S2 NW NW 19 T. 33 S., R. 37 W.
15-189-20434

NELL A 1
Anadarko

SUMMARY

This 74-foot core is from productive lower Morrow Keyes Formation. The top of the core is positioned --- feet below the Morrow/Atoka contact. The base of the core is --- above the Pennsylvanian/Mississippian boundary. The core has been divided into six intervals that contains seven lithofacies. Eight thin sections were studied. This core chiefly represents stacked shoreface deposits, with interbedded tidal channel, shelf, and offshore facies.

The basal interval (**Unit 1**) consists of fossiliferous, planar cross-bedded, conglomeratic, very coarse- to fine-grained sandstones (facies I) deposited in an upper shoreface environment. **Unit 2** comprises heterolithic fine- to very fine-grained sandstones and carbonaceous siltstones (facies F), displaying soft sediment deformation structures and wavy-, flaser- to rarely lenticular-bedding. This unit represents deposition in tidal channels. **Unit 3** consists of fossiliferous, planar-bedded, very coarse- to fine-grained sandstones (facies I, J and K) deposited in middle to upper shoreface settings. **Unit 4** comprises parallel-laminated black shales (facies O) that accumulated in an oxygen-depleted shelf. **Unit 5** consists of coarse- to very fine-grained sandstones and siltstones (facies L, M, and N), which display normal grading, starved ripples, and intense bioturbation. This unit records alternating storm and background sedimentation in lower shoreface, offshore transition, and offshore environments. Unit 5 is separated from the overlying unit 6 by an erosive surface related to a forced regression. **Unit 6** chiefly comprises planar cross-bedded coarse-grained sandstones (facies I, J, K, and L) deposited in lower, middle, and upper shoreface environments.

NOTES

UNIT 1

Conglomeratic, very coarse- to fine grained sandstones; light gray; planar cross-bedding to massive, scours filled with pebbles, hummocky cross-stratification in the fine-grained intervals; interbedded dark mudstone lamina and lenses; common crinoid fragments.

UNIT 2

Fine- to very fine-grained sandstones and carbonaceous siltstones; light and dark gray; wavy-, flaser- (single, bifurcated, flaser-wavy), and, more rarely, lenticular bedding (connected or single thick lenses); great variety of soft sediment deformation structures (slumps, ball and pillow, pseudonodules, fluid escape structures, load casts, convolute lamination); ripple cross-lamination, climbing ripple cross-lamination, planar cross-stratification; mud drapes, lenses and lamina.

UNIT 3

Very coarse- to fine-grained sandstones; greenish gray; granules and pebbles dispersed in the sandstones, concentrated at the base of beds or forming discrete beds (as in 6078.7); scour filled with pebbles at the base of the unit; planar cross-bedding, massive, foresets normally and inverselly graded; thin mud drapes commonly forming stilolytes, mud lenses, and mud intraclasts; abundant crinoids plates, articulate braquiopod shells, and coral fragments dispersed in the sandstones or forming thin lenses; trace fossils in the fine-grained beds; beds stacked forming coarsening upward packages.

UNIT 4

Shales; dark gray to black; thin lamination.

UNIT 5

Coarse- to very fine-grained sandstones and siltstones; light gray to dark gray; normal grading in coarse- to medium-grained sandstones, starved wave ripples, relictic parallel lamination in siltstones; crinoid and gastropod fragments in the coarse-grained sandstones; intense bioturbation in the very fine-grained sandstones and siltstones; petroleum impregnation; pyrite; the whole unit fines upward and culminates in a siltstone package (6054-6054).

UNIT 6

Coarse- to fine-grained sandstones; erosional surface at the base of the unit; greenish gray; planar cross-stratification; thin mud drapes commonly forming stilolytes; crinoid plates, articulate braquiopods, and coral fragments; trace fossils in the fine-grained beds; beds stacked forming coarsening upward packages.

