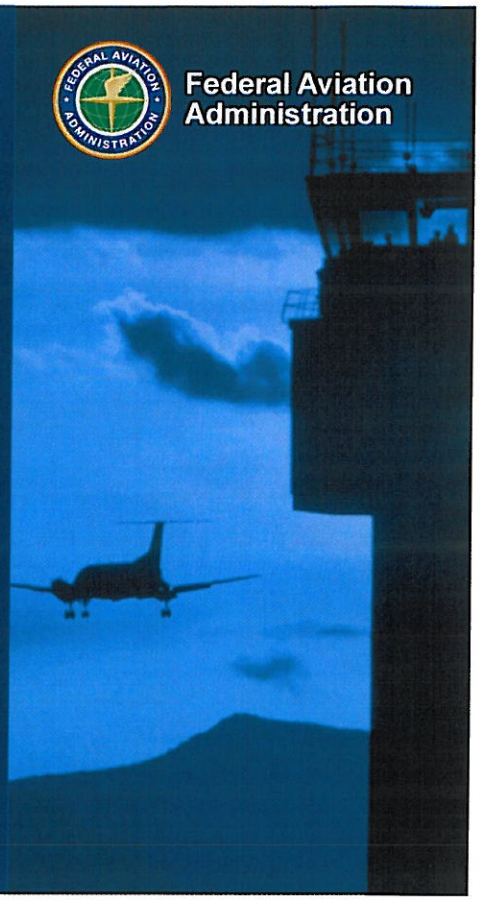
John Wayne Airport Departure Procedures

Federal Aviation Administration



Presented to: Bill Withycombe

By: Western Service Center Operations Support Group

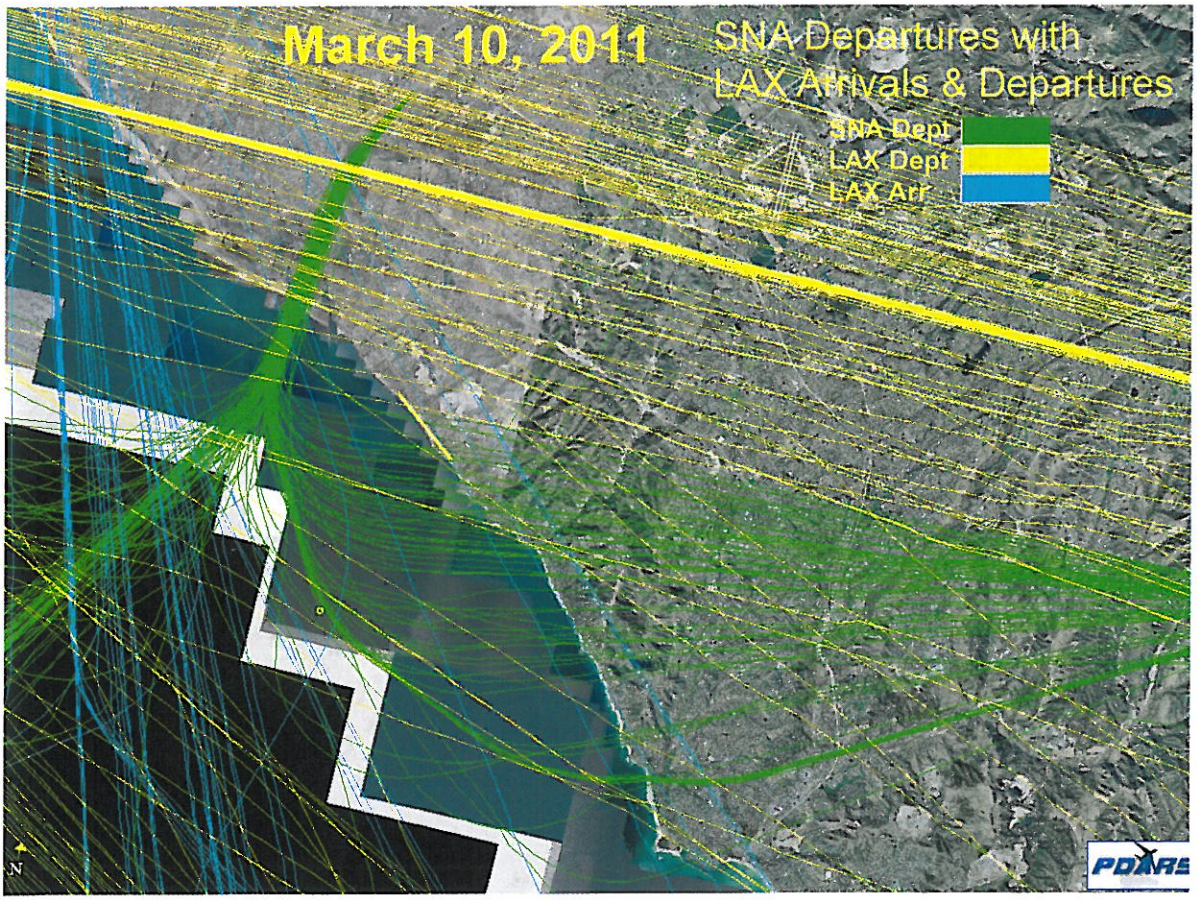
