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CORE DESCRIPTION
MIDDLE ORDOVICIAN CHAZY LIMESTONE
SANDHILL WELL, POWER OIL CO. #9634
WOOD COUNTY, WEST VIRGINIA

Core examined and described on June 24-July 1, 2002, at the WVG&ES core lab in Morgantown, WV, by Richard Smosna.

10148.25—Top of Chazy

10148.25-10167.0

Mudstone, light gray and brown, bioturbated. Numerous rimmed burrows. Abundant horizontal stylolites/clay seams (thin bed of clay with evidence of pressure-solution). Rare crinoids, brachiopods, bryozoans, gastropods. Thin bed of skeletal debris at 10155.9. Some laminae at 10156.5 and 10163, and fenestrae structure at 10153.5 and 10165.9. Short vertical spar-filled fractures (probably tensional cracks associated with stylolites) at 10157, 10161, and 10165.

10167.0-10182.0

Mudstone, light gray, bioturbated. Numerous rimmed burrows. Abundant horizontal stylolites/clay seams. Crinoids, brachiopods, and coiled cephalopod (10178.3). Thin beds of grainstone and/or packstone, with sharp base and hint of graded bedding, at 10169, 10173, 10176, and 10178.4. Long fractures at 10168-10170 and 10181. Several short spar-filled tension cracks at 10174-10176 and 10180.0

10182.0-182.8

Grainstone. Rounded skeletal grains including crinoids and brachiopods. Rounded intraclasts also. Grains parallel bedding. Few stylolites.

10182.8-10184.4

Grainstone. Laminae and low-angle cross-laminae. Microstylolites along lamination.

10184.4-10203.4

Mudstone, light gray, bioturbated. Numerous rimmed burrows. Abundant horizontal stylolites/clay seams. Brachiopods, crinoids, straight cephalopod (10196.0), and coral? Thin beds of skeletal grainstone, with scour base and graded bedding, at 10185.5 and 10188. Lamination at 10184.4-10185.5, 10188-10194, and 10201-10202. Microstylolites along lamination. Long vertical fracture at 10194-10196. Large nodule of dolomite? at 10201.

10203.4-10221.0

Mudstone, light gray, bioturbated. Numerous rimmed burrows. Abundant horizontal stylolites/clay seams. Brachiopods and bryozoans. Thin beds of skeletal grains at 10208, 10209, and 10217. Occasional hint of laminae. Vertical fractures at 10207.7, 10210-10212, and 10219-10221. Short spar-filled tension cracks at 10209-10210 and 10212. Large nodule of dolomite? at 10217.

10221.0-10241.1

Mudstone, light gray, bioturbated. Numerous rimmed burrows. Abundant horizontal stylolites/clay seams. Brachiopods, crinoids, and bryozoans. Thin beds of skeletal debris or intraclasts at 10223.5, 10225.0, 10225.5, and 10227. Lamination at 10237-10238. Long vertical fractures at 10221-10222, 10227-10230, and 10235-10236. Short spar-filled tension cracks at 10230, 10227, and 10239-10242.

10241.1-10250.6

Mudstone, light gray, bioturbated. Numerous rimmed burrows. Abundant horizontal stylolites/clay seams. Brachiopods, crinoids, and bryozoans. Thin beds of skeletal debris and/or intraclasts at 10243, 10248, and 10249. Short spar-filled tension cracks at 10241-10242.

10250.6-10253.0

Mudstone, light gray, bioturbated, stylolites. Crinoids, brachiopods, rugose coral, and skeletal debris. Thin beds of skeletal material (crinoids and bryozoans) at 10252.5 and 10252.8. Peloids at 10252. Short tension cracks.

10253.0-10258.0

Skeletal mudstone-wackestone-packstone, light gray, bioturbated, stylolites. Crinoids, brachiopods, gastropods, oncolites, and skeletal debris floating in a micrite matrix. Fossils becoming more common toward bottom of unit. Horizontal spar-filled fenestrae at base.

10258.0-10262.0

Mudstone, light gray, bioturbated, stylolites. Brachiopods. Short vertical spar-filled voids (burrows?). Rare hint of lamination.

10262.0-10263.0

Skeletal packstone with brachiopods, gastropods, and oncolites.

10263.0-10268.8

Mudstone, light gray, bioturbated, stylolites. Brachiopods. Thin bed of fossil debris and intraclasts with a scour base at 10268. Rim burrows also at 10268. Tension cracks.

10268.8-10269.5

Grainstone with abundant rounded intraclasts. Stylolites.

10269.5-10278.2

Mudstone, light gray, bioturbated, stylolites. Brachiopods, crinoids, and fossil debris. Bed of skeletal grainstone with brachiopods and bryozoans at 10277. Cryptalgal (stromatolitic) lamination at 10273-10274, with microstylolites along the laminae. Hint of laminae at 10278. Short, vertical and horizontal, spar-filled voids at 10272, 10275, and 10277. Short inclined fractures at 10274.

10278.2-10280.0

Mudstone, light gray, bioturbated, stylolites. Several intervals with laminae. Long (4-6") vertical fractures at 10279.

10280.0-10281.0

Interbeds of skeletal packstone-grainstone and mudstone. Brachiopods, bryozoans, and peloids.

10281.0-10283.0

Mudstone, light gray, bioturbated. Short spar-filled voids. Fracture (4") at 10282.

10283.0-10287.7

Mudstone, light gray, bioturbated, stylolites/clay seams. Short spar-filled voids. Short vertical fractures at 10286.

10287.7-10295.0

Mudstone, light gray, bioturbated, dark burrows, stylolites. Brachiopods. Tension cracks up to 1" long.

10295.0-10296.4

Skeletal packstone-wackestone. Brachiopods and crinoids. Burrowed.

10296.4-10297.5

Mudstone, light gray, dark burrows, stylolites. Thin bed of peloids at 10297.5.

10297.5-10300.0

Skeletal wackestone-packstone. Crinoids, brachiopods, coral?, and intraclasts. Bioturbated. Large stromatoporoid at 10299.8.

10300.0-10301.0

Mudstone, light gray, bioturbated. Peloids. Spar-filled vugs up to 1" in diameter; one with **vuggy porosity**—vug has only an inner lining of drusy cement.

10301.0-10303.5

Skeletal packstone. Oncolites (up to ½ inch), brachiopods, bryozoans, crinoids, and peloids. Stylolites.

10303.5-10304.7

Mudstone, bioturbated.

10304.7-10310.3

Mudstone, light gray, bioturbated, dark burrows, stylolites. Brachiopods, gastropods, and crinoids. Intraclasts at 10308. Tension cracks.

10310.3-10316.0

Mudstone, light gray. Abundant spar-filled voids with all orientations (burrows?). Brachiopods and gastropods. Stylolites/clay seams. Several spar-filled vugs at 10315.

10316.0-10322.3

Mudstone, light gray, bioturbated, dark burrows, stylolites/clay seams. Brachiopods and gastropods. Bed of brachiopods, gastropods, and oncolites at 10320. Few spar-filled voids. Tension cracks.

10322.3-10331.5

Mudstone-wackestone, light gray, bioturbated. Very abundant clay seams/shale partings. Gastropods, bryozoans, brachiopods, crinoids, and cephalopod (at 10329). Brachiopod bed at 10330.5, valves concave down and poorly graded. Peloids abundant in bottom 8". Few small calcite-filled vugs at 10329-10330.

10331.5-10334.5

Mudstone, light gray, bioturbated. Very abundant stylolites/clay seams. Brachiopods and peloids. Minute spar-filled voids (tiny burrows?). Tension cracks.

10334.5-10337.0

Skeletal mudstone-wackestone-packstone. Brachiopods (many articulated), crinoids, and skeletal debris. Bioturbated. Stylolites/clay seams.

10337.0-10339.0

Mudstone, bioturbated, stylolites. Short spar-filled voids.

10339.0-10343.5

Mudstone, light gray, bioturbated, stylolites. Brachiopods. Short spar-filled voids at 10342. Horizontal fracture (6") at 10340.

10343.5-10348.0

Skeletal wackestone. Brachiopods and bryozoans. Peloidal bed at 10346. **Pin-point porosity** at 10347.5, possibly small fossil molds.

10348.0-10348.7

Mudstone with abundant shale partings.

10348.7-10358.8

Not described. Much of this core is broken into small pieces.

10358.8-10366.0

Skeletal packstone-wackestone, light gray, bioturbated, stylolites/clay seams. Brachiopods, crinoids, and skeletal debris.

10336.0-10368.2

Skeletal mudstone-wackestone-packstone with brachiopods, bryozoans, and crinoids.

10368.2-10377.8

Skeletal mudstone-wackestone-packstone, light gray, stylolites/clay seams, dark gray bioturbation. Brachiopods, bryozoans, and crinoids. Pyrite. Tension cracks.

10377.8-10385.8

Skeletal packstone and mudstone, light gray, stylolites/clay seams, dark gray bioturbation. Brachiopods, bryozoans, crinoids, gastropods, large rugose coral (at 10380), skeletal debris, and peloids. Pyrite.

10385.8-10393.2

Skeletal mudstone-wackestone-packstone, light gray, clay seams, dark gray bioturbation. Brachiopods, bryozoans, crinoids, and cephalopod. Fractures at 10392-10393.2.

10393.2-10402.5

Skeletal mudstone-wackestone-packstone, light gray, stylolites/clay seams, bioturbation. Bryozoans, crinoids, oncolites, and skeletal debris. Bed of intraclasts at 10396. Fractures at 10397-10398.

10402.5-10411.1

Mudstone, light gray, bioturbated, dark gray clay seams/stylolites. Brachiopods, bryozoans, gastropods, and crinoids. 2-inch laminated bed at 10408.

10411.1-10420.8

Mudstone, laminated, light gray. Abundant spar-filled fenestrae, irregular shapes and orientations. Ostracodes and burrows. Few stylolites. Interval is highly fractured; 16-inch vertical fracture at 10412; core broken into small pieces at 10415-10416 and 10419-10420.

10420.8-10422.0

Mudstone with brachiopods and crinoids. Bioturbated. Stylolites. Vertical fracture at 10421.

10422.0-10425.0

Skeletal grainstone-packstone. Brachiopods, crinoids, and skeletal debris. Intraclasts. Rare lamination.

10425.0-10428.0

Mudstone, laminated. Peloids and intraclasts. Sheet cracks. Microstylolites.

10428.0-10430.7

Mudstone, bioturbated, stylolite/clay seams. Crinoids and brachiopods. Hint of lamination. Small spar-filled vugs (possible skeletal molds).

10430.7-10433.0

Mudstone-wackestone with ostracodes, peloids, and intraclasts. Fenestrae. Hint of lamination. Pyrite. **Pin-point porosity.**

10433.0-10438.1

Mudstone, bioturbated and laminated, stylolites. Crinoids and ostracodes. Spar-filled voids. Thin bed of wackestone-packstone with intraclasts, peloids, and fenestrae at 10433.5. Vertical fractures at 10435.

Show of gas reported between 10439-10469, perhaps corresponding to fractures observed at 10435, 10441-10442, 10442-10443, and 10453.

10438.1-10445.7

Mudstone, light gray, cryptalgal lamination, stylolites/clay seams. Peloids, intraclast, and ostracodes. Abundant spar-filled voids of all orientations; below 10443 many horizontal and vertical spar-filled tubes. Below 10443 bioturbated. Oblique fractures at 10441-10442. shaly and broken dolomite at 10442-10443.

10445.7-10449.3

Mudstone, alternating laminated and bioturbated zones. Ostracodes, brachiopods, and bryozoans. Peloids. Occasional spar-filled tubes. Abundant stylolites/clay seams becoming very abundant at 10448.2-10449.3.

10449.3-10452.7

Packstone with peloids, intraclasts, ostracodes, and brachiopods. Interbeds of mudstone with cryptalgal lamination and fenestrae. Few minute burrows in mudstone.

10452.7-10468.4

Mudstone, light gray, bioturbated, stylolites/clay seams. Crinoids, ostracodes, gastropods, and bryozoans. Few laminae. Many zones of spar-filled tubes and smaller fenestrae. Tension cracks. Fractures at 10453.

Show of gas reported between 10472-10480, perhaps corresponding to fractures observed at 10468-10472.

10468.4-10472.0

Shale, nodular limestone, and limestone with shale partings (from top to bottom). Fractures.

10472.0-10479.1

Mudstone, burrowed and laminated. Large columnar stromatolite, draped by bed of skeletal debris, at 10475. Stylolites/clay seams.

10479.1-10482.0

Packstone-grainstone with peloids and intraclasts. Alternating thin beds of mud-cracked mudstone with cryptalgal laminae.

Show of gas reported between 10490-10496, perhaps corresponding to fracture and pin-point porosity observed at 10482 and 10495.

10482.0-10496.6

Mudstone, laminated and bioturbated, stylolites. Crinoids, peloids, intraclasts. Pyrite. Vertical spar-filled tubes (burrows?). Domed stromatolite at 10488.8; also 9-inch bed at 10495 of small domed stromatolites, cracked, with peloidal packstone and **pin-point porosity**. Thin bed of intraclastic grainstone at 10486. Nodular bedding at 10484.4. Fracture at 10482.

10496.6-10503.0

Mudstone, laminated but with some burrows. Peloids and ostracodes. Interbeds of intraclast-peloid packstone. Small spar-filled vugs at 10497.5, 10498.0, 10500.0 and 10501.0. Stylolites.

Note: interval from 10503.0-10520.0 consists of dolomite and dolomitic limestone.

10503.0-10512.4

Mudstone, cryptalgal laminae. Peloid beds and tiny burrows. Mudcrack at 10506. 5-inch shale at 10509.3. Stylolites.

10512.4-10520.0

Mudstone, laminated. Beds of intraclasts and peloids. 5-inch shale at 10512.8 and 10519.

Note: interval from 10520.0 to 10653.0 consists of dolomite.

10520.0-10527.7

Mudstone, laminated and burrowed. Lamination is cryptalgal; microstylolites along laminae. Scattered intraclasts and peloids throughout interval; thin beds of these grains at 10523.5 and 10524.9. Patches of anhydrite common between 10524.9-10526.0, less so between 10526.0-10527.7.

10527.7-10544.1

Mudstone, cryptalgal lamination. Scattered tiny crystals of anhydrite at 10528; small patches of anhydrite scattered throughout the interval; dolomite-breccia zone with anhydrite crystals at 10531-10532 and 10534-10535. Thin beds of shale at 10536.2, 10537.3, and 10537.9. Oblique fractures at 10535, vertical fractures at 10541.

10544.1-10559.1

Mudstone, cryptalgal lamination. Few thin beds of peloids, intraclasts, and ostracodes. Anhydrite crystals throughout; large anhydrite nodules at 10546-10547 which disrupt the dolomite fabric. Mudcrack at 10553.7. Black shale parting at 10554.3.

10559.1-10575.5

Mudstone, cryptalgal lamination, microstylolites along laminae. Few thin beds of intraclasts. Zone of burrows at 10567-10568. Stromatolites at 10563 and 10575. Zones of dolomite-breccia and anhydrite patches at 10559, 10561, 10564, 10571, 10572, and 10575.5. Small vertical fractures at 10564-10565.

10575.5-10591.0

Mudstone, cryptalgal lamination. Several peloid laminae and thin-medium beds of dolomite clasts. Mudcracks. Few anhydrite crystals. Domed stromatolite at 10587.5. Thin beds of black shale at 10586 and 10590.

10591.0-10606.1

Mudstone—laminated, mottled, or structureless. Several thin beds of intraclasts. Zone of dolomite-breccia with anhydrite at 10591 and 10595. Patches of anhydrite at 10596 and 10599.5. Thin shale beds at 10592 and 10601.

10606.1-10621.3

Mudstone—cryptalgal lamination, mottled, or structureless. Traces of anhydrite throughout interval; anhydrite patches at 10606.5, 10614, 10616, and 10620. Zones of dolomite-breccia at 10612 and 10619.5. 5-inch beds of black shale at 10613 and 10618.

10621.3-10637.7

Mudstone, laminated. Intraclasts, scattered and concentrated in beds. Thick beds (up to 2 ft) of dolomite-breccia at 10627-10628, 10631-10633, and 10635; uppermost breccia is capped by a domed stromatolite. Patch of anhydrite at 10622. 6-inch black shale at 10623 and 10633.

10637.7-10644.0

Mudstone, laminated or mottled. Anhydrite patch at 10637/10638; and dolomite-breccia with anhydrite at 10637. Breccia-stylolite zone at 10640.

10644.0—Possible Base of Chazy.

10644.0-10653.0

Olive-colored argillaceous dolomite. Abundant quartz sand floating in dolomite at 10644-10645. Thin bed of black shale at 10645.1. Unit is transitional with the underlying formation of siltstone, sandstone, and silty dolomite.