Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT - " for such proposals

5. Lease Designation and Serial No.
SF - 078387-A

6. If Indian, Allottee or Tribe Name :

7. If Unit or CA, Agreement Designation

1. Type of Well
☐ Oil Well ☒ Gas Well ☐ Other

8. Well Name and No.
KERNAGHAN B #7

2. Name of Operator
AMOCO PRODUCTION COMPANY

Attention:
Nancy I. Whitaker

9. API Well No.
3004527350

3. Address and Telephone No.
P.O. BOX 800 DENVER, COLORADO 80201

303-830-5039

10. Field and Pool, or Exploratory Area
BASIN FRUITLAND COAL

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
1440 FNL 1040 FEL Sec. 30 T 31N R 8W UNIT H
H

11. County or Parish, State
San Juan New Mexico

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
☒ Notice of Intent	☐ Abandonment	☐ Change of Plans
☐ Subsequent Report	☐ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☐ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	☒ Other DEEPEN RAT HOLE	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work . If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

AMOCO PRODUCTION COMPANY REQUESTS PERMISSION TO DEEPEN THE RAT HOLE & RUN A PERFORATED LINER ON THE ABOVE WELL ACCORDING TO THE ATTACHED PROCEDURES.

FOR TECHNICAL INFORMATION CONTACT MIKE KUTAS 303-830-5159

Maximum Total Depth 3360'

RECEIVED
APR - 8 1997
OIL CON. DIV.
DIST. 3

14. I hereby certify that the foregoing is true and correct
Signed Nancy Whitaker Title Staff Assistant Date 03-26-1997

(This space for Federal or State office use)
Approved by _____ Title _____ Date APR 03 1997
Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, ficticious, or fraudulent statements or representations as to any matter within its jurisdiction.

* See Instructions on Reverse Side

NMOCD

SJOET Well Work Procedure

Kernaghan B 7
Version: #1
Date: March 26, 1997
Budget: Well Repair
Work Type: **Deepen/ c/o /run-perf liner**

Objectives:
1. C/O TBG head,C/O fill, deepen for rat hole
2. Run and perf liner; Replace 4 1/2" TBG w/2 7/8" TBG
3. Place well back on production

Pertinent Information:

Location:	1440'FNLx1040' FEL; Sect 30H-T31N-R08W	Horizon:	FT
County:	San Juan	API #:	30-045-27350
State:	New Mexico	Engr:	Kutas
Lease:	BLM; SF-078387-A	Phone:	H--(303)840-3700
Well Flac:	70304001		W-(303)830-5159
			P--(303)553-6334

Economic Information:

APC WI:	50%	Prod. Before Repair:	8900 MCFD
Estimated Cost:	$100,000	Anticipated Prod.:	10000 MCFD
Payout:	3 Months		
Max Cost -12 Mo. P.O.	$ 465M		
PV15:			
Max Cost PV15:			

Note: **Economics will be run on all projects that have a payout exceeding ONE year.**

Formation Tops: (Estimated formation tops)

Nacimento:		Mesaverde:	
Ojo Alamo:		Point Lookout:	
Kirtland Shale:		Mancos Shale:	
Fruitland:	3048-3366'	Gallup:	
Pictured Cliffs:	3379'(Est'd Kernahgan #4)	Graneros:	
Cliff House:		Dakota:	
		Morrison:	

Bradenhead Test Information:
Test Date: 5/96 **Tubing:** 136 **Casing:** 143 **BH:** 0 psi

Time	BH	CSG	INT	CSG
5 min				
10 min				
15 min				

Comments:

Kernaghan B 7:

Current wellbore info: 7" CSA 3164', OH at 3164-3368', 4 1/2" TSA 3145', Fill at 3232'KB--3/18/96 W.L. tag
Current flow info: 8950 MCFD, FTP=60 psi, FCP=60 psi, LP=56 psi; Producing tubing and casing; Well has original TBG head and is currently producing through both 2 1/8" CSG valves (1.5" ID).

General observations:
1. Well is experiencing loading problems
2. Well was cavitated in 7/89, recavitated in 12/93, and underreamed in 12/93.
3. Severe ledge and sloughing problems were encounterd at approx. 3260' and 3300-25'.
4. Well has not responded to lateral compression as anticipated
5. 11/96 BHP build up test analysis indicated +1.85 skin

Short term plans:
1. Replace WH, C/O, deepen, run and perf liner; replace tubing

Long term plans:
1. Place on artificial lift (if needed); Rathole will be added for gas separation.

