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IMPACT OF WEATHER ON AVIATION #5

Tailoring Aviation Forecasts

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[Editor's Note: Good aviation forecasts are both meteorologically sound and highlight areas of special concern to the users. In many cases, offices have developed special amendment criteria to highlight certain weather phenomena. This paper discusses some of the items of concern at southern California airports, and what WSFO Los Angeles does to tailor forecasts to meet these concerns. Similar problems exist for all WSFOs.]

There are a myriad of landing minimums at larger air terminals, such as Los Angeles International, which has at least 18 published landing IFR minimums. Many of these minimums are important to certain classes of aircraft but not to others and do not have a major impact on the traffic flow at Los Angeles International. It would be futile to try to keep all of them in mind when preparing or amending a forecast.

As a result, WSFO Los Angeles tailors forecasts to give attention to conditions which might result in changing the runways in use at a particular time. At San Diego (Lindberg Field), conditions decreasing to below 800 foot ceilings and 2 miles visibility preclude most operators from using the normal runway configuration, resulting in a runway change, which in turn drastically reduces the traffic into the airport.

Los Angeles International Airport has four nearly parallel runways in an east-west orientation. The normal pattern is for approaches from the east and takeoffs toward the west. The FAA has a ten knot threshold for switching runway traffic flow when winds are from the east. During the peak operating hours at Los Angeles International, a sudden decision to switch runway direction can cause traffic delays lasting up to two hours.

WSFO Los Angeles forecasters are sensitive to the importance of the conditions listed above and consider them when issuing forecasts or amendments. These values are critical to the FAA, to pilots, and to passengers since unexpected runway changes can cause major disruptions to incoming and outbound traffic at some southern California airports. Further, delays at southern California airports have a ripple effect. Nearby airports experience problems as incoming traffic divert into them; scheduled flights into the area are held at the departure airports; long delays can disrupt traffic patterns hundreds of miles from California.

Occasionally, weather which can cause major problems at one airport will not have the same effect on another airport. For example, a spokesman for the FAA Western-Pacific Region relayed that at San Francisco International Airport, nearly twice as many aircraft can land per hour when visual meteorological conditions prevail than when instrument-only approaches are required. However, Los Angeles International

Airport, which can handle a maximum of 57 landings per hour when instrument approaches are required, also claims it can only handle about 57 landings per hour in visual meteorological conditions.

At first glance, this would seem to imply that ceiling and visibility forecasts are more critical for San Francisco International than for Los Angeles International. However, forecasters must remember that while the landing rate may not change as weather changes at Los Angeles International, takeoff/approach minimums will be affected. Thus, the range of flight types permitted may alter significantly as the weather changes.

Other values besides those which affect aircraft takeoff/approach minimums and runway configurations can be important and may need emphasis. For example, at Lancaster, California (field elevation 2,347 feet), an important cloud base value is 6,500 feet MSL--since Lancaster is ringed by mountains on three sides, clouds below 6,500 feet affect air traffic flow into the airport. Similar problems occur at Burbank (field elevation 775 feet) when cloud bases are below 5,500 feet. The decision on whether forecasts should be tailored to emphasize values such as these mostly depends on the work load of the forecasters.

Advance notice of changing conditions may be crucial for planning purposes. The air routes between San Francisco and Los Angeles have the heaviest traffic loads of any air corridors in the world. This enhances the role weather plays along the route. Also, weather deviations or delays along the San Francisco-Los Angeles corridor can have a negative impact on other routes and terminals. The heavily traveled Los Angeles to Las Vegas route is hemmed in by military restricted areas, reducing the route to a seventeen-mile wide corridor between Daggett and Barstow. This does not leave much area for deviating around showers and thunderstorms.

In both the San Francisco-Los Angeles and Los Angeles-Las Vegas cases above, the important thing for NWS forecasters and briefers to remember is to give pilots and controllers as much advance notice as possible about changing conditions. Forecasts which merely reflect changes which already have occurred--particularly changes for the worse--are of little value to the controllers trying to manage air traffic or the pilots caught in the change.

Finally, there are weather factors which affect aircraft operations but which are difficult to relay to users. For example, at Los Angeles International Airport, surface visibility of 10 to 15 miles or better is required to run visuals toward the sun; a forecast of 6+ leaves much to be desired! Visibilities of 5 or 6 miles are required if there is no sun problem. At a distance of about ten miles from the airport, clouds at 5,000 or 6,000 feet begin to hinder airport operations (since they affect the way aircraft are put in line to approach the airport), but clouds at 5,000 or 6,000 feet immediately over the terminal don't appear to affect operations.

Some of these can be relayed in other types of forecasts (such as TWEB route forecasts and meteorological impact statements) or in telephone briefings. Most, however, cannot be relayed routinely under our present forecast/briefing structure. There is little an office can do in such cases.