

# NOTICE

U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION

N 8400.72

8/13/04

Cancellation  
Date: 8/13/05

## **SUBJ: TRANSITION GUIDANCE FOR NEW AIRCRAFT WEIGHT AND BALANCE CONTROL PROCEDURES**

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**1. PURPOSE.** This notice addresses safety recommendations recently issued by the National Transportation Safety Board (NTSB) and provides the latest information regarding aircraft weight and balance control. This notice also provides the following:

**a.** Transition guidance to operators using Advisory Circular (AC) 120-27D, Aircraft Weight and Balance Control, as a basis for their weight and balance control program.

**b.** Revised standard average and segmented weights for multiengine turboprop and multiengine turbojet aircraft certificated with a maximum seating capacity of five or more passenger seats and operated under Title 14 of the Code of Federal Regulations (14 CFR) parts 91, 91 subpart K, 121, 125, and 135.

**c.** Survey standards for operators that choose to use average weights other than standard average weights.

**d.** The latest weight and balance control program policies and procedures recommended by the Federal Aviation Administration (FAA) for use by operators.

**2. DISTRIBUTION.** This notice is distributed to the division level in the Flight Standards Service in Washington headquarters; to the branch level in the regional Flight Standards divisions; to the Flight Standards District Offices; and to the Regulatory Standards Division at the Mike Monroney Aeronautical Center. This notice is also distributed electronically to the division level in the Flight Standards Service in Washington headquarters and to all regional Flight Standards divisions and district offices. This information is also available on the FAA's Web site at: <http://www.faa.gov/avr/afs/notices/8400/N8400-72.doc>.

### **3. BACKGROUND.**

**a.** On January 8, 2003, a regional commuter airplane departing from Charlotte, North Carolina, experienced a fatal accident on departure. The NTSB determined that the probable cause of the airliner crash was the airplane's loss of pitch control during takeoff. The loss of pitch control resulted because of incorrect rigging of the elevator control system,

compounded by the airplane's center of gravity, which was substantially aft of the certified aft limit.

**b.** The NTSB found that the weight and balance program used by this operator contributed to the cause of the accident. At the time of the accident, the operator's program resulted in substantially inaccurate weight and balance calculations for company airplanes. The NTSB noted that the FAA's weight and balance program guidance at the time of the accident contributed to the accident because some assumptions reflected in AC 120-27C regarding average weights were incorrect.

**c.** After the accident, the FAA issued Notice 8400.40, Weight and Balance Control Programs for 10 to 19 Seat Airplanes Operated Under 14 CFR 121, prompting each operator of a 10 to 19 passenger seat aircraft to conduct a survey to validate existing program average weights. After reviewing the survey results, the FAA issued Notice 8300.112, Revision to All Average Weight Programs, to implement an interim weight increase to all average weight programs until such time as AC 120-27C could be revised. In August 2003, the FAA established a weight and balance Aviation Rulemaking Committee (ARC) to review and revise, as necessary, AC 120-27C. On May 28, 2004, the ARC steering committee submitted its final recommendations to the FAA for consideration.

**d.** The NTSB recently issued its accident investigation final report that contained 21 safety recommendations directed to the FAA. Among these 21 recommendations, 7 concerned aircraft weight and balance control.

**4. APPLICABILITY.** This notice applies to aviation safety inspectors (ASI) in all specialties, including: operations, maintenance, avionics, cabin safety, and dispatch.

#### **5. ACTION.**

**a.** All ASIs should review this notice and applicable guidance, as well as familiarize themselves with the latest policies and procedures contained in AC 120-27D.

**b.** Principal inspectors should provide the information in this notice to their respective operators by:

**(1)** Providing a copy of this notice to the director of safety (DOS) for part 121 operators or the director of operations (DO) for part 135 operators; or

**(2)** Referring the DOS for part 121 operators or the DO for part 135 operators to the Web site in paragraph 2.

**c.** Within 12 months from the publication date of this notice, operators using average weights to determine an aircraft's weight and center of gravity should revise their current weight and balance control program with the new average and/or segmented weights provided in AC 120-27D, or conduct a new baseline survey to validate all survey-derived average weights using the survey standards set forth in AC 120-27D.

d. Within 12 months from the publication date of this notice, principal operations inspectors (POI) and cabin safety inspectors should verify their assigned operators' carry-on baggage programs comply with the standards established in AC 120-27D. Operators should revise their existing carry-on baggage program, as applicable, and ensure the guidance provided in AC 120-27D is included in their approved program. The POI and dispatch inspectors should verify that the operator issues the appropriate weight and balance program revisions to pilots and dispatchers. Once the carry-on bag program and average passenger and baggage weight revisions are reviewed, the POI should approve the average weights by issuing operations specifications (OpSpecs) paragraphs or management specifications (Mspecs) paragraphs, as applicable:

(1) A011, Carry-On Baggage Program; and

(2) A096, Actual Passenger and Baggage Weight Program for all Aircraft, and none of the following paragraphs; or

(3) A097, Small Cabin Aircraft Passenger and Baggage Weight Program; and/or

(4) A098, Medium Cabin Aircraft Passenger and Baggage Weight Program; and/or

(5) A099, Large Cabin Aircraft Passenger and Baggage Weight Program.

**NOTE: See AC 120-27D for aircraft size definitions.**

e. Within 12 months from the publication date of this notice, principal maintenance inspectors (PMI) should review the approved weight and balance control program and verify the operator has adopted the revised guidance established in AC 120-27D. Upon satisfactory review of the operator's aircraft actual or fleet average weight procedures, the PMI should issue the revised OpSpec E096, Aircraft Weighing Control.

