. 45 BPM. Increased sand to 1¼#/gal with 1142 bbls in. With 1313 bbls. frac in, drop 10 balls. Pressure increased to 3600 psi. I.R. 37 BPM. After 4 min at 3600 psi pressure broke to 2900 psi; with 1700 bbls. frac in increased sand to 1½#/gal.; with 2025 bbls frac in drop 10 balls. Press 3100 psi. I.R. 44 BPM; when balls hit, press increased 200 psi. Fracing at 3200 psi, 44 BPM at end of job. Used total 2369 bbls. water, 89,200# 20-40 sand, 2½# FR-2/1000 gal and 1 gal Aquaflow/1000 gal. I.F. 3200 psi. Max 3600 psi, Min 2100 psi, Ave 2900 psi. Final 3200 psi. ISDP 1000/psi. 15 min shut-in 600 psi. Max I.R. 47 BPM. Ave I.R. 44 BPM. Ave. horsepower 3127. Shut well in.

245# FR-2
99gal Aquaflow

11-29-81 Did not work - Sunday

11-30-81 Ran in hole w/ 2-3/8" tubing. Seat nipple 1 jt. off bottom. Ran 223 of 239 joints and tagged sand w/ 10' of #224 in hole and 7 stands racked w/ 225 jts. in string. This put the open-ended bottom joint pin at 7180'.

Began trying to circulate in reverse. Had very little returns. Switched over to attempt conventional circulation and achieved partial circulation. Pumped ±5-6 BPM and lost ±20%. Tried to circulate some sand out, but did not recover any as the circulation would be lost whenever the tubing was lowered to tag the sand. Began T.O.O.H. for hydrostatic bailer. S.D.O.N.

12-1-81 P.O.H. G.I.H. w/ Baker hydrostatic bailer. Clean out 120' sand. Bailer quit working. P.O.H. Dump sand out of tbg. S.D.O.N.

12-2-81 T.I.H. w/ Hydrostatic bailer. Clean out sand to 7450'. P.O.H. Dump water and very little sand out of tbg. (seem to have lost most of sand while pulling out of hole). T.I.H. w/ hydrostatic bailer.

12-3-81 Finished going in hole. Tag up at 7300'. Made 30' hole. Hitting solid. Tried rotating tbg. Unable to make hole. P.O.H. Rubber packing was off tbg. drain. T.I.H. w/ bailer. Tag up on sand. Clean out to 7450'. Start out of hole.

12-4-81 P.O.H. Dump 90' out tbg. T.I.H. Tag up at 7430'. Clean out to 7640'. P.O.H. Dump 14 stands of sand. Had show of oil & gas.

12-5-81 Went in hole w/ tbg. Tag sand at 7640'. Landed tbg. as follows: 233 jts. 2-3/8" OD, 4.7#, J-55, 8 Rd, EUE tbg. T.E. 7493.67' set at 7500' RKB. Seating nipple at 7468'. N.D. B.O.P. N.U. well head. Rig down MTK.

12-7-81 MI & RU Hinson Service Co. swabbing unit.

12-8-81 Tbg. pressure 0; casing pressure 0. Fluid level at start of day 600'. Made 26 swab runs, pulling 2500' wtr. per run. Estimate 225 bbls. wtr. swabbed. Show of gas last 6 runs. Csg. on vacuum.

12-9-81 Csg. press. 150 psi. Tbg. press. 110 psi. Fluid level at 700' from surface. Made 25 swab runs. Swabbed approx. 240 bbls. water. No show oil. Well gassing while swabbing. Fluid level at end of day 1400'. Csg. press. at end of day 225 psi.

12-10-81 Csg. press. 325 psi, tbg. 215 psi. Fluid level 750' from surface. Made 25 swab runs; swabbed approx. 250 bbls. wtr. Show of oil on water. Fluid gas-cut on last 10 runs. At end of day fluid level 1500'. Csg. pressure 300 psi.

12-11-81 Csg. pressure 400 psi. Tbg. press. 310 psi. Fluid level 800' at start of day. Made 27 runs, pulling 2500' fluid per run. Est. 260 bbls. Show of gas; slight show of oil. Csg. pressure 450 psi at end of day.

12-12-81 Tbg. pressure 475. Csg. pressure 525. Fluid level at start of day 750'. Csg. pressure at end of day 550 psi. Fluid level at 1500'. Made 26 swab runs - approx. 250 bbls water. Well gassing more each day. Very slight show of oil.

