Submitted in lieu of Form 3160-5

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED
96 MAR 15 PM 2:49
070 FARMINGTON, NM

Sundry Notices and Reports on Wells

1. **Type of Well**
GAS

5. **Lease Number**
SF-079265

6. **If Indian, All. or Tribe Name**

7. **Unit Agreement Name**

2. **Name of Operator**
MERIDIAN OIL

8. **Well Name & Number**
Klein #19

3. **Address & Phone No. of Operator**
PO Box 4289, Farmington, NM 87499 (505) 326-9700

9. **API Well No.**
30-039-20499

4. **Location of Well, Footage, Sec., T, R, M**
1190'FNL, 890'FEL, Sec.34, T-26-N, R-6-W, NMPM

10. **Field and Pool**
Blanco MV/Basin DK/
Ensenada Gallup Ext

11. **County and State**
Rio Arriba Co, NM

12. **CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OTHER DATA**

Type of Submission	Type of Action		
_X_ Notice of Intent	___ Abandonment	___ Change of Plans	
	_X_ Recompletion	___ New Construction	
___ Subsequent Report	___ Plugging Back	___ Non-Routine Fracturing	
	___ Casing Repair	___ Water Shut off	
___ Final Abandonment	___ Altering Casing	___ Conversion to Injection	
	___ Other -		

13. **Describe Proposed or Completed Operations**

It is intended to add the Mesaverde and Gallup formations to the subject well according to the attached procedure and wellbore diagram. The well will then be commingled. A down-hole commingle order will be applied for.

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MAR 26 1996
OIL CON. DIV.
DIST. 3

14. **I hereby certify that the foregoing is true and correct.**

Signed Peggy Bradfield (JE3) Title Regulatory Administrator Date 3/7/96

(This space for Federal or State Office use)
APPROVED BY _____ Title _____ Date _____
CONDITION OF APPROVAL, if any:

need NMOC & Cog numbers to 1911

APPROVED
MAR 18 1996
DISTRICT MANAGER

NMOCD

need DHC & Chg number for GM

District I
PO Box 1980, Hobbs, NM 88241-1980
District II
PO Drawer DD, Artesia, NM 88211-0719
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
PO Box 2088, Santa Fe, NM 87504-2088

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION
PO Box 2088
Santa Fe, NM 87504-2088

Form C-1
Revised February 21, 19
Instructions on ba
Submit to Appropriate District Offi
State Lease - 4 Cop
Fee Lease - 3 Cop

☐ AMENDED REPOR

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number	² Pool Code	³ Pool Name
30-039-20499	71599 72319/96321/	Blanco MV/Ensenada Gallup/Basin DK

⁴ Property Code	⁵ Property Name	⁶ Well Number
7228	Klein	19

⁷ OGRID No.	⁸ Operator Name	⁹ Elevation
14538	MERIDIAN OIL INC.	6322'

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	34	26 N	6 W		1190	North	890	East	R.A.

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N/320 N/320-160									

¹² Dedicated Acres	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

Not resurveyed, prepared from a plat dated 6-28-72 by David O. Vilven.

1190'
890'

34

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DIST. 3

¹⁷ OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief

Peggy Bradfield
Signature
Peggy Bradfield
Printed Name
Regulatory Administrator
Title
3-14-96
Date

¹⁸ SURVEYOR CERTIFICATION

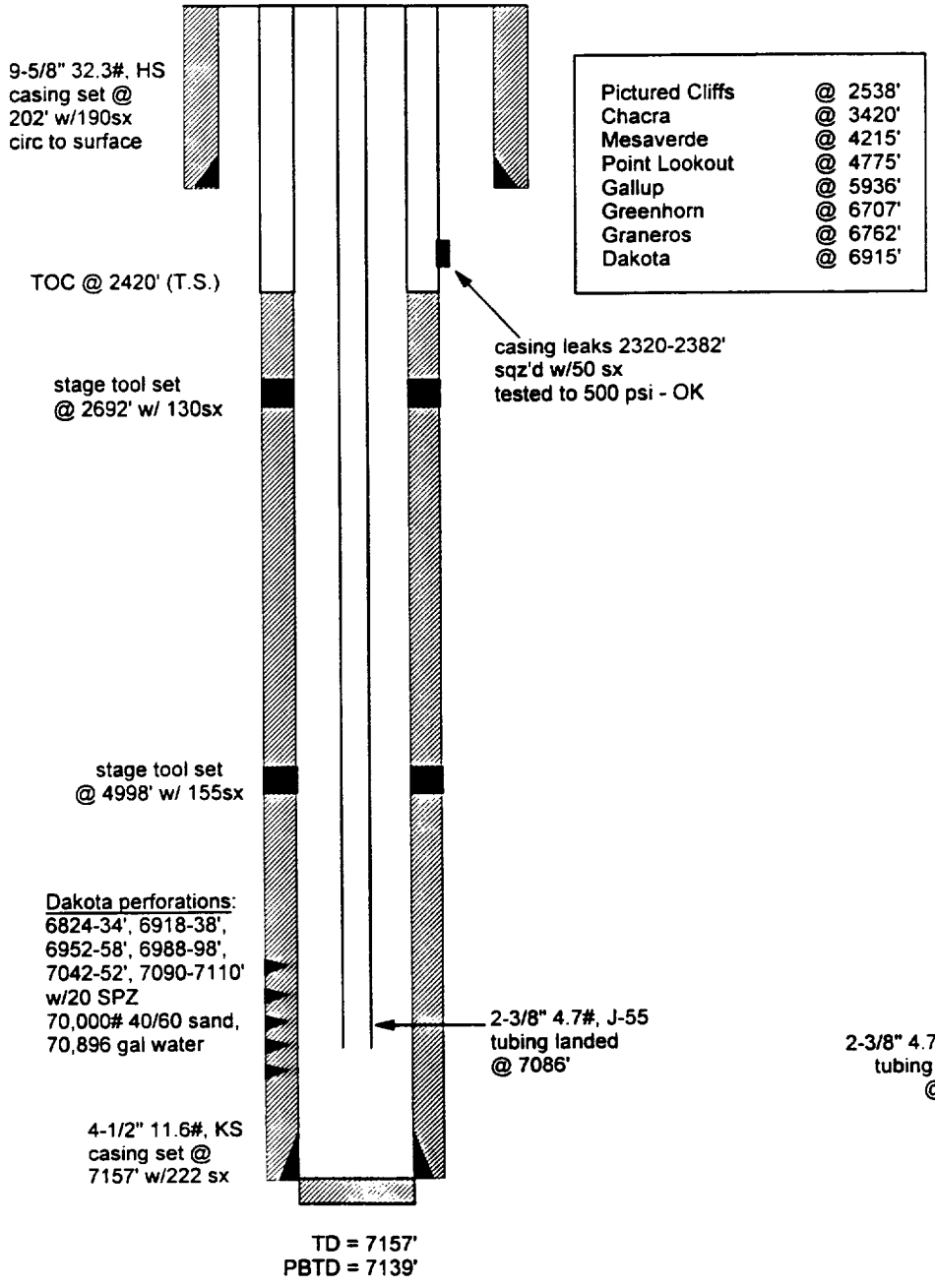
I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

