U.S. DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

LITHOLOGIC LOG: SHELL-SLOAN #34-1, OKEECHOBEE COUNTY, FLORIDA

by

Barbara H. Lidz

Open-File Report 81- 453

This report is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards and stratigraphic nomenclature.

1981

LITHOLOGIC LOG: SHELL-SLOAN #34-1,

OKEECHOBEE COUNTY, FLORIDA

Barbara H. Lidz

Cuttings from non-productive Shell-Sloan #34-1 (Sec. 34, Twp. 35S, Rge. 36E, 27°28.3'N, 80°42.0'W) drilled in 1974 off the southwest flank of the subsurface anticlinal Peninsular Arch, Okeechobee County, Florida, are described in this report by use of standard colors and symbols for lithology and fossils (Swanson, in press). The well was drilled to Lower Cretaceous basement at driller's total depth (TD) of 11,280 feet. Sampling intervals ranged downhole from 40 to 10 feet. Weak oil shows, determined by ultraviolet fluorescence of carbon tetrachloride cuts, were detected throughout the Cretaceous sections, and most strong cuts were noted in samples from the Lower Cretaceous Fredericksburg and James Formations. The excellent porosity and permeability of limestone in the Fredericksburg make this formation a potential oil-producing unit elsewhere on the Florida Shelf.

Formation tops and dominant rock types penetrated are as follows:

(1) Undifferentiated sand, gravel, and limestone of Oligocene to Pleistocene age (210 ft).

(2) Boulder Zone (890 ft), Eocene, virtually no recovery from 2280-ft-thick interval. Time equivalent to Ocala, Avon Park, Lake City and Oldsmar Formations of Florida.

(3) Cedar Keys (3170 ft), Paleocene, dolomite, as much as 60 percent anhydrite exists between 3630 and 4170 ft.

(4) Upper Cretaceous (4440 ft), predominantly chalky lime packstone to 6160 ft, then lime mud-wackestone to 60-ft-thick bed of waxy gray-green shale marking top of Lower Cretaceous. Limestone interbedded with dolomite.

(5) Lower Cretaceous (6880 ft), sucrosic dolomite and lime mud-wackestone, some anhydrite.

(6) Fredericksburg (7805 ft), sucrosic dolomite and limestone interbedded with shale and anhydrite.

(7) Mooringsport (8270 ft), 75-ft-thick unit of sucrosic dolomite, shale, limestone, and as much as 60 percent anhydrite.

(8) Unnamed 1195-ft-thick section (8345 ft), principally of sucrosic dolomite, contains limestone, shale, and some anhydrite. Time equivalent to Sunniland (oil-producing unit), Punta Gorda, Rodessa, and Pearsall Formations of Florida.

(9) James (9540 ft), proportions of dolomite, anhydrite, shale, and limestone are nearly uniform but absolute percentages are variable.

{Pine Island anhydrite-shale time equivalent between James and Sligo not noted.}

(10) Sligo (10,260 ft), similar to James Formation but contains a higher percentage of shale.

(11) Hosston (10,840 ft), predominantly quartz sandstone interbedded with shale, limestone, dolomite, and very little anhydrite.

(12) Basement (11,200 ft), as much as 70 percent sandstone; also contains green chlorite and gneiss, interbedded shale, and markedly less carbonate rock than is in the 390-10,840-ft section of the well.

The color in the color column of the log given below has not reproduced accurately. For information on the color of the cuttings, write to: Barbara Lidz, U.S. Geological Survey, Fisher Island Station, Miami Beach, Florida 33139.

Reference

Swanson, R.G., Sample Examination Manual: Amer. Assoc. Petroleum Geologists, Methods and Exploration Series (in press).

Acknowledgment

Well cuttings for this report were obtained through the courtesy of Shell Oil Company, New Orleans, Louisiana.

KEY TO CARBONATE ROCK TYPES AND SYMBOLS

Faint oil cut

Strong oil cut

Benthic Foraminifera

Small benthic Foraminifera

Miliolid Foraminifera

Echinoderms

Algal stromatolites

Bryozoa

Mica

Molluscs

Pelecypods

Porosity

Pinpt Pinpoint or leached porosity

Poor vuggy porosity

C Author's notation for sucrosic dolomite

D Author's notation for oolitic lime grainstone

PRIMARY DEPOSITIONAL TEXTURES*

Limestone	Dolomite	
		Mudstone
		Wackestone
		Wackestone
		Packstone
		Grainstone

MISCELLANEOUS

	Chalky
	Sandstone
	Shale
	Anhydrite
	Sandstone interbedded with lime mudstone
	Shale with interbedded red and green shale
	Sucrosic dolomite

Log form is marked in 10-ft intervals.

Brackets indicate sampling intervals.

*According to Dunham R. J., 1962, Classification of carbonate rocks according to depositional texture, in Classification of carbonate rocks--A symposium: Am. Assoc. Petroleum Geologists Mem. 1, p. 108-121.

U.S. GEOLOGICAL SURVEY
FISHER ISLAND STATION

STATE OR PROV. Florida
COUNTY Okeechobee

Shell Oil — COMPANY

Sloan — NO. 34-1

T. 35S | R. 36E

Wildcat
FIELD OR AREA Jungle Area

SURVEY — BLK.

ELEV. KB 60'

COMM. Jan (?) 1974

COMP. May 1974

T.D. 11,280'

