SANTA CLARA/SANTA CRUZ COUNTIES
AIRPORT/COMMUNITY ROUNDTABLE
PO Box 3144
Los Altos, CA 94024

March 6, 2020

Ms. Raquel Girvin
Regional Administrator, AWP-1
FAA Western-Pacific Region
777 South Aviation Boulevard, Suite 150
El Segundo, CA 90245

Subject: PIRAT follow up questions for the FAA

Dear Administrator Girvin,

The SCSC Roundtable is submitting the following four requests regarding the PIRAT TWO Standard Terminal Arrival Route (PIRAT TWO STAR) for the FAA's review and response:

1. **Explain the differences between the CATEX information and reality using the seven assumptions identified as unreasonable.** The SCSC Roundtable requests that the FAA validate the assumptions made in the PIRAT STAR CATEX, based on the following FAA assumptions listed below.

   Note: This same question was asked in my letter to the FAA dated January 17, 2020, on page 9 of the SCSC RT meeting packet - February 26, 2020. This question was listed as question 2.

   > *To understand whether the original expectations about the PIRAT STAR's noise exposure described in the CATEX for the PIRAT STAR match reality, the SCSC Roundtable requests that the FAA validate the assumptions made in the PIRAT STAR CATEX.*

   Note: Ms. Girvin's letter to me dated February 21, 2020, on pages 9 and 10 of the SCSC RT meeting packet – February 26, 2020 states,

   > *"Your letter also asks the FAA to validate assumptions made in its categorical exclusion of the proposed procedure amendment to ensure the noise analysis conducted matches reality. However, your letter does not identify any FAA assumptions that were unreasonable."*

   Identification of seven assumptions that are unreasonable: *See the Annotated FAA's PIRAT Environmental Review document dated May 17, 2018 obtained via FOIA ("Annotated - 2018-06-11 KSFO.IER.ARCHI.20180517 (SIGNED)_MLsign.pdf").*

   > **Assumption 1** – The FAA noted, "an increase in operations is not expected". (Page 17, the CATEX). Slide 18 of the 2/26/2020 FAA presentation to the SCSC RT (or page 30 of the meeting packet) shows a 35.5% increase from 2018-2019, 4044 to 5579, May through August. Note: many Oceanic arrivals are nighttime flights.
   >
   > Both the Palo Alto and Los Altos/Mountain View letters dated 11/13/18 raised the concern:
   >
   > • Palo Alto: "In particular, we are concerned about the predictable increase in volume of overflights resulting from transitioning of the Pacific 2 Tailored Approach (TA) to a public-use area navigation (RNAV STAR), and the increased impacts associated with adding Oakland International Airport (OAK) traffic to the SFO traffic on this route."
   >
   > • Los Altos/Mountain View: "We expect noise will be shifted from other approaches as airlines consolidate operations to us this procedure, which violates the widely endorsed principle,

including by the San Francisco Roundtable, of not moving noise form one community to another."

Note that Joseph Bert, from the FAA, commented on the increased usage of PIRAT at the 2/26/2020 meeting: he stated, "the PIRAT has increased, which is kind of, I guess, anticipated when you don't have a STAR and then you bring in a STAR. People are going to want to fly the STAR" (see time stamp 53:46 of the video of the 2/26/2020 SCSC RT meeting). Such statement is in direct contradiction with the CATEX assumption that usage would not increase.

Assumption 2 – The FAA denotes the project as a "Community Request". (Page 22, the CATEX)

Note: The PIRAT procedure was not requested by the Community. What was created by the FAA was different from what was asked for. By implementing the PIRAT STAR, there is an increased volume of planes AND these aircraft produce a higher level of noise before final approach because they need to lose altitude faster than the former procedure. Furthermore, a limited-use (Tailored Arrival) procedure was converted to a public-use navigation (RNAV STAR) procedure for both SFO and OAK arrivals.

Assumption 3 – The FAA states that the "proposed changes do not capture any of the Select Committee/SF Roundtable recommendations, rather they are a result of design work to address safety and operational concerns". (Page 50, the CATEX).

Note: This contradicts what is stated on FAA slide 16 presented at the February 26, 2020 meeting that PIRAT is in response to the Select Committee recommendation.

Assumption 4 – the FAA marked "Yes" to the question, "Are the airport proprietor and users providing general support for the proposed project?" on page 50 of the CATEX.

Note: Our understanding is that SFO was shown and did not support the early version called the "PIRAT project" in the FOIA documents received. **Please provide the FAA documentation that shows that the airport proprietor supported PIRAT.**

Assumption 5 – The FAA denoted "No" impact for an established community on page 48 of the CATEX. **Did the FAA look at Environmental and Social Justice as part of the PIRAT STAR environmental review process?**

Note: The City of East Palo Alto sent a letter to the FAA dated November 13, 2018 requesting noise and emission impacts of the PIRAT STAR procedure on sensitive areas such as minority and low-income populations.

Assumption 6 – The FAA denoted "Yes", local citizens and community leaders are aware of the proposed project and then states that it is "UNKNOWN" if they oppose or support it, on page 50 of the CATEX.

Note: Letters of objection were sent (November 13, 2018) by Palo Alto, Los Altos, Mountain View, and East Palo Alto and within 60 days of the IFP Gateway posting. **Who are the local citizens and community leaders with whom the FAA communicated at the time the PIRAT STAR CATEX was done?**

Assumption 7 – The FAA denotes "No" the FAA has not received one or more comments objecting to the project on environmental grounds from citizens or elected officials.

Note: Residents brought up concerns about PIRAT multiple times and months before the procedure was implemented in April 2019. They did so in writing and at Roundtable meetings. Letters of objection were sent (November 13, 2018) on environmental related impacts by Palo Alto, Los Altos, Mountain View, and East Palo Alto.

2. **Why is the FAA not meeting the noise abatement agreement documented in a 2000 letter with Representative Eshoo for MENLO at 5,000 feet?**

   On slide 16 of the 2/26/2020 FAA presentation (page 28 of the packet), the FAA stated that PIRAT was "Developed to meet noise abatement procedures implemented in July 1998 (Traffic permitting cross over Woodside VOR (Now ARGGG) at 8,000 feet mean sea level). We applaud the FAA's desire to honor previous noise abatement agreements and wish that the FAA would do the same for communities living in the close vicinity of the MENLO waypoint.

3. **In my letter dated January 17, 2020, the FAA was asked about the history of PIRAT development since 2013.**

   Note: Slide 17 of the 2/26/2020 FAA presentation covers only the change from PIRAT ONE to PIRAT TWO, not pre-PIRAT ONE. Furthermore, the FAA representative at the meeting (Joseph Bert) stated he has no information before PIRAT ONE. Appendix C of the January letter included historical information on PIRAT ONE. See attachments "Annotated - RE_ PIRAT STAR_SFO.pdf" and "Annotated - KSFO New STAR 8457 Gateway (1).pdf" for email communications in 2016 and 2017 about a PIRAT STAR, which preceded the current PIRAT ONE/PIRAT TWO STAR.

   a. The FAA records referenced above, and obtained through a FOIA request, indicate that the FAA was working on a PIRAT STAR as early as 2015 (and probably earlier than that) as part of the NorCal Metroplex project, but that the procedure had environmental issues.
      - This FAA documentation aligns with the SFO Noise Office saying that they did not support a PIRAT procedure that was proposed around 2014 because of noise concerns.
   b. On November 16, 2016, an FAA employee requested to put the PIRAT STAR back in the IFP process because it had been removed by mistake. Note that the Select Committee issued their recommendations, which do not mention any STAR procedure for Oceanic Arrivals, one day later on November 17, 2016, after the FAA put PIRAT STAR back in the IFP process.

4. **Five questions marked "6." in my January 17, 2020 letter to the FAA were not answered** – see Appendix B of my letter to the FAA dated January 17, 2020, page 9 of the SCSC RT meeting packet - February 26, 2020 as well the "Annotated - 2018-06-11 KSFO.IER.ARCHI.20180517 (SIGNED)_MLsign.pdf" document.

On behalf of the SCSC Roundtable, thank you for your attention to these requests. We look forward to receiving your written response by the April 22, 2020 SCSC Roundtable meeting.

Sincerely,

Mary-Lynne Bernald

Mary-Lynne Bernald
Chairperson, SCSC Roundtable

Cc: SCSC Roundtable Members and Alternates
Congressman Jimmy Panetta's Office
Congresswoman Anna Eshoo's Office
Congressman Ro Khana's Office

ATTACHMENTS

- FAA's PIRAT Environmental Review documents dated May 17, 2018 received via FOIA:
  - Annotated - 2018-06-11 KSFO.IER.ARCHI.20180517 (SIGNED)_MLsign.pdf
  - Annotated - RE_ PIRAT STAR_SFO.pdf
  - Annotated - KSFO New STAR 8457 Gateway (1).pdf
- Letters to the FAA: East Palo Alto, Los Altos/Mountain View, and City of Palo Alto
  - Los Altos/Mountain View: "181113 IFP Coordination joint ltr MtV-LA (final).pdf"
  - Palo Alto: "FAA comment letter on PIRAT STAR 11-13-18.pdf"
  - East Palo Alto: "EPA Pirat Ltr 11 13 18.pdf"
- SCSC-RT letter to FAA, January 17, 2020

Attachment 1

Appendix 5. Air Traffic Initial Environmental Review

Facility/Office:	Western Service Center/OSG	Date:	May 17, 2018
Prepared By:	Katherin Matolcsy	Phone:	206-231-2237

This initial environmental review (IER) will provide basic information about the proposed project to better assist in preparing for the environmental analysis phase and inform the FAA's compliance with the National Environmental Policy Act of 1969 (NEPA) (42 United States Code [U.S.C.] Section 4321 et seq.; implementing regulations issued by the Council on Environmental Quality (CEQ) (40 Code of Federal Regulations (CFR), parts 1500-1508); FAA Order 1050 1F, *Environmental Impacts: Policies and Procedure*s (FAA Order 1050.1F); and FAA Order 7400.2L, *Procedures for Handling Airspace Matters*. FAA Order 7400.2L provides guidance and establishes policy and procedures to assist air traffic personnel in applying the requirements of FAA Order 1050.1F.

Although the IER requests information in several categories, not all the data may be available initially; however, it does represent information, in accordance with FAA Order 1050.1, which ultimately will be needed for preparation of the environmental document.

Once the FAA determines that NEPA applies to a proposed action, the FAA needs to decide on the appropriate level of review. The three levels of NEPA review are Categorical Exclusion (CATEX), Environmental Assessment (EA), and Environmental Impact Statement (EIS). A CATEX refers to a category of actions that the FAA has determined, based on previous experience, do not individually or cumulatively have a significant effect on the human environment except in extraordinary circumstances. The presence of extraordinary circumstances preclude the use of a CATEX and would merit additional review in an EA or EIS. A CATEX is not an exemption or a waiver from NEPA; it is a level of NEPA review and compliance. FAA Order 1050.1F, Section 5-6.5, Categorical Exclusions for Procedural Actions includes the list of CATEXs involving establishment, modification, or application or airspace and air traffic procedures.

This document describes how the CATEX applies to the Proposed Action, and presents analysis of extraordinary circumstances that, if present, could require more detailed NEPA review. There is not a prescribed format for an environmental review of a CATEX. However, the documentation should "cite the CATEX(s) used, describe how the proposed action fits within the category of actions described in the CATEX, and explain that there are no extraordinary circumstances that would preclude the proposed action form being categorically excluded." FAA Order 1050.1F. Section 5-3.d.

A. Project Description. The FAA is proposing to amend multiple procedures for the San Francisco International Airport (KSFO) in San Francisco, California and one procedure for the Metropolitan Oakland International Airport (KOAK) in Oakland, California (Figure 1). The FAA is also proposing to implement one new Standard Terminal Arrival Route (STAR) for both KSFO and KOAK.

The proposed project consists of three grouped actions:

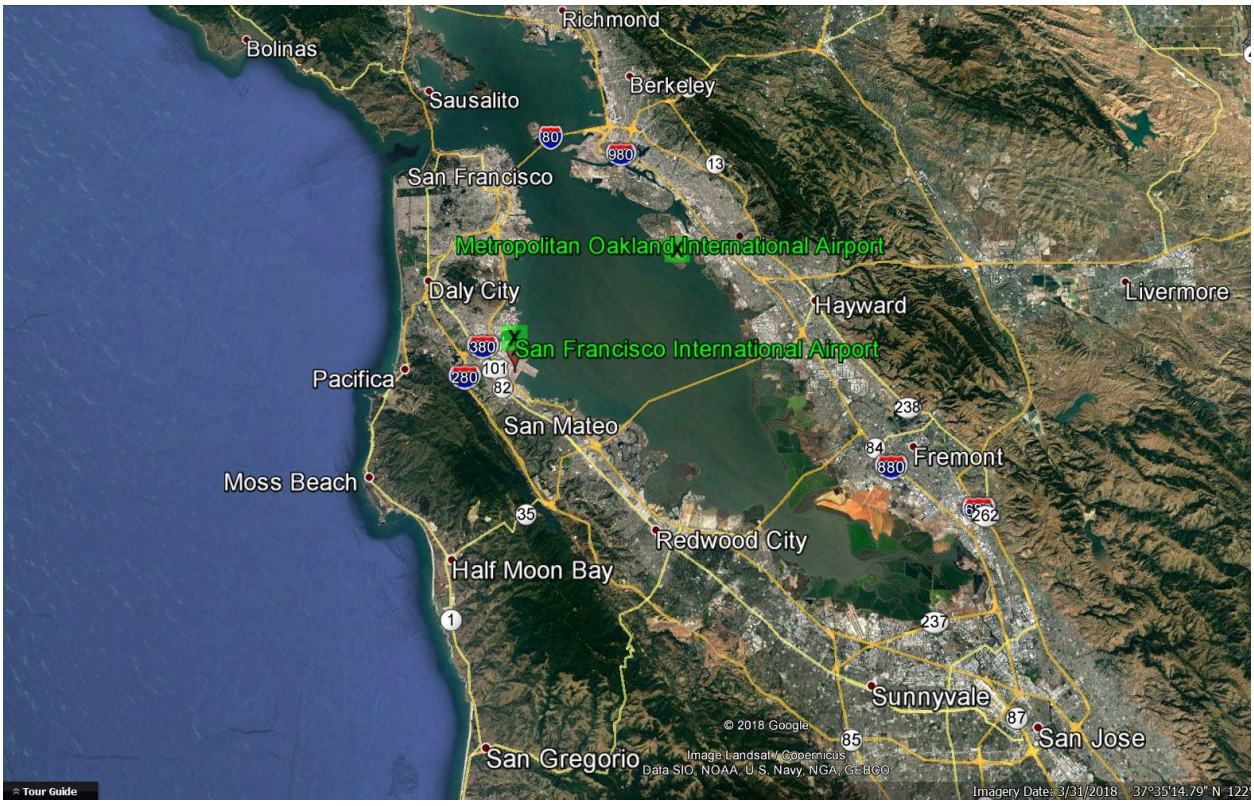
1. The DYAMD STAR procedure would be amended to conform to the Class B Airspace redesign and current procedure design criteria.

   Eight Instrument Approach Procedures (IAPs) to Runways (RWY) 28L/R and one Charted Visual Flight Procedure (CVFP) to RWY 28L/R would be amended to maintain connectivity to the DYAMD STAR.

2. Amend three Standard Instrument Departure (SID) procedures: WESLA and SSTIK at KSFO and CNDEL at KOAK.

3. A new Area Navigation (RNAV) STAR to replace the non-charted Pacific 2 Tailored Arrival procedure into KSFO and KOAK.

Figure 1. General Area of the San Francisco International Airport and the Metropolitan Oakland International Airport



B. Has airspace modeling been conducted using Sector Design Analysis Tool (SDAT), Total Airspace and Airport Modeller (TAAM), Terminal Area Route Generation, Evaluation, and Traffic Simulation (TARGETS), or other airspace/air traffic design tool?

☒Yes ☐No If Yes, Model: TARGETS and the Instrument Approach Procedures Automation (IAPA).

If yes, provide a summary of the output from the modeling.
TARGETS distribution packages are available in Attachment 1.

C. Describe the existing (no action alternative) in full detail. Provide the necessary chart(s) depicting the current procedure or provide information for a new procedure. Describe the typical fleet mix, quantifying (if possible) the number of aircraft on the route and depict their altitude(s) along the route.

The following current (published) procedures would be amended (Refer to Attachment 2 for Terminal Procedure Publication procedure charts):

1. DYAMD STAR:
    1. DYAMD THREE ARRIVAL RNAV

2. Standard Instrument Departures:
    1. SSTIK THREE DEPARTURE (RNAV)
    2. WESLA THREE DEPARTURE (RNAV)
    3. CNDEL THREE DEPARTURE (RNAV)

3. Instrument Approach Procedures:
    1. Instrument Landing System (ILS) or Localizer (LOC) Runway (RWY) 28L
    2. ILS or LOC RWY 28R
    3. ILS RWY 28R (Special Authorization [SA] CAT I[1])
    4. ILS RWY 28R (CAT II – III)
    5. ILS RWY 29L (SA CAT II)
    6. RNAV (Required Navigation Performance [RNP]) Y RWY 28R
    7. RNAV (Global Positioning System [GPS]) RWY 28L
    8. RNAV (GPS) Z RWY 28R

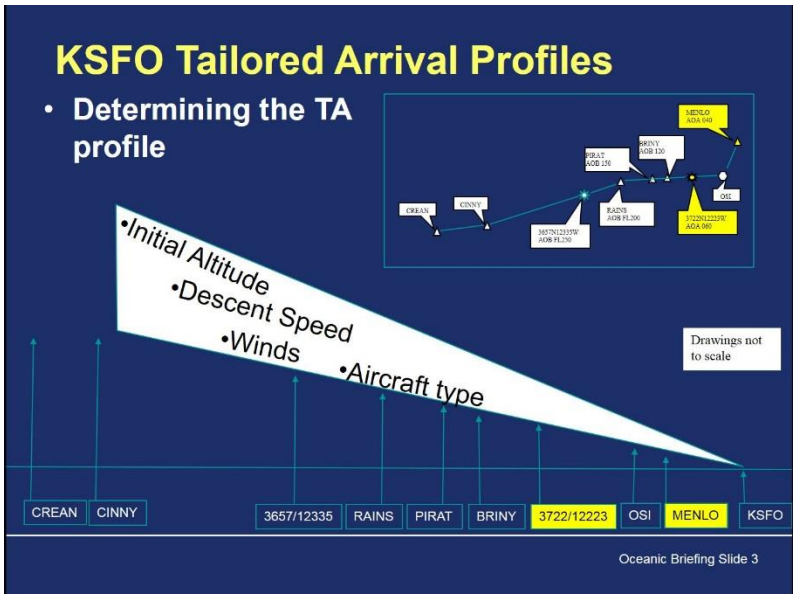
4. Charted Visual Flight Procedure:
    1. QUIET BRIDGE VISUAL RWY 28L/R

[1] CAT = Approach category.

5. Pacific 2 Tailored Arrival[2]

The OCEANIC Pacific 2 Tailored Arrival (TA) procedure into KSFO comes in from the west from overseas locations, with aircraft converging into a single path at the PIRAT waypoint, located approximately 23 nautical miles (NM) to the west of the California coastline (Figure 2). Once on a single path, the aircraft cross the San Francisco Peninsula at the Woodside Very High Frequency Omni-Directional Range Tactical Air Navigation (OSI VORTAC) system, a navigational beacon and proceed to the final approach into KSFO. This procedure is in use as a test procedure with selected carriers. Tailored arrivals are similar to an optimized profile descent (OPD), except that it is a non-published dynamic procedure (tailored for traffic, aircraft type, environment, time, etc.).

Figure 2. Tailored Arrival into KSFO[3]



FAA's Operations Network[4] reports 450,391 operations for the calendar year 2016 (Table 1).

[2] Tailored Arrivals (TA) is a comprehensive method of planning, communicating, and flying highly-efficient arrival trajectories from cruise altitude to the runway threshold. TA trajectories are optimized for each aircraft to permit a fuel-efficient, low noise descent profile that will provide separation assistance while complying with arrival sequencing requirements and other airspace requirements.

[3] Excerpted from presentation"SOCM-2 Seminar. Data Link Advanced Operations". Presented by Dennis Addison, FAA on February 8, 2012.
https://www.google.com/search?q=Pacific+tailored+arrival+into+KSFO&rlz=1C1GCEA_enUS761US761&oq=Pacific+tailored+arrival+into+KSFO&aqs=chrome..69i57.13432j0j8&sourceid=chrome&ie=UTF-8

[4] The Operations Network: official source of FAA air traffic operations. https://aspm.faa.gov/opsnet/sys/Airport.asp

Appendix 5. Air Traffic Initial Environmental Review

Table 1. KSFO Operations Data

	Air Carrier	Air Taxi	General Aviation	Military
IFR Itinerant[5]	379,642	54,856	10,396	411
VFR Itinerant	5	626	2,29	2,16

Note:
IFR= Instrument Flight Rules
VFR = Visual Flight Rules

Runway use percentages[6] for operations during 2014 are reported in Table 2 below.

Table 2. Runway Use

Operating Configuration	Arrival Runways	Departure Runways	Day	Night
West	28L, 28R	01L, 01R	96.6%	94.2%
East2	19L, 19R	10L, 10R	4.4%	5.7%
West (Noise Abatement)	28L, 28R	10L, 10R	0.0%	0.1%

Runway use percentages for arrivals during the year 2014[7] are broken up into aircraft type, and day/night operations in Table 3.

Table 3. Runway Use – Arrivals Only

	Heavy Jets		Jets		Small Jets		Turboprops		Pistons	
RWY	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night
19L	5%	5%	3%	5%	0%	0%	3%	3%	0%	0%
19R	0%	0%	1%	0%	0%	0%	1%	1%	0%	0%
28L	46%	16%	38%	16%	21%	0%	59%	28%	0%	8%
28R	49%	79%	58%	79%	79%	100%	38%	68%	100%	92%

The current procedures are provided in Attachment 1. The procedure charts depict the altitudes on each procedure.

[5] Airport Operations. The number of arrivals and departures from the airport at which the airport traffic control tower is located. There are two types of operations: local and itinerant. Local operations are those operations performed by aircraft that remain in the local traffic pattern, execute simulated instrument approaches or low passes at the airport, and the operations to or from the airport and a designated practice area within a 20−mile radius of the tower. Itinerant operations are operations performed by an aircraft, either IFR, SVFR, or VFR, that lands at an airport, arriving from outside the airport area, or departs an airport and leaves the airport area.

[6] Environmental Assessment for Northern California Optimization of Airspace and Procedures in the Metroplex. Average Annual Day Flight Schedules. ATAC Corporation. Revised. August 7, 2014.

[7] Environmental Assessment for Northern California Optimization of Airspace and Procedures in the Metroplex. Average Annual Day Flight Schedules. ATAC Corporation. Revised. August 7, 2014.

Historical radar track data was obtained through the Performance Data Analysis and Reporting System (PDARS) to obtain traffic counts and aircraft mix departures from KSFO and KOAK separated by runway. Departure operations data is available in Table 4.

