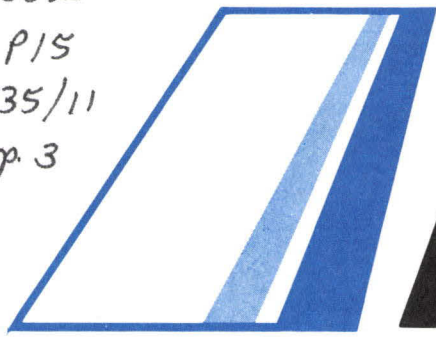


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Palmetto AVIATION

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STATE DOCUMENTS

VOLUME 35 NUMBER 11

South Carolina Aeronautics Commission

NOVEMBER, 1983



Sled Lt. Murray Fant, standing on the helicopter skid, gets the signal to lower himself so he will clear the skid when he jumps to begin his descent to the ground 110' below. Fant was one of about 20 agents who recently took training in using rappelling techniques to descend from a helicopter. The agents expect to use the procedure to locate marijuana fields in remote locations or as an anti-terrorist tactic. (Aeronautics Commission photo).

SLED agents can now 'drop in', literally

State Law Enforcement Division (SLED) agents are perfecting a new technique to enable them to literally drop into marijuana fields and other trouble spots where they are needed.

Using rappelling methods developed by mountaineers, agents can descend from a helicopter quickly into areas that can't easily be reached by land vehicles.

Recently, some 20 agents took part in a training course in Lexington County using the State Aeronautics Commission's UH-1B helicopter.

Under the direction of Richland and Lexington County EMS personnel, men from SLED's narcotics and SWAT teams spent the day and part

of the night dropping from the craft to a grassy field 100 feet below.

Steve Smith, lieutenant in charge of narcotics, said he expects the helicopter to help greatly in the eradication of domestically grown marijuana, particularly in the mountains where it is difficult for the men to get in and out on foot.

"We can rapel in, destroy the field and get extricated with the helicopter. We can do four or five days work in one day," he said.

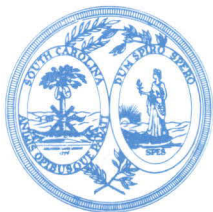
The domestic cultivation of marijuana has increased significantly in the last two or three years since law enforcement agencies and drug task forces have cut sharply into the

amount of the weed being imported.

So far this year, Smith said, he and his men have destroyed some 23,000 plants in South Carolina. But he said, as the domestic eradication program gets into high gear, they expect to find much more.

He noted that Tennessee officials got a half million plants in their crackdown and said agents in Georgia burned a 25 acre field with an estimated 750,000 plants.

Besides accessing hard to get at marijuana fields, Smith said rappelling is also a good anti-terrorist tactic that can place men where they are needed quickly and easily, like on the top of a building, for example. →



PALMETTO AVIATION is an official publication of the South Carolina Aeronautics Commission. It is designed to inform members of the aviation community, and others interested in aviation, of local developments in aviation and aviation facilities and to keep readers abreast of national and international trends in aviation.

The Aeronautics Commission is a state agency created in 1935 by the S.C. General Assembly to foster and promote air commerce within the state.

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FAA continues testing on collision avoidance

Over the past 10 years, there has been one mid-air collision involving a commercial airline, an excellent record considering the volume of traffic. But the threat of such collisions, though minimal, continues. To lessen the threat, the Federal Aviation Administration is currently testing an electronic system designed to prevent them. It is known as the Traffic Alert and Collision Avoidance System (TCAS) and it is based on electronic equipment aboard a plane that can track nearby aircraft and automatically issue traffic warnings and maneuver advisories for collision avoidance.

FAA announced the decision to proceed with the TCAS program in June 1981 and awarded a contract for construction of two engineering models of the equipment — designated as TCAS II — for use by the airlines. A simpler and less expensive general aviation version is known as TCAS I.

TCAS II is an airborne system that operates independently of ground equipment. Its basic purpose is to detect possible midair collisions, warn pilots of the danger and display on the instrument panel appropriate avoidance maneuvers, if required.

A TCAS II unit obtains information on other traffic from radar beacon transponders which are in wide use in the nation's air fleet and which are required equipment in many airspace areas. The position and altitude data provided by the transponder is analyzed by the TCAS computer to determine whether any aircraft is on a possible collision course and, if so, what evasive action can be taken.

Collision avoidance advice is presented to pilots on a cockpit display.

