Small Unmanned Aircraft Systems (sUAS)

1. Purpose / Background

This Standard Operating Guideline (SOG) establishes procedures to comply with applicable federal, state, and local regulations and to reduce risks to and/or protection of persons, property, security and privacy.

The operation of small unmanned aircraft systems (sUAS), including drones and model aircraft, is regulated by the Federal Aviation Administration (FAA), and changes to the regulatory framework occur on a regular basis. As the law continues to evolve, this policy will be modified to remain compliant. All sUAS operators must understand and comply with all local, state and federal rules and regulations, including privacy regulations, for all sUAS applications. Please see **Section 8: Definitions**, for capitalized terms that are not otherwise defined herein.

2. Scope

This SOG applies to:

- MIT employees and students operating small unmanned aircraft systems (sUAS) in any location, including off campus, as part of their Institute employment or as part of Institute activities;
- The operation by any person of unmanned aircraft system or model aircraft on or above MIT property;
- The hiring or contracting for any unmanned aircraft services by an MIT Department, Lab or Center (DLC) or other MIT sponsored club or group;
- The operation of sUAS by any third party, including MIT start-ups, that launches from and/or lands upon MIT-Property.

This SOG does *not* apply to the use of UAS at Lincoln Laboratory, which is governed by a separate Lincoln Laboratory policy. Lincoln Laboratory employees who intend to operate sUAS at the MIT Cambridge campus are expected to follow these guidelines.

All sUAS operators who are authorized to operate sUAS on MIT Property must read, understand, and operate sUAS in accordance with this SOG, as well as with FAA regulations and other applicable federal, state, and local laws (i.e., privacy laws).

3. Prerequisites

Prior to outdoor sUAS flights, operator must hold a remote pilot airman certificate or part 61 pilot certificate or be under the direct supervision of a

person who does hold a remote pilot airman certificate or pilot certificate issued under 14 CFR part 61. All sUAS's must be registered with the FAA (exception for recreational/hobby flights and classroom purposes). sUAV's purchased with MIT funds (including sponsored funds, unless otherwise required by the sponsor) must be registered with the FAA, using the MIT name. After the sUAS have been registered with the FAA, the DLC contact must provide a copy of the registration to the Office of Insurance (insurance@mit.edu) and EHS (environment@mit.edu), along with the contact information for the individual who will be responsible for the sUAS when operating outdoors. Additional operators may be added when requesting approval for flights on MIT properties. See **Section 4.2** and complete flight authorization request found here.

4. Procedures

4.1 Applicable to all sUAS Operations over MIT Property

4.1.1 Only small UAS (sUAS) as defined by 14 CFR Part 107 and FAA Advisory Circular 107-2 (see Appendix A) are permitted under these guidelines for flights over MIT properties.

4.1.2 sUAS shall not be used to monitor or record areas where there is a reasonable expectation of privacy, in accordance with accepted social norms. If operating a UAS for purposes of recording or transmitting visual images, operators must comply with applicable privacy laws.

4.1.3 The campus community should report violations of this SOG, as well as any reckless, irresponsible and/or malicious activity involving UAS, to MIT Police.

4.1.4 In order to operate sUAS at non-MIT Property, written permission from the property owner is required.

4.2 For Outdoor Flight Approval:

Outdoor flights are governed by FAA regulations. The FAA grants approval to fly in restricted airspaces (like the MIT Cambridge campus) through the Low Altitude Authorization and Notification Capability (LAANC). LAANC automates the application and approval process for airspace authorizations.

Requests are checked against multiple airspace data sources in the FAA UAS Data Exchange such as UAS Facility Maps, Special Use Airspace data, Airports and Airspace Classes, as well as Temporary Flight Restrictions (TFRs) and Notices to Airmen (NOTAMs). If approved, pilots can receive their authorization in near-real time.