Historical radar track data was also obtained through PDARS for the Pacific 2 TA. Track data was collected for 90 random days during calendar year 2017 ("2017 Track Data").[8] The selection of 90 random days is considered a conservative representation of the average traffic counts accounting for seasonal variations and peak travel times. Operations on the Pacific 2 TA are shown in Table 5. Table 5 also identifies the transition waypoints for the proposed PIRAT STAR associated with the appropriate position reporting point (waypoint) on the Pacific 2 TA. Flight tracks for ALANN, CINNY, CREAN, and MAFIC waypoints on the Pacific 2 TA are associated with the CINNY transition on the proposed PIRAT STAR. Flight tracks for ALCOA, ALLBE, BUTEN, and CEPAS waypoints on the Pacific 2 TA are associated with the ALCOA transition on the proposed PIRAT STAR. Flight tracks for DACEM and FATMO waypoints on the Pacific 2 TA are associated with the PAINT transition on the proposed PIRAT STAR.

[8] Ninety random days of track data selected in accordance with the FAA Average Annual Day Addendum to the Guidance for Noise Screenings of Air Traffic Actions, utilizing the Random Day Generator tool.

Table 4. Operations Data for Departures from KSFO and KOAK

		Heavy Jets				Large Jets				Small Jets				Turboprops				Pistons			
		Day		Night		Day		Night		Day		Night		Day		Night		Day		Night	
Airport	Runway	Daily	Annual	Daily	Annual	Daily	Annual	Daily	Annual	Daily	Annual	Daily	Annual	Daily	Annual	Daily	Annual	Daily	Annual	Daily	Annual
KOAK	28L	-	-	-	-	0.1	35	-	-	0.1	26.1	0.02	8.7	0.02	8.7	-	-	-	-	-	-
	28R	-	-	-	-	0.1	35	-	-	0.1	35	-	-	0.02	8.7	-	-	0.02	8.7	-	-
	30	0.02	8.7	-	-	19	6987	2.2	800	2.4	860	0.2	78	0.02	8.7	-	-	-	-	-	-
KSFO	01L	-	-	0.02	8.7	34.5	12610	4.8	1747	0.3	104	-	-	0.05	17.4	-	-	-	-	-	-
	01R	-	-	-	-	1.1	417	0.07	26.1	-	-	-	-	-	-	-	-	-	-	-	-
	10L	-	-	-	-	-	-	-	-	0.02	8.7	-	-	-	-	-	-	-	-	-	-
	10R	-	-	-	-	0.07	26.1	0.14	52	-	-	-	-	-	-	-	-	-	-	-	-
	19R	-	-	-	-	0.02	8.7	-	-	0.02	8.7	-	-	-	-	-	-	-	-	-	-
	28L	-	-	-	-	3.4	1251	0.48	174	0.12	43.5	-	-	0.07	24	-	-	-	-	-	-
	28R	-	-	-	-	2.5	921.2	0.21	78	1.64	600	0.05	17.4	0.5	172	-	-	-	-	-	-
Totals		0.02	8.7	0.02	8.7	60.79	22,291	7.9	2,877.1	4.7	1,686	0.27	104.1	1.13	239.5	-	-	0.02	8.7	-	-

Table 5. Operations Data for the Pacific 2 Tailored Arrival

		Heavy Jets				Large Jets				Small Jets				Turboprops			
		Day		Night		Day		Night		Day		Night		Day		Night	
Position Reporting Point		Daily	Annual	Daily	Annual	Daily	Annual	Daily	Annual	Daily	Annual	Daily	Annual	Daily	Annual	Daily	Annual
[1]PACIFIC 2 TA	[2]PIRAT STAR																
ALANN	CINNY	0.8	277	0.04	14.6	0.8	277	0.6	219	0.01	4.9	-	-	-	-	-	-
ALCOA	ALCOA	0.52	190	0.32	117	0.01	4.9	0.33	122	-	-	-	-	-	-	-	-
ALLBE	ALCOA	4.5	1635	0.47	170	0.63	229	0.17	63.3	-	-	-	-	-	-	-	-
BUTEN	ALCOA	0.4	141	0.01	4.9	0.08	29.2	-	-	-	-	-	-	-	-	-	-
CEPAS	ALCOA	0.21	77.9	0.07	24.3	0.01	4.9	-	-	-	-	-	-	-	-	-	-
CINNY	CINNY	0.48	175.2	2.6	934	0.16	58.4	4.3	1557	-	-	-	-	-	-	-	-
CREAN	CINNY	6.5	2385	1.8	652	6.33	2297	2	730	0.4	146	0.04	14.6	0.01	4.9	-	-
DACEM	PAINT	7.2	2623	0.4	146	0.05	19.5	-	-	-	-	-	-	-	-	-	-
FATMO	PAINT	0.41	151	0.08	29.2	0.03	9.7	-	-	-	-	-	-	-	-	-	-
MAFIC	CINNY	0.7	258	0.2	83	0.04	14.6	0.1	24.3	-	-	-	-	-	-	-	-

D. Describe the proposed project, providing the necessary chart(s) depicting changes. Describe changes to the fleet mix, numbers of aircraft on the new route, and their altitude(s), if any.

Northern California Terminal Radar Approach Control has requested that the crossing restriction of "AT 8,000 feet MSL" at the ARCHI waypoint be lowered to 7,000 feet MSL. The proposed amendment restores the original crossing restriction listed in the Northern California Metroplex Environmental Assessment (July 2014). The proposed amendment will allow arrivals to KSFO approaching from the east to descend on an ODP while remaining within Class B airspace. The proposed amendment accounts for the modified KSFO Class B airspace with a targeted implementation date of August 2018.

Amending the crossing restriction at the ARCHI waypoint requires amendment of the DYAMD STAR and associated IAPs and CVFP to maintain connectivity between DYAMD and the IAPs/CVFP.

The number of aircraft operations and mix are not expected to change. Proposed procedure specific amendments are described below.

DYAMD STAR:

1. Lower the crossing restriction altitude at the ARCHI waypoint from 8,000 feet MSL to 7,000 feet MSL.
2. Remove the speed restriction of AT 230K at the waypoint ARCHI.
3. Move the FRELY waypoint 0.11 nautical mile (NM)/668.37 feet southwest along its current track to conform to current design criteria
4. Reduce the speed restriction at FRELY from AT 240 Knots Indicated Air Speed (KIAS) to 230KIAS. Requested by ATC and industry.

Instrument Approach Procedures and Charted Visual Flight Procedures:
The following IAPs and CVFP will be amended by reducing the crossing restriction at ARCHII from AT 8,000 feet MSL to AT 7,000 feet MSL. No other changes will be made.

1. ILS or LOC RWY 28L
2. ILS or LOC RWY 28R
3. ILS RWY 28R (SA CAT I[9])
4. ILS RWY 28R (CAT II – III)
5. ILS RWY 29L (SA CAT II)
6. RNAV (RNP) Y RWY 28R
7. RNAV (GPS) RWY 28L
8. RNAV (GPS) Z RWY 28R

[9] CAT = Approach category.

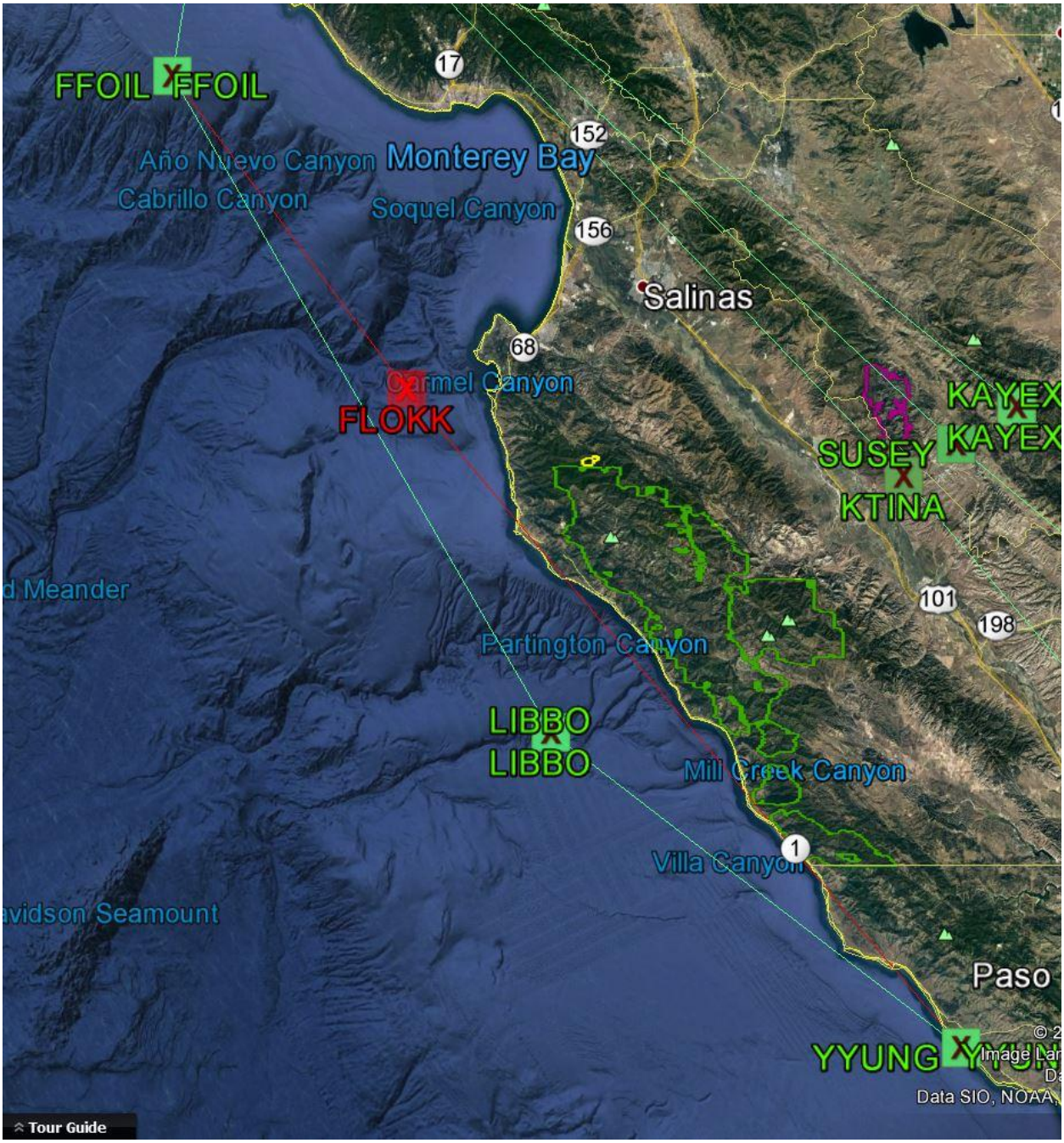
9. QUIET BRIDGE VISUAL RWY 28L/R

Standard Instrument Departure Procedures:
The following amendments are common to the three SIDS:

1. Remove the FLOKK waypoint at ATC's request (Figure 3).
2. Increase the Minimum En Route Altitude (MEA) from 9,000 feet MSL to 11,000 feet MSL on the EBAYE transition from SUSEY to EBAYE. Increase of the altitude reduces the number of critical DMEs[10].
3. Increase the MEA from 9,000 feet MSL to 11,000 feet MSL on the CISKO transition from KTINA to CISKO. Increase of the altitude reduces the number of critical DMEs.
4. Add new waypoint, LIBBO, between FFOIL and YYUNG. Addition of LIBBO moves the procedure alignment approximately 10 NM to the west. This moves the procedure over water; the existing segment between FLOKK and YYUNG is partially over land (Figure 3).

[10] DME = Distance Measuring Equipment

Figure 3. New Waypoint LIBBO to be added. FLOKK to be removed.



The following are the SID-specific amendments:

1. SSTIK THREE DEPARTURE (RNAV):
   a. Move the SSTIK waypoint 0.44 NM/2673.5 feet southeast to conform to current criteria.
   b. Add note indicating runways not available for use: RWYs 10L/R, 19L/R, 28L/R.
   c. Add the San Jose VOR/DME as a critical DME on both the CISKO and EBAYE transitions. Addition of the critical DME is based on RNAV Pro results.

2. WESLA THREE DEPARTURE (RNAV)
   a. Add a critical DME on the EBAYE transition. Addition of the critical DME is based on RNAV Pro results.

3. CNDEL THREE DEPARTURE (RNAV)
   a. Add a critical DME on the EBAYE transition to replace the MANTECA (ECA) VOR/DME which has been decommissioned. Addition of the critical DME is based on RNAV Pro results.

The above-described proposed amendments will not change existing flight paths.

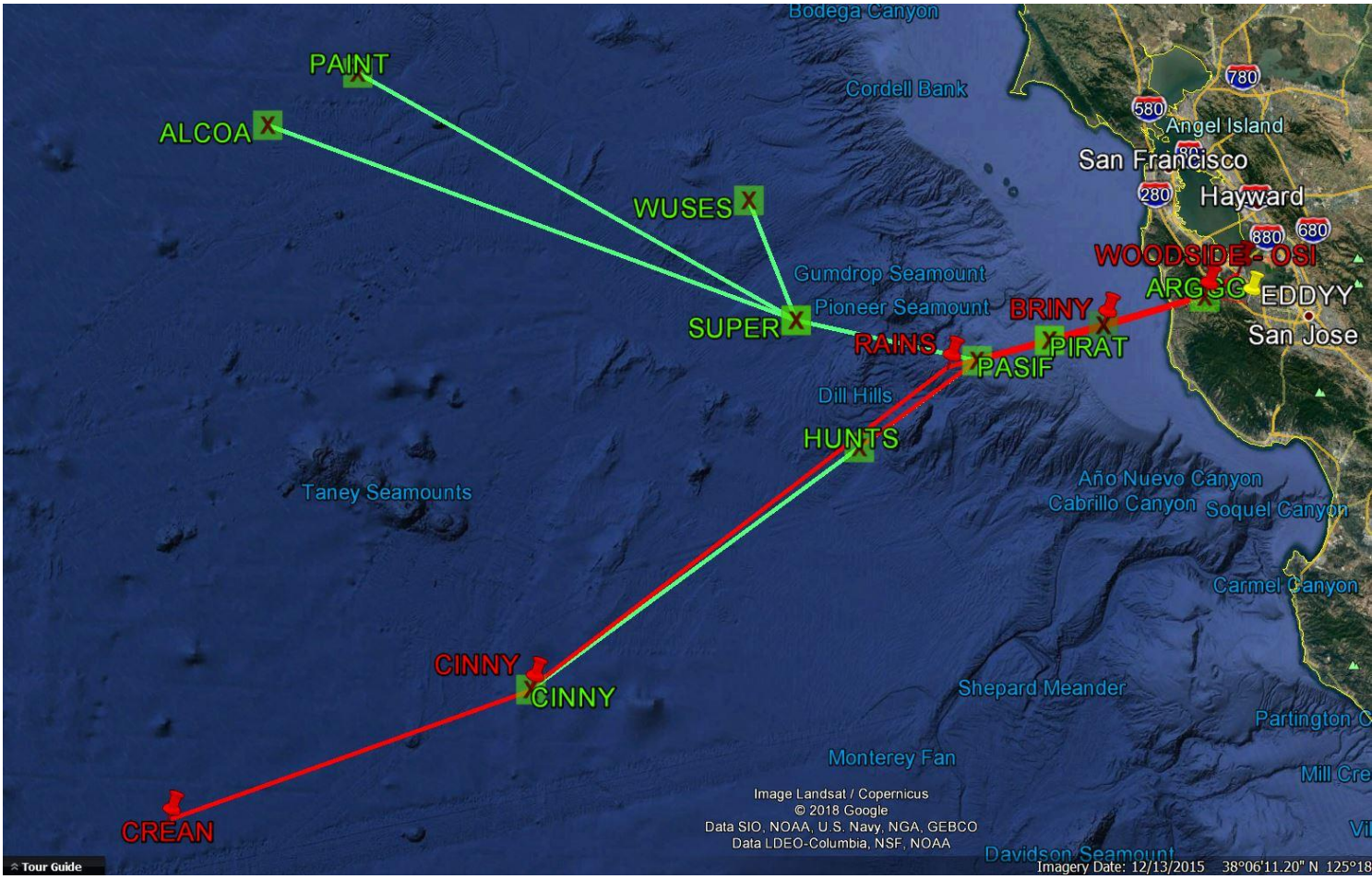
New PIRAT STAR

The PIRAT STAR (Figure 4) will convert the Pacific 2 TA to a public-use RNAV STAR that expands benefits of the TA currently only available to selected carriers to all users of KSFO. The PIRAT STAR will accommodate arrivals to RWY 28L/R at KSFO and RWY 28L/R and RW 30 at KOAK.

The PIRAT STAR will be an Optimized Profile Descent (OPD) STAR, requiring aircraft to cross ARGGG at 8,000 feet MSL or approximately 5,820 feet AGL. The waypoint ARGGG will replace the WOODSIDE VOR (OSI), and is located approximately 100 feet west of OSI along the existing track. At ARGGG, ATC will vector aircraft to final approach course for KSFO and/or KOAK. The PIRAT STAR does not connect to IAPs.

The PIRAT STAR will have three en route transition, PAINT, ALCOA, and CINNY. The CINNY transition mimics the existing Pacific 2 TA segment(s) CINNY-PIRAT- BRINY-OSI. The ALCOA transition mimics the existing BUTEN-ALCOA-BRINY-OSI segment on the Pacific 2 TA. The PAINT transition mimics the existing DACEM-BRINY-OSI segment on the Pacific 2 TA. Oakland Air Route Traffic Control Center (ZOA) requested a route north of the waypoint PAINT developed for offloads that the Traffic Management Unit (TMU) could utilize during periods of concentrated demand. Waypoint WUSUS is the proposed start point for the offload route.

Figure 4. Pacific 2 Tailored Arrival and the Proposed PIRAT STAR



Red = Existing Pacific 2 TA

Green = Proposed PIRAT STAR

Table 6 shows the anticipated traffic and aircraft mix based on the 2017 Track Data on each transition on the proposed PIRAT STAR. The WUSUS transition is not included because it is intended for overflow traffic.

Table 6. Estimated Operations on the Proposed PIRAT STAR

	Heavy Jets				Large Jets				Small Jets				Turboprops			
	Day		Night		Day		Night		Day		Night		Day		Night	
Transition	Daily	Annual	Daily	Annual	Daily	Annual	Daily	Annual	Daily	Annual	Daily	Annual	Daily	Annual	Daily	Annual
CINNY	8.48	3095	4.64	1684	7.33	2647	7	2530	0.41	151	0.04	14.6	0.01	4.9	-	-
ALCOA	5.63	2044	.87	316.2	0.73	268	0.5	185.3	-	-	-	-	-	-	-	-
PAINT	7.61	2774	0.48	175.2	0.08	29.2	-	-	-	-	-	-	-	-	-	-

Appendix 5. Air Traffic Initial Environmental Review

1. Will there be actions affecting changes in aircraft flights between the hours of 10 p.m. – 7 a.m. local?
   ☒Yes ☐No
   Aircraft would continue to fly the amended procedures and the route of the new PIRAT RNAV STAR; published airline-specific schedules are not expected to change.

2. Is a preferential runway use presently in effect for the affected airport(s), formal or informal?
   ☒Yes ☐No

   The preferred runway for arrivals during both Daytime (0700 – 2200 local time) and Nighttime (2200 – 0700 local time) is RWY 28L/R and using the QUIET BRIDGE CVFP[11].

   For departures, the preferred runway for Daytime (0700 – 2200 local time) is RWY 01L/R. For Nighttime departures (2200 – 0700 local time), the preferred runway is RWY 10L/R.

   The Nighttime Preferential Runway Use programme aims to maximize flights over water and minimize flights over land and populated areas between 0100 and 0600 (local time), thus reducing nighttime noise in the airport surrounding communities.

   The noise abatement information published on whispertrack[12] lists the noise sensitivity of the Airport area as "High", noting that the overall goal of the Fly Quiet Program is to influence airlines to operate as quietly as possible in the San Francisco Bay Area.

3. Will airport preferential runway configuration use change as a result of the proposed project?
   □ Yes ☒No

4. Is the proposed project primarily designed for Visual Flight Rules (VFR), Instrument Flight Rules (IFR) operations, or both?
   ☐VFR ☒IFR ☐ Both

[11] Noise Abatement Procedures by Whispertrack. http://whispertrack.com/airports/KSFO
[12] https://whispertrack.com/airports/KSFO

If this specifically involves a charted visual approach (CVA) procedure, provide a detailed local map indicating the route of the CVA, along with a discussion of the rationale for how the route was chosen. N/A

5. Will there be a change in takeoff power requirements?
   ☐Yes ☒No

   If so, what types of aircraft are involved, i.e., general aviation propeller-driven versus large air carrier jets? N/A

6. Will all changes occur above 3,000 feet above ground level (AGL)?
   ☒Yes ☐ No

   What is the lowest altitude change on newly proposed routes or on existing routes that will receive an increase in operations?

   An increase in operations is not anticipated.

7. Will there be actions involving civil jet aircraft (heavier than 75,000 pounds gross weight) arrival procedures between 3,000-7,000 feet AGL or departures between 3,000-10,000 feet AGL?
   ☒Yes ☐No

   Civilian jet aircraft are currently flying and would continue to fly the procedures proposed for amendment. The number of operations and aircraft mix are not expected to change. The number of aircraft that would fly each transition on the new PIRAT STAR is not expected to change from the number of operations and aircraft fleet mix based on the 2017 Track Data (Refer to Table 6 above).

8. If noise analysis was already performed using the FAA's Aviation Environmental Design Tool (AEDT), Aviation Environmental Screening Tool (AEST), TARGETS Environmental Plug-In, Integrated Noise Model (INM), or Noise Integrated Routing System (NIRS), provide a summary of the results (and/or attach a copy of the noise screening analysis results).

   The FAA Air Traffic Organization (ATO) established a noise screening process to help determine the need for a detailed noise analysis of air traffic actions. The MITRE Corporation's Center for Advanced Aviation System Development prepared a guidance document to assist the FAA and others involved in proposed air traffic actions with a solid and repeatable approach to noise screening (MITRE Guidance).[13]

[13] MITRE. Guidance for Noise Screening of Air Traffic Actions. December 2012.

The MITRE Guidance document provides an overview of the noise screening process, which can be used to determine the potential for noise impacts related to most air traffic actions. The MITRE Guidance provided conforms to the FAA Order 1050.1; consistent with NEPA and the CEQ regulations, FAA adjusts the level of environmental review to the expected level of impact of a proposed action. For example, FAA Order 1050.1F contains a list of air traffic actions, which normally do not result in significant impacts to the environment (CATEX), and therefore do not require the preparation of an EA or EIS. One of the requirements for a CATEX determination is to ensure that there are no extraordinary circumstances as defined in FAA Order 1050.1F. The noise screening process provides an approach to identify extraordinary circumstances and/or the potential for significant impacts associated with noise impacts of proposed air traffic actions for fixed-wing aircraft. The process is based on currently approved FAA tools and policies.