Date: February 2012

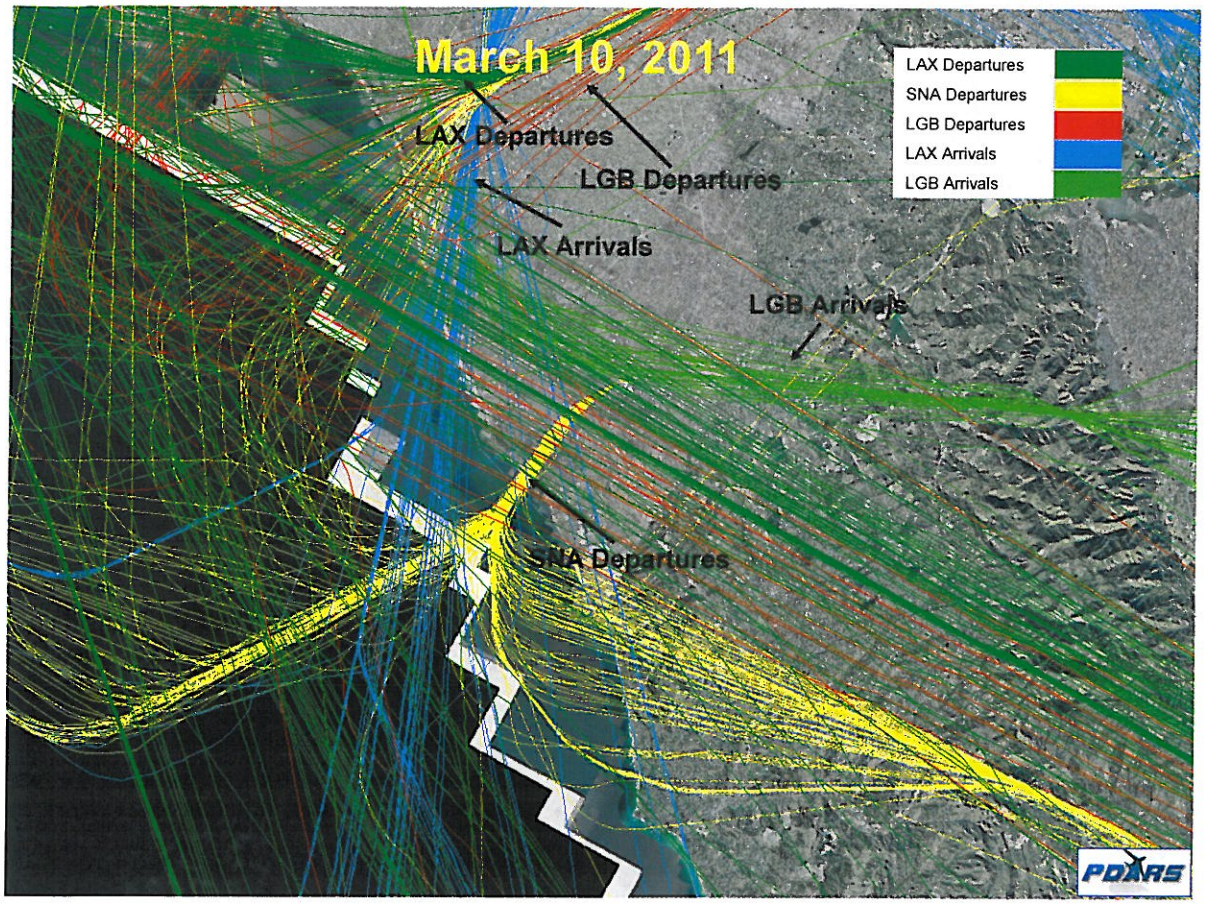
STREL vs. MUSEL Departures

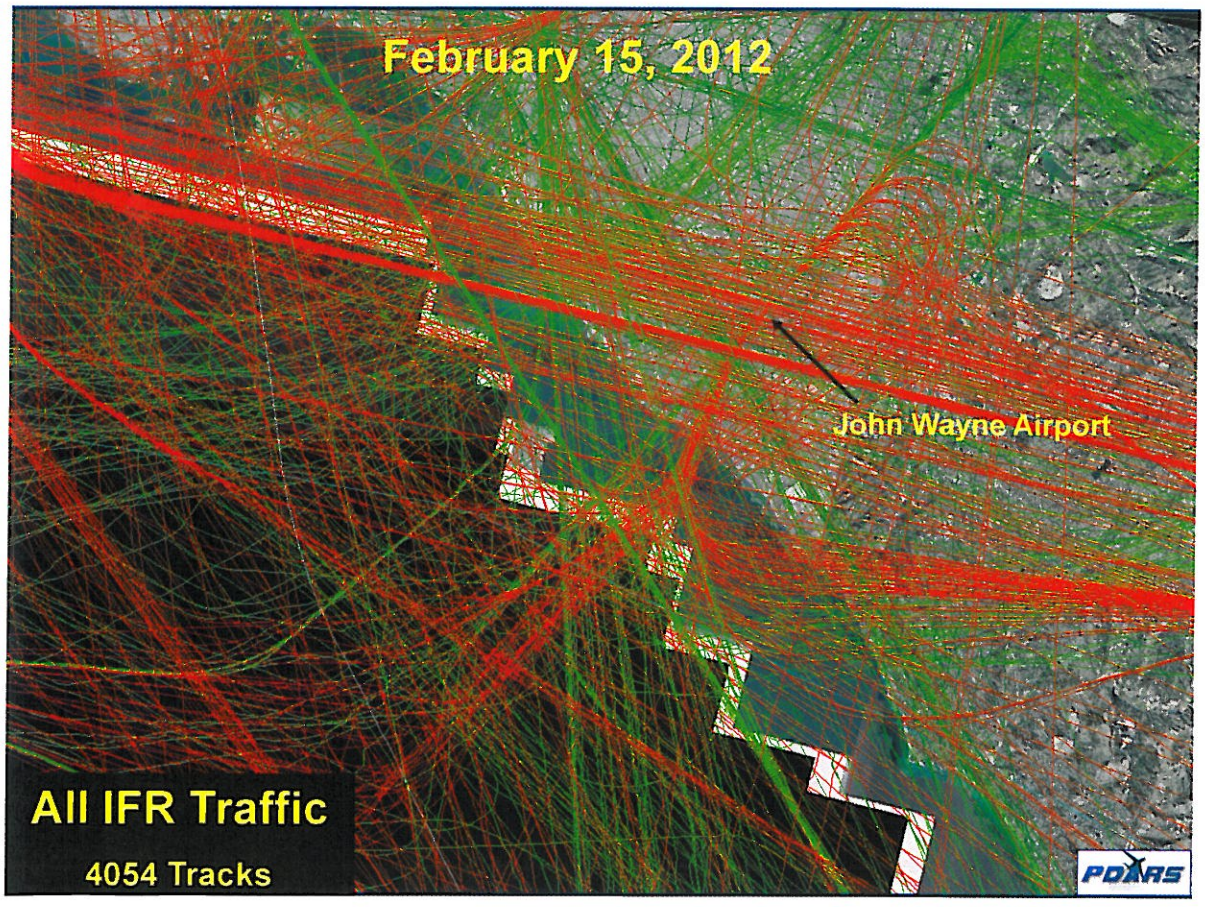
- 3/10/2011: STREL departure procedure implemented after extensive collaboration
- STREL is pilot navigated route, compared to ATC radar vector path of MUSEL
- Pilot navigated routes can follow ground paths more precisely than radar vectors
- More precise route guidance can keep flights over ground paths that are designed to minimize perceived surface noise