It is estimated that a TCAS II unit will cost from \$45,000 to \$50,000.

Before the end of the year, FAA expects to award contracts for the production of 18 additional TCAS II units to be used for further testing in actual airline operations.

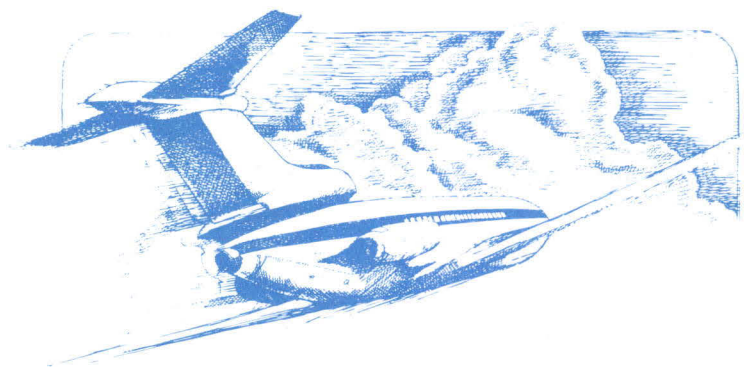
FAA is also continuing development of TCAS I. In its simplest form, this equipment will warn pilots of the proximity of other aircraft but will not tell them where the aircraft are or what evasive action to take. This will have to be determined through visual observation once the pilot is alerted to the potential collision hazard. The cost of this model would be about \$3,500. But users could buy additional capability that would help them pinpoint the location of other traffic.

Both versions of TCAS are expected to become operational in late 1984. ➔

Bamberg soliciting FBO proposals

The Bamberg County Airport is soliciting proposals for a full service FBO until Dec. 9, 1983.

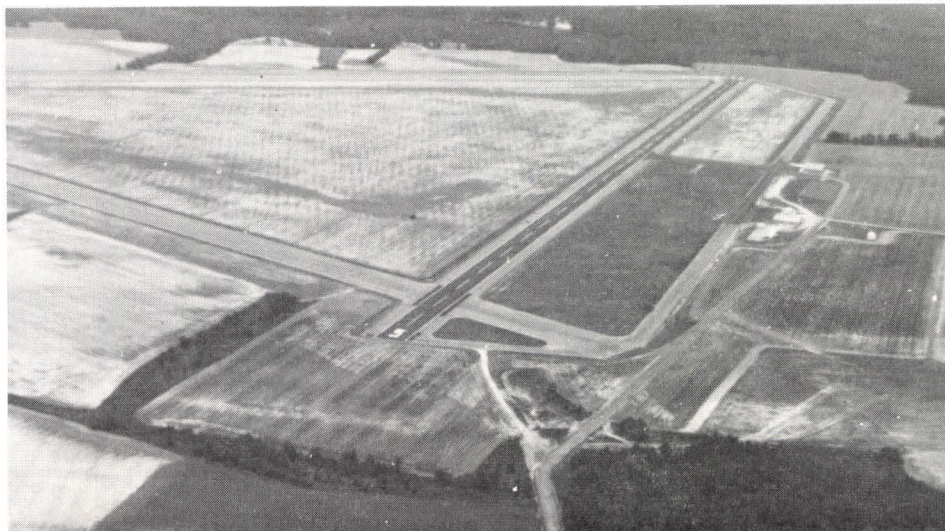
Interested persons should contact Hal Zorn, County Administrator, P.O. Drawer 149, Bamberg, SC 29003. Phone (803) 245-5191.



5,519 pilots in state

The number of licensed, active pilots in South Carolina with current medical certificates according to FAA records as of Aug. 24, 1983:

Students	1,219
Private	2,272
Commercial	1,547
ATP	481
TOTAL	5,519



Darlington County Airport

State franchise tax preempted by federal law

By Henry M. Burwell
Barringer, Allen, Pinnix & Burwell

The New York Supreme Court recently decided that the state of New York was prohibited by section 1113 of the Federal Aviation Act of 1959 (49U.S.C. §1513) from imposing a franchise tax on air carriers on intrastate gross earnings which was "in fact a tax upon the gross receipts from sale of air transport services."