Noise screening trades modeling precision for a simplified process when and where possible. The simpler noise screening techniques provide conservative results very quickly, whereas the most complex modeling tools provide more precise results, but take more time and require more data. The screening tests have been constructed to minimize the risks of false-negative results, i.e., an action potentially causing significant noise impacts passing the noise screening process. Passing noise screening implies that the potential for significant impacts and/or extraordinary circumstances due to aircraft noise is negligible, and a CATEX is appropriate. The noise screening documentation can be used to the support the CATEX determination.

Noise screening is required for arrivals below 7,000 feet above ground level (AGL) and departures below 10,000 feet AGL. These limits increase to 18,000 feet AGL over national parks or wilderness areas. Air traffic actions could include route or procedure route or procedure utilization changes, vertical profile changes, and Performance-Based Navigation (PBN) procedures including:

"Changing jet arrival traffic position, altitude, or volume between 500 feet above ground level (AGL) and 10,000 feet AGL." [14]

The FAA noise screening Aviation Environmental Screening Tool (AEST) version 1.4, which supercedes the NIRS[15] Screening Tool, was used to complete the analysis of potential effects due to change in the aircraft noise exposure level. AEST incorporates the noise pre-screening tools in the FAA Guidance for Screening of Air Traffic Actions.

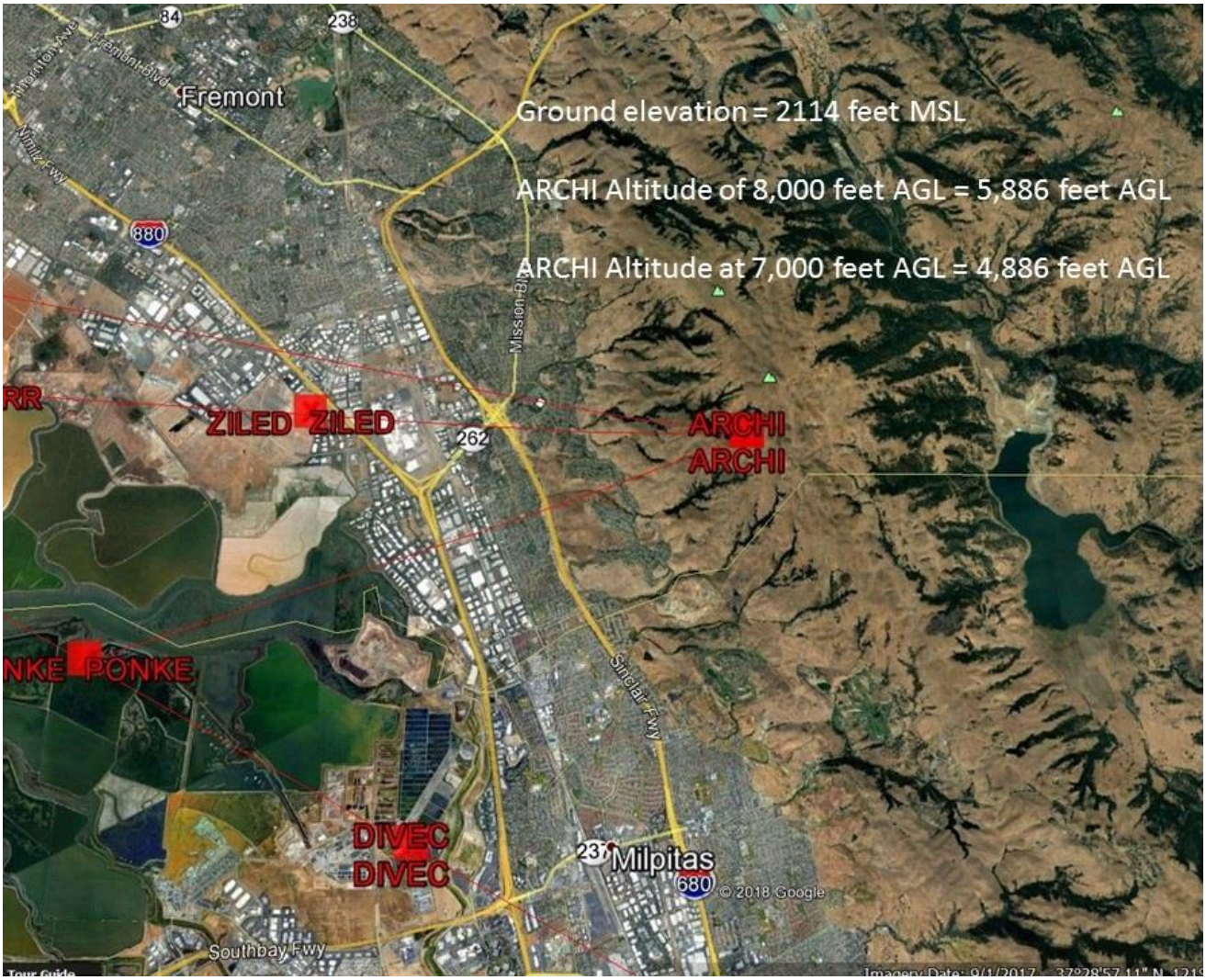
The Altitude/Operations Test (A/O Test) is a tool to determine if changes in the number of operations or altitudes or both are enough to cause a change in noise exposure levels exceeding the noise screening thresholds. This test applies to both jet and/or propeller

[14] MITRE Guidance for Noise Screening of Air Traffic Actions. December 2012.
[15] Noise Integrated Routing System (NIRS)

traffic. The proposed action failing this test is an indication that the potential exists for extraordinary circumstances above 3,000 feet AGL or significant impacts at or below 3,000 feet AGL. The change in altitude at ARCHI was evaluated using the A/O Test (Figure 5). The number of operations is not expected to change; therefore, the A/O Test evaluated the change in altitude from 8,000 feet MSL/5,886 feet AGL to 7,000 feet MSL/4,886 feet AGL.

The results of the A/O Test noise screening results indicated that potential noise impacts are not expected due to the lateral movement of the fix; therefore, further noise screening is not required (Attachment 3).

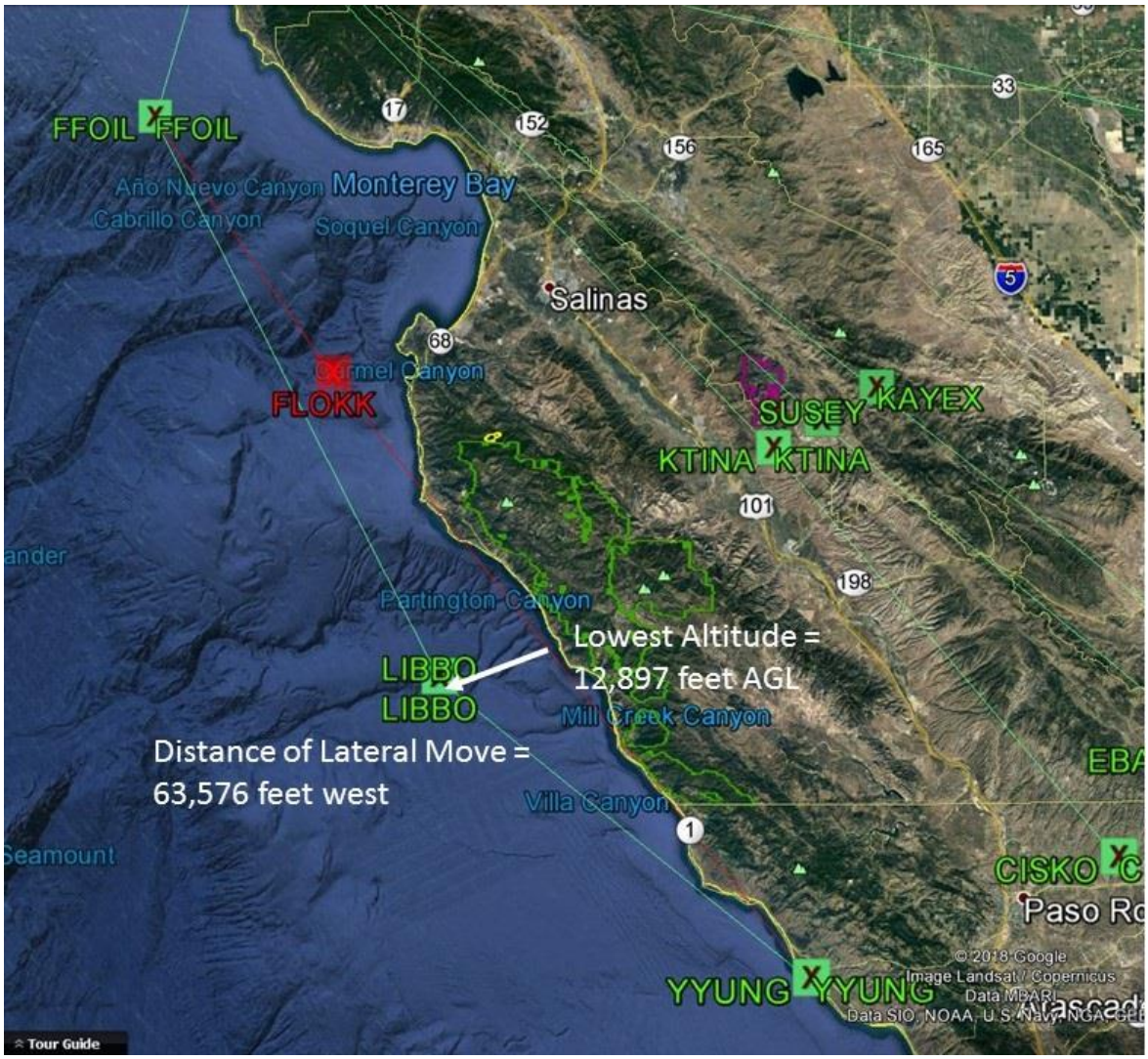
Figure 5. ARCHI Waypoint



The waypoint LIBBO (New) is located approximately 63,576 feet west of the segment between FFOIL and YYUNG (Figure 6). The lowest altitude specified in Above Ground Level (AGL) flown along the changed portion of the procedure is approximately 12,897 feet AGL. Noise screening is not required for changes to departure procedures above 10,000 feet AGL or arrival procedures above 7,000 feet AGL.[16]

[16] MITRE Guidance for Noise Screening of Air Traffic Actions. December 2012.

Figure 6. Addition of LIBBO and Lateral Movement of the FFOIL-YYUNG Segment to the West



Purpose and Need

A. Describe the purpose and need for the proposed project. If detailed background information is available, summarize here and provide a copy as an attachment to this review.

The crossing restriction at the ARCHI waypoint on the DYAMD STAR and connecting IAPs was raised from 7,000 feet mean sea level (MSL) to AT 8,000 feet MSL in January 2016. The speed restriction of AT 230 knots (K) at ARCHI was added to all connecting IAPs as well. The amendments were implemented in response to aircraft excursions into and out of Class B

airspace. An excursion is an event describing an aircraft dropping out of Class B airspace and then re-entering Class B airspace. Excursion data was compiled from PDARS on a daily basis for KSFO. Concurrently, the Class B airspace was undergoing redesign to contain arrival and departure paths, both lateral and vertical, within the Class B airspace. The change in altitude was to keep traffic within Class B airspace until the redesigned airspace was implemented (effective August 2018). To conform to the redesigned Class B airspace, the crossing restriction at ARCHI would be lowered from AT 8,000 feet MSL to AT 7,000 feet MSL.

The existing Pacific 2 TA, a private arrival procedure, would be replaced by the new PIRAT RNAV STAR for use by oceanic airlines for arrival into KSFO. The oceanic arrivals converging into the congested domestic airspace need to be procedurally separated and sequenced into the arrival flow at the destination airport to ensure aircraft operations remain safe and efficient without increasing pilot and controller workload. The PIRAT RNAV STAR would be an Optimized Profile Descent (OPD) STAR, requiring aircraft to cross ARGGG, which is near the WOODSIDE VOR (OSI), AT 8,000 feet MSL or approximately 5,820 feet AGL.

B. What operational/ benefits will result if this project is implemented?

The Pacific 2 Tailored Arrival is currently in use as a test procedure with selected carriers. The procedure is beneficial for users but cumbersome for ATC to issue in its current form. ATC requested an RNAV STAR that converts the Pacific 2 Tailored Arrival to a public RNAV STAR that expands the benefits of the Tailored to all users of KSFO. The new STAR would enhance flows and accessibility to KSFO and KOAK for all arrivals from the Pacific. RNAV STAR usage is very high for KSFO; currently there is no RNAV STAR that provides access to KSFO from oceanic routes.

1. If a delay reduction is anticipated, can the reduction be quantified?
   ☐Yes ☐No ☒ N/A

2. Can reduced fuel costs/natural energy consumption be quantified?
   ☐ Yes ☐ No ☒N/A

   If not quantifiable, describe the approximate anticipated benefits in lay terms.

C. Is the proposed project the result of a user or community request or regulatory mandate?
   ☒Community Request ☐Regulatory Mandate

   If not, what necessitates this action?

Describe the Affected Environment

A. Provide a description of the existing land use in the vicinity of the proposed project.

As described in the Part 150 Study[17] update for KSFO, the airport is located in eastern San Mateo County, California and is owned by the City and County of San Francisco (CCSF) and operated by and through the San Francisco Airport Commission (Airport Commission). KSFO is located approximately 13 miles south of downtown San Francisco. The active operations area at KSFO is bordered by the San Francisco Bay to the east and U.S. Highway 101 (U.S. 101) to the west and south. The Airport is surrounded by the cities of Millbrae and Burlingame (to the south), San Bruno (to the west), and South San Francisco (to the north).

Generalized planned land uses within the immediate vicinity of KSFO consist primarily of commercial and industrial uses including transportation and utility infrastructure. Single- and multi-family residential uses are the predominant planned land uses in areas west of U.S. 101. San Mateo County and its incorporated jurisdictions also provide for a substantial amount of open space, park, and recreation areas; the most prominent of which includes the Golden Gate National Recreation Area in western San Mateo County, the San Bruno Mountains, and miles of shoreline along both the San Francisco Bay and the Pacific Ocean. With the Bay Area's strong emphasis on technology, large portions of San Mateo County and its cities are also designated for professional office, research and development, and light industrial uses.

DYAMD STAR

The DYAMD STAR provides the en route transition from flights approaching from the east to the arrival procedures to KSFO. The two transitions, INYOE and RUSME, connect to DYAMD and then to the fix ARCHI. ARCHI then connects the DYAMND STAR to the IAPs to KSFO. The INYOU transition overflies the Granite Mountain and Ansel Adams Wilderness Areas; the RUSME transition overflies the White Mountain Wilderness Area (Figure 7). Both transitions overfly the Yosemite National Park (Figure 7). These areas are overflown at altitudes of approximately 12,697 feet AGL and higher. Additionally, the DYAMD STAR directs aircraft to overfly Important Bird Areas (IBAs) as designated by the Audubon Society (Figure 8 and 9). IBAs are locations that have been identified as critical areas for sustaining bird life. Critical Habitat for the California Red-legged Frog is overflown in the area between CEDES and FRELY (Figure 14). The only amendment to the DYAMD STAR and associated IAPs and CVFP is lowering of the

[17] ESA and BridgeNet. San Francisco International Airport. 14 CFR Part 150 Study Update Noise Exposure Map Report. Final. August 2015.

altitude at ARCHI from 8,000 feet MSL/5,886 feet AGL to 7,000 feet MSL/4,886 feet AGL. The proposed amendment would not change flight tracks.

STANDARD INSTRUMENT DEPARTURE PROCEDURES

The SSTIK, WESLA and CNDEL RNAV SIDs all cross the San Francisco area, with land use transitioning from industrial to residential along the flight path to the southwest. The flight path continues over the San Francisco State Fish and Game Refuge (Figure 10), the Golden Gate National Recreation Area (Figure 11), the city of El Granada, and then over the Pacific Ocean to the PORTE fix. From the PORTE fix, the flight path heads southwest at which point it splits into three transitions, NTELL, LOSHN, and EBAYE, overflying the Santa Cruz Mountains. The land use along the ground track of the three transitions is sparsely populated mountainous terrain, areas of agricultural activities and pockets of residential use. The forth transition, YYUNG, connects from PORTE to FFOIL, continuing southeast over the Pacific Ocean to YYUNG. These transitions serve aircraft en route to destinations to the south, southwest, and southeast. The EBAYE transition overflies the Pinnacles National Monument and the Hain Wilderness Area at an altitude approximately 7,371 feet AGL (Figure 12). The three SIDs also overfly IBAs as shown in Figure 13. The segments between WESLA/SSTIK/CNDEL and PORTE overfly Critical Habitat for the California Red-legged Frog (Figure 14)

Only the YYUNG transition on the three SIDs would be amended and is discussed later in this document. Flight paths would not change for the NTELL, LOSHN, and EBAYE transitions.

