



August 23, 2013

Donna O'Neill
Air Traffic Wind Turbine Specialist for North Dakota
FAA Central Regional Office
901 Locust St., Room 200
Kansas City, MO 64106

Re: Thunder Spirit 1 and 2, Hettinger ND

Dear Ms. O'Neill,

Our client, Global Winds Harvest, received Notices of Presumed Hazard (NPH) on the following Aeronautical Study Numbers:

Thunder Spirit I:

2013-WTE-4680-OE, 2013-WTE-4683-OE, 2013-WTE-4684-OE, 2013-WTE-4685-OE, 2013-WTE-4686-OE, 2013-WTE-4687-OE, 2013-WTE-4688-OE, 2013-WTE-4689-OE, 2013-WTE-4690-OE, 2013-WTE-4703-OE, 2013-WTE-4704-OE, 2013-WTE-4705-OE, 2013-WTE-4706-OE, 2013-WTE-4707-OE, 2013-WTE-4708-OE, 2013-WTE-4709-OE, 2013-WTE-4710-OE, 2013-WTE-4711-OE, 2013-WTE-4716-OE, 2013-WTE-4717-OE, 2013-WTE-4718-OE, 2013-WTE-4721-OE, 2013-WTE-4722-OE, 2013-WTE-4753-OE, 2013-WTE-4724-OE, 2013-WTE-4725-OE, 2013-WTE-4738-OE, 2013-WTE-4739-OE, 2013-WTE-4740-OE, 2013-WTE-4741-OE, 2013-WTE-4742-OE, 2013-WTE-4747-OE, 2013-WTE-4748-OE, 2013-WTE-4749-OE, 2013-WTE-4750-OE, 2013-WTE-4758-OE, 2013-WTE-4759-OE, 2013-WTE-4760-OE, 2013-WTE-4761-OE, 2013-WTE-4762-OE, 2013-WTE-4763-OE.

Thunder Spirit II:

2013-WTE-4764-OE, 2013-WTE-4765-OE, 2013-WTE-4766-OE, 2013-WTE-4767-OE, 2013-WTE-4768-OE, 2013-WTE-4769-OE, 2013-WTE-4770-OE, 2013-WTE-4771-OE, 2013-WTE-4772-OE, 2013-WTE-4773-OE, 2013-WTE-4774-OE, 2013-WTE-4775-OE, 2013-WTE-4776-OE, 2013-WTE-4777-OE, 2013-WTE-4778-OE, 2013-WTE-4779-OE, 2013-WTE-4780-OE, 2013-WTE-4781-OE, 2013-WTE-4782-OE, 2013-WTE-4783-OE, 2013-WTE-4784-OE, 2013-WTE-4785-OE, 2013-WTE-4786-OE, 2013-WTE-4787-OE, 2013-WTE-4788-OE.

On behalf of Global Winds Harvest we are requesting further study of the NPHs listed above. Furthermore, in support of this request we are submitting the

Pages: 15

Filed: 7/1/2014

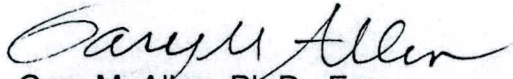
PU-11-601
Exhibit 4

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Tetra Tech Ec, Inc.
Tracey Dubuque, P.E.

accompanying analysis we prepared for Global Wind Harvest in response to those NPHs. We respectfully request that this analysis be considered by the FAA during the further study process. We believe it provides sufficient and meaningful information to enable the FAA to reach a favorable decision on most, if not all, of the NPHs.

Sincerely,

A handwritten signature in cursive script that reads "Gary M. Allen".

Gary M. Allen, Ph.D., Esq.
President

Attachments: As stated



August 23, 2013

Mr. Dan Albano
Global Winds Harvest
197 North Street Rd.
Argyle, NY 12809

Re: Thunder Spirit ND Project, ASI # 13-N-0733.001

Dear Mr. Albano:

Pursuant to your request, Aviation Systems, Inc. (ASI), has evaluated the FAA response to the Thunder Spirit ND Project, (hereinafter referred to as "Project") from an aviation and airspace point of view. In support of our position, we reviewed the Project against aviation and airspace criteria set forth in Federal Aviation Regulation (FAR) Part 77 (14 CFR 77) *Safe, Efficient Use and Preservation of the Navigable Airspace*; FAA Order 8260.3B, the *United States Standard for Terminal Instrument Procedures (TERPs)*; FAA Order JO 7400.2J, *Procedures for Handling Airspace Matters*; FAA AC 150/5300-A, *Airport Design*; and the Hettinger Municipal Airport, Airport Layout Plan (ALP), dated 10/19/2007.