In the case of *Air Transport Association v. Dept. of Taxation*, 17 Avi 18,092 (1983), the court rejected the defendant's argument that the franchise tax imposed by New York law was a tax on more than just gross receipts of the sale of air transport services. The court quoted pertinent language of the preemptive federal law which establishes that no such tax may be directly or indirectly levied on

persons traveling in air commerce or on the sale of air transportation or on the gross receipts therefrom. In the court's view, the Department of Taxation position that the measurement of the tax by gross earnings is distinguishable from a tax levied on the receipts was a meritless distinction.

The effect of the court's ruling was to reject the New York State Tax Law as unconstitutional under the supremacy clause of the United States Constitution. This state supreme court ruling affirmed the lower state court which had also rejected this tax statute as unconstitutional.

A petition for a writ of certiorari has been filed with the United States Supreme Court. →

Terminal dedicated

The Bennettsville Airport Terminal building was officially dedicated Sunday, Nov. 1.

The occasion was commemorated by an airshow featuring the North Carolina Chapter of the International Aerobatic Club and an ultralight aerobatic demonstration by Sherman Hanke of Clio. →

Breakfast Club

- Nov. 6** Huggins Airport, Timmonsville
- Nov. 20** Anderson County Airport, Anderson
- Dec. 4** Aiken Municipal Airport, Aiken
- Dec. 18** Sumter Municipal Airport, Sumter

Darlington seeks FBO

The Darlington County Airport Commission is interested in obtaining a fixed base operator for the Darlington County Airport located eight miles north of Darlington off U.S. 52 and 401.

The World War II vintage facility has three 5000 foot runways. The northeast-southwest runway was resurfaced in 1982 and is lighted. Facilities include five T-hangars available for rent, a large service hangar for aircraft maintenance, and a quonset hut for service or storage. There is also an office, lounge and restroom.

Tanks and pumps are adequate to supply 5000 gallons of aviation fuel. Jet fuel is available through Sonoco Products Co. which also has a hangar and two jet aircraft at the airport.

All inquiries should be mailed to the Darlington County Airport Commission, Rt. 1, Box 4, Society Hill, S.C. 29593. →

Bomb groups seek personnel

The 461st and 484th Bomb Groups are seeking former personnel who served with these two groups in Italy during WWII 1944-45, to advise them of the 1984 reunion now being planned.

Please contact: Jim Nostrand, Box 1659, Jackson Hole, Wyoming 83001. →

Proper tiedown techniques can pro

Each year, numerous aircraft are needlessly damaged by windstorms because of inattention to weather forecasts, negligence, or improper tiedown procedures.

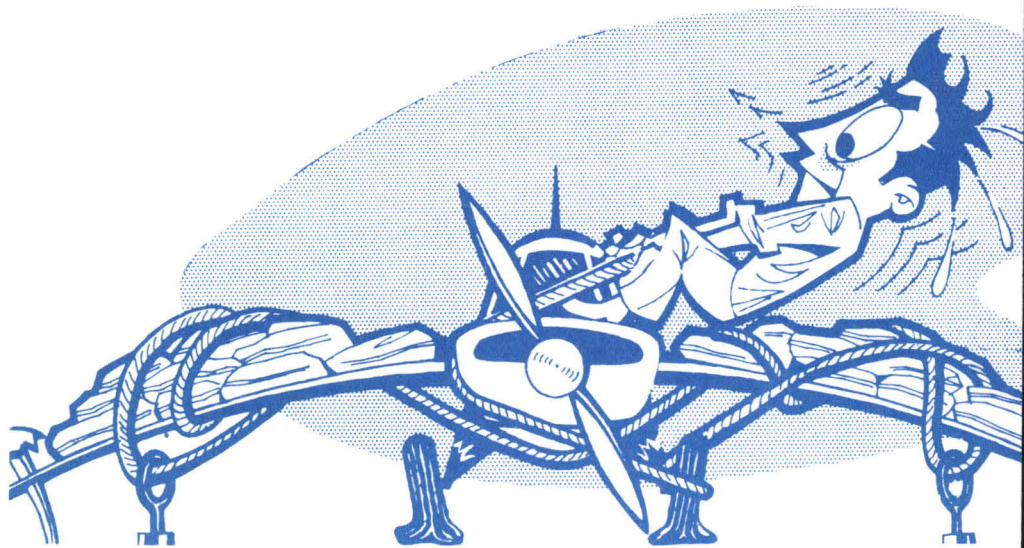
The following article, taken from FAA Advisory Circular #20-35C, provides the latest information on proper tiedown techniques and procedures to protect aircraft in high wind situations.

