




October 27, 2016

**TO:** Roundtable members and Interested Persons

**FROM:** James A. Castañeda, AICP, Roundtable Coordinator 

**SUBJECT:** Roundtable Response Package to FAA Initiative Results to Address Noise Concerns

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The following package of documents make up the Roundtable's response to the *FAA Initiative to Address Noise Concerns* (Initiative) consideration. The package included a letter introducing the response, an item-by-item response for the items listed in the Initiative, an executive working outline of detailed action steps, and attachments that provide expanded information that details specific procedure operations as they fly today and any changes the Roundtable is requesting. This represents the work of the Technical Working Group, staff, and collaborating with stakeholders.

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November 2, 2016

Congresswoman Jackie Speier  
155 Bovet Road, Suite 780  
San Mateo, CA 94402

Re: *FAA Initiative Phase 1*, SFO Airport/Community Roundtable Response

Dear Congresswoman Speier:

As part of the FAA Initiative process, we look forward to opening a dialogue with the FAA Western Service Center and the Sierra Pacific District Air Traffic Operations to find ways to decrease the noise impact on our residents and improve the quality of their lives.

Throughout the Metroplex process, the Roundtable has been the voice for nearly 1.6 million people in the County of San Mateo and the City and County of San Francisco regarding aircraft noise issues. We take the role of being the voice for our communities seriously, as they have looked to us for the past 35 years to be the bridge between the aviation industry and the public.

Although the FAA sees Metroplex as a necessary evolutionary step in the modernization of the air traffic control system, the initial results have had a substantial negative effect on the surrounding communities which the Roundtable represents. This is reflective in thousands of inquiries and complaints by affected residents. We need a collaborative process that creates better compatibility between flight procedures and the areas around San Francisco and San Mateo County. The Roundtable believes there are opportunities to work together to create the changes necessary to reduce negative noise impacts on our cities, while also maintaining safety in our skies.

In reviewing the FAA Initiative Feasibility Study, there are approximately 29 Adjustments that are under the purview of the Roundtable; of this total, 13 were deemed by the FAA as "Feasible" while 16 were deemed by the FAA as "Not Feasible." Those deemed Not Feasible may likely be remedied by operational changes and pilot and controller outreach, rather than a protracted environmental process to change a procedure. This letter will detail our response to each of the Adjustments.

For some of the Adjustments, there are attachments to the letter that provide additional information on solutions and collaboration. The hope in "packaging" these procedures is to create greater clarity and understanding of what is going on with a particular flight procedure of interest, so that the public can be productive in providing direction to the Roundtable, which will eventually be passed on to the FAA. Our goal is to put forth achievable solutions and identify short and long term actions to alleviate noise for our communities.

None of the Adjustments can be successful without a concentrated collaboration between stakeholders, including your Congressional office, FAA Western Service Center and our local NORCAL TRACON professionals as part of the Sierra Pacific District Air Traffic Operations team. In addition, we strive to include other stakeholders such as San Francisco International Airport, airlines, Congressional representatives, other elected officials, the Select Committee on South Bay Arrivals, as well as the citizens we represent in our communities.

Our SFO Airport/Community Roundtable looks forward to working with you and the FAA to collaboratively develop solutions that reduce noise impacts in our communities, while maintaining safety in our skies.

Very truly yours,

Cliff Lentz, Chair  
SFO Airport/Community Roundtable

Elizabeth Lewis, Vice Chair  
SFO Airport/Community Roundtable

cc:

Glen Martin, Regional Administrator  
Ron Fincher, Director, Air Traffic Operations Western Service Area South  
Clark Desing, Director, Western Service Center  
Tony DiBernardo, Terminal District Manager, Sierra Pacific District Air Traffic Operations  
Don Kirby, Manager, NORCAL TRACON  
Tracey Johnson, Manager, Quality Control Group, Mission Services  
Mindy Wright, Manager, South Airspace & Procedures Team  
Members, SFO Airport/Community Roundtable  
Members, Select Committee on South Bay Arrivals  
Congresswoman Anna Eshoo  
Congresswoman Jackie Speier

Attachments

- A. Executive Working Outline
- B. Expanded Procedure Discussion Package
- C. Letter to FAA Wester-Pacific Region, City of Pacifica

Adjustment - 1.a.i.(a) (Altitude)– Not Feasible

*Description:* Evaluate raising altitude at MENLO waypoint to 5,000’.

*Roundtable Response:* This Adjustment contains two items: increasing the altitude at MENLO and establishing a new waypoint. Based on instrument procedure design, the Roundtable understands the altitude at MENLO must remain at the current altitudes. The SFO Aircraft Noise Abatement Office and Northern California TRACON have an agreement that states when able, aircraft will cross the MENLO intersection during visual conditions at 5,000’ AGL and 4,000’ AGL during instrument conditions. The Roundtable requests this agreement stays in place and aircraft cross MENLO at or close to 5,000’ AGL during visual conditions.

Adjustment - 1.a.ii. (Altitude) – Feasible

*Description:* Analyze reducing impacts of SSTIK, WESLA, and CNDLE departures.

*Roundtable Response:* This Adjustment contains language regarding three separate procedures.

1. SSTIK – Discontinue flying the SSTIK procedure and revert back to pre-RNAV PORTE/OFF SHORE departure using the SEPDY waypoint.
2. WESLA – This procedure should be flown as charted and allow aircraft to climb unrestricted when there are no other air traffic conflicts.
3. CNDLE – As with the SSTIK, the Roundtable advocates for CNDLE to be flown as charted and vectored for safety purposes only, not for efficiency. The Roundtable would request the FAA to research other possible lateral path options for the CNDLE southbound departures

Additional information regarding the SSTIK and CNDLE can be found in Attachments.

Adjustment - 1.b.i. (Track)– Feasible

*Description:* Analyze moving the SSTIK and PORTE departures more over water.

*Roundtable Response:* There are two procedures in this Adjustment; the majority of aircraft fly the SSTIK departure, therefore the comments will focus that procedure. Keeping aircraft over compatible land uses as much as possible is key to noise abatement. For SSTIK, there are two bodies of water to use for aircraft operations; on immediate departure, the San Francisco Bay and later in the Pacific Ocean for points between the existing SSTIK and PORTE waypoints. The Roundtable advocates utilizing water as much as possible for the SSTIK procedure to:

- Fly over the Bay until the SSTIK waypoint, and
- Fly the procedure as charted to PORTE waypoint instead of clearing aircraft to subsequent waypoints downstream from SSTIK, bypassing PORTE. Aircraft bypassing the PORTE waypoint lead to aircraft overflying larger portions of San Mateo County instead of the ocean.

Additional information regarding this Response can be found in Attachment B.

Adjustment - 1.b.ii. (Track)– Feasible

*Description:* Analyze reducing the impacts of SSTIK, WESLA, and CNDLE departures.

*Roundtable Response:* There are three procedures in this Adjustment.

1. SSTIK – This Adjustment addresses the track of the procedure. The comments in this

Adjustment relate specifically to the existing track and options for procedure modifications. The SSTIK procedure can be dissected into parts, or segments, to look at how to solve the overall issues by focusing on how the procedure flies: over the Bay, the peninsula, and the ocean. The FAA Initiative Phase 1 shows that 99% of aircraft are compliant with the SSTIK procedure, turning within 1 nautical mile of the initial waypoint that was designed to RNAV-1 standards. While technically this is accurate, the further aircraft are turned before the waypoint, the lower they are over the peninsula. Aircraft turned before the waypoint then compound the noise issue when cleared to waypoints downstream from PORTE.

2. With regard to the existing procedure, the SFO Roundtable would request:
  - a. That southerly vectors not be issued to an aircraft until an aircraft is actually over SSTIK (avoid anticipatory turns approaching SSTIK).
  - b. That the Bay, Golden Gate and ocean be used for overflight as much as possible.
  - c. That existing areas of non-residential land be used for overflight.
  - d. That assigning a southbound heading toward PORTE should be delayed as long as feasible **including flying to the ocean before turning south.**
  - e. That vectoring aircraft down the Peninsula direct to **PORTE and to** waypoints beyond PORTE should be avoided.

With regard to the longer term, the Roundtable would propose to replace the SSTIK with the PORTE departure used prior to NextGen.

3. WESLA – This procedure should be flown as charted and allow aircraft to climb unrestricted when there are no other air traffic conflicts.
4. CNDLE – This procedure should be flown as charted and reduce the amount of aircraft vectored. *FAA Initiative Phase 1, Appendix B* notes that 46% of CNDLE departures are on the procedure; this assumes 54% of aircraft flying the CNDLE departure are vectored. The Roundtable requests the FAA to use this as a baseline to compare conditions in the future when reporting back to this body regarding decreasing vector traffic. As with Adjustment 1.a.ii., the Roundtable requests the FAA research various options as alternate lateral paths for CNDEL southbound departures.

Additional information regarding the SSTIK and the CNDEL can be found in Attachment B.

#### Adjustment - 1.b.iii. (Track)– Not Feasible

*Description:* Analyze moving the ILS/Visual Approach to RWY 28L offshore.

*Roundtable Response:* The Roundtable understands the limitations of an offset to RWY 28L interfering with operations on RWY 28R. This Adjustment is an example of an operational issue that can use controller and pilot outreach to help with noise issues; it is understood that the need for side-by-side operations has increased and with the changes in wake re-categorization, aircraft delays at SFO are at times cut in half due to this type of operation. As part of the outreach, the Roundtable would like to request the following:

- a. Work with SFO Noise Abatement Office on a pilot outreach program to encourage aircraft to stay over water while on approach after receiving their cleared to land instructions.
- b. Work with Northern California TRACON (NCT) to educate controllers on keeping aircraft over water as much as possible, especially during late night hours and when aircraft are

- operating in single-stream and using RWY 28R. Additionally, we would like assurances from the FAA, to the maximum extent possible, not turn aircraft over affected communities prior to nine miles from the SFO VOR (9 DME) final from the airport, consistent with the NCT informal noise abatement agreement.
- c. Determine the feasibility of creating an RNAV (RNP) dual offset approach to Runway 28R and 28L.

Adjustment - 1.b.iv. (Track)– Not Feasible

*Description:* Analyze offsetting Visual Approaches until passing San Mateo Bridge.

*Roundtable Response:* The Roundtable understands the limitations of aircraft conducting a stabilized approach and needing to be set up on a final approach outside of the San Mateo Bridge. This Adjustment is an example of an operational issue that can use controller and pilot outreach to help with noise issues.

As part of the outreach, the Roundtable would like to request the following:

- a. Work with SFO Noise Abatement Office on a pilot outreach program to encourage aircraft to stay over water while on approach after receiving their cleared to land instructions.
- b. Work with Northern California TRACON (NCT) to educate controllers on keeping aircraft over water as much as possible, especially during late night hours and when aircraft are operating in single-stream and using RWY 28R.

Adjustment - 1.b.v. (Track)– Not Feasible

*Description:* Analyze the impact of non-charted visual approaches to RWY 28.

*Roundtable Response:* The Roundtable understands the limitations of aircraft conducting a stabilized approach and needing to be set up on a final approach outside of the San Mateo Bridge. This Adjustment is an example of an operational issue that can use controller and pilot outreach to help with noise issues.

As part of the outreach, the Roundtable would like to request the following:

- a. Work with SFO Noise Abatement Office on a pilot outreach program to encourage aircraft to stay over water while on approach after receiving their cleared to land instructions.
- b. Work with Northern California TRACON (NCT) to educate controllers on keeping aircraft over water as much as possible, especially during late night hours and when aircraft are operating in single-stream.

Adjustment - 1.c.ii. (Waypoint)– Feasible

*Description:* Analyze making adjustments to PORTE departure to maximize offshore routing.

*Roundtable Response:* The majority of aircraft that depart Runway 01L fly a SSTIK departure procedure; the comments relating to Adjustment 1.c.ii. are the same the Roundtable comments on Adjustments 1.a.ii, 1.b.i, and 1.b.ii. with emphasis on the comments for Adjustments 1.a.ii and 1.b.i.

Adjustment - 1.f.ii. (PBN Procedures)– Not Feasible

*Description:* Evaluate the effect of dispersing flight tracks over a wider range.

*Roundtable Response:* The Roundtable understands that vectoring is often used to compensate for high flight volumes at SFO and to avoid long delays on the ground. The Roundtable requests to work with the FAA to determine where aircraft can be vectored with the least noise impact and identify locations that have the most compatible land uses for vectoring purposes.

Adjustment - 1.f.iii. (PBN Procedures)– Feasible

*Description:* Study the feasibility of creating new transitions for the NITTE departure for airports to southbound destinations.

*Roundtable Response:* The Roundtable supports FAA's efforts to create a noise abatement procedure for nighttime flights that will keep aircraft over compatible land uses, specifically the Bay and ocean, instead of the peninsula. We request a timeline from the FAA for implementation of this procedure, factoring in requirements to run the procedure through the FAA Order JO 7100.41A process.

Additional information regarding a new southbound transition for the NIITE Departure can be found in Attachments.

Adjustment - 1.f.iv. (PBN Procedures)– Not Feasible

*Description:* Study the possibility of new SFO RNP approaches which will serve RWYs 28 L/R and follow the BSR ground track, curved out over the Bay crossing MENLO at 5,000 -6,000 feet.

*Roundtable Response:* There are two issues in this Adjustment, creating an RNP approach to Runways 28 L/R and crossing MENLO at 5,000- 6,000 feet. Based on instrument procedure design, the Roundtable understands the altitude at MENLO must remain at the current altitudes. For procedural adjustments, the Roundtable would like approach control to encourage use of the RNAV (RNP) Y procedure to Runway 28R to keep aircraft over the water for as long as possible. The Roundtable suggests the following outreach:

- a. Work with NCT to educate controllers on keeping aircraft over water as long as possible on approach, especially during single-stream operations.
- b. Work with the SFO ANAO to educate pilots on the ability to request the RNP to Runway 28R, given the properly equipped aircraft and flight crew.

Adjustment - 2.a.i. (Sequencing and Vector Points)– Not Feasible

*Description:* Analyze adjusting air traffic activity in the vicinity of Woodside VOR including altitudes.

*Roundtable Response:* Aircraft activity over the Woodside VORTAC includes aircraft arrivals from numerous origin points, not just oceanic arrivals. The Initiative addressed one portion of the flights which utilize the Ocean Tailored Approach, which accounts for less than 4% of SFO's traffic. The majority of traffic in this area of southern San Mateo County are 1) vectored flights from southern arrivals on BIG SUR THREE and SERFR TWO STARS and 2) vectored flights from northern arrivals on numerous STARS including but not limited to the GOLDEN GATE SIX, POINT REYES ONE, and BDEGA TWO. Aircraft on STARS from northern origin cities fly down the peninsula, turning back towards the airport over towns and cities in southern San Mateo County over populated terrain that rises to 2,000' mean sea level. Aircraft on arrival from southern origin cities are vectored for traffic over this same geographic area. The Roundtable requests:

- a. The FAA determine the ability of more aircraft to utilize the Bay for arrivals from points

- north instead of the peninsula. This is especially important during nighttime hours; nighttime as defined by the FAR Part 150 is 10 pm – 7 am. Between the hours of 10 pm – 7 am, we would like 100% of the arrivals to use the Bay,
- b. The BDEGA TWO procedure include the waypoints for a down the Bay procedure, as done in BDEGA ONE, and
  - c. The FAA determine altitudes to turn aircraft for vector purposes that minimizes noise.

