APPENDIX H

ALTERNATIVES DEVELOPMENT SCREENING MEMO

14 CFR PART 150 UPDATE

Alternatives Development Screening Memo

This memo addresses the proposed alternatives received (as of August 7, 2020) from the Technical Advisory Committee (TAC) and the Community Advisory Committee (CAC). This memo addresses the action taken for alternatives that were requested. It serves as a response about how alternatives are identified for either moving forward to be modeled or being dismissed if they not viable or reasonable. The alternatives modeling results will be shared at the October 15 CAC/TAC meeting.

While not every individual alternative that has been suggested for evaluation is addressed here, the range of alternatives addressed below is representative of the comments received (including ANAC recommendations), and the overall intent of the collective alternatives proposed from those comments. Alternatives brought forward for modeling or inclusion in the Part 150 Study are based on screening criteria that follows the intent of 14 CFR Part 150, the general intent of the proposed alternatives (concentration, dispersion, etc.), and the Team's expertise. The screening criteria applied to proposed alternatives to determine which would be modeled is identified below and followed by an alternatives screening summary table. This table indicates whether the proposed alternatives have been modeled, will be modeled for the October meeting, or will not be carried forward and the associated rationale for these determinations. In addition, there are several categories of alternatives that do not lend themselves to noise modeling, such as land use and program management/administrative alternatives. As such, this table will be updated as those alternatives are evaluated.

Alternatives Screening Criteria

a. A 14 CFR Part 150 Study is focused on addressing aircraft noise inside the 65 CNEL and greater contour, and therefore the alternatives modeled should be focused on those that have the greatest potential to reduce the noncompatible land uses within the 65 CNEL and greater contour.[1]

b. Alternatives that affect capacity, throughput, or safety are not considered for modeling, as per the intent of 14 CFR Part 150.[2]

c. Most of the alternatives requested by TAC and CAC members are not focused on reducing the size of the 65 CNEL and greater contour, but on addressing noise concerns outside the 65 CNEL and greater contour. We understand that many of the committee members are interested in reducing noise outside the 65 CNEL and greater exposure area, but benefits for noise-sensitive areas exposed to levels lower than 65 CNEL are not relevant for the purposes of 14 CFR Part 150. Per 14 CFR Part 150, alternatives must focus on reducing noise within the 65 CNEL or greater contour. However, if a proposed alternative had the potential to reduce aircraft noise levels for areas exposed to levels at or greater than 65 CNEL AND noise-sensitive areas exposed to levels lower than 65 CNEL, these alternatives were considered for modeling.

[1] 14 CFR Part 150, Airport Noise Compatibility Planning, §B.150.23(e)(5), Noise Compatibility Programs.

[2] 14 CFR Part 150, Airport Noise Compatibility Planning, §C.150.35(b)(3)(iii), Determinations; Publications; Effectivity.

d. Many recommendations and comments from the TAC and CAC fall into one of several general categories, including concentrating the Runway 27 aircraft departures, dispersing or fanning the Runway 27 aircraft departures, or those that focus on nighttime operations. Therefore, the table below focuses on the goal of the procedure to help associate various recommendations with the overall intent of an alternative. Prioritization of the requested modeling runs is based on potential to decrease non-compatible land uses in the 65 CNEL and greater contour (without shifting noise) and show a range of alternatives with the highest likelihood of noise reduction based on the overall intent. For example, while many recommendations are based on the same approach to concentrate departures over the Mission Bay Channel, it would not be feasible to model each recommendation. To respond to these requests, the Part 150 Team used modeling alternatives to bookend the results to understand what would happen with the representative range of approaches, rather than modeling each minor change in degree headings.

e. For the purposes of this memo, intent of proposed operational procedures is lumped into two categories, including concentration and dispersion. **Concentration** for these purposes includes proposed alternatives using Performance Based Navigation (PBN) procedures that allow precise, repeatable paths to be flown with a high degree of certainty. These procedures can still be modeled with some element of dispersion, but it generally follows a flight path dictated by the PBN procedure with the intent is to fly over an area that is more compatible (such as the Mission Bay Channel). **Dispersion** is also called fanning, where departures are divided among several different departure headings to fan the operations out over a more widely spaced corridor area. As stated above, dispersion can also be attributed to a PBN procedure but with a lesser degree of certainty based on radar vectors or use of multiple PBN procedure headings intended to equitably distribute departures in a widely spaced corridor area.

f. Some alternatives were meant to address ground noise (such as noise barriers), which would not result in substantial changes to the cumulative contours. As a result, analysis was prioritized for single events, as they may affect residents living within the 65 CNEL and greater contour.

