DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Proopsed Advisory Circular (AC) 431–01, Reusable Launch Vehicle System Safety Process and AC 431–02, Expected Casualty Calculations for Commercial Space Launch and Reentry Missions

AGENCY: Federal Aviation Administration, DOT.

ACTION: Notice of availability and request for comments.

SUMMARY: This notice announces the availability of and requests comments on two proposed AC's that would describe the Federal Aviation Administration (FAA) Commercial Space Transportation Reusable Launch Vehicle. The proposed AC's would provide guidance on two separate processes. Proposed AC 431–01 will provide top level guidance and information concerning the application of a logical safety process methodology for the identification and control of public safety hazards associated with the operation of Reusable Launch Vehicle (RLV) systems. Proposed AC 431–02 would provide a description of the measure Expected Casualty and generally will discuss the basics of an acceptable methodology for estimating the value or upper limit of the value for commercial space launch and reentry missions.

DATES: Comments must be received on or before July 20, 1999.

ADDRESSES: Send all comments on the proposed AC's to Stewart Jackson, AST–100, Space Systems Development Division, Office of the Associate Administrator for Commercial Space Transportation, Federal Aviation Administration, 800 Independence Ave. SW., Washington, DC 20591, telephone (202) 267–7982.

FOR FURTHER INFORMATION CONTACT: Stewart Jackson, AST–100, Space Systems Development Division, Office of the Associate Administrator for Commercial Space Transportation, Federal Aviation Administration, 800 Independence Ave SW., Washington, DC 20591, telephone (202) 267–7982.

SUPPLEMENTARY INFORMATION:

Comments Invited

A copy of the draft AC's may be obtained by contacting the person named above under **FOR FURTHER INFORMATION CONTACT**. Interested persons are invited to comment on the proposed AC's by submitting such written data, views or arguments as they may desire. Commenters must identify AC 431–01 or AC 431–02 and submit comments in duplicate to the address specified above. All communications received on or before the closing date for comments will be considered by the FAA before issuing the final AC's.

Discussion

AC 431–01

An RLV applicant will be expected to apply a disciplined, systematic, and logical safety process methodology for the identification and control of hazards associated with its launch and/or reentry systems. The applicant should use the System Safety Engineering Process or its equivalent, which includes a Risk Analysis, to show that it meets the safety process methodology critieria identified in the proposed AC. The use of a systematic process for the identification and control of safety critical systems and operations also provides the foundation supporting the Expected Casualty analysis. Without a process that helps assure a disciplined approach to the design, manufacture, integration, test, and operation of a system, it will be very difficult to establish any confidence in the probabilities of success and failure provided for the Expected Casualty analysis. The application of the system safety engineering approach in combination with the expected casualty analysis and the mandatory operational controls defined in the reentry proposal is intended to help ensure an adequate level of public safety.

AC 431–02

Expected casualty is used in the space transportation industry as a measure of risk to public safety from a specific mission, and is one of the factors typically used within the U.S. Government to determine if a mission may proceed or a license granted. Expected casualty is the expected average number of human casualties per commercial space mission. Human casualty is defined as a fatality or serious injury. For the purpose of this advisory circular, a human casualty is considered to be any human contact with a piece of vehicle debris or exposure to or greater. Another way of expressing the measure of expected casualty is that; if thousands of identical missions were conducted and all the casualties that resulted were added up and the sum divided by the number of missions, the actual casualties and the expected casualties per mission should ideally be the same.

For the purpose of this advisory circular, a mission includes all licensed flight segments throughout the mission. If there are activities that occur on orbit that are not conducted under a license, these segments, or phases, are not included in the mission. For example, a sub-orbital mission might include launch, stage separations, state ignitions and payload landing or recovery. An orbital mission of an expendable launch vehicle (ELV) might include vehicle launch, multiple booster stage separations, stage ignitions, booster stage recovery, and payload insertion into orbit.

The proposed AC's would become effective only after a final rule establishing the operational requirements for launches of reusable launch vehicles and the authorized conduct of commercial space reentry activities becomes effective.

Issued in Washington, D.C. April 13, 1999.

Patricia Grace Smith,

Associate Administrator for Commercial Space Transportation.

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