AD-A085 628 FEDERAL AVIATION ADMINISTRATION WASHINGTON DC F/G 1/2
FIRST COMMUTER AIR CARRIER SAFETY SYMPOSIUM, JANUARY 16 - 17, 1--ETC(U)
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First Commuter Air Carrier Safety Symposium

January 16-17, 1980

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U.S. Department of Transportation
Federal Aviation Administration
Washington, D.C.

First Commuter Air Carrier Safety Symposium

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Technical Report Documentat. n Pag

1. Report No.	2. Government Accession No. AD-A085 628	3. Recipient's Catalog No
4. Title and Subtitle (6) First Commuter Air Carrier Safety Symposium, January 16 - 17, 1980.		5. Report Date Janurary Jan~~uary~~ 1980
		6. Performing Organization Code
7. Author(s) (10)		8. Performing Organization Report No
9. Performing Organization Name and Address U. S. Department of Transportation Federal Aviation Administration Washington, D. C.		10 Work Unit No (TRAIS)
		11. Contract or Grant No
12. Sponsoring Agency Name and Address U. S. Department of Transportation Federal Aviation Administraotn Wasnington, D. C.		13. Type of Report and Period Covered
		14 Sponsoring Agency Code
15. Supplementary Notes		

16. Abstract

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~~Our~~ The program is directed toward a listening session and regulatory overview; the industry presented its perspectives with reliability, and air-worthiness; human factors considerations in accident prevention; and the prospects of, or needs for, airport and airway development for commuter service.

17. Key Words	18. Distribution Statement Document is available to the public through the National Technical Infor Service, Springfield, Va. 22161.		
19. Security Classif. (of this report) UNCLASSIFIED	20. Security Classif. (of this page) UNCLASSIFIED	21. No. of Pages 244	22. Price

Form DOT F 1700.7 (8-72) Reproduction of completed page authorized

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WELCOME AND CONFERENCE OVERVIEW

Charles R. Foster
Associate Administrator for Aviation Standards
Federal Aviation Administration

It is my pleasure to welcome those of you who represent the commuter air carriers, the aircraft industry, constituent organizations, the public, the press, and all others.

As the Associate Administrator for Aviation Standards, under my purview come the Offices of Flight Operations, Airworthiness, Aviation Safety, and Civil Aviation Security. These will all be subjects that we will be addressing at this symposium.

To open these proceedings, I would like to give an initial overview of our program and objectives and provide a few introductory remarks. This is the first commuter air carrier safety symposium held by the FAA. Our objective is to review the significant problems which are inseparable from safety issues, now and in the forthcoming year--which is the first year in which all commuter operations will operate in accordance with the revised Part 135 of the Federal Aviation Regulations.

Next year there will be a second symposium, and it will be an opportunity for us then to review what has taken place in the past 12 months and to continue to look at the challenges in safety and safety issues. In the meantime, we will augment this symposium with meetings in both Washington and the various regions of the country to address unique geographical problems as well as the individual needs of air taxi commuters and operators.

Initially, we had planned to have the symposium the first of December--the effective date for all commuters under FAR Part 135. We felt, however, that it would be better to get a picture of where we stood as of the initiation of full compliance with Part 135; and to do that and to be able to get the operational statistics, we postponed it until the January period. I think this will give us a better opportunity to establish a baseline that we will be using for the next year and future symposiums. We are looking forward to improvement in our safety program as a result of this and many other activities we have underway, recognizing, of course, that the improvements we expect are based upon the fact that most of the accidents which

have occurred in the last several years have involved recurring contributing factors--in operations, maintenance, and training--and most are truly avoidable. This suggests, as does your presence here, that your interests, our interests, and the interests of the public will be served by our concentration of efforts during the next year towards the prevention of these accidents and the reduction of them to the absolute minimum.

Our program is directed toward a listening session and regulatory overview; the FAA role in conducting surveillance of the operational, maintenance, and training activities; and the current and proposed security programs.

With regard to the program itself, the industry will present its perspectives with respect to commuter operations management; progams for maintenance, reliability, and airworthiness; human factors considerations in accident prevention; and the prospects of, or needs for, airport and airway development for commuter service. The Commuter Airline Association of America (CAAA) will discuss its safety program; and we will hear the concerns of state governments, airport managers, and the consumers, represented by the Aviation Consumer Action Project. The program also includes those who will speak for pilots, representatives of the manufacturers, and those who develop training and simulation programs in operations or maintenance.

We are deeply indebted to those representatives, top managers, and experts for their contribution to this symposium. I would like to extend our thanks to those in the industry who have furnished aircraft, eqiupment, and components for display both here and at Dulles Internatinal Airport.

THE ROLE OF FAA IN ASSURING AIR SAFETY UNDER DEREGULATION

Honorable Langhorne Bond
Administrator
Federal Aviation Administration

Deregulation has been an enormous opportunity for the commuter airlines, and none of you has hesitated to seize that opportunity. It has placed an enormous responsibility on your shoulders, too; and many of you have moved just as quickly to shoulder that responsibility.

But not all of the industry. No matter how you cook or juggle the statistics on commuter accidents, they add up to a safety record that is unacceptable. I know all the rationalizations, and all the explanations, and all the arguments about how the figures on accidents aren't really comparable; and I remain unconvinced. In 1978, commuters had 3.93 accidents per 100,000 hours of flight, whereas the locals had only .55. This is nearly eight times as many accidents per hours flown. And we're not comparing apples and oranges here, because the average flight stage is 48 minutes for locals and 41 minutes for the commuters. We're comparing one apple with another, and yours doesn't look so good.

I said at the beginning that some of you have shouldered the responsibilities of rapid expansion in an admirable way, and you have. But the traveling public lumps you all together. Weakness on the part of a few commuters reduces confidence in all commuters. That might be unfair, but so is life.

The effects of deregulation were clear to all of us from the start, and they have been just what we knew they would be. Demand has grown to the point where we are projecting that commuter operations, passenger movements, and cargo tonnage will be double during this decade.

I made it my first priority, when I took over the FAA in 1977, to create a regulatory structure that would accommodate this growth with safety. This was Part 135, which had been languishing in the bureaucracy for years. Part 135 was the most comprehensive rulemaking action the FAA had ever undertaken, and putting it in place cost all of us immeasurable amounts of time and money. But the job is done at last, and now we have a framework of regulations capable of providing a level of safety

for commuters comparable to that of the large carriers--if those regulations are followed conscientiously.

The ultimate responsibility for living up to the standards of Part 135 doesn't lie with the FAA, any more than the ultimate responsibility for driving safely lies with the traffic cop. It lies with you. And some of you are meeting that responsibility. But I believe in the universal perfection of mankind about as much as I believe in the tooth fairy. So, I am taking steps to help some of you along the paths of righteousness.

Last March, in a speech before the National Aviation Club in Washington, I announced a new and stiffer enforcement policy. As part of that policy, I have asked Congress to raise the present $1,000 limit on fines to $25,000 per violation and to permit criminal penalties for operators who violate safety regulations. I look forward to the day when I can impose these heavier penalties on those who repeatedly and willfully endanger safety. If a reckless driver can be jailed, why can't a reckless pilot who busts a minimum? Or the operator who urges him to do it?

In the meantime, though, I have been busy using the enforcement tools I already have in hand. I have grounded PRINAIR, the country's largest commuter, for maintenance and weight-and-balance violations. I have revoked the certificate of Skyway Aviation, in Missouri, for failure to meeet maintenance requirements. They are back in operation now, under new management. In our Great Lakes Region, I revoked the certificate of International Aviation for operation of a plane that wasn't airworthy. We seized a non-airworthy airplane belonging to Rapidair of Denver, and grounded the airline for a variety of maintenance and operational violations. And this list is only partial.

What's more, I can promise you that such measures will not only continue, but will intensify. I have directed our field division chiefs and safety office managers to use all available resources to ensure compliance with Part 135. They will put great emphasis on your accident prevention programs, increased pilot proficiency checks, more aircraft inspections, and increased monitoring of maintenance.

We're undertaking a comprehensive study of our safety reporting and analysis system, particularly as it relates to maintenance problems. Also, we're using Aeronautical Center computers at Oklahoma City to spot patterns of negligence and violations, so that we can identify and deal with problems--whether human or mechanical--before they can cause an accident.

I have centralized all safetly-related functions under the Associate Administrator for Aviation Standards. I have reorganized and redefined our Headquarters staff functions in order to

beef up our field staffs--including more field inspectors and engineers. I think I can predict, incidentally, that next year's budget will provide for more inspectors, in addition to the 712 who now oversee the 258 commuter operators.

These won't be the only new faces you'll be seeing. We are shifting personnel around between GADO's (General Aviation District Offices) on temporary and unannounced tours of duty so that an unfamiliar FAA inspector might be on any of your flights, at any time. We'll be particularly interested in flights under marginal--or worse--weather conditions. From 1975 to 1978, 58 percent of commuter accidents were due to pilot error or deficiencies--and 40 percent were weather-related. In more than a few of these cases, profits were put before safety. I promise you that any operator we catch making that sort of choice in the future will have a long time on the ground to regret it. I have little patience with people who say meaningful comparisons between air carrier and commuter safety records aren't pssible because of differences in operations, route, structures, equipment, et cetera, ad nauseum. These are rationalizations, not reasons. We are the reason--the FAA and the commuter industry. This is why we're here today--to search together for ways to meet the responsibility we share to make commuters as safe as scheduled carriers. With six months of experience with Part 135 behind us, we should be able to begin making judgments now on where its weaknesses lie and how they can best be strengthened.

COMMENTS AND QUESTIONS

Mr. Tim C. Ford (New Haven Airways) - Standardization between the regions is one of the weaknesses within the FAA; a lot of how the regulations are interpreted depends on which field office you apply to. I think you could do a tremendous service to us if you could improve standardization.

Administrator Bond - You are absolutely correct. Our operation--any decentralized operation--has both strengths and weaknesses. The strength of the operation is the field personnel who know their own particular circumstances better than we in Washington ever will. And the weakness of a decentralized system is a certain amount of non-uniformity from area to area. I know it is difficult to deal with. We are doing our best to straighten out the question of non-uniformity. It is our problem, the FAA's and the industry's as well, and where we are at fault we will do our best to cure that.

Mr. John Van Arsdale, Jr. (Provincetown-Boston Airline) - Relative to the approach situation and the fact that most accidents seem to occur during the approach phase, can you advise us

why most of the airports we operate in and out of do not have precision approach facilities?

Administrator Bond - The march towards better precision approach facilities is at a pace that I personally would like to see accelerated. I know this is a universally felt need by all the members of this industry. But we operate under funding levels that are finally those that are provided by the Congress. We can't spend any more than that which we are appropriated by the Congress, and we spend evey penny of that appropriated money. The FAA holds back nothing, but the question ought to be expanded beyond that.

Safe operations are possible under conditions of non-precision approaches. In order to accommodate that problem, we have higher minimums and less permissive operating conditions, and there have been too many cases in the past where we have found that operators have become frustrated with the limitations of non-precision approach and have decided to go to lower minimums, at illegal minimums, anyway.

Now that is a very tough thing for us to enforce. We have to be there to see it, but we are going to be watching; and there is no excuse under any circumstances for operating under what has been called a company minimum. That is a violation of the law and of conscience.

Mr. Van Arsdale, Jr. - The point is valid, but the problem is that the FAA is really doing very little to give the commuters something to work with, if you think that 500- or 600-foot minimums off of VOR approach, maybe 30 miles away, when running 250,000 people into an area is appropriate. We have received letters from the regional directors, we have been fighting for approaches for years; and yet $4.5 billion languishes in the Trust Fund. We can't get any cooperation whatsoever from the FAA with respect to that. So all you are doing is toughening up an operation we have to run reliably.

What we need is approach facilities, and we are getting zero from the FAA. Historically, from what I can see, it will be five or ten years before we ever see anything from you people.

Administrator Bond - Well, a number of points--one is that there is a lot of money languishing in the Trust Fund. That is a separable issue from what the Congress gives us to spend. We spend every penny that we can get our hands on. There is no uncommitted money that we could possibly spend for navaids, so the question of the uncommitted balance in the Trust Fund is a question the Congress will have to resolve on its own.

The question of whether or not the FAA or any part of the Executive Branch cannot spend what the Congress appropriated was resolved during the impoundment debates during the Nixon Administration. It is now clear to all parties in this debate that we can spend only as much money as Congress gives us, and we must spend all of that. So whatever is left in the Trust Fund that is unspent or in the general revenue fund for any other program is a decision for the Congress to make. And I think that it is worth noting that this industry has not done very much to go to the Congress in an effective way and make their will known for more precision navaids.

Now the question again of non-precision approach. I am sympathetic to that problem. All we can do is spend what we get. Ten years ago there were maybe 270 approaches in the United States. When the current pipeline for ILS's is exhausted, those we just have under contract, we will have over 800 ILS's in the United States, and that happens to total more than there are in the whole rest of the world. So we have not been idle. And the notion that the FAA will not give people what is needed is really not right. We are doing our very best. That is an increase of an enormous dimension, and we need more.

I agree with you on that point.

Mr. Stanley Bernstein (Air Line Pilots Association) - It appears the commuter air carriers are indeed a special group often requiring special needs. Is the FAA considering anything to deal with the special needs in terms of a commuter air carrier specialist? As it stands right now, commuters are making use of either the FAA field air carrier office or the GADO, and there is really no expertise being developed in the exact commuter area where it could help the problems that we are facing now.

Administrator Bond - The regulatory framework under which we all operate is Part 135. Some of you are moving up into the lofty dimensions of Part 121. I am surprised to note that there are not experts out there because I believe that our GADO and air carrier inspectors are plenty capable of dealing with Part 135, and they have been dealing with that sort of regulatory structure for many years.

I have never heard the notion that our inspectors are not able to deal with them effectively. I believe the converse is true, that they are able to do so. But the question of how many of them are available is a legitimate question, so let me tell you what we have been doing to deal with that.

In the implementation of a new and far more complex regulatory environment for this promising industry, it is a new thing,

so what we have basically done is taken inspectors off of general aviation. We shifted our resources around to meet this peak. For 1979 and 1980, probably 50 percent of the inspector hours of our GADO force has been and will be spent on commuter problems. That is tripling or quadrupling the prior number, and our effort until July of last year and then through the fall was to get everybody certificated. That takes a long time.

We have given extensions of time. The pieces of equipment aren't available. Training had to be done; but as of December 1, 1979, everybody is certificated or has dropped their certificate and gone out of business. Our emphasis now is going to be on compliance. Everybody has a rule. Now we will make sure that they are complying with that rule, and we are doing check rides with every commuter, we have special safety programs--all of the things that we can think of for one year afterwards.

Mr. Bernstein - The point I am really trying to emphasize is that the commuters as they are now are sort of in between a trunk or regional carrier, and they are certainly more than a flight school. I think the special needs that the commuters have today are not fully being addressed by either GADO inspectors or by air carrier inspectors. There seems to be some special needs in the middle that have to be developed and worked upon and systems put into place that can work with them and deal with them effectively.

Administrator Bond - I guess that I really had not addressed that problem at all. I had never heard it before, and I would be happy to talk to you later on about some accommodation for that.

Again, my assumption has been that people can move very easily. Remember, our GADO inspectors have been commuter and air taxi inspectors for many years. The air carrier types have been dealing with even more sophisticated operations, and I didn't think there was difficulty in moving down.

Mr. Bernstein - The point I was implying is that the air carrier offices tend to be more restrictive. Perhaps the GADO's tend to be too lenient, in meeting a sort of middle-of-the-road approach.

Mr. Colby F. Van Atta (Van Atta Associates) - You have pointed out that you can only do what Congress provides funds for you to do. Seldom is Congress ever going to give you anything that you haven't asked for. I have seen no strong appeal from FAA, to my knowledge, asking for these precision approaches in the smaller communities.

Administrator Bond - The statement was that Congress never gives you more than you ask for. I respectfully submit, sir, that that is incorrect. In this business alone you will find that where there is a well-organized lobby and there is a pressure group and so on, and the cities get in there and organize and do their number, they get what they want.

Mr. William P. Gamble (New Haven Airways) - Would you like to comment on your agency's ability to help small operators with their fuel problem?

Administrator Bond - The difficulty is that the Department of Energy has fuel allocation responsibility in the Executive Branch, and the FAA does not. While our Environment and Energy Office is a collaborative office and tries to help operators get together with the DOE, we aren't responsible for allocation and we don't have much direct authority to do that. It is a serious problem for this industry; and if I read the newspapers right, none of those problems are going to get any easier.

NOTE: Subsequent to the symposium, the FAA Office of Environment and Energy provided the following supplemental information in response to Mr. Gamble's question.

Mr. Gamble's question refers to a problem which surfaced in conjunction with the termination of service by certain large carriers to small communities while taking their fuel supplies with them. The Airline Deregulation Act requires that replacement service be provided; however, in some cases replacement commuters did not have adequate fuel supply arrangements. The Civil Aeronautics Board (CAB) and Department of Energy (DOE), who have the primary responsibility in this area, are coordinating to ensure that adequate fuel is available to guarantee a level of "essential" service; otherwise, the original carrier must continue to serve the market.

The FAA has no authority to regulate the fuel availability for any air carrier including commuters. However, the agency has coordinated informally with DOE on all requests forwarded to the FAA from the carriers. DOE maintains an airline fuel desk to handle requests for fuel or other related problems.

Beyond this, the FAA has focused primarily on monitoring general fuel supply and price conditions for all users of the aviation industry. In this regard, the agency has worked with DOE to ensure that the industry receives an equitable share of aviation fuels.

CONGRESSIONAL VIEWPOINT

Marshall S. Filler
Assistant Minority Counsel (Aviation)
Committee on Public Works and Transportation
House of Representatives

As Assistant Minority Counsel for the House Committee on Public Works and Transportation, I hope I can enlighten you as to what Congress has done in the recent past and what it is going to do as the second session begins on January 22.

I think it is a fair statement to say that the commuter industry has experienced phenomenal growth in the previous decade. Currently, there are 258 commuter carriers serving 820 airports in the United States. And, just to give you an idea of the magnitude of this growth, commuters enplaned over 10 million passengers in 1978--twice as many as they did in 1971. The amount of cargo being carried now is over ten times what it was in the beginning of the decade. The number of aircraft being flown has also doubled in the same time period. In 1978, commuter passenger traffic grew at a rate of almost 20 percent, which was the highest rate of any other form of scheduled air service.

Before getting into specific Congressional action, I would like to touch very briefly on the manner in which the Congress handles aviation issues in general and commuter issues in particular.

In the House, the Public Works and Transportation Committee, by whom I am employed, has 47 Congressmen as members of that Committee. It is one of the largest committees in the House of Representatives. It is divided into 6 subcommittees, one of which is the Aviation Subcommittee, with 26 members. The Committee has legislative jurisdiction over the FAA and the Civil Aeronautics Board. In addition, there is also an Oversight and Review Subcommittee which from time to time will get into aviation matters, either by itself or in conjunction with the Aviation Subcommittee. There are also some other committees in the House such as the Committee on Government Operations which exercises oversight jurisdiction over the FAA.

In the Senate, we have the Committee on Commerce, Science and Transportation, and that is the committee which handles aviation issues in that body.

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Matters of interest to Members of Congress often result in the introduction of specific legislation, and quite often there are hearings scheduled to follow up on determining whether any specific Congressional action might be warranted to correct a particular problem.

In addition to these formal types of situations, both members and the staff of the Aviation Subcommittee are in constant contact with representatives of the FAA and with industry in an attempt to monitor very important issues that are affecting the industry at the time. So, if there is something that is going on at the moment, it is a fair statement to say that the Aviation Subcommittee is aware of it.

Mr. Bond mentioned the Deregulation Act as being the bellwether statute affecting the commuter industry. It certainly grew plenty without it, but I think in the future you are going to grow even more with it. For the first time, Congress, in recognizing the importance of commuters, established a loan guarantee program. To give you an idea of the importance Congress attaches to your operations, in 1980 it appropriated $150 million--this money specifically being earmarked for loan guarantees for commuter carriers. It certainly reflects Congressional recognition of the fact that if commuters are to expand into markets vacated by certificated carriers, they must have the aircraft to support this expansion.

In addition, the Congress declared in the Deregulation Act that safe, continuously reliable scheduled service is to be provided to the small communities in this country, and commuter air carriers would lead the way in that regard. Commuters now serve 190 communities that were at one time served by the certificated carriers--50 of these since the Deregulation Act was passed.

Perhaps the most important aspect of the Deregulation Act from the standpoint of this symposium is the provision which mandated that commuter air carrier operations be conducted with a level of safety equivalent to the operations being conducted by the certificated carriers. I think there is a belief in Congress right now that the revised Part 135 will undoubtedly enhance commuter air safety, but certainly this particular provision reflects the fact that Congress believes that as you as an industry grow and expand into more and more markets, your duties and responsibilities will also increase proportionately.

Despite this phenomenal growth that the industry has experienced and will experience, the big problem is safety. From what we can tell on the Hill, the very safety of your operations has been called into question. Administrator Bond mentioned the fact that in 1978 per 100,000 departures, the accident rate for

the commuters was 8 times greater than that of the local service carriers. These rates are even higher when you use other measures, but I think that is probably the most reliable one you can use at this point. Some of the recurring themes of these accidents are particularly troublesome to some of the members of the Aviation Subcommittee and the Public Works and Transportation Committee--deficient company operating procedures, poor crew discipline. As an example, missing callouts on instrument approaches (certainly this type of thing is not confined to commuter carriers, but there has been a lot of it recently that has been observed in the accident investigations), disregard of FAA regulations in general and a wanton disregard of basic weight and balance regulations, and other elementary considerations of safety. I think it is probably the view of most Members that these problems are correctable.

We certainly applaud Administrator Bond's action in increasing surveillance of the commuter air carrier industry. But, as he mentioned before, it is imperative that the improved safety record result from the commitment by the commuter air carrier industry itself--perhaps to form a better self-policing type of group to make sure that this level of safety is made comparable to the certificated carriers--because public confidence is right now the largest stumbling block to the continued growth of the commuter industry. And, while the vast majority of you are undoubtedly fine operators, conducting your operations with perhaps even a higher level of safety than mandated by the FAA, a few have a tendency to spoil the record for everybody. It is critically important that the safety record be improved in the near future.

In the first session of the 96th Congress which ended in December, some legislative proposals were considered and enacted which have a direct bearing on the commuter air carrier industry. The 1980 discretionary authorization for the Airport and Airway Development Act, which masquerades around town as the Noise bill, is out of conference, and floor votes in the House and the Senate are expected early in the second session. This is a major piece of legislation. Perhaps what has generated the most controversy so far has been the noise provisions. But as far as commuter air carriers are concerned, the House directed in that particular report accompanying the legislation that the FAA increase spending for commuter service airports from $15 million to $25 million in FY 1980. That gives you an idea, I think, of how important the Congress thinks the commuter air carrier industry is to this country's air transportation system. And as you continue to grow, I think you can be assured that the Congress will be responsive to providing these needs to support that growth.

Another piece of legislation passed by Congress in the first session requires the National Institutes of Health (NIH) to study the medical- and performance-related implications of pilot aging. Basically, this study is going to go a long way in determining whether the FAA's mandatory age 60 retirement rule should be modified. I realize that the age 60 rule does not apply to Part 135 operations at this time. Those of you who are operating under Part 121, I believe, are governed by it. There was a considerable amount of controversy on the Hill in this session as to whether or not the rule should be modified or whether it should be applied to commuters before the NIH study was conducted. The way the bill passed the Congress and was signed into law by the President, it authorizes a study. NIH is directed to come forth within one year, and at that time further decisions will be made. Certainly that study will have a great impact as to whether the Part 135 operators at some future time might be governed by some mandatory retirement age. In addition, the study is a little broader than that and will focus on current FAA medical standards governing first- and second-class medical certification, to see if they should be strengthened.

As far as the second session of Congress is concerned, the major piece of legislation they will be dealing with is the Airport and Airway Improvement Bill for the next five years. This is a successor program to the Airport and Airway Development Act, better known as ADAP (Airport Development Aid Program). The Administration has proposed five-year funding levels for the various programs. The programs that we are going to be dealing with in considering the ADAP legislation are airport development--funds for projects such as runway construction; facilities and equipment (such as ILS, VASI, air traffic control radar and towers); and research and development by the agency in the next few years.

Earlier, Mr. Van Arsdale and Mr. Bond discussed the surplus in the Trust Fund. I don't think it is appropriate at this point to place blame on anybody as to how the surplus got there. I think there is enough to go around perhaps throughout the system. Suffice it to say that at the end of FY 1980, it is estimated there will be a $3.5 billion uncommitted surplus in the Trust Fund. The Congress believes that the existence of this surplus has had an adverse effect on safety. And I think it is unquestionable that action will be taken to draw down the surplus, certainly by increased spending, and there is a possibility, although it is too early to tell at this point, that there will be some reduction in the taxes that go into the Aviation Trust Fund, the biggest being the passenger eight percent ticket tax.

Specifically, as far as ADAP is concerned, and to touch further on what was discussed earlier, there is an awful lot of

Congressional sentiment to increase spending for facilities and equipment. According to the statistics that I have seen furnished by the CAAA, 66 percent of airports serving commuters exclusively lack ILS. Only 22 percent of the runways at these airports are equipped with visual approach slope indicators. Congress is pleased with the renewed FAA commitment outlined in the Part 135 final rule to install VASI's on all runways equipped with non-precision instrument approaches.

However, on a broader scale, I think it is important to note that the Congress will be looking very closely at the criteria that the FAA uses to determine whether a particular airport justifies an ILS or a VASI to determine whether those criteria are sound. It is feasible that upon further reflection, they will have to be modified. I think, as a generalization, the mood in the House is that passengers traveling between smaller airports should not be provided with a lesser level of safety than that provided to passengers traveling between the larger airports.

As a follow-up to this symposium and as a further follow-up to the NTSB hearings to be held in late January, at this point I think it is appropriate to say that the Oversight and Review Subcommittee of the Public Works and Transportation Committee will very likely hold hearings in February on this issue. The hearings at this point have not been scheduled. I have talked to staff members of that subcommittee, and they inform me that it looks very good for some time in February or perhaps a little bit later, but early in the second session. The purpose of these hearings will be to follow up on the issues which have been and will be discussed here and which will be discussed at the NTSB hearings and continue to focus public attention on the safety issue.

I think it is a fair statement to say that there is nothing like crashing a disproportionate amount of airplanes to attract Congressional attention. That is not unique to Congress. It does the same thing to the FAA and to the NTSB, as well it should. So you people are certainly, as an industry, going to be in the spotlight over the next couple of months.

In addition to the things I have mentioned so far, there is the legislation that the Administration will be submitting very shortly to increase the maximum fine authorized to be collected from $1,000 to $25,000 for violation of safety regulations. In all honesty, the members so far have been very much preoccupied with other issues so this legislation hasn't yet been considered in Congress. It hasn't been really given the discussion that it will certainly get in the second session.

There is sentiment for increased enforcement on the Hill in the form of FAA increased surveillance, and Part 135 will certainly go a long way toward raising that level of safety. I would think at this point it is fair to say the $1,000 maximum fine that the FAA can presently impose, although it does have ways to get around that, has a good chance of being raised. As to whether it will be up to $25,000 and whether criminal penalties will be authorized too, it is much too early to say at this point.

That pretty much runs down the specific Congressional actions that have been occurring and will occur in the future.

In addition, as I mentioned earlier in my talk, there is a good deal of monitoring going on by the staff of the subcommittee concerning the other major issues that are affecting commuters. We are looking certainly at Part 24 and following the progress of that.

The security regulations probably have caused many of you consternation over the past couple of months. We now have somebody as a matter of fact traveling at this very moment in Alaska looking into commuter safety in general in that state and, specifically, how the security proposals would affect operators there.

Flight and duty time limitations--another very controversial subject--was deferred in the adoption of the new Part 135. It is our understanding that supplemental proposals will be forthcoming very shortly from the FAA in that regard.

I hope I have been successful in giving you a general idea of what has been going on in the 96th Congress and prior to that, and again I would like to thank Mr. Bond and Mr. Foster for the opportunity to address this group. I trust you will continue to provide the public with essential air service as mandated by the Deregulation Act with the highest level of safety.

In closing, I would like to extend an invitation on behalf of the Congressmen and the staff of the Aviation Subcommittee that we really would like to hear from you. We hear often from the CAAA and many other organizations representing your interests. We like hearing from them; but if any of you individually would like to contact any member of the staff, we will be most happy to hear from you.

THE COMMUTER AIR CARRIER COMMITMENT TO AIR SAFETY

Duane Ekedahl
President
Commuter Airline Association of America

I appreciate the opportunity to address the opening session of the First Commuter Air Carrier Safety Symposium representing of the Commuter Airline Association. The association's membership consists of 150 commuter air carriers that comprise nearly 90 percent by volume of the activity of this segment of aviation in the United States.

The commuter airlines welcome the opportunity to participate in this symposium. We believe it will advance a dialogue with the FAA which will lead to greater success in reaching the objectives of these sessions--that is, to ensure a regulatory environment leading to the highest level of safe and reliable air transportation for the traveling public.

We would hope that the commuter air carrier commitment to air safety is perfectly clear to all in this audience. The commuter industry is proud of the fact that it has been a strong advocate of the development of the new Part 135 operating regulations and indeed proposed many of the provisions that were built into that regulation. This extensive revision to commuter operating regulations has just been implemented, and we were pleased to learn that every commuter air carrier met the December 1 compliance deadline for the new regulation. This industry is fully committed to the success of the new Part 135. We believe that time will show that the new Part 135 rule will lead to a significantly higher level of safety for commuter airlines in the decade of the 1980's.

The commuter industry has also worked with the FAA toward the development of a new Part 24 certification rule for commuter-type aircraft. The stepped-up surveillance and enforcement policies announced earlier this year by the FAA have generally been supported by the commuter industry, and the commuters have pushed for changes in FAA equipment criteria and increased ADAP funding to allow for improved navigational aids and facilities at the small airports.

We have testified twice in both Houses of Congress with respect to ADAP funding for these navaids and equipment, but we really would like to focus at this point on the outmoded FAA

criteria which are really a bottleneck for getting more monies to these small airports for this type of equipment. We think this could be one of the very positive things to come out of this conference.

Present, today, are many of the leaders of the commuter airline industry. In attendance are the members of our Board of Directors; the members of our key committee, the Government Relations Committee; and also many other commuters from across the country--from Hawaii, California, Puerto Rico--all regions of the country. Our vigorous support of the objectives of this two-day symposium should be obvious.

As you know, the National Transportation Safety Board has scheduled hearings on the subject of commuter safety for later this month. The commuter industry is prepared to cooperate with any reasoned, impartial assessment of the industry's operating and maintenance practices. The Chairman of the NTSB has stated that the hearings will be conducted in this manner, and we have given our full cooperation to his staff in preparing for those hearings.

The Nation's commuter airlines conduct nearly 6,000 operations a day in the United States safely and reliably. In providing short-haul, high-frequency air service, the average stage length of the industry is 111 miles. Commuters operate a structure that is typically a hub-spoke configuration, bringing the small- to medium-sized communities of the Nation into the national air transportaion system. We estimate that 80 percent of commuter passengers interline or connect with other carriers. The average fare in 1979 was $40.

Commuter airlines serve twice as many airports as the larger certificated carriers. Many of these airports are small, needing substantial improvement in navigational aids, facilities, and related equipment. Of these, there are 359 communities in the country served only by commuter carriers and which are, therefore, dependent on commuter airlines for their only link to the national air transportation system. In 1978, total commuter passengers broke the 10 million level. In 1979, we project that enplanements exceeded 12 million. During the decade of the 1970's, commuter airlines posted the fastest rate of growth in the airline industry, averaging an annual increase of 12.3 percent in passenger enplanements, twice that rate achieved by the certificated jet carriers. In the decade of the 1980's, as the cost of short-haul air service increasingly drives trunk and local service carriers into long-haul or mass intercity markets, commuter airline passenger traffic will continue to post record growth. By 1990, we expect 10 percent of all air travel will be by commuter airlines.

I suppose an underlying question which provides the framework or the starting point for this symposium is: How safe are commuters? And as a related question, Is their record improving or deteriorating? Therefore, I would like to discuss accident statistics for just a moment. Hopefully, we can then set them aside and not dwell on unmeaningful comparisons, but rather focus our attention on those areas where steps might be taken to improve commuter airline safety.

Aircraft accident statistics are among the most misused and least understood in transportation. We believe there are some obvious, yet basic, caveats which should accompany any statistical examination of commuter air safety. However, these caveats are often lost or ignored in public presentations.

One of the first cautions is to recognize the very high level of safety associated with almost all aviation operations and most certainly with scheduled passenger carriers. Because of this excellent safety record, any accident statistics are extremely volatile with respect to the impact of one catastrophic event. A second caution is to recognize that the variation in statistics from year to year can be dramatic because of this volatility. And, finally, what discredits commuter statistics even further is that good accident exposure data for commuter air carriers is limited. Prior to 1975, commuter accident data was not separated from other segments of general aviation. Indeed, even in 1979, we find this data is complicated by changing definitions. Some 28 passenger-carrying commuters, large and small, have received CAB certificates. In the most recent traffic statistics report, the CAB split these carriers out, excluding some of them from the data base used by the NTSB to derive its safety comparisons. We understand the CAB, NTSB, and FAA are moving now to clasify commuter carriers according to aircraft size operated. We believe this is certainly the way the public perceives this segment of the industry.

In spite of these major inconsistencies, there continue to be attempts to compare the safety record of the larger carriers with that of the commuter airlines. Although these unfair comparisons inevitably will be made, there remains the question of which statistic best represents a measure of safety meaningful to the airline passenger and consistent with the various operational characteristics of each class of air carrier--commuter, local, supplemental, or trunk.

Until recently, the NTSB and FAA made their principal comparison of commuter air safety on the basis of passenger miles or hours flown. We think this is categorically unfair. It puts the short-haul, smaller aircraft at a distinct disadvantage. To

dramatize this, we note that one 747 transcontinental will generate as many passenger miles as 1,000 average commuter flights.

Further, it can be very misleading to use statistical comparisons to suggest that one air carrier segment is safer than another without accounting for the variables involved, particularly when comparisons are made with the extraordinarily safe record of the jet air carriers. It is said that numbers can be made to say anything. Let me give you an example. Last year, commuter airlines performed 28 percent of all scheduled air operations, yet they accounted for only 12 percent of the fatalities. Does this statistical comparison make us the safest segment in aviation?

We suggest that industry and Government should together and attempt to quantify the most meaningful statistical safety measures appropriate to the operational nature and role of commuter service so that resources can be directed efficiently toward problem areas. In the meantime, we strongly urge that statistical comparisons be used with extreme caution by the news media, Government officials, and others commenting on the public record. To do otherwise does disservice to the commuter safety record and to the traveling public.

Since we say that comparisons are misleading, then what about the so-called accident trend within the commuter airline industry? Is it an improving or worsening record? Researching the accident statistics and recognizing that there is meaningful data for only a brief period, we found some very interesting comparisons. In 1971, the NTSB did a study of the safety of commuter-type operations. At that time, accident data were especially generated for the three-year period, 1968-1970, with an operational base very comparable to our current information. In that three-year period, 1968-1970, commuter airlines accounted for 24 fatal accidents and 144 fatalities. Comparing those facts to the most recent three-year period, 1977-1979, and bearing in mind that the industry has tripled in size in the interim decade, the accidents and fatalities actually decreased to 20 fatal accidents and 117 fatalities. This suggests that commuter airlines have achieved a significant reduction in the fatality rate over the past decade.

What about the accident record since deregulation, specifically during 1979, this past year? Are there conclusions upon which we can draw from the record? Unfortunately, the volatility factor was once again at work for the commuter air carriers. One accident occurring early in the year accounted for nearly one-third of the commuter fatalities for the year. By the end of July, the fatalities attributable to commuter air carriers had reached 41, which compares to a total of 36 for the preceding year. As these were the first months of 1979 following the

Airline Deregulation Act, the commuter industry generally was receiving considerable attention, and the question of commuter air safety became a national issue to the public. Government officials who bear the heavy responsibility for aviation safety quickly indicated their sudden concern about the apparent worsening trend.

Yet, as the year progressed, the commuter accident statistics dramatically improved, again verifying the volatility factor in commercial aviation and the cautions which must be exercised in making statistical judgments based on one-year time frames. In the last five months of 1979 and through today, there have been 13 fatalities in commuter passenger operations, bringing the annual fatality rate to near record low levels.

Now, let me make a couple of the very easy conclusions of the type I am urging you not to make. It could be said that for the most recent six months, the commuter safety record is one of the best of any six-month period in its history. It could also be stated that since the full implementation of Part 135 on December 1, there has not been a single commuter fatality. Obviously, neither is necessarily a useful point to make. Yet we must note that the basic trend lines are positive. We do not have a deteriorating situation in commuter safety as some would suggest. Further, we expect that the new Part 135 will result in future significant improvements to commuter safety. We are here today to explore whatever steps might also be necessary to ensure that is the case.

I would like to comment for a moment about the effects of airline deregulation on commuter safety. Some mistakenly think that the commuters were created by airline deregulation and, therefore, a whole new segment of the industry must now be reckoned with. This is not the case. Airline deregulation did nothing more than recognize that the role in legislation that commuter air carriers had been performing for many, many years was important to the air traveling public. To be sure, this role is vital to the success of airline deregulation. Many anticipated that there would be a substantial movement by the jet air carriers from the short-haul and small communities in order to employ this equipment more efficiently in the long-haul markets. As a result, this void in air service would be fulfilled by commuter carriers. Indeed, unparalleled opportunities are now opening up for commuters. Yet this opportunity is not new to commuters. As I reported earlier, the growth of the industry in the last 10 years averaged 12 percent per year, a very high percentage for any industry. Further, in the year immediately preceding airline deregulation, the growth in commuter passenger enplanements was 17.5 percent. This year we expect that growth to be about 20 percent, constrained somewhat

by the downturn in the economy. The fact is, while airline deregulation has fostered commuter air service, that role was well underway before Congress ratified its importance.

We are not reinventing a novice industry to follow in the footsteps of the local service carriers which suddenly has thrust upon it new responsibilities which it is unaccustomed to handle. The commuters have been in the business of successfully replacing certificated carriers for many years. Let me explain. In the 11 years preceding the Airline Deregulation Act, 1,972 cities lost all ccertificated air service. These cities had no guarantee that they would have a replacement carrier. Yet, in 140 of these cities, commuters are currently economically and successfully providing replacement air service.

We must also note that not a single city has lost all air service since the Airline Deregulation Act was enacted. Commuters have been able to provide replacement service at approximately 60 cities where the last certificated carrier has filed to suspend service. Thus, the commuters have moved steadily to reliably fill the air transportation voids occurring from airline deregulation.

Also, it is interesting to note that deregulation did not lead to a wholesale influx of small or improperly frnchised new carriers as was anticipated by some. We can report that the number of commuter airlines since deregulation that have become full interline partners has continued stabilizing. The increasing complexity of the industry brought about by the new Part 135 rules and the additional CAB requirements, coupled with the increasing cost of aircraft and availability of fuel, have combined to stiffen the barriers to entry historically associated with the industry.

One of the ironies of airline deregulation is that it has brought about more regulation for the commuters. Since deregulation, there has been a steady flow of new rules and policies affecting commuter carriers. Rarely a month goes by that there isn't a major regulatory change or operating directive issued by the FAA with broad implications for commuter carriers. The CAB continues to expand its reporting requirements and seeks most recently to impose on commuters extensive financial fitness reporting. This ever-increasing regulatory burden will have its price. Our concern is that ultimately we might find that air service cannot be provided to the small communities of this Nation without Federal subsidy. Commuter airlines recognized that with the benefits of deregulation would come increased regulation. On the other hand, it's appalling to see a general attitude developing among regulatory agencies that Congress guaranteed air service to small communities; therefore, the

Federal Government has to pay for it. All at once some would attempt to place on this relatively free sector their planning standards and regulations, rather than depending on the free forces which have served us so well in the past. I am not talking here about regulations affecting safety, but rather those policies which add needless cost and impede the growth of air service.

Perhaps the ultimate in this type of unnecessary regulation is FAA's proposed airline security rule. It is not a safety matter. The proposal, in essence, would require full security programs at airports served by aircraft of 20 or more passenger seats. This would mean full security requirements, including the presence of a law enforcement officer, passenger screening, airport fencing, and sterile terminals. For much of our industry, this will be a very costly regulation to implement. And it is unnecessary. In our entire history, there has not been a single event of commuter air piracy outside the immediate Caribbean area. There were five such instances all occurring in the period 1968-1972. There have been none since. The FAA has lumped commuter hijacking statistics with general aviation, which is not accurate because of the very special circumstances which often surround a commandeering or stealing of private general aviation aircraft.

Further, there has never been a commuter accident because of hijacking, or even a passenger injury. This is not a safety issue, and there is no conceivable benefit to the consumer.

Common sense tells us that a commuter aircraft is a most unlikely target for hijacking. One certainly wouldn't use it to go very far. You would be lucky if you could make it to a U.S. border.

The suggestion is made that maybe it is not so much hijacking at this point. It is hostage-taking because commuters are now flying larger aircraft, up to 60 passengers, and they are going into replacement markets that heretofore have been served by the larger jet airplanes.

Hostage-taking is really a different matter from hijacking and again we would say that the commuter airplane is about the least likely object that a terrorist would use for a hostage-taking. He couldn't sustain the siege. How long could you be in a commuter airplane? I think most of you who are commuter members would agree that to stay for 10 or 20 days would really be tough in a commuter airplane. I am not sure you could stand up when it was all over, plus the problem of bathroom facilities and a few other things.

The fact remains that in the free countries of the world, it is pretty well acknowledged there is no defense against the terrorist act of hostage-taking; and if we feel that we must protect our commuter airplanes from hostage-taking, we had better get armed guards at all the school buses, subways, and office buildings of the land because that is where it is going to happen.

To consider the imposition of a costly regulation such as this at a time when two-thirds of the commuter airports across the country do not have ILS's and are in need of upgraded navigational facilities and equipment is, in our view, a distortion of FAA's priorities. Let's focus on safety. Let's forget armed security guards and fences at the commuter airports and instead spend the money to put ILS's and improved navigational aids and take a meaningful step toward improved safety and reliable air service for the traveling public.

We believe this two-day symposium on commuter safety is a good initiative by the FAA. A key element in achieving higher levels of commuter safety is communication between the FAA and the industry. It is very important that the interpretation of regulations be fully understood by the commuter carriers and applied consistently and uniformly from region to region. We are looking forward to the regional meetings which will follow this symposium and offer our service in working with the FAA to help organize these sessions.

Later today representatives from commuter air carriers will describe for you current industry practices in the areas of operations management, maintenance programs, top management's role in accident prevention, and our priorities for airport and airway development. A new six-point industry safety program organized by the members of the CAAA will be described. Commuter aircraft provided by the industry and its suppliers will be displayed, and we believe the increasing levels of sophistication of the equipment used by the industry will be most evident.

Once again, we appreciate the opportunity to be here today to discuss the subject of air safety with you. Thank you very much.

DEVELOPMENT OF PRESENT FAR PART 135

William J. Sullivan
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Office of the Associate Administrator
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Federal Aviation Administration

When I was asked to talk about the development of Part 135, I experienced deja vu. I tried to put myself back into that long, hot summer in the headquarters building when we were knocking out that document. In going through the papers and trying to prepare my speech, I came across a document that we had prepared for the press in 1978. That document is still a pretty accurate summary of what we were thinking then, and that is where I want you to return to now.

I want you to go back with me to the time when we issued Part 135. I will talk to you about how we got to that point, what we did and didn't do, and why we did or didn't do it. I will also talk briefly about what we are about to do on flight time limitations and on the proposal for a category of airworthiness standards for light transport airplanes.

If you read the preamble of Part 135 or if you have read it recently, I think you will find that most of what I am about to tell you is stated far more articulately in that document than I could ever do here.

What led to Part 135 was the last revision of Part 135 which was completed in 1969 and took effect in 1970. No sooner had that been done, and no sooner had the implementation of it gotten underway, than we realized there were still deficiencies remaining in our regulations of what we lovingly referred to at that time as the air taxi industry. So, in May 1972, (about two and a half years after we had just completed a revision of Part 135), we began to revise it again--a massive undertaking. The objectives essentially were to bring Part 135 more closely in line with Part 121 and (because of NTSB recommendations that we received not long after we began that project) to implement NTSB recommendations.

In 1976, after having gone through six massive rewrites of a revision of Part 135, and in the spirit of a more open rulemaking process that was developing in the Executive Branch, we had a listening session with the CAAA. We asked them, "Would

you like to take a shot at our draft?" The almost unanimous response was, "Oh, yes, would we ever!" So we established a regulatory review, published our document, gave everybody a chance to read it, and then let you all take your shots in a four-day Regulatory Review Conference in Denver in November 1976.

I think that was one of the most rewarding four-day sessions I have ever spent in my life. We were attacked for all sorts of things that we had done wrong. We were attacked for some things we had done right, but nobody liked. We were roundly criticized. It was a wide-open forum and a very enjoyable one.

As a result of it, although I don't think the industry really believes this, we eliminated about 12 major changes that we were thinking about proposing. In August 1977, we issued Notice of Proposed Rule Making 77-18.

I think you will recall that Mr. Bond said that it had been "languishing in the bureaucracy." Well, it didn't languish long after he got here. I will say that the period from November 1976 to August 1977 was about as fast a turnaround on a regulatory document as I have seen in 15 years of experience with the FAA. The point really was that when it hit the street, people knew what we were coming out with. It isn't that we cared so much whether they liked it or not, but that they had a better understanding of why we were doing it. There was a considerable improvement in the quality of the comments we received because we had exposed our draft first.

Then came the spring of 1978. I would say that we finished our first draft about the first of May. We went to Mr. Bond and he gave us his thoughts; and from May until September 1978 was, in my personal life, the busiest, hardest, heaviest time I have ever put in. And I don't speak just for myself. I speak for about a dozen or a dozen and a half FAA people who were doing the gut work of getting that document issued.

Now what did we do? We revised Part 135 from front to back. We brought it as closely in line as we reasonably could with Part 121, considering the level of sophistication of the operation in Part 121 compared to the level of sophistication in the operation in Part 135.

We wanted to upgrade the standards so that we had a better safety standard, and we wanted to recognize the different character of air taxi commuters and "small" (meaning the size of the equipment operated, not necessarily the size of the operator) air carriers. I want that word to go out from here. We weren't

thinking about air taxis any more. We were thinking air carriers. These are people operating in air transportation at the highest level of safety in the public interest. That is what this regulation was directed to. What we wanted to recognize was that you have air carriers that are all the way from mom-and-pop, one-airplane operations in the sparsely settled areas of Utah and Wyoming to major air carriers like Air Wisconsin and others who have now, since the Deregulation Act, gone to Part 121 certificates.

We affected about 200 commuter airlines; about 2,200 on-demand air carriers which everybody, I guess, calls air taxis; and a number of inactive air taxi certificates which, because of the turnover, ceased to exist entirely.

We recognized then (in 1978) that since 1970, the commuter passenger traffic had grown at the rate of 10 percent per year. The number of revenue passenger miles had increased 22 percent to 946 million--and that is a lot of passenger miles. In the next 10 years (that is, from 1978 to 1988) we could expect a doubling, at least, in passengers to 16.5 million. Based on what has happened in the two years since we have adopted it, that may be a very conservative estimate. I think you are rapidly approaching 10 million passengers today. So we underestimated your capacity for growth and the rate of your growth.

What were the major changes? Well, we computed that 97 percent of the total route passenger miles commuters would be flying would have an air transport pilot as the Pilot-in-Command (PIC).

We figured that 75 percent of your operations would be conducted in aircraft having thunderstorm detection equipment or weather radar.

We figured two-thirds of you would be maintaining your aircraft essentially under Part 121 maintenance standards.

