

# Speak out. We're listening.

Each of the 21 members of the Airport/Community Roundtable is either a directly elected public official or the appointed delegate representing a public agency. But you don't need to be in public office to have a voice in Roundtable activities.

To encourage public participation in a subject which affects so many communities, the Roundtable conducts on-going public information efforts, including press releases, media notices and public distribution of background material. The Roundtable *Monitor* newsletter is a key element of that effort. To educate and stimulate airport neighbors to get involved it is necessary to reach out. Tell us what you think.

Jot down your ideas below and return it to the Airport/Community Roundtable. We'd like to know of your specific interest so that we may address those subjects in subsequent issues.

## Write today!

Write your comments here (type or print clearly):

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Attach another sheet if necessary. Return to:  
David Carbone, Roundtable Administrative Office,  
350 Harbor Way, So. San Francisco, CA 94080

If you wish to be contacted about Roundtable issues, please provide:

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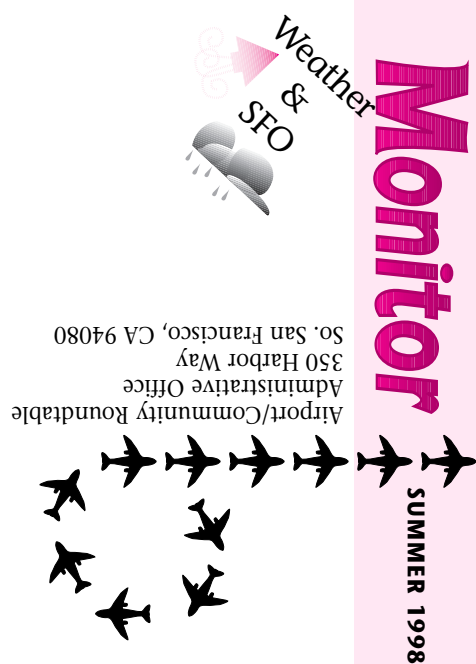
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## Lead Story

# Aircraft operations, noise have to accommodate weather

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Backblast test house pushes the envelope  
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## From the Airport

### Runway study

By John L. Martin  
Director  
San Francisco International Airport

Last summer, I received letters from both the Roundtable and the FAA urging the Airport to consider solutions to noise and air traffic problems caused by the Airport's runway configuration.

And now we are set to begin a Runway Reconfiguration Study, with the first meeting in June of an advisory board representing environmentalists, business leaders, airlines, the FAA, regulatory agencies and airport neighbors. Our goal is to develop a proposal for how alternative runways could prepare SFO for the future, cut noise and help the Airport maintain operations even with larger planes and poor weather.

This winter magnified the standing runway problems of noise and air traffic. Airline operators and thousands of travelers delayed at SFO question how the Airport could better serve its passengers, its neighbors and its airlines with reconfigured runways.

That shouldn't be a surprise.

With only 750 feet separating the Airport's runways, FAA rules force the Airport to operate only one of our two arrival runways at a time when clouds, fog or rain restrict visibility. That cuts arrival capacity in half, to 30 aircraft per hour. Last year, these were significant delays, not surprising given that SFO operates a runway system laid out in the 1940's. These airfield limitations will become more of a problem when larger jets begin service.

For the Airport neighbors, a reconfiguration could reduce aircraft noise by instituting new over-water arrival and departure paths and decreasing the number of delays which push back arrivals to late in the evening.

The reconfigured runways could also help cut pollution. Currently, planes waiting for runway slots often sit idle on taxiways, sending exhaust into the air. More efficient runways, including taxiways allowing jets to be

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## A change in the weather makes all the difference

Daily headlines through the winter of 1997 provided graphic testimony of the power of weather to change how people live.

The same is true of San Francisco International Airport — though it does not take an El Niño to play havoc with SFO flight operations and alter takeoff and landing patterns.

Change is routine. That is true also of the noise of jet aircraft operations. It is intimately linked to the winds at SFO. As wind direction changes, aircraft operations move to accommodate.

San Francisco International was laid out three quarters of a century ago with runways intersecting at right angles to compensate for wind shift. That way, one runway would likely face into a breeze, providing an extra measure of aerodynamic lift and safety, no matter in which direction the wind blew.