INTERPRETED DEPOSITIONAL ENVIRONMENT

UNIT 1

Upper shoreface (HST)

UNIT 2

Tidal channel point bars (LST)

UNIT 3

Middle to upper shoreface (TST to HST)

UNIT 4

Oxygen-depleted shelf (TST)

UNIT 5

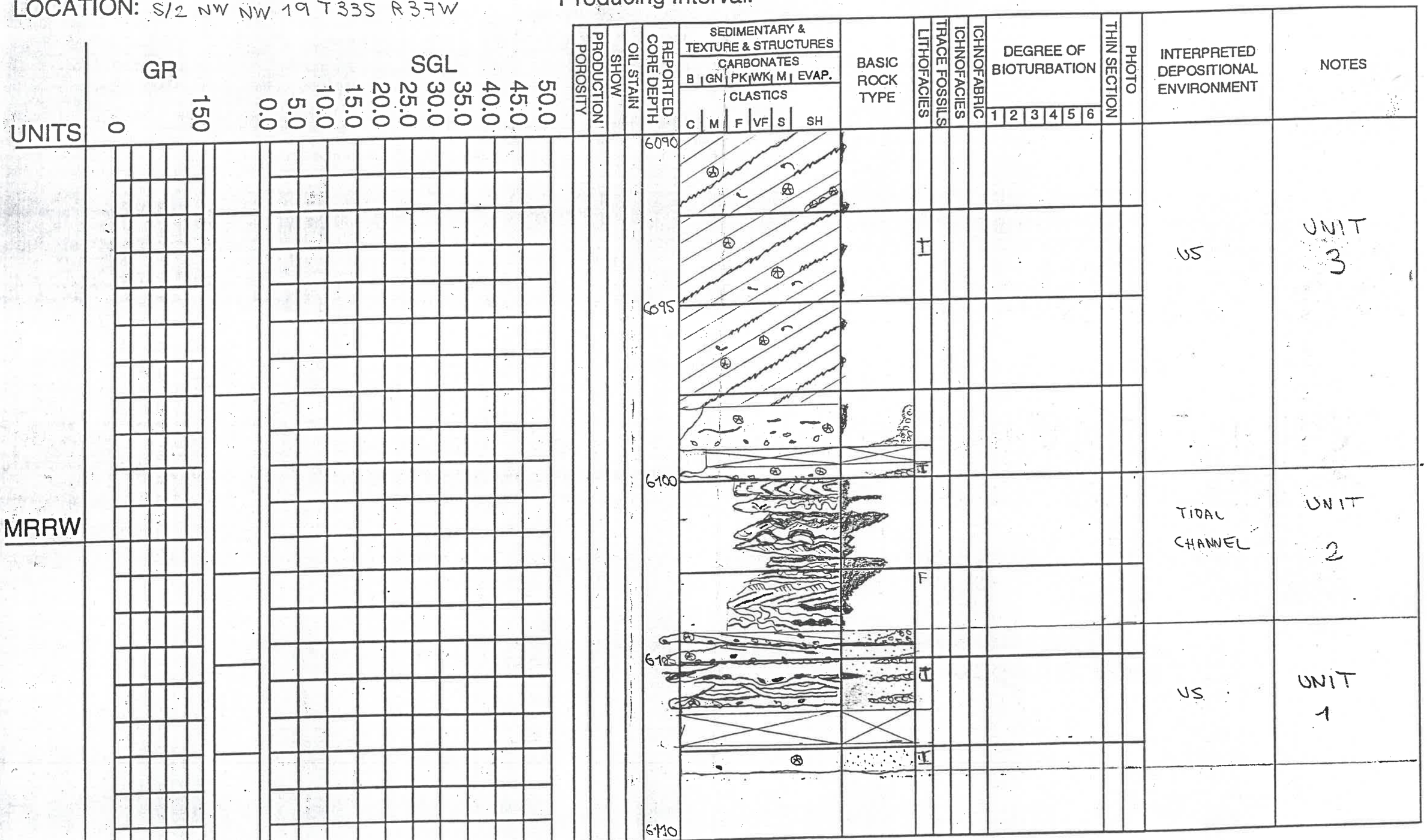
Lower shoreface, offshore transition, and offshore (HST to TST)

UNIT 6

Lower, middle to upper shoreface (LST to TST to HST))

OPERATOR: ANADARKO
NAME: NELL No A1
LOCATION: S/2 NW NW 19 T33S R37W

Reported Core Interval: 6036-6108 Approx. Feet Recovered:
Log Interval: 6036-6108 Quality: E G F P
Producing Interval: Source: Kansas Geological Survey, Lawrence, Ks.

