

WIND ENERGY & the MILITARY: A NC Example

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THIS IS A DRAFT VERSION

Wind Energy Review: DoD

Many citizens are confused about how the military internally functions. Between numerous acronyms, its own language and a different culture, it's often a very different world from what civilians are used to.

Another easily misunderstood aspect of the military is its leadership. The US hierarchy is that the military Commander-in-Chief is a civilian (often with no military background), who additionally is a professional politician.

One downside of this arrangement is that some military dictates can be more about promoting that politician's political ideology, rather than advancing what is in the best interest of our national defense.

The current situation with renewable energy is a good case in point. Due to successful lobbying, renewable energy has become a *politically* favored energy option. Although **there is zero scientific proof that alternatives like wind energy are a net societal benefit**, it has been enormously subsidized by taxpayers and ratepayers. This is a good example of how many of our national policies are essentially determined by self-serving lobbyists.

But what about the military? Shouldn't military decisions be made on the basis of national defense and not promoting political favorites? One would hope, but with the military being led by a politician, that is certainly not the case here.

Consider: is it in our military interest to replace nuclear-powered navy ships with sailboats? Is it in our military interest to dilute carefully-formulated jet fuel with ethanol? Is it in our military interest to run an army base with unreliable and expensive electricity?

Or, more closely to home, is it in our military interest to negatively impact the safety, operation and mission of a NC military base, just to allow a politically-favored investor the opportunity to establish a lucrative wind business?

As senior retired military personnel we think the answers to all of these questions is a self-evident, unequivocal, **no**.

But hasn't the military generated reports saying that some of these are actually a good thing? Yes they have. Military personnel are trained to do one thing extremely well: *follow orders*. Those report authors are **very** aware what the wishes of their superiors are. They know full well that any report that runs contrary to those wishes, will effectively end the military career of the author.

But what about the DoD wind energy review? Carefully read this May 2013 [DoD report](#) (with notations) to see what they say about their own plan.

It clearly states that the DoD Clearinghouse procedure is NOT a wind energy permitting process. Further, **their stamp-of-approval is NOT a verification that the submitted wind project will not have serious safety, mission and operational readiness impacts on nearby military bases.**

Note that their own words carefully avoid any reference to *objectivity* or *comprehensiveness*, because that is **not** their job or interest:

“The Department of Defense is committed to maintaining an effective, consistent, transparent, and timely process ...”

The specifics of the process are documented in a federal rule, 32 C.F.R. Part 211. What does all that really mean?

In brief it says that if a wind project affects some military base’s readiness and operations, there must be *negotiations* between the developer and the military.

There are two defined outcomes of those DoD negotiations:

1) The issues are “mitigated”.

It’s important to understand that *mitigated* does **not** mean *resolved* or *fixed*, but rather means “made less bad.” This term is uniquely defined in this law to mean: “Actions taken by either or both the DoD or the applicant to ensure that a project does not create an unacceptable risk to the national security of the US”.

Note that possible **mitigations** of conflicts between a proposed wind project and an affected military base, would be:

- a) the developer making a superficial change (e.g. moving a turbine),
- b) the base accepting a diluted mission,
- c) the base offloading some of its mission to other facilities, or
- d) the base closing or moving to another location.

2) The issues are not “mitigated”.

This would be when the developer refuses to make changes of any kind. Not surprisingly there is no difference in the end result. The DoD’s “evaluation” comes down to one single thing, a determination: “if the proposed project would result in an unacceptable risk to the national security of the United States”.

Note that DoD’s process has **nothing** to do with the merits of the project, and **nothing** to do with the safety, mission, readiness or operational impact on nearby bases — unless it meets the “unacceptable risk to the national security” standard. [Note: out of thousands of applications, zero have met that.]

Some citizens have confused the activities of the Bureau of Ocean Energy Management (BOEM) and DoD. Like other federal agencies, BOEM has been directed to **implement** (not assess) wind energy (offshore in their case).

The BOEM approval process is much broader than the DoD process, but it is still all premised on the unproven assumption that offshore wind energy is a good thing. DoD is one of several agencies that makes inputs to BOEM. Then BOEM makes a determination on a *composite* of those inputs. **Note that at no point in the BOEM process is there any cost/benefits analysis!**

The bottom line is that the federal DoD process provides no meaningful protections for NC military bases or NC communities.

Wind Energy Permitting: NC

What about the new North Carolina Wind Permitting Process (aka [H484](#))?