12-14-81 Tbg. pressure 230 psi; casing pressure 610 psi. Fluid level at 600' at start of day. Casing pressure at end of day 600 psi. Fluid level 800' at end of day. Made 25 swab runs - approx. 250 bbls. water. Slight show of oil; good show of gas. (Had fluid level swabbed down to 1200' and raised back to 800' at end of day.) Well gassing more and kicking from 2:00 p.m. on.

12-15-81 Csg. pressure 675 psi; tbg. pressure 290 psi at start of day. Fluid level 700'. Made 28 swab runs. Estimate 300 bbls. wtr. w/ very slight show oil. Good show gas. Csg. pressure at end of day 650 psi. (Gas increasing each day.)

12-16-81 Tbg. press 210 psi; csg. press 780 psi. Fluid level 700'. Made 28 swab runs. Swabbed approx. 300 bbls. Csg. pressure 800 psi at end of day. Fluid level at 1000'. Gas increasing. Oil percentage less than 1%.

12-17-81 Tbg. pressure 200 psi. Csg. pressure 875 psi. Fluid level 750'. Made 24 swab runs. Swabbed est. 300 bbls. water. Csg. pressure 850 psi. Fluid level 900'. Gas increasing. Oil est. at 1%.

12-18-81 Tbg. pressure 230 psi. Csg. pressure 950 psi. Fluid level 750'. Made 23 swab runs. Swabbed est. 300 bbls water. Csg. pressure 975 psi at end of day. Fluid level 1400'. Gas increasing. Oil 1%.

12-19-81 Csg. pressure 1050 psi. Tbg. pressure 200 psi. Fluid level at start of day 800'. Casing pressure at end of day 1025 psi. Fluid level at 1500'. Made 21 runs. Swabbed estimated 275 bbls fluid. Well kicked off after 18 runs and flowed 30 minutes and died. No increase in oil.

12-20-81 Shut down - Sunday

12-21-81 Tbg. pressure 50 psi. Casing pressure 1150 psi. Fluid level 700' at start of day. Made 20 swab runs. Well kicked off and flowed 20 minutes three different times during day and died. Swabbed and flowed estimated 250 bbls. wtr.

12-22-81 Tbg. Press. 200 psi. Csg. press 1230 psi. Fluid level 800' at start of day. Made 10 swab runs. Sand line jumped sheave and stranded same. Swabbing unit rigged down and moved in to repair sand line. Well had kicked off and flowed 10 minutes one time during day. Fluid level 1200' and csg. press 1175 psi when well was shut in.

12-27-81 Tubing pressure 360 psi Casing pressure 1255 psi

4-28-82 MI & RU Hinson Service Co. swabbing unit. Casing pressure 1575 psi. Tbg. pressure 1425 psi. Blew tbg. down. Did not unload. Made 9 swab runs; well kicked off. Flowed well to tank 2 hrs. Made 48 bbls. water & 2½ bbls oil. Casing pressure decreased to 1300 psi. Well died. S.I. overnight.

4-29-82 Casing pressure 1500 psi. Tubing pressure TSTM. Fluid level 1200'. Made 8 swab runs to pit - 100% water. Well kicked off. Flowed to pit ½ hr. Turned to tank and left on. Released swabbing unit. Left open. Checked well at 8:00 p.m. Well dead. Will swab well again after pressure build up.

9-9-82 SITP 1200 psig SICP 1560 psig
Tank gauge initial 3'11¼"
Drained water off tank and left 9" oil. Opened well thru variable choke to tank at 1620 hrs. Had 1100 psi behind choke and 1560 on casing.

9-10-82 TP = Zero CP = 1620 psig. Well had logged off soon after opening. Tank gauge still 9". Shut well in.

5-10-83 SITP = SICP = 1800 psi. Opened to atmosphere & bled to zero. Well dead.

5-11-83 Moved in and rigged up Well Tech pulling unit. Nippled up B.O.P. T.O.H. with 2-3/8" tubing string. Picked up Baker Model "R" double grip packer. Start trip in hole. S.D.O.N.

5-12-83 Finished T.I.H. Set packer at 6150' - 191 jts. Nipple down B.O.P. Nipple up well head. R.U. to swab. Made 4 runs. Well kicked off, making heavy water. Rig down service unit and released rig.

