

Rick James – A Technical Discussion of His Deposition and Testimony in the Spencer / Kobetz Lawsuit

Background

Shandy and Penny Spencer installed a Xzeres/ARE 442 wind turbine on their farm in Leelanau County in October 2010. Neighbors Dick and Kay Kobetz immediately filed a nuisance complaint with Centerville Township. The zoning administrator (Tim Cypher) visited the site and ruled that it was not a nuisance. The Kobetzes then filed a lawsuit claiming numerous issues including: Shadow flicker, glint, glare, improper siting, improper turbine sizing, vibration, noise, not asking their permission, loss of property value, motion sickness, nausea, sleeplessness, wind turbine syndrome, reflections inside the home, reflections outside the home, not being financially viable and using incorrect technology. The main claim was that the wind turbine constituted a nuisance.

The 442 was installed on a 100 ft tower 800 ft from the Kobetz residence. It was installed according to all zoning ordinances and building codes. There was no dispute that it was done legally. So, after a year of failed negotiations, it went to trial.

The case came to court in a three day bench trial Nov 8-10 in 13th Circuit Court in Michigan before Judge Thomas Power. Rick James (e-Coustic Solutions) was hired by the plaintiffs to perform acoustic tests and to testify as an expert witness. The defendants retained Melinda Miller of Acoustics by Design and Tom Gallery of North Wind Measurement for testing and expert witness testimony. There were also expert witnesses for property values, optics, motion effects, wind resources and wind turbine technology.

Judge Power found for the defendants and declared that the wind turbine was not a nuisance. He noted that although you could hear the turbine outside the Kobetz residence under some conditions, it did not rise to a nuisance level. He noted that it was in an active agricultural area with a wide variety of mechanical sounds common to farming operations. He noted that permitted uses include sawmills and mining operations without any noise restrictions. He also found that the turbine could not be heard inside the home as the Kobetzes had claimed.

Rick James - Acoustics Expert

I was present for Rick James' deposition and for the trial. I was also deposed by the plaintiffs and testified as an expert witness for the defense.

I had heard of Rick James' various presentations and claims made at town meetings and before zoning boards. By his own admission, in deposition and at trial, he only works for anti-wind groups and has never done any work for the wind industry or for a wind developer. He also had never observed or analyzed any small wind system before his involvement with the Kobetzes. All his experience with wind systems was with with large commercial wind farms.

His acoustic testing is typically limited to short site visits with a sound level meter. He'll test for a few minutes to a couple hours and then make detailed analyses of the site based on this short period. He never accurately measures windspeed at a site or ascertains the operating characteristics of turbines he is analyzing. He often measures turbine noise combined with ambient sound and makes no attempt to separate the two.

Rick James – A Technical Discussion of His Deposition and Testimony in the Spencer / Kobetz Lawsuit

A good example of this is his testimony in the Tazewell case in Illinois (a). He places a sound level meter 1200 to 1500 ft from an operating wind turbine, measures the sound level and declares that the wind turbine is producing 46 dBA. He has absolutely no way of knowing that the 46 dBA is from the wind turbine since he took no windspeed measurements and no background sound measurements. In fact, if the wind were 20 mph, the background sound would be over 46 dBA.

Rick James's professional experience is in industrial noise, not wind turbine noise. His 35 years of acoustics experience is with manufacturing facilities, gravel pits, traffic, airports, etc, that produce noise as a function of time of day and activity at the source. A windmill produces noise only as a function of windspeed. Louder at high wind, quieter at low wind and silent at windspeeds below cut-in. He has no experience in wind measurement or wind science so he reverts to his experience with stationary systems and tries to fit that experience to wind technology.

He has developed various techniques to meet his client's expectations of negative impacts of wind systems. In particular, he insists on a no-wind background sound measurement to assess wind turbine noise in a windy environment. This is appropriate in industrial situations where wind is an incidental, random part of ambient sound.

The judge was highly critical of the no-wind background sound issue at trial. The judge is a pilot, technically competent, and has a very good understanding of wind and aerodynamics. He completely dismissed the Rick James methodology saying that it makes neither technical sense or common sense to measure background sound with no wind and then compare that to a turbine operating in a windy environment. He was also critical of the Centerville Township Commercial Wind Ordinance that is based on the Rick James no-wind background noise theory. In his final judgement, he stated that it was clear that the only purpose of the Centerville Township Commercial Wind Ordinance was "to be certain that there is never a commercial wind turbine in Centerville Township".

