

INFORMATION FOR BANNER TOWING OPERATIONS

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U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
Flight Standards Service
General Aviation and Commercial Division

PREFACE

This publication is presented as an information guide for banner towing operations, to promote safe operations through careful preparation and planning. For preparation and planning, administrative concerns are also addressed.

Federal Aviation Administration (FAA) investigations of aerial advertising/banner towing accidents have revealed that the majority of the accidents are associated with one or more of the following circumstances: the banner pickup maneuver, entangled or snarled banner towlines, or loss of engine power. An analysis of banner tow accidents has revealed the following information:

- Of the accidents resulting in ditching in rivers, lakes, or the ocean, the aircraft may have been capable of landing on shore. Sometimes the decision is made to ditch to protect the public on congested beaches or riverbanks.
- Of the accidents caused by engine failure resulting in an off-airport landing, the accidents could have easily occurred off shore. In one ditching accident, the pilot was saved by the timely appearance of a person on a personal watercraft. This person prevented the incapacitated pilot from drowning. The pilot did not have any flotation device. Pilots of banner tow aircraft operated over water should have the capability to save themselves in the first critical minutes of a ditching accident. FAA-approved flotation devices should be readily available.
- Lifeguard stations along riverbanks or beaches are generally not equipped to respond to offshore aviation accidents. Lifeguards are normally not trained to deal with the hazardous material (hazmat) issues of released fuel and oil and may not be familiar with the aircraft exits and seat belt assemblies. It is recommended that an FAA-approved personal flotation device be carried in the aircraft when banner tow flying along beaches, rivers, or lakes.

The FAA would like to thank everyone who participated in the development of this publication, especially the support provided by Aerial Sign Company, Inc., of Hollywood, FL.

This publication is available to the public on the FAA website at https://www.faa.gov/regulations_policies/handbooks_manuals/aviation/ and on the Flight Standards Information Management System (FSIMS) under “Publications” at <http://fsims.faa.gov/>.

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CHAPTER 1. INTRODUCTION

This publication provides information on safety recommendations and available procedures to assist individuals in banner towing operations.

TERMINOLOGY. For the purpose of this publication, the following terminology is applied:

Aerial Pickup Towline. The line connecting the grapple hook to the banner. The line is made of non-stretching material; extended length 250 feet (76 meters) is provided with an endless loop at the forward end and snap at the aft end for connecting to the mast assembly bridle ring.

Banner. An advertising medium supported by a temporary framework attached externally to an aircraft and towed behind that aircraft.

Grapple Hook and Cable Assembly. The device used to engage the towline when making an aerial pickup launch; consists of a ring on the forward end (which connects to the tow-hitch) connected by a line to a multiprong bar on the aft end, provided with a safety link at the forward end.

Mast Assembly or Lead Pole. A rigid pole that connects to the front of the banner and is equipped with bridle lines that join at a collector ring to which the towline couples. The mast stabilizes the banner and controls roll attitude. Only nonconductive materials are to be used.

Rudder Guard or Vee Bar. A device attached to the aft fuselage to guide the grapple line away from the tailwheel or control surface horns.

Safety Link. A weak link contained in the towing apparatus as recommended by the current edition of Advisory Circular (AC) 43.13-2, Acceptable Methods, Techniques, and Practices – Aircraft Alterations. The link is strong enough for towing, but breaking strength is low enough to protect the airplane and pilot in the event of an accidental overload.

Spring Keeper. A short length of spring attached to the bottom of the horizontal stabilizer or empennage.

Swim Line. A designated distance from the shoreline, which has an outer limit within which people would normally swim. This distance is usually set at 180 feet from shore.

Takeoff Launch Towline. Similar to an aerial pickup towline, but used for takeoff launch. The ring on the forward end of the towline couples to the tow hitch, followed by a stiffened section of the line that avoids fouling of the tailwheel. Made of non-stretching materials, this type of towline is normally 350 feet (107 meters) long.

Tow Hitch. The tow release mechanism and its mounting fixture that is normally attached to the tail of the airplane, which serves as a point of attachment for all trailing equipment and has a remote control release from the cockpit. This term usually includes the cockpit control.

CHAPTER 2. EQUIPMENT AND OPERATION SAFETY ISSUES

GRAPPLE HOOK DEPLOYMENT. A crucial event during banner towing operations is the deployment of the grapple hook. The grapple hook should be released in such a manner that neither it, nor the grapple line, snarls in aircraft control surfaces or landing gear (to include the tailwheel) in conventional gear configurations. The hook line must be observed to have clearance before every low approach. If the grapple line becomes snarled on the tailwheel or a control surface, a reduction in the capability of the pilot to control the airplane may occur. In a worst-case scenario, movement of the rudder or elevator control surface may be limited or even jammed. Further, the pilot may not be able to release the grapple line because of the entanglement. The best cure is prevention.

PREVENTION OF GRAPPLE LINE ENTANGLEMENT. Depending upon aircraft configuration, several devices can be used to help avoid entanglement.

The tow hitch end of the grapple line can be stiffened to prevent it from looping around the tailwheel or the empennage as the line is deployed. Stiffening of the line may be accomplished by working a 2-foot length of stiff plastic garden hose over the line. The hose is then carefully heat-formed over the knots at the ring. See Figure 2-1, Examples of a Plastic Garden Hose Installation.

Devices, such as spring keepers, can be used to hold the grapple line away from the tailwheel or the tail control surfaces until the grapple line is released. The spring keeper is attached to the bottom of the horizontal stabilizer or the empennage bracing wire into which the grapple line is connected.

The configuration of some aircraft may not permit the use of keepers to hold the grapple line away from the airframe. As an alternate method, the use of a rudder guard or Vee bar (if a multiple rope system is used) may be helpful. This device is attached to the aft fuselage and serves to guide the grapple line away from the tailwheel or control surface horns during deployment. See Figure 2-2, Examples of a Vee Bar.

The pilot should avoid uncoordinated or abrupt maneuvers during grapple line deployment. Trained ground support personnel should be available during banner pickup operations, and be briefed to observe the aircraft and inform the pilot if the line appears to be trailing abnormally. Picking up a banner with a loosely snarled line will only tighten it and complicate the problem.

BANNER PICKUP. The banner pickup is the most critical portion of a banner towing operation. A typical flight begins by taking off with the grapple hook assembly stowed. Upon reaching a safe altitude, the pilot will deploy the grapple hook and allow it to trail aft of the aircraft. See Figure 2-3, Examples of a Typical Tow Rope Configuration, Stowed for Deployment.

