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Aeronautical Study No.  
 2020-WTE-6722-OE

Issued Date: 04/23/2021

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**\*\* 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 1  
 Location: Pierre, SD  
 Latitude: 44-26-31.46N NAD 83  
 Longitude: 99-46-40.20W  
 Heights: 1990 feet site elevation (SE)  
 625 feet above ground level (AGL)  
 2615 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 to be marked/lighted in accordance with FAA Advisory circular 70/7460-1 M, Obstruction Marking and Lighting, white paint/synchronized red lights-Chapters 4,13(Turbines),&15.

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.

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 1)
- Within 5 days after the construction reaches its greatest height (7460-2, Part 2)

See attachment for additional condition(s) or information.

This determination expires on 10/23/2022 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 May 23, 2021. 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 of the Rules and Regulations Group. Petitions can be submitted via mail to Federal Aviation Administration, 800 Independence Ave, SW, Washington, DC 20591, via email at [OEPetitions@faa.gov](mailto:OEPetitions@faa.gov), or via facsimile (202) 267-9328.

This determination becomes final on June 02, 2021 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 Rules and Regulations Group via telephone – 202-267-8783.

This determination is based, in part, on the foregoing description which includes specific coordinates and heights. This determination is valid for coordinates within one (1) second latitude/longitude and up to the approved AMSL height listed above. If a certified 1A or 2C accuracy survey was required to mitigate an adverse effect, any change in coordinates or increase in height will require a new certified accuracy survey and may require a new aeronautical study.

If construction or alteration is dismantled or destroyed, you must submit notice to the FAA within 5 days after the construction or alteration is dismantled or destroyed.

Additional wind turbines or met towers proposed in the future may cause a cumulative effect on the national airspace system. All information from submission of Supplemental Notice (7460-2 Part 2) will be considered the final data (including heights) for this structure. Any future construction or alteration, including but not limited to changes in heights, requires separate notice to the FAA.

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.

In order to ensure proper conspicuity of turbines at night during construction, all turbines should be lit with temporary lighting once they reach a height of 200 feet or greater until such time the permanent lighting configuration is turned on. As the height of the structure continues to increase, the temporary lighting should be relocated to the uppermost part of the structure. The temporary lighting may be turned off for periods when they would interfere with construction personnel. If practical, permanent obstruction lights should be installed and operated at each level as construction progresses. An FAA Type L-810 steady red light fixture shall be

used to light the structure during the construction phase. If power is not available, turbines shall be lit with self-contained, solar powered LED steady red light fixture that meets the photometric requirements of an FAA Type L-810 lighting system. The lights should be positioned to ensure that a pilot has an unobstructed view of at least one light at each level. The use of a NOTAM (D) to not light turbines within a project until the entire project has been completed is prohibited.

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.

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 Lan Norris, at (404) 305-6645, or [Lan.norris@faa.gov](mailto:Lan.norris@faa.gov). On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-WTE-6722-OE.

**Signature Control No: 456427063-478745900**

( DNH -WT )

Steve Phillips

Manager, Obstruction Evaluation Group

Attachment(s)

Additional Information

Map(s)

## Additional information for ASN 2020-WTE-6722-OE

All FAA determinations and circularized cases are public record and available at the FAA's public website; <https://oeaaa.faa.gov>. The distribution for proposals circularized for public comments includes all "known" aviation interested persons and those who do not have an aeronautical interest but may become involved with specific aeronautical studies. Notification includes both postcard mailers and email notifications to those with registered FAA accounts. The FAA does not have a database for all persons with an aeronautical and non-aeronautical interest. Therefore, the public is encouraged to re-distribute and forward notices of circularized cases to the maximum extent possible. This may include local publications, radio, television and digital media outlets. Additionally, it is incumbent upon local state, county and city officials to share notice of circularized cases with their concerned citizens.

AGL, Above Ground Level  
AMSL, Above Mean Sea Level  
ARP, Airport Reference Point  
ASN, Aeronautical Study Number  
ATC, Air Traffic Control  
CARSR, Common Air Route Surveillance Radar  
CFR, Code of Federal Regulations  
DME, Distance Measuring Equipment  
GPS, Global Positioning System  
IFR, Instrument Flight Rules  
MOCA, Minimum Obstruction Clearance Altitude  
MSA, Minimum Safe Altitude  
NM, Nautical Mile  
RNAV, Area Navigation  
RWY, Runway  
VOR, VHF Omnidirectional Radio Range System  
VORTAC, VOR/TACAN System

This notice is for 57 proposed wind turbines for a wind farm project that would be located approximately 9.89 NM - 16.34 NM southwest of the ARP for Highmore Municipal Airport (9D0), Highmore, SD. The ASNs with coordinates, AGL heights, and AMSL heights for each proposed structure are listed on page one of the determination letters. The proposed structures would exceed the obstruction standards of 14 CFR Part 77 as follows:

- > Section 77.17(a)(1) by 126 feet; a height that exceeds 499 feet AGL.
- > Section 77.17(a)(3); a height that increases a minimum instrument flight altitude within a terminal area.
- Highmore Municipal Airport (9D0); the following would increase the MSA for the RNAV (GPS) RWY 13 & RNAV (GPS) RWY 31 approaches from 3600 feet AMSL to 3700 feet AMSL.