The alternatives screening table that follows is organized by the general intent of the comments received and provides a summary of resulting analysis based on the application of the above screening criteria with notes to provide context to the committees. While many comments were directed towards proposed operational alternatives, it is important to recognize that some comments focused more on program management or administrative alternatives. Where such suggested program management and administrative alternatives are considered feasible, it is indicated that those alternatives could be carried forward.

Noise abatement alternatives, which must be evaluated per 14 CFR Part 150, are discussed in Chapter 6 (including those that are and are not feasible at SDIA). Chapter 7 will include the analysis of all modeled operational alternatives. Land use, program management and administrative alternatives will be discussed in Chapter 8.

Alternatives Discussion

LEGEND:

GREEN	Modeled for May meeting;
BLUE	Modeled for October meeting; Modeling inputs and results included in the PowerPoint Presentation for October
ORANGE	Not recommended for modeling due to reasons such as not meeting intent of Part 150, coverage under other alternatives or due to impacts on throughput, capacity, safety or other limitations

Intent of Alternative	Title/Description	Associated ANAC Recommendation	Recommended Analysis	Rationale	Results
Concentration	C - 1A. Create a path with dispersion over the Mission Bay Channel. Modify existing PADRZ RNAV SID to climb to 520' at 500' per NM proceed direct to waypoint offshore	14 and 17	Modeled: Alternative 1A from May meeting	Bookend alternatives for concentration	Shift in noise[1]
	C – 1B. Create a concentrated path over the Mission Bay Channel. Modify existing PADRZ RNAV SID to fly runway heading and intercept 293-degree heading course to a waypoint offshore	14 and 17	Modeled: Alternative 1B from May meeting	Bookend alternatives for concentration	Shift in noise[1]
	C – 1C. Provide a more predictable and repeatable initial jet departure path with very little to no dispersion along the path from Runway 27 that direct jet aircraft to fly over a fixed point on runway heading then a turn to the northwest to direct jet aircraft over the Mission Bay Channel	14 and 17	Modeled: Alternative 1C from May meeting	Bookend alternatives for concentration	Shift in noise[1]

[1] Alternative found to reduce noise in targeted areas, but cause noise level increases for other areas.
RNAV - Area Navigation
SID - Standard Instrument Departure
Bookend – refers to analysis of a range of alternatives to understand what would occur to shifts of noise within that range. Analyses focused on the intent of the alternative to find the best option without shifting noise over other non-compatible land uses.

Intent of Alternative	Title/Description	Associated ANAC Recommendation	Recommended Analysis	Rationale	Results
Concentration	C – 2A. Equivalent Lateral Spacing Operations (ELSO) for Departures with Dispersion: Provide a predictable and repeatable initial jet departure path with some dispersion along the path from Runway 27 that direct jet aircraft along a heading that diverges from the ZZOOO RNAV SID heading by at least 10-degrees	14	Modeled: Alt 2A from May meeting	Provides range of ELSO alternatives	Shift in noise[1]
	C – 2B. Equivalent Lateral Spacing Operations (ELSO) for Departures with Concentration: Provide a predictable and repeatable initial jet departure path along the path from Runway 27 that direct jet aircraft along a heading that diverges from the existing heading by at least 10-degrees. Provides greater predictability and repeatability compared to Alternative 2A due to less dispersion	14	Modeled Alt 2B from May meeting	Provides range of ELSO alternatives	Shift in noise[1]
	C – 2C and 2D. Refined Proposed ELSO Alternatives to move the ELSO heading from 10 degrees to 12 degrees (about halfway between 10 and 15 degree) based on committee discussion. Alternative 2C is a dispersion design; Alternative 2D is a concentration design (287 heading – combination of Len's comments and La Jolla comments).	14	Recommended to model: Alternatives 2C and 2D	Recommended to model as "midpoint" alternative to right departure turn between design concepts (Alternative 1A/1B; Alternative 2A/2B and Alternative 2C/2D)	Shift in noise[1]
	C3. Move all 275 (ZZOOO RNAV SID) departures to fly over Dog Beach		Reviewed and determined not feasible for modeling	Would have impact on efficiency and throughput because it would limit the airport to one departure heading per day	Not Modeled

[1] Alternative found to reduce noise in targeted areas, but cause noise level increases for other areas.