3-28-72
Date of Survey
Signature and Seal of Professional Surveyor:
NEALE C. EDWARDS
NEW MEXICO
6857
Certificate Number

KLEIN #19

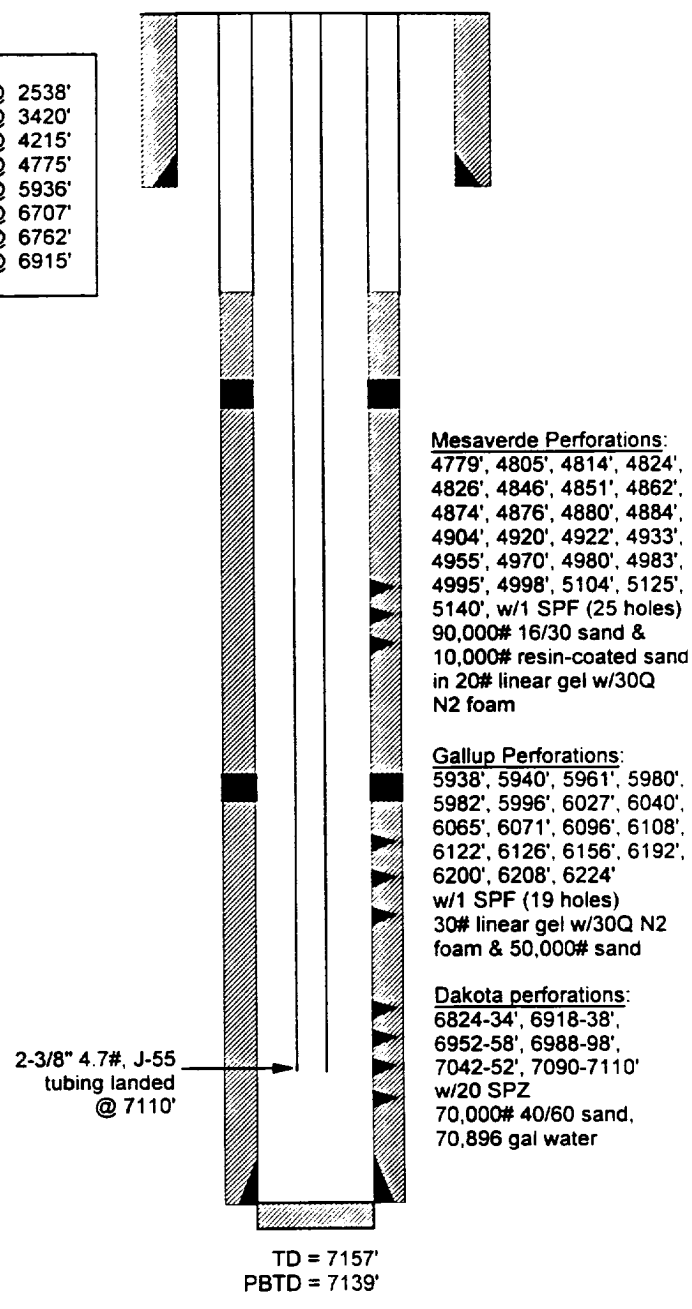
Dakota/Gallup/Mesaverde
1190' FNL, 890' FEL
Unit A, Section 34, T26N, R6W
Rio Arriba County, NM
Spud Date: 06/03/72
Elevation: 6322' GL
LAT: 36* 26' 49"
LONG: 107* 26' 55"

Current



Pictured Cliffs	@ 2538'
Chacra	@ 3420'
Mesaverde	@ 4215'
Point Lookout	@ 4775'
Gallup	@ 5936'
Greenhorn	@ 6707'
Graneros	@ 6762'
Dakota	@ 6915'

Final



This well will be commingled in the Mesaverde, Gallup, & Dakota. Prior to commingle, the Gallup & Dakota will be T&A'd under a CIBP while the Mesaverde will be produced separately to help determine commingled production. An Allocation Formula will be finalized after a 3 month online sales testing penod.

Meridian Oil Inc.
03/14/96: dla
/MK

Meridian Oil
2/28/96:dla

PERTINENT DATA SHEET
KLEIN #19

Location: 1190' FNL, 890' FEL
Unit A, Section 34, T26N, R06W
Rio Arriba County, NM

Field: Basin Dakota

Elevation: 6322' GL
LAT: 36° 26' 49"
LONG: 107° 26' 55"
DP#: 43955A
GWI: 100%
NRI: 68.25%

Spud Date: 06-03-72
Completion Date: 07-06-72
Cathodic Protection: Installed March 1993.