We required all of your jets to have a third attitude gyro. We required all of your 10 or more passenger airplanes to have a voice recorder and a ground proximity warning system. We required all of your 19 or more passsenger airplanes to have a public address system and a crewmember interphone system. We required each operator to establish management officials responsible for the operation, a chief pilot, a Director of Operations, and a Director of Maintenance; and this was tailored to the size of operation. Flexibility was built in so that if you were a mom-and-pop operator, you didn't have to have pop be the Director of Operations and the chief pilot and mom be the Director of Maintenance.

We required shoulder harnesses at all flight crew stations. We required training programs and proficiency checking programs for all of your pilots. We required those training programs to be approved by the FAA. We allowed you to go to the large air carriers and essentially adopt their training programs if you wished. We imposed the same performance operating limitations for large airplanes that are in Part 121 almost verbatim. We raised the limit to 30 passenger seats and 7,500-pound payload from a limit that was 12,500 pounds flat to give you the opportunity to operate larger equipment under Part 135.

We imposed comprehensive operating manuals. We made the operator responsible for exercising control over flight operations. We imposed stricter carry-on baggage rules. We required you to have passenger briefing cards. We imposed a requirement that if you increase the number of seats in your aircraft over nine seats, you had to meet additional airworthiness standards. Also, we required specific weather reports and forecasts for IFR operations.

Now, I think I have hit all of the really sensitive ones. I think that some of the additional requirements--for example, a commercial pilot certificate and others that have phased-in compliance dates--are still the subject of some discussion.

What did we do in terms of relieving what we had proposed to do or what you were previously required to comply with?

We authorized the use of minimum equipment lists. We allowed you to use combination reports and forecasts to get your weather. We deferred flight time limitations; that is, we kept the old flight time limitations in Part 135.

I think the biggest cheer went up when we decided that we would not require you to file periodic financial reports with us, nor would we require you to keep records in a form in which we wanted you to keep them.

We also did something that I think the maintenance departments cheered, which is we allowed you to file maintenance reliability reports 72 hours after the occurrence instead of 24 hours after the occurrence.

We computed then that the cost to the commuter airlines would be $7.5 million and to the other on-demand air taxi operators to be almost $25.9 million, for a total of $33.4 million.

The rule took effect December 1 last year, and now we are going to find out if it is working.

I think there are two other points I would like to make. One is we expect within the next 60 days to issue a Notice of

Proposed Rule Making that will deal with flight time limitations for all Part 121 and 135 operators. We expect that it will be a very controversial rulemaking.

What we set out to do was both improve safety and simplify the standards so that you don't have to come to us to try to apply it or need a computer or a lawyer for every new schedule that you develop.

Secondly, I also expect that a Notice of Proposed Rule Making on the light transport category airplane will be issued within the next 30 to 45 days.

I think that the cooperation we have had from the industry, the support we have had for trying to get Part 24 to notice, has been admirable. It has been a lot of hard work; and I want to say now that while Mr. bond said that Part 135 was the largest rulemaking undertaking that the FAA had done, that was true as of that time.

Part 24, in terms of order of magnitude, is about three times the level of effort and complexity. I think it also has a great benefit of allowing us--for the first time in perhaps 24 years--to do a section-by-section look at the airworthiness standards, front to back.

I know my people have benefitted from it, and I believe Mr. Beard would agree that the airworthiness people have benefitted from it. I hope you have, too. Thank you.

FLIGHT OPERATIONS SURVEILLANCE ACTIVITIES

Kenneth S. Hunt
Director of Flight Operations
Federal Aviation Administration

Over the past decade the FAA, along with many segments of the industry, has looked forward to the day that the commuter air carrier community would assume fully its role as a vital part of the total air transportation system. Speaking to you today, the future is now. The advent of the Airline Deregulation Act, along with the initiative and innovations of the commuter airline community, has brought to the forefront this very important segment of air carrier service. I think that this is a very dynamic period of time, and we are all looking forward to the commuter operations in the future.

As is often the case, this rapid growth to maturity has not been without growing pains, creating challenges for both the industry and the agency. Recognizing this, the FAA promulgated revised Part 135, effective December 1, 1978, to meet the need for an increased level of safety for all air taxi/commuter operations. On this same date, Advisory Circular 135-3B was issued to assist FAA field personnel and operators in complying with the requirements of the new regulation. This was our first attempt in standardizing the regions and coming up with guidelines on the new regulation.

Mr. Bond spoke to you earlier on air carrier safety standards and what we expect of the commuter industry with respect to these standards. But, because I believe that this subject is so vitally important, I want to further review, very briefly, the agency program to stimulate upgraded commuter safety, which will in turn lead to my prime topic, that of flight operations surveillance activities. The major elements of the safety program are:

1. A new Part 135 regulation that raises the commuter standards as close to those of Part 121 as is practicable at this time;

2. A reorganization of the Flight Standards Service, accomplished in December 1978;

3. A program to increase the capability of small commuter airplanes by increasing their maximum certificated weight and passenger-seating capacity while adding safety features;

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4. A major effort to establish a new Part 24 which would contain aircraft certification standards tailored for commuter aircraft;

5. A stepped-up enforcement program;

6. A loan guarantee program directed to the specific needs of the commuters; and,

7. A rigorous monitoring program of the commuters after they are certificated under the new Part 135.

With respect to the reorganization of Flight Standards Service, when Mr. Foster took over as our Associate Administrator, he set up a group to look at the former organization and come up with an organization that would move to effectively meet the requirements that we have today in the industry. As a result of that effort, he split us up into the Office of Airworthiness, the Office of Aviation Safety, the Office of Civil Aviation Security, and the Office of Flight Operations. Also, as part of this reorganization effort, my Office of Flight Operations looked at the role of the commuter airlines and the air taxis, and we saw that this is a vital part of the aviation industry. So, we reorganized our Air Transportation Division and have now set up an Air Taxi Commuter Branch--which is equal to the branch that we have for the scheduled air carriers. Thus, as far as the agency and especially the Office of Flight Operations is concerned, we consider the commuter industry a mature industry, and we expect to work with them just the same way we do with the other airlines.

Returning to the surveillance program we have set up, as Mr. Sullivan previously stated, the new Part 135 requires the commuter operators to upgrade their on-board equipment to include thunderstorm detection equipment, a third attitude gyro, a ground proximity warning indicator, and cockpit voice recorders, depending upon the types of airplanes operated and the numbers of seats on those airplanes. From the management point of view, the new regulation requires a Director of Operations, a Chief Pilot, and a Director of Maintenance. It also requires much more comprehensive training programs and pilot checking.

Based on the foregoing, it became increasingly evident to the FAA that increased surveillance activities were highly desirable, if not an absolute necessity, in order to ensure that these regulations were understood especially, that people didn't misunderstand the regulations, and that they were complying with them so that we could see the effectiveness of this new regulation.

We viewed this increased surveillance program very cautiously basically for the fact that we are limited to the number of inspectors we have available in the field to do surveillance, and we were already expending many thousands of inspection manhours--about 50 percent of our capability in the field--to recertificate operators under the new regulation.

Our increased surveillance program is being candidly discussed by our field personnel with each operator/owner to stress the importance of a more effective accident prevention program and to make known the fact that increased surveillance will be conducted to ensure compliance with the revised rule. At this time, I am pleased to say that a very positive attitude has been displayed by the large majority of operators contacted, who themselves recognize the need for such a program and have pledged their continued cooperation. Without such cooperation, we would never have gotten as far with this program as we have today.

In addition, in the area of pilot checking, FAA inspectors are currently conducting or observing all pilot-in-command (PIC) proficiency checks for pilots flying aircraft with 10 or more seats, and 25 percent of the checks for pilots flying aircraft with fewer than 10 seats. Additionally, we are conducting en route inspections on 25 percent of the pilots-in-command flying for each operator. During en route inspections, FAA inspectors will place special emphasis on pilots' knowledge of weight and balance procedures, takeoff and landing performance data, cockpit procedures, and adherence to company operating procedures as published in company manuals.

Speaking of the observation of proficiency checks, one of the problem areas we have run into in the past is that in some cases our inspectors were saying that they didn't have anybody to observe a proficiency check at the time the company wanted to give it, so they couldn't fly until we came down and observed the proficiency check. I think we have that straightened out. It is FAA's responsibility when you have a proficiency check to cover it. You don't schedule that proficiency check at our convenience. We have talked with the CAAA at length on that, and I hope we have that straightened out.

Turning next to resources, in order to run the commuter surveillance program, in FY 1979 our field office staff numbered about 900 persons, and we devoted about 492 inspector-years (i.e., the total number of inspector-hours spent by our personnel on certification, inspection, and surveillance activities divided by the number of available hours in the work year) to cover the surveillance and recertification of air taxi/commuters. That was an increase of approximately 153 manyears

over the 1978 level, so it took a big bite (about 50 percent of the total staff time) out of our manpower in the field, and it took us away from other functions. But, as Mr. Bond said, we are looking forward to getting more inspectors in the field so that we can handle the additional workload.

One of the primary benefits I see that we are going to derive from the new Part 135 is the improved training programs and training requirements that we have set forth.

Of the factors cited in commuter accidents in the period 1975-1978, slightly over 50 percent were attributed to pilot errors or other deficiencies. A contributing factor in many of these accidents was deemed to be the lack of adequate flightcrew training; it was becoming increasingly evident that the existing program requiremens were just not doing the job--flightcrew performance was gradually sinking to a dangerous level of mediocrity. With this in mind, I am firmly convinced the upgraded training requirement of the revised regulation will have the desired effect of producing more proficient flightcrews, on both an initial and a recurring basis.

Along the lines of pilot checking, we have just signed out a notice to the field which sets forth guidelines for proficiency and currency checks that are required by Part 135. It also shows which maneuvers can be done in flight simulators, which can be done in a training device, and other methods of doing it other than the actual airplane. We are hoping that it will have a big effect on the standardization we have in the field.

Our field personnel are, at this time, concentrating their efforts, and we have asked them to look into training to assure that the training programs are coming up with adequate training for the crews. And we are placing emphasis on aircraft emergency procedures--especially engine out operations of multiengine airplanes, crew coordination, and the understanding and compliance with the operation specifications.

In summarizing the training program evaluation process, our objectives are to: (1) ensure the overall quality of the training program; (2) place emphasis on training to a predetermined level of proficiency in an aircraft, simulator, or other training device; and (3) encourage establishment of effective quality control--to be conducted primarily by the air carrier--within the program itself.

Finally, our inspectors will ensure that, during their redesignation, company check airmen are thoroughly familiar with all of the flight check requirements of the new Part 135 and the

standards of proficiency expected on flight checks. This function is particularly important because we realize that, as the industry continues to grow, these people will play an increasingly important role in ensuring the safety of commuter airline operations.

While the program I have briefly discussed has just begun to produce tangible results in terms of improved safety, I believe the results will, in the near future, be much more positive. This will come about because both the commuter airline operators and FAA personnel are working together to satisfy the many upgraded requirements of the new regulation and will continue to work together to create a safer air transportation environment for the traveling public. I hope at this time next year we will have a much better record to show than we have now.

AIRWORTHINESS/MAINTENANCE SURVEILLANCE ACTIVITIES

M. C. Beard
Director of Airworthiness
Federal Aviation Administration

Earlier today, from both the podium and the floor, there were some comments about your problems with lack of standardization among regions. There have also been some inferences that there is a lack of standardization in the way our general aviation and air carrier inspectors work. We are aware of this in the airworthiness area, and we are going to be taking steps on both of those items.

We are also aware that there have been some inconsistencies in logic, lacking a better phrase, in the way the FAA's three technical disciplines have worked to regulate airworthiness. One of the FAA's principal objectives in creating an Office of Airworthiness was to pull the three disciplines--design approval, manufacturing approval, and maintenance--together at the headquarters level to gain a more consistent and balanced outlook toward accomplishing our airworthiness objectives.

Probably one of the most significant thrusts of the Part 135 amendment was to place control of maintenance on the operating certificate holder. This emphasis is reflected in the increased requirements for inspection and maintenance programs, management personnel requirements, and the organizational requirements of continuous airworthiness maintenance programs for aircraft type certificated to have 10 passenger seats or more.

Probably the most noticeable change in the FAA surveillance posture is the expectation that the certificate holder makes himself aware of the maintenance shortcomings and takes whatever corrective action is needed to remedy the situation.

This differs from the FAA's previous concept of concentrating on the performance of the contributing entities such as the mechanic and the repair station with regard to their activities in the commuter air carrier system.

The FAA's proposals at the Denver Air Taxi Regulatory Review Conference were essentially directed toward adoption of Subpart L of FAR Part 121, which prescribes the conventional airline continuous airworthiness maintenance programs.

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The industry comments that were received at the review and the written comments that were received subsequent to the review expressed a deep and valid concern about the complexity of such a program and its restrictions on the air taxi operations, particularly for the smaller air taxi people.

After considerable discussion, the review team that put together the final work concluded that the 10-passenger cutoff used to determine applicability of Appendix A of Part 135 would best serve as the demarcation between those air taxi airplanes warranting a continuous airworthiness program and those that could remain under an aircraft inspection program.

This conclusion was reflected in the type certificated passenger-seating capacity classification used in the new Subpart J of the revision to FAR Part 135. The cutoff at 10 passengers was never intended to indicate that we were less concerned with the safety of the people in an aircraft with fewer than 10 passengers. That 10-passenger cutoff on the aircraft was intended to be an index to determine the complexity of an aircraft that should be put under a continuous maintenance program versus the complexity of one that need not be. And as in any arbitrary cutoff number, even though you need to have a line somewhere, wherever you draw it, there are always problems with it. We have had our share of problems with that one.

For aircraft with fewer than 10 passengers, the additional requirements for aircraft of 9 or fewer passenger seats are in response to the accidents in which powerplant failures were the primary factor. The intent of the requirement is to impose heavy maintenance functions such as overhaul and hot section inspections in addition to the basic aircraft inspection programs. The new rule for these aircraft, which includes the engine and propeller basic accessories as they are listed on the type certificate data sheet and the emergency equipment, provides for the adoption of either the aircraft or the airframe manufacturer's maintenance program for the engine, propeller, or emergency equipment or the programs of the individual manufacturers of these items with no requirement that the operator further substantiate the adequacy of these programs.

As an alternative, an operator can submit any other justifiable maintenance program for those items for approval. This allows an operator to capitalize on his own operational experience rather than adopting a blanket manufacturer's program. I think all of us recognize that, quite often, when manufacturers must make recommendations that cover everybody who will be operating their aircraft and must bear up under the product liability burdens of their recommendations, they must address themselves to the lowest common denominator. That is

reasonable, and that is why we do allow latitude where you have operational experience to develop your own programs.

Aircraft of 9 or fewer passenger seats are subject to the inspection programs defined under FAR Part 91, or an approved aircraft inspection program defined under FAR Part 135.

An operator might elect to use the approved aircraft inspection program in lieu of the Part 91 procedures or the FAA might decide that an aircraft is of a particular complexity and can require that, if it is the FAA's decision that the Part 91 program is inadequate.

The continuous airworthiness maintenance programs required for aircraft of 10 or more passengers serve as a total maintenance program for the aircraft. The operator is established as the primary responsible maintenance entity with the maintenance privileges similar to those held by repair stations for the total maintenance of his aircraft. As a maintenance entity, the operator must show full maintenance capability either at his own facility or through contracts.

In addition to the operator's aircraft, he is authorized to perform maintenance on other air taxi aircraft that are subject to a continuous maintenance program. An operator might elect to maintain aircraft of 9 or fewer passengers under this same program. Our Advisory Circular 120-16A goes into this in considerably more detail.

The real big point I wanted to reiterate here is that the FAA surveillance mission is being oriented towards the operator's influence and participation in the inspection and maintenance programs and other accomplishments. Or to say it in simpler words, the ultimate responsibility for airworthiness must rest with those who have the greatest opportunity to affect its outcome, and we see that as the management of the operator.

CURRENT AND PROPOSED FAA SECURITY PROGRAM

Richard F. Lally
Director of Civil Aviation Security
Federal Aviation Administration

I am pleased to have this opportunity to discuss an important aspect of aviation safety. FAA has long held that the terms safety and security are synonymous. Our standpoint is also that FAA is not and would not be in the security business in terms of aircraft and airport security if it were not for the safety concerns. FAA is not a law enforcement agency, nor is it a security agency. It is an aviation safety agency. That is where we are coming from.

The threat or the problem of hijacking is with us. It has not gone away. It has received less publicity than before, but in 1977 there were 30 airline hijackings throughout the world. Five of them were U.S. airline hijackings. That number 30 is double the number of the previous year and was more than any single year since the peak hijacking years of 1968 to 1972. In 1978, the number dropped to 25, but the U.S. share of the action went up to 8. In 1979, the number dropped again, to 23, still high, but the U.S. share again went up from 8 to 11. So people still hijack airplanes. Aviation is an attractive target, and aviation by its very nature is a vulnerable target.

The threat of hijacking is compounded by the increasing use of explosives and sabotage and by the increasing tendency toward terrorist acts worldwide; but what we have proposed for security for commuter airlines is not designed to prevent terrorism. It is designed to try to prevent criminal acts against air transportation, and in this case, we are talking about commuter airline operations.

Since 1961, there have been 47 hijackings of the types of aircraft used by commuter airlines. Since 1972, when the certificated airline security measures went into effect, there have been 29 hijackings of the types of aircraft used by commuters. Of those 29, 13 involved aircraft of air taxi and commuter operators. So, I think there is a need, which is why we proposed Notice of Proposed Rule Making 79-17 issued on October 25,

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1979[1]. Since then, we have received many comments primarily from the industry, which is normal. We have benefited from those comments. They are good comments.

On January 10, FAA conducted a public meeting in Washington to discuss the issue of commuter and air taxi security. I thought that meeting, which was attended by many of you or your representatives, was excellent; and FAA benefited from the comments we received there.

We have now extended the comment period on NPRM 79-17 from January 28 to February 11 in anticipation that we will get more informed, better input from the industry. We are anxious to receive that input, and I can assure you that all comments will be thoroughly considered as the rulemaking process continues. None will be ignored.

We are not inflexible by any means. So, I guess what I am saying here is that in a way I think we are really in the prevention business. Granted, there have not been many hijackings of aircraft of scheduled commuter operators--very, very few; but as in the case of accident statistics, any statistic in that area is a bad one. So, I think we are "ahead of the power curve" or the threat, and it is very similar to the action FAA was, in effect, pressured into taking two years ago dealing with public charter operators of large aircraft. As you know, FAA did not require security measures for charter flights, but the CAB proceeded to deregulate, and the built-in administrative safeguard that applied to charter operation disappeared. The traveling public went more to charter flights from the scheduled flights, and the public didn't see the kind of security that they had become accustomed to. So, there was a literal groundswell of public and political reaction, which led FAA to then extend its security requirements to charter operators.

There never had been before that date or since that date a hijacking of a large public charter aircraft. So, I think what we are going to see here is that as your industry expands, as you pick up more routes from the certificated carriers, as more of the American public fly commuters, they will expect to have a high level of security. This we are already seeing in the form of letters from the public--not many, but we are seeing it. This is also evidenced by the fact that there has been introduced in Congress already a piece of legislation that would

1. Background information regarding this NPRM is presented at the conclusion of this paper.

require FAA, if it is enacted, to substantially do what our Notice of Proposed Rule Making proposes to do, So, I think we are in good shape.

I would like to again go back to my earlier words relating security to safety. I think my statements and FAA's actions are supported and strengthened by the CAB actions. As you know, the cost of security is recognized as a valid operating cost of running an air transportation system. And, security is part of a safe air transportation system, so that the cost of security is recognized as no different from your other operating costs--fuel, maintenance, wages, etc. Our concept is that security costs are not to be "eaten by you." They are to be recovered the same way other operating costs are recovered, and that is through your fare structure.

Now again in terms of numbers, accident statistics, hijacking statistics, any number is a bad one; and that equally applies to economic impact numbers. No economic impact is good, but the economic analysis prepared by FAA pegs that the cost of security as proposed in that notice would come down to $1.12 per passenger. This is stated as a "worst case" analysis which sets forth cost figures for fencing around every airport and other personnel and capital costs that will result from implementation of the proposal. Now that cost is high, in relation to your average fare, which has been stated earlier. But, I am convinced that the public is willing and will want to pay the cost of security. Again, though, we are not inflexible, and we are expecting and fully anticipate that we will get further comments from the industry, particularly in the area of the economic impact. In fact, a revised economic statement is now being prepared by FAA and will soon be available.

I guess the bottom line of what I am saying is that hijackings, crimes against aviation, are not new. Aviation security is not new. It is not new to FAA. It is not new to the certificated airlines who have done very well with it, and it is not new to the public. So, I think we are anticipating and recognizing a requirement to have measures in place before a problem becomes unmanageable.

I would just like to close by stating again that we appreciate all the comments we have received to date. We look forward to more comments and further consultation; and, hopefully, we will have a satisfactory conclusion to this rulemaking process that is underway now.

GENERAL DISCUSSION[2]

Mr. Lally - It appears that the proposed security requirements for the commuter airlines as set forth in NPRM 79-17 have touched an emotional chord. I think this emotional reaction reflects some misinterpretation of our intent. It might be that by putting security labels on already followed operational procedures, we might have misled you to some extent.

In our proposal, we are not intending that the owner post a guard at the aircraft 24 hours a day or that every airport in the Nation be completely fenced. Our intent is very clear. We do perceive a threat; and while we might disagree on the nature and severity of the threat, experience indicates that people are continuing to hijack airplanes, and I don't see that commuter airlines are immune.

The majority of safeguards proposed for small airplane operations constitute procedures that a prudent operator already follows. In addition to that, we are saying that passenger screening procedures, as you know them, will not be required for your small aircraft operations. We are saying you ought to have some other alternative method to know that the person who gets on your airplane is a bona fide passenger--and we advance an ID-type requirement for that.

Otherwise, we have said again that you do not have to have guards at those airports you serve with those smaller aircraft. There are no capital costs, no personnel costs envisioned in those security requirements of aircraft below 20 seats.

We think that that type of operation will give you adequate security and meet the security requirements. We are seeking the thoughtful, enlightened, and reasoned comments of the industry on these proposed requirements. We have received many of them already, and they are very beneficial. We are better for the dialogue at this symposium and the public meeting held on January 10, and we look forward to continuing this dialogue. While we can't talk at this time about the future of that regulation in terms of decisionmaking, I can assure you that your comments will be very, very carefully reviewed and thoroughly considered.

2. This discussion was held during the second day of the symposium but for continuity purposes have been incorporated in this section of the proceedings.

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Mr. John Van Arsdale, Sr. - First, I object to your equating safety and security. The Congressional Record in the Airline Deregulation Act of 1978 is pretty clear that when mandating "an equivalent level of safety" in small community air service, the Members of Congress were referring to the physical operation of the aircraft. Only the FAA has interpreted this definition to mean security.

Secondly, you indicated in your presentation, and it was stated in the FAA publication "Commuter Airlines and Federal Regulation 1926-1979" (See Appendix A), that since 1972 there have been 29 hijackings of aircraft of the type utilized by commuters. Yet, the statistics developed by the CAAA and also similar records passed out by the FAA at the public meeting of January 10 indicate there have been no commuter hijackings since 1972, and only one in the history of the commuter airline industry of aircraft greater than 20 seats.

To take the words of some of our aircraft manufacturers, I would like you to take another look.

In your presentation, you stated that, "The public expects a form of security from commuters." Our survey questionnaire has brought strong comments from passengers criticizing the FAA and big government for shoving this unneeded burden upon both the passengers and the commuter airlines who serve them. While you have indicated that the questions of my survey are slanted, the written comments from passengers are not; and we intend to submit these comments to you together with the results of our survey.

On the other hand, if the FAA would like to deevelop a questionnaire that it feels is not slanted and have it mailed directly to the commuters, I am sure they will be happy to aid in this distribution.

Big carriers with large volumes of passengers can spread the economic impact of security screening over a large number of passengers to reduce unit costs. Commuters connecting small communities to hub airports using aircraft greater than 20 seats cannot do this.

The FAA has an absolute obligation to determine the economic impact of security. In the worst case, the New York Port Authority demands from an operator over $250 for a Law Enforcement Officer for eight hours. Commuters flying into New York simply cannot afford such charges.

This is a safety symposium. You simply cannot take our resources that might aid safety, training, and the other essentials to safety and divert them into security.

Our company, the oldest commuter in the United States, can't afford what we forecast to be our security costs. You indicated security could be recovered in the passenger fare structure. Please do a little research on this and tell us how, if 80 percent of our commuter passengers travel on a CAB-regulated joint fare, we can accomplish the recovery of the security costs in the fare. The CAB has indicated that we cannot do this on a joint fare since it is regulated.

There is a security cost built into the terminal charge of a current joint fare, but it is down around 64 cents. It is all right if you are operating out of Tampa or Miami. If you have to set up your own screening facilities as we would at Boston, we can't recover it out of that 64 cents.

Finally, will you please give some consideration to the possibility of self-determination? The local airport operators should be granted some authority to determine the need, potential risk, and cost benefit. Perhaps in the regulation you will see if some airport-by-airport exemption authority coming from the airport operator itself can be written into this proposed regulation.

This industry is very seriously concerned with the economic impact and the imposition of the regulation as currently proposed.

We strongly request serious consideration. Our comments will be filed. We hope you will pay attention to them because they are serious.

Mr. Lally - They will be seriously considered. I don't think it is proper at this forum to try to respond to every point you made, but one comment may need to be made. And that is, there are currently some 40 commuter airlines who have voluntarily adopted FAA-approved security programs and who are now screening passengers with law enforcement support. Granted, they have done this more to meet a passenger facilitation need that they perceive; but it is being done. Those operators believed it was not only economically feasible, but it was desirable. It was good for their business, or they wouldn't have done it.

With regard to your comment on the joint fare, we will research that. I am not technically familiar with this matter, but it is my understanding that the joint fare sets certain parameters and permits certain movement within that fare structure. But, even if the joint fare is not adjustable in that way, I believe, based on our experience and CAB's past recognition of security costs, our position would be that the CAB

should make whatever adjustments are necessary to permit cost recovery if, in fact, it is not now possible under the joint fare system.

We will thoroughly review your comments, and they will be fully considered. That I can promise you.

Mrs. Betty Van Arsdale - On the basis of some discussions I've had at this symposium, I question the FAA statistics as to the number of hijackings of commuters. I understand that it lists two hijackings of PRINAIR aircraft, but one of these actually involved a kidnapping away from the airport. The hostage was later taken to the airport where he was flown to Cuba. The security as proposed by you would not have done anything about this situation. The other case involved a man carrying a brown paper bag who got on a commuter aircraft and went to the pilot and said he wanted to go to Cuba. The pilot recognized the man was inebriated and told him to go sit down--which he did. It turned out that all the paper bag contained was mangoes. So, this whole thing seems very silly.

Now, I have a question. If you say you have the mandated statutory responsibility to require airline security for all air carriers, how did you arrive at the benchmark of 19 seats? Why not 9, or 29, or 60 seats? Why not require this security if it is so great for everyone?

Mr. Lally - Because we, like you, are trying to be reasonable; and we think there are levels of vulnerability and levels of threat. Also, we think that certain types of operations are more attractive in terms of the motivations of the hijacker. We chose the line of 20 seats which happens to be an FAA benchmark for other reasons. It was rather arbitrary. We didn't think it was necessary across-the-board. To me, this is not a whole lot different than the new Part 135 which has been praised. So, I don't think that we are being irrational or having a knee-jerk reaction. At least, we are trying not to be. We are trying to be honest and straightforward and to surface our proposal and obtain your input on it.

With respect to your statement about our statistics, I recognize our statistics are not perfect. In your first instance, if we counted that kidnapping as a hijacking, we shouldn't have since that kind of action is not normally categorized as a hijacking. Maybe we goofed and it got counted inadvertently. For that, I'm sorry.

Mrs. Van Arsdale - I worry about your being arbitrary because I think you were the one who said that the nonschedules had a perfect safety record as far as hijacking goes, and yet you are arbitrarily imposing security on them.

Mr. Lally - We did that just the way we are doing this one. That was not done in a closet. It was surfaced. I think those operators realized that they should have security. Some of them started on their own. They are a large aircraft operation and were never hijacked before and haven't been hijacked since.

Mrs. Van Arsdale - I would have no problem with allowing us to start it on our own if we wanted to. We would do it the way some of our industry has, which isn't dotting all those i's and crossing all the t's and having a little allowance for some sort of economic sanity. When you tell us about Part 135, that's okay. Those are good rules, and we don't mind those. But, when you come with security, it's weird and hard to take and is arbitrarily imposed on us. We question, Where is your data?

Mr. Van Atta - I believe I heard someone say yesterday that the press is here because 225 million people can't be here. I am directing my comments not to FAA, not to the operators, but to the media that might be present. We have quite a controversy here, and perhaps the most controversial subject being discussed throughout this entire meeting. The surest way to get a commuter hijacked tomorrow would be to take a comment that has been said here out of context and put it on the wire service.

Mr. Lally - I agree with you completely. Thank you for the comment. I think we should all bear that in mind.

Mr. Mark Chestnutt, Cascade Airways - I would like to ask the FAA, particularly Mr. Lally and his people, to keep in mind the fact that this security program would be great if it would guarantee 100 percent the safety of all air traveling passengers. I would say implement the whole thing down to five-passenger airplanes or down to four or three or whatever. But, we know that is not going to happen. As evidenced by several recent incidents, a man can get on board with a brown paper bag or a book under his arm and have all the identification and everything else that any other passenger had and still hijack an airplane if he has a mind to do so. We are not going to protect all of the traveling public all of the time, and there must be a cost-versus-benefit line drawn somewhere. I don't know whether it should be over 20 passenger seats, or over 30, or 50, or whatever. But, there has to be a cost-versus-benefit consideration. I know Mr. Lally is aware of this, but I want to reemphasize it because if this regulation is implemented as proposed, there is a very good possibility it is going to drive some commuter operators out of business.

Big brother can't protect all of the American public from themselves ad infinitum. There has to be a cost-versus-benefit

line drawn, and I would ask you to consider very seriously how an operator of a 21-passenger airplane can spread the same security costs in the system he operates versus that airline flying an 85-, or 150-, or 250-seat airplane. It is just impossible to do it. You can't raise your fares high enough and still have the public buy tickets to cover the cost of security when you are talking about full-blown screening concerning X-ray machines, magnetometers, armed guards--the whole works. It is just not going to be possible regardless of what the economic study--which has flaws in it--states so far. Regardless of what the FAA states they based their cost impact figures on, it is going to be higher than that. It is something we have to consider as to how many dollars would be added to the passenger ticket. Fuel, labor costs, and prices are all going up; and if we add one more, which is going to be $3 or $4 per ticket, I submit, rather than $1.12, you are going to then discourage short-haul passengers, and the small-community service is going to suffer as a result.

Background Information NPRM 79-17[3]
(October 25, 1979)

Based on FAA's current threat estimate[4] of hijackings of air taxis and commuters and to discharge the responsibilities levied on the Administrator in the Airline Deregulation Act of 1978, FAA has proposed in NPRM 79-17 to establish multilevel security requirements dependent on the types of operations and size of aircraft utilized. The NPRM proposed to create a new FAR Part 108 entitled "Air Carrier Security" and further proposed to amend a number of existing regulations including Part 129, "Operations of Foreign Air Carriers," and Part 107, "Airport Security."

Specifically, it is proposed that current security requirements in Part 121 be followed by all operators issued an air carrier operating certificate or an operating certificate when that operator engages in scheduled or public charter operations with an aircraft with a seating configuration of 20 or more seats. Those security procedures include 100 percent screening of passengers and carry-on and checked baggage and further include requirements designed to prevent or deter unauthorized access to aircraft and procedures to ensure safe acceptance and transportation of baggage and cargo. These requirements are proposed to attach to the aformentioned operations whether those operations are being conducted by a large U.S. flag air carrier or a very small air taxi operator. The second level of security proposed in the Notice covers aircraft with 19 or fewer seats in scheduled or public charter operations and includes requirements that encompass passenger presentation of identification or alternative means of "screening" passengers.

Further, it is proposed that the operator implement procedures to ensure a law enforcement response to incidents and to ensure that baggage and cargo are accepted and handled in a

3. This material is extracted from the prepared text Mr. Lally presented for the record at the FAA Commuter Symposium.

4. This threat estimate, which draws on the expertise existing within the intelligence and law enforcement communities, both inside and outside the United States, reflects that the threat will be directed toward aircraft with the range capability to transport a hijacker to an intended destination. Further, the threat will be directed at aircraft with seating capability to accommodate sufficient numbers of hostages for use by the hijacker and in fact will be focused on scheduled operations on which the hijacker can depend.

secure manner. With regard to on-demand or nonscheduled operations conducted by Part 135 operators, FAA proposed to continue the requirement in Part 135 that crewmembers receive hijacking training.

With regard to airport security, the Notice proposed a number of changes to existing Part 107 to ensure that airport security procedures are complementary to those aircraft operators' procedures proposed. In that regard, the agency has emphasized that flexibility is the key. The agency proposes to view each airport as a separate entity and analyze the extent of security necessary based on the types and number of operations accommodated, the environment of the airport, and a number of other factors and would, in fact, envision tailoring the airport security requirements on a case-by-case basis accordingly. At this time the FAA would envision a number of airports served by 19 or fewer seat operations, complementing those operations by ensuring the availability of appropriate law enforcement response in the case of an incident and, in fact, would envision no capitol improvements in such cases.

LUNCHEON REMARKS

Honorable James B. King
Chairman
National Transportation Safety Board

I welcome the opportunity to be with you here today. I was pleased to have had the chance to meet with many of you in Key Biscayne last October at which time I took the podium at the CAAA Convention to ask for your help in relation to the Safety Board's upcoming en banc hearings on commuter safety.

First and foremost today, I want to give the industry an unqualified thank you for the generous cooperation received by members of the NTSB staff in our field survey. This cooperation was due without question to the fact that all of us here today share a priority--that priority is to achieve and maintain the highest possible level of safety in commuter aviation.

Safety is always a controversial topic. Even raising the topic--according to some--does irreparable damage to the traveling public and to the transportation industry in general. Once the topic is raised, many critics seem to feel that the discussion creates more heat than light. I know that I have been criticized in this regard for (1) "playing the numbers game" with statistics and (2) approaching the topic of safety from the narrow perspective of a single accident or series of accidents. I would like to take a moment to respond to these observations.

First, as to the use of statistics, all of us are aware that the use of statistics can be misleading. I am aware, and the Safety Board is aware, that any attempt to compare accident rates for commuters with any other category of carrier has its pitfalls. We know that the risk ratio for commuters is affected by the greater number of short hauls and the resulting higher percentage of takeoffs and landings. I understand that in 1978 commuters took off and landed 1.7 million times, to fly 167 million miles--a ratio of one departure for each 98 miles as compared with the larger carriers where the ratio was one departure per 456 miles. Keeping this in mind, I remain troubled when I look at statistics based upon an accident rate per 100,000 departures which, by the way, is the most conservative set of numbers anybody can use and that is the one we use. It shows commuter air carriers with a significantly higher accident rate than that of certificated route air carriers. This does not mean to say that I feel that the traveling public need become

unduly alarmed about the safety of commuters. It means that I believe we share with you a commitment to find ways to continue to reduce this fatality rate.

Secondly, as to my perspective of accident investigation, there is no question that the National Transportation Safety Board approaches air safety from the perspective of accident investigation. That is our mandate. It is our obligation under the act which created the Board to seek ways to "reduce the likelihood of recurrence of transportation accidents similar to those investigated by the Board." And it further troubles me to note that the Board has observed recurring themes and patterns in our accident investigations of commuters over the last several years. These themes are varied ones ranging from weight-and-balance problems to inadequate training for pilots. These themes and problems are ones which we hope to explore with many of you in greater depth at our en banc hearing beginning on January 28. While we at the Board come to the issue of safety from the perspective of accident investigation, this does not mean that we will be using this single yardstick as our measurement. Accident investigation is a tool--one tool which can provide us with one perspective. We certainly intend to be looking at the question of commuter safety from a broader view as well. Part of a broader view includes a knowledge of the history of the growth of the dynamic commuter industry.

Since the mid-1970's, the commuter industry has seen dramatic change, not only in terms of new and expanded markets following deregulation, but also in both public expectations and industry perceptions of what represents commuter air carrier service. The dynamics of the economics of the industry are reflected in a comparison of statistics between 1975 and today. In 1975, there were 165 commmuter air carriers involved in passenger service. These 165 carriers transported a total of 6,666,000 passengers during that calendar year. Today, at the beginning of 1980, there are 208 of the 258 commuter air carriers with passenger operations. These 208 commuters carried an estimated 12 million passengers during 1979--nearly double the 1975 figure. Future projections show this passenger load continuing to expand rapidly as the commuter share increases from 1 percent of the total passenger traffic to an estimated 10 percent by 1990.

Not only are more and more passengers using commuter airlines for their transportation needs, but the era of deregulation has shown that for many communities across our Nation, commuter service is the exclusive means for meeting these needs. By June of last year, commuter air carriers were serving 70.7 percent of the total communities in North America; and for 60.8 percent of these communities, commuters provided the only available service.

While economic growth has been taking place, the image of commuters has grown as well. Once frequently lumped with the general aviation industry, commuters today hope to share a public image similar to that of the certificated major air carriers. Commuters now look forward to unified OAG listings, through ticketing and baggage handling, and other services previously available only to the Part 121 carriers. Together with these new opportunities, we believe, have come additional responsibilities. In 1979, the revised Part 135 FAR's were put into effect as part of an effort to assure the traveling public that it will have "to the maximum extent feasible" a comparable level of safety to the major air carriers. These new responsibilities brought with them new costs to the industry. We are all mindful of these costs. The Federal Aviation Administration has estimated the cost for the commuter industry for the new Part 135 at approximately $2.7 million initially and $5.8 million on an annual recurrent basis.

All of us here are aware that the commuter industry is on the edge of, if not into, a bonanza. The vital new role placed upon the commuter segment of our transportation system by the advent of deregulation is one that all of us--every person here today--has a stake in preserving and expanding. Everyone here today is also aware that the only way we can ensure continued healthy growth of the industry is if we, together, make safety our first priority.

One of the hardest questions to answer is, How do you measure safety? What is the appropriate yardstick to use? There are a number of tools available to us--we can look to statistical analysis and commuter accident history or attempt, as many of you are doing here at this sympposium, to examine the adequacy of Federal safety regulations.

We at the National Transportation Safety Board hope to use all of these tools and more in our upcoming en banc hearing to assess commuter air safety. But most importantly, we will be turning to both the private and public sectors for input. I know that the American people will expect nothing less than a commitment at the highest levels of our public agencies during these important discussions. I know that the Administrator of the Federal Aviation Administration and the Civil Aeronautics Board won't fail the American people in this respect. We are anxious to work with all of you in evaluating the operating environment and constraints faced by the typical commuter operator. All of us at the Board understand that there is no way to judge the question of safety in isolation. It must be judged within the context of the real world. For that reason, these are some of the questions that we hope to explore during our hearings:

Are commuter airport facilities adequate to provide a high level of safety?

Are Federal loan programs adequately addressing the safety needs of airports serving commuters?

Are Federal agencies charged with enforcing Federal safety standards providing adequate assistance to commuter operators in meeting safety needs?

Are Federal agencies enforcing consistent policy requirements for commuters in all regions?

Is the new Part 24 an adequate response to the equipment needs of the commuter industry?

This touches on some but not all of the questions that will arise. We at the Safety Board believe we have triggered a meaningful dialogue. In the weeks ahead we hope that we can continue to reach out to each of you in an effort to work together to assure the best possible future for an industry which plays such a vital role in meeting the transportation needs of our Nation and will continue to do so in the years ahead.

COMMENTS AND QUESTIONS

Mr. John Van Arsdale, Jr. - At $1,000 per violation, Braniff Airlines could be fined $1.5 million and American Airlines will be fined $500,000 and commuter operators are fined $300,000. Do you feel there is a necessity for increasing the amount of the fines from $1,000 per violation to $25,000 per violation; and, further, do you feel that the fact that these carriers have been fined as much as they have been fined has had any implication with respect to safety?

Chairman King - I think that question might be more effectively directed at the FAA Administrator because we at the NTSB don't look for liability and we don't look for blame in that traditional legal sense. What you raise is civil penalties. We are not interested in penalties.

What we are interested in is having the industry do what is right and do it voluntarily. I think in aviation, though--which has been rather unique and sometimes folks don't fully understand unless they are familiar with the business--it is the one industry that has had a partnership with the Federal Government and, basically, with the Federal Government exclusively. The industry would really never have been born and had the success it has had without two things--the relationship with the Federal

Government and, probably, World War II. The combination certainly put it where it was going.

To answer your question, I really don't know.

Ms. Nettie Dickerson (Bankair) - Mr. King, as one in the field in the commuter airline industry, I noticed your remarks; and I know sometimes the press will pick up one remark and leave out the rest. But concerning your remarks that blamed the lack of safety on the FAA and its enforcement and so forth, were they taken out of context because it hasn't seemed to me in the industry that that is a helpful approach?

Chairman King - Our question is, What role does the industry see FAA playing? I think what we see FAA playing is an affirmative role, and that is they are helpful to people who want to do the right thing. But sometimes, as you know, regulations are really written for attorneys to deal with things after the fact, rather than for operators who are on the line making decisions. So I think part of the issue should look for clarification, for guidance, for intelligent response to the kinds of business problems you might face and the operational problems that might transcend business. And you look, I think, to the FAA for that help and assistance. If the person you are looking to is stretched so thin, they can't be responsive. So I think this is kind of a mixed bag here, and what I think we would like to do is set a standard of performance based on what you, the industry, feels that they need for support.

FAA also has a role of enforcement which is very difficult. I don't attempt to speak to that; but too often we have gone into the field and when we talked to the FAA people who are responsible for certain things, we say, How do the kinds of gross things we have seen occur? They will say, We are stretched too thin. We didn't have an opportunity to go in there. Had we spent any time with this operator, that wouldn't have happened. We would have seen it because it is obvious. We have too much to do. So what we want to do is to encourage the FAA wherever possible to seek additional resources or reallocate existing resources in the areas of greatest need, and I think that has been addressed in the past. That is how I think we at NTSB see it.

Mr. Tim Ford - What mechanism, if any, is available within the recommendation procedures of the NTSB so that when it makes a safety recommendation to the FAA, the FAA either responds in time or shows good cause why the recommendation is not adopted? There have been a number of recommendations made by the NTSB that have never been adopted or modified and were sort of left on the shelf. There are no formal procedures I know of whereby

if FAA decides they just don't want to pursue a certain aspect of a safety recommendation, the NTSB has any means of going one step further.

Chairman King - As I think I mentioned, one of the things I hate to do is make public addresses and formal presentations. But that is one way. The other way is, quite frankly, I think why we are all here today. Several months ago when we first raised this issue, I don't think there was anyone who would say there was any opportunity that we would all be gathered here today. At that time most people rejected the idea that there was any problem at all with the industry. We didn't suggest there was. We felt it was an industrywide problem because the industry would suffer by the very small minority who were having problems and who continue to have problems. As we opened that dialogue and as the industry determined that it was in their best interests to take a long, hard look at themselves, they did so and they cooperated with us. This symposium today is a step in that direction.

I think that the forthcoming en banc hearing will permit a public record to be drafted that will give us a great deal of breadth. I think anyone coming and looking at it will say this is where the commuter industry was in 1980. It will be an opportunity to have people say what they believe their plans and hopes will be for the future of this important industry in a number of ways.

The real question will be, Will the commitment be there from the people who are in the industry, who are articulate, who care, and who have their roots here; and will the regulatory agencies, the people who determine the future of the industry in many ways, make the commitment at the highest level by participating in responding to some of the concerns that are expressed? Not that we are going to have all the answers, but I would like to have a substantial number of the questions before us. So that is why a hearing is going to be held, and our methods of moving our recommendations are really based on going into the public arena and having them fully discussed and hopefully fully understood.

We might not always be right because right in that sense has a number of different facets. Some are cost/benefit analyses that have to be done. Sometimes it is state-of-the-art. Generally, I think it is reasonable, and in that reasonableness there might be other points of view. We have to understand that.

We have one perspective. We are mandated to be concerned about safety exclusively. There might be other dimensions to

that question for other people. We have an appreciation of that. Nevertheless, we feel that voice should be shared and should be heard in a clear fashinon.

Mr. Wes Lupien (Harbor Airlines) - Perhaps you can't speak for the Board on this subject, but as an individual, do you see any increase in safety for the commuters by application of the proposed NPRM on the security regulations?

Chairman King - I don't have access to all the intelligence. I couldn't respond.

Mr. David S. Stempler (Airline Passengers Association, Inc.) - First, Mr. King, I would like to publicly applaud you, as well as Mr. Bond, for the initiatives you have taken.

I want to touch on one thing that I think was brought up a lot at this morning's session and that you and other Board members have talked about in your speeches and testimony. That is the great need for additional precision landing equipment at most of these airport facilities. I think Mr. Bond said earlier that he agrees we need more, and I think the commuter airline industry agrees with that.

Can you give us your thoughts about how we, as consumers of airline aviation services, as the actual passengers, and as operators of the system, can work with you and Mr. Bond to help you to get this equipment? I think there are a lot of pieces in the whole ADAP and Airport and Airway Trust Fund which are subject to controversy; but this landing equipment item is not controversial, and we want to help. Just tell us how to do it.

Chairman King - Very early in my talks with the CAAA I said I would hope that in the hearing there would be a lucid presentation of the type of equipment that is needed. Many times the industry has tried to have both sides of the argument. You will tell us, Gee, you have to understand that statistically we have problems because we obviously are on approach more often, on landing.

On the other hand, we don't have the kind of equipment that will assist us in completing this successfully. So then, the next question is, What have you done to seek that equipment? I don't know. I don't spend a great deal of time in the Congress. I am not able to follow every issue carefully. But I am still going to do a fair amount of reading and possibly I haven't seen a total kind of package coming up saying, Here are the various levels of care that we receive. Here are the various places that we go into. Here is where we are going to be the only person coming into that market--where we are really a sole source. These are the kinds of items that would fall into that category.

I think the professionals who are in the business know what is needed. It is a question of putting it together, developing a set of priorities, and then stepping into an arena.

The reason we raised this last June and are working on it at this particular moment is that we saw the very substantial (I think the most recent figure is $4.5 billion) amount of ADAP funds that is supposed to be provided for safety. We have heard rumors that some people are planning to put in beautiful fountains, improve the esthetic value of airports, plant shrubbery, retire bonds--all that sort of thing. I'm sure those are all malicious rumors; but we were under the impression that that money would be used for safety. And safety being primary, that was the first thing that we hoped for.

As I say, the types of equipment that would be necessary and the level of enhancement, level of utilization, and cost-effectiveness will be determined by FAA who, by the way (although we kind of banter back and forth here), really does have the professional expertise on staff.

It is an opportunity to let those professionals work. On the other hand, we are talking about public policy which means this will be debated in a public forum. It will be open for various types of discussions, to the push and pull that goes on in a public forum. It's called politics, and I don't mean it in the partisan sense. Unless you know how to move and work in that particular arena, and work effectively, you will end up with the short end of the stick.

It is our hope that by getting you early or organizing you, showing you that you can stand and say, Yes, we have a problem, it is not an admission of weakness. It is an admission of strength, if anything; and that is what your appearance is today and will be in a few weeks when we go into a more formal type of presentation. Those are critical in developing a record that will be useful for your industry as it addresses its future rather than the past.

The past should be like a rearview mirror. It can guide us to some of the things we are going to be looking at in the future; and that is why we have spoken in very harsh terms, maybe initially. We don't feel we have to speak in harsh terms now. I think it is everyone's understanding we now want to work with you in the most cooperative fashion available so it could be constructive, and that is what our hope is. So we look to the professionals in the field (the operations side) and to the FAA to reach what is needed professionally, and then get all the parties in here to work out the accommodation in the public arena. That is where the final cut will occur.