The other method Rick James uses to exaggerate turbine sound is to reweight his sound measurements from the A-weighting scale (dBA) to the C-weighting scale (dBC). dBA represents human hearing and is the weighting system used for all community sound measurements. dBC is used to evaluate very loud sounds (over 100 dB) or low frequencies (under 60 Hz). The effect of using C weighting is to significantly exaggerate measured sound levels below 250 Hz. In the Spencer case, his re-weighting exaggerated the measured levels by 13 dB vs human hearing.

Rick James has become a master of "cherry picking". He finds an event or study and then amplifies the results or misinterprets the report to prove his point. He presents himself in a very authoritative way (some would say arrogant). This trial offered a unique opportunity to carefully examine his techniques since the reports and testimony are recorded. Here are some examples:

Sound Propagation

The IEC 61400-11 test on the ARE 442 conducted by the National Renewable Energy Lab (NREL) showed a noise emission level of 98.2 dBA at 12 m/s (27 mph). When propagated 800 ft to the receptor, the level is 39.5 dBA. No controversy, everyone agrees that this is the correct calculation ⁽¹⁾.

Rick James – A Technical Discussion of His Deposition and Testimony in the Spencer / Kobetz Lawsuit

The Rick James method: He then adds his private version of “uncertainty” to get to 43 dBA. He could offer no proof or documentation for his adjustment. He then declares that this event (12 m/s) is “normal” based on the ARE 442 specification that the 10 kW turbine is rated at 12 m/s⁽²⁾. Sounds very convincing when he also declares that the World Health Organization has recommended that the sound level outside a residence should not exceed 40 dBA. Therefore, according to Rick James, the “normal” sound from the turbine exceeds 40 dBA.

When challenged in deposition to show the where the manufacturer’s literature describes 12 m/s as the normal operating range, he fumbled for a few minutes, then made the following statements:

“The specifications for the turbine stated that 11 to 12 meters per second is the normal operating range. That’s just a literal statement.”

“No, it was in the table where I just said the normal operating speed was 11 meters per second. Rate of wind speed, I should say. If you want, I’ll find the source of that reference and provide it to you.”

“I would say that in the context that’s being used there, that is the optimum range for power production.”

He was asked to provide a report supporting his claim. He did so a few weeks later. In it, he contends that the terms normal and optimum can be used interchangeably in technical descriptions.

So, how often does 12 m/s occur at the site? Less than 1% of the time! This is a very simple calculation using the weibull windspeed calculation and the average windspeed. So is a 1% occurrence “normal”? If the judge in this case was not a small plane pilot and an astute observer of wind, this would have passed as valid evidence.

The uncertainty in the NREL test is 1.3 dBA (not 4 dBA). This is a plus/minus quantity. It is equally probable that the observation will be 1.3 dBA under the 39.5 as over 39.5. The actual numbers are 38.2 to 40.8 dBA. Even by Rick James’ method, it would be equally probable that 36 dBA would occur as 43 dBA.

His “Peer Reviewed” Paper

He and George Kamperman wrote a paper for the Institute of Noise Control Engineering (INCE) titled “Simple Guidelines for Siting Commercial Wind Turbines” in 2008 . It was not peer reviewed by INCE prior to publication. INCE finally published it without peer review. It was, of course, well received by anti-wind groups because it called for one mile setbacks and the use of no-wind background sound levels to assess the noise of an operating turbine.

