U.S. Department
of Transportation
**Federal Aviation
Administration**

800 Independence Ave., S.W.
Washington, D.C. 20591

June 23, 2015

Exemption No. 11868
Regulatory Docket No. FAA–2015–0626

Mr. Michael E. Sievers
Hunton & Williams LLP
Riverfront Plaza, East Tower
951 East Byrd Street
Richmond, VA 23219-4074

Dear Mr. Sievers:

This letter is to inform you that we have granted your request for exemption. It transmits our decision, explains its basis, and gives you the conditions and limitations of the exemption, including the date it ends.

By letter dated March 11, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Duke Energy Business Services, LLC (hereinafter petitioner or operator) for an exemption. The exemption would allow the petitioner to operate an unmanned aircraft system (UAS) to conduct inspections of transmission and distribution lines, vegetation, coal ash ponds, boilers, stacks, absorbers, and solar arrays.

See Appendix A for the petition submitted to the FAA describing the proposed operations and the regulations that the petitioner seeks an exemption.

The FAA has determined that good cause exists for not publishing a summary of the petition in the Federal Register because the requested exemption would not set a precedent, and any delay in acting on this petition would be detrimental to the petitioner.

Airworthiness Certification

The UAS proposed by the petitioner is an AeroVironment Qube.

The petitioner requested relief from 14 CFR part 21, *Certification procedures for products and parts, Subpart H—Airworthiness Certificates*. In accordance with the statutory criteria

provided in Section 333 of Public Law 112−95 in reference to 49 U.S.C. § 44704, and in consideration of the size, weight, speed, and limited operating area associated with the aircraft and its operation, the Secretary of Transportation has determined that this aircraft meets the conditions of Section 333. Therefore, the FAA finds that the requested relief from 14 CFR part 21, *Certification procedures for products and parts, Subpart H—Airworthiness Certificates*, and any associated noise certification and testing requirements of part 36, is not necessary.

The Basis for Our Decision

You have requested to use a UAS for aerial data collection. The FAA has issued grants of exemption in circumstances similar in all material respects to those presented in your petition. In Grants of Exemption Nos. 11062 to Astraeus Aerial (*see* Docket No. FAA−2014−0352), 11109 to Clayco, Inc. (*see* Docket No. FAA−2014−0507), 11112 to VDOS Global, LLC (*see* Docket No. FAA−2014−0382), and 11213 to Aeryon Labs, Inc. (*see* Docket No. FAA−2014−0642), the FAA found that the enhanced safety achieved using an unmanned aircraft (UA) with the specifications described by the petitioner and carrying no passengers or crew, rather than a manned aircraft of significantly greater proportions, carrying crew in addition to flammable fuel, gives the FAA good cause to find that the UAS operation enabled by this exemption is in the public interest.

Having reviewed your reasons for requesting an exemption, I find that—

- They are similar in all material respects to relief previously requested in Grant of Exemption Nos. 11062, 11109, 11112, and 11213;
- The reasons stated by the FAA for granting Exemption Nos. 11062, 11109, 11112, and 11213 also apply to the situation you present; and
- A grant of exemption is in the public interest.

Our Decision

In consideration of the foregoing, I find that a grant of exemption is in the public interest. Therefore, pursuant to the authority contained in 49 U.S.C. 106(f), 40113, and 44701, delegated to me by the Administrator, Duke Energy Business Services, LLC is granted an exemption from 14 CFR §§ 61.23(a) and (c), 61.101(e)(4) and (5), 61.113(a), 61.315(a), 91.7(a), 91.119(c), 91.121, 91.151(a)(1), 91.405(a), 91.407(a)(1), 91.409(a)(1) and (2), and 91.417(a) and (b), to the extent necessary to allow the petitioner to operate a UAS to perform aerial data collection. This exemption is subject to the conditions and limitations listed below.

Conditions and Limitations

In this grant of exemption, Duke Energy Business Services, LLC is hereafter referred to as the operator.

Failure to comply with any of the conditions and limitations of this grant of exemption will be grounds for the immediate suspension or rescission of this exemption.

1. Operations authorized by this grant of exemption are limited to the AeroVironment Qube when weighing less than 55 pounds including payload. Proposed operations of any other aircraft will require a new petition or a petition to amend this exemption.

2. Operations for the purpose of closed-set motion picture and television filming are not permitted.

3. The UA may not be operated at a speed exceeding 87 knots (100 miles per hour). The exemption holder may use either groundspeed or calibrated airspeed to determine compliance with the 87 knot speed restriction. In no case will the UA be operated at airspeeds greater than the maximum UA operating airspeed recommended by the aircraft manufacturer.

4. The UA must be operated at an altitude of no more than 400 feet above ground level (AGL). Altitude must be reported in feet AGL.

5. The UA must be operated within visual line of sight (VLOS) of the PIC at all times. This requires the PIC to be able to use human vision unaided by any device other than corrective lenses, as specified on the PIC's FAA-issued airman medical certificate or U.S. driver's license.

6. All operations must utilize a visual observer (VO). The UA must be operated within the visual line of sight (VLOS) of the PIC and VO at all times. The VO may be used to satisfy the VLOS requirement as long as the PIC always maintains VLOS capability. The VO and PIC must be able to communicate verbally at all times; electronic messaging or texting is not permitted during flight operations. The PIC must be designated before the flight and cannot transfer his or her designation for the duration of the flight. The PIC must ensure that the VO can perform the duties required of the VO.

7. This exemption and all documents needed to operate the UAS and conduct its operations in accordance with the conditions and limitations stated in this grant of exemption, are hereinafter referred to as the operating documents. The operating documents must be accessible during UAS operations and made available to the Administrator upon request. If a discrepancy exists between the conditions and limitations in this exemption and the procedures outlined in the operating documents, the conditions and limitations herein take precedence and must be followed. Otherwise, the operator must follow the procedures as outlined in its operating documents. The operator may update or revise its operating documents. It is the operator's responsibility to track such revisions and present updated and revised

documents to the Administrator or any law enforcement official upon request. The operator must also present updated and revised documents if it petitions for extension or amendment to this grant of exemption. If the operator determines that any update or revision would affect the basis upon which the FAA granted this exemption, then the operator must petition for an amendment to its grant of exemption. The FAA's UAS Integration Office (AFS−80) may be contacted if questions arise regarding updates or revisions to the operating documents.

8. Any UAS that has undergone maintenance or alterations that affect the UAS operation or flight characteristics, e.g., replacement of a flight critical component, must undergo a functional test flight prior to conducting further operations under this exemption. Functional test flights may only be conducted by a PIC with a VO and must remain at least 500 feet from other people. The functional test flight must be conducted in such a manner so as to not pose an undue hazard to persons and property.