Ms. JoAnne W. Young (Zuckert, Scoutt & Rasenberger) - As you noted today and in previous speeches before the commuter carriers and in other public forums, the issue of safety is a controversial one, and the use of statistics can be highly misleading. Because of that, the media's coverage of the commuter's industry record and these Federal hearings can be all important in formulating the public's perception of this industry.

In this regard, do you feel the media have given equal time to the excellent job the vast majority of commuter carriers are doing, and would you have any recommendations for people with respect to the upcoming NTSB hearings?

Chairman King - I don't know. I never the judge the media.

My feeling first from the media point of view was that, quite frankly--and I developed this attitude some years ago, and it helps, and sometimes it doesn't always help you personally--225 million Americans couldn't be here today, so they sent the press. They represent the American people.

You might not agree with that, but that is true. That is at least how I see it. That is No. 1.

No. 2, whether fair or unfair, they are not fair or unfair. They report what is said and what is done. I will tell you when I get up in the morning and I look at the mirror, I must admit that I don't always meet that with enthusiasm. Some of you obviously looking out must, but not in my case.

Many times I have disappointments, more and more often these days; but I almost never yell at the mirror and I have yet to hit it, so I understand that what I am is what I will see.

Now as you know, you can have mirrors that magnify things. There are special-purpose mirrors. Then you understand you use those for special purposes; so whatever tactics are used, I would suggest that you have an industry now that is growing. At the rate it is growing, it is obvious that a substantial part of it is a success. I don't think as I look out on the faces of the Executive Board and the professional staff of CAAA that there are feelings of foreboding or a future that looks dreary. I think they are brighter than ever.

Ms. Dickerson - It is not a question. It is a plea, sir. I would greatly appreciate it and I don't know whether others share my sentiments, but if the National Transportation Safety Board and the FAA could work more closely together to bring about the safety, no one would want that more, I think, than the

people in the industry who suffer the accidents and therefore the profits.

Chairman King - When we talk about accidents, we get this perspective.

Ms. Dickerson - I think if you could work more closely together we would be spared the contention maybe between the agencies and maybe with what ends up being a witch hunt and, at the grass roots, cost to the public without buying that dollar's worth of safety.

Chairman King - I think the problem here might be that the types of accidents we see are not the usual types. You raise a question. In some cases, FAA is responsible for monitoring the system.

When we go to an accident in Alaska and find out they have all the parts--the ones that have been damaged and the ones that have been cast away--thrown in one box, when the chief mechanic kind of thumbs the navaids and puts them in and dispatches the pilot into bad weather with a wrench and kills a planeload of people, and we are told that happened because the surveillance wasn't proper, then the next question we have to turn to the industry and ask is, Where were you when that was going on? When we see a pilot with no time in type take off with a full load of passengers and bring them in and kill them all, I have to raise a question.

We have a thousand pounds over at gross, 8-1/2 inches aft CG--and that would seem to have been a practice--and it is not being monitored. That is what's wrong. We are not talking about modest operational errors, but about the kinds of gross things we see. I think the industry has to clean up its act and the FAA has to do what it has to do, but we are going to continue to call them as we see them. And if I sound harsh, it is maybe because we do some of the tough work. We do the cleaning up when we get out there.

A FUNCTIONAL REVIEW OF COMMUTER OPERATIONS MANAGEMENT

Dennis J. Crabtree
Senior Vice President, Operations
Golden West Airlines

I welcome the opportunity to share with you what it is to be accountable for the operations department of a commuter airline. To do so, we must first understand the regulatory basis for commuter operations--in other words, the role of Federal Aviation Regulations. They are simply minimum standards, rules which establish the least a manager can do in keeping his operation in order. The Federal Aviation Regulations are certainly integral to an airline in the management of its safety of flight, but we use them as a digest or a checklist.

The checklist used by most commuter airlines' operations management is Federal Aviation Regulation Part 135, entitled "Air Taxi Operators and Commercial Operators." To me, that is a noteworthy point. The title itself often leads to the misconception by the public that commuter airlines are regulated like taxicabs or at least something less than air carriers. That is most unfortunate since that is certainly not the case.

Let's examine what it is to manage a commuter operation under the Part 135 rules. First, let's look at the prerequisites. The FAA must certificate the operation which can only occur when all the applicable rules are complied with. Aircraft must meet FAA standards and be proven in flight to be acceptable for the operation.

Management personnel must have the required experience and qualifications for FAA standards; manuals specific to the operation must be prepared which contain at least the information and procedures required by the rules. And these manuals must be provided to and followed precisely by all personnel in carrying out their assigned duties.

The application for a certificate and the carrier's operations specifications must be prepared in accordance with FAA-prescribed format. The operation specifications must detail the specific authorization to be issued to the airline, including airport, route, weather restrictions, and limitations; aircraft maintenance standards; aircraft weight and balance requirements; and any other requirements judged by the FAA to be needed to ensure the safety of flight.

Having been certificated, these functional requirements are ongoing for the operations manager. A continuous monitor must be maintained to assure regulatory compliance. For example, the procedures detailed in the operations manual must continually conform to or exceed FAA safety standards. Adherence to the procedures by pilots and other operations personnel must be checked and surveyed.

Maintenance records must be executed and updated in a manner that assures current aircraft status. Also, a record of aircraft weight and balance for each flight must be made. This is in the form of a manifest which includes actual takeoff and landing weights, maximum allowable weight, number of passengers, and documentation of the balancing of the load within the center of gravity limitations for that aircraft.

A record for each pilot is prepared and kept up-to-date, including the status of airman certificate and medical, details of current flight experience, the duties assigned, and documents which confirm satisfactory completion of initial and recurrent training, proficiency flight checks, competency tests, and route checks. Records of any physical or professional disqualification experienced by the pilot must be maintained as well as a control record to assure compliance with flight and duty time limitations.

Operational systems are required to assure control over each flight, including the monitoring of the flight's progress and the reporting and disseminating of any information on hazards, airspace restrictions, or airport conditions that could in any way compromise safety of flight. Procedures are implemented to restrict or suspend operations when any condition is judged to be a hazard to safe operations.

Current technical information and publications are made available to each pilot, including complete aircraft and equipment manuals, the Airman's Information Manual, operational notices, and Federal Aviation Regulations. Aircraft records are provided to the pilots before each flight so that they may continuously determine the airworthiness of their aircraft.

Procedures and systems are implemented and monitored to assure proper loading of aircraft within FAA-prescribed limitations. Aircraft are periodically reweighed, and the empty weight and center of gravity data are always available for pilot use.

Runway length, obstacles around the airport, and the routes that are flown are analyzed. This information is then used to ensure that the airplane's performance under the conditions of

flight meets that required to comply with FAA-prescribed operating limitations.

Specific duties and responsibilities are formulated, described, and assigned for crew members to use in the event of emergency. And finally, training programs are prepared and pilots are given detailed classroom indoctrination regarding the company's operation, its rules and procedures, the aircraft that are operated, their components and systems, and emergency procedures. Also, meteorology, communications, and Federal Aviation Regulations are covered.

Emergency drills, maneuvering exercises, and air traffic control procedures are practiced through hours of flight training in the aircraft before a pilot is allowed to conduct a revenue flight.

The focal point or the bottom line of all these efforts is to ensure the reliability of the airplane and its crew members over its mission.

What I have just described is what management must do to meet regulatory compliance. It is the checklist I spoke of that is used in managing safety of air carrier flight operations.

There is, however, an even more fundamental point for management. It is the issue of morality. There are far too many things that go into the integrity of airline operations management that regulations don't and can't cover. The fact is all the regulations in the world won't guarantee safety. The best we can expect is to control immorality through effective and constructive surveillance and enforcement of the regulations. A consistent application of the morality principle must be there, or safety is surely compromised for other principles.

As an example, how do you select a pilot if you are looking for a first officer, a copilot? The regulation says he must hold at least a commercial pilot's license with a multiengine instrument rating, have current instrument experience, and have at least a second-class medical certificate. A captain must have an airline transport pilot license and a first-class medical certificate.

The regulation doesn't say you have to exercise good judgment in making the selection. That is something you do because you want to, because you are concerned. Your professional pride demands it, and you need to feel comfortable with your decision that this person is going to reflect what you are and what your operation is. Sure, you are interested in whether or not he can fly an airplane. You do want to review his technical experience, his flight hours, the types of aircraft flown, and his

record. But your selection is based on moral considerations as well. Is he concerned about aviation? Does he respect himself? Can he work professionally in a team environment? Will he respond in a positive manner to training, rules, procedural compliance, and constructive criticism? Can he be entrusted with your future, your reputation, and perhaps the lives of your family?

You need to know that he is really learning what he is taught and will use what he has learned with confidence, that he is acquiring the ability and the attitude to react affirmatively in response to a problem, that he has an appreciation for why procedures are necessary and why knowledge of aircraft systems is essential. His flight training, route checks, proficiency checks, and examinations have to be conducted in a manner that gives you satisfaction that he, in fact, meets your minimum standards.

So, what is the difference in managing safety between a commuter airline and a traditional airline? There really isn't any. The legal restrictions of regulations are the same, and the moral obligation is certainly no different. But the challenge and opportunity provided by deregulation is far greater for the commuters. Commuter airlines throughout the country are responding to this challenge with dedication and professionally motivated attitudes toward airline safety.

The overall success of this industry could not have prevailed through so many obstacles had there not been an intense sensitivity to the public's demand for a level of airline safety envied throughout the world. People like myself who are accountable for commuter airline operations departments will continue to manage safety of flight in a manner we are very proud of. We will continue to work together in support of efforts to ensure the technical expertise and moral integrity of all commuter airlines.

COMMUTER AIR CARRIER PROGRAMS FOR MAINTAINABILITY, RELIABILITY AND AIRWORTHINESS

Michael Freeman
Vice President, Operations
Air Midwest

The role of the aircraft maintenance program is fundamental to the success of any airline, whether commuter, regional, or trunk.

For very obvious reasons, the quality of maintenance ensures the airworthiness of the aircraft and its systems, as well as the reliability of scheduled service.

From recent press reports, it appears the regulatory requirements and technical sophistication of commuter maintenance programs are not well understood. This afternoon, I would like to provide a brief overview of the important elements that comprise airline maintenance today and how we perceive they will contribute to improved air safety.

Perhaps the single most important change associated with the new Part 135 regulations is the imposition on commuter airlines for the first time of specific provisions for airline-type maintenance programs.

Prior to the new rule, the type of maintenance program utilized by a commuter was left to the option of the individual air carrier. While an "approved aircraft inspection program" was required by the old rule, most operators developed their own programs with guidance from FAR Part 43 dealing with maintenance procedures or Part 145, repair station certification.

Since December 1, 1979, with the full implementation of new FAR Part 135, a "Continuous Airworthiness Maintenance Program" has become the standard for most commuter air carriers. In any complete system of maintenance, areas will overlap; however, the continuous airworthiness maintenance program can be roughly divided into five major categories:

1. Responsibility for airworthiness,

2. Maintenance and inspection organization,

3. Manual requirements,

4. Reporting requirements, and

5. Continuing analysis and surveillance.

Although not actually a part of the continuous airworthiness maintenance program, the regulations also provide for a reliability control program. Most operators have so closely intertwined the two that I will treat them as one entity.

Perhaps the key element in airline maintenance is the provision cited in FAR 135.413. It places the responsibility for airworthiness of the aircraft on the "certificate holder," or air carrier, as opposed to a mechanic.

For the first time, a single source is identified as being in charge of the air carrier's maintenance program. Along with the responsibility for airworthiness, the regulation also provides the air carrier with the authority to perform maintenance, preventive maintenance, and alterations on its own aircraft and equipment; and the authority to approve those aircraft and equipment for return to service after such maintenance has been accomplished.

In combination with the organizational requirements cited by the regulation, this single source of accountability provides the air carrier the opportunity to more closely oversee its maintenance activities while providing the Federal Aviation Administration a clear delineation of the air carrier's maintenance chain of command.

The maintenance (and inspection) organizations required by regulation are not defined by size, but rather by desired result. They must be "adequate to perform the work." This phrase would appear to be excessively open-ended; but when it is studied in conjunction with the other elements of the program (particularly the manual requirements), it becomes obvious that the operator will have to provide the necessary staffing to accomplish the intent of the regulation. Since each provision of the regulation must be met, the lines of authority and the individual personnel within the organization responsible for compliance must be described. While providing flexibility to the carrier to match the maintenance program to operational needs, it also means the maintenance organization must grow as either the complexity or the size of the air carrier's operation increases. The FAA reserves for itself the final acceptance of the organizational structure.

The nucleus of the entire continuous airworthiness maintenance program is the manual requirement.

Quite simply, without an adequate manual to guide the carrier's personnel, its maintenance program cannot function as designed by the carrier or as required by the FAA. This operating manual must describe in detail how each element of the program is to be implemented, the personnel involved, and, most importantly, the interrelationship between each element of the program and the various departments in the carrier's maintenance operation. Perhaps some examples will help to illustrate the importance of this document.

The operating manual specifies in great detail the provisions of the basic maintenance program developed by the air carrier. Such items as scheduled and unscheduled maintenance are covered.

The operating manual also describes the repair and alteration requirements for engines, propellers, and appliances on each aircraft the carrier operates. It prescribes the routine inspection and testing requirements, overhaul and life limits for components, as well as the aircraft as a whole. Also included are the routine aircraft structural inspections and a comprehensive detailing of the procedures to be followed in the accomplishment of "required inspections."

This section of the operating manual is a major safety enhancement when compared to the previous requirements.

No program is workable unless the personnel involved are knowledgeable in its use. The regulation requires that all maintenance and inspection personnel be trained in their individual jobs and in the program itself. This training program is contained in the carrier's operating manual.

The manual requirements also ensure that adequate record-keeping procedures are developed and followed by the carrier and its personnel. Thm two major areas of attention are:

1. proper execution of an airworthiness release or maintenance logbook entry when returning an aircraft to service, and

2. proper completion of aircraft, engine, and appliance work records.

The airworthiness release or maintenance logbook entry is the maintenance department's way of informing the flight crews that they have an airworthy aircraft. Work records are documentation for everything that is accomplished on the aircraft.

The reliability control program record-keeping procedures are generally integrated in this portion of the manual since

some of the documents from the continuous airworthiness maintenance program are the source data for the reliability control program.

Many air carriers contract for some of their maintenance to outside facilities. Avionics, instruments, and certain other highly sophisticated components are examples of the type of equipment that is most frequently contracted out.

The regulation provides for this by making the contracted agency virtually an extension of the air carrier's own maintenance facility. The regulation, and hence, the air carrier's operating manual, accomplishes this goal by requiring that the carrier ensure that the contractor's facility and equipment are adequate to perform the required work; that the facility is using the FAA-approved data in accomplishing the work; and that the workmanship meets the same high standards that the air carrier must meet on work performed within its own maintenance facility.

If the carrier contracts out any "required inspections" to such an agency, then the carrier must also ensure that the contractor's personnel performing these "required inspections" are properly trained and qualified. Even if the contracted agency is an FAA-certificated repair station, it must still accomplish the work in accordance with the specifications of the air carrier's manual. (The certificated repair station is also required to do this by its own operating regulation, FAR Part 145.)

The overall philosophy guiding the development of the operating manual is rather unique among Government regulations. Rather than attempting to specify in great detail maintenance procedures in the regulation itself, the FAA imposes certain hard-and-fast guidelines. The carrier then has the discretion to use any procedures that meet its overall operational needs as long as the resulting program complies with FAA's guidelines. Once that determination is made by the FAA, the operating manual, now containing the carrier's individually tailored program, is printed and distributed. The FAA begins to monitor the carrier's aircraft records and maintenance facility to ensure that the carrier adheres to the program.

This concept allows flexibiity but at the same time constrains the program to a rigid set of safety standards.

The reporting requirements imposed by a continuous airworthiness program retain some previous requirements while introducing two new concepts. The mechanical reliability report and the mechanical interruption summary are continued as before.

These two reports provide the FAA with detailed data regarding the service history of components or systems that could derogate aircraft safety, particularly those that could affect similar aircraft operated by other carriers.

The two new reports are generated by the reliability control program through continuing analysis and surveillance of maintenance histories. The reliability control program report provides the carrier and the FAA with reliability information while the continuing analysis and surveillance system is a macro study of the carrier's entire continuous airworthiness maintenance program.

The continuing analysis and surveillance system is the quality control and audit function for the entire continuous airworthiness maintenance program. The system audits such functions as frequency of unscheduled parts maintenance, currency of publications, accuracy of maintenance records and documents, and overall maintenance effectiveness.

The system also provides for the carrier's timely corrective action of any discrepancies uncovered and, hence, is not merely a reporting system. The month-end report is usually a combination of worded statements, computer-generated printouts, and charts or graphs.

If one examines the evolution of maintenance programs within the commuter air carrier industry, it is impossible to arrive at any conclusion other than "they are getting better."

Now, with the inception of the revised FAR Part 135, we believe that many of the safety concepts that the carriers have been attempting to implement, and the FAA wants to see implemented, are possible.

The phrase "zero defects" is close to a reality. The operational reliability of commuter air service has been broadly enhanced.

MANAGING FOR SAFETY

J. Dawson Ransome
President
Ransome Airlines

I've been looking forward for many weeks, with increasing anticipation, to this meeting. It will provide an excellent opportunity for all of us here today to discuss our efforts regarding the important matter of upgrading commuter airline safety.

Further, it will help to foster better public understanding of our progress in this area.

There are four fundamental concepts I believe form the basis for understanding the challenge of commuter airline safety.

First, the way to upgrade safety is through management expertise, not regulatory muscle.

Second, we must recognize that the management expertise we need is related to dealing with our explosive growth--that is, how do we maintain operational integrity within an organization that is rapidly expanding?

Third, operational integrity is literally in the hands of our employees. If we lose their dedication, enthusiasm, and support in achieving operational goals, we might lose more than our opportunity to manage our growth, but also our franchise to operate at all.

And finally, I want to discuss what we think the role of the FAA should be in helping us meet the significant challenges we face.

Actually, the challenges confronting the commuter airline industry today are much the same challenges the local service carriers faced two decades ago--carriers such as Allegheny, Frontier, and Piedmont that survived and Bonanza Airlines and Lake Central which did not.

The performance of the commuter airlines, like that of the locals during their developing years, has become a critical issue.

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However, we are operating in a substantially more complex regulatory environment. The result impacts management time, attention, and resources. This impact has increased with airline deregulation as we seek to take advantage of the uprecedented opportunity for growth. Therefore, meeting our challenges might be even more difficult now than it was 20 years ago.

Virtually every commuter airline manager, operations, technical, or financial as well as the CAAA takes this challenge very seriously. As a result, the industry is devoting its full attention and considerable resources to the matter of commuter airline safety.

Most of us share the conviction that the new Part 135 regulations are reasonable and contain all the elements necessary to ensure a level of safety for the commuter passenger and crew equal to the major airlines. We are solidly committed to the success of these regulations.

The FAA has gotten the attention of the entire airline industry--not only the commuters, but also the trunks and locals--as a result of the recent enforcement policy of severe fines and shutdowns it has imposed.

Now that the FAA has our full attention, the time has come for both the agency and the industry to roll up our collective sleeves and get down to the crucial business of improving communications and understanding. The FAA should find ways to lead us into compliance, not beat us into it.

Help us to develop better methodology for meeting the regulations and better management expertise for dealing with our explosive growth. That will accomplish far more, far faster than merely continuing to build up your regulatory muscle. Enforcement is a necessary tool, but not the only one.

Today's safety symposium and, more importantly, future regional symposia proposed by the industry will definitely foster improved communications and understanding and accelerate the speed with which the commuter industry can achieve operational reliability under the new rules.

Recognizing that we have a comprehensive set of new regulations affecting our operations and maintenance programs, the aircraft we fly, and the airports we serve, we expect to see a great reduction in the rate of regulatory change we have lived with for the past few years.

The less time we devote to keeping up with a changing regulatory environment, the more time we can devote to what I said

was my second main point: managing our growth, that is, maintaining operational integrity in organizations that are rapidly expanding as we seek to serve an ever-increasing number of markets.

Many of us are transitioning from small firms to much larger, more complex businesses. It's quite a test of our ability to learn and adapt.

Many commuter airlines were founded by individuals with an entrepreneurial flair and a strong aviation background. Typically, these individuals have had direct personal involvement in almost every aspect of their airline's operations--everything from handling the passengers and baggage to flying the planes.

In most cases, as these operations grew, the span of control that these individuals have personally overseen has become much broader in scope and more complex.

With the recent strong growth of commuters across the country, chief operating officers have been forced to delegate their responsibilities and formalize their management techniques.

It has been a choice between that and risking the possibility of reaching a point on the growth curve where control would break down with disastrous results.

The Presidents of today's successful commuter airlines concern themselves less with the day-to-day operational aspects--they hire capable managers to make decisions in their place. The Chief Executive Officers devote their energies and attention to setting corporate objectives and developing plans to reach them. With the huge investments most airlines are making in equipment and facilities, long-range planning, budgeting, and personnel development become prerequisites to successful growth management.

As we delegate authority, we, as managers, must recognize my third main point: that is, as managers, the operational integrity of our airlines is literally in the hands of our employees. If, as we grow, we fail to take positive steps to ensure that our employees grow with us, we will lose the dedication, enthusiasm, and commitment that they have applied to the realization of our goals and objectives thus far.

The most important of our assets in the commuter airline industry today is our people. They will make us or break us. They need to be motivated, encouraged, complimented, counseled, communicated with, and generally made to feel they belong to and are the most important part of the organization.

Good people are hard to find nowadays. Therefore, a good personnel program is necessary to find and develop those people needed for future growth requirements. Evaluation, counseling, and training encourage the employee to identify with his airline and enhance his ability to assume greater responsibility.

A formal program to evaluate the ongoing performance of each employee is vital and helps to ensure that individual employee objectives are in line with and supporting the overall corporate objectives.

It's the same on the line and in the maintenance shop as it is in the pilot's seat--morale is essential to productivity and safety.

Each one needs to know our plans, objectives, and priorities.

Each quarter, at the very least, mandatory meetings should be held to provide a forum for this vital exchange. Management should review progress toward previously established goals and outline the future course of the company.

Meetings of this type foster a realization on the part of the employee that he or she is "in on" and "part of" what's going on--not just a number on the payroll.

These quarterly meetings also give employees an opportunity to question top management concerning any phase of the airline operation, to offer suggestions, and to voice their concerns.

At Ransome Airlines, we have a program that has contributed to maximum communication and understanding between management and employees. In the flight operations, maintenance, product support, and customer service areas, we have what is termed "review boards."

And that brings me to the final area I want to discuss today.

As I said earlier, one of the reasons this meeting is vital to upgrading safety in the commuter airline industry is that the more the agency understands the challenges which our industry faces, the better equipped the agency will be to help us meet those challenges.

The FAA's goal is not to enforce regulation; it is to ensure aviation safety.

Mr. Bond, you have our undivided attention. We take the challenge seriously. We do not believe there is a need to add

more regulations. What we do need is improved communications through future idea exchanges and local symposia, with yearly reviews of our progress.

Let's give the regulations we have recently implemented a chance to take hold and seek more consistent interpretation of these rules from region to region.

Let's not establish new regulations without first determining that they make meaningful safety contributions.

Let's make sure more regulations are needed. The proposed new security regulations are a prime example of what I mean. The administrative and financial burdens these proposals will place on the commuter airlines will greatly decrease our time and exhaust our energies for dealing with and managing our growth. They threaten our Nation's small-community service program.

Moreover, they are totally unjustified from the standpoint of need. They are not in the public interest and cannot be cost-justified. They are also contrary to the President's anti-inflation program.

May I suggest that these important FAA resources be redirected to the areas of real need, areas that will produce meaningful contributions to increased commuter airline safety.

We despearately need better radar coverage and improved precision approach facilities at most of the small communities we serve.

We urge that a program to upgrade our Nation's secondary airports be given a top-priority status. If funds are not available, we want to know about it so that we can pursue the matter further in Congress.

A safer commuter airline industry is an obtainable reality, starting right here today, if we are willing to recognize a few basic fundamentals.

The key to safety is not regulatory muscle, but management expertise.

The challenge to commuter airline management is to realize well-planned, coordinated, integrated growth in personnel, facilities, and equipment, as well as in markets.

Of all of our assets, our employees--the men and women who turn the screws, fuel the airplanes, meet and serve the

passengers--are our most important. We must meet their professional and emotional needs or we are exposing ourselves to havoc.

And finally, the FAA should lead--not push--us into compliance with the effective regulations we already have.

I thank you and congratulate you, Mr. Bond, and all of the representatives of the Federal Aviation Administration for providing this forum today.

We are in full and enthusiastic support of this concept and your planned regional commuter symposia.

I hope by this presentation I have helped illuminate the challenges we in the commuter airline industry face in learning to manage growth.

The faster we learn better management expertise, more modern techniques, and a more dependable way to communicate with the agency, the quicker we will realize the result we all seek--a commuter airline industry that is renowned for the safety of its operations.

AIRPORT/AIRWAY DEVELOPMENT FOR COMMUTER SERVICE

Kingsley G. Morse
President
Command Airways

I appreciate the opportunity to participate on behalf of the commuter airline industry in this first FAA Commuter Safety Symposium.

My colleagues who have preceded me on this panel today have thoroughly reviewed key elements of commuter airline operations, maintenance, and management programs. They have described in detail how commuter air carriers comply with complex FAA regulatory standards in order to provide reliable and safe air service. They have noted what they, as managers, can do to achieve excellent operational records through the continuous upgrading of their equipment, facilities, and personnel programs.

I, too, am concerned over reliable and safe air service. But my topic, commuter airport/airway development needs, must be treated somewhat differently. The responsibility for maintaining a national system of safe and efficient airports and airways principally is that of the Federal Aviation Administration.

To be sure, commuter airlines cannot serve any airport from which they cannot guarantee safe operations, considering weather conditions, aircraft performance, airport facilities, and any associated features that might pose an obstruction or hazard to flight.

While the airports we serve are, in general, operationally safe, they often lack runway improvements and navigational aids which would make them operationally reliable under all conditions.

Why is there a gap between what we have now and what we need? I think the answer to that simply stated is the explosive growth that we have witnessed in the industry over the past decade. This growth has caught everybody by surprise, and I include airframe manufacturers, vendors, unions, the FAA, and even the industry itself. This is the reason for some of our problems and also the reason that we are here today.

It should not be any big surprise, from the commuter airline industry standpoint, that the airways and airport system is

sadly lacking. To give emphasis to this point, about four or five years ago we were carrying seven million passengers a year; and now in 1979, twelve million. That is explosive growth, as everybody has commented on today. I don't think anybody, including the FAA, was prepared for this type of growth.

The fact is, there is today a large gap between the facilities and equipment on the airports we serve and those served by the certificated air carriers. As a prime example of this, 66 percent of the airports commuters exclusively serve in the continental United States lack precision instrument landing systems. Not only would the installation of such equipment enhance the safety of operations at these airports, but it would significantly improve the reliability of air service that the customer expects by reducing the incident of delay or diversion in adverse weather conditions.

Further, we are concerned that the FAA is far behind in developing air traffic procedures and airspace utilization programs that will provide capacity and access for the growing volume of commuter air traffic at our Nation's major airport terminals. The success of airline deregulation in large degree hinges on access for replacement carriers.

Before addressing this subject further, I would briefly like to review some facts regarding comomuter operations.

We are in the business of providing short-haul, hub-spoke air service which links outlying towns and communities with frequent, direct access to our Nation's principal air carrier airports. As evidence of the validity of this commuter connection to the air traveling public, nearly 80 percent of all commuter passengers interline with other scheduled flights.

Some 630 airports today receive commuter passenger service in the United States, 359 of which rely exclusively on commuter airlines for their only link to our national air transportation system. This number has grown dramatically since the enactment of the Airline Deregulation Act in October 1978.

Some 50 communities that lost certificated service are now receiving commuter replacement service under the CAB essential air transportation program. This is not a new role for the commuter airline industry. In the 12 years prior to deregulation, commuter air carriers successfully replaced service at 140 of the 172 cities which were suspended from the certificated air carrier schedules.

The typical commuter airline flight today operates over a trip distance of 110 miles and, therefore, is typically flown in

the low-altitude air traffic environment, usually below 10,000 feet. Fifty-five percent of all passenger enplanements were generated outside the Nation's 72 large- and medium-hub airports. Eighty-seven percent of all passenger markets which commuters serve are less than 250 miles in distance.

Under deregulation, commuter airlines will assume an even more significant proportion of all such local and feeder air service over the next decade. The economics of short-haul transportation make it increasingly difficult for air carriers utilizing large jet transport aircraft to profitably serve these markets. Commuter airlines on the other hand, with frequent schedules flown in aircraft matched to the market density, can provide convenient and profitable replacement service in these markets.

The Congress recognized this role in the enactment of the Airline Deregulation Act. It sets forth as public policy that air service in the United States must be provided with "the highest level of safe, reliable air transportation to all communities served by air carriers." Congress also ensured that essential air transportation be guaranteed through the "maintenance of a comprehensive and convenient system of continuous airline service for small communities and isolated areas." In so doing, the Congress directed the Federal Aviation Administration to ensure that "the level of safety provided to persons traveling on commuter air carriers is, to the maximum feasible extent, equivalent to the level of safety provided to persons traveling on certificated air carriers."

That is the mandate to the FAA by Congress, and I am sure everybody is aware of it. If Congress mandated the FAA to ensure an equivalent level of safety, doesn't this imply an equivalent level of airway system and airports? I think so. Let's take a look at this, however. On my way down from New York yesterday, I noted a speech by Mr. J. J. O'Donnell, the President of ALPA, in which he said that ten percent of his air carrier airports don't have ILS's. By contrast, as I stated earlier, 66 percent of the exclusively commuter airline airports don't have ILS's. I don't think that is equivalent. I think it is separate and unequal.

Unless the agency can redress the imbalance, the gap will worsen simply because under deregulation, the major airlines are pulling out of their marginal cities and turning them over to our industry. And in general terms, those cities are the ones that lack the ILS's and the VASI's; and that is probably why they are pulling out--because they couldn't operate reliably.

The historical bias by the FAA toward the major airlines has been obvious. That is where most of the money went, and the

commuters take the hindmost. I would like to suggest that the FAA rethink the problem.

I am reminded of an appropriate analogy of the French generals in the late 1920's and early 1930's when they were preparing for the upcoming war. They reasoned that since World War I had been a war of trenches and mass movement of troops, they would be well-served by building one big line of heavily fortified trenches and fortifications from Belgium on down to the south of Franch, which they did. It was called the Maginot Line. But things changed, and I am sure the FAA is aware of this, too. Gentlemen, please think through what is going on in the industry today, and I hope that you will give the commuters a better "shake."

Frankly, it is obvious what Congress wants. Commuter airlines are willing and able to provide that level of safe and reliable service. In fact, as a measure of that commitment, in 1979, commuter airlines placed orders for nearly $500 million in new aircraft, an amount greater than all previous aircraft investment made by this industry. Now, it is time for FAA to ensure that our Nation's airport and airway system is developed consistent with the intent of Congress in maintaining air service and the growing capability of our industry to provide that service.

Specifically, we offer four recommendations.

First, with respect to airport development, the commuter airline industry strongly supports legislation now pending before Congress that would continue ADAP through 1985. Importantly, this legislation would for the first time make commuter service airports eligible for enplanement funds and provide $750,000 set aside over the next five years at each qualifying airport for high-priority projects that improve safety or expand capacity. If this legislation is enacted, we call on FAA to vigorously pursue the funding of projects at these airports. FAA's record in this regard has not been good. During the period 1971 through 1979, the FAA underspent minimum authorizations set by Congress for airport planning and development by some $1.2 billion! Runway and taxiway improvement, removal of obstructions and hazards, ramp and terminal facilities, and emergency equipment are all ADAP-eligible. Investment in these facilities will improve safety.

Second, the FAA must revise its existing facility establishment criteria. This is the econometric methodology by which FAA determines airport eligibility for the installation of equipment such as instrument landing systems, radars, and visual glideslope indicators. As I noted earlier, 66 percent of the

airports exclusively served by commuter airlines lack instrument landing systems. As an example of the failure of FAA's criteria to establish ILS's where they are sorely needed, let me cite Naples, Florida. In 1979, some 260,000 passengers flew in and out of Naples. Although the ticket tax would generate more than $600,000 for the Trust Fund, the unique formula developed by the FAA precludes an ILS there; as a result, instrument approaches are made off a VOR located 23 miles away. The installation of an ILS at Naples would improve service reliability and safety by lowering approach and takeoff minimums and would allow the commuter air carrier based there to conduct instrument training of pilots without costly diversion to other ILS-equipped airports.

For another example, one which affects my airline, no commuter airport--whatever the volume of commuter, general aviation, and military traffic--can qualify for radar service. My company is based at Dutchess County Airport in the Hudson Valley, and there is a very high volume of commuter air traffic at the airport. Stewart Airport is just across the river and is being developed into a cargo airport. Moreover, there are 10 general aviation airports within a 15-mile radius. The entire area cries out badly for approach control radar. Under the present rules, however, we don't qualify and we never will be able to qualify. FAA's cost-benefit ratios preclude radar unless a minimum of 4,000 certificated jet air carrier operations are reported. At Dutchess County Airport, where I serve, the lack of radar coverage due to this policy is in the interest of neither safety nor public need.

We believe that passengers should be afforded a common level of safety at all airports receiving commercial service, whether that service is commuter or certificated. With nearly $4 billion lying unobligated in the Aviation Trust Fund today--the Aviation Daily said yesterday that there was $4.3 billion in the Trust Fund--just three months' interest (the daily interest is $600,000) on that balance alone would pay, for example, for the installation of ILS at every airport served by commuter airlines that are not now so equipped. Frankly, there is little excuse in my estimation for FAA to continue a policy that results in unequal facilities at commercial service airports.

Our third recommendation deals with FAA's proposals for implementing more terminal control and terminal radar service areas. We believe that it is very important that FAA, to the maximum feasible extent, ensure aircraft separation where there is potential for midair collisions. However, in developing a policy, commuter airlines are concerned that the FAA will fail to take into account impact on airport access and system capacity. FAA's objective, in our view, must be to upgrade the overall quality of air traffic service. In this regard, we

recommend that the FAA address the alarming rise in system outages and errors that have compromised safety in recent years.

Finally, our fourth recommendation deals with terminal access. Commuter airlines provide important feeder services into our Nation's major air traffic hubs. Under deregulation and mandated levels of replacement service, commuter airlines will link surrounding communities with their associated hub airports. Where the departing jet air carrier provides two flights per day, commuter replacement levels will be five or more flights per day. Thus, terminal congestion is both a safety and a capacity issue for commuter airlines.

We believe it is possible to add much needed new air traffic access by developing "reliever" approach procedures and runways, not to mention satellite airports, for general aviation use. There is little reason to queue jet and commuter aircraft together. The lower approach speeds, greater maneuverability, and shorter landing distances of aircraft generally used by commuter airlines offer greater flexibility in the utilization of congested terminal airspace and groundside facilities. Development of "stub" runways and other alternative landing sites such as has been recently done by Ransome Airlines can also provide much needed future capacity with no deterioration in air safety.

I have covered a lot of material; however, no discussion of commuter air safety would be complete without full consideration of the operating enviroment and how it might be improved.

CAAA INDUSTRY SAFETY PROGRAM

Alan R. Stephen
Vice President, Operations
Commuter Airline Association of America

The past two years I have been associated with CAAA since leaving the Federal Aviation Administration has been a very interesting experience. I have had an opportunity to see both sides of the coin, both the regulatory and the operational sides. At times, in our Board meetings, I have had to defend what I consider to be good regulatory policy, and sometimes I have to go to the FAA and tell them they don't know what they are talking about. So it has been an interesting two years.

It should be perfectly clear by the broad overview you have heard of the commuter airline operation that the requirements imposed on the industry are complex and that commuter airlines are prepared and committed to achieving the highest level of safety possible.

The Commuter Airline Association of America, being an industry organization, currently represents over 150 air carriers, which do about 90 percent of all commuter airline business. Our members operate in virtually every state, including Alaska and Hawaii, and the Caribbean; and some even have routes tnat extend into Mexico and Canada. Many of our members operate pursuant to a certificate of public convenience and necessity or to an air cargo certificate.

Our members include airlines that fly exclusively under Part 121, or Part 135, and some that operate aircraft under both rules. Some of our members conduct scenic flights, while others conduct all cargo operations. However, most of our members do what traditionally has been known as airline service, which is passenger operations. Some members even operate from water. On the lower end, our members operate only one or two aircraft, while others operate fleets of aircraft that can exceed 20 in number and provide service to a dozen or more cities.

The point of this description is to emphasize the diversity of operating characteristics embodied in commuter air service today. This diversity is a major problem for FAA in developing consistent regulatory policy and certainly a problem for the industry in addressing how it can work toward a better safety record. We must recognize first, however, that very simply

neither the FAA nor the industry can achieve air safety alone. We have to rely on Government and we have to rely on ourselves to get the job done. And let's face it, partnership between Government and industry has been very successful in aviation.

Just briefly I would like to describe for the record what the role of the Government agencies--CAB, NTSB, and FAA--might be as far as the industry is concerned.

The Civil Aeronautics Board has a very important role under deregulation. It has to guarantee air service. As part of this guarantee, the CAB has two programs underway. One is a management audit where in conjunction with finding replacement air carriers and specifying minimum levels of services, the CAB is auditing carriers to ensure that their management expertise and capability are sufficient to provide reliable replacement air service.

Second, the CAB will shortly be promulgating a "fitness regulation" where all commuter airlines will be required to file substantial financial information. The CAB then, in accordance with the provisions of the Airline Deregulation Act, must declare individual carriers fit. We think these efforts by the CAB will raise the whole regulatory standard of the industry and perhaps ensure that some of the carriers that are presently included as commuters today won't be in the future.

With respect to the National Transportation Safety Board, commuter airines have worked very hard to give them the information they need for the upcoming En Banc Hearings. We are impressed by the sensitivity of Chairman King in trying to understand our industry and trying to provide us with his views. We believe the En Banc Hearings scheduled at the end of January will have the very important effect of getting on the record the entire spectrum of commuter operations. Thus, the NTSB can successfully fulfill its important role, that is to audit what we are doing and to tell us what we might be doing wrong.

Commuter airlines can be justifiably proud of many aspects of their operational records. But maybe we are overlooking something. The final report coming from the NTSB hearings will help to guide us as to where we ought to be going in the decade of the 1980's to improve the commuter safety record.

Finally, the Federal Aviation Administration has a massive safety responsibility and it is not only with respect to commuters. The FAA must ensure the safety of all aviation, from the large jet air carriers to general aviation.

With respect to our industry, the FAA has recently promulgated a very thorough and needed revision to commuter operating

regulations, Part 135. These regulations have been implemented successfully; and in this regard, I would like to address a subject of a great deal of criticism, that is, how good FAA surveillance programs have been for this regulation.

FAA surveillance is good, but it could be better. Commuters have had their problems in implementation of the new Part 135, but that was only to be expected because it was a massive rule change. What was unnecessary was the confusion and inconsistent interpretation of new Part 135 regulations, which resulted from, in part, understaffed FAA field offices. On the subject of FAA staffing standards, a number was bantered around here today that there are about 800 FAA field inspectors. That isn't quite right. If you do a quick mathematical calculation, you will find that that figure amounts to about three inspectors for every commuter air carrier. That is simply not the case. What has been described is the total group of inspectors that have been assigned responsibility for not only commuters and air taxis, but also general aviation, trunk and local service airlines, flight schools, and maintenance shops.

With respect to FAA standards, we have two goals. First, we would like to see staffing consistent from region to region--that is, a ratio of inspectors to carriers, whether operations or maintenance, that is consistent. Second, we would like to see FAA inspectors properly trained to understand commuter operations. The comment was made earlier today that FAA inspectors have been involved in surveilling our industry for many years. The fact is that this industry is no longer general aviation, and it is certainly not an air taxi industry. The regulations commuters operate to are not anything less than airline standards, and FAA inspection teams have to understand airline operations to be effective.

I think one of the most graphic examples of the difference between general aviation and commuter airlines can be stated very simply--if a commuter airplane is on the ground for an hour, you have lost one revenue flight. You have forced your customers to drive because their destinations are that close, and they might never come back. We have to have a group of FAA inspectors who are technically qualified and knowledgeable in regard to airline industry practices and who can come in and assess programs like those just addressed by our industry panelists. At the same time, we look to FAA to assist us in the correct way to do business as well as to ferret out practices that are not done right.

Part of this goal is to have consistent regulatory interpretation from region to region. Fully 50 percent of my time is spent dealing with many of the people in this room who call up

and say, "I have to comply with this regulation while so and so in another region doesn't." It is frustrating at times to resolve problems like this. The solution is for commuter airlines and the FAA to come together, share ideas, and come up with in the end consistent policy.

Finally, what is it the CAAA should do to promote safety? We are an industry organization and, as such, we have a multipoint program for 1980.

First and foremost, the No. 1 CAAA priority is to get the post-1980 airport/airways legislation passed. It has important provisions for the commuter airline industry; and after discussion we heard today, we are going to work even harder to make sure that the facilities and equipment budget of FAA is adequate to meet the needs of this industry. But that doesn't necessarily solve our problem--we could have $400 or $500 million a year in the FAA budget. If FAA doesn't change its facilities qualification standards, commuter airports won't benefit from that money. What will happen is that air carrier airports will get their second or third ILS, and commuter airports won't even get their first.

The second CAAA objective is to have improved communications between FAA and the industry. In this regard, we are working together to plan regional meetings where operations and maintenance managers can come together and meet regional and national FAA personnel to discuss the status of Part 135. So many new policies have come out in the past few months associated with Part 135 that it is important for commuters to know what FAA wants and for FAA to better know what commuters are doing.

The third objective is the technical area. There exist today a number of aircraft technical committees--the Beech 99, the Swearingen Metro, the Dash 7, and other models. Shortly there will be one for the Piper Navajo and the Cessna 402. With these committees we will cover half the aircraft in use by the commuter airline industry. These technical committees are really very important. They hold regular meetings in which airline maintenance personnel and manufacturers' support personnel discuss service programs and maintenance problems that arise with the reliability of the airplane. The manufacturer goes home to find solutions, and the members of the committee have a better appreciation of where the problems are and how to solve them. Thus, we want to strengthen these committees. We want to use the umbrella of the CAAA to foster industry-manufacturer communication and cooperation.

Fourth, I would like now to formally accept the offer made by Mr. Harrison to establish a solid commuter statistical baseline.

I have been spending a lot of time in the last few months looking at every statistic ever written about this industry; and believe me, there are a lot. Right now, FAA has one set of data which is embodied in their report entitled "Commuter Airlines and Federal Regulation, 1926-1979" (See Appendix A). NTSB has another. And if you scratch the surface, you can raise questions about both.

We need a good baseline so we can get down and measure the success of this industry on a year-to-year basis. In this regard, this recommendation is not just for the FAA. It is also for the CAB because of their data collection role and for the National Transportation Safety Board because they publish commuter airline safety statistics.

Fifth, we are going to diligently work toward full implementation of Part 24, the certification rule for light transport aircraft, at the proper size level of aircraft, up to 60 seats, that will make economic and safety sense for this industry over the next 25 years. I am really impressed with the cooperation that has occurred between the commuter industry and the General Aviation Manufacturers Association and its members in working together to develop a common set of proposals for submission to FAA.

Sixth, there is a need for finetuning of Part 135. When these regulations were implemented, nobody said they were the final word in safety regulation. Perhaps in some areas we are going to see some need to look at Part 135 standards again. That finetuning doesn't need to happen now, however. We haven't had any real experience under the new Part 135 yet, but certainly by the end of this year we would recommend to FAA that some type of regulatory review occur.

Seventh, we will support these annual FAA safety symposiums. Perhaps next time around we will deal more with operational and maintenance issues and with the industry trends and changes, while again bringing FAA and industry people together.

As an aside, I have been to a lot of FAA regulatory reviews and usually the top management of FAA give their speeches and then walk out. I am very impressed that in this room I see virtually every single senior FAA manager related to safety sitting here listening to what we have to say. I also noted earlier today that virtually the entire membership of the National Transportation Safety Board was here to listen to the subjects that were discussed, and I think that is also important.

Finally, and this one is a tough issue because there is no quick fix for it, we see the need to establish an industry task

force to examine commuter pilot training and proficiency standards.

Some of the accidents that happened last year shouldn't have. We have to see what we can do in terms of both regulatory and operational programs to improve pilot proficiency. In particular, we want to work with FAA to define some simulation standards that achieve higher levels of proficiency for pilots without having severe economic impact.

I think many of you know that a simulator under FAA's definition might cost two, three, four million dollars. In fact, it can be more expensive than the airplane it replaces. That just doesn't make sense. If there is some way we can find a suitable definition for simulation standards, maybe like we are doing with Part 24 with respect to airworthiness, we can make increasing use of training devices in pilot proficiency that will help make our pilots more capable of performing their missions.

With that, I would like to thank all of you for listening and state we need all of your assistance this coming year to accomplish these objectives.

GENERAL DISCUSSION

Mr. Yupo Chan (Office of Technology Assessment, U.S. Congress) - The key issues discussed today seem to cover many areas. At the same time, however, we do not have a good discussion of avionics requirements not only for the terminal which was brought out earlier, but onboard avionics which are probably required as a result of the new DABS and other air traffic control systems. These should be discussed in some thoroughness, in my judgment; and I would think that an assessment of (1) the anticipated improvement in safety because of this new ATC equipment and (2) whether it is commensurate with the cost affordability of the new smaller carriers to purchase such onboard avionics would be a very good agenda item for tomorrow if there is time for it.

Mr. Luffsey - I appreciate the input. In large part, some of the future requirements in avionics will be addressed at the Consultative Planning Conference the FAA will hold on January 29 and 30 to discuss the FAA Response to New Engineering and Development Initiatives Recommendations.

Mr. Ransome - I think, frankly, that we have to tailor the avionics and instrumentation in airplanes to the mission you are trying to accomplish. In the particular case that we are involved in, we need substantially more sophistication than you would need for other missions. I think we have to be a little bit careful that we don't overburden the requirements there, and I think we can look at independent appraisals of these requirements.

In our particular operation, for example, between Philadelphia and Washington, we have a very sophisticated system in the airplane. It is there and can only be cost-justified for us to complete that mission not only successfully, but safely. I think that is a very interesting subject, but I think we are going to have to try to tailor the avionics to the particular mission that we are involved in.

Mr. Van Arsdale, Jr. - I would just like to read one thing into the record relative to Mr. Morse's explanation of the predicament down in Naples. This is an editorial in the January 14 morning edition of the Fort Myers "News Press." It is related to radar coverage in this same area and talks about Lee County Airport now served by six major carriers. It states:

> "On a typically busy day, 60 jet liners and around 500 private planes land and take off carrying hundreds of passengers. 'It's the busiest non-radar approach facility in the world,' one air traffic controller says.

"The FAA, aware of the increasingly crowded skies over Fort Myers, is doing nothing but conducting still another study of the delays in aircraft takeoffs and landings at Page Field. Local air traffic controllers say the study isn't necessary, that the need for radar now is obvious.

"The FAA, Congress, other bureaucratic agencies, and some individuals apparently haven't felt pressured enough by the possibility of a major air disaster here to make certain the airport has the proper air traffic control equipment and manpower, yet the conditions are ripe for disaster."

The same thing is true with respect to ILS's. You always wait until somebody augers in before you put in an ILS; and even today, if Congress were to get on the ball about putting in instrument landing systems, I think we are five to ten years away in most commuter airports from getting them installed due to the bureaucratic delays involved in installing an ILS.

We can go to Wilcox and buy an ILS for $250,000 and install it in three months. It is five years to work through the FAA, and it is just not right.

