Illinois Storage Corridor
CarbonSAFE Phase III

One Earth Energy
Seismic Interpretation

Technical Report

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EXECUTIVE SUMMARY

The objectives of the Illinois Storage Corridor (ISC) project are to accelerate commercial deployment of carbon capture utilization and storage at two individual sites and receive approvals for Underground Injection Control (UIC) Class VI permits for construction at each site (ISC Project Narrative, 2020). As part of this project, and as part of the subsurface geologic characterization, 2D seismic data was acquired at both sites. This report summarizes the findings from the 2D and 3D seismic interpretation at the One Earth Energy site near Gibson City, Illinois. The seismic data confirms the stratigraphic continuity of the Mt. Simon Arkose Zone storage interval and the Eau Claire confining unit across the project area. The seismic data also indicates that there are faults that transect the Mt. Simon Arkose Zone Sandstone storage reservoir within the modeled CO_2 plume (for more detailed information, see Faults and Fractures section of One Earth Energy Class VI Permit applications). However, the seismic data also shows that there are no faults within the modeled CO_2 plume that transect the confining unit Eau Claire Formation. The faults that transect the Mt. Simon Arkose Zone Sandstone storage reservoir all tip out in the Lower Mt. Simon Formation and do not reach the overlying Eau Claire confining unit. A small 3D survey acquired around the One Earth Energy #1 characterization well confirms these findings.

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INTRODUCTION

This report summarizes the stratigraphic and structural interpretation of two-dimensional (2D), and three-dimensional (3D) seismic data acquired near Gibson City, Illinois in 2019, 2021, and 2022. The objectives of the seismic programs were to contribute to the subsurface characterization of the Mt. Simon-Eau Claire Storage Complex by evaluating the continuity of potential storage reservoirs and confining units across the project area, and to determine if any geologic features that would increase out of zone migration risk to the proposed carbon storage project are present.

The first part of the report summarizes the interpretation of the four 2D seismic lines acquired at the Illinois Storage Corridor project near Gibson City, Illinois in 2019 and 2021. The second part of the report discusses the interpretation of the small 3D seismic survey acquired in 2022.

2D SEISMIC INTERPRETATION

In 2021, as part of the Illinois Storage Corridor project, three 2D seismic lines were acquired and processed near Gibson City, Illinois (Figure 1). The project also included an existing seismic line acquired in 2019 (Figure 1, "2019 Gibson"). Table 1 lists the acquisition parameters for the 2021 survey.

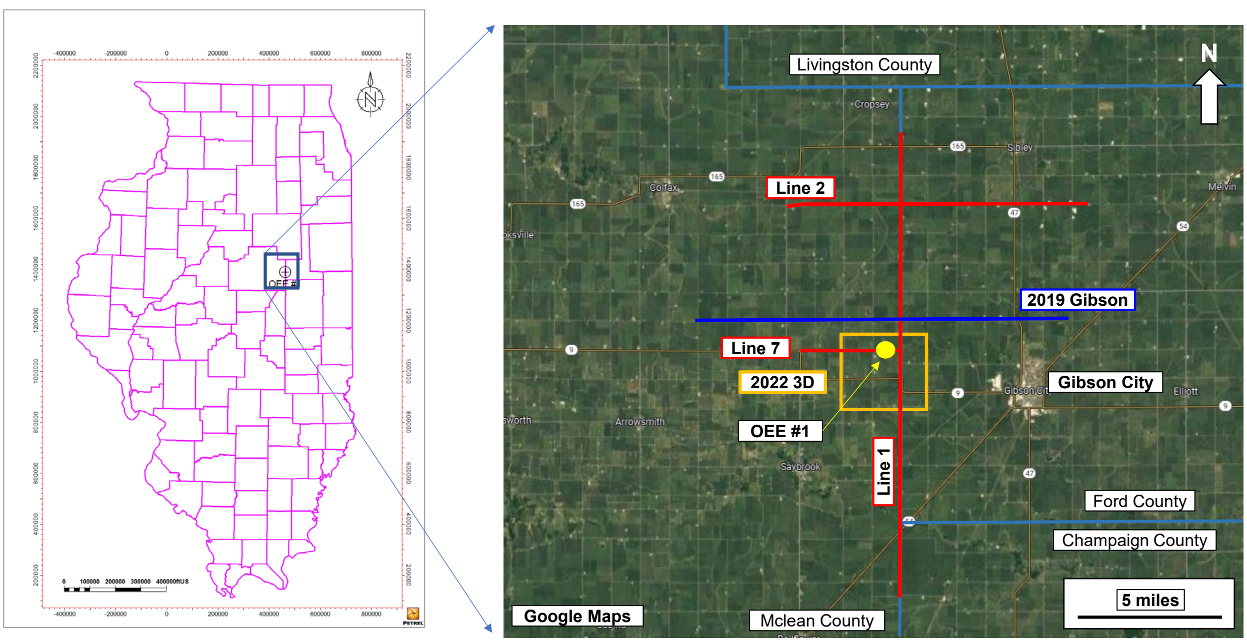

Figure 1. Seismic basemap of the Gibson City area (Google maps). Red lines indicate the three 2021 seismic lines, and the blue line is the 2019 Gibson line. The orange square outlines the 2022 3D survey. The One Earth Energy #1 well (OEE #1) is notated.

Table 1. 2D seismic survey acquisition parameters for the 2021 seismic lines.

Source Type	Vibroseis IVI ~60,000 lb peak force per vibe
Number of Vibrators per VP	2 each
Vibe Output	70%
Source Spacing	110 feet
Sweeps	2-minimum per station
Sweep Design	2-96 Hz Linear with 0.5 s tapers
Sweep Length	16 seconds
Record Length	5 seconds
Receiver Spacing	20 feet
Receiver Sampling	2 milliseconds
Receiver Type	STYDE Nodal 150 g 1C 1-125 Hz with 28 days memory
Receiver Installation	All receivers were spiked
Minimum Offset	15,000 feet
Tail Spread	~6,000 feet where possible

Synthetic Seismogram and Well-Tie

The One Earth Energy (OEE) #1 characterization well was spud in the fourth quarter (Q4) of 2021 and reached total depth (TD) in February of 2022. Log data from this well was used to correlate the well to the seismic. The density and sonic logs were reviewed for log quality and edited as needed. The density and sonic logs were used to generate an impedance log, which was then convolved with the selected wavelet to produce the initial synthetic seismogram using the Petrel™ interpretation package.

The planned full wellbore Vertical Seismic Profile (VSP) was not run in this well to reduce the overall well costs. A VSP using a downhole Distributed Acoustic Sensing (DAS) system was obtained, but the VSP was only run from about the top of the Eau Claire to surface, and did not include the deeper Mt. Simon, Argenta, or Precambrian intervals. Therefore, this VSP data was not used.

The wavelet used for the final well-tie was an extracted reverse polarity wavelet using a window of 200-1,100 milliseconds two-way travel time (twtt). This wavelet was extracted from a ten-trace window around the well on Line 1 (traces 4550-4560) (Figure 2). As part of an iterative process, this extracted wavelet was used to generate synthetic seismograms using both normal and reverse polarity. Based upon the character tie and shape of each resulting synthetic, it became clear that the polarity used by the processing contractor was opposite to that used in the Petrel™ interpretation package. Hence the extracted wavelet used in the final well-tie was reverse polarity.

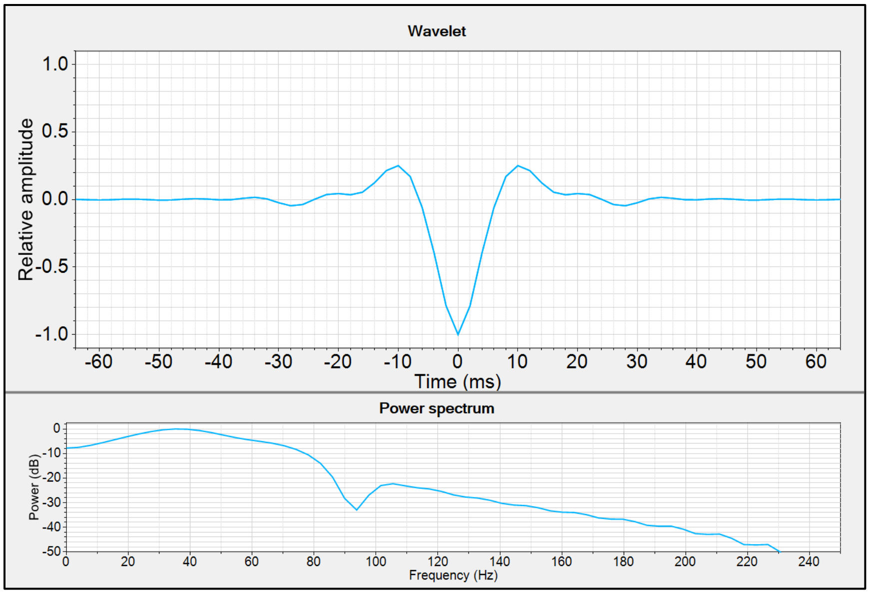

Figure 2. Extracted reverse wavelet from traces 4550-4560 on Line 1 around the One Earth Energy #1 well.