Windstorms may be broadly classified as cyclonic storms or low pressure systems, regional or localized terrain induced winds, thunderstorms or tornado induced winds and hurricanes.

Cyclones. Cyclones are the lows of the weather maps. In the United States the name does not suggest any degree of intensity and is applied to moderate as well as intense storms. Winter storms are atmospheric disturbances that may become intense low pressure systems churning over tens of thousands of square miles. In our northland the severity of these storms makes them seasonal threats. These intense low pressure systems combine winds sometimes as strong as 90 mph with snow and cold temperatures. The National Weather Service (NWS) issues timely watches and warnings against the hazards of winter weather so that persons in the alerted area may take precautionary measures.

Regional or Localized Terrain Induced Wind. Geography is a factor in producing local and sometimes strong winds due to peculiar or unique terrain effects. The Santa Ana winds of Southern California, or the winds in Boulder, Colorado, are examples of infrequent localized winds that are generally forecast far enough in advance to minimize the potentially damaging effects upon parked aircraft.

Thunderstorms. Individual thunderstorms may measure from less than 5 miles to more than 30 miles in diameter, and may occur both in isolation and as a part of larger weather systems. In some places and seasons thunderstorms recur almost daily at almost the same time. In other places they occur rarely or irregularly. Some last a few minutes and on other occasions a succession



of related events may last most of the day. The significant features of thunderstorms are high wind velocity, lightning, intense precipitation and hail. All these are variable features that appear in many combinations. Strong straightline winds accompany thunderstorms more often than tornadoes and may be as damaging to persons and property as small tornadoes. Strong and shifting winds along thunderstorm gust fronts have been associated with tragic accidents to commercial aircraft.

Hurricanes. Compared to the great cyclonic storms of the Temperate Zone, hurricanes are of moderate size and their worst winds do not approach tornado velocities. Their winds exceed 70 mph and may reach 200 mph, and their lifespan is measured in days or weeks, not minutes or hours. No other atmospheric disturbance combines duration, size, and violence more destructively. Hurricanes are a threat to the Gulf and East Coast during the hurricane season from June through November. Decaying tropical storms may on rare occasions move inland and dump flash-flood producing rainfall over California and the desert Southwest.

Tornadoes. Tornadoes are fearsome storms that usually move from the southwest. The more severe tornadoes move at forward speeds of about 60 mph accompanied by winds of 200 mph or more. Since the tor-

nado core is rarely larger than .6 mile in diameter, destructive winds generally last at one place for less than a minute but practically all structures and much of the natural environment can be destroyed by severe tornadoes in just a few seconds. More intense than the worst hurricanes, tornadoes command much attention because of their sudden and violent onslaught and occasional sharp alteration in path.

Preventing Damage

The best protection against windstorm damage is, of course, to fly the aircraft out of the impending storm area provided you have sufficient warning time. The next best protective measure is to secure the aircraft in a stormproof hangar or other suitable shelter. The remaining alternative is to assure that the aircraft is tied down securely. When securing your aircraft, it is considered good practice to fasten all doors and windows properly, thereby minimizing damage inside the aircraft. Engine openings (intake and exhaust) for both reciprocating and gas turbines should be covered to prevent entry of foreign matter. Pitot-static tubes should also be covered to prevent damage or entry of foreign matter. Make sure your neighbor's aircraft is also tied down.

It is the mission of the National Weather Service (NWS) to help mitigate the threat to life and property from natural hazards through the is-

Protect your aircraft from storm damage

suance of tornado and severe thunderstorm watches and warnings. NWS meteorologists at the National Severe Storms Forecast Center (NSSFC) monitor atmospheric conditions utilizing information from many sources and locations. When hazardous conditions are anticipated or detected, watches or warnings are issued.

Watches are issued by the NSSFC to indicate when and where severe thunderstorms and/or tornadoes are most likely to occur. Watches are usually issued for areas about 140 miles wide, 200 miles long and generally 2 to 4 hours in advance of severe weather. Listen to the National Oceanic and Atmospheric Administration (NOAA) weather radio (162.400-162.550MHZ) continuous broadcasts for the latest weather information directly from NWS offices, and use commercial radio or television for further information.

Warnings are issued by local NWS offices when severe thunderstorms or tornadoes are indicated by weather radar, weather observers or trained spotters. A warning describes an imminent risk from a tornado or severe thunderstorm in a relatively small area such as one or several counties. The key to damage avoidance or reduction is to be routinely weather conscious.

