

CLOSING SUBMISSION

Re: Planning Application Appeal Public Inquiry: WIN-370-2 Arecleoch Wind Power Plant Extension

Mariana Alves-Pereira, Ph.D.
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1. INTRODUCTION

Having heard and read the material presented at this Inquiry, I am compelled to add the following commentaries with the hope that the Reporters of this Inquiry are better elucidated on the seriousness of the issue of infrasound contamination in homes, and its dire health consequences.

2. INFRASOUND AND THE BRAIN

I have no doubt that Dr. Cand is a highly qualified professional when it comes to implementing the rules and regulations set out by ETSU-R-97. Unsurprisingly, Dr. Cand dutifully follows the line of reasoning that the infrasound levels emitted by Industrial Wind Turbines (IWTs) are insufficient to impact health. The basic premise is: the amount of infrasound generated by IWTs is below the human hearing threshold, therefore, it cannot be harmful to humans.

This is an antiquated notion, akin to saying that smoking while pregnant has zero effects on fetal health, or that alcoholic intoxication has no deleterious effects on the ability to operate moving vehicles. These notions have been entirely disproven, and yet, they persisted among human societies for several decades before being exposed and discarded. By requiring that infrasound be perceived by the auditory system in order for it to have a pathological effect on humans is as absurd (and deeply worrisome) as smoking is good for your health.

Why?

The human brain is a complex system that has evolved over millions of years. The fact that humans have survived for so long means that they have developed a variety of survival mechanisms, among which is the alertness to infrasonic events. Unlike the eye, the ear does not sleep, otherwise, as a species, we would have died out a long time ago.

Infrasonic events are a harbinger of danger, as evidenced in the 2010 document published by the UK Health Protection Agency (CD 11.1, Health effects of exposure to ultrasound and infrasound, Section 3.5-Natural Sources of Infrasound, page 69). These infrasonic events have served as warning signals to all terrestrial, airborne and water-based creatures since they came into being on planet Earth. Were this not the case, many species that proliferate today would have already become extinct.

While the human brain does not necessarily interpret infrasonic signals as “sound”, it does, nevertheless, *process infrasonic information*. It does so by comparing the normally present,

monotonous (i.e., not dangerous) background acoustic phenomena, with the new element introduced by the sudden appearance of extra infrasonic signals (such as those heralding volcanic activity or the proximity of predators or, in this context, IWTs acoustic signatures).

As the brain senses these new infrasonic signals in the environment, and since (evolutionarily speaking) these are usually a sign of imminent danger, the body appropriately gears up for the well-known *fight or flight* response. (Today, it has been proposed that a third response may also be possible: *freeze*.) One of the outcomes is the production of cortisol, and this is why the Health Canada Study found it of interest to measure cortisol levels among their study population.

This *fight or flight* response is an immediate and automatic (or autonomic) reaction triggered by the abnormal (or different) signals that emerge in the environment. One has no control over this reaction, cannot habituate to it, and it cannot be maintained *ad infinitum*, given the energetic toll it takes on the body. Keeping human beings in a continuous autonomic state of *fight or flight* is akin to driving a car at full power *ad infinitum* – a situation that we can all agree will, sooner or later, end the car's ability to move anywhere. The *fight or flight* autonomic response has been profoundly studied in people who have had to remain in 'extreme-stress environments', wherein cortisol levels return to normal while other biological mechanisms kick-in to deal with the aggression or hostile environment.

Hence, the discussion on the energetic impact of absolute pressure values is only marginally of interest, being mostly related to 'loud sounds' and not *patterns of infrasonic signals*. The idea that the human brain cannot discern the difference between IWT acoustic signatures and wind (or other natural, non-threatening phenomena) is, simply put, unconscionably unscientific, and can only be put forth by persons who have no knowledge of how the brain processes environmental information. This senseless position, supporting the notion that pressure variations only impact the body by ballistic means, and denying the brain's capability of discerning *information* from these pressure variations is, again, reprehensible, as evolution clearly proves.

The issue, therefore, of whether or not IWTs generate infrasound that is below the human audibility threshold is of no practical significance. The brain does not interpret new infrasonic signals that appear in the environment as *sound*, but rather as information that it compares to the ever-present background acoustic environment. These finer points of human biology are not generally considered (or even known) by acousticians and are certainly not incorporated into documents such as ETSU-R-97. As a result, residents such as Ms. Pat Spence (and many others around the world) are the victims of an assault on their health and well-being, that is being minimized (and indeed, ignored) by people who are not biologists nor medical professionals (See CD 15.28, Paragraph 2.3).