ELSO - Equivalent Lateral Spacing Operations

RNAV - Area Navigation

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Intent of Alternative	Title/Description	Associated ANAC Recommendation	Recommended Analysis	Rationale	Results
Dispersion	D1. Change 275 ZZOOO from one to three SIDs at 270, 275, and 280		Reviewed and determined not feasible for modeling	This will bring in more newly impacted people because no jets currently take a 270 heading; SID procedure design can accommodate only one initial departure heading; a SID with 3 different runway transitions going in the same direction is not feasible as it increases complexity and may cause new safety risks in the system; FAA traffic management systems not capable of managing equitable distribution among multiple headings for traffic going in the same direction; and proposed headings are less than the required 10-degree divergent heading which would impact runway throughput	Not Modeled
	D2. Intended to reduce the total departure dispersion from approximately 250- and 310-degrees from Runway 27 to between 275 and 290-degrees. This would reduce the number of overflights heading south of 275 over areas in Point Loma and aircraft heading north of approximately 293-degrees.		Not Modeled but reviewed for feasibility: Alternative 3 as presented in the May meeting	Would have impacts on efficiency and throughput	Not Modeled
	D3. Disperse departures off Runway 27 at SAN across three distinct paths, thereby reducing the noise impact on any one of the impacted communities. The proposal is to use three Standard Instrument Departure protocols ("SIDS"), each separated by 10-degrees.		Recommended for modeling	Modeled for October meeting	Shift in noise[1]

[1] Alternative found to reduce noise in targeted areas, but cause noise level increases for other areas

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Intent of Alternative	Title/Description	Associated ANAC Recommendation	Recommended Analysis	Rationale	Results
Dispersion	D4. Vectoring off of the current ZZOOO and PADRZ RNAV SID departures, while within JETTI, LANDN and WNFLD to "headings" versus "direct to (existing) waypoint" would create dispersion under the flight path within the 65 CNEL and benefit everyone inside the 65 CNEL. Adding a third departure heading within the current departure flight path footprint, equidistant between ZZOOO and PADRZ RNAV SIDs with an offshore "flyover" waypoint would disperse noise more evenly within the 65 CNEL and mitigate some of the NextGen flight path concentration due to RNAV.		Reviewed and determined not feasible for modeling	The vectored "headings" for PADRZ and ZZOOO SIDS would have to be 15-degrees apart from each other and PADRZ would need to be 15-degrees from the BORDER SID as well. This would not change the majority of flight track locations compared to existing conditions; therefore, is not expected to change 65 CNEL or greater levels. Adding a third route between the two would prevent ability to maintain a 15-degree separation among the three routes, which would impact airfield capacity; therefore, this alternative with a third route is not be feasible.	Not Modeled
	D5. Dispersion of flight paths using 3 SIDs with headings (275, 285, 295) after an initial Vector Altitude(VA)/Direct to Fix(DF) climb to 520 feet leg (omits 1.2 mile concentration along 275 degrees as has been proposed by Alt D3), but subject to strict allocation provisions between the three SID options.		Reviewed and determined not feasible for modeling	See rationale for D2. Also, FAA traffic management systems are not capable of managing equitable distribution among multiple headings for traffic going in the same direction; therefore, strict allocation (equal distribution) is not possible. Due to procedural conflicts, additional complexity, potential introduction of new safety risks and limited capabilities to manage traffic in an equitable fashion for noise abatement, this alternative was deemed not feasible.	Not Modeled
	D6. Make the current 290-degree vector the initial leg up to the coast for ALL PADRZ SID departures, assuming that the 290-degree vector goes over Noise Dot #2		Reviewed and determined not feasible for modeling	The vector heading for the initial leg would need to be at least 293-degrees to maintain 15-degree divergence from the BORDER SID, which has an initial heading of 278 degrees. Therefore, issuing a 290-degree heading for all PADRZ SID departures (daytime, evening and nighttime) is not feasible.	Not Modeled

