

March 3, 2003

Docket Management System  
U.S. Department of Transportation  
Docket number FAA-2002-13464  
Room Plaza 401, 400 Seventh Street, SW.  
Washington, DC 20590-0001.

**SUBJECT: Proposed Rule: Retrofit of Improved Seats in Air Carrier Transport  
Category airplanes**

The Regional Airline Association (RAA) submits the following comments on behalf of our membership (Attachment A).

**RAA requests that that they proposed rule be withdrawn** since for the regional operators, the safety objectives sought by rule will largely be accomplished by the introduction of newly manufactured airplanes into the regional fleet. While the proposed 14 year retrofit compliance timetable may appear liberal and accommodate most carriers, in reality the adoption of any rule with a fixed compliance period will cause severe disruption to a significant number of regional air carriers, particularly those considered small business operators.

**1. Airplane Fleet Types Operated by the U.S. Regional Air Carriers**

The proposed rule is limited to only transport category airplane types operated under FAR Part 121. RAA estimates there are 15 Part 121 air carriers that operate only non-transport airplanes, leaving approximately 25 regional air carriers impacted by the proposed rule. 12 of our members are company's considered as a small business and are affected by this proposal (see attachment A)

The regional airplanes operated by air carriers affected by this proposal include: Saab 340, Embraer 120 and 135/140/145, Bombardier/deHavilland DHC-7 and DHC-8, ATR 42 and 72, Bombardier CRJ and CRJ-700, Jetstream 41, Fairchild Dornier 328-100/-300, Bae-146 and Avro RJ-85, and Fokker airplanes. RAA estimates there are currently 1862 airplanes of these fleet types operated by U.S. regional air carriers (Attachment B).

**2. A Retrofit Rule Is Not Necessary For Regional Airplane Types.**

Within the last 10 years the regional fleet has rapidly transitioned from a mostly turboprop fleet to a mixed turboprop and turbojet fleet with the majority of airplanes being turbojet airplanes. Since seat manufacturers sold only 16G compliant seats in the mid to late 90's and the current age of the regional fleet is less than 7 years old, most of the seats in the regional fleet are 16G compliant. A retrofit rule is therefore not necessary for the transport category regional fleet since it is largely in compliance without a FAA Part 121 rule mandate.

RAA currently estimates that 60% of the regional fleet is "16G compliant" (48,464/80,739). There are between 5,000 to 6,000 seats stamped as "9G" but described as "16G certifiable". This could bring the regional fleet to 67 % compliance if the FAA would consider a "16G certifiable" seat as a 16G compliant seat (Attachment B).

We project the trend toward more turbojets and less turboprops within the regional airline industry will continue in the near future. Regional air carriers have over 600 regional turbojets on firm order; and have options and conditional orders for over 1300 more turbojets (Ref: <http://www.regionalairservice.org/>). All these airplanes will be delivered with 16G compliant seats. RAA projects that the turboprop fleet will decrease by 30-40 % within the next 3 years and then decrease by a single digit percentage in fleet size for the next 10 years (Attachment B).

Based upon the above projections, RAA therefore estimates that within 3 years, approximately 80 % of the regional fleet will be "16G compliant" without a retrofit rule. As the years progress, the percentage of 16G compliant seating will increase through the gradual retirement of the older airplane types.

**3. The proposed retrofit rule should be withdrawn since any mandatory compliance period will adversely affect a small number of air carriers who operate aircraft with non-compliant seats.**

The proposed rule fails to accurately account for the impact that this rule will have on the small business operators (Regulatory Flexibility Determination). RAA has identified 12 members (10 operate regional transport category airplanes and 2 operate large transport category (Boeing) airplanes) that are to be considered as small entities affected by the proposed rule (Ref: Attachment A). The FAA's assumption that such air carriers will replace their aircraft seats every 14 years is not correct. Regional air carriers (and charter operators of large transport airplanes) rarely replace aircraft seats except only if damaged; certainly the outer fabrics and cushions are replaced regularly but not the seat structure. The operators that may replace passenger seats on a fleet wide basis have done so for marketing reasons. In the past this activity has largely been confined to the major air carriers. Most regional air carriers and charter operators do not have marketing departments. Therefore the total cost of retrofit will be borne by those operators identified as operators without compliant seats

We disagree with the FAA's assessment that the proposed rule would not have a significant economic impact on a substantial number of small entities. The criteria for assessing whether the small business air carrier is adversely affected is to compare the cost of compliance to (annual) operating revenues. The operating revenues for the regional air carriers we identified as affected by this proposal and considered as small business air carriers varies between 30 to 100 million dollars.