Be prepared for the worst conceivable windstorm conditions: pouring rain, gusty winds ranging from 30 mph and up, for example intermittent sheets of water blowing across the runways, ramps, and parking areas, and lack of hangar facilities. With such conditions in mind, aircraft owners and operators should plan in advance by learning their aircraft manufacturer's instructions for tiedown; location and/or installation of tiedown rings for attachment of tiedown ropes; any special instructions for securing nosewheel type aircraft vs. tailwheel type aircraft; and manufacturer's charts and graphs denoting aircraft weights and relative wind velocities that would make varied tiedown procedures necessary for pending weather emergencies.

Tiedown Facilities

Any aircraft parking area should be equipped for three-point tiedowns. Aircraft should be tied down at the end of each flight to preclude damage from sudden storms. The direction in which the aircraft are to be parked and tied down will be determined by prevailing or forecast wind direction.

Aircraft should be headed into the wind, or as nearly as possible, depending upon the locations of the fixed parking area mooring points.

Spacing of tiedowns should allow for ample wingtip clearance. Spacing should be equal to the major axis (wingspan or fuselage length) of the largest aircraft usually operated plus 10 feet.

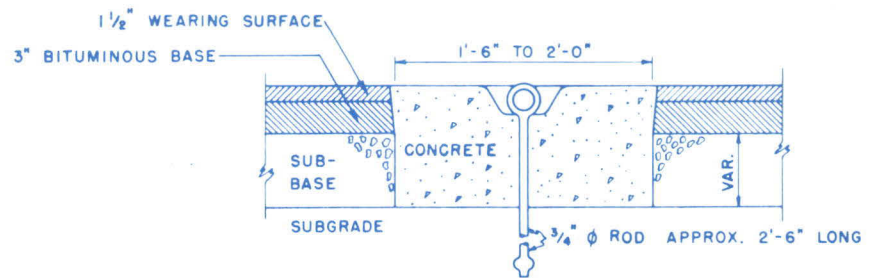
After the aircraft is properly located lock the nosewheel or the tailwheel in the fore-and-aft position.

Tiedown anchors for single-engine aircraft should provide a minimum holding power (strength) of approximately 3,000 pounds each. The type of anchors in use varies depending upon the type of parking area — whether for a concrete paved surface, a bituminous paved surface, or an unpaved turf area. Location of tiedowns are usually indicated by some suitable means, either white or yellow paint, or a painted tire which has been fastened into the ground, or surrounding the tiedown anchor with crushed stone. The tiedown anchor eye should not protrude more than 1 inch above ground.

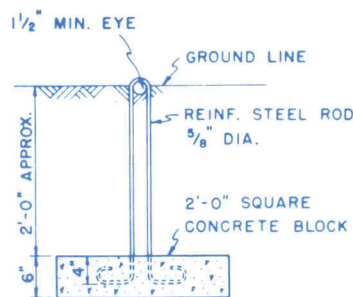
Stake-driven tiedowns such as depicted on the next page will almost invariably pull out when the ground becomes soaked from torrential rains which

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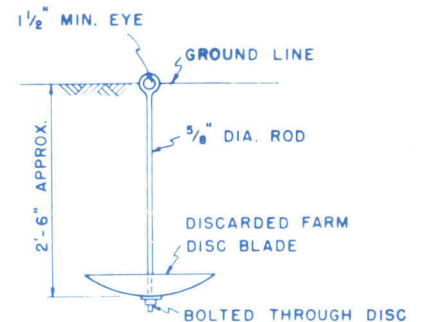
TIEDOWN ANCHOR FOR BITUMINOUS PAVED AREAS



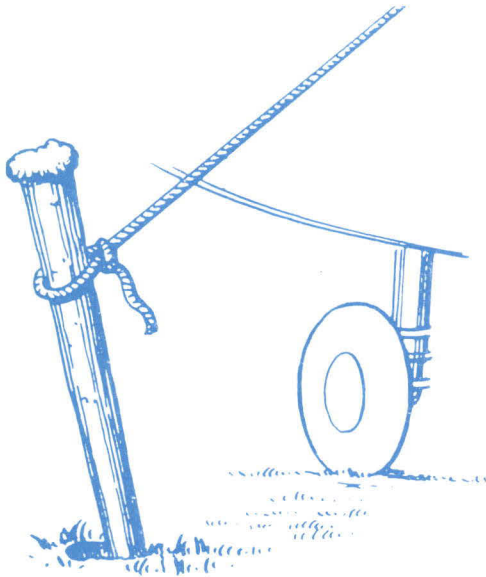
TIEDOWN ANCHORS FOR TURFED AREAS



ROD AND BLOCK ANCHOR



MUSHROOM TYPE ANCHOR



DON'T depend on wooden stakes.

accompany hurricanes and some thunderstorms.