A shallow approach is conducted perpendicular to the pickup masts in an effort to snag the towline loop with the grapple hook. As the masts are reached, the airplane is rotated into a steep climb to ensure the banner will be peeled off the ground instead of jerked off at an acute angle, depending upon aircraft performance capabilities. As the banner is peeled off the ground,

back pressure is gradually reduced until the airplane is climbing at a normal angle with the banner in tow.

The approach to the pickup masts should be flown appropriate to the performance characteristics of the aircraft. Care must be taken to avoid snagging the towline with the airframe. An approach that is both too low and too slow may result in the grapple hook bouncing off the ground. The length of the grapple hook and line assembly should be limited to a length that will not allow the hook to strike the cockpit area of the airplane if it should come up over the fuselage. Grapples contacting a hard surface have been known to bounce upward and forward, over the airplane, snarling the horizontal stabilizer or a wing.

Stalls during the banner pickup procedure constitute one of the more frequent causes of banner towing operational accidents. A stall occurs when an airfoil reaches a critical angle of attack (AOA) and is a function of wing loading, independent of airspeed. In fact, an excessively abrupt rotation of an airplane during a pickup, or a snap or steep turn after a missed pickup, may be sufficient to precipitate an accelerated stall.

Note: The formula for a stall is the square root of the load factor multiplied by the normal stall speed. Gradually reducing back pressure while in the climb as the banner is picked up increases the margin from the stall threshold by decreasing the wing loading and consequently the AOA.

FLYING WITH A BANNER IN TOW. The accidental release of a banner in flight may not be hazardous to the tow plane or crew, but it may pose a threat to people and property on the surface. Banner towlines should be examined carefully for flaws before each towing day. Grapple hooks should also be examined for cleanliness and smoothness. Any surface irregularities on a hook can act as an abrasive and degrade the towline loop during the pickup as the line moves laterally over the hook while tension on the line is increased. Whenever possible, banner material and lines should be of nonconductive material; this reduces the risk of shorting out powerlines in the case where a banner is released over powerlines by accident.

LANDING WITH A BANNER IN TOW. Should a malfunction make it impossible to release the banner, it is generally uneventful if a hard surface runway is used. However, a special technique can be used if the landing is attempted on a sod or dirt runway. If the masthead and banner lay down on the sod runway, each blade of grass folds over the mast and each individual letter pole on lettered banners causes drag. The pilot needs to be aware that the masthead may dig into the soft turf like an anchor, stretching the towline, and sometimes breaking it. If the towline breaks, the sudden release of energy will cause the airplane to pitch down and a nose-over condition may occur. This condition can be countered by maintaining back pressure on the flight controls and adding full power once the drag caused by the masthead is experienced. After the airplane is again stabilized, the power is reduced.

MULTIPLE TOW HITCHES. When multiple tow hitches are used, an airplane may tow a succession of banners without having to land and reinstall a grapple line after every drop. A bank of as many as four or five tow hitches may be installed on the aircraft, and a grapple line is affixed to each. These lines are stowed within reach of the pilot in the same manner as previously discussed. Care must be taken to prevent multiple lines from tangling, and since the pilot will be

confronted by a multitude of grapples and hitch releases, each line and release should be positively matched to prevent confusion in the event of an emergency. The length of flights and fuel consumption should be considered in determining how many hooks will be added to a multiple tow hitch. See Figure 2-4, Examples of a Multiple Grapple Hook Installation.

BOOM-HOOK SYSTEM. An alternative to the multiple tow hitch system is a boom pickup system. A typical installation consists of a rigid boom pivoted aft of the landing gear, approximately the length of the aft fuselage. The boom is equipped with a hook that can be used to snag the towline and pick up the banner. A retract cable is employed to stow the boom under the fuselage during takeoff and landing.

The boom system eliminates the multiple grapple line of the multiple hitch system as well as the problems previously discussed concerning grapple line snarling and grapple bounce. On the negative side, due to the relatively short length of the boom, the airplane must be flown more carefully during the banner pickup and high enough to avoid snagging the towline with the landing gear, yet low enough to engage the bridle with the hook. Turbulence can cause the hook to bounce while in the normal trail position, and it may swing from side to side in a crosswind.