As many know, H484 mainly came about due to the [Seymour-Johnson affair](#). H484 started out with lofty objectives, but it's a classic example of how a lobbyist-influenced political process can undermine even the best of intentions. The politest way to say it, is that H484 ended up being little more than a shell of what it should have been. The Wise Energy website has a [document](#) with a line-by-line explanation of H484's deficiencies.

Regarding its military protections, there are several issues with H484...

Problem #1: H484 invokes the federal DoD process.

It is explained above why the DoD Clearinghouse process is flawed and inadequate. For H484 to require it does not fix any of its deficiencies, nor provide NC military bases with any beneficial protections.

Problem #2: H484 expects too much from active military.

There are several parts in the NC law that specifically involve local military personnel. However there is nothing the NC law does (or can do) to counter the fact that these personnel have been ordered not to speak negatively about any proposed wind project. Asking them for inputs {§ 143-215.117 (c) (2)} or having them sit in on several meetings might look like they are "involved" but the reality is otherwise, as they are restrained observers.

Problem #3: H484 relies too much on the developer.

For example {§ 143-215.117 (b) (3)} requires (*from the developer*) "A description of any known potential impacts of the proposed wind energy project location on civil air navigation or military air navigation routes..." We do not accept the premise that the developer's inputs will be accurate or unbiased.

Problem #4: H484 doesn't have sufficient other protections.

One of the best ways to actually protect NC military installations, is to have a permitting process that provides a broad array of meaningful health and environmental protections to the public, and the environment. Unfortunately this law did not choose to go that route, so the opportunity to provide *indirect* protections to the military has not yet been taken advantage of. Here is one example of such a H484 missed opportunity:

- 1 - A significant problem with industrial wind energy is the scientifically proven adverse health consequences to some nearby citizens.
- 2 - In the eight pages of H484 there is but one single sentence {§143-215.119. (a)(8)} that addresses any human health concern, which is a requirement that there be:

“A study of the noise impacts of the turbines associated with the proposed wind energy facility...”

- 3 - The first problem with this should be obvious: *this is an **undefined** permitting condition*, as “noise impacts” is unacceptably vague.
- 4 - Then H484 was written so that it’s up to the *developer* to determine what noise tests are done for *his own* project!
- 5 - It’s then eroded further because the developer is allowed to employ his favorite hired-gun to conduct such tests.
- 6 - If that wasn’t enough, the permit approval part of H484 {§143-215.120. (a)} lists all the reasons that an application may be denied — like, if the wind project has an adverse impact on fish, or wildlife, or cultural sites, or state park views. But, there is not a *single word* that allows a denial due to health and safety impacts on nearby citizens!

From a citizen-protection perspective, this is woefully inadequate. From a military perspective this is an unfortunate lapse.

Problem #5: H484 fails to connect the dots.

The military words for permit approval are in § 143-215.120 (a) (2). The initial part of the first sentence sounds good, but H484 fails to explain how this determination will be made when active military personnel are restricted from providing an objective and comprehensive military assessment.

Problem #6: H484 sets an impossibly high standard.

The second part of the first sentence effectively cancels out the otherwise good words there. H484 says that a wind energy project that has a *significant adverse impact on a NC base’s mission, training or operations* IS NOT ENOUGH for rejection! In *addition* to that, it must be proven that such encroachment will “result in a detriment to continued military presence in the State”. Again, due to political directives, that will never happen.

Problem #7: H484 leaves way too much up to DENR’s judgment.

DENR has said they like this bill as it gives them “wide discretionary latitude.” That *may* be a good thing, but such flexibility cuts both ways. The terms and conditions for protecting NC citizens, businesses, environment and military should be appropriately and clearly spelled out, and not be left up to the subjective opinions of state agency personnel.

The clear conclusions are:

- 1 - H484 needs substantial improvements in the next legislative session, *and*
- 2 - in the meantime, it is up to local NC communities to pass wind legislation which has proper protections.

The bottom line is that although the state process is better than the federal one, it provides no assured protections for NC military bases or NC communities.

Wind Turbines & Radar: An Overview

- 1 - An excellent [collection of articles](#) on turbine radar interference. Read through these for other references.
- 2 - [Wind Turbine Clutter: The Battle Continues](#) (2014).
- 3 - A NOAA [explanation](#) of what happens with radar, with pictures.
- 4 - A 2013 [technical study](#) that acknowledges current issues.
- 5 - 2013: "[Defense chiefs fight plans for 115ft wind turbines over fears they may confuse radar and allow enemy planes to evade detection](#)"
- 6 - 2013: "[Finland wind farms clash with military radar](#)"
- 7 - The national Canadian website [discusses](#) turbines and weather radar (a similar issue).
- 8 - An article about a [military study](#) in Denmark re radar interference.
- 9 - A recent [NOAA report](#) about radar interference.
- 10-A good [2011 report](#) that specifically discusses the military impact.
- 11-An *Aviation Week* [article](#) referencing a 2013 MIT/Sandia report.
- 12-[Advanced Radar Research Center](#) studies.