9. The operator is responsible for maintaining and inspecting the UAS to ensure that it is in a condition for safe operation.

10. Prior to each flight, the PIC must conduct a pre-flight inspection and determine the UAS is in a condition for safe flight. The pre-flight inspection must account for all potential discrepancies, e.g., inoperable components, items, or equipment. If the inspection reveals a condition that affects the safe operation of the UAS, the aircraft is prohibited from operating until the necessary maintenance has been performed and the UAS is found to be in a condition for safe flight.

11. The operator must follow the UAS manufacturer's maintenance, overhaul, replacement, inspection, and life limit requirements for the aircraft and aircraft components.

12. Each UAS operated under this exemption must comply with all manufacturer safety bulletins.

13. Under this grant of exemption, a PIC must hold either an airline transport, commercial, private, recreational, or sport pilot certificate. The PIC must also hold a current FAA airman medical certificate or a valid U.S. driver's license issued by a state, the District of Columbia, Puerto Rico, a territory, a possession, or the Federal Government. The PIC must also meet the flight review requirements specified in 14 CFR § 61.56 in an aircraft in which the PIC is rated on his or her pilot certificate.

14. The operator may not permit any PIC to operate unless the PIC demonstrates the ability to safely operate the UAS in a manner consistent with how the UAS will be operated under this exemption, including evasive and emergency maneuvers and maintaining appropriate distances from persons, vessels, vehicles and structures. PIC qualification flight hours and currency must be logged in a manner consistent with

14 CFR § 61.51(b). Flights for the purposes of training the operator's PICs and VOs (training, proficiency, and experience-building) and determining the PIC's ability to safely operate the UAS in a manner consistent with how the UAS will be operated under this exemption are permitted under the terms of this exemption. However, training operations may only be conducted during dedicated training sessions. During training, proficiency, and experience-building flights, all persons not essential for flight operations are considered nonparticipants, and the PIC must operate the UA with appropriate distance from nonparticipants in accordance with 14 CFR § 91.119.

15. UAS operations may not be conducted during night, as defined in 14 CFR § 1.1. All operations must be conducted under visual meteorological conditions (VMC). Flights under special visual flight rules (SVFR) are not authorized.

16. The UA may not operate within 5 nautical miles of an airport reference point (ARP) as denoted in the current FAA Airport/Facility Directory (AFD) or for airports not denoted with an ARP, the center of the airport symbol as denoted on the current FAA-published aeronautical chart, unless a letter of agreement with that airport's management is obtained or otherwise permitted by a COA issued to the exemption holder. The letter of agreement with the airport management must be made available to the Administrator or any law enforcement official upon request.

17. The UA may not be operated less than 500 feet below or less than 2,000 feet horizontally from a cloud or when visibility is less than 3 statute miles from the PIC.

18. If the UAS loses communications or loses its GPS signal, the UA must return to a pre-determined location within the private or controlled-access property.

19. The PIC must abort the flight in the event of unpredicted obstacles or emergencies.

20. The PIC is prohibited from beginning a flight unless (considering wind and forecast weather conditions) there is enough available power for the UA to conduct the intended operation and to operate after that for at least 5 minutes or with the reserve power recommended by the manufacturer if greater.

21. Air Traffic Organization (ATO) Certificate of Waiver or Authorization (COA). All operations shall be conducted in accordance with an ATO-issued COA. The exemption holder may apply for a new or amended COA if it intends to conduct operations that cannot be conducted under the terms of the attached COA.

22. All aircraft operated in accordance with this exemption must be identified by serial number, registered in accordance with 14 CFR part 47, and have identification (N−Number) markings in accordance with 14 CFR part 45, Subpart C. Markings must be as large as practicable.

23. Documents used by the operator to ensure the safe operation and flight of the UAS and any documents required under 14 CFR §§ 91.9 and 91.203 must be available to the PIC at the Ground Control Station of the UAS any time the aircraft is operating. These documents must be made available to the Administrator or any law enforcement official upon request.

24. The UA must remain clear and give way to all manned aviation operations and activities at all times.

25. The UAS may not be operated by the PIC from any moving device or vehicle.

26. All Flight operations must be conducted at least 500 feet from all nonparticipating persons, vessels, vehicles, and structures unless:
    a. Barriers or structures are present that sufficiently protect nonparticipating persons from the UA and/or debris in the event of an accident. The operator must ensure that nonparticipating persons remain under such protection. If a situation arises where nonparticipating persons leave such protection and are within 500 feet of the UA, flight operations must cease immediately in a manner ensuring the safety of nonparticipating persons; and
    b. The owner/controller of any vessels, vehicles or structures has granted permission for operating closer to those objects and the PIC has made a safety assessment of the risk of operating closer to those objects and determined that it does not present an undue hazard.

    The PIC, VO, operator trainees or essential persons are not considered nonparticipating persons under this exemption.

27. All operations shall be conducted over private or controlled-access property with permission from the property owner/controller or authorized representative. Permission from property owner/controller or authorized representative will be obtained for each flight to be conducted.

28. Any incident, accident, or flight operation that transgresses the lateral or vertical boundaries of the operational area as defined by the applicable COA must be reported to the FAA's UAS Integration Office (AFS−80) within 24 hours. Accidents must be reported to the National Transportation Safety Board (NTSB) per instructions contained on the NTSB Web site: www.ntsb.gov.

If this exemption permits operations for the purpose of closed-set motion picture and television filming and production, the following additional conditions and limitations apply.

29. The operator must have a motion picture and television operations manual (MPTOM) as documented in this grant of exemption.

30. At least 3 days before aerial filming, the operator of the UAS affected by this exemption must submit a written Plan of Activities to the local Flight Standards District Office (FSDO) with jurisdiction over the area of proposed filming. The 3-day notification may be waived with the concurrence of the FSDO. The plan of activities must include at least the following:
    a. Dates and times for all flights;
    b. Name and phone number of the operator for the UAS aerial filming conducted under this grant of exemption;
    c. Name and phone number of the person responsible for the on-scene operation of the UAS;
    d. Make, model, and serial or N−Number of UAS to be used;
    e. Name and certificate number of UAS PICs involved in the aerial filming;
    f. A statement that the operator has obtained permission from property owners and/or local officials to conduct the filming production event; the list of those who gave permission must be made available to the inspector upon request;
    g. Signature of exemption holder or representative; and
    h. A description of the flight activity, including maps or diagrams of any area, city, town, county, and/or state over which filming will be conducted and the altitudes essential to accomplish the operation.

31. Flight operations may be conducted closer than 500 feet from participating persons consenting to be involved and necessary for the filming production, as specified in the exemption holder's MPTOM.