1. MIRURT
2. ND tree, rig up BOP's w/cavitation capability, complete with venturies on blooie lines. Test BOE. Set plug in F-nipple in 4 1/2" TBG (2.75" F-nipple sa 1 jt off btm, at approx. 3102'). TOH and lay down 4 1/2" tubing
3. Set wireline EZSV in 7" at 3100'. Load csg and pressure test. NDBOE and change out TBG head to allow hanging 2 7/8" TBG (w/full opening 3 1/8" casing valves). NUBOE and test
4. Pick up 4.750" drill collars and 3.500" drill pipe with 6.250" bit, blow hole dry, drill up EZSV, clean out fill from 3,232' to total depth (3368') using air and foam. Drill out to a total depth of 3379'. C/O and stibilize hole as quickly as possible to allow running liner (after reaching TD, trip out to casing shoe and wait for 4-6 hours and check to determine amount of fill and how difficult it is to clean up.
5. Run a blank 5.500" flush joint liner (Hydril 511) from TD back to approx. 3,000'. Install a tricone bit on bottom with a float immediately above bit and a Baker Model SLR-P Liner Hanger Packer. Strip in hole and drill to bottom with power swivel if necessary. Hang liner, lay down drill pipe
6. RU HES, run GR-CCL to identify correct coal seam depths; TIH and perforate liner as follows:

COAL ZONES		PERFORATIONS		
Ignacio	3,216 to 3,235'	3,216 to 3,235'	4 jspf	76 holes
Cottonwood	3,276 to 3,294'	3,276 to 3,294'	4 jspf	72 holes
Cahn	3,338 to 3,366'	3,338 to 3,366'	4 jspf	112 holes
		Total		**260 holes**

7. Pick up and run 2 7/8"TBG as follows:
   1) 10' 2 7/8" tbg sub
   2) 10' 2 7/8" tbg sub, w/ 5/8" hole in middle
   3) 2 7/8" std. SN (2.280" ID) with retrievable plug in place
   4) remainder 2 7/8" TBG (All TBG: 6.4# J55)

Land bottom of TBG at approximately 3361-66'(approx. 5' above bottom perf). Pull retrievable plug. RDMODU. **Turn well over to production. Note: bring well on slowly, well may need swabbing in order to RTP.**

Dependent on speed of hole stabilization, I estimate this procedure to require approximately 5-6 days and to cost approximately $100,000 (see attached AFE form).

If problems are encountered, please contact:

Mike Kutas

(W) (303) 830-5159
(H) (303)840-3700
(P) (303)553-6334

Repair Well Cost Detail

Property - KERNAGHAN /B/, Well# 007H30

SAN JUAN County, NM Property FLAC - 698862 Well FLAC - 703040

Operating Field - BLANCO-MESAVERDE

Amoco Production Company

Ownership Code: 00

Intangibles	
Rig Cost	$50,000
Equipment Rental	$0
Circulating Media	$0
Cement and Service	$0
Packers and Equipment	$0
Perforate, Log, Wireline	$7,000
Stimulation	$0
Labor	$6,000
Special Equipment	$0
Fishing	$0
Other Intangibles	$9,100
Total Intangibles	$72,100

Tangibles	
Casing	$11,600
Tubing	$7,800
Wellhead	$8,500
Other	$0
Total Tangibles	$27,900

	Net	Gross
Total This Request	$50,000	$100,000
Previous Estimate	$0	$0
Total to Date Estimate	$50,000	$100,000

