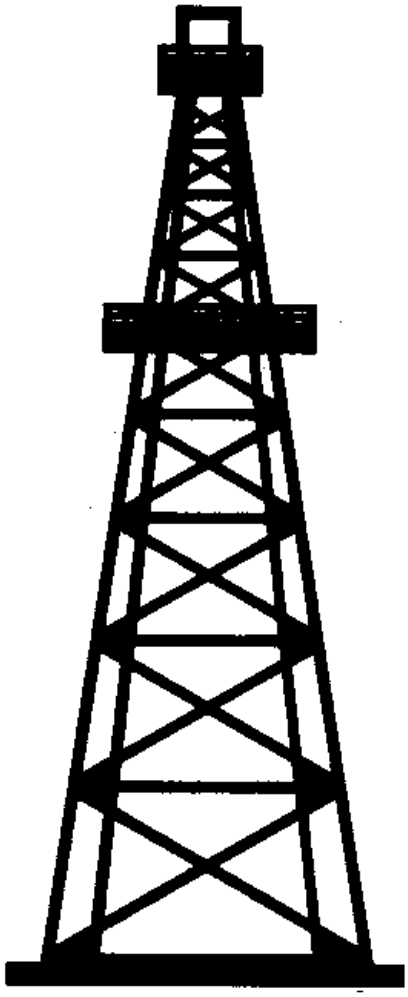
CALIFORNIA WELL SAMPLE REPOSITORY

SPECIAL PUBLICATION NO. 1
DISPLAY OF CORES FROM THE
STEVENS SAND (UPPER MIOCENE)
SOUTHERN SAN JOAQUIN VALLEY, CALIF
MAY 12-13, 1978



Cal State Bakersfield
9001 Stockdale Hwy 93309

$1.00

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INTRODUCTION

The purpose of this display of Stevens Sand cores is two-fold: (1) to make available for observation, comparison, and study, representative cores from a number of oil-productive wells of various oil fields from the Stevens Province of the Southern San Joaquin Valley, and (2) to acquaint as large a number of geologists, engineers, and students as possible with the facilities of the California Well Sample Repository at California State College, Bakersfield

This publication is designed to supply some additional information relative to the Stevens sand and the cores on display, with the hope that it may prove useful both in observation and study of the cores, and also as reference material for later study. Included is an "Upper Miocene Sand Distribution" Map, by G. W. Webb, a revision of the map in his paper in the 1977 Guidebook, Pacific Section, AAPG; A Geological Summary of the Stevens Sand, by William Bazeley; a selected bibliography of the Stevens Sand; a number of photographs of the cores of some of the wells on display; electric logs (where available) of the cored intervals; some core descriptions by the operator of the wells, and finally a list of additional wells in the repository having Stevens Sand material.

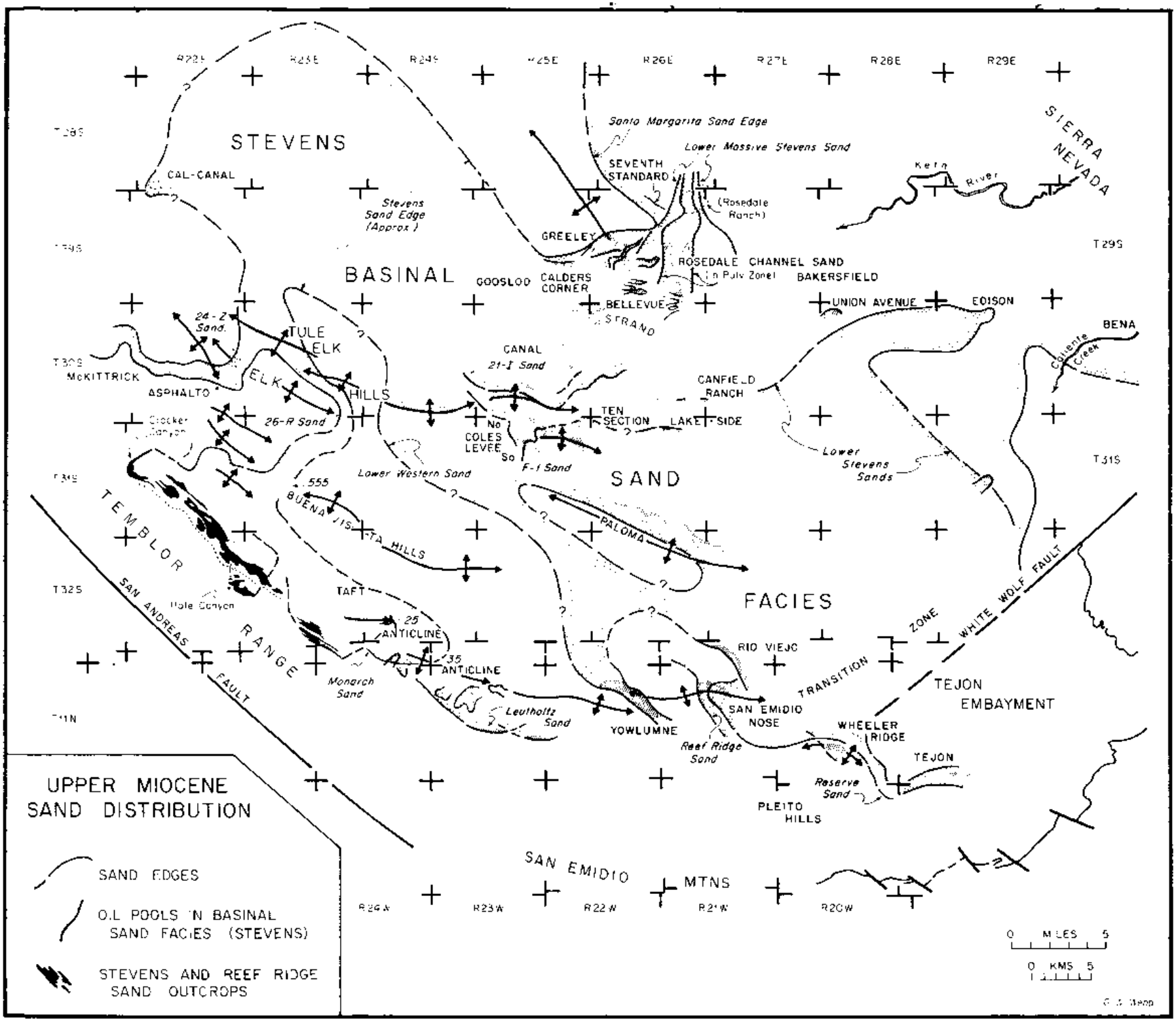
Since the initial discovery of the Stevens Sand (Shell Oil Co., Ten Section field, 1936) an appreciable number of productive Stevens fields have been found, and cumulative production from this zone to January 1, 1978, is 584,000,000 barrels of oil. Reserves are currently estimated by the Division of Oil and Gas at 860,000,000 barrels, for an estimated ultimate total production of 1,444,000,000 barrels. The great majority of the reserves is at Elk Hills (653,000,000) and Tule Elk (124,000,000). Other fields with significant reserves are: South Coles Levee (25,000,000), North Coles Levee (19,000,000), "555" (2,000,000), Ten Section (1,500,000), Paloma (1,000,000). The recently discovered Yowlumne (1974) and Rio Viejo (1975) fields are still being vigorously developed so their respective estimated reserves of 17,000,000 and 2,000,000 may be appreciably changed as a result of future drilling. No estimates of the most recent important Stevens discovery (Cal Canal, 1977) are available at this time. As of November, 1977, daily production from the Stevens was 116,000 barrels per day.

These figures are given to emphasize the important position the Stevens has held as an exploration objective over the years. The recent major finds of Tule Elk, Yowlumne, Rio Viejo, and Cal Canal attest to its continuing preeminent position for exploratory activity in Kern County. Since the recognition of the Stevens as a turbidite deposit (see Sullwold, 1961), renewed attention has been directed to the sedimentary features exhibited in the cores for the clues they may contain which could aid in leading exploratory work to additional discoveries. We believe that never before has there been such an opportunity for all interested workers to see and compare such a great number of Stevens cores, and we hope all who attend will find it interesting, instructive and ultimately, economically significant. We are pleased, therefore, to welcome each of you. For those who cannot be present, most of these cores, as well as others not displayed at the "Open House", will be available to you for study at the Repository at your convenience, under the normal operating policies of the Repository (see information in the catalog, published in November, 1977).

The second purpose of this "Open House" is to acquaint geologists, engineers, students, researchers, and other interested parties in the facilities available at the Repository. We have attempted to publicize the use and importance of the Repository since its formal opening in 1976, by various articles in California Geology, Pacific Petroleum Geologist, the USGS News Letter, Munger Oilogram, the Bakersfield Californian, and even a local T.V. story. In November, 1977, the first Catalog of Well Samples at the Repository was issued, listing over 2,000 wells plus samples from foundation borings, water quality control samples, and various other miscellaneous samples. In addition there are micropaleontologically processed slides and samples from 853 California wells and 214 outcrop samples which are presently being cataloged. Additional material is constantly being donated for which the Repository is grateful. The majority of the material, of course, has come from oil companies who no longer wish to store it, and consequently such material is not generally of wide current interest. As material from more recently drilled wells, as well as foundation borings, etc. is acquired, we anticipate increased usage. However, we do hope that this "Open House" will acquaint interested workers to the considerable and growing amount of information available to them for their investigatory studies.

Whatever success this "Open House" may acheive is due to the concerted effort of the Advisory Board, the curator, and the generous cooperation of numerous companies and governmental agencies. We wish to extend our sincere appreciation to the following for their donation or loan of materials displayed: Gulf Oil Co. (Paloma), Shell Oil Co., (Ten Section, Strand), Tenneco Oil Co., (Yowlumne, Rio Viejo, Sand Hills Area), Atlantic Richfield Oil Co. (North Coles Levee), Department of Energy (Elk Hills, Tule Elk). The Pacific Coast Section of the AAPG donated the cost of sending out the announcement cards. We also wish to thank Mr. William Bazeley for his summary article on the geology of the Stevens, Dr. Gregory Webb for use of his Upper Miocene Sand Distribution Map, Mr. Chuck Bloomquist of the Bakersfield State College (Foundation) for the photographs, William Rintoul of the Bakersfield Californian, and Averill Munger of the Munger Oilogram for publicity.

H. Victor Church
Project Director
California Well Sample Repository


STEVENS
BASINAL
SAND
FACIES
SAN EMIDIO
MTNS
SIERRA NEVADA
CAL-CANAL
Stevens Sand Edge (Approx.)
Santa Margarita Sand Edge
Lower Massive Stevens Sand
SEVENTH STANDARD
(Rosedale Ranch)
GREELEY
ROSEDALE CHANNEL SAND
(In Pulv Zone)
BAKERSFIELD
GOOSLOD
CALDERS CORNER
BELLEVUE
STRAND
UNION AVENUE
EDISON
BENA
Caliente Creek
Kern River
CANAL
21-I Sand
24-Z Sand
TULE ELK
ELK HILLS
McKITTRICK
ASPHALTO
Crocker Canyon
26-R Sand
No COLES LEVEE
So
F-1 Sand
TEN SECTION
LAKE-SIDE
CANFIELD RANCH
Lower Stevens Sands
Lower Western Sand
555
BUENA VISTA HILLS
PALOMA
TEMBLOR RANGE
SAN ANDREAS FAULT
Hole Canyon
TAFT
25 ANTICLINE
35 ANTICLINE
Monarch Sand
Leutholtz Sand
YOWLUMNE
Reef Ridge Sand
RIO VIEJO
SAN EMIDIO NOSE
TRANSITION ZONE
WHITE WOLF FAULT
TEJON EMBAYMENT
WHEELER RIDGE
TEJON
Reserve Sand
PLEITO HILLS
T28S
T29S
T30S
T31S
T32S
T11N
R22E
R23E
R24E
R25E
R26E
R27E
R28E
R29E
R20W
R21W
R22W
R23W
R24W
0 MILES 5
0 KMS 5
UPPER MIOCENE SAND DISTRIBUTION
SAND EDGES
O.I. POOLS IN BASINAL SAND FACIES (STEVENS)
STEVENS AND REEF RIDGE SAND OUTCROPS

THE STEVENS SAND - A GEOLOGICAL SUMMARY

William Bazeley

"Stevens Sand" is an informally defined subsurface term which is applied to sand bodies of Late Miocene (Upper Mohnian) age occuring within the Bolivina vaughni zone in the southern San Joaquin Valley. The name which came from the Stevens Station (16 - 30S/26E) on the Sunset Railroad, was first applied in 1936 at the Shell Oil Company discovery well in the Ten Section field.

The Stevens sand is actually an assemblage of discontinuous sand bodies generally separated by thin shale interbeds. A variety of depositional histories have been proposed for these rocks but since the late 1950's or early 1960's a consensus has developed that they are "channel sands" or, more definitively, turbidites. As a result of this interpretation, the Stevens is now visualized as the basinal turbidite facies of: 1) the shallow marine Santa Margarita shelf sands which are present principally along the eastern and southern sides of the southern San Joaquin Valley; 2) the deep water Antelope shale member of the Monterey formation, which is distinguished by abundant chert and siliceous shale (implying very low rates of clastic sedimentation); or 3) the breccias and coarse clastics of the Santa Margarita which are exposed in the southern Temblor Range.

The paleogeography that emerges from this stratigraphy can be approximated by imagining the present floor of San Joaquin Valley as the ocean surface. To east and southeast rises the ancestral Sierra, fronted by a rather broad flood-plain. To the west across the San Andreas, lies the Salinian granitic high. Its precise topography is obscure but it appears that at least a portion has been elevated along the San Andreas fault to form a high block with a steep east-facing scarp. This mass, moving northward along the San Andreas during the Late Miocene, is the source for a landslide (the Crocker Flat landslide) and a narrow band of shallow marine conglomerate and sandstone which parallels the fault (Santa Margarita formation). Seaward (eastward) from this narrow shelf, turbidity currents moved down northeasterly and easterly trending channels to deposit a series of sand lenses (Stevens equivalents: Leutholtz, Williams, Republic, Potter, etc.).

At the same time, on the eastern and southeastern sides of the basin, a shallow marine sandy shelf and slope facies was deposited (Santa Margarita). It merged downslope with a large submarine fan system (Stevens), about 15 miles wide and 50 miles long. This complex was apparently fed by at least two sources - one in the vicinity of T.30S, R.28E, and one in the area of T.29S, R.26E.

Basinward, the growth of the fans was restricted by growing folds which diverted or dammed the turbidity flows. Thus, clastic sedimentation rates in the deepest part of the basin were much reduced (Antelope Shale).

For reasons not yet clear, most of the turbidity flows stopped rather abruptly at the end of the Mohnian and the Stevens was covered by a thick mantle of mud (Reef Ridge Shale). This marked the beginning of a new sedimentation regime which persists to the present - steady basin filling and the transition from deep marine deposits to shallow marine to non-marine.

