ENERGY TRANSFER

Unmanned Aerial System Operational Requirements

Policy
Title 49, Part 192
Applicable to Natural Gas Pipelines and Related Facilities

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1.0 Standard Description

This document establishes requirements for the operation of Unmanned Aerial Systems (UAS), also known as, Drones, near and around partnership's facilities and property.

2.0 Scope

This policy provides guidance for employees of ET and its subsidiary companies, Joint Ventures and Contractor who operate UAS near and within partnership's facilities and property.

Requirements for Employees:

1. Employee must have an F.A.A. Part 107 license. Must be current. Part 107 Recurrent Training must be completed **every 24 calendar months**.

2. UAS must be registered with the F.A.A. and display the unique identifier. (See 14 CFR Part 48.200)

3. UAS must be compliant with the remote identification operating requirements applicable to unmanned aircraft (see attachment – Federal Register / also see 14 CFR Subchapter F Part 89)

4. Must have manager's approval to operate UAS within partnership's properties.

5. Employees should not use their personally owned (PO) UAS for Partnership business. However, in rare circumstance, if the need arises and the employee and UAS meets all the requirements stated in this policy, and with Manager's approval for the business purpose the employee may use their PO UAS. All photos and data acquired for business purposes shall be the property, ET, or Sunoco. Additionally, the PO UAS must be insured with liability insurance. **Requirements for Managers:**

1. Ensure there is an operational need for the UAS

2. Ensure employee and the UAS has all the required licenses and is registered with F.A.A

3. Review and sign the Advance Request Notice of UAS on or Near Partnership's Property form.

4. Approve any PO UAS use and state the need in the Advance Request Notice of UAS form. Documenting the dates placed in operation. Any operating expense occurred from the use of the PO UAS shall be documented in an expense report and reimbursed to the employee. While the UAS is used for Partnership business, the Partnership will indemnify the employee while the PO UAS is used for business purposes.

Requirements for Contractor:

1. Adherence to this policy is not intended to relieve UAS operator of the responsibility to perform the Scope of Work as an independent contractor in accordance with all applicable governmental and regulatory requirements.

2. In performing the work, UAS operator shall also comply with all applicable provisions of this specification, the Agreement, permits and regulations of all governmental authorities having legal control.

3. All references to codes, standards or other specifications shall be the most current issue, unless specifically instructed otherwise, and shall be considered as being a part of this Specification.

4. The UAS contractor shall meet ET's contracting requirements and have executed the appropriate contract for UAS services prior to starting any work.

5. The UAS operator shall provide proof that they meet or exceed the ET's insurance requirements for aircraft liability insurance.

Contractors must have a current F.A.A. Part 107 license

3.0 Authority of Partnership

Contractors:

1. The UAS operator, being an "Independent Contractor," shall have full power and authority to select the methods and manner of performing the Work and shall be done to the satisfaction of the Partnership.

2. If, at any time during the progress of the work, tools or equipment being used appear to the Partnership to be inappropriate per § 6.1(6) or insufficient to accomplish the work, the Partnership may request that UAS operator to improve the character, augment the number, or substitute new tools or equipment to the satisfaction of Partnership.

3.1 Scope of Work

Contractors:

1. UAS must be registered with F.A.A.

2. UAS operator shall provide all necessary personnel, labor, and consumables to successfully complete the work, including, but not limited to the following:

- Transportation of all equipment, labor, and consumables to and from the jobsite.
- Mobilization and demobilization upon completion of the work.

3. Contractor shall for the duration of the work, assign the necessary qualified and experienced personnel, equipment, supervision, tools, all other materials and supplies to meet project milestones.

4. The Contractor shall identify key personnel. Contractor shall not reassign key project personnel and/or equipment from work being performed for Partnership without Partnership's written consent.

5. Contractor shall provide a detailed work plan for the project. Components of the plan should include, but not be limited to:

   - Names of supervisory personnel.
   - List of key personnel and equipment assigned to the Work.
   - Site-specific flight plans, aircraft maintenance plan and safety program.
   - List of all proposed subcontractors and their responsibilities.
   - Qualifications for all pilots, observers and support personnel assigned to the Work.