USER/GOVERNMENT PANEL DISCUSSION ON CONCERNS OF THE CONSUMER

INTRODUCTORY REMARKS

Moderator - Robert E. Whittington
Director, New England Region
Federal Aviation Administration

This morning's panel deals with the concerns of the consumer with respect to commuter aviation, its performance over the past year, and its prospects for satisfying the needs of the passenger inasmuch as deregulation of the major carriers has replaced the accustomed comforts of the modern jet aircraft and their background music and other amenities with the spartan interiors of prop-driven light planes.

Those of you who were here yesterday have already been exposed to considerable discussion on commuter safety issues, particularly in terms of safety in flight.

You have heard various views about the higher exposure to flying and weather that is inevitable in propeller-driven airplanes operating over short route segments; reliability of these planes from the maintenance standpoint; the experience level of the pilots; the adequacy of navigational aids at some of the smaller airports; and the threat of political or terrorist activity against the occupants of the larger planes coming into commuter service.

This morning, we will be getting into some other safety areas, including what happens to the commuter traveler on the ground. That is probably not too big a problem at Nantucket, Massachusetts, or similar small airports; but a great many of the commuter flights start in one of the major airports where interconnection to or from a large air carrier is part of the trip.

Now, at many of these locations, Boston included, the airport was not well prepared physically for the tremendous growth of commuters. As a consequence, gate and counter space arrangements are substantially less than ideal. The terminals are built for second-deck boarding; but for commuter passengers who must board and offload from the commuter flights at ground level, who can claim that it is equally safe for the passengers, particulary when it requires the elderly or handicapped traveler

to use a long, narrow flight of stairs to reach ground level and then climb up a set of unstable drop-door steps into a waiting aircraft? That is one example.

There are many other issues including flight delays, lost baggage, overflights, or diversions to other airports that require a great deal of interaction between the commuter operators, the airport proprietors, the Civil Aeronautics Board, state and local government units, and, of course, the FAA if we are to bring commuter airline travel to a really acceptable level of safety, comfort, convenience, and reliability.

Our panel this morning includes representatives of the cooperating parties just mentioned.

CONSUMER AND THE COMMUTER AIR CARRIER

Cornish F. Hitchcock
Aviation Consumer Action Project

One of the problems of being a speaker on the second day of a two-day symposium is that a lot of the things you wanted to say have already been said better than you could say them. Somehow you always speak as long as you would have if you had stuck to your prepared remarks.

Yesterday, Mr. Bond expressed startlement that I had had a few kind words for his speech when I ran into him in the hall afterwards; and I guess what was startling was, first of all, that is sort of a man-bites-dog story--consumer group said good thing about FAA Administrator. But to put it in context, here we are saying something good on Wednesday and on Tuesday the "Washington Star" had an article which mentioned a lawsuit we filed against the FAA for not acting fast enough on a rulemaking proceeding. To make matters worse, "The Star" quoted a letter from Jim King to Mr. Bond saying that the FAA should get cracking because the NTSB has been saying the same thing for a number of years.

You know, Mr. Bond said another thing yesterday which I thought about this morning as I was driving in from Washington, and that was the road to righteousness which we are supposed to be on with respect to commuter safety. Those words took a special meaning as I was driving past here out to Dulles to circle back because there are no exits on the Dulles access road; and I was wondering whether the road to righteousness is going to be like the Dulles access road--long and circuitous and no exits!

Actually, when you think about commuter air safety or air safety generally, there shouldn't be any exits, any shortcuts. If you had to ask travelers what is the one thing they are considering with respect to air travel, I think it would be safety. Low fares, good service--all that really comes in secondary to the ultimate question: Do you want to get there in one piece? And since this is a symposium on commuter safety, I would like to focus on that issue.

A lot has been said about the great opportunity that Congress gave the commuter industry to capitalize on the gains it had made in the years before passage of the Airline Deregulation Act of 1978. Congress really specified two goals to be pursued: first of all, safety.

Congress stated in the Act that the implementation of the Deregulation Act should result in no diminution of the high standard of safety in air transportation and spelled out safety as one of the two top-priority items that the Civil Aeronautics Board should consider with respect to implementing the Act.

Another important goal which we have to consider today is better service to small communities, and the Congress intended that the commuter airline industry play a major role here.

The exemption from certain CAB economic regulations was lifted for aircraft up to 60 seats. Commuters are now eligible for Federal loan guarantees for aircraft purchases and, of course, direct subsidies for providing otherwise uneconomic service.

The challenge before the Federal Government and the industry is really how to meet those twin goals. It is a subject that has concerned us for some time; and before taking a look at the future, I would like to take a look backwards.

Mr. Whittington discussed in his introductory remarks the perceptions of commuters by the public; and it is perhaps a bit presumptuous for me to be telling commuter operators the reactions they get. But there are sort of two strains that run through this subject.

When the Senate Commerce Committee considered the Deregulation Act, one example they cited of a town with successful commuter service was Salisbury, Maryland, where in 1969 there were 10,000 enplanements a year when Allegheny Airlines pulled out. Within a year, a commuter came in to replace it, and they were up to 50,000 within 5 years. I understand they are going to be up to 100,000 some time this year.

There was also an article I saw in "Commuter Air" magazine. The writer had done an informal poll and found that 60 percent of the travelers surveyed on commuters enjoyed the service better than the service that had existed before with the certificated carriers. Some of them found it was better because of more convenience, more flights. Some felt safer because they were closer to the ground, and so on. But I think there is another perception, and this is the perception of new service, which was summarized in the headline on air safety in "The Washington Monthly" magazine in December. After a lengthy article about air safety generally, there was an article about commuter safety under the headline "Travelers Advisory--The Commuters Are Coming." It warned that there was going to be more commuter travel and cited a series of accidents which are familiar to all of us having occurred over the last year.

I think that is the perception which, of course, many of you as commuter operators realize when you try to go into a community; and when I am reading your trade publications, it seems you are embarking on an ambitious program to convince the consumers there can be good service. But we still come back to the issue of commuter air safety. Is it safe enough? Is there an adequate level? Is the Congressional goal set out in 1978 being achieved?

Back in 1976 when FAA was considering Part 135 revisions--and this was four years after the 1972 en banc hearing of the National Transportation Safety Board--ACAP did an examination of the commuter air accidents from 1969 to 1974. Based on a variety of conservative assumptions, the commuter accident rate based on departures was still three times greater than the accident rate for trunks. But that really doesn't tell the full story, and this I want to emphasize strongly lest I be misunderstood.

There are many, many safe commuters. The problem was not so much with the large commuters. The accidents came with the smaller ones where the accident rate was considerably higher--not smaller generically, but there were some which seemed to have higher rates.

Even while the rate for large carriers tended to decline over the period surveyed, the smaller carrier rates still showed no sign of improvement through 1974.

I have looked at the figures that the National Transportation Safety Board has compiled from 1975 through 1979, and there still is a gap there.

Mr. Ekedahl talked yesterday about the fact that there is no really reliable figure and anyone can pick any figure; and that's right. But on the other hand, to say there is no reliable figure is an invitation to put off any kind of decisionmaking. You have to look at all the figures, and decisionmakers at the FAA and NTSB have to ask themselves, All right, these are the statistics, these are the limitations--where do we go from here?

I don't think you can say that because the statistics never will be perfect--there will be some soft data here--we shouldn't try to find some sort of way of improving the ratio.

What I thought was more significant, though, is not only looking at the facts of accidents, but looking at the causes of accidents. Mr. King in his speech before CAAA in October 1979 listed a series of factors that continually recur--deficient

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operations and maintenance, poor training programs, disregard for safety requirements, and inadequate FAA surveillance.

If you go back to the 1972 Air Taxi Study that the NTSB conducted, you see the same factors cropping up. Not only did they crop up in 1972 when the NTSB looked at accidents from 1966 to 1970, but the same recommendations on the same problems keep cropping up again and again in the 46 recommendations that the Safety Board made to the FAA between 1972 and 1979.

Again, statistics don't really tell the story. We all know there are some accidents which, I think, really play up in the public's mind concern about this safety.

On September 6, 1977, an Alaska Aeronautical Industries flight crashed into a mountain in Alaska killing 2 crew members and all 11 passengers. The NTSB investigation found that "the company's operational, maintenance, and training practices were inadequate. The FAA's surveillance was also inadequate."

On September 2, 1978, an Antilles Airboat crashed in the Virgin Islands between St. Croix and St. Thomas. The pilot and three of the ten passengers died. The Safety Board cited deficient FAA surveillance and enforcement as contributing to the accident, called the enforcement process ineffective, and cited apparent policy of continual compromise on civil penalties by the FAA.

On February 10, 1979, at Richland, Washington, an accident there killed 15 people and 2 crew members. The NTSB cited FAA certification and monitoring of flight crew and maintenance personnel ineffective and deficient.

Let me cite one more. There was a front-page article on October 29 in "The Washington Post" of a PRINAIR incident where the pilot realized shortly after takeoff that the plane was out of balance and shouted to some youngsters sitting behind him, "Want to see a takeoff? Run up here." They did, and he was able to land without any mishap; but the FAA noted in the grounding of PRINAIR that there were weight and loading violations not only this time but at other times.

Part 135, which was revised in 1978 after a number of years of rulemaking, is really designed to deal with a lot of these problems; but I think there is still room for improvement.

One area was cited yesterday, and that is flight duty time limitations, which is an issue that has been around for some time. It is a very emotional issue, a complex issue; but it is interesting to note that in 1972 at the last NTSB en banc hearing the FAA said it was considering rulemaking revisions in the

standard for commuter pilots. Here we are in 1980, eight years later, and the progress we made is that there is going to be another Notice of Proposed Rule Making out in 30 to 60 days. After eight years, we are still in rulemaking. There is no end in sight. It has been rolling on long enough, and there comes a time in regulatory proceedings when the agency has to do something one way or the other. But this one, I think from all indications, seems doomed to continual consideration for several more years.

Another consideration with respect to Part 135 is a series of programs to upgrade pilot training and proficiency--the maintenance and weight-and-balance problems--the problems that are continually cited in recent NTSB accident recommendations. From what I have read of the new FAA enforcement policy, it seems the FAA is quite properly putting emphasis on enforcement and monitoring the training on pilot knowledge of weight-and-balance procedures and aircraft performance data; reviewing the operators' weight-and-balance programs; monitoring the ground flight training programs; and doing a series of proficiency checks.

Finally, there is another issue that concerns us along the lines of the regulatory philosophy. In 1972, in its air taxi study, the NTSB did say that when you revise Part 135, what you should do is recognize that commuters are separate entities from the smaller air taxis.

The approach taken in Part 135, however, was to divide the rulemaking standards between aircraft with under ten seats and aircraft with ten seats and above. Having chosen that route, I think the burden is on the FAA enforcement policy to show that the decision was valid, that there is no diminution of safety by having fewer standards. They have said you can achieve just as high a level of safety with this lower level without imposing all the restrictions on pilots and on aircraft with under ten seats on the smaller carriers.

I think the proof of the pudding will be in enforcement. If we continue to see accidents in smaller carriers operating smaller aircraft, I think the burden will be on the FAA to explain why this approach was chosen.

In speaking of the FAA enforcement policy, I would like to say that as was indicated yesterday, ACAP welcomes what has been called the new get-tough approach by the FAA in the commuter area as demonstrated by the PRINAIR grounding and several other incidents or actions that the FAA has taken which Mr. Bond alluded to yesterday.

It is fine to have good regulations, a good Part 135--one which addresses the substantive issues; but the key to having

good regulations is having good enforcement of those regulations. There are positive signs on this front: the devotion of more manpower in the form of more inspectors that Congress has authorized for the FAA; we also support the proposals for legislation which have been put forth to impose stiffer maximum fines from $1,000 to $25,000 and the possibility of criminal sanctions for a knowing and willful violation of safety standards and safety statutes.

Let me speak for a moment about criminal sanctions, which have raised considerable concern. Again, any time you talk about criminal penalties, there is an emotional issue present; but to put things in context, it is interesting to look at what the Federal Aviation Act considers a crime and what it does not consider a crime. As it is now, violating safety regulations which can lead to a fatal accident is not a crime. The most you are subject to is the $1,000 civil fine.

What is a crime? Rebating--giving a discount below the posted price--that is a misdemeanor, and you can be fined $5,000. Price competition, in other words, is a crime under the Federal Aviation Act. Violating safety standards is not. That seems to me frankly a skewed sense of priorities, and it seems the proposed legislation in this area would sort of bring things more into line. A central issue in dealing with the new enforcement policy that we have--and this is one that cannot be resolved in the short term--is, Is this policy here to stay? Is the FAA going to be pursuing the get-tough policy six months from now? Two or three years down the road, are inspectors going to be shifted to other responsibilities? Will there be cutbacks in personnel?

These are the questions I think will always be present any time you have an enforcement policy. How well does it work? How well does it work long-term? I think it is something for the FAA to keep monitoring, for the Safety Board in its investigations and for the Congress to keep an eye on.

I talked a lot about regulation and enforcement, but that is only part of the picture. Having the best regulations in the world--which don't drive everybody out of business and which keep the planes flying safely--and having tough enforcement won't solve every problem and make commuter travel risk-free.

The problem has been mentioned about smaller, under-equipped airports. Sixty-six percent don't have ILS, and I agree entirely with everything that was said previously that it is an outrage to have this type of situation existing when there is over $3 billion in the Trust Fund.

Let me make a suggestion, if I may. You all operate in areas where there are airports that you believe are inadequate. This is the year in which Congress is going to be reauthorizing the Trust Fund for probably the next five years.

If you know where there are problems, go to the Congressmen who represent that area. Probably some of them are flying on your carrier now, and they weren't before. Let them know what the problems are because I think they are concerned. They and their constituents are flying into these airports. Let them know where the problems are so they will have an opportunity to improve the situation in their particular area, to make it safer, to get the Trust Fund down so that they don't have to raise taxes. In fact, the Trust Fund bill contemplates lowering the ticket tax in the future. It is something which you can do to promote safety and for which you, as commuter operators, can make a very effective case.

I would like to conclude by raising the question of where we go from here. Frankly, I am optimistic about the future and the ability of the commuter airlines to provide new service to a lot of new communities and for travelers in the future.

Unfortunately, the benefits of the new Part 135, which was a number of years in the making, have been delayed because it took the FAA until December of last year to recertify the carriers. Now the emphasis is properly on surveillance as carriers are moving into communities, and the accident rate stays high. I hope that the accident rate will drop off as things settle down, the transition moves into a steadier period, and service can improve accordingly.

The Airline Deregulation Act offers a tremendous opportunity for the industry, but it is one which could quickly end if Congressmen and the people they represent perceive that commuters are unsafe. After the San Diego and Chicago accidents, there is a great concern for air safety by the public. We still get calls from people who want to know whether or not it is safe to fly in a DC-10, and the accident was seven months ago.

Commuter air accidents have been in the news lately. People are concerned about travel and their safety; and if communities which are losing service with a DC-9 are getting a small plane which they regard as unsafe, there is going to be strong concern.

I know a carrier's safety reputation is very important to it. I noted in the paper several weeks ago that PSA, after being hit with a proposed $385,000 fine, said that the money wasn't as important to them as the public pronouncement by FAA

officials that its maintenance was unsafe. I am certain it is the concern that many of you share as well.

We at ACAP hope the commuter industry, under the increasingly watchful eye of FAA, will respond to the challenges, that the gap which now exists in safety between the commuter accident rate and the scheduled carrier accident record will be closed. This is an important issue. Commuter safety is everybody's business.

STATE GOVERNMENT VIEWPOINT

Karl R. Sattler
Administrator
Maryland State Aviation Administration

The Maryland State Aviation Administration is the owner/operator of Baltimore-Washington International Airport (BWI); and as the agency responsible for fostering aviation in Maryland, takes a particular interest in commuter operations and commuter airline safety.

Reflecting upon the activity of BWI and considering the number of frequencies of short operations by Henson Aviation, or all-cargo operations by Summit, or other operations by the many commuters serving BWI, I am reminded just how important commuter airlines are not only to BWI and to Maryland, but to the Nation's total air transportation system.

BWI's six passenger-carrying commuters--Henson, Air Virginia, Cumberland, New Haven, Ocean, and Altair (although Altair is no longer a true commuter) account for 6 percent of BWI's passenger traffic and more than a third of the total commercial operations logged by the 16 scheduled airlines.

Commuters, in providing both local origin/destination service and feed traffic to trunk carriers, are an invaluable asset to BWI and to the state's economy. Commuter airlines are particularly valuable to states attempting to retain existing industry or to attract new firms. Maryland is now engaged in an aggressive economic development program, and commuter airlines play an important support role in efforts to attract new business firms.

In making the decision to locate, many corporation heads consider a number of variables, including the availability of air service. Maryland's Department of Economic and Community Development, which is a cabinet-level agency charged with promotion of the state and the administration of programs designed to assist businesses to locate in Maryland, has made it very clear to me as the aviation administrator that corporations do indeed consider the availability of air service as one very vital point in their decisionmaking process.

I know it is not mere chance that four smaller Maryland communities regularly identified by businessmen as offering particularly attractive sites are also well served by commuter airlines.

Alternatively, the loss of air service can have a chilling effect on business already situated in a community and can undermine statewide efforts to create and maintain a favorable business climate.

Maryland recognized long before the President's October 24, 1978, signing of the Airline Deregulation Act that the commuters were going to play an increasingly important role in aviation systems. It was becoming clear that only commuters could adequately serve the smaller communities with the required frequency of service in an economically efficient manner.

It is important to remember that commuter airlines are not a hybrid spinoff industry created by the Deregulation Act. While new commuter airlines have initiated operations since 1978, and a new industry has indeed emerged, commuters were already performing a vital mission before the birth of deregulation.

The pre-deregulation environment also witnessed the gradual transformation of local service carriers like Allegheny, Southern, Mohawk, and Northeast into today's growing regional trunk airlines. Faced with rising fixed costs and growing opportunities in larger markets, these local service carriers were compelled to seek out longer, more efficient stage lengths. Increasing costs of jet fuel and avgas beginning in the mid-1970's only served to accelerate this trend.

As these former local service carriers evolved into regional trunks and today's truly national airlines such as USAir and Republic Airlines, commuters have been experiencing their own evolutionary change. One of the principal strengths of free market economy, that is, the ability of the entrepreneur to identify demand for service and satisfy that need, worked to the advantage of the smaller communities losing local service carriers and to the advantage of the commuter airlines.

This commuter airline evolution of the 1960's, leading to a wholesale transformation of the industry in the 1970's, culminated in 1978 with the true evolution--passage of the Deregulation Act.

We are all perhaps a little shell-shocked from numbers and statistics. In fact, I think I am more than a little shell-shocked from the statistics given yesterday. I will skip over these numbers; but these numbers are, I think, very indicative of success of the commuter airlines.

With success, however, came concern--concern over accelerating costs and availability of fuel; concern over the ability

to finance purchase of new equipment; concern over the need to upgrade smaller airports; concern over the ability to secure slots at larger airports; concern over the ability to meet new regulations and absorb increasing regulatory costs; concern over the challenge of forging a positive public image among air passengers formerly served by larger airlines and bigger equipment; and, of course, the all-important concern of commuter airline safety.

In focusing upon the issue of commuter safety, however, we should not forget that any decision affecting the commuter airlines necessarily impacts upon their ability to perform a vital service to smaller communities.

In fact, the Nation's air transportation system cannot operate effectively or efficiently without well-managed and safe commuter airlines. Commuters are necessary to make deregulation work.

It is not overstating the case to say that the discussions at this safety symposium concern not only the future of commuter airlines, but the future of all commercial aviation. When we discuss commuter airline safety, therefore, we are also discussing the continued vitality of our Nation's air transportation system.

States like Maryland recognize that commuter airlines are on the cutting edge of deregulation and the future of the industry. A great deal of money has been spent at BWI in an effort to provide commuters with the kind of first-class facility they deserve.

We have worked closely with commuters serving BWI to provide them with special facilities strategically located in the middle of our recently dedicated $70 million terminal complex. For many smaller communities, however, much work needs to be done to enhance the safe operation of commuters using their airports. Runway and taxiway improvements and the wider introduction of precision approach and landing aids are required to enhance the commuter operating environment. This aspect of commuter safety--improvement of airport physical plants--requires the coordinated effort of government at all levels, the airport owners/operators, and the commuter airlines.

Maryland, through its aviation grant program, has helped finance improvements at airports served by the state's commuter airlines.

Just as the State of Maryland is committed to aiding airport operators to improve their facilities and to providing commuters with a first-class facility at BWI, commuter operators

must continue to strive for excellence in the maintenance and operation of their equipment. Many states have expressed concerns about the fitness requirements for commuters selected as replacement carriers under deregulation.

A growing consensus is identifying financial stability as a key test of fitness. Financial stability goes hand in hand with a number of criteria, including strength of management, appropriateness of ground and flight equipment, and, as a logical corollary to all these considerations, an excellent safety record.

I know that some states have or are considering minimum capitalization requirements for commuter operators in an effort to help ensure that quality service is provided to local communities. If commuter airlines are to perform in a safe and economically efficient manner, safety regulations and operational reality must be viewed interdependently and not as competing objectives.

From the state perspective, determination of adequate service involves more than a calculation of the number of seats and frequency of service, but represents an expression of commuter operational and equipment safety. As a new generation of equipment is introduced into the commuter fleet and state and local governments work with airport operators and the FAA to upgrade smaller community air facilities, the safety record of commuter operators will only improve.

I trust this symposium will enhance understanding of commuter airline safety from a number of vantage points, including the state perspective. Commuter airline safety can only be promoted through a course of responsible corporate policy and reasonable Government regulation.

How we tackle the multiplicity of problems associated with the issue of commuter airline safety should tell us a lot about ourselves and our institutional arrangements.

I am confident that all parties are up to that challenge.

LOOKING OUT FOR THE CONSUMER IN DEREGULATION

William Boyd
Senior Analyst
Essential Air Services Division
Civil Aeronautics Board

I would like to start by saying that I don't want to go into a lot of things which have already been said about the expansion of the commuter industry. We all know what has happened in the last 15 months since deregulation--increased opportunities that are available to commuter carriers because of the deregulation of the airline industry with the larger equipment that can be used by commuter air carriers without certificate authority from the CAB and also the exodus of certificated carriers from a number of points throughout the Nation and replacement of essential air service at these communities by commuter air carriers.

The statutory framework, in addition to the benefits that it bestowed upon the commuter industry, has also placed certain responsibilities on air carriers; and it has also placed certain responsibilities on the CAB as the regulatory agency responsible for these carriers to ensure there is a certain quality of service available in the country.

Prior to the Deregulation Act, the CAB involvement with commuter carriers was, quite frankly, very limited. Commuter carriers, as I am sure many of you know, merely had to register with the Board as a commuter air carrier, provide us with a certificate of insurance liability policy, and provide us with certain traffic data on a quarterly basis indicating their operations. We did not look into financial fitness of the carriers except in those cases where there was a replacement arrangement such as in the Allegheny Commuter system, and the industry was basically out there on its own.

The Airline Deregulation Act has changed that substantially in two major ways. First of all, it has directed the CAB to find that all commuter air carriers are fit, willing, and able to perform air service; and the second area is that now we are relying on commuter air carriers to provide essential air services under the new program which was incorporated in the Deregulation Act.

The CAB has been working very diligently the last 15 months to fulfill these new responsibilities. The fitness of carriers

is important to the consumer, and it is important to the communities which they are now serving.

In July 1979, the Board issued a Notice of Proposed Rule Making dealing with the fitness of commuter carriers which, for the first time, would require them to file financial data with the Board. This will be used for evaluating the capability of the carriers to provide ongoing service and continue service without service interruptions which are very important to the communities which they are serving. This rulemaking has not been finalized yet, but the staff is in the process of evaluating the comments to it and will be issuing a final rule shortly.

The other area regarding fitness that the Board was directed to consider is safety, which is the major topic of this symposium and the one which, judging by this morning's comments, is the more important concern at this time.

The commuter airline industry is an important and growing segment of the air transportation network, and the safety of these carriers is of critical importance to everyone. However, under the Deregulation Act the responsibility for airline safety is placed with the Federal Aviation Administration, as I am sure you are all aware. Maintenance, training policies, aircraft equipment requirements, and operating procedures all come under the jurisdiction of the FAA; but the Board must consult with the FAA in accordance with the Act to ensure that these safety requirements are being met, and we are doing this now.

Whenever we rely on a commuter air carrier for essential air service, we contact the FAA here in Washinton and the regional offices out in the field to get a report on the commuter air carriers as to their compliance with the FAA regulations and safety requirements. The FAA is our source of information, and we rely on their opinion in this regard.

That brings me to the major area on which the Board is really working on its own, and that is the quality of air service in terms of reliability, which goes beyond the safety aspect, although they are interrelated obviously.

When a commuter carrier is replacing a certificated carrier at a point, we are concerned that the service will be afforded to the consumer in an ongoing and reliable fashion. We are required by the Act to see that there are no service disruptions. Therefore, we are concerned about the financial stability of the carrier. We are concerned about their fleet composition and whether or not they have backup equipment to provide service. We are concerned about their gasoline supplies

to make sure that they will not be cut off at any time. We are doing field audits in all of these regards, whenever we rely on a commuter carrier to replace a certificated carrier, to inspect the carrier to make sure that the requirements for reliable service are there.

We are also sending field auditors out to inspect the books--financial records of the carriers--to report to us before we take action to rely on a commuter carrier to provide essential air transportation.

All of these efforts are directed toward ensuring the stability of the carrier once it moves into a point where a certificated carrier is leaving.

In addition to this, we check with state aviation commissions and the attorney general offices of the state to see if there are any actions against carriers regarding fraud or consumer complaints before we rely on them for essential air service, and we also use our office of the Bureau of Consumer Protection to check their records on consumer complaints with respect to carriers.

I don't think I need to tell you that the role of the commuter air carrier is growing in the country, and the public perception of it is changing. It is very important that the industry, with the help of the Government, see that the public acceptance of the commuter air carrier operations grows as the carriers become more involved in the air transportation system.

It is directed toward this end that the CAB under its essential air service program is trying to ensure that the service being provided by commuter air carriers at certificated points meets the standards of service that the public expects of operations by Government-sanctioned air service.

We expect that we will work closely with the FAA. We have in the past. We will continue to do so in the future to ensure safety. We will work closely with the communities, with the state aviation officials, to ensure the quality of the service; and this, quite frankly, is the direction in which the Board is going with respect to the fitness of air carriers. I think this is a new area to us. It is a new area to the states, and I think undoubtedly there will be problems developing. But we are committed to a policy of overcoming these problems and working with everyone to see that the quality of the air service that we ensure communities meets the standards that the public expects.

In just a final comment I would like to say that it is a pleasure for the CAB to participate in this endeavor. We are in

close relationship with the FAA with regard to relying on them on safety aspects, although we recognize their preeminence in responsibility for that area.

Our major concern is, as I said, quality of service; and in this area we are taking steps to ensure that the commuter is providing the service that they are required by Congress to give.

PERSPECTIVES OF AN AIRPORT MANAGER

Timothy J. Campbell
Peninsula Airport Commission
Patrick Henry International Airport

The problem with being the last person on these panels is that you run the risk of everybody else taking all your good ideas. I hope that I will have a new thought or two for you.

Deregulation of the airline industry has resulted in a rapid shift of the local service and trunk carriers from small communities throughout the country. This withdrawal of service has provided commuter airlines with an unprecedented opportunity to serve as replacement carriers in these communities.

These opportunities have brought with them additional pressures and responsibilities. The urgency and rapidity with which commuter airlines are attempting to meet personnel, organizational, and equipment requirements might have caused some operators to lose sight of the first priority of all of us in the aviation industry, and that is safety.

The statistics seem to indicate a slightly worse safety record for commuter operators versus the large carriers. While it is true that statistics can be misleading and must be carefully scrutinized before conclusions are drawn, the data does seem to indicate there is a safety problem of some magnitude within the commuter industry when compared with large air carrier operations.

Obviously, there are many safety-conscious and safe commuter operators, and it is wrong to tar these operators with the same brush used on the less safe commuter operators. Unfortunately, the public is not in a position to differentiate between these safe and unsafe operators. The public perceives commuter airlines as being less safe than the large carriers. This public perception reduces the commuter airlines' ability to fulfill their role as replacement service in many small communities throughout the country. The solutions to this problem are many and varied. I am sure most, if not all, of the obvious ones have been suggested at this conference already or will be before the day is completed.

From the airport operator's perspective, it is imperative that commuter operators rededicate themselves to putting safety

above all else. There is a tradition in the aviation industry that extends from aircraft manufacturers to airline operators to airport operators to government agencies involved in the industry that safety is first and foremost.

We must all be constantly on guard against the temptation to cut corners or streamline operations at the expense of safety. A rededication to aviation safety is the first step leading to positive actions by all parties involved in the commuter airline segment of the aviation industry.

As an operator of a small airport at which we have commuter operations, and having worked at large airports where there were many commuter operations, I would offer several observations.

Pilot training and proficiency and proper operating procedures could dramatically reduce the number of accidents and incidents within the commuter airline industry. Based upon the statistical evidence I have seen, it appears that reducing pilot error and improving proficiency in prescribed procedures could dramatically reduce the accident rate.

Proper and frequent maintenance and following of maintenance procedures is also essential to improving safety and schedule reliability. Much of the commuter equipment operated today is older and might require more frequent maintenance than the new aircraft now being introduced into the market.

Sufficient management personnel and organizational control to properly monitor and administer the airline are also important. Much can be accomplished through having the proper organization and management personnel who can instill the importance of safety throughout the organization and ensure proper follow-up procedures and monitoring of work performed.

What can the Federal Government do to improve commuter airline safety? The Federal Government should provide additional funding to improve navigational aids, landing and approach aids, and other safety-related facilities at airports, particularly small airports.

The Federal Government should provide the necessary funding to enable large-hub airports to install commuter-designed runways, taxiways, and related approach and landing aids to allow commuter airline operations at large-hub airports to operate more or less separately from the larger air carrier procedures. This will not only improve safety at these large congested airports, but will also expand the capacity of these airports and allow commuter operators to continue to meet their obligations to smaller communities by providing feeder service to the large-hub airports and to other airlines at those airports.

Perhaps most importantly, the Federal Government should resist the temptation to overregulate the commuter airline industry as a result of these hearings or subsequent hearings.

It will be all too easy for the FAA to bend to public pressure and pressure from other Federal agencies and attempt to solve the commuter airline safety problem by imposing burdensome and unnecessary regulations.

The FAA must determine the most critical aspects of the problem and judiciously choose those regulations which can lead to improvement in commuter safety while not imposing such a burden that many operators are hamstrung in their efforts to provide much-needed service to smaller communities.

What can our airport operators do to rededicate themselves to safety for commuter airline operations? Airport operators can make sure their facilities are as safe as possible by using proper construction methods and techniques when the facilities are constructed and by providing proper and timely maintenance of important runway, taxiway, and ramp facilities.

Approach and landing aids which are controlled by the FAA should be monitored closely; and if problems arise, the airport operator should make sure that the appropriate department is contacted to advise them of the problems and to follow up to make sure those problems have been corrected.

The airport operators must make sure that landing aids under the control of airport management are also in proper working order and properly maintained. It is imperative that each of us representing various segments of the aviation industry find the time to put safety first. It will not be easy. Hence, solutions might increase costs of operations. The commuter operators must bear many of these costs and pass them on to the consumer. I believe that the consumer will pay these increased costs if safety of the commuter airlines can be demonstrably improved.

Federal Government intervention in the form of additional regulations must be carefully considered and designed to treat specific identifiable problems. If regulations are imposed in a haphazard fashion, the industry will be discouraged in its effort to respond to the growing need for commuter airline operations in many smaller communities throughout the country.

In my opinion, the key to improving the comomuter airline safety record is really quite simple. It requires an attitude that places safety first. This attitude is necessary for aircraft manufacturers, commuter airline operators, airport operators, and Government agencies involved in the industry.

GENERAL DISCUSSION

Mr. John Van Arsdale, Sr. - Mr. Hitchcock made a very good point with respect to the need for reliability of service by commuter air carriers and the necessary navigational aids to make this service reliable. He suggested that we go to the Hill and make sure that the funding is available. Mr. Bond touched on this yesterday.

I would like to make a point with the Federal Aviation Administration and the gentlemen here who make this policy that it makes no difference how badly we need the aid or how much money we have unless the FAA will take a look at its criteria and its standards for establishing ILS systems.

In other words, there should be more flexibility. I talked yesterday to the Director of the FAA Southern Region. He said, "We know you need an ILS at Naples, but you don't meet the criteria." Part of the reason we don't meet the criteria is that we don't shoot radar approaches in there because there is no radar, and it means a nonprecision, circling approach. It is a time-consuming thing.

There are situations in the country where there is a definite need for improved ILS systems. We are not getting them, and the bottleneck in many cases as far as the region is concerned is that the Washington offices have established criteria which are unrealistic.

If a certificated carrier comes in and gets more points than a local service carrier or a commuter airline, then the result is that the ILS can go into the small airport that is served by a certificated carrier but it can't go into the airport that is served by a commuter air carrier.

Naples, Florida, is a very specific example, and I would request that those responsible for FAA policy take a real good look at criteria and delegate the decision of whether an ILS should go into an airport or not, not at the Washington level, but in the field where these people work with us and know the problem and can do something about it.

Along this same line, I will compliment the FAA New England Regional Director by stating that somehow or other, he and his F&E representative were able to get an ILS system approved and put into the Provincetown Airport.

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We do have a lot of instrument approaches. Maybe that helps us, but we don't carry anywhere near the volume of traffic that we carry under very adverse conditions--night fog, midnight and ground fog, and a 23-mile away (Ft. Myers) VOR/DME approach to a 560-foot circling minimum. Those things are just not right, and the people in Washington have to recognize that and give more freedom to the people in the regions and at the local level to make the decisions as to whether we do or do not need an ILS. And then when we get the funding that Mr. Hitchcock suggests, it can be spent. If we get the funding and we don't meet the criteria, we can't have the ILS anyhow.

Mr. Whittington - I believe Mr. Van Arsdale really has a good point, and I did arrange for him to talk to our new Associate Administrator, Dr. Bill Wilkins, who informed me that he has his staff working on some new criteria. But I still believe that criteria only set a standard. You have to take a look at an individual situation; and if you can justify beyond the criteria, it certainly ought to be done. That is the role of the regional director, as I see it; and that is what we tried to do.

I would like to say it is very important, I think, that you get to know your regional people probably better than you do. You're used to the flight standards folks; but our airway facilities people--the ones who install and maintain this equipment--are the ones who handle this program, and you could get together with them and see what is downstream right now. Let me give you an example. Of the 39 commuter airports in the New England Region, 21 have at least one full ILS and 9 have partials; and of those 9, 8 are programmed for a full ILS. At the other nine airports, we have something already programmed. Programmed means you have the money. It is just a matter of receiving the equipment and installing it, provided the airport sponsor has met this obligation of proper site preparation. There is a lot in the FAA program which you might not have heard about. I would suggest you get a rundown from your FAA Region so that you are aware of what is going on this year and next year.

We just finished working up our 1982 budget, and we are getting feedback from the commuters on what they think we ought to have in there. I had all my people--the airway facilities people, the flight standards people, and so on--go back after the first briefing and take a look at every one of these commuter airports and try to give some priority there not only on navigational aids but also in our airport construction program. That is probably the way it is throughout the country. The more you find out about what is going on, I think the better you will like it and the more chance you will have to help that particular regional director make a positive program that really represents what you think the needs are.

Mr. Joseph Fugere - Something Mr. Hitchcock said, the new ADAP legislation will be coming up this year and obviously we are going to try to get more for commuter airline airports.

The last time around we did quite a bit of lobbying, and one of the reasons for the bill as it was passed is that it had provisions for $150 million a year for commuter airline airports. After both the House and the Senate passed the bill, differing versions, and it went to conference, that was reduced to $15 million.

I have just been playing with a little bit of arithmetic. The commuter industry carried 12 million passengers last year. If we assume that the average commuter fare is somewhere around $33 (I don't have an exact figure, but I think that is fairly close), it looks like the commuter revenue this past year alone is about $400 million; and 8 percent of that is $31,680,000. So something is obviously wrong when the commuters are putting in $31 million and they are only getting $15 million back. Then we sit here and get criticized because we are not safe.

Even if we campaign and lobby hard, what is to prevent the final version of the ADAP legislation from being less than what we have tried to get in there? I don't think we should take the rap for it when it is all over.

Mr. Hitchcock - I think that is a very good statement. I think one difference now as opposed to several years ago is that there is $3 billion uncommitted surplus in the Trust Fund, and a lot of Congressmen realize that that money really has to be spent.

In the last Congress there was a proposal put forward by the air carriers to reduce the tax by two percent and give that money directly to the air carriers so they could meet FAR Part 36 standards. That didn't make it through the Congress. I think that sobered up a lot of people.

This money is sitting there, has been paid for by people for safety, and has to be spent. I think that might be one big difference between this time and the last time around.

Another thing is that there is a lot more commuter service being provided; and again, as I said, if you talk to your Congressman this time (he has a lot more commuter service in his district probably) and say this is the situation, you might find a more favorable response.

It is interesting in Congressional hearings how many Congressmen say, How does this affect my district? There was

one last month on computer outages when the members of the Ways and Means Committee were asking questions of Deputy Administrator Taylor: What is the situation in my district? And, quite frankly, if a Congressman asks if the eligibility criteria allow airports in his district to get more money and to get these ILS's in there, I think he will be hoping for a "yes" answer and will be willing to take steps to get one.

I think the situation is changed because of the tremendous surplus that exists now which wasn't there then and because of the realization and the perception that commuters are booming. It is in the news, quite frankly; Congressmen are riding commuters more, and they and their constituents are concerned.

Mr. Fugere - If my memory serves me correctly, there was a surplus in the Trust Fund at the time of the last ADAP bill that was somewhere between $1.5 billion and $2 billion. It is only double, but just the interest on what was in the Trust Fund at that time would have been enough to take care of the commuters.

Mr. Hitchcock - As I understand it, the surplus has been growing since the 1972 amendments. I think the difference is that after the attempt by the air carriers to, in effect, raid the Trust Fund in 1978 for the FAR Part 36 compliance, I think that did make people realize, as Congressman Conable said, when you have this much money sitting there like a plum ripe for the picking, you have to do something to spend it.

It means pounding the corridors, talking to your Congressman back home; that is why it is different this time.

Written Question - Concerning what the FAA considers a crime, isn't it true that the regulation governing fare rebates is an economic regulation of the CAB and not a safety regulation of the FAA? In other words, wasn't this an inadvertent slip by you in a peanuts to billion comparison?

Mr. Hitchcock - The point I was making was, What is it that the Congress considers a crime? Congress writes the laws and then charges enforcement to particular agencies. It is not a criticism of the FAA so much as of the way the Congress wrote that particular statute--the Federal Aviation Act.

That is the objection, regardless of who is responsible for the economic or safety regulation.

Mr. Alan Stephen - I have a question for the CAB representative. We are getting very close to a final rule. I am just curious. Under what circumstances do you believe a commuter airline would be declared unfit; and when that happens, what

happens to the airline operation? Does it cease, and how long would it have to cease? What are the economic implications of that?

Mr. Boyd - The Act under Section 419 requires the Board not to allow a commuter air carrier to operate unless it finds it fit. If, is a result of the final rule and the Board's implementation of that rule, it were to find an air carrier unfit because of financial reasons, it could not be allowed to operate until that was rectified.

I believe, and I hope I am not speaking out of turn here, but I believe that the rule is going to be somewhat different than the original proposal that was issued in July. So it is a little bit premature for me to try to speculate on just what it will contain and how it will be implemented at this time.

The staff is working on that rule at this time, and I do expect it to be out before too long; but I can't go into any more detail at this time.

Ms. Joanne W. Young (Zuckert, Scoutt and Rasenberger) - From an airport managing standpoint, how helpful do you find the departing certificated carriers to be in helping a commuter get set up as an essential air service carrier? And what recommendations would you have to commuter operators as to how they might better avail themselves of the assistance a certificated carrier could give them?

Mr. Campbell - In our particular situation at Newport News, we have lost three certificated carriers, two since deregulation was passed. It is a little bit muddy because in our situation we had Allegheny Airlines and we found replacement service from an Allegheny Commuter. So in that case obviously the departing incumbent carrier was helpful to the Allegheny Commuter since it was in its own best interests.

I think generally throughout the country in talking with other airport operators who have experienced the withdrawal of certificated service, however, the rule is that the certificated carrier is not very helpful at all unless he is pressured by the CAB or community publicity or something.

Certificated carriers are not going to help commuter operators unless they are forced to do so, in my opinion. In terms of easing the transition, I think that one of the things--and this is something that we have put forth to Congress for legislation--is to set up a longer transition period from the time the certificated carrier announces that it wishes to withdraw from a market to the time that the Board officially allows it to withdraw.

We think 98 days is a ridiculously short period of time to allow any replacement carrier to gear up, find the equipment and personnel, and get organized to come in and replace a certificated carrier. We think 12 to 18 months might be a more reasonable period of time.

If a replacement carrier can be found and he is set up and has the equipment to do the job, then he should be allowed to come in as the incumbent leaves. But until there is that proper phasing in of the service, I think you are going to experience severe disruptions in air service similar to the Bakersfield example; and there are other examples around the country where the incumbent carriers are withdrawing on 90-day notice. The Board is helpful in some instances, but not in every instance. I think that that could be improved.

PANEL DISCUSSION ON TRAINING AND PROFICIENCY ISSUES IN COMMUTER AIR CARRIER OPERATIONS

INTRODUCTORY REMARKS

Moderator - Christian B. Walk, Jr.
Director, Northwest Region
Federal Aviation Administration

As I have sat and listened to the various comments at this symposium, one thing that has become very clear to me is that the level of safety in the commuter airline industry is unacceptable. We've heard this from Administrator Bond and from Chairman King, and there are indications that Congress, consumer groups, and, to some degree, the general public feel that way.

I think we have problems, and I am convinced that we had better put forth a maximum effort to correct those problems before somebody else comes in and tries to solve them for us. Because I am a great believer in that if you have a problem, you had better try to solve it yourself rather than wait for somebody else to solve it, I am firmly convinced that the commuter operators of this country are the one group which is going to achieve the level of safety that we all are striving for.

I was tremendously impressed yesterday with the industry presentations. There were a couple of phrases used that got my attention: One was the issue of morality; the other one was operational integrity--a bold and powerful word.

Operational integrity--Is such a lofty goal achievable? I think so. It might be a good idea for the commuter industry to adopt the internal slogan "operational integrity in 1980." If it would become the unquestionable company policy that you will not tolerate compromising safety to any degree whatsover, and if that is relayed down through the organization from the top to the most junior employee, I think we would make great strides in achieving safety. But words and slogans certainly will not do it alone.

In achieving a high level of operational safety, I have always felt that there are two key elements in the keystone. One is attitude and one is training.

If one has an attitude that consistently looks for loopholes in the regulations, cuts corners, encourages breaking

minimums, doesn't take prompt corrective action for overloading aircraft, or tries to get away with anything you can (and it only takes a small percentage of people who might do that), it will certainly preclude you from achieving those safety goals that are really achievable.

Training--I believe training, and I think you would agree with me, is the very foundation of achieving safety in operations. And I mean training for pilots, flight attendants, maintenance personnel, and all those other folks in your organization who are so vital to achieving safety.

I think we might remember what was said yesterday. Regulations set minimum standards, and all the regulations in the world will not ensure safety. However, operational integrity and good, sound, solid training programs, in my judgment, will achieve that high level of safety that is so important.

I don't think the activity in the commuter industry is all bad. When I sat here and heard yesterday that you have gone from the 6 or 7 million passengers of a few years ago up to 12 million in 1979, that indicated to me that there is a hell of a lot of confidence in the commuter industry around this country. You are standing on the threshold of a great program that is going to be challenging--new equipment; and the more I talk about it, I come right back to how important training is. And that is what we are going to talk about in this panel.

CREW TRAINING IN COMMUTER OPERATIONS

Abe Vanderschraaf
Manager, Pilot Training and Operations
Fokker Aircraft

The title of my address might lead you to assume that there ought to be a type of crew training which is applicable specifically to commuter operations. Personally, I do not think this assumption is valid. There ought to be no basic difference in proficiency level between a commuter crew operating a revenue flight and the crew of an air carrier operating an intercontinental flight. Granted, there are differences in airplane systems and equipment, but this is of relatively minor significance. The size of the airplane certainly has very little to do with it. I can assure you from personal experience that handling a multiengined jet of a hundred thousand pounds gross weight or more is, in itself, no more difficult than a twin of one-tenth this weight--provided a comparable amount of training is taken into account.

When discussing training of air crew to a required level of proficiency, it must first of all be clearly defined what exactly is meant by proficiency. Many people tend to define proficiency as the degree to which a pilot is able to control the airplane. In other words, the better a pilot handles the airplane, the more proficient he is. Well, I think that is only part of the story. The opposite, by the way, also applies--a qualified test pilot on a certain type of airplane is not necessarily as proficient as a line pilot because there are different things that a test pilot does as compared to what a line captain does.

The pilot's job in air carrier and commuter-type operations is twofold. He can be considered a system operator, in that he operates his equipment with learned skills and according to given sets of rules. But he is also a supervisor, because he has to monitor a number of things:

- the airplane with its systems
- his own actions
- the actions of his fellow crew member(s), be they lower or higher-ranking
- the environment--air traffic control, weather, etc.

When talking about proficiency, we should define the areas in which a crew ought to be proficient. These areas are:

- airplane handling
- knowledge of systems, operating procedures, and performance
- weight and balance
- route proficiency
- proficiency as a crew member

The sort of training we usually provide and recommend for our operations is as follows:

Knowledge of systems, operating procedures, and performance

The major part of this training is done during a ground instruction course, which makes use of a number of audio/visual aids, systems mockups, etc. In general, about 60 to 120 hours of instruction are required to train to the required level of proficiency, depending on entry level (previous background, experience, etc.). This usually takes two to four weeks.

Airplane handling

The most efficient single training tool available today is without a doubt a modern flight simulator, complete with multi-axis motion system and computer-generated visual system. The value of this tool cannot be overemphasized. Energy conservation is one thing; financial advantage, another; environmental friendliness, a third. But none is as significant as the fact that a flight simulator can produce a much better-trained crew than would be possible if only actual flying training were used.

There are several good reasons for this fact. In a simulator, system failures can be practiced which are impractical or even impossible to simulate on a real airplane. For example, our F28 Simulator is equipped with a smoke generator which, at the instructor's discretion, can introduce actual smoke contamination at various selected positions in the cockpit to simulate either an electrical fire and air conditioning smoke or engine malfunction. The crew under training will have to act all the the way up to and including the use of oxygen masks, lest they suffocate. Engine failures are much more realistic in the simulator than when simulated in real flight. Also, weather phenomena can be realistically simulated, at will, including items

like turbulence, strong crosswinds, windshear, and even hydroplaning.

Training items like accelerate-stop maneuvers, which are highly critical in real life, can be practiced under circumstances which will cause the same type of mental stress as during a real incident.

The usual transition time in a modern flight simulator takes about 30 hours per crew, depending on entry level. It is followed by a so-called confidence flight in the real airplane and a check ride with an inspector/check airman.

Route proficiency

This could be defined as "attaining proficiency in the actual environment." The purpose is to thoroughly acquaint the crew with the specific routes in which they are to operate. It includes all the physical features of the airports, navigational aids and hazards, weather (both en route and terminal), and air traffic control. Some of the route training can be done on the simulator; some of it should be done on the actual routes.

As a rule of thumb, we usually recommend anywhere between 25 and 150 hours of route training.

Training as a member of a crew

This philosophy is integrated into the areas covered previously. For instance, we do not usually train a single pilot on a flight simulator, but we train a crew, i.e., a captain and a first officer. Route training is also done in a crew concept. One of the most important items in a crew concept is standardization. The use of standard operating procedures, checklists, standard callouts and so on and so forth is essential to safe operation. It is necessary for any qualified captain in the fleet to be able to operate with any qualified first officer. This is possible only through proper standardization.

