the sea level static maximum rated takeoff power or thrust.

(3) The bird must be targeted on the first exposed rotating stage or stages at a blade airfoil height of not less than 50 percent measured at the leading edge.

(4) Ingestion of a large flocking bird under the conditions prescribed in this paragraph must not cause any of the following:

(i) A sustained reduction of power or thrust to less than 50 percent of maximum rated takeoff power or thrust during the run-on segment specified under paragraph (d)(5)(i) of this section.

(ii) Engine shutdown during the required run-on demonstration specified in paragraph (d)(5) of this section.

(iii) The conditions specified in paragraph (b)(3) of this section.

(5) The following test schedule must be used:

(i) Ingestion followed by 1 minute without power lever movement.

(ii) Followed by 13 minutes at not less than 50 percent of maximum rated takeoff power or thrust.

(iii) Followed by 2 minutes between 30 and 35 percent of maximum rated takeoff power or thrust.

(iv) Followed by 1 minute with power or thrust increased from that set in paragraph (d)(5)(iii) of this section, by between 5 and 10 percent of maximum rated takeoff power or thrust.

(v) Followed by 2 minutes with power or thrust reduced from that set in paragraph (d)(5)(iv) of this section, by between 5 and 10 percent of maximum rated takeoff power or thrust.

(vi) Followed by a minimum of 1 minute at ground idle then engine shutdown. The durations specified are times at the defined conditions. Power lever movement between each condition will be 10 seconds or less, except that power lever movements allowed within paragraph (d)(5)(ii) of this section are not limited, and for setting power under paragraph (d)(5)(iii) of this section will be 30 seconds or less.

(6) Compliance with the large flocking bird ingestion requirements of this paragraph (d) may also be demonstrated by:

(i) Incorporating the requirements of paragraph (d)(4) and (d)(5) of this section, into the large single bird test demonstration specified in paragraph (b)(1) of this section; or

(ii) Use of an engine subassembly test at the ingestion conditions specified in paragraph (b)(1) of this section if:

(A) All components critical to complying with the requirements of paragraph (d) of this section are included in the subassembly test;

(B) The components of paragraph (d)(6)(ii)(A) of this section are installed in a representative engine for a run-on demonstration in accordance with paragraphs (d)(4) and (d)(5) of this section; except that section (d)(5)(i) is deleted and section (d)(5)(ii) must be 14 minutes in duration after the engine is started and stabilized; and

(C) The dynamic effects that would have been experienced during a full engine ingestion test can be shown to be negligible with respect to meeting the requirements of paragraphs (d)(4) and (d)(5) of this section.

(7) Applicants must show that an unsafe condition will not result if any engine operating limit is exceeded during the run-on period.

TABLE 4 TO § 33.76—LARGE FLOCKING BIRD MASS AND WEIGHT

Engine inlet throat area (square meters/square inches)	Bird quantity	Bird mass and weight (kg (lbs))
A <2.50 (3875)	none	
2.50 (3875) ≤A <3.50 (5425)	1	1.85 (4.08)
3.50 (5425) ≤A <3.90 (6045)	1	2.10 (4.63)
3.90 (6045) ≤A	1	2.50 (5.51)

[Doc. No. FAA–1998–4815, 65 FR 55854, Sept. 14, 2000, as amended by Amdt. 33–20, 68 FR 75391, Dec. 31, 2003; Amdt. 33–24, 72 FR 50868, Sept. 4, 2007; Amdt. 33–23, 72 FR 58974, Oct. 17, 2007]

§ 33.77 Foreign object ingestion—ice.

(a) Compliance with the requirements of this section must be demonstrated by engine ice ingestion test or by validated analysis showing equivalence of other means for demonstrating soft body damage tolerance.

(b) [Reserved]

(c) Ingestion of ice under the conditions of this section may not—

(1) Cause an immediate or ultimate unacceptable sustained power or thrust loss; or