15-187-20632 23-29-41W

Reported core depth	Textures, sedimentary & biogenic structures, & diagenesis / Carbonate Rock Types (B, Gn, Pk, Wk, M, Evapor.) / Siliciclastics Grainsize (c, m, f, vf, si, sh)	Rock Type	Lithofacies	Bioturbation (Rare / Common / Abund.)	Thin section (*) or perm plug (p)	Description, interpreted depositional environment, and comments

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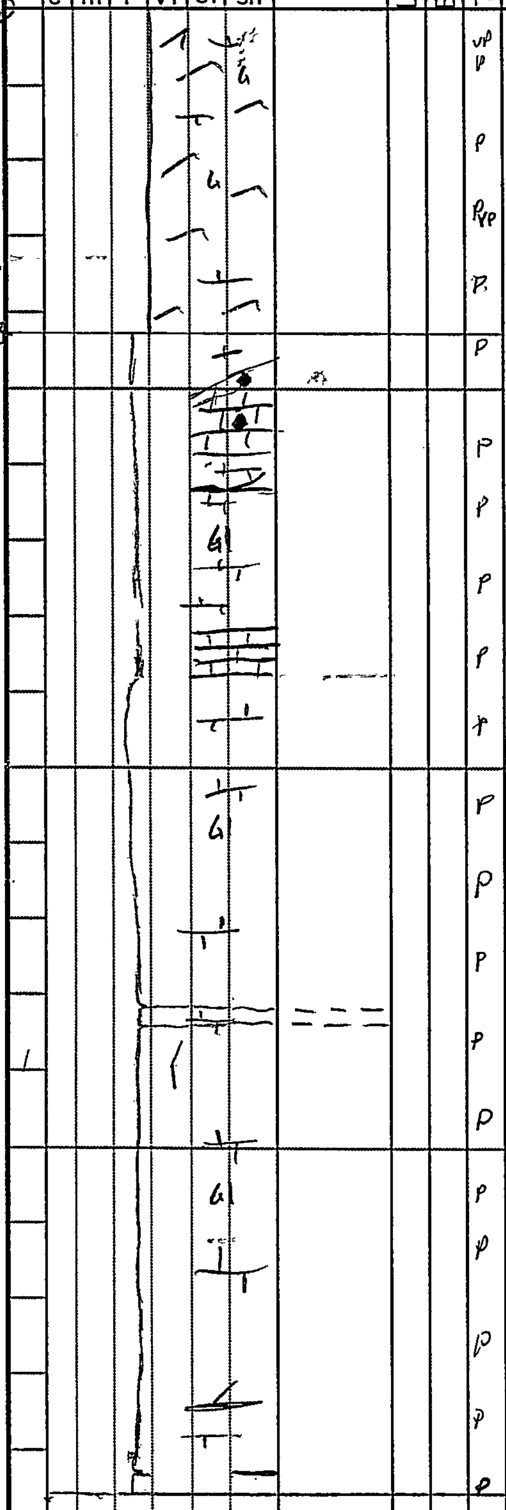
Lease Kendrick Well 23-1
Location 330 FNL 1680 FWL NW NE NW 23 29S 41W.
County, State Stanton, Kansas
Stratigraphy Morrow – Kearny
Core description by AW Walton



Sandstone, qtz arenite, f., v. lt gy. to yellowish gray structureless or lo. cross-bedded (may be low ∠ x bdded, but very vague. Sandstone, qtz arenite, f. v. lt. gy. structureless or lo. cross-bedded. Lower contact absent No obvious burrows pyrite-replaced shale clast (?) (sparse). Calc. cmt. comes and goes. Sparse (<<1%) glauconite

[Sh. dk gy, laminated tr. of mica.]
53.2, 53.4 Sh lam in Ss.
Ss also has Sh lam too thin to measure for about 1" below & 1/2" above lower shale lam.
5454 - fracture - vertical 0.4' long

Re calcite cmt: where v. lt gy (N8) is more calc than where yellowish gray (5Y8/1 or 5Y 7/2)

Sh lam @ 59.3

Base of core 5459.7

AWW 12/95

Rock types
Sandstone (may be left blank)
Conglomerate
Siltstone, laminated (top), structureless
Shale (top), mudstone (bottom)
Blocky shale
Limestone
Coal

Lithology (rock type)
Grainsize
Color
Sedimentary structures
Lower contact
Biogenic features
Diagenetic features
Tectonic features
Porosity
Fluid saturations