Entry level

One aspect of crew training which has been mentioned before is entry level. Education, intelligence, previous experience, and background do have a significant influence on the amount of training necessary to reach proficiency. This is one area where commuters are generally at a disadvantage to large carriers; the entry levels of individual commuter pilots vary widely. The training program will have to cater to this.

As an example, our ground training classes might vary between 50 and 150 hours of instruction, depending on entry

level. A similarly large scatter in training time required on the simulator and in actual flying is possible.

Recurrent training

Finally, having trained the crews to an acceptable minimum level of proficiency in the fields discussed, there is the question of how to keep them proficient. We usually recommend a recurrent training program twice yearly. Most or all of it can usually be done on the simulator, together with suitable academic refresher courses.

In addition to this regular training, some sort of contact with the manufacturer is necessary to help keep crews up-to-date with latest operating practices, reviews of accidents and incidents, etc. Most manufacturers, including ourselves, issue safety bulletins for this purpose. Additionally, we have one of our training captains visit each operator once a year, sometimes more often if necessary, to keep tab on how things are going.

COMMUTER AIR CARRIER TRAINING - A KEY ELEMENT IN OPERATIONAL RISK MANAGEMENT

G. E. Schlesinger
President
International Learning Systems, Inc.

It is a pleasure to be able to address this symposium on a subject which is as important as any other presented thus far. That is the subject of aircrew training.

Quite simply, one can look at risk management from a training viewpoint as the bringing together of the right combination of economics, high-level management involvement, professionally prepared and conducted training sessions, and a very high degree of standardization. These elements, properly managed, are the basis for professional training and therefore are an important part of commuter air carrier safety.

Let us review the history of aircrew training and some of the elements that have made training difficult in the past for the air taxi/commercial operator.

1. The industry has been highly fragmented, impeding the easy exchange of training materials and ideas among operators.

2. Commuter air carriers have historically operated many different types or classes of aircraft. This fact means that several different training programs might be needed by one operator to adequately fulfill his training requirements.

3. Personnel turnover has made it difficult for operators to retain crews long enough to recoup their investment in training.

4. Training has been perceived as expensive since it is an indirect cost of operation with no discernible profit contribution.

Although I am sure that each of you could take a quick look back at your own operating history and expand on the reasons why training has been hard to come by, let's forget the past and look at today's need!

The industry needs training and the training programs must be good--not merely adequate. When I talk about good training,

I refer to educationally based programs that have been designed and developed to meet specific goals or objectives.

The proven steps that are needed to make sure one develops more than just an adequate training program are:

Step 1 - Analysis of Training Requirements: We must know what the requirements are which are to be met. This should include not only regulatory criteria, but also such things as operating in cold/hot weather, crew coordination, leadership in the cockpit, etc.

Step 2 - Identification of Course Objectives: What specific items in the training requirements do we want to make sure the student knows?

Step 3 - Develop Criterion Test: This is simply the development of the testing or measurement means that you wish to use to ensure that the objectives in Step 2 have been met.

Step 4 - Organize and Prepare the Course Plan: Gather and assemble the information, validate it, and structure it into a learning sequence, etc.

Step 5 - Select Media: A good training program will have different learning resources or media. These resources might include: groundschool, audio visual, cockpit procedures, and flight training.

Having looked at the steps necessary to design and develop a training program, let's look at other elements that are important and necessary to make training not only good but effective. Remember, in many instances the effectiveness of training is a "state of mind"--more simply put, how an individual perceives training.

First, a training program needs a high degree of management awareness and support to be effective. Company executives must therefore be involved in training and training management for that "state of mind" to wend its way to the lowest level of each organization.

Second, the industry needs to be economically stable. The ability to plan and forecast economic events plays a large part in the training equation. The ability of the operator to plan and forecast accurately the results of his operation will, without question, ultimately allow more resources to be applied to training. A natural tendency in an unstable or unpredictable economic environment is to hold the line on indirect costs, and that includes training.

Third, a training program or system needs to be responsive to the student and his needs. Individuals learn at different rates of speed and comprehension. Recent educational studies have concluded that self-paced, individualized instruction might be the wave of the future as opposed to strictly classroom-oriented training. Further, a media mix of learning resources is important because some people learn better by seeing and hearing, while some do better by reading text materials only.

Fourth, a program must be readily adaptable to change. Keeping training materials current is an item better not left as "an additional duty" for someone. The timely professional dissemination of new or changed material sometimes can be critical to safety.

Finally, a good training program must be continuous and have a high degree of standardization. As shown in the curve of forgetting presented as Figure 1, within the first 30 days of acquiring a piece or element of knowledge, 78 percent of such knowledge is lost if not immediately used.

From this curve, it is evident that if no training was accomplished for 180 days after initial or transition training, 78 percent of the knowledge gained during initial training and not used day-to-day would be lost.

Figure 2 gives you an appreciation of the effects of a continuous training program. Anyone would agree this is a far better situation than before.

A well-managed training program which focuses on individual needs, which are met by continuous short exposures to various learning resources, will produce a higher level of retained knowledge.

What does the future hold? Our crystal ball suggests several elements which would enhance the upgrading of training that I believe is currently underway. First, improve the economic stability of the industry. We have already discussed the important role that a stable, economically sound industry plays in the enhancement of training. Second, apply the latest developments in educational technology to deliver and manage the training.

International Learning Systems is presently completing a Computer-Based Training (CBT) system for the FAA. This system is comprised of audio-visual materials, student materials and workbooks, use of the aircraft flight manual, and simulation and will allow FAA's airways check pilots to receive initial and recurrent training on the Sabreliner aircraft at 10 different locations on a 24-hour-a-day, 7-day-a-week basis.

So what is Computer-Based Training or CBT? CBT is basically two types of training: CAI (Computer-Assisted Instruction), which teaches the individual, and CMI (Computer-Managed Instruction), which manages, tests, and prepares training prescriptions for individuals.

Some of the applications or benefits Computer-Based Training has for your operation are:

- Availability on demand
- Reduced student time
- Probability of more students attaining objectives
- Consistent presentation
- Up-to-date presentation
- Employee availability during training
- Reduced travel time and expense
- Individualized pace and content
- Peak loads accommodated
- Reduced on-the-job training (OJT)
- Improved backup training
- Reduced overtime
- Improved control and recordkeeping

Further, the benefits for your training manager or your training department might include:

- Reduced instructor time
- Simplified course maintenance
- Improved quality through response monitoring
- Reduced classroom space requirements
- Reduced quiz-grading time
- Improved control and recordkeeping
- Simplified input to personnel records

Before addressing the costs of CBT, let's consider what can be done to ensure that good training is not just the province of the "big" operators, but that such training is reasonably available to the smaller operator, one who is normally faced with the greatest problem in meeting the regulatory requirements and normally has the smallest margin of gross profit available for investment in compliance with the regulations.

One possible answer might be group/association/government or manufacturer initial funding for these types of training materials. As we discussed, the creation of good training materials is expensive. Therefore, the ability to fund such costs on a collective basis will enhance and speed the delivery of such materials to the industry. I believe a computer-based system such as the one described today, on each of the major commuter aircraft types, would be cost-effective if spread over the industry versus being cost-prohibitive for each individual operator.

In summary, as the commuter air carriers play an ever-expanding and important role in our national air transportation system, it is imperative that all concerned individuals and organizations address the training needs of today and tomorrow. It will only be by such a cooperative effort that training for the commuter air carriers will excell and play an ever-increasing role in the safety of flight. We in the training industry are prepared to come forth with the technical and educational tools necessary to support you in obtaining this objective.

The Curve of Forgetting

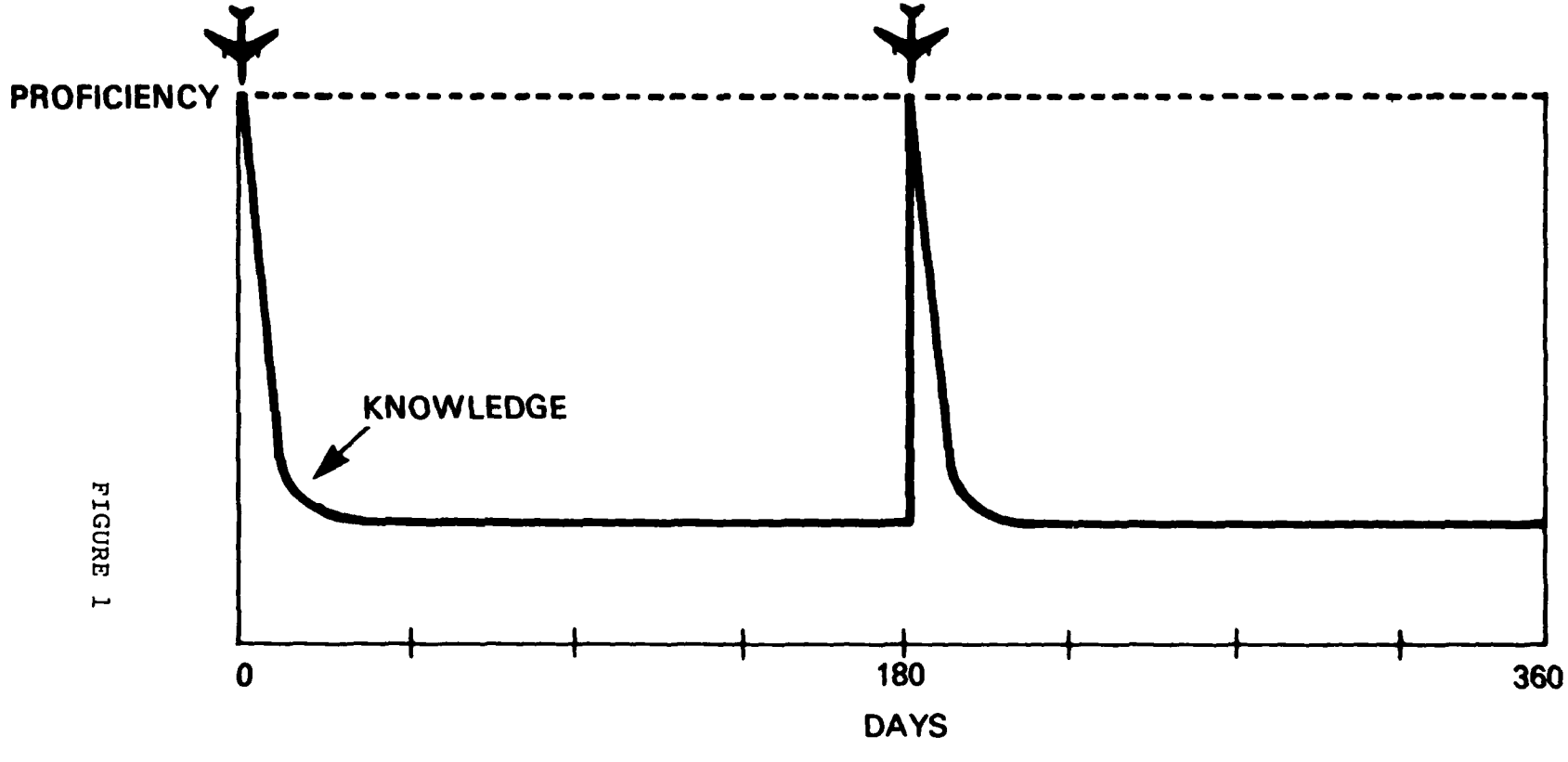

FIGURE 1

Continuous Training Curve

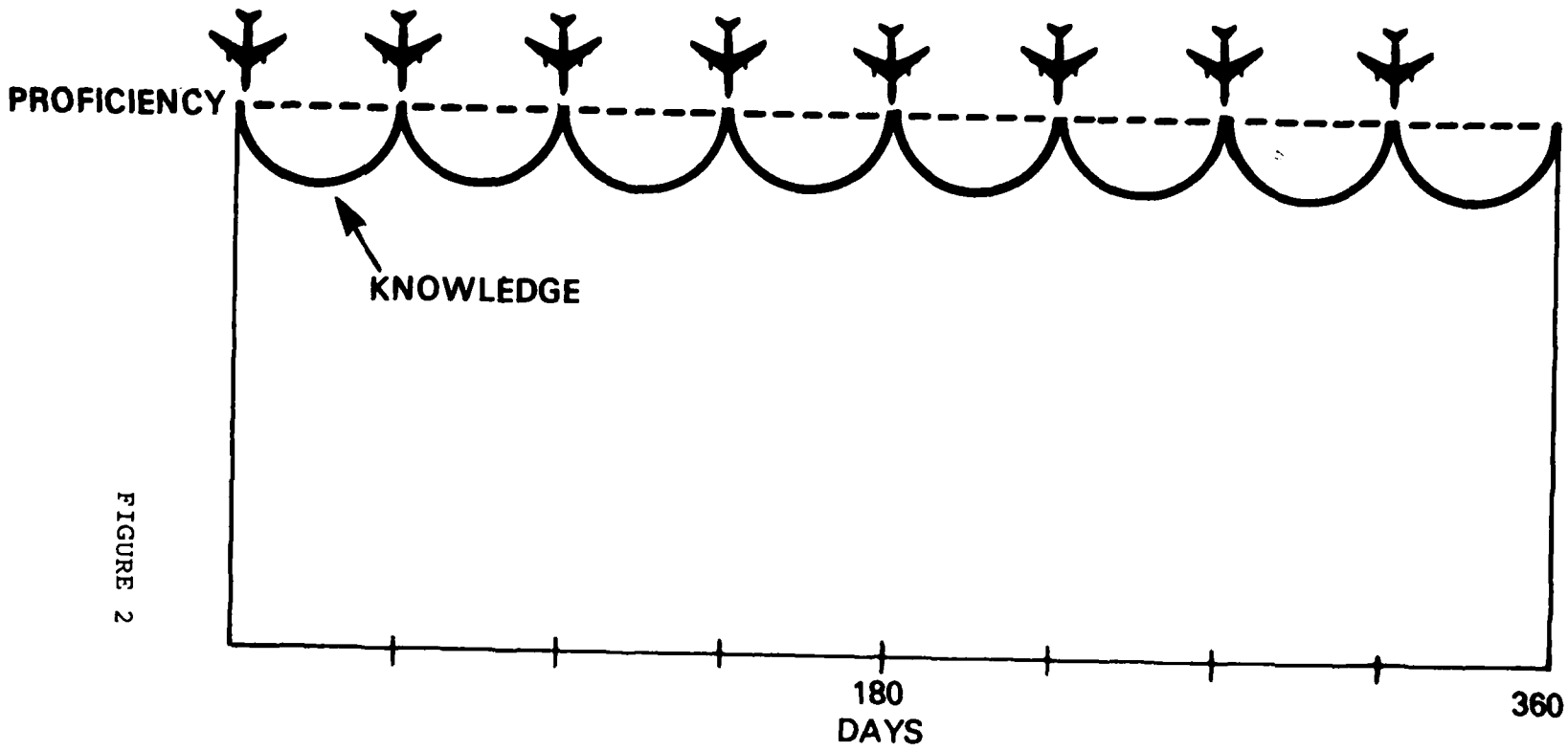

FIGURE 2

USE OF SIMULATORS IN TRAINING PROGRAMS

Thomas L. Oneto
Vice President, Operations
National Air Transportation Association

In listening to the descriptions of simulators in use today with their six-axis motion and computer-generated visual systems, it is hard to imagine that the modern-day simulator began as a device developed in the basement of an organ factory.

Ed Link utilized the facilities of his father's organ factory to develop a device that was powered by an electric motor and bellows in series to create either suction or pressure to activate the various movements of the device.

The motor and bellows provided the force to tip and turn the device as the stick and rudders were moved. Thus, a student could become accustomed to a conventional stick and rudder bar and to what generally happens in an airplane as the controls are moved.

The whole unit sat on a universal joint and was moved by a series of bellows and motors that would gasp and wheeze as it whirled around to give the effect of an airplane in motion. After about a year and a half of development, a patent was granted on April 14, 1929, to Ed Link, signifying that the age of simulation was underway.

Interestingly, Ed's first customers were amusement parks. As a novel, profitable amusement feature, several veteran amusement park operators were interested in the device, which they termed a "pilot maker." Therefore, a mechanism was installed in the trainer that permitted it to accept coins. Thus, the "pilot maker" joined the coin-operated hobbyhorses that still abound in penny arcades and five-and-dime stores.

Initially, the training device was accepted as an aviation novelty or toy. Ed was so angry he decided to start his own school and use the device as the foundation of a training program. So he went back to his dad's organ factory, into the basement, and established a flying school. He called it the Link Flying School and guaranteed that for $85 you could learn to fly. This worked out roughly to $35 for ground school--all given in the trainer--and 2 hours of flight time at $25 per hour. The plan taught students to solo which, without the use

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of the trainer, might have taken as many as 15 or more hours. Unfortunately, the depression occurred at this point, and the Link Organ Factory was closed, leaving the trainer and the Link Flying School without a home.

By 1930, 50 pilot makers had been sold for use in amusement parks, but only 3 had been bought by aviation interests. It wasn't until June 23, 1934, that the Army Air Corps received its first of six trainers. From the middle of the very late 1930's, the popularity and utilization of the device increased considerably.

For the first time, the devices began to duplicate certain characteristics of the airplane beyond elementary turning, banking, and descending. A bank now resulted in a turn; the rudder in turn was able to bank the device. You experienced nose-heaviness during the turn, and the engine instruments reflected air-density changes while climbing or descending.

By 1940, the war had started in Europe, and U.S. involvement seemed, at worst, a remote possibility. Though military expenditures were still small, there was some effort to increase the size and capability of our Air Corps. It was at this point that the simulators proved their value.

The manufacturing and purchase of Link trainers continued throughout the war. After the war, it became apparent that there would have to be trainers built reflecting the peculiarities of particular airplanes and their many flight characteristics.

By the end of World War II, trainer production had reached an all-time high. The blue box basic instrument trainers were leaving the assembly line at the rate of one every 45 minutes. With the welcome peace came a swift and sudden cancellation of future orders. The assembly line shut down, and the civilian market for trainers was glutted with military surplus.

At this time, Ed Link's first electronic simulator was developed. Also at this time, the development of the first so-called operational flight trainers in the form of the F8/FN and SNJ trainers were built. These duplicated the cockpits of those airplanes. The savings in lives, money, and manhours were duly noted in a report to the Subcommittee of the Committee on Appropriations of the U.S. House of Representatives which was quite supportive of future funding requests.

Developed concurrently with the military trainers were advanced training devices for the airlines. Initially, the airlines used modified military trainers for their purposes. The

first airline to place an order for a full simulator was Pan American, and it was manufactured by Curtiss-Wright. Competition was quite keen between Curtiss-Wright and Link during the next decade and resulted in the production of some rather sophisticated devices.

In September 1958, Link delivered to United Airlines and Douglas simultaneously a DC-8 simulator--the first true commercial simulator. The cockpit was the exact replica of the actual aircraft. Engine sounds were provided, and controls responded to the various conditions of takeoff, climb, and descent.

Another major innovation of the DC-8 simulator was the Link visual system that provided a remarkably realistic visual presentation of an airport runway and surrounding terrain during takeoffs and landings.

A replica of the selected airport complete with instrument runways and taxi strips was fixed vertically on the wall, and it was faced by a television camera capable of moving parallel and at right angles to the runway. Its focus was controlled via a computer by the pilot's stick movements. The projector was mounted above the trainer cockpit and projected a picture that had been taken by the TV camera onto a 15-foot wide screen ahead of the cockpit windows.

The light intensity of the screen picture could be varied to simulate visibility deterioration. This visual realism, coupled with complete instrument simulation and an effective cockpit motion system, provided the highest degree of total training ever incorporated into a flight simulator at that time.

However, there were also lessons to be learned. Some simulators were developed while the airplane was still on the drawing board, the object being that the crews would be trained prior to the delivery of the airplane. However, variations in design were introduced before the airplane was delivered, and this produced many problems regarding the simulator's capability of reproducing the aircraft's characteristics with a high degree of fidelity.

Also, the simulator manufacturers would beware of signing contracts with different airlines for supposedly the same airplane. Often the simulator turned out to be quite different because the airline would specify different interior equipment.

They also discovered that one thing to be avoided was the selling of a simulator that incorporated unnecessary and expensive features. Since strong economic benefit had to be shown

before an order would be obtained, the manufacturer had to demonstrate that simulators would make it easier to attain and retain higher levels of pilot skill than were possible by training in the aircraft.

It was impractical for the airlines to purchase an adequate number of simulators to accommodate the large number of crew members to be trained. This resulted in the demand for the incorporation in the program of part-task trainers such as navigational and cockpit procedural trainers

In reviewing the lessons learned by the airlines, we can summarize them by simply stating that the devices should be tailored to the needs and financial capabilities of the customer. Never sell a customer a product or feature they can't use, and the device must produce a high level of training before the customer would consider the economic advantages of the device over the airplane.

Considering the present state-of-the-art, it is appropriate at this time to define the differences between a flight simulator and a training device.

An aircraft flight simulator may be defined as a device which closely duplicates a specific aircraft. The cockpit would represent a full-scale mockup of the aircraft; and where control and switch movement is involved, the direction and movement would be identical to that in the aircraft.

Aerodynamic changes, relevant instrument indications, control forces, and communication and navigation equipment would correspond to that installed in the aircraft. Approvals of aircraft simulators would be in accordance with Advisory Circular AC-121-14B.

A definition of a training device is really quite simple, namely, a device other than a flight simulator. It may be thought of as a device that provides a realistic simulation of a portion of the aircraft's functions, systems, or flight environment.

In general, the closer a training device represents a specific aircraft, the greater the transfer of learning. Consequently, the degree of approval will be dependent upon a demonstration that the device satisfactorily performs the functions for which approval is sought.

Guidelines for training device approval can be found in Appendix 3 of AC-135-3B. FAR Part 135.321 describes requirements for establishing and maintaining an approved training

program. It provides for the approval and use of aircraft simulators and other training devices in the conduct of that program.

It is important that we keep this in mind because the approval of the training device is determined by the manner in which it is incorporated in the operator's training program. Therefore, you would want to read and comply with the requirements of 135.327, entitled "Training Programs Curriculum." In essence, that small section tells it all. What we have to do now is to tie in the training device with the requirements of that section. But before that can be done, we must establish what the training device is to do, then determine if the features sought are within the realm of fiscal reality.

One of the first considerations to be made is the accident history of the commuter industry and the liability resulting therefrom. Our intent here is to eliminate two undesirable blemishes on the industry--first, an unsatisfactory accident history casts a stigma on the industry and influences public confidence; and second, the costs associated with accommodating the liabilities involved is an incentive for every operator to take what preventive measures are necessary to identify and avoid any accident potential present within his operation.

Identifying accident trends by either accident causes or occurrences in similar make and model aircraft will allow the operator to specify features in the training device that would allow him to duplicate these accident causes and train his pilots to avoid them. An example of this is one accident cause we have been experiencing in commuter operations as of late, which is that of aircraft being operated beyond CG limits. Therefore, the operator might consider a training device that has provisions for CG variations and possibly CG position extremes. There is no safer way to acquaint a crew member with the reaction of an airplane under these conditions other than in a training device firmly planted on terra firma.

Another consideration to be made is those areas in the training program that caused the operator the greatest amount of problems when complying with the FAR requirements.

An example would be if you had to travel great distances to utilize navigational aids for the various approach requirements, you would want a training device that offered good fidelity in the execution of the various approaches, thereby reducing the aircraft time associated while flying a crew member to other locations for compliance with that particular training requirement.

Another example would be the damage inflicted on certain types of aircraft engines and systems when subjected to constant activation and deactivation. In this case, you need a training device that would provide an equivalent workload for the pilot yet enable the pilot to practice numerous engine shutdowns and featherings without damaging the aircraft's engines or systems.

Only upon reviewing the training requirements of the FAR's and his own needs can the operator "spec" out those portions of the aircraft's functions, systems, or flight environment he would like to have incorporated in a training device. Once this is done, a cost analysis must be made.

When considering the economics of purchasing a flight training device, operators make two very common mistakes--one, they feel that the device has to be justified on a cost-saving basis only; and two, they use direct operating costs of the aircraft when trying to establish an hourly or comparative figure instead of using true costs.

The training device is like any other new tool the operator gains experience with. Initially, it is purchased for a specific purpose; but then, through operational experience, he discovers that there are many other uses for the piece of equipment.

Additionally, some benefits of the device have no tangible value, yet contribute to the profitability of the company.

An example is the weight-and-balance issue that we discussed earlier. If this one feature prevents one out-of-CG accident, then the value of the device would increase a hundredfold.

When reviewing aircraft operating costs, do not confine your interest to direct operating costs only. The reason for this is that for each revenue hour that is generated, you receive a net profit plus return on investment. Conversely, for every hour that the aircraft is utilized for training, you dilute the profit and limit this return on investment.

Therefore, it is incumbent upon the operator to build these factors into his cost determination to arrive at a total or true cost.

One very important problem that is with us today and must be addressed at this time is fuel availability. From all indications, we may go to a prioritized or rationing system in the very near future. This will place the operator in the position whereby he will have to use a portion of his fuel allocation for

training flights. Fuel is another item that affects the operator's profitability and return on investment.

Ideally, the operator would want the minimum amount of training and testing time placed on his aircraft; but in order to realize all of the aforementioned benefits, the training device must have a high level of fidelity. Consequently, the operator can expect a high purchase price. However, there is a provision in FAR Part 135.335 for the use of training devices by more than one operator. This is but one of the many avenues the operator should explore before deciding on a particular training device.

In short, in addition to training costs involved, the operator should put his business skills to work in analyzing other profit-generating uses for the device which in turn may enable him to purchase a device of greater fidelity and utilization.

Once the decision has been made to purchase a device and a determination of specific tasks the device is capable of performing has been established, the operator then incorporates its usage in his training curriculum.

Once the device is in place and being utilized, the operator should not be the least bit hesitant in amending his training curricula as operating experience and new uses for the device are established.

Presently, the simulator manufacturers exert the greatest influence on training device design. This is due to the FAR Part 135 operators having limited knowledge and operating experience with these devices. Consequently, the manufacturers utilize their expertise and marketing skills in developing a basic device with some options. Usually, though, the manufacturer queries the operator on those features he would like to have incorporated in the device; then costs are discussed, resulting in a further tailoring of the device to accommodate the operator's ability to purchase.

However, in the very near future as the Part 135 operators gain experience, they would reach a point where more and more demand will be made on the manufacturers just as the airlines are now doing. We are closely paralleling the past experience of the airlines, and it is the technology that resulted from their experiences that has allowed this industry to incorporate greater sophistication in their training devices at such an accelerated pace.

With the advent of analog and digital computers, microprocessors, and computer-generated imagery, I am quite excited

about what I perceive the training devices of the future will look like. It will take the collective efforts of both industry and the FAA to ascertain that as this new technology is developed, it is exploited for all possible usage, and its benefits fully utilized. After all, the bottom line is safety; and if these devices enhance safety, which they do, let's put them in place and have them operating.

PERSPECTIVES OF THE PROFESSIONAL PILOT ON COMMUTER OPERATIONS

George H. Snyder, Jr.
National Safety Chairman
Union of Professional Airmen

In my presentation, I am going to rely heavily on the word "WE." No industry, organization, or society can exist or function without the cooperation and assistance of the many groups of people that comprise it. If one part of the industry does not communicate its problems or solutions with another part of the industry, the industry as a whole is operating without a true picture of itself. If the industry operates without a true picture, many potential or real problem areas are ignored and not dealt with. To be an effective and responsible industry, every individual group must contribute information in its own areas of expertise.

The commuter airline industry is becoming one of the fastest growing areas of the national business environment. Commuter air carriers sustained a passenger traffic growth of 17.4 percent during a recent 12-month period, with a forecasted annual growth rate of 12 percent. Without boring you with repetitive statistics, let us conclude that our industry is expanding exponentially.

We are hearing more and more every day that our industry is unsafe. The justification for this claim is seen in statistically incorrect data comparing the commuter air carriers with the major scheduled air carriers. It is immediately apparent to anyone knowledgeable in the industry that this comparison is questionable at best due primarily to the differences in operating environments in which the two carriers operate. However, going along with this comparison, expert statisticians agree, and are firmly convinced, that the commuter airline industry is unquestionably either 6 times safer or 17 times more dangerous than the scheduled carriers. There seems to be a problem here. Are commuter air carriers in fact comparable in the area of safety with the scheduled air carriers? Exactly who is a commuter air carrier? Lastly, what is an acceptable level of safety?

I do not believe that we have yet devised an appropriate statistical basis with which to judge the safety performance of commuter air carriers. We cannot compare them with other modes

of transportation because no one else operates in the same environment as the commuter airlines. Below 10,000 feet, in crowded metropolitan areas, in all types of weather, and taking off and landing an average of twice every hour must be found to be the most demanding and dangerous operating conditions in modern-day aviation. To compare this environment with that of the major carriers is not only misleading but inaccurate.

Laying the statistical comparisons aside, according to NTSB figures, we damaged or destroyed 30 aircraft and killed 28 people in 1978; and for the first 7 months of 1979, 48 people lost their lives while in our aircraft. Whether or not this is a statistically significant deterioration in the level of safety or an acceptable level of compromise in the interest of industry growth is of relatively no importance to those 76 people who died, or to the future victims of industry-forecasted accident occurrences. What is intrinsically important about all of this is the underlying reason why these accidents and loss of human life occur. The National Transportation Safety Boad has devoted much time and energy in giving us some of the reasons for these accidents and recently addressed itself to the operating environments in which these accidents occurred. In these environments, we find alarmingly reoccurring themes. Ineffective or nonexistent operational and maintenance programs, insufficient training programs, and blatant disregard for Federal Aviation Regulations currently in effect keep finding their way into the NTSB Blue Book Reports. These causal factors and accident causes affect each and every one of us in this room. Now, we have a problem. It is one thing to have an accident caused by an unusual or mitigating circumstance, but it is entirely different and unacceptable to have the same problem areas causing loss of life and property damage time and time again. It is without a doubt and unequivocally in our best interests to correct these areas for the purpose of both profitability and consumer image.

The NTSB has determined that pilot error contributed to 75 percent of all the accidents involving commuter air carriers in 1978 and 1979, and 60 percent of all commuter accidents involving loss of human life. Now, I have a problem. We are responsible and dedicated professional pilots deeply concerned with making our industry as safe as it can be. By participating and contributing to safety investigations and symposiums of this type, we have only one interest at heart, and that is improving commuter airline safety. The accidents happen in the aircraft cockpit, not in executive offices in Washington, not in stockholders meetings, and not in the hearing room of an investigation committee. They occur in the aircraft cockpits. Professional pilots are the only individuals occupying the front seats of commuter aircraft and are frightenly intimate with the

environment that breeds potential accidents. It has been pointed out that frequently we are the first ones at an accident scene. Because we are part of this industry and care very deeply for the industry, we would like to contribute our insights and thoughts on how we might eradicate these reoccurring areas of accident causes.

Very recently, commuter operators were forced to spend much money and, in some cases, to completely revamp their operations to fall in line with the new parameters of the revised FAR Part 135 regulations. Now, there appears to be a move on to again change Part 135 to bring it more in line with the more stringent Part 121 parameters. We do not believe that the commuters should be saddled with the responsibiity of again changing their operations in an effort to fall in line with new regulations that have been spurred by cries of commuter airline safety deterioration by unknowledgeable people. We must be careful not to react to sensationalism but endeavor to responsibly evaluate problem areas in the current Part 135 and come up with solutions among ourselves as to how we might better implement the present regulations without throwing everything we now have out the window and starting from scratch again. There are, however, definitely problem areas in the present Part 135, primarily in the area of flight time and duty time regulations which now allow the commuter pilots to fly into a figure of cumulative duty time where fatigue and performance levels are an unknown. We have much subjective information in this area from pilots who have complained that their level of professional ability, that is so vitally important to the safe operation of their aircraft, is substantially eroded away by being on duty near the present Part 135 limitations. In addition to the normal piloting duties, commuter pilots are subjected to many other extraordinary functions that have been labeled as "related flight duties," such as fueling, loading, dispatching, and readying their aircraft for flight, that do not even come under any Federal limitations. Let us suffice to say that the ten hours free from duty the pilot is entitled to is not as restful as the regulations intend. This might sound trivial and unimportant, but keep in mind that the passengers' lives are in the total control of this individual and his reactions and judgments are directly affected by his clearness of thought and emotional well-being. It is difficult to be clear of mind when, with only several hours of effective rest, you are solely responsible for all phases of the flight.

No one knows the actual extent of high levels of fatigue besides the individuals who experience them in day-to-day operations. We can argue that there have been no complaints along these lines that have been vocalized by commuter pilots to any company official or member of a regulatory agency stating that

fatigue under the present regulations is excessive. I must disagree. Time after time the line pilot's own suggestions and feelings have become known. The average line pilot feels that his job is all too encompassing in responsibilities and that he is not given enough free time from these duties. I believe that FAR Part 135 flight time and duty time limitations should be closely examined to determine if they are adequate in today's operating environment.

We also support and are grateful to the Federal Aviation Administration for their efforts in the area of surveillance of commuter air carriers. I personally welcome the FAA on board my aircraft at any time it does not interfere with its safe operation. It is comforting to know that a regulatory agency cares enough to take the time to personally assure themselves that the carriers in their jurisdiction are operating at the highest level of safety.

However, we must keep in mind that to be effective this surveillance must be also equitable. It is not representative of operating practices of a carrier to be checked only at one certain airport, on only five days a week, and then only between the hours of nine and four. Surveillance must be far-reaching, both in numbers of carriers inspected and in locations at which these inspections are carried out. To do this, the FAA must add additional personnel, often at the expense of neglecting other responsibilities. During this period of cost-consciousness, this viewpoint is understandably unfavorable. Equally unfavorable is the consequence of allowing safety deficiencies to grow unchecked into accident statistics.

We feel that the present training practices of commuter airline pilots are not as inclusive and comprehensive as their responsibilities warrant. Again, due to cost considerations, actual flight training for both initial and recurrent requirements is being kept to the bare minimum. Once established as a commuter airline pilot, under present regulations you are not required to have any additional flight training or instruction in the same type of aircraft for as long as you fly it. You are required, however, to pass the required check rides for either pilot-in-command or second-in-command positions; as long as you successfully complete these checkrides, no training whatsoever is required in the aircraft. This is inadequate and dangerous. We must find a way to increase the training time for commuter pilots, either actually in the aircraft or in some form of simulation in the areas of abnormal and emergency procedures. We must train to proficiency, rather than check for it.

Weight and balance control for some carriers has been found to be, at best, an educated guess. Fuel loads, passenger

weights, and cargo weights are too frequently over- or understated depending on the purpose in mind. With our present aircraft performance, staying within the approved weight and balance and center-of-gravity parameters is not only required, but absolutely essential in the event of powerplant loss.

Training is not only important to the flight crew of a commuter aircraft, but also to the ground personnel who work in and around the aircraft. Too often they are not familiar with the aircraft they are servicing and are ignorant of safety procedures that should be employed when working around these aircraft, specifically in the area of baggage compartment access door operation, and in the vicinity of operating engines. On-the-job training is obsolete. We should be as emphatically concerned about the safety of ground personnel as we are about our own or our passengers'.

We would also encourage examination of the availability of exemptions of present FAR Part 135 requirements that have been recently secured by operators. It seems self-defeating for the NTSB to recommend a regulation be implemented, the FAA to spend thousands of dollars researching the regulation, and then exerting the effort to enforce it, when it can be completely ignored and disregarded if compliance with the regulation becomes costly or inconvenient. Regulation is not a matter of convenience, and compliance with regulations should be closely guarded to ensure that their intent is not lost.

I am extremely proud of being a commuter airline pilot, of the industry in general, and of my company in particular. We are just now coming into the public attention by providing, as needed and required, airline service to communities and individuals that would otherwise be denied it. Now, back to my pet word "WE." You and I are to be commended and congratulated for this successful growth--regulatory agencies who have supplied guidelines, investigation agencies who have given us insight, responsible owner-operators who furnish equipment and operational environments, and maintenance and flight personnel who assimilate all the components of the industry into the commuter airline flight; without all these people communicating and working together effectively and responsibly, the industry would not be in the affluent position that it is in today.

Inherent in all good fortune, and prosperity, is an acceptable level of performance failure. Customer dissatisfaction, loss of profitability, equipment loss or damage, and loss of human life are all areas of our performance failure. While all of these areas are equally vital to the success of the industry, human life is devastatingly irreplaceable, and its loss is irrevocable. We can cater to and cajole an irate customer, we

can also find some avenue of regrouping lost revenue, and we can even replace multimillion dollar equipment; but we cannot replace human life. This one area of performance failure can, by itself, cripple or destroy our entire industry. It seems logical, then, that we address ourselves emphatically to the task of improving our performance in the area of protecting human life--or, in short, safety.

SURVEILLANCE OF COMMUTER AIR CARRIER PILOT PROFICIENCY

Richard L. Collie
Acting Chief, Air Transportation Division
Federal Aviation Administration

It is indeed a pleasure for me to be here today to discuss some of the basic issues confronting the FAA and the commuter air carrier industry regarding proficiency standards for flight crewmembers. In recent years, the commuter air carrier industry has experienced an unprecedented growth rate. As that growth continues and the commuter air carriers offer services to a larger portion of the flying public, it is incumbent upon the FAA and the commuter industry to ensure the highest possible safety standards. A primary consideration toward ensuring a safe operation must be the training and proficiency level of the pilots.

Pilot proficiency is the culmination of the experience a pilot gains from his or her everyday operational exposure and the training that the pilot receives throughout his or her career. Through everyday operations the pilot maintains proficiency in normal operating procedures. However, exposure to everyday operations does not provide the opportunity for the pilot to maintain proficiency in those maneuvers and procedures required in the event of an emergency or abnormal situation. Proficiency in this area is dependent upon and directly related to the training program of the carrier. Revised Part 135 requires FAA approval of pilot training programs including recurrent training. While satisfactory completion of a competency check within the preceding 12 months may be substituted for recurrent flight training, the FAA encourages participation in an approved recurrent flight training program prior to the required check.

I think everyone in this audience would agree that flight training, when properly conducted, results in a better-qualified pilot. The training is accomplished by instilling proper pilot techniques and reinforcing a pilot's confidence in his ability to use those techniques in any foreseeable situation. However, while everyone is in agreement that recurrent flight training is highly desirable, the continuing escalation of aircraft operating costs is an ever-present consideration for the air carrier industry. The FAA is aware of the operating costs associated with flight training programs and required flight-checking requirements. Accordingly, we have developed additional guidance material relating to the requirements for competency

checks, pilot-in-command instrument proficiency checks, and recurrent flight training.

This guidance material will more specifically define what maneuvers and procedures should be included in the required checks. It will also reference when simulators and training devices may be used in lieu of the actual aircraft during those checks and during training. By permitting the liberal use of approved training devices, especially during recurrent training, the FAA will, through this guidance material, provide a relatively inexpensive means for the industry to develop and use a continuing recurrent flight training program. Through the expanded use of training devices, the cost of conducting flight training could be substantially reduced. There are many training devices on the market today which can provide effective training for many operators at a fraction of the purchase price of the most sophisticated simulators, which cost between probably $3 million and $5 million. FAA approval of training devices will be on an individual maneuver or procedure basis and will depend upon the capability of the device, the particular carrier seeking approval, and the type of aircraft operated. Of course the more sophisticated the aircraft, the more sophistication will be required in the training device.

Table I presents a look at a section from the table of maneuvers and procedures which will be a part of the forthcoming guidance material and which will replace the table of maneuvers and procedures presently found in Appendix 3 of Advisory Circular 135-3B. As can be seen from this example, the left-hand column includes the maneuvers and procedures required. Each maneuver or procedure might be required on the instrument proficiency check or the competency check, depending on which column contains a symbol for that particular maneuver or procedure. In the instrument proficiency check and competency check columns, an "A" or "H" will appear if the maneuver or procedure is required in an airplane or helicopter; a "V" will appear if authorized in a visual simulator; an "N" will appear if authorized in a nonvisual simulator; or a "T" will appear if authorized in a training device.

Two columns entitled "Maximum Training Device Credit, Initial" and "Maximum Training Device Credit, Recurrent" have been incorporated in the schedule of maneuvers and procedures. In these columns each maneuver or procedure has been categorized as A, B, or C for the purpose of indicating the MAXIMUM amount of credit which could be given to a particular training device for that maneuver or procedure for initial and recurrent training. Category A credit means that all training and checking for that maneuver or procedure may be accomplished in a training device. Category B credit means that all training may be accomplished in

a training device but checking must be in an aircraft or simulator as indicated in the checking columns. Category C credit means that some training is allowed in a training device, but training to proficiency and the required check must be accomplished in a simulator or aircraft as indicated.

The categories have been assigned based on consideration of the wide range of training devices on the market. As evident, more credit might be given to a certain training device in the recurrent training column than the initial training column for a particular maneuver or procedure. This has been done to encourage operators to train in the procedural aspects of a maneuver prior to the required check on a recurrent basis. Initial training, on the other hand, might require training in a higher fidelity device or the actual aircraft. Training devices might range from a table-top instrument procedures traiing to a cockpit systems simulator.

The actual amount of credit given to a particular training device will depend on the evaluation of the device by the FAA. Hopefully, by using this table as a vehicle, operators will be capable of conducting an effective flight training program at less expense by taking advantage of the expanded role of training devices.

I think all of you are aware that we have embarked upon a program of what we call advanced simulation in air carriers where within the next year we will possibly see people who receive their type ratings totally in an advanced type of simulation. We hope that this same type of program would carry over to the commuter air carrier industry; and I am sure that it will because one of these days, with the price of fuel, it is going to be too costly to put fuel in an airplane to do training.

In closing, I want to advise you of an amendment to Part 135 which is being considered to increase the level of proficiency of pilots-in-command who are flying in commuter air carrier operations. The proposed amendment is based on a series of fatal commuter accidents which occurred last year. All of these accidents involved PIC's with significant experience in multiengine airplanes but little experience in the specific make and model being operated at the time of the accident. A significant number of the accidents involved single-pilot operations. These accidents bring to light an important consideration regarding pilot proficiency. That is, a pilot might be generally proficient in flying a class of aircraft but not necessarily proficient in flying a specific make and model of aircraft, especially in critical flight situations. Again, this lack of proficiency can only be linked to one or more of three different factors: inadequate training, improper evaluation on

the competency check, or lack of experience in that make and model of aircraft.

Part 135 already requires an approved training program, and the forthcoming guidance material which I discussed earlier will provide specific guidance for properly conducting a flight check. However, Part 135 does not require operating experience in a specific make and model of aircraft. In light of the previously referenced accidents and in a continuing effort to provide a level of safety to passengers traveling on commuter air carriers equivalent to that afforded to passengers on the larger air carriers, the FAA is considering an amendment to Part 135 which would require such operating experience. If implemented, the amendment will require two things. First, operating experience in a specific make and model of aircraft as PIC under the supervision of a check pilot will be required before a person can be designated as PIC in any commuter air carrier passenger-carrying operation. (The amount of operating experience required ranges from 10 hours for a single-piston-engine airplane to 25 hours for a turbojet airplane.) Second, before a person can serve as a PIC in single-pilot autopilot operation, that person must have logged at least 100 hours in the make and model of aircraft to be flown.

This amendment, if promulgated, along with the existing regulatory requirements and forthcoming guidance material, reflects the agency's most recent efforts to upgrade the proficiency level of pilots operating under the provisions of Part 135. I know that everyone here today is equally interested in the highest level of commuter air carrier safety, and the FAA looks forward to working with industry to ensure that this safety level is achieved.

-- SAMPLE --

Required Maneuvers and Procedures for the
Competency Check and the PIC Instrument Proficiency Check

	INSTRU. PROF. CHECK	COMP. CHECK	MAX. TRNG. DEVICE CREDIT INIT.	MAX. TRNG. DEVICE CREDIT RECUR.
d. Rejected Landing. A rejected landing, including a normal missed approach procedure, that is rejected approximately 50 feet over the runway threshold. This maneuver may be combined with instrument approaches, but instrument conditions need not be simulated below 200 feet above the surface.		V	Cat C	Cat B
6. Emergency Procedures. Each applicant should demonstrate the proper use of as many systems and devices listed below as the person conducting the check finds are necessary to determine that the applicant has a practical knowledge of, and abiity to perform such procedures:				
a. Fire in Flight		T	Cat A	Cat A
b. Smoke Control		N	Cat A	Cat A
c. Rapid Decompression		T	Cat A	Cat A
d. Emergency Descent		N	Cat B	Cat B
e. Any other emergency procedures outlined in the appropriate approved aircraft flight manual.		T	Cat A	Cat A
7. Instrument Procedures	I			
a. Instrument. One takeoff with instrument conditions simulated from an altitude of 200 feet above the runway elevation.	V		Cat B	Cat B
b. Area Departures & Arrivals. During each of these procedures, the pilot should demonstrate the proper response to actual or simulated ATC instructions and the proper use of navigation facilities.	N		Cat B	Cat B

TABLE 1

GENERAL DISCUSSION

Mr. Walk - Before asking for questions, I am going to be a little permissive and just mention something that I am not quite sure was clearly stated yesterday. We talked about the Trust Fund and the monies in the Trust Fund and so forth, and I have read in the various news media that the FAA is not using it, etc. The FAA cannot touch that Trust Fund. Congress appropriates each year monies to the FAA out of that Trust Fund.

Another thing I think has to be understood. We are talking about acquiring navaids that we in the FAA are budgeting 18 months ahead. For example, the FY 1982 budget has already been developed and is in Washington now and will be under consideration. So the next budget will be the FY 1983 budget which is downstream.

The other thing that was mentioned was the criteria. I think Mr. Vanderschaaf mentioned navaids and so forth. In my judgment, I think the criteria are too heavily oriented in the scheduled air carrier operations area, and I believe now we have enough stability in the commuter industry that you should be flexing your muscles to see if you can get those criteria changed. Now, one other thing. When we talked about acquiring an ILS out of the F&E side of the house, you also have to remember that when you put in an ILS, you have to have somebody to maintain it. The present trend in Government is to reduce Government employees, so then on the operations side of the house we have to provide for those personnel to operate and maintain those equipments. So, it is not an easy thing.

Mr. Joseph Fugere (Pilgrim Airlines) - The proposed rule that was just discussed on the pilot-in-command requirement on two-pilot airplanes--are you proposing any time requirement on that?

Mr. Collie - No, there would not be any additional time requirement.

Mr. Fugere - Does that contemplate that, after a captain gets his upgrade check in the aircraft, for a period of time he would fly as captain with a training captain alongside?

Mr. Collie - Yes, a check airman will be required in revenue operations.

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Mr. Fugere - There are currently provisions whereby in the upgrading process you can put an upgrade captain, an upgrade first officer in the left seat with a training airman in the right seat. Will that time count?

Mr. Collie - No, it would not. What is visualized is that before designating an individual as a pilot-in-command on a commuter air carrier operation, he would have to have X number of hours, reduced up to, say, 50 percent for each landing in revenue operation with a check airman before he could be designated to act as pilot-in-command.

Mr. Fugere - I just heard something this past week which I found somewhat distressing, but I am not sure that I have the facts correct. I have been told that the previous practice within the FAA was that if flight standards inspectors worked beyond normal working hours, they were given compensatory time off and that there has just been a ruling by the GAO or the Civil Service Commission that this practice must cease and they must either be paid overtime or it must be done during normal working hours. I am not sure I am clear on it. I am not sure it isn't just a rumor or an excuse, but I am trying to get some information on it.

Mr. Walk - I haven't heard of anything like that at all. As a matter of fact, I am not a great believer in compensatory time. I am a believer in paying people overtime because you don't gain anything in compensatory time. If you have 1,800 hours a year, that is what we use, and you give a fellow compensatory time, you are not gaining anything. The only way you can increase your productivity to a large degree is to pay overtime, and in Government we have some problems. For example, in the air traffic side and the airways facility side of the house, those people get time-and-a-half. When we have our flight standards inspectors work overtime, they get half-time; and that doesn't win many friends and influence people, either.

Mr. Fugere - Are there any provisions in appropriations for any overtime money for flight standards inspectors currently?