ELEC. LOG
RADIOACTIVE
MICROLOG
LATEROLOG
SONIC

PRODUCTION

None

REMARKS

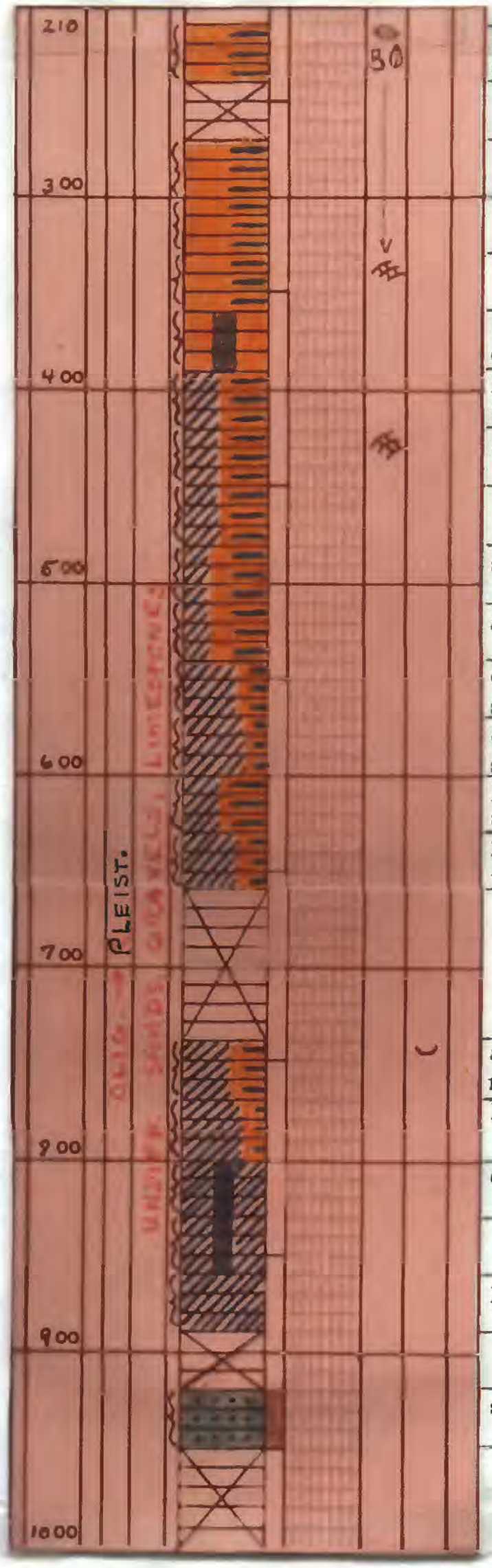
LOGGED BY: Barbara Lidz DATE 11-4-80

PLOTTED BY: Barbara Lidz DATE 11-4-80

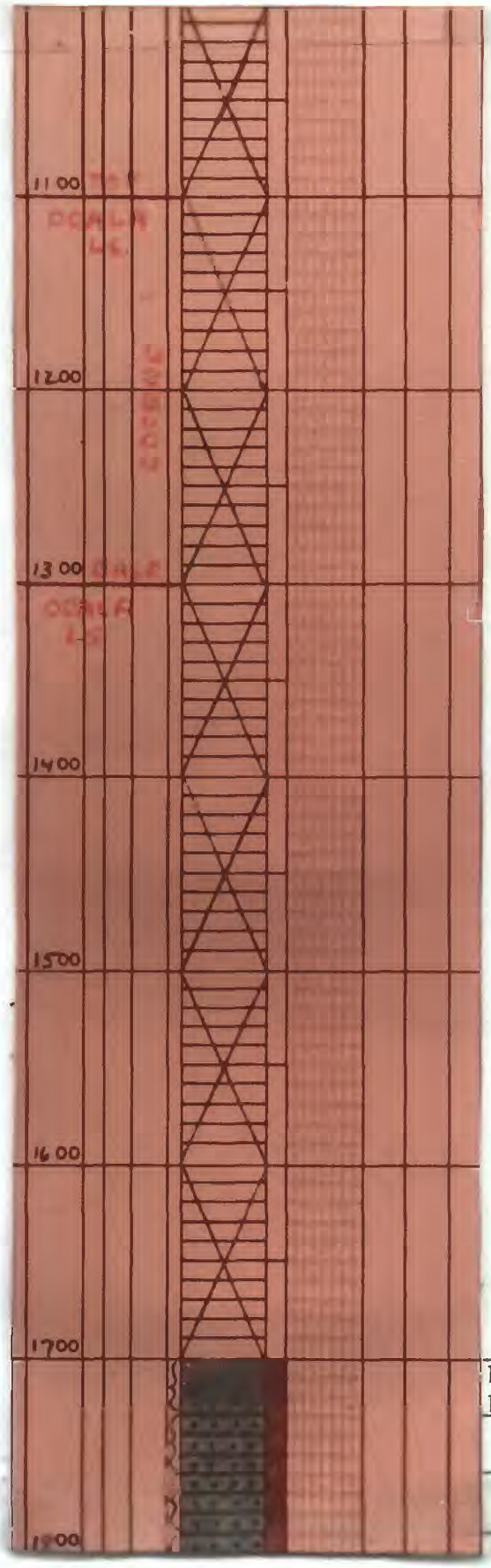
SEC. 34 TWP. 35S RGE. 36E

SEC. 34 BLK. TWP. 35S SURVEY RGE. 36E

ENVIRONMENT | DEPTH & TOPS (FEET) | ENGR DATA | SHOWS | POROSITY | CORES | LITHOLOGY | COLOR | CRYSTAL/PARTICLE SIZE | FOSSILS | ACCESSORIES | BED. STRUCTURES | REMARKS