Rick James claimed in deposition that the paper was peer reviewed. When asked who reviewed it, he testified that no one at INCE had reviewed it prior to or after publication. When asked if he had submitted his raw data to INCE so a proper scientific peer review could be conducted he replied that he had not. When asked why he claims that the paper had been peer reviewed, he offered the following:

“It has been peer reviewed now because it has floated around the world. It’s been presented by -- it’s been reported on by other people, et cetera. So while it was not peer reviewed before it was published it has been very thoroughly peer reviewed afterwards because the wind industry hates it. “

Rick James – A Technical Discussion of His Deposition and Testimony in the Spencer / Kobetz Lawsuit

The Kamikaze Letter

Rick James had been hired by Emmet County Michigan to create a commercial wind ordinance. In mid April of 2011, he was asked by Brentt Michelek, the Emmet County zoning administrator, if small wind systems should follow the same guidelines as commercial wind systems. Brentt's question was prompted by a permit application for a small wind system (Gaia 11 on 120 ft tower). Brentt indicated that he wanted to work with the farm owner on this project.

Rick James email reply indicated that he had recently performed measurements at the Spencer site and that the turbine (ARE 442) "sounds like a kamikaze plane coming toward adjoining houses". He also stated that it "is creating a nuisance for neighbors that live about 500 to 1000 feet away".

So, what is a zoning administrator to take from this? Brentt's only experience with small wind is an "expert opinion" that small wind systems sound like a kamikaze plane attacking nearby homes. And that they are a nuisance. This is highly exaggerated and inflammatory language.

In his deposition, he repeated the assertion that while standing on the Kobetz deck:

"I would say it's like being on a battleship in World War II with a Kamikaze pilot heading towards you."

Sound Testing for the Trial

So how much time did Rick James spend taking measurements at the Kobetz home?

April 12: One hour of measurements from the Kobetz patio. The windspeed averaged 10 mph. The spectral data showed a tower resonance at 160 Hz at which he then scaled to C-weighting. This exaggerates the 160 Hz sound level by 13.3 dB over the human hearing scale (A-weighting). If he reported the measurements in dBA, the sound levels would have been under 40 dBA.

His measurements were of turbine sound plus ambient sound. He had no way of differentiating the two since he couldn't turn off the turbine to capture ambient sound from the wind. In fact, daytime wind-driven ambient sound when he was measuring was between 40 and 43 dBA.

He also violated the most important restriction when measuring propagated sound – stay away from reflective surfaces. ANSI S12.18 is very clear on this requirement. He was on a deck with the house façade within 15 feet of the microphone with a solid (plexiglass) railing within a few feet of the microphone.

July 28: Six hours of background sound measurement between 1 AM and 6 AM. The turbine was not operating.

October 31: One hour of turbine sound from inside the home through a partially opened window.

The Kobetz Sound Recordings

Rick James – A Technical Discussion of His Deposition and Testimony in the Spencer / Kobetz Lawsuit

At the Rick James' deposition, Kobetzes submitted sound recordings that they had made. I was there, and asked what type of microphone was used and if there was any filtering used. They responded that it was the HT system.

HT stands for "Happy Times", an Apple app that uses the iPhone microphone. Rick James recommended that they use this system.

So, I contacted Andy Berlin (Applied Voices LLC), the developer of the HT System, and told him that we wanted to use the HT system to record wind turbine sound for a legal case. His email response:

"HT Recorder is a voice recorder. It does gain adjustment and speech enhancement. Using it for scientific measurements would not be appropriate.

"Additionally, using a phone for this at all is odd, because at any point Apple can change the operating system's handling of audio (for instance adjusting the noise cancellation algorithm) thereby changing your measurements. "

HT uses the iPhone directional microphone plus audio filters to remove background sound. The main application is recording voice in noisy lecture halls, a favorite with college students.

Sound In the Courtroom

The plaintiffs played an HT sound recording of the turbine in court. Rick James held a sound level meter at the witness stand, asked the plaintiff's paralegal to adjust the volume up and down until the level was 43 dBA. When the volume was at 43 dBA, he declared that this is what the Kobetzes normally experience (remember 12 m/s, 27 mph?)

The judge then asked for the sound level meter, Rick showed him how to read it. The judge asked what the Centerville township ordinance is for maximum sound level from wind turbines. Rick James told him it is 35 dBA. The judge tells everyone in the courtroom to be quiet. A minute later the judge says: "OK everyone, you're all in violation of the Centerville Township wind turbine ordinance. The sound level in this room is 38 dBA!"

