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OPERATIONAL PROBLEMS FROM THE PROFESSIONAL PILOTS PERSPECTIVE

CAPTAIN J. J. O'DONNELL*

In selecting the various topics for the Tenth Annual Symposium of the Journal of Air Law and Commerce, the Symposium Editors made a value judgment which tracks one that has become increasingly apparent to the Air Line Pilots Association. The approach and landing phase of flight, while representing only three percent of the flying time, represents a staggering proportion of the avoidable accidents in commercial aviation. It is also the phase of flight in which little, if any, progress has been made in terms of accident prevention. There is only one positive observation which can be made: from at least one perspective, there has been a high degree of success in the landing phase of flight from the inception of aviation . . . we have never left one up there! In too many instances, this statistic has seemed to satisfy those charged by law with regulating and promoting air safety.

You have probably noticed that I have not mentioned the legal ramifications of air safety. Nor will I. There are two reasons why this is the case. First and foremost, the Air Line Pilots Association's concern is more basic and immediate. An accident can ruin a crew's entire day! The second is that I have been advised that it is axiomatic in the legal profession that anyone who represents himself has a fool for a client. Clearly, the only bigger fool would be a non-lawyer who attempted to tell lawyers their business.

I do not feel constrained from observing, however, that lawyers can be invaluable in the effort to improve operational safety in aviation. Far too often we see the lawyer fall prey to the same disease that afflicts the National Transportation Safety Board; that is, looking into the accident only far enough to find someone to

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blame without taking the next logical step of determining why the individuals acted as they did. From the pilots perspective, finding the "why" is a must if we are to prevent accidents rather than merely assess blame. From the litigants' perspective, it would open new areas of inquiry, broaden the possibilities for recovery, and spread the liabilities.

These observations provide a spring-board for discussing the approach and landing segments of flight. Recently, the National Transportation Safety Board released a report on low visibility approach and landing accidents. Its data shows that during the period 1968 through 1972, there were thirty-eight approach and landing accidents and incidents among air carriers. Of these, forty-seven percent were straight-in ILS approaches, the most precise of the instrument approach techniques. In all the air carrier accidents surveyed, the human element was considered to be a causal factor. Finally, and most disturbing, the trend of accident statistics over the last several years clearly indicates that the aviation community is not making any significant progress in dealing with this most critical phase of air carrier operation.

In terms of fatal accidents, ALPA recently had occasion to examine the data for the five year period 1970 through 1974. These five years are significant for they represent the first five years' experience under the expedited funding levels for equipment provided by the Airport/Airways Facilities Development Act of 1970. To our dismay we found that there were seven fatal approach and landing accidents in 1970 and seven in 1974. In the intervening years there were never fewer than seven nor more than eight. The total number of air carrier operations was almost identical in 1970 and 1974 (10.3 million in 1970 and 10.4 million in 1974). All that changed was the number of fatalities, 76 in 1970 versus 366 in 1974, and much of that increase could be attributed to larger aircraft and better load factors!

These discouraging data have to make anyone interested in improving air safety wonder if we are doomed, much like Sisyphus, to forever pushing the rock up the hill only to have it roll back again. ALPA has stated, over and over for a number of years, that there are serious defects which have existed and are being compounded rather than resolved.
Before you jump to the conclusion that we are being overly defensive, let me assure you that we do concede that pilots are human and susceptible to making mistakes. When we see the highly trained and highly motivated professional pilot make the same "mistake" with some regularity, however, common sense would seem to dictate that we carefully examine our criteria for judging "mistakes" and explore the "why" with diligence. Our inquiry into the "why" has produced some very interesting insights. Far too often the aviation community reacts to an accident much like Ben Wattenberg's observation about liberals in politics: "When they set up a firing squad, they form a circle." We aim that double-barreled weapons of blame and liability at each other rather than seeing in on the problem!

The handling of the approach and landing problems is a classic! In most instances the evidence clearly indicates that the accidents occurring in this phase of flight are not the result of the crew simply mishandling the aircraft. Almost without exception we find that the accident happens because of a miscalculation or error in judgment which is induced by either misinformation, lack of the necessary information upon which to base a valid judgment, or the unavailability of adequate visual cues which allow the successful transition from instrument flight to visual flight necessary to complete the approach successfully. Unfortunately, those charged by law with regulating for safety refuse to accept these facts. The accident data indicates that the problem is very complex. It points to a flight management problem which is occasioned by a myriad of subordinate issues which run the gamut from airport and aircraft design philosophy to weather reporting.

The litany of areas to be examined is almost endless: diminished safety margins in the operation of the aircraft with the resulting erosion of options available to the pilot, an overload of extraneous information and a shortage of necessary information, a bias in air traffic system design which seeks to focus solutions in the ground based system with the resulting exclusion of the pilot, a filtering of vital safety information through a ground based non-pilot with the inevitable faulty subjective judgments being made as to what information the pilot needs, ill-suited cockpit instrumentation, and ineffective ground-based equipment which impedes the pilot's efforts.
to cope with the dynamic situation in which he operates, and on and on! It is a situation in which the manager of the flight is confronted with incomplete data, inadequate equipment, a fragmented decision-making process, and divided responsibility. That our system enjoys the outstanding safety record that it does is a testimonial to the ingenuity and initiative of the man located where the buck stops, the pilot. But none of us is satisfied with an excellent safety record; we must continue to strive for a spotless one!