Desktop and mobile applications that utilize the LAANC capability are provided through UAS Service Suppliers (USS). Commonly used applications include Airmap, Kittyhawk and Skyward. A full list of USS can be found on the

FAA webpage:
https://www.faa.gov/uas/programs_partnerships/data_exchange/

LAANC provides airspace authorizations only. FAA may grant flight approval several days before the requested flight date/time. Prior to actual flight (lift-off), pilots must check NOTAMs, weather conditions, and abide by all airspace restrictions.

In addition to FAA approval, sUAS Operators are responsible for providing MIT flight specific information outlined in this section and found here.

4.2.1 The flight requestor shall complete the sUAV flight approval request form (see also Appendix E for a copy of the form). Completed forms shall be submitted for approval to the managing DLC, EHS (safety@mit.edu) and the Insurance Office. Questions or concerns with the requested planned flight operations will be reviewed with the requestor to mitigate any potential hazards or risk to persons or property in the area. All flights on MIT's Cambridge campus require approval from FAA.

4.2.2 All flights on MIT campus must be sponsored by a DLC.

4.2.3 Any MIT employee or student wishing to operate UAS for MIT programs for research or educational purposes must operate in accordance with FAA regulations -- 14 CFR Part 107, Operation and Certification of Small Unmanned Aircraft Systems, FAA Advisory Circular 107-2 and this SOG.

4.2.4 Flight operations over MIT-Property (see Definitions under Section 8) shall occur at the discretion and written permission of the DLC representative authorized to manage the space.

4.2.5 Any third party (non-MIT) wishing to use a sUAS or model aircraft upon, or originating from or landing on MIT Property, for any purpose (including, without limitation, research, service, filming*, recreational, etc.) regardless of whether or not such party is sponsored or hired by, or collaborating with, an MIT DLC, must follow the same procedures outlined here and in MIT sUAS Flight Approval Request Form. Operation of a sUAS by a third party over Institute property will only be permitted by written agreement. Contact MIT's Office of the General Counsel for the required facility use agreement, unless the third party will be a contracted vendor; VPF and Facilities contract administrators will include this guide as an incorporated document in the vendor service agreement and direct the DLC hiring the vendor to EHS to begin the approval process. For the purposes of this SOG, MIT start-

ups owned by faculty, staff, and/or students (whether former or current) are considered third parties. Third parties contracted through the Department of Facilities must also complete the "Requirements and Approval Process: Drone Flight by Third Parties on MIT-owned Property and MIT Use of Image / Name." Contact the DOF project manager and DOF Communications Officer for further information. *Any filming requests for television, movie, streaming or other publicly available distribution channels will require separate approval from the MIT News Office and the execution of a film agreement.

4.2.6 Any MIT employee or student wishing to use sUAS for activities that are not sponsored or funded by MIT (including MITIMCo) or that are not recreational use, wish to operate on or over MIT Property must receive prior approval from EHS, the Insurance Office, and the DLC manager of the space where the flight is requested to take place. Refer to Appendix E for more information.

4.2.7 Operators of sUAS on MIT property must meet the FAA requirements listed in Appendix A. Certain operating restrictions listed are waivable if the operator can demonstrate that the flight can be conducted safely under the terms of a waiver from the FAA.

4.2.8 Operators must conduct a pre-flight safety risk assessment. (See example template in Appendix D).

4.2.9 Due to the close proximity to area hospitals, Fenway Park, the Hatch Shell, and certain types of events that may occur at either or in the Boston area generally, the FAA may issue temporary flight restrictions, or Notices to Airmen (NOTAMs). All sUAS operators authorized to operate sUAS on the MIT campus must check NOTAMs prior to each flight. Pilot in Command (PIC) will avoid published approach corridors near Logan Airport, monitor air traffic control (ATC) communications (e.g., by use of a scanning radio receiver) to avoid distracting pilots, or interfering with any new or changing air traffic patterns not identified during pre-flight check, and promptly lower or land sUAS that may interfere with the safe operation of any manned aircraft: https://notams.aim.faa.gov/notamSearch/nsapp.html#/

4.2.10 ALL parties who are authorized to fly sUAS outdoors by the FAA and MIT shall keep copies of the FAA registration, the MIT-approved flight request, and pilot certification on hand (or readily available electronically) during all sUAS operations on MIT Property.