Additional information regarding the Woodside VOR can be found in Attachment B.

Adjustment - 2.a.ii.(a) (Sequencing and Vector Points)– Feasible

*Description:* Analyze adjusting air traffic to eliminate early turns over land. Focus on leaving aircraft over water as long as possible.

*Roundtable Response:* This Adjustment contains references to numerous procedures, which will be addressed in order.

1. NIITE – when aircraft remain on the NIITE procedure, they represent an excellent use of an RNAV-based procedure that places aircraft over the intended waypoints, over a compatible land use, on a consistent basis. We are encouraged by the use of the NIITE procedure and look to see the amount of aircraft vectored off of the NIITE to reduce from the baseline of 25% vectored flights between 10 pm – 12 am and 50% between 1 am – 4 am. It is critical stay on the NIITE procedure given that it is used during late night hours, essential for sleep.
2. HUSSH – the HUSSH is an OAK-based procedure. While these flights do not fly over San Francisco or the peninsula, we continue to encourage its use and reduce vectors off of the HUSSH departure for the same reasons as the NIITE.
3. FOGGG – this procedure is used on runways not commonly used, RWY 10L/R and RWY 19L/R. When weather conditions dictate the use of these runways, we encourage the use of FOGGG as published.
4. GNNRR – the GNNRR TWO departure is a replacement for the legacy GAP SIX departure, flying runway heading from RWY 28L/R. The Roundtable has been the voice for San Mateo County for the past 35 years; in that time, aircraft departing out “the gap” have not been identified as flying a noise abatement procedure. During nighttime periods, it is not the preferential departure runway due to its overflight of thousands of residents in multiple communities that vary in elevation. The Roundtable requests:
  - a. The FAA remove GNNRR TWO in references to flying aircraft over less noise-sensitive areas and the associated inclusion in procedures used over less noise-sensitive areas that total 88%, as noted in this Adjustment, 3<sup>rd</sup> bullet.
  - b. When available, use the GAP SEVEN departure to avoid any top altitude restrictions for aircraft departing Runway 28L/R out the gap.

Adjustment - 2.a.ii.(b) (Sequencing and Vector Points)– Feasible

*Description:* Analyze adjusting air traffic to eliminate early turns over land. Keep aircraft on the SSTIK departure until the SSTIK waypoint before turning.

*Roundtable Response:* This Adjustment contains reference to three procedures; the comments will address each procedure in order.

1. The SSTIK procedure is a replacement for the legacy PORTE procedure; with the new



procedure came a new waypoint for aircraft to make their initial procedure turn. As with many cities within San Mateo County, cities underneath the SSTIK waypoint contain topographic features that can heighten noise from aircraft operations, unlike flying over flat land. When aircraft are turned before the waypoint, they are turning over the peninsula while simultaneously continuing their climb, increasing the noise to communities along its path. Early turns that are cleared to waypoints beyond PORTE add to the aircraft noise profile along the peninsula.

In keeping with comments regarding SSTIK operations in Adjustment 1.a.ii., 1.b.i., and 1.b.ii, the SSTIK procedure can be dissected into segments to increase use of compatible land uses along the entire route. The goal is to increase the amount of wings-level flight over the peninsula to reduce the effect of aircraft climbing and turning over populated areas, letting aircraft gain altitude in a wings level configuration and to minimize their flight path over populated land before starting a turn to the south over the ocean.

The Roundtable requests:

- a. Aircraft use compatible land uses for as long as possible before turning. For the SSTIK procedure, this would be using the Bay to gain altitude before turning over populated areas.
  - b. Define the airspace limitations to the north and east for placement of a waypoint to replace SSTIK. Present these limitations to the Roundtable in graphic and memo formats.
  - c. Define the airspace limitations over the Golden Gate and the ocean to the west of the peninsula for placement of a waypoint to replace or augment PORTE. Present these limitations to the Roundtable in graphic and memo formats.
2. The Roundtable requests aircraft remain on the WESLA procedure, as charted.
  3. While the CNDLE procedure is for OAK departures, the CNDLE and SSTIK share the PORTE waypoint. Aircraft flying the CNDLE departure overfly numerous areas of the City of San Francisco and northern San Mateo County. As requested in Adjustment 1.b.ii., *FAA Initiative Phase 1, Appendix B* notes that 46% of CNDLE departures are on the procedure; this assumes 54% of aircraft flying the CNDLE departure are vectored. The Roundtable requests the FAA to use this as a baseline to compare conditions in the future when reporting back to this body regarding decreasing vector traffic.

Adjustment - 2.a.ii.(c) (Sequencing and Vector Points)– Feasible

*Description:* Analyze adjusting air traffic to eliminate early turns over land. Keep aircraft on the NITTE departure to at least the NIITE waypoint as much as possible.

*Roundtable Response:* The Roundtable comments for Adjustment 2.a.ii.(a) apply to this Adjustment; we are encouraged by the use of the NIITE procedure and look forward to a report from the FAA that the number of aircraft vectored off of the NIITE procedure will be reduced.

Adjustment - 2.e.i. (RWY Usage)– Not Feasible

*Description:* Study the feasibility of increasing the use of RWY 10.

*Roundtable Response:* RWY 10L/R has historically been the nighttime preferential runway for noise abatement, especially for wide body aircraft that are travelling to destinations in Asia. This Adjustment references the increased use of RWY 10L/R in relation to weather conditions. The

Roundtable understands due to weather conditions RWY 10L/R is unable to be used much of the time, however; the use of RWY 10L/R for portions of nighttime activity will be addressed in Adjustment 2.e.iii.

Additional information regarding the Runway 10 departure and Opposite Direction Operations can be found in the Attachments.

Adjustment - 2.e.ii. (RWY Usage)– Feasible

*Description:* Study the feasibility of increasing the use of RWY 01 for departures, study the feasibility of proceduralizing the 050 departure heading off RWY 01 at night.

*Roundtable Response:* For daytime operations, RWY 01L/R are the preferential departure runways while RWY 28L/R are the preferred arrival runways. For nighttime operations, use of RWY 01L/R is the third preference of SFO's nighttime preferential runway use program. For departures using RWY 01L/R for departures during nighttime hours, the Roundtable requests aircraft with southern destinations use the 050 departure heading as much as possible to avoid overflights of the peninsula. The RT is not advocating for Runway 01L/R to be used more during nighttime hours.

Operationally, the Roundtable would like to use the 050 departure heading, NITTE, and new NITTE waypoint for south-bound departures to reduce nighttime overflights of the peninsula.

Adjustment - 2.e.iii. (RWY Usage)– Not Feasible

*Description:* Study the necessity of extending nighttime operations at SFO. According to the SFO Standard Operating Procedure, the preferred RWY for operations between 0100 and 0600 local time is departing RWY 10 and landing RWY 28.

*Roundtable Response:*

Since 1988, SFO has had in place a nighttime preferential runway use program<sup>1</sup>. The program defines nighttime hours the same as the FAA FAR Part 150 study as 10 pm – 7 am. During this time period, SFO defines the following preferred nighttime preferential runway procedures:

1. The primary goal of the program is to use Runways 10 L/R for takeoff because they offer departure routing over the San Francisco Bay which will reduce the noise impacts over the communities surrounding SFO.
2. When departures from Runways 10 L/R are not possible, the second preference would be to depart Runways 28 L/R on the Shoreline or Quiet Departure Procedures. Both of these procedures incorporate an immediate right turn after departure to avoid residential communities northwest of SFO. The Quiet DP is now the TRUKN procedure that flies up the bay.
3. The third preference is to depart on Runways 01 L/R. While this procedure directs aircraft over the bay, jet blast from these departures affects communities south of SFO.

Over the past 35 years, the Roundtable has worked with the SFO Noise Abatement Office to ensure the nighttime preferential runway use program stayed in place and is used as much as possible between 10 pm – 7 am. Due to daytime delays and traffic volumes, the hours that the preferential runway use program can be used doesn't always span from 10 pm – 7 am. However, we strive to have this preferential nighttime runway use program used as much as possible when traffic allows.

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<sup>1</sup> <http://www.flysfo.com/community-environment/noise-abatement/noise-abatement-procedures>

The Roundtable requests:

1. Maximum use of SFO's preferred nighttime preferential runway procedures, including using the TRUKN (up the Bay) and NIITE as replacements for the SHORELINE and QUIET departures.
2. Create a RWY 10R procedure for aircraft to depart RWY 10R, then turn up the Bay to join the NIITE. Currently aircraft depart and turn to heading 330 to fly up the Bay via vector headings issues from NCT. This can be enhanced by creating an RNAV procedure that brings aircraft up the Bay to join the existing NIITE for destinations to the east or on a new NIITE waypoint over the Golden Gate Bridge.

Additional information regarding this Response can be found in Attachment B.

Adjustment - 2.e.iv. (RWY Usage)– Not Feasible

*Description:* When weather conditions permit, study the increase in use of the Shoreline 7 departure off RWY 28R or 28L.

*Roundtable Response:* As with previous Adjustments, the Roundtable's goal is to use compatible land uses as much as possible. For the SHORELINE SEVEN departure, and now the TRUKN departure, it is key for aircraft to stay east of Highway 101 for noise abatement. This provides residents of numerous densely populated cities with relief from aircraft overflights all times of the day, especially at night. When conditions permit and aircraft use the TRUKN departure off RWY 28L/R, the Roundtable requests the FAA conduct controller outreach to educate them about aircraft staying east of Highway 101.

Adjustment - 2.f.i. (Instrument Flight Procedures IFP)– Feasible

*Description:* Study the feasibility of creating new transitions for the NIITE departure for departures to southbound destinations.

*Roundtable Response:* See Roundtable response to Adjustment 1.f.iii. and more information in Attachment B.

Adjustment - 2.f.ii. (Instrument Flight Procedures IFP)– Not Feasible

*Description:* When weather operations permits, study the use of the Shoreline 7 departure off of RWY 28R or 28L.

*Roundtable Response:* See Roundtable response to Adjustment 2.e.iv.

Adjustment - 2.f.iii. (Instrument Flight Procedures IFP)– Not Feasible

*Description:* Study the use of offset visual approaches in lieu of straight in visual approaches.

*Roundtable Response:* See Roundtable response to Adjustments 1.b.iii., 1.b.iv., and 1.b.v.

Adjustment - 2.f.iv. (Instrument Flight Procedures IFP)– Not Feasible

*Description:* Study the usage of the GAP departure.

*Roundtable Response:* Aircraft departing on GNNRR are many times fully-loaded wide-body aircraft traveling to Europe or Asia. These operations fly over numerous cities that are densely populated.

The Roundtable requests aircraft can climb unrestricted on this procedure.

Roundtable Response: The Roundtable requests aircraft depart without a top altitude restriction when flying “out the gap” on Runway 28L/R.

Adjustment - 2.f.vi. (Instrument Flight Procedures IFP)– Not Feasible

*Description:* Study the feasibility of increasing the use of the SSTIK departure during the day and the NIITE departure at night.

*Roundtable Response:* As the Roundtable has requested in previous Adjustments, the SSTIK procedure should be flown as charted, especially flying to the PORTE waypoint instead of down the peninsula to points south of PORTE.

Adjustment - 2.g.i. (Opposite Direction Operations ODO)– Not Feasible – Not Applicable

*Description:* Review recent implementation of ODO procedures and their impacts in the San Francisco Bay Area.

*Roundtable Response:* See the Roundtable response in Adjustment 2.e.iii.

Adjustment - 2.g.ii. (Opposite Direction Operations ODO)– Not Feasible – Not Applicable

*Description:* Review recent implementation of ODO procedures and their impacts in the San Francisco Bay Area.

*Roundtable Response:* The Roundtable supports the FAA's efforts to use the 050 heading for noise abatement at night. Please see the Roundtable Response to Adjustments 2.e.i., 2.e.ii., and 2.e.iii.

Adjustment - 3.a.i. (Equitability, Opposite Direction Operations ODO)– Not Feasible – Not Applicable

*Description:* Review the current nighttime operations to determine if they adequately address preferential RWY usage.

*Roundtable Response:* In addition to the Roundtable's response and requests in Adjustments 2.e.i., 2.e.ii., and 2.e.iii relative to runway use at night, the Roundtable requests that SFO's nighttime preferential runway use program remain unchanged, with the runway use at nighttime remain as follows:

1. The primary goal of the program is to use Runways 10 L/R for takeoff because they offer departure routing over the San Francisco Bay which will reduce the noise impacts over the communities surrounding SFO.
2. When departures from Runways 10 L/R are not possible, the second preference would be to depart Runways 28 L/R on the Shoreline or Quiet Departure Procedures. Both of these procedures incorporate an immediate right turn after departure to avoid residential communities northwest of SFO.
3. The third preference is to depart on Runways 01 L/R. While this procedure directs aircraft over the bay, jet blast from these departures affects communities south of SFO.

Additional information regarding Opposite Direction Operations/Nighttime flights can be found in Attachments.

Adjustment - 3.b.ii. (Interactions and agreements) – Feasible

*Description:* Review facility agreements to ensure they are effective and efficient with regard to routing and speeds.

*Roundtable Response:* In its 35-year history, the Roundtable has maintained working relationships with its advisory members, including NCT, airlines, and the FAA airports district office. The Roundtable membership understands how key it is to have representatives from NCT involved with noise abatement at Roundtable meetings, Noise 101 workshops, and as our host for yearly NCT visits. We welcome the opportunity to discuss noise abatement with the controllers and as stated in a previous Adjustment, provide a noise presentation that can be used at NCT during training sessions.