Amoco Production Company

ENGINEERING CHART

Sheet No ____ Of ____

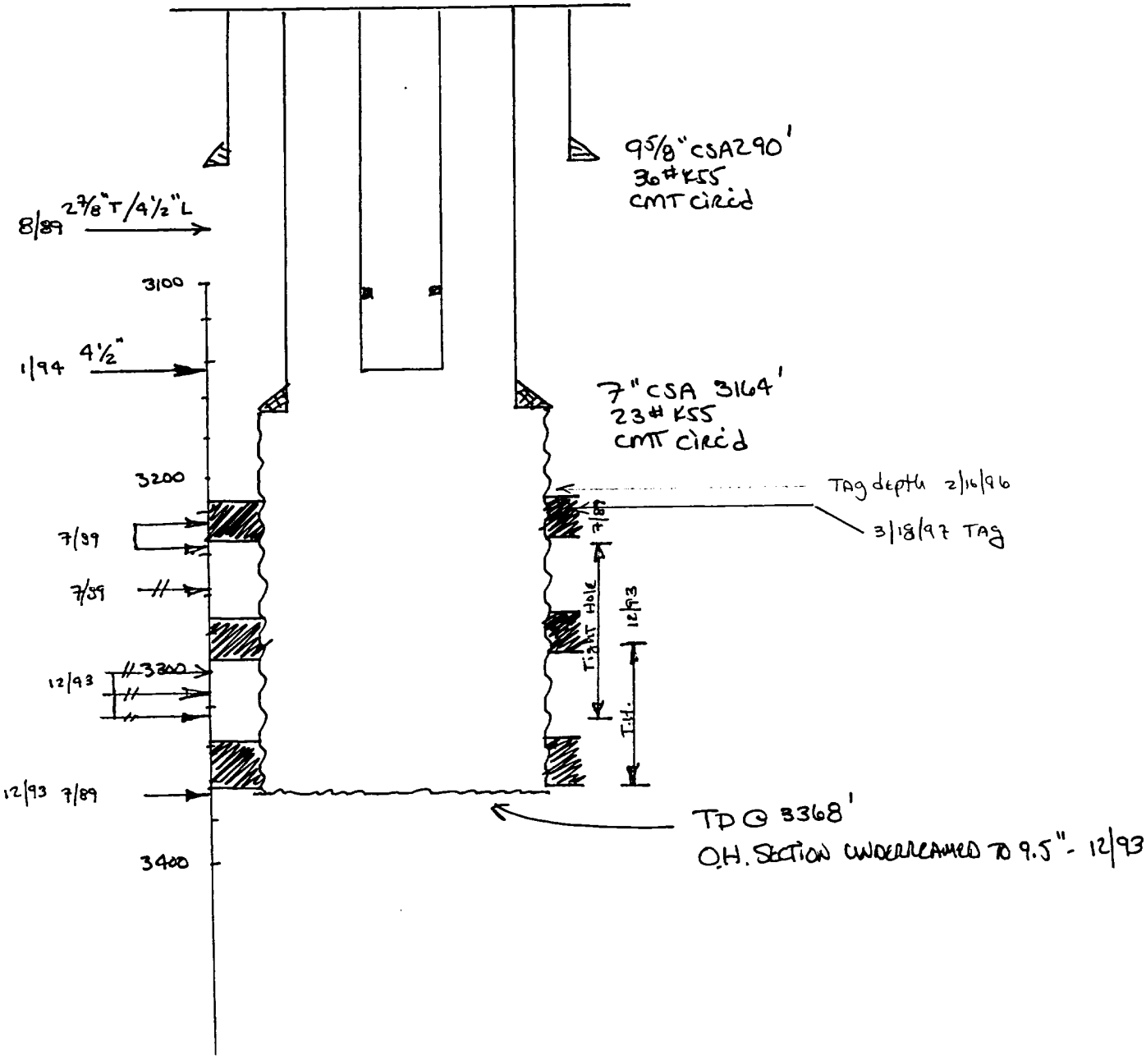
File ____

Appn ____

Date 3-17-97

By GMK

SUBJECT KERNAGHAN B 7



Sheet No 01

File

Appn

Date 3-11-97

By GMK

Amoco Production Company

ENGINEERING CHART

SUBJECT Kernaghen B 7

SPud : 6/14/89
RREL : 6/17/89

9 5/8" CSA 290', 36# K55, CMT circd
7" CSA 3164', 23# K55, CMT circd

7/15/89 - MIRUSU

ZONE	DEPTH	GAS SHOW
IG	3216-35'	896
CW	3276-94'	800
CN	3338-66'	800

- O.O. TO TD OF 3368'; FOUND COALS AS FOLLOWS
- SI FOR 2 HRS, 1320psi, TAG: C/O 60' Fill, HOLE STICKING BADLY, DARK BLACK WATER & DUST RETURNS 0.7"
- CST WELL; TAG: C/O 140' Fill; FLOW TEST: 8 HRS, 230-400#, 3335→5800 MCFD NG →565 BWPD; TAG: C/O 5' Fill, HOLE TRYING TO STICK STRING
- CST WELL - HOLE UNLOADING LOTS COAL: BLACK WTR, TAG: C/O 2' Fill; FLOW TEST: 3/4" ck 4 HRS, 200→425 psi, 2.9-6.163 MM 0→452 BWPD; TAG: CO 130' Fill
- REAM 130' TO BTM, CST WELL, TAG: C/O 145' Fill, HEAVY BLACK (Syrup) RETURNS SI 2 HRS = 1240psi
- CST WELL, THICK HEAVY BLACK WTR, + COAL chunks & FINES, FLOW TEST: 3/4", 4 HRS 300-530 psi, PUT THRU SEP: 3087 MCFD, 350# BACK PRESS, 668 BWPD
- CONT SEP TEST, 3/4" ck, 590#, 2889 MCFD, 1056 BWPD; TAG: C/O 140' Fill Short trip, tag: C/O 2' Fill, Short trip, tag: C/O 10' Fill
- RU Cud, SIP= 1240 psi; TAG ledge @ 3233', REAM, TAG: C/O 2' Fill. HOLE CAVED IN, DP stuck @ 3354'
- FREE stuck PIPE (100% FREE @ 2917', 50% FREE @ 2950'), HOLE BEGAN UNLOADING LARGE QUANT. OF COAL, RD CUDD, ONLY RECOVERED PART OF DP - 12 JTS + BHA IN HOLE
- REC FISH, WELL UNLOADING LARGE AMTS OF COAL & WTR - WAIT ON CUDD, RU Cud TOH W/ DP & FISH
- TIH: TAG Bridg @ 2612', WASH out Bridge & HOLE BEGAN UNLOADING COAL, CIRC @ 2633'
- WASH & REAM TO 3245', Hit ledge @ 3245', WASH & REAM to 3294', stuck DP, WORK Pump - 100% Stuck @ 3025', 50% stuck @ 2966', FREE @ 2935'
- WORK PIPE, PERF DP @ 2880', couldn't circ; BACK OFF DP @ 2842', TOH
- RU FISHING TOOLS, WORK FISH, SNUB OOH W/ FISH - EVERYTHING plugged w/ COAL
- SICP= 1300psi, Mud up to CONTROL FLOW, TIH x ~~START~~ REAMING to BTM
- WORK THROUGH TIGHT SPOTS @ 3238-68', WASH TO 3360