Tiedown ropes capable of resisting a pull of approximately 3,000 pounds should be used. Manila ropes should be inspected periodically for mildew and rot. Nylon or dacron tiedown ropes are preferred over manila ropes. The objection to manila rope is that it shrinks when wet, is subject to mildew and rot, and has considerably less tensile strength than either nylon or dacron.

Securing Aircraft

Tie only at the tiedown rings provided for that purpose. Never tie to a strut itself. The practice of tying to lift struts has in itself caused frequent damage. Ropes slip to a point when even slight pressure may bend the struts.

Allow for about 1 inch of movement, and remember that manila rope shrinks when it gets wet. Too much slack will allow the aircraft to jerk against the ropes. Avoid tightening the ropes too much. Tight tiedown ropes actually put inverted flight stresses on the aircraft, and many of them are not designed to take such loads. A tiedown rope holds no better than the knot. Antislip knots such as

a bowline or a square knot are quickly tied, and easy to untie.

All flight controls should be locked or tied to prevent their banging against the stops. Some aircraft are equipped with integral gust locks operable from the cockpit. On others, it may be necessary to use external padded battens (control surface locks) or secure the control wheel and rudder pedals inside the cockpit.

When using external surface locks, it is advisable that red streamers, weights, or a line to the tiedown anchor be fastened to the locks. This will provide a means of alerting airport service employees and pilots to remember to remove the external locks prior to takeoff. Secure ailerons and rudders in neutral. Tailwheel type aircraft headed into the wind should have their elevators secured in the "up" position by securing the control column or "stick". Tailwheel type aircraft "tailed" into the wind should have their elevators secured in the "down" position by securing the control column or "stick".

Set and lock wheel brakes. Chocks should be placed and secured fore and aft each wheel. Wooden chocks may be secured by nailing a cleat from chock to chock on each side of each wheel. Ropes may be substituted if wood cleats are unavailable. A brick or piece of 2 x 4 are poor excuses for good chocks.

On tricycle gear aircraft secure a tiedown line through the nosegear tiedown ring. In addition, secure the middle of a length of rope to the tiedown ring in

the tail section. Pull each end of the rope away at a 45° angle and secure to ground anchors at each side of the tail. Elevators should be secured parallel to the ground (neutral position). It is good practice to also secure the flaps, especially if the aircraft is tailed into the wind.

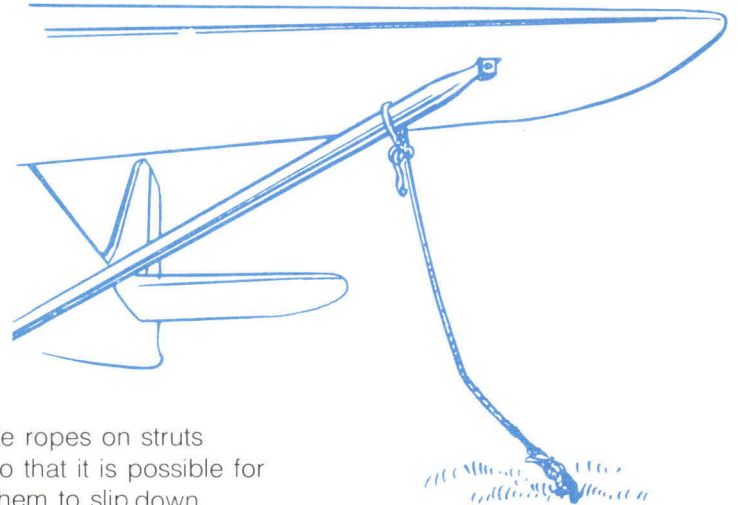
Recommended Practices

The following practices are designed for day-in-day-out use regardless of the inconvenience they might entail. These practices are principally for protection of light and medium weight aircraft and result from experiences with the storms of the past. Adoption of the following recommendations should materially reduce aircraft damage from windstorms.