Carbonates:
B Boundstone
Gn Grainstone
Pk Packstone
Wk Wackestone
M Mudstone

Siliciclastics
c Coarse sandstone & coarser
m Medium sandstone
f Fine sandtone
vf Very fine sandstone
si Siltstone, silt
sh Shale and other mudrocks, clay

Structures
Cross beds
Planar Beds, or lamination
Hummocky cross strata
Ripples
Current
Wave
Wavy, lenticular lamination
Flaser
Wispy laminae
Convoluted bedding
Nodular bedding
Desiccation crack
Fenestra
Stylolite
Fractures

Cements
Pyrite
Calcite
caliche nodule
caliche crust
Siderite

Grains
Pebbles, granules, cobbles, or boulders
Shale or mudstone clasts
Carbonaceous material

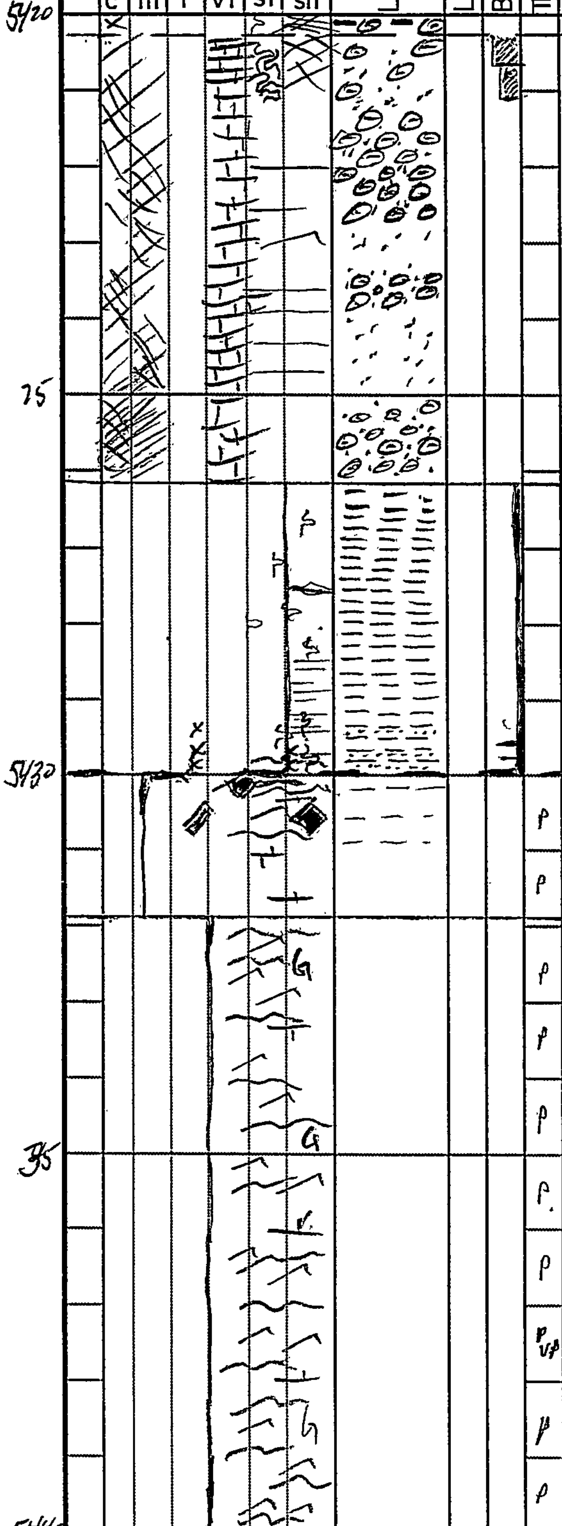
Biogenic structures
Root marks and rhyzocretions
Thalassinoides
Planolites
Chondrites
Skolithis
Type not distinguished

Carbonate allochems
Ooids, coated grains
Pelloids,
Intraclasts
Corals
Molluscs
Echinoderms (stalked)
Brachiopods
Bryozoans
Forams
Phylloid algae
Skeletal fragments
Fusilinid

Date 1/5/96	Page 2 of
Lease Kendrick	Well 23-1
Location	
County, State	
Stratigraphy	
Description by: AWW	

Reported core depth | Textures, sedimentary & biogenic structures, & diagenesis | Carbonate Rock Types: B Gn Pk Wk M | Evapor. | Siliciclastics Grainsize: c m f vf si sh | Lithology | Lithofacies | Rare / Common / Abund. Bioturbation | Thin section (*) or perm plug (p)

Description, interpreted depositional environment, and comments



20.25 Burrowed congl. mudstone, blks a few cm?

Congl, clongtress, & ss. Clasts not calc & softer than knife ∴ shale. Many be dolomite & congl: clasts x̄ 1 cm, range up to 8 cm. Sand is med to csc. Rock is v. lt. gy, clasts are gray. Crudely lam to rippled. Top has burrows - dense, which ad mix mud. Calcite cmt.