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LIST OF FIELDS (OR AREAS) WITH WELLS DISPLAYED AT THE "OPEN HOUSE"

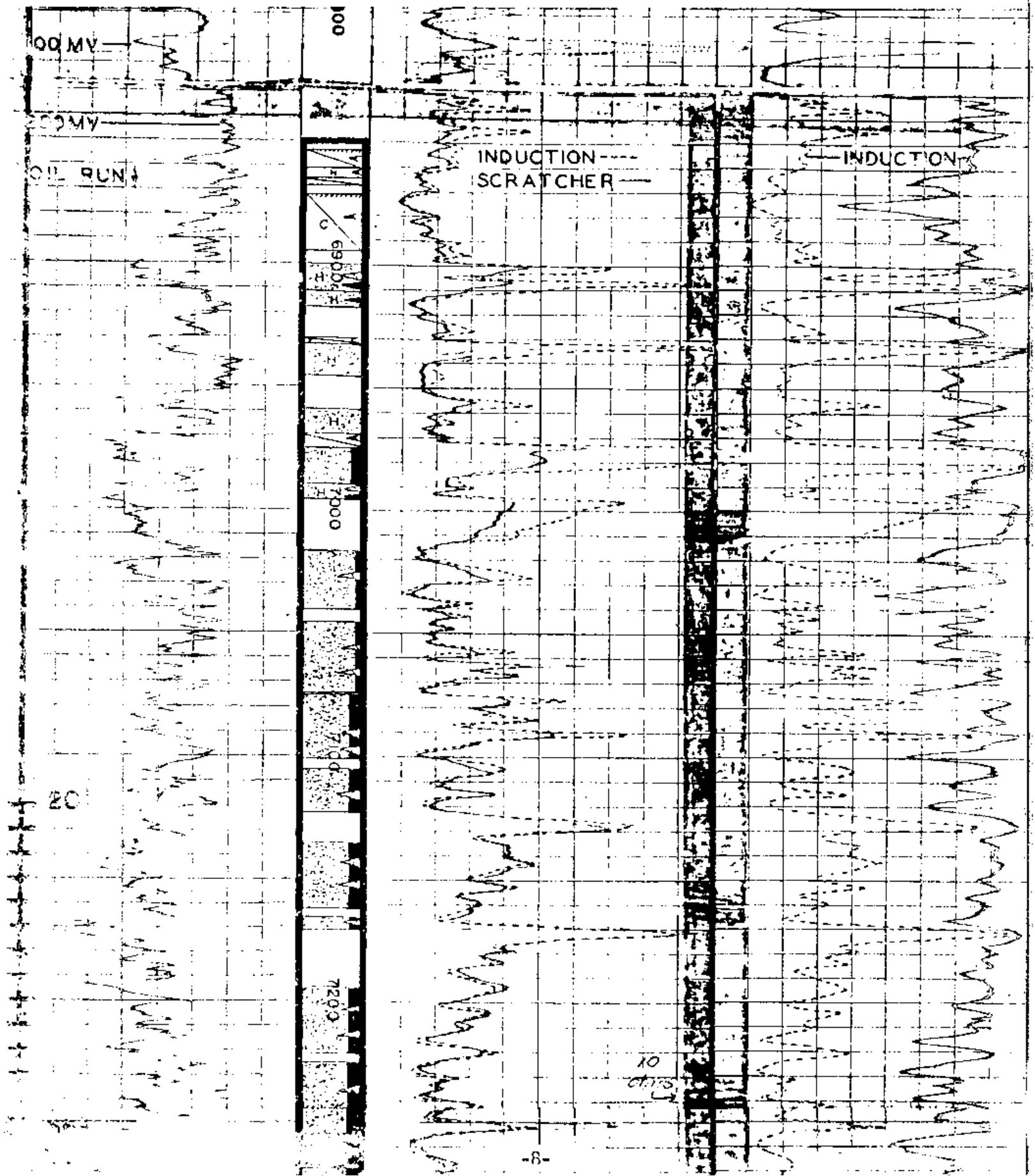
WITH SELECTED SUPPLEMENTAL DATA

(PHOTOS, E-LOGS, CORE DATA, ETC.) WHERE AVAILABLE

Field/Area	Well	Sec.-T/R
1. Elk Hills	Navy 344-35S	35-30S/24E
2. Elk Hills	Navy 352-26Z	26-30S/22E
3. Elk Hills	Navy 333-5G	5-31S/24E
4. Tule Elk	Navy 357-8R	8-30S/23E
5. North Coles Levee	ARCO CL-A56-27	27-30S/25E
6. Paloma	Gulf Paloma U 36-28	28-31S/26E
7. Rio Viejo	Tenneco 22X-34	34-12N/21W
8. Sand Hills	Tenneco 64X-34	34-32S/28E
9. Strand (Posuncula)	Shell KCL 131-12	12-30S/25E
10. Ten Section	Shell KCL 52-29	29-30S/26E
	Shell KCL 87-29	29-30S/26E
11. Yowlumne	Tenneco 12X-11	11-11N/22W
	Tenneco 54X-4	4-11N/22W

ELK HILLS

NAVY 344-35S
35 - 30S/24E



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35 - 30S/24E
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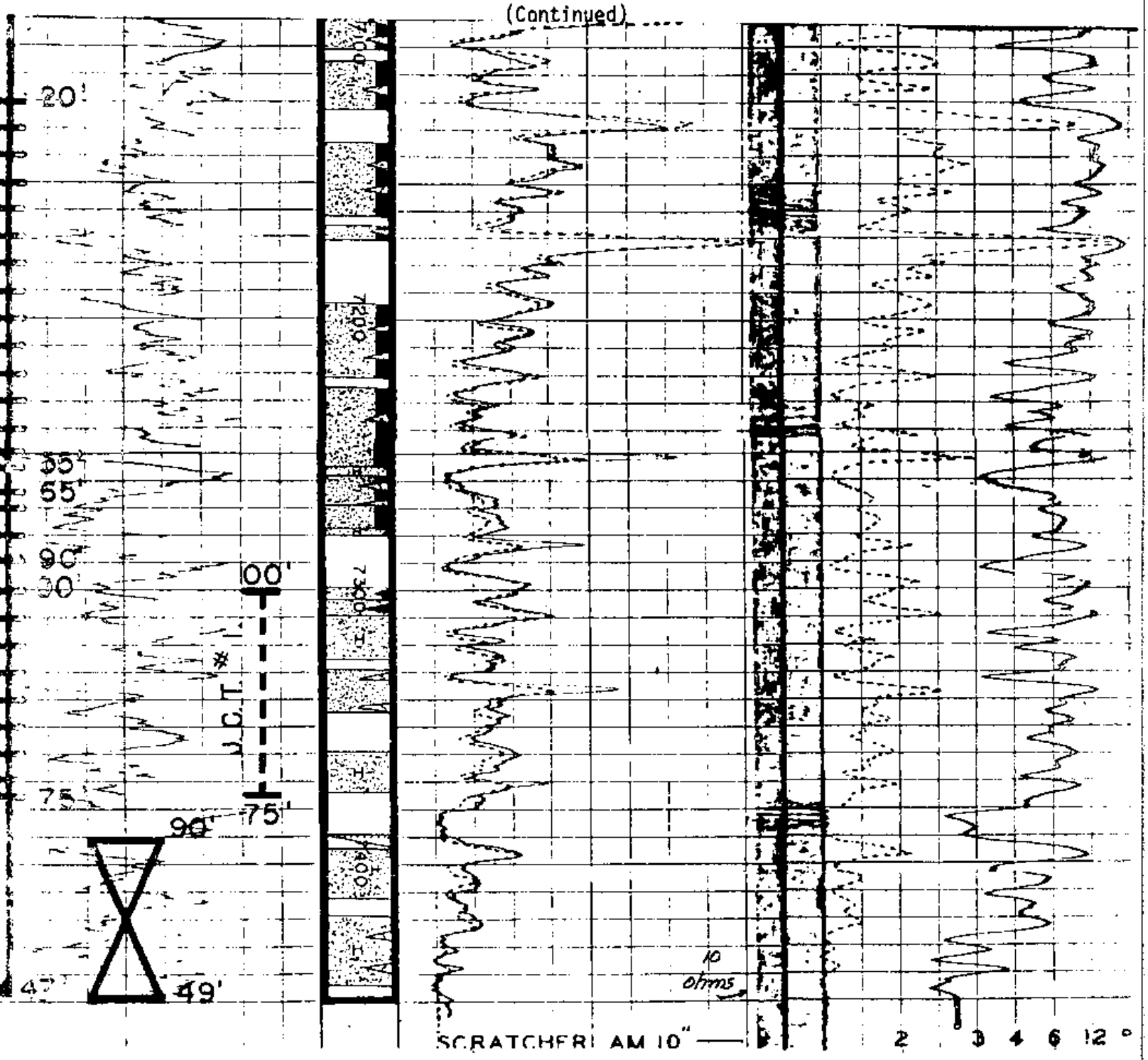
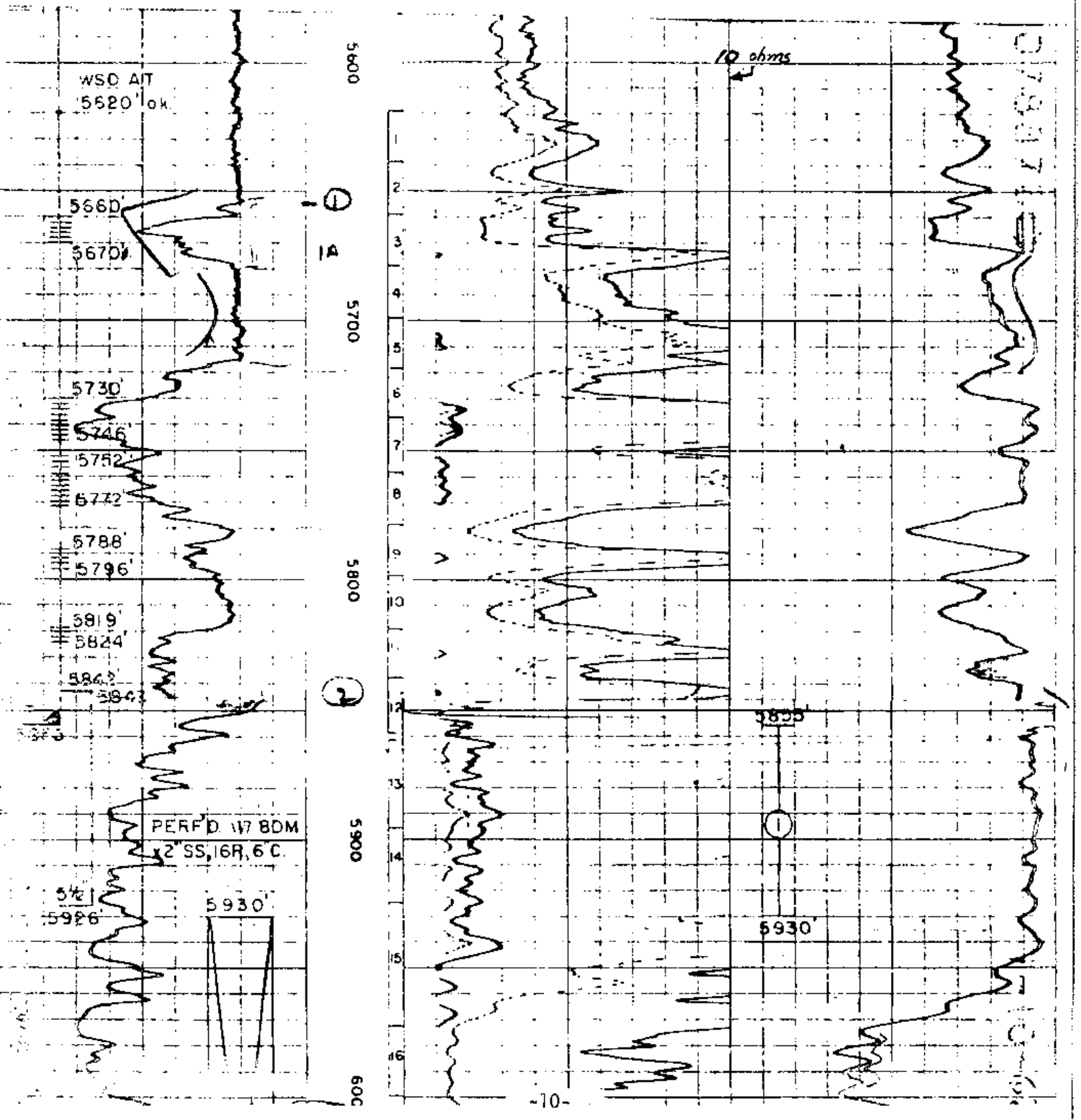