RAA estimates that for the regional transport airplane fleet, the cost to implement a seat retrofit program will be at least \$154 million:

The total cost of compliance is distributed among both small business operators and large air carriers. If one considers only the actual cost of seat retrofit, then in most instances, the cost for

any one small business operator will likely not exceed its current annual operating revenue. However RAA considers the Regulatory Flexibility Determination should also consider the ability of small business operator to obtain aircraft for future operations since without that ability, the air carrier will be forced out of business. Obviously an air carrier forced out of business by an adopted rule will have no operating revenue.

As we had earlier stated, while the proposed 14 year retrofit compliance timetable may appear liberal and accommodate a carriers needs, it will not accommodate the future needs of small business air carriers because the cost of fleet retrofit cannot be recovered through future revenues. There are not enough seats in a small airplane to justify the expense, particularly for the re-certification and retrofit of the flight attendant seats. Turboprop airplanes with 29 to 38 seats are no longer being manufactured. Consequently such operators will only have two options; either purchase/lease larger aircraft (principally regional jets or very large turboprops) or purchase/lease 19 seat commuter category airplanes. Since commuter category airplanes are not affected by the proposal the small business air carriers presently operating 29-38 seat airplanes could purchase/lease 19 seat airplanes. However from a regulatory perspective, this does not seem to be a preferred option. Many airports that the small business operators serve cannot accommodate regional jets (from both a passenger payload and operational perspective) so it is unlikely they can pursue the purchase/lease of larger airplanes without completely changing their operations and marketing goals. This too, however would completely change their operations and marketing goals. In most instances the complete revision of the business model may not be supported by the available capitol of the affected company. The selection of either option will totally alter the current business model of the affected air carrier. Similarly the communities served by the smaller regional airports that depend on the fleet type affected by this proposal will also be adversely affected.

Because the cost of seat retrofit cannot be recovered, nearly all of the affected airplanes will have to be sold/leased to air carriers of other countries that do not have/nor expect to adopt a 16G retrofit rule (the other option is to sell/lease to all cargo operators but that market is limited). The FAA has made no effort to harmonize this rule. Consequently the value of the aircraft will be significantly reduced because the seats can no longer be operated within the U.S. While an airplane with 16G seats may be considered to be more valuable on the market, the benefit will not be imparted to the current lesser. The value of a retrofitted airplane will likely not have greater value if it is operated in a country that does not have a 16G seat requirement. Retrofitted airplanes that are shortly removed from service will yield no safety benefit to the U.S. traveling public if the airplane be operated outside the U.S.

#### **4. Past Accident Analysis Does Not Support A Retrofit Rule That Mandates A Fixed Compliance Period.**

In reviewing the NTSB accident data records from 1982 forward, for the transport category airplane types that are currently operated by the regional air carriers, RAA identified only 3 accidents from a total of 10 accidents that would be classified as survivable for this evaluation (attachment D). In one of these 3 accidents, the NTSB noted that passenger “structures separated and/or became deformed” but made no recommendation or conclusion with respect to the seat type. RAA is not aware of any NTSB recommendation that noted that the seat type played any

factor in the loss of a life or serious injury to a flight attendant or passenger for the regional airplane types. RAA concludes that even if the current regional transport fleet had always been 16G compliant, it would not have made any difference in reducing the fatalities or serious injuries in the accidents that actually occurred.

Based upon a review of regional (transport category) airplane accident data for the last 10 years, statistically it could be projected that perhaps 6 accidents of the type identified as survivable, will occur within the next 20 year period. A survivable accident is of course, the only accident category where seat design may make a difference in preventing a fatality or minimizing occupant injury.

However as we describe in questioning the cost-benefit analysis below, we consider that intervening factors such as the TAWS retrofit program, the CAST program to implement constant descent airplane approach procedures, and other safety enhancements will be significant in reducing the number of survivable type accidents. We consider it entirely reasonable to project no more than 2 to 3 survivable accidents, within the next 20 years for the affected regional fleet. Furthermore since we have projected that 80% of the seats will be 16G compliant in the next three years without a rule mandate, it is accurate to project that the survivable accident rate in regional airplanes without 16G compliant seats will be less than one accident in the next 20 years.

If the accident data from the last 20 years is any indication, RAA can reasonably project that it will not make any difference in reducing the fatalities or serious injuries that may occur in these airplane fleet types, regardless whether a certain percentage of non-compliant or partially seats continue to remain in the regional fleet.