Figure 7. DYAMD STAR. INYOE and RUSME Transitions

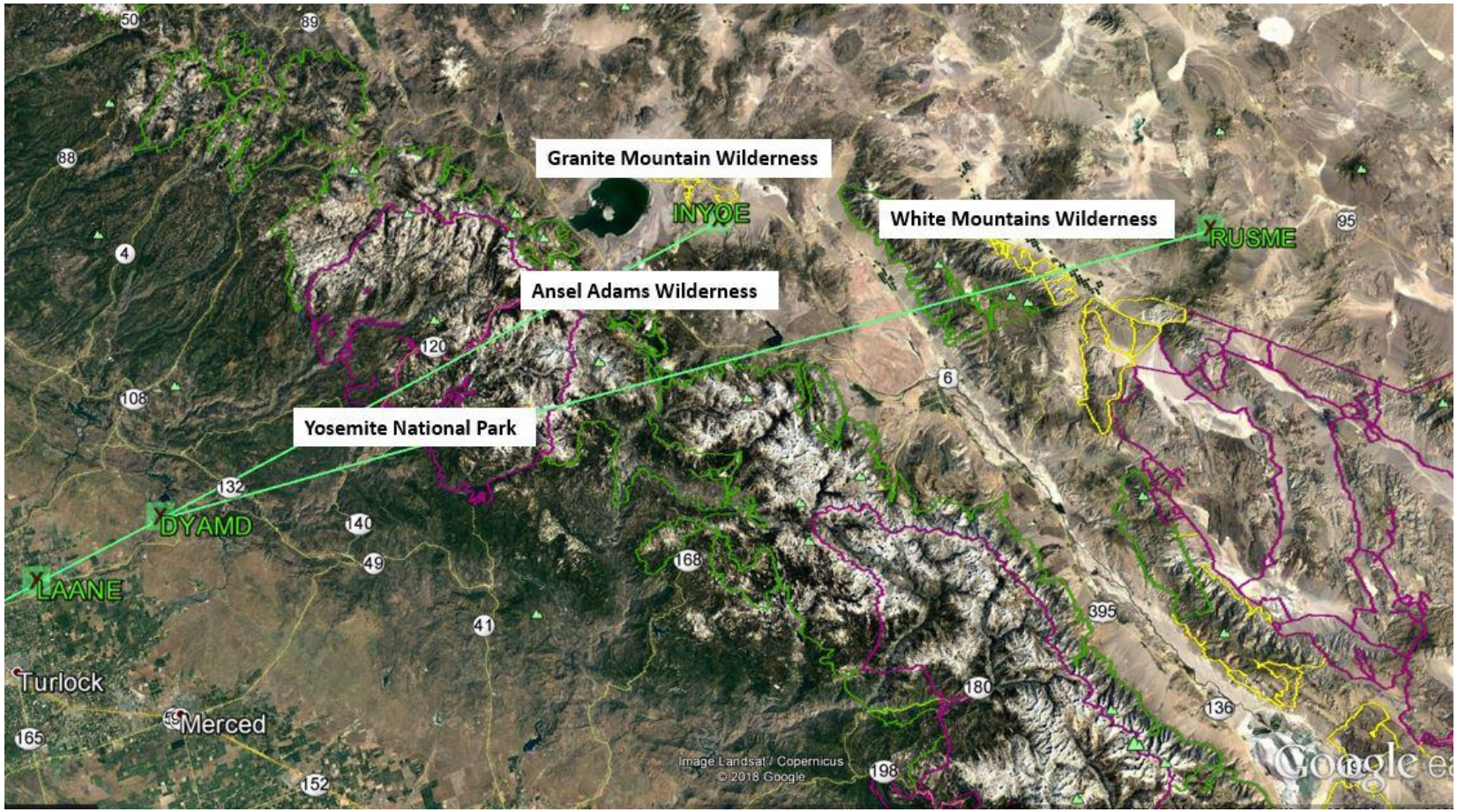


Figure 8. DYAMD STAR. Important Bird Areas

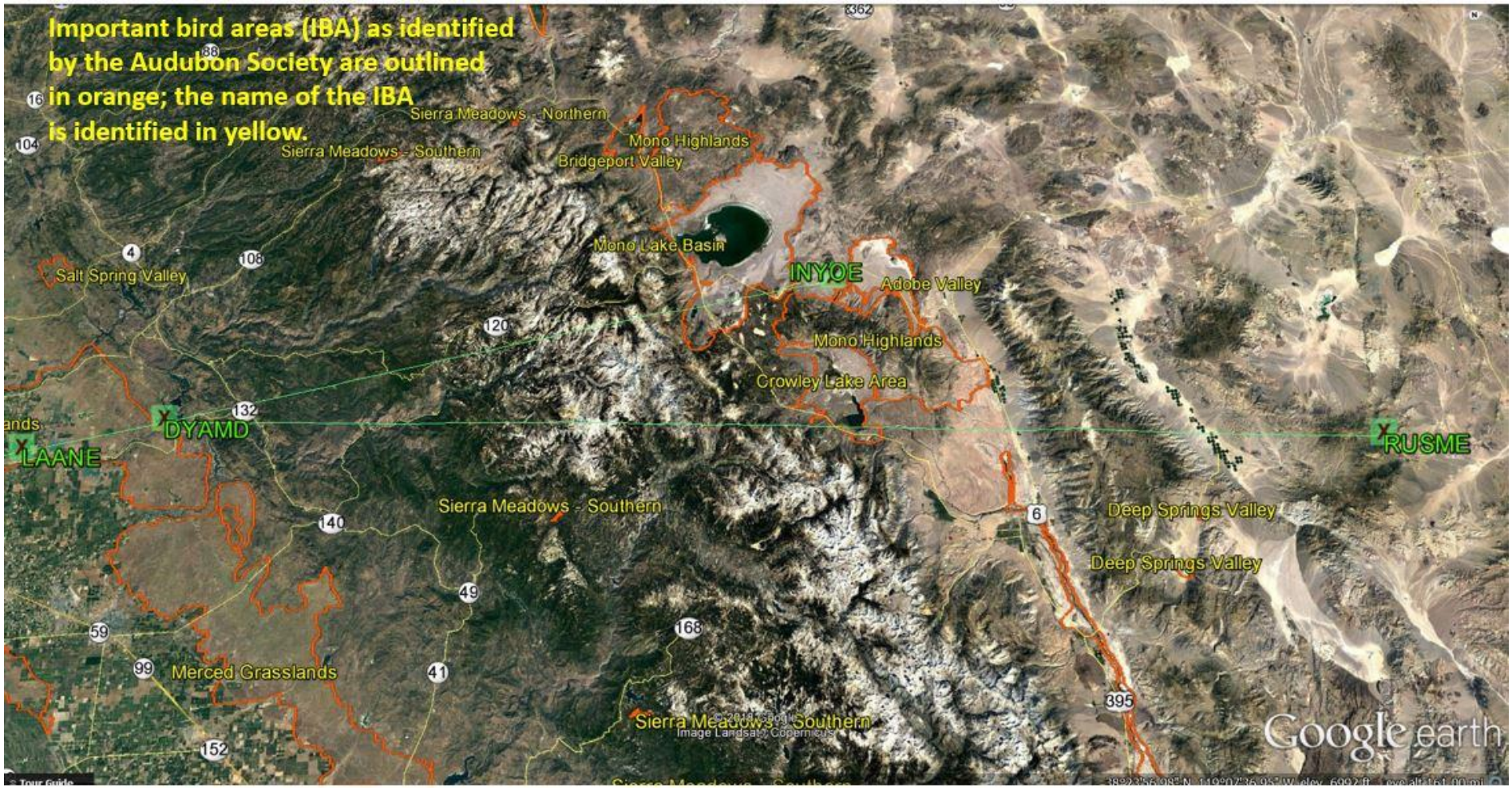


Figure 9. DYAMD STAR. Important Bird Areas

Figure 10. WESLA, SSTIK, and CNDEL. San Francisco State Fish and Game Refuge

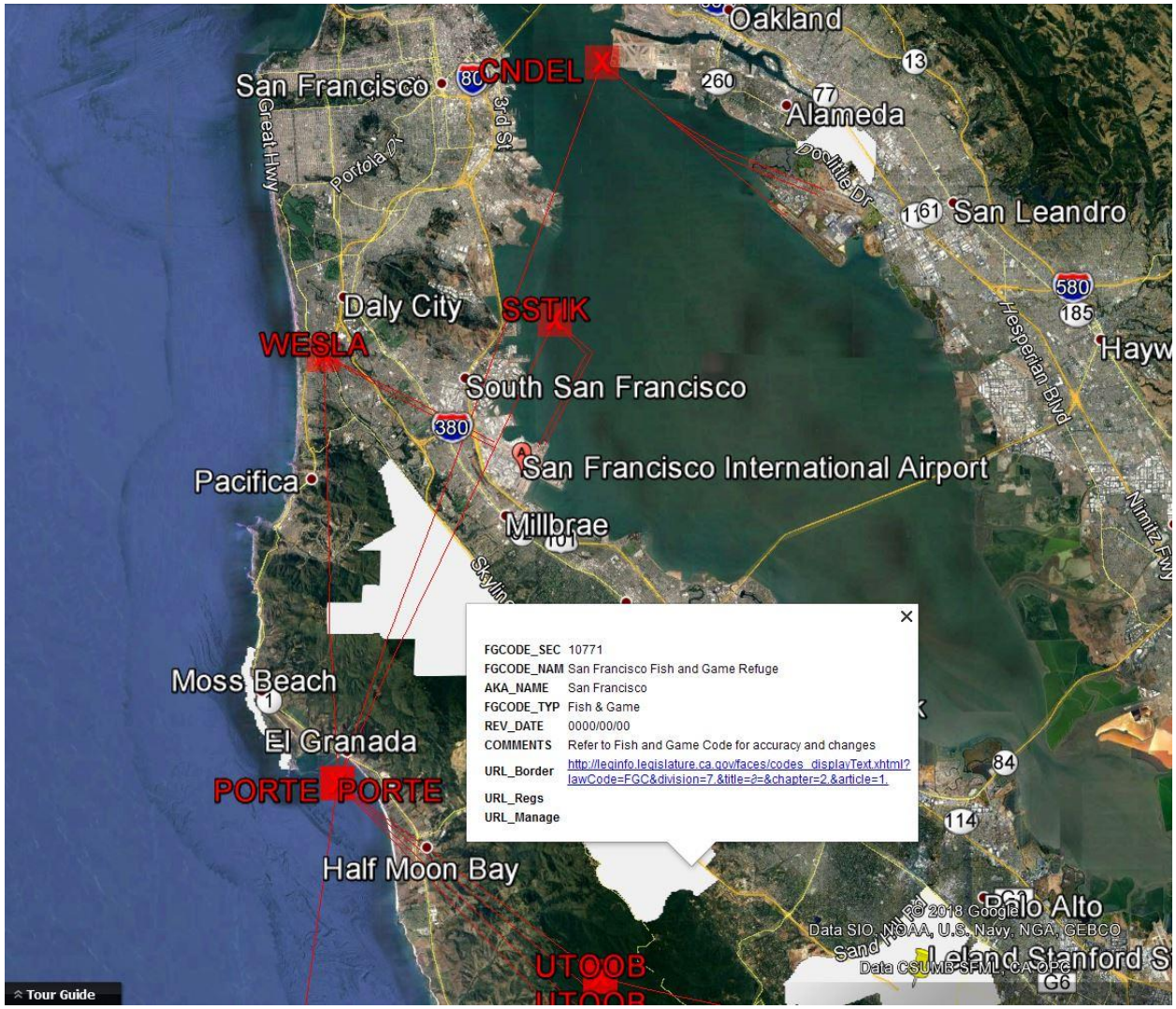


Figure 11. WESLA, SSTIK, and CNDEL. Golden Gate National Recreation Area

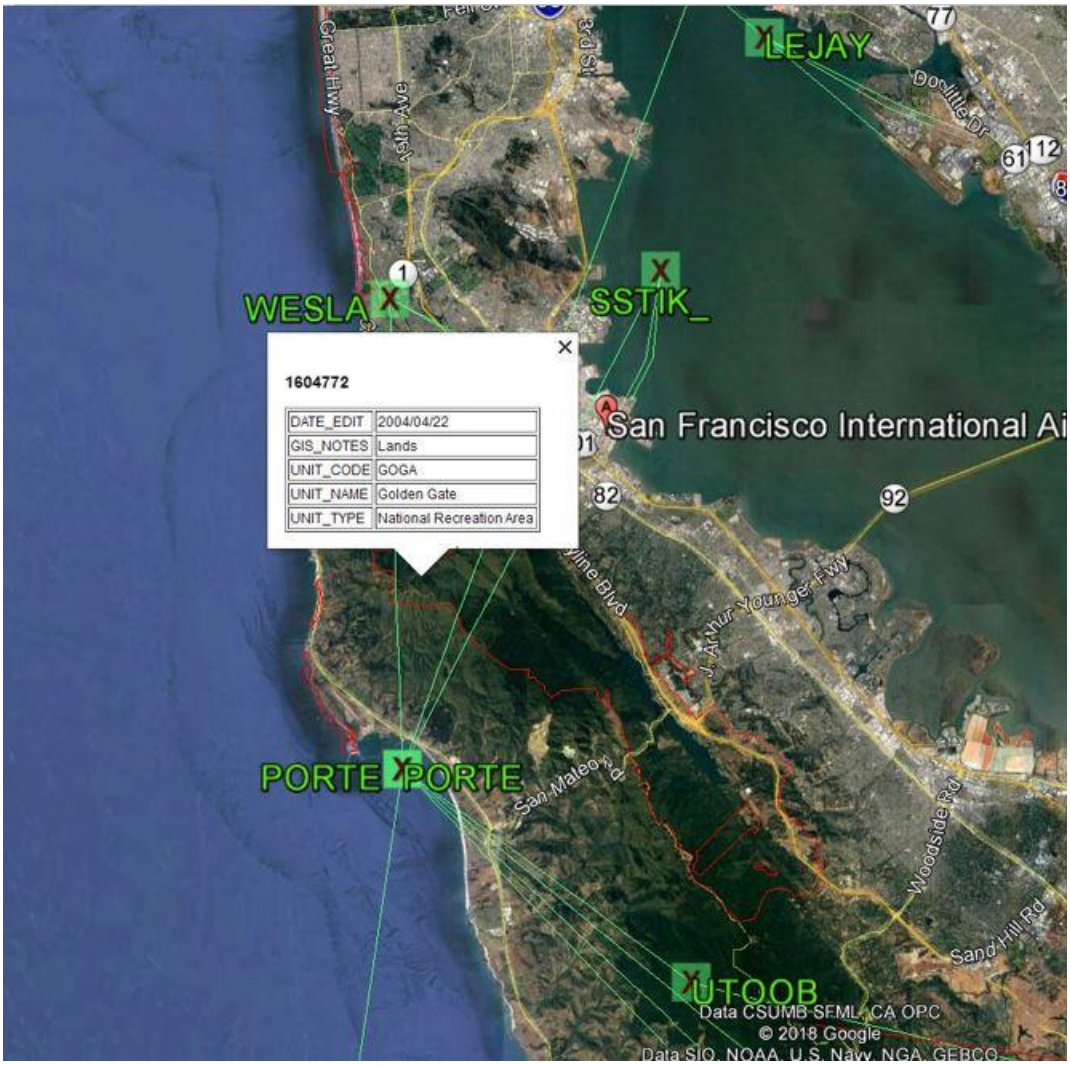


Figure 12. EBAYE Transition. Pinnacles National Monument and Hain Wilderness

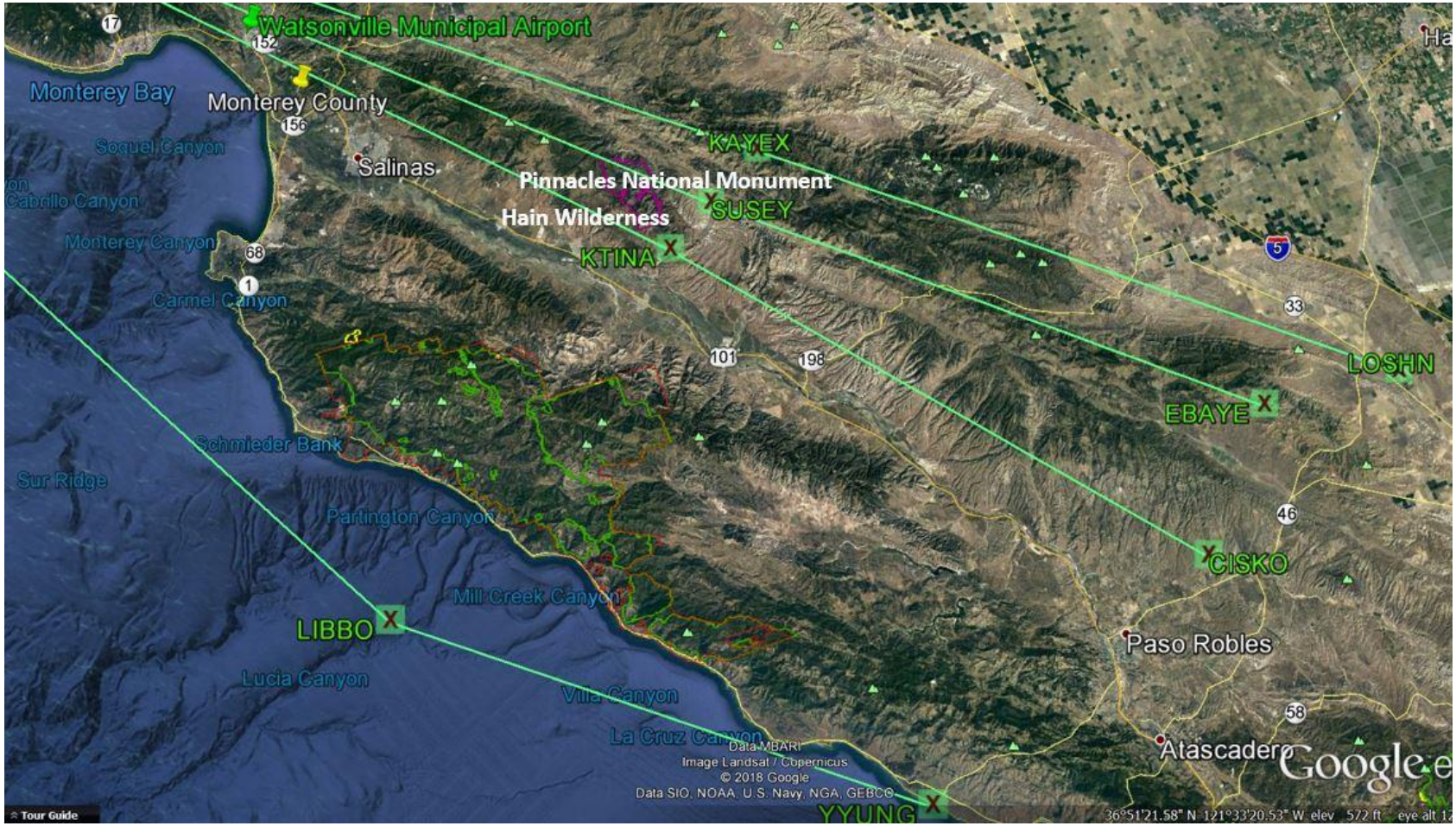
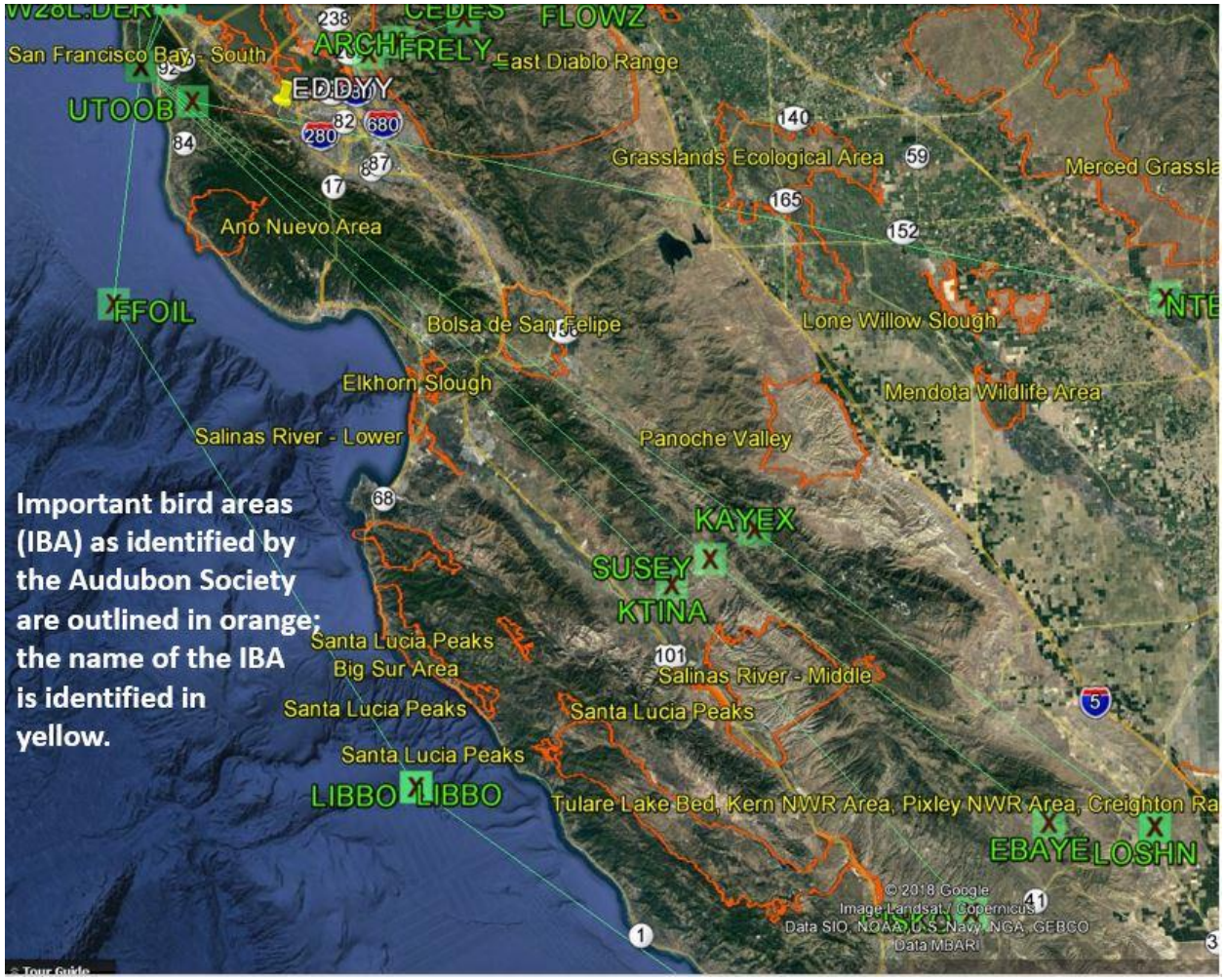


Figure 13. WESLA, SSTIK, and CNDEL. Important Bird Areas.



B. Will the proposed project introduce air traffic over noise sensitive areas not now affected?

☐Yes ☒No

Note: An area is noise sensitive if aircraft noise may interfere with the normal activities associated with the use of the land. Normally, noise sensitive areas include residential, educational, health, and religious structures and sites, and parks, recreational areas, areas with wilderness characteristics, wildlife refuges, and cultural and historical sites. See FAA Order 1050.1 [Paragraph 11-5.b.(1)] for full definition of noise sensitive areas.

The amendments to the DYAMD STAR and associated IAPs would not change flight paths. Aircraft would not overfly any new areas.

With the exception of the YYUNG transition on the WESLA, SSTIK, and CNDEL SIDs, flight paths would not change for the NTELL, LOSHN, EBAYE, and CISKO transitions on the three SIDs. The NTELL, LOSHN, EBAYE, and CISKO transitions would not be amended. The addition of the waypoint LIBBO would move the FFOIL-YYUNG segment to the west of its current ground track. The amended segment would move the track further west over water.

The proposed PIRAT STAR mimics the existing Pacific 2 TA.

B. Affected Environment and Consequences

The determination of whether a proposed action may have a significant environmental effect is made by considering any requirements applicable to the specific resource [see FAA Order 1050.1, paragraph 4-3. and Exhibit 4-1.]. Will implementation of the proposed project result in any extraordinary circumstances[18]? As stated in FAA Order 1050.1, paragraph 5-2.b., extraordinary circumstances exist when a proposed action involves any of the following circumstances AND has the potential for a significant effect [40 CFR 1508.4).

The use of a CATEX to satisfy NEPA is precluded if the proposed action involves any of the circumstances described in Order 1050.1F, Paragraph 5-2(b) and may have a significant impact. The determination of whether a proposed action may have a significant environmental impact under NEPA is made by considering the relevant environmental impact categories and comparing impacts to the FAA's thresholds of significance, where applicable, as well as any other relevant federal laws and statutes, Executive Orders, and regulations as outlined in with FAA Order 1050.1F.

There are 14 environmental impact categories identified by FAA Order 1050.1F. Only those areas where there may be significant environmental impacts caused by the proposed action, or where there are uncertainties which require evaluation are discussed in this document.

[18] Extraordinary circumstances are factors or circumstances in which a normally categorically excluded action may have a significant environmental impact that then requires further analysis in an EA or an EIS. For FAA proposed actions, extraordinary circumstances exist when the proposed action involves any of the circumstances described in Order 1050.1F, Paragraph 5-2(b). and may have a significant impact.

The Proposed Action does not involve land acquisition, physical disturbance, or construction activities.

B1. Wildlife and Waterfowl: Endangered/Threatened Species; Critical Habitat

Exhibit 4-1 of FAA Order 1050.1F provides the FAA's significance threshold for biological resources (including fish, wildlife, and plants). A significant impact to biological resources would occur when: *The U.S. Fish and Wildlife Service or the National Marine Fisheries Service determines that the action would be likely to jeopardize the continued existence of a Federally-listed threatened or endangered species, or would result in the destruction or adverse modification of federally-designated critical habitat.* The FAA has not established a significance threshold for non-listed species.

In addition to the threshold above, Exhibit 4-1 of FAA Order 1050.1F provides additional factors to consider in evaluating the context and intensity of potential environmental impacts for biological resources. Please note that these factors are not intended to be thresholds. If these factors exist, there is not necessarily a significant impact; rather, the FAA must evaluate these factors in light of context and intensity to determine if there are significant impacts. Factors to consider that may be applicable to biological resources include, but are not limited to, situations in which the proposed action or alternative(s) would have the potential for:

• A long-term or permanent loss of unlisted plant or wildlife species, i.e., extirpation of the species from a large project area (e.g., a new commercial service airport);

• Adverse impacts to special status species (e.g., state species of concern, species proposed for listing, migratory birds, bald and golden eagles) or their habitats;

• Substantial loss, reduction, degradation, disturbance, or fragmentation of native species' habitats or their populations; or

• Adverse impacts on a species' reproductive success rates, natural mortality rates, non-natural mortality (e.g., road kills and hunting), or ability to sustain the minimum population levels required for population maintenance.

Are wildlife and/or water fowl refuge/management areas within the affected area of the proposed project?

☒ Yes ☐No

The segment between BRINY and ARGGG on the proposed PIRAT STAR would overfly Critical Habitat for the California Red-legged Frog (*Rana draytonii*) which is Federally listed as Threatened (Figure 14). The YYUNG waypoint is located approximately 0.11 nautical miles west of the Critical Habitat for the California Red-legged Frog (Figure 15).

Critical Habitat for Steelhead Trout (*Oncorhynchus (=Salmo) mykiss*) which is Federally listed as Threatened is located throughout the region. Procedures, both existing and proposed, overfly Critical Habitat of the Steelhead Trout (Figure 16).

If so, has there been any communication with the appropriate wildlife management regulatory (federal or state) agencies to determine if endangered or protected species inhabit the area?
☐ Yes ☒ No

Information was obtained from readily available online sources such as the U.S. Fish and Wildlife Service (USFWS) website Critical Habitat Mapper (https://www.fws.gov/refuges/) and the California Department of Fish and Wildlife website (https://www.wildlife.ca.gov/).

An impact on natural, ecological or scenic resources of Federal, Tribal, State, or local significance (for example, Federally listed or proposed endangered, threatened, or candidate species or proposed or designated critical habitat under the Endangered Species Act) [see FAA Order 1050.1, paragraph 5-2.(3)].
☐Yes ☒ No ☐ Possibly

1. *At what altitude would aircraft overfly these habitats?*
   The proposed PIRAT STAR would overfly these habitats at altitudes ranging between approximately 7,896 to 6,782 feet AGL.

2. *During what times of the day would operations be more/less frequent?*
   Overflights may occur during both daytime and nighttime.