The Thunder Spirit project was filed with the FAA in two parts. Thunder Spirit 1 is an 84 turbine layout and Thunder Spirit II is a 25 turbine layout plan.

The Project area is located approximately 2.82-8.54 nautical miles (NM) to the northeast of the Hettinger Municipal Airport (HEI) in North Dakota.

In the FAA response to the filing, 66 proposed turbines were reported to exceed 14 CFR, part 77.17 (a)(2) standards by amounts varying from five to 248 feet. Further, twenty-one turbines were reported to exceed either Category C or D Circling Minimums for the RNAV (GPS) Rwy 30 Approach. Forty-one turbines are reported to be within the lateral limits of the Traffic Pattern Airspace for either Category C or Category D aircraft and would exceed the vertical limit of 3056 feet AMSL. As a result these proposed turbines are classified by the FAA as Presumed Hazards to Navigation pending further study.

It will be necessary to request that further study by the FAA be conducted to address several issues that should mitigate most, if not all, of the possible adverse effects of the Project.

Examination of the current approved ALP provides compelling evidence that the initial FAA assignment of CAT C and D Traffic Pattern lateral areas requires re-consideration. The ALP assigns to each runway an Approach Category and a Design Group Designation. For existing and future operations, paved runway 12/30 (13/31 future), is designated as (aircraft) Design Group BII *(existing) and BII (future). The turf runways 17/35 (18/36 future) and 7/25 (future) are designated A/BII. The supplemental * designation denotes "Exclusively Small Aircraft," and the A denotes an Approach Category for aircraft with approach speeds less than 91 knots. Aircraft Approach Categories C and D are for approach speeds of 121 knots or more but less than 141 knots, and 141 knots or more but less than 166 knots, respectively.

A review of 385 contemporary aircraft models revealed that none that would be within the HEI Design Code of BII have approach speeds equal to Category D. In fact, none of the aircraft in Design Code BII have approach speeds equal to Category C. As previously noted, the turf runways, both existing and future are designated for "Exclusively Small Aircraft." At least 60% of airport operations are conducted by the 22 single-engine aircraft of the total 23 aircraft based at the field.

FAA Order 7400.2J (Section 6-3-8, paragraph d.2(b), states that a "substantial adverse effect" can only be determined if a "significant volume of VFR aeronautical operations are affected....." related to traffic pattern airspace. With all data and evidence to the contrary, and no evidence that any CAT D aircraft have used the airfield, it would be completely inappropriate to enforce CAT D traffic pattern limitations to the area.

This rationale is especially relevant to the traffic pattern airspace for runway 17/35. Past practice by FAA Air Traffic personnel, based on the responsibilities assigned under Order 7400.2J, section 6-3-6, paragraph a.2, have assessed the runway handling capability of individual runways where there are multiple runways available. In this case, the CAT D Traffic Pattern was applied to runway 17/35, which we consider an inappropriate application. This short (2020 feet) turf runway would not serve CAT D aircraft which are typically large, mostly "heavy" jets used by commercial air carriers. We believe a CAT B designation, at most, would be appropriate.

The airport operator, as evidenced by the ALP, clearly expects that air traffic using HEI will continue to be limited to those that fall within the BII Airplane Design Group. Considering airport limits, it is not feasible to expect any "significant volume" of CAT D traffic that would be impacted by the Project northeast of the field.

It may be possible to mitigate the effect of the CAT C-D Circling Minimums of the RNAV (GPS) Rwy 30 Approach. If the aircraft operators would request the FAA to create a "Restricted Circling Area" for CAT C and D Aircraft northeast of runway 12/30 (future 13/31), as described in TERPS. This restriction should permit the majority of traffic, CAT A and B, to circle as usual to any runway as needed.

In summary, it is the position of ASI that if the proper limits for visual flights around the airport, i.e. Traffic Pattern size, are applied and circling patterns modified, nearly all (possible exceptions are five turbines in the runway 7/25 CAT C Traffic Pattern Area) should be approved and ultimately receive Determinations of No Hazard (DNH) from the FAA.