##### **5. The Cost Benefit Analysis is flawed for all airplane types.**

This Cost Benefit Analysis projects the same accident rate of fatalities and serious injuries during the forecast period from the accident rate observed during the period 1984 to 1998. This projected rate fails to account for the TAWS retrofit rule that was mandated to minimize CFIT accidents. Survivable accidents are typically CFIT accidents. There have been numerous Airworthiness Directives over the last twenty years to correct aircraft braking systems and other system malfunctions that were part of the causal factor leading to specific accidents. CAST projects an 80% reduction in accidents by 2007 by implementing a TAWS retrofit, implementing constant descent approach and other safety enhancement procedures. It is not reasonable for the authors of the Regulatory Evaluation to ignore these safety enhancements when others within the FAA are espousing their safety benefits. Surely the Cost Benefit Analysis should account for these safety improvements when forecasting the accident rate for the next 20 years.

The cost benefit analysis points out the value in having the flight attendant survive the impact so that he/she can assist in the evacuation. We certainly agree. However the benefit is not that a flight attendant is on hand to save lives during evacuation but rather the alleged benefit in reworking all the flight attendant seats. The proposal fails to provide any service history where the accidents in which flight attendants died or seriously injured as a result of not having a fully

compliant 16G flight attendant seat. The FAA cannot state with any certainty that the current flight attendant seats will not provide a less safe environment than a reworked seat.

We are also disappointed in the lack of analysis between the 16G compliant seat and the partial 16G seat. While the analysis did account for a partially 16G compliant seat, it attributed its value as only 10% of the benefit of a fully compliant seat without any further discussion of the merits of the partially compliant 16G seat. This is simply not realistic for the majority of most partially compliant seats. We consider the safety benefit of a partially compliant seat as significantly greater.

## **6. The Cost Benefit Analysis fails to account for the differences between the regional fleet and the very large transport airplanes (Boeing and Airbus airplanes)**

In this and a number of other recent Part 121 retrofit proposals, the FAA simply lumps the regional airplane types in with the very large airplane types and develops an average risk model to fit all airplane types; with the end result being that the smaller airplane operators carry a significantly greater cost of the regulatory burden on a cost per seat basis.

The benefits methodology for the proposed rule assumes there will be 100 occupants per accident. A regional transport category airplane has between 29 and 86 seats with an average number of seats per airplane well below 50 seats. The average passenger loads are approximately 60-70% of total seat capacity. Most airplanes with non-compliant seats typically have 29 to 38 passenger seats. In order to make the accident scenario meaningful for the regional fleet, you have to increase the number of “expected” survivable accidents that may occur within the regional fleet by a factor of three.

Similarly, the analysis for justifying re-certification and potential retrofit of flight attendant seats is based upon the 100 occupants per accident scenario with flight attendants comprising 2 of the 100 occupants. Typically there is only one flight attendant on a regional airplane. Again in order to make the accident scenario fit the regional fleet, the number of “expected” survivable accidents that would have to occur in a typical regional aircraft would have to be at least triple the projected number of accidents forecasted by the Cost Benefit Analysis.

A significant cost of this rule will be attributed to the engineering cost of “re-certifying” both the passenger seat and the flight attendant seat with monument. The cost to re-certify a flight attendant seat in a Saab 340 are basically the same costs as that of a Boeing 747 flight attendant seat yet the ability of the operators of the small fleet types will incur a significantly higher “re-certification cost per airplane” for the regional operators. We view the FAA’s failure to separately account for the regional fleet when constructing a cost benefit analysis as discriminatory against the smaller operators. At the very least it cannot be reconciled at all with the accident rate of the regional carriers during the last 10 years.

## **7. If A Retrofit Rule Is Nonetheless Adopted, the FAA Should Adopt a Rule That Provides A Positive Cost/Benefit**

The President's Executive Order 12866 directs the agencies to “*adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs.*”

RAA believes that the FAA should not abandon its stated policy of focusing on rulemaking that provides measurable safety benefits. The FAA's Safer Skies program and FAA's active participation in the Commercial Aviation Safety Team (CAST) is based upon sound policy of focusing the industry and the FAA's resources on those accident prevention strategies that provide a meaningful reduction in the accident rate. We consider FAA policy that encourages positive safety benefits for any rule change will keep the FAA and industry on track toward achieving its accident reduction goals.

**8. If A Retrofit Rule Is Nonetheless Adopted, then RAA requests that the adopted rule "grandfather" seats that were newly manufactured from 1992 and on. (16G Compatible)**

At the 1998 public meeting, the speaker from B/E Aerospace mentioned that in order to support the FAA proposal to reassess recently manufactured seats, they will have to submit over 300 data packages. Many of these previous tests were conducted by several seating companies that they have acquired over the last several years and they could not report with any certainty that this documentation is available. RAA assumes that if this documentation is unavailable then the affected air carriers will have to bear the cost of re-testing these seats and replacing/modifying those seat types that falls short of what the FAA now considers sufficient documentation.