Mr. Walk - Absolutely. However, I can only speak for the Northwest Region. I think it is typical of other regions. We program overtime monies for each of our major program divisions each year, and I personally don't let them use it unless they justify it. It is easy to manage if you have unlimited funds and overtime. You have to guard those funds very carefully, and I am sure you do it the same way in industry.

LUNCHEON REMARKS

Honorable Elliott H. Levitas
House of Representatives

I am very pleased to be here to participate in this first symposium being held on a subject that is extremely important to the American traveling public and to those of you who are in the industry or who have the responsibilities of regulating the industry.

I am here, unlike you, not as an expert. You are the professionals. You are the experts. You have the knowledge. You have the information. You have the data.

I am here basically as a policymaker, as a Member of Congress, and specifically as a member of the House Aviation Subcommittee. There is a big difference, of course, between being a policymaker and an implementor of that policy. I think one of the benefits of a meeting such as this is we get policymakers and people who have to implement and comply with those policies together.

What I would like to do is discuss with you the problems that you have been going into in great detail at this symposium and give you what is my personal viewpoint as a Member of Congress and as a member of the House Aviation Subcommittee. I would like to cover essentially four subjects with you.

The first is the airline deregulation legislation and its relationship to commuter service; secondly, safety considerations and the relationship to commuter service; thirdly, the matter of safety as a general proposition and the role that FAA in my judgment should be playing; and fourthly, what lies ahead from the vantage point of the policymaking arm of our Government--the Congress.

Now, first of all, on the subject of deregulation and commuter service, I personally believe that commuter aviation was truly the darling of deregulation as clearly evidenced by the emphasis which Congress placed upon commuter service. Commuter air transportation was the "belle of the ball" if you will. It was the bonanza. It was that one element which would be essential if the other objectives of deregulation were to work successfully.

The legislation itself was carefully drafted and carefully designed to emphasize, encourage, and develop commuter air transportation.

In the area of replacement service which was clearly anticipated as the local service carriers and even trunk carriers withdrew from providing service to certain communities, it was the commuter aviation industry that would be looked to to provide that replacement service.

Such concerns and such provisions as joint fares, interlining agreements, equipment loan guarantees, and increased size of equipment were just some of the provisions that were specifically, deliberately, and intentionally written into the deregulation legislation in order to encourage and promote the growth of the consumer aviation industry.

As all of you know, there has been a rapid growth in commuter air transportation. I understand that last year 12 million passengers flew commuter airlines. For the most part, it is my judgment that it is working well.

There are still problems. There are problems which have not yet been encountered, but for the most part the new proposals are working well.

The Section 419 provision was written into the law as much as anything else to provide the assurance that there would be essential service provided if the market could not provide it; but I am pleased to learn, based upon the inquiries I have made and recently when speaking to Chairman Marvin Cohen of the CAB, that there has been little need to use the subsidy program. Indeed, the commuter industry itself has some healthy reluctance to get involved in a subsidy program. There is a great deal more desire to operate in the free enterprise market system without depending upon the Government for economic support as a positive direction of the commuter industry than there is to turn to the Government and say, "Pay us," because it is quite clear that once any industry becomes totally or significantly dependent on Federal subsidies, there are a lot of disadvantages that come down the line.

It has been said that becoming hooked on Federal subsidies becomes the moral equivalent of drug addiction, and I think that it is commendable that the commuter industry on its own has avoided wherever possible a need or a desire to turn to this mechanism.

As I said, there are still some problems which the industry and which those of us who make policy in this area still see.

We know that there have been some communities, particularly medium-sized cities, which have complained about the loss of jet air service by trunk or local service carriers. We also know that before deregulation came in, under the old law, over 170 communities lost service even under a regulated system; and since deregulation, no community has lost all of its service. The commuter airlines are now providing service where the trunk and local service carriers previously operated; in many instances, that service is better for the local community because it provides a greater frequency of service at more convenient times for the traveling public.

There are still other problems, one I have addressed for years now. I addressed it when the deregulation legislation was before Congress. I addressed it in the ADAP hearings we held last year. And that is, it is one thing to talk about a deregulated airline industry so that anybody can fly if they want to with the use of dormant authority, or automatic entry, or easier and quicker procedures for getting authority; but if you don't have access to the airports, if you don't have the slots or the gaates or the ticket counters, then it becomes an empty accomplishment because you just can't fly around up in the air. You have to be on the ground to be able to serve the people who want to fly. In the case of replacement service, it becomes especially important, where a trunk or local service carrier pulls out of a small community in anticipation that those passengers can be fed into a spoke-hub arrangement to a larger airport, and that facilities are provided, in terms of slots, gates, and ticket counters, for that access.

Based upon the personal and priviate discussions I have had with representatives of the CAB and the Justice Department and some of the airport operators, it is my judgment that this is something which Congress will be addressing during 1980.

The second area is the question of safety as it relates to commuters. I am not going to engage in the statistics game with you. Obviously, depending on what statistics you use and how you compare them, you can make a case one way or the other. You can paint a good picture or you can paint a frightening picture, but statistics and facts are there. We all know the reasons or many of the reasons why some of the statistics turn out the way they do. Commuter airlines fly shorter hauls. They make more takeoffs and landings which are the most critical part of aviation operations. We also know that many of the airports which are served by commuter carriers have inadequate airport facilities and inadequate precision landing equipment, and these are some of the contributing factors. But the fact is that both in the Congress and, more importantly, I suppose, in the public, there is a perception, and perhaps a reality, of concern about

the safety of commuter air transportation. Let me just give you a few examples, and I am talking about perceptions from relatively responsible sources.

In November 1979, at the convention of the AFL-CIO, one of the resolutions adopted at that meeting was a resolution dealing with airline safety; and in part of the preamble of that resolution, the following paragraph appears:

> "We are concerned that the imposition of deregulation in the airline industry may be leading to cutbacks in such safety-related areas as aircraft maintenance, training of airline personnel, particularly commuter airlines whose growth has been stimulated by deregulation and continue to have an alarmingly high accident rate."

A recent magazine article had the following statement in it dealing with the whole subject of airline safety: "In the wake of airline deregulation which permitted the major carriers to stop serving dozens of communities, the commuter airlines have been enjoying rapid gowth as they move to fill the vacuum. For passengers this is a mixed blessing. The accident frequency of commuter lines is about three times that of the major carriers."

Another recent magazine article also pointed out that one of the great fears that the American traveling public has in those places where replacement service is being provided is the fact that the airlines that are serving them, the commuters, might not have as safe a record. A Business Week article that just appeared stated: "The increased importance of commuter airlines has provoked greater concern over their safety."

Now, that gives you some indication at least of the public perception. I can tell you as a member of the committee that wrote the airline deregulation legislation that we specifically focused and concerned ourselves with that type of situation. It was not just something that was written in as boilerplate material. It was not something that went unnoticed or was overlooked or received only passing attention. It was something that was specifically focused on as the Congress wrote the legislation which, as I said earlier, made the commuter airline industry the darling of deregulation.

It was never the Congressional intent, as we move to a deregulated aviation industry and as we created the economic environment in which commuter airlines would become a major factor in serving the American public, that this would result in less safe aviation operation for the American traveling public.

Indeed, it was just the opposite--not that there would be less safe operations as we moved to use commuter airlines to

provide replacement service and take on a greater role, but that the type of safety which the American traveling public could expect would be substantially the equivalent of that expected of certificated air carriers.

I think that it becomes absolutely essential that the FAA and the commuter airlines vigorously carry forward the implementation of the steps--such as the promulgation of FAR Part 135--which have been taken to date. This is vital both to the public and to the industry and in carrying out the intention that Congress had when this comprehensive legislation was enacted.

There are many things that the Government can and should do in playing its role in implementing this enhanced safety factor in commuter air transportation. One thing is the need to focus on improved facilities at commuter airports. We clearly need to devote more attention, not only to the airports themselves and their facilities, but particularly with respect to precision landing aids as a major component in giving assurance to the public as well as to the industry that this is a major safety concern which the Government, both the FAA and the Congress, has not overlooked.

There needs to be, and I predict there will be, increased surveillance and monitoring by FAA of the implementation of Part 135; and the industry itself must, in a very positive, cooperative, and constructive way, begin, continue, and further a campaign of improved procedures, training, and attitude by the commuter aviation industry.

Now, let me just broadly for a moment go to the matter of aviation safety and the FAA in general. As was said in the introductory remarks, for a number of years now, I have been vitally interested in aviation safety, and particularly the responsibilities that FAA has to the American traveling public in this regard.

I think it is safe to say that I have been critical of FAA's performance in many respects as it discharges these very grave and important responsibilities.

I can tell you that, in my judgment, there have been significant improvements in the last year or so, but I think it is also important and fair for me to say that I am stil not satisfied. There are too many delays. There is too much lethargy. There is too much time lag between the identification of safety hazards and the taking of corrective action to solve those problems.

As one of the articles I referred to said in describing some of the operations of FAA internally, it is too much of a

democracy where everyone gets everything he wants. I am personally committed during the next few years to see that FAA assumes not only a stronger role, but a more vigorous role, in carrying out its responsibilities.

I think you will see as you have over the last several years that Congress will increase its oversight functions over FAA in the carrying out of their responsibilities. I think you are going to see more and more hearings of committees of Congress looking at how FAA is carrying out and discharging this grave responsibility that it has.

Some of you may know that last year I asked the General Accounting Office to undertake a major management study of FAA and its responsibilities. That study, which I am told by GAO is the most comprehensive audit they have ever performed at FAA, will be available by the end of February. I think it is going to be a milestone. It is going to be a benchmark from which Congress, FAA, industry, and the public will from this point forward look to the discharge of responsibilities by FAA.

Under this study, GAO will have examined FAA's effort in identifying safety hazards, analyzing hazards, and considering potential corrective action or interim solutions; how priorities have been assigned and how the action plans have been developed; how those plans have been implemented; and, finally, how the implementation of those plans has been monitored and evaluated as far as their effectiveness is concerned.

GAO, in making this comprehensive audit, has focused on the adequacy of FAA's management controls over efforts to reduce safety hazards--not necessarily the technical adequacy of the solutions, but the management within FAA to see that these hazards are identified, that meaningful solutions are proposed, that those solutions are implemented in a timely fashion, and that they are carried out effectively, and if not, why not.

I urge all of you to keep your eyes and ears open because that report from GAO will be a benchmark.

In addition to the increased oversight activities of the Congress and the GAO study, I think it is also fair to say that you will see new legislation coming out of Congress in the next year targeting on aviation safety and the role in which the FAA is to perform in this area.

Now, what do I see ahead for the immediate future? As all of you are well aware, during the next few months the Congress will consider the extension of the ADAP legislation. The extension of this ADAP legislation will provide a golden

opportunity to the Congress to begin to take action, legislatively, in some of the problem areas which I have referred to already.

First of all, I think it is very fair to say, and I think it is not being overly optimistic, that the ADAP legislation, which the House Public Works and Transportation Committee will report out, will contain significantly increased funding for commuter airports, particularly for providing navigational aids and precision landing aids, and that there will be a significantly enhanced setaside for this purpose.

I think you will also see an effort in the Public Works and Transportation Committee to provide designation and line item requirements for the use of ADAP funds for navigational aids and safety-related functions at FAA. I think that you are going to see our Committee insist that the ADAP Trust Fund be spent and not squirreled away to help balance the budget. I think you are going to see also that we will deal in this legislation--as our hearings have already indicated--with the serious problems of access and slots for commuter and other airlines as we go into this new era of deregulation of our aviation industry.

A second area that I think you are going to see growing out of our oversight activities, and the GAO report, will be a Congressional insistence on improvements in FAA's internal management operations and procedures because the FAA has been designated by the Congress as the primary agency in Government to be concerned for the American traveling public in the field of aviation. I think we have the responsibility as the policymakers to insist that that role be discharged in an effective, timely, and vigorous manner.

Another thing that I see, as a result of Congressional oversight and through our cooperative work with FAA, is the full implementation and monitoring of Part 135. Finally, in order that FAA can carry out its primary responsibility, a piece of legislation, which I have been working on for about a year now and anticipate introducing shortly after the GAO report has been made available, will recharter the FAA and split it off from the construction grants aspect of its program and let the agency become solely concerned with aviation safety so that there will not be a mixed message to FAA from the Congress.

The responsibilities for the economic considerations of the aviation industry and even portions of ADAP which are presently administered by FAA, in my judgment, should be taken out of FAA and placed in the Department of Transportation itself so that FAA's single, primary, exclusive direction is concern about the safety and well-being of the millions and millions of Americans

who are, in increasing numbers, flying in our aviation transportation system. Today this system is clearly the safest means of transportation in the world, but it is one that can become even safer.

Many of the things which we have seen time and time again create criticism and anxieties on the part of the public can be eliminated, in my judgment, when FAA gets that single message of responsibility--that aviation safety is their concern.

I am very proud of the progress and of the accomplishments that we have seen so far. I think deregulation has been a success, and I think that not only the free market system, but the decisions of the free enterprise system are going to bring benefits to the American traveling public as well as to the industry in years to come. I think it is going to work well, and I think we have already seen even in this transition period a lot of reasons to be proud of what has occurred.

I am proud of the accomplishment and the progress in safety enhancement and in the promulgation of Part 135, and I am very proud of the role that the commuter airline industry has played in moving in under a free market system to play a role, to fill a gap, and to serve the public. I think you have a lot to be proud of. But this is just the beginning, and I suppose my message to you today is that Congress will be listening to you and Congress will be watching and Congress will be acting.

COMMENTS AND QUESTIONS

Mr. Don St. Peter (Beech Aircraft) - Mr. Congressman, regarding the GAO audit of FAA which will be available in February, can you tell us what period of time the audit covered, and is it in consideration of the recent reorganization of the FAA?

Congressman Levitas - I cannot be altogether precise as to what period. Roughly when it was first discussed with GAO we were talking about a seven- to ten-year carryback, but with most emphasis on the more recent period of time.

GAO as its main mechanism in evaluating and making its audit selected a series of cases which would address the possible management actions that FAA can take to reduce or eliminate safety hazards--enforcement, research and development, system acquisitions, and rulemaking--so there was a selection of specific cases which they followed through to see how they were handled.

I am told there has been consideration taken of recent reorganization efforts, and opportunity is being afforded at the

present time to FAA to make its responses to the report that GAO is proposing. I don't want to anticipate what the report is going to say or what FAA's response to any particular portion of that report might be.

I will tell you it has been my experience as a member of oversight committees and of the Government Operations Committee as well as the Public Works and Transportation Committee that frequently--and I don't mean to be cynical when I say this, I am just saying this has been my experience--when criticism, even constructive criticism, has been directed to any agency in Government, I guess the same could be true of any private sector operation, the first response that we normally get is, "Oh, yes, that's the way we used to do things; but that is not the way we are doing them now."

I don't know whether the way they are going to be doing them now is going to result in a great deal of difference if the only changes are a shifting around of boxes on some type of organizational chart.

I intend to look at that GAO report more in the substantive areas of why these situations existed and what type of mindset created the situation to begin with to make any judgment as to the efficacy, if you will, of recent reorganizational changes in FAA.

Mr. Van Arsdale, Sr. - Mr. Congressman, I wonder if you could tell me if Congress is concerned with respect to the cost impact of agency regulations on small-community air service? As we have gone into deregulation, I think your living doll has become a little burdened and with a few more regulations. We are facing things like security screening which we consider to have a severe economic impact upon us. I wonder if Congress is addressing the potential economic impact of this type of FAA regulation with respect to the future of our services.

Congressman Levitas - I think the answer to that question is yes. It is first of all a requirement of Executive Order 12044 already that FAA itself, in addition to the legislative requirements, take into account the economic impact or the cost/benefit relationship.

In my own conversations with commuter airline operators, I have heard some of the same types of comments. There are some types of costs that are easily quantifiable. Some of the benefits are quantifiable, but some are not. I think that what FAA will have to do in making their judgments is take into account the quantifiable costs, quantifiable benefits, and unquantifiable benefits as they perceive them, and then ultimately, at some point, yes, Congress will deal with that.

Congress, not just in the area of FAA and aviation, is moving into the direction of requiring all Government agencies to take into account economic impact in the proposal of new regulations. President Carter issued several months ago the regulatory reform legislation which the Administration has proposed; and just by coincidence, a bill, HR 1984, which I am the primary sponsor of, specifically demands the consideration of cost/benefit analyses prior to the promulgation of regulations so that judgments can be made.

Let me emphasize again that costs are generally quantifiable. They might be off because the wrong measuring system was used, but they are quantifiable. Many benefits are quantifiable. Some benefits are not quantifiable, and at that point someone has to make a judgment whether those nonquantifiable benefits plus the quantifiable benefits justify it. I think that FAA should, must, and will take into account the benefits, as well as the costs, of these new regulations; and at some point, Congress will have an opportunity to make its own judgment after that decision has been made by FAA.

USER/GOVERNMENT PANEL DISCUSSION ON COMMUTER AIR CARRIER MAINTENANCE ISSUES

INTRODUCTORY REMARKS

Moderator - C. R. Melugin, Jr.
Director, Southwest Region
Federal Aviation Administration

I think that the quality of the industry presentations I have heard these past two days has really been outstanding and is certainly a manifestation of the maturity that this great industry is undergoing. Certainly you are rapidly closing the gap with the more sophisticated air carriers, and I think in some cases they might take a page from your book.

I have heard a lot of good things that I like to hear. I heard about operational integrity, standardization, and professionalism and that you have come a long way.

I think I have been afforded a rather unique experience in FAA, perhaps in Government, in seeing your industry from several perspectives. The first indoctrination I had with your industry was when I was the manager of Washington National Airport in 1965 to 1972 when this industry really got off the launchpad. This was way before anybody I think even conceived of deregulation.

There were some real trials and tribulations during that period. We had a lot of congestion--and I assume some of those problems still exist; and space and slot allocations were at a premium. One day, I think this was about 1966, somebody asked us how many commuters we had. I started counting noses, and I think the number was something like 17; and still you were knocking at the door to come in.

There were a lot of problems. You were squabbling with each other. The airlines were fussing about you. The fixed-base operators asked me if there wasn't some way we could throw you off the airport as you were creating so many problems. You were tight with your money; and, one problem I remember most is that sometimes you showed up when you wanted to. You missed a lot of schedules, and you left little old ladies stranded up there in the general aviation terminal. Things were pretty tough.

I finally recognized one day that somebody was going to have to take you by the hand and lead you down what Mr. Bond called "the path of righteousness." So I called the first commuter meeting that we ever had at National Airport; and needless to say, there was a little blood on the rug before we settled some issues. But a very positive thing came out of that meeting and that is, if you are given the right motivation and the right incentives, you could do a hell of a lot toward solving your own problems and cleaning up your own act. I learned a lesson from that, and I have remembered it.

Another vantage point that I had in seeing your industry grow was from the regulatory standpoint when I was the Deputy Director of Flight Standards--that is the organization that preceded Mr. Foster's present organization. We saw the regulatory requirements change to meet your needs, and the seeds were planted for a new Part 135. I've also seen your industry from the vantage point of the field, first as the Director of the FAA Central Region--with responsibility for commuters and the airworthiness of two manufacturers, Cessna and Beech, which provide many of your commuter vehicles, and the launching of Air Midwest, which is one of our success stories in the midwest--and, as of six months ago, as the Director of the FAA Southwest Region. I see tremendous challenge for the future for your industry in my area of responsibility.

Before closing out my introductory remarks, I just have a couple of observations that I would like to make.

First, as I alluded to earlier, I really think that if you are going to make any quantum steps in the area of aviation safety, you are going to have to do it yourself. I believe that you need a very vigorous, introspective, tough, professional self-policing of your own ranks. I think that you can clean up your act.

As far as my contribution to the Southwest Region is concerned, I can only promise you I am going to do the thing that I think can best promote your industry, and that is rigorous, tough, but fair enforcement policy.

I promise you that I will give you people down there the same treatment that I give the scheduled airlines such as Braniff and American--no discrimination. I promise you that, and I hope that at the next symposium we won't have to compare numbers with the scheduled airlines.

Now, before you find any comfort in that, let me say I think the scheduled airlines can do a much better job; and I think there is a lot of room for improvement with the scheduled airlines in the area of safety, considering the environment in which they operate, the equipment, the experience.

COMMUTER AIR CARRIER MAINTENANCE TRAINING AND PROFICIENCY STANDARDS

R. E. McKelvey
Vice President - Engineering
Swearingen Aviation Corporation

Maintenance training and proficiency is an issue, I think, of considerable importance not only to the commuter airlines, but to manufacturers of commuter airplanes as well. The approach that we at Swearingen Aviation have taken to emphasize and improve upon this philosophy we think has been very effective in terms of both safety and reliability in the operation of our aircraft. I would like just to share with you some of the factors we think have contributed to that effectiveness.

For those of you who might not be familiar with Swearingen, we manufacture the pressurized twin-engine turboprop airplane for the commuter and the business marketplace. Our commuter airplane which you probably are more familiar with is the 19-passenger Metro, which has been in airline service since 1973. There are presently 183 Metros either in service or soon to be in service, and they are being operated by 21 domestic airlines and 14 foreign airlines.

The typical Metro operating in the United States flies a commuter route of about 134 miles at altitudes ranging anywhere from 8,000 to 16,000 feet and cruises at speeds up to just over 300 miles an hour. A takeoff and landing occurs about every 35 minutes. In one year's time, a typical Metro will accumulate about 2,600 flying hours and make 4,500 takeoffs and landings.

The operating environment that this airplane is involved in is very demanding in that there are very many operations from all types and varieties of airports, and we operate through the extremes of the desert to the mountains in almost every imaginable weather condition that any type of airplane sees. Some of our aircraft have accrued more than 15,000 hours and with maintenance reliability, we are proud to say, in excess of 98 percent. Despite the heavy usage of the aircraft, the accident record speaks for itself. There has not been a fatality in the Metro airplane. We don't think this condition is either luck or happenstance, but is due without a doubt to the concerted efforts of everybody involved. And this includes not only the manufacturer and the operator, but the regulatory agencies as well. From the manufacturer's side, this entails lots of

things, particularly in the areas of design and support programs and procedures that are established and continually updated.

We also think that one of the most important factors in airline maintenance which has had a significant impact on the operation of our airplane is the technical support side. At Swearingen, we provide this technical service to everyone on a 24-hour basis, and it is available every day of the week. An extension of this service which we are currently implementing is the establishment of field offices conveniently located throughout the United States.

Another major support vehicle is our particular involvement as a participant in what is known as the Metro Operators Technical Committee. This is an organization composed of Metro operators. The committee meets every three or four months with the engine manufacturer and major vendors involved in the manufacture of the aircraft, as well as some of the support equipment folks. Formal agendas concerning this maintenance and the operation of the airplane, as well as questions, are prepared prior to each of these meetings, and action items are accepted, worked upon, and tracked until the issues are completely resolved.

Now, as this committee and our other actions reflect, we are committed to the support of the users of this airplane regardless of their location around the world. We feel it is essential to maintain effective communications in order that we can exchange information relative to operation of maintenance and design changes that perhaps should be incorporated into the airplane.

I don't think any discussion of maintenance and safety would be complete without a mention of the rules that govern them. In addition to the basic normal category certification requirement, the Metro meets the regulations of SFAR-23. It is applicable to airplanes of ten or more passengers that are going to be operated in scheduled Part 135 or Part 121 service. Metro was designed to meet these requirements from the very beginning. We believe that SFAR-23 is doing its job, and again our safety record achieved while flying hundreds of millions of passenger miles in the commuter environment adds very solid evidence to this point.

Maintenance training and proficiency is not really an area where you establish a goal, achieve it, and then go on to other matters. Like safety, it is an area where the ideal is perfection and where constant emphasis, energy, and innovation must be applied.

We believe the programs that I have briefly discussed are a real commitment to the stability and the continued growth of the

commuter industry. And our continued participation with the operators, the vendors, the regulatory agencies, and the concerned citizens, I think, is going to help achieve and maintain the stability and growth that the commuter industry really needs.

IMPORTANCE OF MAINTENANCE RECORD KEEPING

Arlo Clough
Airline Program Manager
Airwork Service Division

As everyone here today has been listening to two days of different speakers discussing the changes in FAR Part 135, I am sure we realize by this point the intent is to bring us up much closer to the Part 121 standards. One of the major changes in the maintenance area is the requirement for Part 135 operators to develop and abide by the maintenance operations specifications list, the approved operating time for each system component, and time between airframe and engine inspections.

Proof of compliance in the form of records must be available to the FAA maintenance inspectors. If, during periodic record checks, components are found to have been operated in excess of their approved operating time, the operator can be fined or have his certificate revoked. For this reason, it is important that the maintenance records be accurate and up-to-date. Many times in the past maintenance personnel have performed the required inspections or maintenance actions but have failed to record them with proper documentation.

At first look, these new requirements might appear only to increase our workload and expense. However, if we were to use these required records, we will find that we can reap benefits in both reliability and economy.

When an operator is having a problem which is causing either high cost or poor reliability, it is his accurate records that are the foundation for technical discussions with the aircraft and engine manufacturers. Using the operator-provided records, the manufacturer can assign his engineering staff to find a solution to the problem which could result in an operational change or a system modification.

Using the ATA-100 system, flight delays, pilot write-ups, and component failure rates can be categorized by aircraft system. Periodic analysis of this information by the airline's maintenance staff can direct the need to adjust inspection times, request manufacturer's assistance, or modify the system to meet operational demands.

For example, an engine manufacturer might require that an engine's hot section be inspected at 1,250 hours. After repeat

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inspections, the records indicate that no defects are being found. The operator may then take his records to his FAA office and apply for a time extension.

I would like to give another example of using the records to determine possible defects and things that relate sometimes to what we don't expect to find in our records, and that is sometimes records will reveal environment-related problems. For example, while reviewing the records to determine why an aircraft had a flight delay, we find that the cause of the delay is a leaking main landing gear strut. Further review of the problem indicates that this only happens during the months of January and February when it is very cold.

After discussing this problem with the landing gear manufacturer, we find he has already developed a cold weather seal. Reviewing our records indicates that we do not have this particular seal installed. Once we have this type of information, we can then set up a program to modify our struts.

Component failures can be analyzed to determine if failure is occurring at low times since overhaul, midlife, or just before scheduled removal time. If the failure is occurring at low time, the overhaul shop should be consulted to determine if the cause might be poor or improper overhaul techniques. Failures at midlife might require a change in inspection or maintenance programs. High-time failures might require a lowering of scheduled removal times.

On the other hand, if components are running to their opspec approved times, teardown inspection might indicate that the component could have stayed in service longer. If this is the case, we can take our component records and our teardown report to the FAA and apply once again for a time extension.

Records can have both safety and economical impact. Recently in the investigation of a fatal accident the engine manufacturer determined that the low-pressure impeller had failed. Further investigation of similar failures resulted in a service bulletin being issued requiring a special inspection at the next engine overhaul. However, if these impellers had ever been run in a two-stage turbine model of the engine, inspection was required at a prorated time dependent on the cycle since overhaul. If the cycle since overhaul was unknown, not recorded, the engine had to be removed before 1980.

In conclusion, I would just like to stress the point that if we use the required records properly, we can promote safety, economy, and reliability.

FAA SURVEILLANCE OF COMMUTER AIR CARRIER MAINTENANCE PROGRAMS

Wayne N. Dixon
Aviation Safety Inspector
Federal Aviation Administration

In my presentation I am going to try to tell you who this inspector is you see wandering around your hangar floor, nosing around your airplane on the ramp, and what his responsibilities are and what his mission is.

The primary control point for FAA surveillance is the FAA district office located in the proximity of an operator's main base. The office might be a general aviation district office--a GADO. It might be an air carrier district office--an ACDO; or a flight standards district office--an FSDO--which is a combination of the two.

The assignment of air taxis to offices is a prerogative of the regional offices. So in some regions, air taxis might be assigned to air carrier offices; in others, it might tend to combine into FSDO's. The fact that in different regions you are under different offices isn't just an accident. It is based on the regional prerogative. And this in turn is based on the idea of decentralization where the people on the scene know best how to arrange it.

The office to which you are assigned has a responsibility for certification and surveillance of the operators and in FAA jargon is referred to as the certificate holding office. The responsibility is called certificate responsibility.

The inspectors assigned to the operator are entitled principal inspectors, operations, or airworthiness. There might be a principal airworthiness inspector for maintenance and another for avionics, or their maintenance principal airworthiness inspector might handle both. He functions as an FAA contact and liaison point for the operator in all matters pertaining to maintenance. Our principal airworthiness inspector might be assigned certificate responsibility for several operators, depending on the size of the operator, the proximity to the operator, and several other factors.

Each district office has a geographical area of responsibility for aeronautical activities in addition to those operators for whom they have certificate responsibility. This

presents a situation whereby several FAA offices have area responsibility for one operator at various locations in the operator's area of activity. This arrangement occasionally creates confusion for an operator regarding what element it is accountable to and for what.

The point is best clarified by recognizing the function of each element with regard to a problem. If the problem results from a deficiency in the maintenance program, company policies and procedures, or some factor that is systemwide, the office with certificate responsibility should handle it. In this case, if the problem is local in nature, then the office with local or area responsibility will take care of it; then the office with the area responsibility will resolve the problem and advise the certificate holder, the office with certificate-holding responsibility, accordingly. So this sets up two different situations where two different levels of responsibility come into play.

The best protection against any misunderstandings or problems with the area office is well-defined policies and procedures and the way you are set up on your manuals.

Normally if the office with area responsibility knows there is a problem that pertains to deficiencies in the maintenance program or something of that nature, they will contact the principal inspector who in turn will contact you. However, there are occasions where either one of these inspectors is obligated to take necessary action when he is confronted by a situation critical to passenger safety. The type and frequency of inspections is determined by the office with area responsibility.

In effect, then, we are saying that the principal, the office with certificate responsibility, does not set up how many inspections are conducted by another office in another area. That is, each office sets up its own inspection program.

On the types of inspections, the maintenance spotcheck is the primary surveillance inspection used by FAA maintenance and avionics inspectors for air carriers and air taxis. They are observation and analysis of the in-progress maintenance operations. They look for overall quality; conformity of the operator's inspection or maintenance programs; compliance with specific methods, techniques, and practices; competency in personnel, and adequacy of facilities--all viewed from the standpoint of the effectiveness of the operator's management control and support.

The spotchecks are conducted with a minimum of interruption to the maintenance operation. The inspector will advise the person in charge of the maintenance operation as to his, the

inspector's mission and area of interest. It is not necessary for the operator's personnel to accompany the inspector on his inspection, but they may do so if they wish. The inspector will normally discuss activities with mechanics and inspectors but will address complaints or need for corrective action with appropriate supervisory or management personnel, so you won't have the situation of the inspectors telling your mechanics to do this, that, and the other thing. They will be going through your supervisory and management system.

We also conduct maintenance facility inspections to determine the adequacy of facilities and personnel at any base, terminal, or intermediate stop along which the operator's maintenance is performed. The scope of the inspection includes parts storage and handling, training facilities, test gear, shops, and other maintenance support equipment such as workstands, jacks, et cetera. These inspections might emcompass outside agencies performing maintenance for the operator. Again, these inspections are conducted so as to minimize interrupting operations. In the case of facilities inspections, someone of the operator's personnel usually accompanies the inspector. In the case of an inspection of an outside agency, the operator is advised sufficiently in advance of the intent to make the inspection so that he can make the necessary arrangements.

Facility inspections are normally conducted whenever a new maintenance facility is established or the activities of an existing facility are significantly changed. Normally there is a whole round of these done whenever a new airplane is introduced into service.

The FAA also conducts special-purpose inspections of activities such as training, records reviews, and other activities relevant to accomplishment of the maintenance program and to management control. Ramp and en route inspections are conducted to evaluate the effectiveness of the operator's maintenance functions by inspection of the finished product. These activities also afford the inspector the opportunity to observe refueling, weight and balance control, and other operational aspects relative to this area of responsibility. Again, these inspections are conducted with a minimum of disruption of the carrier's operation, and in most cases en route inspections are scheduled to avoid displacing regular passengers.

Hopefully, this general information will help you to know what we are going and what our programs are under surveillance.

WRAP-UP SESSION

FAA Moderators Panel

The FAA moderators presented the following viewpoints on the discussions and panels they had moderated during the two-day symposium:

FAA Discussion - Commuter Air Carrier Safety Issues

Mr. Harrison stated he was gratified to hear an acknowledgement of the duty and responsibility which rests with the operators. He also said he was glad to hear the characterization of the Federal Aviation Regulations as minimum standards and to hear the expression of duty in terms of the highest degree of care. These duties had been expressed in many different ways--morality, attitude, and integrity. There are really five elements to duty, and there are five elements to safety, all of which were expressed in these two days. They are knowledge, care, skill, judgment, and responsibility.

Mr. Harrison then thanked everyone for their participation in the program and said he was very gratified with the support that the CAAA and its membership and the operators, manufacturers, and suppliers had given this symposium.

Commuter Operations Overview

Mr. Luffsey first commended his speakers for their excellent and comprehensive presentations. He stated they had covered in-depth considerations of functions associated with commuter operations management; programs for maintenance, reliability, and airworthiness; human factors--really the people considerations related to accident prevention--commuter service needs for airport/airway development; and finally the CAAA perspective of the issues and programs related to safety--really the CAAA's safety program.

Continuing, Mr. Luffsey said he had elected not to condense and summarize what the panel had said since that would really be unjust. Instead, he said he would like to cover what he heard--to put it in his own words and let the participants evaluate whether he (in fact, whether FAA) had gotten the message. In shopping list form, what he heard was:

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1. The regulatory effort by FAA to date has been a proper step. Part 135 is supported. However, he heard a word of caution, and that is don't tamper with it unless it is really needed. More generally, don't regulate unless necessary;

2. Commuter carriers have significant approach and landing facility requirements, including radar coverage by the ATC. FAA is admonished to fix the criteria to recognize those needs so that when the funding is approved, it can be applied forthrightly, fairly to commuter needs;

3. Good surveillance is needed and its associated enforcement is recognized. Also, FAA should recognize the other role, that of coach and counselor. FAA should lead, not push, compliance with good existing regulations;

4. There remains an airport surface problem in terms of terminal access, air traffic access, and reliever approach facilities and procedures, including the airport. FAA should recognize and meet the objective of upgrading overall quality of air traffic service and, in that process--

5. Deal with system anomalies and system errors that today compromise safety;

6. The roles of CAB, NTSB, and FAA are recognized. For the FAA part, fundamentally the role is to assure safety through regulation. FAA should also assure that staffing standards are consistent region-to-region, that inspectors are trained for commuter operations, and that regulatory interpretations are standard. CAAA discussed an eight-point program in which at least, in part, was enunciated the establishing of a solid statistical baseline from which to work. They indicated strong support for the implementation of Part 24 and reassessment or regulatory review of Part 135, as well as an intense effort towards the use of flight simulator training devices; and,

7. FAA is encouraged to continue this form of dialogue on safety particularly, at least annually on a national basis. But of more importance, or at least equal importance, is to continue this effort at the regional level throughout the year, and I tell you we intend to do that.

User/Government Panel Discussion on Concerns of the Consumer

Mr. Whittington said the main message as he saw it is that with all the consumer concerns expressed, the overriding concern is safety. The commuter operators must above all else commit the funds necessary to ensure the highest degree of safety and pass these costs along to the consumer who will directly benefit. When Congress passed the Deregulation Act, he said, two

principal goals were identified. First was safety, and second was service to the small community.

The rapidly expanding commuter industry has made remarkable adjustment in filling in on the heels of the departing certificated carriers. But in some cases, it has really not lived up to the safety expectations that are essential to a healthy industry. We all realize, he said, the so-called less-safe operators are a small minority in a large population of commuter operators, but this is where the public perception issue comes into play with devastating results, as we know.

Continuing, Mr. Whittington said, "You are judged in the public eye by the actions of the few, and public perception will make or break you."

In his panel, Mr. Whittington said we heard consumer concerns addressed from varying viewpoints. ACAP applauded the new Part 135 and the surveillance and enforcement initiatives being taken by the FAA. But it also chided the agency for not moving faster than it has. It cited areas where there is room for improvement in Part 135, particularly with respect to flight duty time limitations. ACAP, he said, supports the legislative proposals on violation sanctions and criminalization of certain acts. It reminds the agency the key to good regulations is good enforcement, and it pointed out the need for continuing monitoring of field enforcement activity by the Congress, the Safety Board, and the FAA itself.

We were reminded of the vital role safe, reliable air service plays in decisions to locate or relocate businesses at various communities. With deregulation, the Nation's air transportation system simply cannot function unless the commuters and the state and airport operators recognize the need to upgrade the physical environment of the commuter by ensuring that appropriate runways, taxiways, terminal facilities, and navaids are provided.

The states are keenly aware of the need for financial stability monitoring as an indicator of reliability, and some are taking steps in that direction. The CAB already has rulemaking in progress on this very issue. Deregulation has added new responsibilities on to the CAB, which is now mandated to ensure that the commuter is fit, willing, and able to provide the necessary service. The fitness issue includes safety, of course, and the Board consults with the FAA to ensure that a particular commuter's safety attitude and record are taken into consideration in awarding the essential service authorizations.

Consumer complaints are also considered in these decisions. Mr. Whittington stated we were cautioned that the FAA must

resist the temptation to overregulate as a result of the safety concerns expressed at this symposium. The FAA must skillfully and judiciously choose the new regulations that are necessary to close the gap between commuter and the trunk carrier safety record. It was suggested that haphazard, uncontrolled rulemaking will only discourage growth without achieving the safety result that is desired.

There were also repeated reminders that a small portion of the $3 billion in the Trust Fund is sorely needed at the small airports served by commuters for up-to-date navaids. The FAA criteria for establishment of precision landing aids were criticized as being unresponsive to the safety needs of the commuter market.

In closing, Mr. Whittington asked the rhetorical question, "Is the commuter passenger getting his fair share of the Trust Fund?" Many of you, he said, think not. The basic consumer concern, no matter how you cut it, however, is safety. Many of the steps already taken in rulemaking and enforcement will work toward responding to this concern. Additional work is needed, and it will follow. However, the commuter operator himself is the key to this issue, and he must police himself and his fellow operators if comparability of safety with the large trunk carriers is to be achieved.

User/Government Panel Discussion on Training and Proficiency Issues in Commuter Air Carrier Operations

Mr. Walk started off by saying that one thing that he had gotten out of this symposium is that the word "training" and the "essentiality of training to achieve a high level of safety" came up time and time again. This was not only from the personnel on his panel, but he also heard Congressman Levitas using two words that Mr. Walk had used--"attitude" and "training." Mr. Walk indicated that during his discussions with a great number of the participants, he hadn't talked to one operator who didn't believe that good, solid training isn't the key to success for a high level of safety.

Continuing, Mr. Walk said his panel looked at the use of simulators in crew training in commuter operations, and the perspectives of a commuter airline pilot were given. There was also a review of what is going on in the FAA and what we can expect in the future.

Mr. Walk closed by saying that he was looking forward to having smaller seminars out in the FAA Northwest Region, and he had already talked to some of the operators from the great northwest about it. We may not be entirely standardized, he

said, but we are going to be standardizing our Region among ourselves and hopefully we will get standardized throughout the country. We do have a problem--there isn't any question about it--but it all goes back, he said, to "training."

Government/User Panel Discussion on Commuter Air Carrier Maintenance Issues

Mr. Melugin indicated that his panel, being last on the program, had kept their remarks very brief and concise. He thought the story they told is simply this--that the maintenance function quite often is subordinated to other functions. It is not as dramatic as the operational statistics, but it is an important part of the safety equation.

NOTE: The Wrap-Up Session was followed by further discussion and comments concerning the FAA security program. In effect, this was a continuation of the previous day's discussion of the "Current and Proposed FAA Security Program." Accordingly, the proceedings of these further discussions/comments have been inserted immediately following the earlier discussions (see pages 45 through 50).

CLOSING STATEMENT

In his closing statement, Mr. Foster noted that he had observed that a tone of cooperation had been struck at the symposium between "those whom we in the Government serve and you who serve the public." And, he added, if we can keep that cooperation and that attitude as we proceed on down through this next year, when we have our second symposium next January, I think we will see that we will have accomplished a lot in the next 12 months.

Mr. Foster then thanked the participants and stated he was delighted that they were there. The symposium was then closed.

APPENDIX A

Commuter Airlines and Federal Regulation 1926-1979

COMMUTER AIRLINES AND FEDERAL REGULATION

1926–1979

JANUARY 1980

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
WASHINGTON, D.C. 20591

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EXECUTIVE SUMMARY

The purpose of this paper is to trace the development and performance of the commuter airline industry to the present time, with particular reference to economics and safety. In addition, an attempt is made to interrelate the various factors which have contributed to the growth of the commuter airline industry into one of the vital links in the National Air Transportation System. It is hoped that the paper will shed some additional light on the current potentialities and problems which face the commuter airline industry.

Some of the more relevant points made in the main body of the paper are summarized below.

- Changes in technology--especially aircraft design--and in circumstances--e.g., the Second World War--played a vital role in the development of the National Air Transportation System. As these changes occurred over time, the viability of scheduled passenger service to smaller communities improved significantly.

- Small community service was first introduced by local service carriers at the close of the Second World War, and has now been greatly enhanced by the growth of smaller, commuter air carriers, especially since the mid-1960's.

- Changes in economic and safety regulations have accompanied the growth of service by all carrier groups to small communities. In general, the changes in economic regulations have coincided with dramatic changes in aircraft design or with historical circumstances such as the Second World War. Improvements in safety regulations also generally coincide with the changes in economic regulations as service to small communities improved.

- Since the mid-1960's, commuter air carriers have captured an increasing share of the small community market. This pattern began and has continued as scheduled carriers obtained larger turbojet equipment and abandoned smaller markets. The Airline Deregulation Act of 1978 has recently stimulated scheduled carriers to abandon small community markets and commuter airlines, in turn, to replace scheduled carrier service. During calendar year 1978, CAB reported approximately 250 commuter airlines serving 630 communities and 819 airports in the United States.* Approximately 91 percent of these airports were small-hub or non-hub facilities-most of which were not served by certificated carriers. Significantly, commuters enplaned approximately 55 percent of their passengers at these smaller airports, where scheduled carriers enplaned only 12 percent of their passengers. Thus, commuter operations complement, rather than compete with, scheduled carriers. Commuter operations are therefore a non-duplicating and necessary part of the nation's air transportation system.

*Preliminary FAA data show some 321 commuters certificated under Part 135 as of December, 1979.

- Recent changes in economic and safety regulations have affected the commuter industry. Of particular importance in the area of economic regulation was the Airline Deregulation Act of 1978 which:

  - Increased scheduled airline flexibility in entering and abandoning markets, thus resulting in increased market opportunities for commuter airlines.

  - Authorized the use of larger equipment, thereby increasing commuter flexibility in serving larger markets.

  - Enhanced opportunities for commuter operators by making them eligible for loan guarantees, requiring their inclusion in joint fare agreements, and permitting the CAB to issue direct subsidies to commuter airlines for providing essential air service.

- The most significant change in safety regulations was the FAA's revision of Part 135 in late 1978 which dramatically changed the rules governing operations of commuter aircraft to make them more akin to those required of scheduled carriers. The revision of Part 135 and other regulatory administrative programs undertaken by the FAA are just now becoming fully effective.

- The safety record of commuters has been receiving increased attention from the FAA, NTSB, the public, and the press since the passage of the Airline Deregulation Act and the consequent increased importance of the industry within the national Air Transportation Air Transportation System. An analysis of this record shows the following:

  - Accident rates for commuter carriers have been and continue to be significantly higher than those for laeger carriers.

  - One key characteristic of the commuter industry is its diversity. As more homogeneous groups of carriers--e.g., larger carriers, scheduled passenger carriers, or carriers reporting to the CAB--are considered, the record of the industry improves but remains below the safety record attained by larger air carriers.

  - The majority of all commuter accidents occur in multi-engine piston aircraft.

  - Three types of accidents account for the majority of fatal and non-fatal commuter accidents--engine failures, collision with ground/water and collision with objects on the ground.

  - Two flight phases--landing and takeoff-account for the majority of all commuter accidents but the majority of fatal accidents and fatalities occur in the in-flight phase.

Of the factors cited in 180 commuter accidents in the period 1975-1978, 56.7 percent were attributed to pilot errors or deficiencies. The most frequently cited factor contributing to accidents in the same period was weather-related phenomena, which accounted for 39.7 percent of all factors.

- In the next decade, the industry will mature and carriers will acquire larger and more sophisticated equipment. New and exciting FAA programs will also become fully effective in the 1980's. As a consequence, the safety record of the industry should improve. In Exhibit A, FAA safety programs are correlated directly with the causes and factors of accidents whose risk they are designed to reduce. These programs and their potential impacts are discussed more fully in the main body of the report.

The main body of the report is organized in the following way. Commuter airline developed and measures of performance (excluding safety) are considered in the first chapter. The second chapter is a review of the FAA Safety Program from 1977 to the present time. The commuter safety record is considered in the third chapter, while the potential effects of the FAA Safety Program on commuter safety are discussed in the fourth chapter.

Exhibit A

COMPARISON OF THE RELATIVE INCIDENCE OF CAUSES AND FACTORS FOR 180 COMMUTER ACCIDENTS (1975-1978) WITH RECENT FAA SAFETY PROGRAMS AND REGULATORY REVISIONS

Broad Cause/ Factor	Detailed Cause/ Factor	Percent of Total Causes	Percent of Factors	Directly Applicable FAA Safety Programs and Regulatory Revisions
Pilot		56.7	18.3	Enforcement Program New Office of Flight Operations
	Training Related	30.2	6.8	135.97 135.243 135.245 135.293 135.297 135.321-.351
	Attempted Operations With Known Deficiencies in Equipment	1.1	1.0	135.65 135.69 135.179
	Weather Related	2.6	1.6	135.173, .175 135.213, .225 135.219 135.227
	Inadequate Pre-Flight Preparation and/or Planning	5.6	2.6	135.21, .23 135.27, .39
	Mismanagement of Fuel	4.1	0.0	135.223
	Familiarity With Operations	7.6	2.6	135.299
	Other Pilot Error/Faults	5.3	3.7	135.97 135.243 135.245 135.293 135.297 135.299 135.321- .351 Proposed Flight and Duty Time Regulations
Personnel		10.9	12.6	Enforcement Program
	Maintenance, Servicing, Inspection	7.6	3.1	New Office of Airworthiness 135. 21, .23 135.37- .39 135.411- .443
	Operational Supervising Personnel	0.8	5.2	135.37- .39 135.69 135.77

Exhibit A

COMPARISON OF THE RELATIVE INCIDENCE OF CAUSES AND FACTORS FOR 180 COMMUTER ACCIDENTS (1975-1978) WITH RECENT FAA SAFETY PROGRAMS AND REGULATORY REVISIONS

Broad Cause/ Factor	Detailed Cause/ Factor	Percent of Total Causes	Percent of Factors	Directly Applicable FAA Safety Programs and Regulatory Revisions
	Production-Design Personnel	0	1.0	Part 24 Lead Region Certification
	Other Personnel Inadequacies	2.6	3.1	135.21 135.37- .39
Airframe		7.1	2.1	Lead Region Certification
Powerplant		12.6	2.1	Part 24
Systems		1.8	0.5	New Office of Airworthiness
Airports/ Airways Facilities		2.6	14.7	Satellite Airports Programs Collision Avoidance System
Weather		2.4	39.7	Approach and Landing Systems
Terrain		2.4	10.5	Aviation Weather Detection
Miscellaneous		3.5	0	Short-Term Weather Tracking

COMMUTER AIRLINE DEVELOPMENT

On March 1, 1925, Ryan Airways commenced the first domestic regularly scheduled year-round passenger service between Los Angeles and San Diego, using a converted World War I single-engine standard bi-plane. Later, passenger comfort and safety was improved with the introduction of the Ford Trimotor, a three-engine, all-metal, fully enclosed highwing monoplane, first introduced in 1926. In these early years of commercial air transportation, there were few distinctions betwen airlines in terms of quality of service, types of aircraft, or operating procedures. However, in 1936, American Airlines introduced New York to Chicago service using DC-3 aircraft. By 1938, these aircraft were carrying 95 percent of all U.S. commercial traffic and the distinctions between aircraft, quality of service, and operating procedures of the various airlines were becoming apparent.