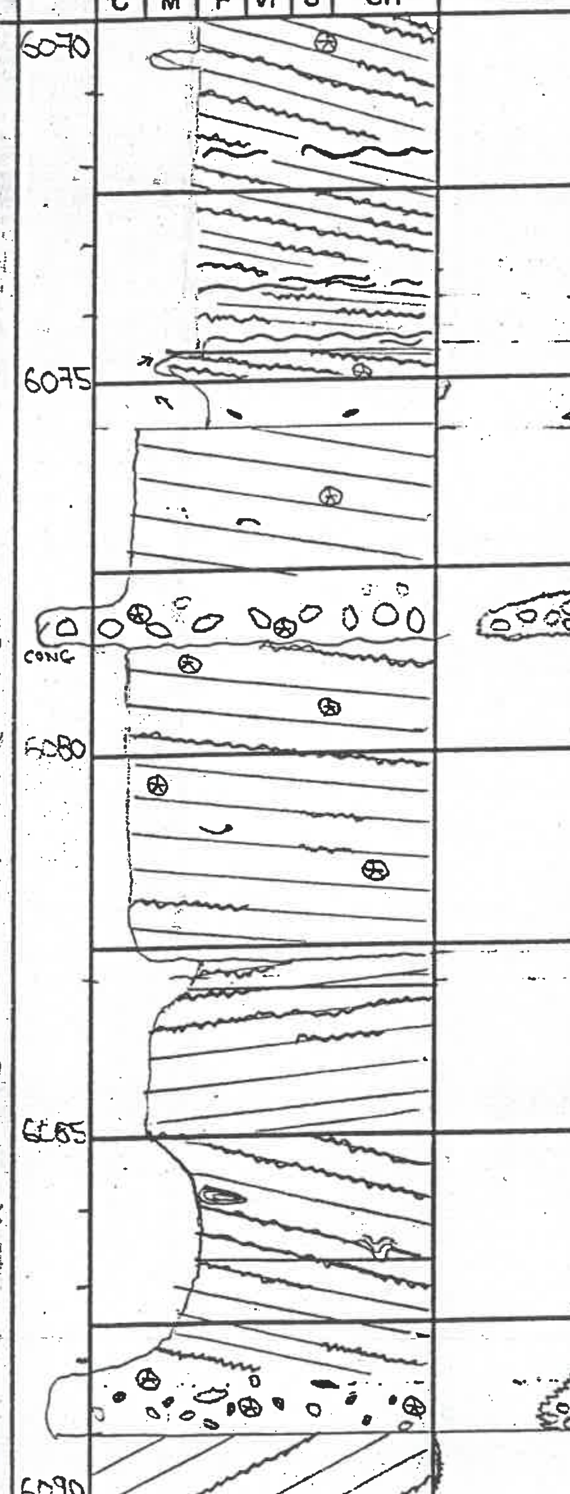


OPERATOR:
NAME:
LOCATION:

Reported Core Interval:
Log Interval:
Producing Interval:

Approx. Feet Recovered:
Quality: E G F P
Source: Kansas Geological Survey, Lawrence, Ks.

UNITS | GR (0 – 150) | SGL (0.0, 5.0, 10.0, 15.0, 20.0, 25.0, 30.0, 35.0, 40.0, 45.0, 50.0) | POROSITY | PRODUCTION | SHOW | OIL STAIN | REPORTED CORE DEPTH | SEDIMENTARY & TEXTURE & STRUCTURES (CARBONATES: B, GN, PK, WK, M, EVAP.; CLASTICS: C, M, F, VF, S, SH) | BASIC ROCK TYPE | LITHOFACIES | TRACE FOSSILS | ICHNOFACIES | ICHNOFABRIC | DEGREE OF BIOTURBATION (1 2 3 4 5 6) | THIN SECTION | PHOTO | INTERPRETED DEPOSITIONAL ENVIRONMENT | NOTES