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Intent of Alternative	Title/Description	Associated ANAC Recommendation	Recommended Analysis	Rationale	Results
Nighttime	N1. Remove nighttime departure amendment (aircraft filing the ZZOOO RNAV SID fly 290-degree heading) and have aircraft fly as they do during the day either PADRZ or ZZOOO RNAV SIDs	17	Modeled: Alternative 4 from May meeting	Modeled for 24 hours	Shift in noise[1]
	N2. Modify Alternative 1B for just nighttime operations if 24-hours is not feasible (Alternative 1B at night): Initial departure heading to direct over the Mission Bay Channel but only at nighttime between 10:00 p.m. and 6:30 a.m. (meet the intent of 290, direct flights over Mission Bay Channel, staying on a published route – have a nighttime published procedure)	17	Recommended for modeling	Modeled for October meeting based on intent of other comments and potential for noise reduction	Shift in noise[1]
	N3. SLEPN – short for "Sleeping" – make it a fly over waypoint and an FAA published procedure. This would be a new departure path over the channel between Ocean Beach and Mission Beach and would require planes to turn right or left at 2 miles over the ocean.	17	Do not model; Intent is similar to previous alternative	Similar to previous nighttime recommendation (Alternative 1B modified for night only) and is covered under the intent of that alternative; this concept with a fly-over waypoint was evaluated in the flight procedure analysis and was not feasible because the aircraft were not able to get to the waypoint; therefore Alternative 1B modified for nighttime only is preferable and that alternative will be modeled.	Not Modeled

[1] Alternative found to reduce noise in targeted areas, but cause noise level increases for other areas.

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Intent of Alternative	Title/Description	Associated ANAC Recommendation	Recommended Analysis	Rationale	Results
Additional Alternatives	AA1. Complete a meaningful analysis of Noise Abatement Departure Procedure (NADP) options, well beyond the single example dismissed in the prior Part 150 study, that would add both lateral and vertical dispersion to the current ZZOOO and PADRZ RNAV SID departures		Recommended for single event modeling	Modeled for October meeting	Potential reduction in Lmax
	AA2. Noise Barrier		Recommended for single event modeling	Modeled for October meeting	No substantial noise reduction
	AA3. Analyze exposure levels by re-locating heavy jet departures conducted by cargo and international carriers on the right turn initial departure heading associated with the PADRZ RNAV SID		Not modeled but reviewed for feasibility: Alternative 5 as presented in May meeting	Would have impact on efficiency and throughput	Not Modeled
Program Management Alternatives	PM1. Explore alternatives that result in more Stage 4 and Stage 5 aircraft at SDIA using either regulation or carrier incentives		Not Recommended for inclusion in alternatives (program management). No additional analysis required; all commercial service aircraft manufactured after Dec. 31, 2020 will be Stage 5 compliant.	No modeling but recommended as a program management alternative, coordinating with air carriers and monitor progress over years as voluntary program. Since Stage 5 aircraft are more fuel efficient and quieter, it is anticipated that airlines will transition to Stage 5 aircraft on their own accord, particularly given COVID. This could be addressed as an ancillary component of the Fly Quiet Program.	Not Modeled: Included in Chapter 8 as part of Fly Quiet Alternative
	PM2. Analyze ways to ensure maximum compliance with nighttime landing from the west unless safety dictates otherwise		Recommended for inclusion in alternatives (program management)	No modeling but recommended as a program management alternative; monitor landings and report on Runway 9 and reasons for its use, and then use the information to better understand and possibly recommend ways to maximize use of Runway 27	Not Modeled: Included in Chapter 8 as part of Fly Quiet Alternative
	PM3. Add alternative for future flight procedure study as technology changes		Recommended for inclusion in alternatives (program management)	No modeling but recommended as a program management alternative to reevaluate as technology advancements may allow for some alternatives proposed above to become feasible	Not Modeled: Included in Chapter 8N/A

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