5426.15
Sh w interlam contorted of ss. Sh: clay rich, dk gy (N3) to gyish blk (N2) fissile to platy. SS: qtz arenite, f, lt gy (N7). lams (.1–.5 cm) or burrow fillings (may have burrowed ss to vcm). Base of unit gradational from that below, in the form of increased abd of shale & lower abund. of ss. lds.

5430 SS, 1φ (1–1.5φ), v. lt gy to yellowish v.lt gy, sublitharenite. Sharp base. Unit appears to be thinly bedded, upper part has shale wisps. Diagenesis - calcite cmt, more than pavement surface? [illegible] below. Pyrite in core.

SS, 3φ, yellowish v. lt. gray, ripple bedded. Ripples marked by grayish black to black mudstone laminae w. v. sparse mica in ripple troughs — too thin & too far up on foresets to be flasers. Sharp base to unit. Diagenesis: v. sparse glauconite. calcite cement. Appears to have chalky material in between grains - especially visible on sawed surface.

AWW 1/96

Rock types
- Sandstone (may be left blank)
- Conglomerate
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- Shale (top), mudstone (bottom)
- Blocky shale
- Limestone
- Coal

Carbonates:
- B Boundstone
- Gn Grainstone
- Pk Packstone
- Wk Wackestone
- M Mudstone

Siliciclastics
- c Coarse sandstone & coarser
- m Medium sandstone
- f Fine sandtone
- vf Very fine sandstone
- si Siltstone, silt
- sh Shale and other mudrocks, clay

Structures
- Cross beds
- Planar Beds, or lamination
- Hummocky cross strata
- Ripples: Current, Wave
- Wavy, lenticular lamination
- Flaser
- Sreaked shale with ss or zs lenses
- Wispy laminae
- Convoluted bedding
- Nodular bedding
- Desiccation crack
- Fenestra
- Stylolite
- Fractures

Lithology
- SS, Sh, Zs, Ls, etc.
- SS type or Ls type
- Grainsize
- Color
- Sedimentary structures
- Lower contact
- Biogenic features
- Diagenetic features
- Tectonic features
- Porosity
- Fluid saturations

Cements
- Pyrite
- Calcite
- caliche nodule
- caliche crust
- Siderite

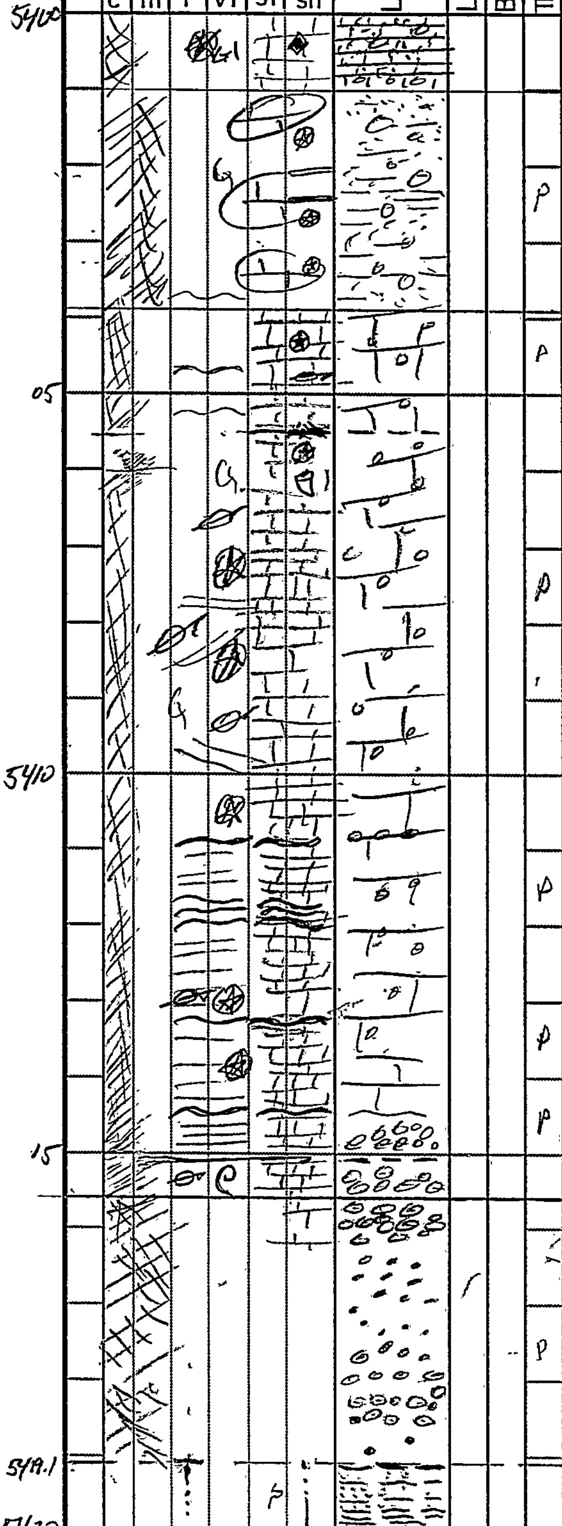
Grains
- Pebbles, granules, cobbles, or boulders
- Shale or mudstone clasts
- Carbonaceous material