6. Requirements placed upon Contractor shall apply to all Contractor's subcontractors.

7. Permits and licenses of a temporary nature necessary for the execution of the work shall be secured by Contractor unless otherwise advised by Partnership. Contractor shall give all notices and comply with all laws, ordinances, rules, and regulations bearing on the conduct of the Work.

8. Contractor shall supply to Partnership, daily, daily project reports.

4.0 Terms and Definitions

Terms and definitions associated with this Policy follow in the table below.

Terms	Definitions
Aircraft	A device used or intended to be used for flight in the air, including unmanned aircraft (UA), unmanned aircraft system (UAS) and drones.
Airworthiness	A condition in which the UAS (including the aircraft, airframe, engine, propeller, accessories, appliances, and control station (CS)) conforms to its type certificate (TC), if applicable, and is in condition for safe operation.
Airworthiness Certification	A repeatable process that results in a documented decision that an aircraft system has been judged to be Airworthy. It is intended to verify that the aircraft system can be safely maintained and safely operated by pilots within its described and documented operational envelope.

Terms	Definitions
Airworthiness Statement	Document required from public UAS applicants during a Certificate of Waiver or Authorization (COA) application process which confirms aircraft airworthiness.
Certificate of Waiver or Authorization (COA)	An FAA grant of approval to a public operator for a specific UA activity.
Chase Aircraft	A manned aircraft flying near a UA that carries a qualified observer and/or UA pilot for the purpose of seeing and avoiding other aircraft and obstacles.
Civil Aircraft	Aircraft other than public aircraft.
Congested Area	An area determined to have a significant number of structures, roads or gather places for people that has the potential to compromise the safe operation of the UAS.
Cooperative Aircraft	Aircraft that have an electronic means of identification (i.e., a transponder or Automatic Dependent Surveillance—Broadcast (ADS-B) transceiver) aboard in operation.
Crewmember (UAS)	In addition to the crewmembers identified in Title 14 of the Code of Federal Regulations (14 CFR) part 1, a UAS flight crew member includes pilots, sensor/payload operators, and visual observers (VO), but may include other persons as appropriate or required to ensure safe operation of the aircraft.
Crew Resource Management (CRM)	The effective use of all available resources including human, hardware, and information resources.
Daisy-Chaining	The use of multiple, successive observers to extend the flight of a UA beyond the direct visual line-of-sight of any other pilot in command (PIC) or VO.
Due Regard	A phase of flight wherein an aircraft commander of a State-operated aircraft assumes responsibility to separate his or her aircraft from all other aircraft.
External Pilot	A UAS pilot who flies from outside a control station with direct visual contact with the aircraft.
FAA-Recognized Equivalent	An FAA recognition that a public agency may exercise its own internal processes regarding airworthiness and pilot, aircrew, and maintenance personnel certification and training; furthermore, the agency has determined that its UAS is capable of safe operation in the National Airspace System (NAS) when conducting public aircraft operations under Title 49 of the United States Code (49 U.S.C.) §§ 40102(a) (41) and 40125.
Flight Termination	The deliberate process of performing controlled flight into terrain (CFIT). Flight termination should be executed if all other contingencies have been exhausted, and further flight of the aircraft cannot be safely achieved.