TD: 7157'
PBTD: 7139'

Casing Record:

Hole Size	Casing Size	Weight & Grade	Depth Set	Sxs Cement	Cement Top
13-3/4"	9-5/8"	32.3#, HS	202'	190 (225 ft3)	surface
8-3/4" - 7-7/8"	4-1/2"	11.6#, KS	7157'	1st - 222 (379 ft3)	
	4-1/2"	10.5#, KS	6474'		
			DV @ 4998'	2nd - 155 (383 ft3)	
			DV @ 2692'	3rd - 130 (323 ft3)	2420' (T.S.)
		No Marker Jt.			

Tubing Record:

Tubing Size	Weight & Grade	Depth Set	BHA
2-3/8"	4.7#, J-55	7086'	1 jt, standard SN, 225 jts. SN @ 7053'

Formation Tops:

Pictured Cliffs:	2538'	Gallup:	5936'
Chacra:	3420'	Greenhorn:	6707'
Mesaverde:	4215'	Graneros:	6762'
Point Lookout:	4775'	Dakota:	6915'

Logging Record: FDC-GR, IES, Temp. Survery

Stimulation: Selectively perf the Dakota formation:
6824-34', 6918-38', 6952-58', 6988-98', 7042-52', 7090-7110', with 20 shots per zone.
70,000# 40/60 sand, 70,896 gal. treated water

Workover History:

6-20-79:	Frac. Land tbg within 24 hrs of frac.
7-6-72:	Test well: SICP 2597 psi, SITP 1412 psi. Calculated 24 hr rate = 1146 mcf
9-30-85 to 10-5-85:	Attempted to pull tbg, tbg stuck. Cut tbg off at 6805' & pulled same. Washed over 265' of fish & recovered. Cleaned out to 7139' w/wtr. Repaired csg leaks 2320-2382'. Squeezed with 50 sks cement. Drilled out, pressure tested to 500 psi, held okay. Ran 226 jts 2-3/8", 4.7#, J-55 tubing.
12-4-87:	Made one swab run. Well kicked on.
3-18-88:	Made one swab run. Well kicked off. Blew well for 1 hr. Put well on production.
8-29-91:	Hit fluid @ 4290'. Pulled approx. 5 bbls fluid. Well kicked. Blew 1 hr. CP: 480, TP: 380. No piston. SI over-night.
3-12-93:	CP: 920, TP 0. 1st run mandrel to seat. Fluid level @ 4400'. Recovered 3 bbls wtr. Flowed 10 min, logged off. 2nd run - Fluid level @ 2800'. Recovered 3 bbls wtr. for a total of 6 bbls. Well back on line. Used 1 cup 2 rubbers. CP: 880, TP 620.

Production History: ISCIP: 2597 Line Pressure: 90.2

Initial Deliverability:	1146 mcfd	n/a bopd	Cumulative Gas:	981 mmcf
Latest Deliverability:	57 mcfd	2.7 bopd	Cumulative Oil:	7666 bbls

Transporter: Oil/Condensate: Giant Transportation Gas: El Paso Natural Gas

Klein #19
Meridian Oil, Inc.
Blanco Mesaverde/Undesignated Gallup/Basin Dakota Workover
UnitA-Sec34-T26N-R06W
Lat: 36° 26' 49"
Long: 107° 26' 55"

- Comply with all BLM, NMOCD, & MOI rules & regulations.
- **Always Hold Safety Meetings.** Place fire and safety equipment in strategic locations.
- 2-7/8" N-80 Buttress Frac String (6300' +/- required).
- Fifty (50) joints 2-3/8" 4.7# EUE J-55 tubing and six (6) 3-1/8" drill collars on location
- 6 frac tanks to be spotted and filled with 2% KCl water.
- **Acetic acid** will be used for Gallup stimulation.
- **Immediate flowback will be implemented on the fracs. Note special frac rig-up for this: flow tee, swab valve, etc.**
- Use drill gas or Nitrogen **ONLY** for all operations - **NO AIR**.
- Ensure CIBPs used are T-Lok for easier drilling of stacked plugs.

This well is part of the 1996 Klein/Vaughn Mesaverde/Gallup/Dakota commingle program. The well is currently completed in the Dakota with a production rate of 63 MCFD/ < 1 BOPD. Cumulative Dakota production is 996 MMCF/ 7.7 MBO. The Dakota will be temporarily abandoned so that the Gallup (Niobrara) and Mesaverde (Point Lookout) intervals can be added. All three zones will be commingled after production has been established in the upper two zones.

1. MIRU. Record and report SI pressures on tubing, casing, & bradenhead. Lay blowdown line. Blow down casing & tubing. Kill well w/ 2% KCl down tubing. ND WH, NU BOP.

2. TOOH, rabbit, & strap 226 jts of 2-3/8" tubing (from 7086', SN @ 7053'). Visually inspect tubing, note any scale in tubing. Lay down bottom 500' of this pipe (scale problems anticipated - this tubing may be used if there is no scale or other problems).

3. PU 3-7/8" bit, float, six (6) 3-1/8" drill collars & 2-3/8" 4.7# J-55 EUE workstring. Clean out w/ gas to PBTD @ **7139'**. Note drilling mud in returns if any. TOOH with bit & collars.

4. PU 4-1/2" CIBP & 4-1/2" packer combination on 2-3/8". TIH & set CIBP @ **6300'** to T&A Dakota. Load hole from bottom w/ 2% KCl water.

5. Set PKR above CIBP & test to 3800 psi. Hold for 10 minutes. Release PKR & pressure test entire casing string to 1000 psi for 10 minutes. **NOTE: Prior squeeze work done, see pertinent data sheet and wellbore diagram.** If PT does not hold, pull above DV tools @ 4998' and 2692' & test below each to 1000 psi. Locate hole(s). TOOH. Engineering will provide squeeze design if necessary.