Sincerely,

A handwritten signature in black ink that reads "Gary M. Allen". The signature is written in a cursive style with a large, prominent "G" and "A".

Gary M. Allen, Ph.D., Esq.
President

Attachments: As stated



Mail Processing Center
 Federal Aviation Administration
 Southwest Regional Office
 Obstruction Evaluation Group
 2601 Meacham Boulevard
 Fort Worth, TX 76137

Aeronautical Study No.
 2013-WTE-4764-OE

Issued Date: 12/11/2013

Dan Albano
 Global Winds Harvest
 197 North Street Rd.
 Argyle, NY 12809

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure: Wind Turbine TS2-8 13-N-0733.003
 Location: Hettinger, ND
 Latitude: 46-04-58.36N NAD 83
 Longitude: 102-38-25.24W
 Heights: 2889 feet site elevation (SE)
 448 feet above ground level (AGL)
 3337 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure would have no substantial adverse effect on the safe and efficient utilization of the navigable airspace by aircraft or on the operation of air navigation facilities. Therefore, pursuant to the authority delegated to me, it is hereby determined that the structure would not be a hazard to air navigation provided the following condition(s) is(are) met:

As a condition to this Determination, the structure is marked/lighted in accordance with FAA Advisory circular 70/7460-1 K Change 2, Obstruction Marking and Lighting, white paint/synchronized red lights - Chapters 4,12&13(Turbines).

It is required that FAA Form 7460-2, Notice of Actual Construction or Alteration, be e-filed any time the project is abandoned or:

- At least 10 days prior to start of construction (7460-2, Part I)
- Within 5 days after the construction reaches its greatest height (7460-2, Part II)

See attachment for additional condition(s) or information.

This determination expires on 06/11/2015 unless:

- (a) the construction is started (not necessarily completed) and FAA Form 7460-2, Notice of Actual Construction or Alteration, is received by this office.
- (b) extended, revised, or terminated by the issuing office.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

This determination is subject to review if an interested party files a petition that is received by the FAA on or before January 10, 2014. In the event a petition for review is filed, it must contain a full statement of the basis upon which it is made and be submitted to the Manager, Airspace Regulations & ATC Procedures Group, Federal Aviation Administration, 800 Independence Ave, SW, Room 423, Washington, DC 20591.

This determination becomes final on January 20, 2014 unless a petition is timely filed. In which case, this determination will not become final pending disposition of the petition. Interested parties will be notified of the grant of any review. For any questions regarding your petition, please contact Airspace Regulations & ATC Procedures Group via telephone -- 202-267-8783 - or facsimile 202-267-9328.

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

Any failure or malfunction that lasts more than thirty (30) minutes and affects a top light or flashing obstruction light, regardless of its position, should be reported immediately to (877) 487-6867 so a Notice to Airmen (NOTAM) can be issued. As soon as the normal operation is restored, notify the same number.

This aeronautical study considered and analyzed the impact on existing and proposed arrival, departure, and en route procedures for aircraft operating under both visual flight rules and instrument flight rules; the impact on all existing and planned public-use airports, military airports and aeronautical facilities; and the cumulative impact resulting from the studied structure when combined with the impact of other existing or proposed structures. The study disclosed that the described structure would have no substantial adverse effect on air navigation.

An account of the study findings, aeronautical objections received by the FAA during the study (if any), and the basis for the FAA's decision in this matter can be found on the following page(s).

If we can be of further assistance, please contact Donna O'Neill, at (816) 329-2525. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2013-WTE-4764-OE.

Signature Control No: 193579138-203460614

John Page

Manager, Obstruction Evaluation Group

(DNH -WT)

Attachment(s)

Additional Information

Map(s)

Additional information for ASN 2013-WTE-4764-OE

The determinations for all of the studies associated with this project (2013-WTE-4680 through 4788-OE) will be available upon issuance on our website, <http://oeaaa.faa.gov>.