The final well-tie had a bulk shift of 260 milliseconds (ms) down, with some minor stretching and squeezing, which resulted in a fair character tie (Figure 3). The bulk shift was large due to the lack of initial time-depth information from a VSP or checkshot. The character tie relies on strong impedance contrasts seen at the top of the New Albany shale, the top and base of the Maquoketa Shale, top St. Peter Sandstone, top Mt. Simon, and the top Arkose Zone. The Arkose Zone contains high porosity that results in a significant impedance contrast with the overlying Lower Mt. Simon and is mappable on the OEE seismic data.

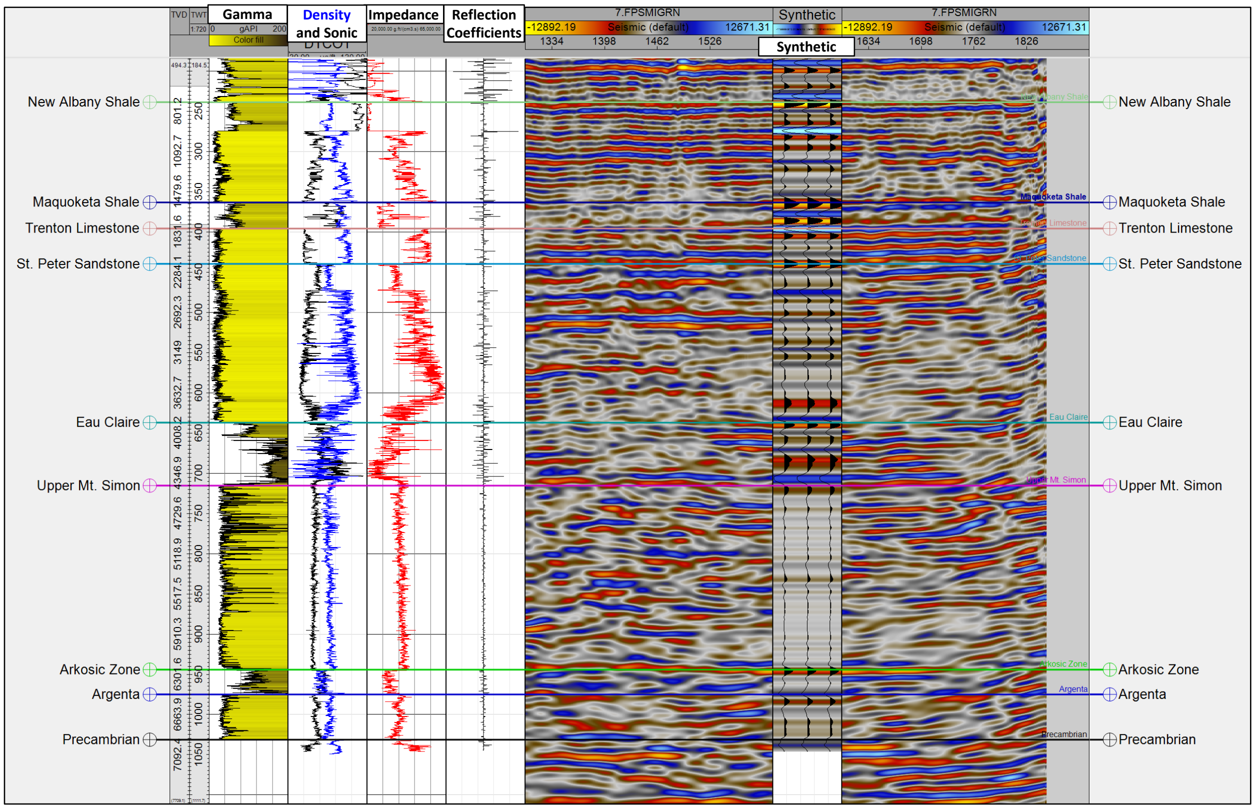

Figure 3. One Earth Energy #1 well-tie to Line 7. Red is a negative number and is the top of low impedance.

The synthetic seismogram shows that numerous stratigraphic units have strong impedance contrasts; the shales and sandstones were low impedance relative to the limestones and dolomites. The horizons interpreted include the top Albany Shale, top Maquoketa Shale, base Maquoketa Shale/top Trenton, top St. Peter Sandstone, top Shakopee (Knox), top Eau Claire, top Mt. Simon, top Arkose Zone, top Argenta, and top Precambrian.

For the project at One Earth Energy, the Mt. Simon Sandstone (including the Arkose Zone) is the potential storage reservoir. The primary sealing interval is the Eau Claire Shale, with secondary containment expected from the Knox dolomites and the Maquoketa Shale.

The following sections will discuss each seismic line individually.

Line 7 Interpretation

Figure 4. Line 7 seismic line, the shortest seismic line at One Earth. Line is about 3.5 miles long. shows Line 7, the line that is closest to the OEE #1 well, which is located 182 feet to the south of trace 1601 (Figure 1). The gamma ray log is posted along the wellbore on the seismic line. The seismic quality of this line is only fair and is likely affected by its short length where full fold is limited to the middle part of the line. Most mapped horizons extend across the line on moderate/high amplitude and continuous reflectors, but the Eau Claire and Mt. Simon horizons have poorly imaged reflectors. Given the poor to fair imaging with some variability in reflector continuity and strength, it would be difficult to make inferences on how the seismic data indicates changes to either facies or thickness along this line. Given that the line is only about 3.4 miles long, significant stratigraphic changes would not be expected.

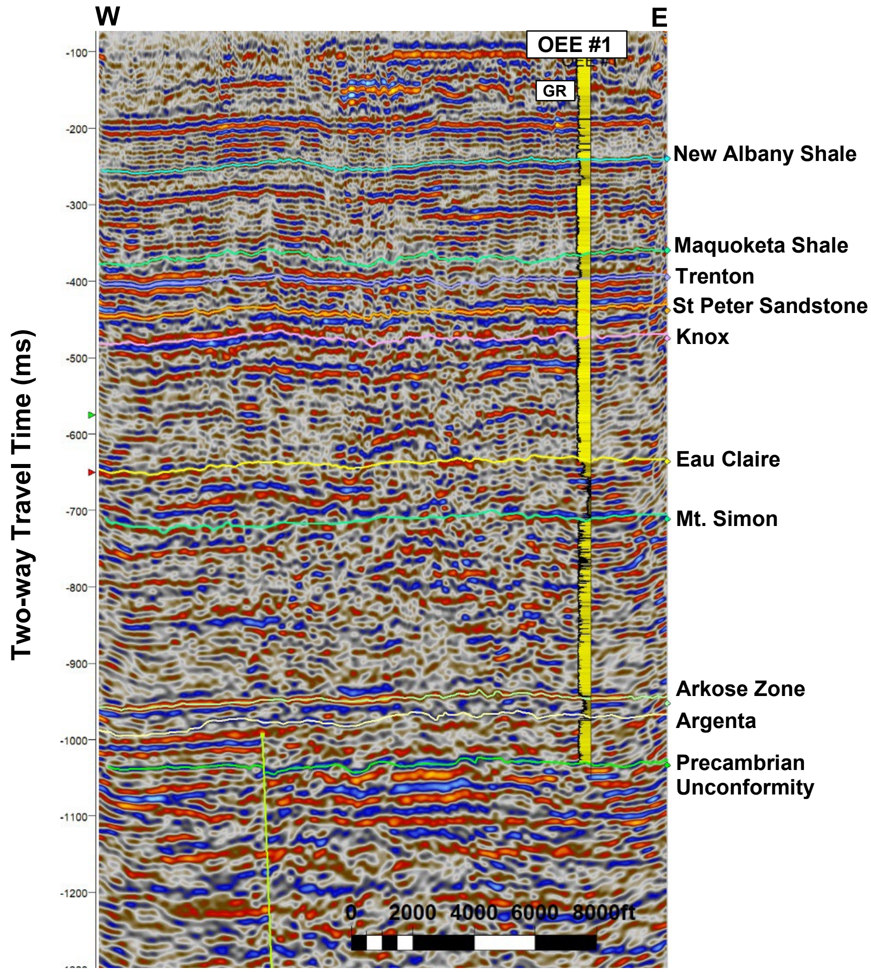

Figure 4. Line 7 seismic line, the shortest seismic line at One Earth. Line is about 3.5 miles long.

Only one fault is mapped on this seismic line. This normal fault comes up from the Precambrian and tips out in the Argenta. There may be a small bit of growth in the Argenta across this fault, indicating the age of the last movement of the fault.

Line 1 Interpretation

Line 1 (Figure 5) is oriented north-south. The OEE #1 well is located about 2,500 feet west of Line 1 at trace 4557 (Figure 1). The Mt. Simon Sandstone, excluding the Arkose Zone, is a high net-to-gross sandstone with a small component of thin interbedded shale. Due to its mostly homogenous sandstone composition, there are few continuous impedance contrasts internally. This is consistent with the mapped seismic package seen on Figure 5. Line 1 seismic line, showing a few small offset faults and some growth in the Arkose and Argenta zones., where the Mt. Simon shows overall low reflectivity, with low-moderate amplitude discontinuous reflectors. The overlying Eau Claire shale shows similar seismic facies but does show more continuity of reflectors on the north (right) side of the seismic line shown in Figure 5. The Arkose Zone is the lowest interval within the Mt. Simon Sandstone but is treated as a separate zone. The Arkose Zone has higher porosity than the Mt. Simon which results in a strong low impedance boundary between it and the overlying lower Mt. Simon (see well-tie on Figure 3). This impedance boundary is mappable as a separate unit.