Using the "Acoustic Lens" for Indoor Sound Measurement

Rick James presented results from a test he conducted inside a bedroom at the Kobetz residence. He cracked the window an inch or two and then placed the sound level meter "one meter from the window". We suspected that he placed the microphone directly in line with the turbine and the window opening. This arrangement is called an acoustic lens. It effectively removes background sound from the measurement and concentrates the sound source. So the attorney (Kristyn Houle) asked him directly "Was the microphone in line with the window opening and the turbine?"

Response "It was one meter from the window."

Asked again, "Was the microphone in line with the window opening and the turbine?"

Response again "It was one meter from the window."

Rick James – A Technical Discussion of His Deposition and Testimony in the Spencer / Kobetz Lawsuit

James knew exactly why Kristyn was asking the question. The judge just rolled his eyes and Kristyn gave up. So we can be sure that he had created an acoustic lens to take his measurements.

He made night time measurements of the turbine sound with this arrangement. He then took the data and reweighted it from the A scale (human hearing) to the C scale to exaggerate the turbine sound below 200 Hz. His data showed various L10, L50 and L90 levels which he said proved that someone sleeping in this room would certainly experience sleep disturbance.

Kristyn asked him where the Kobetzes were during his night time measurements. He told her that they were sleeping in a nearby room. (laughter in the courtroom)

The Centerville Township Method for Background Sound Measurement

In his deposition for the Spencer lawsuit, Rick James stated that the preferred method for establishing background sound is the process prescribed in the Centerville Township wind ordinance. This followed his criticism of long term outdoor measurement conducted by North Wind Measurement (Spencer site) and Hessler Associates (Ripley-Westfield site in NY).

The long term studies were performed according to ANSI S12.18 and S12.9 protocols for long term outdoor measurement. This process measures for 10-20 days during two or three seasons of the year. Sound measurements and local windspeed are simultaneously measured. Minimum background sound levels (L90) are developed for day, night and seasons along with functions for wind driven ambient noise. A comprehensive test will include 500 to 1000 hours of testing to ascertain the long term character of the site.

The Rick James/Centerville measurement method for establishing annual and seasonal background sound levels is:

- Four site visits per year (March 15-May 15, June 1-Sept 1, Sept 15-Nov 15, Dec 1 –March 1).
- Four measurements during each site visit (6-8 AM, Noon-2 PM, 6-8 PM, 10 PM-midnight).
- Each measurement period lasts 10 minutes (anytime within the above period)
- Measurement taken of wind direction and to determine that the windspeed is under 11 mph.

A total of 160 minutes of measurements are taken (less than three hours). Within each 10 minute period, the quietest one-minute is captured and reported as the L₉₀ background sound. So a total of 16 minutes of data is used to predict the annual daytime, nighttime and seasonal background sounds at a site.

You don't have to be a scientist or statistician to see the absolute folly in this method. A typical 24 hour period will vary from 28 to 55 dBA at a site. Within any of the two-hour periods, sound levels could vary by 20 dBA or more. Wind driven sound alone can cause a 15 dBA difference in sound even when observing the prohibition of not taking measurements when windspeed exceeds 11 mph.

This method is wide open to mischief from an acoustical expert who is looking for a low measurement (Rick James) or high measurement (wind farm developer) to satisfy his client's requirements.

IEC 61400-11 The International Standard for Measuring Wind Turbine Sound

Rick James – A Technical Discussion of His Deposition and Testimony in the Spencer / Kobetz Lawsuit

Rick James criticized the IEC test in both his deposition and court testimony. His main criticism is that the test was developed by the wind industry and that it was a laboratory test that doesn't represent real world conditions.

IEC 61400 was developed by Germanischer Lloyd (GL) in response to concerns from the insurance and investment community. GL's main experience was developing design guidelines and certification processes for large machinery, primarily commercial ships. Early wind turbines had no independent certification process. An investor had no guidelines for performance, durability or noise. Failures were common and performance was often less than predicted by the turbine manufacturers. IEC 61400 puts all turbine manufacturers and wind developers on a level playing field. The requirements are complex, expensive to meet, and the source of frequent complaints from the wind industry.