Figure 14. Critical Habitat for the California Red-legged Frog

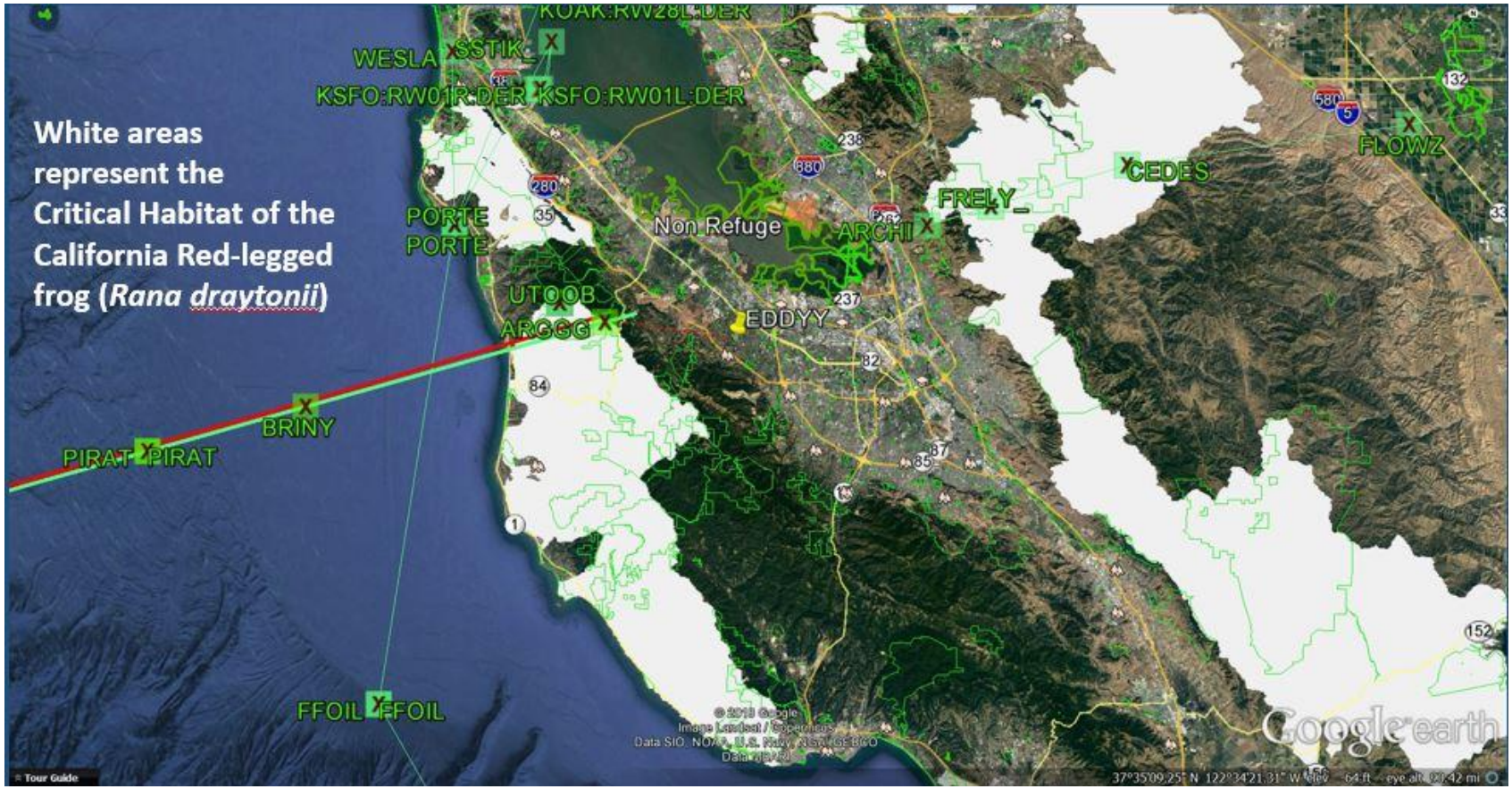


Figure 15. Critical Habitat for the California Red-legged Frog

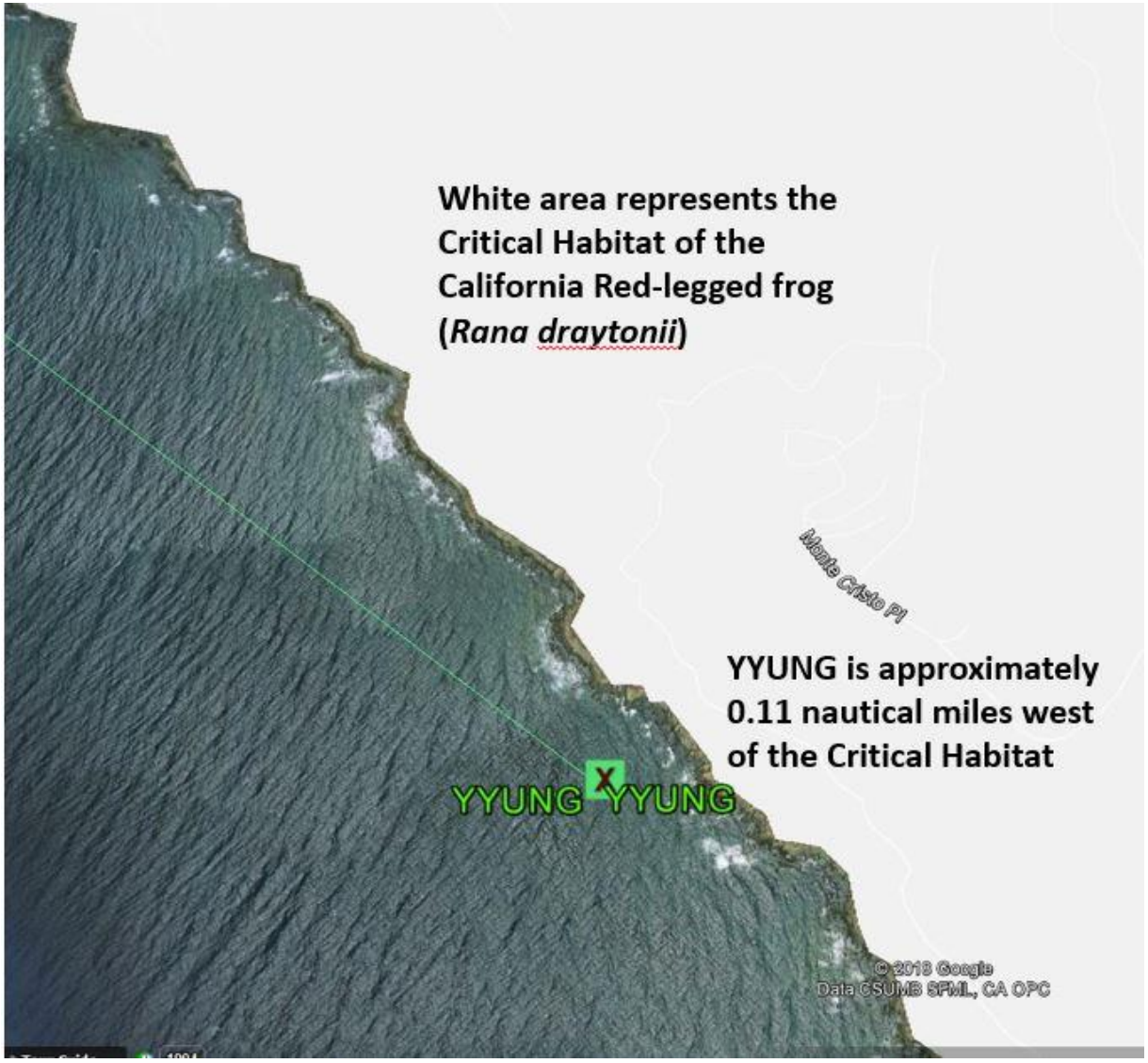
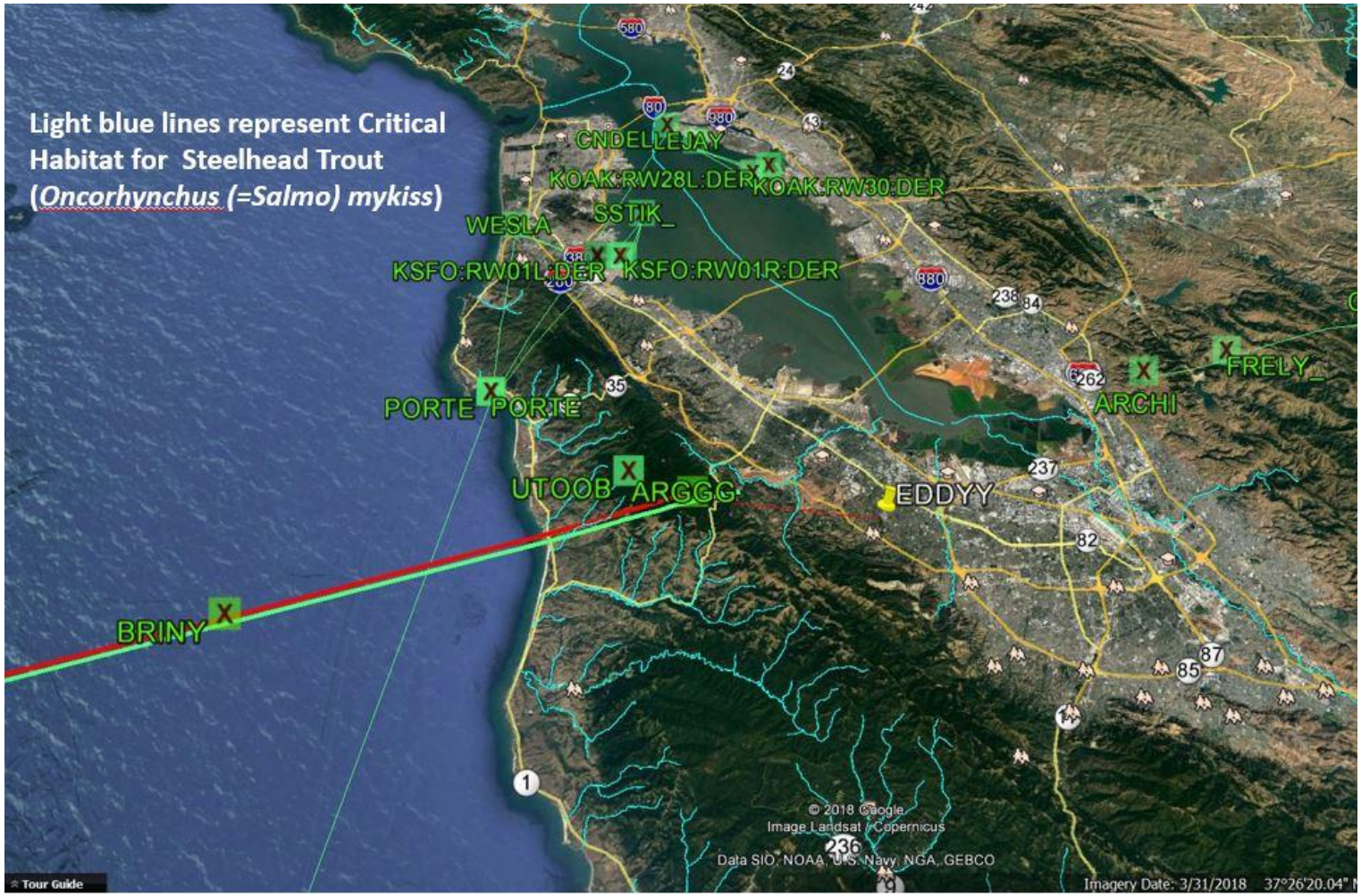


Figure 16. Critical Habitat for the Steelhead Trout



B2. An impact on the following resources: resources protected by the Fish and Wildlife Coordination Act; wetlands; floodplains; coastal zones; national marine sanctuaries; wilderness areas; National Resources Conservation designated prime and unique farmlands or, State, or locally important farmlands; energy supply and natural resources; resources protected under the Wild and Scenic Rivers Act, including study or eligible river segments; rivers or river segments listed on the Nationwide Rivers Inventory (NRI); and solid waste management [see FAA Order 1050.1, paragraph 5-2(4)].

This section addresses several environmental impact categories (EIC) as identified in FAA Order 1050.1F:

EIC 4: Coastal Resources

- coastal zones
- coastal wetlands
- floodplains
- fish and wildlife and their respective habitats within these areas

The Proposed Action does not involve land acquisition, physical disturbance, or construction activities.

The segment between LIBBO and YYUNG on the amended YYUNG transition for the WESLA, SSTIK, and CNDEL SIDs overflies the California Sea Otter Game Refuge (Figure 17). With the exception of the California Sea Otter Game Refuge, the remaining subcategories of this EIC were assessed and considered to not be present or to have negligible or non-existent effects from the Proposed Action, and in accordance with CEQ regulations, did not warrant further analysis.

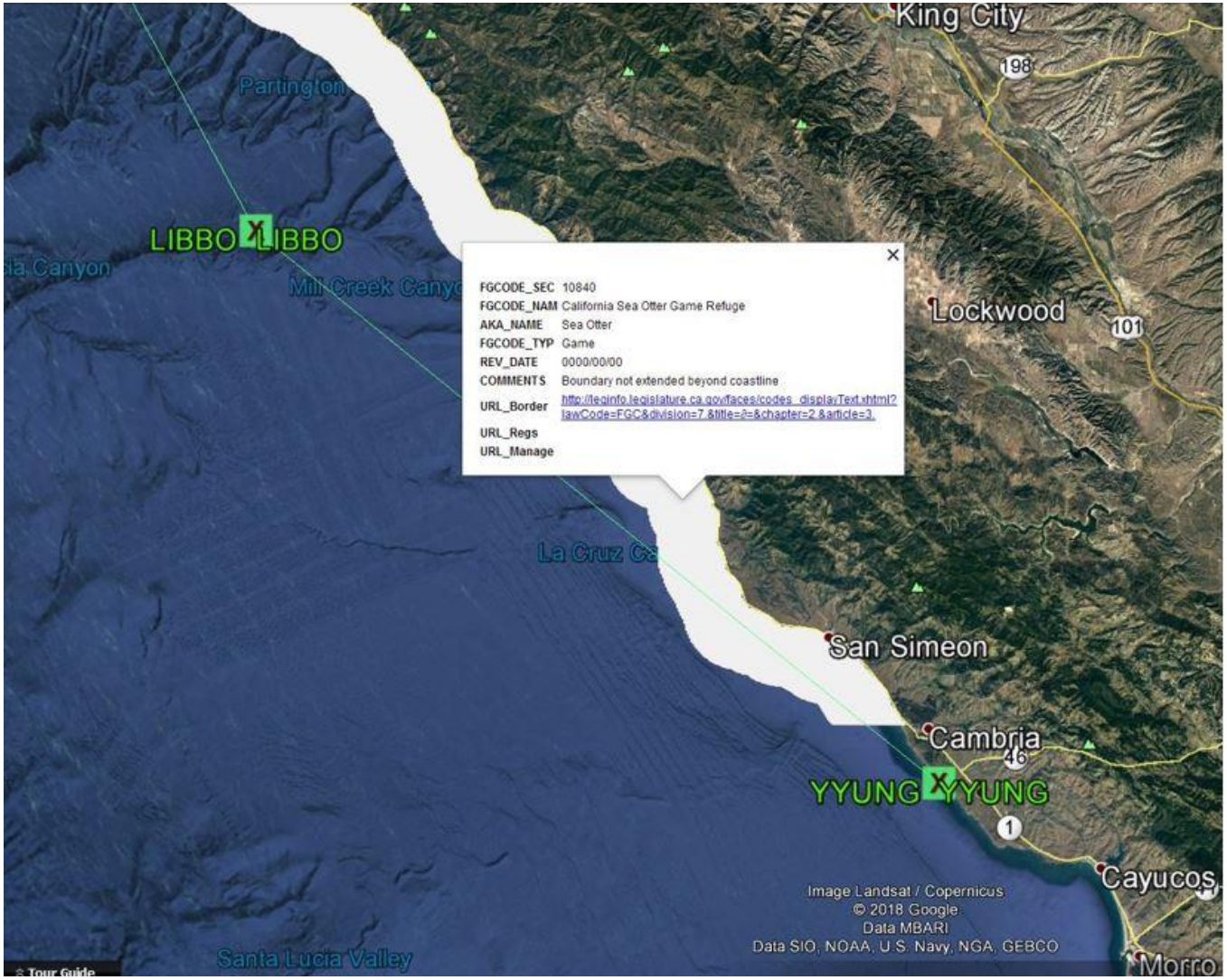
EIC 6: Farmlands

The Proposed Action does not involve land acquisition, physical disturbance, or construction activities. This EIC was assessed and was considered to not be present or to have negligible or non-existent effects from the Proposed Action, and in accordance with CEQ regulations, did not warrant further analysis.

EIC 7: Hazardous Materials, Solid Waste, and Pollution Prevention

The Proposed Action does not involve land acquisition, physical disturbance, or construction activities. This EIC was assessed and was considered to not be present or to have negligible or non-existent effects from the Proposed Action, and in accordance with CEQ regulations, did not warrant further analysis.

Figure 17. California Sea Otter Game Refuge



EIC 10: Natural Resources and Energy Supply
The Proposed Action does not involve land acquisition, physical disturbance, or construction activities. This EIC was assessed and was considered to not be present or to have negligible or non-existent effects from the Proposed Action, and in accordance with CEQ regulations, did not warrant further analysis.

EIC 11: Noise and Noise-Compatible Land Use

- wilderness areas

Noise and Noise-Compatible Land Use is covered later in this document.

EIC 14: Water Resources

- wetlands
- floodplains
- surface waters
- groundwater
- wild and scenic rivers

The Proposed Action does not involve land acquisition, physical disturbance, or construction activities. This EIC was assessed and was considered to not be present or to have negligible or non-existent effects from the Proposed Action, and in accordance with CEQ regulations, did not warrant further analysis.

B3. Section 4(f) Properties

Section 4(f) of the U.S. DOT Act of 1966 (now codified at 49 U.S.C. § 303) protects significant publicly owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites.

An impact on properties protected under Section 4(f) of the Department of Transportation Act is one of the factors FAA considers in determining whether there are extraordinary circumstances that would preclude use of a CATEX to satisfy NEPA requirements for a Proposed Action (EIC 5 in FAA Order 1050.1F). Section 4(f), as amended and re-codified at 49 U.S.C. § 303(c), states that, subject to exceptions for *de minimis* impacts[19]:

> … the Secretary [of Transportation] may approve a transportation program or project . . . requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance, or

[19] The term "highly controversial on environmental grounds" means there is a substantial dispute involving reasonable disagreement over the degree, extent, or nature of a Proposed Action's environmental impacts or over the action's risks of causing environmental harm. FAA Order 1050.1F. Section 5-2.b.(10).

> land of an historic site of national, State, or local significance,[20] (as determined by the officials having jurisdiction over the park, area, refuge, or site) only if . . . there is no feasible and prudent alternative to the use of such land…and the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.

As noted above, the Proposed Action does not involve land acquisition, physical disturbance, or construction activities.

Are there cultural or scenic resources, of national, state, or local significance, such as national parks, publicly owned parks, recreational areas, and public and private historic sites in the affected area?

☒Yes ☐No

The segment between LIBBO and YYUNG on the amended YYUNG transition (WESLA, SSTIK, and CNDEL SIDs) is approximately 0.56 nautical miles east of the Piedras Blancas Light Station which is listed on the National Register of Historic Places (NPS Reference Number: 91001095) (Figure 18).

If so, during what time(s) of the day would operations occur that may impact these areas?

Aircraft on the YYUNG transition would not be directed to overfly the Piedras Blancas Light Station.

Will the proposed project result in an adverse effect on cultural resources protected under the National Historic Preservation Act of 1996, as amended (see 1050.1, paragraph 5-2.b.1.)?

☐Yes ☒No

No historic properties would be affected as a result of implementing the proposed amendments and the proposed new procedure as the proposed amendments would not direct aircraft to overfly the listed historic property.

[20] There is no prescribed format; however, the documentation should cite the CATEX(s) used, describe how the Proposed Action fits within the category of actions described in the CATEX, and explain that there are no extraordinary circumstances that would preclude the Proposed Action form being categorically excluded." FAA Order 1050.1F. Section 5-3.d.

Figure 18. Piedras Blancas Light Station

An impact on properties protected under section 4(f) of the Department of Transportation Act [see FAA Order 1050.1, paragraph 5-2.b.(2)].

☐Yes ☒No ☐Possibly

Exhibit 4-1 of FAA Order 1050.1F provides the FAA's significance threshold for Section 4(f) properties. A significant impact would occur when: The action involves more than a minimal physical use of a Section 4(f) resource (see Section 5.3.1 above) or constitutes a "constructive use" based on an FAA determination that the aviation project would substantially impair the Section 4(f) resource (see Section 5.3.2 above).4 A significant impact under NEPA would not occur if mitigation measures eliminate or reduce the effects of the use below the threshold of significance. If a project would physically use Section 4(f) property, the FAA is responsible for complying with Section 4(f) even if the impacts are less than significant for NEPA purposes.

The proposed amendments to procedures would not direct aircraft to overfly areas not currently overflown. The Proposed Action would not require the use of, impact to, any publicly owned land such as a public park, recreation area, wildlife or waterfowl refuge, or any land of national, state, or local significance. The Proposed Action would have no effect on Department of Transportation Section 4(f) resources.

B4. Air Quality

Air Quality is addressed in FAA Order 1050.1F as EIC 1. This section considers the potential for the Proposed Action to have impacts on air quality that could preclude use of a CATEX. Any air quality impacts would be the result of increased emissions from aircraft using the amended procedures as compared to the No Action alternative; there are no other emissions sources associated with the Proposed Action. No additional operations will result from the Proposed Action.

In the United States (U.S.), air quality is generally monitored and managed at the county or regional level. The U.S. Environmental Protection Agency (EPA) pursuant to mandates of the federal Clean Air Act, (42 U.S.C. § 7401 et seq. (1970)), has established the National Ambient Air Quality Standards (NAAQS) to protect public health, the environment, and quality of life from the detrimental effects of air pollution. Standards have been established for the following criteria air pollutants: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM), and sulfur dioxide (SO_2). Particulate Matter standards have been established for inhalable coarse particles ranging in diameter from 2.5 to 10 micrometers (μm) (PM_{10}) and fine particles less than 2.5 μm ($PM_{2.5}$) in diameter. The current NAAQs are listed in Table 7.

If concentrations of or more criteria pollutants in a geographic area is found to exceed the regulated or "threshold" level for one or more of the NAAQs, the area may be classified as a *nonattainment* area. Areas with concentrations of criteria pollutants that are below the levels established by the NAAQs are considered either *attainment* or unclassified areas. The Clean Air Act requires states to develop a general plan to attain and maintain the standards in all areas of the country and a specific plan to attain the standards for each area designated nonattainment. These plans are known as State Implementation Plans (SIPs). A SIP is a collection of regulations and documents used by a state, territory, or local air district to reduce air pollution in areas that do not meet NAAQS.

For areas of nonattainment, an air quality design value is assigned to the criteria pollutants out of compliance. A design value is a statistic that describes the air quality status of a given location relative to the level of the NAAQs. Design values are typically used in SIPs to designate and classify nonattainment areas, such as severe, moderate, or marginal, as well as to assess progress towards meeting the NAAQS[21].