## ATTACHMENT A:

# EXECUTIVE WORKING OUTLINE SFO AIRPORT/COMMUNITY ROUNDTABLE RESPONSE TO FAA INITIATIVE

ST = Short Term Task

LT = Long Term Task

**LIGHT GRAY SHADING** = FAA NORCAL TRACON

**DARKER GRAY SHADING** = FAA Western Service Group

**LEAD** = Task lead agency:

- SFO** = SFO Airport Manager
- RT** = SFO Airport/Community Roundtable
- NCT** = FAA NORCAL TRACON
- WSC** = FAA Western Service Group
- OKC** = Flight Procedures Oklahoma City

#		LEAD	LT/ ST	ARRIVALS	
1	<b>BDEGA +</b> Other arrivals from north Woodside + Mid-Peninsula	WSC	ST	Safety and traffic flow permitting, go back to historical use of the BDEGA East downwind prior to May 2010.	The RT understands that at certain times of the day, continuous traffic flow on the DYMND arrival causes reduced opportunities to use the BDEGA East downwind. However, when traffic allows (or when a slot can be created), use of the BDEGA east downwind significantly decreases noise to the entire mid-Peninsula.
2	<b>BDEGA +</b> Other arrivals from north Woodside+ Mid-Peninsula	WSC	ST	The FAA has provided, via the Select Committee on South Bay Arrivals, data on BDEGA West and East legs, showing the decline in the use of the East leg, with it being used only 28% of the time in May 2016 versus 42% in May 2010, down from a high in May 2005 of 57%.	Residents would benefit by understanding the limitations on the use of the BDEGA East downwind and the causes underlying what appears to be a significant decrease over the past few years in the utilization of the BDEGA East downwind.
3	<b>BDEGA</b> Other arrivals from north Woodside+ Mid-Peninsula	WSC	LT	If safety is not a factor, request the reinstatement of the FNISH transition in order to facilitate use of the BDEGA East downwind.	Ideally (even if only in visual conditions), it would be beneficial to create a "connection" between FNISH waypoint and a turn on to 28R for the FMS Bridge Visual, Quiet Bridge Visual or similar approach to 28R. This would most benefit non-local pilots who may not be familiar with SFO BDGEA East Downwind procedures.
4	<b>BDEGA</b> Other arrivals from north Woodside+ Mid-Peninsula	WSC	ST	The RT requests the FAA provide data on Golden Gate/BDEGA lateral track locations pre-NextGen and post-NextGen and if new procedures can use headings, not tracks, in procedure design.	The Golden Gate arrival directed a 140° <b>heading</b> from SFO. In the BDEGA, this was changed to a 140° concentrated <b>TRACK</b> from BRIXX waypoint located on SFO. Consider other factors which may also account for aircraft following a different track after NextGen.

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5	<b>BDEGA</b> Woodside+ Mid- Peninsula	WSC	LT	Determine if the BDEGA West downwind can be flown at a higher altitude or over compatible land uses west of Highway 280 without shifting noise to other communities.	It has been suggested that the BDEGA West downwind be flown at a higher altitude notwithstanding the constraints of the BRIXX at 12,000' using more compatible land uses to the west of Highway 280.
6	<b>BDEGA Arrival</b>  IN-TRAIL SPACING	NCT	ST	The SFO RT requests that the FAA study whether an increase in in-trail spacing on the BDEGA arrival will result in the decrease in vectoring over the Peninsula	Efficiency to the industry must be balanced with noise and health impacts to the communities as well as increased emissions to the environment.
7	<b>BDEGA</b> Other arrivals from north  Woodside+ Mid- Peninsula	NCT	ST	<b>BDEGA NIGHTTIME HOURS</b> During the nighttime hours, every effort should be made for all arrivals from the north to be assigned to the BDEGA East Downwind.	If delay vectors are needed to create a single stream to 28R or to incorporate BDEGA East downwind into the flow, early adjustments to DYMND arrivals might have the least noise impact on residents.
8	<b>SERFR Arrival</b>  IN-TRAIL SPACING	NCT	ST	The SFO RT recommends that the FAA increase the in-trail spacing of aircraft on the SERFR Arrival which will decrease the need for vectoring.	The FAA reports that more than 50% of planes on the SERFR Arrival are vectored off their path; some vectors begin as early as Monterey. This vectoring results in many additional flight miles, causing significant increases in noise and emissions. While the RT understands that this recommendation for increased in-trail spacing may result in ground delays at the departure cities, it will be at least partially offset by the reduced amount of airborne flight delays. This planned vectoring merely masks the problem; efficiency must be balanced with noise and health impacts to the communities as well as increased emissions to the environment.
9	<b>SERFR + BSR</b>  Woodside+ Mid- Peninsula	WSC	ST	<b>FLIGHT FROM THE SOUTH NIGHTTIME HOURS</b> During nighttime hours only, determine if arrivals from the south (such as on the SERF/BSR) could instead file a route which would terminate to the east of the Bay for an approach to Runway 28R.	<b>During the nighttime hours only</b> , the concept is to allow aircraft to file a routing similar to an LAX-OAK route (such as KLAX-CASTA6-GMN-RGOOD-EMOZOH3 to MYNEE), then from MYNEE (or other) direct ARCHI or ANETE, then conduct a noise-friendlier approach such as the FMS Bridge Visual 28R, Quiet Bridge Visual 28R, RNAV (RNP) Y 28R or if required, ILS 28R.

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10	BDEGA West Downwind OCEANIC SERFR/BSR ARRIVALS	WSC	LT	<p><b>NIGHTTIME HOURS APPLICABLE TO SFO AND OAK FLIGHTS</b></p> <p>During nighttime hours only, whenever aircraft fly over sensitive areas, the RT requests that every effort be made to keep aircraft at a higher altitude than typical daytime altitudes.</p> <p>Consider using extra flight distance over the Bay to 28R to dissipate extra altitude.</p>	<p><i>During nighttime hours only</i>, the goal is for BDEGA arrivals to be assigned the EAST Downwind, the goal for OCEANIC arrivals is for the flights to file for an arrival substantially over water (ex. BDEGA East Downwind) and the goal for SERFR/BSR is to file for an arrival to the east of the Bay.</p> <p>However, in the interim, and at any time flight over sensitive areas is absolutely required, higher altitudes over land might be dissipated by flight over the Bay to a 28R “noise-friendlier” approach. The amount of higher altitude available over land is related to the amount of miles flown to intercept the 28R approach.</p>
11	DYAMD Arrival IN-TRAIL SPACING	NCT	ST	<p>The SFO RT recommends that the FAA increase the in-trail spacing of aircraft on the DYAMD arrival to allow additional opportunities for aircraft to use the BDEGA East arrival, Down the Bay. By routing more flights over the BDEGA East downwind, vectoring noise and emissions over the Peninsula (from SERFR, Oceanic and BDEGA West) will be decreased.</p>	<p>The DYAMD arrival is used by aircraft arriving from the east. This arrival feeds into SFO 28R approaches. The level of vectoring on DYAMD is low and is generally done over unpopulated areas. By increasing the spacing of aircraft on the DYAMD – either for 24 hours of the day or during the hours in which traffic is estimated to exceed a pre-determined level—there should be additional opportunities for aircraft on the BDEGA to be assigned the BDEGA East downwind over the Bay, rather than the BDEGA West downwind over the noise-sensitive Peninsula and will decrease noise and emissions over the Peninsula. Efficiency to the industry must be balanced with noise and health impacts to the communities as well as increased emissions to the environment.</p>
12	RWY 28 APPROACHES Foster City	NCT	ST	<p>Regardless of the time of day, whenever there is a single stream operation to only one runway, aircraft should approach and land only on Runway 28R.</p>	<p>This request is in accordance with NCT SOPs.</p>
13	RWY 28 APPROACHES Foster City	NCT	ST	<p>When landing single stream to 28R or landing both 28L/28R in VMC, aircraft landing 28R should be assigned noise “friendlier” approaches such as FMS Bridge Visual 28R, Quiet Bridge Visual, or RNAV (RNP) Y 28R.</p>	<p>This request is substantially in accordance with the NCT SOPs.</p>
14	RWY 28 APPROACHES Foster City	NCT	ST	<p><b>NIGHTTIME HOURS</b></p> <p>ATC should make every effort to coordinate traffic arrivals to <b>create a single stream of traffic</b> to land only on Runway 28R.</p>	<p>Depending on weather conditions, aircraft would be expected to fly the FMS Bridge Visual 28R, the Quiet Bridge Visual, the RNAV (RNP) Runway 28R, (or if conditions require) the ILS 28R or other approach to Runway.</p>



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15	<b>RWY 28 APPROACHES</b> Foster City	OKC *	LT	Determine the feasibility of creating dual offset (VMC or IMC) RNAV, RNAV (RNP) or other type of approach to Runway 28L <b>and</b> to Runway 28R.	This requested concept would create two offset paths with both the 28L path and the 28R path remaining well clear of Foster City and other bayside communities until past the San Mateo Bridge when aircraft would then line up with each runway for landing.
16	<b>MENLO + VICINITY</b>	NCT	ST	In VMC, aircraft should cross the vicinity around the MENLO waypoint and at or above 5,000 feet MSL. Aircraft within the <b>vicinity</b> of MENLO should use the 5,000' altitude when able.	The SFO Aircraft Noise Abatement Office and Northern California TRACON have an agreement that states when able, aircraft will cross the MENLO intersection VMC at 5,000' MSL and IMC at 4,000' MSL.
17	<b>MENLO +Vicinity</b>  SFO TIPP TOE VISUAL 28L	FAA	LT	Create a Visual Approach for Runway 28L with a MENLO crossing altitude at or above 5,000' MSL.	While the TIPP TOE Visual Runway 28L is still a published approach procedure, the RT understands that it is little, if at all, used since NextGen. The SFO RT requests that the FAA replace the TIPP TOE Visual with a comparable NextGen Visual Arrival to 28L <b>preserving the TIPP TOE Visual requirement for crossing MENLO at or above 5000'.</b>
<b>DEPARTURES</b>					
18	<b>NIITE HUSSH</b>	WSC	ST	This procedure should be flown as <b>charted</b> including flying over the NIITE flyover waypoint as specified in the departure procedure.	When the NIITE Southbound transition is published, flights should fly the complete published departure unless a 050° Heading is available as an alternative.
19	<b>NIITE HUSSH</b>	WSC	LT	<b>NIITE/HUSSH SOUTH NIGHTTIME HOURS APPLICABLE TO SFO AND OAK FLIGHTS</b> Create a south transition for the NIITE DP that keeps traffic over the Bay and ocean until a high altitude is attained.  The south transition to the NIITE DP should also include applicability of that transition to the OAK HUSSH DP	Since the NIITE DP has a transition for westbound traffic to GOBBS waypoint, a southbound transition could follow a track using the PYE 135° radial (which defines GOBBS) from GOBBS to the PORTE waypoint. Some have suggested that the track should remain offshore for some distance beyond PORTE which could be done using a portion of the OFFSHORE Dep.
20	<b>NIITE</b>	NCT	ST	<b>NIITE/HUSSH SOUTH NIGHTTIME HOURS APPLICABLE TO SFO AND OAK FLIGHTS</b> While awaiting the development of a NIITE/HUSSH SOUTH transitions, NCT is requested to use the NIITE DP track to GOBBS and then vectors from GOBBS southbound (keeping offshore) at least until PORTE or further south.	This vector request mirrors the long-standing NCT SOP which reflects, in essence, a vector to GOBBS <i>"Between the hours of 2200 and 0700 local (Sundays to 0800), vector oceanic departures over the Bay to pass over the north end of the Golden Gate Bridge."</i>  This request would simply add on a request for a vector from the vicinity of GOBBS southbound to remain well clear of the coastline.

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21	NIITE	NCT	ST	<p><b>NIITE NIGHTTIME HOURS</b> Determine if Runway 10 take-offs can be authorized to use the NIITE DP. If not, create a departure to allow Runway 10 take-offs to make a left turn up the Bay to NIITE waypoint.</p>	<p>Apparently safety concerns resulted in the removal of the authorization for Runway 10 take-offs to use the NIITE DP. Perhaps these concerns could be reviewed to determine if another departure routing or transition could be created to ensure safety.</p>
22	NIITE	WSC	ST	<p><b>NIGHT-NIITE/HUSSH:</b> determine if aircraft can file for SFO CUIT Departure or the OAK SILENT Departure and then be vectored IAW NCT SOPs out to GOBBS...and then southbound.</p>	<p>Or perhaps there is a way for the Nighttime Hours southbound aircraft that would normally file for CNDEL/SSTIK, to file for NIITE with a GOBBS transition, then vector past PORTE to an on-course?</p>
23	NIITE	NCT	ST	<p><b>NIITE NIGHTTIME HOURS</b> While awaiting authorization for Runway 10 departures to use the NIITE DP, the RT requests that aircraft be vectored to mirror the NIITE DP.</p>	<p>While awaiting authorization for Runway 10 departures to use the NIITE DP (or other appropriate procedure), the RT requests that RWY 10 departures be vectored IAW TRACON procedures - up the Bay (~330° heading) to join the NIITE or be vectored up to the vicinity of NIITE, thence vectored to the vicinity of GOBBS (and if southbound), thence via a southbound vector remaining well off the land.</p>
24	050° HEADING	NCT	ST	<p><b>SFO 050° HEADING NIGHTTIME HOURS APPLICABLE TO SFO AND OAK FLIGHTS</b> The RT supports the use the 050° heading from SFO Runways 01 and a comparable OAK Rwy 30 heading down the Bay at night. Runway 01 departures should not be increased, rather use a 050 heading in lieu of flying a procedure over the peninsula for aircraft with southern departures.</p>	<p>Use of a “down the Bay” heading -- ~ 050° heading for SFO and a comparable heading for OAK south departures is important procedure to reducing noise impact, <b>but not to imply that the Roundtable is requesting increased use of Runways 1 for departure.</b></p>
25	RWY 28 STRAIGHT OUT DEP NIGHTTIME RWY DEP	NCT	LT	<p><b>RWY 28/10 NIGHTTIME HOURS STRAIGHT-OUT DEPARTUES</b> During the nighttime hours only—Is there any ability to eliminate or raise the 3,000’ altitude limit on these departures?</p>	<p>Notwithstanding any existing airspace constraints, do the nighttime hours allow any flexibility in these constraints that could allow deleting the 3000’ level-off or do aircraft have the ability to file for the GAP 7 departure that does not have a top altitude.</p>

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26	RWY 28 DEP INCL ODO + NIGHTTIME RWY DEP	NCT	ST	<p><b>RWY 28/10 NIGHTTIME HOURS</b> Between 10pm and 7am, the RT requests use of SFO preferential runways for departure: Runways 10 then Runways 28 (TRUKN or NIITE) and then Runways 01. The TRUKN is similar to the legacy Shoreline departure up the Bay.</p>	In accordance with NCT SOP.
27	RWY 28  STRAIGHT OUT DEP	NCT	LT	Determine if the existence of a VFR flyway or other conflicting airspace use off the coastline in the vicinity of the extended Runways 28 centerline, leads to Runway 28 straight-out departures being required to level off at 3000’.	If this altitude restriction is due to VFR airspace, determine if a modification of this VFR airspace is warranted in the current Class B Airspace Modification process. If due to other airspace restriction, what actions could be taken to ameliorate this conflict.
28	CNDEL	NCT	ST	This procedure should be flown as <b>charted</b> including flying over the CNDEL flyover waypoint and flying to the PORTE fly-by waypoint as specified in the departure procedure.	Vectors prior to CNDEL may interfere with the ability of SSTIK to be flown as published. Avoid any vectors before CNDEL; after CNDEL, avoid vectors as long as possible, avoid vectors that fly down the Peninsula to waypoints beyond PORTE. If vectoring is required for safety only -- minimize overflight of sensitive noise areas. If vectoring over the Bay and Ocean, use of the NIITE waypoints of NIITE and GOBBS for aircraft routing might be appropriate routing
29	CNDEL	WSC	LT	Determine if a revised southbound transition (with additional waypoints?) for the CNDEL procedure could “contain” the flight paths further west (perhaps over the ocean) to allow expanded clear space for possible modification of the SSTIK departure.	
30	CNDEL	WSC	ST	Determine if a southbound transition for CNDEL could effectively use flight over bodies of water to gain altitude before flying over noise sensitive land use.	Such a southbound transition should not move noise to noise-sensitive areas not under the published CNDEL Departure and should not interfere with a possible expanded SSTIK departure path.