IEC 61400-11 is the procedure for measuring wind turbine noise. The tests are conducted outdoors at one of two certified sites in the US. The ARE 442 was tested at the NREL wind test facility in Boulder CO. Windspeed, turbine speed and sound levels are simultaneously measured. Windspeed is measured upwind at hub height and sound level is measured downwind at ground level. The turbine is turned on and off for five to 15 minutes over a 5-10 hour period. The "off" period is used to map wind driven background sound. The "on" period measures turbine + background. Data is taken in 10 second intervals and only recorded when the wind direction is within 15 degrees of downwind.

The data is binned into standard windspeeds (4, 5, 6 m/s, etc). The turbine sound is calculated in each wind bin by logarithmically subtracting the background sound from the turbine+background measurements. The turbine sound level in each bin is then normalized to a one meter distance from the turbine.

Uncertainty for each windspeed bin is calculated based on the test data variation, weather and instrumentation specifications. In addition, spectral data is measured to ascertain if there are tonal properties in the turbine sound.

The final result is a worst case (downwind) mapping of sound levels vs windspeed that can be used to calculate sound propagation at any distance from the turbine.

So, is this a laboratory test? And why doesn't Rick James use the uncertainty values from the certified test when he does propagation studies? In the Spencer case, he uses 2 + 3 dB of uncertainty. In his Tazewell testimony (a) he contends (with no proof) that you should add 3 + 4 + 3 = 10 dBA of uncertainty to the IEC test data because it's performed in a lab and doesn't represent the real world.

[By the way, 3 + 4 + 3 of uncertainty does not equal 10. Anyone with the most basic understanding of statistics knows that you add uncertainty by adding the variances (square of uncertainty) and then taking the square root of the variance sum. So $3^2 + 4^2 + 3^2 = 5.8$. This is just another method he uses to exaggerate data to make his point.]

Background Sound Level for Wind Turbines

Perhaps the strangest argument put forth by Rick James is that we should use the no-wind background sound level to evaluate the noise emitted by an operating wind turbine. In the Spencer case he contends

Rick James – A Technical Discussion of His Deposition and Testimony in the Spencer / Kobetz Lawsuit

that we should use the 26-29 dBA nighttime background sound level (with no wind) and compare it to the propagated sound level of the ARE 442 at 12 m/s (27 mph) to determine if the wind turbine sound is objectionable.

The ARE produces 39.5 dBA at the Kobetz residence at 27 mph windspeed. Anyone who has spent time outdoors knows that wind produces noise. The NREL test of the ARE 442 turbine plots a very clear trend that indicates that background sound increases with windspeed. In this case, each 1.0 m/s increase in windspeed at the turbine hub height results in a 1.5 dBA increase in ambient sound level. The NREL test shows a background sound level of 48 dBA at 12 m/s. This will completely mask the turbine sound of 39 dBA.

The Rick James Theory of Wind Shear

In both his deposition and at trial he told the story of how the wind can be calm at the Kobetz patio and the turbine 800 ft away will be operating in high wind. Specifically at trial he said that there could be no wind at the Kobetz deck (thus the 26-29 dBA background sound level) and the wind would be 12 m/s (27 mph) at the turbine hub.

Here's the geometry. The Kobetz deck is 35 ft below the turbine hub and 800 ft away. The turbine base is 65 ft below the deck. According to James, the turbine is producing sound of 43 dBA at the deck and the background sound is 26 dBA. So the turbine can be clearly heard at the deck.

Now the facts. I simultaneously measured windspeed at 82 ft on the turbine tower and at 22 ft and 5 ft elevations halfway between the turbine and the Kobetz deck over a two month period. The 22 ft anemometer was very close to the deck elevation (local terrain changes). The ratio between the 22 ft windspeed and the tower windspeed ranged from 0.65 to 0.85 over a two month period. Weather ranged from 85 F to 30 F and windspeeds at hub height between calm and 52 mph.

So I presented the data at trial and testified that the Rick James statement was categorically false. It was impossible for the wind to be calm at the deck and 27 mph 35 ft above the deck. Measured data indicated that the deck windspeed would be between 17 and 23 mph under this condition.

What Rick was referring to is a common occurrence with tall, commercial systems. It often occurs that the ground level wind is calm and ambient sound low when wind at 80-100m (260-330 ft) is sufficient for the turbine to operate. The turbine produces sound that is clearly audible at ground level. This cannot happen when the difference from the observer to the turbine hub is 35 ft. Absolutely impossible!