Unless otherwise specified in this grant of exemption, the UAS, the UAS PIC, and the UAS operations must comply with all applicable parts of 14 CFR including, but not limited to, parts 45, 47, 61, and 91.

This exemption terminates on June 30, 2017, unless sooner superseded or rescinded.

Sincerely,

/s/
John S. Duncan
Director, Flight Standards Service

Enclosures

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March 11, 2015

FILE NO: 34085.000112

VIA ELECTRONIC SUBMISSION
AND FEDERAL EXPRESS

U.S. Department of Transportation, Docket Operations
West Building Ground Floor, Room W12-140
1200 New Jersey Avenue, S.E.
Washington, D.C. 20590

Re: Petition for Exemption Under § 333 of the FAA Modernization and Reform Act and Part 11 of the Federal Aviation Regulations

Dear Sir or Madam:

Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 ("FMRA"), 49 U.S.C. § 44701, and 14 C.F.R. Part 11, Duke Energy Business Services, LLC ("DEBS" or "Petitioner"), a subsidiary of Duke Energy Corporation, a Delaware corporation ("Duke Energy"), hereby petitions for exemption in order to operate certain small unmanned aircraft systems ("sUAS")[1] as described in this petition. Duke Energy desires to research the efficacy and efficiency of using sUAS to perform inspections of transmission and distribution lines, vegetation, coal ash ponds, boilers, stacks, absorbers, and solar arrays, all of which are presently conducted by manned aerial or ground-based methods. Duke Energy anticipates that the use of sUAS offers a means to conduct the foregoing inspections in a safer, faster, and more cost effective manner.

Consistent with the safety-conscious and deliberative ethos of Duke Energy and each of its affiliates and subsidiaries, Petitioner proposes to conduct all sUAS operations contemplated by this petition fully within the access-controlled fence-line of the Marshall Steam Station. This facility, which is owned by Duke Energy Carolinas LLC, is located in a sparsely populated area of North Carolina. The sUAS operations also will be conducted by licensed

[1] For the purposes of this petition, "sUAS" shall be used to specifically refer to "small unmanned aircraft systems," and "UAS" shall be used to refer to the broader category of "unmanned aircraft systems," which includes but is not limited to sUAS.

and trained pilots and in strict accordance with comprehensive safety and security conditions, as more fully described in this petition.

As described further below, the proposed sUAS operations qualify for exemption under Section 333 of the FMRA, and the proposed limitations and conditions on sUAS operations set forth herein will ensure a level of safety at least as great as that which would result from compliance with the specific Federal Aviation Regulations from which exemption is sought. Accordingly, this petition offers an opportunity to further the objective of integrating unmanned aircraft systems into the national airspace, as mandated by the FMRA.

Table of Contents

I. Identity and Description of Petitioner and Petitioner Affiliates

A. Name and Address of Petitioner

The name and mailing address of the Petitioner are:

Duke Energy Business Services, LLC
Attention: Jacob Velky
550 South Tryon Street
DEC 15A
Charlotte, North Carolina 28202
Tel: (704) 382-2115

All communications in regard to this petition should be sent both to the Petitioner contact named immediately above and to the undersigned, Petitioner's outside counsel, at the address set forth in the letterhead of this petition.

B. Duke Energy Carolinas, LLC

Duke Energy Carolinas, LLC, is the owner and operator of the Marshall Steam Station where the sUAS operations covered by this petition will take place. Duke Energy Carolinas, LLC, is a regulated utility of Duke Energy Corporation. Duke Energy Carolinas, LLC generates, transmits, distributes and sells electricity in central and western North Carolina and western South Carolina. Its service area covers 24,000 square miles, and it supplies electric services to a combined 2.4 million residential, general service and industrial customers in North and South Carolina.

C. Duke Energy Business Services, LLC

Duke Energy Business Services, LLC is a management services company in the Duke Energy Corporation family of companies and provides management services to all regulated utilities of Duke Energy Corporation. In addition to providing such services as Insurance and Information Technology to the Duke Energy Corporation regulated utilities, Duke Energy Business Services, LLC is also home to the corporate aviation department.

The Duke Energy corporate aviation department has been in operation since 1953 with no incidents or accidents. It currently operates nine aircraft with a staff of 37 people. The aviation department is a member of the National Business Aircraft Association (NBAA) and

is International Standard - Business Aircraft Operations (IS-BAO) registered through the International Business Aircraft Council (IBAC). As a part of this highly regarded industry standard, the department has a robust Safety Management System (SMS) that identifies and reduces flight risks. The proposed sUAS has undergone a thorough evaluation and with a change management plan in place, it will become a fully functioning asset within the Duke Energy aviation department.

II. Statutory and Regulatory Authority to Grant Petition for Exemption

A. Section 333 of the FAA Modernization and Reform Act of 2012

Section 333(a) of the FMRA provides that "the Secretary of Transportation shall determine if certain unmanned aircraft systems may operate safely in the national airspace before completion of the plan and rulemaking required by section 332 of this Act[,]"[2] As part of that assessment, the Secretary is directed to determine "which types of unmanned aircraft systems, if any, as a result of their size, weight, speed, operational capability, proximity to airports and populated areas, and operation within visual line of sight do not create a hazard to users of the national airspace system or the public or pose a threat to national security," as well as whether an airworthiness certification is required for any such unmanned aircraft systems.[3] Finally, if the Secretary determines that certain unmanned aircraft system may operate safely in the national airspace, Section 333(c) further mandates that the Secretary "shall establish requirements for the safe operation of such aircraft systems."[4] Accordingly, the Secretary is *required* by law to make an initial determination about the potential for safe UAS operations and if the Secretary's determination is in the affirmative, then the Secretary is further *required* by law to establish the parameters for such safe UAS operations. As recognized by the FAA, Section 333 thus provides the Secretary, acting through the FAA, "flexibility for authorizing safe civil operations [of certain unmanned aircraft systems] in the NAS" on a case-by-case basis.[5]

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[2] FMRA § 333(a).
[3] FMRA § 333(b).
[4] FMRA § 333(c).
[5] *See* FAA Home – Unmanned Aircraft Systems – Key Initiatives – Section 333; http://www.faa.gov/uas/legislative_programs/section_333/ (last visited Dec. 8, 2014).