5-13-83 Checked well after flowing to tank 23 hrs. Making estimated 250 MCFGPD with slugs of water and trace of oil. Shut well in for I.P.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

Form C-122
Revised 10-1-78

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELLS

RECEIVED
JUL 14 1983
OIL CONSERVATION DIVISION
SANTA FE

Type Test: [X] Initial [ ] Annual [ ] Special		Test Date: 5-22-83	
Company: Dugan Production Corp.	Connection:		
Pool: Blanco Mesaverde and Undesignated Mancos	Formation: Mesaverde - Mancos		Unit:
Completion Date: 5-13-83	Total Depth: 7759'	Plug Back TD: 7671'	Elevation: 7795 GL
Csg. Size: 4-1/2" / Wt.: 10.5# 11.5# / d: / Set At: 7727' RKB / Perforations: From 6234 To 7272			Farm or Lease Name: Divide / Well No.: 1
Tbg. Size: 2-3/8" / Wt.: 4.7# / d: / Set At: 7500' RKB / Perforations: From open ended To			Unit: H / Sec.: 35 / Twp.: 26N / Rge.: 2W
Type Well – Single – Bradenhead – G.G. or G.O. Multiple: downhole commingled G-O (appl. pending)	Packer Set At: 6150'		County: Rio Arriba
Producing Thru: tubing	Reservoir Temp. °F:	Mean Annual Temp. °F:	Baro. Press. – P_a: / State: New Mexico

L	H	Gg	% CO_2	% N_2	% H_2S	Prover	Meter Run	Taps

	FLOW DATA				TUBING DATA		CASING DATA		
NO.	Prover Line Size	X Orifice Size	Press. p.s.i.g.	Diff. h_w	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.	Temp. °F	Duration of Flow
SI						1485		packer		9 days
1.										
2.										
3.	5/8" pos. choke		87		60			0		3 hrs.
4.										
5.										

RATE OF FLOW CALCULATIONS

NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P_m	Flow Temp. Factor Ft.	Gravity Factor Fg	Super Compress. Factor, Fpv	Rate of Flow Q, Mcfd
1							
2.							
3.	8.5417		99	1.000	.9608	1.012	822
4.							
5.							

NO.	P_t	Temp. °R	T_r	Z
1.				
2.				
3.				
4.				
5.				

Gas Liquid Hydrocarbon Ratio _____ Mcf/bbl.
A.P.I. Gravity of Liquid Hydrocarbons _____ Deg.
Specific Gravity Separator Gas _____ XXXXXXXXX
Specific Gravity Flowing Fluid XXXXX _____
Critical Pressure _____ P.S.I.A. _____ P.S.I.A.
Critical Temperature _____ R _____ R

P_c 1497 P_c^2 2241.0

NO	P_t	P_w	P_w^2	$P_c^2 - P_w^2$
1				
2				
3	9.8		9.8	2231.2
4				
5				

(1) $\frac{P_c^2}{P_t^2 - P_w^2}$ = 1.0044 (2) $\left[\frac{P_c^2}{P_t^2 - P_w^2}\right]^n$ = 1.0033

AOF = Q $\left[\frac{P_t^2}{P_t^2 - P_w^2}\right]^n$ = 825

Absolute Open Flow 825 Mcfd @ 15.025 | Angle of Slope θ _____ | Slope, n .75

Remarks: $P_t - P_w$ - friction negligible. Spray of oil continuously throughout flow.
Application to commingle Mancos and Mesaverde pending.

Approved By Division	Conducted By: Jacobs	Calculated By: Jacobs	Checked By:

Divide No. 1

Dugan Production Corp.

SE NE 35, T-26N, R-2W

Reserve Evaluation

Mancos Completion

Perforated Interval	Pay Ft.	Porosity %	Water Saturation
7266-72	3	5	≤48
7276-82	7	7	≤48
7310-22	12	4	-
7415-21	3	2.5	-
7442-56	10	9.0	≤41
7480-90	4	1.5	-
7554-62	8	1.5	-
7602-10	8	3.5	≤93
7620-30	11	4.5	-
7660-70	5	2	-
Total/Avg.	71	4.4%	40%

Recoverable Reserves = (7758 x A x h x Ø x (1-Sw)/Bo) x RF

Bo = 2.80 from Gallup study of general area - GOR assumed to be 2400 - Similar to Janet No. 1 and No. 2, 5 miles to southwest.

Sw - Assumed to be 40% based Gallup study of general area. Exact value cannot be calculated as a result of the inability of open hole logs to measure the true formation resistivity due to thin beds of sand and shale common to the Gallup.