6. RU wireline. Run GR-CCL-CBL from 6300' to surface under 1000 psi w/ no gaps. Note and report all cement tops and quality of bond over both Gallup & Mesaverde intervals. If cement is not covering the Gallup interval, a block squeeze may be performed across the Gallup. Engineering will provide a sqeeze procedure if required.

7. Complete all squeeze cementing operations which will be determined based upon pressure test information and bond quality. WOC recommended time. Drill out cement. Pressure test to

1000 psi. If casing integrity is not sound, identify leaks, & engineering will recommend squeeze procedure & modify stimulation work.

Niobrara Completion:

8. Spot 250 gallons **10% acetic acid** (w/ 2 gal/1000 corrosion inhibitor) across Gallup @ 6225'. TOOH, standing 2-3/8" back. Change rams to 2-7/8".

9. RU wireline under packoff. Perforate Gallup top-down in acid @ the following depths with 3-1/8" HSC gun w/ Owen 306 12 g charges (0.31" hole, 11" penetration), 1 SPF @ 180 degree phasing. Engineering may modifiy perforations based upon bond character.

5938'	**5940'**	**5961'**	**5980'**	**5982'**	**5996'**
6027'	**6040'**	**6065'**	**6071'**	**6096'**	**6108'**
6122'	**6126'**	**6156'**	**6192'**	**6200'**	**6208'**
6224'					

(19 total holes, 286' of interval)

10. PU 4-1/2" FB PKR, 1.81" profile nipple, 4 joints 2-3/8" 4.7# N-80 tubing, 2-3/8" x 2-7/8" buttress changeover, 2.25" profile nipple, and 2-7/8" 8.7# N-80 Buttress frac string. Set PKR 100' above top Gallup perforation. Hold 500 psi on annulus during acid job.

11. RU stimulation company. Pressure test surface lines to 7500 psi. **Max pressure = 6500 psi.** Prepare to break down Niobrara w/250 gallons **10% acetic acid** (w/ 2 gal/1000 corrosion inhibitor) and 38 7/8" 1.3 s.g ball sealers. Attempt to achieve 20 BPM on breakdown, go higher if possible. Release pressure, RD stimulation company. Release PKR & TIH knocking balls below bottom perforation. Pull up and reset PKR.

12. RU immediate flowback equipment (frac nipple, valve, tee, etc.). See attached diagram.

13. RU stimulation company. Pressure test surface lines to 7500 psi. **Maximum STP = 6500 psi.** Hold 500 psi on annulus. Fracture stimulate the Niobrara w/ 50,000# Tempered DC sand and 20# linear gel w/30Q N2 foam. See attached frac schedule for details. *(2 frac tanks needed)*

14. Flow back well immediately after shutdown -- **NOTE: Time from frac shut-down until flow tee is opened for flow back should be around 30 seconds. Time is critical to achieve reverse gravel packing. Flowback rate not to exceed 4 BPM - choke flowback line as necessary.** Frac company is to monitor flowback pressures for 30 minutes after shutdown. Flowback should continue for as long as possible while still allowing for completion of both stages within 24 hours. Blow down to release pressure when necessary.

15. Release PKR, TOOH w/ 2-7/8" tubing and PKR. RU wireline under packoff. Make 4-1/2" gauge ring run to 5230'. Set 4-1/2" RBP @ 5200'. Dump 1 sack sand (approx. 8') on RBP w/ dump bailer. RD wireline.

Point Lookout Completion:

16. TIH w/ PKR on 2-7/8" and test RBP to 3800 psi. Spot 300 gallons 15% HCl acid (w/ 2 gal/1000 corrosion inhibitor) at 5145' across Mesaverde. TOOH.

Klein # 19
Meridian Oil Inc.
3/15/96

17. Perforate Mesaverde top-down in acid @ the following depths 3-1/8" HSC gun w/ Owen 306 12 g charges (0.31" hole, 11" penetration), 1 SPF @ 180 degree phasing. Engineering may modifiy perforations based upon bond character.

4779'	**4805'**	**4814'**	**4824'**	**4826'**	**4846'**
4851'	**4862'**	**4874'**	**4876'**	**4880'**	**4884'**
4904'	**4920'**	**4922'**	**4933'**	**4955'**	**4970'**
4980'	**4983'**	**4995'**	**4998'**	**5104'**	**5125'**
5140'					

(25 total holes, 361' of interval)

18. PU 4-1/2" FB PKR, 1.81" profile nipple, 4 joints 2-3/8" 4.7# N-80 tubing, 2-3/8" x 2-7/8" buttress changeover, 2.25" profile nipple, and 2-7/8" 8.7# N-80 Buttress frac string. Set PKR 100' above top Mesaverde perforation. Hold 500 psi on annulus during acid job.

19. RU stimulation company. Pressure test surface lines to 7500 psi. **Max pressure = 6500 psi.** Prepare to break down Mesaverde w/250 gallons **15% HCl acid** (w/ 2 gal/1000 corrosion inhibitor) and 50 7/8" 1.3 s.g ball sealers. Attempt to achieve 20 BPM on breakdown, go higher if possible. Release pressure, RD stimulation company. Release PKR & TIH knocking balls below bottom perforation. Pull up and reset PKR.

20. RU immediate flowback equipment (frac nipple, valve, tee, etc.). See attached diagram

21. RU stimulation company. Pressure test surface lines to 7500 psi. **Maximum STP = 6500 psi.** Hold 500 psi on annulus. Fracture stimulate the Mesaverde w/ 90,000# 16/30 sand and 10,000# curable resin-coated sand in a 20# linear gel w/30Q N2 foam. See attached frac schedule for details. *(4 frac tanks needed)*

22. Flow back well immediately after shutdown -- **NOTE: Time from frac shut-down until flow tee is opened for flow back should be around 30 seconds. Time is critical to achieve reverse gravel packing. Flowback rate not to exceed 4 BPM - choke flowback line as necessary.** Frac company is to monitor flowback pressures for 30 minutes after shutdown. Flowback should continue for as long as necessary to release PKR.