4.3 For Indoor Flights and Outdoor Flights Contained by Netting:

NO USE OF UAS OVER 55 LBS, INDOORS OR OUTDOORS on MIT Property. Indoor flights, as well as outdoor flights under netting, are not covered by FAA regulations. Operators of sUAS in those locations must abide by the following MIT guidance for safety purposes:

4.3.1 On the MIT campus, flight operations shall occur only at approved indoor or netted locations designated for sUAS flights, with prior permission from the DLC controlling the indoor space or netted enclosure. (See Appendix B for current list of indoor and netted locations).

4.3.2 To reserve flight locations within the Campus Activities Complex (CAC), including DAPER, visit the CAC Event planning guide website: https://web.mit.edu/eventguide/reserving/cac.html

Once reserved, complete the Division of Student Life event registration and safety planning questionnaire here: https://mit.quickbase.com/db/bnq5u6z27

4.3.3 Individuals who wish to operate sUAS at other locations inside MIT buildings will need approval in advance from EHS and the DLC managing the space. EHS and the relevant DLC will review the planned flight operations and work with the operator to mitigate any potential risk to persons or property in the area (e.g., through risk assessment, installation of cages over sprinkler heads, etc.)

4.3.4 Operators must conduct a pre-flight safety risk assessment. (See example template in Appendix D).

4.3.5 Operators must follow the Guidelines for Indoor Use of Unmanned Aircraft Systems (UAS), based on the Academy of Model Aeronautics (AMA) National Model Aircraft Safety Code (see Appendix C).

4.3.6 Third parties who wish to conduct flights on MIT Property within any of these facilities must also obtain Third Party Approval (as described in Section 4.2.3), provide evidence of insurance and execute MIT's facility use agreement.

4.4 International Operations

4.4.1 **Export Controls:** Some sUAS, as well as their embedded camera chips, are heavily restricted by US Export Control Law, both by the International Trafficking in Arms Regulations (ITAR) and Export Administration Regulations (EAR). You are free to use, ship (unless to an Office of Foreign Assets Control (OFAC)-sanctioned country) and share EAR99 category items, but you cannot bring ITAR-controlled

items to MIT without approval, share them with non-US persons or ship them out of the country. EAR-controlled items also have some restrictions. Prior to purchasing, shipping, or operating a sUAS to, from or in another country, individuals should contact MIT's Export Control Officer (exportcontrolhelp@mit.edu) to determine whether an approved Technology Control Plan is necessary. Although FAA regulations will not apply to flying UAS in airspace outside the U.S., jurisdictional, country-specific, and local laws may still apply to the use of UAS.

4.4.2 Shipping Safety Standards: Shipping hazardous materials, including rechargeable battery systems, strong magnets, etc., must be shipped in accordance with regulatory requirements. Refer to the following EHS website for more guidance: http://ehs.mit.edu/site/content/hazardous-materials-shipping-mit.

4.4.3 Flying sUAS in Foreign Jurisdictions: Depending upon the international jurisdiction, registration, approval or other regulations may apply to the operation of sUAS in foreign jurisdictions. Please contact the Office of the General Counsel for further assistance (mitogc@mit.edu).