[21] https://www.epa.gov/air-trends/air-quality-design-values#definition

Table 7. National Ambient Air Quality Standards

Pollutant		Primary/ Secondary	Averaging Time	Level
Carbon Monoxide (CO)		primary	8 hours	9 ppm (1971 standard)
			1 hour	35 ppm (1971 standard)
Lead (Pb)		Primary and secondary	Rolling 3 month average	0.15µg/m^3 (2008 standard)
Nitrogen Dioxide (NO_2)		primary	1 hour	100 ppb (2010 standard)
		primary and secondary	1 year	53 ppb (1971 standard)
Ozone (O_3)		primary and secondary	8 hours	0.070 ppm (2015 standard)
Particle Pollution (PM)	$PM_{2.5}$	primary	1 year	12.0 µg/m^3 (2013 standard)
		secondary	1 year	15.0 µg/m^3 (2013 standard)
		primary and secondary	24 hours	35 µg/m^3 (2013 standard)
	PM_{10}	primary and secondary	24 hours	150 µg/m^3 (2012 standard)
Sulfur Dioxide (SO_2)		primary	1 hour	75 ppb (2010 standard)
		secondary	3 hours	0.5 ppm (1991 standard)

Levels reflect the most recent NAAQ standard for the particular criteria pollutant.

Units of measure for the standards are parts per million (ppm) by volume, parts per billion (ppb) by volume, and micrograms per cubic meter of air (µg/m^3).[22]

[22] https://www.epa.gov/criteria-air-pollutants/naaqs-table

The YYUNG transition on the WESLA, CNDEL, and SSTIK SIDs overflies the San Luis Obispo County Air Pollution Control District. The ARCHI waypoint and the PIRAT STAR overfly the Bay Area Air Quality Management District.

The current attainment/nonattainment status of California in the counties identified above with respect to the NAAQs is found on EPA's website[23] (current as of May 13, 2018). The areas are currently in attainment with all NAAQS.

Under section 176(c)(4)) of the Clean Air Act (42 U.S.C. 7506(c)) and EPA regulations at 40 CFR Parts 51 and 93 (commonly referred to as the General Conformity Rule), the FAA must ensure that its activities do not cause or contribute to new violations of the NAAQS; worsen existing violations of the NAAQS or delay attainment of the NAAQS. When developing the General Conformity Rule, the EPA recognized that many actions conducted by Federal agencies do not result in substantial increases in air pollutant emissions in nonattainment and maintenance areas.

The General Conformity Rule also allows Federal agencies to develop a list of actions that are presumed to conform to a SIP. [24] This can be done by clearly demonstrating that the total of direct and indirect emissions from these types of activities would not cause or contribute to any new violation of any standard in any area; interfere with provisions in the applicable SIP for maintenance of any standard; increase the frequency or severity of any existing violation of any standard in any area; or delay timely attainment of any standard or any required interim emission reductions or other milestones in any area

An impact on air quality or a violation of local, State, Tribal, or Federal air quality standards under the Clean Air Act amendments of 1990 [see FAA Order 1050.1, paragraph 5-2.(8)].

☐Yes ☒No ☐Possibly

According to FAA Order 10501F, Exhibit 4-1, an emissions impact is significant if "[t]he action would cause pollutant concentrations to exceed one or more of the NAAQS, as established by the EPA under the Clean Air Act, for any of the time periods analyzed, or to increase the frequency or severity of any such existing violations."

The FAA's Presumed to Conform list includes "Air Traffic Control Activities and Adopting Approach, Departure and Enroute Procedures for Air Operations." Air traffic control activities are defined for this purpose as "actions that promote the safe, orderly, and expeditious flow of aircraft traffic, including airport, approach, departure, and en route air

[23] https://www3.epa.gov/airquality/urbanair/sipstatus/reports/ca_areabypoll.html
[24] 40 CFR 93.153(g)(h))

traffic control. Airspace and air traffic actions (e.g., changes in routes, flight patterns, and arrival and departure procedures) are implemented to enhance safety and increase the efficient use of airspace by reducing congestion, balancing controller workload, and improving coordination between controllers handling existing air traffic, among other things." FAA determined that project related aircraft emissions released into the atmosphere below the inversion base for pollutant containment, commonly referred to as the ''mixing height,'' (generally 3,000 feet above ground level) can be presumed to conform when modifications to routes and procedures are designed to enhance operational efficiency (i.e., to reduce delay), increase fuel efficiency, or reduce community noise impacts by means of engine thrust reductions.[25] This Presumed to Conform covers the Proposed Action.

B5. Water Resources

FAA Order 1050.1F addresses water resources under EIC 14.

Are there reservoirs or other public water supply systems in the affected area?

☒Yes ☐No

Approximately 85% of San Francisco's total water needs are provided by the Hetch Hetchy watershed, an area located in the Yosemite National Park west of San Francisco.

An impact on water quality, sole source aquifers, a public water supply system, or State or Tribal water quality standards established under the Clean Water Act and the Safe Drinking Water Act [see FAA Order 1050.1, paragraph 5-2.(9)].

☐Yes ☒No ☐Possibly

Exhibit 4-1 of FAA Order 1050.1F provides the FAA's significance threshold for surface waters. A significant impact exists if:
The action would:
1. Exceed water quality standards established by Federal, state, local, and tribal regulatory agencies; or
2. Contaminate public drinking water supply such that public health may be adversely affected.

Exhibit 4-1 of FAA Order 1050.1F provides the FAA's significance threshold for groundwater. A significant impact exists if:
The action would:
1. Exceed groundwater quality standards established by Federal, state, local, and tribal regulatory agencies; or
2. Contaminate an aquifer used for public water supply such that public health may be adversely affected.

[25] 72 Fed. Reg. 41578.

The Proposed Action does not involve land acquisition, physical disturbance, or construction activities. This EIC was assessed and was considered to not be present or to have negligible or non-existent effects from the Proposed Action, and in accordance with CEQ regulations, did not warrant further analysis.

B6. Community and Community Development

Community and community developed is addressed under EIC 12 in FAA Order 1050.1F: Socioeconomics, Environmental Justice, and Children's Environmental Health and Safety Risks; specifically under the "Socioeconomics" subsection.

Socioeconomics is an umbrella term used to describe aspects of a project that are either social or economic in nature. A socioeconomic analysis evaluates how elements of the human environment such as population, employment, housing, and public services might be affected by the proposed action and alternative(s).

In general, the significance of socioeconomic impacts is determined by the magnitude and duration of the impacts, whether beneficial or adverse. The FAA has not established a significance threshold for socioeconomics in FAA Order 1050.1F.

A division or disruption of an established community; a disruption of orderly, planned development; or an inconsistency with plans or goals that have been adopted by the community in which the project is located [see FAA Order 1050.1, paragraph 5-2.(5)].

☐Yes ☒No ☐Possibly

An increase in congestion from surface transportation, by causing a decrease in the Level of Service below the acceptable level determined by the appropriate transportation agency (i.e., a highway agency) [see FAA Order 1050.1, paragraph 5-2.(6)].

☐Yes ☒No ☐Possibly

Likelihood of an inconsistency with any Federal, State, Tribal, or local law relating to the environmental aspects of the proposed action [see FAA Order 1050.1, paragraph 5-2.(11)].

☐Yes ☒No ☐Possibly

Likelihood of directly, indirectly, or cumulatively, creating a significant impact on the human environment, including, but not limited to, actions likely to cause a significant lighting impact on residential areas or commercial use of business properties, likely to cause a significant impact on the visual nature of surrounding land uses, likely to cause environmental contamination by hazardous materials, or likely to disturb an existing hazardous material contamination site such that new environmental contamination risks are created [see FAA Order 1050.1, paragraph 5-2.(12)].

☐Yes ☒No ☐Possibly

Effects on the quality of the human environment that are likely to be highly controversial on environmental grounds. The term "highly controversial on environmental grounds" means there is a substantial dispute involving reasonable disagreement over the degree, extent, or nature of a proposed action's environmental impacts or over the action's risks of causing environmental harm. Mere opposition is not sufficient for a proposed action or its impacts to be considered highly controversial on environmental grounds. Opposition on environmental grounds by a Federal, state, or local government agency or by a tribe or a substantial number of the persons affected by the action should be considered in determining whether or not reasonable disagreement regarding the impacts of a proposed action exists. If in doubt about whether a proposed action is highly controversial on environmental grounds, consult the LOB/SO's headquarters environmental division, AEE, Regional Counsel, or AGC for assistance [see FAA Order 1050.1, paragraph 5-2.(10)].

☐Yes ☐No ☒Possibly

The FAA is aware of local community concerns associated with the implementation of the 2014 Northern California Optimization of Airspace and procedures in a Metroplex (OAPM) project.

Community Involvement

Formal community involvement or public meetings/hearings may be required for the proposed project. Make a determination if the proposed project has the potential to become highly controversial. The effects of an action are considered highly controversial when reasonable disagreement exists over the project's risks of causing environmental harm. Opposition on environmental grounds by a Federal, State or local government agency or by a Tribe, or by a substantial number of the persons affected by the action should be considered in determining whether reasonable disagreement regarding the effects of a proposed action exists [see FAA Order 1050.1, paragraph 5-2.b.(10)].

A. Have persons/officials who might have some need to know about the proposed project due to their location or by their function in the community been notified, consulted, or otherwise informed of this project?

XYes ☐ No UNKNOWN

During the spring of 2016 and to facilitate community involvement within their respective districts, the Congressional delegation designated a total of 12 representatives—locally-elected officials from Santa Cruz, Santa Clara, San Mateo and San Francisco Counties – to serve on the Select Committee. The Select Committee's role was to review the FAA's Phase One Report, gather public input within their represented areas about measures to address noise concerns, and make

recommendations that reflect public input. The Select Committee diligently worked to identify which of the initially feasible recommendations, including amendments and/or new procedures, could be included within the second phase of the Initiative. The San Francisco Airport Community Roundtable provided guidance and assistance to the Select Committee's efforts as well.

The Select Committee held a total of 10 public meetings, and the SFO Roundtable concurrently discussed the Initiative during its own regularly scheduled meetings. In November 2016, the Congressional delegation provided the FAA with 104 recommendations from these two bodies.

In July 2017 the FAA issued an interim report on its efforts to evaluate 104 recommendations from these two bodies. At that time, the agency was still considering how to address more than 50 percent of them. The agency has now determined how it would proceed on the full set of recommendations. The November 2017 update[26] details a total of 203 items, which consists of the original 104 recommendations and each of their sub-recommendations. Of these, 101 have already been addressed, 25 would be addressed in the future, and 77 were not endorsed.

The proposed changes do not capture any of the Select Committee / SF Roundtable recommendations, rather they are a result of design work to address safety and operation concerns.

1. Are local citizens and community leaders aware of the proposed project?
   X Yes ☐ No

Please see discussion above.

2. Are any ☐opposed to or ☐ supporting it? ☒UNKNOWN

Please see discussion above.

If so, identify the parties and indicate the level of opposition and/or support.

a. If they are opposed, what is the basis of their opposition?

b. Has the FAA received one or more comments objecting to the proposed project on environmental grounds from local citizens or elected officials?
   ☐Yes ☒No

   If so, state the nature of the comment and how the FAA was notified (e.g. resolution, Congressional, Public meeting/workshop, etc.).

3. Are the airport proprietor and users providing general support for the proposed project?

[26] FAA Initiative to Address Noise Concerns of Santa Cruz/Santa Clara/San Mateo/San Francisco Counties. Update on Phase Two. Compiled at the Requests of Representatives Farr (Panetta), Eshoo and Speier. November 2017.

☒Yes ☐No

4. Is the proposed project consistent with local plans and development efforts?
   ☐Yes ☐No

5. Has there been any previous aircraft-related environmental or noise analysis, including a FAR Part 150 Study, conducted at this location?
   ☒ Yes ☐No

   If so, was the study reviewed as a part of this initial review?
   ☒Yes ☐No ☐N/A

   The Part 150 study has been reviewed and referenced earlier in this document.

Alternatives

A. Are there alternatives to the proposed project? ☒ Yes ☐No
   If yes, describe any alternatives to the proposed action.

   The only alternative is the No Action alternative; procedures would not be amended and the proposed PIRAT STAR would not be implemented.

B. Please provide a summary description of alternatives eliminated and why.

The No-Action alternative was eliminated because amendments to the DYAMD STAR and connecting IAPs and CVFP are necessary to conform to the Class B airspace redesign. The No Action alternative does not meet the purpose and need of the proposed action.

Mitigation

Are there measures, which can be implemented that might mitigate any of the potential impacts, i.e., Global Positioning System (GPS)/Flight Management System (FMS) plans, Navigation Aids (NAVAID), etc.? ☐Yes ☐ No ☒ N/A

Cumulative Impacts

What other projects (FAA, non-FAA, or non-aviation) are known to be planned, have been previously implemented, or are ongoing in the affected area that would contribute to the proposed project's environmental impact?

The FAA Northern California Optimization of Airspace and Procedures in a Metroplex (NorCal OAPM) project was implemented in 2014. The NorCal OAPM project serves the existing air traffic within the northern California metropolitan area, which includes

KSFO. Arrival and departure procedures were redesigned in order to increase efficiency and safety in the National Airspace System. Given that the proposed amended procedures do not add to the number of aircraft operations at KSFO, no cumulative impact is expected to occur as a result of the implementation of the Proposed Action.

Facility/Service Area Conclusions

☒ This initial review and analysis indicates that no extraordinary circumstances or other reasons exist that would cause the responsible federal official to believe that the proposed project might have the potential for causing significant environmental impacts. The undersigned have determined that the proposed project qualifies as a categorically excluded action in accordance with Order 1050.1, and on this basis, recommend that further environmental review need not be conducted before the proposed project is implemented.

Appendix 5. Air Traffic Initial Environmental Review

Facility Manager Review/Concurrence

Signature: _____ Date: 7/10/18

Name: John F. Nelson
Air Traffic Manager
Northern California Terminal Radar Approach Control (NCT)

Service Area Environmental Specialist Review/Concurrence

Signature: _____ Date: _____

Name: Marina Landis
Environmental Protection Specialist, Operations Support Group,
Western Service Center, AJV-W25

Service Area Director Review/Concurrence, if necessary

Signature: _____ Date: _____

Name: Kim A. Stover
Director, Air Traffic Operations
Western Service Area, AJTW

Attachment 2

From:	Pitts, Jason (FAA)
To:	Kelley, Kevin C (FAA); Gonzalez, George (FAA); Wolfe, Derek (FAA); Peterson, John CTR (FAA)
Cc:	Calabrese, Stefanie CTR (FAA); wpbn@natca.net; Cureton, Lisa (FAA)
Subject:	RE: PIRAT STAR_SFO
Date:	Wednesday, May 17, 2017 8:08:15 AM
Attachments:	image001.png image002.png image003.png image004.png image005.png image006.jpg

Copy Sir.

Tom,

Please put a copy of this email in the project folder. Josh and I will bring up the issue for discussion with the work group regarding continued use of the Pacific 2.

Thanks

Jason

Jason Pitts
Performance Based Navigation (PBN) Co-Lead
Western Service Center
Operations Support Group
(425) 917-6736 (Office)
(425) 306-5848 (Mobile)

From: Kelley, Kevin C (FAA)
Sent: Wednesday, May 17, 2017 8:03 AM
To: Pitts, Jason (FAA); Gonzalez, George (FAA); Wolfe, Derek (FAA)
Cc: Calabrese, Stefanie CTR (FAA); wpbn@natca.net; Cureton, Lisa (FAA)
Subject: RE: PIRAT STAR_SFO

Hello Jason,

Thank you very much for the thorough background, which I read from top to bottom. It is helpful for us keep tabs on this, as our C063 OpSpec authorizes Tailored Arrivals, and when the subject STAR gets published, I expect use of the Pacific 2 Tailored Arrival at SFO will decline, possibly to the point where we would cancel the authorizations.

Thanks again!

Best regards,
Kevin

KEVIN C. KELLEY, JR.
AFS-470, Performance Based Flight Systems
FAA Flight Standards
202-267-8854
kevin.c.kelley@faa.gov

From: Pitts, Jason (FAA)
Sent: Wednesday, May 17, 2017 9:43 AM
To: Kelley, Kevin C (FAA); Gonzalez, George (FAA); Wolfe, Derek (FAA)
Cc: Calabrese, Stefanie CTR (FAA); wpbn@natca.net; Cureton, Lisa (FAA)
Subject: RE: PIRAT STAR_SFO

Hi Kevin,

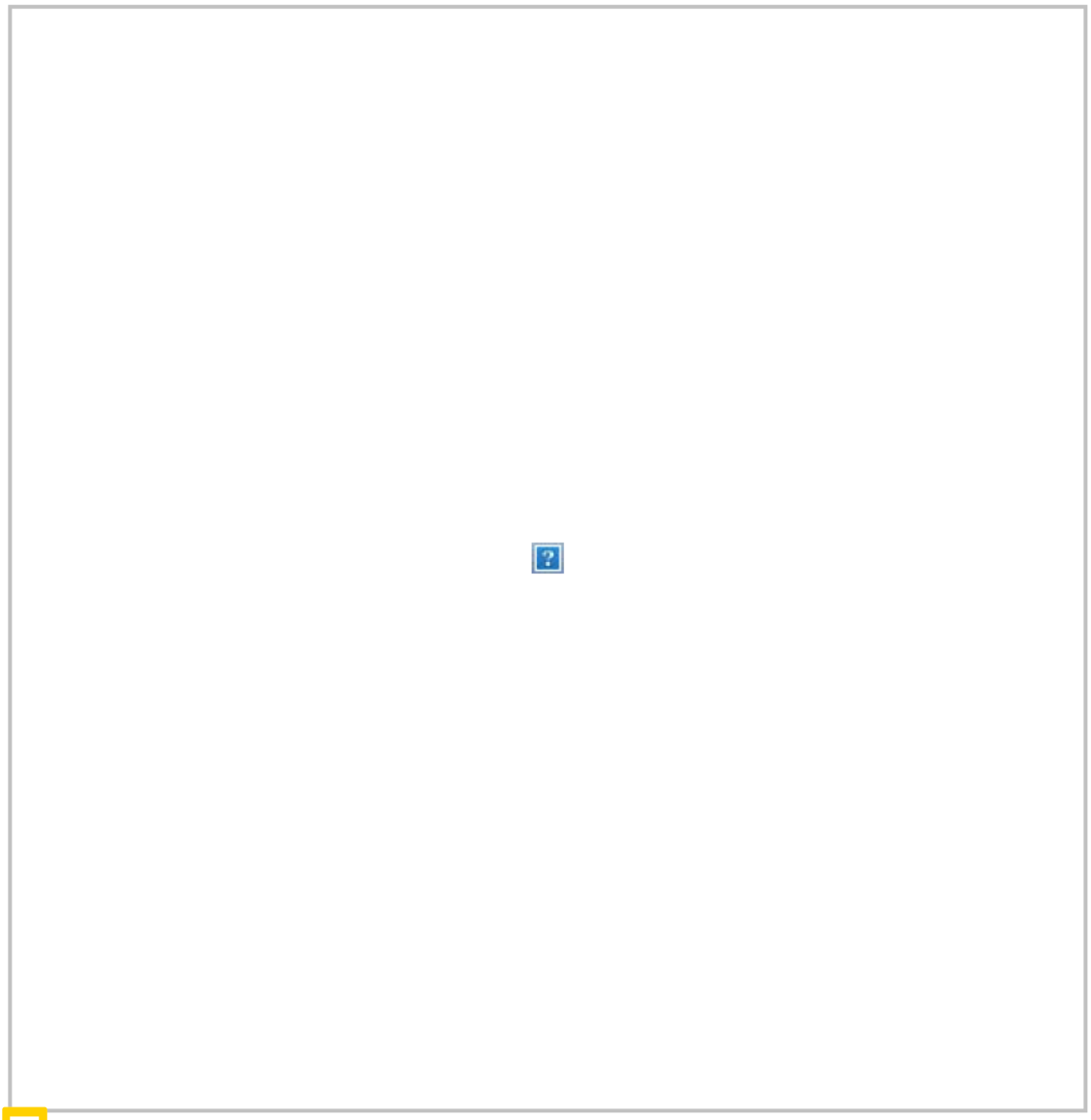
The short answer is this is not the same project as had environmental issues back in 2015 and is proceeding as a new project request. Pub date is TBD.

Let me give you some background for understanding. Sorry if it's more than you bargained for.

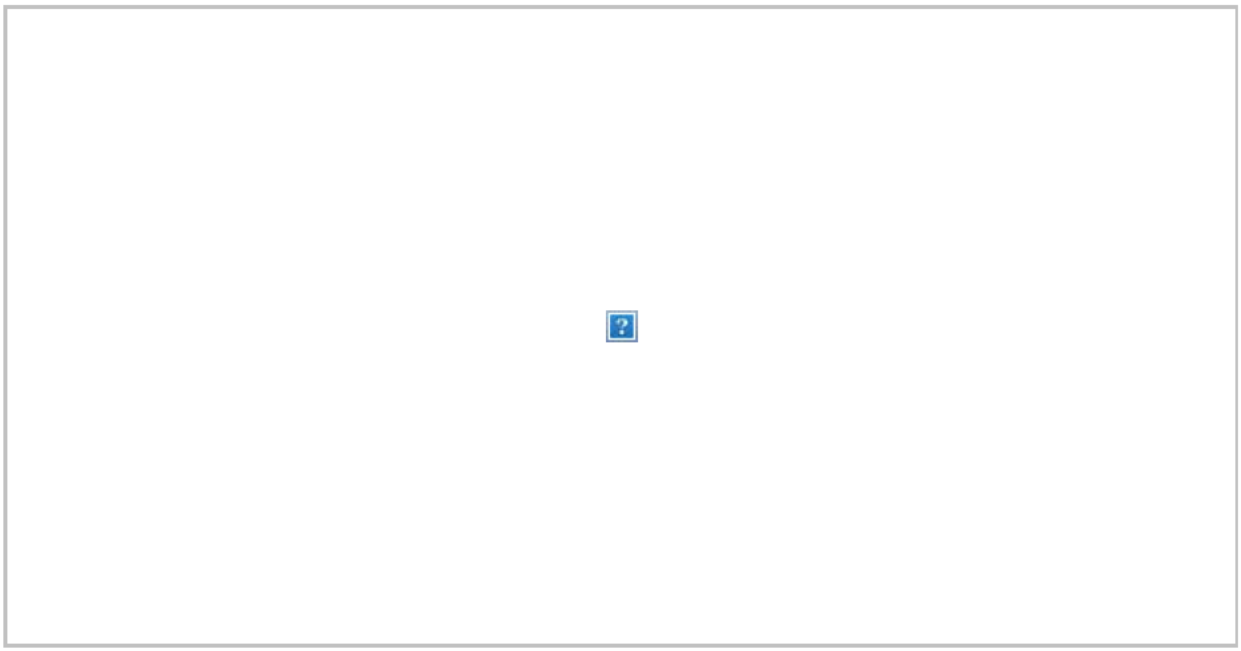
The information provided from the original email at the bottom is from a terminated project and quite old.