Terms	Definitions
Flyaway	An interruption or loss of the control link, or when the pilot is unable to effect control of the aircraft and, as a result, the UA is not operating in a predicable manner.
Internal Pilot	A UAS pilot who flies from inside a control station without direct visual contact with the aircraft.
Lost Link	The loss of command-and-control link contact with the remotely piloted aircraft such that the remote pilot can no longer manage the aircraft's flight.
Nighttime	The time between the end of evening civil twilight and the beginning of morning civil twilight. Civil twilight occurs between one hour after sunset and one hour before sunrise.
Non-Cooperative Aircraft	Aircraft that do not have an electronic means of identification (e.g., a transponder) aboard.
Observer	A trained person who assists a UAS pilot in the duties associated with collision avoidance and navigational awareness through electronic or visual means.
Off-Airport	Any location used to launch or recover aircraft that is not considered an airport (e.g., an open field).
Pilot Duty Period	The period beginning when a flight crew member is required to report for duty with the intention of conducting a flight and ending when the aircraft is parked after the last flight. It includes the period before a flight or between flights that a pilot is working without an intervening rest period.
Pilot in Command (PIC)	The person who has final authority and responsibility for the operation and safety of flight, has been designated as PIC before or during the flight, and holds the appropriate category, class, and type rating, if applicable, for the conduct of the flight. The responsibility and authority of the PIC as described by § 91.3 apply to the UA PIC. The PIC position may rotate duties as necessary with equally qualified pilots. The individual designated as PIC may change during flight.

NOTE: The PIC can only be the PIC for one aircraft at a time. For an OPA, the PIC should meet UAS guidance requirements for training, pilot licensing, and medical requirements when operating an OPA as a UAS.

Terms	Definitions
Safety Risk Management (SRM)	A formalized approach to system safety that ensures hazards are identified; risks are analyzed, assessed, and prioritized; and results are documented for decision-makers to transfer, eliminate, accept, or mitigate risk.
Scheduled Maintenance (Routine)	The performance of maintenance tasks at prescribed intervals.

Terms	Definitions
Supplemental Pilot	Pilots assigned UAS flight duties to augment the PIC. The supplemental pilot may also assume duties of the PIC if the specified qualifications are met.
Unmanned Aircraft (UA)	A device intended to be used for flight in the air that has no onboard pilot. These devices are offer referred to as "Drones" or "UAV's." This device excludes missiles, weapons, or exploding warheads, but includes all classes of airplanes, helicopters, airships, and powered-lift aircraft without an onboard pilot.
Unmanned Aircraft System (UAS)	A UA and its associated elements related to safe operations, which may include control stations, control links, support equipment, payloads, Flight Termination Systems (FTS), and launch/recovery equipment.
Unscheduled Maintenance (Non-routine)	The performance of maintenance tasks when mechanical irregularities occur.
Visual Line of Sight (VLOS)	Unaided (corrective lenses and/or sunglasses exempted) visual contact between a PIC or a VO and a UA sufficient to maintain safe operational control of the aircraft, know its location, and be able to scan the airspace to see and avoid objects aloft or on the ground.

5.0 General Operating Rules

The following section provides rules for general operation of an UAS by Employees and Contractors.

1. UAS shall be operated in accordance with all applicable local, state, and federal regulatory requirements, including Section 333 of the FAA Modernization and Reform Act of 2012 "Special Rules for Certain Unmanned Systems".

2. Offshore UAS operations in support of oil and gas shall follow the above regulatory statue. Also, offshore UAS operators shall comply with additional USCG, EPA and BSEE applicable requirements as well.

3. All operators should have a flight operations manual that includes procedures and checklists for pre-flight, in flight, post flight, emergency procedures, aircraft systems and aircraft performance.

4. All UAS operations shall avoid overflight of personnel not involved in the operation.

5. All UAS operations during nighttime is strictly prohibited.

6. All UAS operations shall be conducted during visual metrological conditions only in compliance with visual flight rules (VFR).

7. All UAS operations in Class I, Division II areas is strictly prohibited.

8. A Notice to Airman (NOTAM) should be issued for the affected airspace of UAS operations where required by the regulatory authority. NOTAMs shall be filed by the pilot in command (PIC).

9. In situations where manned aircraft pose a potential conflict with UAS operations, manned aircraft have the right-of way and UAS operations should be terminated until the potential conflict has passed.

10. All UAS should use "sense and avoid" technology on the aircraft and a mode "S" or ADS-B capable transponder whenever practical and allowed by the FAA. Light UAVs (less than 15 pounds without fuel) operating within visual line of sight below 400 feet are exempted from this policy but should have a designated visual observer to provide a similar level of safety to sense and avoid hazards.