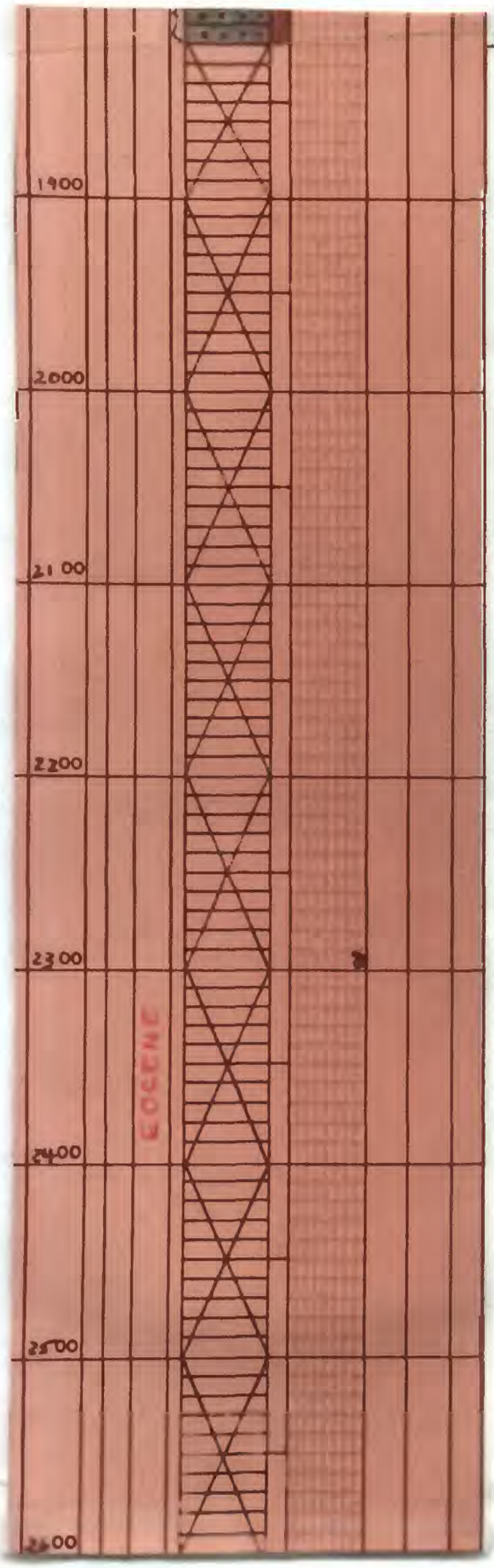


about 10% shell hash, scattered dark limestone fragments, poorly sorted uncemented sand
calcite cemented sandstone, 1-5% heavy minerals, 50% quartz, lime wackestone
50% lime grainstone, interbedded lime wackestone, coral fragments, echinoid spines, unconsolidated, gastropod molds
shark tooth
abundant phosphatic pellets
obvious decrease pellets, 30% sand, 70% limestone, consolidated, root mold thus caliche?
80% lime grainstone, 20% sandstone, well preserved shell fragments, beach?
50% uncemented grainstone, 50% cemented sandstone with interbedded lime wackestone
20% sandstone, 80% grainstone, shark and fish teeth
abundant mica, 70% limestone, 20% quartz, 10% mica, mostly cemented
10% quartz, 80% cemented grainstone
cemented lime packstone
lime grainstone
Boulder Zone
sucrosic dolomite



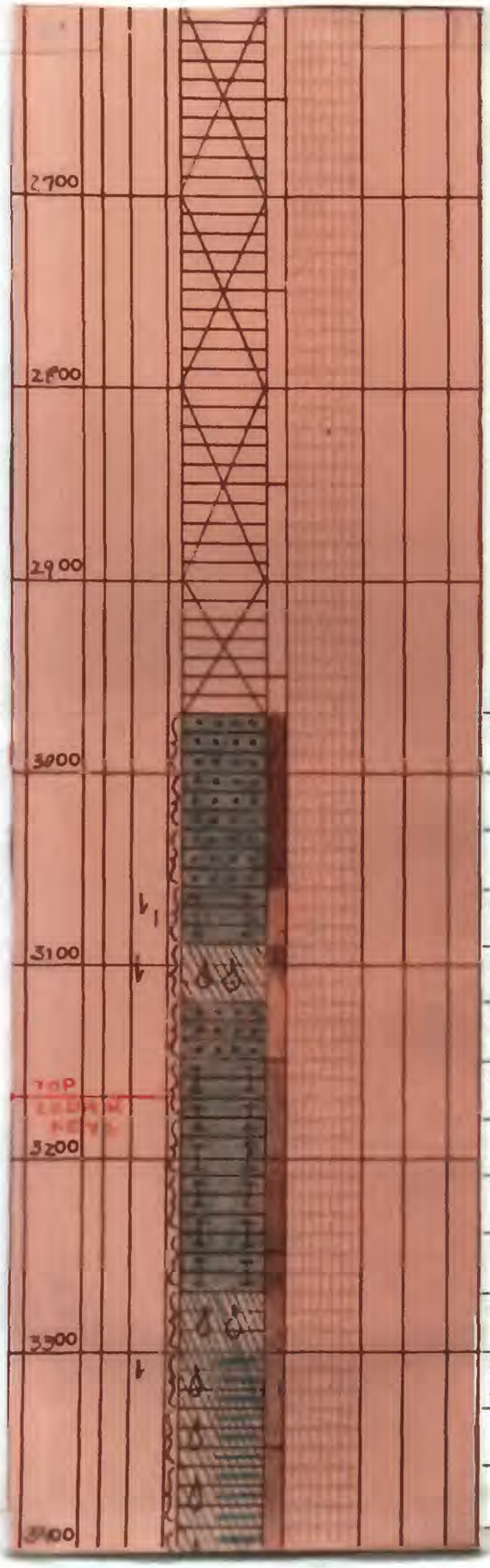
Boulder Zone

highly cemented recrystallized calcium carbonate, sucrosic dolomite



cemented recrystallized sucrosic dolomite

Boulder Zone



Boulder Zone

cemented recrystallized sucrosic dolomite

chalky dolomite, leached (pinpoint) porosity

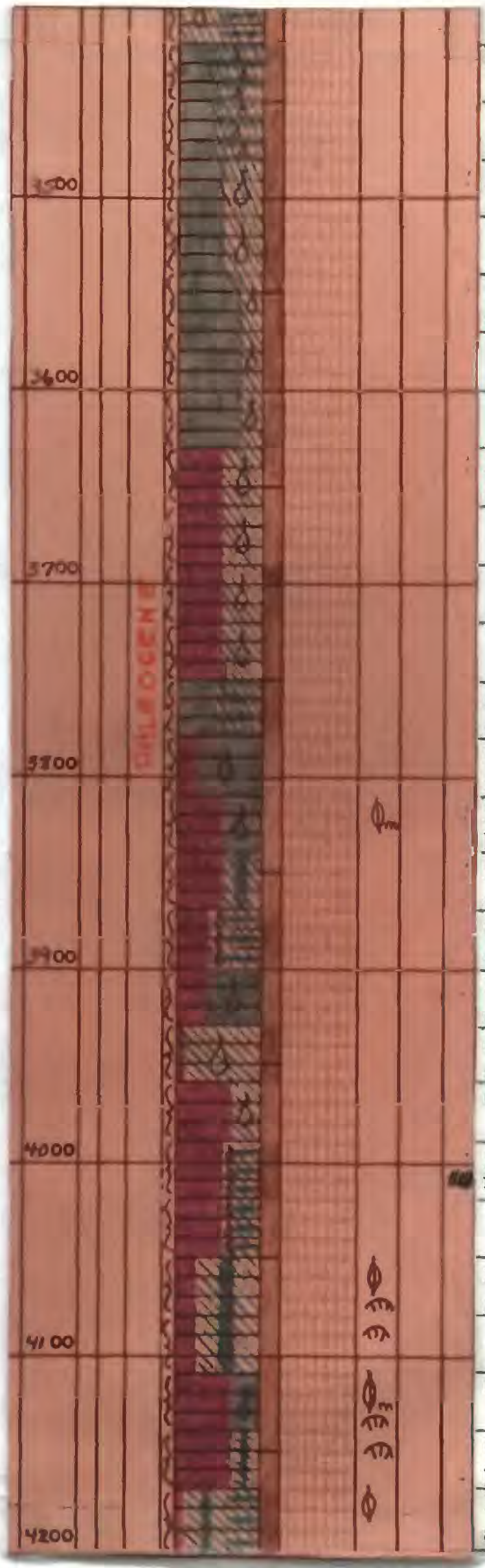
dolograinstone

cemented recrystallized sucrosic dolomite

chalky dolomite

dolograinstone

dolomitized grainstone, intercrystalline porosity



dolomite, interbedded dolograinstone

50% dolograinstone, 50% dolomudstone, intercrystalline and pinpoint porosity

75% dolomudstone, 25% interbedded dolograinstone, intercrystalline & pinpoint porosity