Ambient Sound is Highly Localized

North Wind Measurement conducted over 600 hours of ambient sound measurement at six different locations around the Spencer property and near the Spencer / Kobetz property lines. Sound measurements near ground level were synchronized with windspeed measurements at three elevations. The data showed large diurnal differences for ambient sound. 28 to 55 dBA was the common range for a 24 hour period. There were also large differences before and after first frost (insect noise), and

Rick James – A Technical Discussion of His Deposition and Testimony in the Spencer / Kobetz Lawsuit

differences before and after leaf-off in late October. But the sites all showed identical ambient sound levels at any given time, varying less than 1 dBA from site to site.

At trial, Rick James claimed that all this testing was irrelevant because 300-400 ft away at the Kobetz residence the ambient sound levels were significantly lower (3 to 10 dBA lower) because ambient sound is highly localized.

But he forgot his deposition testimony. At deposition, the defense attorney asked him why he chose a particular location around the Kobetz residence to measure ambient sound. His response:

“And for ambient measurements it really wouldn't make much difference. The ambient sound levels in a community are pretty much the same over large areas.”

So we pulled out his deposition and read the statement into the court record.

The NREL Conspiracy

In both his deposition and at trial Rick James stated that the National Renewable Energy Lab (NREL) has been charged by the Department of Energy to promote wind power and to hide any test data that may be detrimental to the wind industry. His evidence in this case was that the ARE 442 report did not analyze tonal data at frequencies below 200 Hz. He claimed that the data was there in the test plots but the engineers (Arlinda Huskey and Jaroen VanDam) had suppressed the data in the report because the tonal data would be detrimental to the ARE 442.

Acoustics engineer Melinda Miller of Acoustics by Design pointed out that it was clear in the report why that data had not been analyzed. There was either insufficient data and/or it was buried in the background sound and it was impossible to extract the tonal data. In fact, the engineers specifically noted this in the report.

Several times during the trial and in the judgement ruling the judge joked about the Rick James / NREL conspiracy theory.

Small Wind Turbines are Directional

Rick James criticism of the IEC 61400-11 acoustic noise test included his theory that you can't use it to measure small wind noise. His reason is that small wind turbines are “highly directional”. He sketched a classic dipolar sound pattern often seen for loudspeaker polar radiation patterns. The sketch showed the sound from the ARE 442 shooting well above the test microphone sound board used for the IEC test. By his reckoning, the IEC test misses most of the sound emitted by small wind systems. In this case, he contended that it missed the 160-200 Hz resonance because the sound shot over the test microphone.

A good try. In fact the judge seemed to buy this theory based on his observations at the Kobetz residence.

Two problems with this:

1. 160-200 Hz sound is non-directional. It spreads nearly equally in all directions.
2. The directionality the judge perceived was an upwind /crosswind / downwind phenomenon. When he was directly downwind of the turbine, the rotor was normal to the wind. He wasn't seeing the turbine acting like a large, directional loudspeaker. He was experiencing the sound

Rick James – A Technical Discussion of His Deposition and Testimony in the Spencer / Kobetz Lawsuit

propagated downwind. When the turbine turned away from the sight line, the sound was carried left or right of the receptor and the sound disappeared.

Wind Turbine Sound Always Increases with Windspeed

There were several setpoint adjustments made to the ARE 442 controller to move the generator cut-in excitation away from the tower resonant frequency. For each setting 5,000 to 10,000 4-second interval, simultaneous measurements were made of hub height windspeed and ground level sound from the turbine. This was to mimic the IEC acoustic test and reveal changes in turbine sound behavior for the setpoint changes.

At trial, Rick James criticized the testing performed by North Wind Measurement which showed nearly flat sound levels measured from the wind turbine at hub windspeeds from 3-7 m/s. Rick James claimed that the test results were invalid because it indicated no increase in sound level from 3 to 7 m/s. He claimed that this is not possible because all wind turbines exhibit increased sound with increased windspeed and that the tests were somehow rigged.