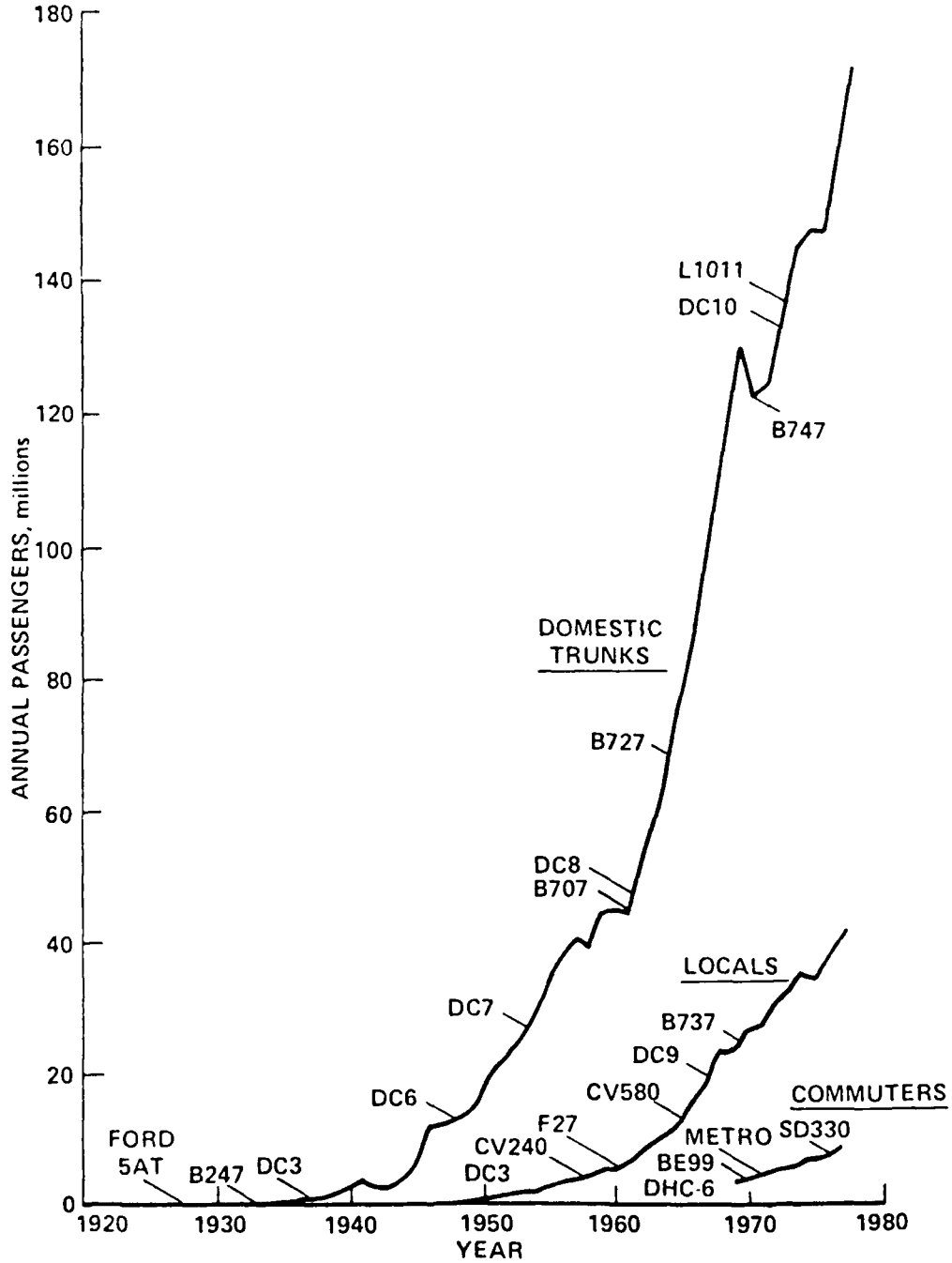
The Civil Aeronautics Act of 1938 created a single, independent agency, the Civil Aeronautics Authority, to regulate civil aviation. The Act broadened the scope of safety regulations, subjected air carriers to economic regulations which were similar to those imposed on public utilities, and authorized subsidy assistance to air carriers through federal payments made for the carriage of mail. One of the first measures passed by the new Authority was Regulation 400-1, which exempted nonscheduled operators from the economic and safety provisions of the Civil Aeronautics Act. This led to the establishment of "small irregular carriers" operating aircraft under 10,000 lbs. in gross takeoff weight (later amended to 12,500 lbs.). CAA Regulation 400-1 set a precedent for later regulations which distinguished between scheduled and commuter airline services.

Another precedent-setting CAA action was the "Investigation of Local, Feeder and Pickup Air Services" (1943) which led to the temporary certification of local service carriers to serve "communities and localities throughout the continental United States to which (air) transportation may not appear warranted under usual economic considerations." In that same year, Essair was the first airline to be awarded a certificate as a local service carrier and subsequently began service in 1945 at the close of the Second World War. This second precedent-setting action committed the Federal Government to the promotion of service to small communities, a role later to be assumed by the commuter airlines.

With the end of the Second World War came a rapid spurt in airline activity. By May 1945, 10,926 DC-3 aircraft had been produced, including the military versions--C-37, C53, R-4D, and Dakota. In the four years immediately after the war, several other aircraft types were also introduced--DC-4 (1945), Lockheed L-049 Constellation (1946), DC-6 and Martin 202 (1947), and Boeing 337 (1949). It was the large pool of DC-3's, together with these newer aircraft, which spurred the development of the trunk airlines in the post-war period. The local service carrier also benefited directly from the low prices of the war surplus DC-3's available in this period. Shown in Exhibit 1 is the interaction between airline growth and the introduction of new aircraft into commercial service.

Exhibit 1

HISTORY OF U.S. COMMERCIAL AIR TRANSPORTATION



During this same period (1946-1950), federal regulations concerning the certification of aircraft also changed. CAR Parts 3 and 4(b) separated the standards affecting utility, acrobatic, and restricted-purpose aircraft from transport category aircraft. In the former group were included the relatively small (under 12,500 lbs. gross takeoff weight) aircraft which were to become the mainstay of the commuter fleet two decades hence. The separation became necessary as the larger transport category aircraft were embodied with more sophisticated equipment which would have been uneconomic in smaller aircraft.

The separation of CAR Parts 3 and 4(b) was part of a larger concern for the quality of service to small communities. Although during the early post-World War II years the local service carrier airlines began to serve communities smaller than those of interest to the trunks, the CAB remained concerned enough about the total system of air transport to recognize that there were communities even smaller than those to which local service airlines were flying which also required interstate service. At the same time, the Board recognized that scheduled service was not always required at the smallest points and that the aircraft called for were smaller than Douglas DC-3's that the newly certificated local service operators generally employed.

So it was in 1949 that the CAB experimentally granted blanket exemptions from economic regulation for all commercial operations of aircraft having a maximum certificated gross takeoff weight of 12,500 lbs. or less. The 1949 exemption, being an experiment, generated little activity if only because there was no assurance that the exemption would be continued long enough to permit recovery of capital of new operators. In 1952, the CAB made permanent the exemption with the adoption of Part 298. The regulatory threshold of 12,500 pounds established in the exemption had precedent in CAB Regulation 400-1 adopted in 1938 and the same threshold was included in CAR Parts 3 and 4(b) as well. In addition, the Board wanted to protect from competition the local service airlines who were recently certificated and also heavily subsidized to cities only a little larger than those visualized to be served by the "air taxis" created by Part 298.

Having created the "air taxi industry," the regulators--both safety and economic--were able to turn their attention to the larger carriers because few of these air taxis provided anything more than charter service. In fact, the number of commuter air taxis remained under twenty until the mid-1960's.[1] Although there were several reasons why scheduled air taxi service was almost nonexistent in the period 1952 to 1965, the single overriding reason was that the available aircraft were either too large--e.g., DC-3--or too small--utility aircraft--to meet the demands of the low-density markets which the Part 398 carriers were supposed to serve. Thus, although notices of proposed rulemaking for Parts 47 and 125 which would have affected air taxi operations were made during this period, the air taxi operators continued to operate under the special provision of CAR 42(a) (first adopted in 1946), while aircraft certification for smaller aircraft remained under CAR 3.

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1 Johnson D. Mayer, "Local and Commuter Airlines Throughout the United States," Traffic Quarterly, April 1977.

However, the period 1952-1965 witnessed several events in the trunk and local service carrier segments of the airline industry which would later profoundly affect the commuters. The most important series of events pertains to the increased pace in aircraft technology, and especially the introduction of turbojet aircraft in 1958. From 1958 through 1961, the domestic airlines witnessed the introduction of the Boeing 707 series, the DC-8 series, the Convair 880, the Boeing 720 series, and the French-built Caravelle. These new aircraft were not only a technological leap forward, but also forced upon the trunk airline industry a massive reequipment cycle because no large carrier could for very long remain competitive with slower turboprop aircraft. Many of the older turboprop aircraft were sold to the local service carriers which also had a number of new turboprop aircraft to choose from. As the size of the average aircraft used by the certificated airlines grew, the gap between these turboprop and turbojet aircraft and the 12,500 lbs. aircraft used by the limited number of air taxi operators obviously grew with it. In the same vein, as the regulated carriers' aircraft grew larger, their utility in the short-haul, low-density markets diminished as did the profitability of using them in such markets. Thus were created the economic incentives which later led to the growth of commuter airlines.

During this same 1952 through 1965 period, three developments in the local service industry also foreshadowed the growth of the commuter airlines. In 1955, Public Law 38 amended the Civil Aeronautics Act to permit the permanent certification of local service carriers. Up to this point, the growth of this industry segment was inhibited by the temporary nature of their certification which fostered a high degree of risk. With permanent certification, the local service carriers were in a better position to grow into the routes which the trunk carriers would later abandon as the size of aircraft increased.

In the "Skip-Stop Operating Authority Case" of 1958, the CAB first permitted the local service airline to skip some intermediate points in some markets. This decision, in effect, authorized local service carriers to directly compete with trunk carriers on certain routes and was instrumental in fostering the growth of the local service carriers, especially when they began to acquire DC-9 and BAC-111 turbojet aircraft in the 1960's. It was this increased competitiveness with trunk carriers together with the availability of larger aircraft which led to the subsequent abandonment of certain markets by local service carriers in the mid-1960's.

Also in 1958, the CAB decided in the "Seven States Area Investigation" to set a standard for guaranteed air service for communities (under investigation in this case) which enplaned five or more passengers per day. While this case pertained directly to the local service carriers, it set a precedent for the guaranteed service provisions which were incorporated twenty years later in the "Airline Deregulation Act of 1978."

Thus, although its capabilities lay to a large extent dormant during the period 1952 through 1965, several events in the scheduled carrier segments laid the groundwork for future commuter growth. However, the development of the commuter industry as we know it today had to wait for a technological breakthrough in power plants for smaller aircraft.

The hiatus in small aircraft innovation came to an end in 1964 with the development of the lightweight turboprop engine, principally the Pratt and Whitney (Canada) PT-6. This lightweight engine, originally intended primarily for other uses, proved well suited to the under 12,500 lbs. commuter-type aircraft as it allowed a marked increase in payload without any increase in gross weight. Such aircraft as the DeHavilland Twin Otter and the Beech 99 were the primary results of this technological breakthrough. A comparatively rapid and enthusiastic acceptance of these new aircraft by the carriers and by the traveling public is testimony to the fact that there had been a developing demand for such aircraft and service.

The advent of the new turboprop commuter aircraft, along with the development of advanced models of piston powered aircraft, were factors in the substitution of commuter airlines for scheduled carriers. Such substitutions provided the commuter air carriers with relatively large markets which they could integrate with hubs to form viable economic route systems. The first of these substitutions occurred in 1967 when Apache Airlines was substituted for American Airlines at Douglas, Airzona. Although the Apache service to Douglas was for a trunk carrier, most of the subsequent substitutions were for local service carriers.

The most successful substitution agreements were those made by Allegheny Airlines with several commuter operators. Contracted commuters painted their aircraft in Allegheny colors, utilized Allegheny ticket, terminal, and gate facilities at large and intermediate airports, utilized normal IATA forms, and the Allegheny computer for reservations. Allegheny guaranteed the commuters a breakeven operation for the first two years of service. From the standpoint of the commuters, the Allegheny program provided a presence in the market which would otherwise have been difficult to duplicate, and in addition provided for certain economies in the utilization of Allegheny's facilities--e.g., computer service, ticketing, terminals, and gate space.

Coincident with the above-mentioned events which laid the foundation for the current commuter industry, the FAA adopted Part 135 in 1964. This was the first set of operating regulations which pertained specifically to air taxi/commercial operations. Formerly, the air taxis operated under CAR 42(a) which was a special subset of the operating authorities which pertained to scheduled airlines. The passage of Part 135 anticipated the coming growth in the commuter industry and the need for tightened air safety regulations. As instituted, these regulations included requirements for the carriers' basic organizational structure, administrative procedures, crew member qualifications, aircraft and equipment.

In the period 1965-1972, Part 135 was amended to upgrade the safety of air taxi operations. In 1967, amendments pertaining to ILS approaches and landings (Amendment 135-5) and terminal instrument procedures or TERPS (Amendment 135-7) were adopted by the FAA. Two years later, the FAA adopted additional Part 135 amendments which pertained to the operation of larger (than 12,500 pounds GTW) aircraft (Amendment 135-9) and operating procedures (Amendment 135-12) including limits on operations during icing conditions,

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pilot qualifications, training of mechanics, and carriage of cargo. The pace of changes in operating regulations continued in 1971 and 1972 with the adoption of Amendments 135-29 and 135-34 which prescribed standards for avionics equipment.

Perhaps the most important change in Part 135 in this period, however, was Amendment 135-18 which disallowed commercial operation of single-engine aircraft with ten or more passenger seats after May 31, 1972. The amendment also prescribed additional airworthiness standards and operating limitations for aircraft with ten or more passenger seats.

During this same period, aircraft certification regulations pertaining to smaller commercial aircraft also were altered. The regulations embodied in CAR 3 and related amendments became FAR Part 23 while those embodied in CAR 4(b) were recodified as FAR Part 25. Four years later in 1969, special aviation regualations (SFAR 23) applying to aircraft with a maximum takeoff weight of 12,500 lbs. or less and a passenger capacity of ten or more became effective. This SFAR placed airworthiness requirements on these aircraft in addition to those filed in Part 23.

Since 1965, Part 298 has also been amended several times to extend and expand the operating and airmail authority of air taxis, including the permission to carry mail in competitive markets. Most notable among these changes was the 1972 modification permitting the use of aircraft up to 30 passenger seats and a payload capacity of 7,500 lbs. This 1972 amendment permitted commuters to realize economies in their growing markets by utilizing larger aircraft instead of increasing the number of aircraft used in any one market.

In 1969, another amendment to Part 298 was adopted by the CAB which required air taxi operators to register annually and which created "commuter air carriers," i.e., those "operators which perform pursuant to public schedules, at least five round trips a week between two or more points," as a separate subcategory of air taxis. Under this amendment, the commuter air carriers were required to file quarterly reports of their operations. Because extensive data were first available on the industry in 1970, many obsevers attribute the beginnings of the commuter industry to that year.

Commuter airline growth, first spurred by technological change in aircraft design and then by growth in both passengers and size of aircraft utilized by scheduled carriers and by changes in economic regulations was also accompanied by changes in safety regulations. These same factors were to contribute to growth in the next six years.

By the end of 1972, there were 184 commuter airlines serving 643 airports with 791 aircraft. In that same year, the commuters carried 5.2 million passengers. The growth in the industry between 1972 and 1978 was rapid. By the end of 1978, there were 258 commuter airlines serving 819 airports with 1,200 aircraft. In that same year, the commuters carried 10.2 million passengers.

In 1978, Congress passed the Airline Deregulation Act which opened up new opportunities for the commuter airline industry. The key provisions of this Act include:

- Application by the CAB of direct subsidies to commuter air carriers which provide essential air services to small communities. This provision frees the scheduled carriers to serve larger markets where their equipment is best used and at the same time opens up new market opportunities for commuter airlines.

- Inclusion of commuter air carriers in the FAA equipment loan guarantee program which will facilitate the financing of new commuter aircraft and at the same time provide an element of financial security which previously had only been enjoyed by scheduled carriers.

- Inclusion of commuter air carriers in the uniform methods which establish joint fares between air carriers. This provision facilitates joint marketing programs between commuter airlines and scheduled carriers and reduces consumer costs for interline trips.

- Authorization to operate larger equipment (up to 60 seats and 18,000 lbs. of payload capacity) thereby allowing commuters greater flexibility in the selection of appropriate airraft for their growing markets.

During the same 1972 through 1978 period, the safety regulations for commuter airlines were under review. In 1972, the National Transportation Safety Board issued a study entitled, "Air Taxi Safety Study" which suggested several changes in safety regulations pertaiing to commuter airlines. There were seven points which summarized the NTSB opinions concerning the desired future direction of commuter safety regulations. Of these, the following four were directly addressed in the FAA's revision of Part 135 in 1978:

- Stricter initial qualification requirements for pilots.

- More detailed and organized maintenance programs and training.

- More detailed and organized initial and recurrent training programs for pilots.

- Establishment of minimum equipment lists (for multiengined aircraft) and flight continuation rules.

The revision of Part 135 also addressed two of the other seven NTSB points. These revisions provided for the retention of detailed operator's manuals, additional FAA approved training and added a continuous maintenance program for aircraft (greater than ten passenger seats) similar to those used by Part 121 (scheduled) carriers. These revisions will aid in the standardization of operating procedures throughout the commuter industry, especially as commuters move toward the use of larger aircraft.

The other issue discussed in the NTSB report pertained to the assertion that because the previous Part 135 regulations were less stringent than those placed on the scheduled industry, commuter industry safety was necessarily lower. In the preamble to the Part 135 revision published in December of 1978, the FAA indicated:

> A major goal of this revision of Part 135 is to provide the passenger traveling on an on-demand air taxi flight or commuter air carrier flight with the level of safety comparable to Part 121, considering the differences between these operations, the cost versus benefits and the overall feasibility of implementation.

The last major point addressed in the 1972 NTSB report was the lack of specific flight and duty time limitations. Flight and duty time regulations were first introduced in 1975 and are the subject of further revaluation. Originally, revised flight and duty time regulations were to become part of the revised Part 135, but was separated from the remainder of the revisions because of the need to review Part 121 flight and duty time regulations.

More recently, the FAA adopted Amendment 6 to FAR 91 and 121 which also applies to Part 135 carriers. Included in this amendment are alternate airport rules, changes in fuel reserves for night operation, changes in VOR checks and other operations, and equipment-related revisions.

At the same time, the FAA has undetaken several other programs to focus and define the regulation of commuter safety. Currently, it is in the process of developing a proposed new Part 24 aircraft certification regulations which may apply to the new generation of commuter aircraft. The objective of this new regultory initiative is to combine the appropriate features of certification requirements of Part 25 with those from Part 23 in order to speed the development of safer commuter aircraft while, at the same time, reducing certifiction costs for larger commuter aircraft. In addition, the FAA is currewntly examining issues related to increased aircraft performance criteria, fatigue evaluation procedures, passenger cabin safety, fuel system requirements and fire extinguishing methods for commuter aircraft. In three related administrative programs, the FAA has reorganized the Flight Standards Service and placed commuters under the jurisdiction of the Office of Flight Operations and Airworthiness, set up a special follow on monitoring program to ensure compliance with revisd Part 135 and has proposed a bill to expand penalties for lack of compliance with revised Part 135 including criminal sanctions for gross offenders.

Finally, in its administration of the Aircraft Loan Guarantee Program, the FAA is giving priority to requests for guarantees made by commuter airlines. In assigning priority to commuter requests, the agency hopes to help stabilize the financial positions of commuter airlines and thereby ensure that safety programs are not jeopardized either by inadequate equipment or by carrier resource constraints.

The regulatory activity--both safety and economic--since 1978, can be likened to the series of regulatory changes which occurred between 1965 and

1972. Changes in economic regulations have expanded the opportunities of commuter airlines and thereby provided a stimulus to growth. At the same time, changes in safety regulations have been or are in the process of being promulgated to reduce the risk to the public in commuter operations. As commuter airlines grow in the next decade, they will acquire larger, newer, and more sophisticated aircraft which will be subject to stricter safety regulations. Thus, the coincident changes in economic and safety regulations are fortuitous because they help to ensure both a viable commuter industry and increased levels of safety for the flying public.

Current Commuter Operations

According to recent statistics, the 258 commuter airlines serve more communities and more communities exclusively than any other carrier group (see Exhibit 2). The services provided by commuters largely complement rather than compete with those provided by scheduled carriers. One reflection of this complementarity is shown in Exhibit 3 which documents the rapid increase in number of interline agreements between certificated carriers and commuter airlines over the period 1976 through 1978. The statistics in Exhibit 3 also point to the rapid integration of the commuter airlines into the Nation's air transportation system. Further evidence of the complementarity of commuter and scheduled services is shown in Exhibit 4. Note that the vast majority of airports served by commuters are small or non-hub airports. Fifty-five percent of the enplaned passengers also originate at the smaller airports in contrast to only 12 percent for certificated carriers. Furthermore, 60 percent of commuter markets are 150 miles or less while only two percent of certificated markets are in the same mileage category.

The efficiency of these commuter operations is also relevant. Shown in Exhibit 5 is a comparison of the fuel efficiency of scheduled carrier and commuter aircraft. In the exhibit, fuel efficiency is measured by maximum seat miles per gallon of fuel. Note that despite the fact that commuter aircraft are typically more than an order of magnitude smaller than scheduled carrier aircraft, the fuel efficiency of commuter aircraft is comparable. Other measures of efficiency of commuter aircraft are shown in Exhibit 6 where performance--measured by cruising speed--price and passenger capacity are compared. Generally, Exhibit 6 shows that the price per seat of a fully equipped commuter aircraft increases with performance and passenger capacity. What is interesting, however, is the fact that there is a variety of new aircraft currently available from which the commuters may select. For example, there are relatively low-performance, low-priced aircraft and relatively high-performance, and commensurately higher priced aircraft in each seating capacity category which corresponds to the regulatory thresholds of 9, 19, 30 and 50 seats implicit in FAA operating regulations. For commuters having relatively short stage lengths--primarily those east of the Mississippi--the lower cost, lower performance aircraft in any of the three seating capacity categories are more attractive than the higher performance aircraft. For those commuters covering relatively long stage lengths--primarily those west of the Mississippi--higher performance aircraft may be necessary to facilitate sufficient aircraft utilization.

Exhibit 2

SERVICE BY CARRIERS AS OF JUNE 1, 1979

	Communities Served	Communities Exclusively Served
Commuters	630	359
Local Service	484	222
Trunks	189	8
Others (Intrastate/ Supplemental)	57	1

Source: Commuter Airline Association of America, 1979 Annual Report, "Creating a New Era" (October, 1979, pp. 50-51.

Exhibit 3

SUMMARY OF CERTIFICATED
CARRIER INTERLINE AGREEMENTS
WITH COMMUTER AIRLINES

1978 Rank	Certificated Carriers	Number of Agreements with Commuters 1976	1977	1978
1	American Airlines	34	51	107
2	United Air Lines	63	95	105
3	Eastern Airlines	50	81	96
4	Transworld Airlines	48	76	94
5	Braniff International	44	80	91
6	Continental Air Lines	58	86	90
7	Delta Air Lines	46	82	89
8	Ozark Air Lines	48	73	84
9	Northwest Airlines	46	71	81
10	Western Airlines	31	64	80
11	Piedmont Airlines	46	70	78
12	Allegheny Airlines	37	58	67
13	Frontier Airlines	32	52	63
14	Hughes Airwest	36	50	59
15	National Airlines	21	56	59
16	Texas International	29	47	58
17	Southern Airways	33	47	55
18	North Central Airways	24	44	47
19	Alaska Airlines	29	46	45
20	Air New England	17	37	40
21	Pan American	1	35	37
22	Air Midwest	-	26	24
	TOTAL	773	1327	1549

Source: Small Transport Aircraft Technology, NASA (October 1979)

Exhibit 4

CHARACTERISTICS OF COMMUTER AIR SERVICE

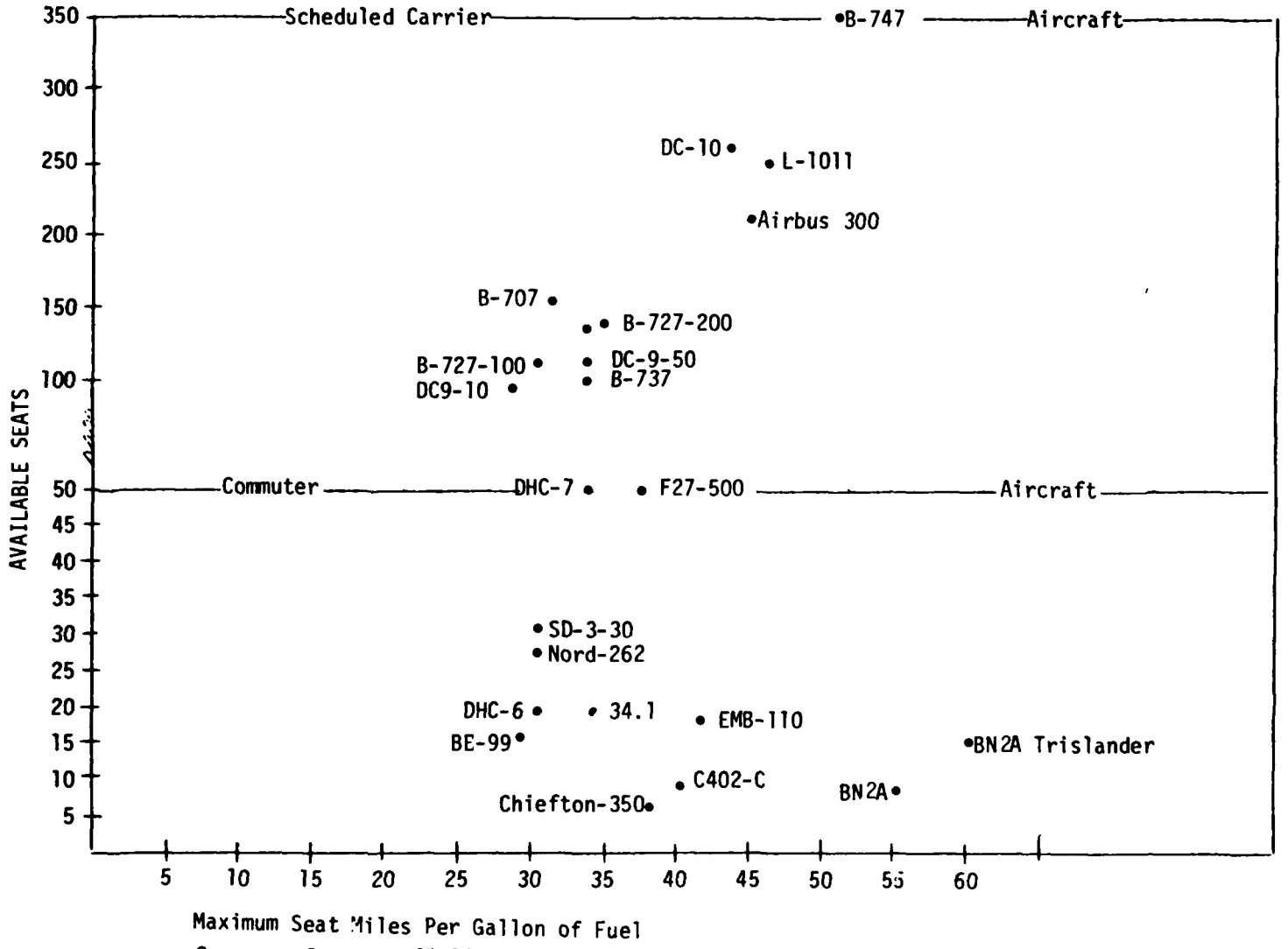
	Number of Airports	Total Enplaned Commuter Passengers	Percent Passengers Enplaned (Commuters)	Percent Passengers Enplaned (Certificated)
Large Hub Airports	26	3,435,008	34%	68%
Medium Hub Airports	48	1,147,985	11%	20%
Small/Non Hub Airports	745	5,597,545	55%	12%
TOTAL	819	10,180,538	100%	100%

Stage Length	Number of Commuter Passenger Markets Served	Percent of Total Commuter Markets	Percent of Certificated Markets
0-75 Miles	452	26%	0%
75-150 Miles	572	34%	2%
150-250 Miles	465	27%	4%
250 and over	221	13%	94%
TOTAL	1,710	100%	100%

Source: Commuter Airline Association of America, 1979 Annual Report, "Creating a New Era," (October 1979, p. 18.

Exhibit 5

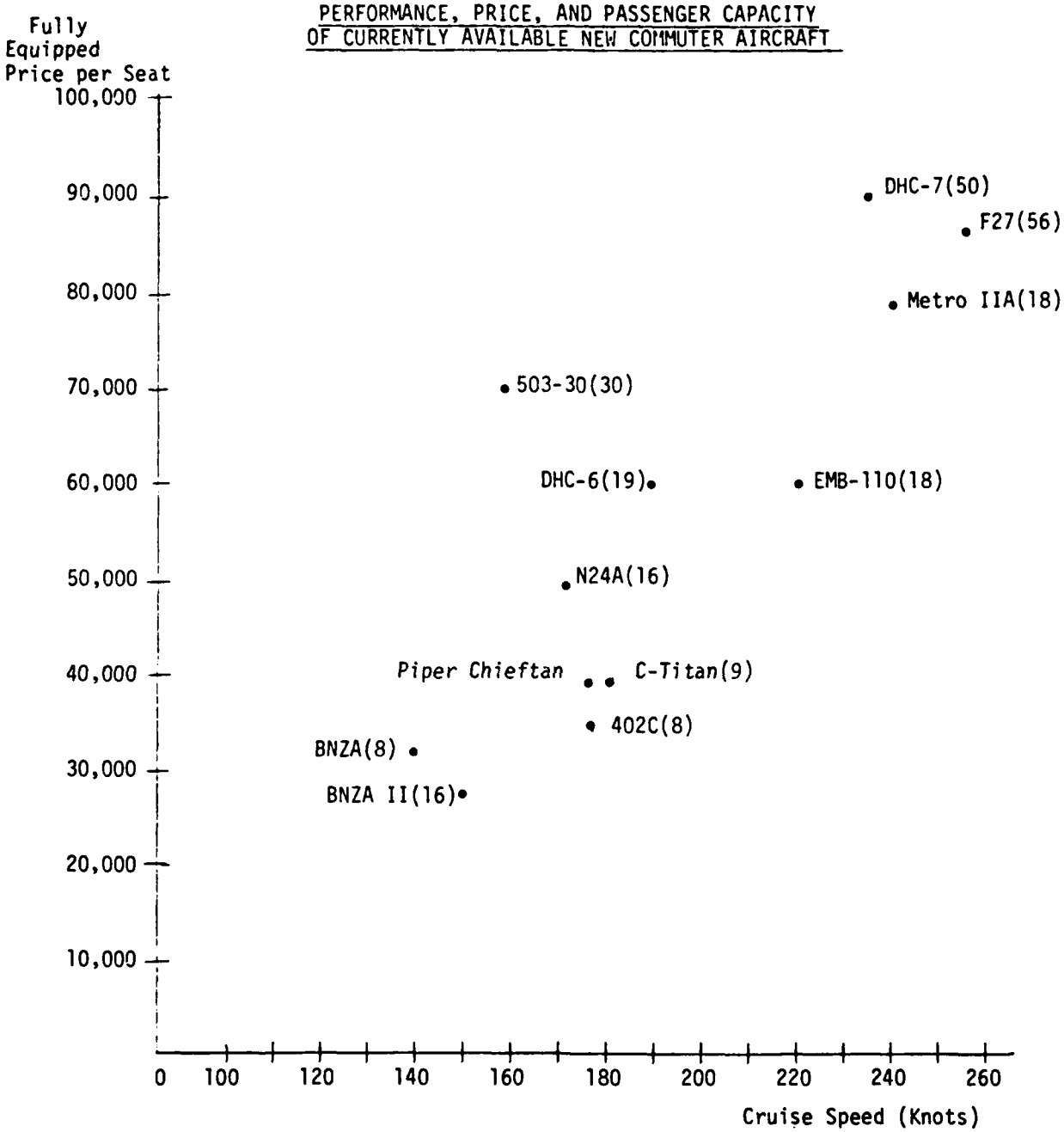
FUEL EFFICIENCY AND SIZE OF SCHEDULED CARRIER AND COMMUTER AIRCRAFT



Source: Commuter Airline Association of America, 1979 Annual Report. "Creating a New Era" (October 1979), Pp.84-85. New York Times (November 1979), p. D13

Exhibit 6

PERFORMANCE, PRICE, AND PASSENGER CAPACITY
OF CURRENTLY AVAILABLE NEW COMMUTER AIRCRAFT



Note: Numbers in parentheses are passenger capacities.

Source: Business and Commercial Aviation (April 1979)

The relatively small size of commuter airline operations, the size of commuter aircraft and the short stage lengths over which they fly do contribute to a number of problems which the industry still faces. For example, aircraft utilization is sometimes hampered by the short stage lengths over which commuters operate. This problem can become particularly acute in hub and spoke commuter operations when aircraft are delayed by the congestion at hub airports. Furthermore, the operational reliability of airports served by commuters is not as high as those served by the scheduled carriers. Of the 271 continental U.S. airports receiving scheduled service exclusively by commuters, 66 percent lack precision instrument landing systems. Without such systems, all weather service reliability and passenger convenience are hampered. Both of these problems may be ameliorated once the debate concerning the new airport and airway development and revenue acts (ADAP) are settled in the coming year. If additional ADAP funds are made available for reliever runways at hub airports and for precision instrument landing systems at other commuter airports, aircraft utilization should be improved.

Also endemic to commuter operations is the problem of taking advantage of economies of scale which are enjoyed by other segments of the air transportation industry. For example, because they are relatively small, commuters do not enjoy the scale economies in maintenance and passenger servicing and sales which their larger cunterparts experience. Often, such services are provided under contract and consequently at a higher price than would obtain if commuters were able to perform such functions effectively themselves. Also related to the size of commuter companies is the difficulty of obtaining financing for new equipment. In the past, commuters had to pay significant interest premiums (as much as five to six percentage points over what their scheduled carrier counterparts were paying) for loans to acquire new aircraft. This problem should be reduced by the loan guarantee program currently being administered by the Federal Aviation Administration.

Another unique problem faced by commuters is related to aircraft size. As commuter airlines grow and consequently require larger aircraft, the operator faces the prospect of crossing the threshold of regulations which occur in aircraft sizes of more than nine seats, more than 19 seats, more than 30 seats and more than 60 seats (Exhibit 7). Though the operator typically gains increased productivity from larger aircraft, crossing each threshold requires a significant effort which inevitably results in increased direct costs--added personnel and maintenance requirements--and indirect costs--added certification, reporting, training, and security requirements.

Aircraft manufacturers also face some unique problems which directly affect the availability of aircraft to the commuter industry. First, the diversity which characterizes the commuter industry presents aircraft manufacturers with a fragmented market for their products. Aggravating this problem is the lack of information on the operations of the industry. Furthermore, owing to the size of commuter airlines, it is difficult to book orders for several aircraft at once. All of these factors contribute to greater risk for manufacturers of commuter aircraft in both positioning new aircraft in the market and in developing them.

The relatively small size of commuter airline operations, the size of commuter aircraft and the short stage lengths over which they fly do contribute to a number of problems which the industry still faces. For example, aircraft utilization is sometimes hampered by the short stage lengths over which commuters operate. This problem can become particularly acute in hub and spoke commuter operations when aircraft are delayed by the congestion at hub airports. Furthermore, the operational reliability of airports served by commuters is not as high as those served by the scheduled carriers. Of the 271 continental U.S. airports receiving scheduled service exclusively by commuters, 66 percent lack precision instrument landing systems. Without such systems, all weather service reliability and passenger convenience are hampered. Both of these problems may be ameliorated once the debate concerning the new airport and airway development and revenue acts (ADAP) are settled in the coming year. If additional ADAP funds are made available for reliever runways at hub airports and for precision instrument landing systems at other commuter airports, aircraft utilization should be improved.

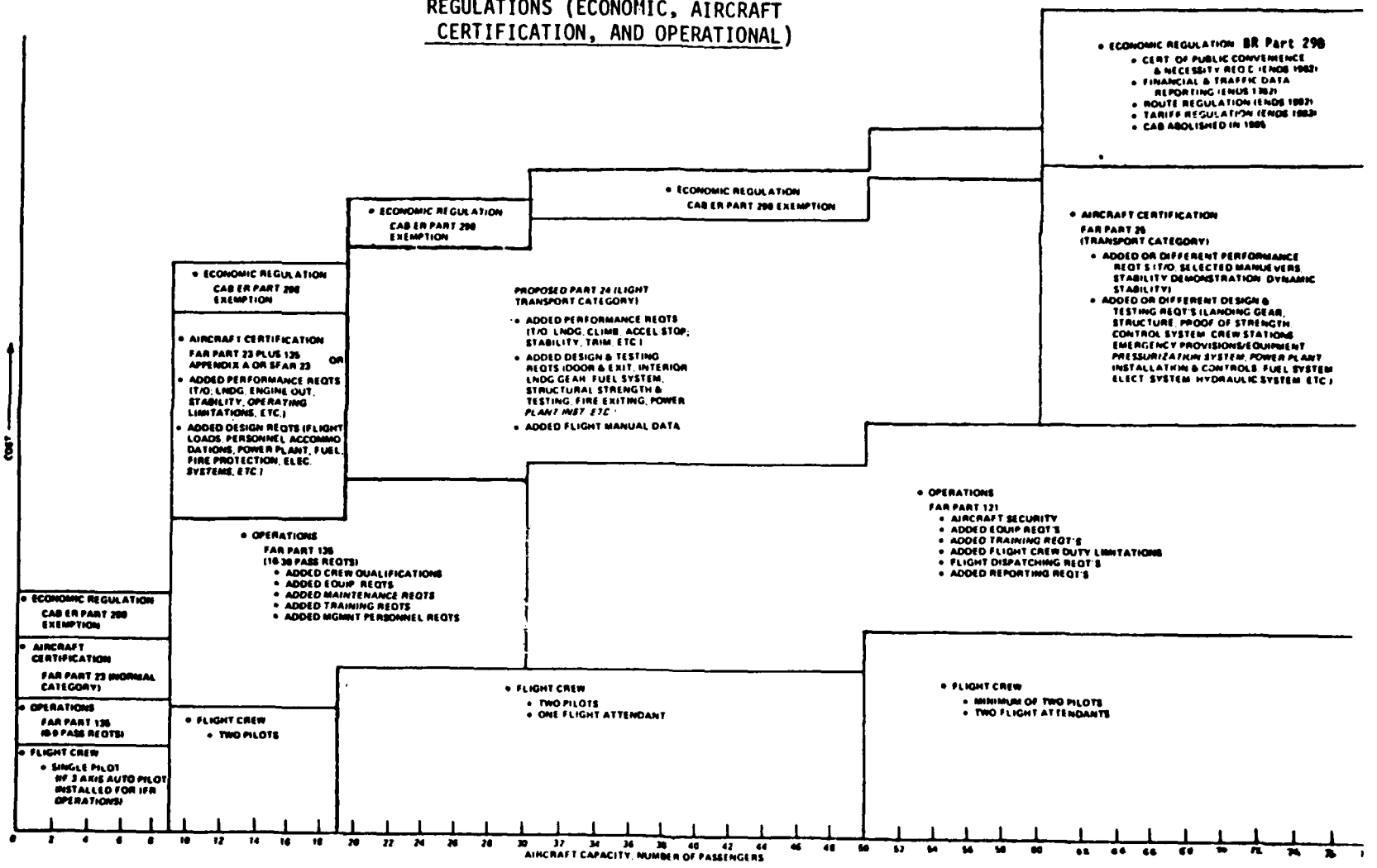
Also endemic to commuter operations is the problem of taking advantage of economies of scale which are enjoyed by other segments of the air transportation industry. For example, because they are relatively small, commuters do not enjoy the scale economies in maintenance and passenger servicing and sales which their larger cunterparts experience. Often, such services are provided under contract and consequently at a higher price than would obtain if commuters were able to perform such functions effectively themselves. Also related to the size of commuter companies is the difficulty of obtaining financing for new equipment. In the past, commuters had to pay significant interest premiums (as much as five to six percentage points over what their scheduled carrier counterparts were paying) for loans to acquire new aircraft. This problem should be reduced by the loan guarantee program currently being administered by the Federal Aviation Administration.

Another unique problem faced by commuters is related to aircraft size. As commuter airlines grow and consequently require larger aircraft, the operator faces the prospect of crossing the threshold of regulations which occur in aircraft sizes of more than nine seats, more than 19 seats, more than 30 seats and more than 60 seats (Exhibit 7). Though the operator typically gains increased productivity from larger aircraft, crossing each threshold requires a significant effort which inevitably results in increased direct costs--added personnel and maintenance requirements--and indirect costs--added certification, reporting, training, and security requirements.

Aircraft manufacturers also face some unique problems which directly affect the availability of aircraft to the commuter industry. First, the diversity which characterizes the commuter industry presents aircraft manufacturers with a fragmented market for their products. Aggravating this problem is the lack of information on the operations of the industry. Furthermore, owing to the size of commuter airlines, it is difficult to book orders for several aircraft at once. All of these factors contribute to greater risk for manufacturers of commuter aircraft in both positioning new aircraft in the market and in developing them.

Exhibit 7

SCHEDULED AIR CARRIER FEDERAL REGULATIONS (ECONOMIC, AIRCRAFT CERTIFICATION, AND OPERATIONAL)



NOTE: STATE REGULATIONS NOT SHOWN AS "AIRLINE DEREGULATION ACT OF 1978" SPECIFIES FEDERAL PREEMPTION WHEN OPERATING UNDER A CAB CERTIFICATE OR EXEMPTION

In the past decade, the existing commuter airlines have been able to overcome the above-mentioned programs because of the rapid growth in the industry. Since 1969, investments in the industry have been attractive because of the number of potential of opportunities available. With the passage of the Airline deregulation Act of 1978, rapid growth should continue for some time. For the period 1978 through 1989, the FAA is currently projecting that commuter airlines will achieve growth of 96 percent in the number of operations, 116 percent in passengers enplaned, and 163 percent in revenue passenger miles. However, after the route realignments and abandonments of the scheduled carriers in the wake of deregulation have been settled, the rate of growth in the number of new points served by commuters should also fall. Therefore, probably within the next decade, commuter growth will be dependent mostly upon growth in existing markets which should closely correspond to the more stable and slower growth experienced by the scheduled carriers. As the rate of growth in the commuter industry slows, there is a possibility that the profitability of the carriers will be diminished, in which case the problems discussed above may become more acute. Offsetting this trend somewhat will be the additional maturity and added size of the carriers by that time, the public awareness of and confidence in commuter services, and the appreciation of various federal programs--especially the loan guarantee program and ADAP-financed airport improvement projects.

Of these factors which will offset the problems engendered by declining growth rates for commuter activity in the future, perhaps the most important is safety. The safety programs and regulatory revisions developed by the FAA since 1977 are reviewed in detail in the following chapter.

FAA SAFETY PROGRAM--1977 TO DATE

Since 1977, the airline industry--including commuters--has been characterized by rapid change. In that period, the Civil Aeronautics Board initiated a number of programs to increase competition and relax regulatory restraints which, together with the passage of the Airline Deregulation Act of 1978, led to unprecedented growth in the industry. During this same period, the number of commuter accidents has also increased. Since 1977, the FAA has undertaken a number of significant programs to insure that as growth occurs, the aviation safety record is not only maintained, but improved.

This section provides an overview of these FAA programs either already instituted or currently underway. Not all of these programs are directed exclusively at commuter airlines, but all of these programs are now, or will soon, affect the operation of commuter airlines.

The most extensive change in safety regulations since 1977 was the complete revision of Part 135 which directly affects the operation of commuter airlines. The major goal of this revision was to provide passengers traveling on commuter air carrier flights with a level of safety comparable to the regulations covering scheduled air carriers (Part 121). The details of these changes have been described above. Some of the implications of this major regulatory revision are that:

- Some 75 percent of the revenue passenger miles (RPM's) flown by commuters will be aircraft having either weather radar or thunderstorm protection equipment.
- Some 97 percent of the total RPM's flown by commuters will be in aircraft flown by a pilot in command having an air transport pilot's certificate.
- Two-thirds of the commuter RPM's will be in aircraft maintained to air carrier (Part 121) standards.

Other changes will result in ungrading crew member training, testing and proficiency, and increased avionics and other safety-related equipment.

As a follow-up to these regulatory changes, an FAA program change was issued in April of 1979 setting forth a program of increased surveillance of scheduled air taxi operators complying with the new Part 135. FAA field division chiefs and district office managers were directed to use all available resources to insure that emphasis is placed on the air taxi/commuter program. Included in the program is the increased emphasis on accident prevention programs by the carriers, increased pilot proficiency checks by FAA inspectors, increased aircraft inspections, and monitoring of aircraft maintenance and airmen performance. Relating to the surveillance program is a new consolidated compliance and enforcement handbook to replace the existing Chief Counsel, Air Transportation Security, Airports and Flight Standards Handbooks. The new handbook should be available in the near future.

At about the same time that Part 135 was adopted, the Administrator and Secretary of Transportation announced a multi-faceted safety enhancement program which included the following key elements:

- Establishment of new terminal control areas similar to those already in use in the nation's 23 majhor airports. All aircraft in terminal control areas are under positive air traffic control.

- Establishment of terminal radar service areas at additional air carrier airports. Pilots flying into these areas will be offered radar guidance to keep them safely separated from other air traffic. Experience indicates that 90 percent of the pilots elect to use this voluntary service.

- Initiation of a program to require an altitude reporting transponder for all aircraft entering terminal control and radar service areas by July 1981. After July 1982, all transponders installed will be consistent with the discrete address beacon system which dramatically improves surveillance capabilities and provides for automatic data link communications to be used in conjunction with a ground based collision avoidance system.

- Initiation of an action to require all airlines and air taxi aircraft to carry an active beacon collision avoidance system by January 1985.

- Establishment of enroute radar service areas below 10,000 feet in certain traffic areas. These would function like terminal radar service areas.

- Installation of brite radar equipment at eight airport control towers which would permit direct radar readout of vital flight information.

In a complementary effort to provide passengers traveling on commuter air carrier flights with a level of safety comparable to that enjoyed by passengers traveling on scheduled air carriers wherever feasible, FAA, in October 1979, issued a Notice of Proposed Rule Making proposed to extend security requirements to air taxis and commuters conducting scheduled and certain charter operations. This proposal envisions a multilevel security program tailored to the type and level of threat directed against the operation. In summary terms, the proposal would require operators of aircraft with 20 or mor seats to implement security safeguards similar to those in use by air carriers. For operations conducted with 19 or fewer seats, the proposal envisions less stringent safeguards. Complementary security procedures to be implemented by airports served by air taxis and commuters are also envisioned by the notice.

In July 1979, the safety-related functions of the FAA were reorganized under the newly created Associate Administrator for Aviation Standards. Key elements of this reorganization include:

- Expansion of the functions of the Office of Aviation Safety to include accident and incident investigation; special safety investigations and analyses; analyses of safety trends; and special safety programs.

- Creation of a new Office of Flight Operations to be responsible for insuring: the comptency of airmen; the adequacy of flight procedures and air operations; the evaluation of in-flight facility performance for compliance with the prescribed standards; and, the safe operation and effective development, utilization and maintenance of the FAA's aircraft fleet.