RF = 10% from study of the Gallup in general area

Oil Reserves = (7758 x 40 x 71 x .044 x (1 - .40)/2.80) x .10
= 20,800 STB

Gas Reserves = Based upon an evaluation of the Gallup in general area; an overall GOR of 10,200 is believed representative
Avg. GOR in Gavilan No. 1 = 103,171/10,134 = 10,181
Avg. GOR in Ingwerson #4 = 523,879/51,403 = 10,192

Ultimate Gas Recovery: 20,800 x 10.2 = 212 MMCF

Divide No. 1
Dugan Production Corp.

Reserve Evaluation

Mesaverde Completion

The interval 6234-44 has been perforated and tested to be productive. Open hole logs indicate 12 ft. of pay with an average porosity of 9%, and water saturation of 56%.

Recoverable Reserves = (43,560 x A x h x Ø x (1-Sw) x Bg)x RF
A = 320 acres for Mesaverde, however, based upon work for infill drilling the Mesaverde, an acreage factor of 0.5 is utilized.
Bg = 138 SCF/RCF (BHP - calculated to be 1790 psia @ 6240')
RF = 76% (BHPabnd. = 500 psia)

Gas Reserves = 43560 x (320 x .5) x 12 x .09 x (1-.56) x 138 x .76
= 347 MMCF

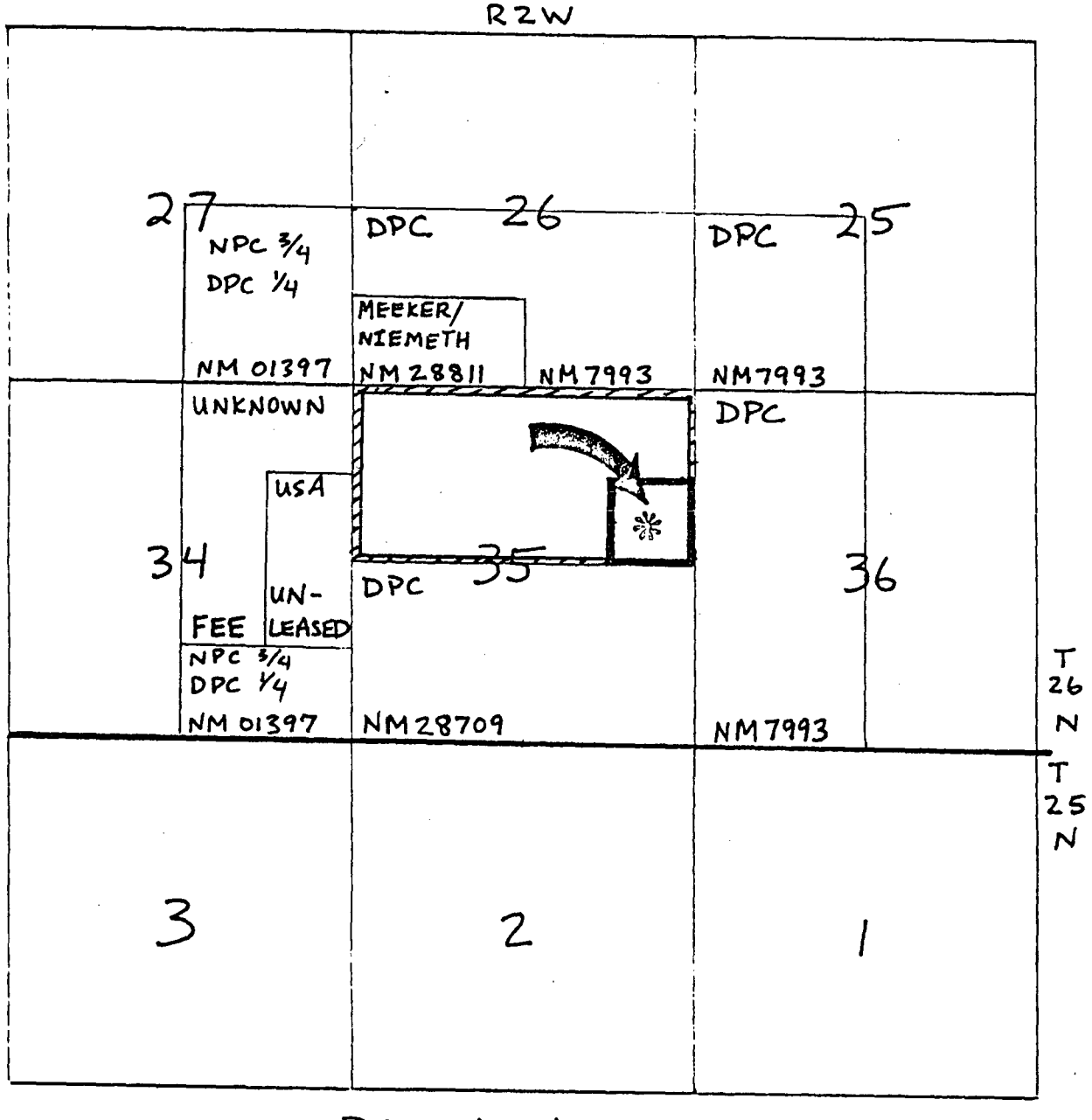
Condensate Reserves = From study of Mesaverde production in the general area, actual production data indicates an overall average condensate ratio of 20.6 bbl/MMCF.