3. SYMPTOMS DEVELOPED BY MS. PAT SPENCE AND OTHERS

Among *some* of the symptoms described by Ms. Pat Spence, from July 2019 to March 2020 are:

Nausea

(CD 21.22, Entries on 6 Jul, 3 Aug, 18 Aug, 12 Oct, 20 Oct, 4 Nov, 6-7 Nov, 10 Nov)

Dizziness

(CD 21.22, Entries on 7 Jul, 3 Aug, 13-14 Sep, 20-21 Sep, 26 Sep, 28 Sep, 24 Nov, 14-16 Jan, 27-28 Jan)

Pain in ears

(CD 21.22, Entries on 16 Jun, 18 Jun, 5-9 Jul, 15 Jul, 18 Jul, 22 Jul, 26 Jul, 31 Jul, 1 Aug, 3 Aug, 9-12 Aug, 21 Aug, 23 Aug, 13-14 Sep, 2 Oct, 4-5 Oct, 10 Oct, 17 Nov, 22 Dec, 27 Dec, 30 Dec, 1-2 Jan, 8-11 Jan, 17 Jan, 23 Jan, 26 Jan, 28 Jan, 29 Jan)

Sleep disturbances

(CD 21.22, Entries on 10 Jun, 2 Jul, 4 Jul, 14 Jul, 18 Jul, 22 Jul, 24 Jul, 13 Aug, 25 Aug, 13 Sep, 20 Sep, 12 Oct, 15 Oct, 3-5 Nov, 17 Nov, 23 Nov, 18 Jan)

These symptoms are not mutually exclusive and can occur simultaneously.

Dizziness and **sleep disturbances** are also described by Ms. Karen Brodie from Fairlie (CD 23.68).

Similarly, **nausea** and **balance disorders** are also reported by Ms. Rita Holmes, from Fairlie (CD 23.67).

Other Fairlie residents report **nausea** (CD 23.64 and CD 23.65) and **pain in ears** (CD 23.64).

Reporters of this Inquiry are reminded that Fairlie residents were exposed to (only) two IWTs (albeit designed for off-shore operations).

Ms. Cindy Aubad (CD 23.84) described **balance disorders** in her husband, but only when he is at home and, for herself, she reports **nausea**. Both report **sleep disturbances**.

In 2007, Mr. and Mrs. R (CD 23.89) reported **sleep disturbances**, while their 12-year-old's school-teacher noted that the child seemed "permanently tired" and questioned: "Does he sleep sufficient hours during the night?" By 2015 (CD 23.87), Mr. R's **balance disorders** had caused several falls requiring medical treatment.

While not a part of the evidence already provided, all these symptoms are occurring in people living in the vicinity of IWTs all over the English and non-English-speaking world (!!)

It is, indeed, a shame that the Reporters of this Inquiry and the Applicant's witnesses, as well as their respective families and pets, cannot be afforded an extended stay in any of these contaminated homes, with no deadline for removal. Perhaps, and maybe only then, would they begin to understand the seriousness of an infrasound-contaminated home.

4. WHERE IS THE SCOTTISH MEDICAL COMMUNITY?

In Medical Sciences, when patients present with specific symptoms, medical diagnostic tests are usually provided to investigate the cause of the symptoms. Mr. and Mrs. R, as well as their 12-year-old son, received these tests that *objectively* evidenced existing pathology (CD 23.89).

The PCO2 respiratory drive test evaluates the existence of lesions in the brainstem.

In 2007, Mr. R's PCO2 test results were 46% (normal above 60%), and by 2015 it had further declined to 28% (CD 23.87).

The P300 Evoked-Related Potentials test measures cognitive decline.

Mr. and Mrs. R's 12-year-old son received the P300 test in 2007 demonstrating cognitive decline (342 milliseconds vs. the expected normal values of 300 milliseconds) (CD 23.89). These values returned to normal after the child spent 2 months away from the contaminated property.

After 2007, Mrs. R and the children never returned to their contaminated property, while Mr. R continued to live there to care for the animals (their source of income).

The Brainstem Auditory Evoked Potentials test documents hearing acuity, and asymmetries in the values from left and right ears are correlated to balance disturbances.

In 2007, this test disclosed asymmetries in the 12-year-old child (CD 23.89).

Why have these (and other) medical diagnostic tests not been provided to Ms. Pat Spence, Ms. Cindy Aubad and husband, as well as, Ms. Rita Holmes, Ms. Karen Brodie, and other Fairlie residents?

Ms. Rita Holmes provides the answer:

"Our GP advised in writing that their insurance did not cover them if they got involved;" Moreover, there is *"no code for GPs to register wind turbine symptoms for the Health Board statistics"* (CD 23.67).