23. Release PKR & TOOH laying down 2-7/8" N-80 tubing. Change out rams to 2-3/8".

24. TIH w/ retrieving head on 2-3/8" tubing and clean out to RBP @ 5200'. Obtain MV pitot gauge. Latch onto RBP, release and TOOH. LD RBP and retrieving head. PU notched collar, TIH and CO to CIBP @ 6300'. Clean up to +/- 5 BPH and trace to no sand. Obtain MV/GP pitot gauge. TOOH.

25. PU 4-1/2" CIBP on 2-3/8" tubing, TIH. Set CIBP @ 5200' +/- to T&A Gallup zone. TOOH.

26. Prepare to run production tubing string as follows for Mesaverde: expendable check, one joint 2-3/8" tubing, 1.81" 'F' nipple, and remaining tubing. Land tubing @ 5140'.

27. ND BOP, NU WH. Pump off expendable check and flow well up tubing obtain Mesaverde production gauge. RD & release rig to next location.

Klein # 19
Meridian Oil Inc.
3/14/96

28. Operations will remanifold wellhead, and produce well for 180 days into EPNG pipeline. Notify governmental agencies that Mesaverde ONLY production will occur until further notice, GP & DK T&A'd.

Commingle Operations (6 months after MV 1st delivery)

29. At end of 6 month production test, run pressure bomb well. Leave well SI 7 days. Pull bomb. Return Mesaverde to production until workover rig returns.

30. MIRU workover rig. Record flowing casing & tubing pressures. Blow casing and tubing down. Kill tubing with 2% KCl water. ND WH, NU BOP.

31. TOOH with 2-3/8" tubing. PU 3-7/8" bit, 6-3-1/8" drill collars & TIH on 2-3/8". Drill CIBP @ 5200' +/-. TIH & drill CIBP @ 6300'. Clean out to PBTD @ 7139'. TOOH & LD bit & collars.

32. TIH with final production tubing string for commingled production as follows: expendable check, one joint 2-3/8", 1.81" F nipple, and remaining 2-3/8" tubing. Land tubing @ 7110'.

33. ND BOP, NU WH. Pump off check. Flow well up tubing verifying check pumped. RD & release rig to next location.

34. Notify Marketing & government agencies that commingled production from all horizons MV, GP, & DK will occur in order to finalize allocation formula. At end of 90 days, the allocation formula will be submitted to NMOCD for approval, **production will commence prior to actual allocation approval.**

Concur: 3/15/96
Northeast Basin Team Leader

Approved: PJB. 3/15/96
Drilling Superintendent

JME

Recommended Vendors:

Immediate Flowback WH Equipment	WSI	327-3402
Stimulation	BJ Services	327-6222
Cased Hole Services	Basin Perforating	327-5244
Engineering	Joan Easley	599-4026-work
		324-2717-pager
		327-6843-home

Stimulation Procedure
Meridian Oil, Inc.

General Information

Well Name:	Klein #19
Location:	Sec. 34, T26N, R06W
Formation:	Niobrara
Vendors	
Stimulation:	
Tagging:	None
Fluid:	20# Linear gel w/30Q N2 foam
Note:	N2 to aid in flowback

Well Configuration

Casing:	4-1/2" 10.5# J-55	462	FT
		0	FT
Tubing:	2-7/8" 6.5# N-80	5838	FT
Capacity:	0.0159	0 0.00579	
PBTD	6300 ft	Vol. to:	(gals)
Top Perf:	5938 ft	PBTD	1,728
Bot Perf:	6224 ft	Top Per:	1,486
Midpoint:	6081 ft	^-100' :	1,420

Perforations

1	spf	0.31	" holes
19	holes	11	" penetration

Formation and Stimulation Data

Max Treating Pressure	6500	psi
Frac Gradient:	0.6	psi/ft
BH Temp:	160	deg. F
Antic. Treating Rate:	25	BPM
Antic. BH Treating Pres:	3,649	psi
Antic. Surf Treating Pres:	5,217	psi
Percent Pad:	15%	
Net Interval:	286	ft
lb prop/net ft pay:		lb/ft
Job Duration:	29.1	min
Perf friction	549	psi
Total friction	4,201	psi

Stimulation Schedule

		Sand Data				Fluid Data				Rate and Time Data			Comments
Tag	Stage	Sand Mesh	Sand Conc ppg	Stage Sand lbs	Cum Sand lbs	Stage Fluid gals	Cum Fluid gals	Stage Slurry gals	Cum Slurry gals	Slurry Rate bpm	Stage Time min	Cum Time min	
	Pad	N/A	0.0	0	0	3,500	3,500	3,500	3,500	25.0	3.3	3.3	w/30Q N2 foam
No	1	20/40	1.0	10,000	10,000	10,000	13,500	10,456	13,956	25.0	10.0	13.3	w/30Q N2 foam
No	2	20/40	2.0	10,000	20,000	5,000	18,500	5,456	19,412	25.0	5.2	18.5	w/30Q N2 foam
No	3	20/40	3.0	10,002	30,002	3,334	21,834	3,790	23,202	25.0	3.6	22.1	w/30Q N2 foam
No	4	20/40	4.0	20,000	50,002	5,000	26,834	5,912	29,114	25.0	5.6	27.7	w/30Q N2 foam
	Flush	N/A	0.0	0	50,002	1,420	28,254	1,420	30,534	25.0	1.4	29.1	reduce N2 to 10Q
						reduce rate & flush to end of tubing							
				Total		Total		Total		Ave.	Total		
				50,002		28,254		30,534		25.0	29.1		

Volumes and Additives

Water Volume=	28,254	treat +	1,413	excess =	29,666 gallons	(MOI)
Water Volume=	673	treat +	34	excess =	706 bbls	(MOI)

Fluid Volume: 706 bbl designed treating volume

Sand Type: 20/40 Tempered DC

Total Sand: 50,002 lbs

Fluid: 20# Linear gel

Bacteriacide (added to tanks before filling with water).