Cond. Reserves = 347 MMCF x 20.6 B/MMCF = 7150 bbl.

Commingled Mesaverde-Mancos

	Gas-MMCF	Oil/Condensate-bbl
Mesaverde	347 (62%)	7,150 (26%)
Mancos	212 (38%)	20,800 (74%)
Total	559	27,950

Divide No. 1
Offset Operators & Leases
Gallup - Mesaverde Formations



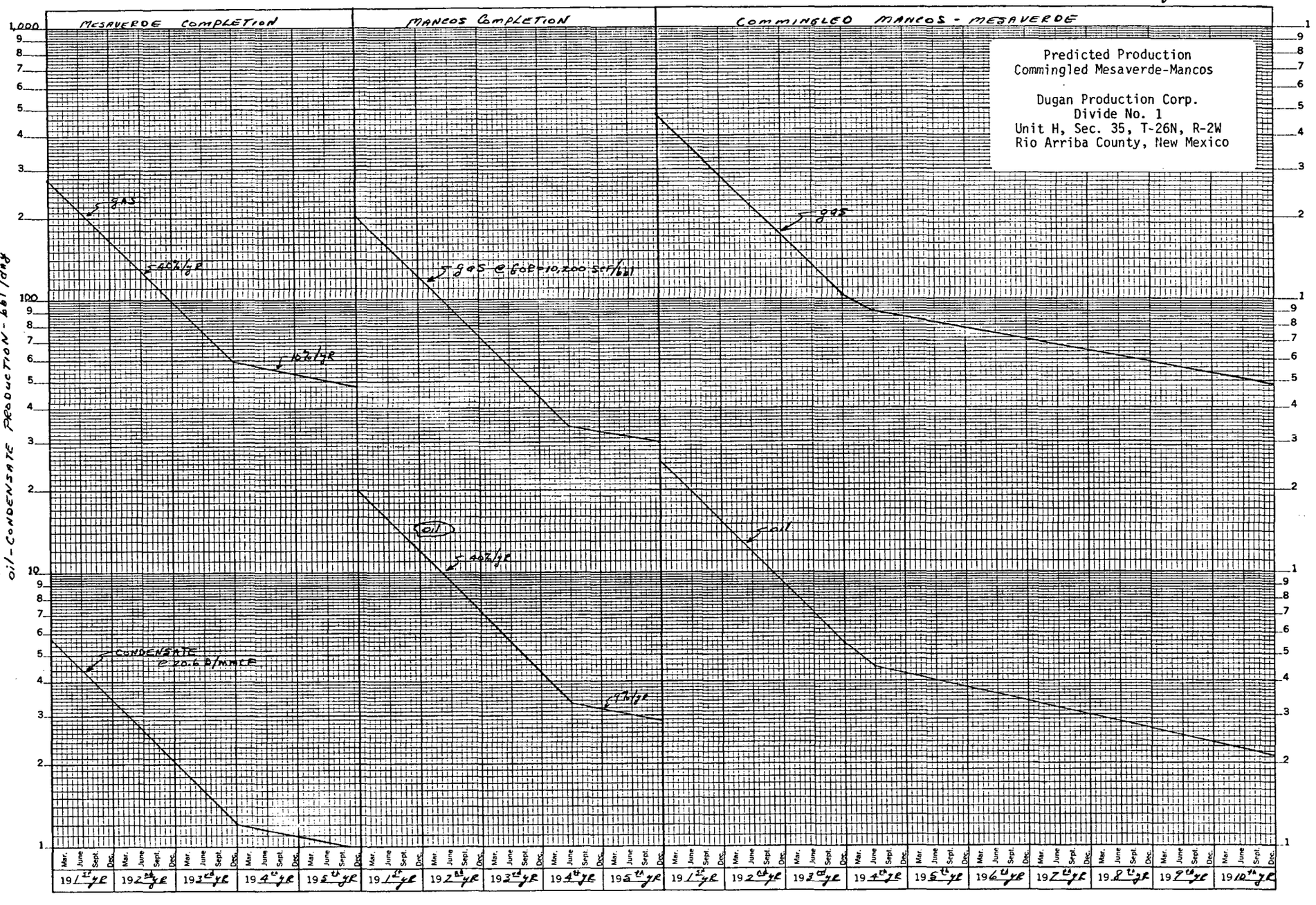
DPC	Dugan Production Corp.
NPC	Northwest Pipeline Corp.
NM 28811	Charles R. Meeker Charles F. Niemeth 1800 Century Park East Stn. 600 L.A., CA 90067