- FINISH WASHING to BTM, TRIP TO CSG, TIH x TAG ledge @ 3258', WORK PAST, FOUND TIGHT SPOTS AGAIN @ 3250-330', TOH, RUN 4½" CSG, TAG 1' Fill
- CIRC TAG FILL @ 3266, SET HANGER, RUN GR LOG

NOTE: FIRST SURVEY 7/19 IN FILE

Amoco Production Company

ENGINEERING CHART

File

Appn

Date

SUBJECT

By

- PERF 3333-63', 3279-97', 3214'-32' W/4JSPF; TIH W/2 7/8" TBG AS FOLLOWS: EXP CHECK, 1 JT, BAKER 'N' NIPPLE 6.5# J55, TSA 3072.3', PUMP 17.7 BBL & SHEAR EXP. CHECK, REV CIRC, WELL STARTED FLOWING
  FLOW TEST: 3/4" ch. 250-540# 1255 BWPD, 7.8 MMCFD
- RD 8/11/89, FLOW TEST 9 HRS, 600-~~650~~ 610 PSI, 8.7 → 8.85 MMCFD, 594 → 952 BWPD

12/11/93 - MIRUSU, SICP = 760 PSI.
- PULL 2 7/8" TBG
- RUN 2 7/8" TBG x BIT, TAG & C/O 5' FILL, TOH L/D TBG, PU MILL x DC'S & DP, TAG TOL @ 3098', MILL 7' OF LINER TOP, TOH
- TIH x SPEAR LINER, TOH x LD LINER, PU x RUN 6 1/4" MT BIT, C/O FROM 3135'-3250' - HEAVY COAL & WTR RETURNS, C/O TO 3250'
- CST #1 x 3, 610-665 PSI, TAG @ 3212', C/O TO 3312', STRING STUCK
- FREE UP & WORK TIGHT SPOT @ 3250-81'
- C/O FROM 3281-3368', PU & TIH W/ UR., UR FROM 3167-3225'
- FINISH UR FROM 3225'-3368'; FLOW TEST: 8137 MCFD, 561 PSI, CST WELL
- CST x 3, 720 PSI - VERY LITTLE COAL OR WTR TO SURF; SD FOR HOLIDAY
- 47 HR SIP = 740 PSI, CST x 4, 725 PSI, FLOW 7" WIDE OPEN @ 23 PSI.
- TAG @ 3221', HOLE CAVING, C/O ROUGH HOLE @ 3281-3302', STUCK PIPE @ 3284' UNSTICK PIPE, C/O FROM 3187-3312' - TREMENDOUS AMT OF COAL RTRNS CLEAN HOLE @ 3312-3341'
- C/O TO TD, COAL RUNNING WHILE CIRC @ TD, BRIDGES @ 3300 & 3343' FLOW TEST: 90 MIN, 300-560 PSI, 8120 MCFD x4 680-685 PSI
- TAG & C/O BRIDGE @ 3301', C/O FROM 3312-3368', CST WELL, FLOW TEST 3/4" ch, 583 PSI, 8.5 MMCFD, HEAVY GAS & COAL RTRNS, LT WTR
- FLW TST, 3/4", 600 PSI, 8.7 MMCFD, TAG @ 3281', C/O TO 3312', COAL RUNNING HEAVY
- C/O TO TD - HEAVY COAL RTRNS
- FLOW TEST: 3/4", 590 PSI, 8.56 MMCFD; CST x 9, 690 → 680 PSI HEAVY GAS, M → LT COAL, LT WTR RTRNS
- FLOW TEST: 3/4", 610 PSI, 8.9 MMCFD, TAG @ 3300', C/O TO 3312', HOLE TIGHT HEAVY COAL RTRNS
- C/O TO TD, HEAVY COAL RTRNS,
- R & R @ BTM, SHORT TRIP, TAG @ 3260', C/O TO TD, TIGHT HOLE @ 3290-3368 HEAVY COAL RTRNS; R & R, C/O BRIDGES @ 3300', 3312', 5' FILL ON BTM. TOH x LDDP & DC x BIT