The proposed wind turbines would be part of a wind turbine farm (currently 109 proposed turbines) that would be located approximately 2.82 - 8.54 nautical miles (NM) north, northeast, and east of the Airport Reference Point for the Hettinger Municipal Airport (HEI), Hettinger, ND. Forty three (43) of the proposed turbines do not exceed any 14 CFR Part 77 obstruction standard and favorable determinations have been completed for these turbines. Public Notice for this project was issued under Aeronautical Study Number 2013-WTE-4680-OE. For the sake of efficiency the specific impacts found for each of the remaining turbines currently filed for this project are listed below. However, separate determinations have/will be issued for each of the proposed turbines and this determination is valid only for the structure shown on Page 1 of this determination.

The proposed turbines are identified as an obstruction under the standards of 14 CFR, part 77, as applied to HEI as follows:

Section 77.17(a)(2): A height that is 200 ft. AGL, or above the established airport elevation, whichever is higher, within 3 nautical miles of the established reference point of an airport, excluding heliports, with its longest runway more than 3,200 ft. in actual length, and that height increases in the proportion of 100 ft. for each additional nautical mile from the airport up to a maximum of 499 ft. Would exceed by up to:

2013-WTE-XXXX-OE / Exceeds By

4680 / 5 ft.

4682 / 124 ft.

4683 / 112 ft.

4684 / 102 ft.

4685 / 93 ft.

4686 / 82 ft.

4687 / 50 ft.

4688 / 35 ft.

4689 / 18 ft.

4690 / 5 ft.

4703 / 111 ft.

4704 / 98 ft.

4705 / 95 ft.

4706 / 134 ft.

4707 / 110 ft.

4708 / 91 ft.

4709 / 72 ft.

4710 / 40 ft.

4711 / 19 ft.

4716 / 116 ft.

4717 / 27 ft.

4718 / 3 ft.

4721 / 59 ft.

4722 / 72 ft.

4723 / 62 ft.

4724 / 47 ft.

4738 / 78 ft.

4739 / 67 ft.

4740 / 84 ft.

4741 / 73 ft.

4742 / 40 ft.

4747 / 147 ft.

4748 / 136 ft.

4749 / 123 ft.

4750 / 54 ft.

4758 / 117 ft.

4759 / 136 ft.

4760 / 132 ft.

4761 / 126 ft.

4762 / 102 ft.

4763 / 75 ft.

4764 / 137 ft.

4765 / 178 ft.

4766 / 198 ft.

4767 / 233 ft.

4768 / 172 ft.

4769 / 220 ft.

4770 / 201 ft.

4771 / 189 ft.

4772 / 248 ft.

4773 / 248 ft.

4774 / 230 ft.

4775 / 217 ft.

4776 / 193 ft.

4777 / 165 ft.

4778 / 248 ft.

4779 / 244 ft.

4780 / 217 ft.

4781 / 193 ft.

4782 / 170 ft.

4783 / 152ft.

4784 / 248 ft.

4785 / 226 ft.

4786 / 201 ft.

4787 / 182 ft.

4788 / 156 ft.

Section 77.17(a)(3): A height that increases a minimum instrument flight altitude within a terminal area (TERPS criteria):

Would raise the Chg 21 Category D Circling Minimum Descent altitude (MDA) for the RNAV (GPS) RWY 30 approach from an anticipated 3520 ft. AMSL to the following value as specified for each case.

2013-WTE-XXXX-OE / Increased To

4764 / 3700 ft.

4765 / 3760 ft.

4766 / 3760 ft.

4768 / 3740 ft.

4769 / 3720 ft.

4770 / 3700 ft.

4771 / 3680 ft.

4774 / 3400 ft.

4775 / 3680 ft.

4776 / 3700 ft.

4777 / 3600 ft.

4780 / 3640 ft.

4781 / 3640 ft.

4782 / 3640 ft.

4783 / 3640 ft.

Would raise the Chg 21 Category C/D Circling Minimum Descent altitude (MDA) for the RNAV (GPS) RWY 30 approach from an anticipated XXXX ft./ XXXX ft. AMSL to the following value specified for each case.

2013-WTE-XXXX-OE Anticipated C/D (ft. AMSL) Increased To (ft. AMSL)

4767 3400/3520 3760

4772 3380/3520 3580

4773 3400/3520 3620

4778 3380/3520 3580

4779 3380/3520 3580

4784 3380/3520 3520

The following structures would lie within the lateral limits of Traffic Pattern Airspace (TPA) for Category C aircraft using proposed Runway 7/25.