50% anhydrite, 50% dolograinstone, intercrystalline and pinpoint porosity

dolomudstone with interbedded grainstone, no anhydrite, pinpoint porosity

25% anhydrite, fine-grained dolowackestone, intercrystalline and pinpoint porosity

50% anhydrite, very fine-grained wackestone highly dolomitized

50% anhydrite, dolomitized packstone to grainstone

dolograinstone with interbedded mudstone, coarse intercrystalline & pinpoint porosity

30% anhydrite, very fine-grained dolowackestone highly dolomitized

decrease anhydrite, dolograinstone with pinpoint porosity

60% anhydrite with dolograinstone

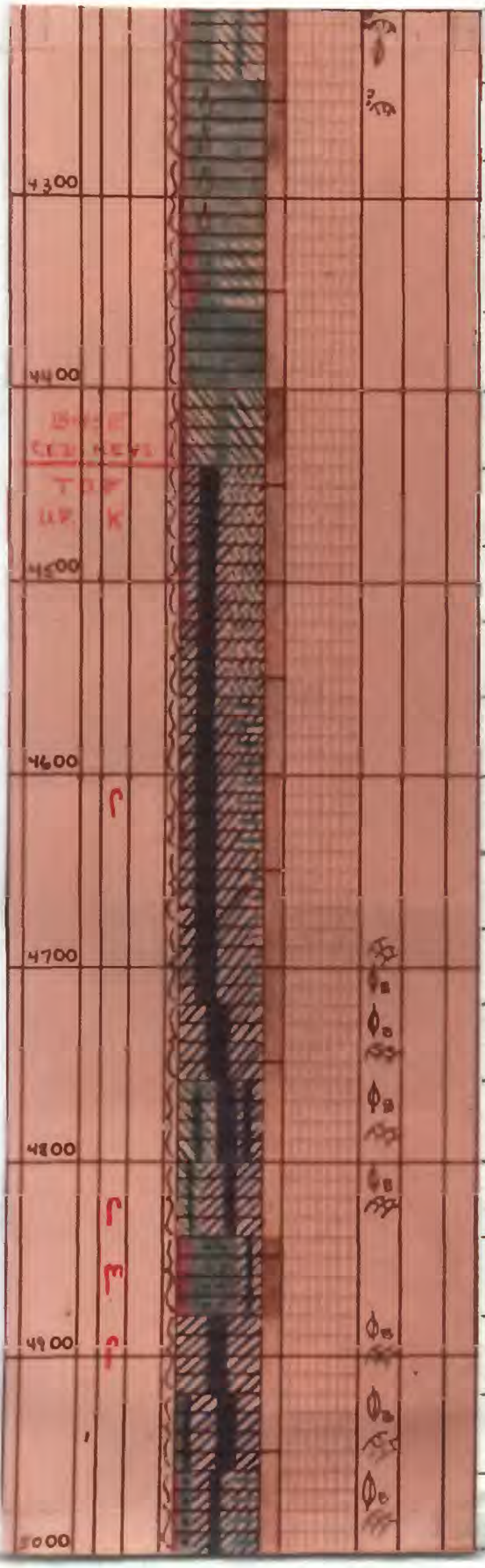
50% anhydrite, grainstone, interbedded dolomudstone, pinpoint porosity

25% anhydrite, high pinpoint porosity, dolograinstone to packstone, algal stromatolites?

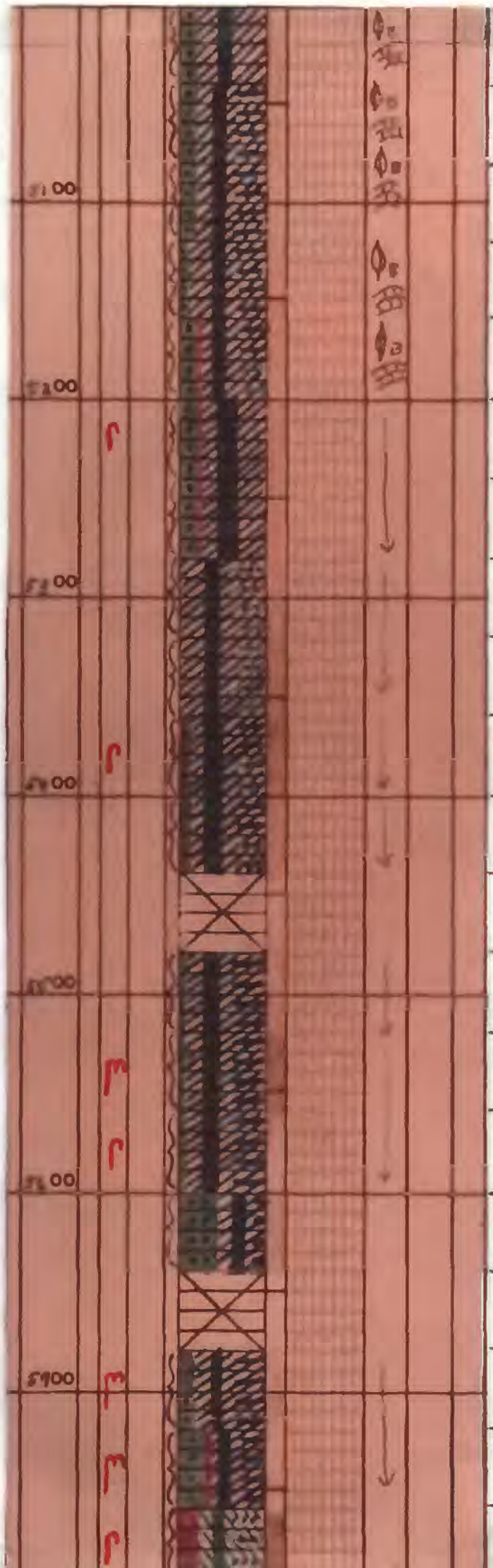
60% anhydrite, dolomudstone and wackestone

