

effectively reduce the display of the radar clutter often associated with severe weather. Where secondary radar is used alone, no weather information is seen on scopes.

As a consequence, radar controllers, lacking sufficient information on storm cells within their area of jurisdiction, may inadvertently direct aircraft through an area of severe weather. With appropriate displays, controllers can: (1) avoid inadvertently directing aircraft through severe storm cells; (2) aid pilots in avoiding severe weather; and (3) anticipate pilots' requests to alter flight paths because of severe weather, making appropriate advance plans for alternate routings.

The airlines recommend that: FAA provide improved display of weather information on all air traffic control radar scopes.

Instrument landing system. The airport and its approach systems must be considered an integral part of the ATC system.

Facilities used to improve the success of an approach and landing contribute to reliability and efficiency, as well as to safety. These facilities include the precision electronic instrument landing system (ILS), the visual approach slope indicator, and approach lights to provide guidance during the final seconds of precision letdown in instrument weather conditions.

The ILS has traditionally been considered necessary only to improve reliability of air operations because it provides the increased precision necessary to permit a landing approach in lower weather minima with equal safety. Only 189 of the 526 airports now served by the airlines have ILS; those communities whose airports lack ILS are often deprived of airline service during reduced visibility conditions. Every community receiving scheduled airline passenger service should be entitled to an ILS to assure greater reliability of service.

With the introduction of jets, the ILS takes on a second role to improve safety, even in good weather conditions. Since the jets came into airline service, a number of jet accidents have occurred in approach and landing. There have been enough cases of undershoots and overshoots to convince the airlines that approaches with positive glide slope guidance will be better stabilized and therefore safer approaches.

In our view, every runway used by airline jets should have glide slope guidance, either electronic or visual. The ILS, with its electronic glide slope, can fulfill this requirement in addition to the requirement for a precision landing aid for lower weather conditions. Where ILS is not available, visual approach slope indicators (VASI) can meet the requirement of good weather conditions.

To reduce the need for circling approaches, it is necessary to provide landing aids which serve at least two basic approach directions, especially for jet operations. Thus, some airports will have a need for two or more ILS installations. The busier the airport, the greater will be the need for additional ILS facilities to service the traffic volume. Parallel ILS installations permit a significant increase in traffic volume during instrument weather conditions.

While there is a great need for ILS—with or without approach lights—to provide precision approach guidance for jets in both good and bad weather, ILS does not yield its full value without approach lights. Approach lights at a price lower than the current \$150,000 to \$200,000 should be achievable.