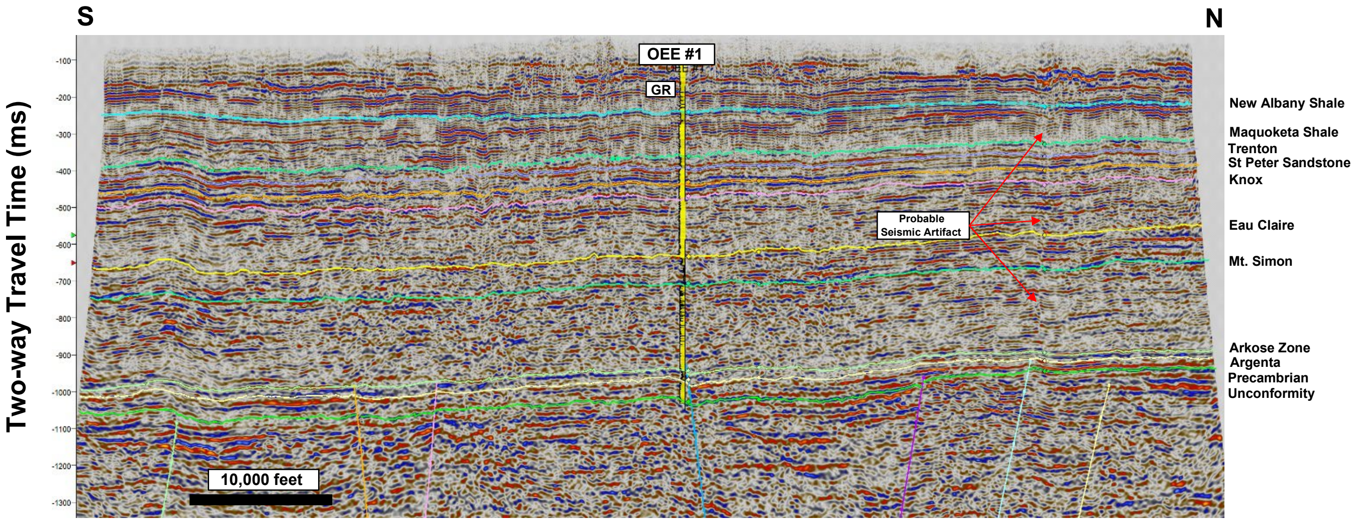

Figure 5. Line 1 seismic line, showing a few small offset faults and some growth in the Arkose and Argenta zones.

Except for the green fault on the left (south) end of the seismic line, all the other mapped faults show normal offset, and tip out in either the Argenta or the Arkose Zone. The extension that has led to the formation of these faults has also led to stratigraphic thickening in the Argenta and Arkose Zones. These two zones thicken from north to south (right to left in Figure 5) after crossing the three normal faults on the north side of the line (purple, light blue, and beige faults). Conversely, onlap of seismic reflectors is visible moving south to north within the Argenta, particularly between the purple and light blue faults.

The green fault on the south end of the line underlies a small north-verging anticline. It is likely that this fault and associated fold is related to the deformation that produced the larger Osman monocline just to the east.

There is a near-vertical, "wavy" break in reflectors on the north side of the line (Figure 5). Because it appears directly beneath a shallow burst of amplitudes, it is believed that this is a seismic artifact and not a fault. Reflectors shallower than the lower Mt. Simon appear to be broken, but the Arkose, Argenta, and Precambrian reflectors do not appear broken and are continuous.

Line 2 Interpretation

Line 2 (Figure 6) is oriented east-west. It is located about 5 miles north of the OEE #1 well (Figure 1). On this line the shallowest Mississippian and Pennsylvanian stratigraphy above the New Albany Shale is onlapping onto the Osman Monocline, indicating the relative timing of the formation of the structure. Most of the faults associated with the formation of the Osman Monocline, which is part of the Lasalle Anticlinorium, were likely active into late Mississippian and Pennsylvanian time (Nelson 2010). The LaSalle Anticlinorium formed in response to the Ancestral Rocky Mountains orogeny (McBride 1998, McBride and Nelson 1999).

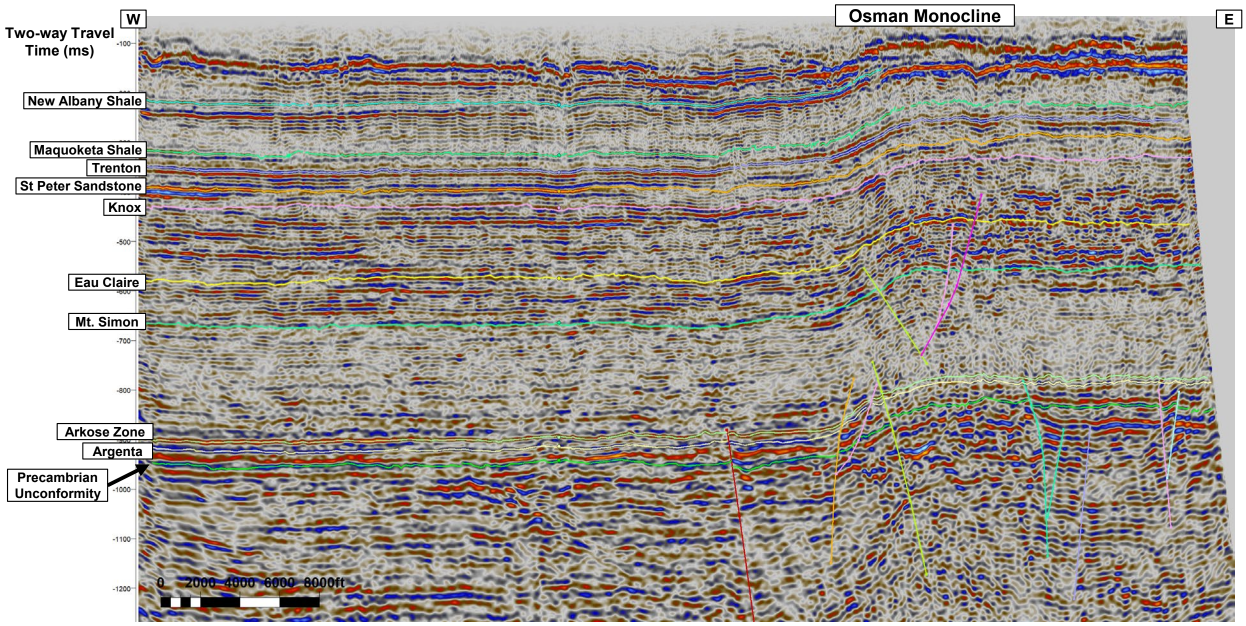

Figure 6a. Line 2 seismic line, showing the Osman Monocline.

The mapped stratigraphy changes in seismic character up onto the Osman Monocline. The interval between the Knox to the top of the Mt. Simon appears to have high amplitude reflectors but with lower continuity. The Mt. Simon interval has lower amplitude reflectors with lower continuity. This is believed to be a combination of lower seismic quality due to the structure itself, as well as the possible presence of additional small faults that are below seismic resolution.

There are some thickness changes on top of the monocline in the interval between the Trenton and the Knox. This is interpreted to be due to stratigraphic changes that are observable in the reflector geometries, and not due to the structuring.

The Arkose Zone thins onto the structure, and it appears that the Argenta thickens slightly onto structure. The Argenta thickening is interpreted to be from a local pre-existing thick before the structure began growing. This scenario is possible in part because the Argenta is older than the Arkose Zone, which unconformably lies on top of the Argenta (Freiburg et al, 2015). In Arkose time, there may have been some early minor fault movement initially unrelated to the Osman Monocline, causing some thinning onto the structure. The faults that help to form the features in the LaSalle Anticlinorium may be reactivated older Precambrian faults, so early movement may have been in a different tectonic stress regime than when the monocline formed in late Mississippian and Pennsylvanian time (Nelson, 2010).

The key structural element in the Osman Monocline is the mapped reverse fault, which is the olive-green fault in the core of the fold in Figure 6a and Figure 6b, coming out of the Precambrian and tipping out in the Mt. Simon Sandstone. This fault may be a reactivated Precambrian fault that helped form the Osman Monocline. In this interpretation scenario, all the other mapped faults coming out of the Precambrian and tipping out in the Argenta, Arkose Zone, or lower Mt. Simon Sandstone are normal faults that appear to have offset of less than one seismic cycle, which is about 80-100 feet.

Within the core of the monocline in the Eau Claire and Mt. Simon intervals, there are three mapped small-offset normal "keystone" faults, potentially developed under localized extension as the fold formed. Offset is small, from 20-60 feet, and appears to die out at depth within the Mt. Simon Sandstone. There are likely additional normal faults in the same style that have offsets too small to image.