Partially disassembled aircraft which are outdoors, particularly light aircraft with engines removed, should be hangared as soon as storm warnings are received. Loose wings should never be tied against a fuselage; they should be stored inside a hangar.

Wherever possible, fly aircraft out of anticipated storm danger zones. If possible, hangar the aircraft in a stormproof hangar.

The minimum recommended tiedown rope is one which will resist a pull of approximately 3,000 pounds. (Many users of plastic tiedown rope, yellow polypropylene, 1/2-inch and larger, reported little or no rope failure because of its elasticity. In some instances, nylon and hemp rope failed. In others, steel cables were



DON'T tie ropes on struts so that it is possible for them to slip down.

snapped while hemp lines, due to their elasticity, held. In many cases, both hemp and steel cable tiedowns failed due to chafing).

A single row of properly secured sandbags of 2x2s (spoiler boards) on the top of a wing's leading edge will serve as an effective spoiler and reduce the lifting tendency of the wings. Do not overload the wings with sandbags. If the anticipated winds will exceed the lift-off speed of the aircraft wings, then the makeshift spoilers should run the entire length of the wings. The 2x2 homemade spoiler shown below is very easily constructed and may be used for all types of light aircraft. Drill a number of 3/8-inch holes across the length of the 2x2. Cement a strip of 1-inch foam rubber to the entire length of the 2x2. This will prevent damaging the wing's surface. Avoid nailing the foam rubber to the spoiler since the nailheads may damage the wing's skin.

To prevent the spoiler from shifting position due to the wind, it is suggested that knots be tied in the rope on either side of the drilled holes. The spoiler should then be tied onto an aircraft's wings at the 25 percent chord point. To prevent damaging the wing's leading and trailing edges, it is suggested that a piece of foam rubber, or carpet, or even rags be placed under the nylon rope before tying. Some people may like to substitute bungee (elastic) cords for the long lengths of nylon rope.



Thread a length of nylon rope through each of the drilled holes. To facilitate threading the nylon rope through the holes, it is suggested that the ends of the lines be seared. This will prevent fraying of the ends to be threaded through the 3/8-inch holes.



Another means for tying down aircraft of various types and sizes is by utilizing continuous lengths of parallel wire ropes passed through U-bolt anchors and fastened at the ends of the line with wire rope clips. Tiedown chains are attached to the wire rope with roundpin galvanized anchor shackles. This allows the tiedown chains to "float" along the wire rope and gives a variable distance between anchor points so that a variety of large, medium, and small aircraft can use a vertical tiedown without loss of space. The vertical anchor significantly reduces impact loads that may occur during gusty wind conditions.

Still another means of securing an aircraft is with tiedown cables, one at each wing and the third at the tail section. One end of a tiedown cable is secured with a snaphook to the tiedown anchor eye protruding above ground; the other end is hooked through the tiedown rings installed on the aircraft. Cable slack is taken up with an adjustable locking device.

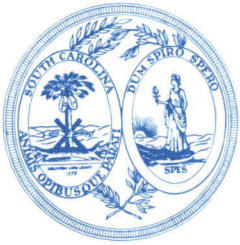
Seaplanes

Aircraft mounted on floats or skis should be secured in the usual manner — to tiedown anchors or "deadmen" sunk under the water or ice. When warning of an impending storm is received, some pilots have been known to partially flood the floats of their aircraft, thereby partially sinking the aircraft. In addition, the

aircraft is tied down securely to anchors. Seaplanes moored on land have been saved from high-wind damage by filling the floats with water in addition to tying down the wings. Pilots of ski-equipped aircraft sometimes pack soft snow around the skis, pour water on the snow, and permit the skis to freeze to the ice. Although the techniques mentioned in this paragraph are not recommended practices, they are cited here because they have proven effective in preventing damage from sudden windstorms. Extreme care must be taken to reverse the effects of any such measures prior to operation of the aircraft.

The simplest way to prevent wind-storm damage to your aircraft is to fly it out of any impending storm area provided there is sufficient warning time. If that is impossible or impractical, shelter the aircraft in a storm-proof hangar. Should this prove impossible, then tie your aircraft down securely. Aircraft parked outdoors should be tied down securely after each flight. Use the tiedown techniques discussed in this advisory circular. Learn to tie a bowline or a square knot during fair weather; do not wait until the wind and rain are adding to your difficulties. Should you desire additional information, we suggest that you contact the manufacturer for specific tiedown instructions for your aircraft.