An active military person sent me this recent [article](#), which has comments by Canadian military personnel, about the effect of nearby wind projects on them performing their military mission. (These people evidently do not have the same political directive as our military has.)

In the "What else do you need to know?" category, a particularly telling statement is this, where the military person said that a wind project: **"will create areas where we cannot reliably observe or control military/civilian air traffic"**.

Wind Turbines and Aircraft Radar

The following is a brief technical overview of some of the aircraft radar consequences resulting from industrial wind turbines.

1. There are two types of radar used to identify and control aircraft:
 - a) [Primary Surveillance Radar](#) sends out electromagnetic pulses which are reflected from the aircraft skin back to the Radar antenna as a signal. This type of device sees all aircraft that are within the Radar Line of Sight. This is the type most impacted by industrial wind turbines.
 - b) [Secondary Surveillance Radar](#) sends out a coded message. If the aircraft is equipped with a "[transponder](#)", the transponder will reply with either a generic response or a specific response code.
 - Many light civilian aircraft don't have or use a transponder.
 - Many aircraft flying below 10,000 feet are not required to have or use a transponder ([FAR 91.215B](#)).
2. Radar interference above and around the turbines causes a flight safety issue with Primary Surveillance Radar. The Radio Frequency (RF) reflection off of wind turbine blades can produce echoes just like that of aircraft, causing the following:
 - a) False targets (showing aircraft where there are no aircraft).
 - b) False locations (showing a real aircraft but in the wrong place).
 - c) No targets (not showing an actual aircraft when one does exist).

These can cause a multitude of safety issues:

- 1) Telling an aircraft to perform an unnecessary evasive maneuver to avoid another aircraft that does not actually exist. This could be a violent maneuver and could cause injury to passengers.
- 2) Not telling an aircraft to perform an evasive maneuver when necessary because the opposing aircraft was not seen. This could result in a midair collision.

For a superior discussion on this, please read "[Wind Turbines and Safety](#)" published on the Air Mobility Command website. Among other things it says:

"Wind turbine issues here include radar blind spots, weather radar effects, aircrew training due to loss of radar capability, antiquated radar capability, and radar upgrades. The team felt the most serious issue was not the effect on radar, but rather the human factor of false returns on ATCs and aircrew. Wind turbines had a cause and effect scenario for both ATCs and aircrew. The wind turbines, even with radar software filtering, produce radar returns identical to aircraft without a transponder."

**"You can't ensure that aircraft avoid each other,
if you can't see all the aircraft!"**

Wind Turbines and Weather Radar

We are heavily dependent on accurate current weather condition descriptions, and forecasts, from citizens planning everyday affairs, to emergency response efforts by police and fire departments, to military applications, including safe aircraft control and operation. Since 1988, the US weather forecasting system has been based on what is called **Nexrad**. [Wikipedia](#) describes this as follows:

Nexrad (Next-Generation Radar) is a network of 160 high-resolution [S-band Doppler weather radars](#) operated by the [National Weather Service](#), an agency of the [National Oceanic and Atmospheric Administration \(NOAA\)](#) within the [US Department of Commerce](#), the Federal Aviation Administration within the Department of Transportation and the US Air Force within the Department of Defense. Its technical name is **WSR-88D**, which stands for **Weather Surveillance Radar, 1988, Doppler**. NEXRAD detects [precipitation](#) and [atmospheric](#) movement or [wind](#). It returns [data](#) which when processed can be displayed in a [mosaic](#) map which shows patterns of precipitation and its movement.

NOAA has [extensive information](#) on its website regarding the impacts of wind projects on NOAA's ability to accurately describe and forecast weather. NOAA has classified the weather degradation affects of wind projects, by zones.

The red zone (up to 3 km from the weather radar) is a Red, no-build area. The next level (from 3 km to 18 km) is the Orange "mitigation" area. We will examine that as this is the situation that exists with the Mill Pond project, which is 10± km from the Newport NOAA NexRad weather radar installation.