2013-WTE-4772, 4773, 4774, 4775, 4778-OE

The following structures would lie within the lateral limits of Traffic Pattern Airspace (TPA) for Category C aircraft using existing Runway 17/35.

2013-WTE- 4778, 4779-OE

The following structures would lie within the lateral limits of Traffic Pattern Airspace (TPA) for Category D aircraft using proposed Runway 7/25.

2013-WTE-4703, 4704, 4705, 4706, 4740, 4747, 4748, 4765, 4766, 4767, 4768, 4769, 4770, 4771 ,4776, 4777, 4780, 4781, 4782, 4784, 4785, 4786-OE

The following structures would lie within the lateral limits of Traffic Pattern Airspace (TPA) for Category D aircraft using Runway 17/35.

2013-WTE-4716, 4760, 4761, 4762, 4763, 4776, 4780 through 4788-OE

The following structures would lie within the lateral limits of Traffic Pattern Airspace (TPA) for Category D aircraft using existing and proposed Runway 12/30.

2013-WTE-4682, 4683, 4684, 4721, 4747, 4760, 4761, 4762, 4763, 4764 through 4788 -OE

The proposed structures listed above would lie beyond the lateral limits of the conical surface but within either Category C or D Traffic Pattern Airspace climb and descent or level flight areas for specific runways. All proposed structures would lie OUTSIDE Traffic Pattern Airspace for Category A and B aircraft (approach speeds of 120 kts. or less).

The proposal was circularized on October 24, 2013, to all known aviation interests and to non-aeronautical interests that may be affected by the proposal. No letters of objection were received as a result of the circularization.

Aeronautical study disclosed that the proposed structure would have some effect on existing or proposed arrival, departure, or en route instrument flight rule (IFR) operations or procedures for Category C and/or D aircraft as disclosed above. However, no information was received and records do not indicate that any Category C or D aircraft use this airport, especially not on an ongoing and regular basis. IFR operations for Category A and B aircraft would not be affected by any of the currently proposed turbines.

As stated earlier, no comments were received and records do not indicate that any, much less a significant number of Category C or D aircraft use this airport. Study for possible visual flight rules (VFR) effect disclosed that the proposed structure would have no effect on any existing or proposed arrival or departure VFR operations or procedures. All structures would lie outside Category A and B Traffic Pattern Airspace (TPA) for both runways at HEI. They would not conflict with airspace required to conduct normal VFR traffic pattern operations at HEI or any other known public use or military airports. At 448 ft. AGL, the proposed structure would not have a substantial adverse effect on VFR en route flight operations.

The proposed structure would be appropriately obstruction marked and/or lighted to make it more conspicuous to airmen should circumnavigation be necessary. See page 1 for the specific recommendation for this turbine.

The cumulative impact of the proposed structure, when combined with other proposed and existing structures, is not considered to be significant. Study did not disclose any adverse effect on existing or proposed public-use or military airports or navigational facilities, nor would the proposal affect the capacity of any known existing or planned public-use or military airport.

Therefore, it is determined that the proposed construction would not have a substantial adverse effect on the safe and efficient utilization of the navigable airspace by aircraft or on any air navigation facility and would not be a hazard to air navigation provided the conditions set forth within this determination are met.

Additional Conditions

Obstruction marking and lighting recommendations for wind turbine farms are based on the scheme for the entire project. ANY change to the height, location or number of turbines within this project will require a reanalysis of the marking and lighting recommendation for the entire project. In particular, the removal of previously planned or built turbines/turbine locations from the project will often result in a change in the marking/lighting recommendation for other turbines within the project. It is the proponent's responsibility to contact the FAA to discuss the process for developing a revised obstruction marking and lighting plan should this occur.

Obstruction lights, for those structures for which lights have been recommended, should be installed and operational once the structure has reached the height for which lights are required, in this case 200 ft. AGL. Lights Out NOTAMs (Notices to Airmen) are NOT to be used as a substitution for operational lighting during project construction.

Synchronization is a critical component of the reduced lighting scheme. If synchronization is absolutely not feasible until the project is completed, for aviation safety, it should be accomplished immediately upon completion of the final lighted turbine.

TOPO Map for ASN 2013-WTE-4764-OE