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31	CNDEL	NCT	LT	<p><b>CNDEL NIGHTTIME HOURS</b></p> <p>For OAK southbound aircraft, until the NIITE southbound transition has been finalized, use of the NIITE/HUSSH DP or vectors to replicate the NIITE/HUSSH DP with a vector from GOBBS to the south to remain offshore would be a preferred nighttime alternative.</p>	For OAK southbound aircraft, use of the left turn down the Bay (~135° heading) with no flight over sensitive areas is also supported.
32	SSTIK	NCT	ST	Discontinue flying the SSTIK procedure and revert back to the pre-RNAV/OFF SHORE departure using the SEPDY waypoint.	
33	SSTIK	WSC	LT	Move SSTIK N + E as much as feasible to allow maximum altitude gain before turning to fly over land using the historic SEPDY waypoint as a guide.	<p>Create an additional waypoint over the ocean to guide aircraft over water to PORTE such as the legacy WAMMY waypoint associated with the OFFSHORE procedure.</p> <p>Determine if the minimum altitude required at SSTIK can be raised before a left turn (vicinity of SSTIK).</p> <p>Determine if a reduced airspeed (~220kts) can be required until after established in the left turn from SSTIK so aircraft climb at a higher angle of climb approaching land.</p>
35	SSTIK	WSC	LT	Create an RNAV overlay of the OFFSHORE ONE procedure to guide aircraft higher over the Bay before turning to a waypoint located in the ocean.	Using the legacy OFFSHORE procedure, create an RNAV overlay to keep aircraft higher over the peninsula and fly over the ocean instead of down the peninsula and RNAV waypoints at WAMMY or to the west of this point.
36	SSTIK	NCT	ST	Use the OFFSHORE ONE procedure for aircraft departures.	While awaiting the development of an OFFSHORE ONE RNAV overlay, NCT is requested to use the OFFSHORE departure procedure for flights to Southern California destinations such as: LGB, SNA, SAN, SBA and Mexican airspace.
38	DEPARTURE/ ARRIVAL  PROCEDURE ASSIGNMENT	WSC	ST	The RT requests that the FAA determine if any aircraft were assigned or re-assigned-- via preferential runway or otherwise-- from one departure or arrival to a different departure or arrival.	

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39	TAKE-OFF BACKBLAST NOISE	RT/ SFO/ FAA		The RT recommends that SFO allocate funds or work with the FAA to obtain grant money to commission an updated Technical Study of the backblast noise from takeoffs at SFO. The RT will work with SFO to develop Technical Study parameters and will later review and monitor improvements recommended in the Technical Study.	Backblast noise from SFO takeoffs primarily affects the communities south of Runway 1L/1R departures as well homes more distant. Although Runways 10L/10R are used infrequently, backblast from these takeoffs affects communities to the west of Runways 10L/R departures. Since technology improvements are regularly attained, the RT requests that SFO to conduct an up-to-date Technical Study of options to include community input and without limitation on cost of improvements.
40	MID-PENINSULA + VECTORING  FAA EQUIPMENT	NCT	LT	The RT requests that the FAA determine if upgraded radar display equipment or notations on the map using symbols would be helpful to TRACON controllers to increase the use of less impactful areas if vectoring is required for safety.	The RT understands that controllers are limited in their ability to effectuate vectoring over more compatible land use. The controllers' display shows very vague outlined areas of Bay, Ocean and land masses. The RT can work with NCT to determine areas that could be identified on the radar scopes as noise sensitive without increasing the complexity of the scopes.
		RT	ST + LT	<b>The SFO Airport and the SFO RT will support the FAA in their efforts. The RT will provide data regarding land use and terrain height for areas throughout the RT region to assist NCT in using less sensitive noise areas for vectoring. SFO and RT will work with airline representatives to encourage use of "noise-friendlier" options for flight planning and operations. The RT will provide community input to the FAA and will make recommendations to the FAA based on community consensus for changes.</b>	
<b>END</b>					



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**ATTACHMENT B:**

**EXPANDED PROCEDURE DISCUSSION PACKAGE  
SFO AIRPORT/COMMUNITY ROUNDTABLE RESPONSE TO FAA  
INITIATIVE**

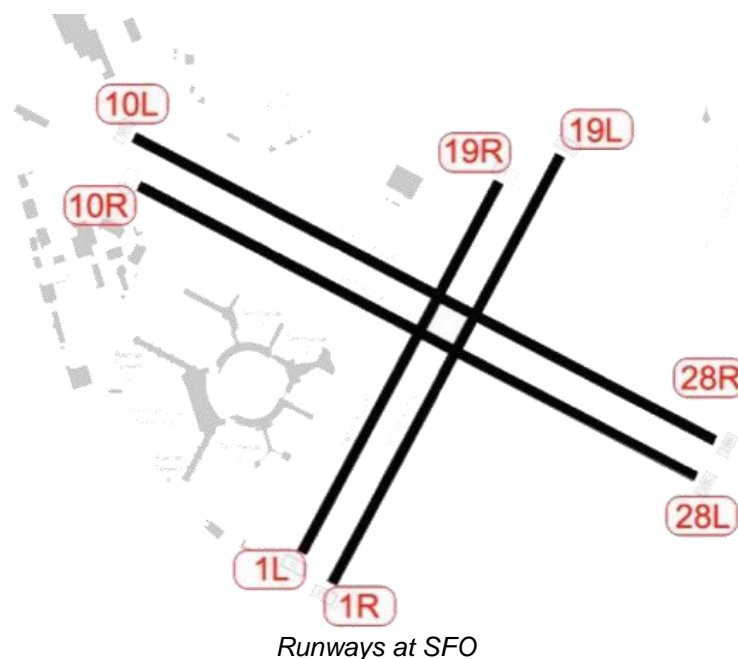
## INTRODUCTION

This attachment to the Roundtable's response to the FAA *Initiative* is to expand on information in the letter to Congressional Representatives Speier, Eshoo, and Farr, detailing specific procedure operations as they fly today and any changes the Roundtable is requesting.

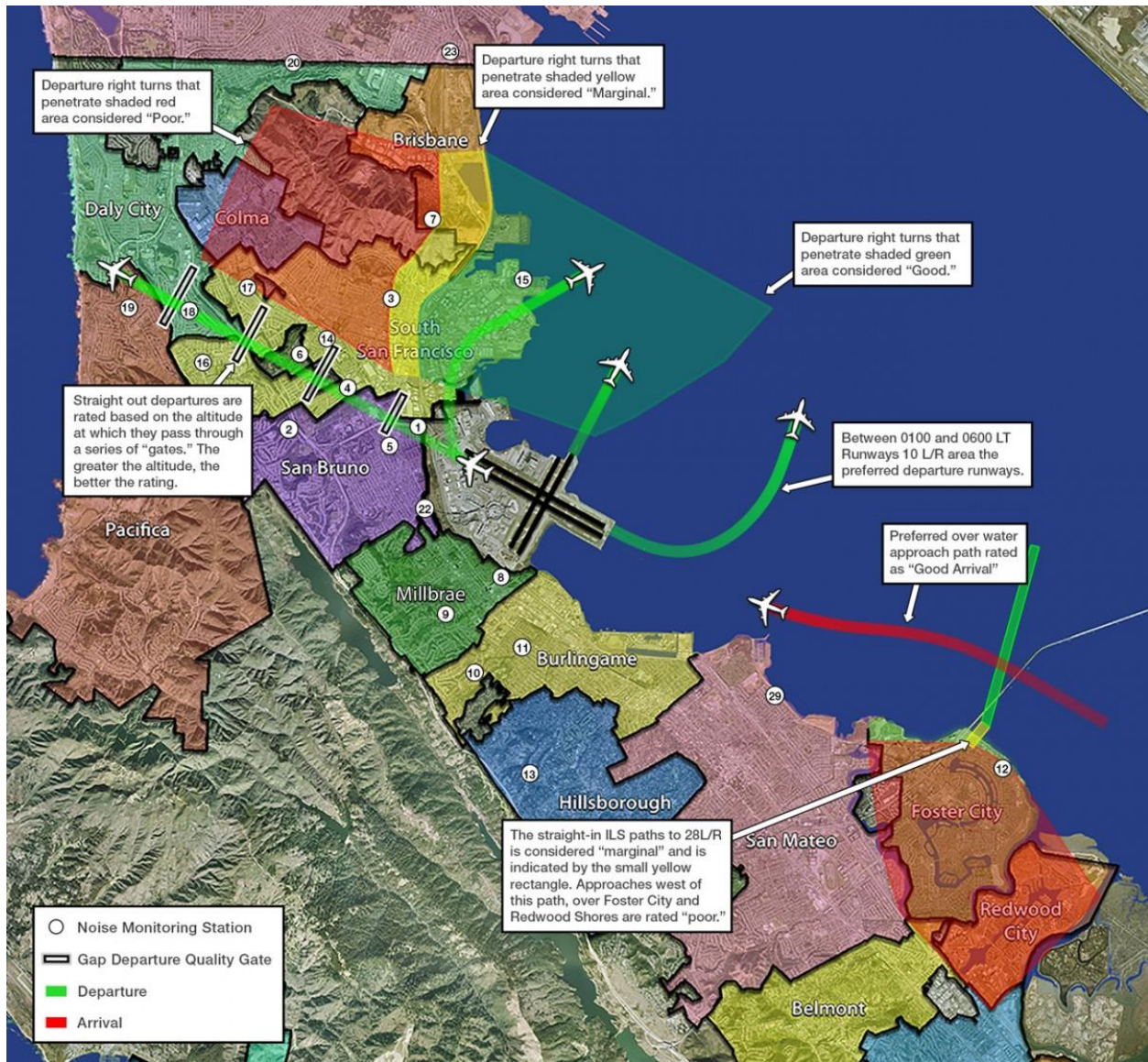
Each of the "Attachments" has the following sections:

- **Description** – details the procedure(s) as they are flown today.
- **Executive Working Outline** – Cross-references the items in this Attachment with those in the Executive Working Outline (Attachment A) submitted in the overall package to the Congressional representatives.
- **Primarily Impacted Cities** – notes the cities that are most directly under the flight path(s) of the procedures being described.
- **Noise Issues** – the primary existing noise issues due to the procedure.
- **Roundtable Requests (Short Term, Long Term)** – details what mitigation efforts the Roundtable is requesting the FAA implement either in the short or long term, depending on the detail of the request.
- **Collaboration** – requests the appropriate agencies to work on each mitigation effort. Initial Requested FAA Research – if applicable, requests the FAA research specific operational items related to the mitigation efforts.

There are two airport diagrams shown here; the first one shows the runways with each runway end labeled, and the second is SFO's Fly Quiet map that shows the general parameters of the Fly Quiet program in a graphic format.







SFO Noise Abatement Office Fly Quiet Program Illustration

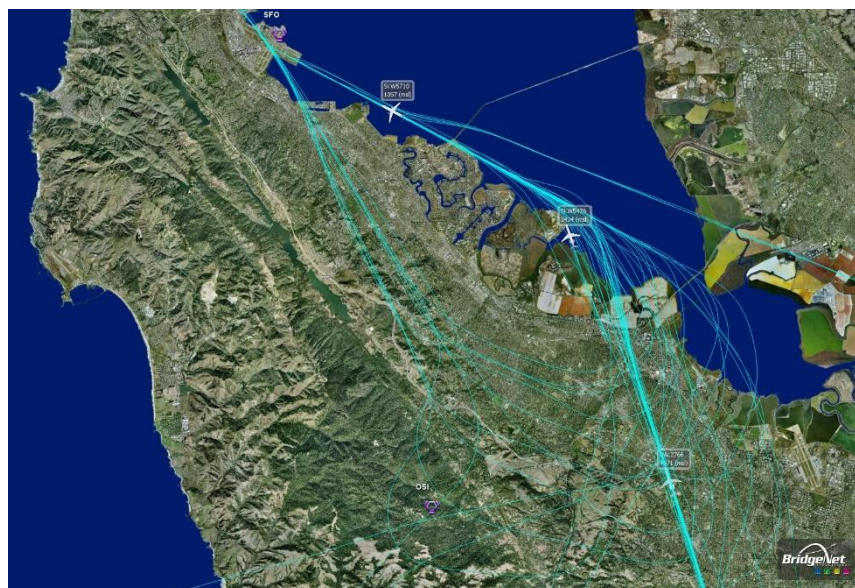
In this document, the following abbreviations are used:

- **Mean Sea Level (MSL)** – refers to an aircraft altitude in relation to its location above the average level of the earth’s surface.
- **Above Ground Level (AGL)** – refer to an aircraft altitude in relation to its location relative to the ground below.
- **Nautical Miles (NM)** – the length of a mile used for navigation purposes. All references to miles in this document refer to nautical miles.



<b>PROCEDURE:</b> Woodside VORTAC BDEGA+	<b>ADJUSTMENT:</b> 2.a.i.
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### WOODSIDE AND MID-PENINSULA



Woodside and Peninsula Flight Tracks

**DESCRIPTION:** Aircraft fly in the vicinity of the Woodside VORTAC (a ground-based navigational aid) to arrive at SFO and OAK; this discussion will focus on aircraft arriving at SFO. Aircraft fly over the Woodside VOR area when arriving from the ocean as well as vectored aircraft from the south and north.

**OCEANIC ARRIVALS:** Aircraft that fly over this area from the ocean are typically flying a course and altitude as assigned by ATC. A minority of these oceanic flights are cleared via the Ocean Tailored Arrival (OTA), an optimized profile descent using idle power and crossing Woodside VOR at approximately 6,000' MSL. Oceanic arrivals not on the OTA are assigned to cross Woodside VOR at or above 8,000' MSL when traffic permits. The SFO Noise Abatement Office tracks airline adherence to this procedure on a weekly basis to determine if aircraft crossed the Woodside VOR above 7,700' MSL (because of instrument tolerances an altitude at or above 7,700' is considered to be in compliance with the 8,000' requirement).<sup>1</sup> While the noise office tracks adherence to the procedure 24-hours a day, in its twice-weekly reports, the noise office publishes adherence during the hours of 10:30 pm – 6:30 am.

<sup>1</sup> <http://www.flysfo.com/community-environment/noise-abatement/reports-and-resources/woodside-vor>

**SERFR AND OTHER ARRIVALS FROM THE SOUTH:** Approximately half of the aircraft that fly over this area from the south, typically on the SERFR arrival, are vectored off course to achieve and maintain required separation distance from other aircraft until the aircraft can be sequenced in line for approach and landing at SFO.