B. 49 U.S.C. §§ 40109 and 44701

The FAA Administrator is authorized by several statutory provisions to issue exemptions in appropriate circumstances from the regulations prescribed in otherwise carrying out the requirements of applicable aviation law. For example, Section 40109(b) provides that the "Administrator...may grant an exemption from a regulation prescribed in carrying out sections 40103(b)(1) and (2), 40119, 44901, 44903, 44906, and 44935-44937 of this title *when the Administrator decides the exemption is in the public interest.*"[6] Similarly, Section 44701(f) states that the Administrator "may grant an exemption from a requirement of a regulation prescribed under subsection (a) or (b) of this section or any of sections 44702-44716 of this title *if the Administrator finds the exemption is in the public interest.*"[7]

C. 14 C.F.R. Part 11

Pursuant to existing FAA regulations, a party may seek relief from current regulations set forth in Title 14 of the Code of Federal Regulations by submitting a petition for exemption to the FAA.[8] The required contents of such a petition for exemption are set forth in 14 C.F.R. § 11.81. Among other technical requirements, the petition must contain (i) the specific section(s) of 14 C.F.R. from which exemption is being sought, (ii) the extent of and reason why relief is sought, (iii) an explanation of how granting the exemption would benefit the public as a whole (i.e., why it is in the public interest), and (iv) an explanation of how an equivalent or greater level of safety will be achieved even with the grant of the exemption (i.e., how the exemption would not adversely affect safety).[9]

III. Petitioner's Proposed Aircraft and Operations

All sUAS operations proposed under this petition will be conducted under the auspices of the Duke Energy aviation department in accordance with the Supplement to the Duke Energy Flight Operations Manual for Small Unmanned Aircraft (such Supplement, the "Duke sUAS FOM," and such Flight Operations Manual, the "Duke FOM"),[10] and the following specific terms, conditions and requirements.

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[6] 49 U.S.C. § 40109(b) (emphasis added).
[7] 49 U.S.C. § 44701(f) (emphasis added).
[8] 14 C.F.R. § 11.61.
[9] 14 C.F.R. § 11.81.
[10] Confidential copies of these documents are being submitted in support of this petition as "Confidential Exhibit 1" and "Confidential Exhibit 2," respectively.

A. The Unmanned Aircraft System

1. Overview of the sUAS (Qube by AeroVironment)

Duke Energy seeks authorization in this petition to operate the Qube by AeroVironment, a rugged and reliable sUAS that is comprised of a vertical takeoff and landing ("VTOL") air vehicle with high resolution video camera, payload, and associated ground control station. The ground control station features an intuitive touchscreen tablet controller that enables position-hold (using GPS), altitude hold (using barometric sensors), and geofencing throughout the flight. Geofencing prohibits flight of the air vehicle beyond a user-defined radius, centered at the launch location, while altitude limit prohibits flight of the air vehicle above a user-defined maximum altitude. Duke Energy will program a geofencing "box" for every flight that will ensure the sUAS does not fly into unauthorized airspace. The Qube has a 40 minute maximum flight time (with payload) and numerous built in alarms and safety features. AeroVironment is a technology solutions provider that designs, develops, produces and supports an advanced portfolio of UAS and electric transportation solutions. Agencies of the U.S. Department of Defense and allied military services use the company's battery-powered, hand-launched unmanned aircraft systems extensively to provide situational awareness to tactical operating units through real-time, airborne reconnaissance, surveillance and communication.

2. Additional Operational and Design Details

The Qube measures three feet long and weighs approximately 5.5 pounds. It has hover and stare capabilities and dual high resolution color and thermal cameras. Built in safety features include: loss of link return home, low battery automatic recovery, altitude and range limits, built in tests, and automated preflight. An automated system built-in test is conducted prior to each flight and during landing the air vehicle detects touchdown and automatically shuts off propulsion motors. In addition, the Qube contains a patent pending aircraft battery design and high-efficiency propellers. For additional operational and design details please see the Qube Small Unmanned Aircraft System Operator's Manual (the "Qube Operator's Manual").[11]

3. System Inspection and Maintenance Information

[11] A confidential copy of the Qube Operator's Manual is being submitted in support of this petition as "Confidential Exhibit 3."

Please see the Qube Operator's Manual for more information regarding pre-flight, post-flight, and scheduled maintenance.

B. Pilot-in-Command and Observer Duties and Qualifications

The Pilot-in-Command (PIC) will hold (at a minimum) a private's pilot's license and a third class medical certificate, and be responsible for pre and post flight inspections, logging of flight data, the overall safety of the flight operation, and the operation of the sUAS in accordance with the conditions of any exemption granted by the FAA pursuant to this petition. The visual observer (VO) will remain within speaking distance of the PIC and visually monitor the sUAS at all times.

C. Operations Parameters

1. Overall Site Location

Marshall Steam Station is located in Catawba County, North Carolina at approximately 35°35'51"N, 80°57'53"W. The approximate boundaries of the property are depicted in red on Attachment 1 to this petition.

2. Inspection-Specific Locations

While Petitioner is seeking approval to conduct sUAS operations anywhere within the property line of the Marshall Steam Station, but otherwise in accordance with the conditions of this petition, for illustrative purposes Attachment 1 to this petition depicts portions of the Marshall Steam Station property anticipated to be the subject of the specified types of aerial inspection.

3. Flight Conditions

a) General Requirements

Petitioner will obtain an Air Traffic Organization (ATO) issued Certificate of Waiver or Authorization (COA) in order to coordinate its efforts through Air Traffic Control (ATC). In addition, Petitioner will request a Notice to Airmen (NOTAM) no more than 72 hours in advance, but not less than 48 hours prior to any operation, and flights will not be conducted within 5 nautical miles of an airport reference point as denoted on a current FAA-published aeronautical chart unless a letter of agreement has been obtained from the airport's management or it is concluded that such airport is no longer operational.

b) Pre-Flight Routines

Pre-flight inspections and procedures will be conducted in accordance with the attached Qube Operator's Manual.

c) Flight Operations and Limitations

The Qube will be flown within visual line of sight (VLOS) in visual metrological conditions (VMC) and Duke Energy will not operate the aircraft less than 500 feet below or 2,000 feet horizontally from a cloud or when visibility is less than 3 statute miles from the PIC. In addition, the aircraft will not be flown over 400 feet above ground level (AGL) and Duke Energy will comply with the OEM's policies, procedures and limitations listed in the Qube Operator's Manual. If the PIC encounters unpredicted obstacles or emergencies the flight will be aborted in accordance with the Qube Operator's Manual and the aircraft will not be flown within 500 feet of nonparticipating persons, vessels, vehicles, or structures. Operations within 500 feet of unoccupied vessels, vehicles or structures will only be conducted if permission has been granted by the owner/controller.

d) Post-Flight Routines

Post-flight inspections and procedures will be conducted in accordance with the attached Qube Operator's Manual.