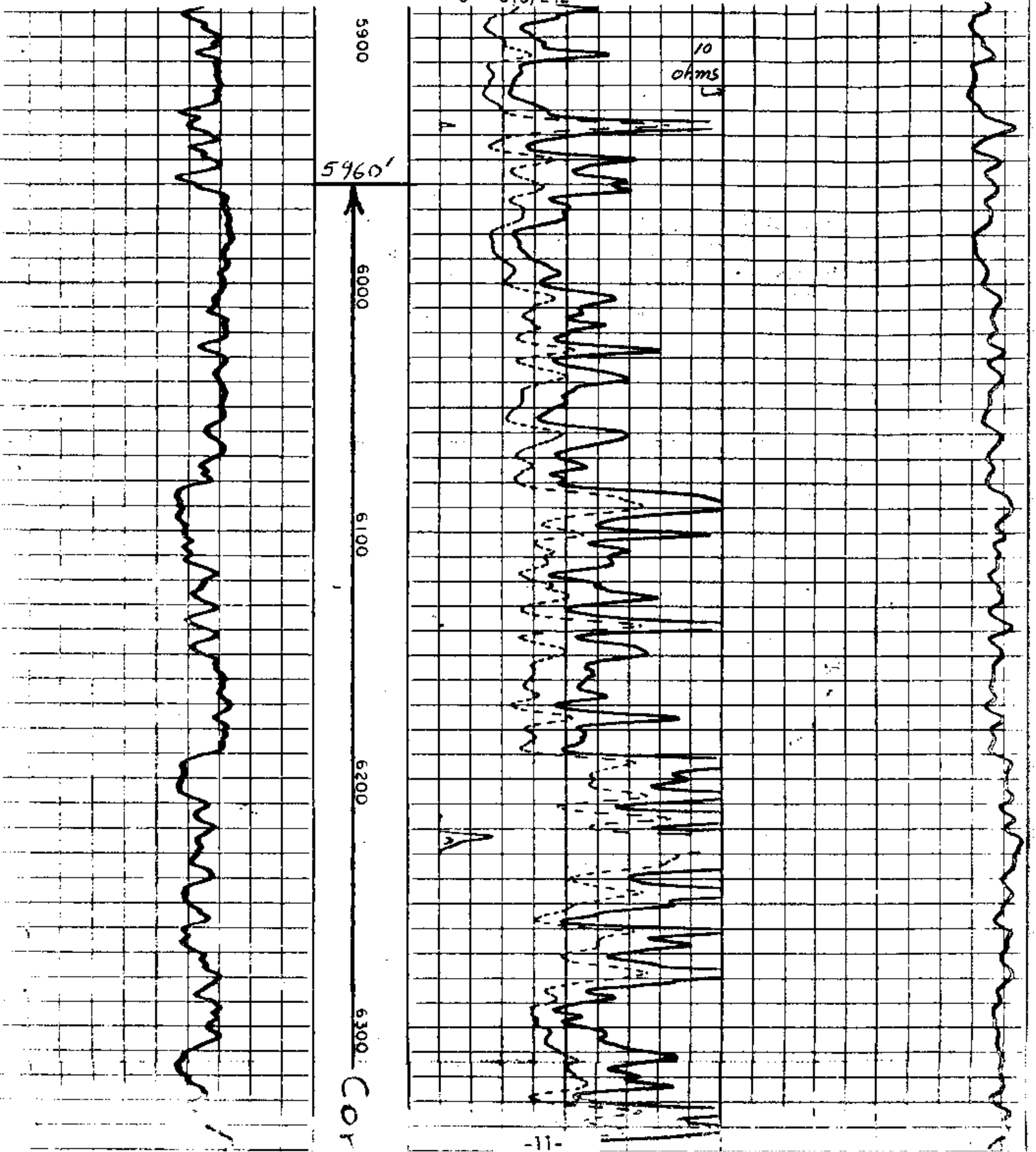
ELK HILLS

NAVY 352-26Z
26 - 30S/22E



ELK HILLS

NAVY 333-5G
5 - 31S/24E



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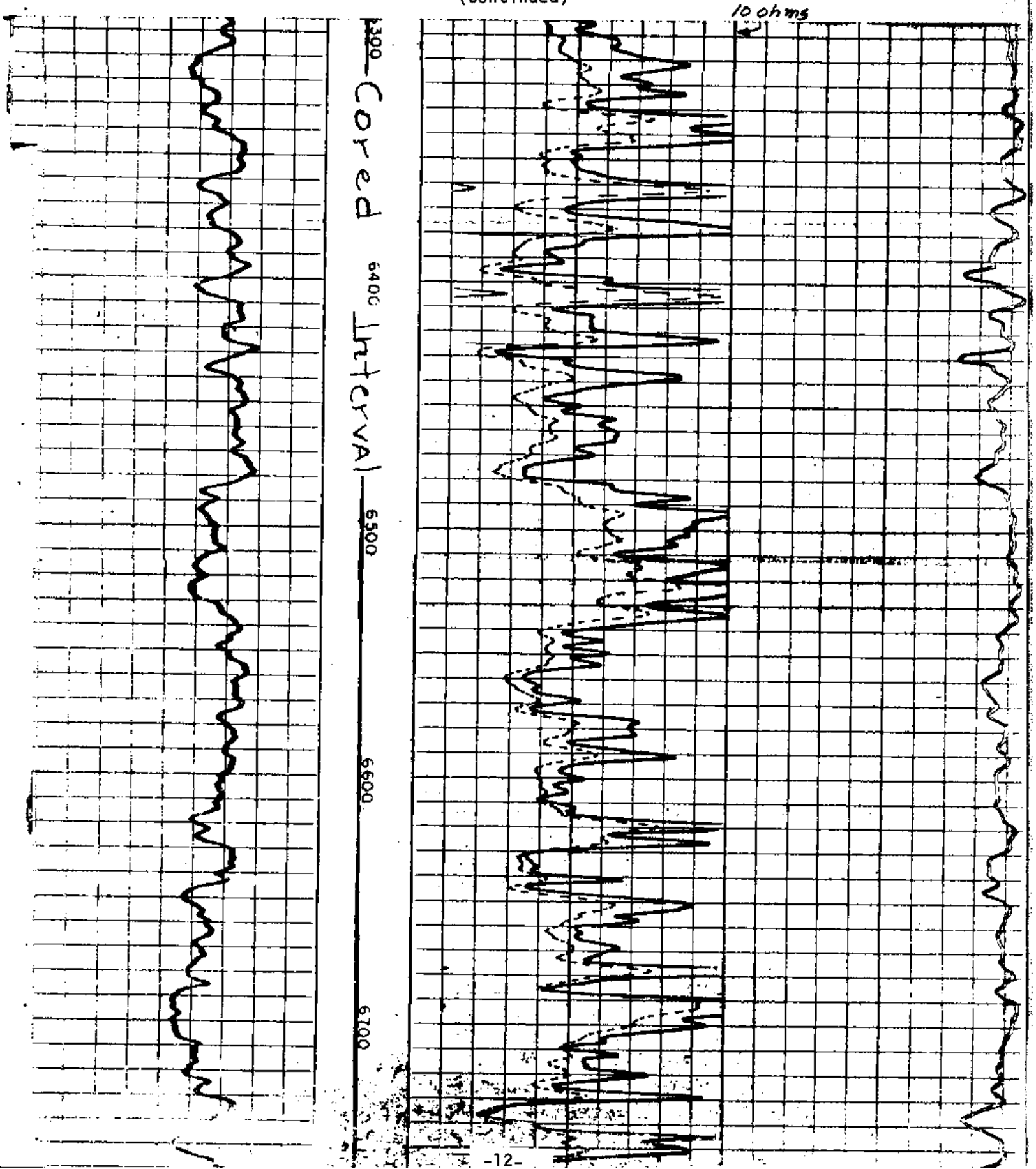
NAVY 333-5G
5 - 31S/24E
(Continued)



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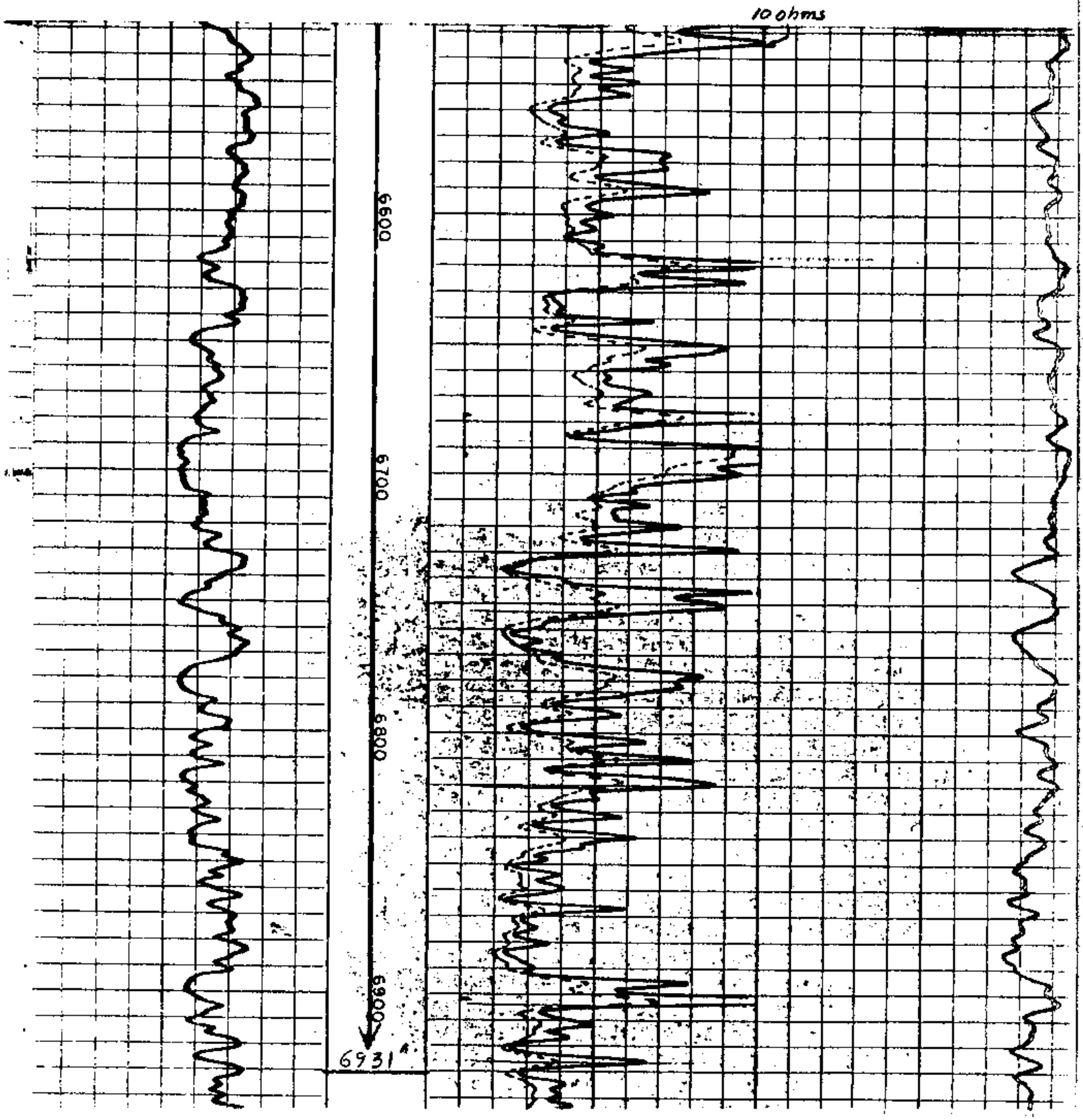
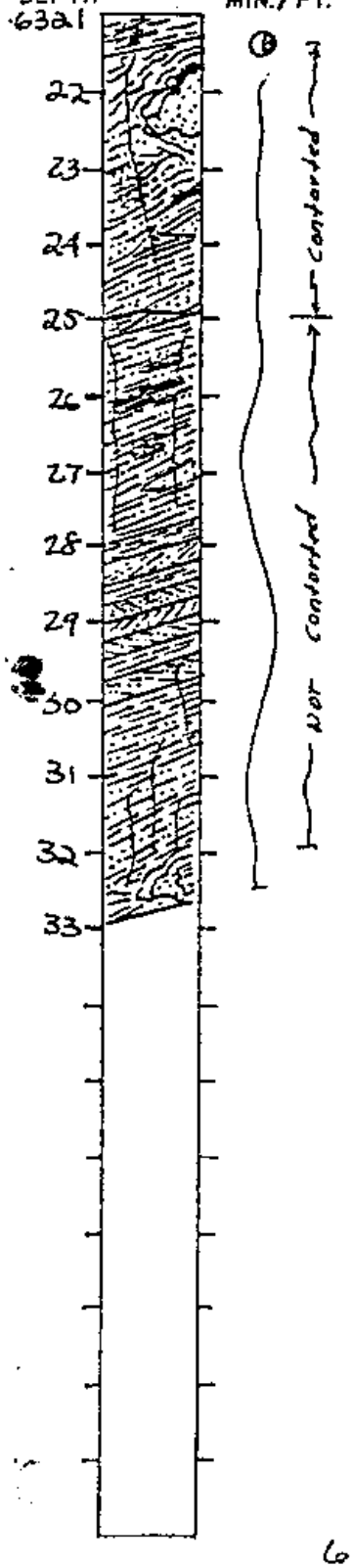
5 - 31S/24E
(Continued)



NAVAL PETROLEUM RESERVES
GRAPHIC CORE LOG

WELL NAME UO-NPR #1 333-5G FIELD ELK HILLS
LOC. _____ SEC. 5G TWP. 31S RGE. 24E COUNTY KERN STATE CA
CORE NO. 14 FROM 6301 TO 6333 REC. 32 FORMATION STEVENS "B" SHALE
DATE 6/5/76

DEPTH 6321 | CORING TIME MIN./FT. | LITHOLOGIC DESCRIPTION

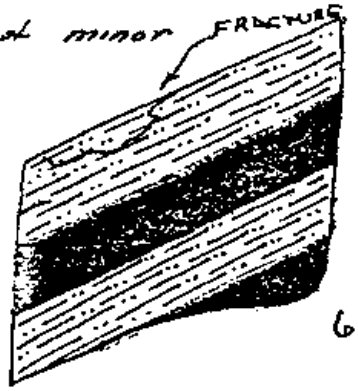


SLST/SH AS BEFORE

SLST & SA, buff to Lt Brn, V dense, hard, contorted w/ shale partings, thin oil sand lenses, show as before fractured

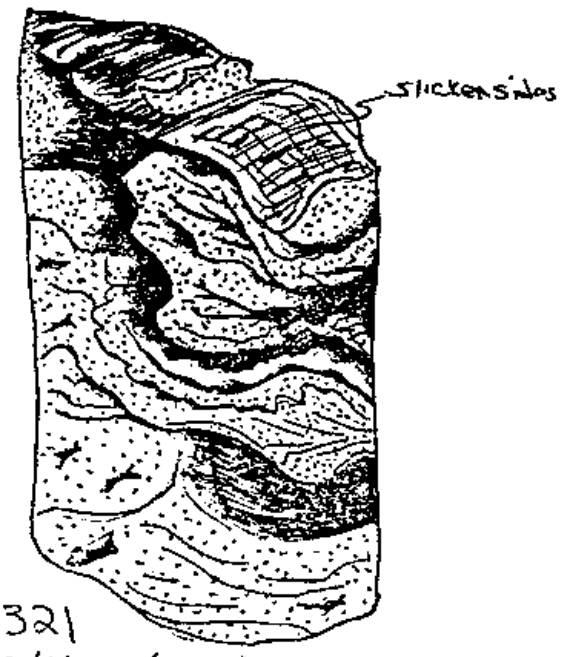
Shale- dk gry, black, blocky, with thin Mahogany slst partings,

highly Crossbedded slst & sh lenses, sd & minor



6326

fractured, bleeding oil & gas



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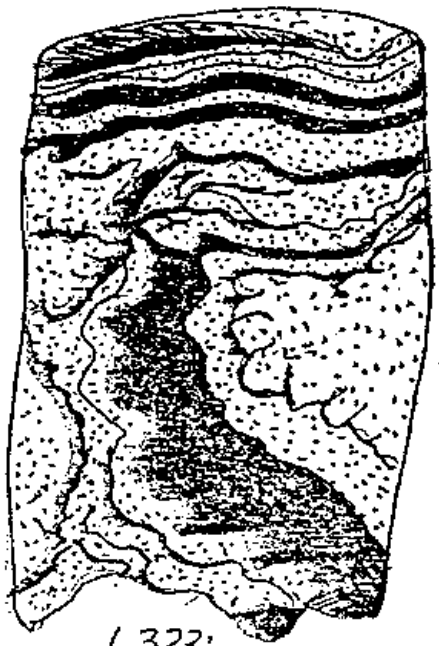


6323

DRILLER JONES/HOUK/MASON CUTTER HEAD, KIND & SIZE ACC 8"1/16 X 4"1/4 DCH
CORE DESCRIPTION BY H.D. FISHBURN

MDF 12/70

NAVAL PETROLEUM RESERVES
GRAPHIC CORE LOG

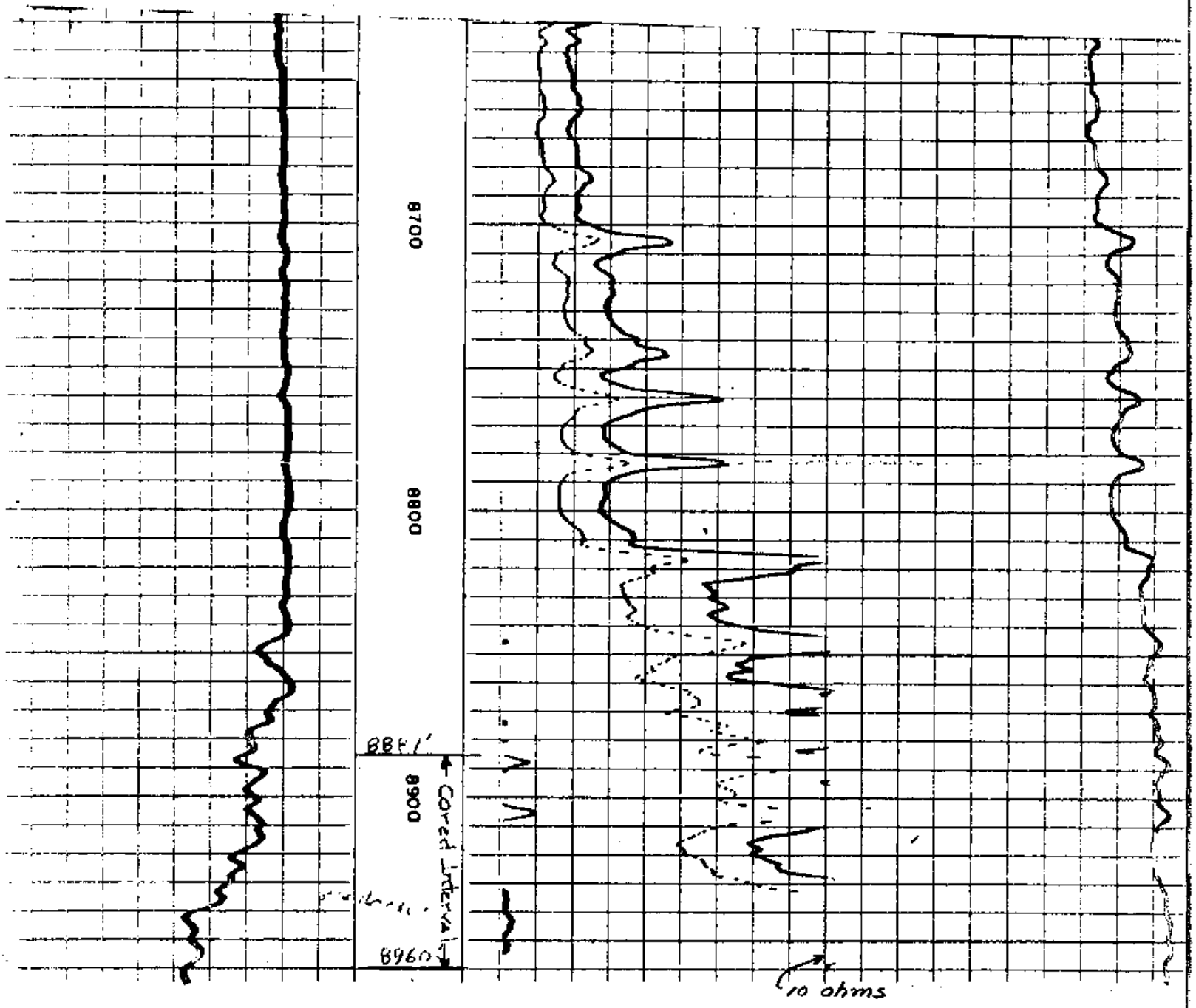
WELL NAME U.O. NPR #1 (WBEC) #333-5G FIELD ELK HILLS
LOC. _____ SEC. 5 TWP. 31S. RGE. 24E COUNTY KERN STATE CA
CORE NO. 40 FROM 6878 TO 6915 REC. 37½ FORMATION MBS
DATE 21 JUN 76 C 37 DF= 1130