Current screenshot from the project mentioned at the bottom.

That being said and, looking at the date of the original email, additional comments were included in the project *after* the email at the bottom. The full list (final) is below. As you can see, the 6/19/15 entry indicates design activities were on-going and the STAR had moved back into design. If memory serves me correctly the last publication date for NorCal Metroplex was December 2015. As such, you can see from the comment list, I had project terminated quite some time ago. (Background continued below….)



To make sure we aren't comparing apples and oranges, we are not resurrecting the NorCal Metroplex PIRAT STAR project. On 11/16/2016 Oakland Center put in a IFP Gateway request to convert the (currently in use) Pacific 2 Tailored Arrival to a RNAV STAR. See the following cut and paste from the Baseline Analysis Report. While we were at NorCal TRACON late last year the ATM asked us to expedite the STAR since it was a priority for the facility. As such, Josh and I got it on the agenda for our meeting down there in March. Yes … it will be called the PIRAT STAR. No … it's not the same project as referred to in the January 2015 email. It is a stand-alone-single-site project under the 7100.41 and we are following the process from square one. Once we have final design agreement the project will be submitted for environmental review. We won't continue with development/publication if we don't complete the required environmental review and have the appropriate documentation.



It's not yet on the production schedule because it's not yet in the Procedure Tracking System (PTS). Normally, it doesn't get put into PTS until it goes to the RAPT and, following the process, we're not quite ready to send the request to the RAPT. We're close – simply waiting to schedule the pencils down telcon. Once we get RAPT approval we'll have a publication date established.

I don't know if this background helps.

If you have any questions please let me know.

b/r

Jason

Jason Pitts
Performance Based Navigation (PBN) Co-Lead
Western Service Center
Operations Support Group
(425) 917-6736 (Office)
(425) 306-5848 (Mobile)

From: Kelley, Kevin C (FAA)
Sent: Tuesday, May 16, 2017 1:21 PM
To: Gonzalez, George (FAA); Wolfe, Derek (FAA)
Cc: Calabrese, Stefanie CTR (FAA); Pitts, Jason (FAA); wpbn@natca.net
Subject: RE: PIRAT STAR_SFO

Hi George,

Thanks for that update.

//Derek,

This STAR previously was mired in environmental review (see screen shot at bottom of this trail). Is that resolved/ do you have a sense for how long it will take to get it published?

Thanks,

Best regards,
Kevin
KEVIN C. KELLEY, JR.
AFS-470, Performance Based Flight Systems
FAA Flight Standards
202-267-8854
kevin.c.kelley@faa.gov

From: Gonzalez, George (FAA)
Sent: Tuesday, May 16, 2017 3:40 PM
To: Kelley, Kevin C (FAA)
Cc: Calabrese, Stefanie CTR (FAA); Pitts, Jason (FAA); Wolfe, Derek (FAA); wpbn@natca.net
Subject: RE: PIRAT STAR_SFO

Hi Kevin…

The SFO PIRAT STAR is almost at the end of the "Design Phase" also known as "pencils down" The PBN Co-Leads will be scheduling a design confirmation meeting in the very near future. If you need any more information suggest you contact Derek Wolfe, Joshua Haviland or Jason Pitts (WSA PBN Co-Leads).

"EZ"

Respectfully,

George Gonzalez
Airspace Services (AJV-1)
Manager, Performance Base Navigation (PBN) Technical Support Services (AJV-141)
East 490 L'Enfant Plaza, 4th Floor, Room 212
Washington, DC 20024
Work: (202) 267-0669
Cell: (405) 314-9388

"Real knowledge is to know the extent of one's ignorance." *- Confucius*

From: Calabrese, Stefanie CTR (FAA)
Sent: Tuesday, May 16, 2017 3:28 PM
To: Gonzalez, George (FAA)
Subject: FW: PIRAT STAR_SFO

FYI…PIRAT STAR at SFO. Kevin needs info on it – says it was held up by environmental. Bill says it is not on the production schedule. Any insight?

Thanks!

Stefanie

Stefanie C. Calabrese
PBN Programs and Policy Group Contract Support, AJV-14
(w): 202-267-7385
stefanie.ctr.calabrese@faa.gov
490 L'Enfant Plaza SW, Suite 4102
Washington, DC 20024

From: Kelley, Kevin C (FAA)
Sent: Tuesday, May 16, 2017 3:09 PM
To: Calabrese, Stefanie CTR (FAA)
Subject: FW: PIRAT STAR_SFO

Hi Stefanie,

Oops, the BUFIE is at LAX. It's the PIRAT I was looking for… (not in the document you sent) who would have updates on this? George Gonzalez?

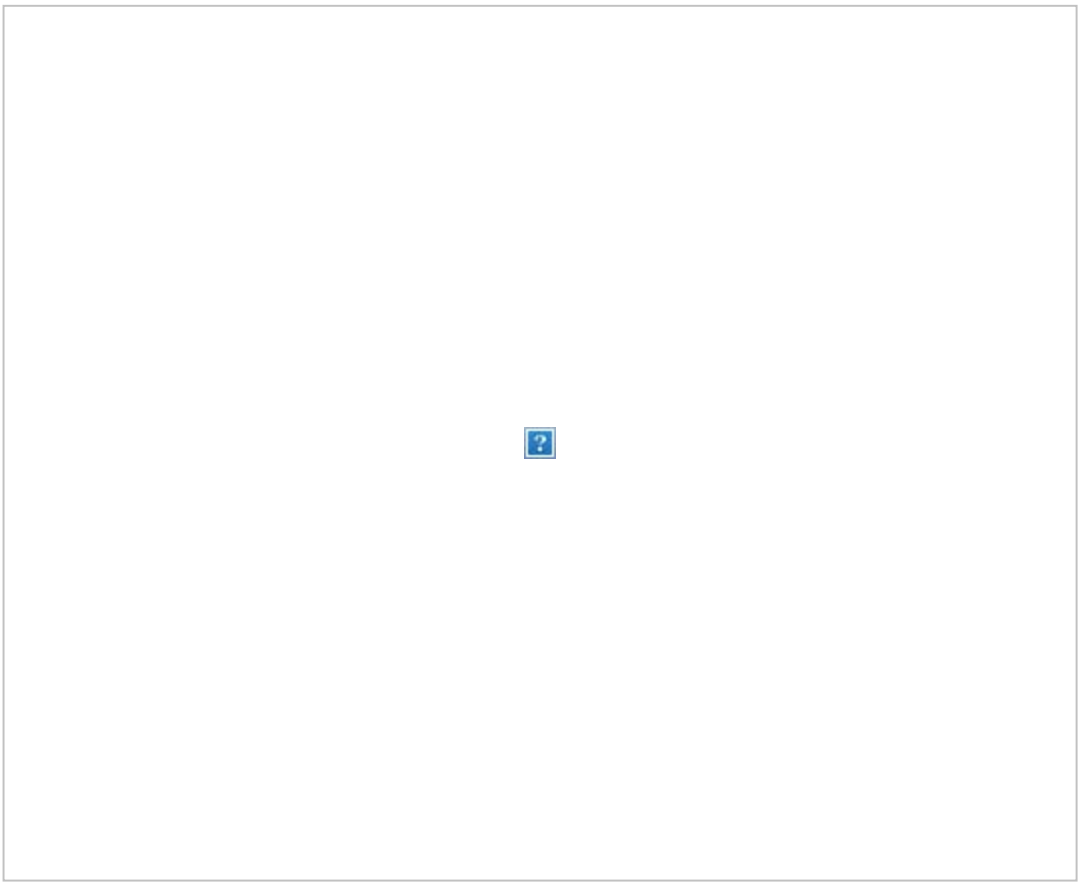
Thanks!

Best regards,
Kevin
KEVIN C. KELLEY, JR.

AFS-470, Performance Based Flight Systems
FAA Flight Standards
202-267-8854
kevin.c.kelley@faa.gov

From: Cureton, Lisa (FAA)
Sent: Monday, January 05, 2015 3:56 PM
To: Kelley, Kevin C (FAA)
Subject: FW: PIRAT STAR_SFO

More FYI



Attachment 3

View Help

View Request

Request: EXTERNAL WEBSITE REQUEST - SAN FRANCISCO, CA

Request ID: 20161116171103 Date Created: 11/16/2016
Allow this Request to be viewable from the external website? YES

Initial Request Remark:
COMMENTS: -----CONTACT INFO-----
FIRST NAME: JEFF
LAST NAME: HUBERT
TELEPHONE: 510-745-3744
EMAIL: JEFF.B.HUBERT@FAA.GOV
ROLE: INTERNAL FAA
TYPE OF PROCEDURE: STAR (INTERNAL)
ICAO CODE: KSFO
AIRPORT NAME: SFO
AIRPORT COUNTRY: US
AIRPORT CITY: SAN FRANCISCO
AIRPORT STATE: CA
AIRCRAFT TYPE: FIXED WING (DEFAULT)
NAVIGATION SYSTEM TYPE: RNAV (GPS) - EXAMPLES: LPV, LP, LNAV/VNAV, LNAV, ETC.
TYPE OF REQUEST: ORIGINAL
PREFERED ROUTING DESCRIPTION: THE ORIGINAL REQUEST TO CREATE AN RNAV STAR FOR OCEANIC ARRIVALS TO SFO (PIRAT STAR) WAS INADVERTENTLY REMOVED FROM THE IFP PROCESS. THIS PROCEDURE IS CURRENTLY IN USE AS A TEST PROCEDURE WITH SELECTED CARRIERS (PACIFIC 2 TAILORED ARRIVAL). THIS PROCEDURE HAS BEEN PROVEN BENEFICIAL FOR THE USERS BUT IS VERY CUMBERSOME FOR ATC TO ISSUE IN ITS CURRENT FORM.
OTHER REMARKS:

Tracking Information:
Status: PENDING Owner:

Association Information:
ID: KSFO Name: SFO
City: SAN FRANCISCO State: CALIFORNIA
Country: UNITED STATES
Aircraft Type: ROTARY
Does this Airport have a published IFP? FALSE
Airport Manager contacted about request? FALSE

Point of Contact Information:
Name: JEFF HUBERT
Company:
Business: EXTERNAL WEBSITE USER
Address: NOADDRESSGIVEN
Location:
Phone Number: 5107453744 Fax Number:
E-mail: JEFF.B.HUBERT@FAA.GOV

Project List

There have been no Projects built for this Request.

Please review the Request Remarks for more information on this Request.

Request	Request Remarks	Request	New Project
Edit/Delete	View/Add/Edit	Print	Add
Request Files	**Request Files**	**Filter Worklist**	**Search Results**
Check In	Check Out	View	Go

Attachment 4

1 North San Antonio Road
Los Altos, California 94022-3087

November 13, 2018

Kimberly Stover, Director, Air Traffic Operations
Western Service Area, AJTW
2200 S. 216th Street
Des Moines, WA 98198

RE: IFP Coordination, Standard Terminal Arrival Route (STAR), PIRAT, KSFO/KOAK

Ms. Stover,

The Cities of Mountain View and Los Altos (Cities) have serious concerns if the FAA allows the PIRAT STAR procedure to be published in its current state. Most importantly from the perspective of our cities, this new procedure has the potential to move noise over our cities, which violates the widely endorsed principle of not moving noise from one community to another. The PIRAT approach will likely increase the number of flights over Mountain View and Los Altos, as more, and perhaps all, Oceanic arrivals would be using this procedure rather than the select carriers using the existing Pacific 2 tailored arrival. Moreover, some proportion of that increased number of flights can be expected to be vectored over Mountain View and Los Altos when approaches are congested.

The aforementioned STAR data has been posted to the IFP Information Gateway and reviewed by our consultants. Please find the following issues relative to the STAR's development and production:

Design

The terminus of the PIRAT procedure is ARGGG at 8000' (MSL), where the aircraft depart on a track of 60 degrees "for vector to an instrument approach." We have the following comments:

- The cities of Mountain View and Los Altos are concerned about the potential of increased vectoring of transpacific flights over their communities during times of congestion and resulting from the higher utilization of the PIRAT procedure.

- The cities of Mountain View and Los Altos share an interest in noise being minimized over the populated areas past the ARGGG waypoint. To that end, we ask the FAA to work with Air Traffic Control (ATC) to have the minimum altitude of 8000' followed.

CATEX

- The CATEX is devoid of any noise data analysis relative to projected traffic increases and expected usage. Analysis of old / new noise contours appears to have been bypassed, irrespective of aircraft altitude.

- The CATEX does not address historic noise complaints over the noise sensitive communities due to nighttime oceanic flights crossing as low as 1500' AGL. The San Francisco International Airport Noise Office has been tracking data on this issue since 2015. The Late Night Woodside VOR report shows the flight number and altitude for each aircraft that uses, or is vectored in the proximity of the Woodside VOR, on approach to San Francisco International Airport / Metropolitan Oakland Airport between the hours of 10:30 p.m. and 6:30 a.m. This report is generated twice per week and is sent to Northern California TRACON (NCT). To date, this has been no more than a futile effort to mitigate noise impacts with this compliance. With the PIRAT STAR now being "public," greater usage is expected which has the potential to bring greater impact; none of this has been quantified in the CATEX.

- The CATEX states, "The PIRAT STAR will convert the Pacific 2 Tailored Approach (TA) to a public-use RNAV STAR that expands benefits of the TA [tailored arrival] currently only available to selected carriers to all users of KSFO." We expect that noise will be shifted from other approaches as airlines consolidate operations to use this procedure, which violates the widely endorsed principle, including by the San Francisco Roundtable, of not moving noise from one community to another.

- From the CATEX: "An Environmental Review was completed by the Western Service Center and is incorporated herein by reference. The Environmental Review was conducted in accordance with policies and procedures in the Department of Transportation Order 5610.1C, 'Procedures for Considering Environmental Impacts' and FAA Order 1050.1F."

  This Environmental Review was not included with the CATEX. In addition, this Review was not signed off by the FAA Regional Manager nor the Regional Environmental Specialist. Therefore, the Environmental Review does not comply with FAA JO 7100.41, 7400.2, 1050.1, and DOT Order 5610.1.

Air Traffic Initial Environmental Review

Section IV, Community Involvement, contains questions for Community Development input in conjunction with the airport proprietor. This section was not disclosed and appears to be noncompliant with the FAA's Community Involvement Manual / ATO Community Involvement Plan.

- Adverse effects on the following aspects of the environment were not disclosed:

  - Species listed or proposed to be listed on the List of Endangered or Threatened Species, or designated Critical Habitat for these species, contained within the San Francisco State Fish and Game Refuge, in which the terminus waypoint ARGGG is located.

- Impact to the San Francisco Bay Natural Wildlife Refuge was also not disclosed and is a possibility due to the vectoring of additional arriving aircraft for San Francisco, Oakland, and San Jose. The vectoring of low arriving aircraft over the South Bay (5000' and below) increased 36% from 2001 to 2013 and is projected to increase in the future.

- Properties protected under Section 106 of the National Historic Preservation Act were not disclosed. These sites involve a unique characteristic of the geographic area, such as prime or unique agricultural land, a coastal zone, a historic or cultural resource, parkland, wetland, wild and scenic river, designated wilderness or wilderness study area, sole source aquifer (potential sources of drinking water: San Andreas Lake, Crystal Springs Reservoir), or an ecologically critical area.

- Significant increases of noise over a noise-sensitive area and emissions (hazardous/toxic substances) from low altitude vectored aircraft were not disclosed.

Therefore, the cities respectfully request the FAA to stop any further production action of the PIRAT STAR until the aforementioned errors can be rectified and the Environmental Review made compliant with current FAA Orders concerning Community Involvement. In addition, the cities request that this procedure be held in abeyance until noise impacts on the residents in our communities are provided by the FAA to our cities and until the cities are allowed to analyze the procedure and its impacts, and subsequently provide comments on this procedure.

Please consider the cities of Mountain View and Los Altos in the hosting of any future Community Involvement meetings concerning the finalizing of development of this STAR.

Respectfully submitted,

Jean M. Mordo

Leonard M. Siegel
Mayor
City of Mountain View

Jean Mordo
Mayor
City of Los Altos

cc: Honorable Anna Eshoo, U.S. House of Representatives
Honorable Jimmy Panetta, U.S. House of Representatives
Honorable Ro Khanna, U.S. House of Representatives
Dennis Roberts, Regional Administrator, AWP
Tamara Swann, Deputy, Regional Administrator, AWP
Manager, Federal Aviation Administration, Western Service Area Air Traffic Organization
FAA Manager, Aeronautical Information Services
Manager, Performance-Based Navigation Integration Group (AJV-14)
City of Mountain View City Council
City of Mountain View CM, CA, ACM, ATCM-Gilmore

Attachment 5

City of Palo Alto
Office of the Mayor and City Council

November 13, 2018

Mr. Dan Elwell
Acting Administrator
Federal Aviation Administration
800 Independence Ave., SW
Washington, DC 20024

Sent via email to Dan.Elwell@faa.gov

Dear Administrator Elwell:

The City of Palo Alto is writing to comment on the recently proposed PIRAT ONE ARRIVAL Standard Terminal Arrival Route (STAR). These comments are submitted in response to the solicitation of comments set forth on the FAA's IFP Gateway which indicates that comments are being accepted until November 13, 2018. (See https://www.faa.gov/air_traffic/flight_info/aeronav/procedures/application/?event=procedure.results&tab=coordination&nasrId=SFO#searchResultsTop)

We note at the outset that we understand the request for comments on the IFP Gateway is directed primarily at solicitation of technical comments from air traffic professionals or aeronautical users. The agency has not, however, provided any other mechanism for the public to comment on this proposed procedure. We are, therefore, availing ourselves of this opportunity to ensure that the FAA receives and considers our comments before taking a final agency action pursuant to 49 U.S.C. 46110.

We are troubled by the lack of community engagement by the FAA during the planning and execution of such proposed changes to routes or procedures. The manner in which the PIRAT STAR has been proposed and the process for solicitation of comments does not comply with the FAA's own Community Involvement Policy as set forth in Appendix 10 to FAA Order JO 7400.2L. Neither has the process complied with current FAA practice to engage the community in any air traffic change which is likely to be controversial on environmental grounds. See FAA Order 1050.1F § 5-2; see also RTCA, PBN Blueprint Community Outreach (2016) (available at https://www.rtca.org/sites/default/files/2016_pbn_blueprint_community_outreach.pdf) which was approved by the FAA's NextGen Advisory Committee in June 2016. As far as we know, the agency has not solicited non-technical comments, has not widely distributed the proposed draft CatEx document, and has not provided the environmental documentation that was prepared in connection with what appears to be a documented CatEx. See Order 1050.1F § 5-3. (The City, through its attorney, has submitted a FOIA request for this documentation but the agency has thus far not responded to the request. We reserve the right to supplement these comments upon the timely receipt of the requested information. We reiterate here, as we did in the FOIA request, that the environmental documentation is essential for the City to determine whether the agency has properly documented the Cat Ex.)

The City of Palo Alto has also written several letters to the FAA in the past to which the FAA has been completely unresponsive. We have been left with no viable process for engaging with the FAA regarding the many questions and concerns we have about flight operations in the airspace over our city; this

P.O. Box 10250
Palo Alto, CA 94303
650.329.2477
650.328.3631 fax

communication vacuum is unacceptable. In the present context, in particular, the agency has failed to explain how the proposed PIRAT route addresses our previous complaints and concerns regarding OCEANIC arrivals into San Francisco International Airport (SFO).

With that background, we offer the following comments and raise several questions specifically on the proposed PIRAT STAR.

Because it has neither provided the environmental documentation to support the CatEx nor responded to the City's FOIA request, the FAA has not communicated whether or how the impacts of the proposed PIRAT route have been studied. We request that the FAA disclose single event noise levels, number of events over grid points on-the-ground and other relevant per-flight-operation noise data on the proposed PIRAT route using the FAA standard AEDT model. See FAA Order 7400.2L § 32-2-1. We also request that the proposed PIRAT route be presented for community involvement per Appendix 10 to FAA Order 7400.2L. We specifically request that preparation of an Air Traffic Initial Environmental Review pursuant to Order 7400.2L § 32-2-1(b).

We have several concerns about the potential impacts of the PIRAT route and ask the FAA to clarify the following issues related to routing paths and altitudes; air traffic volume; and noise and other environmental impacts, particularly given that one of NextGen's goals was to "take into consideration, to the greatest extent practicable, design of airport approach and departure flight paths to reduce exposure of noise and emissions pollution on affected residents."

While we appreciate the intent to limit flights to 8,000 MSL or higher near the neighborhoods in the Woodside area, we remain concerned about noise and other environmental impacts anticipated from the PIRAT STAR. In particular, we are concerned about the predictable increase in the volume of overflights resulting from the transition of the Pacific 2 Tailored Approach (TA) to a public-use area navigation (RNAV) STAR, and the increased impacts associated with adding Oakland International Airport (OAK) traffic to SFO traffic on this route. We are also troubled by the ambiguity and absence of information about where and how aircraft will be vectored by Air Traffic Control (ATC) between the ARGGG waypoint and final approach at SFO or OAK.

The following questions illustrate the current dearth of information available to the public about the impacts of the proposed PIRAT STAR and the necessity for a more transparent public process prior to any implementation decision.

Ambiguity of Vectoring's Routes, Altitudes, and Impacts

How will Air Traffic Control manage the paths for vectoring from the stated 060 heading from the ARGGG waypoint? Where are aircraft most likely to fly between the ARGGG waypoint and final approach into each airport? When vectoring aircraft from ARGGG, will Air Traffic Control maintain aircraft at or above 6,000 MSL over Palo Alto? What altitudes will be maintained over other neighboring sensitive areas? What are the impacts on the Air Traffic Control workload when all flights must be vectored by ATC after the ARGGG waypoint?

Impacts of Increased Volume

How many total operators and flights are anticipated to use this public-use STAR compared to the volume limitations of the current TA? Does the FAA anticipate increases in flights on this route because

of the increased growth projected at all three international airports in the San Francisco Bay Area? What are the anticipated levels of use by OAK arrivals vs. SFO arrivals on this route? What are the anticipated levels of use, if any, by SJC? What are the implications of the proximity of current and future SJC traffic to the anticipated PIRAT traffic vectored from ARRRG en route to SFO? How has the FAA studied the safety implications of PIRAT in increasingly congested airspace? What are the impacts on efficiency of increased volume?

Environmental Impacts

What studies has the FAA completed on the noise and emission impacts of the PIRAT STAR procedure, including especially the on-the-ground noise impacts because of increased volume on PIRAT? Some flights currently using the Pacific 2 TA overfly our community during nighttime and early morning hours. What is the anticipated volume and frequency of flights on the newly proposed public route during these disruptive times?

The proposed route, and the associated areas most likely to be used in vectoring flights from ARGGG to final approach, would likely direct aircraft over noise-sensitive areas, several wildlife refuges and water storage areas, historic areas, and minority and low-income populations. We draw your attention to the specific obligations of the FAA to consider impacts over such areas even if the agency believes that it has adequate legal justification to use a CatEx. See FAA Order 1050.1F § 5-3 in particular. What has the FAA done to study the environmental impacts of PIRAT flights, including the increased volume of these flights and their required vectoring, over these sensitive areas?