Biogenic structures
- Root marks and rhyzocretions
- *Thalassinoides*
- *Planolites*
- *Chondrites*
- *Skolithos*
- Type not distinguished

Carbonate allochems
- Ooids, coated grains
- Pelloids,
- Intraclasts
- Corals
- Molluscs
- Echinoderms (stalked)
- Brachiopods
- Bryozoans
- Forams
- Phylloid algae
- Skeletal fragments
- Fusilinid

Date	Page 3 of
Lease	Well
Location	
County, State	
Stratigraphy	
Description by:	

Column headings: Reported core depth | Textures, sedimentary & biogenic structures, & diagenesis — Carbonate Rock Types (B, Gn, Pk, Wk, M), Evapor., Siliciclastics Grainsize (c, m, f, vf, si, sh) | Lithology | Lithofacies | Bioturbation (Rare, Common, Abund.) | Thin section (*) or perm plug (p) | Description, interpreted depositional environment, and comments



calcite cement, pyrite.

5401 Granular ss. (or pebbly med.) qtzarenite w. granule-sized fossils, lt. gy. Numerous clay laminae (blk fissile shale; <1 to 5 mm thick). ~~Cal~~ Some calcite cement, difference with interval below is amount of cement.

5403.9 [Sharp decline in abundance of calcite cement ~~and of~~ which becomes more patchy]

SS, qtzarenite, coarse, w. congl. at base (pebble) & pebbly or granular throughout; v. lt. gray. Diffuse horizontal bedding near base; higher has inclined bedding, some with closely paired clay lam. Scattered clay lam throughout. Calcite cement. Highly fossiliferous. Glauconite.

fissile black shale.

5415.6 — color change ~~med gy below~~ v. lt gray above

Congl, intraclast, pebble to granule SS matrix, med s to granule qtz. med gray N5 w. green cast. Clasts ∥ to bedding. grades coarser from cmt below. Internally has coarser & finer (clast N-gm) zones. Calcite cmt, clay cmt (hence color).

Sh, clay blk N7 dk gy. platy w. med SS interbeds (pyrite)! 3-25 mm thick.

AWW 1/96

Rock types
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- Blocky shale
- Limestone
- Coal

Lithology
- SS, Sh, Zs, Ls, etc.
- SS type or Ls type
- Grainsize
- Color
- Sedimentary structures
- Lower contact
- Biogenic features
- Diagenetic features
- Tectonic features
- Porosity
- Fluid saturations

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- Fenestra
- Stylolite
- Fractures

Cements
- Pyrite
- Calcite
- caliche nodule
- calichecrust
- Siderite

Grains
- Pebbles, granules, cobbles, or boulders
- Shale or mudstone clasts
- Carbonaceous material

Biogenic structures
- Root marks and rhyzocretions
- Thalassinoides
- Planolites
- Chondrites
- Skolithos
- Type not distinguished

Carbonate allochems
- Ooids, coated grains
- Pelloids,
- Intraclasts
- Corals
- Molluscs
- Echinoderms (stalked)
- Brachiopods
- Bryozoans
- Forams
- Phylloid algae
- Skeletal fragments
- Fusilinid

Textures, sedimentary & biogenic structures, & diagenesis	Lithology	Lithofacies	Bioturbation	Thin section (*) or perm plug (p)	

Reported core depth

Carbonate Rock Types: B | Gn | Pk | Wk | M | Evapor.

Siliciclastics Grainsize: c | m | f | vf | si | sh

Rare / Common / Abund.