DEPTH	CORING TIME MIN./FT.	LITHOLOGIC DESCRIPTION
6878	27	SH, DK GY BRN, SLTY, MIC, NON CALC, SLI CARB, SLI BLOCKY.
	5	SS, LT TN GY, V FN-MED, SLTY, ARGIL, A-SA, SLI FRI. POOR SORT, SLI CALC, MIC (BIOT), SLI CARB, THN BDD W/ SH LAMS, AA. SCAT P.P. BLDG O.G, POOR LT TN STN, BRI YEL WHT LAM FLUOR, L-M STRAW CUT W/ BRI WHT CUT FLUOR. X-BD W/ DIPS UP TO 30°.
80	3.5	
	10	BECOMES MED TO CRS & GRITTY DNWD & MASSIVE BD W/ LT AMBER CUT & MILKY WHT CUT FLUOR. P.P. BLDG ON FRACTS.
	8	
	13	SS, AA, BECOMING THN BD W/ MUCH CARB MAT & BIOT. LAM FLUOR, AA. W/ LAMS SH, DK GY BRN, AA.
	22	SH, DK CHOC BRN, SLI CALC, SLTY, SLI MIC, SLI BLOCKY W/ SCAT NAIELING FRACTS. 35° DIPS.
85	10	
	4	SS, MED GY BRN, FN-MED, A-RND, V. ARGIL, MIC (BIOT) POOR SORT, SLI DOLO, WELL CEM, TITE, LOW Φ, AND VIS STN, PATCHY YEL FLUOR W/ LT STRAW CUT & MILKY WHT CUT FLUOR. GRADES DNWARD TO CGLIC, GRITTY SS AA, W/ PATCHY YEL WHT FLUOR V LT STRAW CUT & WHT FLUOR CUT.
	15	
	6	
	4	SS, LT TN GY, VFN-FN GRADING DNWD TO CRS-U.CRS, GRITTY, A-RND, MASSIVE, MIC, ARGIL, MOD FRI. LT TN STN, FAIR ODOR, YEL WHT FLUOR, MILKY WHT CUT FLUOR, MED STRAW CUT.
90	3.2	FRACT W/ BLDG OIL ON SURF & PP BLDG OIL.
	18	SH, DK CHOC BRN-GY ANNA.
	15	INTBDD SH AA & SS LT TN GY, V FN, ANA. THN BD LT TN STN, FNT WHT CUT FLUOR, V. LT STRAW CUT.
	3	SS, LT CRM TN, V. FN-V. CRS, A-SA TO RND, GRITTY, ARGIL, NON CALC, FRI, MASSIVE, GOOD Φ, LT TN STN, GOOD ODOR, YEL WHT FLUOR, LT AMBER CUT, MILKY WHT CUT FLUOR.
	1.6	
95	1.7	
	1.9	
	1.9	
6898		

DRILLER Reese - Hycalog - Overton CUTTER HEAD, KIND & SIZE Hycalog 8 11/16" x 4 7/8" DCH.
Montgomery Rig #8 CORE DESCRIPTION BY G. S. McJannet

TULE ELK

NAVY 357-8R
8 - 30S/23E



NAVAL PETROLEUM RESERVES
GRAPHIC CORE LOG

WELL NAME NPR #1 - 357-BR FIELD ELK HILLS
LOC. _____ SEC. BR TWP. 30S RGE. 23E COUNTY KERN STATE CALIF.
CORE No. 1 FROM 8887 TO 8901 REC. 13' FORMATION STEVENS SAND
DATE 12/6/74

DEPTH | CORING TIME MIN /FT. | LITHOLOGIC DESCRIPTION

8887 — Shale - dk gry to black, brittle, massive, fish scales scattered, fractured, live oil on fracture planes; thin streaks Vf- m grn Sandstone, gry- silty, poorly sorted, good odor, gold fluor, RSYC, med brn amber cut., v pyritic, dense, hard, sli calc.

88

89

90 — 25° Sandstone - gry - v dense, hard, silty, Vf- c grn (scattered c) fair sorting in part. Zones of abundant biotite flakes, calc streaks, thin shale partings up to 2", contorted, fractured, live oil on bedding planes, poker-chip texture.

91

92

93 — Sand, as above, abundant small horizontal fractures, many open, live oil, good odor, sections bleeding oil and gas. ranges from Vf up to C grains - overall sorting fair. thin blk shale laminar, generally contorted. Beds & zones of Sandstone show good cross-stratification. contorted Sds & Sh

94

95

3" Sand lenses w/ bleeding oil zones.
v shaly @ 96½
bleeding reddish-brown oil

97

98

fractured, cross-bedded.

99 — 20°±

bleeding oil from Sand lenses - ? permeability.

8900 — 1.0 No Recovery

01

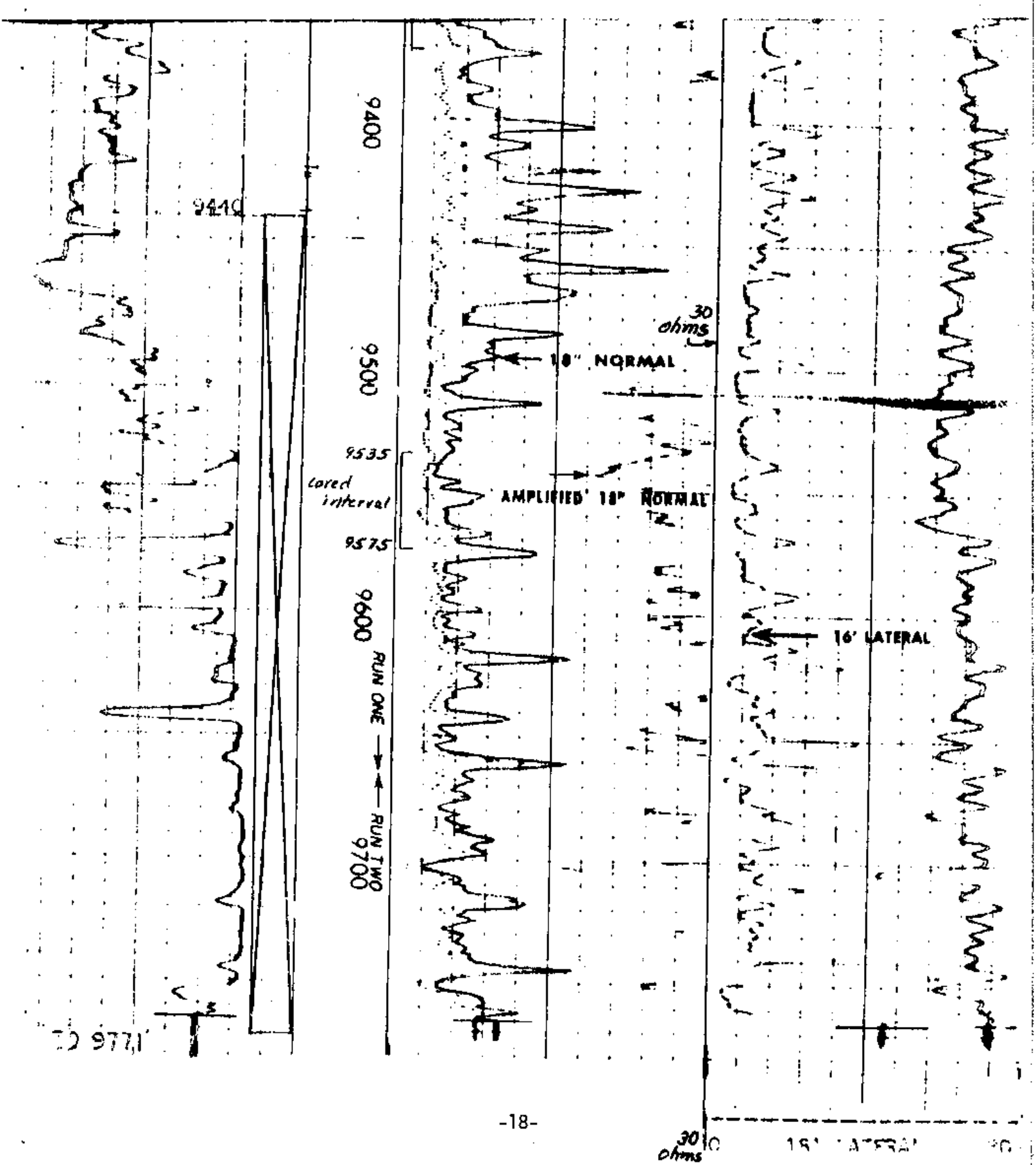
8895'±

FRACTURES

DRILLER _____ CUTTER HEAD, KIND & SIZE CHRISTENSEN 8 11/16 x 5½"
CORE DESCRIPTION BY M.D. FISHBURN

NORTH COLES LEVEE

ARCO CL-A56-27
27 - 30S/25E



North Coles Levee - Arco CL-A56-27

LOG AND HISTORY
CL "A" #56-27
Section 27, T. 30 S., R. 25 E., MDB&M
Work done by Gary Drilling Company

July 13, 1972
Moved in Gary Drilling Company and started operations 8:00 p.m. 7-13-72. Installed blowout prevention equipment. Tested pipe rams with 1000 psi. Released packer. Pulled and laid down 2-7/8" tubing. Ran 4-5/8" bit, stopped at 9333', spotted gel pill at 9333' and pulled to 9017'. Mixed and changed over to 65#/c.f. water base mud. Cleaned out fill 9333-9367' and drilled out shoe and drilled 4-5/8" hole to 9375'.

July 16, 1972
Ran hydraulic liner puller, pulled liner free with 195,000# pull recovering all of 5-1/2" liner. With 6-1/8" bit, reamed 9367-9375' and drilled 6-1/8" hole 9375-9535'. Ran oriented diamond core and cored 6-1/8" 9535-9575' - Core #1
9535-9575' Cut 40' Recovered 35-1/2'
Sandstone: Grey, no visible formation oil stain, light brown stain on exterior and on fractures from oil in mud. Very poorly to poorly size sorted, fine to very coarse grained, predominantly medium to coarse grained with common "floating" very coarse grains, common to abundant white silt size interstitial material. Angular to well rounded, predominantly sub-angular to sub-rounded with "floating" well rounded grains. High in feldspar and quartz ±5%. Coarse grained size crumpled Biotite flakes, trace to 1% dark rock fragments. No cut, stain, odor or fluorscence on fresh breaks. Strong fluorescence on exterior surfaces and fractures.
Siltstone: Dark brown to black, finely sandy, micromiceous, scattered fish remains.

Drilled 6-1/8" hole 9575-9671'. Ran Induction Electric Log 9297-9671'. Drilled 6-1/8" hole 9671-9771' T.D. reached 7-21-72. Ran Induction Electric Log 9665-9771'.

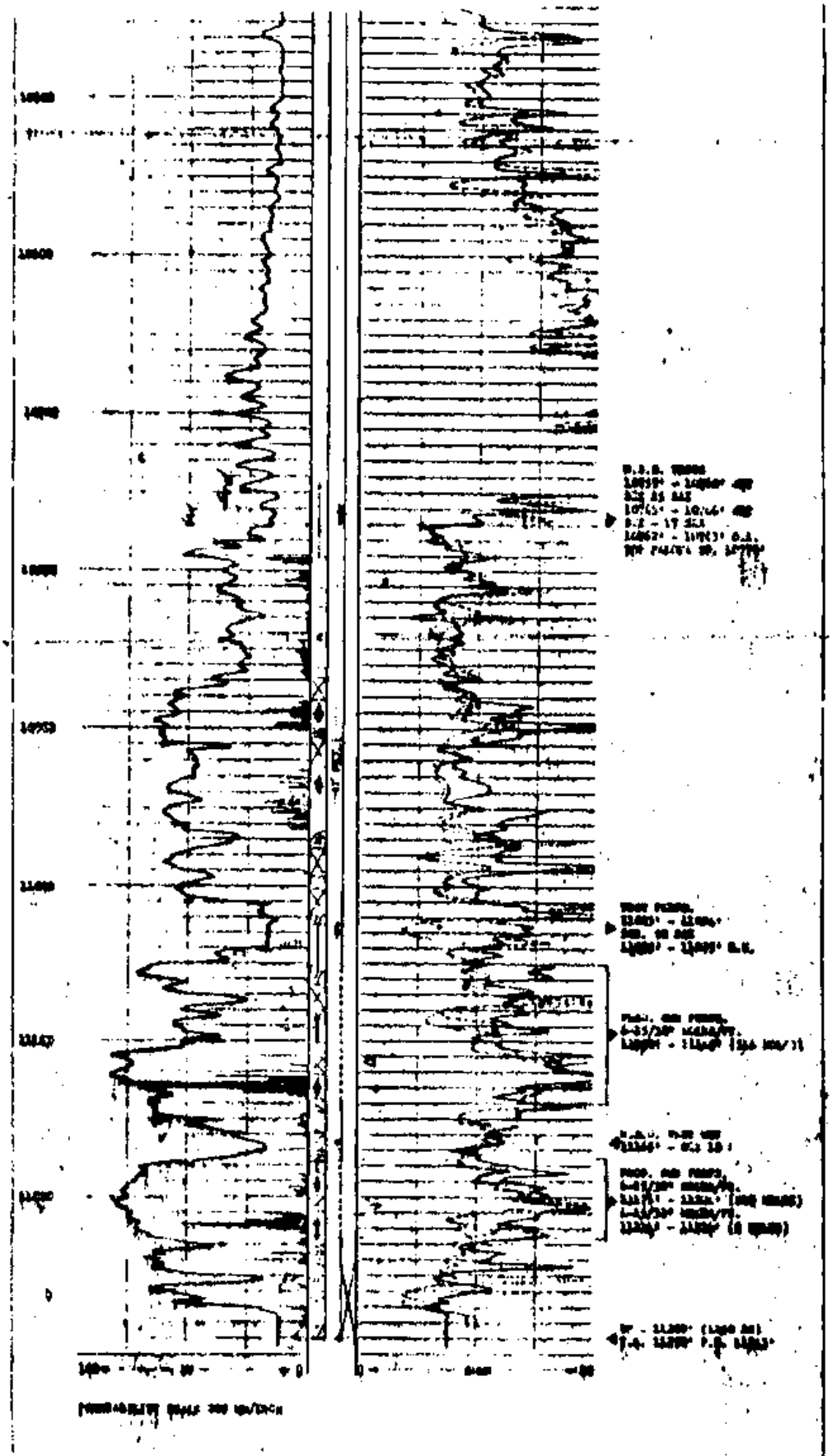
9371'	-	9535'	Sand
9535'	-	9575'	Core #1
9575'	-	9771'	Sand and shale

July 22, 1972
Plugged 9771-9440': With open end tubing tail at 9762', pumped in 90 sacks of Class "G" cement mixed with 0.2% HR7 (retarder) and 0.6% Halad #9. Cement in place 2:13 p.m. 7-22-72. Pulled to 9383' and backscuttled out 25 c.f. cement. With 6-1/8" bit, ran to 9437', no cement. Pulled to 9279' and backscuttled drill pipe clean. Stood cemented 7 hours. Cleaned out soft cement 9437-9440'. Changed over to salt water. Laid down 3-1/2" drill pipe, installed xmas tree and released rig 11:00 p.m. 7-23-72.