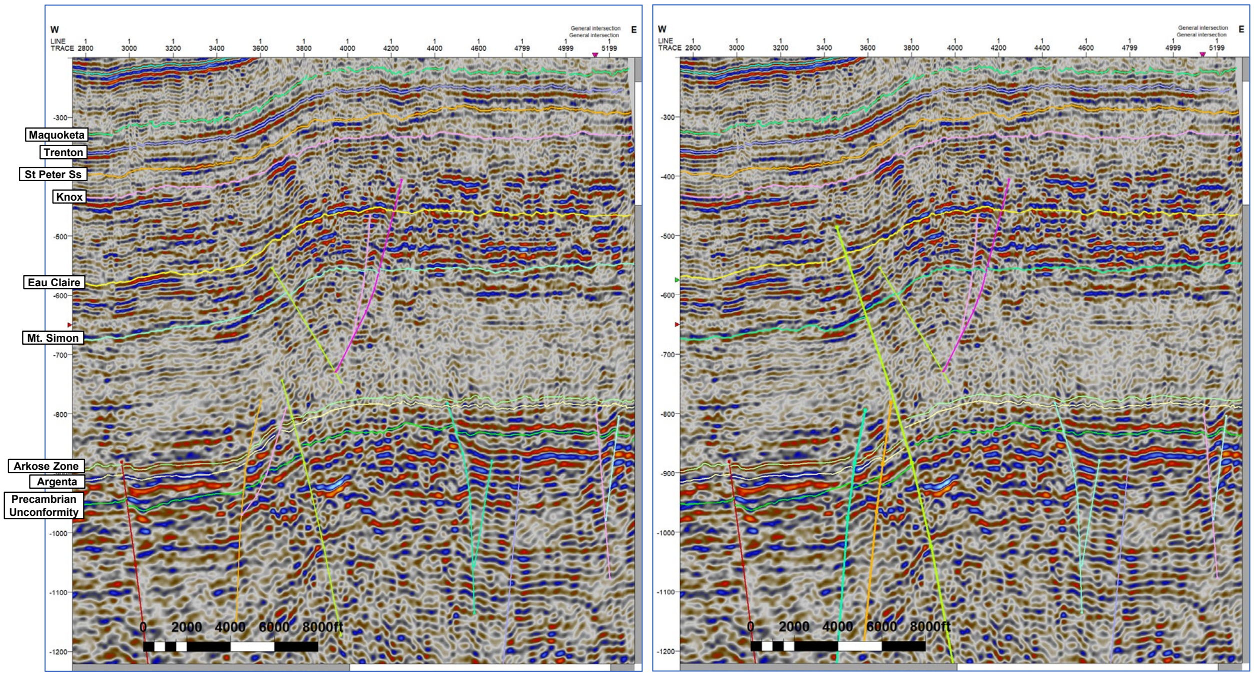

Figure 6b. Portion of Line 2 seismic line, showing the Osman Monocline. The most likely interpretation scenario is shown on the left, and a less likely but viable alternate interpretation is shown on the right.

A less likely but alternate plausible structural interpretation is to extend the olive-green reverse fault further upwards to cut through the entire Mt. Simon and tip out in the Eau Claire and have additional reverse faults just to the west (Figure 6b). Figure 6b shows the same portion of Line 2, but with two different structural interpretation scenarios. On the left is the scenario described in the previous two paragraphs. On the right is a viable alternate interpretation that extends the olive-green reverse fault up into the Knox group where it tips out, and with two additional reverse faults just to the west of the main olive-green reverse fault. There are some breaks in the seismic reflectors in the Eau Claire and Mt. Simon that support this interpretation, but there are also continuous reflectors that do not support this interpretation; these continuous reflectors could just be where the fault offset is fortuitously one cycle. The author believes either interpretation is plausible and consistent with the data observed.

2019 Gibson Line Interpretation

The 2019 Gibson Line (Figure 7) was acquired two years before the other three 2021 lines. The line is located about 4 miles south of, and parallel to, Line 2, and runs east-west. The Gibson line is lower quality relative to the 2021 lines, with the seismic reflectors showing more variability in amplitude.

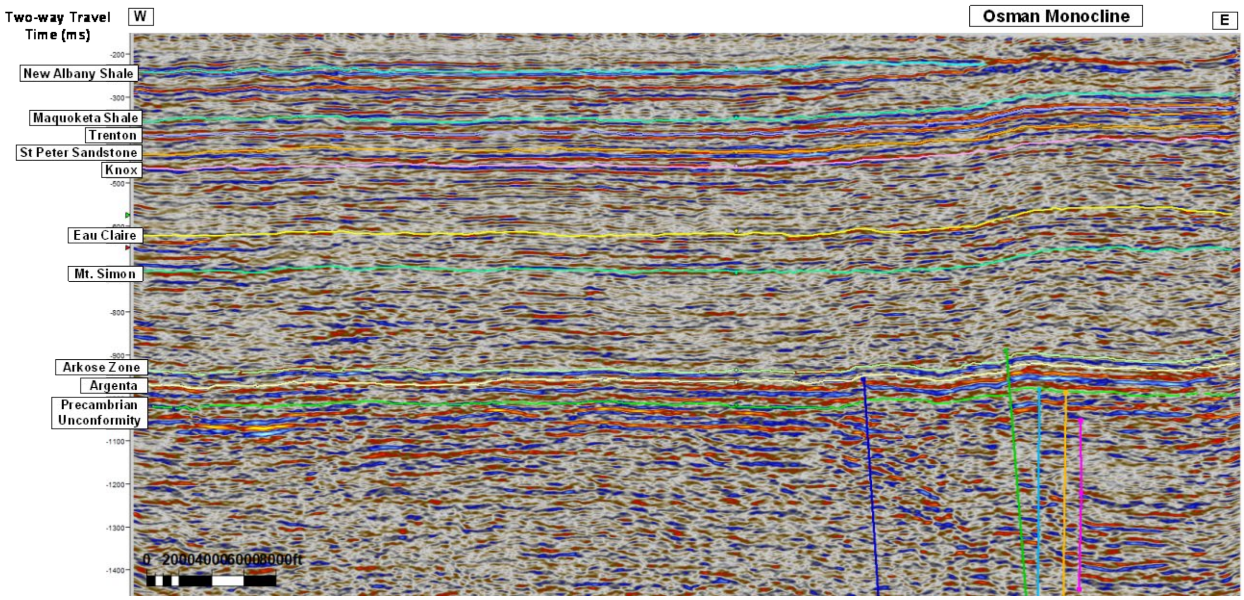

Figure 7. Gibson 2019 seismic line, showing the Osman Monocline.

Because the 2019 Gibson line was processed independent of the 2021 lines and used a different processing contractor, different datums were used in the processing of the lines. A 78ms downward shift was necessary to tie the 2019 line to Line 1 of the 2021 dataset (Figure 8).

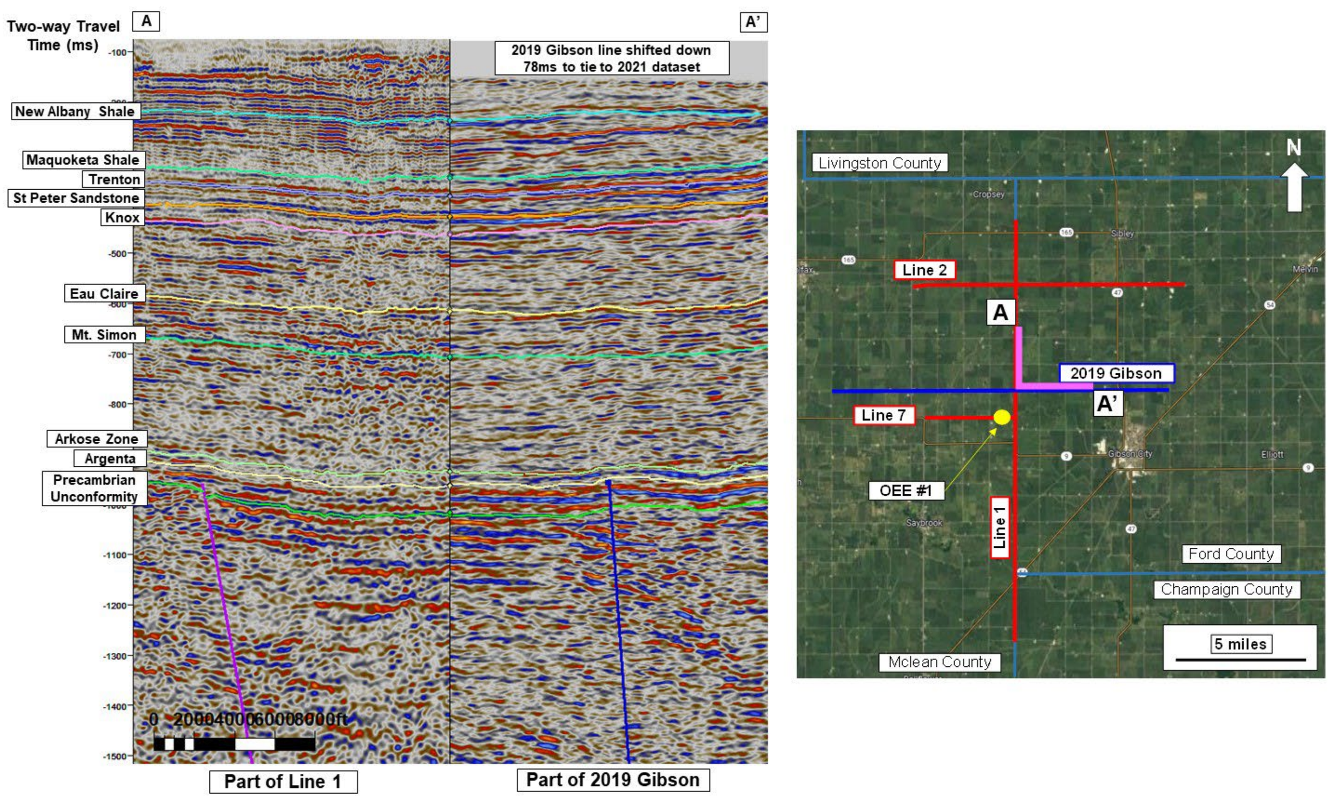

Figure 8. Composite traverse composed of part of Line 1 and part of 2019 Gibson line, with Gibson line shifted 78ms downward to tie to 2021 Line 1.