This is defined as an area where "**Significant impacts are likely**". Based on their investigations and experience, NOAA's [Radar Operation Center](#) webpage spells out what some of these impacts can be:

- a. False storm identification due to reflection from turbines,
- b. Potential loss of low-level tornado/severe weather signatures because of blockage from turbines,
- c. False mesocyclone and tornado vortex detection due to anomalous velocity values,
- d. Incorrect velocity values due to contamination by turbine blade motion,
- e. Incorrect VAD wind profiles & velocity de-aliasing errors,
- f. False echoes downrange from wind farms due to multi-path effects,
- g. Anomalously large reflectivity values due to reflection from turbines,
- h. False or anomalously large radar-estimated precipitation amounts (esp Storm Total Precipitation) due to reflection from turbines, and
- i. False low radar-estimated precipitation amounts due to radar blockage.

This [NOAA webpage](#) has an excellent discussion of how actual wind projects have caused specific problems with weather descriptions and forecasts.

Wind Turbines *and* ROTHR

North Carolina has a long history of being a [military friendly state](#). In addition to us doing more than our share to protect the country, economically this means tens of **Billions** of dollars to the NC economy. Many important bases are located on (or operate in) the coastal region.

An example of an important military operation that could be severely impacted by coastal wind development, is the [Navy ROTHR facility](#) just north of Elizabeth City. The main mission of this specialized radar facility is to monitor what goes on in the Gulf of Mexico and northern South America.

It should be obvious that relatively nearby 500-600 foot structures in their view field, will almost certainly degrade the performance of this facility — which is the conclusion of this [official government report](#). It says any wind project **closer than 28 miles** to the ROTHR facility could seriously degrade performance of that site. (That was also the conclusion of this official [report](#) by the Army Corps of Engineers.) Some of the Desert Wind turbines are **14± miles away!** (See graphic.)



Unfortunately there may be another major complication from this situation. [Read about](#) what is happening in the small town of Newport, NY. They have a nearby radar facility, as well as a wind project. A [petition](#) was put out by some very concerned citizens, because of some “startling cancer statistics.” Their concern is that this tiny town now has 6% of the US cases of a particular cancer. As the petition explains, local people believe that industrial turbines in the path of nearby radar redirects this energy into people’s homes — and quite possibly increasing their health risk.

Mill Pond and Cherry Point

Now, more specifically, these will be the Cherry Point aircraft radar impacts.

1. Radar coverage of the current instrument pattern to [Runway 32L](#) (Left hand) will be impacted. (Because of prevailing winds Runway 32L is the primary runway used at MCAS Cherry Point.) To mitigate the impact to the 32L approach, MCAS CP will have to change to a Right hand pattern (32R).

This will minimize military aircraft from transiting the “blind” area above the Mill Pond site, but will force all aircraft to the north side of the airfield while in the instrument pattern. Some consequences of moving to a 32R instrument flight pattern will be:

- a. Forcing more aircraft in the area between MCAS CP and the R5306A* training range. This is a narrow corridor which is used by civilian aircraft (commercial and private) to go around Cherry Point.
- b. Aircraft going to and from the R5306 will be flying through the same airspace that is being used by the instrument pattern.
- c. In order to ensure that training aircraft and instrument aircraft are kept a safe distance apart, a slice of the R5306 (bordering the CP side of the range), will become unusable whenever the instrument approach to 32R is in use. This reduces the usable size of the 5306A for training.

*[R-5306A Special use Airspace](#): Training area North/North East of Cherry Point, and includes the BT-9 and BT-11 bombing ranges.

2. Aircraft transiting to [MCAF Bogue Field](#) (or to the 5306C**) will be at an increased risk of midair collision with civilian aircraft that are masked by the Mill Pond created “blind zone”.

**[R-5306C Special Use Airspace](#): Training area South East of Cherry Point including airspace over Bogue field.

3. Aircraft entering the 5306A from the south will fly through the “blind zone”.
4. Radar operators track all UAVs/UASs*** as they transit between MCAS Cherry Point and the 5306C which includes MCAF Bogue. If the Radar operators are unable to track all civilian aircraft there will be an increased risk of midair collision between MCAS UAVs and civilian aircraft.

*** UAV = unmanned aerial vehicle; UAS = unmanned aerial system

Note 1: MCAS Cherry Point is an excellent training site for [UAVs/UASs](#). Cherry Point would be in strong contention for additional UAS units in any future [BRAC](#) type scenario.

Note 2: The ability for UAVs to transit the FAA airspace between MCAS Cherry Point and the 5306C will be put in jeopardy or even eliminated. This will reduce MCAS CPs overall military training value, *and* could result in the loss of UAV units to another installation.