**BDEGA AND OTHER ARRIVALS FROM THE NORTH:** Aircraft arriving from the north on the BDEGA arrival are instructed to proceed on one of two paths – an east downwind which overflies the Bay (“down the Bay”) or a west downwind flying over SFO then southeast down the length of the Peninsula before making a “U-turn” or teardrop turn toward SFO. Vectoring is utilized to achieve and maintain required separation distance from other aircraft until the aircraft can be sequenced in line for approach and landing at SFO; aircraft must be vectored from the final point on the BDEGA Standard Terminal Arrival Route (STAR) approach procedure, which is over SFO called BRIXX.

**EXECUTIVE OUTLINE:** BDEGA 1-7, SERFR 8 - 9, BDEGA West 10, DYAMD 11 and MENLO 16

**PRIMARILY IMPACTED CITIES:** Woodside, Portola Valley, Menlo Park and the surrounding area as well as numerous Mid-Peninsula Cities.

**NOISE ISSUES:** It is important to note the topographic variety in the Bay Area. The areas in the south Peninsula overflowed by these procedures are located on large, wooded lots that have low ambient noise levels similar to what can be found in a national park setting. There are also peaks in the area that rise to 2,000’ MSL, including the area around the Woodside VOR that is populated. In the early morning and late night hours, aircraft noise is especially prevalent given the low ambient noise levels.

## **SFO ROUNDTABLE REQUESTS:**

### **Short Term**

1. For daytime BDEGA and other arrivals from the north, the Roundtable requests that the FAA use all available opportunities to assign arrivals from the north to an east downwind “down the Bay.” Historically the east leg of the BDEGA arrival has been used up to 57% of the time; in May 2016, the FAA reported use of the BDEGA east leg was 28%, continuing a downward trend of using the east leg for arrivals since May 2010.
2. During the FAA-defined nighttime hours of 10 pm – 7 am, the Roundtable requests every effort should be made to use the Bay for 100% of the arrivals from the north, using the east downwind or the “down the Bay” procedure.

## **Long Term**

1. BDEGA Arrivals from the North: The SFO Roundtable requests reinstatement of BDEGA FINSH transition in order to facilitate increased use of the east downwind (“down the Bay”) to Runway 28R. The BDEGA ONE arrival originally had two transitions from CORKK waypoint – one transition to BRIXX for the west downwind and one transition to FNISH (in the middle of the Bay) for the east downwind. The current BDEGA TWO arrival no longer shows the FNISH transition.
2. BDEGA Arrivals from the North: The SFO Roundtable is available to provide data to the FAA regarding terrain and land use for aircraft arriving on the BDEGA east leg and can work with the FAA to move the east downwind leg of the arrival over compatible land uses. In order to reduce vectoring on the Peninsula, the SFO Roundtable requests the FAA to increase in-trail spacing on the SERFR Arrival, on the DYAMD Arrival (to allow an increase in the BDEGA East Downwind, and determine if an increase in the BDEGA in-trail spacing would decrease vectoring.

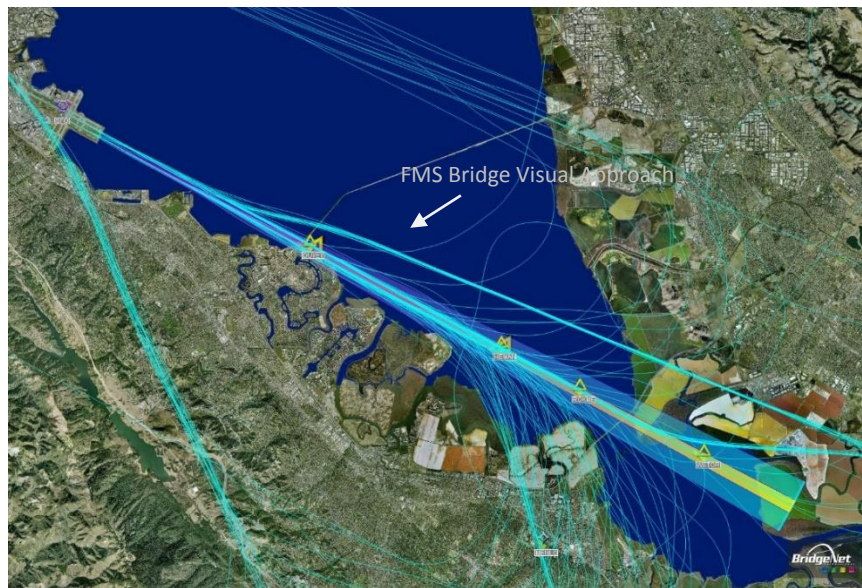
## **COLLABORATION:**

1. The SFO Roundtable is available to provide data to the FAA regarding land use areas to assist in keeping procedures over compatible land uses as much as feasible during the day. The goal during the nighttime hours is to avoid flight over noise-sensitive land uses as much as feasible, even if it means a few additional track miles.
2. The SFO Roundtable will work with local elected officials from the towns, cities, and County to determine the locations of the most appropriate land uses for vector traffic. The SFO Roundtable will work with the FAA to determine if a re-design of the BDEGA STAR West Downwind could be made that would reduce noise without shifting noise to other communities.
3. The SFO Roundtable will work with airline representatives to request that during the night time hours, airlines file oceanic flight plans that follow the path of BDEGA arrival for an FAA assigned east downwind for Runway 28R (down the Bay procedure) instead of flying over the peninsula.
4. The SFO Roundtable will work with airline representatives to request that during the night time hours, airlines file routes from the south to a point east of the Bay in order to use a noise-friendlier approach to Runway 28R.
5. The SFO Roundtable requests that NCT update its SOP to reflect using a “down the Bay” procedure is preferred during nighttime hours.

**REQUESTED FAA RESEARCH:**

1. Determine if the BDEGA transition to FINSH can be reinstated. If so, determine a timeline for this revised procedure to be included for publication.
2. The SFO Roundtable requests that the FAA research to compare the previous Golden Gate arrival with the current BDEGA arrival to determine what changes have been made in actual flight tracks with regard to location of lateral paths, narrowing of path and concentration of aircraft. The previous Golden Gate arrival directed aircraft to fly a 140° heading after SFO/BRIXX, but the BDEGA directs aircraft to fly a 140° track after BRIXX. While this change seems minor - flying a track instead of a heading - it would result in a more concentrated invariable path, contrasted with using a heading, which, depending on the direction and velocity of wind could create somewhat dispersed paths.
3. The SFO Roundtable requests that the FAA research reasons for the continued increased use of the BDEGA west leg from May 2010 – present.

<b>PROCEDURE:</b> Visual Arrivals, Foster City Arrivals	<b>ADJUSTMENTS:</b> 1.b.iii., 1.b.iv., 1.b.v.
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**DESCRIPTION:** Runways 28L and 28R are the primary runways for landing at SFO when the airport is using the West Plan which is 85% of the time. Runways 28L and 28R are each served by a precision electronic Instrument Landing System (ILS). The lateral path for the Runway 28L ILS goes over the city of Foster City while the lateral path for Runway 28R ILS is slightly offshore. An ILS approach is used when the SFO weather is IMC (Instrument Meteorological Conditions) and pilots cannot visually see the airport and must rely on their instruments to be guided to the runway.

During VMC (Visual Meteorological Conditions), aircraft flying visually to 28L will generally replicate the Runway 28L ILS lateral path which provides separation from the Runway 28R lateral path. Aircraft flying visually to Runway 28R can fly offset visual approaches such as the FMS Bridge Visual Runway 28R or the RNAV (RNP) Runway 28R. These Runway 28R offset visual courses fly closer to the center of the Bay and do not intercept the Runway 28R ILS lateral path until just past the San Mateo Bridge. There is no offset approach for Runway 28L.

**EXECUTIVE SUMMARY:** RWY 28 Approaches 12 – 15

**PRIMARILY IMPACTED CITIES:** Foster City, Menlo Park and other bayside cities.

**NOISE ISSUES:** Aircraft in a landing configuration is also known as a 'dirty' configuration, which means that the landing gear and flaps are deployed for the impending landing. Each of these pieces of the aircraft that extrude - the flaps, speed brakes, landing gear and the engines all contribute to noise generated by an aircraft on

arrival. When air travels over these extended surfaces, it is disrupted by the different surfaces coming into contact with the air. The more surfaces come in contact with the air, the louder the aircraft will be to those on the ground. At this point, aircraft are approximately seven miles from the airport at altitudes below 2,000' MSL. This can be very disruptive to sleep as well as to activities of daily life.

## **SFO ROUNDTABLE REQUESTS:**

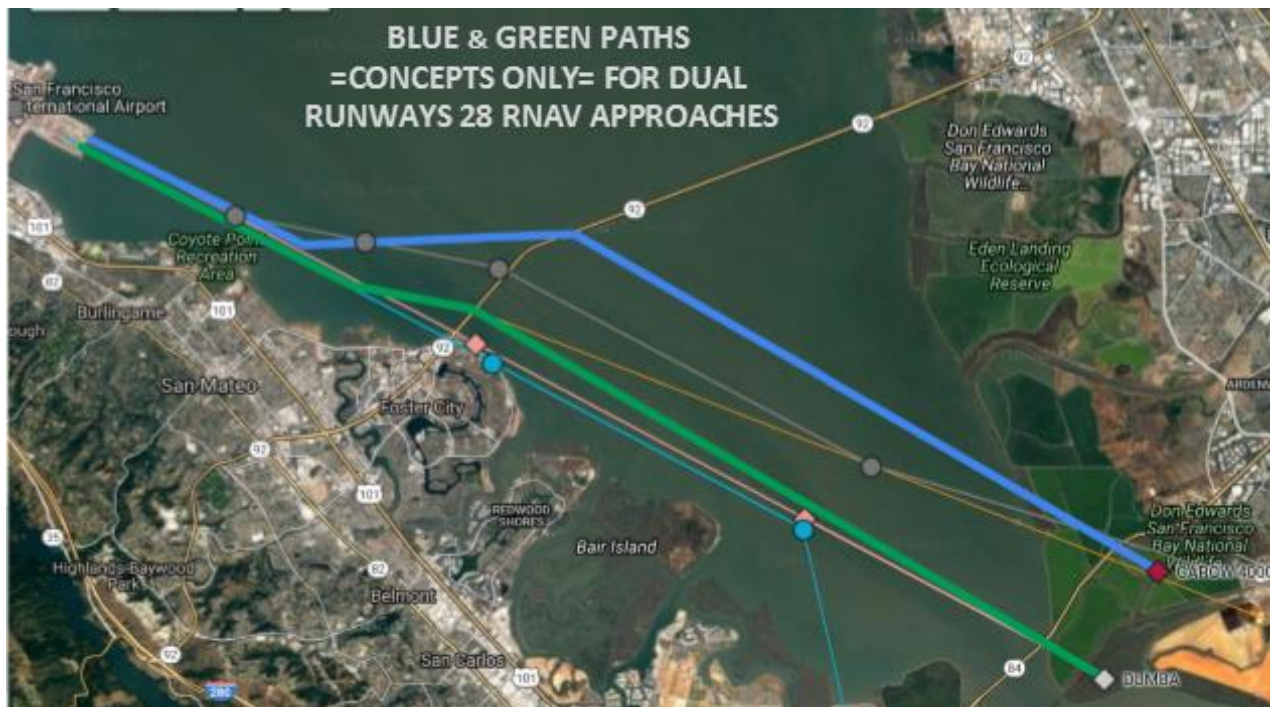
### **Short Term:**

1. **Dual Visual Approaches:** Whenever there are arrivals to both Runway 28L and 28R, and VMC conditions allow, aircraft for Runway 28R should be assigned to fly the FMS Bridge Visual Runway 28R or RNAV (RNP) Runway 28R (as capable), Quiet Bridge Visual or other noise friendlier approach to land on Runway 28R.
2. **Single Stream Visual Approaches:** Regardless of the time of day, and when conditions and traffic allow, whenever there is a single stream operation to only one runway, aircraft should arrive only on Runway 28R and should be assigned to fly the FMS Bridge Visual 28R or RNAV (RNP) Rwy 28R (as capable), Quiet Bridge Visual or other "noise friendlier" approach to land on Runway 28R.
3. During the nighttime hours ATC should make every effort to coordinate traffic arrivals to create a single stream of traffic to land only on Runway 28R. Depending on weather conditions, aircraft would be expected to fly the FMS Bridge Visual 28R, the RNAV (RNP) Runway 28R, (or if conditions require) the ILS 28R or other approach to Runway 28R which minimizes noise impact to Foster City and other Bayside communities.
4. With air traffic control anticipating these arrivals to the right runway, efforts can be made to reduce any time spent waiting for aircraft to depart Runway 28L and coordinate these arrivals and departures.

### **Long Term**

1. Research the feasibility of creating dual offset RNAV, RNAV (RNP) or other type of approach to Runway 28L and to Runway 28R which would create two offset paths closer to the middle of the Bay with both Runway 28L path and 28R path remaining well clear of Foster City and other bayside communities until past the San Mateo Bridge when aircraft would then line up with each runway for landing.





**TEAL LINE:** existing 28L ILS. **PINK LINE:** existing 28R ILS. **GRAY LINE:** existing RNAV (RNP) Y RWY 28R. **ORANGE LINE:** existing FMS Bridge Visual Approach 28R. **GREEN LINE:** Concept for a possible 28L offset RNAV approach. **BLUE LINE:** Concept for a possible 28R offset RNAV approach. ALL POINTS AND LINES APPROXIMATE.

## COLLABORATION:

1. The SFO Roundtable will work with NCT management to illustrate the importance of the use of Runway 28R instead of Runway 28L during periods of single stream operations and the critical nature of nighttime operations which might require managing arrival traffic to create a single stream of traffic to 28R.
2. The SFO Roundtable will provide information and community input to the FAA regarding the process of creating, if feasible, of dual satellite-based Runway 28L and 28R offset approaches closer to the middle of the Bay.

## REQUESTED FAA RESEARCH:

- There is no additional research requested.

<b>PROCEDURE:</b> NIITE	<b>ADJUSTMENTS:</b> 1.f.iii, 2.a.ii., 2.a.ii.(c)., 2.f.i., 2.f.vi.
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*NIITE Procedure*

**DESCRIPTION:** The NIITE departure is designed to be used only during nighttime hours as a noise abatement procedure when the volume is light and typically used by aircraft departing Runway 01 L/R at SFO during nighttime hours; aircraft will use the NIITE departure off Runway 28 L/R, but it is more commonly used off Runway 01. After takeoff, the aircraft flies northeast to a waypoint approximately six miles northeast of SFO called MDBAY. At this point aircraft turn towards the north to the NIITE waypoint, located approximately 12 miles north of MDBAY just north of Treasure Island, then northbound or eastbound aircraft turn to the north to the REBAS waypoint over Richmond, and westbound aircraft fly west to the GOBBS waypoint located approximately 11 miles west of the Golden Gate Bridge in the Pacific Ocean. The GOBBS portion of the procedure is charted, but has not been adopted for use by Northern California TRACON on this procedure. This procedure replaced the conventional navigation QUIET departure.