60% anhydrite, dolopackstone and grainstone, high porosity

10% anhydrite, packstone, interbedded mudstone, abundant benthics, high porosity



10% anhydrite, 50% dolopackstone, interbedded wackestone and mudstone
10% anhydrite, mostly dolowackestone with interbedded mudstone, decrease Foraminifera
color change to white, mostly dolomudstone with wackestone, some pinpoint porosity
dolomudstone with interbedded pack-, wacke-, grainstone, increase anhydrite
50% dolomudstone, 50% coarsely crystalline dolomite, intercrystalline porosity
dolograinstone with interbedded dolopack- and wackestone, intercrystalline porosity
chalky lime packstone with interbedded dolo-grainstone and packstone, little anhydrite
↓
no anhydrite
↓
chalky lime packstone, 10% dolowackestone, leached porosity
↓
about 5% anhydrite
↓
95% chalky lime packstone, 5% dolomudstone
↓
increase in fossil fragments
↓
abundant dolomitized Foraminifera in chalky lime packstone
50% dolograinstone, 25% lime packstone, 25% lime wackestone, coral and fossil fragments
75% chalky lime packstone, 25% dolograin-stone, abundant worm tubes, fossil fragments
20% anhydrite, 50% sucrosic dolomite, rest lime packstone, high porosity, cuttings float in water
lime packstone with abundant fossil frag-ments
lime packstone with 5% sucrosic dolomite, 5% lime wackestone, abundant fossil fragments
75% lime packstone with interbedded sucrosic dolomite, dolomudstone, anhydrite



90% lime packstone, 10% sucrosic dolomite, abundant fossil fragments

lime packstone interbedded with lime mudstone, 10% sucrosic dolomite

decrease in sucrosic dolomite and lime mudstone, fossil fragments very abundant

lime packstone with sucrosic dolomite, dolomudstone, anhydrite, decrease in fossils

increase in fossils, no anhydrite, lime packstone with interbedded sucrosic dolomite and lime mudstone

90% lime packstone, interbedded lime mudstone 10% sucrosic dolomite, some anhydrite

90% lime packstone interbedded with lime mudstone, very little sucrosic dolomite

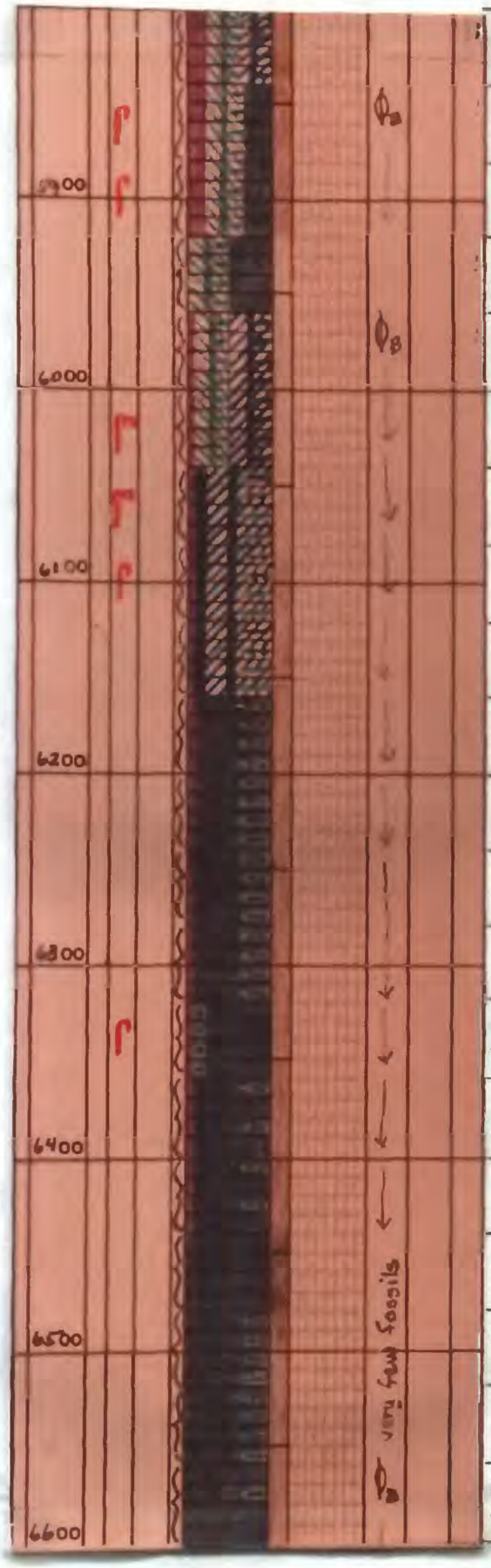
cuttings float in water

50% lime packstone, 50% sucrosic dolomite and dolomudstone, interbedded lime grainstone

80% lime pack- and mudstone, 20% sucrosic dolomite

lime packstone interbedded with lime mudstone, 25% sucrosic dolomite, some anhydrite

80% dolopackstone interbedded with limestone and sucrosic dolomite, 20% anhydrite



40% all types limestone, 40% all types dolomite, 20% anhydrite

50% all types dolomite, 30% lime mudstone, 20% anhydrite

50% lime mudstone, 50% all types dolomite, no anhydrite noted

50% lime pack- and mudstone, 50% all types dolomite, some anhydrite

lime pack- and mudstone interbedded sucrosic dolomite, dolomudstone, some anhydrite