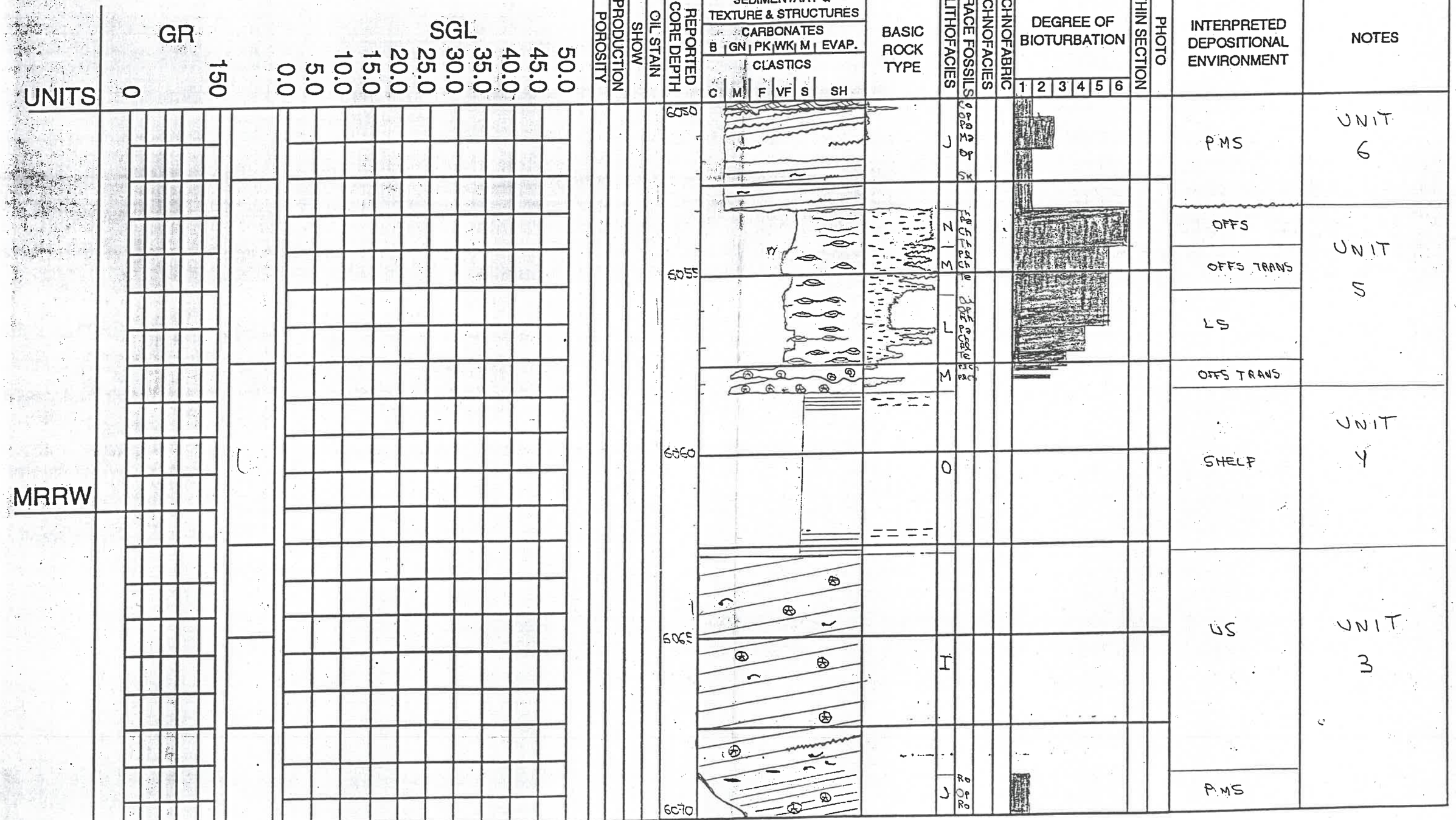
Reported core depth	Lithofacies	Degree of bioturbation notes	Interpreted depositional environment	Notes
6070	J		P.MS	
	K	lms	DMS	
	J		PMS	
	K	lms	DMS	
	I		US	
6075	K	Sonder ms (lms)	DMS	UNIT 3
	I		US	
6080				
	J		PMS	
	I		US	
6085	J		P.MS	
	I		US	
6090				

MRRW

OPERATOR:
NAME:
LOCATION:

Reported Core Interval:
Log Interval:
Producing Interval:

Approx. Feet Recovered:
Quality: E G F P
Source: Kansas Geological Survey, Lawrence, Ks.



OPERATOR:
NAME:
LOCATION:

Reported Core Interval:
Log Interval:
Producing Interval:

Approx. Feet Recovered:
Quality: E G F P
Source: Kansas Geological Survey, Lawrence, Ks.

UNITS

MRRW

GR 0 150

SGL 0.0 5.0 10.0 15.0 20.0 25.0 30.0 35.0 40.0 45.0 50.0

POROSITY	PRODUCTION	SHOW	OIL STAIN	REPORTED CORE DEPTH	SEDIMENTARY & TEXTURE & STRUCTURES: CARBONATES (B, GN, PK, WK, M, EVAP.); CLASTICS (C, M, F, VF, S, SH)	BASIC ROCK TYPE	LITHOFACIES	TRACE FOSSILS	ICHNOFACIES	ICHNOFABRIC	DEGREE OF BIOTURBATION (1 2 3 4 5 6)	THIN SECTION	PHOTO	INTERPRETED DEPOSITIONAL ENVIRONMENT	NOTES
				6035											
				6040			H							LS PMS LS	UNIT 6
				6045			K							PMS OMS PMS OMS. LS PMS	
				6050											