**EXECUTIVE OUTLINE:** NIITE/HUSSH 18 – 23

**PRIMARILY IMPACTED CITIES:** Brisbane, Burlingame, Daly City, Pacifica, Millbrae, San Francisco, South San Francisco and other mid-Peninsula communities.



**NOISE ISSUES:** Aircraft overflying compatible land uses reduce the number of citizens experiencing aircraft overflights during nighttime hours. Aircraft that can use the NIITE procedure instead of flying over the peninsula can reduce noise impacts for thousands of residents each night. Aircraft flying over the peninsula are overflying areas rich in diverse topography. This impacts how cities under the departure path experience aircraft noise; there are numerous ridges and peaks leading to valleys that experience aircraft noise differently than if it was all flat land. Aircraft using Runway 01 L/R also generate back blast noise from when aircraft start their departure roll to lifting off the ground. This reverberating noise is difficult to mitigate and very intrusive to cities west of Runway 01 L/R.

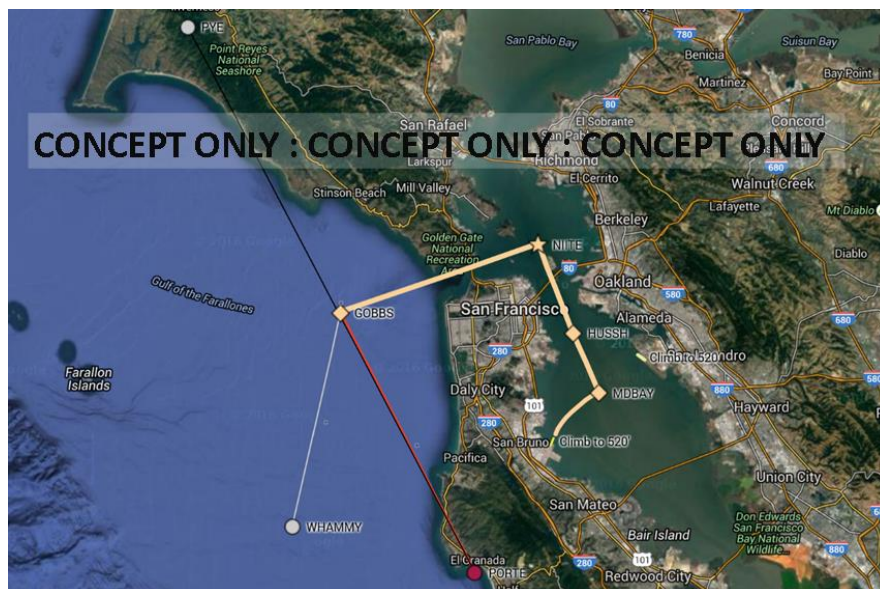
## SFO ROUNDTABLE REQUESTS

### Short Term

1. Southbound Transition: While undergoing the formal process of amending the NIITE departure to add a transition for southbound aircraft past GOBBS, the SFO Roundtable requests that NORCAL TRACON work with the SFO RT to determine if an interim informal procedure based on TRACON vectors might be feasible during the nighttime hours only to approximate the NIITE departure which would be heading up the Bay to NIITE, then west to GOBBS, then south-south-east to PORTE remaining offshore. While the Roundtable is asking for the NIITE procedure to be used, it is not requesting increased use of Runway 01 L/R for departures, especially at night.
2. Keep aircraft on the NIITE procedure as much as possible to reduce vectoring; aircraft remaining on the NIITE procedure until the REBAS waypoint (for eastbound flights not affecting San Francisco or San Mateo Counties) located near the city of Richmond will keep aircraft over compatible land uses. In the future, when the NIITE southbound transition is implemented, the SFO Roundtable requests that the NIITE south be adhered to in its entirety without vectoring.
3. Runway 10: While undergoing the necessary research and procedure development to enable Runway 10 L/R departures to use the published NIITE departure, the SFO Roundtable requests that NORCAL TRACON use its longstanding noise abatement procedure to vector Runway 10 L/R departing aircraft up the Bay (approximate heading of 330°), then vector as needed for routes of flight such as from NIITE to GOBBS (if the destination is to the west or south), in accordance with guidance for westbound aircraft in NCT 7110.65: *Between the hours of 10:00 pm - 7:00 am local (Sundays to 8:00 am), vector oceanic departures over the Bay to pass over the north end of the Golden Gate Bridge.*

4. While not increasing the actual number of aircraft using Runway 01 L/R, the Roundtable urges the for those aircraft using Runways 1L/1R, that the FAA continue to use the 050° heading option for southbound flights at night instead of the SSTIK procedure for south-bound departures.

## Long Term



**BEIGE LINE** (approximate): Depicts current SFO NIITE Departure. **RED LINE** (approximate): Depicts one concept option for the NIITE Departure South Transition. **LIGHT GRAY LINE** (approximate): Depicts one concept option for the NIITE Departure South Transition

1. NIITE Southbound Transition: The SFO Roundtable is in agreement with FAA *Initiative* Adjustment 2.f.i and formally requests that the FAA add a transition to the NIITE departure for southbound aircraft.

Without presuming to technically design such a south transition, it would seem that this highly desirable southbound destination transition *might* be comprised of a single, simple “add-on” leg, using the existing NIITE departure to the GOBBS waypoint, and thence via already largely existing waypoints and flight paths mirroring much of the PORTE departure to PORTE intersection. In addition, the routing of the OFFSHORE departure may present an additional option. The SFO Roundtable understands that the design of professional flight procedures encompasses far more than a line drawn on a map, and understands that airspace use and airspace restrictions are significant challenges in this process.

The possible southbound transition for the NIITE departure depicted above contains just two concepts to consider. The “add-on” paths depicted seem desirable not only because they keep aircraft largely over the Pacific Ocean, but also because a significant portion of the “add-on” paths are routinely used in the

PORTE and OFFSHORE departures. Many other paths for this southbound transition could be designed that would also keep aircraft over the ocean.

Once implemented, the concept for the NIITE southbound transition would be that during night time hours, the airline dispatcher would file for the NIITE departure with the new southbound transition. At the time of takeoff, if conditions and SFO Tower/TRACON workloads permit, an aircraft departing Runway 01 L/R will be offered the option of the 050° heading down the Bay departure instead of the filed NIITE/south transition.

2. NIITE Departure with Runway 10 takeoffs authorized: The SFO Roundtable requests that the NIITE departure and all transitions be amended to include authorization for its safe use by aircraft taking off from Runway 10 L/R.

#### **COLLABORATION:**

##### **NIITE Southbound Transition & NIITE Departure with Runway 10 takeoffs authorized:**

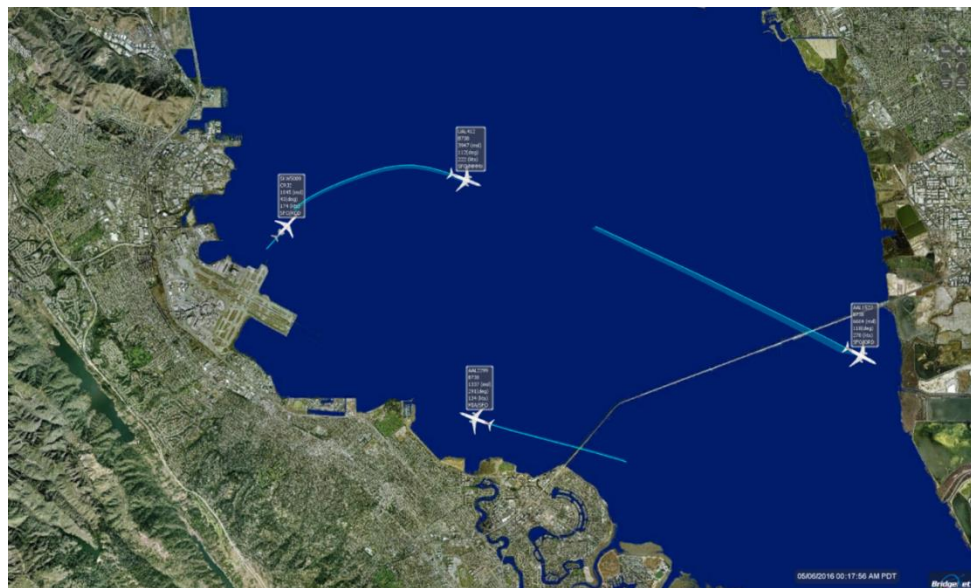
1. The SFO Roundtable will provide input regarding the new southbound transition and will elicit community input and response to the design of the new NIITE southbound transition and Runway 10 L/R NIITE authorization.

#### **REQUESTED INITIAL FAA RESEARCH:**

- There is no additional research requested.

**PROCEDURE:** 050° Heading Off Runway 01

**ADJUSTMENTS:** 2.e.ii., 2.g.ii.



Runway 01 L/R Flight Tracks

**DESCRIPTION:**

Aircraft departing during nighttime hours on Runways 1L/1R for southern destinations typically fly the SSTIK departure; the NIITE departure, the published noise abatement procedure, is typically only used for aircraft with northern or eastern destinations. During nighttime hours only and when traffic permits, ATC can assign a Runway 1L/1R departure to fly an initial heading of 050° with further right turns down the Bay until reaching a higher altitude and then direct them on course to their destination. This 050° initial heading can also be used to allow eastbound aircraft to gain additional altitude before turning them onto an easterly heading which reduces noise impact for East Bay residents. The 050° initial heading was originally created through collaboration between the Roundtable and TRACON, to help reduce noise impacts at night.

Typically, aircraft departing from OAK Runway 30 at night will also use the Bay for aircraft to climb before flying over land.

**EXECUTIVE SUMMARY:** 050 Heading 24

**IMPACTED CITIES:** Brisbane, Daly City, Pacifica, San Bruno, San Francisco, South San Francisco and other north Peninsula cities.

**NOISE ISSUES:** Aircraft using compatible land uses reduce the number of citizens experiencing aircraft overflights during nighttime hours. Aircraft that can use the 050° heading procedure instead of flying over the Peninsula and San Francisco can reduce noise impacts for thousands of residents each night. Aircraft flying over the Peninsula are overflying areas rich in diverse topography. This impacts how cities under the departure path experience aircraft noise; there are numerous ridges and peaks leading to valleys that experience aircraft noise. Aircraft using Runway 01 L/R also generate back blast noise from when aircraft start their departure roll to lifting off the ground. This reverberating noise is extremely difficult to mitigate and very intrusive to cities southwest of Runway 01 L/R.

## **SFO ROUNDTABLE REQUESTS:**

### **Short Term**

1. Use the 050° heading at night to the maximum extent feasible for aircraft departures to southern destinations instead of SSTIK or PORTE departure procedures that fly over the Peninsula and San Francisco. The request for maximum use of the 050° heading departure procedure is ***not a request to increase the number of flights using Runways 1L/1R*** since back blast from Runways 1L/1R departures have a noise impact on the cities southwest of the departure end of Runways 1L/1R.
2. The Roundtable also requests the use of a comparable heading down the Bay for southbound flights taking off from OAK.

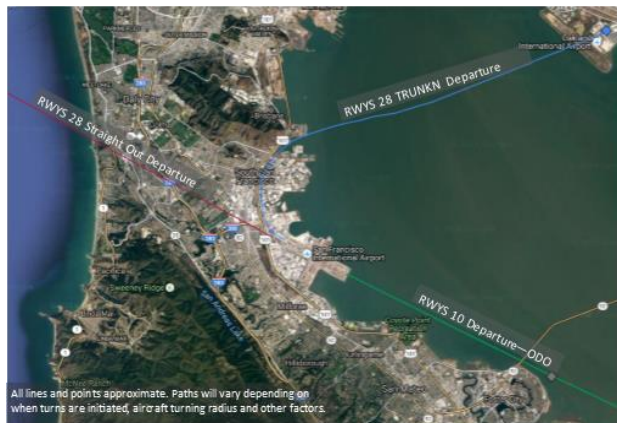
### **Long Term**

Continue flying the 050 heading when able during nighttime hours.

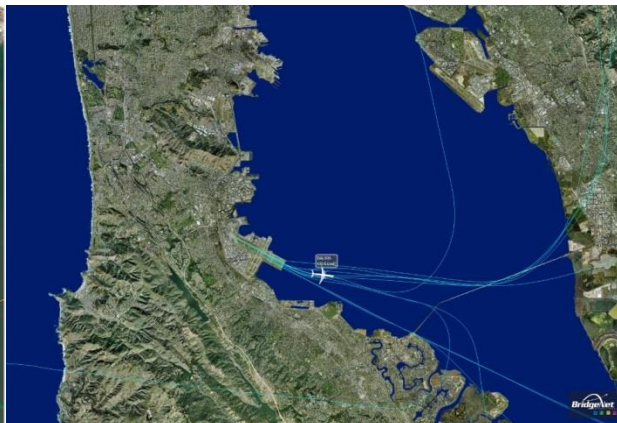
## **REQUESTED FAA RESEARCH:**

- There is no additional research requested.

<b>PROCEDURE:</b> Opposite Direction Operations	<b>ADJUSTMENTS:</b> 2.e.i., 2.e.ii., 2.e.iii., 2.g.i., 2.g.ii.
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Runway 28 Departure Options



Runway 10L/R Radar Flight Tracks

### RUNWAYS 28 DEPARTURES including OPPOSITE DIRECTION OPERATIONS

**DESCRIPTION:** San Francisco International Airport has two pair of intersecting runways. The two runways oriented north and south (1L/19R and 1R/19L) are shorter than the two runways oriented east and west (28L/10R and 28R/10L). The majority of takeoffs use runways 1L and 1R. However, some aircraft which are heavily loaded (fuel, passengers, cargo) cannot safely takeoff from the shorter runways and must use the longer runways (28L and 28R).

When an aircraft requires the longer runway for takeoff, there are typically three departure choices:

1. Runways 28L or 28R flying straight out the “gap” to the ocean coastline. This is the most impactful departure with noise events to residents reaching 100 dBA.
2. Runways 28L or 28R with an immediate right turn after takeoff towards the Bay. (TRUNKN departure procedure, formerly Shoreline, going up the bay).
3. During nighttime hours only, there may be an option to takeoff from Runways 10L or 10R flying over the Bay using a highly regulated procedure called Opposite Direction Operations.

#### DAYTIME AND NIGHTTIME:

Departing jet traffic flying straight out from Runway 28 are initially climb restricted to 3,000’ MSL to allow for possible VFR traffic in a VFR flyway or other airspace restriction. While the departing jets are not usually kept to 3,000’ MSL for a long time, any level off in this high noise departure is significant.



#### **NIGHTTIME:**

SFO has had a long-standing nighttime preferential runway use program in place. This program's goal is to utilize the Bay as much as possible for nighttime procedures to keep aircraft over compatible land uses and not fly over populated areas. For SFO, this means use of the Bay for arrivals and departures as much as possible. The preferred nighttime runway use is to depart to the east from Runway 10 L/R over the Bay, and arrive from the west on Runway 28 L/R, which is the typical arrival runway. This type of operation is called Opposite Direction Operations (ODO) when aircraft depart and arrive over the same flight path but at different points in time.