lime mud- and wackestone, interbedded sucrosic dolomite, some anhydrite

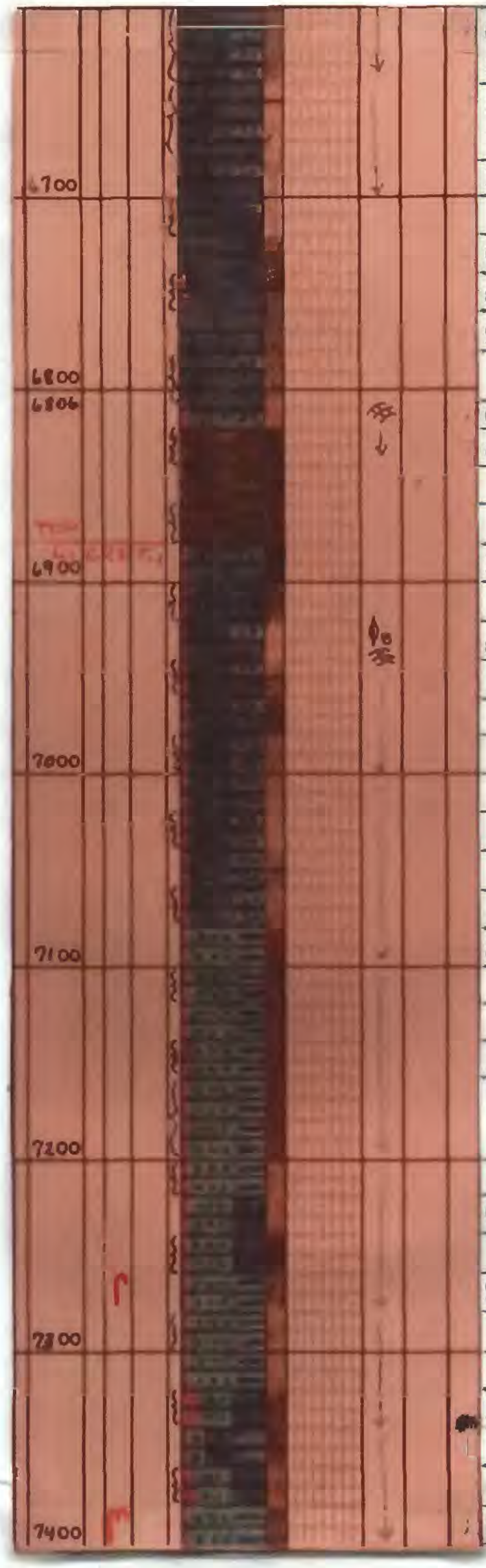
lime mud- and wackestone, 10% sucrosic dolomite, some anhydrite

lime mud- and wackestone, some anhydrite and sucrosic dolomite, abundant echinoid spines

80% dark grey organic-rich poorly consolidated lime mudstone, 20% cream lime mudstone

85% lime mud- and wackestone, 10% sucrosic dolomite, little organic-rich lime mudstone

95% lime mud- and wackestone, 5% sucrosic dolomite and organic lime mudstone



60% cream lime mud- and wackestone, 25% dark grey organic-rich lime mudstone, suc. dolomite

85% cream lime mud- and wackestone, 10% organic lime mudstone, 5% sucrosic dolomite

lime mud- and wackestone, organic lime mudstone

60% organic lime mudstone, 40% lime wackestone

same with some anhydrite

90% organic lime mudstone, 10% lime wackestone

60% lime mudstone, 30% organic lime mudstone

80% limey shale, mixed lime, dolomite cavings

lime mudstone, wackestone, limey shale cavings

same with sucrosic dolomite, anhydrite

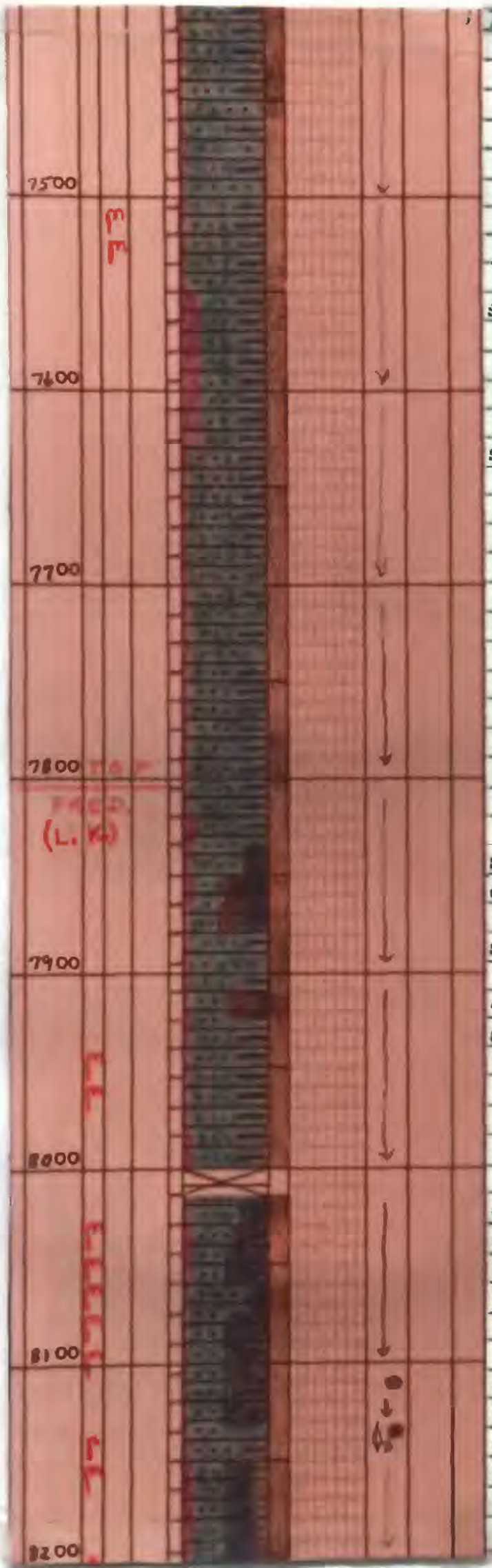
80% sucrosic dolomite with limestone, shale

60% sucrosic dolomite, 40% lime mudstone

95% sucrosic dolomite, 5% lime mudstone

limestone, dolomite with anhydrite, shale

75% sucrosic dolomite with limestone, anhydrite



75% sucrosic dolomite with limestone, anhydrite

same with increase anhydrite

same with decrease anhydrite

same with increase lime mudstone, shale
dolomite, limestone, shale with anhydrite

