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

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

July 22, 2015

Exemption No. 12118
Regulatory Docket No. FAA–2015–0819

Ms. Danielle M. Rivera
CEO
Lone Star Sky Solutions, LLC
1699 Ridge Runner Court
Clarksville, TN 37042

Dear Ms. Rivera:

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 24, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Lone Star Sky Solutions, LLC (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct aerial photography, videography, surveying, and UAS training[1].

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.

[1] The petitioner requested authority to conduct UAS training. At this time, the FAA is unable to authorize UAS operations for training until a further assessment is completed. When the FAA completes its review, we will proceed accordingly and no further action will be required by the petitioner. However, the petitioner is permitted to train its own pilot in commands and visual observers in accordance with condition no. 14 and the other conditions and limitations in this exemption.

Airworthiness Certification

The UAS proposed by the petitioner are the 3D Robotics X8+ and SenseFly eBee.

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 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[2]. 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, Lone Star Sky Solutions, LLC is granted an exemption

[2] Aerial data collection includes any remote sensing and measuring by an instrument(s) aboard the UA. Examples include imagery (photography, video, infrared, etc.), electronic measurement (precision surveying, RF analysis, etc.), chemical measurement (particulate measurement, etc.), or any other gathering of data by instruments aboard the UA.

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, Lone Star Sky Solutions, 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 3D Robotics X8+ and SenseFly eBee 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 five 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 July 31, 2017, unless sooner superseded or rescinded.

Sincerely,

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

Enclosures

March 24th, 2015

Danielle M. Rivera, CEO
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U.S. Department of Transportation
Docket Management System
1200 New Jersey Ave., SE
Washington, DC 205930

Petition for Exemption Filed under Section 333 of the 2012 FAA Modernization and Reform Act
Filed via www.regulations.gov

Dear FAA UAS Exemption Review Team,

Lone Star Sky Solutions, LLC ("LSSS") is respectfully writing to request exemptions that would lead to safe and legal entry into the NAS under Section 333 of the FAA Modernization and Reform Act of 2012. A granted exemption would allow us to obtain a COA, if required, to conduct commercial operations and training described in this letter. Furthermore, it would enhance airspace safety and efficiency in our community by offering affordable aerial imagery, video, and surveying to the general public that would deter and mitigate unsafe and illegal entrance into the NAS by untrained and unlicensed UAS users.

Annex A outlines requested exemptions and applicable reasoning. Annex B briefly describes PIC training program and qualifications. Annex C outlines operations, safety considerations, and limitations. The remainder of this letter is outlined in accordance with ("IAW") the *Section 333 Guidance* document available at *FAA's Petitioning for Exemption under Section 333*.

LSSS' UAS Platforms

1. Operations will be conducted with *3D Robotics' X8+* and *SenseFly's eBee* UAS(s). Design and operational characteristics are defined within attached manuals. Recently, exemptions for the X8+ were granted to Build Imagery, BNSF Railway Company, and the eBee to Quiet Creek Corporation, amongst others, on the 11th and 12th of March. In addition, airworthiness of both platforms has been demonstrated in different projects within the United States (e.g., eBee by New Mexico State University, X8).

2. PIC(s) will be trained on and operate by strict conditions defined by the Safety Program of the Academy of Model Aeronautics, attached flight manuals, and LSSS' training program. Inspections will be conducted before each flight IAW platform's respective checklist and Annex C. Maintenance and repairs will be performed IAW 3DR or eBee user manual, at minimum, quarterly or upon failed pre- or post-flight inspections.

3. All equipment, frequencies, and payloads comply with FCC requirements and can be furnished upon request.

LSSS' PIC(s)

4. LSSS has developed a PIC training program that can be furnished upon request. Refer to Annex B for further information.

5. All PIC(s) will obtain and maintain First Aid and CPR certification. They will be able to apply basic aid in the unlikely situation that an UAS collides with personnel.

Operation of UAS

6. LSSS conducts operations to provide affordable aerial photography, video, and surveying to the general public. Refer to Annex C for a list of operations, safety considerations, and limitations.

7. The X8+ max operating speed will not exceed 15MPH and the eBee will not exceed 35MPH. Neither platform will exceed an altitude of 400 feet above ground level. Both platforms will not operate at night or in weather conditions that produce precipitation, visibility less than three miles from the launch point, ceilings less than 1000 feet, sustained winds greater than 25 knots, or gust spreads greater than 10 knots. All PIC(s) are equipped with Kestrels to measure current site wind speed. This will prevent unnecessary risk to people and property.