IV. Section 333 Determination and Need for Relief from 14 CFR Part 21

Based on the description above of the design and capabilities of the Qube, including its size, weight speed, and limited area of proposed operations, the sUAS operations Petitioner proposes to conduct pursuant to this petition will not pose a threat to users of the NAS, the general public, or to national security. Petitioner thus requests that the Secretary determine, pursuant to authority granted under Section 333, that this aircraft does not require a certification of air worthiness under 14 CFR Part 21, or any associated noise certification under 14 CFR Part 36, in order to operate in the NAS in accordance with this petition. Several Grants of Exemption have stated that similar aircraft did not require such an airworthiness certification, including Exemptions 11109, 11110, 11111, 11112, and 11114.

V. Requested Exemptions from Federal Aviation Regulations

Petitioner requests an exemption from certain provisions of the Federal Aviation Regulations set out at Title 14 of the Code of Federal Regulations for the sUAS operations described in this petition in order to conduct research on the efficacy and efficiency of using sUAS to perform inspections of transmission and distribution lines, vegetation, coal ash ponds, boilers, stacks, absorbers, and solar arrays, all of which are presently conducted by manned aerial or ground-based methods. Exemptions are requested from provisions within Parts 21(H), 47, and 49; and Sections 45.23; 91.9(c); 61.3(d); 61.31(d); 61.113(a) & (b); 61.133(a); 91.7(a); 91.9(b)(2); 91.105; 91.109; 91.119; 91.121; 91.151(a); 91.203(a) & (b); 91.405(a) & (d); 91.407(a)(1); 91.409(a)(1) and (2); 91.417(a) & (b);and 91.103(b)(2) of Title 14, Code of Federal Regulations. Petitioner addresses each relevant regulation below and provides a basis for requesting an exemption.

A. 14 C.F.R. Part 21 (H) (Airworthiness Certification)

14 C.F.R Part 21 (H) sets forth the requirements for airworthiness certificates that must be obtained and carried under 14 C.F.R. Part 91.203 (a) & (b). As mentioned above in Section IV, Petitioner believes based on past Grants of Exemption that an airworthiness certificate is not required for this sUAS. However, all of the safety features described herein demonstrate that the proposed operation will be just as safe as those conducted by manned aircraft, even if an airworthiness certificate is found to be required. The attached Qube Operator's Manual provides a detailed explanation of the Qube's safety features, capabilities, and standard procedures.

B. 14 C.F.R. 45.23 and 91.9 (c) (Marking of the Aircraft)

14 C.F.R. Section 45.23 requires that all aircraft display a capital letter "N" followed by a registration number. In addition, when the number is displayed on limited, restricted, light-sport category, or experimental or provisionally certified aircraft, the operator must display near each entrance to the cabin, cockpit, or pilot station, in letters between 2 and 6 inches high, the applicable words describing such category of aircraft. Section 91.9 (c) prohibits the operation of U.S.-registered civil aircraft unless the identification requirements of Section 45.23 are followed.

The Qube does not have any entrances to a cabin or cockpit where the registration number can be displayed. Also, it does not have sufficient space to bear the registration number in 2 inch high lettering. The quadcopter will be marked with a serial number and the make and model

of aircraft. Additional information can be displayed or marked on the aircraft, but not in the letter size required by Section 45.23. The Qube will still provide sufficient detail for close-up identification purposes and the FAA has granted previous exemptions to this regulation or found that an exemption was not necessary under Exemptions 8738, 10167, 10167A, 10700, 11109, 11110, 11111, 11112, and 11114.

C. 14 C.F.R. Part 47 (Aircraft Registration) and Part 49 (Recordation of Aircraft Title and Security Documents)

14 C.F.R. Part 47 sets forth various aircraft registration requirements regarding ownership and identification of the aircraft and Part 49 covers recordation of title and conveyances.

Petitioner does not plan to acquire a particular sUAS until after approval for the operation has been obtained under this petition, but Petitioner will comply with all registration requirements prior to initiation of operations.

D. 14 C.F.R. Section 61.3 (d) (Requirement of Certificate for Flight Instruction)

This regulation states that only those instructors with a flight instructor certificate from the FAA may qualify other pilots for solo flight. However, the additional skills required to obtain a flight instructor certificate for standard aircraft are generally not applicable to training unmanned pilots in the operation of sUAS. The training necessary to master the operation of the Qube need not be as extensive as the training for manned aircraft due to the automated features of the quadcopter, the built-in failsafe devices, and the lack of a crew or heavy payload. Prospective Qube pilots will already have sufficient aeronautical knowledge to operate the aircraft because of their private pilot's license and instructors will be well trained in this particular sUAS. Therefore, an exemption to this regulation is appropriate because Qube pilots will have a level of training with respect to sUAS that is equivalent to the training required by those who operate manned aircraft.

E. 14 C.F.R. Section 61.31 (d) (Aircraft category, class, and type ratings)

This section requires the pilot in command of an aircraft to hold the appropriate rating for the aircraft to be flown or receive an endorsement for solo flight in the aircraft by an authorized instructor. Pilots are therefore limited to the types of aircraft for which they possess a license. However, sUAS are unique forms of aircraft and the FAA does not issue licenses specifically for these devices so this section would not apply to the proposed operations. Exempting the

Qube from this section would not adversely impact safety because the pilots operating under this proposal would receive special training on the Qube and all flights would take place on the training facility under controlled conditions. An exemption from this provision is appropriate based on the foregoing information because an equivalent level of safety can be achieved.

F. 14 C.F.R. Section 61.113 (a) & (b); 14 C.F.R. Section 61.133 (a) (Private Pilot Restrictions on Compensation)

These regulations prohibit private pilots from operating an aircraft for commercial purposes except under certain limited circumstances. In order to pilot an aircraft for compensation the operator must possess a commercial pilot certificate and meet the requirements set forth in Section 61.133. The Petitioner seeks an exemption from these regulations so that an operator with a private pilot's license can conduct operations with the Qube.

sUAS are a unique type of aircraft and the additional training required for a commercial pilot certificate would not necessarily be relevant to the operation of such devices. The commercial designation is applicable to manned aircraft, but the Qube does not carry personnel or the property of a third party. A specialized training program conducted in accordance with any manufacturer-recommended training guidelines would provide the additional knowledge and experience required to safely pilot the Qube. In addition, a visual observer will be present during all flight operations. Petitioner will assure that the operator of the sUAS will have completed sufficient training to ensure the safe operation of the aircraft under the proposed conditions. Petitioner anticipates that such a training program would involve: (a) at least 25 hours of total flight time as a UAS rotorcraft pilot with at least 10 hours of multi-rotor time, (b) at least 5 hours of flight time with the Qube, and (c) a currency requirement of 3 take-offs and landings in the preceding 90 days. Completion of a specialized training program in operation of this sUAS will ensure that an equivalent level of safety is obtained. Moreover, all flights will be pre-planned, aided by the Qube's autopilot features, and conducted in a controlled environment. The FAA has granted similar exemptions to this regulation under Exemptions 11109, 11110, and 11062.