Enter the NREL test data. There is a plot of windspeed vs measured sound level in the report. It clearly shows the sound levels decreasing slightly from 3 m/s to 7 m/s. With Rick James on the stand, the defense attorney pointed the judge and Rick James to the report plot. The judge studied it, looked at Rick James, and then made a couple minutes of hand written notes. James had never studied the NREL report.

Measuring Background Sound Levels on the Kobetz Patio

Rick James performed background sound level measurements on the Kobetz outdoor patio. The patio is about 15 x 20 ft and elevated 15 ft off the ground. One side is the house façade and the other three sides have a plexiglass railing system.

He took one hour intervals and calculated the L90 during each hour. He also measured the windspeed (no documentation on how or where he measured it). He plotted each hour on a bar graph and plotted peak windspeed for each hour.

Result: Very low background, as low as 21 dBA.

Can you measure sound levels of 21 dBA? The Larson Davis 841 sound level meter that Rick James used has a “below range limit” of 26.3 dBA. This means that any readings below that level are known to be inaccurate.

Indoor vs Outdoor Sound Levels

In his deposition, Rick James claimed that the sound of a wind turbine can easily penetrate a residence because of the frequency of the turbine sound. He claimed that the sound experienced inside was virtually the same as the outside sound because the inside ambient is lower than the outside ambient.

Rick James – A Technical Discussion of His Deposition and Testimony in the Spencer / Kobetz Lawsuit

Acoustics by Design conducted an “Outside-Inside” test of the Kobetz residence. A white noise generator (loudspeaker) was directed toward the residence at the incidence angle of the turbine sound. A series of sound measurements were taken at various points inside and outside the residence with the windows open and closed. A worst case situation was set up by measuring the sound through the large glass windows on the first floor. The sound reduction was then calculated for 1/3 octave bands from 60 Hz to 16,000 Hz.

Results: At least 25 dBA reduction at all frequencies with windows closed. At least a 15 dBA reduction with windows open.

The judge confirmed this at his site visit. He could hear the turbine outside with the wind in the right direction and could never hear it inside the house.

The plaintiffs never challenged the tests at trial. They did not have Rick James testify at trial to his deposition testimony about inside and outside sound.

Reading Technical Reports

Rick James’ testimony and written reports show a very careless reading of technical reports.

In his deposition, he spends over five minutes criticizing a report by Hessler Associates that assessed outdoor noise and wind turbine noise for a wind farm in western NY. James’ main criticism was the method used by Hessler to correct for windscreen induced noise. This is a phenomenon where the wind passing by a screened microphone produces noise. A good understanding of the windspeed and the windscreen characteristics is required to correct the sound measurements. Hessler made corrections based on measurements of ground level windspeed (1m height) and tests conducted on the windscreens used in the tests.

The Hessler report of windspeed vs background sound plotted the reference windspeed at 10m (33 ft) vs sound levels measured at 1m from the ground. Rick James did not read the plots correctly. He thought the windspeed shown was at ground level and claimed that windspeeds (6-10 m/s) shown on the plots could not be corrected. This is partially true but the sound level meters were not at 10m on the met tower. They were near ground level where the windspeed is about 30% of the 10m windspeed. This follows the ANSI S12.9 Part 2 procedure where reference windspeed is taken at 10m and ambient sound levels are taken near the ground where windspeed is low and windscreen induced noise is negligible.

James railed against the test method Hessler used claiming that the windspeed in the plots exceeded the windscreen limits. He referred to Paul Schomer’s study of windscreen properties and acceptable windspeeds. I read Dr. Schomer’s report and Hessler’s were clearly within the windscreen limits for their testing (under 3 m/s) as recommended by Schomer. Rick James incorrectly assumed that the windspeeds in the plots were at the sound level meters (near ground) although it is clearly labeled that the windspeed is at 10m elevation.

A very careless reading of a technical report.

Rick James – A Technical Discussion of His Deposition and Testimony in the Spencer / Kobetz Lawsuit

North Wind Measurement submitted a preliminary report on Sept 22 of background sound and wind-driven ambient sound at Spencers. The report calculated a nighttime L90 background noise level of 29 dBA and a daytime L90 of 36 dBA. Rick James spent several minutes criticizing the report for using data contaminated by nocturnal insect noise. He was referring to a plot in the report that showed a typical 24-hour period in August 24. The description of the plot indicated that nighttime background noise “could not be calculated because of nocturnal insect noise”. He obviously never read the report, just looked at the plot. In the report there is a clear statement that nighttime L90 was calculated in mid September “after all nocturnal insect activity had ceased”.