NOTE: For inquiries into approved technology vendors and their uses, use the new Outlook Mailbox, Mailbox, Pipeline Surveillance Technology Committee.

5.1 Operations

The following section provides guidelines for the safe operation of an UAS.

1. All UAS operations should be controlled by a Pilot in Command (PIC). Completely autonomous UAS operations is strictly prohibited. A PIC may control only one UAV at a time.

2. A SRM should be submitted by the UAS operator to the Partnership addressing the ratings of the PIC for the UAS operation being considered.

3. The UAS operator shall provide a process that ensures that pilots maintain an appropriate level of recent pilot experience for the position they are assigned in the UAV being operated.

4. Operating range limits - suitable radio equipment should be fitted to be able to always effect positive control over the unmanned aircraft.

5. Visual observers should:

    - Be trained in areas such as aviation terminology, Visual Flight Rules (VFR), airspace requirements and applicable aviation regulatory requirements.
    - Keep the pilot informed of possible hazards (power lines, crane/venting booms, birds, other aircraft, approaching workboats (when working underneath facility), and weather conditions.
    - Establish an observation position having a clear view of the UAS operating area

- Be designated as such and not share in any other duties associated with the flight.
- Be briefed on lost communications procedures prior to the flight.

5.2 Weather Observation

The following section provides guidelines for weather observations.

1. A reliable method of determining wind speed, ceiling and visibility should be used.

2. Weather observations should be taken near enough to the operation that it is certain that they are valid; for example, an airport's observations can be used if the airport is within several miles and the conditions appear to be uniform.

5.3 Flight Planning

The following section provides guidelines for UAS flight planning.

1. Notification to other potential users of the airspace and appropriate regulatory authorities should be **ISSUED** with ample time (24-hour notice is recommended) for those operators/regulators to plan appropriately.

2. **ENSURE** no simultaneous operations between UAS and manned aircraft are planned in the same area. The following should take place prior to operations.

   2.1. **NOTIFY** local airspace users (in addition to NOTAM). Include at least:

   - Date and time range
   - Precise location
   - Altitude range
   - Aircraft type and description (what to look for)
   - Frequencies monitored and call sign
   - Contact information to coordinate, de-conflict and exchange other information.

NOTE: For UAS operations occurring in the vicinity of Gulf of Mexico facilities the BSEE and USCG should be notified and whether the helideck will be closed.

Notifying BSEE directly of UAS operations may allow the scheduling/rescheduling of inspections to avoid facilities that have ongoing UAS operations. The HSAC NOTAM guidance and other applicable Recommended Practices should be adhered to for UAS operations that could pose a potential hazard to manned aircraft operations

3. All UAS operations shall include a pre-flight briefing with all on site personnel. The briefing should include:

   - Mission overview
   - Hazards unique to the mission (including potential sources of interference)
   - Check and brief applicable NOTAMs
   - FSS/ATC notifications.

- Identify any special airspace and restrictions. (i.e., VFR corridors, TFRs, MOAs etc.)
- De-confliction plans for intruding aircraft.
- Weather (current and forecast ceiling, visibility, and winds).
- Mission altitude.
- Lost Link, divert and flight termination procedures.
- Identification of any public or residential areas near flight path and privacy concerns.
- Flight time and fuel/battery requirements.
- Fuel reserves/minimum voltage requirements.
- Frequencies to be used.

4. Prior to each launch, the PIC should:
   - **PERFORM** a pre-flight inspection/checklist,
   - Visually **INSPECT** airframe condition,
   - **RUN** system diagnostics,
   - **CONDUCT** engine run test,
   - **CHECK** battery, sensors, etc.
5. **VERIFY** communications with the visual observer(s) and confirm that there is no conflicting air traffic.
6. The use of cell phones and other electronic devices during flight operations should be **RESTRICTED** to communications pertinent to the operational control of the UA and any required communications with Air Traffic Control.
7. Cell phones should **NOT BE USED** as the primary means of communications between visual observers and pilots.
8. All UAS operations should be conducted with sterile cockpit procedures during critical phases of flight. These include taxi and ground operations involving aircraft movement, take-off, and landing, as well as all other flight operations in which safety or mission accomplishment might be compromised by distractions.

