FAA Initiative to Address Noise Concerns of Santa Cruz/Santa Clara/San Mateo/San Francisco Counties

FAA & Select Committee Working Meeting

September 29, 2016
Discussion Overview

• Other Solutions Identified by the Select Committee:
  a) Northern Arrivals (BDEGA) in to SFO
  b) Woodside VORTAC
  c) MENLO Waypoint
  d) Aircraft Vectoring
  e) Herringbone Approach to SFO Arrivals
  f) Fan in Oversees Arrivals (OCEANIC) into SFO
  g) Redirect Southern Arrivals to an Eastern Approach into SFO

• Transition the SERFR STAR back to the BSR Ground Track Prior to EPICK

• Comparison between the BRIXX arrival and its predecessor (GOLDN6)
Northern Arrivals (BDEGA) in to SFO
Distribution of Procedural Usage of RWY 28R/L

Key:
- BDEGA June 2016
- DYAMD June 2016
- SERFR June 2016
Usage: BDEGA East/West Legs

- **West leg**
  - May 2005: 43%
  - May 2006: 47%
  - May 2007: 52%
  - May 2008: 48%
  - May 2009: 56%
  - May 2010: 55%
  - May 2012: 58%
  - May 2014: 66%
  - May 2016: 72%

- **East leg**
  - May 2005: 57%
  - May 2006: 53%
  - May 2007: 48%
  - May 2008: 44%
  - May 2009: 45%
  - May 2010: 42%
  - May 2012: 34%
  - May 2014: 29%
  - May 2016: 28%
Woodside VORTAC
Altitudes of oceanic arrivals over OSI

- 8,000 feet: 76%
- 7,000 feet: 7%
- 6,000 feet: 11%
- < 6,000 feet: 6%
MENLO Waypoint
Arrivals into SFO

Key:
- BDEGA June 2016
- DYAMD June 2016
- SERFR June 2016
- Oceanic June 2016

BDEGA: 25% SFO Arrivals

DYAMD: 40% SFO Arrivals

Oceanic: 5% SFO Arrivals

SERFR: 30% SFO Arrivals
Which flights are effected by MENLO

Key:
- BDEGA June 2016
- Vectored SERFR June 2016
- Non-Vectored SERFR June 2016
- Oceanic June 2016

West BDEGA leg: 35% MENLO area traffic

Oceanic: 9% MENLO area traffic

Vectored SERFR: 28% MENLO area traffic

Only non-vectored SERFR flights use MENLO. This is:
- 15% of all SFO arrivals
- 28% of SFO arrivals in the MENLO area

Non-vectored SERFR: 28% SFO Arrivals
MENLO Usage

MENLO is the last fix on the SERFR STAR, and is only used by aircraft that fly the SERFR procedure.

MENLO is used by 28% of all traffic that fly in the vicinity of MENLO. Moving MENLO would not effect the 72% that fly within the vicinity of MENLO.
MENLO Usage

MENLO is NOT used by aircraft that are vectored or on the BDEGA.
Aircraft Vectoring
## Vectored Flights – BSR and SERFR

### Big Sur

<table>
<thead>
<tr>
<th>Altitudes in FT MSL</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 50</td>
<td>Red</td>
</tr>
<tr>
<td>50 – 100</td>
<td>Blue</td>
</tr>
<tr>
<td>100 – 150</td>
<td>Yellow</td>
</tr>
<tr>
<td>150 – 200</td>
<td>Green</td>
</tr>
<tr>
<td>200 – 250</td>
<td>Light Blue</td>
</tr>
<tr>
<td>250 – 300</td>
<td>Purple</td>
</tr>
</tbody>
</table>

### SERFR

**BSR Flights July 1-31 2014**

**SERFR Flights July 1-31 2015**

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[Image: Map showing vectored flights over Big Sur and SERFR]
Herringbone Approach to SFO Arrivals
Herringbone Approach
Fan in Oversees Arrivals (OCEANIC) into SFO
Constraints of “fanning”

- Special Use Airspace limits the location where the oceanic arrivals cross land.
- Once the oceanic arrivals cross land, spacing and sequencing needs to be accomplished as they are merged with SERFR and BDEGA arrivals.
Constraints of “fanning”
Redirect Southern Arrivals to an Eastern Approach into SFO
Arrivals into SFO

Key:
- BDEGA June 2016
- DYAMD June 2016
- SERFR June 2016
- Oceanic June 2016

BDEGA: 25% SFO Arrivals

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Oceanic: 5% SFO Arrivals

SERFR: 30% SFO Arrivals
Transition the SERFR STAR back to the BSR Ground Track Prior to EPICK
BSR and SERFR Ground Tracks
Comparison between the BRIXX arrival and its predecessor (GOLDN6)
BRIXX vs. GOLDN

• The GOLDN6 terminated at SFO and SJC arrivals were vectored to SJC.
• The BRIXX is almost an overlay of the legacy GOLDN6.
• For the dates analyzed:
  – 76% of BRIXX arrivals are vectored off the procedure prior to the procedural SERFR/BRIXX intersection.
  – 90% of GOLDN6 flights were vectored across BSR prior to this same intersection.
Comparison of GOLDN & BRIXX

Pre-NorCal OAPM: June 2014

90% of GOLDN were vectored off prior to LUYTA
An additional 10% are vectored off prior to JILNA

Key:
- GOLDN6/BRIXX
- BSR/SERFR

Post-NorCal OAPM: June 2016

67% of BRIXX are vectored off the BRIXX prior to LUYTA
An additional 9% are vectored off prior to JILNA
Comparison of GOLDN & BRIXX

Pre-NorCal OAPM: June 2014

Post-NorCal OAPM: June 2016

Key

- < 1,000 ft MSL
- 1,000 - 2,000 ft MSL
- 2,000 - 3,000 ft MSL
- 3,000 - 4,000 ft MSL
- 4,000 - 5,000 ft MSL
- 5,000 - 6,000 ft MSL
- 6,000 - 7,000 ft MSL
- 7,000 - 8,000 ft MSL
- 8,000 - 9,000 ft MSL
- 9,000 - 10,000 ft MSL
- 10,000 - 11,000 ft MSL
- 11,000 - 12,000 ft MSL