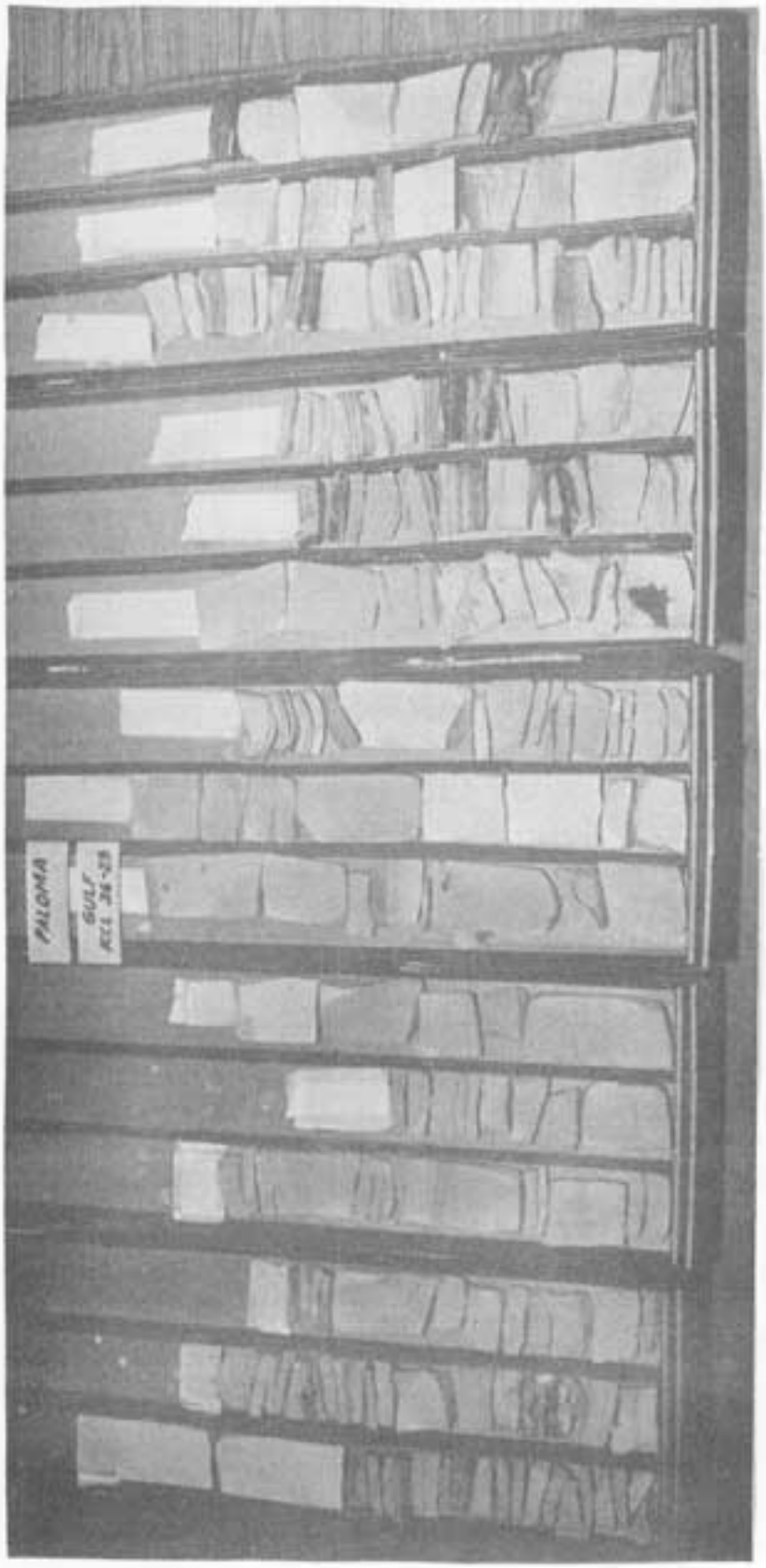
July 25, 1972
Moved in production hoist 10:30 a.m. 7-25-72. Hung 2-7/8" tubing at 9272' with packer at 9207'. Displaced salt water with crude oil. Set and tested packer. Released hoist 6:30 a.m. 7-26-72. Placed on production 3:00 p.m. 7-26-72 gas lifting. Produced from July 26, 1972 to August 31, 1972 average of 459 BWPD, 100% oil. Well shut in September 1, 1972.