5.4 Lost Link Procedures

There are many acceptable approaches to satisfy lost link requirements. The intent of any lost link procedure is to ensure airborne operations remain predictable. Provided below are guidelines for loss of data link.

1. Lost link procedures should comply with all regulatory requirements.
2. The appropriate air traffic control facility should be notified immediately if applicable.
3. Lost link procedures should avoid flight over any populated areas and hazards, as well as any frequently travelled flight paths.

4. The time and duration of each lost link event should be recorded by the operator and reported through the incident reporting process.
5. The designated return site should be clear of any personnel and hazards in the event of an immediate lost link return to base and landing.

5.5 Maintenance

A maintenance program should be in place to ensure the airworthiness of any UAS being utilized. The following section provides guidelines for UAS maintenance.

1. Maintenance shall be performed in accordance with manufacturer recommendations and only by professionally trained and certified personnel. This program should comply with all governing regulations and policy. The maintenance program should include:
   - A pre-flight and post flight inspection of the aircraft and have an associated logbook to track inspections
   - A pre-flight and post flight inspection of the ground control station.
   - Incorporate a logbook to track flight hours and any inspection replacement times and life limited items (i.e., batteries, rotors). The logbooks should be available for on-site inspection.
   - Software and hardware changes should be documented as a part of the maintenance procedures.
   - Maintain a record of malfunctions (i.e., loss of link), anomalies and damaged parts.

2. All UAS operators should have a battery safety program that includes:
   - Material Safety Data Sheets (MSDS) included in the aircraft flight manual, battery tracking systems and battery logbooks.
   - Battery storage plans that include storage and charging in fireproof containers.
   - Battery inspection procedures and requirements.
   - Procedures for thermal runaway, determination of battery pack capacity

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5.6 Training

The following section provides guidelines for UAS personnel training.

1. UAV pilots shall meet applicable FAA licensing, training, and testing requirements for each class or type of UAS they will operate. The licensing should be appropriate and as required by aircraft type certification or determination of airworthiness. UAS type or class ratings may be determined based on individual type in the case of larger aircraft, or by class for smaller ones under 55 pounds.
2. All UAS operators should have a training program to verify the air crew and observers meet the applicable requirements of the governing aviation regulator. The training program should be appropriate for each aircrew role, the environment and mission the operator is expected to perform.
3. The training program should cover currency, evaluation, emergency procedure proficiency, systems knowledge, and specialized tasks.

4. Training requirements should exist for the specific UAS on unmanned vehicles over 55 pounds maximum takeoff weight (MTOW), however training programs on UAS under 55 pounds MTOW can be designed for similar types of systems (i.e., quadcopters under five pounds).
5. All training programs should comply with the manufacturer's recommended training programs.
6. Personnel performing UAS maintenance shall receive maintenance training and be evaluated for each operated system in accordance with the UAS manufacturer's recommendations.

5.7 Communications

The following section provides guidelines for UAS communication.

1. UAS should be operated in a reliable radio frequency environment that minimizes the probability of lost link and Radio Frequency (RF) interference with nearby systems. UAS operators should have a valid communications plan that considers:
   - Every effort is made to always ensure positive control of the UAS
   - A spectrum or Receiver Autonomous Integrity Monitoring (RAIM) analysis to determine frequency strength, integrity, and areas of possible interference prior to UAS operations. The UAS should be operated in strict compliance with all provisions and conditions contained within the spectrum analysis assigned and authorized
   - Sources of radio frequency (RF) interference such as microwave antennas and high voltage lines should be identified and assessed prior to commencing operations.
   - Encryption of all command and return links when possible, and required when sensitive information is being collected.
   - All frequencies used to support safety critical UAS functionality have been coordinated and licensed in accordance with the appropriate licensing agency.
   - Quick access to back-up ground control systems.
   - Immediate availability of secondary power supplies for the GCS and all antennas.
   - Safe recovery of the vehicle in the event of loss of link.