The ability to use the opposite direction operations procedure is limited. Its use is largely dependent on three factors: 1) weather conditions including ceiling, visibility and wind direction and velocity; 2) performance capabilities of the aircraft (primarily whether it can safely takeoff with even a small amount of tailwind or needs a headwind); and 3) the location and distance of any aircraft approaching to land on Runways 28.

ODO regulations have changed over the years since the inception of SFO's nighttime preferential runway use program. It is now more regulated and the arriving and departing aircraft must have more distance between them to use ODO.

#### **EXECUTIVE SUMMARY: RWY 28 Straight Out Departures 25 – 27**

**PRIMARILY IMPACTED CITIES:** Daly City, Pacifica, San Bruno, San Francisco, South San Francisco.

**NOISE ISSUES:** The San Francisco Bay area is an area rich in diverse topography. This impacts how cities under the departure path experience aircraft noise; there are numerous ridges and peaks leading to valleys that experience aircraft noise differently than if it was all flat land, including San Bruno Mountain close to the airport and Sweeny and Milagra ridges closer to the ocean. At night, some aircraft that require a longer runway that aren't on an ODO departure typically depart "out the gap" on Runway 28 L/R (i.e. straight out), flying west over numerous densely populated cities. These aircraft include those that are flying long distances to Asia and are large, fully loaded wide body aircraft. The ability to utilize Runway 10 L/R more will greatly alleviate thousands of residents being disturbed by Runway 28 gap departures in the middle of the night.

#### **SFO ROUNDTABLE REQUESTS:**

##### **Short Term**

1. The SFO Roundtable requests that, during the nighttime hours and traffic permitting, TRACON use a longstanding TRACON procedure for aircraft taking off on Runway 10 L/R by vectoring them north up the Bay (using an approximate 330° heading) and then, if westbound, vectoring them to the Pacific Ocean. The

following excerpts from presentations and TRACON documents show the existing precedent for using this type of procedure.

SFO Tower Noise Abatement Primer (4/3/13) presented to SFO Roundtable Training:  
*“330 and 050 heading on mid-shift”*

NCT 7110.65D (8/20/15):  
*Between the hours of 2200 and 0700 local (Sundays to 0800), vector oceanic departures over the Bay to pass over the north end of the Golden Gate Bridge.*

SFO Tower Noise Abatement Primer (4/3/13) presented to SFO Roundtable Training:  
*Mid-shift runway 10 oceanic departures taken over north tower GGB (NCT)*

2. The SFO Roundtable requests that the SFO Airport Director coordinate with the FAA to maintain the existing SFO ANAO nighttime preferential runway use in place, including Runway 10 L/R as the preferred nighttime runway for takeoffs.
3. The SFO Roundtable requests that the SFO Airport Director work with the Roundtable to coordinate outreach efforts to educate dispatchers and pilots on the importance of considering the use of a Runway 10 L/R ODO departure to the impacted communities.
4. When Runway 28 L/R must be used for nighttime departures, the SFO Roundtable requests use of the GAP SEVEN departure that does not have a top altitude restriction.

## **Long Term**

1. It should be determined if any VFR flyway results in Runway 28 straight-out departures being assigned a 3,000' altitude restriction. If so, determine if a modification of any VFR flyway is warranted in the current Class B Airspace Modification process to allow unrestricted climbs for SFO Runway 28 jet traffic. If the altitude restriction is due to other factors, determine if the other factors can be modified to allow unrestricted climb.
2. Create a procedure that includes the ability of aircraft to depart Runway 10 L/R on a heading that isn't in the direct path of aircraft arriving on Runway 28, such as making an immediate left turn after takeoff or flying to the east of the Runway 28 arrival path to provide lateral separation; for vertical separation, use altitude restrictions for the departing aircraft.



**Attachment B: Expanded Procedure Discussion Package**

Response to the *FAA Initiative to Address Noise Concerns*

November 2, 2016

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**COLLABORATION:**

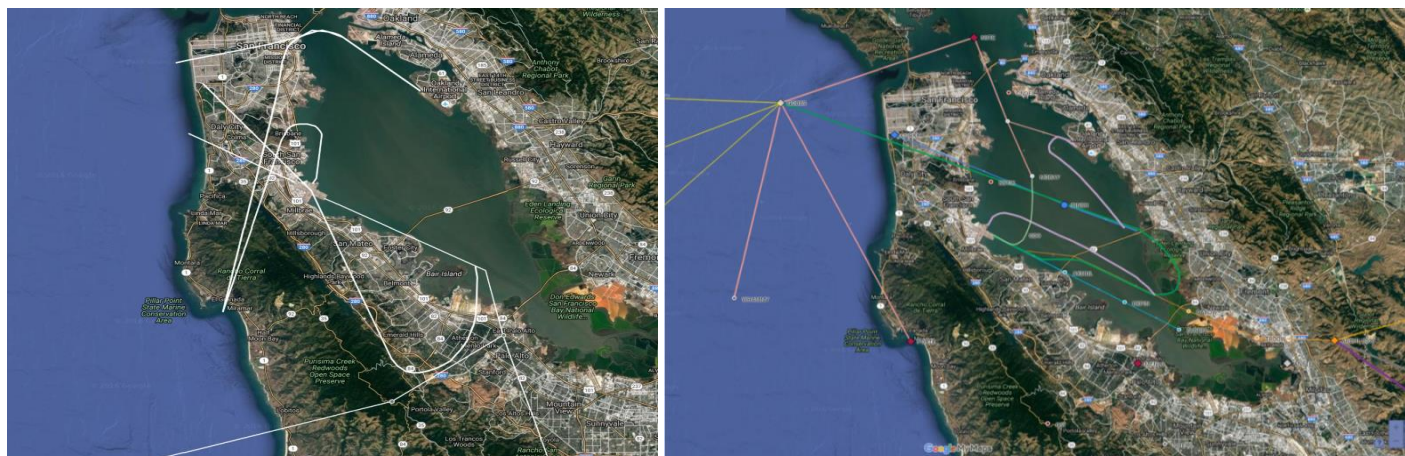
1. The SFO Roundtable will provide information to the FAA to assist in a review of options for aircraft to use Runway 10 L/R that does not use the same flight path as a Runway 28 L/R arrival.
2. The SFO Roundtable urges the consistent use of effective noise abatement procedures such as the long-standing TRACON nighttime noise abatement procedure for aircraft taking off from Runway 10, to fly an approximate 330° heading up the Bay and thence out the Golden Gate.

**REQUESTED FAA RESEARCH:**

- There is no additional research requested.

**PROCEDURE: NIGHTTIME OFFLOADS/ROUTES**

**ADJUSTMENTS: 3.d.i.**



*In the illustration at left, the white lines depicts the arrival, departure, approach and take-off paths that have a significant noise impact on residents during the nighttime hours. The alternate flight paths shown in various colors in the illustration at right represent the many recommendations of the SFO Roundtable for alternative procedures and paths during the nighttime hours.*

**DESCRIPTION:** Flights that take-off and land at SFO and OAK during the nighttime hours significantly impact hundreds of thousands of residents in San Francisco and San Mateo counties. Widespread resident reports indicate that their health is being seriously compromised due to aircraft noise causing continual sleep deprivation. The Roundtable believes that because of the serious impact on residents' health, the FAA should take extraordinary steps to decrease aircraft noise at night – including additional miles flown by aircraft.

Many of the nighttime hours are also a time of increased flexibility for ATC due to significantly fewer flight operations and a curfew at Mineta San Jose International Airport beginning at 11:30 pm. These factors allow ATC to increase the use of already existing noise abatement nighttime procedures as well as to consider the possibility of adopting additional noise abatement nighttime procedures.

Nighttime hours are generally stated to be 10:00 pm-7:00 am. (CNEL, SFO Noise Abatement website, TRACON SOP), although the SFO Noise Abatement Office also highlights the hours of 1:00 am - 6:00 am for desired voluntary use of the preferential runway use.

The ability of ATC to utilize alternative nighttime procedures is not tied to the hands on a clock, but rather relies on the decreased number of flights being operated during nighttime hours. Thus, if weather delays cause originally scheduled evening flights to

have their takeoff delayed into the nighttime hours, some nighttime quieter procedures cannot be used until later in the nighttime when flight operations actually decrease.

Several noise abatement departures have been published (NIITE & HUSSH departures for SFO and OAK flights to the north, west and east), SFO Runway 28 take-offs with an immediate right turn by the Bay (TRUKN – formerly Shoreline).

In addition, NORCAL TRACON makes use of additional important nighttime hours' procedures (SFO Runway 1L/R southbound with an initial 050° heading; OAK Runway 30 southbound with an initial ~130° heading; SFO Runway 10L/R Opposite Direction Operations take-off procedure; Runway 28R single stream approaches only; noise abatement approaches to Runway 28R (FMS Bridge Visual, Quiet Bridge Visual, RNAV (RNP) 28R.)

However, there are still flight paths which cause significant noise impact to families in the middle of the night: SSTIK & CNDEL for southbound flights, BDEGA and other arrivals from the north using the **west** downwind, Oceanic arrivals over Woodside to MENLO, 28L approaches over Foster City, SERFR and other arrivals from the south to MENLO.

**EXECUTIVE SUMMARY:** BDEGA 7, RWY 28 Approach 14, MENLO 17, NIITE/HUUSH 19, 20, 21, 23, 050 Heading 24

**PRIMARILY IMPACTED CITIES:** San Francisco and the cities in San Mateo County.

**NOISE ISSUES:** Aircraft fly the Oceanic arrivals during periods of low traffic volumes, typically at night, during late night and early morning hours. The areas in the south peninsula overflown by these procedures are located on large, wooded lots that have low ambient noise levels similar to what can be found in a national park setting. There are also peaks in the area that rise to 2,000' MSL, including the area around the Woodside VOR that is populated. In the early morning and late night hours, aircraft noise is especially prevalent given the low ambient noise levels that can be extremely disruptive to sleep. Although the total number of nighttime flights may not seem high, the impact of these overflights throughout the night is devastating to the residents. As an example, on July 19, 2016, between the hours of 4:33 am and 6:53 am, there were seven flights from the Hawaiian Islands that flew over this area as close as 10 minutes apart as shown below:

- UAL 1557      landed at 4:26am
- UAL 396      landed at 4:33am
- UAL 1746     landed at 4:43am
- UAL 1724     landed at 5:03am
- VIR 48        landed at 5:40am
- UAL 1580     landed at 6:05am
- UAL 1575     landed at 6:53am

## SFO ROUNDTABLE REQUESTS

### Short Term:

During the **nighttime hours ONLY**, the Roundtable requests:

1. **NIITE/HUSSH transition for southbound flights:** While awaiting the publication of this NIITE southbound transition, it is requested that aircraft be vectored in according with long-standing NCT procedures (SFO 330° heading up the Bay) and (SFO and OAK) out to the ocean and southbound over the Pacific Ocean.) The SFO RT also supports the NCT use of the 050° heading for SFO southbound departures, however not increasing Runway 01 L/R utilization.
2. **NIITE from Runways 10:** While awaiting authorization to use NIITE departure from Runways 10, (or in the failure to obtain such authorization), the RT requests that aircraft be vectored to mirror the NIITE DP.
3. **NIITE/HUSSH transition for southbound flights:** While awaiting the publication of this southbound transition, determine if aircraft can file for SFO CUIT Departure or the OAK SILENT Departure and then be vectored in accordance with NCT SOPs out to GOBBS waypoint and then southbound.
4. **050 Heading:** The RT supports the use the 050° heading from SFO and a comparable OAK Rwy 30 heading down the Bay at night. Runway 01 departures should not be increased; rather use a 050 heading in lieu of flying a procedure over the peninsula for aircraft with southern departures.
5. **Runway 28R nighttime straight-out departures:** Determine if there is any ability to eliminate the 3,000' MSL altitude restriction.
6. **28L approaches over Foster City and north Peninsula:** The SFO RT requests that, all nighttime approaches be managed into a "single stream" of airplanes, that (wind/weather permitting) this single stream of planes only uses noise abatement approaches such as the Runway 28R FMS Bridge Visual, the Runway 28R Quiet Bridge, or the RNAV (RNP) 28R and that this single stream of planes landing only on Runway 28R. If conditions require an ILS approach, it is requested that only Runway 28R be used. Continuing to land on 28R, rather than sidestepping to 28L, can reduce noise to residents from approach thrust and reverse thrust after landing.
7. **Arrivals from the North:** The SFO Roundtable requests that BDEGA and other arrivals from the north be assigned only to the BDEGA East downwind (or similar) for a "noise-friendlier" approach to only 28R

8. **ALL approaches:** The SFO RT requests that, when feasible, during nighttime hours and VMC conditions -- *if any flights fly over sensitive areas* -- every effort be made which would allow aircraft to **remain higher than typical** and are vectored so as to approach single stream using noise-friendlier approaches to land on Runway 28R.
  - If an arrival ***must*** be made over Woodside (Oceanic) or the Peninsula (BDEGA) or from the south (SERFR), every effort should be made to keep aircraft higher than typical. This excess altitude could be expeditiously dissipated by giving the aircraft a slightly longer path over the Bay before intercepting an appropriate noise-friendly visual approach to 28R. The amount of altitude increase over the sensitive land use areas will be related to the available additional distance flown to lose that altitude through whatever lateral path is flown. If the pilot can anticipate the plan, he/she would be prepared for an expeditious descent over the Bay prior to intercepting the typical FMS Bridge Visual or other noise friendlier approach.

#### Longer Term:

1. **NIITE transition for southbound aircraft: *This is FAA Initiative Feasible item 2.f.i.*** The SFO Roundtable supports an immediate start to designing the southbound transition for SFO and OAK flights on the NIITE departure. This NIITE departure/southbound transition procedure will replace the SSTIK and CNDEL departures during the nighttime hours.
2. **NIITE:** Determine if Runway 10 take-offs can be authorized to use the NIITE DP. If not, create a departure to allow Runway 10 take-offs to make a left turn up the Bay to NIITE waypoint.
3. **BDEGA Arrivals from the North:** The SFO Roundtable requests reinstatement of the FINSH transition to the BDEGA Arrival in order to facilitate increased use of the BDEGA East downwind ("down the Bay") to Runway 28R or the establishment of a similar east downwind transition if there are technical concerns with the original design.
4. **Oceanic:** The SFO RT will work with airline representatives and the FAA to request that all nighttime arrivals from the north file for and fly an approach which utilizes the Bay (such as the BDEGA East downwind) and substantially avoids flight over non-compatible land uses.
5. **SERFR:** The SFO RT will work with airline representatives and the FAA to request that all nighttime arrivals from the south (SERFR) file for a routing and Arrival that would terminate east of the Bay for connection to an approach to SFO Runway 28R.