Radioactive Tagging

none

Equipment

Tanks:	2.0	x 400 bbl frac tanks(supplied by MOI).
Filled w/	706	bbls 2% KCl water (supplied by MOI).

Acid Requirements:

500 gallons (250 spot, 250 pump)
10% acetic acid w/
2 gal/1000 corrosion inhibitor

Comments and Special Instructions

MAXIMUM ALLOWABLE TREATING PRESSURE IS 6500 PSI.

Frac down 2-7/8" N-80 frac string and a packer.

Hold safety meeting with everyone on location before pressure testing surface lines.

Pressure test surface lines to 7500 psi (1000 over max allowable but less than working pressure).

Call flush when sand concentration drops 1/2 ppg (@ 3.5 ppg).

Perform immediate flowback through 1/8" positive choke. Downtime between pump shut-down and opening of flowback valve must be LESS THAN 30 SECONDS.

Production Engineer: Joan Easley

PJT5 3/10/96

Stimulation Procedure
Meridian Oil, Inc.

General Information

Well Name:	Klein #19
Location:	Sec. 34, T26N, R06W
Formation:	Point Lookout
Vendors	
Stimulation:	
Tagging:	None
Fluid:	20# Linear gel w/30Q N2 foam
Note:	N2 to aid in flowback

Well Configuration

Casing:	4-1/2" 10.5# J-55	521	FT
		0	FT
Tubing:	2-7/8" 6.5# N-80	4679	FT
Capacity:	0.0159	0 0.00579	
PBTD	5200 ft	Vol. to: (gals)	
Top Perf:	4779 ft	PBTD	1,486
Bot Perf:	5140 ft	Top Per:	1,205
Midpoint:	4960 ft	^-100' :	1,138

Perforations

1 spf — 0.31 " holes

25 holes — 11 " penetration

Formation and Stimulation Data

Max Treating Pressure	6500	psi
Frac Gradient:	0.67	psi/ft
BH Temp:	140	deg. F
Antic. Treating Rate:	30	BPM
Antic. BH Treating Pres:	3,323	psi
Antic. Surf Treating Pres:	5,329	psi
Percent Pad:	10%	
Net Interval:	361	ft
lb prop/net ft pay:		lb/ft
Job Duration:	48.2	min
Perf friction	457	psi
Total friction	4,153	psi

Stimulation Schedule

		Sand Data				Fluid Data				Rate and Time Data			Comments
Tag	Stage	Sand Mesh	Sand Conc ppg	Stage Sand lbs	Cum Sand lbs	Stage Fluid gals	Cum Fluid gals	Stage Slurry gals	Cum Slurry gals	Slurry Rate bpm	Stage Time min	Cum Time min	
	Pad	N/A	0.0	0	0	5,000	5,000	5,000	5,000	30.0	4.0	4.0	w/ 30Q N2 foam
No	1	16/30	1.0	20,000	20,000	20,000	25,000	20,912	25,912	30.0	16.6	20.6	w/ 30Q N2 foam
No	2	16/30	2.0	20,000	40,000	10,000	35,000	10,912	36,824	30.0	8.7	29.2	w/ 30Q N2 foam
No	3	16/30	3.0	50,001	90,001	16,667	41,667	18,947	44,859	30.0	15.0	35.6	w/ 30Q N2 foam
No	4	20/40 res	3.0	9,999	100,000	3,333	45,000	3,789	48,648	30.0	3.0	38.6	No N2 , resin coated
	Flush	N/A	0.0	0	100,000	1,138	46,138	1,138	49,786	30.0	0.9	39.5	reduce N2 to 10Q
						reduce rate & flush to end of tubing							
				Total		Total		Total		Ave.	Total		
				100,000		56,138		60,698		30.0	48.2		

Volumes and Additives

Water Volume=	56,138	treat +	2,807	excess =	58,945 gallons	(MOI)
Water Volume=	1,337	treat +	67	excess =	1,403 bbls	(MOI)

Fluid Volume: 1,403 bbl designed treating volume

Sand Type: 16/30 Arizona

20/40 Resin: 9,999 lbs — Total Sand: 100,000 lbs

Fluid: 20# Linear gel

Bactenacide (added to tanks before filling with water).

Radioactive Tagging

none

Equipment

Tanks:	4.0	x 400 bbl frac tanks(supplied by MOI).
Filled w/	1,403	bbls 2% KCl water (supplied by MOI).

Acid Requirements:

550 gallons (300 spot, 250 pump)

15% HCl acid w/

2 gal/1000 corrosion inhibitor

Comments and Special Instructions

MAXIMUM ALLOWABLE TREATING PRESSURE IS 6500 PSI.

Frac down 2-7/8" N-80 frac string and a packer.

Hold safety meeting with everyone on location before pressure testing surface lines.

Pressure test surface lines to 7500 psi (1000 over max allowable but less than working pressure).

Call flush when sand concentration drops 1/2 ppg.