5.8 Hazard Identification and Safety

The following section provides guidance for the identification of hazards.

1. The UAS operator should have in place a Safety Management System (SMS) that is consistent with the SMS recommendations in the Oil & Gas Producers Aviation Management Guidelines.

2. The UAS operators should have an incident reporting system that tracks and reports all mishaps, potential mishaps, control link events, and near misses. This system should provide for analysis and improvements made as a part of the operator's Safety Management System (SMS). All mishaps, incidents and anomalies should be tracked and reported to the Partnership, respective entity's aviation advisor and civilian aviation authorities when necessary.

3. A quality assurance (QA) program should be utilized as a part of the overall safety management system (SMS). The QA program should include:

- A Continuing Airworthiness Program.
- Any unique skill sets or maintenance practices relating to the aircraft and aircraft operations that may be outside the current scope and practices of staffed aviation.

4. Appropriate air traffic control should be immediately notified in the event of any emergency, loss of command link, loss of visual contact, or any other malfunction that would impact safety or operations.

5. All UAS operators should be equipped with any specialized equipment that may be required in the event of a mishap.

6. Consideration should be given towards using UAS with redundant controls, automatic flight termination and/or flight recovery systems when operating near populated areas or sensitive infrastructure.

7. The UAS operator should have an established hazard register and hazard identification process. A hazard analysis should be completed prior to beginning flight operations in a new location, or when a new UAS is employed at an existing location. All risks should be evaluated according to a Risk Assessment Matrix (RAM), and the results of any risk controls should be evaluated through a Gap Analysis process.

8. UAS contractors shall have a comprehensive aircrew fatigue management program as a part of their Safety Management Systems. Crew rest and crew mission day requirements, including consecutive days worked should be consistent with the Oil and Gas Producer's (OGP) Aircraft Management Guidelines (AMG) section 5.6.4 and compliant with applicable regulatory requirements. No PIC or reserve pilot should be at the controls of an UAS for more than eight (8) hours in one day to include no longer than three (3) hours in succession. UAS crews should have the opportunity of no less than twelve (12) hours of uninterrupted rest prior to flight operations.

6.0 UAS Data Security

The following section provides guidance for data security.

1. All photographic images, geospatial data or any other data obtained during UAS operations are the sole property of the Partnership. The data, in any form, shall not be shared with any third party without the written consent of the department vice president.

2. All photographic images, geospatial data or any other data obtained during UAS operations shall be stored on the Partnership's approved storage device. No data shall be stored on a third-party storage device without the written authorization of the department vice president.

6.1 UAS Security

This section provides guidance on security requirements of UAS, to ensure it meets ET and Sunoco's Infrastructure & Cybersecurity standards

1. Security approval is required for UAS used for Partnership's business.

2. Complete an Unmanned Aereal Systems Operations Request on ServiceNow Portal Energy Transfer Service Portal Homepage - Employee Center ***this form**

is currently in production, please contact the Security Operation Center (SOC) at Security@energytransfer.com for approval.

3. Report all lost or stolen UAS to Security Operation Center (SOC) at 800-786-2255.
4. Report all suspicious activity, unknown or reckless use of an UAS to the Security Operation Center (SOC) and your immediate Supervisor.

4. An inventory of all Partnership UAS will be maintained by Aeriel Patrol Unit.

5. Employees that hold an F.A.A Part 107 license will be documented with Aeriel Patrol Unit to ensure licenses are current and any training requirements are completed per government regulations.

6. Only approved UAS manufacturers may be used on Partnership property. Email **Mailbox, Pipeline Surveillance Technology Committee** to request a current list of approved manufacturers.

7.0 Documentation Requirements

Advance Request Notice of UAS On or Near ET or Sunoco's Property form.

8.0 References

- 14 CFR 21 - Certification Procedures for Products and Parts
- 14 CFR 91.3 - Responsibility and authority of the pilot in command.
- 14 CFR 107 - Small Unmanned Aircraft Systems

Revision Log:

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