PALOMA

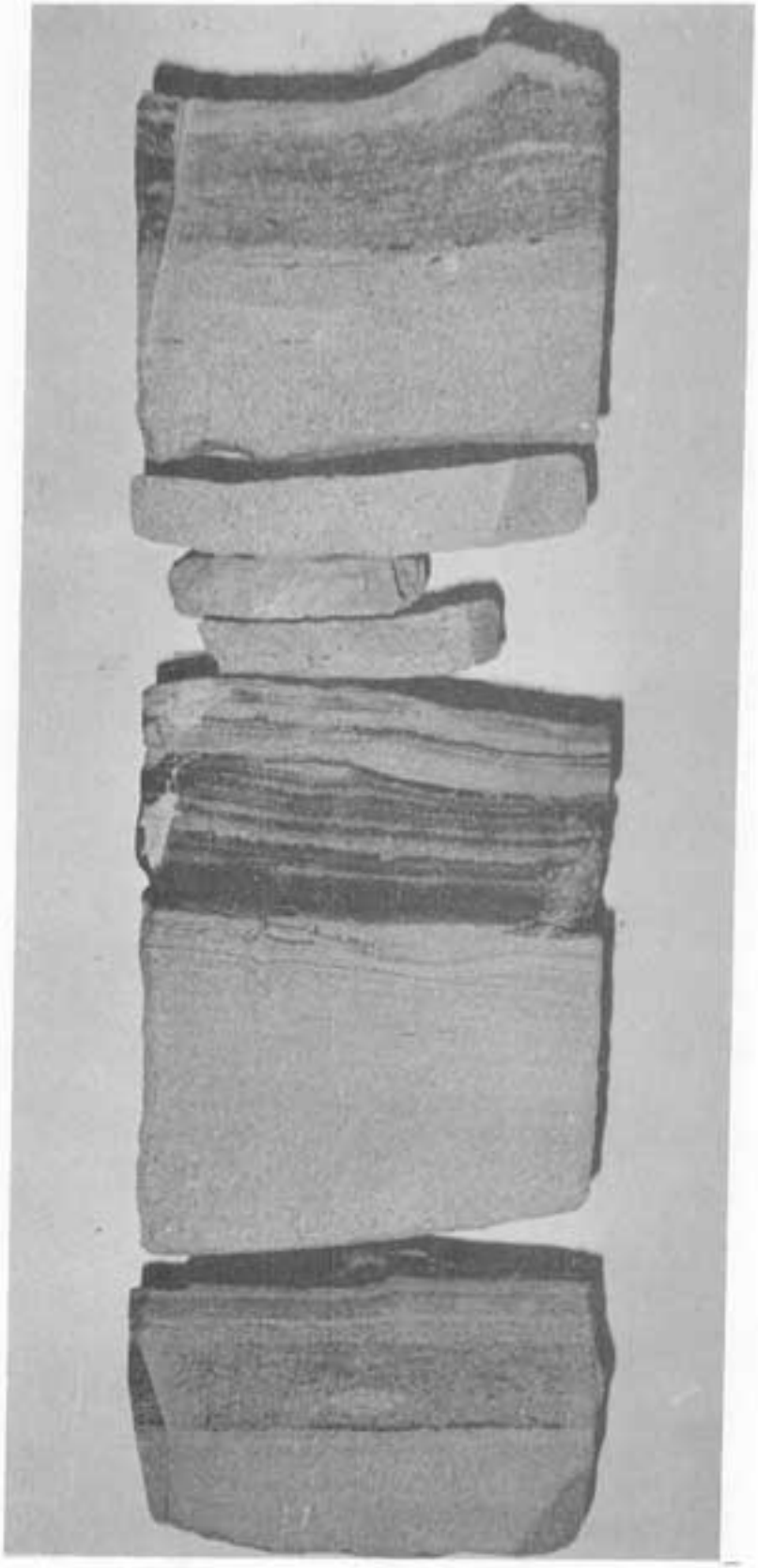
GULF PALOMA UNIT 36-28
28 - 31S/26E



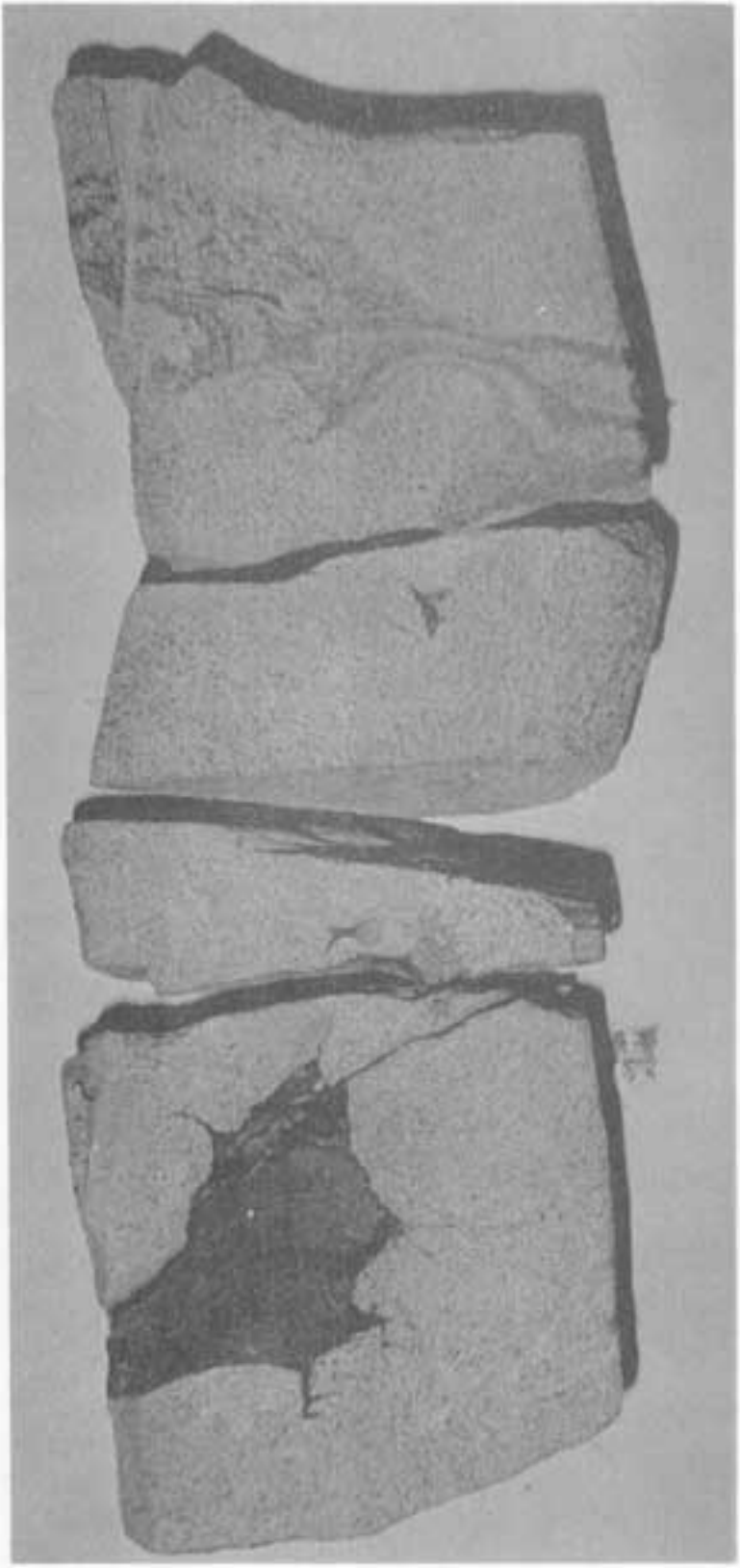
PALOMA UNIT 36 - 28



PALOMA GULF PALOMA UNIT 36-28 28 - 31S/26E



PALOMA GULF PALOMA UNIT 36-28 28 - 31S/26E



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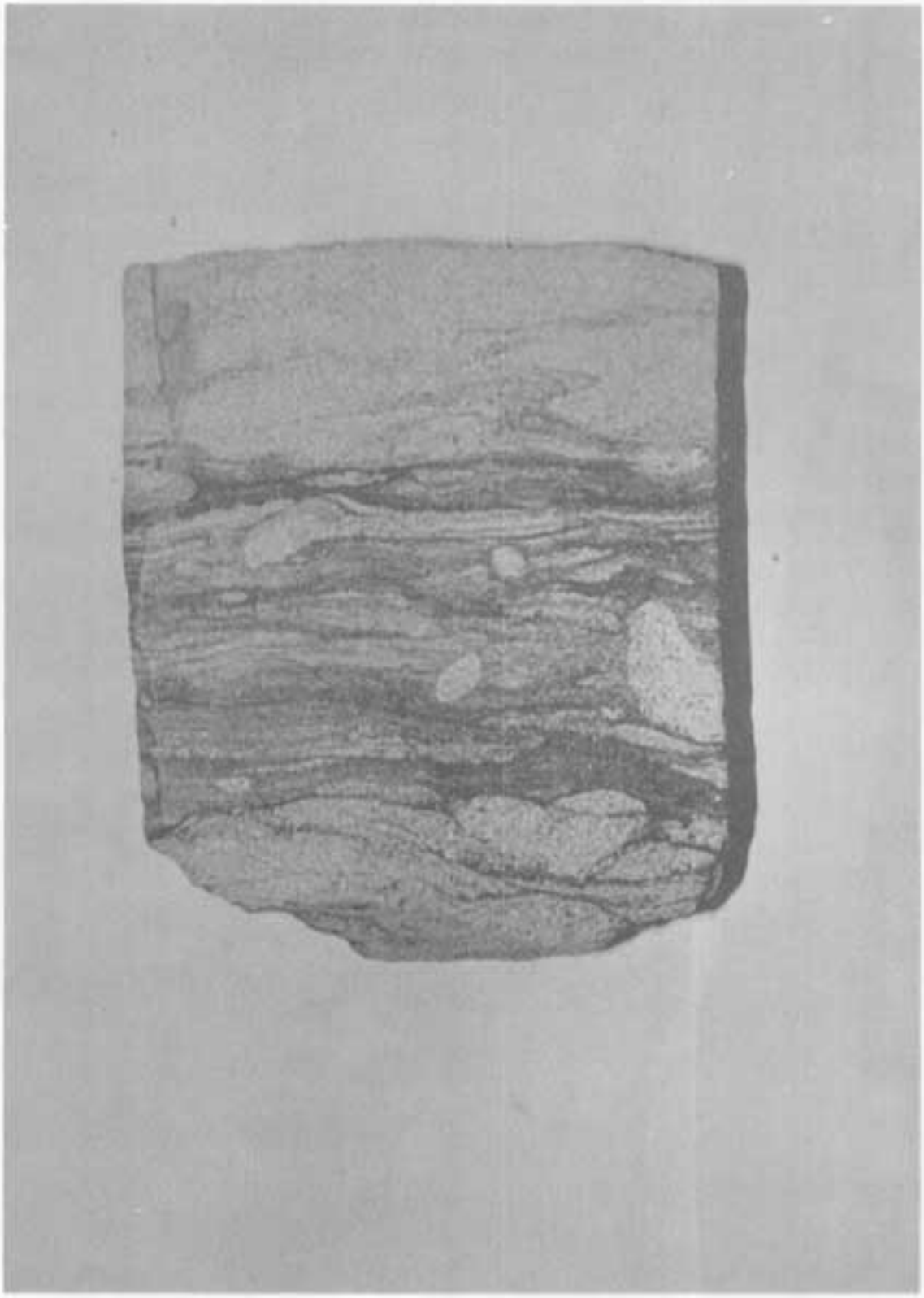
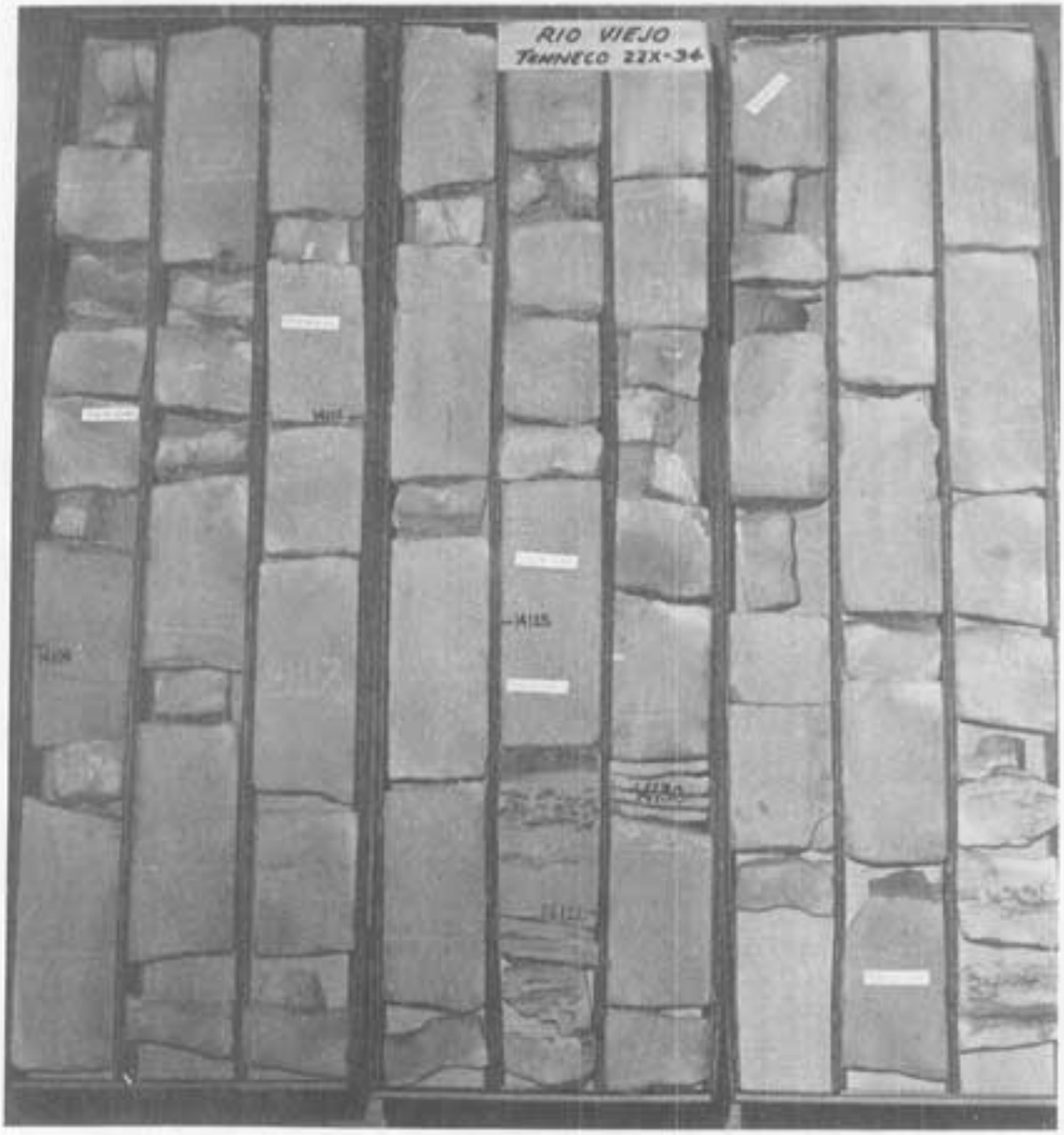


PALOMA GULF PALOMA UNIT 36-28 28 - 31S/26E



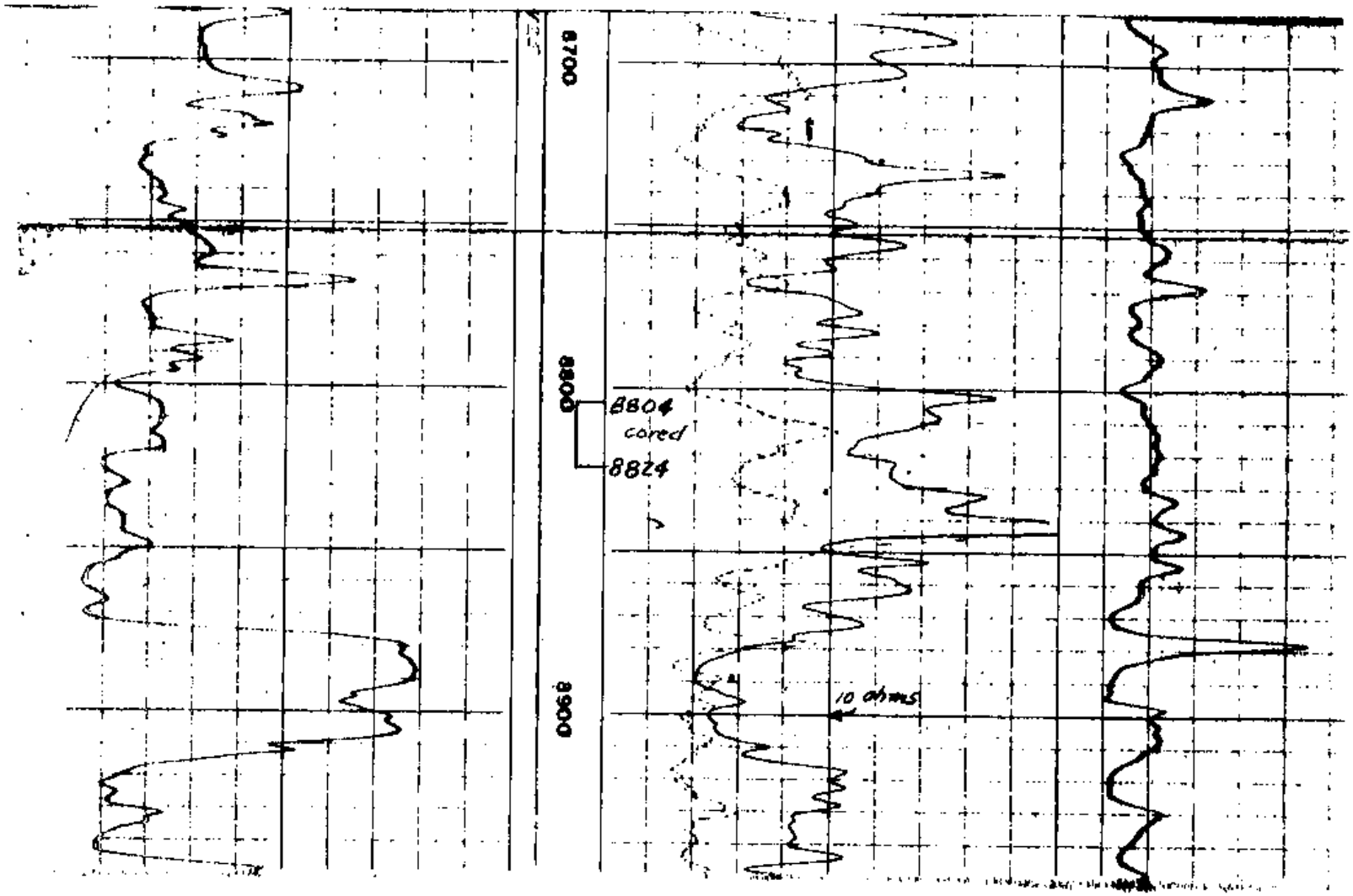
RIO VIEJO TENNECO 22X-34 34 - 12N/21W

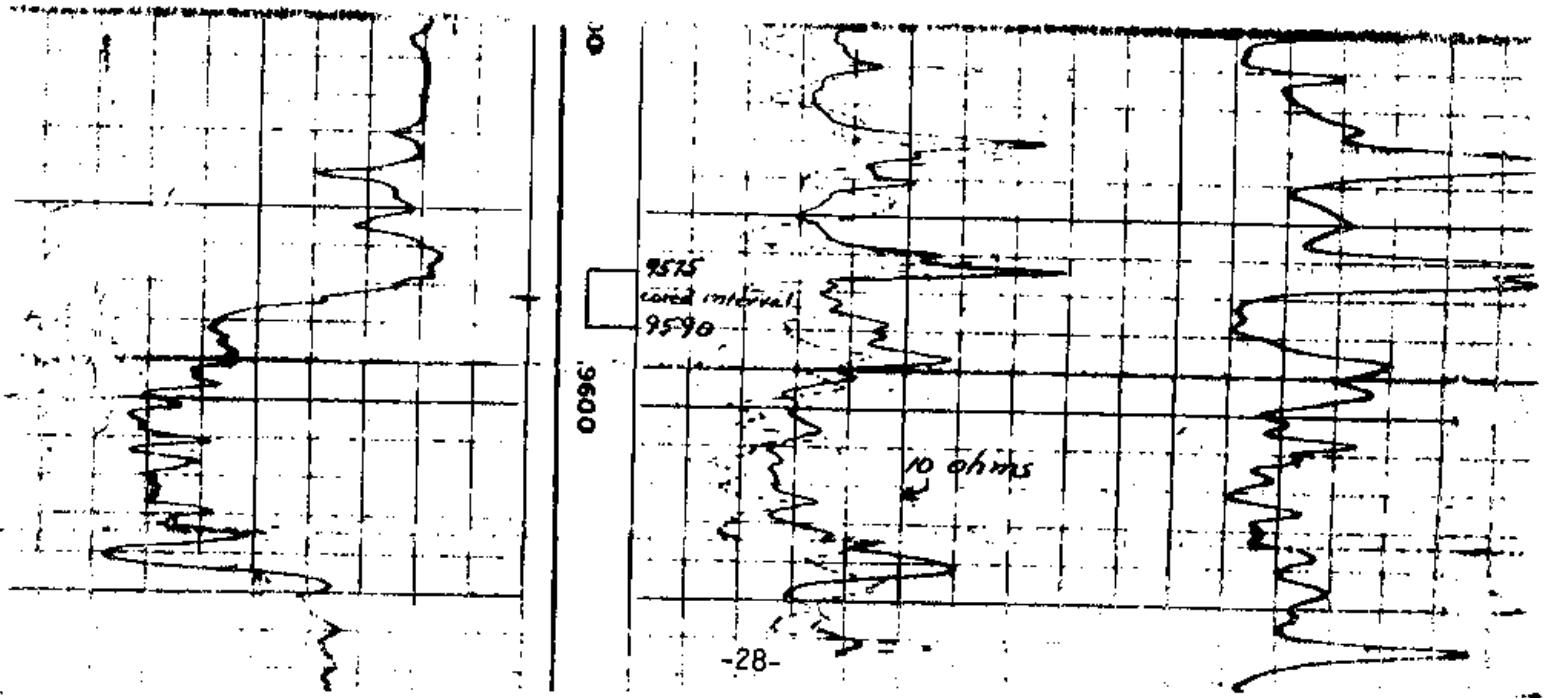
RIO VIEJO TENNECO 22X-34 34 - 12N/21W

RIO VIEJO TENNECO 22X-34 34 - 12N/21W

STRAND (POSUNCULA)