## **6. SURVEY STANDARDS.**

a. The new weight and balance guidance provides greater accuracy, more flexibility and the ability for an operator to develop average weights appropriate for its operation. For operators that elect to use weights other than the standard average weights provided in AC 120-27D, a new baseline survey must be established accounting for the new definitions, policies, and survey techniques provided. Thereafter, a new survey must be conducted to validate the survey-derived average weights every 36 calendar-months.

b. OpSpecs A096, A097, A098, and A099 allow the operator to determine, for each program average weight, whether the operator will use standard average, survey derived average, actual weights, or any combination thereof. OpSpecs A097, A098, and A099 also allow the operator to increase or decrease the program average weights for specific city pairs that do not conform to the typical program average weights. Operators using ONLY actual weights for all company aircraft (or asked passenger weights plus 10 pounds and actual bag weights) must be issued OpSpec A096.

c. Because of the substantial changes to the definitions, policies, and survey standards provided in this notice, operators are encouraged to transition to the new standard average weights without the requirement of an additional survey, unless the operator considers any of the AC 120-27D weights to be inappropriate for its operation. Operators are ultimately responsible for the average and/or segmented weights contained in their weight and balance control program.

d. An operator may elect to conduct a survey to increase or decrease any program average weight. Operators must give the POI 2 weeks advance notice of their intention to conduct a survey and provide the location of the survey, as well as the estimated number of days to complete the survey. Once a survey has been completed, the operator must incorporate new average weights into its program and may only increase or decrease such average weights by conducting another survey using the procedures and guidelines established in this notice and AC 120-27D.

## **7. ASI's ROLE (SHOULD OPERATORS ELECT TO SURVEY).**

a. The POI should review and accept the survey plan for average passenger and baggage weight determination, provided the plan meets the standards established in AC 120-27D. Some key points regarding survey plans are provided below:

- (1) Surveys can be conducted any day of the week and anytime during the day.
- (2) The operator may elect to avoid conducting a survey on a Federal holiday.
- (3) Surveys may be conducted during the summer or winter months; apply a 5-pound adjustment to derive the other season's average (+5 pounds summer to winter, -5 pounds winter to summer).
- (4) Operators that are not affected by seasonal variation may use a year-round average weight. Operators that are affected by seasonal variations may elect to use a year-round weight by using the winter established average weights. Using average weights that fall between the summer and winter average weight for year-round weights is not permitted.
- (5) The operator must ensure a random sample. Selection of a passenger cannot be biased by the operator.
- (6) ASIs should only observe the survey and not bias the random selection process.
- (7) Passenger, carry-on, and personal item route surveys only need to be surveyed in one direction.
- (8) Plane-side loaded, checked, and heavy bag route surveys need to be surveyed in both directions.
- (9) Recommended passenger sample size is 2,700 passengers.

(10) Recommended carry-on, personal item, plane-side loaded bag, checked bag, and heavy bag sample size (for each item) is 1,400 pieces.

b. The POI should provide enough oversight during the survey process to determine that the operator conducted the survey in accordance with this notice and AC 120-27D.

c. The POI may consult with FAA statisticians in the Flight Standards Certification and Surveillance Division, AFS-900, for questions regarding SURVEY COMPUTATIONS OR STATISTICAL ANALYSIS. Should the POI need such consultation, the POI may contact Charles Blackwell at (703) 661-0520. The POI should forward the operator's complete survey data and analysis to [Charles.Blackwell@faa.gov](mailto:Charles.Blackwell@faa.gov) so a review can be accomplished and accurate guidance provided.

d. Once the POI has validated the accuracy of the operator's proposed average weights, the POI should approve the carry-on baggage program and specific average passenger and baggage weights through OpSpecs A011 and A097, A098, and/or A099.

e. The operator's carry-on baggage procedures must be designed to ensure that the approved weight and balance control program is not compromised. OpSpec A011 should specify whether the operator is authorized to have carry-on bags or is authorized to use a no-carry-on bag program.

f. The PMI is responsible for approving the aircraft average fleet or actual weight program through OpSpec E096. OpSpec E096 must be issued by the PMI once the PMI has validated the operator's program is in compliance with AC 120-27D.

g. Current OpSpecs A011, A096, A097, A098, A099, and E096, as applicable, must be revised and issued (or reissued) no later than 12 months from the publication date of AC 120-27D. Failure to either adopt the AC's specified weights or complete a survey and incorporate the survey derived average weights into the operator's weight and balance control program within the 12-month transition period, will result in the withdrawal of any previously authorized average weight authorizations and the issuance of OpSpec A096 requiring the operator to use program actual weights until such time as the operator can comply with the guidance established in AC 120-27D.

**8. REPORTING.** POIs and PMIs should document that they have read and conveyed this notice to the respective DOS or DO no later than 30 days from the publication date of this notice:

a. Use Program Tracking and Reporting Subsystem (PTRS) code 1045 (special projects) and 3045 (special projects).

b. POIs enter "840072" (without the quotes) into the "National Use" field.

c. PMIs enter "830072" (without the quotes) into the "National Use" field.

**9. GUIDANCE FOR VALIDATING WEIGHT AND BALANCE CONTROL PROGRAMS.** For guidance refer to AC 120-27D.

**10. DISPOSITION.** The guidance in this notice will be incorporated in a future change to Order 8300.10, Airworthiness Inspector's Handbook, and Order 8400.10, Air Transportation Operations Inspector's Handbook. Questions concerning ASI-Operations oversight of an operator's weight and balance control program should be directed to the Air Transportation Division, AFS-200, at (202) 267-8166. Questions concerning ASI-Maintenance oversight should be directed to the Aircraft Maintenance Division, AFS-300, at (202) 267-9948.

/s/ John M. Allen (for)  
James J. Ballough  
Director, Flight Standards Service