5. Roles & Responsibilities

5.1 sUAS Operators

- Attend required training (described in Section 6) and obtain remote pilot certificate.
- Read and operate in accordance with this SOG, 14 CFR Part 107, Operation and Certification of Small Unmanned Aircraft Systems and FAA Advisory Circular 107-2 (see Section 7.1 below).
- Prior to flight, sUAS operators must obtain approval from the DLC representative authorized to manage the space or area of the proposed flight and will also need approval from EHS and the Insurance Office. Please refer to Appendix E.
- Register all sUASs intended to be used outdoors with the FAA (http://www.faa.gov/uas/registration/).
- Register and coordinate all outdoor sUAS flights through the MIT sUAS Flight Approval Request Form.
- Fly under the supervision of a certified remote pilot, if operator doesn't have a remote pilot certificate.
- Report all accidents or near misses to EHS at environment@mit.edu.
- Obtain approval from FAA for any outdoor flights occurring in restricted airspaces (including MIT main campus).
- Conduct and document a pre-flight safety risk assessment. For an example assessment, see Appendix D.

- For indoor flights, follow the Guidelines for Indoor Use of Unmanned Aircraft Systems (UAS), based on the Academy of Model Aeronautics (AMA) National Model Aircraft Safety Code (see Appendix C).

5.2 Departments, Labs and Centers (DLCs)

DLCs are responsible for ensuring that:

- sUAS operators are following this SOG and FAA regulations.
- All sUAS operators have the appropriate certificates and training.
- All UASs are registered with the FAA for outdoor use.
- All outdoor sUAS flights are coordinated and documented through the online request form.

5.3 Environment, Health and Safety Office (EHS)

- Maintain this SOG and EHS UAS webpage.
- Review and approve non-research or non-educational flights and third-party flights.
- Review and approve flights in other indoor locations not listed in Appendix B.

5.4 Insurance Office

- Review and approve non-research or non-educational flights and third party flights.
- Provide appropriate insurance guidelines for UAS operations. Insurance guidelines: sUAS operator must provide liability insurance that is specific to the operation of sUAS. Minimum limits required are $1,000,000 USD. The insurance certificate must specifically state that coverage includes the operations of sUAS (or drones). In addition, MIT must be named as an additional insured and the coverage must not be limited to the insurance limits requested. Flights for MIT academic curriculum, MIT-sponsored research, or MIT operations operated by an MIT student, faculty member or staff member may be covered under MIT's insurance and would not require a certificate of insurance as part of the approval process.

5.5 Procurement Office

- Refer all those who purchase sUAS by requisition to these guidelines.

6. Pilot Certification and Training

6.1 To qualify for a remote pilot certificate, a person must demonstrate aeronautical knowledge by either:

- Passing an initial aeronautical knowledge test at an FAA-approved knowledge testing center; or
- Hold a part 61 pilot certificate, other than student pilot certificate, complete a flight review within the previous 24 months, and complete the sUAS online training course provided by the FAA:

https://www.faasafety.gov/gslac/ALC/course_content.aspx?cID=451&sID=726&crID=1436761.

6.2 Training references in FAA Advisory Circular 107-2, the Aero/Astro Ground School (if applicable) or Lincoln Lab Small Unmanned Aerial Systems Training can be used as a resource for preparation training for aeronautical knowledge in 6.1.

7. References

7.1 Regulations:

- 14 CFR Part 107, Operation and Certification of Small Unmanned Aircraft Systems: http://www.ecfr.gov/cgi-bin/text-idx?SID=ea940e919ac987cc11223ed725cf70a0&mc=true&node=pt14.2.107&rgn=div5
- FAA Advisory Circular 107-2: http://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_107-2.pdf

7.2 Useful links:

- **LAANC:** https://www.faa.gov/uas/programs_partnerships/data_exchange/
- **FAA UAS:** https://www.faa.gov/uas/
- **Academy of Model Aeronautics:**
  https://www.modelaircraft.org/sites/default/files/105.pdf
  https://www.modelaircraft.org/sites/default/files/documents/100.pdf

8. Definitions

- **First person view** – **Applies to indoor use or use in netting only.** Use of a video camera installed in the sUAS, which feeds wirelessly to a video monitor or video googles for the PIC to view the flight of the sUAS from the sUAS itself.