Amoco Production Company

ENGINEERING CHART

File _____

Appn _____

Date _____

By _____

SUBJECT _____

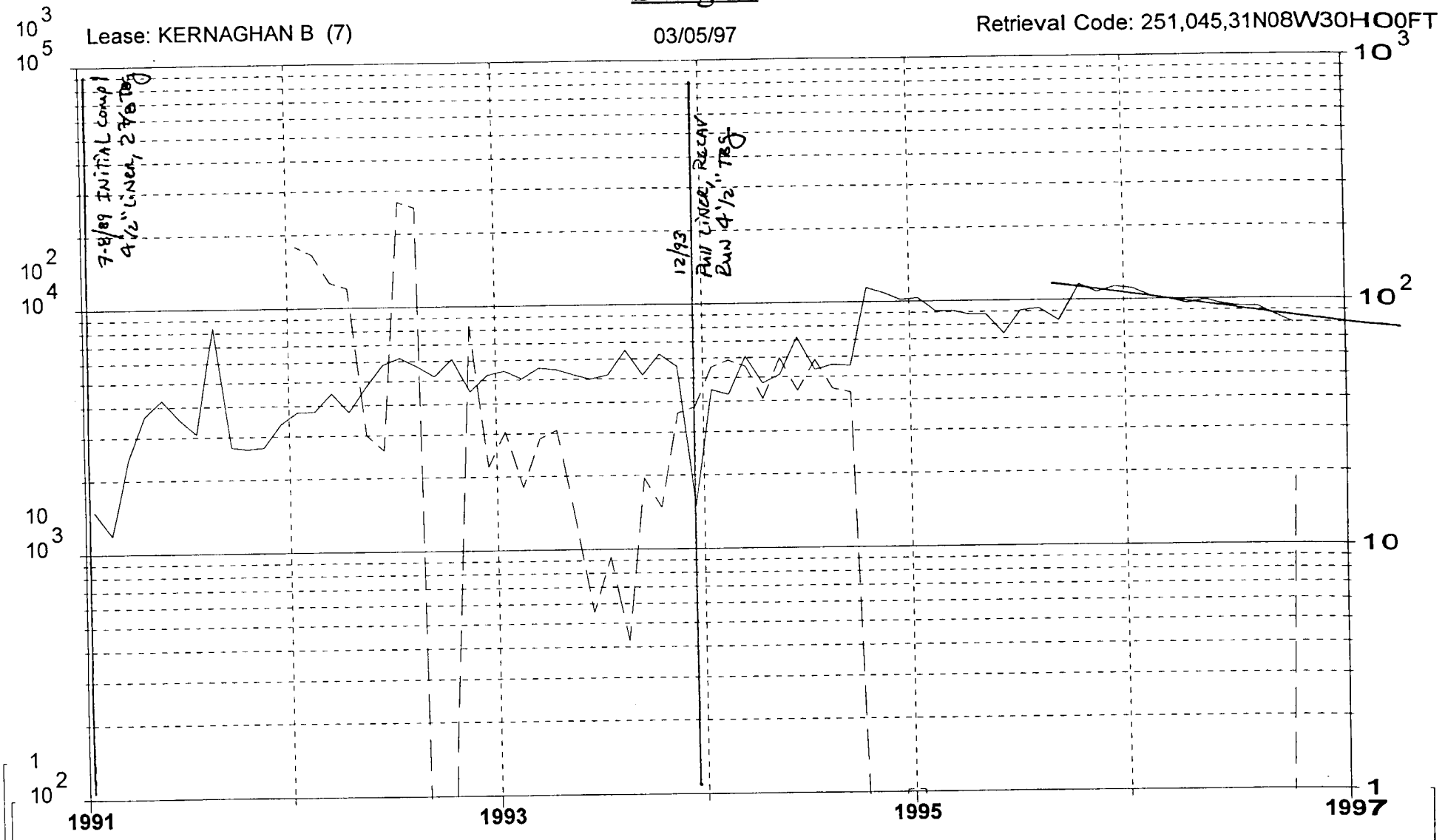
- SNUB IN HOLE w/4 1/2" TRS, TSA 3 145', BAKER 2.75" F-Nipple @ 3102'
  11.6# K55
- Pull BLANKING Plug, RACL 1/6/94