2020-WTE-6732-OE  
2020-WTE-6733-OE  
2020-WTE-6734-OE

2020-WTE-6735-OE  
2020-WTE-6736-OE  
2020-WTE-6738-OE  
2020-WTE-6739-OE  
2020-WTE-6745-OE  
2020-WTE-6746-OE  
2020-WTE-6747-OE  
2020-WTE-6748-OE  
2020-WTE-6749-OE  
2020-WTE-6750-OE  
2020-WTE-6751-OE  
2020-WTE-6752-OE  
2020-WTE-6754-OE  
2020-WTE-6755-OE  
2020-WTE-6756-OE  
2020-WTE-6768-OE

- Miller Municipal Airport (MKA); the following would increase the MSA for the RNAV (GPS) RWY 15 & RNAV (GPS) RWY 33 approaches from 3600 feet AMSL to 3700 feet AMSL.

2020-WTE-6749-OE  
2020-WTE-6750-OE  
2020-WTE-6751-OE  
2020-WTE-6752-OE

> Section 77.17(a)(4); a height that increases a minimum instrument flight altitude within an en route area. The proposal would increase the minimum altitudes for the following IFR procedures:

- V120; the following would increase the MOCA from PIERRE (PIR) VORTAC 100 Radial to MITCHELL (MHE) VOR/DME from 3400 feet AMSL to 3700 feet AMSL.

2020-WTE-6754-OE  
2020-WTE-6756-OE

- Section 77.29 (a)(6); potential effect on ATC radar, direction finders, ATC tower line-of-sight visibility, and physical or electromagnetic effects on air navigation, communication facilities, and other surveillance systems. The turbines would be within radar line of sight (RLOS) of the Gettysburg, SD. (QJB) CARSR facility and will affect the quality and/or availability of QJB primary radar signals.

In order to facilitate the public comment process, all 57 studies were circularized on 01/04/2021 under ASN 2020-WTE-6767-OE to all known aviation interests and to non-aeronautical interests that may be affected by the proposal. There were two comment received during the circularization concluding on 02/10/2021. The comments are summarized as follows:

Comment 1: Agriculture is the number one industry in South Dakota. The wind turbines, Meteorological Evaluation Towers (MET) and transmission lines present a hazard to agricultural operations / aerial applicators. Each wind turbine limits the use of aerial applications on farmland. Wind turbines on neighboring farmlands also limits aerial applicators as aircraft need 1 to 1.75 miles to turn around safely.

Comment 2: The turbines at 625' will prevent safe and effective aerial applications to protect crops in the area. The turbulence and "dirty air" produced by the turbines are also a concern. Additionally, the location of the turbines will limit the distances on field borders that aerial applicators need to turn around. The turbines will make it impossible for aerial applications. The turbines would have a negative annual agronomic impact on local farming operations.

FAA Response: The FAA recognizes that the proposed structures may affect flights conducted under 14 CFR Part 137, Agricultural Aircraft Operations. While in the process of dispensing aerial chemicals, Part 137 operations are excluded from the minimum safe altitudes of 14 CFR Part 91. Those operations conducted under Part 137 are therefore not considered in determining the extent of adverse effect on VFR flights. Furthermore, the FAA does not have land-use authority for privately owned/leased property and does not issue building permits. A determination issued by the FAA does not relieve the project sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body. Economic impacts and the effects of wind turbine vortex, vortices, turbulence or severe weather phenomenon are beyond the scope of a Part 77, aeronautical study. Questions or comments regarding commercial land development projects, lease/purchase agreements, economic impacts, site selection, etc., should be directed to the private property owners, state, county and/or local city municipalities.

...End of Comments...

The aeronautical study identified the proposed structures as being within the RLOS of the QJB CARSR. Impacts to radar facilities are not circularized to the public for comments as they only require review by the military services, Department of Defense and responsible ATC facilities. Further review determined this would not cause an unacceptable adverse impact on ATC or military operations at this time.

Study for possible IFR effects identified impacts to flight procedures for 9D0, MKA and V120. MSAs are the minimum obstacle clearance altitudes within a specified distance from the navigation facilities upon which procedures are predicated. MSA altitudes are designed for emergency use only and are not routinely used by pilots or by air traffic control. Consequently, MSAs are not circulated for public comment as they are not considered a factor in determining the extent of adverse effect. MOCAs assure obstacle clearance over the entire route segment to which they apply and assure navigational signal coverage within 22 NM of the associated VOR navigational facility. Structures that only affect the MOCA are not considered to have a substantial adverse effect and only require a review by the responsible ATC facility. Further study revealed that only the MOCA along V120 is effected and is not routinely assigned by ATC. The proposed structures would have no other effect on any existing or proposed arrival, departure, or en route IFR operations or procedures.

Study for possible VFR effects disclosed that the proposals are beyond traffic pattern airspace for 9D0 and any other known public use or military airports. The proposals would have no effect on any existing or proposed VFR arrival or departure operations. At 625 feet AGL, the structures would extend into airspace normally used by en route VFR traffic. In coordination with ATC, an analysis of potential VFR Routes and available traffic data indicated that an average of less than one VFR aircraft per day may be affected by the proposed wind farm. In accordance with JO 7400.2M, the proposed wind farm would not affect a significant volume of aircraft and therefore, it is determined they will not have a substantial adverse effect on en route VFR flight operations.

The proposed structures would be published on sectional aeronautical charts and obstruction marked/lighted to make them more conspicuous to airmen should circumnavigation be necessary.

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

Therefore, it is determined that the proposed structures 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 providing the conditions set forth in this determination are met.