Similar to Line 2, the New Albany onlaps onto the Osman Monocline. Except for the Arkose Zone, the mapped stratigraphy between the Maquoketa Shale and the top of the Mt. Simon has approximately constant thickness across the seismic line. The Mt. Simon thickens slightly from west to east, which is consistent with the overall regional trend (Freiburg et al, 2014).

The Arkose Zone thins slightly from west to east; thinning starts about two miles west of the monocline and the thinning increases slightly onto the structure at the east end of the line. Like the Arkose Zone thinning observed on Line 2, this may reflect some early minor fault movement on what are likely reactivated Precambrian faults. This interpreted minor fault movement was ultimately not significant enough to affect the thickness of the entire Mt. Simon/Arkose Zone.

Compared to Line 2, the Osman anticline is broader, and its west-dipping flank has a shallower angle. A few small faults, both normal and reverse, underlie the structure. Two reverse faults are present and help form the overall monocline structure (blue and green faults, Figure 7). The blue fault tips out in either the upper Argenta or the Arkose Zone, and this fault forms a small, shallow fault-bend fold about two miles in front of the main flank of the Osman monocline. The green fault forms within the main part of the Osman monoclinal fold and tips out in the lower Mt. Simon. It is possible that this fault can be correlated with the light green reverse fault observed on Line 2 (Figure 6). Both the green and blue faults on the 2019 Gibson line are mapped with high confidence, as there is clear reverse offset on reflectors within the Argenta and Arkose Zone. Three small normal faults are also observed in the Precambrian, and do not penetrate the Precambrian unconformity. No additional faults are observed higher up in the section nor within the fold of the monocline, unlike those faults seen in the monocline on Line 2. This lack of faulting is consistent with the broader and more gently dipping structure on this line.

3D SEISMIC SURVEY

As part of the detailed subsurface characterization of the area around the OEE #1 characterization well, a 3D seismic survey was acquired (Table 2). The survey was adjacent to where the One Earth Energy CO_2 injection wells will be located and was intended to characterize the subsurface where a portion of the CO_2 plume was expected to be present during injection.

Table 2. Acquisition parameters of the 2022 One Earth Energy 3D seismic survey.

Parameter	Value
Size	9 mi^2
Spread	All Live Spread, 19,838 Receivers
Acquisition Record Length	5 seconds
Acquisition Sample Interval	2 ms
Source Type	60,000 lb peak force Vibroseis
	Sweeps: 1 Sweep, length: 16 sec. 2-100 Hz, Linear
Shot Interval	60 ft
Station Interval	40 ft
Filters	1 – 125 Hz
Max Fold	1609
Recorder	STRYDE Nodal

Similar to the 2021 2D survey, the source was a single Vibroseis at 60,000 lbs force, and the receiver array was the Stryde Nodal system.

Figure 9 shows maps of the locations of both the Vibroseis source locations as well as the receiver locations. Due to various issues with some landowners, neither source nor receiver coverage was 100%. This outcome did affect the seismic quality in parts of the area, particularly the northern part of the survey where there were voids in both source and receiver locations. However, seismic quality in the northern quartile of the survey area was deemed sufficient to determine the presence of faults and structures and to sufficiently characterize the subsurface.

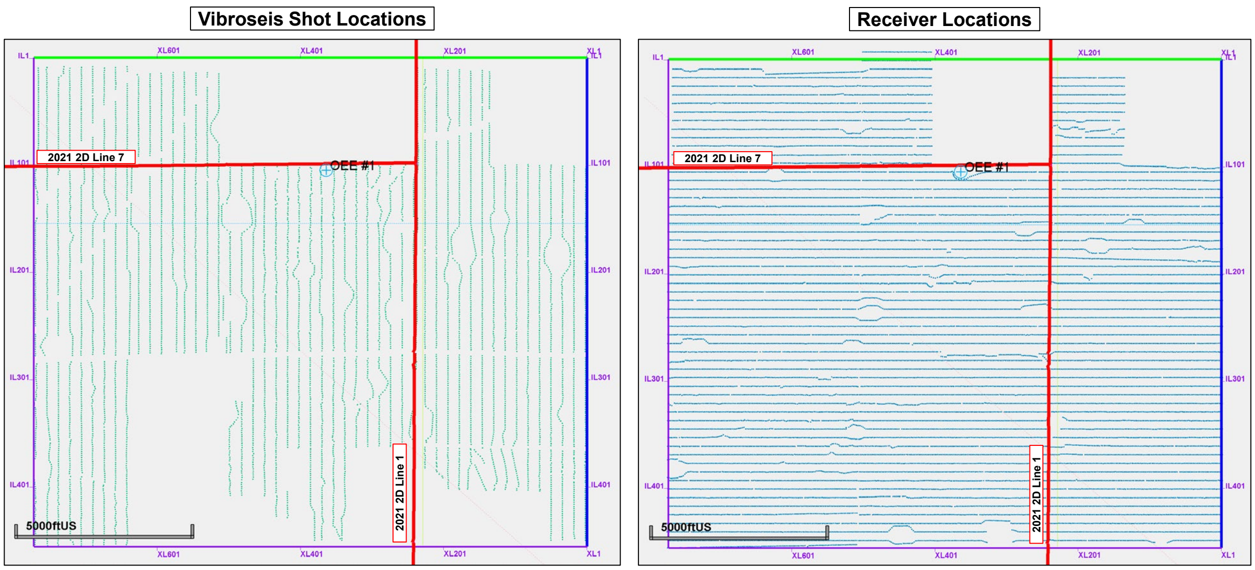

Figure 9. Shotpoint and Receiver location maps across the 2022 3D seismic survey.

Figure 10 shows the synthetic seismogram and the well-tie of the OEE #1 well to the 3D survey, inline 105. The well-tie utilized an extracted wavelet around the well from 300-1,050ms, with an additional 3ms time shift after applying the time-depth relationship generated from the original 2D seismic tie. The well-tie results give the same tie as the initial tie to the 2D seismic, confirming the 2D interpretation and the 3D interpretation are consistent.

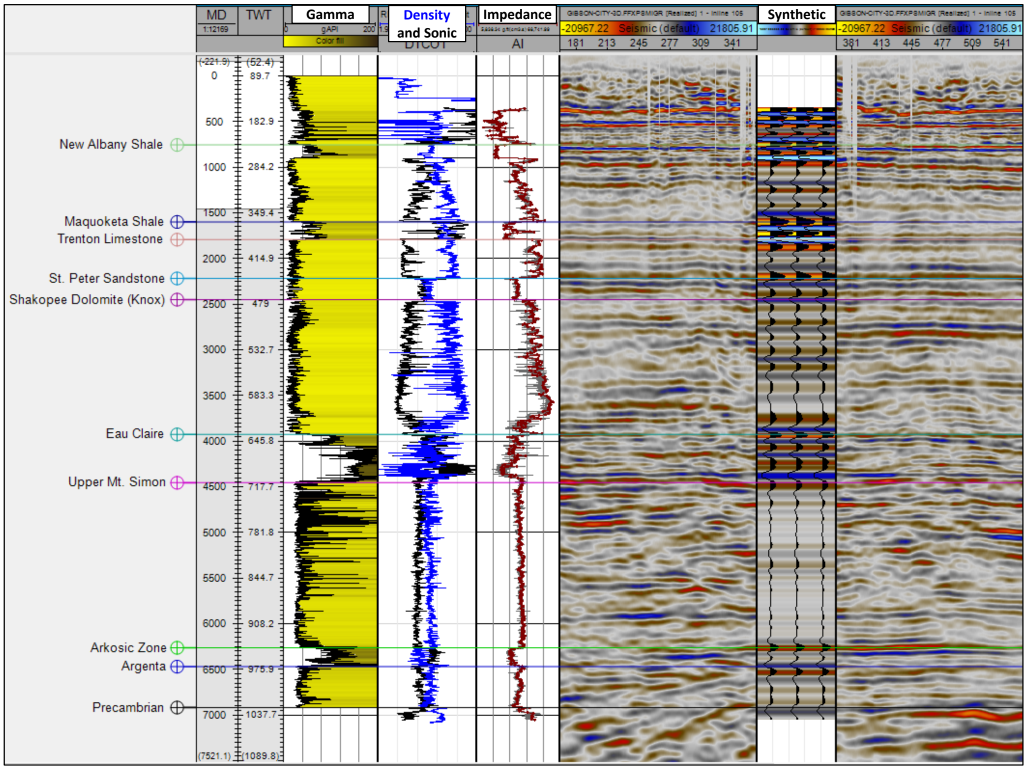

Figure 10. Synthetic well-tie of OEE #1 well to Inline 105 of the 2022 3D.