- Creation of a new Office of Airworthiness which will be responsible for assuring airworthiness of civil aircraft; production certification; airworthiness certification; approval of operators' aircraft maintenance programs; airmen certifications; air agency certification; and continuing airworthiness programs.

- Reassignment of the Office of Civil Aviation Security to the Associate Administrator for Aviation Standards to assure an integrated an coordinated aviation safety and security program.

- Reorganization and redefinition of headquarters staff functions in order to free resources for field work, including more field inspectors and engineers.

An integral part of the FAA's continuing safety program is the continued operation and installation of new facilities in the air navigation and traffic control system. Shown in Exhibit 8 is an inventory of facilities installed as of July 31, 1978 and those installed during fiscal year 1979.

In addition to the above-mentioned programs the FAA has several programs underway which are expected to reach completion within the next few years. Some of the more important of these programs are discussed below.

The Light Transport Airplane Airworthiness Review--Part 24--has been discussed above. Briefly, this review contemplates the development of a new Part 24 of the Federal Aviation regulations which will provide a separate set of airworthiness standards for multi-engine airplanes that have a suggested maximum passenger seating configuration, excluding any pilot seat, of about 60 seats and a maximum gross weight of about 50,000 lbs. It is expected that this type of aircraft will become an integral part of the commuter fleet in the 1980's. In performing the review, the FAA is attempting to set higher (than Part 23) standards for these aircraft, while holding certification expenses below those commonly experienced for Part 25 aircraft.

Exhibit 8

FAA FACILITIES
1979

Facility Type	Installed as of 7/31/78	Installed during FY-1979
o Enroute Control & Services		
--Air Route Traffic control Centers	25	0
--Air Route Surveillance Radar	101	2
--Remote Center Air/Ground Communication Facility	552	27
o Terminal Control & Services		
--Airport Traffic Control Tower	427	0
--Airport Surveillance Radar	181	1
--Automated Radar Terminal Service	88	24
o Flight Service Facilities		
--Flight Service Stations (Domestic)	318	1
--Direction Finder Equipment	205	33
o Navigation & Landing Aids		
--VHF Omnidirectional Range	931	5
--Instrument Landing System	595	22
--Visual Approach Slope Indicator	712	102
--Runway and Identification Lights	339	89

An additional 372 facilities are programmed and funded and are in process to be installed.

The FAA has already set in motion what is termed the Aircraft Certification Lead Region Program. Under this program, the FAA region having the greatest expertise with a category of aircraft has been assigned aircraft certification national program responsibility according to their expertise identifiable by specific Federal Aviation regulations--e.g., Parts 23, 27, 29, 33, etc. Application of the lead region concept is intended to provide move standardization in certification decisions for a given category of aircraft, improve overall effectiveness of FAA aircraft certification efforts, and will permit the Washington headquarters to be more selective in concentrating on other major issues of national significance. In addition, the program will result in more timely updating of regulations and resolutions of precedent-setting issues pertaining to type certification.

An aircraft certification national resource specialist program has also been established to identify FAA personnel having special technical skills, to be used nationally in policy and problem areas. The lead region and national resource specialist programs are designed to be complimentary programs directed toward upgrading the FAA's technical effectiveness.

The FAA also has underway a review of flight crew members' flight and duty time limitations. This proposed amendment to the FARs would revise the flight and duty time limitations and set limits for flight crew members used by domestic (including commuter) flag, and supplemental air carriers, as well as operators of large aircraft, and air travel clubs. It is intended to eliminate the complexity of the current regulations and insure flight and duty time limitations are based on today's operating environment.

Aside from the above current or proposed safety programs, the FAA maintains an active research and development effort whose major objectives are:

- To reduce the number of accidents that have occurred during the approach and landing phase of aircraft operations.

- To reduce the risk of mid-air collision by providing an improved separation insurance system. This improved system should impose a minimum economic and operational burden on the users of the system, especially general aviation.

- Take human factors into consideration when developing improvements to air traffic control and aircraft systems.

The research and development programs are expected to make major contributions to the resolution of these safety needs and are shown in Exhibit 9. All of these programs are funded by the Airport and Airways Trust Fund through the research, engineering, and development appropriation.

Exhibit 9

FAA RESEARCH AND DEVELOPMENT PROGRAMS

- Approach and Landing
  - Wind Shear and Wake Vortex Avoidance
  - Visual Aids to Pilots for Transitioning Low Level Approaches (head-up display)
  - Automated Low Cost Weather Observation System (ALWOS)
  - Microwave Landing System (MLS)
- Ground Based Collision Avoidance Systems
  - Discrete Address Beacon System (DABS)
  - Discrete Address Beacon System Data Link
  - Automated Traffic Advisory and Resolution Service (ATARS)
  - Conflict Alert and Resolution--the DABS/ATARS Interface
  - En Route and Terminal Computer Enhancements for Conflict Detection and Reduction
  - Automated Terminal Service (ATS)
- Airborne Equipment Based Collision Avoidance Systems
  - Active Beacon Collision Avoidance System (BCAS)
  - Full Capability BCAS
- Weather Related Programs for Terminal and En Route
  - Improved Aviation Weather Detection and Display
  - Short-Term Severe Weather Tracking and Prediction
- Human Factors Studies
  - The Cockpit/Controller Interface
  - Cockpit integration and display, including the Cockpit Display of Traffic Information (CDTI)

COMMUTER SAFETY RECORD

The recent concern of both the FAA and the NTSB with commuter safety can be attributed to the increasing importance of commuter airlines in the national air transportation system. One standpoint from which to examine the relative performance of commuter safety is to compare it which that of scheduled and certificated air carriers. Exhibits 10,11, and 12 make this comparison. From the first two exhibits, it is readily apparent that the absolute number of commuter accidents in any year is higher than for certificated route carriers. In comparing Exhibits 10 and 12, it becomes apparent that commuter airline accident rates for scheduled operations are consistently higher than those for scheduled operations of certificated carriers. In fact, commuter accident rates are on the order of a magnitude larger than comparable accident rates for the larger carriers.

One of the key factors to remember when considering commuter accident rates is the diversity in the industry. Shown in Exhibit 13 are accident rates for scheduled passenger commuter air carrier operators which report to the CAB. These are the only passenger-carrying commuter airlines for which activity data--flight hours, departures, passengers, or revenue passenger miles--are available. The accident rates shown in Exhibit 13 are about one-fourth lower than those for all scheduled commuter operations. There is, however, no significant change in the rate of fatalities because these operators carry the vast majority of commuter passengers.

A more homogenous group of commuter airlines are those 50 carriers which carry the most scheduled passengers. Comparing the experience of these top 50 carriers to all scheduled commuter passenger carriers reveals that accident rates reduced by more than half for both all accidents and for fatal accidents. Again, the rates for fatalities remain approximately the same because these top 50 operators carry approximately 70 percent of all commuter passengers. Also shown in Exhibit 14 is a comparison of the safety experience of these top 50 carriers with certificated passenger airlines. Again, it must be concluded that the commuter safety record has not been as good as that of certificated passenger airlines.

Shown in Exhibit 15 are the accidents by aircraft type in the period 1975 through 1978. The majority of all commuter accidents are in multi-engine piston aircraft. It should be noted that these multi-engine piston aircraft account for a disproportionate share of accidents when compared to their size in the fleet. Unfortunately, data is not available on a number of operations or hours of operations by aircraft type, but it is probably true that these multi-engine piston aircraft have higher utilization rates than do either helicopters or single-engine piston aircraft, so that their disproportionate number of accidents may be illusory.

Exhibit 10

RATES OF U.S. CERTIFICATED ROUTE CARRIER ACCIDENTS IN SCHEDULED OPERATIONS, 1975-1978

	Accident Rates*							
			Per 100,000 Flight Hours		Per 100,000 Departures			
	Total	Fatal	Total	Fatal	Total	Fatal	Flight Hours	Departures
1975	30	2	0.553	0.037	0.638	0.043	5,422,665	4,704,052
1976	22	2	0.394	0.036	0.455	0.041	5,587,601	4,835,138
1977	20	3	0.345	0.052	0.405	0.061	5,800,843	4,934,094
1978	20	4	0.334	0.067	0.400	0.080	5,985,000	4,995,000

*Does not include training, ferry and other operations of scheduled air carriers that may be included in other analyses.

Exhibit 11

SUMMARY OF ALL COMMUTER AIR CARRIER ACCIDENTS
1975-1979

	Accidents			No. of Accidents by Operators Who Report to CAB		Category of Operation			
Year	Total	Fatal	Fatalities	Yes	No	Scheduled	Non-Scheduled	Training	Ferry
1975	50	12	26	42	8	46 (12F)	3	0	1
1976	41	11	34	37	4	38 (11F)	3	0	0
1977	41	8	30	37	4	40 (8F)	1	0	0
1978	56	15	63	53	3	54 (13F	2 (2F)	0	0
1979	70	16	72	52	18	58 (12F)	10 (3F)	1	1 (F)

F - Denotes fatal accidents

Exhibit 12

RATES OF COMMUTER AIR CARRIER ACCIDENTS
IN SCHEDULED OPERATIONS OF
OPERATORS REPORTING TO CAB

	Accidents			Per 100,000 Flight Hours			Per 100,000 Departures				
Year	Total	Fatal	Fatalities	Total	Fatal	Fatalities	Total	Fatal	Fatalities	Flight Hours	Departures
1975	38	8	32	4.0	0.8	2.3	2.6	0.5	1.5	950,410	1,475,579
1976	34	10	30	3.5	1.0	3.1	2.2	0.7	2.0	966,931	1,536,130
1977	36	7	28	3.2	0.6	2.5	2.1	0.4	1.7	1,115,858	1,680,491
1978	51	12	46	4.0	0.9	3.6	2.6	0.6	2.4	1,273,000	1,954,731
1979*	37	9	56	3.3	0.8	4.8	2.0	0.5	3.0	1,161,690*	1,890,414*

*1979 Data preliminary. Hours and departures estimated.

Exhibit 13

RATESS OF COMMUTER AIR CARRIER ACCIDENTS
IN SCHEDULED PASSENGER OPERATIONS
OF OPERATORS REPORTING TO CAB

				ACCIDENT RATES											
				Per 100,000 Flight Hours			Per 100,000 Departures			Per 1,000,000 Passengers			Per Billion RPM's		
	Total	Fatal	Fatalities	Total	Fatal	Fatalities	Total	Fatal	Fatalities	Total	Fatal	Fatalities	Total	Fatal	Fatalities
1975	22	2	13	2.9	0.3	1.7	1.7	0.2	1.0	3.3	0.3	1.9	30.1	2.7	17.8
1976	26	6	26	3.1	0.7	3.1	1.9	0.4	1.9	3.6	0.8	3.6	31.0	7.1	31.0
1977	23	6	27	2.6	0.7	3.1	1.5	0.4	1.8	2.7	0.7	3.2	24.4	6.4	28.6
1978	32	7	34	3.2	0.7	3.4	1.9	0.4	2.0	3.1	0.7	3.3	27.9	6.1	29.7

	Flight Hours	Departures	Passengers	RPM's
1975	746,000	1,262,000	6,700,000	730,000,000
1976	845,000	1,400,000	7,300,000	840,000,000
1977	869,000	1,498,000	8,500,000	943,000,000
1978	1,014,000	1,700,000	10,200,000	1,145,000,000

NOTE: Only accidents reported in NTSB Briefs and by FAA are included in this exhibit.

Exhibit 14

ACCIDENT RATES: TOP 50 SCHEDULED PASSENGER CARRYING COMMUTER AIRLINES VS. CERTIFICATED AIRLINE PASSENGER SERVICE, 1979-1978

Commuters

				Accident Rates Per Million Passengers			
	Total	Fatal	Fatalities	Total	Fatal	Fatalities	Passengers Carried
1977	8	2	18	1.1	0.3	2.5	7,258,772
1978	13	4	26	1.5	0.5	3.1	8,421,991

CERTIFICATED PASSENGER CARRIERS

1977	15	2	75	0.07	0.01	0.34	222,283,516
1978	18	4	16	0.07	0.02	0.06	248,000,000

Exhibit 15

COMMUTER AIRLINE
ACCIDENTS BY AIRCRAFT TYPE, 1975-1978

All Commuter Operations

	Piston							
	Single Engine		Multi-Engine		Turbine		Helicopter	
	Total	Fatal	Total	Fatal	Total	Fatal	Total	Fatal
1975	6	0	39	11	4	1	1	0
1976	13	3	21	7	7	1	0	0
1977	5	1	31	4	4	2	1	1
1978	6	0	41	12	8	2	1	1
Percent of Fleet in 1978	17.7		55.9		26.0		0.4	
Percent of Total Accidents 1975-1978	16.0		70.2		12.2		1.6	
Percent of Fatal Accidents 1975-1978	8.7		74.0		13.0		4.2	

Scheduled Passenger Operators Reporting to CAB

1975	4	0	30	7	4	1	0	0
1976	10	3	17	6	7	1	0	0
1977	3	0	28	4	4	2	1	1
1978	6	0	36	9	8	2	1	1

Helicopters have accounted for a disproportionate share of all commuter accidents relative to their fleet size. In contrast, turbine aircraft appear to experience fewer accidents and fewer fatal accidents relative to their size in the fleet. This is significant because turboprop aircraft are the fastest growing category of commuter aircraft. The total number of accidents due to single-engine piston aircraft are roughly proportional to their share of the fleet, although the number of fatal accidents is somewhat lower than would be expected relative to their fleet size.

The statistics shown in Exhibit 15 for scheduled passenger operators reporting to the CAB indicate a similar pattern as that exhibited for all commuter operations. Unfortunately, information on the fleet devoted exclusively to passenger operations is not currently available so that a similar comparison of passenger accident experience with relative fleet size among the different aircraft types cannot be made.

Shown in Exhibit 16 is a breakdown of the types of all commuter accidents for the period 1975 through 1978. Engine failures, collision with ground/water and collisions with objects on the ground as a group account for 44.1 percent of all accidents, 67.4 percent of fatal accidents, and 54 percent of all fatalities. A similar pattern is exhibited for passenger commuter accidents shown in Exhibit 17. These same three accident types account for 41.3 percent of all passenger accidents, 59 percent of all fatal accidents, and 48.5 percent of all passenger fatalities.

Shown in Exhibit 18 are the percent of all commuter accidents by phase of operation for the period 1975 through 1978. As would be expected, the takeoff and landing phases account for the majority of all accidents. Surprisingly, however, the majority of all fatal accidents occur during the in-flight phase, as do the number of fatalities. The same pattern is repeated in Exhibit 19 for passenger commuter operations in the period. Again, the takeoff and landing phases account for the majority of all accidents, but the majority of fatal accidents and fatalities in passenger operations occur in-flight.

From the standpoint of any safety program, the most important accident data are those which describe the causes and factors of accidents. The detailed NTSB Cause/Factor Index has been consolidated in order to facilitate the presentation of these data. This reclassification scheme is shown in Appendix A. Exhibit 20 shows the raw data concerning causes and factors for 180 commuter airline accidents for the period 1975 through 1978. In that period, there were 136 non-fatal accidents and 44 fatal accidents. What emerges from these raw data is the fact that pilot errors or deficiences were the cause of 193 of the 340 causes of these 180 commuter airline accidents. Weather was the most often cited factor in these accidents, accounting for 75 of the 191 factors.

Exhibit 16

PERCENT OF ALL COMMUTER ACCIDENTS
BY TYPE OF ACCIDENT
(1975-1978)

	Accidents	Fatal Accidents	Fatalities
Gear Collapse	5.4 (10)	0.0 (0)	0.0 (0)
Gear Retracted	3.3 (6)	0.0 (0)	0.0 (0)
Stall/Mush or Spin	6.0 (11)	11.6 (5)	19.8 (25)
Engine Failure or Malfunction	23.4 (43)	30.2 (13)	23.8 (30)
Collision with Ground/Water	7.1 (13)	25.6 (11)	24.6 (31)
- Controlled	4.9 (9)	18.6 (8)	22.2 (28)
- Uncontrolled	2.2 (4)	7.0 (3)	2.4 (3)
Collision with Objects or Ground	13.6 (25)	11.6 (5)	5.6 (7)
Collision with Aircraft, Both on Ground	3.8 (7)	0.0 (0)	0.0 (0)
Collision: Mid-Air	1.1 (2)	4.7 (2)	12.7 (16)
Undershoot/Overshoot	5.4 (10)	2.3 (1)	2.4 (3)
Ground/Water Loop Swerve	7.1 (13)	0.0 (0)	0.0 (0)
Airframe Failure	3.8 (7)	2.3 (1)	4.8 (6)
Wheels Up	3.3 (6)	0.0 (0)	0.0 (0)
Hard Landing	2.7 (5)	0.0 (0)	0.0 (0)
Fire/Explosion	5.4 (10)	4.7 (2)	3.2 (4)
Turbulence	1.1 (2)	0.0 (0)	0.0 (0)
Miscellaneous	7.6 (14)	7.0 (3)	3.2 (4)
TOTAL	100.0 (184)	100.0 (43)	100.0 (126)

Note: Numbers in parentheses represent actual numbers.

Note: Does not include 4 flights not found in NTSB Accident Briefs or NTSB printout titled "Cause/Factor Table, Commuter Air Carriers."

Source: NTSB Accident Briefs - First Accident Type

Exhibit 17

PERCENT OF PASSENGER COMMUTER ACCIDENTS
BY TYPE OF ACCIDENT
(1975-1978)

	Accidents	Fatal Accidents	Fatalities
Gear Collapse	5.8 (6)	0.0 (0)	9.9 (0)
Gear Retracted	4.8 (5)	0.0 (0)	0.0 (0)
Stall/Mush or Spin	4.8 (5)	9.1 (2)	20.2 (20)
Engine Failure or Malfunction	24.0 (25)	31.8 (7)	21.2 (21)
Collision with Ground/Water	6.7 (7)	22.7 (5)	25.3 (25)
- Controlled	5.8 (6)	22.7 (5)	25.3 (25)
- Uncontrolled	1.0 (1)	0.0 (0)	0.0 (0)
Collision with Objects or Ground	10.6 (11)	4.5 (1)	2.0 (2)
Collision with Aircraft, Both on Ground	4.8 (5)	0.0 (0)	0.0 (0)
Collision: Mid-Air	1.9 (2)	9.9 (2)	16.2 (16)
Undershoot/Overshoot	5.8 (6)	4.5 (1)	3.0 (3)
Ground/Water Loop Swerve	4.8 (5)	0.0 (0)	0.0 (0)
Airframe Failure	2.9 (3)	4.5 (1)	6.1 (6)
Wheels Up	4.8 (5)	0.0 (0)	0.0 (0)
Hard Landing	1.9 (2)	0.0 (0)	0.0 (0)
Fire/Explosion	5.8 (6)	4.5 (1)	3.0 (3)
Turbulence	1.0 (1)	0.0 (0)	0.0 (0)
Miscellaneous	9.6 (10)	9.1 (2)	3.0 (3)
TOTAL	100.0 (104)	100.0 (22)	100.0 (99)

Note: Numbers in parentheses represent actual numbers.

Note: Does not include 4 flights not found in NTSB Accident Briefs or NTSB printout titled "Cause/Factor Table, Commuter Air Carriers."

Source: NTSB Accident Briefs - First Accident Type

Exhibit 18

PERCENT OF ALL COMMUTER ACCIDENTS
BY PHASE OF OPERATION
(1975-1978)

Phase of Operation	Accidents	Fatal Accidents	Fatalities
Takeoff	22.3 (41)	14.0 (6)	20.6 (26)
Landing	37.5 (69)	23.3 (10)	15.1 (19)
In-Flight	27.7 (51)	58.1 (25)	62.7 (79)
Taxi	10.9 (20)	0.0 (0)	0.0 (0)
Static	0.5 (1)	0.0 (0)	0.0 (0)
Unknown	1.1 (2)	4.7 (2)	1.6 (2)
TOTAL	100.0 (184)	100.0(43)	100.0 (126)

Note: Numbers in parentheses represent actual numbers.

Note: Does not include 4 Flights not found in NTSB Accident Briefs or NTSB printout titled "Cause/Factor Table, Commuter Air Carriers."

Source: NTSB Accident Briefs

Exhibit 19

PERCENT OF PASSENGER COMMUTER ACCIDENTS
BY PHASE OF OPERATION
(1975-1978)

Phase of Operation	Accidents	Fatal Accidents	Fatalities
Takeoff	22.1 (23)	9.1 (2)	20.2 (20)
Landing	32.7 (34)	13.6 (3)	9.1 (9)
In-Flight	32.7 (34)	72.7 (16)	69.7 (69)
Taxi	10.6 (11)	0.0 (0)	0.0 (0)
Static	1.0 (1)	0.0 (0)	0.0 (0)
Unknown	1.0 (1)	4.5 (1)	1.0 (1)
TOTAL	100.0 (104)	100.0 (22)	100.0 (99)

Note: Numbers in parentheses represent actual numbers.

Note: Does not include 4 Flights not found in NTSB Accident Briefs or NTSB printout titled "Cause/Factor Table, Commuter Air Carriers."

Source: NTSB Accident Briefs

Exhibit 20

CAUSES AND FACTORS FOR 180 COMMUTER ACCIDENTS 1975-1978

Includes: 136 Non-Fatal Accidents
44 Fatal Accidents

Broad Cause/ Factor	Detailed Cause/ Factor	Fatal Accidents			Non-Fatal Accidents			All Accidents		
		Cause	Factor	Total	Cause	Factor	Total	Cause	Factor	Total
Pilot	Training Related	25	2	27	78	11	89	103	13	116
	Attempted Operation With Known Deficiences in Equipment	1	1	2	3	1	4	4	2	6
	Weather Related	5	2	7	4	1	5	9	3	12
	Inadequate Pre-Flight Preparation and/or Planning	6	0	6	13	5	18	19	5	24
	Mismanagement of Fuel	5	0	5	9	0	9	14	0	14
	Familiarity with Operations	3	0	3	23	5	28	26	5	31
	Other Pilot Errors/ Faults	8	2	10	10	5	15	18	7	25
	SUBTOTAL	53	7	60	140	28	168	193	35	228

Exhibit 20 Continued)

Broad Cause/ Factor	Detailed Cause/ Factor	Fatal Accidents			Non-Fatal Accidents			All Accidents		
		Cause	Factor	Total	Cause	Factor	Total	Cause	Factor	Total
Personnel	Maintenance, Servicing, Inspection	4	1	5	21	5	26	25	6	31
	Operational Supervisory Personnel	1	8	9	2	2	4	3	10	13
	Production-Design Personnel	0	0	0	0	2	2	0	2	2
	Other Personnel Inadequacies	2	2	4	7	4	11	9	6	15
	SUBTOTAL	7	11	18	30	13	43	37	24	61
Airframe	All NTSB Categories	0	1	1	24	3	27	24	4	28
Powerplant	All NTSB Categories	12	0	12	31	4	35	43	4	47
Systems	All NTSB Categories	2	1	3	4	0	4	6	1	7
Airports/ Airways Facilities	All NTSB Categories	0	0	0	9	28	37	9	28	37
Weather	All NTSB Categories	5	25	30	3	50	53	8	75	83

Exhibit 20 Continued)

Broad Cause/ Factor	Detailed Cause/ Factor	Fatal Accidents			Non-Fatal Accidents			All Accidents		
		Cause	Factor	Total	Cause	Factor	Total	Cause	Factor	Total
Terrain	All NTSB Categories	2	6	8	6	14	20	8	20	28
Miscel-laneous	All NTSB Categories	8	0	8	4	0	4	12	0	12
	SUBTOTAL	29	33	62	81	99	180	110	132	242
	TOTAL	89	51	140	251	140	391	340	191	531

Source: NTSB Accident Briefs

Shown in Exhibit 21 is a percentage breakdown of these causes and factors by category. Pilot errors or deficiencies of all types accounted for 56.7 percent of all causes of commuter accidents. Of that 56.7 percent, 30.2 percent were due to training-related errors or deficiencies as defined in Appendix A. Weather-related phenomena accounted for 39.7 percent of all factors, while airports, airways, and facilities accounted for another 14.7 percent of the factors.

From any standpoint, it appears that the commuter safety record has not been as good as that of the scheduled carriers in the period 1975 through 1978. In order to contribute to the improvement of this situation, the FAA has instituted a number of new safety programs and regulatory revisions which have been described in the previous chapter. The potential effects of these programs and regulatory revisions are described in the following chapter.

Exhibit 21

RELATIVE INCIDENCE (PERCENTAGE) OF FACTORS AND CAUSES FOR 180 COMMUTERS ACCIDENTS 1975-1978

Includes: 136 Non-Fatal Accidents
44 Fatal Accidents

Broad Cause/ Factor	Detailed Cause/ Factor	Fatal Accidents			Non-Fatal Accidents			All Accidents		
		Cause	Factor	Total	Cause	Factor	Total	Cause	Factor	Total
Pilot	Training Related	28.1	3.9	19.3	31.1	7.9	22.8	30.3	6.8	21.8
	Attempted Operation With Known Deficiences in Equipment	1.1	2.0	1.4	1.2	0.7	1.0	1.2	1.0	1.1
	Weather Related	5.6	3.9	5.0	1.6	0.7	1.3	2.6	1.6	2.3
	Inadequate Pre-Flight Preparation and/or Planning	6.7	0	4.3	5.2	3.6	4.6	5.6	2.6	4.5
	Mismanagement of Fuel	5.6	0	3.6	3.6	0	2.3	4.1	0	2.6
	Familiarity with Operations	3.4	0	2.1	9.2	3.6	7.2	7.6	2.6	5.8
	Other Pilot Errors/ Faults	9.0	3.9	7.1	4.0	3.6	3.8	5.3	3.7	4.7
	SUBTOTAL	59.6	13.7	42.9	55.8	20.0	43.0	56.8	18.3	42.9

Exhibit 21 Continued)

Broad Cause/ Factor	Detailed Cause/ Factor	Fatal Accidents			Non-Fatal Accidents			All Accidents		
		Cause	Factor	Total	Cause	Factor	Total	Cause	Factor	Total
Personnel	Maintenance, Servicing, Inspection	4.5	2.0	3.6	8.4	3.6	6.6	7.6	3.1	5.8
	Operational Supervisory Personnel	1.1	15.7	6.4	0.8	1.4	1.0	0.8	5.2	2.4
	Production-Design Personnel	0	0	0	0	1.4	0.5	0	1.0	0.3
	Other Personnel Inadequacies	2.2	3.9	2.9	2.8	2.9	2.8	2.6	3.1	2.8
	SUBTOTAL	7.9	21.6	12.9	12.0	9.3	11.0	10.9	12.6	11.5
Airframe	All NTSB Categories	0	2.0	0.7	9.6	2.1	6.9	7.1	2.1	5.0
Powerplant	All NTSB Categories	13.5	0	8.6	12.4	2.9	9.0	12.6	2.1	8.8
Systems	All NTSB Categories	2.2	2.0	2.1	1.6	0	1.0	1.8	0.5	1.3
Airports/ Airways Facilities	All NTSB Categories	0	0	0	3.6	20.0	9.5	2.6	14.7	7.0
Weather	All NTSB Categories	5.6	49.0	21.4	1.2	35.7	13.6	2.4	39.7	15.6

Exhibit 21 Continued)

Broad Cause/ Factor	Detailed Cause/ Factor	Fatal Accidents			Non-Fatal Accidents			All Accidents		
		Cause	Factor	Total	Cause	Factor	Total	Cause	Factor	Total
Terrain	All NTSB Categories	2.2	11.8	5.7	2.4	10.0	5.0	2.4	10.5	5.0
Miscel-laneous	All NTSB Categories	9.0	0	5.7	1.6	0	1.0	3.5	0	2.3
	SUBTOTAL	32.6	64.7	44.3	32.3	70.7	46.0	32.4	69.1	45.6
	TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

All numbers are column percents.
Totals and subtotals may not sum correctly due to rounding.

POTENTIAL EFFECTS OF THE FAA SAFETY PROGRAM ON COMMUTER SAFETY

One way to evaluate the efficacy of the FAA safety program described in the previous section is to examine the directions of that program in terms of the causes and factors of accidents which have occurred in the recent past--1975 through 1978. While it is impossible to conclude that any single regulation or set of regulations or programs will prevent all accidents due to causes or factors directly addressed by those regulations or programs, such improvements should have a beneficial long-run effect on the safety of the commuter industry.

In this section, the directions of the new regulations and programs described in the previous sections are compared directly with the detailed causes and factors presented in the section on commuter safety statistics. Appendix A to this report contains a detailed listing of the reclassified NTSB causes and factors which are summarized in this section.

One of the key findings in the analysis of aviation safety statistics pertaining to commuter airlines was that the majority of accidents were caused by operations deficiencies. Many of these deficiencies are directly addressed in the new Part 135 implemented in December of 1978. The full impact of this revision has not yet been felt as the industry regears its operations to comply with new regulations. However, this process should be speeded by two administrative changes made at the FAA. These include increased emphasis on accident prevention by the carriers, pilots' proficiency checks and the creation of the new Office of Flight Operations which is responsible for the adequacy of flight procedures, operations, and conformance to prescribed standards. The specific directions of the 135 revision and the areas of impact in terms of causes and factors are shown below.

Broad Cause/Factor: Pilot

Training-Related Cause/Factor

As a result of the revision of Part 135, 97 percent of the RPM's flown by commuter carriers will be by a pilot in command who holds an ATP certificate (135.243). In addition, Parts 135.321-351 call for an FAA approved training program for pilots (and other personnel), while Part 135.97 will insure that all carriers provide aircraft at facilities for pilot training and proficiency checks. Other Part 135 revisions which should reduce the incidence of training-related causes or factors include:

- Part 134.245, which calls for the co-pilot in commuter flights to hold a commercial pilot's license, with appropriate category, class and instrument ratings.

- Part 135.293 which requires yearly competency checks for pilots and co-pilots.

- Part 135.297 which requires IFR proficiency checks for pilots in command.

Attempted Operations with Known Deficiencies in Equipment: Cause/Factor

There are three Part 135 revisions which directly address this cause/factor. Part 135.179 specifies rules for flights with inoperable equipment and also a minimum equipment list for multi-engine aircraft. Part 135.69 includes rules which specify restrictions on or suspension of operations and continuation of flight rules during emergencies. Part 135.65 pertains to procedures for reporting flight irregularities, some of which may be due to equipment failures or deficiencies.

Weather-Related Cause/Factor

As a result of the Part 135 revision, 75 percent of commuter RPM's will be flown in aircraft with either weather radar or thunderstorm detection equipment (Part 135.173,.175). Other Part 135 revisions which should reduce the incidence of weather-related accidents include:

- Parts 135.213 and 225 which require weather reports for IFR operations and takeoff, approach, and landing minimums for IFR operations.

- Part 135.219 which specifies that weather at destination airports must be at or above IFR minimums before flight commences.

- Part 135.227 which prohibits flying into icing conditions under either IFR or VFR without sufficient icing protection.

Inadequate Pre-Flight Preparation and/or Planning: Cause/Factor

One of the more important revisions to Part 135 pertains to this cause/factor. Part 135.21 calls for the development of a detailed manual of procedures for compliance with FAA operations rules (135.23).

Mismanagement of Fuel: Cause/Factor

Part 135.223 directly addresses this cause/factor by requiring that sufficient fuel to reach an alternate airport in IFR conditions with 45-minute reserves be available before flight commences.

Familiarity with Operations: Cause/Factor

Many pilot errors which are included in this cause/factor category may be prevented by the line checks on representative routes and represenative airports called for by Part 135.299. Compliance with this rule will help to ensure that pilots are more familiar with the terrain, airports, and other details of the routes which they normally fly.

Other Pilot Errors/Faults: Cause/Factor

The Part 135 revisions discussed above for (1) training-related and (2) familiarity with operations causes and factors should help to prevent many of the errors in jugment and procedures which are included in this category.

The importance of these new programs, and especially revision of Part 135, cannot be over-emphasized. Pilot errors and inadequacies accounted for 56.7 percent of the causes of commuter accidents in the period 1975 through 1978 while 18.3 percent of the factors contributing to accidents were attributable to this broad category in that same period. The effectiveness of these new programs can only be judged once they have become fully effective. The year 1979 has been a transition period from the old Part 135 regulations to the new. Thus, 1980 will be the first full year in which commuter operations are affected by revised Part 135.

Broad Cause/Factor: Personnel

Maintenance, Servicing, and Inspection: Cause/Factor

As a result of the Part 135 revision, two-thirds of the commuter aircraft fleet will be maintained to Part 121 (scheduled carrier) standards. In addition, in its headquarters' reorganization, the FAA has created a new Office of Airworthiness. Among the responsibilities of this new office will be the approval of operator aircraft maintenance programs and airworthiness certification. The specific changes in Part 135 regulations which pertain to this cause/factor category are:

- Parts 135.37-.39 which requires a qualified director of maintenance who, in addition to other requirements, holds certificates with airframe and powerplant ratings.

- Part 135.433 which requires that carriers provide adequate training programs and facilities for training of maintenance personnel.

- Parts 135.411-.433 which require certificated inspection personnel, approved aircraft inspection and maintenance programs, reports to the FAA on mechanical failures and responsibilities of the carriers for maintenance programs.

Operational Supervisory Personnel: Cause/Factor

The requirements in Parts 135.37 and .39 for management personnel, including the chief pilot, director of operations, and director of maintenance, should improve the performance of operations personnel.

Production/Design Personnel: Cause/Factor

Two programs currently underway at the FAA should help to prevent design deficiencies of future commuter aircraft. The light transport airplane-airworthiness review (Part 24) contemplates the development of a separate set of airworthiness standards for multi-engine airplanes that have a suggested maximum passenger seating configuration of about 60 seats, and a maximum gross weight of about 50,000 lbs. These new aircraft will be required to meet certification standards which more nearly approximate those required of Part 25 (scheduled carrier) aircraft. In addition, the FAA's new lead region aircraft type certification program should insure that the best agency employees are utilized in the type certification procedures and approval process.

Other Personnel Inadequacies: Cause/Factor

Improvement in the qualifications of operations supervisory personnel should aid in reducing the incidence of accidents attributable to other personnel--e.g., weather personnel, third pilots, flight engineers, flight attendants, and dispatchers. In addition, manual procedures for compliance with FAA operating rules called for in Part 135.21 also apply to the activities of these other personnel.

Personnel causes and factors accounted for 11.5 percent of all factors and causes of commuter accidents in the 1975-1978 period.

Other Broad Cause/Factor Categories: Airframe, Powerplant, Systems, Airports/Airways/Facilities, Weather, Terrain, and Miscellaneous

The new FAA safety programs instituted since 1977 also apply to these broad cause/factor categories. The lead region program, the new Part 24, and the creation of the new Office of Airworthiness all should contribute to a reduction in the incidence of accidents attributable to Airframe deficiencies. The lead region program also will apply to the certification of new aircraft and Powerplants. In addition, the collision-avoidance system currently being evaluated and tested by the FAA should also improve the performance of airports and airways. Ongoing FAA research and development programs pertaining to approach and landing systems and collision-avoidance systems directly pertain to the System deficiencies. The same research and development program contemplates the introduction of improved aviation weather detection and display and short-term weather tracking and prediction and should therefore aid in the reduction of accidents attributable to Weather-related phenomena.

As a group, these other broad cause/factor categories accounted for 32.4 percent of the causes of all commuter accidents in the 1975-1978 period and were also mentioned as factors in 69.1 percent of these accidents.

Exhibit 22 summarizes the relationship between commuter accidents and causes and recent FAA safety programs and regulatory changes.

Exhibit 22

COMPARISON OF THE RELATIVE INCIDENCE OF CAUSES AND FACTORS FOR 180 COMMUTER ACCIDENTS (1975-1978) WITH RECENT FAA SAFETY PROGRAMS AND REGULATORY REVISIONS

Broad Cause/ Factor	Detailed Cause/ Factor	Percent of Total Causes	Percent of Factors	Directly Applicable FAA Safety Programs and Regulatory Revisions
Pilot		56.7	18.3	Enforcement Program New Office of Flight Operations
	Training Related	30.2	6.8	135.97 135.243 135.245 135.293 135.297 135.321-.351
	Attempted Operations With Known Deficiencies in Equipment	1.1	1.0	135.65 135.69 135.179
	Weather Related	2.6	1.6	135.173, .175 135.213, .225 135.219 135.227
	Inadequate Pre-Flight Preparation and/or Planning	5.6	2.6	135.21, .23 135.27, .39
	Mismanagement of Fuel	4.1	0.0	135.223
	Familiarity With Operations	7.6	2.6	135.299
	Other Pilot Error/Faults	5.3	3.7	135.97 135.243 135.245 135.293 135.297 135.299 135.321- .351 Proposed Flight and Duty Time Regulations
Personnel		10.9	12.6	Enforcement Program
	Maintenance, Servicing, Inspection	7.6	3.1	New Office of Airworthiness 135. 21, .23 135.37- .39 135.411- .443
	Operational Supervising Personnel	0.8	5.2	135.37- .39 135.69 135.77

Exhibit 22

COMPARISON OF THE RELATIVE INCIDENCE OF CAUSES AND FACTORS FOR 180 COMMUTER ACCIDENTS (1975-1978) WITH RECENT FAA SAFETY PROGRAMS AND REGULATORY REVISIONS

Broad Cause/ Factor	Detailed Cause/ Factor	Percent of Total Causes	Percent of Factors	Directly Applicable FAA Safety Programs and Regulatory Revisions
	Production-Design Personnel	0	1.0	Part 24 Lead Region Certification
	Other Personnel Inadequacies	2.6	3.1	135.21 135.37- .39
Airframe		7.1	2.1	Lead Region Certification
Powerplant		12.6	2.1	Part 24
Systems		1.8	0.5	New Office of Airworthiness
Airports/ Airways Facilities		2.6	14.7	Satellite Airports Programs Collision Avoidance System
Weather		2.4	39.7	Approach and Landing Systems
Terrain		2.4	10.5	Aviation Weather Detection
Miscellaneous		3.5	0	Short-Term Weather Tracking

HIJACKINGS OF AIRCRAFT TYPES UTILIZED BY AIR TAXI/COMMUTER OPERATORS

Commuter air carriers utilize upwards of 25 types of airplanes. Since 1961, there have been in the United States, 47 hijackings involving aircraft of the types utilized by commuters. Since 1972, when the FAA first promulgated security regulations, there have been 29 hijackings of such aircraft. Further, during that period there have been 13 air taxi/commuter aircraft hijacked. Hijacking as a threat and therefore a possible causative factor in accidents is unique in that it represents a criminal threat directed against the operation from outside. Whereas it can be argued that the effects of lack of maintenance, flying into bad weather and other statistically significant causative accident factors can be anticipated and controlled by the operator to some extent, the criminal act in the form of a hijacking which can also lead to an accident, is not subject to being overcome by the exercise of common sense or by adherence to preventive maintenance routines. The FAA's current analysis of the threat against air transportation reflects generally that such a threat will be directed against airplane types utilized by commuters which operate on longer stage lengths and appear to be capable of transporting a hijacker to an intended destination.

APPENDIX A

RECLASSIFICATION OF NTSB CAUSES AND FACTORS

Broad Cause/Factor	Detailed Cause/Factor
PILOT	Training Related
	Attempted Operations Beyond Experience/Ability
	Delayed Action in Aborting Takeoff
	Delayed in Initiating Go-Around
	Exceeded Design Stress Limits of Aircraft
	Failed to Obtain/Maintain Flying Speed
	Failed to Follow Approved Procedures, Directives
	Improper Operation of Powerplant and Powerplant Controls
	Improper Operation of Brakes and/or Flight Controls
	Improper Operation of Flight Controls
	Premature Liftoff
	Improper Leveloff
	Improper IFR Operation
	Improper In-Flight Decision and Planning
	Inadequate Supervision of Flight
	Failed to Assure the Gear was Down and Locked
	Improper Recovery from Bounced Landing
	Misused or Failed to Use Flags
	Failed to Maintain Directional Control
	Failed to Abort Takeoff
	Failed to Initiate Go-Around

Other Pilot Errors/Faults, (Cont'd)

Failed to see and Avoid Other Aircraft

Failed to Use or Incorrectly Used Miscellaneous Equipment

Exercised Poor Judgment

Operated Carelessly

Physical Impairment

Spatial Disorientation

Check Pilot Error

Direct Entries

Detailed Cause/Factor

PERSONNEL

Maintenance, Servicing, Inspection

Improper Maintenance (Maintenance Personnel)

Improperly Serviced Aircraft (Ground Crew)

Inadequate Inspection of Aircraft (Maintenance Personnel)

Inadequate Maintenance and Inspection

Operational Supervisory Personnel

Inadequate Flight Training--Procedures

Inadequate Supervision of Flight Crew

Failure to Provide ADEQ Directives, Manuals, Equipment

Deficiency, Company-Maintained Equipment, Service, Reqs.

Production-Design-Personnel

Poor/Inadequate Design

	Detailed Cause/Factor, (Cont'd)
PERSONNEL, (Cont'd)	Other Personnel Inadequacies
	Flight Instructor
	Weather Personnel
	Miscellaneous Personnel
	Third Pilot
	Flight Engineer
	Flight Attendant
	Dispatching
	Traffic Control Personnel
	Airport Supervisory Personnel
AIR FRAME	All NTSB Categories
POWERPLANT	All NTSB Categories
SYSTEMS	All NTSB Categories
AIRPORTS/ AIRWAY/ FACILITIES	All NTSB Categories
WEATHER	All NTSB Categories
TERRAIN	All NTSB Categories
MISCELLANEOUS	All NTSB Categories
UNDETERMINED	

APPENDIX B

List of Registrants

REGISTRANTS

FIRST COMMUTER AIR CARRIER SAFETY SYMPOSIUM

January 16-17, 1980

ALGER, Robert A.
Sana Air, Inc.

ANDERSON, Raymond L.
Marco Island Airways

APPLETON, Tom
DeHavilland Aircraft

ARNER, William S.
Wings Airways

AUBURN, Robert J.
Air Line Pilots Association

AUSTIN, Fred
Shorts Aircraft

AUTRY, Gordon F.
Rocky Mountain Airways

AVERAY, Maurice
Short Brothers USA, Inc.

BAILEY, Graham
Embassy of Australia

BAILEY, Joseph R.
AMSI

BAKER, T.
L & R Services

BANKS, Howard
The Economist Magazine

BARKER, Buck
Cochise Airlines

BARNES, John
Pratt & Whitney Aircraft

BARTEL, David
Knight-Ridder Newspaper

BEECH, Bill
Shorts Aircraft

BENNETT, James E.
Airport Operators Council Intl.

BERARDINO, Frank
Gellman Research

BERNSTEIN, Stanley
Air Line Pilots Association

BETANCOURT, Evelyn
Air Link

BIAZZO, Philip, Jr.
Union of Professional Airmen

BLAINE, B. Paul, Jr.
B. Paul Blaine Associates, Inc.

BOND, Jeff
Sunbird Airlines

BOYD, William
Civil Aeronautics Board

BRIDGLAND, Ed
Transport Canada

BRIER, Captain John
Air Line Pilots Association

BROCKIE, William M.
Dowty Rotol, Inc.

BROWN, Bernard
British Aerospace, Inc.

BROWN, Richard L.
Tri Turbo Corporation

BURGE, Pam
Aviation Consultants

BURLING, Ron
Greater Peoria Airport Authority

BURSLEY, G. H. Patrick
National Transportation Safety Board

CAMPBELL, Timothy L.
The Peninsula Airport Commission

CAREY, James S.
AVMARK, Inc.

CARTER, Gail R.
Executive Jet Aviation, Inc.

CARTER, J. Keith
Pratt & Whitney Aircraft - Canada

CARUSO, Allyn
Bar Harbor Airlines

CARUSO, Joseph A.
Bar Harbor Airlines

CASTRO, Raoul
Mississippi Valley Airlines, Inc.

CERGOL, Jack
Air Line Pilots Association

CHAN, Yupo
Office of Technology Assessment

CHESTNUTT, Mark M.
Cascade Airways, Inc.

CHRISTIAN, Ross A.
Commutair, Inc.

CHRISTOPHER, A. Mark
Sedam & Herge

CLARK, John N.
Pratt & Whitney Aircraft - Canada

CLARK, Leroy W.
Pennsylvania Commuter Airlines

CLARK, William C.
Pennsylvania Commuter Airlines

CLOUGH, Arlo E.
Airwork Service Division

COLEMAN, James F.
Aviation Clearing House

COLKET, Tristram C., Jr.
ALTAIR Airlines, Inc.

COLLOGAN, David
Business Aviation Weekly

COSTELLO, William V.
Systems Analysis & Research Corporation

CRABTREE, Dennis J.
Golden West Airlines, Inc.

CROWDER, Cal
Flight Safety International

CUNNINGHAM, Hugh
Hamilton Standard

DAIL, Glenn
National Transportation Safety Board

DANDREA, Dan L.
USAir, Inc.

DAVIS, Lou
Commuter Air Magazine

DAVIS, Tom
Mid-South Airlines

DAVISON, Calvin
Commuter Airline Association of America

DEEGAN, Tulinda
Commuter Airline Association of America

DEITSCHMAN, Gary R.
Mississippi Valley Airlines, Inc.

DENYER, Ken A.
British Aerospace

DEYAMPERT, Thomas H.
Springfield Air Service, Inc.

DICKERSON, Nettie
BANKAIR

DICKETT, James A.
Air Midwest

DONOVAN, Tim
COMAIR

DORRIS, David B.
Wings Airways

DOUGHERTY, James E.
General Aviation Manufacturers Association

DOUSS, Davis
Wings Airways

DOWNEY, Eugene F.
Transport Workers Union

DRIVER, Elwood T.
National Transportation Safety Board

EKEDAHL, Duane
Commuter Airline Association of America

ELLINGSWORTH, R. K.

ELLIOTT, John I.
Beech Aircraft

ENDERS, John H.

FARLEY, Thomas L.
Aitkin-Kynett Public Relations

FAUST, C. E.
Suburban Airlines

FAUTH, Don
Hayes International Corporation

FEAZEL, Mike
Aviation Week Magazine

FENTRESS, Harry B.
Pennsylvania Bureau of Aviation

FERGUSON, John
National Transportation Safety Board

FERRUCCI, D. E.
Ransome Airlines

FESMIRE, Jerry
Mid-South Airlines

FILLER, Marshall S.
House Committee on Public Works and Transportation

FOHRINGER, Kenneth
Air Atlantic Airlines

FORD, Tim C.
New Haven Airways

FORDE, Michael G.
Civil Aeronautics Board

FREEMAN, Michael
Air Midwest, Inc.

FURTADO, Paulo M. S.
Embraer Aircraft Corporation

GAMBLE, William P.
New Haven Airways

GARRISON, Roy C.
Cessna Aircraft Corporation

GARTENSCHLAEGER, Ron
The Garrett Corporation

GERARD, Penny
Los Angeles Times

GIBSON, Frank W., Jr.
Barnstable Patriot

GILLESPIE, Larry
Air Transport Association

GLESKE, Elmer G.
Flight Safety International

GODEC, Edward J.
Air Wisconsin

GOLDMAN, Patricia A.
National Transportation Safety Board

GOODWIN, Bill
South Carolina Aeronautics Commission

GORDON, Robert J.
National Transportation Safety Board

GREEN, Stanley J.
General Aviation Manufacturers Association

GREENWOOD, James G. III
Pocono Airlines

GRIESINGER, R. L.
Swearingen Aviation Corporation

GROBER, Bob
S.M.B. Airlines

GROUX, Richard W.
Commuter Air

GULLA, Tom
Pocono Airlines

GURAL, Stephen A.
Cascade Airways, Inc.

GUTERL, Thomas F.
U.S. Aviation Underwriters, Inc.

HAKANSON, Walter E.
The Garrett Corporation

HALE, Mark Paul
Aero Industries Sales, Inc.

HALL, Treavor
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