8. Areas of intended operations are defined by property owners, responsible agents, or government agencies consent and boundaries obtained by government GIS sources. Refer to Annex C for further information.

9. PIC(s) will not conduct operations within five nautical miles of airports without approved consent from base operations or air traffic control authorities. PIC(s) will notify these agencies at least 72 hours prior if operation site is within five nautical miles of an airport.

10. PIC(s) will maintain unaided VLOS with UAS. In complex duties or terrain, VO(s) will be used to maintain VLOS with UAS and PIC, and relay flight information.

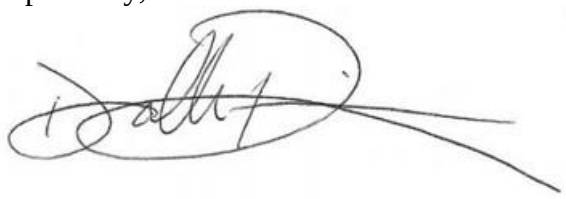
11. PIC(s) will verify flight limiting factors upon arrival to the operation site by using government sources and Kestrel for weather data, surveying and documenting site hazards, and conducting pre-flight inspections prior to operations.

12. PIC(s), when applicable to operations, will submit FAA Form 7711-1 or equivalent form with Flight Standards District Office at least 72 hours prior operations.

13. Will obtain COA, if required, from FAA Air Traffic Organization if granted exemption.

We hope that you grant us an exemption to the current regulations. We are looking forward to leading the way and setting a safe and efficient standard for future companies and UAS operators. Thank you for your consideration.

Very respectfully,



DANIELLE M. RIVERA, CEO
LONE STAR SKY SOLUTIONS, LLC

ANNEX A: Requested Exemptions

- Part 61 Certification
  - 61.113 (a, b)
    - Operators should not be required to hold a commercial or private pilot licenses given safety features of X8+, eBee, AMA training, Lone Star Sky Solutions' training program, and safety measures described in Annex C.

- Part 91 General Operating and Flight Rules
  - 91.105
  - 91.109
    - Flight instruction will be accomplished using a thorough and safe training program outlined in Annex B.
  - 91.119 (c)
    - Cannot operate above 400 feet AGL and therefore cannot comply with this regulation.
  - 91.121
    - Onboard systems of the eBee and X8+ provide a similar level of safety by using GPS and other orientation sensors.
  - 91.151 (a)
    - X8+ and eBee do not use fuel. However, operators will prepare to land when battery falls below 25% and before 20% is reached. PIC(s) will conduct a weather brief before each flight and UAS will not be operated below VFR conditions.
  - 91.405 (a), 91.407 (a)(1), 91.409 (a)(1, 2), 91.417 (a, b)
    - All maintenance and repairs will be accomplished by utilizing 3DR documentation or eBee user manual. An equivalent level of safety to the regulations will be achieved because the X8+ and eBee are not complex mechanical devices. Furthermore, pre- and post-flight checks will be conducted with each flight. If deficiencies are found, the UAS will not be operated until repairs are conducted. All repairs will be logged.
  - 91.7 (a)
    - Airworthiness of both aircraft has been demonstrated. If required, a waiver or certificate according to step four on the Petitioning for Exemption under Section 333 web page will be obtained.
  - 91.203 (a, b), 91.9
    - An equivalent level of safety will be ensured by requiring PIC(s) to carry manuals and standard operating procedure documents while operating UAS.

In addition, request exemption from other regulations deemed necessary by reviewer.

ANNEX B: Pilot in Command Qualifications

Lone Star Sky Solutions' training program is developed by our co-founder who has extensive knowledge in small UAS military applications and safety programs. The program is designed with community safety at mind using AMA guidelines. Ultimately, this program will efficiently qualify trainees to operate and recognize the need for PIC refresher training.

The program separates operators into three tiers: Trainee, Basic Mission Qualified ("BMQ") and Fully Mission Qualified ("FMQ") PIC(s). Minimum qualifications are listed below.