- 2/16/96 WL TAG Fill @ 3208'

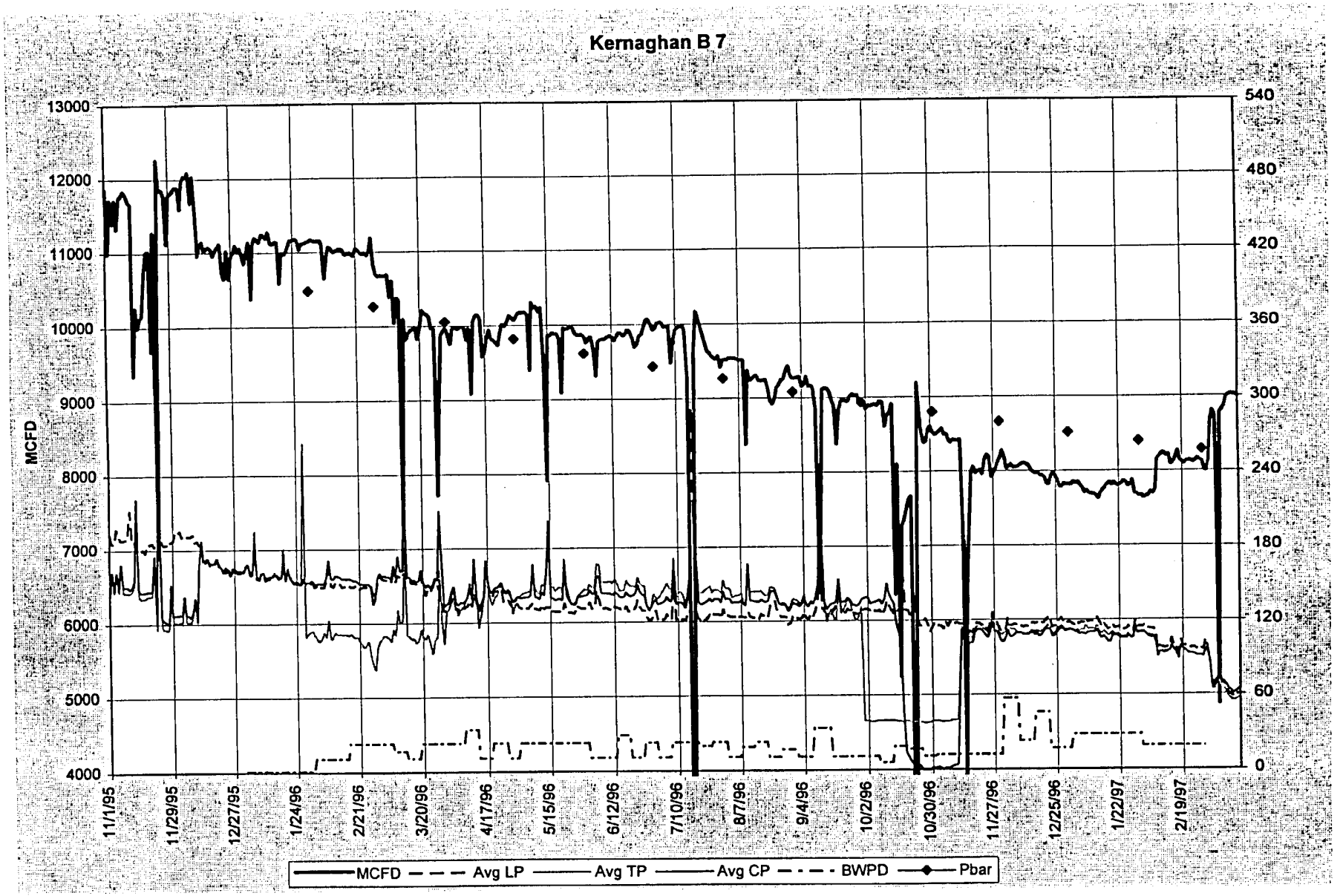
Depth	PSIG	GRAD
0	156	—
1000'	182	.026
2000'	207	.025
3000'	226	.019
3200'	232	.030