RAA views this determination of existing 16G compatible seats as totally unnecessary and requests that any seat that has been manufactured since 1992 be deemed "16G compliant".

Since the FAR Part 25 16G seat standards rule was first issued in 1988, there must surely be some cutoff date from which the FAA can state with confidence that a seat manufactured after a certain date satisfies the more significant design criteria recently adopted by the FAA. RAA sees little if any value in reassessing current "16G compatible" seats so that the FAA can state with certainty that a seat satisfies all of the newly interpreted dynamic standards. If the FAA could state with certainty that in each survivable accident, the seat dynamics will conform to its current test standard, then we could agree that all 16G seats must be re-certified. However the FAA has not provided such documentation. Certainly a study of past regional accidents have not validated the FAA position. Therefore we see little if any value in requiring that the above documentation requirements be met.

In summary RAA believes that the safety objectives of both the FAA and industry can be met without the adoption of the proposed retrofit seat rule. If the FAA nonetheless adopts a retrofit rule, then RAA requests that all seats manufactured after 1992 be deemed 16G certifiable seats.

Sincerely,

David Lotterer  
Vice President - Technical Services

Attachments

**Attachment A: Company's shown in Bold are small business operators (less than 1500 employees) and are affected by the proposed rule.**

<b>Company</b>	<b>City, State</b>
Aeromar *	Mexico City, DF
Air Canada Regional*	Enfield, Nova Scotia, Canada
AirNet Systems	Columbus, OH
Air Serv	Redlands, CA
Air Wisconsin	Appleton, WI
Allegheny	Middletown, PA
American Eagle	Dallas, TX
Atlantic Coast Airlines	Dulles, VA
Atlantic Southeast (ASA)	Atlanta, GA
Big Sky Airlines	Billings, MT
Boston-Maine Airways	Portsmouth, NH
Cape Air	Hyannis, MA
Chautauqua Airlines	Indianapolis, IN
<b>Chicago Express</b>	<b>Chicago, IL</b>
<b>Colgan Air</b>	<b>Manassas, VA</b>
Comair	Cincinnati, OH
CommutAir	Plattsburgh, NY
Continental Express	Houston, TX
Corporate Air	Billings, MT
Corporate Airlines	Smyrna, TN
Empire Airlines	Coeur d'Alene, ID
<b>ERA Aviation</b>	<b>Anchorage, AS</b>
Executive Airlines	Farmingdale, NY
Express Airlines I	Memphis, TN
Federal Express	Memphis, TN
Grand Canyon	Grand Canyon, AZ
<b>Great Lakes Aviation</b>	<b>Bloomington, MN</b>
<b>Great Plains Airlines</b>	<b>Columbia, MO</b>
Gulfstream Int'l	Miami Springs, FL
Horizon Air	Seattle, WA
<b>Hooter's Air</b>	<b>Winston-Salem, NC</b>
IBC Airways	Miami, FL
<b>Island (Aloha) Air</b>	<b>Honolulu, HI</b>
Mesa Airlines	Phoenix, AZ
Mesaba	Minneapolis, MN
<b>Midway Airlines</b>	<b>RDU Int'l Airport, NC</b>
New England Airlines	Westerly, RI
North-South Airways	Atlanta, GA
Piedmont Airlines	Salisbury, MD

PSA Airlines  
 Salmon Air  
**Scenic Airlines**  
 Seaborne Airlines  
**Shuttle America**  
**Skyway Airlines**  
 Skywest  
**Sunworld Int'l Airlines**  
 Trans States  
 Virginia Airways  
 Walker's Int'l

Vandalia, OH  
 Salmon, ID  
**N. Las Vegas, NV**  
 US Virgin Islands  
**Windsor Locks, CT**  
**Oak Creek WI**  
 St. George, UT  
**Ft. Mitchell, KY**  
 St. Louis, MO  
 Chesapeake, VA  
 Ft. Lauderdale, FL