Subject Well

Gallup Proration Unit

Mesaverde Proration Unit

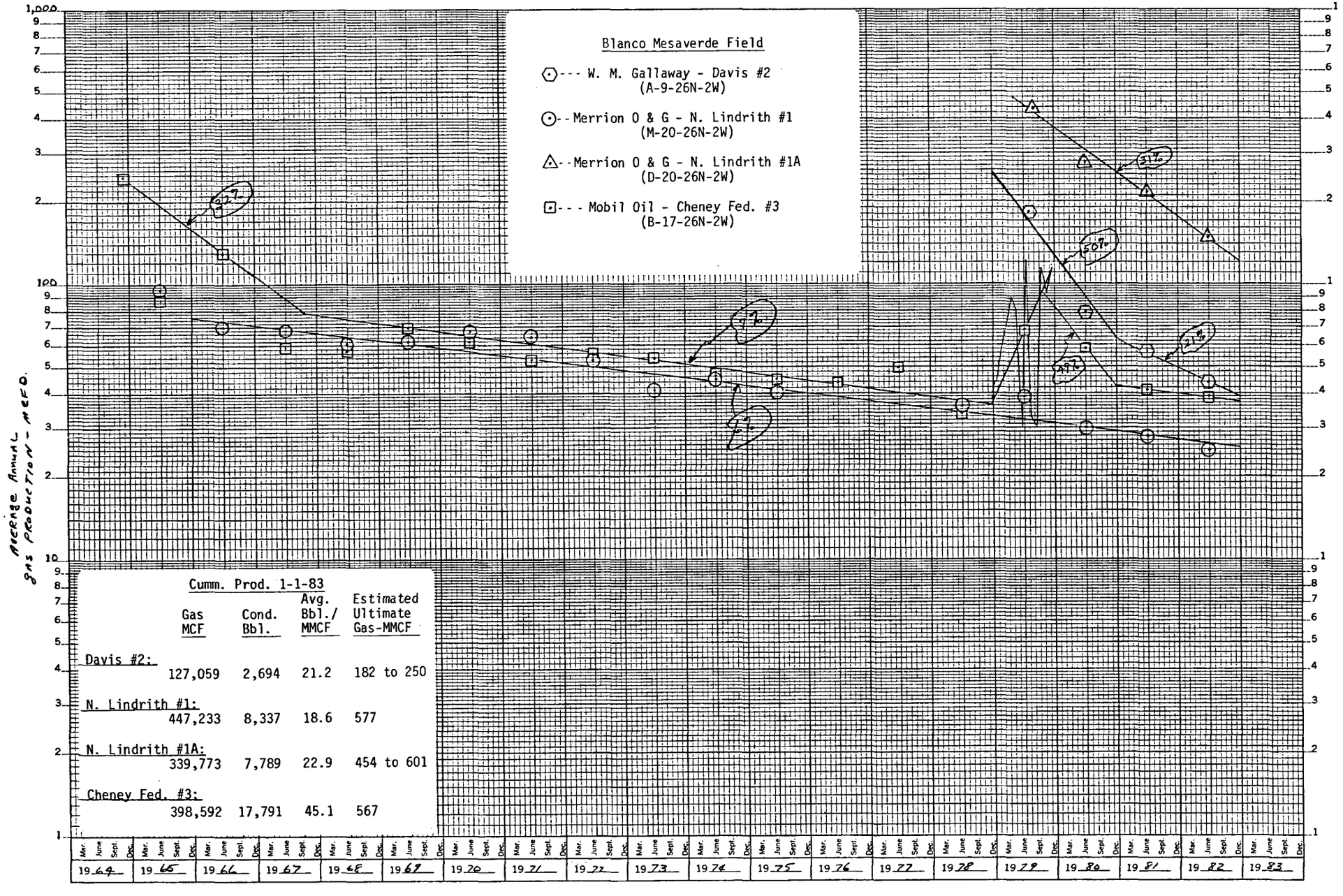
Figure No. 1



47 6840

K+E 20 YEARS BY MONTHS X 3 LOG CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.