G. 14 C.F.R. Section 91.7 (a) (Airworthiness Requirement)

This regulation states that no person may operate a civil aircraft unless it is in an airworthy condition. Since the Petitioner intends to operate the sUAS without an airworthiness certificate, there will be no recognized FAA standard for determining airworthiness. The FAA has ruled that similar craft were able to satisfy this airworthiness requirement through

compliance with all of the procedures and safeguards described in their respective flight manuals under Exemptions 11109 and 11110. The Qube's airworthiness and safety have been discussed above and Petitioner will comply with all relevant requirements in the Qube Operator's Manual, Duke FOM, and Duke sUAS FOM. Therefore, Petitioner seeks relief from this regulation and requests that the policies and procedures outlined in the Duke sUAS FOM serve as the aforementioned standard.

H. 14 C.F.R. Section 91.9 (b)(2) (Flight Manual on Aircraft)

This regulation requires a flight manual to be carried in the aircraft. Based on the FAA Memorandum "Interpretation regarding whether certain required documents may be kept at an UA's control station," dated August 8, 2014, the Petitioner is not required to seek relief from this regulation. However, if this regulation is found to apply, the Qube is unable to carry a flight manual due to the size and weight restrictions of the aircraft. In addition, the pilot is not located in the aircraft, but on the ground with the control system. Therefore, the Petitioner requests that the Qube operating manual be located with the pilot where it can be easily stored and referenced if needed. The FAA has granted similar exemptions to this regulation under Exemption Nos. 8607, 8737, 8738, 9299, 9299A, 9565, 9565B, 10167, 10167A, 10602, 10700, 11109, 11111, and 11112.

I. 14 C.F.R. Section 91.105 (Crewmembers at Stations; Seatbelts)

This regulation requires flight crewmembers to remain at their stations with fastened seatbelts during takeoff and landing. In Exemption No. 11185 the FAA determined that relief from this regulation was not necessary because it did not apply to sUAS operations where crewmembers remained on the ground. The FAA reasoned that the intent of the regulation was to ensure that crewmembers were at the station where their duties could be performed. However, since the crewmembers in the previous Exemption were required to be at their assigned stations while operating the aircraft and the stations were not equipped with safety belts, the regulation did not apply.

Similarly, the PIC and VO under this petition will remain at their stations during flight operations and the Qube will not have any crewmembers aboard the aircraft during any phase of the operation. The stations will not be equipped with safety belts or shoulder harnesses. Therefore, this regulation does not apply to the Petitioner's operations. Should this regulation be found to apply, an exemption is appropriate for the above mentioned reasons.

J. 14 C.F.R. Section 91.109 (Flight Instruction)

This section requires that all civil aircraft used in flight instruction (except a manned free balloon) must have fully functioning dual controls. The Qube is remotely controlled by a single pilot through the use of a ruggedized tablet and radio transmitter and it does not have fully functioning dual controls. Flight plans can be manually controlled using the tablet's digital screen and geofences or altitude limits can be entered in advance of the flight. In addition, the Qube can hold its position or return home in the case of a lost link. Unlike traditional manned aircraft, the Qube does not require constant or instant input from the pilot or instructor in order to operate the device safely. All pilots will receive training in the Qube under controlled conditions and since the instructor and student are not located inside the aircraft, the instructor can easily assume control of the transmitter at any time. Additionally, all pilots will have at least a private pilot's license and training will be conducted during designated training sessions. Therefore, an equivalent level of safety will be achieved through the pilot training program, the automated and failsafe features of the aircraft, and the unique capabilities of radio controlled sUAS. The FAA has approved exemptions for flight training in the past with aircraft that lacked fully functional dual controls under Exemptions 11062, 9862A, 11109, and 11110.

K. 14 C.F.R. Section 91.119 (Minimum Safe Altitudes)

This regulation sets the minimum safe altitudes for aircraft operation. Generally, aircraft may not be operated lower than 500 feet above the ground, but over open water and sparsely populated areas it is permissible to fly below this threshold. Even so, aircraft are still not permitted to be operated within 500 feet of any person, vessel, vehicle, or structure.

All of the Qube's flights pursuant to this petition will be conducted under 400 feet AGL and on the Petitioner's private land. The site in question is a sparsely populated area, but the aircraft will be used to evaluate structures on the property. In addition, Petitioner's personnel may be within 500 feet of the operations. Due to these circumstances, an exemption from the 500 feet restriction is necessary.

The Petitioner is able to achieve an equivalent level of safety because of the Qube's small size, light weight, lack of combustible fuels, and automated failsafe features. In addition, all flights will be conducted over the Petitioner's property under controlled conditions. The Qube will not be flown within 500 feet of any structures or vehicles unless permission has been obtained from the owner of such structures or vehicles. Similarly, the Qube will only be flown within 500 feet of personnel if they have consented to the operation on the Petitioner's property and such proximity is operationally necessary. These operations will be safer than

equivalent inspections carried out by significantly heavier manned aircraft powered by combustible fuels. The low altitude operations conducted by the Qube will also make it less likely to encounter other conventional aircraft. The FAA has granted similar exemptions to this regulation, especially in regard to structures and vehicles, under Exemptions 11109, 11110, 11111, and 11112.

L. 14 C.F.R. Section 91.121 (Altimeter Settings)

This regulation requires the operator of an aircraft not equipped with a radio to maintain a cruising altitude by referencing an altimeter that is set to the elevation of the departure airport or an appropriate altimeter setting. An equivalent level of safety can be achieved by utilizing the Qube's onboard GPS receiver to determine its current position and navigate accordingly. Prior to flight, the operator will obtain an altitude initiation point and confirm its accuracy. The Qube pilot can also use the constantly updated GPS information to determine the aircraft's altitude and view this information on the handheld tablet. The FAA has granted a similar exemption to this regulation under Exemption 11109.

M. 14 C.F.R. Section 91.151 (a) (Fuel Requirements)

This regulation requires that an aircraft carry enough fuel to reach the first point of its intended landing and: (1) during the day have the ability to fly for at least 30 more minutes; or (2) at night have the ability to fly for at least 45 more minutes. The Qube has approximately 40 minutes of flight time on a fully charged battery. An exemption from this regulation is therefore necessary since the aircraft would not be able to maintain the required 30 minute reserve flight time unless flights were limited to 10 minutes.

