To the attention of: **Rob Pappas**

Petition for Exemption Filed under Section 333 For UAS STEM Education Usage

Atlanta FSDO region

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For UAS STEM Education Usage

12/19/14

Requested by: S.T.E.M. Magazine Inc.
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A. STEM Magazine is an electronic monthly education magazine for teachers and students K-16 and is currently the most read STEM publication in the world, in 47 U.S. States and 37 countries. Current readership is just over 500,000 monthly, globally.

The STEM Education program uses 2 small UAS's as part of the on-campus and public STEM lecture programs in Georgia and the Southeast U.S. in direct support of workforce development and STEM careers preparation.

December issue: www.stemmagazine.com/1214.php

Wayne Carley is the primary STEM instructor with 28 years experience as a private pilot, 7 years as a flight instructor at Robins AFB in Georgia, 2,200 UAS flight hours and 9 years as a STEM educator.

STEM Magazine would like to participate with the Atlanta FAA and National FAA in developing STEM education programs, literary content and public awareness regarding STEM in general and UAS usage in the U.S.

1. **UAS overview and details**
    - Use of 2 UAS demonstration aircraft (Phantom II and S-800) weighing less than 15 lbs. each.
    - Flight time of each aircraft limited to 9-10 minutes due to battery limitation.
    - Decibels: Each UAS has been monitored at 40-50 decibels at 50 ft.
    - Built in safety features for both aircraft include:
        - GPS stationary positioning within 5 ft. of GPS location
        - Manuel override to all features as necessary
        - Limited flight time of 8 minutes for safety
        - Not to exceed 200 ft. AGL
        - Normal use is 10-50 miles from nearest Class B airspace
        - All program flights are line of site, not to exceed 50 yards
        - On-board auto landing feature at site of takeoff if power levels suddenly drop, wind conditions exceed 15 knots or unexpected termination of flight is necessary.
        - Live camera download for remote monitoring and photography

2. **Pre – Flight / inspections / maintenance and repair**

    - Since these to UAS's are expensive to replace, pre-flight inspection of all components occurs well before arrival at location. A short test flight to 15 ft. AGL is done to confirm controls and safety features are working properly.
    - Maintenance is as necessary and consists of checking battery levels, electronic connections and cleanliness of all components.
    - Repairs are rare, but done immediately upon discovery of physical or electronic flaws. These are fragile aircraft and must never be flown unless in perfect condition.

3. **Radio Frequency (RF) spectrum**

    - Connections to aircraft are by wireless Bluetooth connection directly to personal ipad, iphone or aircraft controller and have a limited

range of roughly 200 yards, at which point the automatic "return home" safety feature engages and the "auto land" feature is activated.
- Wayne Carley prefers to be Pilot in Command as often as possible to ensure safe control within stated flight parameters. All safety features remain available.

4. Qualifications of Pilot in Command

- Wayne Carley is the primary STEM instructor with 28 years experience as a private pilot, 7 years as a flight instructor at Robins AFB in Georgia and over 2,200 UAS flight hours.
- FAA pilots certification # 513641044 / 2/22/1985
- As lead flight instructor for the National STEM Academy, Wayne Carley has personally taught over 200,000 students since 2006.
- Wayne Carley is regarded as an expert in STEM education and a professional level UAS operator.

5. Medical Standard

- Wayne Carley has full medical coverage through USAA and participates in regular medical checkups.
- When pilot's license is current, required FAA medical exam is updated.

6. Intended UAS operation

- UAS operation will be used in conjunction the STEM Magazine education program with school STEM lecture presentations as a demonstration tool, following the above mentioned parameters.
- Usage will include personal flight time for currency of skill levels and emergency procedures as with any aircraft flight.

- On occasion, use may include the monitoring of construction sites upon request staying within above mentioned flight parameters to monitor progress and safety conditions.
- There is **never** a need to operate above or near the public as this poses unnecessary safety concerns.

7. Maximum operating speed and altitude

- Operation of UAS's is primarily vertical in nature at 1 meter per second.
- Typical altitude will be 50-200 ft. AGL
- On rare occasions, maximum altitude may be 400 ft. AGL, never to exceed 400 ft. AGL.
- Horizontal flight is limited to 50 yards if necessary at a speed of 1 meter per second.
- UAS operation will never be permitted near power lines, trees, cranes or any other obstruction that could cause harm to the UAS or property. This is an unnecessary risk for education demonstrations or other flights.

8. Characteristics of the area of intended operation

- Educational flights are conducted at unpopulated football and baseball fields, empty parking lots or public open space.
- Construction site applications will be over unpopulated site within stated flight parameters and limited to 8 minutes.
- Personal flights will be conducted in unpopulated open space.

9. Airport proximity

- There will not be a need to operate within 5 miles of an active airport.

10. Visual Line of Site

- Visual line of site will not exceed 50 yards for any reason.

11. Pre-Flight

- Since these to UAS's are expensive to replace, pre-flight inspection of all components occurs well before arrival at location. A short test flight to 15 ft. AGL is done to confirm controls and safety features are working properly.
- Visual inspection is always performed.

12. FSDOs

- The Atlanta FSDO will be notified for all planned flights.
- A record / log of each flight and its characteristics will be kept for reference.

13. NAS

- STEM Magazine and Owner/ Publisher Wayne Carley will notify the Atlanta FSDO for permissions if there is a need to enter Controlled National Air Space. Programs and projects never require an altitude above 400 ft. AGL.

I, Wayne Carley, STEM Magazine Inc. CEO and publisher state that all of the information provided above is true and accurate.

Wayne Carley

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