- **MIT Property** – Buildings, grounds, and land that are owned or controlled (by written agreement) by MIT.

- **Model Aircraft** – Model aircraft are still considered “aircraft” and UAS for FAA purposes, but are distinguished in the FAA regulations (for purposes of registration, operation, and other compliance obligations) by intended use – solely for recreational, hobby, or classroom purposes: https://www.faa.gov/uas/resources/policy_library/media/Interpretation-Educational-Use-of-UAS.pdf. Classroom use by MIT registered students; use of model aircraft at MIT still subject to MIT Policies and approval from FAA Headquarters, if operating sUAS outdoors within FAA Class B,C and D airspaces (MIT Campus), and will require checking NOTAM. Use of UAS related to MIT programs, research, or operations does not qualify as

recreational use under FAA regulations. Model aircraft must be kept within visual sightline of the operator, and should weigh under 55 pounds, unless certified by an aeromodelling community-based organization. Model aircraft must be flown a sufficient distance from populated areas, and cannot be flown directly over people. Operators of Model Aircraft are expected to follow FAA Model Aircraft Operating Standards.

- **NOTAM -** A notice to airmen. It is a brief bulletin filed with the FAA to alert pilots of important information that could affect a flight. This information may include:
    - Flight hazards, such as lasers, air shows or parachute jumps.
    - Temporary flight or airspace restrictions.
    - Closed or otherwise unavailable runways.
    - Obstructions such as flocks of birds, large cranes, or clouds of ash or dust.

- **Small Unmanned Aircraft System (sUAS)** – UAS that weighs between 0.5 – 55 pounds.

- **Unmanned Aircraft Systems (UAS**) **-** UAS are also known as, or may be characterized as, drones. According to the FAA, a UAS is the unmanned aircraft and all of the associated support equipment, control station, data links, telemetry, communications and navigation equipment, etc., necessary to operate the unmanned aircraft. UAS may have a variety of names including quadcopter, quadrotor, etc. FAA regulations apply to UAS regardless of size or weight.

Appendix A: Summary of sUAS FAA Part 107

Small UAS (sUAS) are covered by FAA Part 107 and Advisory Circular 107-2 including, but not limited to, the following:

a. Unmanned aircraft must weigh less than 55 lbs. (25 kg).
b. Tethered sUAS are still subject to this regulation and the tether must be included to determine the total weight of the sUAS, unless the tether is attached to an immoveable object. If a tether is used, it must be strong enough so that it can't be cut by the sUAS' rotor blade(s).
c. Maximum airspeed of 100 mph (87 knots).
d. Maximum altitude of 400 feet above ground level.
e. Operators must conduct a pre-flight safety risk assessment (see guidance in Advisory Circular 107-2).
f. All flights on the MIT main campus require an FAA approval. The FAA grants approval to fly in restricted airspaces through the Low Altitude Authorization and Notification Capability (LAANC).
g. Daylight operations only unless specifically approved through the FAA.
h. All UAS must be registered with the FAA.
i. All accidents, as defined in Advisory Circular 107-2, with UAS must be reported to EHS and subsequently by EHS to FAA.
j. Pilots of a sUAS would be considered remote pilots in command (PIC).
k. PICs must have visual line of sight of sUAS during operation at all times, unaided by any device other than corrective lenses.
l. Operators of sUAS must meet all of the following:
    i. A person operating a sUAS must either hold a remote pilot airman certificate with a sUAS rating or be under the direct supervision of a person who holds a remote pilot certificate (remote pilot in command).
    ii. To qualify for a remote pilot certificate, a person must:
        a. Demonstrate aeronautical knowledge by either:
            i. Passing an initial aeronautical knowledge test at an FAA-approved knowledge testing center; or
            ii. Hold a part 61 pilot certificate (other than student pilot certificate), complete a flight review within the previous 24 months, and complete a sUAS online training course provided by the FAA.
    iii. Be at least 16 years old.