\* foreign based air carrier

**ATTACHMENT B: AFFECTED REGIONAL FEET TYPES (PASSENGER CARRYING AIRPLANES)**

*Turboprops*

Name	YOI	Fleet Size	Pass. Seats per Airplane	Non-compliant Seats	Fleet compliance w
ATR-42 Aerospatiale	1985	65	48	3120	All seats are No
ATR-72 Aerospatiale	1989	79	72	5688	Seats are described
BAE Jetstream 41	1992	56	29	1624	Seats are described
Convair CV-580	1965	5	44	220	All seats are No
DHC 8-100/-200	1984	166	38	6308	All seats are no
De Havilland DHC 8-300	1998	9	54	0	-300 fleet is "16
De Havilland DHC 8-400	2000	14	76	0	-400 fleet is "16
De Havilland DHC-7	1977	4	52	208	All seats are No
Dornier 328-100	1993	69	34	2346	Seats are described "16G certifi
Embraer EMB-120	1985	145	29	4205	All seats a
Fokker/Fairchild F-27	1959	5	50	250	All seats are No
SAAB 340A and B	1985/ 1989	204	34	4216 (124 A/P sets)	Approx. 80 airplanes have "16G" are described "16G certifiable" bu remainder are "9G"

Name	YOI	Fleet Size	Pass. Seats per Airplane	Non-compliant Seats	Fleet compliance w
<b>Totals</b>		821		28185	

*Jets*

Name	YOI	Fleet Size	Pass Seats per A/P	Non-compliant Seats	Fleet compliance w
Avro RJ85	1993	36	69	0	
BAE-146-200	1983	12	100	1200	
BAE-146-300	1988	5	110	550	
Bombardier CRJ-100	1992	129	50	2000	Earlier seats (40 ship sets) are 9G;
Bombardier CRJ-200	1995	359	50	0	
Bombardier CRJ-700	2001	37	70	0	
Fairchild Dornier 328 Jet	1999	45	34	0	
Embraer EM-140	2001	55	44	0	
Embraer EMB-135	1999	70	37	0	
Embraer EMB-145	1996	289	50	0	
Fokker F-28-4000	1976	4	85	340	
<b>Totals:</b>		1041		4090	

*Jets on firm order for delivery within the next 3 years*

Aircraft Type	Units on Firm Order	Pass Seats per A/P	Total Compliant Seats
Bombardier CRJ-100/200	185	50	9250
Bombardier CRJ-700	157	70	10990
Bombardier CRJ-900	20	90	1800
Dornier 328-300 (Jet)	6	34	204
Embraer EMB-135	15	37	555
Embraer EMB-140	119	44	5236
Embraer EMB-145	105	50	5250
<b>Totals:</b>	607		33285

**ATTACHMENT C: Approximate Cost of Seat Retrofit**

The following costs are based upon a specific operator's quote for passenger seat replacement on a Saab 340 airplane. The cost of a Flight Attendant Seat is estimated and it includes cost of monument rework (estimated at \$20,000 per monument). All Flight Attendant Seats (2 per airplane) on regional airplanes are mounted on a forward/aft galley and/or bulkhead partition.

Cost Description	Quantity	Unit cost	Approx. Total
Passenger Seats	32,275 seats	\$3,000 cost/seat	\$ 96.83 million
Passenger Seat	16,000 seat pairs	\$100 cost/seat pair	\$ 1.6 million

Installation			
Seat testing costs passed onto operator	32 seat types	\$250,000/cert.& test	\$ 8 million
Flight Attendant Seat	1,600	\$25,000 cost/seat & monument	\$ 40 million
F/A Seat testing costs passed onto operator	32 seat types	\$250,000/cert & test	\$ 8 million
<b>Cost Total</b>			<b>\$154.43 million</b>

Costs for aircraft downtime, added fuel costs due to increased weight and potential loss of revenue due to removal of a front row seat row are NOT included in the above estimate.

**ATTACHMENT D: ACCIDENT RECORD FOR REGIONAL TRANSPORT  
CATEGORY AIRPLANE TYPES CURRENTLY IN OPERATION (1982 – PRESENT)**

<b>Date</b>	<b>Location</b>	<b>Aircraft Type</b>	<b>Fatal</b>	<b>Serious</b>	<b>Minor/None</b>
<b>04/09/90</b>	<b>GADSDEN, AL</b>	<b>EMBRAER EMB-120</b>	<b>2</b>	<b>7</b>	
<b>01/07/94</b>	<b>COLUMBUS, OH</b>	<b>JETSTREAM 4101</b>	<b>5</b>	<b>0</b>	<b>3</b>
<b>08/21/95</b>	<b>CARROLLTON, GA</b>	<b>EMBRAER EMB-120RT</b>	<b>8</b>	<b>13</b>	<b>8</b>

The report for the Columbus accident provided a recommendation regarding the ability to quickly unfasten a certain seat belt. Other than this one recommendation, The NTSB has not indicated in the reports for these (3) accidents that the seat type played any factor in the loss of a life or serious injury to a flight attendant or passenger.