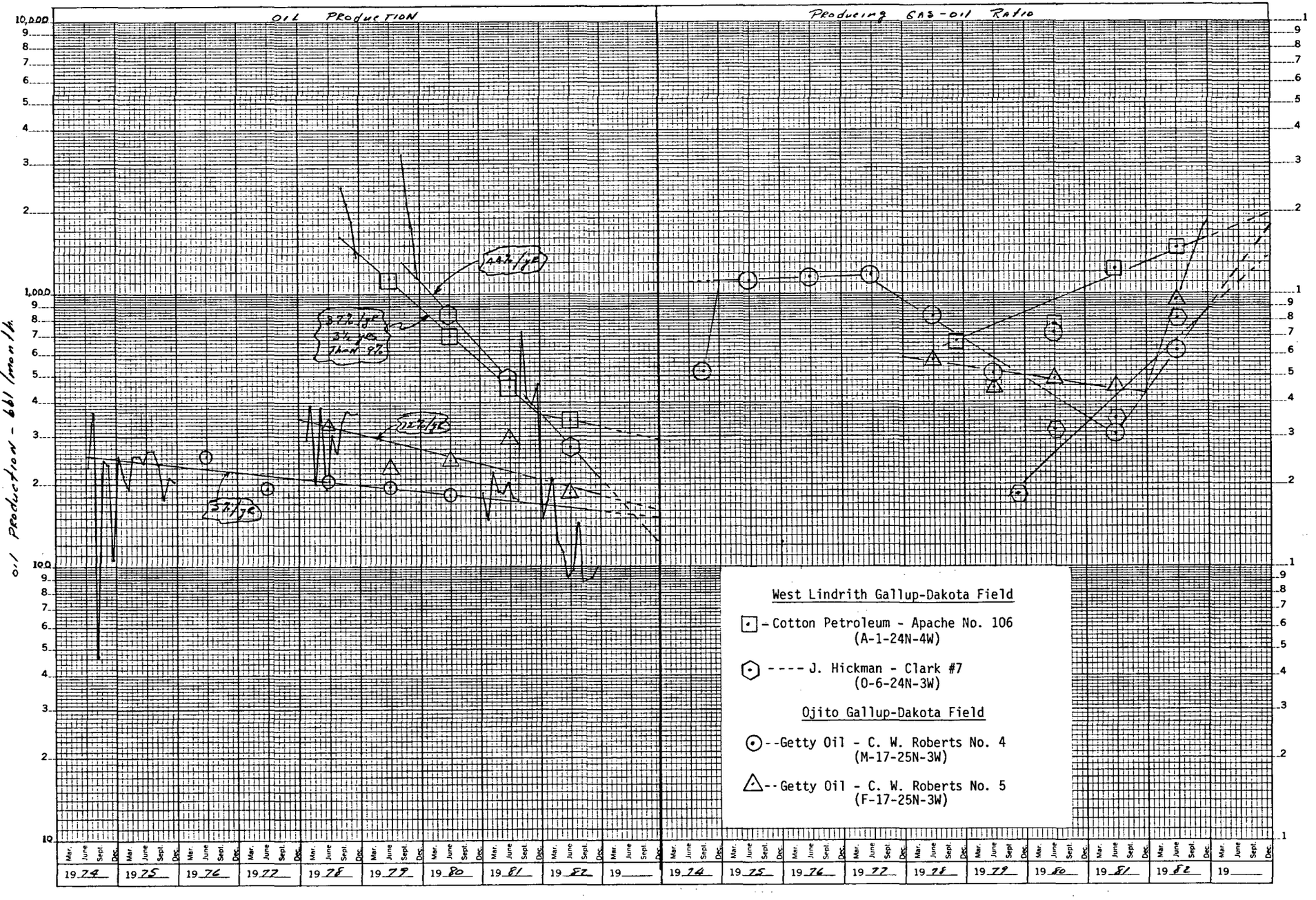
Figure No. 2



Cumm. Prod. 1-1-83

	Gas MCF	Cond. Bbl.	Avg. Bbl./ MMCF	Estimated Ultimate Gas-MMCF
Davis #2:	127,059	2,694	21.2	182 to 250
N. Lindrith #1:	447,233	8,337	18.6	577
N. Lindrith #1A:	339,773	7,789	22.9	454 to 601
Cheney Fed. #3:	398,592	17,791	45.1	567

Figure No. 3.