Ms. Karen Brodie also sheds light on this subject:

"I have had both MRI and CT scans which have all come back clear" (CD 23.68).

A CT scan will reveal nothing associated with infrasound-induced pathology, while a Brain MRI will only be useful if 2 are provided within a 12-month period, in order to show the development of brain lesions that are unrelated to the normal aging process.

All this is tantamount to medical negligence and mal-practice.

5. THE LIABILITY OF DECISION-MAKERS

Many of the agents of disease that are recognized as such today were, in the past, not viewed as problematic to human health (nicotine, thalidomide, glyphosphates, opiates, asbestos, etc.). When sufficient evidence finally came forth (oftentimes despite the corresponding industry's push to obfuscate, deny and block information from reaching decision makers), the agent of disease was recognized and compensation was paid out to the victims.

In time, another Inquiry, such as this one, will be convened to determine damage payments to the affected individuals. Of course, by that time, individual decision-makers might be long gone, and the onus of compensatory damages will be supported by the institutions they represented. The irreversible, biological lesions developed by the affected individuals, however, cannot be expunged by monetary payments.

6. THE IWT CONUNDRUM

Yes, human societies need electricity, and lots of it! Worldwide internet usage is thought to be responsible for about 15% of all electricity consumption and, as we know, this number will only tend to rise. But, are IWTs the solution to humanity's need for electrical power? While I have nothing against IWTs *per se*, I do have serious concerns about placing *any* industrial complex in the vicinity of residential areas.

There are many scientific and technical teams around the world who are working on systems to produce electrical energy that do not require IWTs. It is a certainty that they will succeed in providing economically viable alternatives to these aggressive and egregious IWTs. Of course, for the Pat Spences of the world, they will be too late, but for future generations they will certainly provide all the electrical power we need without harming humans.

7. ALLEGATIONS REGARDING THE CREDIBILITY OF THE WORK DEVELOPED BY DR. CASTELO BRANCO AND MYSELF

During these proceedings, the question about discrediting my work, as well as that of Dr. Castelo Branco has been raised more than once. I would merely like to point out to the Reporters of this Inquiry that the 2010 document produced by the UK Health Protection Agency (CD 11.1, Health effects of exposure to ultrasound and infrasound), under section 4.2 dedicated to Infrasound, section 4.2.2.2 discusses Morphological effects (pages 107-8). Herein, several papers authored and co-authored by Dr. Castelo Branco and myself, are referenced, as shown below:

This same document claims:

"No studies appear to have investigated the carcinogenic or teratogenic potential of infrasound (although there are no obvious reasons to suspect that the risk of cancer could be affected)" (CD 11.1, page 110).

This is simply untrue! In 2002, Dr. Castelo Branco's Team received the Portuguese Ricardo Jorge National Public Health Award for specifically showing the genotoxic effect of infrasound exposure in animals *and* workers. (This work was subsequently published in a peer-reviewed journal, in the English language.) Hence, the notion that our work has been "widely discredited" can be construed, if so desired, as a deliberate attempt to obfuscate, deny and block information reaching the Reporters of this Inquiry.

8. FINAL COMMENTARY

Acousticians, particularly those belonging to the 'Wind Industry Club' (i.e., the "wind farm assessment community," as referred by Dr. Cand during the Reporters' Questions on Feb 11), are not Medical Practitioners. It is not their place to ascertain whether or not infrasound can have an impact on health.

"To the cobbler his last, to the weaver his loom." But the 'cobblers and weavers' of the matter at hand (i.e., medical practitioners) are restricted by insurance issues and by the supposed lack of GP codes (CD 23.67)... Or are they?

If these medical practitioners exercised their duty of care (as demanded by the Hippocratic Oath), they would find that the World Health Organization already provides them with the necessary codes:

"W42 - Exposure to Noise

Sound waves

Supersonic waves

W43 – Exposure to Vibration

Infrasound waves"

In: WHO *International Classification of Diseases (2010)*

"NF08.2Y – Other specified effects of vibration

Vertigo from infrasound

QD70.Z – Problems associated with the natural environment or human-made changes to the environment

Problems associated with exposure to vibration"

In: WHO *International Classification of Diseases (2020)*

It should, by now, be very clear to the Reporters of this Inquiry that the *modus operandi* employed by the multi-national Wind Industry is a *facsimile* of those employed by other industries that caused harm to humans and then tried to cover it up, all in the name of profiteering.

If the health of Scottish citizens is of any concern to the Reporters of this Inquiry, I would strongly recommend that the extension to the already existing wind power plant be denied.