1. Trainee: Can only operate UAS on training courses under supervision. Primary goal is to reach BMQ status by completing classroom, visual observer ("VO"), and operational instruction.
    a. Possess valid state issued driver's license
    b. Passes LSSS interview
    c. Passes background check

2. BMQ PIC: Can operate UAS under supervision. Primary goal is to reach FMQ status by acquiring supervised on-the-job flight hours, passing check-ride, and becoming First Aid and CPR certificated.
    a. Completes eight hours of classroom instruction
    b. Completes four hours of simulated flight training
    c. Completes at least eight hours of operation instruction per platform
    d. Completes at least eight hours of VO on-the-job training

3. FMQ PIC: Can operate UAS unsupervised and can recommend trainee upgrade or BMQ downgrade.
    a. Completes at least twelve hours of supervised on-the-job flight
    b. Passes written test
    c. Passes UAS platform check-ride course
    d. Receives Basic First Aid and CPR certification

ANNEX C: Operations, Safety and Limitations

Lone Star Sky Solutions ("LSSS") conducts several types of operations for two primary reasons. First, is to provide affordable aerial photography, video, and surveying to the general public. Second, is to provide free education and training to youth, high-school, and undergraduates in there freshman or sophomore year. By providing affordable services to the general public and free education, we hope to keep the community safe by deterring and mitigating untrained and unlicensed UAS users from entering the NAS.

1. Proposed operations are, but not inclusive to, the following:
    a. Employee and youth training on LSSS' properties or approved public locations with written consent of responsible government authority
    b. Real-estate photography and video services for property owners, managers, or real-estate agents
    c. Home inspections with multi-spectral cameras for owners or potential buyers.
    d. Outdoor event photography or video (e.g., weddings, golf tournament, etc.) for the general public with consent of property owners and or responsible government authority
    e. Agriculture monitoring, imagery, and surveying for owners, farmers, or agronomist with permission of property owner
    f. General imagery, mapping, and surveying for property/land owners or governments

2. Safety is important, and the guidelines below will be followed in accordance with ("IAW") FAA regulations.
    a. Pre-flight:
        i. PIC(s) will define operational borders using government GIS sources
        ii. PIC(s) will account for all persons on property.
        iii. PIC(s) will seek consent for persons within 100 feet of flight operations
        iv. PIC(s) will survey and document site flight hazards
        v. PIC(s) will review weather data from Kestrel and government sources
        vi. PIC(s) will verify payload limits are not exceeded
        vii. PIC(s) will conduct specific platform pre-flight checklist
        viii. PIC(s) will document all tasks
        ix. PIC(s) will conduct briefings for all PIC(s), VO(s), owners or responsible agent, and persons within 100 feet of operations. Brief will highlight the concept of operation, potential hazards, weather conditions, and abbreviated guidelines of the Academy of Model Aeronautics Safety Code
    b. Flight Operations and Limitations:
        i. PIC(s) will operate according to FAA regulations, manuals, and standard operating procedures
        ii. PIC(s) will end operations before sunset.
        iii. PIC(s) will leave operation site before evening civil twilight.

iv. PIC(s) will not arrive to operation site before morning civil twilight.
v. PIC(s) will not start operations before sunrise.
vi. PIC(s) will not operate on any property without consent from owner or responsible agent
vii. PIC(s) will not fly within 5NM of airports without consent from base operations or air traffic control authorities
viii. PIC(s) will not fly over people
ix. PIC(s) will not fly within 100 feet of non-consenting persons
x. PIC(s) will not fly in excess of 400 feet above ground level
xi. PIC(s) will not operate UAS, to include payloads, more than 20 pounds
xii. PIC(s) will maintain VLOS and or coordination with VO(s)
xiii. PIC(s) will prepare for landing when battery level falls below 25% and land before level reaches 20%

c. Supervision of Operations
   i. FMQ PIC(s) will ensure personnel within 100 feet of UAS operations are wearing protective equipment (e.g., safety vest and glasses, hard hat, etc.)
   ii. FMQ PIC(s) will ensure all FAA UAS regulations and guidelines are maintained.
   iii. FMQ PIC(s) will document violations by trainees, VO(s), or BMQ(s)
   iv. FMQ PIC(s) will recommend upgrade and downgrade of trainees or BMQ(s)
   v. FMQ PIC(s) will conduct spot checks to ensure lead PIC gained proper consent from all authorities.