Most of the time wind direction is west to east from the Pacific Ocean over SFO. Due to terrain around the airport, prevailing westerly breezes funnel down the slope of the coast range directly into the noses of aircraft departing on Runways 28 Right and Left, the east-west parallel runways.

High winds can shift that direction 90 degrees to the left, bringing into play SFO's other runway system.

These weather conditions often force operations to Runways 19 Right and Left, allowing takeoffs from north to south into this headwind. This pattern overflies close-in populated areas of Millbrae and Burlingame.

Landings under these conditions use Runways 19 come in over the Bay and do not overfly Millbrae and Burlingame at low altitudes.

Runways 19 takeoffs are an occasional noise intrusion under adverse wind conditions. They are responsible for takeoff overflights to the south less

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## From the Roundtable

### Low-frequency noise

By Pat Kelly  
Chairman  
Airport-Community Roundtable

The backblast study recently begun by San Francisco International Airport (see story on page 5) recognizes a difficult problem residents behind Runways 01 have had to deal with for many years.

The problem is noise from the sub-audible range to the lowest frequencies the human ear can hear. Lay people often are surprised to learn that low frequency does not necessarily mean low energy. In the audible range, a rock concert or a jet taking off overhead easily can generate 120-decibels of noise. This can be painful. In the low-frequency range, however, the same sound energy — 120 decibels — may not be audible at all, except as a low rumble.

But sound energy traveling under that pressure at that frequency carries many times farther than high-frequency noise and persists longer. It can pass through solid objects as if they weren't there and 'bounce' off the ground, meaning that you don't necessarily have to see the source to hear or feel it. Residents of canyons in Millbrae, Burlingame and Hillsborough are subjected to the noise, though they are far out of sight of the airport.

Low frequency noise sets up vibrations in materials such as concrete and wood. Previous studies have shown that sound of the type generated on takeoff by airliners is in the part of the sound energy spectrum that rattles ceilings, walls and floors of typical residences.

It is interesting to note that, while newer jets have quieter engines in the audible range, they often generate as much or more low-frequency sound than older, noisier engines. Design and cowling configurations of the new engines is changing the direction and nature of the low-frequency sound, fact which bears further investigation.

The airport's \$225,000 commitment to studying this area enters uncharted waters, but we have every expectation that it will uncover useful information applicable to the problem.

# Weather factor affects flights

Continued from page 1

than 1 percent of the time.

However, the winter of '97/'98 played havoc with tradition. El Niño's effects forced air traffic controllers into relatively rarely-used approach and takeoff patterns for less than 10 percent of the time. Some days, air traffic controllers were forced to deal with wind conditions that shifted hour to hour and moment to moment. The airport even saw prolonged periods of winds coming out of the north, an unusual circumstance which results in landing approaches from south to north over Millbrae and Burlingame.

Behind every takeoff or landing decision at San Francisco International Airport is a weather report. Low air temperature and steady winds make for safe, efficient aircraft operations under most circumstances. Cold air is denser than warm and provides greater lift over a moving wing, improving wing performance. This is a major consideration for pilots of trans-oceanic jumbo jets which take off fully fueled and weighing nearly a million pounds.

Federal Aviation Administration policy and aviation industry practice allows for takeoffs and landings even in cross winds; that is, those originat-

ing from the side of an aircraft, provided that their speed is not more than 20 knots (approximately 23 miles per hour). Cross winds greater than 20 knots make a shift to another runway mandatory.

The following scenarios represent both typical and atypical weather scenarios as seen at SFO and how they can affect aircraft operations.

## Scenario 1 'Normal' daytime

Weather — Westerly winds below 20 knots crosswind to Runways 01. Takeoffs — 'Heavy jumbos' on trans-oceanic runs depart to the west on Runway 28 Right over San Bruno, South San Francisco, Daly City and Pacifica. Domestic and smaller jets use Runways 01 in good weather. Smaller aircraft may use Runway 28 when winds are greater than 20 knots or Runway 1 is closed for maintenance. They may be directed to turn right as soon as practicable in a noise abatement "Shoreline" departure. When the crosswind component is less than 20 knots, Runways 01 to the north over San Francisco Bay are preferred for all but the jumbos.

Landings — Runways 28 Left and Right approaches over the Bay.