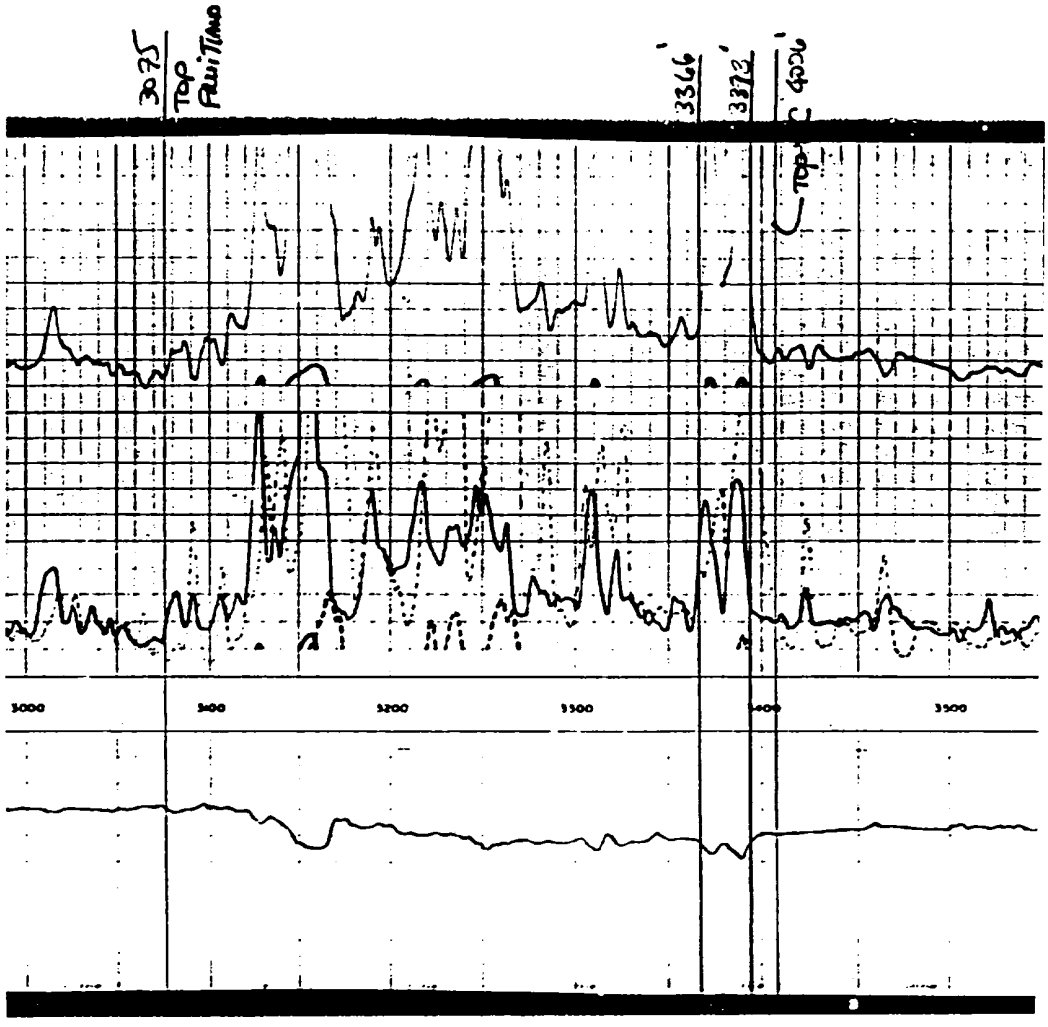
- 11/96 BHPBU ANALYSES : †1.85 SKIN, 358 PSI.