A very careless reading of a technical report.

James did the same thing in criticizing a report from Ontario Ministry of Environment (MOE). This report was released in 2010 to clarify how wind-driven ambient sound was to be treated when calculating acceptable noise levels from commercial wind turbines. MOE’s final report included a chart of hub height windspeed vs ground level ambient sound that showed increasing noise thresholds as windspeed increases. James claimed that the report was written in 2008 and had since been recinded. The original had been written in 2008 and then challenged by various anti-wind groups and Rick James. The challenges were rejected by a number of scientific studies and the guideline remained in the final report in 2010.

Another careless reading of technical reports.

Conclusion

This was a rare opportunity to witness the various techniques that Rick James uses to obfuscate, exaggerate and lie about noise created by wind turbines. The trial judge was very aware that James was playing loose with the truth. He especially took James to task about his background sound level methods and his denial that wind driven noise can mask wind turbine noise. James was caught several times in contradictions and exaggerations that challenged his credibility. The judges commented derisively several times about James’ “conspiracy theory” at NREL.

All his testimony (deposition and trial) are on the record.

References:

- (1) Sound propagation is made using ISO 9613-2 for the propagation model and IEC 61400-11 test results for the source sound.
- (2) Wind turbine power output is typically rated at a given windspeed. This windspeed is usually close to the maximum output of the machine. The rated windspeed is a rare occurrence, typically representing only 1-3% of operating conditions.
- (3) IEC 61400-11 <http://www.asugards.net/dbpics/uploads/iec61400-11%7Bed2.1%7Den.pdf>

(a) Tazewell Testimony

Rick James – A Technical Discussion of His Deposition and Testimony in the Spencer / Kobetz Lawsuit

Q Have you ever gone out and measured an
3 actual operating wind turbine say at 15 hundred
4 feet and measured what sound they produce in
5 decibels in the thousand octave band?

6 A Yes.

7 Q What is your --

8 A Forty-six.

9 Q Where did you do that?

10 A John Deere. And also in the paper that
11 we're presenting where we reviewed not only our
12 work but the work of probably a dozen other
13 consultants.

14 Q But I mean your own measurements. You have
15 done your own measurements?

16 A Yes.

17 Q And what kind of wind turbines were these?

18 A GE 1.5s for John Deere.

19 Q And what did you measure actually, the one
20 thousand?

21 A One thousand hertz, and I had 46.

22 Q You had 46 and at what distance was that?

23 A 12 hundred feet.

24 Q Do you know what it would be, what it was
ALLIANCE REPORTING SERVICE 309-691-0032

Page 65

1 at 15 hundred feet?

2 A I would have to go back and measure it or
3 calculate it.

4 Q And you gave us --

5 A You can knock a decibel off of it, 45.

6 Q -- doing that adjustment here -- And do you
7 have any kind of report of those findings with you?

8 A No, I don't.

9 Q How many times have you made that
10 measurement, how many different turbines, how many
11 different days?

12 A On that turbine it was one day, and on a
13 similar GE at another site on the next day we took
14 two tests. So I did a similar --

15 Q Let me see if I understand you. On two
16 different occasions, two different turbines you
17 have measured a GE 1.5?

18 A Yes.

19 Q And on the second occasion did you come up
20 with a measurement at the thousand hertz octave
21 band?

22 A Yes, I did frequency analysis on all of
23 them.

24 Q And what was the measurement?
ALLIANCE REPORTING SERVICE 309-691-0032

Page 66

1 A They were right in that range of 45, 46 dB
2 at a thousand hertz.

3 Q At 12 hundred feet?

4 A Thirteen hundred and 50 feet at one and 12
5 hundred feet at the other one.

6 Q Let me understand this. One measurement at

Rick James – A Technical Discussion of His Deposition and Testimony in the Spencer / Kobetz Lawsuit

7 12 hundred of 46, and another measurement at 13
8 hundred and 50 feet which you said was 45 or 46?
9 A Yes.