

Depth	Stratigraphic Units				Rock Color	Lithology Rock Column	Sedimentary Structures	Fossils	Porosity	Porosity Type	Remarks
	Members	Formations	Subgroup	Stage							
3475		Maquoketa (Sylvan) Shale							30		3475.0 3480.0 dark gray Above 3480.0 fine sandstone shaly dominant vertical and horizontal tub-shaped burrows (1/16 to 1/4 in cross section) are present and the sandstone is commonly rippled.
3480				Upper							3480.0 3486.5 Interlaminated dark gray slightly calcareous shale sandy and light gray Below 3480' Shale dominates and the rocks are parallel laminated.
3485											
3490		Viola Limestone									3486.5 3497.0 VI. Gray argillaceous medium to finely crystalline dolomite with common horizontal stylolites and irregular discontinuous argillaceous laminae. The unit is bioturbated and horizontal tube-shaped burrows (1/8 to 1/16 in cross section) are common. Porosity is negligible to poor and is predominantly biomoldic. There is minor intercrystalline porosity. Vugs are rare and fractures essentially absent. The unit is an echinoderm wackestone becoming progressively more argillaceous in the upper 0.5' where the rocks have a disrupted appearance. Patchy oil staining occurs in the upper 4.5' in places bioclasts are silicified. Pyrite is rare becoming more common in the upper 0.5'. A 1/2 layer of completely pyritized skeletal debris occurs at the contact with the above unit.
3495											
3500											3497.0 3503.0 V. Light gray mottled medium to coarsely crystalline dolomite. Mottling may be due to bioturbation. As below areas of coarsely crystalline dolomite with good to fair porosity occur with areas of more finely crystalline dolomite with poor to negligible porosity resulting in the mottled character of the rocks. Overall porosity is poor to locally fair. The more porous areas have bio-moldic and intergranular porosity areas of negligible to poor porosity.
3505											3503.0 3515.5 IV. Gray mottled medium to coarsely crystalline dolomite. Mottling is probably due to bioturbation. Light-colored areas have better porosity and appear to be coarser crystalline than darker areas. Porosity fair overall has a patchy distribution reflecting mottling and varies from poor (dark areas) to good (light areas). Porosity appears to be predominantly bio-moldic. In places intergranular porosity may also be present. Fractures are moderately common locally.
3510				Middle							3508.5' to 3509.5' and vugs (1/8 to 1 in length) occur throughout. Minor intercrystalline porosity is present. The lower few feet of this unit was probably an echinoderm wackestone above this the unit appears to be an echinoderm packstone and grainstone. In thin section spots of echinoderms appear to be common to very common in the upper part of the unit. Brachiopods occur throughout and are rare to scarce.
3515											
3520											3515.5 3521.0 III. Light gray mottled medium crystalline argillaceous dolomite. Mottling is probably due to bioturbation. Porosity has a patchy distribution but is fair to good overall excluding the upper 8' of the unit where it is negligible. Porosity probably includes intergranular and bio-moldic but grains and types of porosity are difficult to distinguish due to pervasive dolomite. Numerous fractures occur in the upper 1.5' or the
3525											3521.0 3523.5 II. Light gray planar to low-angle cross-stratified medium to coarsely crystalline dolomite. Depositional textures are generally indistinguishable due to pervasive dolomite. Porosity 3523.5 3536.5 I. Gray to light gray mottled medium crystalline dolomite in places with greenish gray laminae. Mottling is due to bioturbation. Tube-shaped horizontal burrows (1/8 to 1/4 in cross section) are present. Light gray areas have higher porosity locally good and are more coarsely crystalline. Darker generally finer crystalline areas have negligible or poor porosity. Porosity is predominantly irregular-shaped molds probably biomolds not easily recognized as leached bioclasts. Overall porosity is poor to fair above 3531' and poor to negligible below. Fractures generally hairline are scarce becoming moderately common and more open in the upper 3' of the unit. Vuggy porosity is scarce and there is some intercrystalline porosity. Below 3535' the unit was an echinoderm wackestone with rare brachiopods above this the unit was a lime mudstone and locally wackestone with rare to scarce echinoderms and brachiopods. Bioclasts were probably more numerous but they have been leached or can not be distinguished due to dolomitization. Stylolites occur throughout but are not
3530											
3535											

Primary Rock Lithology

- Shale
- Sand, Sandstone
- Dolomite
- Dolomite Wackestone

Secondary Rock Lithology

- Clayey, Argillaceous, clay
- Shaly, shale
- Sandy, sand
- Cherty, chert
- Pyritic, pyrite
- Calcareous

Fossils

- Fresh Water (Fresh Water)
- Brackish Water (Brackish Water)
- Marine (Marine)
- (F) Few
- (M) Many
- (B) Broken
- Brachiopods
- Echinoderms
- Burrows

Sedimentary Structure Symbols

Depositional Structures

- Cross Bedding
- Hummocky cross-stratification
- Lamination
- Parallel Laminations

Deformational Structures

- Nodules - Silicates

Erosional Structures

- Stylolites

Porosity Type

- Intergranular
- Intercrystalline