FIGURE 2-1. EXAMPLES OF A PLASTIC GARDEN HOSE INSTALLATION



FIGURE 2-2. EXAMPLES OF A VEE BAR

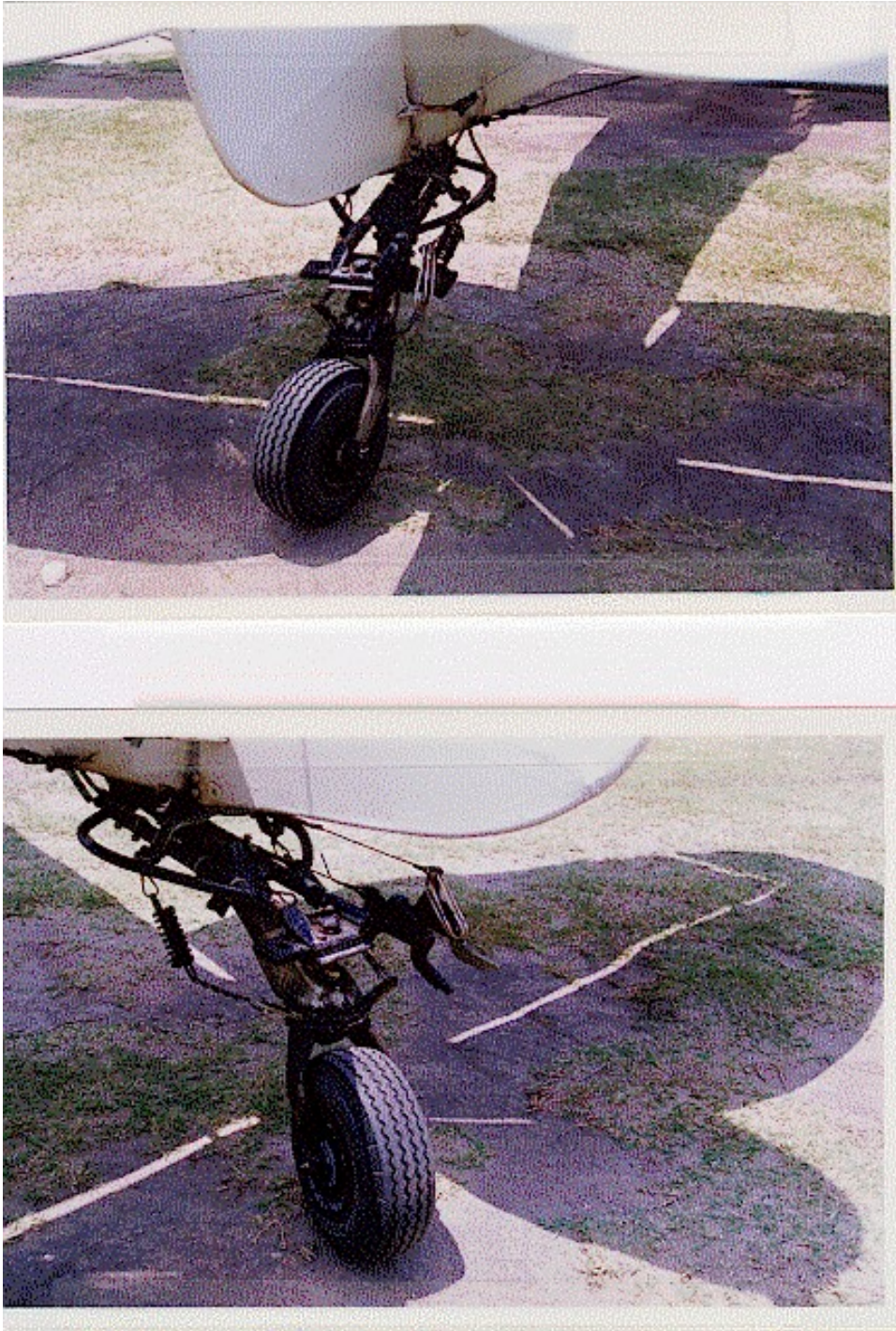
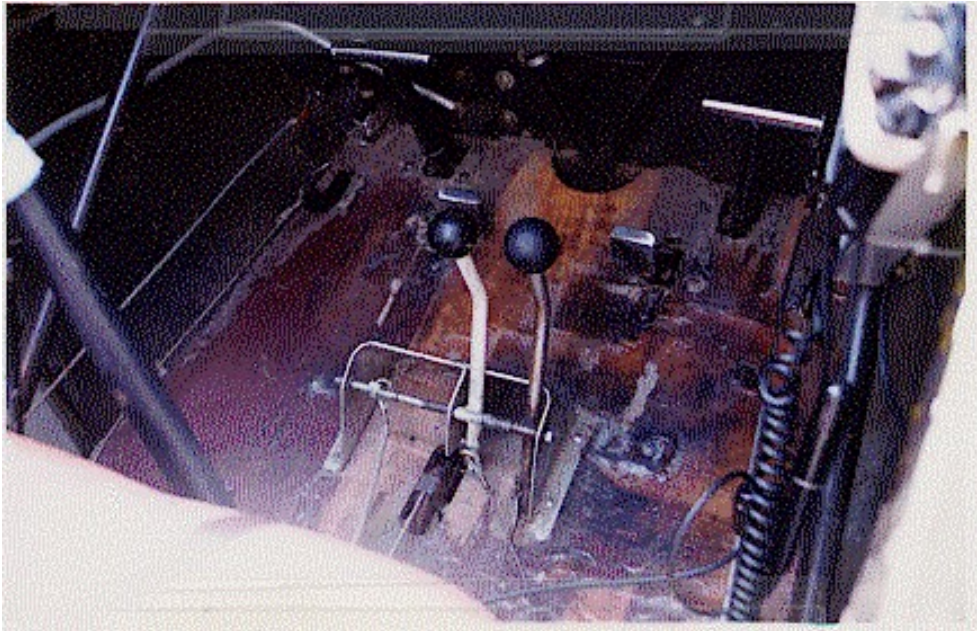


FIGURE 2-3. EXAMPLES OF A TYPICAL TOW ROPE CONFIGURATION, STOWED FOR DEPLOYMENT



FIGURE 2-4. EXAMPLES OF A MULTIPLE GRAPPLE HOOK INSTALLATION



CHAPTER 3. FAA FORM 7711-2, APPLICATION FOR CERTIFICATE OF WAIVER OR AUTHORIZATION

Applicants for a Certificate of Waiver (CoW) for banner towing operations will submit a completed FAA Form 7711-2 to the responsible Flight Standards District Office (FSDO) having jurisdiction over the area where the applicant's principal business office is located.

Blocks from FAA Form 7711-2 are explained below for the purpose of uniformity of use. However, not all blocks on the form may be applicable to the application request for the banner towing operation. Blocks 11 through 16 apply to air show and air race waiver requests only.

FRONT SIDE OF FORM.

Blocks 1 and 2—Name of Organization/Name of Responsible Person. If you are a representative of an organization, then the organization's name should appear in block 1. Your name and title or position, as the organization's representative, for application purposes should appear in block 2. If you are not representing an organization, enter the term "N/A" in block 1 and your name in block 2.

Block 3—Permanent Mailing Address. Enter the permanent mailing address of the organization or responsible person in block 3.

Block 4—Pending Waiver Application. State whether you or any of the principal officers or owners currently have an application for waiver pending at any other FAA office.

Block 5—Denial or Withdrawal of Previous Application. You should also state whether you have had an application for a waiver denied or if the FAA has ever withdrawn a prior waiver issued to them or to any of the principal officers or owners.

Block 6—14 CFR Section and Number To Be Waived. All applicable Title 14 of the Code of Federal Regulations (14 CFR) sections and numbers that are to be waived for the operation to be conducted must be listed in this block. If you are unsure which 14 CFR sections will need to be waived, contact the responsible FSDO for guidance. Verify that 14 CFR part 91, § 91.311 is listed, and if the banner tow aircraft is of the restricted category and plans to operate in areas prohibited by § 91.313(e), also verify that § 91.313(e) is listed.

Block 7—Detailed Description of Proposed Operation. Include detailed information on the type of operation, including using the term "aerial advertising/banner towing."

Block 8—Area of Operation. List the geographic area(s) where the banner towing operation will be conducted. If you have a national operation, it is acceptable to request an authorization for "The 48 contiguous United States and the District of Columbia." If you wish to include those states or territories outside the contiguous United States, such as Alaska or Puerto Rico, simply add the additional states or territories in block 8, as applicable.

Block 9—Time Period. Ensure you have included a beginning date, an ending date, and specific hours (for a one-time event) for the planned operation. Ensure that the requested dates do not exceed 24 calendar-months. The application should be submitted to the responsible FSDO at

least 45 days before the beginning date of the banner towing operation. If the application is for a one-time banner towing operation, it is advisable to request an alternate date for the operation. Alternate dates should be listed in this block. If there are any questions, please contact the FSDO.