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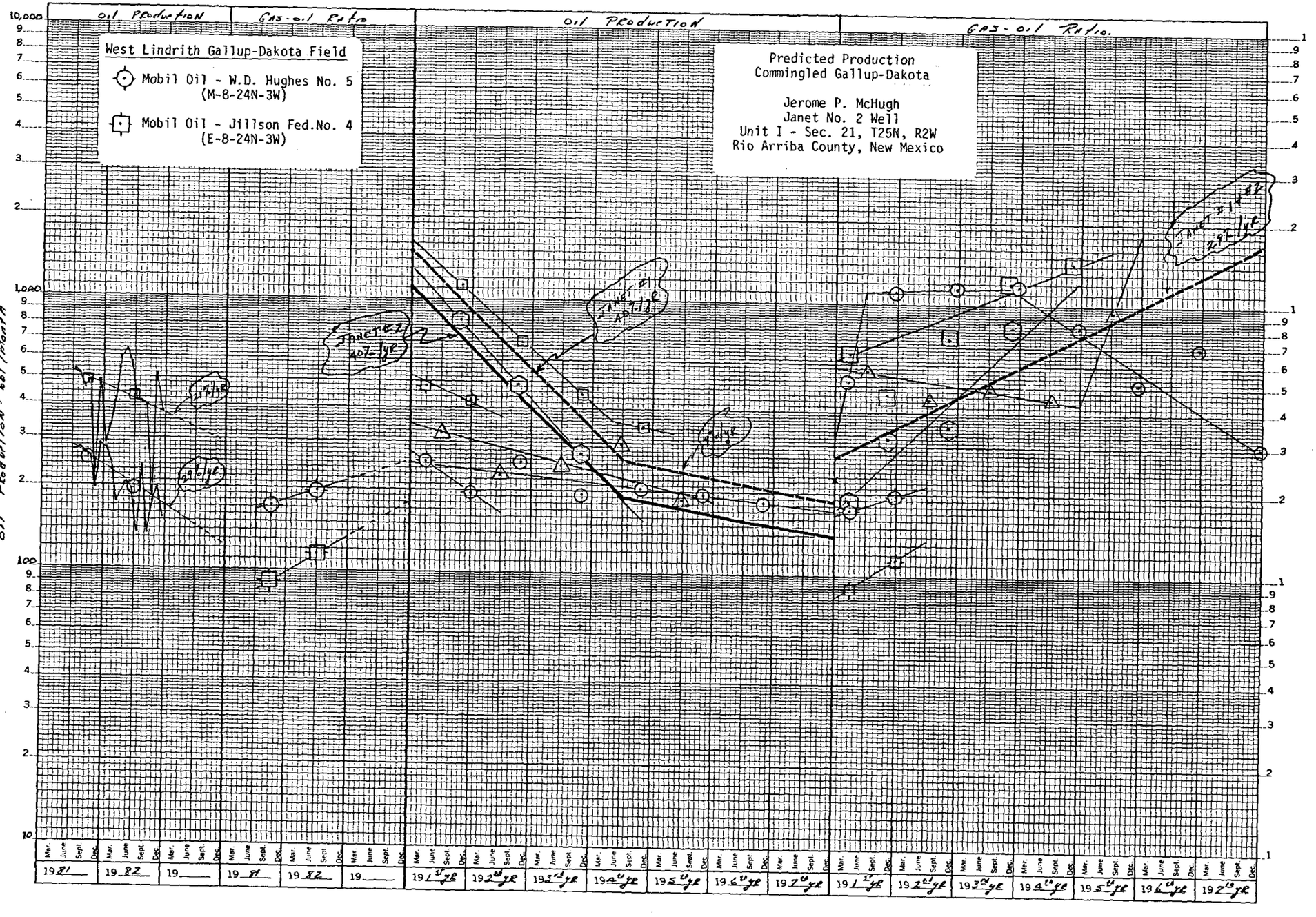
KE 20 YEARS BY MONTHS X 3 LOG CYCLES KEUFFEL & ESSER CO. MADE IN U.S.A.

Gas-oil Ratio - scf/bbl x 10
oil Production - bbl/mon/1k

Figure No. 4



K-E 20 YEARS BY MONTHS X 3 LOG CYCLES KEUFFEL & ESSER CO. MADE IN U.S.A.

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