

## Air Radar System Designed to Prevent Crashes Is Demonstrated by the F.A.A.

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DENVER, Feb. 6—A new radar system that could have prevented several recent air tragedies, including the December crash near Washington in which 92 persons were killed, was given its initial public demonstration here today.

Federal officials refining the system in current tests said that they expected it would start being put into regular operation by the year's end at a number of the 61 major airports for which it is tentatively designed. New York City's airports would be near the top of the list, they said.

At the heart of the system is a collection of computer programs that alert a controller, by flasher and sound, when an airliner strays below a safe altitude. He then radios the pilot so that the pilot can exercise a prompt pull-up maneuver.

### Other Messages Considered

At the moment, the ground-to-air message is a simple, undramatic: "Your altitude read-out shows you at (so many thousand) feet." This cautious approach is attributable to the often acrimonious debate between pilot and controller groups, following the Trans World Airlines crash near Washington, over the interpretation of traffic procedures and over the respective responsibilities of pilots and controllers for keeping planes at safe altitudes.

William M. Flener, an associate administrator of the Federal Aviation Administration, acknowledged that merely reminding an endangered pilot what his current altitude was might fall far short of meeting

an emergency. He said that more explicit messages were being considered, though he doubted whether the agency would go so far as to authorize a controller to radio: "Pull up."

Today's demonstration of the system came at a time when the aviation administration was being subjected to perhaps the heaviest criticism in its history because of its handling of safety issues.

The head of the agency, Alexander P. Butterfield, is understood to have been told by the White House that he should plan on leaving next month. A successor is expected to be nominated soon, perhaps next week.

Suspensions have been voiced that Mr. Butterfield scheduled today's demonstration several weeks ago as part of a goal-line effort to save his job. But a well-informed F.A.A. official denied this. He said that Mr. Butterfield had been reconciled to leaving, and added:

"He didn't want to go out under the pall of a guy who did nothing. It is another move to give the public some confidence that we are doing things."

The new radar system is not to be confused with the altitude-warning system that the Administration has ordered installed on board all the nation's airliners by next December. This is a system in the cockpit that sounds a loud "Whoop! Whoop!—Pull Up" when a plane is headed toward a hillside or is making a dangerously low landing approach. The two systems are considered complementary, overlapping somewhat but also coming into play under different circumstances.

The ground-based radar system operates in two types of

situation, both illustrated today in a test flight by an F.A.A. Convair-580 turboprop that was followed on a radarscope in the Stapleton International Airport tower here.

As the plane flew a landing approach toward the runway, its target was represented on the scope, and also its changing altitude and air speed.

When the plane dipped too low below the proper glide path, a high-pitched tone sounded. Simultaneously, the letters "G ALT" (for glide altitude) came on the scope, just above the plane's call sign, and kept flashing on and off.

### 'Roger, Pulling Up'

The controller radioed the pilot his altitude, at which the pilot replied: "Roger, pulling up."

Next, the plane headed southwest toward the highest peak in the area, Mount Evans, at 14,300 feet. The computer program for that geographical location requires that no plane within a four-square-mile area be below 16,300 feet. In fact, the computer was programmed to anticipate when an approaching plane would be within 30 seconds of reaching the area.

Soon, the F.A.A. plane, flying at 14,500 feet, caused the letters "Z WARN" to appear on the radar scope just above the plane's call sign. Again, the pilot was informed, and he radioed back: "Roger, pulling up into a right turn."