Block 10—Aircraft and Pilots. List the names of all pilots, their certificate numbers and ratings, full home addresses, and all aircraft by make, model, and registration number that will be used in the operation. If the type of aircraft or the names of the pilots are not known at the time the application is submitted, the FAA will accept the application with the statement, “A list containing aircraft and pilot information will be furnished on [insert date].”

BACK SIDE OF FORM.

Blocks 11 through 16 apply to air show and air race requests only.

Block 17—Certification. As the applicant or an organization’s representative, you must sign in this block and on each page of the application.

FIGURE 3-1. SAMPLE FAA FORM 7711-2, APPLICATION FOR CERTIFICATE OF WAIVER OR AUTHORIZATION

No certificate may be issued unless a completed application form has been received (14 C.F.R. 91, 101, and 105).


 US Department of Transportation Federal Aviation Administration APPLICATION FOR CERTIFICATE OF WAIVER OR AUTHORIZATION		Form Approved: O.M.B. No. 2120-0027 08/31/2019	
		APPLICANTS - DO NOT USE THESE SPACES	
		Region	Date
		Action <input type="checkbox"/> Approved <input type="checkbox"/> Disapproved - Explain under "Remarks"	
		Signature of authorized FAA representative	
INSTRUCTIONS			
Submit this application in triplicate (3) to any FAA Flight Standards district office. Applicants requesting a Certificate of Waiver or Authorization for an aviation event must complete all the applicable items on this form and attach a properly marked 7.5 series Topographic Quadrangle Map(s), published by the U.S. Geological Survey (scale 1:24,000), of the proposed operating area. The map(s) must include scale depictions of the flightlines, showlines, race courses, and the location of the air event control point, Police dispatch, ambulance, and fire		fighting equipment. The applicant may also wish to submit photographs and scale diagrams as supplemental material to assist in the FAA's evaluation of a particular site. Application for a Certificate of Waiver or Authorization must be submitted 45 days prior to the requested date of the event. Applicants requesting a Certificate of Waiver or Authorization for activities other than an aviation event will complete items 1 through 10 only and the certification, item 17, on the reverse.	
1. Name of organization AAA AERIAL SIGN CO.		2. Name of responsible person JAMES A. JOHNSON	
3. Permanent mailing address	House number and street or route number #3 AIRPORT DRIVE SUITE 202	City SPRINGFIELD	State and ZIP code FLORIDA 33033
		Telephone No. 305-555-1234	
4. State whether the applicant or any of its principal officers/owners has an application for waiver pending at any other office of the FAA. NONE			
5. State whether the applicant or any of its principal officers/owners has ever had its application for waiver denied, or whether the FAA has ever withdrawn a waiver from the applicant or any of its principal officers/owners. NONE			
6. FAR section and number to be waived 91.311, 91.313 (e)			
7. Detailed description of proposed operation (Attach supplement if needed) AERIAL ADVERTISING / BANNER TOWING			
8. Area of operation (Location, altitudes, etc.) CONTIGUOUS UNITED STATES, PUERTO RICO			
9a. Beginning (Date and hour) 09/01/2017		b. Ending (Date and hour) 08/31/2019	
10. Aircraft make and model (a)	Pilot's Name (b)	Certificate Number and rating (c)	Home address (Street, City, State) (d)
THE APPLICANT MAY	SUBMIT THIS INFO ON A	SEPARATE SHEET	BY 8/15/2017

FIGURE 3-1. SAMPLE FAA FORM 7711-2, APPLICATION FOR CERTIFICATE OF WAIVER OR AUTHORIZATION (CONTINUED)

▶ ITEMS 11 THROUGH 16 TO BE FILLED OUT FOR AIR SHOW/AIR RACE WAIVER REQUESTS ONLY.				
11. The air event will be sponsored by:				
12. Permanent mailing address	House number and street or route number	City	State and ZIP code	Telephone No.
13. Policing (Describe provisions to be made for policing the event.)				
14. Emergency facilities (Mark all that will be available at time and place of air event.)				
<input type="checkbox"/> Physician <input type="checkbox"/> Fire truck <input type="checkbox"/> Other - Specify _____ <input type="checkbox"/> Ambulance <input type="checkbox"/> Crash wagon _____				
15. Air Traffic control (Describe method of controlling traffic, including provision for arrival and departure of scheduled aircraft.)				
16. Schedule of Events (include arrival and departure of scheduled aircraft and other periods the airport may be open.)				
Hour (a)	Date (b)	Event (c)		
<i>If sufficient space is not available, the entire schedule of events may be submitted on separate sheets, in the order and manner indicated above.</i>				
Please Read	The undersigned applicant accepts full responsibility for the strict observance of the terms of the Certificate of Waiver or Authorization, and understands that the authorization contained in such certificate will be strictly limited to the above described operation.			
17. Certification - I CERTIFY that the foregoing statements are true.				
Date	Signature of Applicant			
07/11/2017	<i>J. Johnson</i>			
Remarks				

CHAPTER 4. BANNER TOWING OPERATIONS

ADMINISTRATION.

Records. The holder of the Certificate of Waiver (CoW) must maintain and keep current the following records at the home base of operations designated in the waiver application:

- The date of each banner tow service; and
- The registration number of aircraft used for each operation conducted.

Note: If the company invoice has all the above-required information, the invoice would suffice for this record.

These records must be kept for a minimum of 12 months and made available for inspection by the Administrator upon request.

Certificate of Waiver. CoW J550, Banner Towing Operations, is issued in the Web-based Operations Safety System (WebOPSS), which allows for national visibility and tracking of all approved banner tow waivers (see Figure 4-1, Sample Certificate of Waiver J550, Banner Towing Operations). The banner tow waiver contains special provisions issued in the interest of safety that are general in nature. Additional provisions may be issued because the proposed operation uses nonstandard equipment or for other reasons, such as geographical considerations, pilot limitations, air traffic control (ATC) limitations, and weather conditions.

Sample Additional Special Provisions.

1. Appropriate airport officials will be notified in advance when banner towing operations will be in close proximity to an uncontrolled airport.
2. Tow attachment and release mechanisms on the aircraft must be approved by the FAA.
3. A thorough inspection of the aircraft and special equipment must be made prior to each day's operation.
4. Only essential crewmembers will be carried during banner towing operations.
5. When banner towing operations are conducted around congested areas, due care will be exercised so that in the event of an emergency release of the banner or tow rope it will not cause undue hazard to persons or property on the surface.
6. The altitudes for operations must be in accordance with 14 CFR part 91, § 91.119. The waiver holder is fully responsible for safeguarding persons and property on the surface during flight.

7. Except when necessary for takeoff and landing, all flights will be conducted at or above 500 feet above ground level.
8. No cargo may be carried, nor may any dispensing materials be carried in the hopper, or carried in bulk packages or metal containers on board the helicopter when operating in accordance with this waiver.

FIGURE 4-1. SAMPLE CERTIFICATE OF WAIVER J550, BANNER TOWING OPERATIONS

1. The operator, [Name], is authorized in accordance with Title 14 of the Code of Federal Regulations (14 CFR) part 91, § 91.311 to conduct banner towing operations when signed by the Responsible Person listed in Table 1 and in item 2 on the FAA Form 7711-2 application. This document constitutes the same authority as FAA Form 7711-1 (7-74) and will be issued in lieu of that form for banner towing operations.

a. This Certificate of Waiver (CoW) does not waive any state law or local ordinance. Should the proposed operations conflict with any state law or local ordinance or require permission of local authorities or property owners, it is the operator’s responsibility to resolve the matter.

b. No person may conduct any operation pursuant to the authority of this CoW except in accordance with the standard and special provisions contained in this CoW, and other requirements of 14 CFR not specifically waived by this CoW.

2. Responsible Person. This CoW is considered invalid until signed by the Responsible Person for flight operations listed in Table 1. The Responsible Person for flight operations may be either a person who is a U.S. citizen or a person who holds a U.S. pilot certificate, and has ongoing knowledge of the operations of the aircraft and legal authority to sign on behalf of the operator. By signing this document, the Responsible Person for flight operations accepts responsibility for ensuring compliance with the stated regulations, requirements, limitations, and provisions of this CoW.

a. If the Responsible Person signing this CoW relinquishes responsibility, this CoW becomes invalid.

b. The name, telephone number or email address, street address (not a post office box), city, state, and ZIP Code for the person responsible for flight operations are listed in Table 1 below.

Table 1 – Responsible Person

Name	Telephone #/Email Address	Address	City	State	ZIP

3. Effective Date and Expiration. This CoW is effective from [date] to [date], inclusive, and is subject to cancellation at any time upon notice by the Administrator or his authorized representative. The CoW must not exceed 24 calendar-months. The operator may renew this CoW by submitting an application for a CoW, at least 45 days prior to the expiration date, to the responsible Flight Standards District Office (FSDO).

4. Authorized Aircraft.

a. The operator must only use the aircraft authorized as listed on the approved FAA Form 7711-2 application to conduct operations in accordance with this CoW.

b. Restricted category civil aircraft.

(1) Restricted category civil aircraft must be operated in accordance with an FAA Form 8130-7, Special Airworthiness Certificate, and its associated operating limitations.

(2) Operation of a restricted category civil aircraft over a densely populated area, in a congested airway, or near a busy airport where passenger transport operations are conducted, requires issuance of CoW J551, Restricted Category Civil Aircraft Operating Limitations, in accordance with § 91.313(e).

c. Helicopters.

(1) The provisions of § 91.119(d) are not applicable when operating under the terms of this CoW.

(2) The operator must take into account the lowest point on the trailing banner when determining a helicopter's correct flight altitude. The altitude must be sufficient for the aircraft and trailing banner to comply with § 91.119(b) and (c).

5. Authorized Pilots. The operator must only use the pilots authorized as listed on the approved FAA Form 7711-2 application to conduct operations in accordance with this CoW. When banner towing operations are conducted for compensation or hire, the pilot must have at least a limited Commercial Pilot Certificate (without an instrument rating) and at least a valid second-class medical certificate. For flights that are not conducted for compensation or hire, the pilot of the tow aircraft must hold at least a valid Private Pilot Certificate and have a minimum of 200 hours PIC time.

6. Geographic Area of Operations. The operator is authorized to conduct banner towing operations in the following geographic area(s):

[Select one of more Geographic Area(s) of Operations OR enter specific U.S. state(s), territories, or locations.]

The 48 Contiguous United States and the District of Columbia The Commonwealth of Puerto Rico The State of Alaska The State of Hawaii

7. Weather Limitations. Banner towing operations are limited to day, visual flight rules (VFR)-only operations. Operations must be conducted only between the hours of official sunrise and official sunset. The operator must comply with the following additional weather limitations:

[Weather Limitations: Enter additional weather limitations OR enter "None" if there are no additional weather limitations.]

[Additional weather limitations.]

8. Standard Provisions. The operator is responsible for compliance with the following standard and special provisions:

- a. A copy of the application (FAA Form 7711-2) made for this CoW must be attached to, carried with, and become a part hereof.
- b. A copy of this CoW must be carried on board each authorized aircraft.
- c. This CoW must be presented for inspection upon request of any authorized representative of the FAA, or any state or municipal official charged with the duty of enforcing local laws or regulations.
- d. The operator is responsible for the strict observance of the terms and provisions contained herein.
- e. This CoW is not transferable.
- f. Failure to comply with this CoW and the special provisions may constitute justification for rescinding the CoW.

9. Special Provisions.

- a. For banner towing operations outside the geographic area of the FSDO that issued this CoW, or when operating in another FSDO's geographic area, the operator will provide written notification, by letter or email, to the appropriate non-issuing FSDO responsible for that geographic area not less than 7 days in advance of any operations conducted. Notification will include the applicable date(s) of operation, location(s) of operation, and operator contact information. If the non-issuing FSDO requires additional special provisions for the added geographic area, those provisions will be added by the issuing FSDO. The operator will comply with all special provisions attached to its waiver.
- b. Whenever there is a change of pilots or aircraft, the FSDO must be notified at least 7 days (or 5 business-days) in advance of the first date the aircraft or pilot is scheduled to operate. The FSDO must approve the change before the operation involving the new pilot or aircraft takes place.
- c. The operator is responsible for training each new pilot in banner towing operations and in the special provisions of the CoW.
- d. The maximum number of letters (panels) or the largest advertisement to be towed cannot be more than was demonstrated to the FAA.
- e. Banner pickup or drop should be in a pre-designated area with adequate clearance from taxiways, runways, persons, buildings, parked automobiles, and other aircraft and should avoid obstacles and not endanger other aircraft in the air or persons, property, or aircraft on the surface.
- f. The operator must obtain the airport manager's approval to conduct banner towing operations at that respective airport.
- g. If the airport involved has an FAA Control Tower, the operator must coordinate all banner towing operations and operate in coordination with the FAA Control Tower during banner towing operations.

[If entering additional special provisions, first check this box and then enter the special provisions in the text box below.]

10. Additional Special Provisions.

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RULES TO FOLLOW FOR FLIGHT OPERATIONS.

General.

1. Banner towing operations will be conducted during daytime under visual flight rules (VFR).
2. At no time will an aircraft towing a banner fly directly over another aircraft or fly under another aircraft towing a banner.
3. All pilots of banner tow aircraft must adhere to the regulatory requirements regarding seeing and avoiding other aircraft (refer to § 91.113(b)).
4. When operating along beaches, rivers, or lakes, an FAA-approved personal flotation device should be carried on board the aircraft and be readily available to the pilot.
5. All banner tow operators will meet with the responsible FSDO as required to discuss amended, changed, or new regulations, flight patterns, temporary flight restrictions (TFR), or other data deemed necessary by the FSDO.

Minimum Altitudes. Operations around congested areas or around open-air assemblies of persons must be executed in accordance with a planned course of action with emphasis on selection and availability of emergency landing areas. Due to the area around which such operations are usually conducted (e.g., congested areas or open-air assemblies of persons), the pilot will exercise special precautions to ensure compliance with § 91.119(a), (b), and (c). Operations around congested areas/open-air assemblies must be no lower than 1,000 feet above the highest obstacle. Operations should never be conducted directly over an open-air assembly of persons at any altitude. The operator should take into account the lowest point on the trailing banner when determining a helicopter's correct flight altitude. For safety purposes, the altitude should be sufficient for the aircraft and trailing banner to comply with § 91.119(b) and (c). Some banners may extend more than 250 feet behind the aircraft. Section 91.119(d) is not applicable to helicopters under the terms of the CoW.

Note: Due to TFR requirements, altitude may be limited to no less than 3,000 feet above ground level (AGL) and horizontal distances limited to no closer than 3 nautical miles.

Air Traffic Control (ATC).

1. Before conducting towing operations within Class B, C, or D Airspace, each pilot will establish and maintain two-way radio communications with ATC for coordination purposes and comply with additional instructions or clearances as required by ATC.
2. The waiver holder will sign and comply with any ATC banner tow operator's Letter of Agreement, if applicable.

3. Any ATC Letters of Agreement (or a copy) will be carried aboard the aircraft during banner towing operations.
4. Banner towing operations at airports will be conducted in accordance with ATC clearance or the local standard traffic pattern procedures established by airport management.

Helicopters.

1. Helicopter operators must provide a means to prevent the banner from becoming entangled in the helicopter's tail rotor during all phases of flight. The only way to prevent the banner from tangling in the tail rotor in the event of a power failure may be to immediately jettison the banner.
2. A helicopter operator may tow a banner either under the terms of a § 91.311 CoW, or with a 14 CFR part 133 operating certificate. A part 133 operator is not required to hold a § 91.311 CoW. However, the part 133 operator must:
 - Have at least a Class B rotorcraft-load combination authorization on the part 133 operating certificate;
 - Have a reliable record that the banner being towed, and its configuration, does not differ substantially from that which the person operating the aircraft has previously carried with that type of aircraft;
 - Have an approved congested area plan (CAP), if required; and
 - Comply with part 133 during the banner towing operation.
3. The provisions of § 91.119(d) are not applicable when operating under the terms of a banner tow CoW. The operator must take into account the lowest point on the trailing apparatus when determining the helicopter's correct flight altitude in order to comply with § 91.119(b) and (c). When operating over congested areas of a city, town, or settlement, or over any open-air assemblies of persons, the minimum altitude must not be lower than 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft. Operations elsewhere will be conducted in compliance with § 91.119(c).
4. The pilot needs to be aware that the masthead may dig into the soft turf like an anchor, stretching the rope, and sometimes breaking it.
5. Only jettisonable grapple hooks should be used for banner towing operations.
6. Extremely large banners using long suspension ropes and heavily weighted bags for flight positioning require additional review. The operator should take into account the lowest point on the trailing banner when determining a helicopter's correct flight altitude. For safety purposes, the altitude should be sufficient for the aircraft and trailing banner to comply with § 91.119(b) and (c). Some banners may extend as much as 250 feet behind the aircraft.

CHAPTER 5. BANNER TOW TRAINING

TRAINING FOR BANNER TOWING OPERATIONS. Before operating under the terms of the waiver, the responsible person must ensure that all pilots satisfactorily complete ground and flight training applicable to the aircraft used, and review 14 CFR sections appropriate to banner towing operations and special provisions of the waiver. An experienced banner tow pilot should administer this training. Flight training should include flight at critically slow airspeeds, maximum performance maneuvers, and emergency procedures, to include equipment malfunctions and safety considerations during banner pickups and drop-offs. A flight proficiency check in one of the aircraft to be used for banner towing should also be conducted. This proficiency check should evaluate maneuvers using the Commercial Pilot Airman Certification Standards (ACS). (See Figure 5-1, Suggested Banner Tow Training Syllabus, below.) Ground support personnel should also receive training appropriate to the banner towing operation.

Training Records. Applicants for a banner tow waiver must present a reliable record that each pilot used in banner towing operations has successfully completed banner towing training. These records should include the pilot's name, certificate number, and the date the pilot met the knowledge and skill requirements and completed the flight proficiency check. An example pilot training record may be found in FAA Order 8900.1, Volume 3, Chapter 3, Section 1, Issue or Renew a Certificate of Waiver—Banner Towing, Figure 3-12, Banner Towing Operations Job Aid.

Multiple Release Systems. Pilots authorized to operate aircraft with multiple release systems must receive training administered by a pilot qualified in multiple release systems. The training must include methods to visually verify:

- Hook and release mechanisms prior to each pickup and drop-off.
- That release handles are numbered in sequence and positioned in a manner that will allow the pilot to activate all handles.
- That the rack or other device used to secure grapple hooks to the aircraft should be labeled in a letter or number sequence that is easily recognizable by the pilot while airborne to correspond with the appropriate release handle.

FIGURE 5-1. SUGGESTED BANNER TOW TRAINING SYLLABUS

The following is an example of a training syllabus for banner tow pilots. Some areas may not be applicable in all situations, and additional areas may be added.

I. Ground Training.

- A. As a minimum, banner tow ground training should include: aircraft fuel system and fuel management, aircraft speeds, banner tow equipment preflight inspection, applicable regulations and waiver provisions, and risk management/Safety Risk Management (SRM) related to banner towing operations.

II. Flight Training.

- A. **Traffic Patterns.** The pilot is trained to maintain an accurate pattern altitude in the traffic pattern while towing a banner.
- B. **Banner Pickup Maneuver: Swings.**
 - 1. The pilot should practice swings. This is accomplished without a hook installed on the aircraft and is designed to produce an understanding of the visual cues associated with a banner pickup maneuver.
 - 2. The pilot should fly swings with a hook installed on the aircraft. During this time, there is a ground support person, with a radio, positioned in the vicinity of the poles providing precise information about the height of the hook during the maneuver and whether the swing was early or late.
 - 3. When the instructor considers that the pilot has the mental picture and understanding of the swing, the pilot should complete actual pickups and drops of a banner with the instructor monitoring the maneuver and providing additional instruction as required.
 - 4. The pilot in training should fly actual banner flights accompanied by a qualified banner tow pilot. This banner flight time should teach the pilot:
 - a. Familiarization of banner routes, check points, or landmarks.
 - b. Fuel management.
 - c. Air traffic control (ATC) procedures and communications.
 - d. If flights are conducted with two people in the cockpit, limiting the banner must be considered to compensate for the weight of the extra person. Aircraft must be operated within its Weight and Balance (W&B) limitations.

III. Solo Work.

- A. Upon completion of training, the pilot will complete pickups and drops while the instructor monitors the maneuvers from a ground location near the pickup poles and provides instruction as necessary.
- B. The pilot should include upper-air work including power-on and power-off stalls, slow flight, and steep turns, as well as takeoffs and landings. This provides awareness and appreciation of the flight characteristics of the aircraft.

IV. Proficiency Flight Check.

- A. Administered by an experienced banner tow pilot.
- B. Conducted in one of the aircraft to be used for banner towing.
- C. Flight profile should include the following maneuvers: flight at critically slow airspeeds, maximum performance maneuvers, and emergency procedures, to include equipment malfunctions and safety considerations during banner pickups and drop-offs. Evaluate these maneuvers using Commercial Pilot Airman Certification Standards (ACS).

FIGURE 5-2. SUGGESTED AIRPLANE FLIGHT MANEUVERS

A. The Banner Pickup. (All procedures should be adjusted for different aircraft performance.)

1. After takeoff and the grapple hook is dropped, the pilot should visually inspect the grapple line and hook to ensure it did not become entangled in the tail section of the aircraft during deployment.
2. The airplane approaches the poles at 250 feet above ground level (AGL) at 1.6 times the airplane stall speed.
3. At the point where the down-line is initiated, the airplane is pitched down at a minimum of 5 degrees and maximum of a 15 degree angle while reducing the engine power to maintain proper airspeed.

NOTE: Where to initiate the down-line varies depending upon wind conditions.

4. At the point of the mast poles, full throttle should be selected to ensure a safe climb-out. (If the banner should snag another banner or object on the ground, the pilot would have a better chance of reacting to this situation.)
5. Minimum airspeed through the pickup poles should be 1.6 times the stall speed.

NOTE: The pilot should always fly to a point at pickup. This will allow the ground crew to give direction to the pilot after a missed attempt such as 10 feet forward or aft of the pilot's established reference point.

6. Upon hooking the banner, the airplane climbs at a minimum speed of 1.2 times the stall speed and maximum engine power is applied.
7. Upon reaching 225–250 feet AGL, maintain proper forward momentum and altitude. Although the climb is stopped, the aircraft may remain in a nose-high attitude.
8. Full power and adequate airspeed are maintained until reaching 1,000 feet AGL.

B. The Banner Drop. (All procedures should be adjusted for different aircraft performance.)

1. The airplane approaches the designated drop zone at 300 feet AGL.
2. Upon reaching the drop zone, full power is applied prior to releasing the banner and minimum airspeed should be 1.2 times the stall speed. Full power should be maintained after the banner release handle is activated. This is a safety procedure in the event the banner does not release and snags an object. The pilot would then have power to assist in recovery. Caution should be exercised as to not exceed 1.5 times the stall speed of the aircraft.
3. Rotation is initiated prior to dropping the banner.
4. When the airplane is established on the up-line, a delay of approximately 3 seconds is incorporated into the maneuver to allow the banner to reach its lowest altitude.
5. After the banner is released, the pilot should be prepared to hold the controls in position as the nose will pitch up because of the reduction of drag after banner release.
6. Procedures to follow in the event the banner does not properly release.

FIGURE 5-3. SUGGESTED BANNER TOW EQUIPMENT PREFLIGHT AND POSTFLIGHT CHECKLIST

The following is a suggested checklist. Its purpose is to help the banner tow operator better understand the importance of the preflight and postflight inspection of the equipment used in banner towing. It is NOT intended to replace or supersede the current FAA-approved Aircraft Flight Manual (AFM), Pilot's Operating Handbook (POH), or Rotorcraft Flight Manual (RFM) for the aircraft being flown. No person may operate a civil aircraft without complying with the Abnormal/Emergency procedures.

- 1.** If a safety link is used, the safety link should be closely checked following each flight. When a heavy load has been exerted on the safety link, the ends of the link will bend out of their parallel position. High winds, excessive speeds, and extra-large or extra-long signs may cause the load limits of the link to be exceeded.
- 2.** Check the ends of the towlines, hook lines, or grapple lines frequently for wear. Examine the hemming of the letter fabric. If an edge is snagged or coming loose at the hem, repair it before the next flight.
- 3.** Check the operation of the tow hitch.
- 4.** A suitable shoulder harness should be installed.
- 5.** Inspect the grapple hook for anything unsafe.
- 6.** Check the banner layout, ensuring that nothing is twisted, and that the towline on the front of the banner is in good condition.
- 7.** Check the banner for any tangles or uncoupled fasteners.
- 8.** Inspect the grapple line and ensure that it is correctly coupled before takeoff.
- 9.** Extend the main section of the towline along the flightpath to minimize slack.
- 10.** Attach the towline snap to the bridle ring on the mast assembly.
- 11.** Inspect the towline for serviceable condition. It will usually start to deteriorate from the inside rope first. Small broken fibers will be visible extending through the outer strands, indicating an unsafe condition. There should not be any knots in the line. Knots weaken a towline.

CHAPTER 6. BANNER TOW AIRCRAFT

Certain procedures for towing should be observed in addition to normal flight rules and safety measures. Tow at the lowest airspeed that provides adequate engine cooling, positive control, and a safe margin over stall. The drag of the banner increases in proportion to the square of an increase in speed; an increase in airspeed of 10 percent will produce a 20-percent increase in drag, requiring more power. Wear of the banner equipment will also be greater at the higher speeds.

During towing operations, the engine must work harder than normal. Watch the airspeed indicator and work toward finding the best tow speed for the airplane. At towing speeds, a climb prop is more efficient than a cruise prop. Use the flattest pitch and largest prop diameter allowable for the engine and airplane. Slow flight may reduce engine cooling on some airplanes, with resultant cylinder head temperature increase, although oil temperatures may not be up significantly.

On some airplanes, a slight extension of flaps helps by effectively increasing the attack angle of the wings, allowing the nose to be a little lower for better visibility and engine cooling.

AIRCRAFT REQUIREMENTS. No person may operate an aircraft used in banner towing unless:

1. The aircraft has a current annual inspection in accordance with 14 CFR part 43 or has received an inspection for the issuance of an airworthiness certificate in accordance with 14 CFR part 21.
2. A tow hitch release system is installed using methods, techniques, and practices approved by the Administrator (e.g., Type Certificate Data Sheets (TCDS), aircraft specifications, aircraft manufacturer's kits, Supplemental Type Certificate (STC), FAA field approvals, AC 43.13-2, etc.).
3. A safety link or other safety device is installed between the tow hitch release and banner assembly. This device must be designed to break away at loads no greater than the structural design limits of the tow release system.
4. A guard or other protective device is installed to prevent the grapple hook assembly from draping across the rudder horn or tailwheel when the grapple hook is dropped.

OPERATION OF BANNER TOW AIRCRAFT WITH DOOR REMOVED. When an aircraft is used for a special purpose such as banner towing, the operator may determine it is advantageous to operate the aircraft with a door removed. If an operator wishes to operate an aircraft with a door removed, the operator should contact the responsible FSDO for guidance.

Owners or operators interested in obtaining an authorization to operate an aircraft listed on the FAA Form 7711-2 with a door removed should forward a written request to the FSDO that has jurisdiction over the area in which operations are to be conducted.

The request should contain the following information:

- The name and address of the registered owner;
- The make, model, serial number, and registration number of the aircraft;
- The location where the aircraft is normally based; and
- The reason for the aircraft to be operated with the door removed.

A copy of the operating limitations will be forwarded to the FAA Aircraft Registration Branch in Oklahoma City, OK for enclosure into the aircraft historic file.

AIRWORTHINESS REQUIREMENTS FOR BANNER TOW AIRCRAFT. An aircraft that is in full compliance with its type design and has an FAA-approved banner tow installation may be operated under a standard airworthiness certificate for banner towing purposes. An aircraft that has a standard airworthiness certificate and is modified for a special purpose operation may have a multiple airworthiness certificate (standard/restricted) when the following conditions occur:

1. The special purpose modification does not meet the type design.
2. The special purpose modification is not approved for standard category use.
3. The aircraft will be operated outside the normal category operating limitations. (Refer to the current edition of FAA Order 8130.2, Airworthiness Certification of Aircraft.)

Airworthiness Certificates.

When aircraft are used for special purposes such as aerial advertising, a Special Airworthiness Certificate in the restricted category may be issued to the aircraft in accordance with part 21, § 21.25.

Section 21.25(b)(6) and (7) states aerial advertising includes skywriting, banner towing, airborne signs, public address systems, and any other operation specified by the Administrator.

It is possible for an aircraft that is used for banner towing operations to have multiple airworthiness certificates. The aircraft may have a standard airworthiness certificate that is displayed when the aircraft is operated as it was originally certificated, and a Special Airworthiness Certificate in the restricted category to be displayed during banner towing operations.

If an operator wishes to have multiple airworthiness certificates for the aircraft, he or she must meet the requirements of § 21.187. Section 21.187(a)(1), requires the operator to demonstrate compliance with the requirements for each category when the aircraft is in the configuration for that category. Section 21.187(a)(2) requires demonstration that the aircraft can be converted from one category to another by removing or adding equipment by simple mechanical means.

It is not uncommon for a banner tow operator to configure aircraft for banner towing operations in a manner and to such an extent that the aircraft no longer meets the requirements of § 21.187. After proper application, these aircraft can be issued a Special Airworthiness Certificate in the restricted category, and limited to banner towing operations only.

Aircraft that are modified and certificated under § 21.25 for special purpose operations will be issued operating limitations with the CoW. The operating limitations specify the type and scope of operations for which the aircraft may be used, and the aircraft must be operated as prescribed in § 91.313.

No person may operate a civil aircraft unless an appropriate airworthiness certificate and effective U.S. Registration Certificate are displayed in the aircraft at the cabin or cockpit entrance, so that it is legible to the passengers or crew as prescribed in § 91.203(b).

The current edition of AC 20-65, U.S. Airworthiness Certificates and Authorizations for Operation of Domestic and Foreign Aircraft, provides guidance and general information regarding the issuance of airworthiness certificates for U.S.-registered aircraft.

Maintenance Requirements.

Aircraft with a Special Airworthiness Certificate in the restricted category issued under § 21.25 are subject to the same maintenance and record keeping requirement as aircraft operated with a standard airworthiness certificate, part 43, § 43.1(a)(1).

All maintenance, repairs, and alterations must be operationally checked, approved, and documented as prescribed by § 91.407.

All major repairs and alterations to the aircraft and appliances as defined in 14 CFR part 1 may be returned to service as long as the person approving the return to service is a person specified in § 43.7 or § 43.17, and the approval for the return to service of the aircraft conforms to all regulatory requirements as prescribed in part 43 appendix B.

Title 14 CFR part 65, § 65.95(a)(1) states that the holder of an inspection authorization may return an aircraft to service after major repair or major alteration if the work was done in accordance with technical data approved by the Administrator. The owner or operator as prescribed in § 91.417(a), (b), and (c) must maintain these records.

Aircraft that are used for a special purpose like banner towing must be inspected annually as required by § 91.409.

Banner tow aircraft that are operated with a Special Airworthiness Certificate in the restricted category under § 21.25 must also be marked in accordance with § 45.23(a) and (b). Aircraft operated in the restricted category must display the word “RESTRICTED” near each entrance to the cabin or cockpit on that aircraft, in letters not less than 2 inches or more than 6 inches in height.