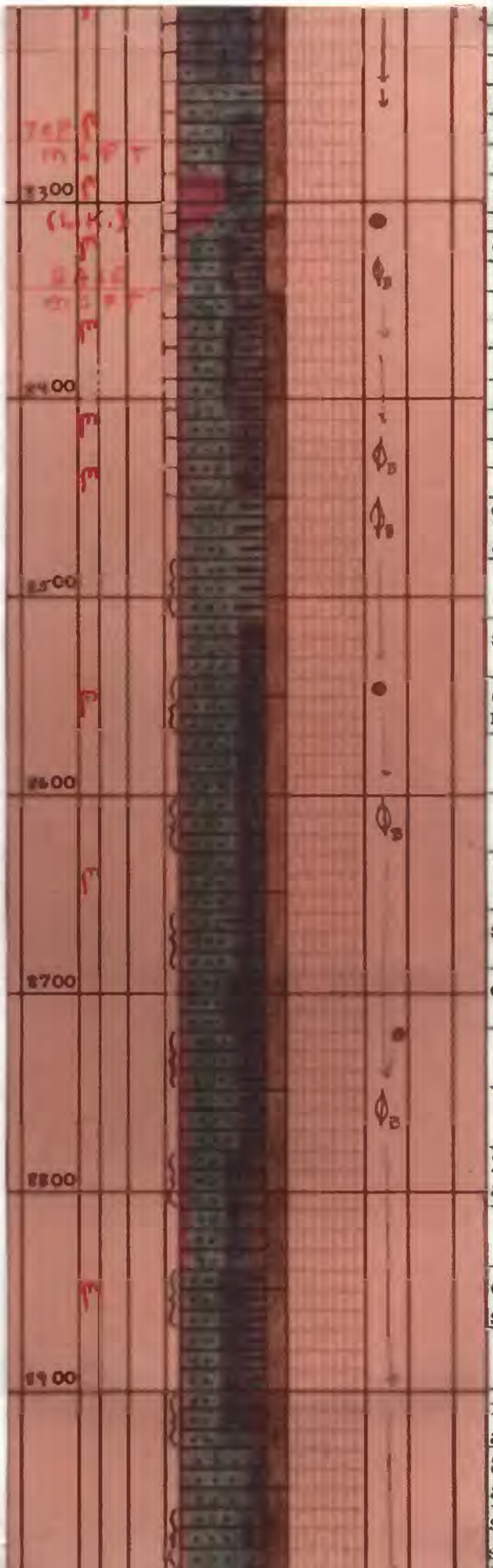
sucrosic dolomite with mudstone, anhydrite

45% sucrosic dolomite, 45% shale
sucrosic dolomite with shale, anhydrite

dolomite, lime mudstone, shale, some anhydrite
dolomite, lime wackestone, shale, anhydrite

same with undistinguishable fossils, corals

dolomite with shale, anhydrite
dolomite, lime wackestone, shale, anhydrite



80% grey & cream lime wackestone

dolomite with lime wackestone, anhydrite

dolomite, lime wackestone, anhydrite, shale

60% anhydrite with lime wackestone, shale

dolomite, lime wackestone, anhydrite, shale

90% sucrosic dolomite, 10% limestone, shale and anhydrite, fossils rare

same with increase in limestone

color change from grey to tan dolomite, marked decrease shale

same with slight increase shale

dolomite, limestone, anhydrite, shale

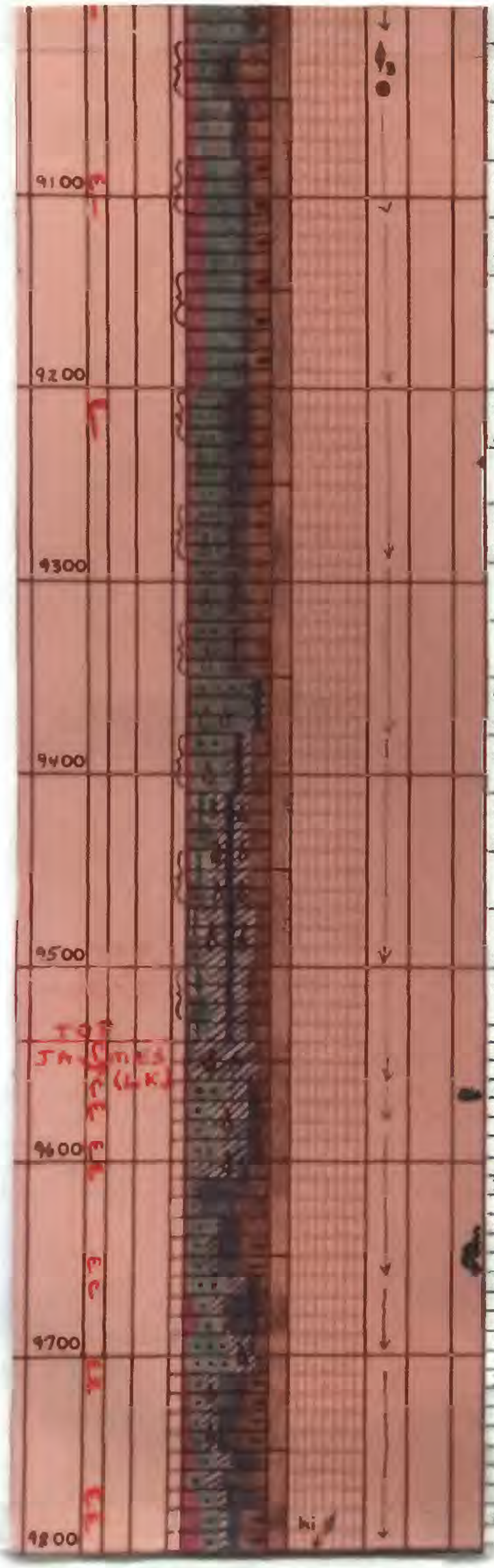
20% shale with dolomite, lime wackestone, anhydrite

dolomite, lime wackestone, anhydrite, less shale, increase fossils

increase shale with dolomite, lime wackestone, anhydrite

80% dolomite with lime wackestone, shale, anhydrite

same but with decrease dolomite, increase shale



oolitic limestone, sucrosic dolomite, shale, anhydrite, abundant fossils

same with increase in dolomite

dolomudstone, greenish shale, anhydrite

same, electric logs indicate high % anhydrite not seen in cuttings, possible dissolution

sucrosic dolomite, lime wackestone, shale, decrease anhydrite, ooids with fossil centers

color change to grey dolomite, chalky lime-stone, shale, some anhydrite

dolomite with lime packstone, anhydrite, shale

same with increase shale

oolitic lime and dolopackstone, 25% shale, some anhydrite, limestone grey & cream color