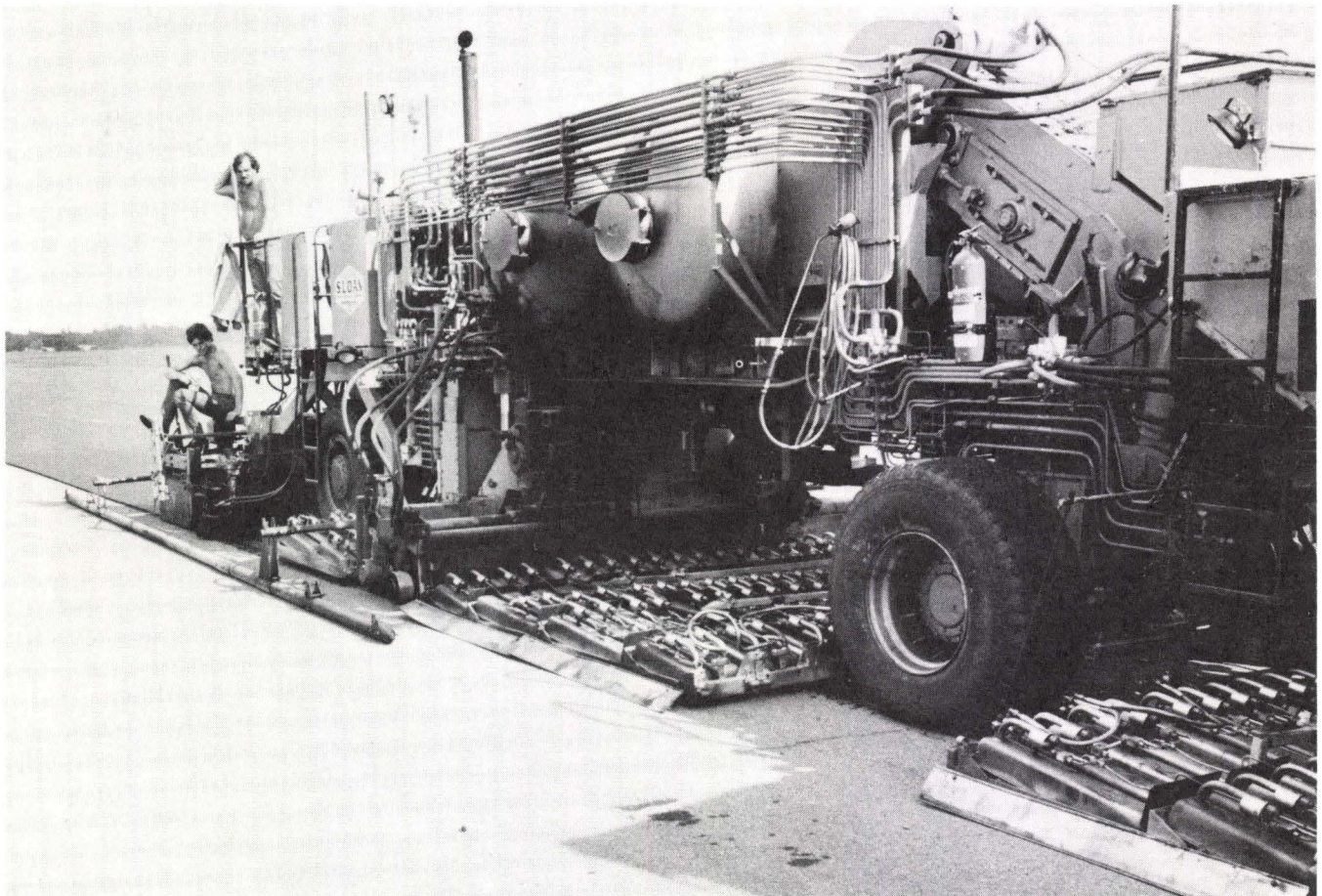
Homemade spoiler keeps wing down in high winds



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Asphalt recycling machine used at Aiken

The Aiken County Airport became the first airport in the nation to be resurfaced by a Wirtgen remixer-repaver, a machine developed in West Germany that recycles the old asphalt and paves in a single pass. The machine mills the top 1½" off the surface, heats it, mixes in new asphalt and lays down the new surface at 10 feet a minute. The project contractors were APAC - Georgia and Sloan Construction Co. of Greenville. Consulting engineers were Wilbur Smith and Associates.