Finally, we urge the FAA to creatively partner with airports in the San Francisco Bay Area Metroplex to leverage new technologies to develop improved procedures as part of its Next-Gen journey. Leveraging SFO's Ground-Based Augmentation System (GBAS) is a key starting point. As you know, SFO is linking two satellite-based approach technologies – Required Navigation Performance (RNP) and a Global Navigation Satellite System (GNSS) Landing System (GLS) to improve from the approach tools invented 85 years ago, but improvements can only be gained by this technology if the FAA is willing to consider procedures that take advantage of it. Did the FAA team approach the SFO GBAS team to discuss how the new procedure could take advantage of GBAS to reduce aircraft impacts on nearby areas? How has the FAA considered SFO's upcoming deployment of new landing options when designing the PIRAT procedure?

Let me be clear that we do not believe that the FAA has adequately disclosed impacts of the PIRAT STAR under its existing orders and policy statements. And, in particular, the manner in which PIRAT STAR has been publicly disclosed violates standard agency practice for enhanced community involvement that has been adopted in the wake of the *Phoenix v. Huerta* decision.

Thank you for your attention to our concerns. We look forward to your response.

Sincerely,

Liz Kniss, Mayor
City of Palo Alto

cc: 9-AMC-Aerochart@faa.gov

https://www.faa.gov/air_traffic/flight_info/aeronav/procedures/application/?event=email.contact&details=SFO%20(%20KSFO)%20SAN%20FRANCISCO%20INTL,%20SAN%20FRANCISCO,%20CA%20-%20STAR%20PIRAT%20(RNAV)%20ONE%20SAN%20FRANCISCO%20CA%20KSFO&procedureName=STAR%20PIRAT%20(RNAV)%20ONE%20SAN%20FRANCISCO%20CA%20KSFO&airportCode=SFO&airportName=SAN%20FRANCISCO%20INTL&airportState=CA

Mr. Dennis Roberts, FAA Western-Pacific Regional Administrator
Ms. Faviola Garcia, Acting Deputy Regional Administrator
Ms. Kimberly Stover, Director, Air Traffic Operations, FAA Western Services Area, AJTW
Mr. Kevin Stewart, Acting FAA Aeronautical Information Services Manager
FAA Western Services Area Air Traffic Organization Manager
Hon. Dianne Feinstein, U.S. Senate
Hon. Kamala D. Harris, U.S. Senate
Hon. Anna G. Eshoo, U.S. House of Representatives
Palo Alto City Council
James Keene, Palo Alto City Manager
Molly Stump, Palo Alto City Attorney

Attachment 6

City of East Palo Alto

Office of the City Manager

November 13, 2018

Mr. Dan Elwell
Acting Administrator
Federal Aviation Administration
800 Independence Ave., SW
Washington, DC 20024

Sent via email to Dan.Elwell@faa.gov

Dear Administrator Elwell:

I am writing to comment on the recently proposed PIRAT ONE ARRIVAL Standard Terminal Arrival Route (STAR). The City of East Palo Alto has been negatively impacted by the increase in airplane traffic and associated noise from both the local General Aviation airport and the regional airports.

I have the following questions and comments.

I am concerned by the lack of community engagement by the FAA during the planning and execution of the proposed PIRAT Star changes to routes or procedures. Were standard FAA community engagement processes used for the proposed PIRAT Star changes to routes or procedures?

What has the FAA done to study the environmental impacts of PIRAT flights, including the increased volume of these flights and their required vectoring, over sensitive areas? The FAA should release the noise and emission impacts of the PIRAT STAR procedure, in particular the impacts on sensitive areas such as minority and low-income populations. The proposed Categorical Exemption lacks the adequate documentation to reach an informed decision.

I look forward to your response.

Sincerely,

Sean Charpentier
Interim City Manager

cc: 9-AMC-Aerochart@faa.gov
East Palo Alto City Council
Palo Alto City Council
James Keene, East Palo Alto City Manager
Hon. Jackie Speier, U.S. House of Representatives

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East Palo Alto, CA 94303
Phone: (650) 853-3100
Fax: (650) 853-3115
www.cityofepa.org
scharpentier@cityofepa.org

Attachment 7

SANTA CLARA/SANTA CRUZ COUNTIES
AIRPORT/COMMUNITY ROUNDTABLE
PO Box 3144
Los Altos, CA 94024

January 17, 2020

Ms. Raquel Girvin
Regional Administrator, AWP-1
FAA Western-Pacific Region
777 South Aviation Boulevard, Suite 150
El Segundo, CA 90245

Subject: SCSC Roundtable Requests Regarding the PIRAT STAR

Dear Administrator Girvin,

The SCSC Roundtable is submitting the following three requests regarding the PIRAT Standard Terminal Arrival Route (PIRAT STAR) for the FAA's review and response:

1. The SCSC Roundtable accepts Adam Vetter's August 28, 2019 offer to have the FAA perform an in-depth analysis of PIRAT STAR usage. A preliminary analysis of SFO PIRAT STAR arrivals indicates that usage may have increased by almost 20 percent for the months of May and June in 2019 versus May and June of 2018 even though the total SFO arrivals during those same periods did not increase. The Roundtable requests an historical review of the number of Oceanic Arrivals to determine whether they have increased since the PIRAT STAR was implemented. The Roundtable requests that the FAA model the noise exposure on the ground for Oceanic Arrivals for the land area located between the Pacific coastline and the western shoreline of the San Francisco Bay from 2013 to 2019 (see Appendix A for specifics on the requested analysis).
2. To understand whether the original expectations about the PIRAT STAR's noise exposure described in the CATEX for the PIRAT STAR match reality, the SCSC Roundtable requests that the FAA validate the assumptions made in the PIRAT STAR CATEX. (See Appendix B for important context information about Oceanic Arrivals before/after PIRAT and specific questions that the Roundtable would like the FAA to address). This question can leverage the data obtained from the analysis in item 1 above.
3. Given that the PIRAT STAR CATEX information received by Palo Alto through its FOIA request and other FAA communications on the PIRAT STAR are at times inconsistent, the Roundtable requests that the FAA provide a history of the PIRAT STAR development since 2013 as well as describe in simple terms the differences between a previous PIRAT STAR version that may have existed before the current PIRAT STAR. (See Appendix C for specifics questions that should be addressed and important context information about a previous PIRAT STAR procedure).

On behalf of the SCSC Roundtable, thank you for your attention to these requests. We look forward to your response in the near future.

Sincerely,

Mary-Lynne Bernald

Mary-Lynne Bernald
Chairperson, SCSC Roundtable

APPENDICES

Appendix A: Analysis of Historical Noise Exposure on the Ground for SFO and OAK Oceanic Arrivals between the Pacific Coastline and Western Shoreline of the San Francisco Bay

- Scope: SFO Oceanic arrivals and OAK Oceanic Arrivals from the Pacific Ocean coastline all the way to each ILS landing system.
- Time period:
    - Same 4-month period of May through August (this 4-month period should be sufficient for comparisons purposes; April should not be used because PIRAT was officially implemented on April 25, 2019; September should not be used because of runway closures at SFO).
    - Seven years (2013, 2014, 2015, 2016, 2017, 2018, 2019) to capture pre-NextGen and post-NextGen changes, including procedure and vectoring changes.
- Tools: Noise modeling should be done using the latest version of AEDT and noise exposure should be calculated using the CNEL metric, which is recognized by the FAA.
- Data input:
    - Use actual flight data.
    - Document any assumptions made for data input.
- Data output/Report details:
    - Summary tables and graphs should be provided to allow readers to compare yearly data from 2013 to 2019 for the same four-month period.
    - Detailed data that are used to create summaries or requested in this document should be provided in an Excel or CSV format.
    - For the same time period of each year, please provide the following information:
        - Total number of arrivals for each airport (SFO, OAK)
        - Total number of Oceanic arrivals for each airport (SFO, OAK)
        - Number of Oceanic arrivals broken down by destination airport (SFO and OAK) that flew within:
            - 1 mile and 3 miles of the Woodside VOR or ARGGG
            - 1 mile, 3 miles, and 5 miles of either MENLO or SIDBY

            Notes:

            - Data should be summarized for each scenario (e.g., a combination of destination airport and a distance from a specific waypoint)
            - Different distances are used for the two locations because flights are on a procedure up to the Woodside VOR/ARGGG but vectored to MENLO/SIDBY after that.
            - Distances represent on-the-ground projections between waypoints and aircraft.
            - The shortest distance between waypoints and aircraft should be used to capture a flight.
    - Detailed data of Oceanic arrivals near 2 locations
        - Location A: within 1 mile and 3 miles of the Woodside VOR (2018 data and before) and ARGGG (2019 data)
        - Location B: within 1 mile, 3 miles, and 5 miles of MENLO and SIDBY once SIDBY started to be used for Oceanic arrivals

For each Oceanic Arrivals scenario (e.g., waypoint location and distance from waypoint), provide the following data:

- Date and time stamp
- Flight number
- Aircraft type
- Origin airport
- Destination airport (SFO or OAK)
- Altitude at time stamp
- Distance from waypoint at time stamp
- Speed at time stamp

- Number of Oceanic arrivals broken down by:
  - Daytime, evening, and nighttime (Evening is 7 pm – 10 pm and nighttime is 10pm to 7am)
  - Heavy Jets, Large Jets, Small Jets, Turbo Props
  - Destination airport (SFO and OAK)
  - Heading (range, average, and median) used after Woodside VOR or ARGGG for each destination airport
  - Descent angle (range, average and median) used between Woodside VOR or ARGGG and MENLO or SIDBY
  - Procedure used --specify name and end point (3 procedures/end points combinations: Pacific 2 Tailored Arrivals/Woodside VOR, non-Pacific 2 Arrivals/Woodside VOR, and PIRAT/ARGGG)
- Altitudes (range, average, and median) within 1 mile or 3 miles of the procedure end waypoint (Woodside VOR or ARGGG)
- Altitudes (range, average, and median) within 1 mile, 3 miles, and 5 miles of MENLO or SIDBY
- On a Google street map, show actual ground tracks between the Woodside VOR or ARGGG and the ILS system, use different colors to show the flights altitude bands in 1,000 ft increments (<3,000 ft, 3000 to 3999 ft, etc.), and identify the median ground track line
- Horizontal and vertical distribution of ground tracks in the vicinity of the Woodside VOR or ARGGG:
  - Using a 3-mile line centered between ARGGG and the Woodside VOR, display separately for SFO and OAK as well as cumulatively (SFO+OAK) the:

Number of actual flights
Lateral and vertical distribution of actual flights
Range, average, and median altitudes
Range, average, and median speeds

  - Maintain the same scale for the axes across all time periods and provide sufficient granularity in the display for readers to be able to identify potential changes over time. Use tables and graphs to display the data.
- Horizontal and vertical distribution of ground tracks in the vicinity of MENLO or SIDBY:
  - Using a 5-mile line centered between MENLO and SIDBY (a wider radius is suggested to capture potential vectoring dispersion), display separately for SFO and OAK as well as cumulatively (SFO+OAK) the:

Number of actual flights
Lateral and vertical distribution of actual flights
Range, average, and median altitudes
Range, average, and median speeds

  - Maintain the same scale for the axes across all time periods and provide sufficient granularity in the display for readers to be able to identify potential changes over time. Use tables and graphs to display the data.

- Total number of flights broken down by arrival route (SFO SERFR, SFO Bodega West, SFO Oceanic, OAK Oceanic, SJC South Flow) that flew within the following distances of MENLO or SIDBY:
  - Within 0.5 mile radius
  - Within 1.0 mile radius
  - Within 1.5 mile radius
  - Within 2.0 mile radius
  - Within 2.5 mile radius
  - Within 3.0 mile radius
  - Within 5.0 mile radius

    For each of the 7 distance groups listed above, specify the altitudes (range, average, and median) and speeds (range, average, and median)

Appendix B: Oceanic Arrivals Before and After Implementation of the PIRAT STAR

Using actual flight data for the months of May through August for both 2018 and 2019, the SCSC Roundtable requests that the FAA:

1. Compare actual number vs assumed number of Oceanic Arrivals in total and broken down between Pacific 2 Tailored Arrivals, non-Pacific 2 Tailored Arrivals, and PIRAT:
   a. For each airport (SFO and OAK)
   b. Within a 3-mile radius of the Woodside VOR or ARGGG
   c. Within a 5-mile radius of MENLO or SIDBY
2. Compare actual fleet mix vs assumed fleet mix of Oceanic arrivals.
3. Compare actual time distribution vs assumed time distribution of Oceanic arrivals.
4. Using AEDT, display the CNEL contours for 3 different Oceanic arrivals procedures in 3 different areas
   a. Procedures are:
      1. Pacific 2 Tailored Arrival, which is optimized for each aircraft for a low noise descent profile all the way to the runway and existed before PIRAT
      2. Non-Pacific 2 Tailored Arrival, which existed before PIRAT
      3. PIRAT arrival, which is not optimized for each aircraft, ends miles away from the runway, and is vectored to final approach

   b. Three suggested areas between the Pacific Ocean and the ILS system: around Woodside VOR/ARGGG, around MENLO/SIDBY, plus around one additional location between ARGGG and SIDBY.
   c. Noise contours for at least 2 different types of jets: heavy jets and large jets.
   d. References for data sources (actual data or assumptions) and documented assumptions.
   e. Small area (maximum 5-mile radius) near each waypoint with CNEL contours displayed in 3-dB increments or less for readers to be able to observe any potential differences.
5. Using actual flight data for 2018 and 2019, display the different CNEL noise exposure contours in 3-dB increments in 2 locations (one near Woodside VOR/ARGGG and the other near MENLO/SIDBY) for the:
   a. Pacific 2 Tailored Arrivals (2018) --specify number of flights
   b. Non-Pacific 2 Tailored Arrivals (2018) - specify number of flights
   c. PIRAT (2019) - specify number of flights

   and articulate any potential differences. Same guidelines as in item 4 above.

6. Articulate the benefits that have been realized through the implementation of PIRAT (benefits statements must be supported by data), and in particular the incremental benefits gained from the prior procedures (Pacific 2 TA and non-Pacific 2 TA).
6. Explain how the altitude increase that occurred at ARGGG does not increase the noise exposure of PIRAT arrivals over the residential areas between ARGGG and the final approaches to SFO or OAK, which did not change. Describe in particular the changes in the flying altitudes and descent angles of aircraft between ARGGG and final approaches that may have occurred given the minimum 8,000 ft altitude at ARGGG.
6. Identify who decided to combine the Tailored Arrival procedure with the ATC vectoring instruction as described in the FAA written answer to the Roundtable question 5 from May 2019 and list all stakeholders who were consulted on the proposal prior to the decision.
6. Identify the stakeholders and elected officials who were involved in the current PIRAT design discussions as well as the timeframe of such discussions.
6. Document when and how SFO and the City and County of San Francisco expressed their support of the current PIRAT procedure.

Context information

The FAA document called “2018-06-11 KSFO.IER.ARCHI.20180517 (SIGNED)_MLsign”, signed on May 18, 2018 and obtained through a FOIA request by the City of Palo Alto, provides some information on the environmental review conducted by the FAA for PIRAT and describes some assumptions used in the CATEX analysis. In this document, the FAA stated that:

- They did not expect the number of operations, aircraft mix and airlines schedules to change. Based on 2017 Track Data (table 6 on page 15), the FAA expected the following traffic:
    - Annual PIRAT traffic: 15,747 planes per year
    - Fleet mix: 64% Heavy Jets vs. 36% Large Jets (very few small jets or turboprops)
    - Time distribution: 31% during night time (10 pm - 7 am) and 69% during the day

  Note however that, in their February 22, 2019 letter to Palo Alto Mayor Filseth, the FAA stated that they “anticipate more aircraft will likely use the PIRAT STAR than the Pacific 2 TA”, which makes sense given that one or two carriers used Tailored Arrivals, but “defers to SFO and OAK to address the potential increase in oceanic arrivals.” This last statement is puzzling given that the FAA assumed no increase in Oceanic arrivals in the CATEX analysis (see above) and that airports do not have the ability to limit the number of carriers or flights (as long as airports have capacity they must accept new flights).

- “[Pacific 2] Tailored Arrivals (TA) is a comprehensive method of planning, communicating, and flying highly-efficient arrival trajectories from cruise altitude to the runway threshold. TA trajectories are optimized for each aircraft to permit a fuel-efficient, low noise descent profile that will provide separation assistance while complying with arrival sequencing requirements and other airspace requirements.” (page 4, footnote #2).
- PIRAT “will convert the Pacific 2 TA to a public-use RNAV STAR that expands benefits of the TA currently only available to selected carriers to all users of KSFO” (see page 12).
- PIRAT was requested by ATC (see paragraph B page 22) because ATC found issuing Tailored Arrivals cumbersome; however, the FAA added on paragraph C page 22 that PIRAT was a community request even though the FAA acknowledged on page 50 paragraph 4 that the proposed changes were not based on the Select Committee or SFO Roundtable recommendations, but designed to address safety and operations concerns.
- The airport proprietor was supportive of PIRAT (page 50).

Appendix C: History of PIRAT STAR before the 2016 Select Committee Recommendations

The SCSC Roundtable requests that the FAA:

1. Explain what was the NorCal Metroplex PIRAT STAR project (as described under Context information below), which existed before 2015 and obviously before the Select Committee was formed, and in particular, how the project related to Pacific 2 Tailored Arrivals.
2. Explain what environmental issues were associated with the NorCal Metroplex PIRAT STAR project.
3. Explain who was consulted and when on the NorCal Metroplex PIRAT STAR project.
4. Explain why the NorCal Metroplex PIRAT STAR was abandoned.
5. Compare and contrast the NorCal Metroplex PIRAT STAR and the current PIRAT STAR. Comparisons should include, but not be limited to ground tracks, altitudes, waypoints, headings, descent angles, etc. for the flight paths of Oceanic arrivals between the Pacific Ocean coastline and the western shoreline of the San Francisco Bay for both SFO and OAK.

Context information

There seems to be inconsistent information from the FAA about the development of the PIRAT STAR.

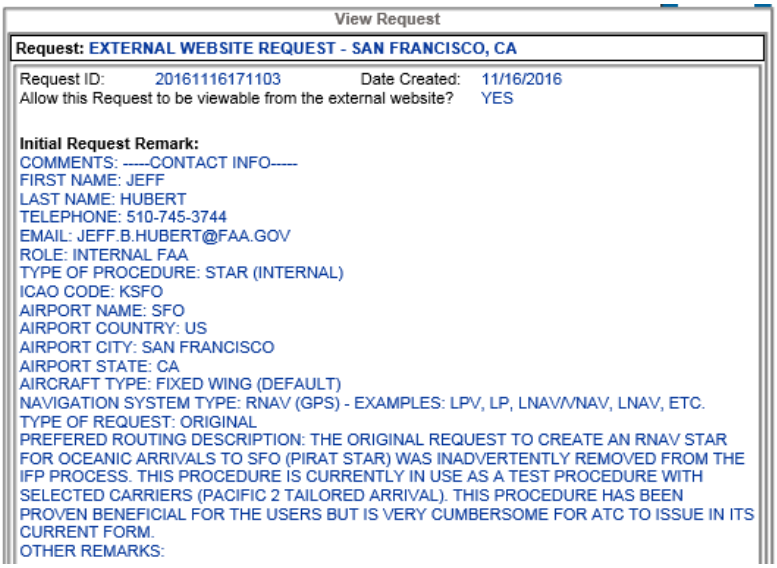
- FAA records, obtained through the City of Palo FOIA request, indicate that there was a different PIRAT STAR (which was referred to in a January 2015 email) that was part of the Norcal Metroplex project, but had environmental issues (see document titled “RE_ PIRAT STAR_SFO.pdf” and screenshots below extracted from pages 2 and 3 of the document). This FAA information is aligned with the SFO Noise Office saying that they did not support a PIRAT procedure that was proposed around 2014 because of noise concerns.

> The short answer is this is not the same project as had environmental issues back in 2015 and is proceeding as a new project request. Pub date is TBD.

> To make sure we aren’t comparing apples and oranges, we are not resurrecting the NorCal Metroplex PIRAT STAR project. On 11/16/2016 Oakland Center put in a IFP Gateway request to convert the (currently in use) Pacific 2 Tailored Arrival to a RNAV STAR. See the following cut and paste from the Baseline Analysis Report. While we were at NorCal TRACON late last year the ATM asked us to expedite the STAR since it was a priority for the facility. As such, Josh and I got it on the agenda for our meeting down there in March. Yes … it will be called the PIRAT STAR. No … it’s not the same project as referred to in the January 2015 email. It is a stand-alone-single-site project under the 7100.41 and we are following the process from square one. Once we have final design agreement the project will be submitted for environmental review. We won’t continue with development/publication if we don’t complete the required environmental review and have the appropriate documentation.

- On November 16, 2016, an FAA employee requested to put the PIRAT STAR back in the IFP process because it had been removed by mistake from the IFP process (see document titled “KSFO New STAR 8457 Gateway (1).pdf” and screenshot below of the

document). Note that the Select Committee issued their report and recommendations, which do not mention any STAR procedure for Oceanic Arrivals, one day later on November 17, 2016.



View Request

Request: EXTERNAL WEBSITE REQUEST - SAN FRANCISCO, CA

Request ID: 20161116171103 Date Created: 11/16/2016
Allow this Request to be viewable from the external website? YES

Initial Request Remark:
COMMENTS: -----CONTACT INFO-----
FIRST NAME: JEFF
LAST NAME: HUBERT
TELEPHONE: 510-745-3744
EMAIL: JEFF.B.HUBERT@FAA.GOV
ROLE: INTERNAL FAA
TYPE OF PROCEDURE: STAR (INTERNAL)
ICAO CODE: KSFO
AIRPORT NAME: SFO
AIRPORT COUNTRY: US
AIRPORT CITY: SAN FRANCISCO
AIRPORT STATE: CA
AIRCRAFT TYPE: FIXED WING (DEFAULT)
NAVIGATION SYSTEM TYPE: RNAV (GPS) - EXAMPLES: LPV, LP, LNAV/VNAV, LNAV, ETC.
TYPE OF REQUEST: ORIGINAL
PREFERED ROUTING DESCRIPTION: THE ORIGINAL REQUEST TO CREATE AN RNAV STAR FOR OCEANIC ARRIVALS TO SFO (PIRAT STAR) WAS INADVERTENTLY REMOVED FROM THE IFP PROCESS. THIS PROCEDURE IS CURRENTLY IN USE AS A TEST PROCEDURE WITH SELECTED CARRIERS (PACIFIC 2 TAILORED ARRIVAL). THIS PROCEDURE HAS BEEN PROVEN BENEFICIAL FOR THE USERS BUT IS VERY CUMBERSOME FOR ATC TO ISSUE IN ITS CURRENT FORM.
OTHER REMARKS: