

Status Report



Total Records: 84

Top 3 County Records		Top 3 Log Type Records		Top 3 Coal Records	Top 3 Member Records	
Hardin	84	Survey Core Study	52	0	WEST BADEN GROUP SANDSTONE	25
		Drillers Log	11		CEDAR BLUFF LIMESTONE	20
		Other Core Study	7		HANEY LIMESTONE	15

Data Summary

Cross-tabulation of all selected logs, individual logs will vary.

Tabulation of logged intervals only, individual logs will vary.

Depth and Thickness measurements in feet

Member	Lithology	Avg. Depth	Min. Depth	Max. Depth	Avg. Thk	Min. Thk	Max. Thk
CEDAR BLUFF GROUP		244.2	26.6	807.0	82.1	35.4	130.0
GRASSY KNOB CHERT		579.0	300.0	858.0	559.5	495.0	624.0
ORDOVICIAN SYSTEM		1401.0	1027.0	1775.0	-	-	-
KINKAID	LIMESTONE	39.9	37.5	42.2	42.4	42.4	42.4
DEGONIA	SANDSTONE	46.2	7.8	84.6	27.3	21.2	33.3
CLORE	SANDSTONE	54.6	14.8	117.9	46.6	34.0	59.1
PALESTINE	SANDSTONE	82.3	48.8	115.8	82.6	58.7	106.4
MENARD	LIMESTONE	65.7	3.5	222.2	59.4	15.9	94.0
WALTERSBURG	SANDSTONE	80.2	8.8	172.4	35.1	22.7	49.9
VIENNA	LIMESTONE	115.3	31.5	218.7	18.0	0.9	36.3
TAR SPRINGS	SANDSTONE	102.3	9.4	232.4	81.9	16.3	126.4
HARDINSBURG	SANDSTONE	133.9	4.0	366.4	72.7	22.0	101.4
HANEY	LIMESTONE	183.1	20.0	467.8	113.7	35.4	169.9
FRAILEYS	SHALE	243.8	11.3	531.7	51.2	11.3	80.1
BEECH CREEK	LIMESTONE	326.9	161.0	594.0	4.9	2.4	9.4
WEST BADEN GROUP		150.8	6.0	596.4	145.7	6.6	268.2
NEW ALBANY GROUP		13.5	10.6	18.0	45.1	5.2	85.0
DEVONIAN SYSTEM		44.0	13.0	75.0	-	-	-
GRAND TOWER	LIMESTONE	151.5	100.0	203.0	143.5	143.0	144.0
BACKBONE	LIMESTONE	545.5	275.0	816.0	33.5	25.0	42.0
SILURIAN SYSTEM		1138.5	795.0	1482.0	-	-	-
MOCCASIN SPRINGS	LIMESTONE	1138.5	795.0	1482.0	110.0	95.0	125.0
ST. CLAIR	LIMESTONE	1248.5	890.0	1607.0	44.0	40.0	48.0
SEXTON CREEK	LIMESTONE	1292.5	930.0	1655.0	13.0	12.0	14.0
EDGEWOOD	LIMESTONE	1305.5	942.0	1669.0	95.5	85.0	106.0
MAQUOKETA SHALE	SHALE	1401.0	1027.0	1775.0	219.5	198.0	241.0
PLATTEVILLE GROU		1702.0	1294.0	2110.0	785.0	785.0	785.0
DUTCHTOWN	LIMESTONE	3207.0	3207.0	3207.0	-	-	-
					Net Coal		

Coal Logs

This report contains non-confidential coal log descriptions from the Coal Section's stratigraphic database in the county listed. Coal logs are sorted by township/range and section. For each log, North American Datum 1983 (NAD83) Longitude/Latitude coordinates in decimal degrees are provided as well as a legal description which uses the Public Land Survey System (PLSS). The following are two examples of coal log locations:

Example location 1: COUNTY: SALINE TWP/RNG: 7S 5E SECTION: 19 QUARTERS/FOOTAGES: 330'S line, 330'W line of SE NE
LONGITUDE: -88.691911 LATITUDE: 37.900435

This log is from a borehole located in Saline County, Township 7 South, Range 5 East, 330 feet from the south line and 330 feet from the west line of the southeast quarter of the northeast quarter of section 19.

Example location 2: COUNTY: SALINE TWP/RNG: 9S 5E SECTION: 36 QUARTERS/FOOTAGES: 530'N, 530'W, SE/c NE NW
LONGITUDE: -88.60834 LATITUDE: 37.700006

This log is from a borehole located in Saline County, Township 9 South, Range 5 East, 530 feet north and 530 feet west of the southeast corner of the northeast quarter of the northwest quarter of section 36.

Beneath the header is geology information for that data point. The Coal Section stratigraphic database from which this .PDF file is derived is a multi-project database which contains drill hole and outcrop descriptions of Pennsylvanian stratigraphy in Illinois. Consequently, the level of detail and accuracy in the data and their interpretation vary (sometimes widely) with the geologist, project type, or original data source. Multiple descriptions of a particular location may be present. Note that both the coal stratigraphic database and this .PDF listing are only a subset of the total amount of data available from the ISGS Geologic Records Library archives, and reflect only coal-specific data and interpretations of past and present Coal Section geologists. They are not a comprehensive listing of all data that may be available from the ISGS.

MAPID: 06900278000C VERSION: 1 PROJECT: CUS-PILOT
 COUNTY: HARDIN TWP/RNG: 11S 7E SECTION: 11 QUARTERS/FOOTAGES: 558' N line, 270' W line of SE SW
 QUADRANGLE: HEROD LONGITUDE: -88.407693 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.572151 DATE COLLECTED: 0 / 0 / 1951
 SURFACE ELEVATION (FT.): 418.0 LOGGED (FT.): 1045.0 LOG TYPE: Survey Core Study
 SOURCE: U.S. BUREAU OF MINES WELL TYPE: Misc. Borings 100 Ft. & Deeper
 COMMENT: CORE STUDY-DB SAXBY 5/51.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
418.0				8.8	0.0	"OVERBURDEN"
409.2				0.0	8.8	
409.2	MISSISSIPPIAN	WALTERSBURG	SANDSTONE	22.7	8.8	
386.5	MISSISSIPPIAN	VIENNA	LIMESTONE	18.2	31.5	
368.3	MISSISSIPPIAN	TAR SPRINGS	SANDSTONE	107.4	49.7	
260.9			LIMESTONE	58.4	157.1	
202.5	MISSISSIPPIAN	HARDINSBURG	SANDSTONE	95.8	215.5	
106.7	MISSISSIPPIAN	HANEY	LIMESTONE	137.2	311.3	
-30.5	MISSISSIPPIAN	BEECH CREEK	LIMESTONE	3.7	448.5	
-34.2	MISSISSIPPIAN	WEST BADEN GROUP	SANDSTONE	268.2	452.2	
-302.4			LIMESTONE	0.0	720.4	UNCERTAIN TOPS & FAULTING BELOW DB.

MAPID: 06920778000C VERSION: 1

PROJECT: BLM

COUNTY: HARDIN TWP/RNG: 11S 7E SECTION: 11 QUARTERS/FOOTAGES: 500' N line, 1320' W line of NW
 QUADRANGLE: HEROD LONGITUDE: -88.408385 GEOLOGIST: BARGH,M
 CONFIDENTIAL: N LATITUDE: 37.583272 DATE COLLECTED: 10 / 30 / 1979
 SURFACE ELEVATION (FT.): 440.0 LOGGED (FT.): 120.0 LOG TYPE: Drillers Log
 SOURCE: Q. RICHEY, DRILLER WELL TYPE: Water Well
 COMMENT:

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
440.0			UNCONSOLIDATED	5.0	0.0	
435.0			ROCK	15.0	5.0	
420.0			COAL	1.5	20.0	
418.5			ROCK	98.5	21.5	

MAPID: 06920942000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 11S 7E SECTION: 11 QUARTERS/FOOTAGES: SE SE
 QUADRANGLE: HEROD LONGITUDE: -88.397173 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.571937 DATE COLLECTED:
 SURFACE ELEVATION (FT.): 500.0 LOGGED (FT.): 100.0 LOG TYPE: Survey Sample Study
 SOURCE: WELL TYPE: Water Well
 COMMENT: SAMPLE TOPS-GK MAYNOR 5/87.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
500.0			CLAYSTONE	4.0	0.0	"CLAY 0-4"
496.0				0.0	4.0	
496.0	MISSISSIPPIAN	HARDINBURG	SANDSTONE	26.0	4.0	
470.0	MISSISSIPPIAN	HANEY	LIMESTONE	0.0	30.0	

MAPID: 069274C0001F VERSION: 1

PROJECT: BLM

COUNTY: HARDIN TWP/RNG: 11S 7E SECTION: 11 QUARTERS/FOOTAGES: NW SE NW
 QUADRANGLE: HEROD LONGITUDE: -88.407275 GEOLOGIST: BARGH,M
 CONFIDENTIAL: N LATITUDE: 37.580089 DATE COLLECTED: 0 / 0 / 1961
 SURFACE ELEVATION (FT.): 460.0 LOGGED (FT.): 10.0 LOG TYPE:
 SOURCE: FLD NOTES-SHAW WELL TYPE: Strip Mine
 COMMENT:

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
-			COAL	-		
-			ROCK	10.0		

MAPID: 06921194000C VERSION: 1

PROJECT: NCRDS 02

COUNTY: HARDIN TWP/RNG: 11S 7E SECTION: 24 QUARTERS/FOOTAGES: 100' S line, 150' E line of NE SW
 QUADRANGLE: HEROD LONGITUDE: -88.386548 GEOLOGIST: STRAAYER
 CONFIDENTIAL: N LATITUDE: 37.544708 DATE COLLECTED: 1 / 26 / 1956
 SURFACE ELEVATION (FT.): 473.0 LOGGED (FT.): 107.0 LOG TYPE: Drillers Log
 SOURCE: AYRSHIRE 1 WELL TYPE: Coal Test
 COMMENT: HICK'S DOME BOX 44

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
473.0	PLEISTOCENE		CLAY	107.0	0.0	AND BROKEN ROCK

MAPID: 06921195000C VERSION: 1

PROJECT: NCRDS 02

COUNTY: HARDIN TWP/RNG: 11S 7E SECTION: 24 QUARTERS/FOOTAGES: 500' S line, 1094' W line of NE SW
 QUADRANGLE: HEROD LONGITUDE: -88.386875 GEOLOGIST: STRAAYER
 CONFIDENTIAL: N LATITUDE: 37.545807 DATE COLLECTED: 1 / 27 / 1956
 SURFACE ELEVATION (FT.): 500.0 LOGGED (FT.): 100.0 LOG TYPE: Drillers Log
 SOURCE: AYRSHIRE 2 WELL TYPE: Coal Test
 COMMENT: HICK'S DOME BOX 44

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
500.0	PLEISTOCENE		CLAY	100.0	0.0	AND BROKEN ROCK

MAPID: 06921196000C VERSION: 1

PROJECT: NCRDS 02

COUNTY: HARDIN TWP/RNG: 11S 7E SECTION: 24 QUARTERS/FOOTAGES: 425' S line, 352' E line of NW SE
 QUADRANGLE: HEROD LONGITUDE: -88.382596 GEOLOGIST: STRAAYER
 CONFIDENTIAL: N LATITUDE: 37.545606 DATE COLLECTED: 1 / 30 / 1956
 SURFACE ELEVATION (FT.): 620.0 LOGGED (FT.): 97.0 LOG TYPE: Drillers Log
 SOURCE: AYRSHIRE 3 WELL TYPE: Coal Test
 COMMENT: HICK'S DOME BOX 44

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
620.0	PLEISTOCENE		CLAY	97.0	0.0	AND BROKEN ROCK

MAPID: 06921197000C VERSION: 1

PROJECT: NCRDS 02

COUNTY: HARDIN TWP/RNG: 11S 7E SECTION: 24 QUARTERS/FOOTAGES: 576' S line, 0' E line of NE SW
 QUADRANGLE: HEROD LONGITUDE: -88.386008 GEOLOGIST: STRAAYER
 CONFIDENTIAL: N LATITUDE: 37.546017 DATE COLLECTED: 1 / 31 / 1956
 SURFACE ELEVATION (FT.): 480.0 LOGGED (FT.): 88.0 LOG TYPE: Drillers Log
 SOURCE: AYRSHIRE 4 WELL TYPE: Coal Test
 COMMENT: HICK'S DOME BOX 44

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
480.0	PLEISTOCENE		CLAY	70.5	0.0	AND BROKEN ROCK
409.5	PLEISTOCENE		CLAY	18.0	70.5	AND BROKEN LIMESTONE

MAPID: 06921198000C VERSION: 1

PROJECT: NCRDS 02

COUNTY: HARDIN TWP/RNG: 11S 7E SECTION: 24 QUARTERS/FOOTAGES: 660' S line, 0' W line of NE SW
 QUADRANGLE: HEROD LONGITUDE: -88.390644 GEOLOGIST: STRAAYER
 CONFIDENTIAL: N LATITUDE: 37.546242 DATE COLLECTED: 2 / 7 / 1956
 SURFACE ELEVATION (FT.): 540.0 LOGGED (FT.): 147.0 LOG TYPE: Drillers Log
 SOURCE: AYRSHIRE 5 WELL TYPE: Coal Test
 COMMENT: HICK'S DOME BOX 44

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
540.0	PLEISTOCENE		CLAY	147.0	0.0	AND BROKEN ROCK

MAPID: 06921199000C VERSION: 1

PROJECT: NCRDS 02

COUNTY: HARDIN TWP/RNG: 11S 7E SECTION: 24 QUARTERS/FOOTAGES: 45' N line, 1027' E line of NW SE
 QUADRANGLE: HEROD LONGITUDE: -88.384869 GEOLOGIST: STRAAYER
 CONFIDENTIAL: N LATITUDE: 37.547969 DATE COLLECTED: 2 / 7 / 1956
 SURFACE ELEVATION (FT.): 540.0 LOGGED (FT.): 85.0 LOG TYPE: Drillers Log
 SOURCE: AYRSHIRE 6 WELL TYPE: Coal Test
 COMMENT: HICK'S DOME BOX 44

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
540.0	PLEISTOCENE		CLAY	85.0	0.0	AND BROKEN ROCK

MAPID: 06921200000C VERSION: 1

PROJECT: NCRDS 02

COUNTY: HARDIN TWP/RNG: 11S 7E SECTION: 24 QUARTERS/FOOTAGES: 0' N line, 882' E line of NW SE
 QUADRANGLE: HEROD LONGITUDE: -88.384368 GEOLOGIST: STRAAYER
 CONFIDENTIAL: N LATITUDE: 37.548094 DATE COLLECTED: 2 / 14 / 1956
 SURFACE ELEVATION (FT.): 520.0 LOGGED (FT.): 147.0 LOG TYPE: Drillers Log
 SOURCE: AYRSHIRE 8 WELL TYPE: Coal Test
 COMMENT: HICK'S DOME BOX 44

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
520.0	PLEISTOCENE		CLAY	147.0	0.0	AND BROKEN ROCK

MAPID: 06900047000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 11S 7E SECTION: 25 QUARTERS/FOOTAGES: 1800' S line, 1400' E line
 QUADRANGLE: HEROD LONGITUDE: -88.381977 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.531104 DATE COLLECTED: 5 / 0 / 1947
 SURFACE ELEVATION (FT.): 505.0 LOGGED (FT.): 34.0 LOG TYPE: Survey Core Study
 SOURCE: POTSCH, JOHN P. SR. WELL TYPE: Misc. Borings Less Than 100 Ft.
 COMMENT: CORE STUDY-LE WORKMAN; ASSUME VERTICAL.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
505.0				10.6	0.0	"SURFACE"
494.4	MISSISSIPPIAN	NEW ALBANY GROUP	SHALE	0.0	10.6	

MAPID: 06920746000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 11S 7E SECTION: 36 QUARTERS/FOOTAGES: 470' S line, 400' E line of SE NE NE
 QUADRANGLE: HEROD LONGITUDE: -88.378656 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.523728 DATE COLLECTED: 12 / 0 / 1978
 SURFACE ELEVATION (FT.): 578.0 LOGGED (FT.): 370.0 LOG TYPE: Multiple log types
 SOURCE: RECTOR & STONE DRLG. CO. WELL TYPE: Structure Test
 COMMENT: CORE/SAMPLE STUDY-RM CLUFF, ET AL 12/78.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
494.1			SHALE	181.2	83.9	
312.9			SHALE	71.4	265.1	
241.5			LIMESTONE	0.0	336.5	

MAPID: 06900070000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 11S 8E SECTION: 2 QUARTERS/FOOTAGES: 1250' N line, 1550' E line of NE

QUADRANGLE: KARBERS RIDGE LONGITUDE: -88.287619 GEOLOGIST: GK MAYNOR

CONFIDENTIAL: N LATITUDE: 37.595642 DATE COLLECTED: 0 / 0 / 1966

SURFACE ELEVATION (FT.): 705.0 LOGGED (FT.): 200.0 LOG TYPE: Drillers Log

SOURCE: LARKIN DRLG CO WELL TYPE: Water Well

COMMENT:

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
705.0				8.0	0.0	"CLAY 0-5', DRIFT 5-8'."
697.0			SANDSTONE	0.0	8.0	

MAPID: 06920984000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 11S 8E SECTION: 5 QUARTERS/FOOTAGES: SE

QUADRANGLE: KARBERS RIDGE LONGITUDE: -88.342224 GEOLOGIST: GK MAYNOR

CONFIDENTIAL: N LATITUDE: 37.588434 DATE COLLECTED:

SURFACE ELEVATION (FT.): 545.0 LOGGED (FT.): 296.0 LOG TYPE: Survey Core Study

SOURCE: OZARK MAHONING WELL TYPE: Mineral Test

COMMENT: CORE TOPS-GK MAYNOR 6/87.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
361.0				0.0	184.0	CORE STARTS AT 184'
361.0			LIMESTONE	14.9	184.0	
346.1	MISSISSIPPIAN	HARDINSBURG	SANDSTONE/SHALE	87.1	198.9	
259.0	MISSISSIPPIAN	HANEY	LIMESTONE	0.0	286.0	

MAPID: 06900045000C VERSION: 1

PROJECT: BLM

COUNTY: HARDIN TWP/RNG: 11S 8E SECTION: 6 QUARTERS/FOOTAGES: SE SE SE NE

QUADRANGLE: KARBERS RIDGE LONGITUDE: -88.356743 GEOLOGIST: BARGH,M

CONFIDENTIAL: N LATITUDE: 37.592559 DATE COLLECTED: 5 / 0 / 1962

SURFACE ELEVATION (FT.): 464.0 LOGGED (FT.): 17.5 LOG TYPE: Drillers Log

SOURCE: ILL. DIVISION OF HIGHWAYS WELL TYPE: Engineering Test Holes

COMMENT:

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
464.0			UNCONSOLIDATED	12.0	0.0	
452.0			COAL	0.5	12.0	SOFT
451.5			ROCK	5.0	12.5	

MAPID: 06900072000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 11S 8E SECTION: 9 QUARTERS/FOOTAGES: 528' S line, 462' W line of SE NW

QUADRANGLE: KARBERS RIDGE LONGITUDE: -88.331544 GEOLOGIST: GK MAYNOR

CONFIDENTIAL: N LATITUDE: 37.578848 DATE COLLECTED: 0 / 0 / 1941

SURFACE ELEVATION (FT.): 640.0 LOGGED (FT.): 98.0 LOG TYPE: Survey Sample Study

SOURCE: U.S. FOREST SERVICE WELL TYPE: Water Well

COMMENT: SAMPLE STUDY-EC COCKRUM 6/42.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
640.0			CLAYSTONE	20.0	0.0	
620.0				0.0	20.0	
620.0	MISSISSIPPIAN	HANEY	LIMESTONE	0.0	20.0	"GOLCONDA"

MAPID: 06900658000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 11S 8E SECTION: 9 QUARTERS/FOOTAGES: 100' N line, 950' E line of SE

QUADRANGLE: KARBERS RIDGE LONGITUDE: -88.32252 GEOLOGIST: GK MAYNOR

CONFIDENTIAL: N LATITUDE: 37.577055 DATE COLLECTED: 10 / 0 / 1972

SURFACE ELEVATION (FT.): 620.0 LOGGED (FT.): 475.0 LOG TYPE: Electric Log

SOURCE: BEANLAND, JOHN R. WELL TYPE: Dry Hole

COMMENT: GR-LOG TOPS-HM BRISTOL 10/72.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
620.0			CLAYSTONE	4.0	0.0	
616.0				0.0	4.0	
616.0	MISSISSIPPIAN	HARDINSBURG	SANDSTONE	22.0	4.0	
594.0	MISSISSIPPIAN	HANEY	LIMESTONE	135.0	26.0	"GOLCONDA"
459.0	MISSISSIPPIAN	BEECH CREEK	LIMESTONE	5.0	161.0	
454.0	MISSISSIPPIAN	WEST BADEN GROUP	SANDSTONE	0.0	166.0	

MAPID: 06900073000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 11S 8E SECTION: 11 QUARTERS/FOOTAGES: 485' S line, 420' E line of NE NE
 QUADRANGLE: KARBERS RIDGE LONGITUDE: -88.28373 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.582429 DATE COLLECTED: 0 / 0 / 1973
 SURFACE ELEVATION (FT.): 530.0 LOGGED (FT.): 285.0 LOG TYPE: Other Core Study
 SOURCE: THOMPSON SCERIAL WELL TYPE: Mineral Test
 COMMENT: CORE STUDY-CO. 7/49.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
530.0				3.5	0.0	"SURFACE"
526.5				0.0	3.5	
526.5	MISSISSIPPIAN	MENARD	LIMESTONE	56.6	3.5	
469.9	MISSISSIPPIAN	WALTERSBURG	SANDSTONE	49.9	60.1	
420.0	MISSISSIPPIAN	VIENNA	LIMESTONE	0.9	110.0	
419.1	MISSISSIPPIAN	TAR SPRINGS	SANDSTONE/SHALE	126.4	110.9	
292.7			LIMESTONE	0.0	237.3	FAULT 243.8'

MAPID: 06900021000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 11S 8E SECTION: 13 QUARTERS/FOOTAGES: 865' S line, 1016' W line of SW
 QUADRANGLE: KARBERS RIDGE LONGITUDE: -88.278814 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.557606 DATE COLLECTED: 11 / 0 / 1957
 SURFACE ELEVATION (FT.): 605.0 LOGGED (FT.): 1024.0 LOG TYPE: Other Core Study
 SOURCE: NEW JERSEY ZINC CO. WELL TYPE: Mineral Test
 COMMENT: CORE STUDY-NJ ZINC 11/57.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
605.0			SANDSTONE	41.3	0.0	
563.7				0.0	41.3	
563.7	MISSISSIPPIAN	MENARD	LIMESTONE	94.0	41.3	
469.7	MISSISSIPPIAN	WALTERSBURG	SHALE & SANDSTONE	37.6	135.3	
432.1	MISSISSIPPIAN	VIENNA	LIMESTONE	26.3	172.9	
405.8	MISSISSIPPIAN	TAR SPRINGS	SANDSTONE	96.3	199.2	
309.5			LIMESTONE	37.2	295.5	
272.3	MISSISSIPPIAN	HARDINSBURG	SANDSTONE	89.7	332.7	
182.6	MISSISSIPPIAN	HANEY	LIMESTONE	135.8	422.4	"GOLCONDA"
46.8	MISSISSIPPIAN	BEECH CREEK	LIMESTONE	9.4	558.2	INFERRED TOP-GK MAYNOR 6/87
37.4	MISSISSIPPIAN	WEST BADEN GROUP	SANDSTONE	205.8	567.6	
-168.4	MISSISSIPPIAN	CEDAR BLUFF GROU	LIMESTONE	78.9	773.4	"RENAULT & LEVIAS (830.7)"
-247.3			SANDSTONE	19.7	852.3	"ROSICLARE SS"
-267.0			LIMESTONE	0.0	872.0	"FREDONIA"

MAPID: 06900074000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 11S 8E SECTION: 14 QUARTERS/FOOTAGES: 257' N line, 705' W line of NW
 QUADRANGLE: KARBERS RIDGE LONGITUDE: -88.298185 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.569273 DATE COLLECTED: 0 / 0 / 1938
 SURFACE ELEVATION (FT.): 500.0 LOGGED (FT.): 175.0 LOG TYPE: Survey Core Study
 SOURCE: HILLSIDE FLUORSPAR WELL TYPE: Mineral Test
 COMMENT: CORE STUDY J. N. PAYNE.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
500.0				0.0	0.0	
-	MISSISSIPPIAN	WEST BADEN GROUP	SANDSTONE	0.0		"BETHEL"
461.8	MISSISSIPPIAN	CEDAR BLUFF GROU	LIMESTONE	76.4	38.2	"RENAULT & LEVIAS (103.1)"
385.4			SANDSTONE	0.0	114.6	"ROSICLARE SS"

MAPID: 06900075000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 11S 8E SECTION: 14 QUARTERS/FOOTAGES: 498' N line, 838' W line
 QUADRANGLE: KARBERS RIDGE LONGITUDE: -88.297735 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.568609 DATE COLLECTED: 12 / 0 / 1944
 SURFACE ELEVATION (FT.): 480.0 LOGGED (FT.): 335.0 LOG TYPE: Survey Core Study
 SOURCE: U.S. BUREAU OF MINES WELL TYPE: Mineral Test
 COMMENT: CORE STUDY-JN PAYNE.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
480.0				16.1	0.0	"OVERBURDEN"
463.9				0.0	16.1	
463.9	MISSISSIPPIAN	MENARD	LIMESTONE	15.9	16.1	
448.0	MISSISSIPPIAN	WALTERSBURG	SILTSTONE/SANDSTONE	35.2	32.0	
412.8	MISSISSIPPIAN	VIENNA	LIMESTONE	26.5	67.2	
386.3	MISSISSIPPIAN	TAR SPRINGS	SANDSTONE/SHALE	120.2	93.7	
266.1			LIMESTONE	20.8	213.9	
245.3	MISSISSIPPIAN	HARDINBURG	SANDSTONE	0.0	234.7	FAULT 275.4'

MAPID: 06900083000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 11S 8E SECTION: 15 QUARTERS/FOOTAGES: SE SW NW NW

QUADRANGLE: KARBERS RIDGE LONGITUDE: -88.317621 GEOLOGIST: GK MAYNOR

CONFIDENTIAL: N LATITUDE: 37.566724 DATE COLLECTED: 0 / 0 / 1952

SURFACE ELEVATION (FT.): 550.0 LOGGED (FT.): 186.0 LOG TYPE: Survey Core Study

SOURCE: CAMPBELL & CARTER WELL TYPE: Misc. Borings 100 Ft. & Deeper

COMMENT: CORE STUDY-DB SAXBY 5/52.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
550.0				10.6	0.0	"SOIL AND BOULDERS"
539.4				0.0	10.6	
539.4	MISSISSIPPIAN	WEST BADEN GROUP	SANDSTONE	21.2	10.6	"BETHEL"
518.2	MISSISSIPPIAN	CEDAR BLUFF GROU	LIMESTONE	35.4	31.8	"RENAULT"
482.8			SANDSTONE	14.1	67.2	"ROSICLARE"
468.7			LIMESTONE	0.0	81.3	"FREDONIA"

MAPID: 06900671000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 11S 8E SECTION: 15 QUARTERS/FOOTAGES: NE SE

QUADRANGLE: KARBERS RIDGE LONGITUDE: -88.303119 GEOLOGIST: GK MAYNOR

CONFIDENTIAL: N LATITUDE: 37.560723 DATE COLLECTED: 1 / 0 / 1957

SURFACE ELEVATION (FT.): 495.0 LOGGED (FT.): 483.0 LOG TYPE: Other Core Study

SOURCE: NEW JERSEY ZINC CO. WELL TYPE: Mineral Test

COMMENT: CORE STUDY-NJ ZINC 1/57.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
495.0				11.3	0.0	"OVERBURDEN"
483.7				0.0	11.3	
483.7	MISSISSIPPIAN	FRAILEYS	SHALE	11.3	11.3	"GOLCONDA", BEECH CREEK ABSENT?
472.4	MISSISSIPPIAN	WEST BADEN GROUP	SANDSTONE	197.8	22.6	
274.6	MISSISSIPPIAN	CEDAR BLUFF GROU	LIMESTONE	88.8	220.4	"RENAULT & LEVIAS (280.4)"
185.8			SANDSTONE	22.5	309.2	"ROSICLARE"
163.3			LIMESTONE	0.0	331.7	"FREDONIA"

MAPID: 06900672000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 11S 8E SECTION: 15 QUARTERS/FOOTAGES: SE NE

QUADRANGLE: KARBERS RIDGE LONGITUDE: -88.303055 GEOLOGIST: GK MAYNOR

CONFIDENTIAL: N LATITUDE: 37.564424 DATE COLLECTED: 4 / 0 / 1957

SURFACE ELEVATION (FT.): 536.0 LOGGED (FT.): 757.0 LOG TYPE: Other Core Study

SOURCE: NEW JERSEY ZINC CO. WELL TYPE: Mineral Test

COMMENT: CORE STUDY-NJ ZINC 4/57.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
536.0				9.4	0.0	"OVERBURDEN"
526.6				0.0	9.4	
526.6	MISSISSIPPIAN	TAR SPRINGS	SANDSTONE	21.6	9.4	
505.0			LIMESTONE	57.8	31.0	
447.2	MISSISSIPPIAN	HARDINBURG	SANDSTONE	55.0	88.8	
392.2	MISSISSIPPIAN	HANEY	LIMESTONE	138.1	143.8	"GOLCONDA"
254.1	MISSISSIPPIAN	BEECH CREEK	LIMESTONE	5.6	281.9	INFERRED TOP-GK MAYNOR 6/87
248.5	MISSISSIPPIAN	WEST BADEN GROUP	SANDSTONE	236.8	287.5	INFERRED TOP-GK MAYNOR 6/87
11.7	MISSISSIPPIAN	CEDAR BLUFF GROU	LIMESTONE	83.2	524.3	"RENAULT & LEVIAS (582.1)"
-71.5			SANDSTONE	28.7	607.5	"ROSICLARE"
-100.2			LIMESTONE	0.0	636.2	"FREDONIA"

MAPID: 06900085000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 11S 8E SECTION: 21 QUARTERS/FOOTAGES: SE NW NE

QUADRANGLE: KARBERS RIDGE LONGITUDE: -88.325386 GEOLOGIST: GK MAYNOR

CONFIDENTIAL: N LATITUDE: 37.55243 DATE COLLECTED: 0 / 0 / 1952

SURFACE ELEVATION (FT.): 430.0 LOGGED (FT.): 125.0 LOG TYPE: Survey Core Study

SOURCE: OXFORD & PERRY WELL TYPE: Misc. Borings 100 Ft. & Deeper

COMMENT: CORE STUDY-DB SAXBY 10/52

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
430.0			CLAYSTONE	29.7	0.0	"CLAY, SAND & GRAVEL"
400.3				0.0	29.7	
400.3	MISSISSIPPIAN	CEDAR BLUFF GROU	LIMESTONE	38.9	29.7	"RENAULT & LEVIAS (55.7)"
361.4				2.1	68.6	"ROSICLARE MBR."
359.3			LIMESTONE	0.0	70.7	"FREDONIA MBR."

MAPID: 06900683000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 11S 8E SECTION: 23 QUARTERS/FOOTAGES: SW NE

QUADRANGLE: KARBERS RIDGE LONGITUDE: -88.289385 GEOLOGIST: GK MAYNOR

CONFIDENTIAL: N LATITUDE: 37.549638 DATE COLLECTED: 2 / 0 / 1958

SURFACE ELEVATION (FT.): 560.0 LOGGED (FT.): 182.0 LOG TYPE: Other Core Study

SOURCE: NEW JERSEY ZINC CO. WELL TYPE: Mineral Test

COMMENT: CORE STUDY-NJ ZINC 2/58.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
560.0				66.0	0.0	"OVERBURDEN-WEATHERED SH & LS."
494.0				0.0	66.0	
494.0			SANDSTONE	40.0	66.0	"ROSICLARE"
454.0			LIMESTONE	0.0	106.0	"FREDONIA"

MAPID: 06900685000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 11S 8E SECTION: 23 QUARTERS/FOOTAGES: NW NW

QUADRANGLE: KARBERS RIDGE LONGITUDE: -88.298599 GEOLOGIST: GK MAYNOR

CONFIDENTIAL: N LATITUDE: 37.553324 DATE COLLECTED: 7 / 0 / 1957

SURFACE ELEVATION (FT.): 545.0 LOGGED (FT.): 269.0 LOG TYPE: Other Core Study

SOURCE: NEW JERSEY ZINC CO. WELL TYPE: Mineral Test

COMMENT: CORE STUDY-NJ ZINC 7/57.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
545.0				8.0	0.0	"OVERBURDEN"
537.0				0.0	8.0	
537.0	MISSISSIPPIAN	WEST BADEN GROUP	SANDSTONE	73.0	8.0	"BETHEL"
464.0	MISSISSIPPIAN	CEDAR BLUFF GROU	LIMESTONE	62.0	81.0	"RENAULT & LEVIAS (131)"
402.0			SANDSTONE	29.0	143.0	"ROSICLARE"
373.0			LIMESTONE	0.0	172.0	"FREDONIA"

MAPID: 06900091000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 11S 8E SECTION: 26 QUARTERS/FOOTAGES: 360' N line, 660' W line of SE NW

QUADRANGLE: KARBERS RIDGE LONGITUDE: -88.294243 GEOLOGIST: GK MAYNOR

CONFIDENTIAL: N LATITUDE: 37.535638 DATE COLLECTED: 0 / 0 / 1955

SURFACE ELEVATION (FT.): 603.0 LOGGED (FT.): 278.0 LOG TYPE: Survey Sample Study

SOURCE: GIBSON DODD WELL TYPE: Misc. Borings 100 Ft. & Deeper

COMMENT: SAMPLE STUDY-DB SAXBY 1/56.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
603.0				6.0	0.0	"SOIL"
597.0				0.0	6.0	
597.0	MISSISSIPPIAN	WEST BADEN GROUP	SANDSTONE	158.0	6.0	
439.0	MISSISSIPPIAN	CEDAR BLUFF GROU	LIMESTONE	81.0	164.0	"RENAULT & LEVIAS (235)"
358.0			SANDSTONE	18.0	245.0	"ROSICLARE"
340.0			LIMESTONE	0.0	263.0	"FREDONIA"

MAPID: 06900043000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 11S 8E SECTION: 30 QUARTERS/FOOTAGES: 372' S line, 181' W line of SE SE

QUADRANGLE: KARBERS RIDGE LONGITUDE: -88.361808 GEOLOGIST: GK MAYNOR

CONFIDENTIAL: N LATITUDE: 37.52681 DATE COLLECTED: 0 / 0 / 1900

SURFACE ELEVATION (FT.): 475.0 LOGGED (FT.): 3306.0 LOG TYPE: Survey Sample Study

SOURCE: MARETTA OIL CO WELL TYPE: Dry Hole

COMMENT: SS STUDY-SWANN,ET AL 1/64 & LEW,JST 9/50

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
475.0			UNCLASSIFIED	12.0	0.0	SAMPLES START AT 12'.
463.0	MISSISSIPPIAN	NEW ALBANY GROUP	SHALE	85.0	12.0	
378.0			LIMESTONE	106.0	97.0	
272.0	DEVONIAN	GRAND TOWER	LIMESTONE	144.0	203.0	
128.0			LIMESTONE & CONGLOMERATE	469.0	347.0	
-341.0	DEVONIAN	BACKBONE	LIMESTONE	42.0	816.0	"LITTLE SALINE"
-383.0	DEVONIAN	GRASSY KNOB CHER	LIMESTONE	624.0	858.0	"BAILEY"
-1007.0	SILURIAN	SILURIAN SYSTEM		0.0	1482.0	
-1007.0	SILURIAN	MOCCASIN SPRINGS	LIMESTONE & CONGLOMERATE	125.0	1482.0	
-1132.0	SILURIAN	ST. CLAIR	LIMESTONE	48.0	1607.0	
-1180.0	SILURIAN	SEXTON CREEK	LIMESTONE	14.0	1655.0	
-1194.0	SILURIAN	EDGEWOOD	LIMESTONE	106.0	1669.0	
-1300.0	ORDOVICIAN	ORDOVICIAN SYSTE		0.0	1775.0	
-1300.0	ORDOVICIAN	MAQUOKETA SHALE	SHALE	241.0	1775.0	
-1541.0			LIMESTONE	94.0	2016.0	"KIMMSWICK"
-1635.0	ORDOVICIAN	PLATTEVILLE GROU	LIMESTONE	785.0	2110.0	"PLATTIN FM."
-2420.0			DOLOMITE	312.0	2895.0	
-2732.0	ORDOVICIAN	DUTCHTOWN	DOLOMITE	0.0	3207.0	

MAPID: 06900044000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 11S 8E SECTION: 30 QUARTERS/FOOTAGES: 330' N line, 330' E line of NW SW

QUADRANGLE: KARBERS RIDGE LONGITUDE: -88.373302 GEOLOGIST: GK MAYNOR

CONFIDENTIAL: N LATITUDE: 37.532341 DATE COLLECTED: 11 / 0 / 1952

SURFACE ELEVATION (FT.): 630.0 LOGGED (FT.): 2948.0 LOG TYPE: Multiple log types

SOURCE: ST JOSEPH LEAD WELL TYPE: Dry Hole

COMMENT: SAMPLE/E-LOG TOPS-CO. 12/52.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
630.0			CLAYSTONE	75.0	0.0	
555.0	DEVONIAN	DEVONIAN SYSTEM	CLAYSTONE	0.0	75.0	
555.0			LIMESTONE	200.0	75.0	
355.0	DEVONIAN	BACKBONE	LIMESTONE	25.0	275.0	
330.0	DEVONIAN	GRASSY KNOB CHER	LIMESTONE	495.0	300.0	"BAILEY"
-165.0	SILURIAN	SILURIAN SYSTEM	LIMESTONE	0.0	795.0	
-165.0	SILURIAN	MOCCASIN SPRINGS	LIMESTONE	95.0	795.0	
-260.0	SILURIAN	ST. CLAIR	LIMESTONE	40.0	890.0	
-300.0	SILURIAN	SEXTON CREEK	LIMESTONE	12.0	930.0	
-312.0	SILURIAN	EDGEWOOD	LIMESTONE	85.0	942.0	
-397.0	ORDOVICIAN	ORDOVICIAN SYSTE		0.0	1027.0	
-397.0	ORDOVICIAN	MAQUOKETA SHALE	SHALE	198.0	1027.0	
-595.0			LIMESTONE	69.0	1225.0	
-664.0	ORDOVICIAN	PLATTEVILLE GROU	LIMESTONE	0.0	1294.0	"DECORAH-PLATTIN." ?TOPS BELOW PLATTE.

MAPID: 06900048000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 11S 8E SECTION: 30 QUARTERS/FOOTAGES: 1800' N line, 3300' W line

QUADRANGLE: KARBERS RIDGE LONGITUDE: -88.365566 GEOLOGIST: GK MAYNOR

CONFIDENTIAL: N LATITUDE: 37.535588 DATE COLLECTED: 5 / 0 / 1947

SURFACE ELEVATION (FT.): 495.0 LOGGED (FT.): 46.0 LOG TYPE: Survey Core Study

SOURCE: POTSCH, JOHN P. SR. WELL TYPE: Misc. Borings Less Than 100 Ft.

COMMENT: CORE STUDY-LE WORKMAN.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
495.0				18.0	0.0	"OVERBURDEN, WEATHERED SH."
477.0	MISSISSIPPIAN	NEW ALBANY GROUP	SHALE	5.2	18.0	
471.8			LIMESTONE	0.0	23.2	"ALTO 23.2-37.2."

MAPID: 06900096000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 11S 8E SECTION: 31 QUARTERS/FOOTAGES: SW NE NW

QUADRANGLE: KARBERS RIDGE LONGITUDE: -88.371099 GEOLOGIST: GK MAYNOR

CONFIDENTIAL: N LATITUDE: 37.523112 DATE COLLECTED: 0 / 0 / 1955

SURFACE ELEVATION (FT.): 480.0 LOGGED (FT.): 295.0 LOG TYPE: Survey Core Study

SOURCE: CRIDER W ETAL

WELL TYPE: Misc. Borings 100 Ft. & Deeper

COMMENT: CORE STUDY-SAXBY & SCHAWLB 10/55.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
480.0				13.0	0.0	"SOIL"
467.0	DEVONIAN	DEVONIAN SYSTEM		0.0	13.0	
467.0			LIMESTONE	87.0	13.0	
380.0	DEVONIAN	GRAND TOWER	LIMESTONE	143.0	100.0	
237.0				0.0	243.0	

MAPID: 06920795000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 11S 8E SECTION: 33 QUARTERS/FOOTAGES: 1320' S line, 2640' W line

QUADRANGLE: KARBERS RIDGE LONGITUDE: -88.329794 GEOLOGIST: GK MAYNOR

CONFIDENTIAL: N LATITUDE: 37.51458 DATE COLLECTED:

SURFACE ELEVATION (FT.): 420.0 LOGGED (FT.): 764.0 LOG TYPE: Survey Core Study

SOURCE: OZARK-MAHONING CO.

WELL TYPE: Mineral Test

COMMENT: CORE STUDY (20-274.3)-JDT 3/83.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
400.0				0.0	20.0	CORE STARTS AT 20'
400.0			LIMESTONE	12.4	20.0	CORE TOP-JD TREWORGY 3/83
387.6	MISSISSIPPIAN	HARDINSBURG	SANDSTONE	94.7	32.4	CORE TOP-JD TREWORGY 3/83
292.9	MISSISSIPPIAN	HANEY	LIMESTONE	61.3	127.1	CORE TOP-JD TREWORGY 3/83
231.6	MISSISSIPPIAN	FRAILEYS	SHALE	80.1	188.4	CORE TOP-JD TREWORGY 3/83
151.5	MISSISSIPPIAN	BEECH CREEK	LIMESTONE	5.8	268.5	CORE TOP-JD TREWORGY 3/83
145.7	MISSISSIPPIAN	WEST BADEN GROUP	SANDSTONE	206.7	274.3	CORE TOP-JD TREWORGY 3/83
-61.0	MISSISSIPPIAN	CEDAR BLUFF GROU	LIMESTONE	97.0	481.0	CORE TOP-GM 6/87. POSS. FLT.
-158.0			SILTSTONE/SANDSTONE	18.2	578.0	CORE TOP-GM 6/87.
-176.2			LIMESTONE	165.2	596.2	CORE TOP-GM 6/87.
-341.4			LIMESTONE	0.0	761.4	?CORE TOP-GM 6/87

MAPID: 06900097000C **VERSION:** 1 **PROJECT:** CUSMAP
COUNTY: HARDIN **TWP/RNG:** 11S 9E **SECTION:** 2 **QUARTERS/FOOTAGES:** 250' S line, 200' W line of SE SW
QUADRANGLE: SALINE MINES **LONGITUDE:** -88.184511 **GEOLOGIST:**
CONFIDENTIAL: N **LATITUDE:** 37.585348 **DATE COLLECTED:** 9 / 0 / 1942
SURFACE ELEVATION (FT.): 364.0 **LOGGED (FT.):** 1270.0 **LOG TYPE:** Geologic Tops
SOURCE: TODD JAMES E **WELL TYPE:** Dry Hole
COMMENT:

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)	UNIT OVERBURDEN	COMMENT
-906.0	BASE OF PENN.		UNCLASSIFIED	-	1270.0	

MAPID: 069275C0002F **VERSION:** 1 **PROJECT:** BLM
COUNTY: HARDIN **TWP/RNG:** 11S 9E **SECTION:** 2 **QUARTERS/FOOTAGES:** NE SW NE
QUADRANGLE: SALINE MINES **LONGITUDE:** -88.176864 **GEOLOGIST:** BARGH,M
CONFIDENTIAL: N **LATITUDE:** 37.594687 **DATE COLLECTED:** 6 / 8 / 1954
SURFACE ELEVATION (FT.): 380.0 **LOGGED (FT.):** 0.0 **LOG TYPE:** Measured section
SOURCE: FLD NOTES-H STONEHOUSE **WELL TYPE:** Underground mine
COMMENT:

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)	UNIT OVERBURDEN	COMMENT
380.0			ROCK	-	0.0	CARBONACEOUS SHALE ON DUMP.

MAPID: 06900099000C **VERSION:** 1 **PROJECT:** CUSMAP
COUNTY: HARDIN **TWP/RNG:** 11S 9E **SECTION:** 11 **QUARTERS/FOOTAGES:** 330' S line, 330' E line of NW NE
QUADRANGLE: SALINE MINES **LONGITUDE:** -88.176884 **GEOLOGIST:**
CONFIDENTIAL: N **LATITUDE:** 37.581837 **DATE COLLECTED:** 11 / 0 / 1948
SURFACE ELEVATION (FT.): 359.0 **LOGGED (FT.):** 1120.0 **LOG TYPE:** Electric Log
SOURCE: ASHLAND OIL&REF. CO. **WELL TYPE:** Dry Hole
COMMENT:

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)	UNIT OVERBURDEN	COMMENT
-761.0	BASE OF PENN.		UNCLASSIFIED	-	1120.0	

MAPID: 06900172000C **VERSION:** 1 **PROJECT:** CUSMAP
COUNTY: HARDIN **TWP/RNG:** 11S 9E **SECTION:** 27 **QUARTERS/FOOTAGES:** 125' S line, 100' E line of SE NE SW
QUADRANGLE: SALINE MINES **LONGITUDE:** -88.199732 **GEOLOGIST:**
CONFIDENTIAL: N **LATITUDE:** 37.529592 **DATE COLLECTED:** 0 / 0 / 1938
SURFACE ELEVATION (FT.): **LOGGED (FT.):** 110.0 **LOG TYPE:** Company Sample Study
SOURCE: MAHONING MINING DIV **WELL TYPE:** Stratigraphic Test
COMMENT:

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)	UNIT OVERBURDEN	COMMENT
-	BASE OF PENN.		UNCLASSIFIED	-	110.0	

MAPID: 069275C0001F VERSION: 1

PROJECT: BLM

COUNTY: HARDIN

TWP/RNG: 11S 9E

SECTION: 32

QUARTERS/FOOTAGES: NW SW SW

QUADRANGLE: SALINE MINES

LONGITUDE: -88.244654

GEOLOGIST: BARGH,M

CONFIDENTIAL: N

LATITUDE: 37.51356

DATE COLLECTED: 6 / 25 / 1954

SURFACE ELEVATION (FT.): 820.0

LOGGED (FT.): 5.5

LOG TYPE: Measured section

SOURCE: FLD NOTES-STONEHOUSE

WELL TYPE: Underground mine

COMMENT:

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)	UNIT OVERBURDEN	COMMENT
-			ROCK	4.0		
-			COAL	1.5		

MAPID: 06900405000C VERSION: 1

PROJECT: CUSMAP

COUNTY: HARDIN

TWP/RNG: 11S 10E

SECTION: 19

QUARTERS/FOOTAGES: NW NE SW

QUADRANGLE: SALINE MINES

LONGITUDE: -88.147103

GEOLOGIST:

CONFIDENTIAL: N

LATITUDE: 37.546394

DATE COLLECTED: 0 / 0 / 1947

SURFACE ELEVATION (FT.):

LOGGED (FT.): 96.0

LOG TYPE: Survey Sample Study

SOURCE: MINERVA OIL CO

WELL TYPE: Producer-Oil and Gas

COMMENT:

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)	UNIT OVERBURDEN	COMMENT
-	BASE OF PENN.		UNCLASSIFIED	-	96.0	

MAPID: 06900406000C VERSION: 1

PROJECT: CUSMAP

COUNTY: HARDIN

TWP/RNG: 11S 10E

SECTION: 20

QUARTERS/FOOTAGES: 425' N line, 777' E line of NW NW

QUADRANGLE: SALINE MINES

LONGITUDE: -88.132474

GEOLOGIST:

CONFIDENTIAL: N

LATITUDE: 37.553775

DATE COLLECTED: 2 / 0 / 1949

SURFACE ELEVATION (FT.): 459.1

LOGGED (FT.): 313.0

LOG TYPE: Drillers Log

SOURCE: MINERVA OIL CO

WELL TYPE: Producer-Oil and Gas

COMMENT:

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)	UNIT OVERBURDEN	COMMENT
146.1	BASE OF PENN.		UNCLASSIFIED	-	313.0	

MAPID: 06900407000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 7E SECTION: 11 QUARTERS/FOOTAGES: 325' N line, 55' E line of SE NE
 QUADRANGLE: SHETLERVILLE LONGITUDE: -88.396293 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.491803 DATE COLLECTED: 7 / 0 / 1945
 SURFACE ELEVATION (FT.): 482.0 LOGGED (FT.): 252.0 LOG TYPE: Survey Core Study
 SOURCE: CRYSTAL FLUORSPAR CO WELL TYPE: Mineral Test
 COMMENT: CORE STUDY-FE TIPPIE 7/45

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
482.0				8.0	0.0	"OVERBURDEN"
474.0				0.0	8.0	
474.0	MISSISSIPPIAN	WEST BADEN GROUP	SANDSTONE	150.7	8.0	"CYPRESS-BETHEL", FAULT 150.7-158.7
323.3			LIMESTONE	0.0	158.7	FAULT 150.7-158.7

MAPID: 06900409000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 7E SECTION: 11 QUARTERS/FOOTAGES: W2 NE SW
 QUADRANGLE: SHETLERVILLE LONGITUDE: -88.408551 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.487341 DATE COLLECTED: 0 / 0 / 1941
 SURFACE ELEVATION (FT.): 450.0 LOGGED (FT.): 204.0 LOG TYPE: Survey Core Study
 SOURCE: HILLSIDE FLUORSPAR WELL TYPE: Mineral Test
 COMMENT: CORE STUDY-FE TIPPIE 7/41

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
437.0				0.0	13.0	CORE STARTS AT 13'
437.0			LIMESTONE	10.4	13.0	"LEVIAS"
426.6			SANDSTONE	26.8	23.4	"ROSICLARE"
399.8			LIMESTONE	0.0	50.2	"FREDONIA"

MAPID: 06900411000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 7E SECTION: 12 QUARTERS/FOOTAGES: NE NW SW
 QUADRANGLE: SHETLERVILLE LONGITUDE: -88.392742 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.488136 DATE COLLECTED: 0 / 0 / 1956
 SURFACE ELEVATION (FT.): 500.0 LOGGED (FT.): 449.0 LOG TYPE: Survey Core Study
 SOURCE: HUMM, J. C., ETAL WELL TYPE: Misc. Borings 100 Ft. & Deeper
 COMMENT: CORE STUDY-DB SAXBY 3/56.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
500.0				12.0	0.0	"SURFACE"
488.0				0.0	12.0	
488.0			SANDSTONE	16.3	12.0	"ROSICLARE"
471.7			LIMESTONE	123.0	28.3	"FREDONIA"
348.7			LIMESTONE	0.0	151.3	

MAPID: 06900413000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 7E SECTION: 14 QUARTERS/FOOTAGES: 1800' N line, 2350' E line of NE

QUADRANGLE: SHETLERVILLE LONGITUDE: -88.404509 GEOLOGIST: GK MAYNOR

CONFIDENTIAL: N LATITUDE: 37.476788 DATE COLLECTED: 8 / 0 / 1942

SURFACE ELEVATION (FT.): 465.0 LOGGED (FT.): 175.0 LOG TYPE: Survey Core Study

SOURCE: FLUORSPAR PROD WELL TYPE: Mineral Test

COMMENT: CORE STUDY-FE TIPPIE 8/42.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		
				UNIT	OVERBURDEN	COMMENT
465.0				55.2	0.0	"ALLUVIUM"
409.8				0.0	55.2	
409.8			LIMESTONE	0.0	55.2	

MAPID: 06900416000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 7E SECTION: 23 QUARTERS/FOOTAGES: SW NW

QUADRANGLE: SHETLERVILLE LONGITUDE: -88.412381 GEOLOGIST: GK MAYNOR

CONFIDENTIAL: N LATITUDE: 37.461813 DATE COLLECTED: 7 / 0 / 1945

SURFACE ELEVATION (FT.): 515.0 LOGGED (FT.): 440.0 LOG TYPE: Survey Core Study

SOURCE: CRYSTAL FLUORSPAR CO WELL TYPE: Mineral Test

COMMENT: CORE STUDY-FE TIPPIE 7/45.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		
				UNIT	OVERBURDEN	COMMENT
515.0				39.2	0.0	"OVERBURDEN"
475.8				0.0	39.2	
475.8	MISSISSIPPIAN	CEDAR BLUFF GROU	LIMESTONE	73.7	39.2	"RENAULT & LEVIAS (96.1)"
402.1			SANDSTONE	25.2	112.9	"ROSICLARE"
376.9			LIMESTONE	157.9	138.1	"FREDONIA"
219.0			LIMESTONE	0.0	296.0	FAULT 340.2-346.7'

MAPID: 06900419000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 7E SECTION: 23 QUARTERS/FOOTAGES: 53' N line, 446' W line of SW NE
 QUADRANGLE: SHETLERVILLE LONGITUDE: -88.404098 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.46342 DATE COLLECTED: 10 / 0 / 1945
 SURFACE ELEVATION (FT.): 465.0 LOGGED (FT.): 435.0 LOG TYPE: Survey Core Study
 SOURCE: CRYSTAL FLUORSPAR CO WELL TYPE: Mineral Test
 COMMENT: CORE STUDY-FE TIPPIE 9/45.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		
				UNIT	OVERBURDEN	COMMENT
465.0				10.6	0.0	"OVERBURDEN"
454.4				0.0	10.6	
454.4	MISSISSIPPIAN	WEST BADEN GROUP	SANDSTONE	63.9	10.6	"BETHEL"
390.5	MISSISSIPPIAN	CEDAR BLUFF GROU	LIMESTONE	110.8	74.5	"RENAULT & LEVIAS (169.2)"
279.7			SANDSTONE	10.7	185.3	"ROSICLARE", FLT. 189.4- 190.3"
269.0			SANDSTONE	27.6	196.0	"ROSICLARE"
241.4			LIMESTONE	0.0	223.6	"FREDONIA"

MAPID: 06900423000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 7E SECTION: 24 QUARTERS/FOOTAGES: 1800' S line, 1750' W line
 QUADRANGLE: SHETLERVILLE LONGITUDE: -88.390669 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.45746 DATE COLLECTED: 0 / 0 / 1942
 SURFACE ELEVATION (FT.): 370.0 LOGGED (FT.): 329.0 LOG TYPE: Survey Core Study
 SOURCE: CRYSTAL FLUORSPAR CO WELL TYPE: Mineral Test
 COMMENT: CORE STUDY-FE TIPPIE 8/42.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		
				UNIT	OVERBURDEN	COMMENT
370.0			CLAYSTONE & LIMESTONE	14.1	0.0	
355.9				0.0	14.1	
355.9			LIMESTONE	0.0	14.1	"FREDONIA"

MAPID: 06900017000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 7E SECTION: 36 QUARTERS/FOOTAGES: SE SE NW
 QUADRANGLE: SHETLERVILLE LONGITUDE: -88.389004 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.431628 DATE COLLECTED: 0 / 0 / 1900
 SURFACE ELEVATION (FT.): 355.0 LOGGED (FT.): 176.0 LOG TYPE: Survey Core Study
 SOURCE: COX WELL TYPE: Misc. Borings 100 Ft. & Deeper
 COMMENT: CORE STUDY-DB SAXBY 5/56

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		
				UNIT	OVERBURDEN	COMMENT
355.0				13.1	0.0	"SURFACE"
341.9			SANDSTONE	0.0	13.1	

MAPID: 06900427000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 7E SECTION: 36 QUARTERS/FOOTAGES: 660' N line, 0' W line of NE NW
 QUADRANGLE: SHETLERVILLE LONGITUDE: -88.392381 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.43605 DATE COLLECTED: 0 / 0 / 1954
 SURFACE ELEVATION (FT.): 370.0 LOGGED (FT.): 317.0 LOG TYPE: Survey Core Study
 SOURCE: MINNETTE J WELL TYPE: Mineral Test
 COMMENT: CORE STUDY-DB SAXBY

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		
				UNIT	OVERBURDEN	COMMENT
370.0				14.8	0.0	"SURFACE"
355.2				0.0	14.8	
355.2	MISSISSIPPIAN	CLORE	CALCAREOUS SHALE	34.0	14.8	
321.2	MISSISSIPPIAN	PALESTINE	SANDSTONE	58.7	48.8	
262.5	MISSISSIPPIAN	MENARD	LIMESTONE	0.0	107.5	?TOPS & POSS. FAULTING BELOW 141.4'

MAPID: 06900431000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 8E SECTION: 7 QUARTERS/FOOTAGES: NW NE
 QUADRANGLE: ROSICLARE LONGITUDE: -88.365382 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.494244 DATE COLLECTED: 6 / 0 / 1945
 SURFACE ELEVATION (FT.): 490.0 LOGGED (FT.): 436.0 LOG TYPE: Survey Core Study
 SOURCE: ROSI LEAD & FLUORSR WELL TYPE: Mineral Test
 COMMENT: CORE STUDY-FE TIPPIE 6/45

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		
				UNIT	OVERBURDEN	COMMENT
490.0				97.3	0.0	"OVERBURDEN"
392.7				0.0	97.3	
392.7			LIMESTONE	98.0	97.3	
294.7			LIMESTONE	40.0	195.3	FAULT 235.3'
254.7			LIMESTONE	0.0	235.3	FAULT 235.3', "WARSAW"

MAPID: 06900433000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 8E SECTION: 8 QUARTERS/FOOTAGES: SW SE
 QUADRANGLE: ROSICLARE LONGITUDE: -88.346211 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.48323 DATE COLLECTED: 1 / 0 / 1944
 SURFACE ELEVATION (FT.): 385.0 LOGGED (FT.): 476.0 LOG TYPE: Survey Core Study
 SOURCE: ROSI LEAD & FLUORSR WELL TYPE: Mineral Test
 COMMENT: CORE STUDY-FE TIPPIE 1/44

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		
				UNIT	OVERBURDEN	COMMENT
385.0				48.3	0.0	"OVERBURDEN"
336.7				0.0	48.3	
336.7			LIMESTONE	0.0	48.3	?TOPS & FAULTING BELOW 172'

MAPID: 06900435000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 8E SECTION: 14 QUARTERS/FOOTAGES: NW SW NE

QUADRANGLE: ROSICLARE LONGITUDE: -88.292004 GEOLOGIST: GK MAYNOR

CONFIDENTIAL: N LATITUDE: 37.476596 DATE COLLECTED: 0 / 0 / 1952

SURFACE ELEVATION (FT.): 468.0 LOGGED (FT.): 268.0 LOG TYPE: Survey Core Study

SOURCE: OXFORD OWEN A WELL TYPE: Mineral Test

COMMENT: CORE STUDY-DB SAXBY 4/52.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
468.0			CLAYSTONE	12.6	0.0	"SOIL CLAY & SS BOULDERS"
455.4				0.0	12.6	
455.4	MISSISSIPPIAN	WEST BADEN GROUP	SANDSTONE	16.6	12.6	"BETHEL", PROB. FLT. 29.2'
438.8	MISSISSIPPIAN	CEDAR BLUFF GROU	CALCAREOUS SHALE	51.2	29.2	"SHET.", PROB. FLT. 29.2'
387.6			SANDSTONE	25.2	80.4	"ROSICLARE"
362.4			LIMESTONE	0.0	105.6	"FRED.", PROB. FLT. 123.7-126.9'

MAPID: 06900436000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 8E SECTION: 14 QUARTERS/FOOTAGES: SW SW NE

QUADRANGLE: ROSICLARE LONGITUDE: -88.292027 GEOLOGIST: GK MAYNOR

CONFIDENTIAL: N LATITUDE: 37.474783 DATE COLLECTED: 0 / 0 / 1952

SURFACE ELEVATION (FT.): 440.0 LOGGED (FT.): 532.0 LOG TYPE: Survey Core Study

SOURCE: OXFORD OWEN A WELL TYPE: Mineral Test

COMMENT: CORE STUDY-DB SAXBY 6/52.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
440.0			CALCAREOUS CLAYSTONE	27.6	0.0	
412.4				0.0	27.6	
412.4			LIMESTONE	210.7	27.6	"FREDONIA", FLTS. 207.9-235.5'
201.7			LIMESTONE	0.0	238.3	FLT. 302-304.8'

MAPID: 06900438000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 8E SECTION: 16 QUARTERS/FOOTAGES: 970' S line, 203' E line of NW NW
 QUADRANGLE: ROSICLARE LONGITUDE: -88.335276 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.480306 DATE COLLECTED: 6 / 0 / 1944
 SURFACE ELEVATION (FT.): 415.0 LOGGED (FT.): 311.0 LOG TYPE: Survey Core Study
 SOURCE: ROSI LEAD & FLUORSR WELL TYPE: Mineral Test
 COMMENT: CORE STUDY-FE TIPPIE 6/44.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		
				UNIT	OVERBURDEN	COMMENT
415.0				22.6	0.0	"OVERBURDEN"
392.4				0.0	22.6	
392.4	MISSISSIPPIAN	MENARD	LIMESTONE	38.0	22.6	
354.4	MISSISSIPPIAN	WALTERSBURG	SHALE & SILTSTONE	29.9	60.6	
324.5	MISSISSIPPIAN	VIENNA	LIMESTONE	4.3	90.5	
320.2	MISSISSIPPIAN	TAR SPRINGS	SANDSTONE	0.0	94.8	"FAULT ZONE 135-142.1'?"

MAPID: 06900439000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 8E SECTION: 16 QUARTERS/FOOTAGES: NW SW
 QUADRANGLE: ROSICLARE LONGITUDE: -88.337018 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.472161 DATE COLLECTED: 0 / 0 / 1943
 SURFACE ELEVATION (FT.): 350.0 LOGGED (FT.): 261.0 LOG TYPE: Survey Core Study
 SOURCE: COX JOHN WELL TYPE: Misc. Borings 100 Ft. & Deeper
 COMMENT: CORE STUDY-FE TIPPIE 5/43.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		
				UNIT	OVERBURDEN	COMMENT
350.0				28.3	0.0	"OVERBURDEN"
321.7				0.0	28.3	
321.7			LIMESTONE W/ SHALE	29.7	28.3	"?CORRELATION"
292.0	MISSISSIPPIAN	HARDINSBURG	SANDSTONE	0.0	58.0	"?CORRELATION"

MAPID: 06900448000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 8E SECTION: 17 QUARTERS/FOOTAGES: 1021' N line, 428' E line of NW SW
 QUADRANGLE: ROSICLARE LONGITUDE: -88.354779 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.471096 DATE COLLECTED: 0 / 0 / 1950
 SURFACE ELEVATION (FT.): 578.0 LOGGED (FT.): 438.0 LOG TYPE: Survey Core Study
 SOURCE: U.S. BUREAU OF MINES WELL TYPE: Mineral Test
 COMMENT: CORE STUDY-DB SAXBY 2/50.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		
				UNIT	OVERBURDEN	COMMENT
578.0				7.5	0.0	"OVERBURDEN"
570.5			SANDSTONE	34.7	7.5	
535.8				0.0	42.2	
535.8	MISSISSIPPIAN	KINKAID	LIMESTONE	42.4	42.2	
493.4	MISSISSIPPIAN	DEGONIA	SANDSTONE	33.3	84.6	
460.1	MISSISSIPPIAN	CLORE	LIMESTONE W/ SHALE	0.0	117.9	MULTIPLE FLTS. & ? CORREL. 128.6'-TD

MAPID: 06900451000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 8E SECTION: 17 QUARTERS/FOOTAGES: NW NE
 QUADRANGLE: ROSICLARE LONGITUDE: -88.346235 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.479518 DATE COLLECTED: 11 / 0 / 1943
 SURFACE ELEVATION (FT.): 385.0 LOGGED (FT.): 353.0 LOG TYPE: Survey Core Study
 SOURCE: ROSI LEAD & FLUORSR WELL TYPE: Mineral Test
 COMMENT: CORE STUDY-FE TIPPIE 11/43.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		
				UNIT	OVERBURDEN	COMMENT
385.0				56.7	0.0	"OVERBURDEN"
328.3				0.0	56.7	
328.3	MISSISSIPPIAN	CLORE	LIMESTONE W/ SHALE	59.1	56.7	
269.2	MISSISSIPPIAN	PALESTINE	SANDSTONE/SILTSTONE	106.4	115.8	
162.8	MISSISSIPPIAN	MENARD	LIMESTONE	0.0	222.2	

MAPID: 06900458000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 8E SECTION: 18 QUARTERS/FOOTAGES: 340' N line, 780' E line of SE SE
 QUADRANGLE: ROSICLARE LONGITUDE: -88.360651 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.469225 DATE COLLECTED: 0 / 0 / 1949
 SURFACE ELEVATION (FT.): 477.0 LOGGED (FT.): 531.0 LOG TYPE: Survey Core Study
 SOURCE: OZARK MAHONING MNG WELL TYPE: Mineral Test
 COMMENT: CORE STUDY-DB SAXBY 10/49.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		
				UNIT	OVERBURDEN	COMMENT
477.0				79.9	0.0	"OVERBURDEN"
397.1				0.0	79.9	
397.1			LIMESTONE	0.0	79.9	

MAPID: 06900461000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 8E SECTION: 19 QUARTERS/FOOTAGES: 625' N line, 140' E line of SW SW
 QUADRANGLE: ROSICLARE LONGITUDE: -88.37387 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.453495 DATE COLLECTED: 1 / 0 / 1944
 SURFACE ELEVATION (FT.): 410.0 LOGGED (FT.): 231.0 LOG TYPE: Survey Core Study
 SOURCE: U.S. BUREAU OF MINES WELL TYPE: Mineral Test
 COMMENT: CORE STUDY-FE TIPPIE 1/44.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		
				UNIT	OVERBURDEN	COMMENT
410.0				7.8	0.0	"OVERBURDEN"
402.2				0.0	7.8	
402.2	MISSISSIPPIAN	DEGONIA	SHALE & SILTSTONE	21.2	7.8	
381.0	MISSISSIPPIAN	CLORE	CALCAREOUS SHALE	0.0	29.0	?TOPS & FLTS. BELOW 37.5'

MAPID: 06900462000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 8E SECTION: 19 QUARTERS/FOOTAGES: 1171' N line, 1157' E line of SW SW
 QUADRANGLE: SHETLERVILLE LONGITUDE: -88.377415 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.451967 DATE COLLECTED: 2 / 0 / 1944
 SURFACE ELEVATION (FT.): 445.0 LOGGED (FT.): 306.0 LOG TYPE: Survey Core Study
 SOURCE: U.S. BUREAU OF MINES WELL TYPE: Mineral Test
 COMMENT: CORE STUDY-FE TIPPIE 2/44.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		
				UNIT	OVERBURDEN	COMMENT
445.0			CLAYSTONE	37.5	0.0	"OVERBURDEN"
407.5				0.0	37.5	
407.5	MISSISSIPPIAN	KINKAID	LIMESTONE	0.0	37.5	?TOPS & FAULTING BELOW 66.4'

MAPID: 06900466000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 8E SECTION: 19 QUARTERS/FOOTAGES: 360' N line, 412' E line of NE SW
 QUADRANGLE: ROSICLARE LONGITUDE: -88.369672 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.457972 DATE COLLECTED: 5 / 0 / 1944
 SURFACE ELEVATION (FT.): 470.0 LOGGED (FT.): 445.0 LOG TYPE: Survey Core Study
 SOURCE: U.S. FLUORAR WELL TYPE: Mineral Test
 COMMENT: CORE STUDY-FE TIPPIE 5/44.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		
				UNIT	OVERBURDEN	COMMENT
470.0				32.4	0.0	"OVERBURDEN"
437.6				0.0	32.4	
437.6			LIMESTONE	0.0	32.4	"FAULT ZONE"

MAPID: 06900469000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 8E SECTION: 21 QUARTERS/FOOTAGES: 688' S line, 1389' W line
 QUADRANGLE: ROSICLARE LONGITUDE: -88.334554 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.4535 DATE COLLECTED: 7 / 0 / 1944
 SURFACE ELEVATION (FT.): 410.0 LOGGED (FT.): 203.0 LOG TYPE: Survey Core Study
 SOURCE: ROSI LEAD & FLUORSR WELL TYPE: Mineral Test
 COMMENT: CORE STUDY-FE TIPPIE 7/44.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		
				UNIT	OVERBURDEN	COMMENT
410.0				11.3	0.0	"OVERBURDEN"
398.7				0.0	11.3	
398.7			LIMESTONE	109.6	11.3	FAULT 119.3-121'
289.1			LIMESTONE	0.0	120.9	FAULT 119.3-121'

MAPID: 06900475000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 8E SECTION: 21 QUARTERS/FOOTAGES: 326' S line, 389' W line
 QUADRANGLE: ROSICLARE LONGITUDE: -88.338012 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.452516 DATE COLLECTED: 8 / 0 / 1944
 SURFACE ELEVATION (FT.): 415.0 LOGGED (FT.): 137.0 LOG TYPE: Survey Core Study
 SOURCE: ROSI LEAD & FLUORSR WELL TYPE: Mineral Test
 COMMENT: CORE STUDY-FE TIPPIE 9/44.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		
				UNIT	OVERBURDEN	COMMENT
415.0				2.1	0.0	"OVERBURDEN"
412.9				0.0	2.1	
412.9			SANDY LIMESTONE	10.6	2.1	"ROSICLARE"
402.3			LIMESTONE	0.0	12.7	"FREDONIA"

MAPID: 06900476000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 8E SECTION: 21 QUARTERS/FOOTAGES: 2620' N line, 620' E line
 QUADRANGLE: ROSICLARE LONGITUDE: -88.323069 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.459441 DATE COLLECTED: 0 / 0 / 1942
 SURFACE ELEVATION (FT.): 390.0 LOGGED (FT.): 396.0 LOG TYPE: Survey Core Study
 SOURCE: TEMS R S WELL TYPE: Mineral Test
 COMMENT: CORE STUDY-FE TIPPIE 12/42.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		
				UNIT	OVERBURDEN	COMMENT
390.0				32.1	0.0	"OVERBURDEN W/ SS BOULDERS"
357.9				0.0	32.1	
357.9			LIMESTONE	0.0	32.1	"FREDONIA"

MAPID: 06900478000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 8E SECTION: 22 QUARTERS/FOOTAGES: 410' S line, 30' E line of NE NW
 QUADRANGLE: ROSICLARE LONGITUDE: -88.311738 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.464072 DATE COLLECTED: 3 / 0 / 1944
 SURFACE ELEVATION (FT.): 395.0 LOGGED (FT.): 107.0 LOG TYPE: Survey Core Study
 SOURCE: PATTON J W & SONS WELL TYPE: Mineral Test
 COMMENT: CORE STUDY-FE TIPPIE

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
395.0				64.7	0.0	"MUD & SS BOULDERS"
330.3			LIMESTONE	14.1	64.7	
316.2	MISSISSIPPIAN	WEST BADEN GROUP	SANDSTONE	0.0	78.8	"BETHEL"

MAPID: 06900481000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 8E SECTION: 28 QUARTERS/FOOTAGES: 272' N line, 703' W line
 QUADRANGLE: ROSICLARE LONGITUDE: -88.336937 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.450863 DATE COLLECTED: 8 / 0 / 1944
 SURFACE ELEVATION (FT.): 397.0 LOGGED (FT.): 238.0 LOG TYPE: Survey Core Study
 SOURCE: ROSI LEAD & FLUORSR WELL TYPE: Mineral Test
 COMMENT: CORE STUDY-FE TIPPIE.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
397.0				21.7	0.0	"OVERBURDEN"
375.3				0.0	21.7	
375.3			LIMESTONE	53.8	21.7	"FREDONIA"
321.5			LIMESTONE	0.0	75.5	?TOP, FLT. 209.6'

MAPID: 06900488000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 8E SECTION: 29 QUARTERS/FOOTAGES: 455' S line, 392' E line of NW SE
 QUADRANGLE: ROSICLARE LONGITUDE: -88.345665 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.441588 DATE COLLECTED: 2 / 0 / 1943
 SURFACE ELEVATION (FT.): 390.0 LOGGED (FT.): 523.0 LOG TYPE: Survey Core Study
 SOURCE: HILLSIDE FLUORSPAR WELL TYPE: Mineral Test
 COMMENT: CORE STUDY-FE TIPPIE 2/43.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
390.0				10.0	0.0	"SURFACE"
380.0				0.0	10.0	
380.0	MISSISSIPPIAN	HARDINBURG	SANDSTONE	79.1	10.0	
300.9	MISSISSIPPIAN	HANEY	LIMESTONE	148.9	89.1	"GOLCONDA"
152.0	MISSISSIPPIAN	BEECH CREEK	LIMESTONE	3.7	238.0	INFERRED TOP-GK MAYNOR 6/87
148.3	MISSISSIPPIAN	WEST BADEN GROUP	SANDSTONE	226.6	241.7	
-78.3	MISSISSIPPIAN	CEDAR BLUFF GROU	CALCAREOUS SHALE	38.7	468.3	"RENAULT", FLT. 476.5'
-117.0			LIMESTONE	0.0	507.0	"FREDONIA"

MAPID: 06900498000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 8E SECTION: 29 QUARTERS/FOOTAGES: 780' S line, 140' E line of NW SE

QUADRANGLE: ROSICLARE LONGITUDE: -88.344768 GEOLOGIST: GK MAYNOR

CONFIDENTIAL: N LATITUDE: 37.44249 DATE COLLECTED: 6 / 0 / 1943

SURFACE ELEVATION (FT.): 420.0 LOGGED (FT.): 401.0 LOG TYPE: Survey Core Study

SOURCE: HILLSIDE FLUORSPAR WELL TYPE: Mineral Test

COMMENT: CORE STUDY-FE TIPPIE 6/43.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
420.0				20.0	0.0	"OVERBURDEN"
400.0				0.0	20.0	
400.0	MISSISSIPPIAN	WEST BADEN GROUP	SANDSTONE	6.6	20.0	"BETHEL"
393.4	MISSISSIPPIAN	CEDAR BLUFF GROU	LIMESTONE	96.9	26.6	"RENAULT & LEVIAS (122.2)"
296.5			SANDSTONE	17.6	123.5	"ROSICLARE"
278.9			LIMESTONE	238.2	141.1	"FREDONIA", FLT. 334'
40.7			LIMESTONE	0.0	379.3	

MAPID: 06900505000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 8E SECTION: 29 QUARTERS/FOOTAGES: 1300' S line, 870' E line of NW SE

QUADRANGLE: ROSICLARE LONGITUDE: -88.347262 GEOLOGIST: GK MAYNOR

CONFIDENTIAL: N LATITUDE: 37.443912 DATE COLLECTED: 7 / 0 / 1943

SURFACE ELEVATION (FT.): 391.0 LOGGED (FT.): 146.0 LOG TYPE: Survey Core Study

SOURCE: HILLSIDE FLUORSPAR WELL TYPE: Mineral Test

COMMENT: CORE STUDY-FE TIPPIE 7/43.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
391.0				38.0	0.0	"OVERBURDEN"
353.0				0.0	38.0	
353.0	MISSISSIPPIAN	TAR SPRINGS	SHALE & SANDSTONE	16.3	38.0	
336.7			LIMESTONE	48.7	54.3	
288.0	MISSISSIPPIAN	HARDINBURG	SANDSTONE/SHALE	0.0	103.0	

MAPID: 06900517000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 8E SECTION: 29 QUARTERS/FOOTAGES: 353' N line, 177' E line of NE
 QUADRANGLE: ROSICLARE LONGITUDE: -88.339988 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.450648 DATE COLLECTED: 6 / 0 / 1943
 SURFACE ELEVATION (FT.): 420.0 LOGGED (FT.): 500.0 LOG TYPE: Survey Core Study
 SOURCE: ROSI LEAD & FLUORSR WELL TYPE: Mineral Test
 COMMENT: CORE STUDY-FE TIPPIE 6/43.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
420.0				12.1	0.0	"OVERBURDEN"
407.9				0.0	12.1	
407.9			SANDSTONE	17.3	12.1	"ROSICLARE"
390.6			LIMESTONE	99.6	29.4	
291.0			LIMESTONE	0.0	129.0	"?TOP, MANY SMALL FLTS."

MAPID: 06900520000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 8E SECTION: 29 QUARTERS/FOOTAGES: 554' S line, 716' W line of NE
 QUADRANGLE: ROSICLARE LONGITUDE: -88.346456 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.445618 DATE COLLECTED: 9 / 0 / 1943
 SURFACE ELEVATION (FT.): 423.0 LOGGED (FT.): 330.0 LOG TYPE: Survey Core Study
 SOURCE: ROSI LEAD & FLUORSR WELL TYPE: Mineral Test
 COMMENT: CORE STUDY-FE TIPPIE 9/43

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
381.4				0.0	41.6	CORE STARTS AT 41.6'
381.4	MISSISSIPPIAN	TAR SPRINGS	SANDSTONE	59.5	41.6	
321.9			LIMESTONE	45.3	101.1	
276.6	MISSISSIPPIAN	HARDINSBURG	SANDSTONE	100.1	146.4	
176.5	MISSISSIPPIAN	HANEY	LIMESTONE	35.4	246.5	FAULT 267.6-281.9'
141.1			LIMESTONE	0.0	281.9	FAULT 267.6-281.9', "FREDONIA"

MAPID: 06900538000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 8E SECTION: 29 QUARTERS/FOOTAGES: 1739' N line, 1046' E line

QUADRANGLE: ROSICLARE LONGITUDE: -88.343082 GEOLOGIST: GK MAYNOR

CONFIDENTIAL: N LATITUDE: 37.446818 DATE COLLECTED: 11 / 0 / 1944

SURFACE ELEVATION (FT.): 508.0 LOGGED (FT.): 426.0 LOG TYPE: Survey Core Study

SOURCE: ROSI LEAD & FLUORSR WELL TYPE: Mineral Test

COMMENT: CORE STUDY-FE TIPPIE

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		
				UNIT	OVERBURDEN	COMMENT
508.0				9.3	0.0	"OVERBURDEN"
498.7				0.0	9.3	
498.7			SANDSTONE	7.8	9.3	"ROSICLARE"
490.9			LIMESTONE	106.5	17.1	"FREDONIA"
384.4			LIMESTONE	0.0	123.6	FAULT 273.6-283.7'

MAPID: 06900542000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 8E SECTION: 29 QUARTERS/FOOTAGES: 690' S line, 1883' E line

QUADRANGLE: ROSICLARE LONGITUDE: -88.346158 GEOLOGIST: GK MAYNOR

CONFIDENTIAL: N LATITUDE: 37.438474 DATE COLLECTED: 4 / 0 / 1945

SURFACE ELEVATION (FT.): 415.0 LOGGED (FT.): 466.0 LOG TYPE: Survey Core Study

SOURCE: ROSI LEAD & FLUORSR WELL TYPE: Mineral Test

COMMENT: CORE STUDY-FE TIPPIE 4/45.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		
				UNIT	OVERBURDEN	COMMENT
415.0				8.7	0.0	"OVERBURDEN"
406.3				0.0	8.7	
406.3	MISSISSIPPIAN	HARDINSBURG	SANDSTONE	45.6	8.7	
360.7	MISSISSIPPIAN	HANEY	LIMESTONE	136.1	54.3	"GOLCONDA"
224.6	MISSISSIPPIAN	WEST BADEN GROUP	SANDSTONE	208.5	190.4	
16.1	MISSISSIPPIAN	CEDAR BLUFF GROU	CALCAREOUS SHALE	0.0	398.9	"RENAULT"

MAPID: 06900543000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 8E SECTION: 29 QUARTERS/FOOTAGES: 1083' N line, 960' W line of NW NE

QUADRANGLE: ROSICLARE LONGITUDE: -88.345532 GEOLOGIST: GK MAYNOR

CONFIDENTIAL: N LATITUDE: 37.448626 DATE COLLECTED: 11 / 0 / 1945

SURFACE ELEVATION (FT.): 394.0 LOGGED (FT.): 720.0 LOG TYPE: Survey Core Study

SOURCE: ROSI LEAD & FLUORSR WELL TYPE: Mineral Test

COMMENT: CORE STUDY-FE TIPPIE 11/45.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
394.0				24.3	0.0	"OVERBURDEN"
369.7				0.0	24.3	
369.7	MISSISSIPPIAN	MENARD	LIMESTONE	67.8	24.3	
301.9	MISSISSIPPIAN	WALTERSBURG	SHALE & SANDSTONE	24.4	92.1	"?TOP"
277.5	MISSISSIPPIAN	VIENNA	CALCAREOUS SHALE	36.3	116.5	"?TOP"
241.2	MISSISSIPPIAN	TAR SPRINGS	SHALE & SANDSTONE	97.7	152.8	FAULT 221.7'
143.5			LIMESTONE	4.3	250.5	FAULT 254.8'
139.2	MISSISSIPPIAN	TAR SPRINGS	SHALE & SANDSTONE	3.8	254.8	
135.4			LIMESTONE	59.7	258.6	
75.7	MISSISSIPPIAN	HARDINBURG	SHALE & SANDSTONE	95.9	318.3	
-20.2	MISSISSIPPIAN	HANEY	LIMESTONE	89.1	414.2	"GOLCONDA", FLT. 455.2-455.5'
-109.3			LIMESTONE	0.0	503.3	

MAPID: 06920794000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 8E SECTION: 31 QUARTERS/FOOTAGES: NE NE

QUADRANGLE: ROSICLARE LONGITUDE: -88.36113 GEOLOGIST: GK MAYNOR

CONFIDENTIAL: N LATITUDE: 37.434807 DATE COLLECTED:

SURFACE ELEVATION (FT.): 445.0 LOGGED (FT.): 1314.0 LOG TYPE: Survey Core Study

SOURCE: OZARK-MAHONING CO. WELL TYPE: Mineral Test

COMMENT: CORE STUDY (461.7-596.4)-JDT 6/83

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
356.6				0.0	88.4	CORE STARTS AT 88.4'
356.6	MISSISSIPPIAN	MENARD	LIMESTONE	84.0	88.4	CORE TOP-GK MAYNOR 6/87
272.6	MISSISSIPPIAN	WALTERSBURG	SHALE & SANDSTONE	46.3	172.4	CORE TOP-GK MAYNOR 6/87
226.3	MISSISSIPPIAN	VIENNA	LIMESTONE	13.7	218.7	CORE TOP-GK MAYNOR 6/87
212.6	MISSISSIPPIAN	TAR SPRINGS	SANDSTONE	87.6	232.4	CORE TOP-GK MAYNOR 6/87
125.0			LIMESTONE	46.4	320.0	CORE TOP-GK MAYNOR 6/87
78.6	MISSISSIPPIAN	HARDINSBURG	SANDSTONE	101.4	366.4	CORE TOP-GK MAYNOR 6/87
-22.8	MISSISSIPPIAN	HANEY	LIMESTONE	63.9	467.8	CORE TOP-JD TREWORGY 6/83.
-86.7	MISSISSIPPIAN	FRAILEYS	CALCAREOUS SHALE	62.3	531.7	CORE TOP-JD TREWORGY 6/83.
-149.0	MISSISSIPPIAN	BEECH CREEK	LIMESTONE	2.4	594.0	CORE TOP-JD TREWORGY 6/83.
-151.4	MISSISSIPPIAN	WEST BADEN GROUP	SANDSTONE	210.6	596.4	CORE TOP-JD TREWORGY 6/83.
-362.0	MISSISSIPPIAN	CEDAR BLUFF GROU	LIMESTONE	95.5	807.0	CORE TOP-GK MAYNOR 6/87
-457.5			SANDSTONE/LIMESTONE	13.4	902.5	CORE TOP-GK MAYNOR 6/87
-470.9			LIMESTONE	0.0	915.9	CORE TOP-GK MAYNOR 6/87

MAPID: 06900548000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 8E SECTION: 32 QUARTERS/FOOTAGES: 35' N line, 620' E line of SW

QUADRANGLE: ROSICLARE LONGITUDE: -88.351259 GEOLOGIST: GK MAYNOR

CONFIDENTIAL: N LATITUDE: 37.429606 DATE COLLECTED: 11 / 0 / 1942

SURFACE ELEVATION (FT.): 410.0 LOGGED (FT.): 610.0 LOG TYPE: Survey Core Study

SOURCE: ROSI LEAD & FLUORSR WELL TYPE: Mineral Test

COMMENT: CORE STUDY-FE TIPPPIE 11/42

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
398.0	MISSISSIPPIAN	WEST BADEN GROUP	SANDSTONE	212.3	12.0	CORE STARTS AT 12'
185.7	MISSISSIPPIAN	CEDAR BLUFF GROU	LIMESTONE	101.9	224.3	"RENAULT & LEVIAS (307.5)'"
83.8			SANDSTONE/LIMESTONE	17.8	326.2	"ROSICLARE"
66.0			LIMESTONE	0.0	344.0	"FREDONIA", FLT. 463.2-474.4'

MAPID: 06900552000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 8E SECTION: 32 QUARTERS/FOOTAGES: 1321' N line, 295' W line of NE
 QUADRANGLE: ROSICLARE LONGITUDE: -88.348119 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.432912 DATE COLLECTED: 2 / 0 / 1943
 SURFACE ELEVATION (FT.): 375.0 LOGGED (FT.): 406.0 LOG TYPE: Survey Core Study
 SOURCE: ROSI LEAD & FLUORSR WELL TYPE: Mineral Test
 COMMENT: CORE STUDY-FE TIPPIE 3/43

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		
				UNIT	OVERBURDEN	COMMENT
375.0				34.0	0.0	"OVERBURDEN"
341.0				0.0	34.0	
341.0	MISSISSIPPIAN	HANEY	LIMESTONE	169.9	34.0	"GOLCONDA"
171.1	MISSISSIPPIAN	BEECH CREEK	LIMESTONE	4.0	203.9	INFERRED TOP-GK MAYNOR 6/87
167.1	MISSISSIPPIAN	WEST BADEN GROUP	SANDSTONE	83.3	207.9	FAULT 291.2'
83.8	MISSISSIPPIAN	CEDAR BLUFF GROU	LIMESTONE	0.0	291.2	FAULT 291.2'; "RENAULT"

MAPID: 06900557000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 8E SECTION: 32 QUARTERS/FOOTAGES: 300' N line, 2180' E line
 QUADRANGLE: ROSICLARE LONGITUDE: -88.347219 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.435735 DATE COLLECTED: 4 / 0 / 1945
 SURFACE ELEVATION (FT.): 395.0 LOGGED (FT.): 341.0 LOG TYPE: Survey Core Study
 SOURCE: ROSI LEAD & FLUORSR WELL TYPE: Mineral Test
 COMMENT: CORE STUDY-FE TIPPIE 4/45.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		
				UNIT	OVERBURDEN	COMMENT
395.0				20.8	0.0	"OVERBURDEN"
374.2				0.0	20.8	
374.2	MISSISSIPPIAN	HARDINSBURG	SANDSTONE	53.2	20.8	
321.0	MISSISSIPPIAN	HANEY	LIMESTONE	113.7	74.0	
207.3	MISSISSIPPIAN	BEECH CREEK	LIMESTONE	4.1	187.7	INFERRED TOP-GK MAYNOR 6/87
203.2	MISSISSIPPIAN	WEST BADEN GROUP	SANDSTONE	81.9	191.8	FAULT 267-268'
121.3	MISSISSIPPIAN	CEDAR BLUFF GROU	LIMESTONE	0.0	273.7	"RENAULT"

MAPID: 06900564000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 8E SECTION: 32 QUARTERS/FOOTAGES: 4906' N line, 2102' E line
 QUADRANGLE: ROSICLARE LONGITUDE: -88.346829 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.423025 DATE COLLECTED: 2 / 0 / 1943
 SURFACE ELEVATION (FT.): 345.0 LOGGED (FT.): 241.0 LOG TYPE: Survey Core Study
 SOURCE: ROSI LEAD & FLUORSR WELL TYPE: Mineral Test
 COMMENT: CORE STUDY-FE TIPPPIE

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
345.0				6.4	0.0	"OVERBURDEN"
338.6				0.0	6.4	
338.6			SANDSTONE	21.9	6.4	"ROSICLARE"
316.7			LIMESTONE	0.0	28.3	"FREDONIA"

MAPID: 06900565000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 12S 8E SECTION: 32 QUARTERS/FOOTAGES: 4760' N line, 2529' W line
 QUADRANGLE: ROSICLARE LONGITUDE: -88.349817 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.423414 DATE COLLECTED: 3 / 0 / 1943
 SURFACE ELEVATION (FT.): 385.0 LOGGED (FT.): 231.0 LOG TYPE: Survey Core Study
 SOURCE: ROSI LEAD & FLUORSR WELL TYPE: Mineral Test
 COMMENT: CORE STUDY-FE TIPPPIE 3/43.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
385.0				11.3	0.0	"SURFACE"
373.7				0.0	11.3	
373.7	MISSISSIPPIAN	WEST BADEN GROUP	SANDSTONE	132.1	11.3	FAULT 108.3-120' & 138.8-139.6'
241.6	MISSISSIPPIAN	CEDAR BLUFF GROU	LIMESTONE	47.1	143.4	"RENAULT", FLT. 185.2-190.5'
194.5			LIMESTONE	0.0	190.5	FLT. 185.2-190.5', "FREDONIA"

MAPID: 06900612000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 13S 8E SECTION: 5 QUARTERS/FOOTAGES: 3377' N line, 300' W line
 QUADRANGLE: ROSICLARE LONGITUDE: -88.359344 GEOLOGIST: GK MAYNOR
 CONFIDENTIAL: N LATITUDE: 37.413602 DATE COLLECTED: 0 / 0 / 1942
 SURFACE ELEVATION (FT.): 347.0 LOGGED (FT.): 455.0 LOG TYPE: Survey Core Study
 SOURCE: WELL TYPE: Mineral Test
 COMMENT: CORE STUDY-FE TIPPPIE 9/42.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
347.0				20.5	0.0	"OVERBURDEN"
326.5				0.0	20.5	
326.5	MISSISSIPPIAN	WEST BADEN GROUP	SANDSTONE	199.1	20.5	
127.4	MISSISSIPPIAN	CEDAR BLUFF GROU	LIMESTONE	129.1	219.6	"RENAULT & LEVIAS (313.9)'"
-1.7			SANDSTONE	0.0	348.7	"ROSICLARE"

MAPID: 06900614000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 13S 8E SECTION: 5 QUARTERS/FOOTAGES: 3642' N line, 1100' W line

QUADRANGLE: ROSICLARE LONGITUDE: -88.356598 GEOLOGIST: GK MAYNOR

CONFIDENTIAL: N LATITUDE: 37.412851 DATE COLLECTED: 0 / 0 / 1942

SURFACE ELEVATION (FT.): 344.0 LOGGED (FT.): 373.0 LOG TYPE: Survey Core Study

SOURCE: WELL TYPE: Mineral Test

COMMENT: CORE STUDY-FE TIPPIE 9/42

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
344.0				71.1	0.0	"STS. LS & SS BOULDERS"
272.9				0.0	71.1	
272.9	MISSISSIPPIAN	WEST BADEN GROUP	SANDSTONE	100.7	71.1	"BETHEL"
172.2	MISSISSIPPIAN	CEDAR BLUFF GROU	LIMESTONE	126.4	171.8	"RENAULT & LEVIAS (261.8)"
45.8			SANDSTONE	14.7	298.2	"ROSICLARE"
31.1			LIMESTONE	0.0	312.9	"FREDONIA"

MAPID: 06900617000C VERSION: 1

PROJECT: CUS-PILOT

COUNTY: HARDIN TWP/RNG: 13S 8E SECTION: 5 QUARTERS/FOOTAGES: SW SW

QUADRANGLE: ROSICLARE LONGITUDE: -88.358137 GEOLOGIST: GK MAYNOR

CONFIDENTIAL: N LATITUDE: 37.410258 DATE COLLECTED: 0 / 0 / 1900

SURFACE ELEVATION (FT.): 350.0 LOGGED (FT.): 400.0 LOG TYPE: Other Core Study

SOURCE: FAIRVW FLUOR & LEAD WELL TYPE: Mineral Test

COMMENT: ASSUME VERTICAL BORING.

ELEVATION TOP (FT.)	FORMATION	MEMBER	LITHOLOGY	THICKNESS (FT.)		COMMENT
				UNIT	OVERBURDEN	
350.0				0.0	0.0	
-	MISSISSIPPIAN	WEST BADEN GROUP	SANDSTONE	0.0		"BETHEL"
245.0	MISSISSIPPIAN	CEDAR BLUFF GROU	LIMESTONE	130.0	105.0	"RENAULT-L. O'HARA"
115.0			SANDSTONE	20.0	235.0	"ROSICLARE"
95.0			LIMESTONE	0.0	255.0	"FREDONIA"