What must be done? First and foremost, there must be a 180 degree turn-about in the philosophy of system design. The pilot is willing to accept the responsibility for management of his flight; indeed, he demands that it be his! But this can only be accomplished if the information necessary for successful decision-making is available in a timely fashion in the cockpit. This is purely and simply an information transfer problem. The concentration of data generating equipment on the ground with no direct readout in the cockpit must be curtailed if we are to avoid the inevitable and unacceptable filtering which now takes place. We must also see a change in the philosophy which requires the user to accommodate to the system rather than the reverse. Over-control by the ground operators damages and dilutes the decision making process of the flight crews and tends to lull them into a false sense of security. It also erodes the incentive of the crews to manage their flights properly.¹

As an aside, we find completely unacceptable the suggestion that the controller be given the “go-no go” authority regarding wind shear and other weather phenomena. I recently received a communication from the Federal Aviation Administration which is four-square with our position:

Consistent with the provisions of Federal Aviation Regulation 91.3, we firmly believe that the final decision for the operation of an aircraft must remain with the pilot of that aircraft. We do not believe that controllers can or should assume the responsibility for denial of approach, landing, or takeoff clearances based on their assessment of the hazards attendant to thunderstorm activity. Controllers are neither trained nor qualified to make this

¹See generally Litchford, Restructure the ATC System, ASTRONAUTICS & AERONAUTICS, Feb., 1976, at 32.
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Kind of judgment; nor do they have the equipment to aid them in reaching this kind of decision. Even if the controller's visual observation is augmented by weather data available on presently used surveillance radar equipment, there is still insufficient information available on which to base a sound judgment. We believe that the "go-no go" decision making responsibility should properly remain with the pilot-in-command. His responsibility for the safe conduct of the flight should not be diluted by introducing the judgment of a person outside the cockpit.

There must be improvement in the weather reporting system. Within the U.S. the weather service provided is, to say the least, an anachronism. It is a throw-back to the system which was cobbled together to meet the needs of the pioneering air mail pilots fifty years ago. The bulk of the resources are used to provide en route forecasts which are simply irrelevant to the modern transport aircraft. En route all we need is the information to allow us to avoid severe weather, but in the highly regimented air traffic system in which we operate that is not available. As a result, avoidance of severe weather is a matter of blindman's bluff.

In the immediate vicinity of the airport, where accurate information is mandatory for proper flight management, consider the situation which confronts the IRF pilot. Runway visual range is information given at the outer marker, by another human, but then only at the controllers' option, and workload permitting, from that point through the landing. Runway friction could be made an exact science and reported directly to the cockpit. It isn't! Wind velocities could be directly read out in the cockpit. They are not! The data which is available is available in places other than the cockpit. So we develop a further information transfer problem.

It is well within our technical capability to instrument our air transport cockpits to receive real time RVR, wind, temperature, and even runway condition data. Should not the pilots be the ones who have the information? Since the control tower was built on the ground, its operator does not have to land it. Nor does he have to make a decision. Nor does he, nor indeed can he, appreciate the significance of all of the information he has at hand. As a result, his need for the information provided him is certainly less pressing than the pilot's need. But he has the option of passing it

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*Letter from FAA Administrator, January 6, 1976.*
on or not, depending on his workload and not on the pilots requirement for it.

There must also be a hard look at current aircraft design and certification to insure that there are sufficient margins of safety to allow the crew proper options. The effort to continue to shoe-horn larger and larger aircraft into what have been becoming smaller and smaller airports has seriously eroded the options which the pilot has at his command in the management of his flight. The same can be said of airport design requirement for adequate aids to assist in providing the information necessary to allow the transition from instrument flight to visual landing with the confidence that the aircraft can be stopped on the available runway.

There is persuasive evidence that, during this critical transition during landing from IFR to UFR, existing cockpit instruments and runway lighting systems do not provide the necessary vertical guidance information to insure the safe and successful landing. ALPA believes that this shortcoming may well account for most of the approach accidents. Unfortunately, the FAA refuses to accept these facts even though most are gleaned from their test programs.

In looking at the management of the flight from the perspective of the crews, the tools they have are much like the golf club, "ill suited for the task intended!" If anyone were to examine scientifically and spell-out the information necessary for safe operation of a complex high-performance aircraft on the approach, the list would almost certainly contain the following: real flight path, proposed flight path, true aircraft attitude (angle of attack), and some measure of energy required versus energy available. The existing instrumentation in transport today simply does not provide these data. Too much extrapolation is required and too much extraneous cockpit information must be sorted out and discarded.

What can be done? It is obvious that the problem areas being discussed are simplifications which in many instances will require highly technical solutions. There must be a re-direction of the research and development effort in both the cockpit and the air traffic system. Better instrumentation which provides the necessary

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information must be designed and made available, be it heads-up display or some other modern information system.

If these steps are not taken, there is every indication that we are doomed to a continuation of the current mislabeled “pilot error accidents” at essentially the same rate we are now experiencing in the approach and landing phase of the flight. Logic would seem to dictate that every time we see an accident classified by the NTSB as “Controlled Flight Into Terrain,” as most approach and landing accidents are, the red flag should go up and we should all demand that the ultimate question, “Why?” be answered.