



U.S. Department
of Transportation

**Federal Aviation
Administration**

Memorandum

Subject: **ACTION**: Balloon Control Force Guidance

Date: DEC 22 1999

From: Manager, Small Airplane Directorate
Aircraft Certification Service, ACE-100

To: See Distribution List

Background: The Small Airplane Directorate recently received a safety recommendation to address control actuation values for the control of emergency deflation systems required by 14 CFR Part 31.55. A rough landing accident of a commercial Firefly 11 balloon prompted this recommendation. The accident balloon was equipped with a simple parachute vent (envelope valve) and rotational vents. The flight manual states that in windy conditions or in tight landing situations, the rotating vent may be used to supplement the envelope valve when deflating the envelope, just prior to and during final touch down. In a post accident test, a 210-pound FAA inspector could not apply the force necessary to operate the rotating vent while simultaneously operating the envelope valve. The following guidance for control force is intended to prevent this situation in future balloon projects.

Guidance: Balloon control forces are currently addressed in §31.49, Control Systems, which states in paragraph (a): "Each control must operate easily, smoothly, and positively enough to allow proper performance of its functions. Controls must be arranged and identified to provide for convenience of operation and to prevent the possibility of confusion and subsequent inadvertent operation." The rules go on to define force limits for the emergency deflation ripcord in §31.57(b) of "not less than 25, or more than 75 pounds." Although the term "rip cord" is not specifically used in §31.55, both sections address the emergency deflation systems. The Directorate believes that in the absence of other rational approaches, the control force guidelines in §31.55 should reflect the same force values as in §31.57.

If you have any questions or would like additional information, please contact Mr. Lowell Foster, Regulations and Policy Branch, at 816-329-4125.


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