## 2 Moderate southerly winds

Weather — Used usually during windy weather with a crosswind component less than 20 knots on Runways 10. Takeoffs — Runways 10 from west to east, climbing over San Francisco Bay. Landings — Runways 19, the runways intersecting the takeoff runways. Approaches are made from the north over San Francisco Bay.

## 3 Strong southerly winds

Weather — Strong crosswind component to Runways 10, preventing their safe use. Takeoffs — Runways 19 over Millbrae and Burlingame. Landings — Runways 19, approaching over the Bay.

## 4 Moderate northerly winds

Weather — Winds out of the north with a crosswind component from the west of less than 20 knots. Takeoffs — Runways 01 over the Bay, except heavy jumbos and trans-oceanics, which use Runways 28 over San Bruno, South San Francisco, Daly City and Pacifica.. Landings — Runways 28 with approaches over the Bay.

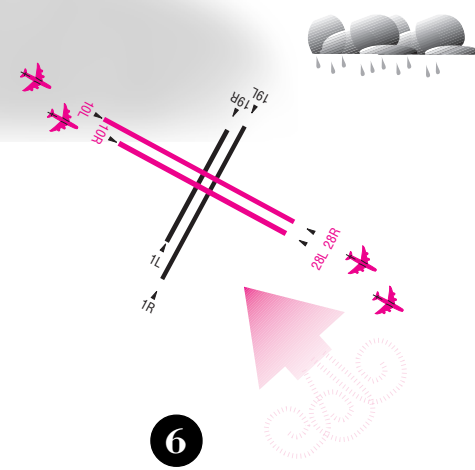
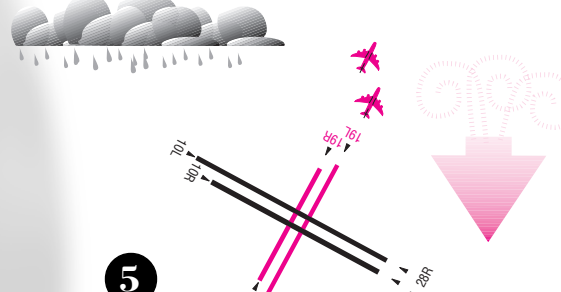
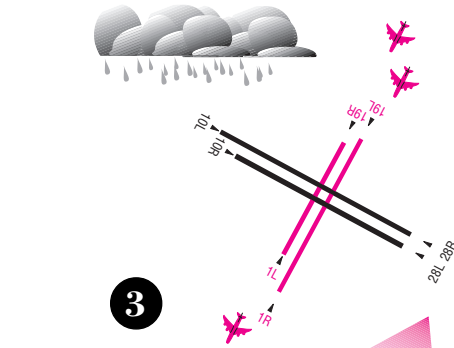
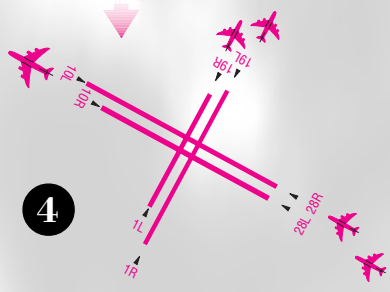
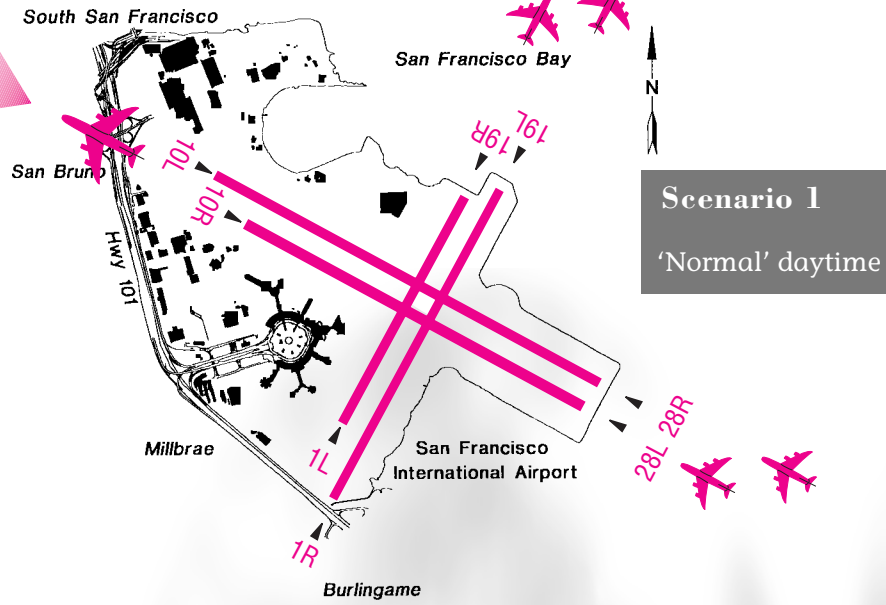
## 5 Strong northerly winds