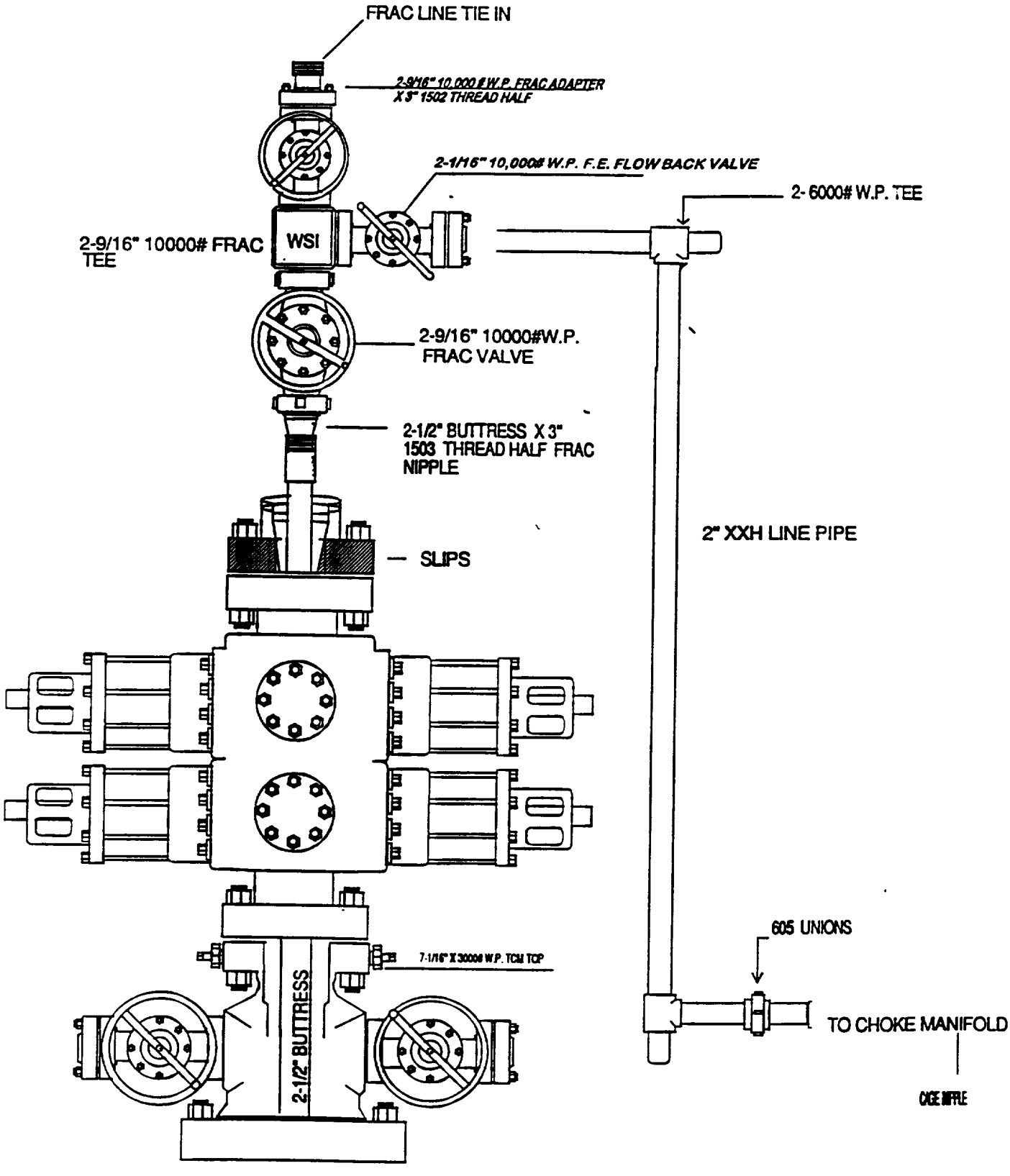
Perform immediate flowback through 1/8" positive choke. Downtime between pump shut-down and opening of flowback valve must be LESS THAN 30 SECONDS.

