

tests or equivalent service engine test experience on engines of similar design and evaluations of service usage of the 30-second OEI or 2-minute OEI ratings.

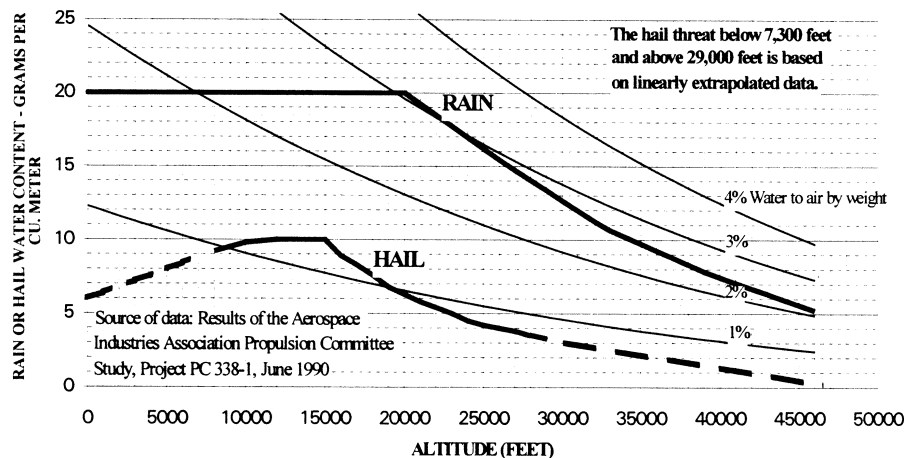
[Amdt. 33–9, 45 FR 60181, Sept. 11, 1980, as amended by Amdt. 33–13, 54 FR 34330, Aug. 18, 1989; Amdt. 33–21, 72 FR 1878, Jan. 16, 2007; Amdt. 33–25, 73 FR 48124, Aug. 18, 2008]

#### APPENDIX B TO PART 33—CERTIFICATION STANDARD ATMOSPHERIC CONCENTRATIONS OF RAIN AND HAIL

Figure B1, Table B1, Table B2, Table B3, and Table B4 specify the atmospheric con-

centrations and size distributions of rain and hail for establishing certification, in accordance with the requirements of §33.78(a)(2). In conducting tests, normally by spraying liquid water to simulate rain conditions and by delivering hail fabricated from ice to simulate hail conditions, the use of water droplets and hail having shapes, sizes and distributions of sizes other than those defined in this appendix B, or the use of a single size or shape for each water droplet or hail, can be accepted, provided that applicant shows that the substitution does not reduce the severity of the test.

**FIGURE B1 - Illustration of Rain and Hail Threats. Certification concentrations are obtained using Tables B1 and B2.**



**TABLE B1—CERTIFICATION STANDARD ATMOSPHERIC RAIN CONCENTRATIONS**

Altitude (feet)	Rain water content (RWC) (grams water/meter <sup>3</sup> air)
0 .....	20.0
20,000 .....	20.0
26,300 .....	15.2
32,700 .....	10.8
39,300 .....	7.7
46,000 .....	5.2

RWC values at other altitudes may be determined by linear interpolation.

NOTE: Source of data—Results of the Aerospace Industries Association (AIA) Propulsion Committee Study, Project PC 338–1, June 1990.

**TABLE B2—CERTIFICATION STANDARD ATMOSPHERIC HAIL CONCENTRATIONS**

Altitude (feet)	Hail water content (HWC) (grams water/meter <sup>3</sup> air)
0 .....	6.0
7,300 .....	8.9
8,500 .....	9.4
10,000 .....	9.9
12,000 .....	10.0
15,000 .....	10.0
16,000 .....	8.9
17,700 .....	7.8
19,300 .....	6.6
21,500 .....	5.6
24,300 .....	4.4
29,000 .....	3.3
46,000 .....	0.2

HWC values at other altitudes may be determined by linear interpolation. The hail threat below 7,300 feet and above 29,000 feet is based on linearly extrapolated data.