Weather — Strong winds, with crosswind greater than 20 knots on Runways 28. Takeoffs — On Runways 01 over the Bay. Landings — Runways 01 over Millbrae, Burlingame and communities south.

## 6 Easterly winds

Weather — East to southeast winds prevailing. Takeoffs — Runway 10 over San Francisco Bay. Landings — Runway 10 over Pacifica, Daly City, South San Francisco and San Bruno. Note: Runway 10 is the preferred takeoff runway late night every night for noise abatement reasons and is used whenever there is no opposing landing traffic on Runway 28.

Prevailing winds



Airport/Community Roundtable Monitor Summer 1998

# Study begins on low-frequency noise

The Airport Commission for the City and County of San Francisco has contracted with an acoustical consulting firm to carry out a long-time Roundtable project and test for methods of reducing interior noise in areas beset by low-frequency noise.

This is a special area of concern outside the residential noise insulation project operated for many years by San Francisco International Airport and the Federal Aviation Administration.

The residential insulation project has paid to retrofit several thousands homes and other structures adjacent to the airport with solid-core doors, double-paned windows, attic insulation and other techniques to attenuate the noise of aircraft overflights.

Low frequency noise which is the target of the new study primarily affects residents to the rear of jets on takeoff. Areas of Millbrae, Burlingame, Hillsborough and points south up to several miles away from SFO experience so-called "backblast" noise at low frequencies. At these frequencies, noise energy may not be audible to the human ear. However, it can set up vibrations in ceilings, walls and floors which can be felt and which can cause windows and other objects to shake and rattle.

The special nature of low-frequency noise means that it can penetrate walls and structures without diminishing.

The Airport/Community Roundtable Work Program has included investigation of the low frequency program for a number of years. Technically, the problem is outside the boundaries of state's noise regulation. SFO's participation is voluntary. The Airport Commission has budgeted up to \$225,000 to the study.

The test will involve leasing a residential structure in a representative area af-



Residential areas behinds San Francisco International Airport Runways 01 are subject to "backblast" noise from takeoffs. The pioneering study will test subjects to define the noise and test attenuation methods.

ected by backblast from Runways 01. The contractor, GTE/BBN Technologies, is the only one of seven bidders capable of reproducing the low-frequency noise in a test laboratory. GTE/BBN will use volunteers in its Low Frequency Test Facility to confirm the nature of the low frequency noise affecting these areas. Results from these tests will help develop proposed noise mitigation modifications to the test house, which will be performed by Wyle Laboratories. Modifications will be performed and evaluated for their impact on the noise and for cost efficiency.

Work on the contract has begun. GTE/BBN Technologies has initiated a project to identify the characteristics of the low-frequency noise to be studied.

The contract is scheduled for

completion by this December. Results will be shared with the Roundtable and may play a role in future Roundtable Work Program items.

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## Reconfiguration

towed to position, would address that problem.

For those concerned about the well being of San Francisco Bay, new runways would provide opportunities for extensive mitigation, allowing for major gains to San Francisco Bay and the sensitive marshlands surrounding it.

The reconfiguration study is scheduled for completion in December, and should allow the Airport to address noise impacts and passenger, cargo and facility demands of the future.

We're on the world wide web  
 Agenda • Monitor on-line  
[www.smcroundtable.com](http://www.smcroundtable.com)

The Airport/Community Roundtable meets the first Wednesday of the month at 7 p.m. in the Millbrae Recreation Center 477 Lincoln Circle

Next meeting: July 29