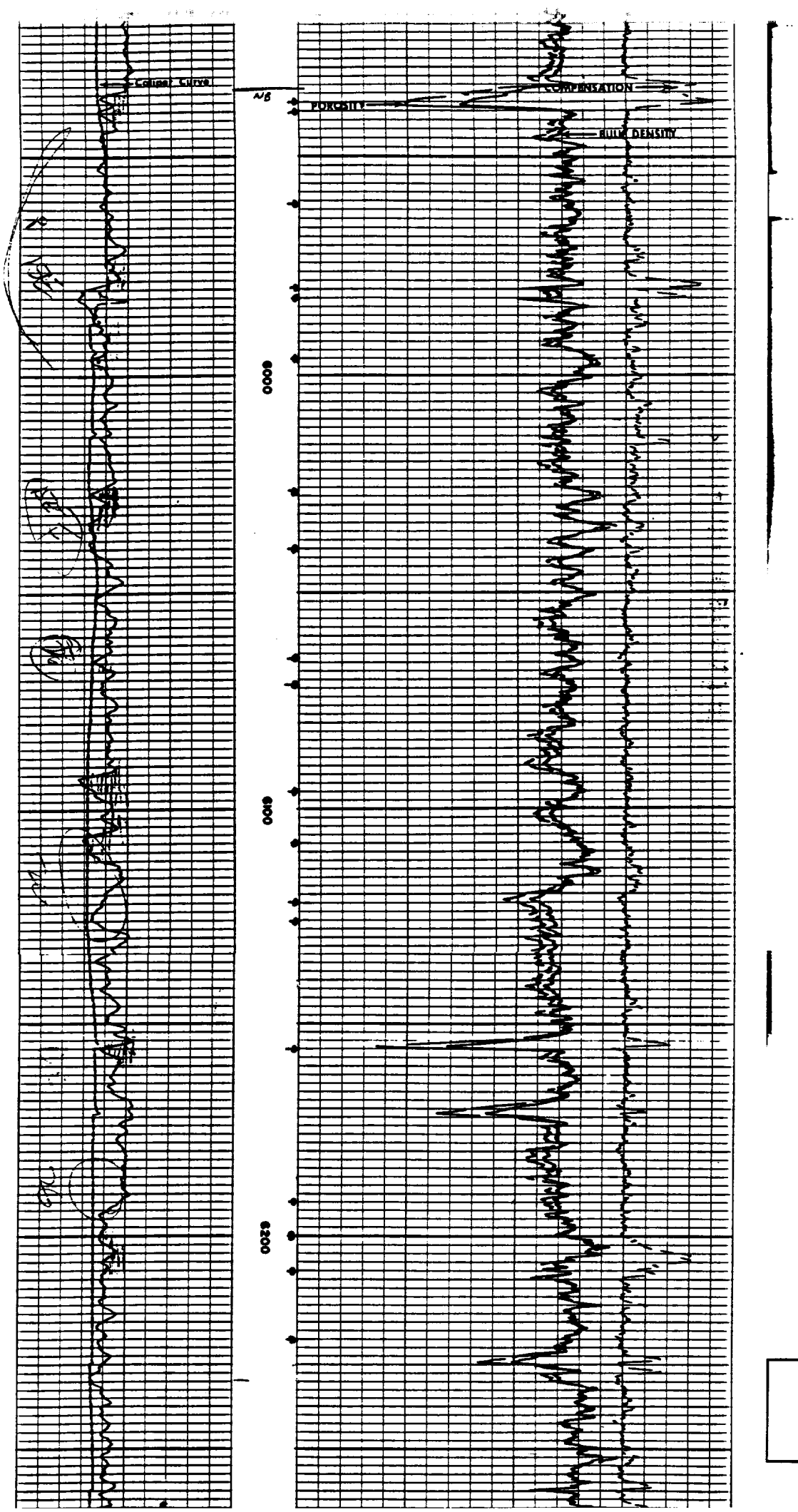
Production Engineer: Joan Easley JMS

PDB 3/10/96

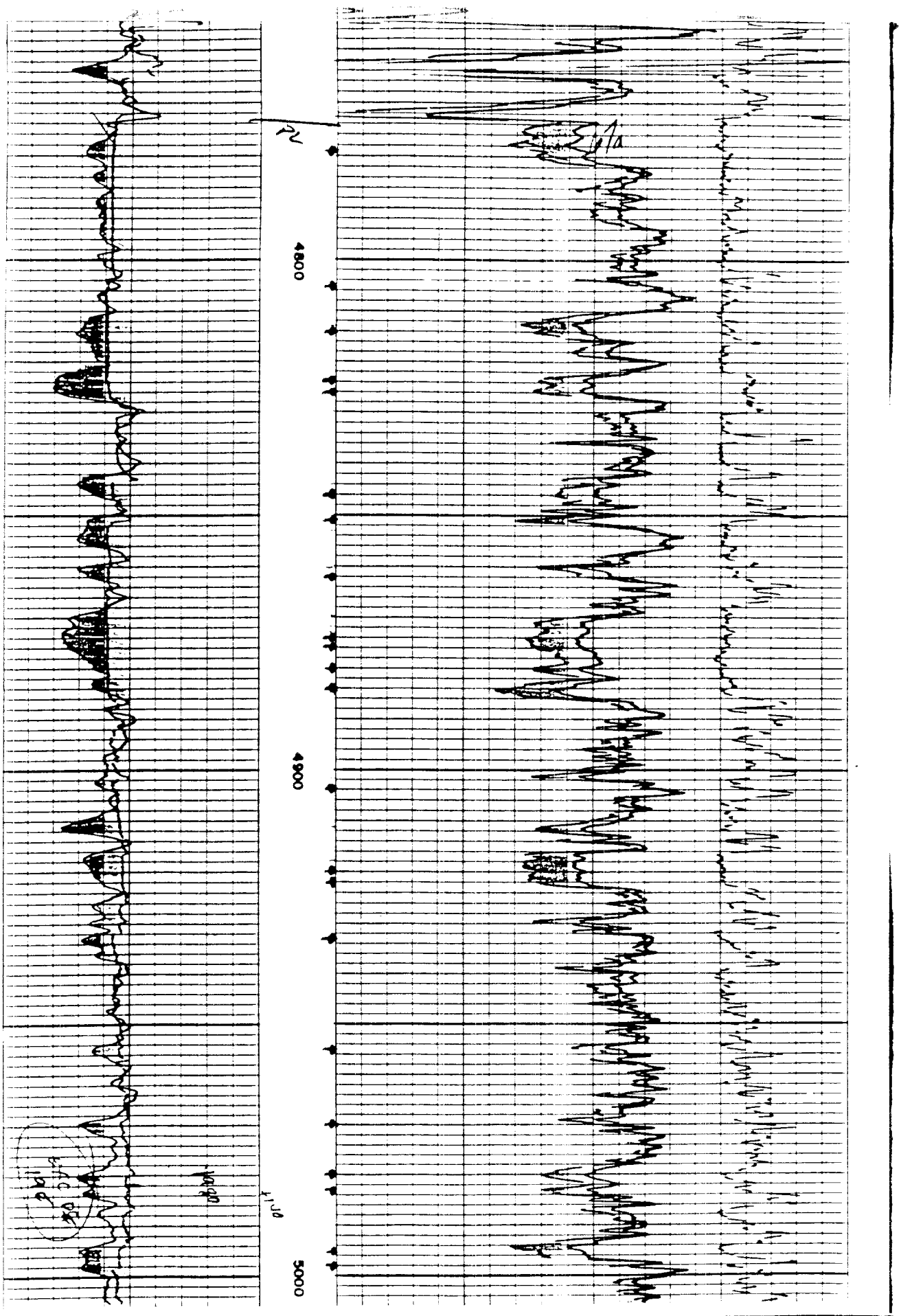
WSI FRAC & FLOW BACK ASSEMBLY - for tubing

MERIDIAN OIL





Klein #19
Niobrara



+ 3 perfs @ 5104' (Based on Dipole
5125' Sonic response
5140' in Klein #19E)

Klein #19
Point Lookout