**Attachment B: Expanded Procedure Discussion Package**

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6. **Nighttime Arrivals:** The SFO Roundtable will work with airline representatives to encourage them to file for SFO arrivals that avoid flight over sensitive areas. If inbound aircraft choose to file for BDEGA, it is requested that only the BDEGA East downwind be assigned to them.

**COLLABORATION:**

1. The SFO Roundtable will provide any required community data as well as community input to the FAA to support all efforts to improve noise impacts during the important night time hours.

**REQUESTED INITIAL FAA RESEARCH:**

- There is no additional research requested.

<b>PROCEDURE:</b> CNDEL	<b>ADJUSTMENTS:</b> 1.a.ii, 1.b.ii, 2.a.ii(b)
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*CNDEL Departure Flight Tracks*

**DESCRIPTION:** The CNDEL RNAV departure is typically used by aircraft departing Runway 30 at Oakland International Airport (OAK). After takeoff, the aircraft flies north a short distance over the Bay, then flies over the LEJAY and CNDEL waypoints, west of the USS Hornet and the old naval air station Alameda, respectively. After the CNDEL waypoint, the CNDEL departure procedure directs the aircraft to turn left to the PORTE waypoint located just south of Half Moon Bay airport.

For southbound destinations, aircraft will often be vectored prior to the CNDEL waypoint, at the LEJAY waypoint. *FAA Initiative Phase 1, Appendix B* notes that 46% of CNDEL departures are on the procedure; this assumes 54% of aircraft flying the CNDEL departure are vectored. Many of these flights turn south or southwest over the Bay or towards southern portions of the City of San Francisco and cities in northern San Mateo County. Often, this vectoring places CNDEL and SSTIK flights in a position to compete for the same airspace.

Occasionally aircraft will fly over the Golden Gate Bridge, then turn to the south. Also, aircraft will occasionally be vectored over the SFO VOR navigational aid on the airport, then over Millbrae and Burlingame towards the PORTE waypoint or waypoints downstream on their flight plan.

This procedure replaced the conventional navigation SKYLINE and COAST departures.



## EXECUTIVE OUTLINE: CNDEL 28 – 31

**PRIMARILY IMPACTED CITIES:** Brisbane, Burlingame, Daly City, Millbrae, Pacifica, San Bruno, San Francisco, South San Francisco.

**NOISE ISSUES:** The San Francisco Bay area is an area rich in diverse topography. This impacts how cities under the departure path experience aircraft noise; there are numerous ridges and peaks leading to valleys that experience aircraft noise differently than if it was all flat land. Between aircraft crossing the peninsula from the Bay to the ocean, San Bruno Mountain State Park amplifies noise impacts for Brisbane, due to its elevation relative to the City of Brisbane. For cities closer to the coast, the topography of the coastal range, including Milagra and Sweeny ridges, amplifies noise impacts for Pacifica residents from aircraft flying toward the PORTE waypoint. Planes flying at low altitudes negatively affect all impacted cities.

## SFO ROUNDTABLE REQUESTS

As stated earlier, this procedure should be flown as charted and reduce the number of aircraft vectored. Based on a month of data from July 2015, *FAA Initiative Phase 1, Appendix B* notes that 46% of CNDEL departures are on the procedure; this assumes 54% of aircraft flying the CNDEL departure are vectored.

### Short Term

1. In the existing procedure, fly the planes on the charted CNDEL departure as published so that they fly over the CNDEL flyover waypoint THEN over the PORTE waypoint as charted. This reduces conflicts with SSTIK coming from SFO and reduces vectoring of both procedures, allowing SSTIK to utilize the Bay to gain altitude before flying over populated areas.
2. Use the Bay and Pacific Ocean for overflight as much as possible. From the CNDEL waypoint, direct aircraft to a waypoint in the Pacific Ocean – potentially to the GOBBS waypoint in the ocean.
3. Use the GOBBS waypoint during nighttime hours to reduce overflights of the Peninsula - (HUSSH departure).
4. In the existing procedure, avoid vectoring aircraft for non-safety reasons prior to the CNDEL waypoint.
5. The SFO RT requests that the assignment of southbound vectors be delayed until the aircraft has reached the ocean and PORTE waypoint to reduce aircraft flying over San Francisco and down the Peninsula. Avoid vectoring aircraft over San Francisco and over the Peninsula direct to waypoints beyond PORTE.

## **Longer Term**

1. Determine if the actual flight tracks of aircraft after CNDEL waypoint could be “contained” to a more limited area such as west of the eastern shore of the Bay (perhaps by an additional waypoint) that would decrease potential conflicts with the SSTIK departure airspace to enable the SSTIK departure to be flown as published.
2. The SFO Roundtable requests that the FAA determine if a southbound transition for the CNDEL procedure could effectively use flight over bodies of water to enable aircraft to gain altitude before flying over noise-sensitive land uses without interfering with a possible expanded SSTIK departure path or shifting noise to other communities.

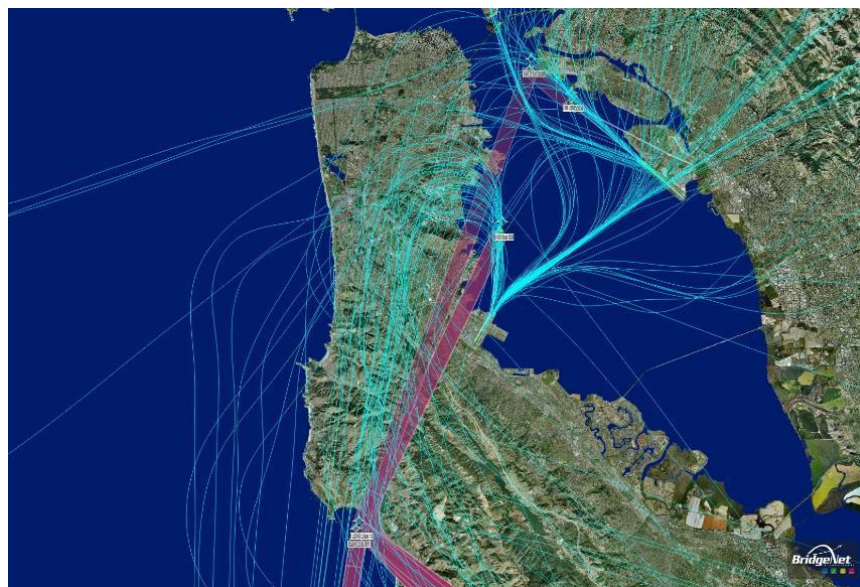
## **COLLABORATION:**

1. The Roundtable is available to provide community input to the FAA with the use of modeling or other tools to determine the effects of other noise friendlier departure paths for flights using the OAK CNDEL departure, especially for CNDEL southbound flights. Such options might include (but are not limited to) flight over the waters of the Bay to the Pacific Ocean or flight over the Bay to SFO and then over the Peninsula (primarily Millbrae and Burlingame) to PORTE or flight down the Bay as far south as feasible, or other options that may become known.

## **REQUESTED INITIAL FAA RESEARCH:**

- There is no additional research requested.

<b>PROCEDURE:</b> SSTIK	<b>ADJUSTMENTS:</b> 1.a.ii, 1.b.i, 1.b.ii, 1.b.iii, 2.a.ii(b)
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SSTIK  
Departure, SFO and CNDEL Departures, OAK

**DESCRIPTION:** The SSTIK RNAV departure is used by aircraft departing SFO Runways 1L and 1R. After takeoff, the aircraft flies north a short distance over the Bay, then flies over the SSTIK waypoint, located east of the City of Brisbane marina. For southbound destinations, after SSTIK, the aircraft then typically makes a left turn to head south to the PORTE waypoint, located just south of the Half Moon Bay airport.

This procedure replaced the conventional navigation PORTE departure. The new SSTIK waypoint is located approximately 1 nautical mile south of the SEPDY waypoint that is associated with the PORTE procedure; SEPDY is located east of the Baylands Soil Processing facilities. The SSTIK waypoint is closer to downtown Brisbane than SEPDY.

**EXECUTIVE OUTLINE:** SSTIK 29 – 33

**PRIMARILY IMPACTED CITIES:** Brisbane, Daly City, Pacifica, San Bruno, San Francisco, South San Francisco as well as Millbrae, Burlingame and other Peninsula cities.

**NOISE ISSUES:** The San Francisco Bay area is an area rich in diverse topography. The topography of San Bruno Mountain State Park amplifies noise impacts for Brisbane, due to its elevation relative to the City of Brisbane, and from low flying planes that are vectored. Similarly, topography of the coastal range, including Milagra and

Sweeny ridges, amplifies noise impacts for Pacifica residents from aircraft flying toward the PORTE waypoint. Planes flying at low altitudes negatively affect all impacted cities.

## **SFO ROUNDTABLE REQUESTS:**

### **Short Term**

Improved utilization of existing flight path and procedures:

1. Discontinue flying the SSTIK procedure and revert back to the pre-RNAV PORTE/OFFSHORE departure using the SEPDY waypoint.
2. Avoid issuing any vectors to aircraft for as long as feasible but no earlier than when an aircraft is actually over the SSTIK flyover waypoint.
3. Avoid vectoring aircraft down the Peninsula direct to waypoints beyond PORTE. Aircraft should fly over the PORTE waypoint on the published procedure.
4. In the existing procedure, use the Bay and ocean for overflight as much as possible.
5. In the existing procedure, utilize existing areas of compatible land use for overflight.
6. For aircraft with destinations in Southern California including Long Beach Airport, John Wayne Airport, San Diego International Airport, Santa Barbara Airport and Mexican airspace, use the OFFSHORE ONE departure. This departure has been an historic procedure that guides aircraft to the ocean instead of down the peninsula.
7. For aircraft with southeast destinations including Phoenix Sky Harbor International Airport and McCarran International Airport in Las Vegas, use the TRUKN departure with a transition at TIPRE or SYRAH. This is consistent with the legacy procedure of using the SFO departure procedure where aircraft were vectored eastbound to the LINDEN VORTAC, a ground-based navigational aid.
8. The Roundtable understands the additional complexities added to air traffic controllers by depicting city locations or densely populated areas on radar displays. However, the Roundtable would like to determine the feasibility of depicting the SEPDY waypoint on the scopes in an effort for aircraft to stay over the Bay as long as possible. This would allow aircraft additional time to climb over the Bay before turning.

## **Longer Term**

1. SSTIK: Determine if a reduced climb airspeed can be assigned until reaching 3,000' MSL or other higher altitude; a slower airspeed will allow the aircraft to climb to a higher altitude in a shorter distance before overflying noise-sensitive land uses. Determine if the minimum required altitude for ATC to initiate a left turn can be raised.
2. Move the SSTIK waypoint north and east as much as feasible to allow maximum altitude gain before turning west to fly over land, using the legacy SEPDY waypoint as a guide. Remain over the Pacific Ocean until attaining a high altitude.
3. Create an OFFSHORE RNAV overlay. An RNAV overlay of the OFFSHORE departure would create a NextGen procedure that can utilize long-standing waypoints in the ocean that are offshore, including waypoints that have historically been over the water. Using these procedure waypoints as a guide, establish RNAV waypoints consistent or west of WAMMY and SEGUL.
4. Create a SSTIK transition over the Golden Gate using GOBBS. Similar to the NIITE procedure, aircraft would depart on the SSTIK procedure flying up the Bay instead of over the peninsula. Aircraft would fly over the Golden Gate Bridge to approximately the GOBBS intersection, then onto a waypoint in the ocean. This could be used for aircraft with southerly destinations in California.

## **COLLABORATION:**

1. The SFO Roundtable will provide community input to the FAA to find an appropriate location for moving the SSTIK waypoint east and north of its current location, again using SEPDY as a guide, so planes can fly over the Bay for a longer period of time, and thus increase altitude before heading west and flying over residential areas.
2. Request the FAA provide modeling or other tools to determine the effects of different waypoint options.
3. The SFO Roundtable requests the FAA to allow planes to fly the charted procedures and to reduce vectoring and when safety is not an issue as well as to use higher altitudes when flying over noise-sensitive land uses and the use of non-residential areas where feasible.
4. The SFO Roundtable will work with the SFO noise office and TRACON to research use of the legacy LINDEN VORTAC transition to determine why it has

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not been used within the last few years and determine which city pairs can utilize this corridor via TIPRE or SYRAH.

**REQUESTED INITIAL FAA RESEARCH:**

1. FAA is requested to determine any conflicting airspace issues which would not be available for the location of a new SSTIK waypoint.

**Attachment C: Letter to FAA Western-Pacific Region, City of Pacifica**

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FAA Western-Pacific Region

Dear Regional Administrator, Glen A. Martin:

Pacifica is one of the first members of the SFO Community Airport Roundtable and has been an active participant since its inception in 1981. Our current representative has been a participant since 2002 and is well aware of the hard work and dedication of members to ensure that the Roundtable mission was consistently clear and steadfast. That Mission is safety in the air and quiet skies for neighborhoods below, without shifting noise impacts to member cities.

In the past, aircraft generally flew higher over Pacifica and mostly over the ocean. Historically, it was only our northern neighborhoods that were affected. Since NextGen, the entire city of Pacifica is under constant assault by aircraft noise. Pacifica residents are irate that their years of endurance and participation in the SFO Roundtable, have resulted in significantly lower flights, and a higher percentage of flights over Pacifica from SFO and Oakland. These and new flight paths down the entire spine of Pacifica have created a substantial deterioration in the quality of life throughout our beloved city. The SFO Roundtable expected NextGen to enhance air travel and result in Quieter Skies, instead it has caused neighborhoods to be severely impacted by constant aircraft noise. Residents are experiencing extreme health issues due to the low, incessant and loud aircraft noise. Roundtable members are shocked that their mission to create quiet skies has been thwarted by flight paths over residential areas. Flight paths should not prioritize the concerns of airline profits over the health concerns of the vast population on the ground.

NextGen has moved aircraft over residential areas throughout the San Francisco Bay area that previously passed over the Ocean, the Bay and non-residential areas. SFO Roundtable members and residents everywhere challenge the underlying reason for such a negative change. We expect both safety in the skies and an equal dedication to the protection of health and safety of the residents below.

We urge the FAA and the Airline Industry to:

- Fly higher over the City of Pacifica
- Direct most flights traversing Pacifica over the ocean and nonresidential areas.
- Research the feasibility of waypoints that direct traffic significantly off the Pacifica coastline: A potential WHALE waypoint 5 miles out due west of Pacifica's most southern and most western point.
- Remove any and all low altitude level offs for all runway 28L and 28R straight out departures

The FAA is the voice of protection for the American Public both in the skies and below. The American Public does treasure air flight opportunities. We also treasure our peace and quiet. We are concerned that the Airline Industry may be more interested in saving time and fuel than respecting a basic quality of life for our specific neighborhoods. We trust that we have Congress and the FAA to champion our safety and quality of life in the skies and in our neighborhoods below. The harsh health impacts in our neighborhoods demand immediate relief. The results of our research listed above are positive changes.

Sincerely:

City Council of Pacifica