Like the 2D seismic interpretation, the horizons interpreted on the 3D survey include the top Albany Shale, top Maquoketa Shale, base Maquoketa Shale/top Trenton, top St. Peter Sandstone, top Shakopee (Knox), top Eau Claire, top Mt. Simon, top Arkose Zone, top Argenta, and top Precambrian.

The 3D survey did not reveal any observable facies changes or significant thickness changes in any of the stratigraphy. This is not unexpected given the small areal extent of the survey. Isochrons of the mapped intervals are consistent and show only minor thickness changes across the survey, which is mostly due to slight variations in the thickness of the reflectors.

Mapping of the key storage interval Arkose Zone on the 3D survey supports the presence of high porosity within this zone. Across the entire survey, the top of the Arkose Zone is a moderate to strong amplitude, low impedance, continuous reflector, which is indicative of its high porosity relative to the overlying Lower Mt. Simon.

The small 3D survey revealed generally southwest dipping stratigraphy with additional structural features such as small faults and gentle folds. Figure 11 is the time structure map of the top of the Arkose Zone. Relief on this surface is caused by both faults and gentle folds. The north/northeast part of the 3D area is a high that is interrupted by a structure and associated deep low immediately north and east of the OEE #1 well; this structure is formed in response to the Blue Fault (see Figures 12, 13, 14, and 15). To the southwest is a plunging saddle with lows to the south and west. The deepest part of the 3D seismic is formed in part by a high angle reverse fault, which is the east-west trending green fault shown on the west side of the map in Figure 13.

Figure 13 shows the faults mapped on the 3D survey. Most of the mapped faults originate in the Precambrian, and tip out in either the Argenta, Arkose Zone, or the Lower Mt. Simon.

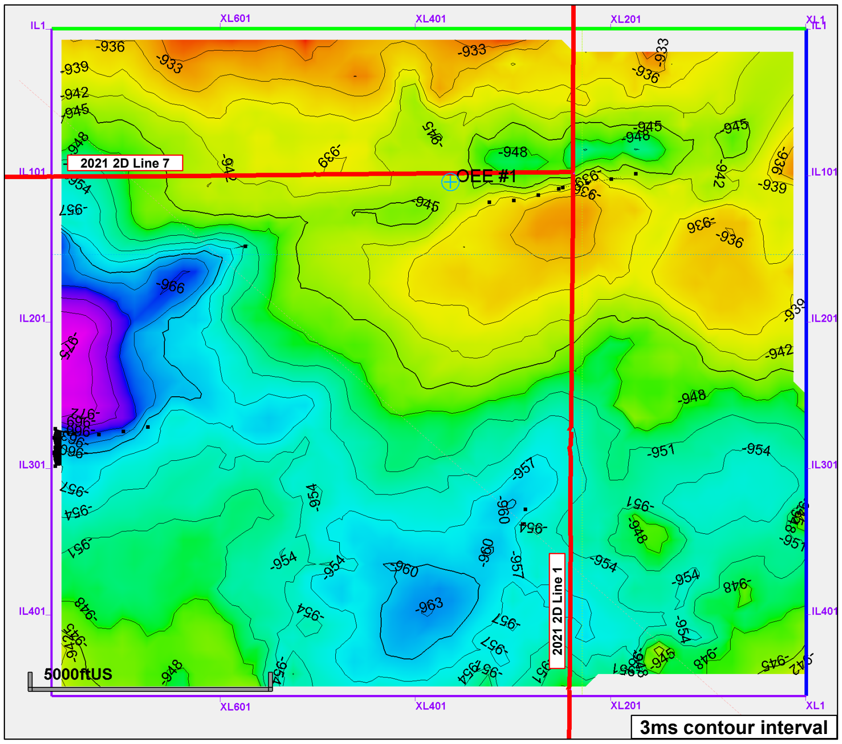

Figure 11. Time structure map of Top Arkose Zone from 3D seismic interpretation.

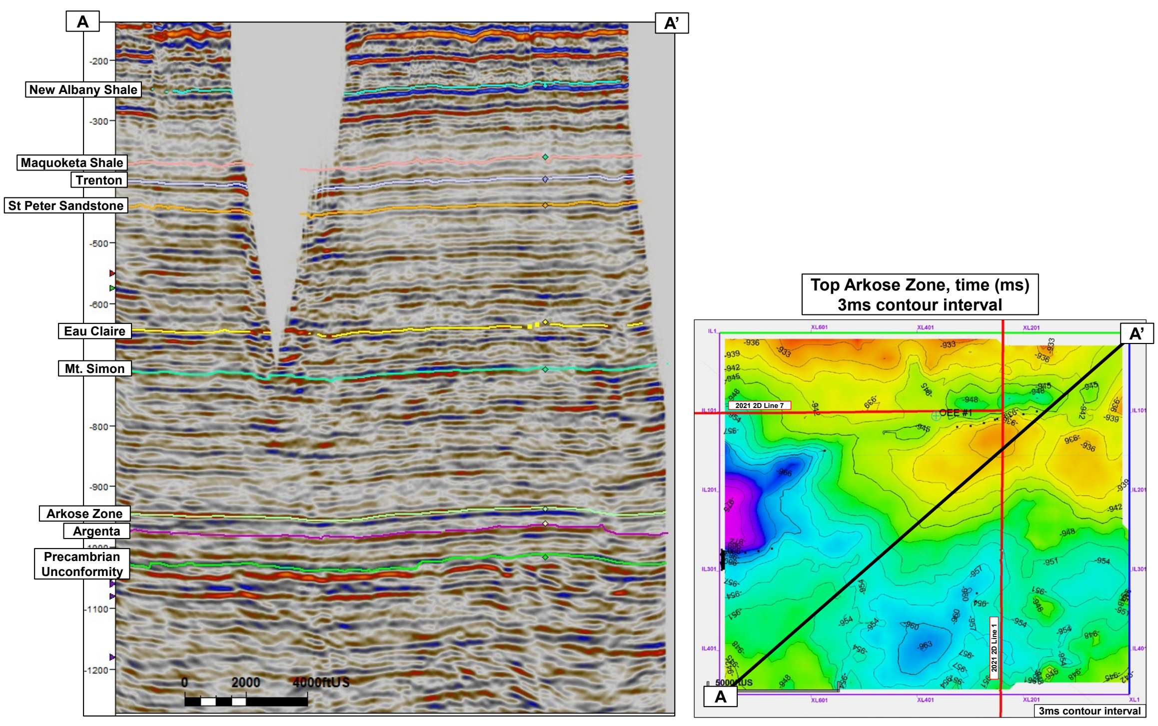

Figure 12. SW-NE A-A' seismic traverse showing gentle structural features (gentle folds) at the top of the Arkose Zone across the 3D survey. The large "V-shaped" area void of seismic data is due to an area without both shot data; refer to Figure 9.

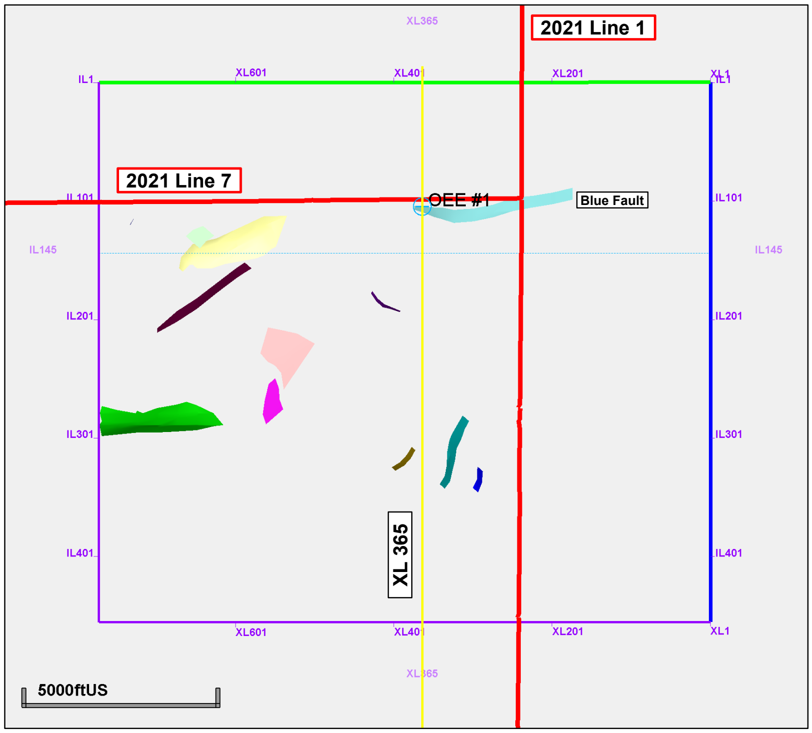

Figure 13. Faults mapped on the 3D. Note the variety of orientations and sizes. The "Blue Fault" is also visible on the 2021 Line 1 2D line.