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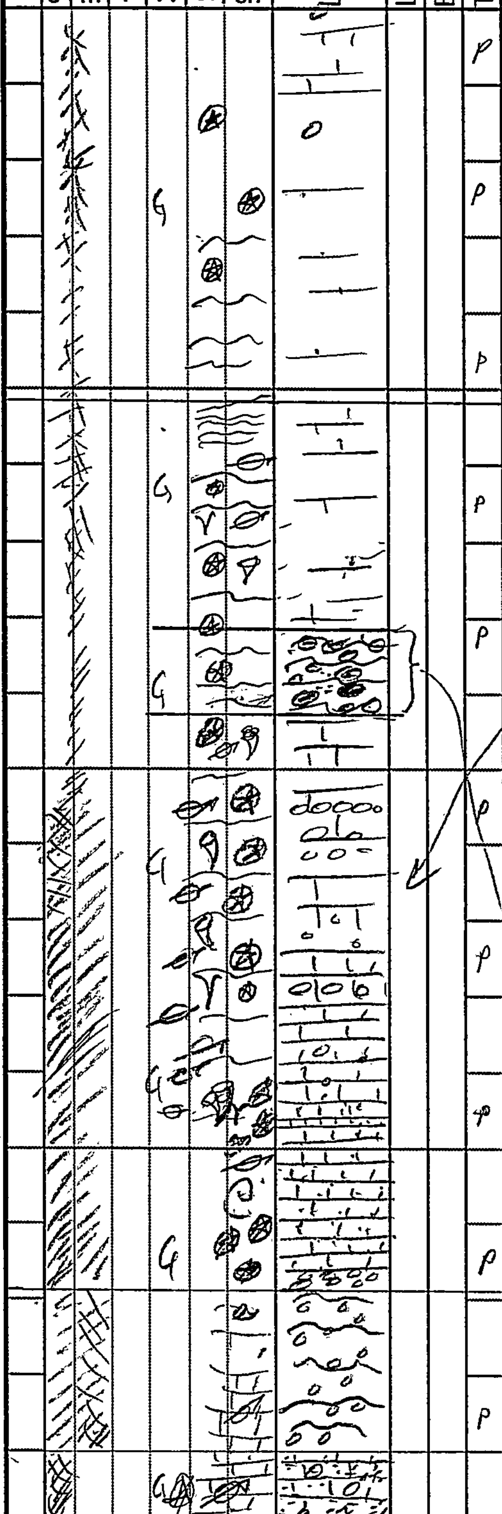
Description by:

Description, interpreted depositional environment, and comments

5380



Becomes much ~~more calcareous~~ lighter colored upwards w. somewhat more fossils.

Sandstone, med, granular, med-gy. to v lt gy (w. calc. cmt). wispy lam of shale, fossiliferous, sparse calcite cmt, conc. in laminae & thin beds glauconite.

85

85.2 (inclined contact.
Calcarenite or grainstone. 1 ϕ, wispy laminae, calc. cmt. v. lt gy.

Crinoid grainstone w. brachiopods, corals, bryozoa, & snails to granular or pebbly med calcarenite or fossiliferous quartzarenite. — Phi
large clasts are fossils or are shale clasts. Wispy shale laminae give impression of near-horizontal lamination. calcite cement: pyrite (scattered) and glauconite (≤1%). Glauc. esp. common @ 92, but still ~1%.

5390

Sandy conglomerate, shale clasts, med gy, wispy lam of shale

95

5396.9 Congl., med sandstone, qtz w shale clasts. lt to dark gy (in shale streaks). weak horizontal bedding enhanced by shale streaks. Sparse brachs & ~~corals~~ crinoid — Phi

5399 SS, calcarenite or qtzose packstone. cse ss w. pebbles & granules. v. lt gy crinoids & other frags. glauconite

5400

AWW 1/96

Rock types

Sandstone (may be left blank)

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Shale (top), mudstone (bottom)

Blocky shale

Limestone

Coal

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SS, Sh, Zs, Ls, etc.
SS type or Ls type
Grainsize
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						Date Page of Lease Well Location County, State Stratigraphy Description by:
5375		Tbp of Cm			p	SS becomes yellowish gray w. v. lt gray streaks at bdy. Yellowish gray is not calcite cemented, about
					p	SS, mdc, glauconitic + fossil. wispy lam common. calc. streaks present.
5380						AWW 1/96

Rock types

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Shale (top), mudstone (bottom)

Blocky shale

Limestone

Coal

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Typenotdistinguished

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