SHELL KCL 131-12
12 - 30S/25E

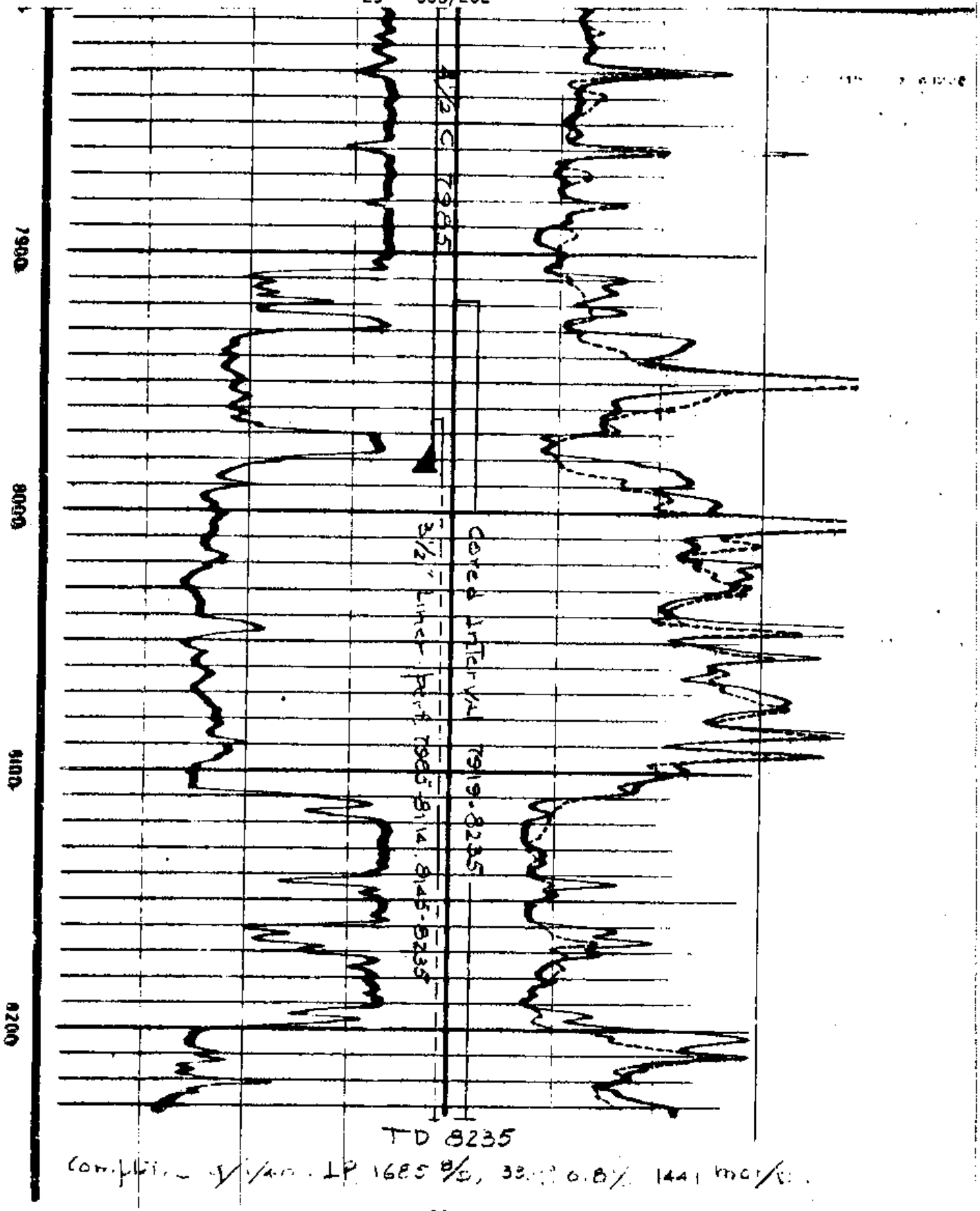




TEN SECTION

SHELL KCL 52-29

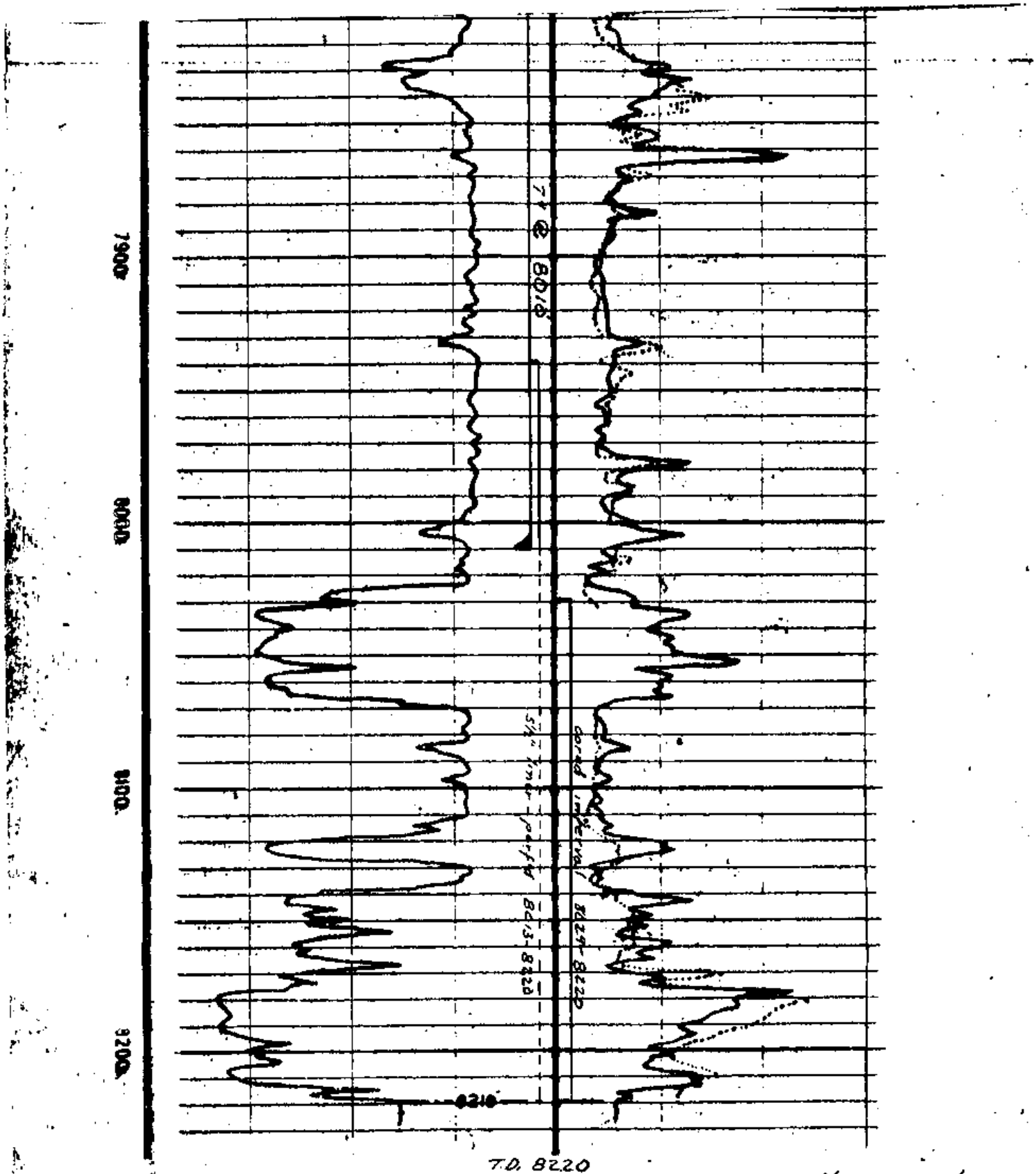
29 - 30S/26E



Completion - 1/1/60 - IP 1685 B/D, 38.0° API, 0.8% 144 MCF/D

TEN SECTION

SHELL KCL 87-29
29 - 30S/26E

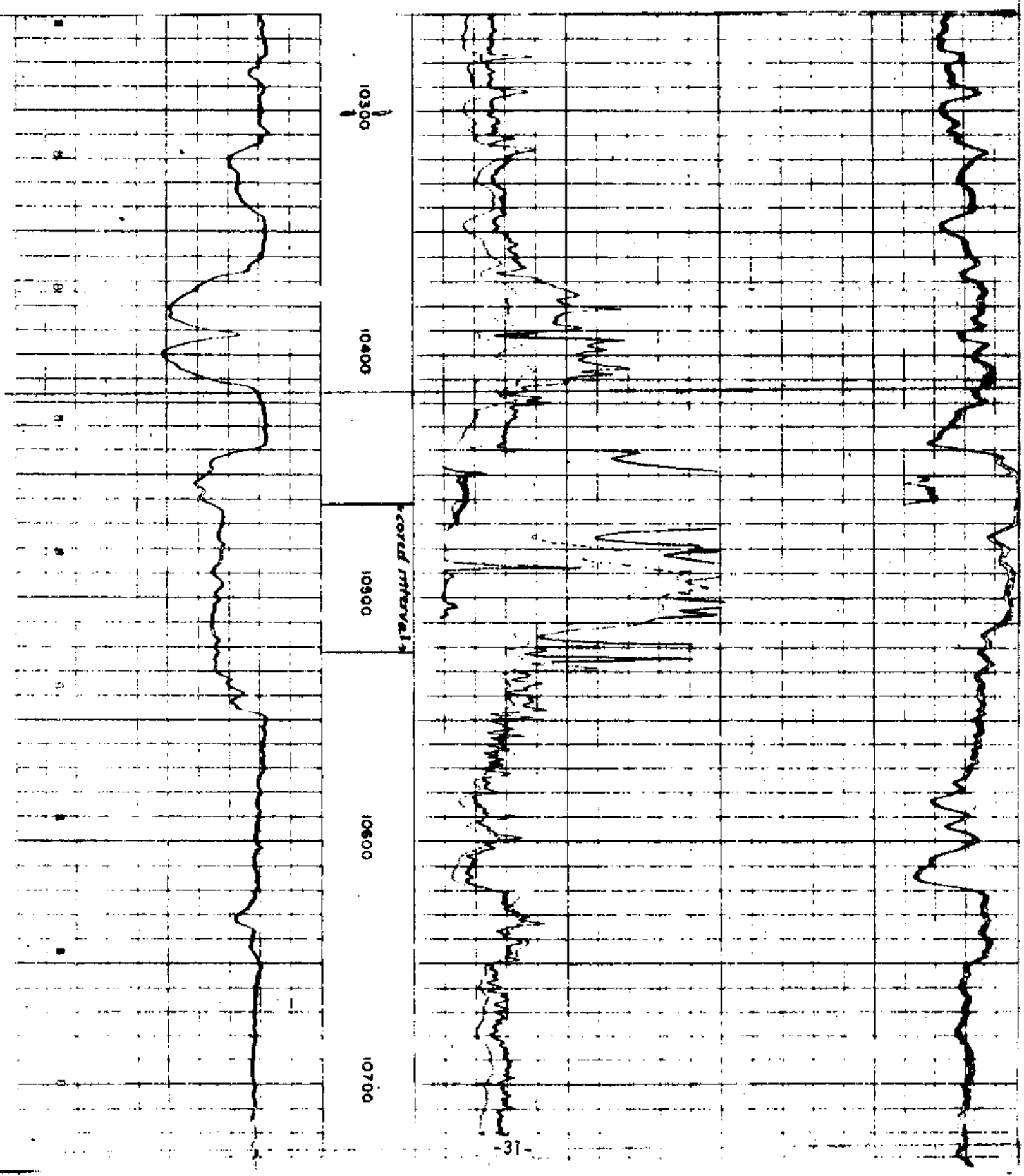


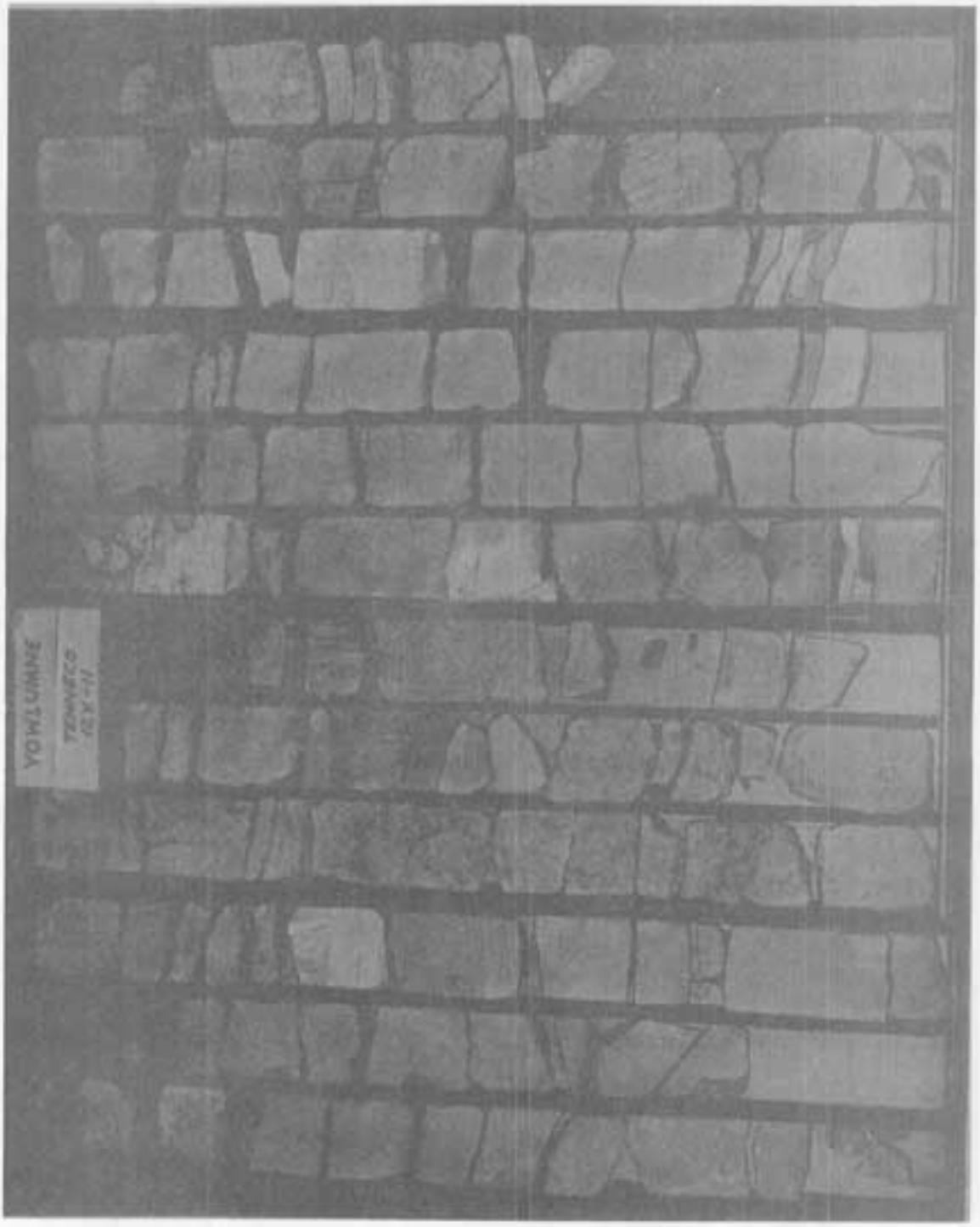
T.D. 8220

Completed: 6/19/40 I.P. 1478 B/D, 32.2°, 6.2%, 1342 Mcf/D

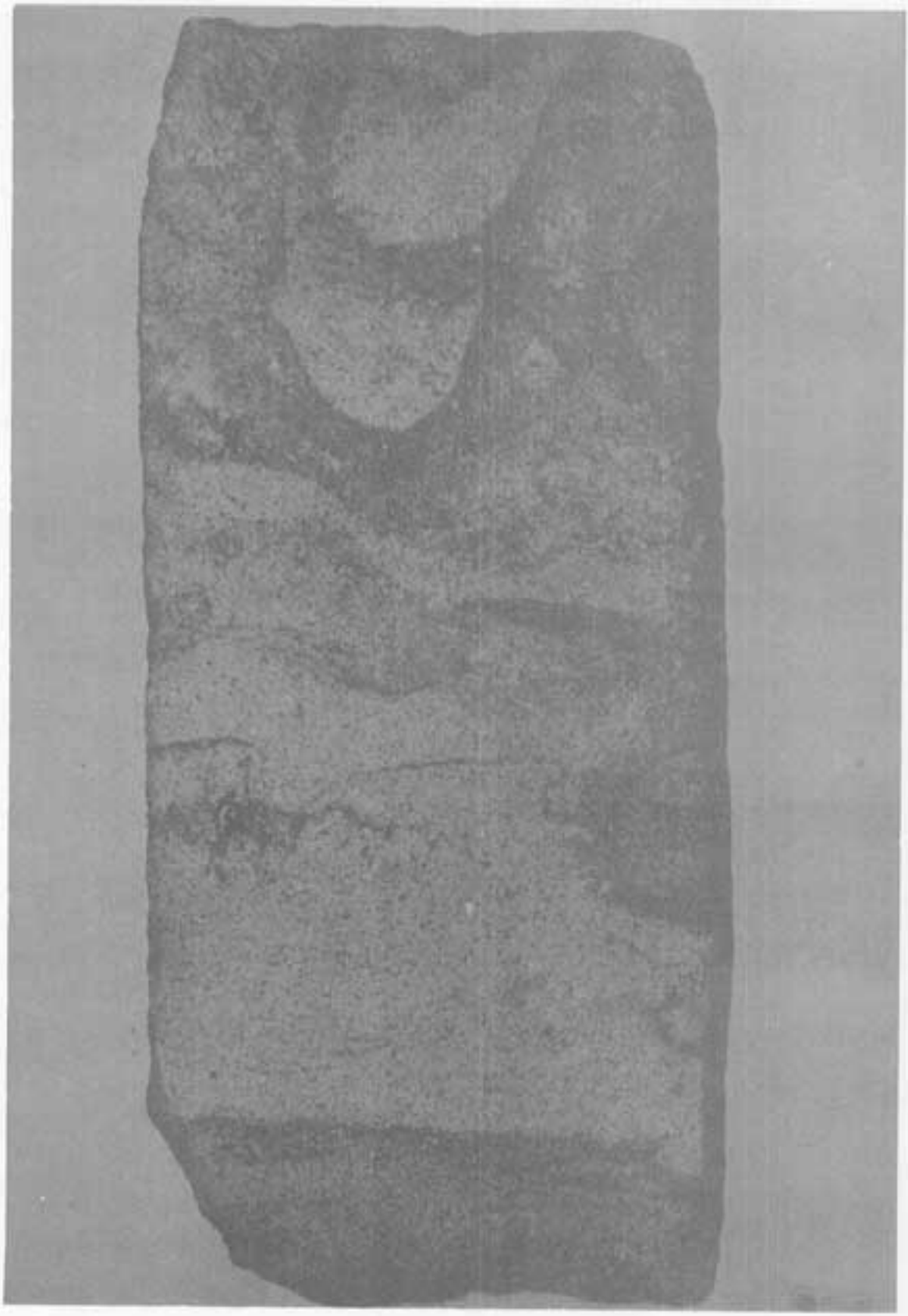
YOWLUMNE

TENNECO 12X-11
11 - 11N/22W



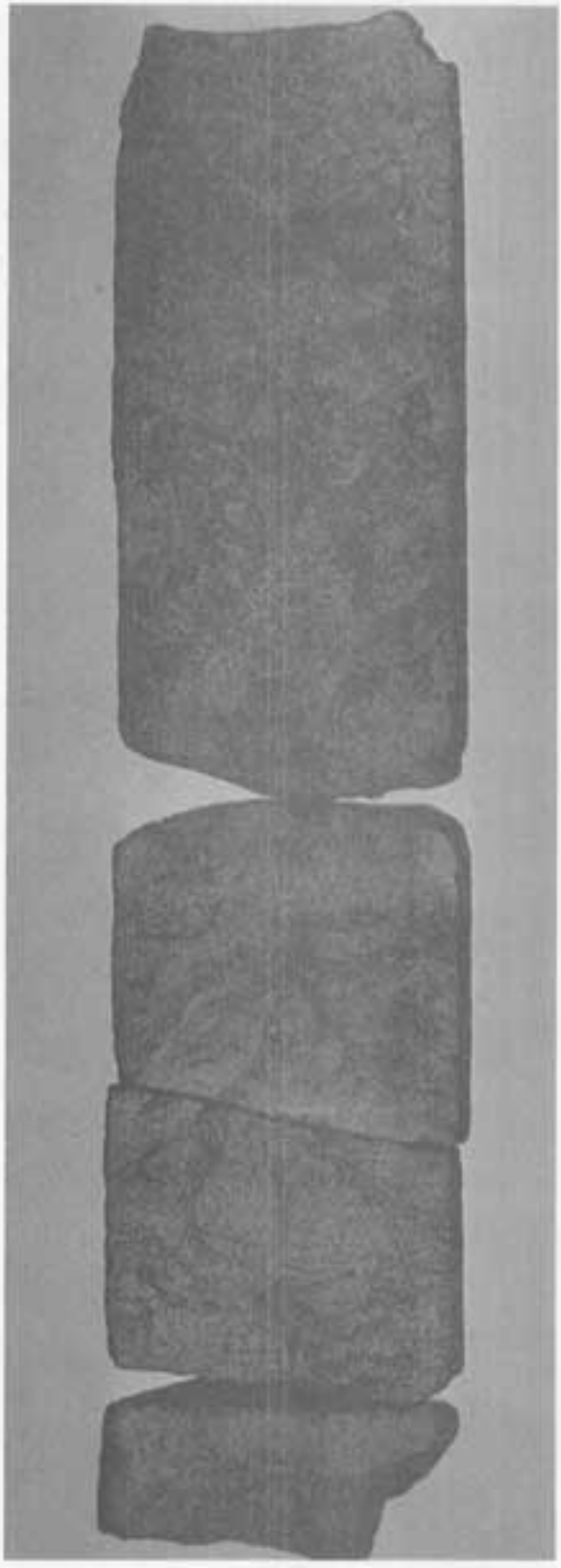


YOWLUMNE TENNECO 12X-11 11 - 11N/22W



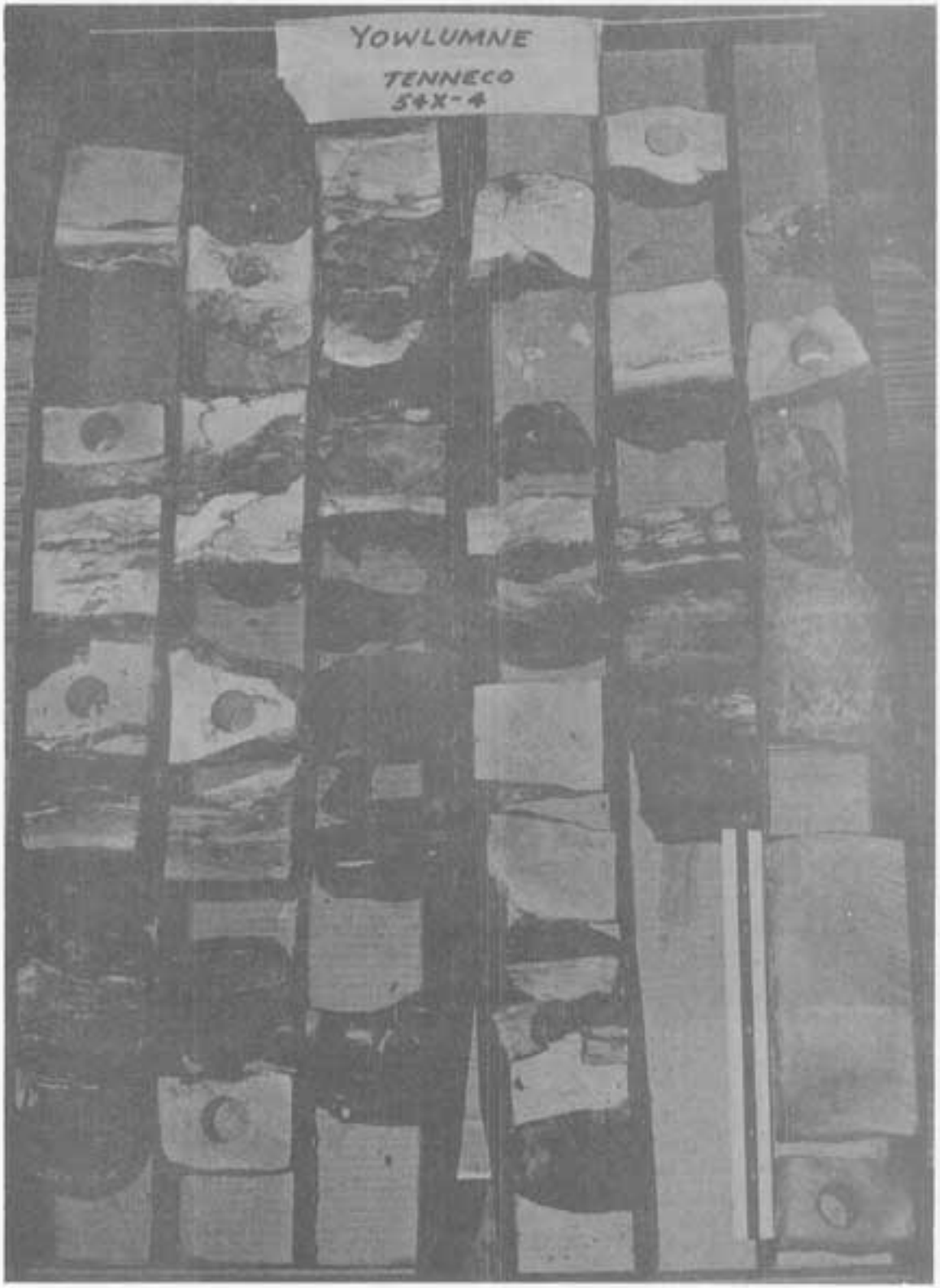
YOWLUMNE TENNECO 12X-11 11 - 11N/22W

YOWLUMNE TENNECO 12X-11 11 - 11N/22W

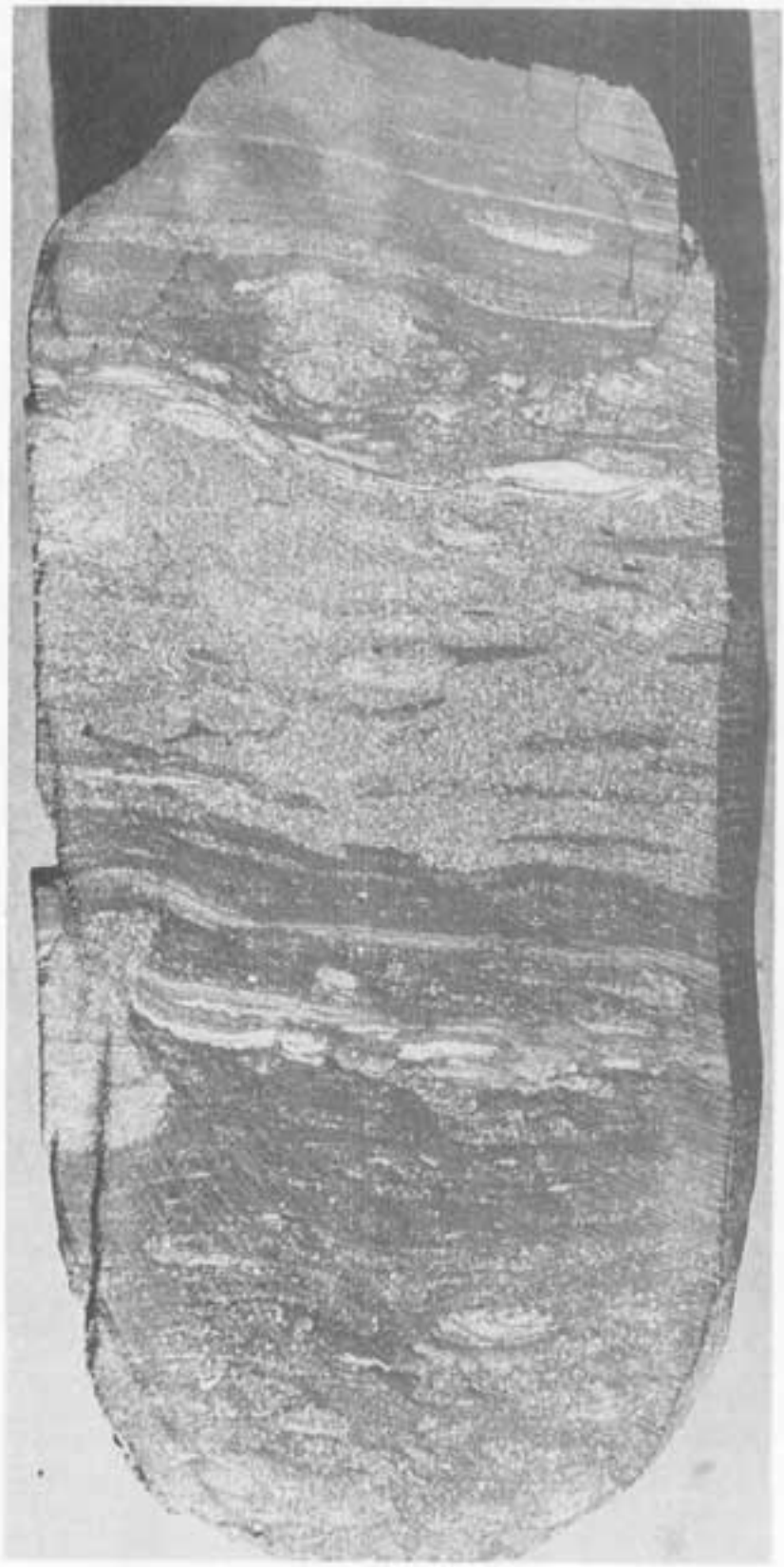


YOWLUMNE TENNECO 12X-11 11 - 11N/22W

YOWLUMNE TENNECO 12X-11 11 - 11N/22W



YOWLUMNE TENNECO 54X-4 4 - 11N/22W



YOWLUMNE TENNECO 54X-4 4 - 11N/22W

YOWLUMNE TENNECO 54X-4 4 - 11N/22W

ADDITIONAL WELLS IN REPOSITORY HAVING STEVENS SAND MATERIAL

T. R. Sec.	Company	Well Name & No.	Field or Wildcat (W)
29S 26E 12	Continental	KCL B-2	Rosedale Ranch
29S 26E 22	Humble	KCL C-3	Rosedale
29S 26E 22	Humble	Stevens 4	Rosedale
29S 26E 31	Signal	Bravo 47X-31	W (Strand)
29S 26E 33	Continental	Easton 2	McClung
29S 26E 35	Superior	Houghton 36-35	Bellevue
29S 26E 36	Ohio	KCL G-1	W