Appendix B: Indoor and Netted Locations

Prior to using a sUAS in any of the locations listed below, operators must obtain permission from the DLC representative authorized to manage the space.

sUAS Indoor and Netted Outdoor Locations:
The flight paths for these indoor locations should be free from unprotected sprinkler heads, utility wires, internet, other cables, or obstructions.

- Building 32, Stata Holodeck, CSAIL (Daniela Rus)
- Building W34, 1st and 2nd floors, Johnson Hockey Rink, DAPER (Dan Martin)
- Building W31, Rockwell Cage, DAPER (Dan Martin)
- Building W32, DuPont Gym, DAPER (Dan Martin)
- Building 31, Kresa Center for Autonomous Systems (Anthony Zolnik)
- Building 17, Wright Brothers Wind Tunnel (Anthony Zolnik)
- Building 33, high bay space in hangar (Anthony Zolnik)

sUAS Outdoor Locations:

- **Cambridge Campus**: None, unless approved by the FAA and coordinated with MIT for access to any campus-approved location for launching and/or landing.

Other MIT Property: Haystack Observatory, Westford, MA

Appendix C: Guidelines for Indoor Use of UAS Based on Academy of Model Aeronautics (AMA) National Model Aircraft Safety Code

- Must be sUAS only, weighing less than 55 lbs, including payload.
- Define the flying area, both horizontal and vertical distances. The primary goal is to prevent injuries to those participating in the operation of the UAS, as well as the general community. The secondary goal is to prevent or mitigate significant property damage (e.g., hitting/discharging sprinkler heads).
- Select a flight line (behind which the pilot(s) will stand when flying).
- Behind the flight line, designate a “pit area” (where assembly, repairs, etc. are done).
- Designate the spectators’ area, at least 25 feet behind the flight line.
- No one should enter an active flying area. Land all UAS before allowing a pilot to retrieve the UAS.
- Visual line-of-sight contact with the UAS will be maintained at all times.
- If using First Person View system, UAS is limited to $\leq$ 15 pounds.
- If using First Person View system, the pilot must switch back to visual line-of-sight if there are any problems with the First Person View system.
- **Only battery-operated UAS can be used indoors**. No charging is allowed in the public spaces nor should UAS be charged unattended because of the risk of a fire.
- Inspect the UAS before each flight: Verify that there are no loose parts, in order to prevent erratic behavior.
- Modify the program to limit the altitude, distance and speed. No higher than 6 feet below the lowest section of the ceiling, lights and/or sprinklers. Speed should be reasonably slow to accommodate the size and obstacles in the indoor flying area.
- If the type of UAS being used cannot be programed to limit the altitude/or speed, describe how the Range Safety Officer will monitor this. (For example: Have two Range Safety Officers, tools to measure the altitude and speed, communication to the pilots, etc.)

- Use the foam guard that prevents the blades from injuring people. This guard also prevents property damage. This guard can be purchased or made in an MIT hobby shop or maker space.

- A frequency control system must be employed.

- Describe the autopilot's behavior when communications are lost. Does it hover, return home, or land?

- If more than one pilot will be operating UASs at the same time, describe the additional safety precautions that are planned. This may need to be increased based on the review.

- If a tether is used for indoor operation of a sUAS, it must be strong enough so that it cannot be cut by the sUAS' rotor blade(s).

Appendix D: UAS Pre-flight Risk Assessment

- Check current **NOTAM**. This notice will alert aircraft pilots of potential hazards along a flight route or at a location that could affect the safety of the flight.
- Have important flight details readily available:

Sponsor's information:

Name: Phone: Email: Department:

UAS Operator's information:

Name: Phone: Email: Department:

Range Safety Officer Information:

Name: Phone: Email: Department:

Spotter / safety monitoring Information:

Name: Phone: Email: Department:

Name: Phone: Email: Department:

Check your drone battery charge.