Mill Pond and Beaufort Airfield

1. Cherry Point also provides Radar service to aircraft going into and leaving [Michael J. Smith Airfield](#) (Beaufort). Part of this service is to deconflict commercial and civilian aircraft. Cherry Point's ability to provide safety of flight service to commercial and civilian aircraft will be seriously reduced with the radar interference introduced by the Mill Pond project.
2. If it becomes more difficult, or less safe, for the operators of light civil aircraft owners to use Michael J. Smith airfield, the owners of these aircraft will find other airfields which are better and safer. These light civil aircraft operators are business leaders, homeowners, etc. If they go elsewhere it could impact real estate values, Carteret County business, health care services, etc.

On December 10, 2013, the *Beaufort-Morehead City Airport Authority* wrote the Carteret County Commissioners a letter expressing grave concerns about the proposed Mill Pond wind project. In part it said:

"The controllers at Cherry Point provide radar coverage for our airport, and control our air space. The *Beaufort-Morehead City Airport Authority* is very concerned of diminished radar services to our air space. This would have a negative impact on our aircraft operations, and greatly reduce safety of air traffic in our area."

For further research into how wind turbines affect military (and commercial) aircraft, this [summary document](#) is a good place to start. It references some sample recent reports about this matter. A good example is a [November 2013 study](#) by the Canadian Air Force — which does not have the some political constraints imposed on our military services. That report concluded:

"A wind facility will create areas where **we can not reliably observe or control, military or civilian air traffic."**

That is the crux of the problem, which results in an unacceptable risk.

Additional investigation is being done on the impacts to —

Helicopter service at Cherry Point (e.g. [Squadron 366](#)).

[Fleet Readiness Center](#) (FRC East) at Cherry Point.

Cherry Point's [Pedro Rescue Service](#).

[New River](#) (MCAS) helicopter and tilt-rotor base aircraft in this airspace.

[Bogue Field](#) (MCAS) operations.

Mill Pond *and* Newport NexRad

Reliable aircraft control, and operation *anywhere*, are both heavily dependent on precise descriptions of **current weather conditions**, as well as accurate **weather forecasting information**.

When erroneous weather data is provided (e.g. inaccurate wind speeds) the decisions by the control tower and/or the aircraft pilot can be faulty. This could result in loss of life in the air and/or on the ground.

Cherry Point is almost completely dependent on its weather information from the [closest NOAA radar station](#) that is located nearby in Newport, NC. This is a NexRad (WSR-88D) operations center. (See page 8 for a more complete description of NexRad weather radar).

As noted earlier in this report, a [NOAA website](#) has an excellent discussion of how actual US wind projects have caused specific problems with NexRad weather installations.

Here is a very revealing comment found at a NOAA site:

“Meteorologists have noticed on numerous occasions that the Lowville Wind Farm has produced very poor data, influencing areas far from the radar across over a hundred mile range of northern New York.”

The Lowville (NY) wind project is 10±km away from the NexRad weather radar site in that area, the same distance that Mill Pond would be from the Newport NexRad weather station.

As such, it will be very likely that eastern North Carolina (including Cherry Point) will start getting a considerable amount of “very poor data” from the heretofore reliable Newport NOAA weather station, if the Mill Pond project is put in operation. The consequences of that could be far-reaching, including the lives of citizens, first-responders, and active military personnel.

Since there are no scientifically proven net-benefits for the Mill Pond wind project, there is absolutely no reason that anyone’s life should be put in jeopardy by allowing such a venture to be constructed.

Mill Pond: Military Conclusions

The bottom line is that:

- a. The Mill Pond project will cause major (life-threatening) consequences to the operation of aircraft in its vicinity — and there are numerous military and civilian aircraft that enter this airspace.**
 - b. All mitigation options would be very expensive. ALL such costs should be fully borne by the wind developer.**
 - c. No mitigation options will truly solve the Mill Pond created problem, without introducing other serious consequences. The developer should be made legally liable for all of these other consequences.**
 - d. Whatever “mitigation” is chosen, it will be a considered a liability in the next BRAC (or equivalent) base evaluation process.**
 - e. The DoD Clearinghouse process should be changed so that aircraft and personnel safety, operational readiness, mission impairment, etc. are sufficient reasons for DoD not to approve a wind project.**
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In summary, the undersigned urge federal, state and local officials to oppose the proposed Mill Pond wind project as it is a serious threat to the mission and operational readiness of Cherry Point MCAS. It is also a bona-fide threat to the lives of aircraft pilots, aircraft passengers and civilians on the ground.

NOTE: This report was going to be signed by several high-level retired NC military personnel, but it wasn't necessary due to the fact that the local Carteret communities acted quickly to pass protective local wind laws — which resulted in the wind developer deciding to leave.

We are posting this report as many parts of it apply to other areas of NC and the USA. It has been updated to include other examples (e.g. ROTH).

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