70% lime packstone with shale, dolomite, some anhydrite

same with increase dolostones

lime grainstone with 15% shale

oolitic lime grainstone, sucrosic dolomite

same with pyrite and chalky limestone

mostly lime mudstone and shale

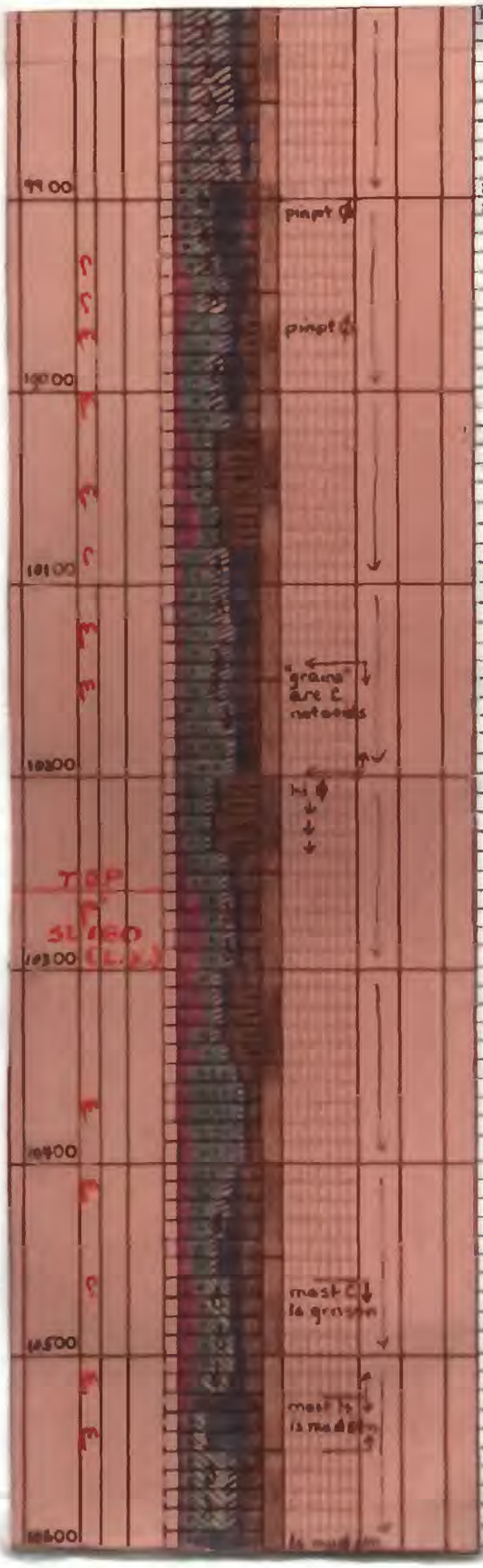
dolomite, lime mudstone, greenish shale

same with pyrite continued to be noted

dolomite, oolitic lime grainstone, shale

increase limestones, decrease dolomites

same with increase anhydrite, greenish shale



mostly oolitic lime grainstone, shale

same with increase chalky limestone, dolomite

same with pinpoint porosity

50% greenish shale, anhydrite, dolo- and limestones

increase dolo- and limestones, decrease shale and anhydrite

same with sucrosic dolomite "grains" in lime grainstone

40-50% shale, sucrosic dolomite, high porosity

25% shale, increase anhydrite, dolomite

25% shale, 25% anhydrite, dolo- and limestones

same with 30% shale, 30% anhydrite

decrease shale, anhydrite, increase dolomite

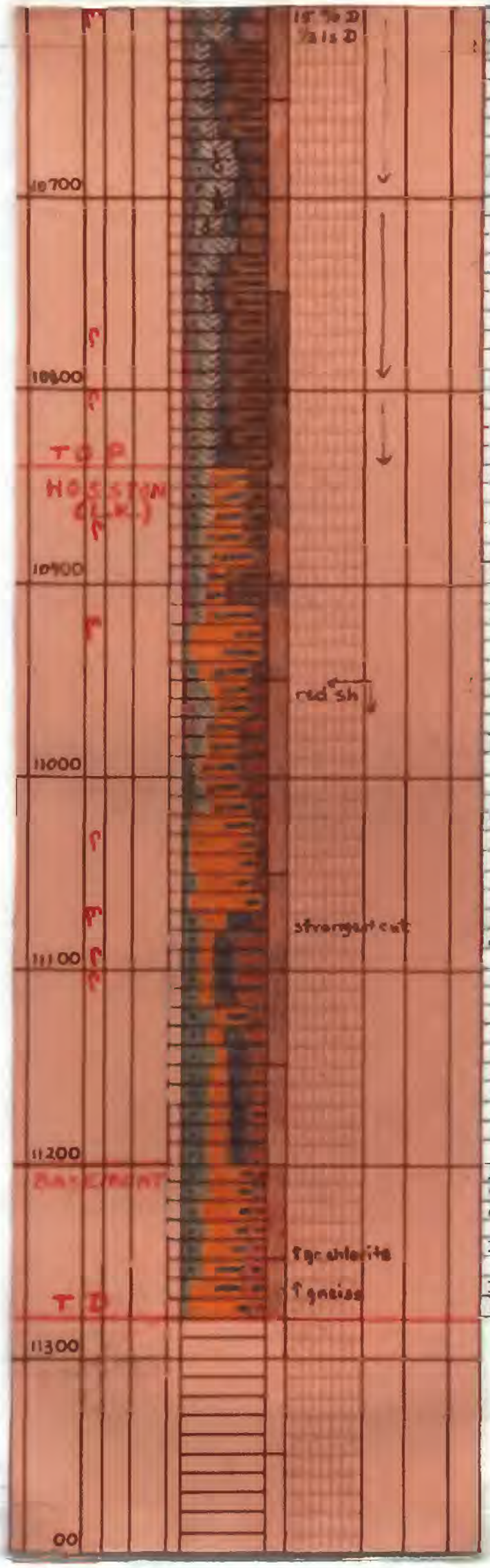
increase limestones, decrease dolomite

50% dolomitic grainstone

mostly lime mudstone

mostly dolograinstone with shale

mostly lime mudstone with shale



about equal amounts shale, dolo- and limestones

40-60% shale with dolo- and limestones

decrease shale, increase dolomite

45-55% greenish shale with carbonates

25% quartz sandstone with shale, carbonates

50% shale with sandstones, carbonates

75% sandstones with decrease shale

50% sandstones with reddish shale, carbonates

bottommost occurrence anhydrite noted

65% sandstones, some shale and carbonates

increase carbonates, strongest cut noted in all cuttings tested, increase shale

50% sandstones, marked decrease carbonates, green chlorite and gneiss noted
color shale very reddish

increase green chlorite

increase gneiss

70% sandstones, 15% shale, little carbonates

Limestone classification according to R.J. Dunham, 1962, Classification of carbonate rocks according to depositional texture. In: W.E. Ham (ed.), Classification of Carbonate Rocks. Am. Assoc. Petrol. Geologists, Tulsa, Okla., p. 108-121.