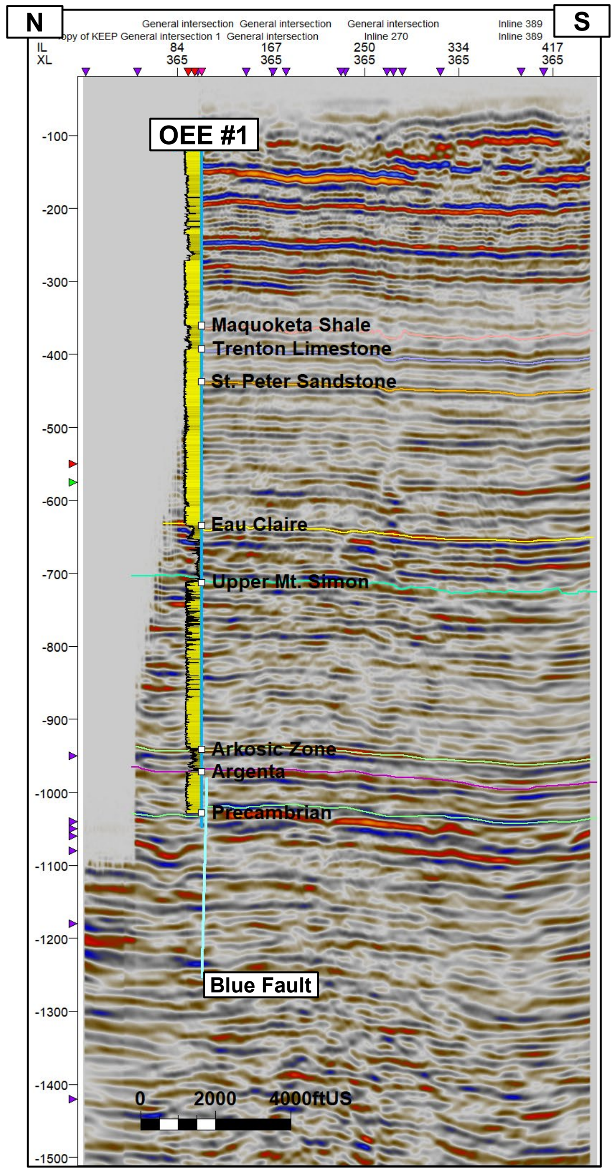

Figure 14. Crossline 365 through the OEE #1 well with gamma log shown in yellow. Note the location of the well versus the Blue Fault, which is the largest fault mapped on the 3D survey. Refer to Figure 13 for location of the crossline.

In addition to the overall gentle structure, the 3D seismic survey has helped the project understand the density and variety of Precambrian faults that are present in the subsurface in this part of the Illinois Basin. The survey area is relatively small, yet several faults were easily identified on the 3D survey. These faults have a variety of orientations and a variety of styles. Both normal and reverse faults were identified, and presumably some of these faults also have a component of strike slip, given the complex and long geologic history of the Illinois Basin. It is presumed that there are more basement faults present that are not visible on seismic due to their offset being too small to image.

Figure 15 shows a north-south crossline through the central part of the east-west trending blue fault, which is the largest fault interpreted on the 3D. This normal fault is about 4,000 feet in length with a maximum throw of approximately 150-200 feet at the Precambrian unconformity. It is possible that the throw is larger below the Precambrian unconformity, but its throw cannot be determined with any kind of confidence due to the low reflectivity and discontinuous nature of the Precambrian reflectors.

Figure 16 shows a NW-SE traverse through several faults, highlighting the varied orientations and styles of faults seen on the 3D. The yellow and red faults are high angle reverse faults, dipping in opposite directions only 400-1,000 feet apart. A possible explanation for their proximity is the faults originally formed at separate times in the Precambrian and then were reactivated later in the Paleozoic. Both the red and yellow faults are about 3,000 feet in length, with maximum fault throw of approximately 100 feet. The light and dark blue faults are small high angle normal faults, and are 1,800 and 400 feet in length, respectively. The light blue fault has a maximum fault throw of approximately 80 feet, and the dark blue fault, being smaller, has a maximum throw of about 50 feet.

Figure 17 shows another view of the red fault, as well as the larger green fault on the western edge of the 3D survey. Both are high angle reverse faults. Total length of the green fault is unknown as it continues off of the western edge of the survey. Maximum offset of the fault visible on the 3D survey appears to be approximately 100 feet.

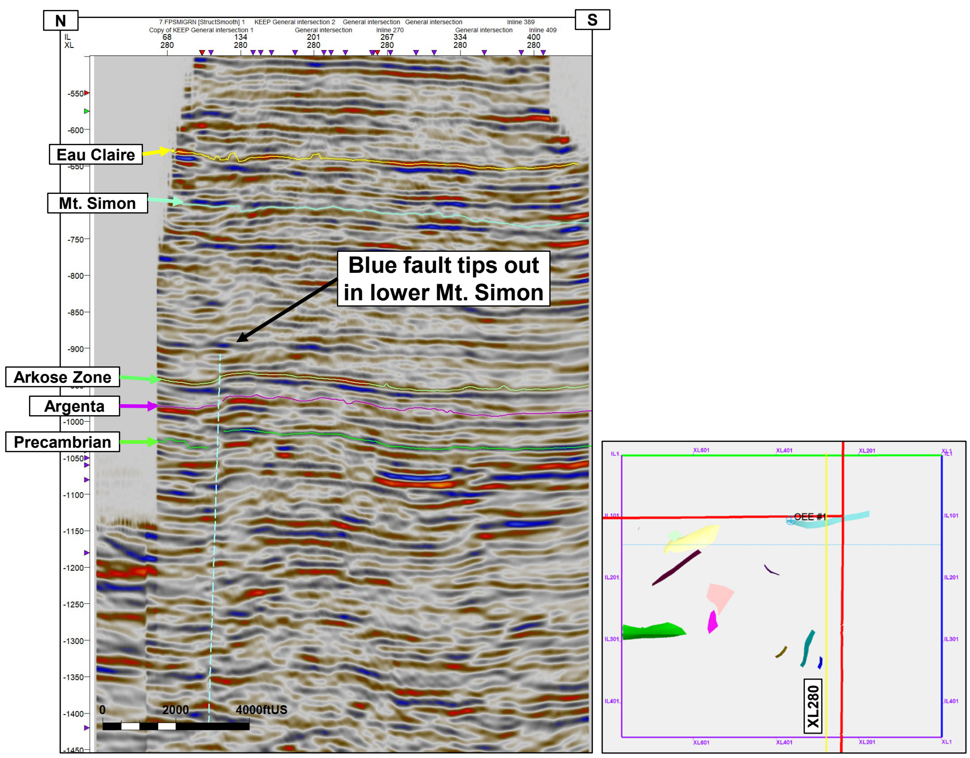

Figure 15. Crossline 280, 1,700ft east of OEE #1, showing additional view of Blue Fault as well as the seismic character of the Paleozoic and Precambrian sections.

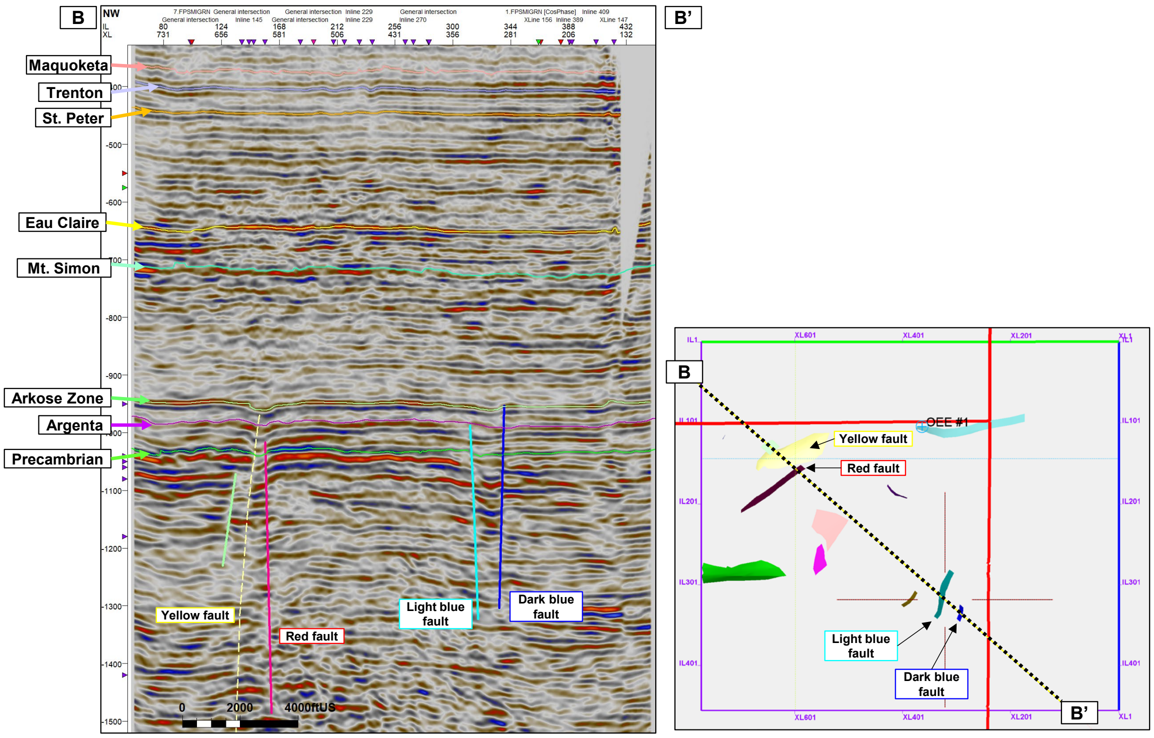

Figure 16. NW-SE B-B' Traverse, showing several faults with different orientations, throws, and lengths. The yellow and red faults are high angle reverse faults. The light blue and dark blue faults are high angle normal faults.