A number of steps can help you make sure that your drone flight will be successful. Among the first should be making sure that your drone's batteries are charged, and that you have backups just in case. You should also avoid overcharging, which can lead to reduced battery life over time.

Check for potential equipment damage.

Next, check your drone for damage that could lead to problems once airborne. Your propellers especially need to be in good operating condition. Additionally, the drone's camera and gimbal system need to be flat it is critical for any successful flight that they are working properly.

Check the current and forecasted *weather.*

In addition, a weather check should be part of your regular pre-flight preparation. The current weather is not a reliable predictor of future weather; instead, inform yourself about the forecast and be prepared for sudden (and unpredictable) weather changes. Make sure camera settings are correct and ensure the exposure and saturation are optimized for the conditions.

Check your available file storage.

Don't forget a microSD card! For aerial photography or videography, make sure enough storage is available to record the footage you need.

Determine ideal starting and landing spots.

Any successful drone flight depends on making sure that the terrain is fit for the intended project. Start by determining a starting and landing spot that allows operation of the drone without barriers or dangers such as telephone wires or trees. Make sure the GPS is working properly and lat/long is set.

Ensure a strong signal from drone to controller.

To avoid losing connection to the drone once in the air, check whether the signal you send from your controller to the sUAS is strong. The solution for any connection issues may be as simple as pairing your drone with your controller.

Scout the space of your proposed flight.

Scouting and planning out your flight can help to ensure success. Walk around the space you're about to fly over to make sure that you know the best angles to capture, along with potential barriers that could impede your flight. If you're on a DroneBase Mission, you'll have a flight plan as a guide to capture the best of a property or area of land. Identify locations where spotters should be present to alert public and control access to flight operations

Inform others of your project.

Finally, make sure that everyone in the area knows a drone is about to take flight. You should always aim to maintain control of your area, helping to keep others out of harm's way and ensure a safe flight.

Safety precautions that will be implemented:

- Define the flying area both horizontal and vertical distances. The primary goal is to prevent injuries to those participating in the operation of the sUAS, as well as the general community. The secondary goal is to prevent or mitigate significant property damage (e.g. hitting/discharging sprinkler heads. Are sprinkler heads protected by cages or are these concealed?)
- Select a flight line (behind which the pilot(s) will stand when flying).
- Behind the flight line, designate a "pit area" (where assembly, repairs, etc. are done).
- Designate the spectators' area ## feet behind the flight line.
- Insert a floor plan that indicates the flight line, pit area, and spectators' area. No flying over people in these areas.
- No one should enter an active flying area. Land all UASs before allowing a pilot to retrieve their UAS.

- Visual line-of-sight contact with the sUAS will be maintained at all times.
- If using First Person View system (i.e., sUAS weighs </= to 15 lbs.), the pilot must switch back to VLOS if there are any problems with the First Person View system.
- Only battery-operated sUASs can be used indoors. No charging is allowed in the public spaces when these are used as flight areas because of the risk of a fire.
- Inspect the sUAS before each flight: Verify that there are no loose parts, in order to prevent erratic behavior.
- Modify the program to limit the altitude, distance and speed. No higher than 6 feet below the lowest section of the ceiling, lights, and/or sprinklers. Speed should be reasonably slow to accommodate the size and obstacles in the indoor flying area.
- If the type of sUAS being used cannot be programed to limit the altitude/or speed, describe how the Range Safety Officer will monitor this. (For example: Have 2 Range Safety Officers, tools to measure the altitude and speed, communication to the pilots, etc.)
- Use the foam guard that prevents the blades from injuring people. This guard also prevents property damage. This guard can be purchased or made in an MIT shop (or maker space).
- A frequency control system must be employed.
- Describe the autopilot's behavior when communications are lost. Does it hover, return home, or land?
- If more than one pilot will be operating sUASs at the same time, describe the additional safety precautions that are planned. This may need to be increased based on the review.
- If a tether is used, it must be strong enough so it can't be cut by a rotor blade.