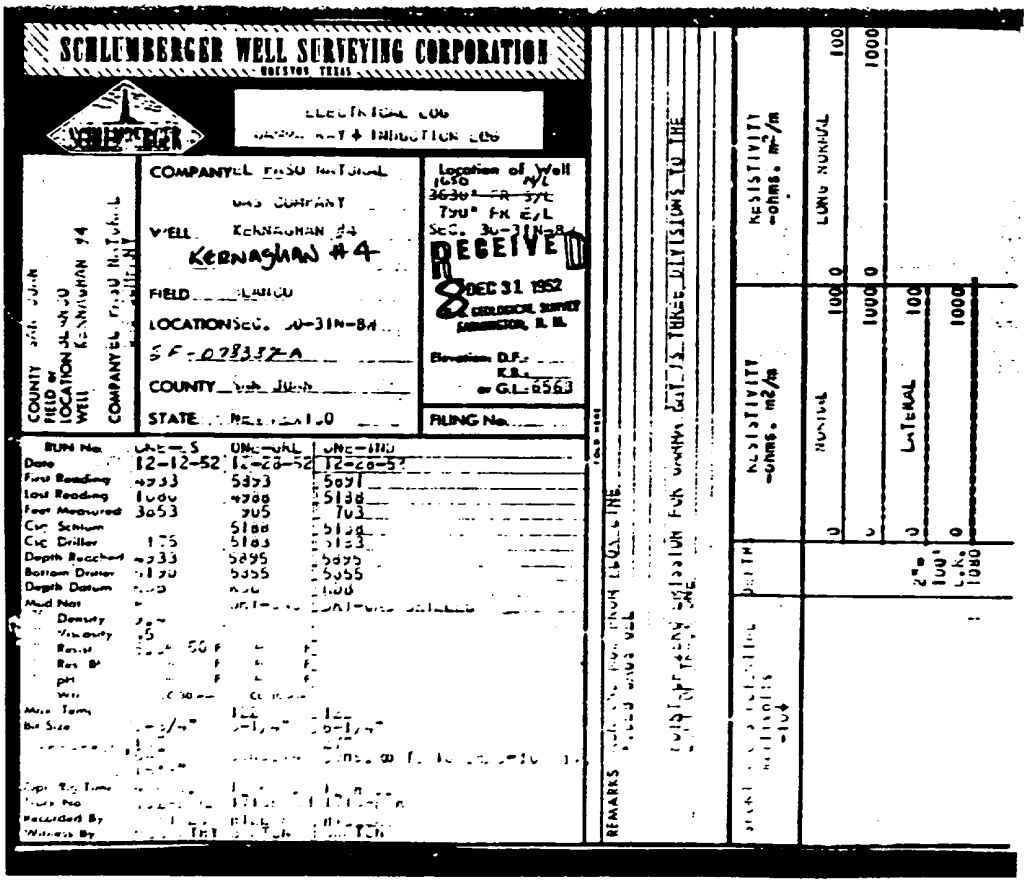
Dwights



County: SAN JUAN, NM	F.P. Date: 11/90
Field: BASIN (FRUITLAND COAL) FT	Oil Cum: 0 bbl
Reservoir: FRUITLAND COAL	Gas Cum: 13.73 bcf
Operator: AMOCO PRODUCTION CO	Location: 30H 31N 8W


Kernaghan B 7
MCFD
13000
12000
11000
10000
9000
8000
7000
6000
5000
4000
540
480
420
360
300
240
180
120
60
0
11/1/95
11/29/95
12/27/95
1/24/96
2/21/96
3/20/96
4/17/96
5/15/96
6/12/96
7/10/96
8/7/96
9/4/96
10/2/96
10/30/96
11/27/96
12/25/96
1/22/97
2/19/97
MCFD
Avg LP
Avg TP
Avg CP
BWPD
Pbar


3025
Top Ojo Alamo
3346'
3372'
Top
3000
3100
3200
3300
3400
3500


SCHLUMBERGER WELL SURVEYING CORPORATION
HOUSTON TEXAS
ELECTRICAL LOG
COMPANY EL PASO NATURAL GAS COMPANY
WELL KERNAGHAN #4
FIELD BLANCO
LOCATION Sec. 30-31N-8W
SF-078372-A
COUNTY San Juan
STATE New Mexico
Location of Well
1650 N/L
3630' FR S/L
790' FR E/L
Sec. 30-31N-8W
RECEIVED
DEC 31 1952
GEOLOGICAL SURVEY
FARMINGTON, N. M.
Elevation D.F.
K.B.
or G.L. 6563
FILING No.
COUNTY San Juan
FIELD or LOCATION BLANCO
WELL KERNAGHAN #4
COMPANY EL PASO NATURAL GAS COMPANY
RUN No. ONE | ONE | ONE
Date 12-12-52 | 12-12-52 | 12-12-52
First Reading 5933 | 5933 | 5891
Last Reading 4000 | 4988 | 5138
Feet Measured 3653 | 905 | 703
Csg. Schlum. 5188
Csg. Driller 175 | 5183 | 5183
Depth Reached 5933 | 5895 | 5895
Bottom Driller 5930 | 5955 | 5955
Depth Datum KB | KB | KB
Mud Pit
Density
Viscosity 45
Fluid Loss
Res. @
Res. @
pH
Water
Max. Temp.
Bit Size
Type Rig Time
Run No.
Recorded By
Witness By
REMARKS
RESISTIVITY -ohms. m²/m
LONG NORMAL
100
1000
0
RESISTIVITY -ohms. m²/m
NORMAL
LATERAL
100
1000
0
DEPTH
2"=100'
Scale
1000
0