An equivalent level of safety can be achieved by limiting flights to 30 minutes or 20% of battery power, whichever happens first. These restrictions, in conjunction with the Qube's battery sensor and automatic landing features, provide a high degree of safety considering that the aircraft will only be operated under controlled conditions on the Petitioner's property. The Qube has vertical takeoff and landing capabilities and does not require the same amount of landing space as most manned aircraft. In addition, the small size and weight of the Qube allows for a much safer emergency landing than traditional aircraft should the power supply become depleted. The aircraft will be flown within VLOS and the sUAS pilot will have continuous knowledge of the battery life since the Qube provides warnings for low battery voltage. The FAA has granted similar exemptions in the past under Exemptions 2689F, 5745, 10673, 10808, 11109, 11110, and 11112.

N. 14 C.F.R. Section 91.203 (a) & (b) (Display of Certificates)

This regulation requires that civil aircraft display airworthiness and registration certificates at the cabin or cockpit entrance. Based on the FAA Memorandum "Interpretation regarding whether certain required documents may be kept at an UA's control station," dated August 8, 2014, the Petitioner is not required to seek relief from this regulation. However, if this regulation is found to apply, it is not possible for the Petitioner to comply because the Qube is an unmanned aircraft and has no cockpit or cabin. Given the small size, weight, and loadbearing capabilities of the Qube, it is not practical to display these certificates in any other part of the aircraft. Furthermore, the Petitioner is seeking to operate the Qube under an exemption to the airworthiness and registration requirements. Such documents can be kept with the pilot where they can be immediately accessed. An exemption, if required, is therefore appropriate under these circumstances. The FAA has reached a similar result regarding this regulation under Exemptions 11109, 11111, 11112, and 11114.

O. 14 C.F.R. Sections 91.405 (a) & (d); 91.407 (a)(1); 91.409 (a)(1) and (2); 91.417 (a) & (b) (Maintenance Inspections and Placarding)

These regulations specify various maintenance and inspection standards, including a requirement under Section 91.405 (a) that the owner or operator of an aircraft "shall have that aircraft inspected as prescribed in subpart E of this part and shall between required inspections, except as provided in paragraph (c) of this section, have discrepancies repaired as prescribed in part 43 of this chapter." Section 91.405 (d) requires placards to be installed if listed discrepancies include inoperative instruments or equipment. Section 91.407 makes reference to maintenance requirements in Part 43 and Section 91.409 (a)(2) requires an annual inspection for the issuance of an airworthiness certificate. Section 91.417 requires the owner or operator of an aircraft to keep maintenance records of work that was completed in accordance with inspection requirements.

An exemption to these regulations is required because the above mentioned sections require an inspection either by an authorized person under 14 C.F.R. Part 43 or pursuant to the acquisition of an airworthiness certificate. The Petitioner plans to operate the Qube without an airworthiness certificate and would like to conduct its own inspections at the operator level per the attached Qube Operator's Manual. An equivalent level of safety will be achieved through pre-flight inspections, maintenance, and recordkeeping conducted in accordance with the Qube Operator's Manual. The operator will perform a visual inspection of key components, test all batteries, and keep a log of inspection and flight activities. Inspections involve pre-flight, post-flight, and scheduled maintenance requirements. Operators will be

the individuals most familiar with this type of aircraft and it would not enhance safety to have a certified mechanic conduct the inspections on a new and relatively simple sUAS system. The Qube also has the capability to automatically sense a mechanical deficiency and conduct an emergency landing. sUAS are smaller and lighter than traditional aircraft and can land almost immediately if issues arise. Given all of these elements and the fact that the aircraft will be operated in a controlled environment over the Petitioner's property, the equivalent level of safety can be achieved. The FAA has granted similar exemptions to this regulation under Exemptions 11109, 11110, and 11112.

P. 14 C.F.R. Section 91.103 (b)(2) (Preflight Action)

This regulation requires the PIC to become familiar with certain information prior to beginning a flight, including information relating to the aircraft performance and environmental conditions. Several prior Exemptions have found that relief from this regulation was not necessary because the petitioners could comply with the requirements by reviewing weather data, checking battery life, and reviewing landings, takeoff distances, and aircraft performance. Exemptions where the FAA found that relief from this regulation was not necessary include 11153, 11109, 11150, and 11138.

Should the FAA find that this regulation applies, relief would be necessary since there is no approved flight manual for the Qube. An equivalent level of safety can be achieved because prior to every flight the operator will perform a visual inspection of key components, test all batteries, and keep a log of inspection and flight activities. In addition, weather data and site specific conditions will be reviewed by the operator, a visual observer will be present during all flight operations, and the aforementioned operational requirements will remain in effect.

VI. Public Interest

Petitioner submits that the exemptions requested by this petition are in the public interest because the sUAS operations contemplated by this petition will not pose a threat to users of the NAS, the general public, or to national security, and have the potential to provide significant benefits to the employees and customers of Petitioner. Specifically, these sUAS operations will allow employees to inspect critical infrastructure without the dangers of ascending towers or working near high voltage power lines. The public interest is furthered by reducing the danger to the personnel who service utility lines and ensure the safe transmission of electrical power to thousands of customers. In addition, current inspections are often conducted with helicopters that could weigh thousands of pounds and carry many

gallons of combustible fuel. sUAS are nearly silent in flight and therefore are less likely to disturb neighboring property owners. In the rare case of a sUAS crash, no combustible liquid fuel would be onboard and the damage caused would be much less given the light weight and small size of the aircraft. Finally, sUAS operations provide a unique cost effective method of inspecting the critical components of the nation's electrical infrastructure, creating a savings that will be passed on to customers throughout the distribution area.

VII. Privacy

All flights will occur over private or controlled-access property with permission from the landowner. Any images taken will be of individuals who have consented to be filmed or otherwise have agreed to be in the area where aerial photography will take place. In addition, all flights will be monitored by the operator and a visual observer to ensure that the sUAS does not deviate from the proposed flight plan.

VIII. Federal Register Notice

Pursuant to 14 CFR Part 11, Petitioner provides the following notice in the event that the FAA determines publication is required:

Duke Energy Business Services, LLC, ("Duke") a subsidiary of Duke Energy Corporation, has filed a petition with the FAA seeking an exemption from the following rules in connection with the operation of a small unmanned aircraft system (sUAS):

14 CFR Part 21 (H); 14 CFR Part 36; 14 CFR Section 45.23; 14 CFR Section 91.9 (c); 14 CFR Part 47; 14 CFR Part 49; 14 CFR Section 61.3 (d); 14 CFR Section 61.31 (d); 14 CFR Section 61.113 (a) & (b); 14 CFR Section 61.133 (a); 14 CFR Section 91.7 (a); 14 CFR Section 91.9 (b)(2); 14 CFR Section 91.109; 14 CFR Section 91.119; 14 CFR Section 91.121; 14 CFR Section 91.151 (a); 14 CFR Section 91.203 (a) & (b); 14 CFR Section 91.405 (a) & (d); 14 CFR Section 91.407 (a)(1); 14 CFR Section 91.409 (a)(1) and (2); 14 CFR Section 91.417 (a) & (b).