Insurance

Insurance is required if the sUAS is owned and/or operated by a third party.

Reviewed by

Advisor of student group (if applicable)
Administrator and DLC
EHS
Insurance Office

Approved by (insert Name of Administrator and DLC, date of approval)

Appendix E: MIT Small Unmanned Aircraft Systems (sUAS) Flight Approval Request Form

Requestor Name / Affiliation

MIT Sponsor (Department / contact requesting flight)

Requestor email

Requestor Phone Number

sUAS Operator Name

Operator email

Operator Phone Number

Operator Credentials Valid remote pilot certificate with small UAS rating or part 61 pilot license – Upload and attach copy of license(s)

Flight Location

Date(s) and Time(s) Requested* – (outdoor dates /times must be specific for approval by MIT Space Manager.) FAA approval is required prior to flights. FAA and Space manager may provide waiver for flight window spanning multiple dates.

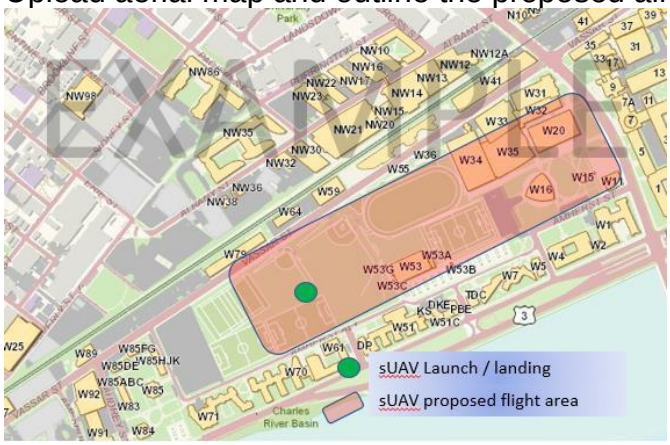
*LAANC, or the Low Altitude Authorization and Notification Capability, was developed for the FAA to work more directly with sUAS pilots to authorize and monitor flights. LAANC is strictly for approving flights classified under Part 107 regulations and does not allow pilots to request operations that require further waivers, (such as flying at night). LAANC is available for both commercial / Part 107 regulations, and for hobbyists looking to operate in controlled airspace. LAANC provides airspace

authorizations only. Pilots must verify safe pre-flight conditions, check NOTAMs, weather forecasts, abide by local authorities and MIT guidelines.

Flight Safety Plan

Description of the purpose of the planned activities. Include anticipated safety hazards and controls. Delineate flight path and provide spotters as needed. Pilot in command maintains line of sight with sUAS

Upload aerial map and outline the proposed airspace in which the flight will take place.



sUAS Make, Model and serial number (Include all models used for flight (primary / backup) if self-built provide description)

sUAS Weight (must be between .5-55 lbs.)

sUAS Registration Number

FAA Approval information and restrictions (flight window, confirmation number, etc.)
All flights at MIT require FAA authorization. Pilot is responsible for documenting authorization code or waiver number upon FAA approval.

Approval of DLC Manager of flight location* (signature / date)

* Eastman, Killian, Hockfield and Saxon Court (Institute Events). Briggs Field, Steinbrenner Stadium & Track, (DAPER); McDermott Court (CAC); Adjacent Dorms/student housing (DSL)

Approval of EHS Office (signature / date)

Approval of Insurance Office* (signature / date)

*Operator must provide insurance evidencing liability insurance that is specific to the operation of sUAS. Minimum limits required are
$1,000,000. Insurance certificate must specify coverage does not exclude use of drones. Flights associated with academic curriculum may be covered under MIT's insurance (Must be confirmed by the MIT Office of Insurance).

Check the box to affirm that the operator agrees to follow all applicable FAA regulations and MIT UAS SOG.

☐ I agree.