29S 27E 5	Shell	Ansolabehere 1	W
30S 25E 4	Shell	KCL A-37-4	W
30S 25E 14	Shell	KCL A-21	Canal
30S 25E 29	Richfield	CLA-67	North Coles Levee
30S 25E 32	Richfield	Western A-52	North Coles Levee
30S 25E 33	Richfield	Western A-12	North Coles Levee
30S 26E 3	Superior	KCL 9	W
30S 26E 3	Union	Kern Co. 31-3	W
30S 26E 10	Continental	KCL D-1	Bellevue
30S 26E 19	Ohio	KCL E-1	W (Ten Section)
30S 26E 34	Standard	KCL 9-1	W (Bellevue)
30S 28E 6	Richfield	Union Ave. 1	W (Union Ave.)
31S 25E 10	Ohio	KCL F-1	South Coles Levee
31S 26E 3	Richfield	Old River KCL-1	W
31S 26E 28	Gulf	Paloma Unit 87-28	Paloma
31S 26E 29	Gulf	KCL NW-63-29	Paloma
31S 26E 30	Ohio	KCL B-41	Paloma
31S 26E 32	Gulf	KCL 65-32	Paloma
31S 26E 32	Ohio	KCL A-12	Paloma
31S 26E 33	Texaco	Paloma Unit 32-33	Paloma
31S 26E 34	Gulf	KCL 65-34	Paloma
31S 26E 34	Gulf	Paloma Unit 12-34	Paloma
31S 26E 35	Superior	Anderson 18-34	Paloma
32S 26E 1	Gulf	KCL 38-1	Paloma
32S 26E 2	Gulf	Paloma Unit 16-2	Paloma
32S 26E 2	Gulf	Paloma Unit 63-2	Paloma
32S 26E 3	Gulf	Paloma Unit 58-3	Paloma
32S 26E 4	Ohio	KCL (A-9) 83-4	Paloma
32S 26E 4	Gulf	Paloma Unit 34-4	Paloma
32S 26E 10	Superior	KCL 74	W
32S 26E 10	Superior	KCL 85	W
32S 26E 12	Gulf	KCL B-12-12	Paloma
32S 26E 12	Gulf	KCL B-45-12	Paloma
32S 26E 12	Gulf	Paloma Unit 63-12	Paloma
32S 27E 7	Hogan	Symons Two 27-7	W (Paloma)
32S 27E 7	Gulf	Symons 55-7	Paloma