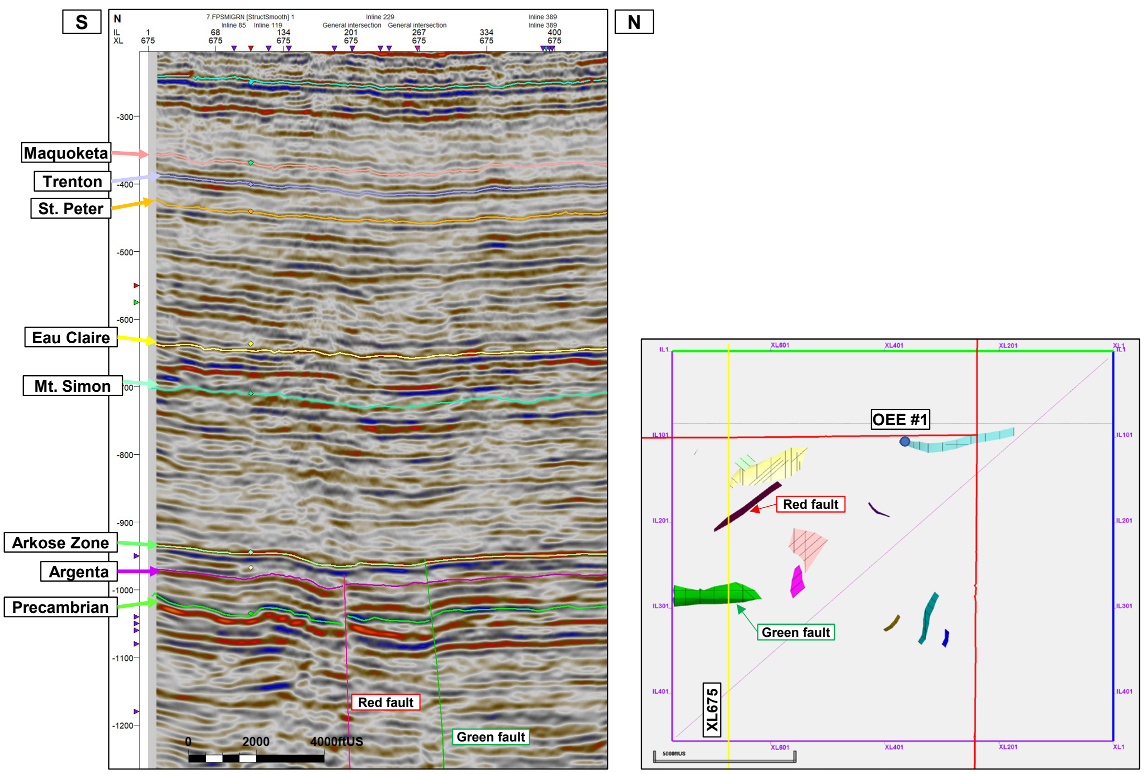

Figure 17. Crossline 675, showing green and red reverse faults. Both are reverse faults with minor offset, and both tip out in or just below the Arkose Zone.

INTERPRETED FAULTS RELATIVE TO MODELED CO_2 PLUME

Figure 18 is a figure from the Faults and Fractures section of the One Earth Energy Class VI permit applications. Shown in green is the modeled CO_2 plume from three proposed injection wells. The only interpreted faults that transected the Eau Claire confining unit were located on Line 2 (Figures 6a and 6b), which lie entirely outside of the modeled CO_2 plume. None of the other 2D seismic lines showed any faults transecting the Eau Claire confining unit, nor the 3D survey. As discussed in previous sections, a few small faults coming up out of the Precambrian tip out within or just above the Arkose Zone storage reservoir, interpreted on both the 2D and 3D seismic data. For more detailed information, see Faults and Fractures Section of the One Earth Energy Class VI Permit applications.

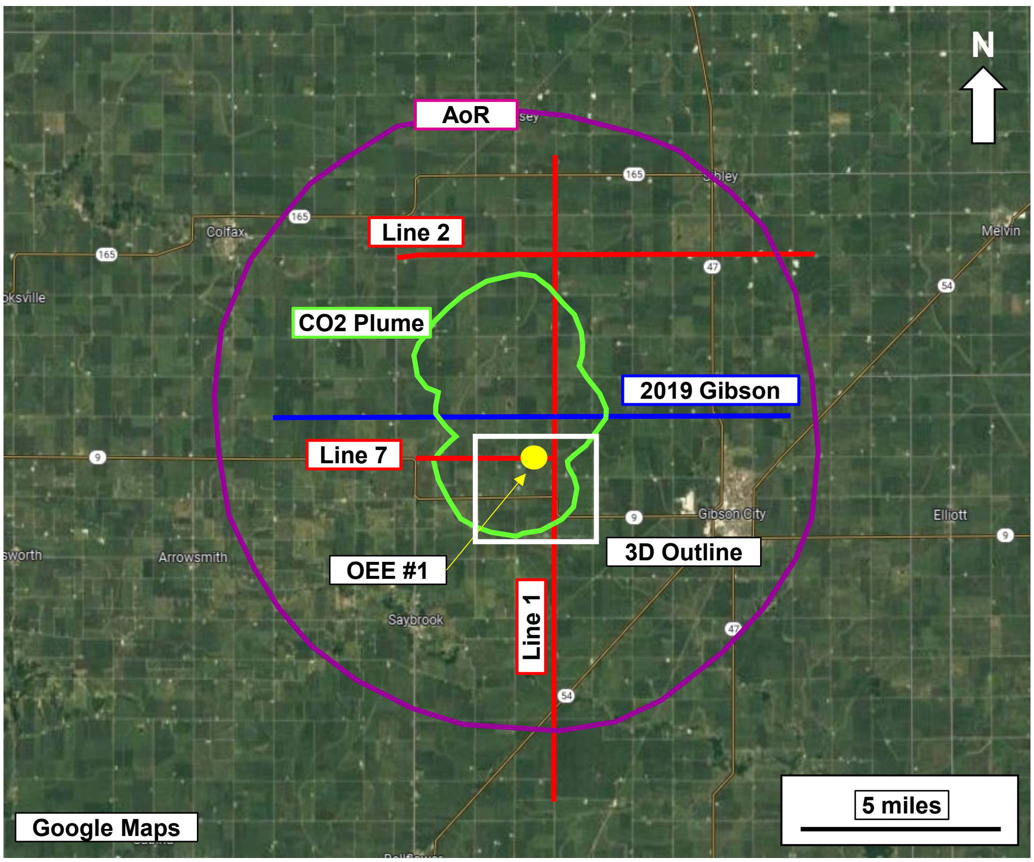

Figure 18. Base map of the One Earth Energy project area showing the location of the seismic lines, OEE #1 well, AoR (Area of Review), CO_2 plume, and the outline of the 3D seismic survey.

SUMMARY

The purpose of the 2D and 3D seismic survey at the One Earth Energy site near Gibson City, Illinois was to characterize the subsurface geology of the site for carbon storage. The seismic surveys have successfully delineated the presence and continuity of potential storage reservoirs and confining units from the interpretation of the mapped horizons. The seismic has also successfully imaged numerous faults originating in the Precambrian that tip out in the Argenta, Arkose Zone, or Lower Mt. Simon. The seismic has confirmed that there are no faults that transect the Eau Claire confining unit within the modeled CO_2 plume area.

REFERENCES

Freiburg, J., Morse, D., Leetaru, H., and Hoss, R. (2014). A Depositional and diagenetic characterization of the Mt. Simon Sandstone at the Illinois Basin – Decatur Project carbon capture and storage site, Decatur, Illinois, USA. Illinois State Geological Survey, Circular 583, 59p.

Freiburg, J. T., Leetaru, H. E., & Monson, C. C. (2015). The Argenta Formation; a newly recognized Cambrian stratigraphic unit in the Illinois Basin. In Abstracts with Programs - Geological Society of America (Vol. 47, pp. 86). Geological Society of America.

McBride, J. H., 1998, Understanding basement tectonics of an interior cratonic basin: southern Illinois Basin, USA, Tectonophysics, Volume 293, Issues 1–2, p. 1-20.

McBride, J. H., and W. J. Nelson, 1999, Style and origin of mid-Carboniferous deformation in the Illinois Basin, USA — Ancestral Rockies deformation? Tectonophysics, Volume 305, p. 249-273.

Nelson, W. J., 2010, Structural features. in D. R. Kolata & C. K. Nimz (Eds), Geology of Illinois. Illinois State Geological Survey, pp. 90-104.

Taft, K. L., 2022, Fault and Fractures section in Class VI permit application for One Earth Energy project as part of the Illinois Storage Corridor project.

Whittaker, S., 2020, Illinois Storage Corridor Project Narrative, submitted under funding opportunity announcement DE-FOA-0001999.