Duke's proposed sUAS operations will take place on private property, under 400 feet above ground level, for less than 40 minutes at a time, and in areas where consent has been obtained from property owners and on-site personnel. The purpose of the operations is to research suitable methods of inspecting utility lines and other infrastructure for maintenance and repair functions. The use of sUAS in lieu of climbing operations or traditional aircraft will enhance

the safety of utility workers and reduce the risk to lives and property. The proposed platform, the Qube by AeroVironment, weighs less than 6 pounds, carries no combustible fuel, and is battery powered. The conditions and safety standards set forth in the petition will achieve a level of safety that is equivalent to, or higher than, the level of safety obtained by traditional aircraft under the above-mentioned regulations.

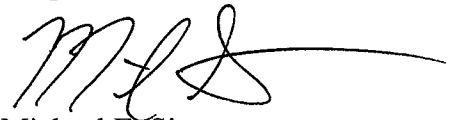
IX. Summary

Given the conditions and standards proposed above, and the proven track record of the AeroVironment Qube, Petitioner's proposed operations will not create a hazard to other aircraft in the NAS or present a threat to national security. The Qube is a light weight, battery powered, and highly sophisticated sUAS with numerous automated safety features. Its effectiveness and airworthiness have been proven through thousands of hours of safe flight time around the world. In order to achieve a level of safety equivalent to that of traditional aircraft, Petitioner has proposed conditions such as line of sight control, the presence of a visual observer, private property restrictions, reserve power levels, training programs, and notice to interested parties in the surrounding area. The requested exemptions are appropriate because sUAS provide many safety advantages over traditional aircraft and any additional risks posed by such systems have been sufficiently mitigated.

X. Prayer for Relief

Based on the foregoing information, Petitioner hereby requests an exemption from the above-listed regulations and such further relief that the FAA determines appropriate for the proposed operations.

Respectfully submitted,

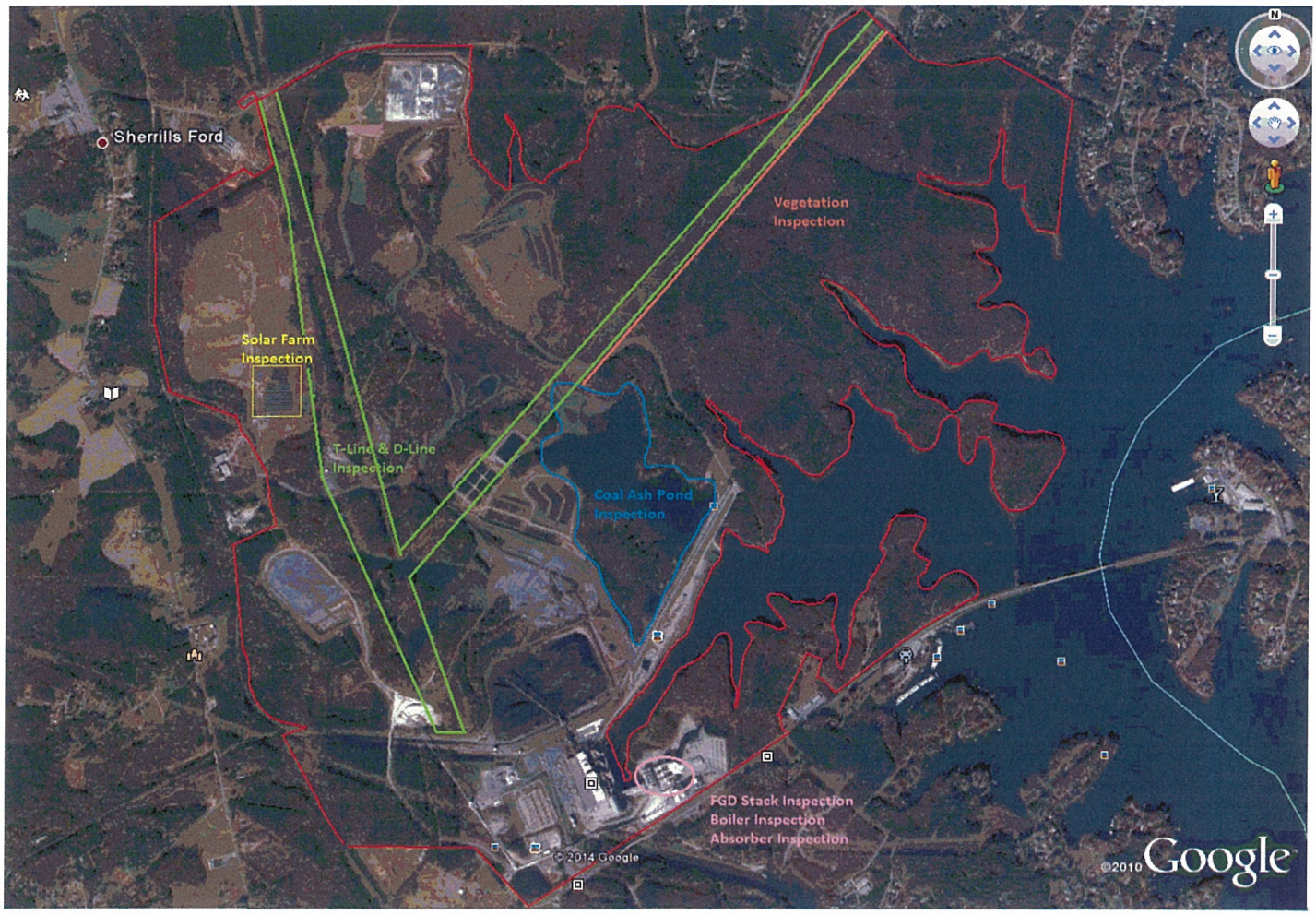


Michael E. Sievers

Attachments
cc: Clayton Morgan, Esq., Duke Energy
Mr. James Williams, FAA
Mr. Robert Pappas, FAA

HUNTON& WILLIAMS

Attachment 1



HUNTON&
WILLIAMS

Confidential Exhibit 1

Submitted Confidentially Under Separate Cover

Supplement to the Duke Energy
Flight Operations Manual for Small Unmanned Aircraft

HUNTON& WILLIAMS

Confidential Exhibit 2

Submitted Confidentially Under Separate Cover

Duke Flight Operations Manual

HUNTON& WILLIAMS

Confidential Exhibit 3

Submitted Confidentially Under Separate Cover

Qube Operator's Manual