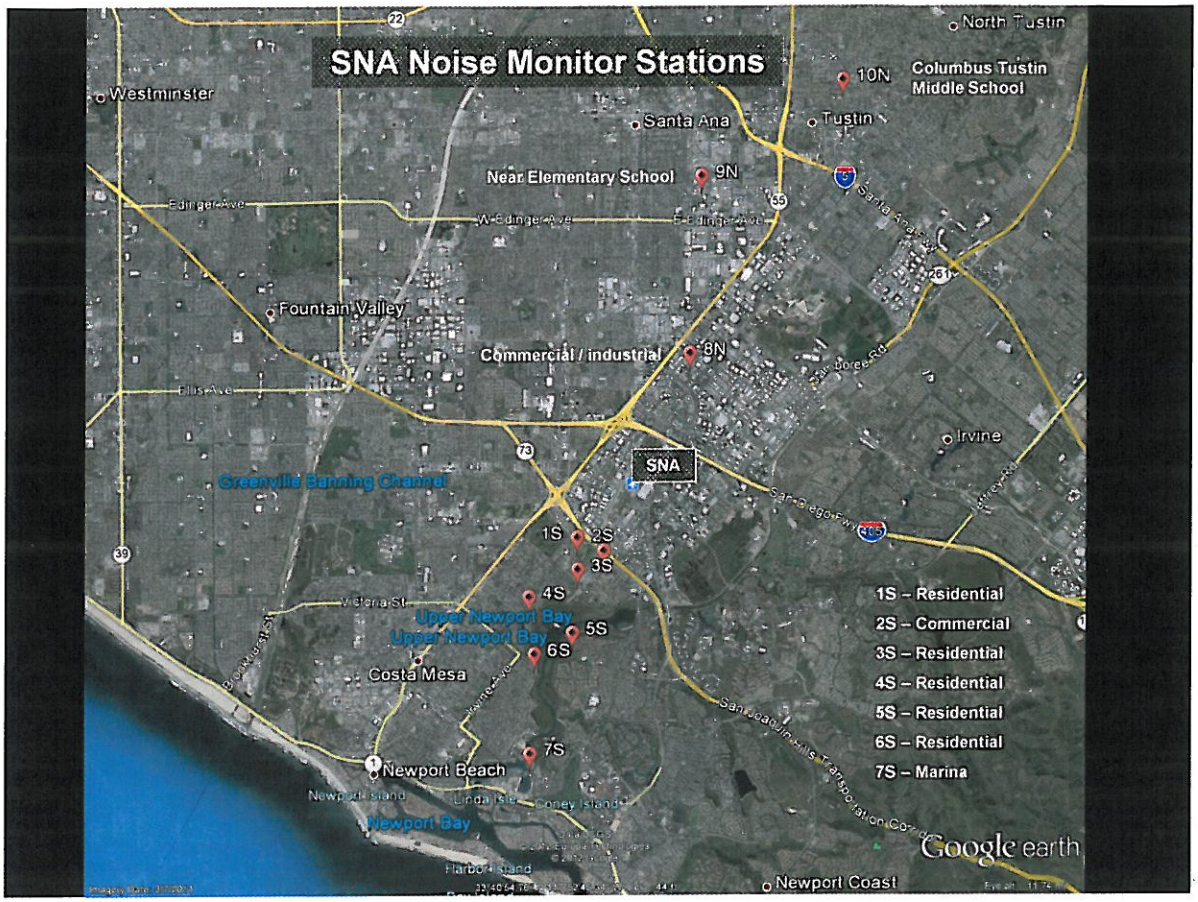
Continued…

- January 2012 traffic was analyzed to determine if STREL route was working as designed
- Analysis accomplished using Performance Data Analysis and Reporting System (PDARS)
- Aircraft flight data was retrieved from Southern California TRACON (SCT)
- Only jet departure traffic was analyzed

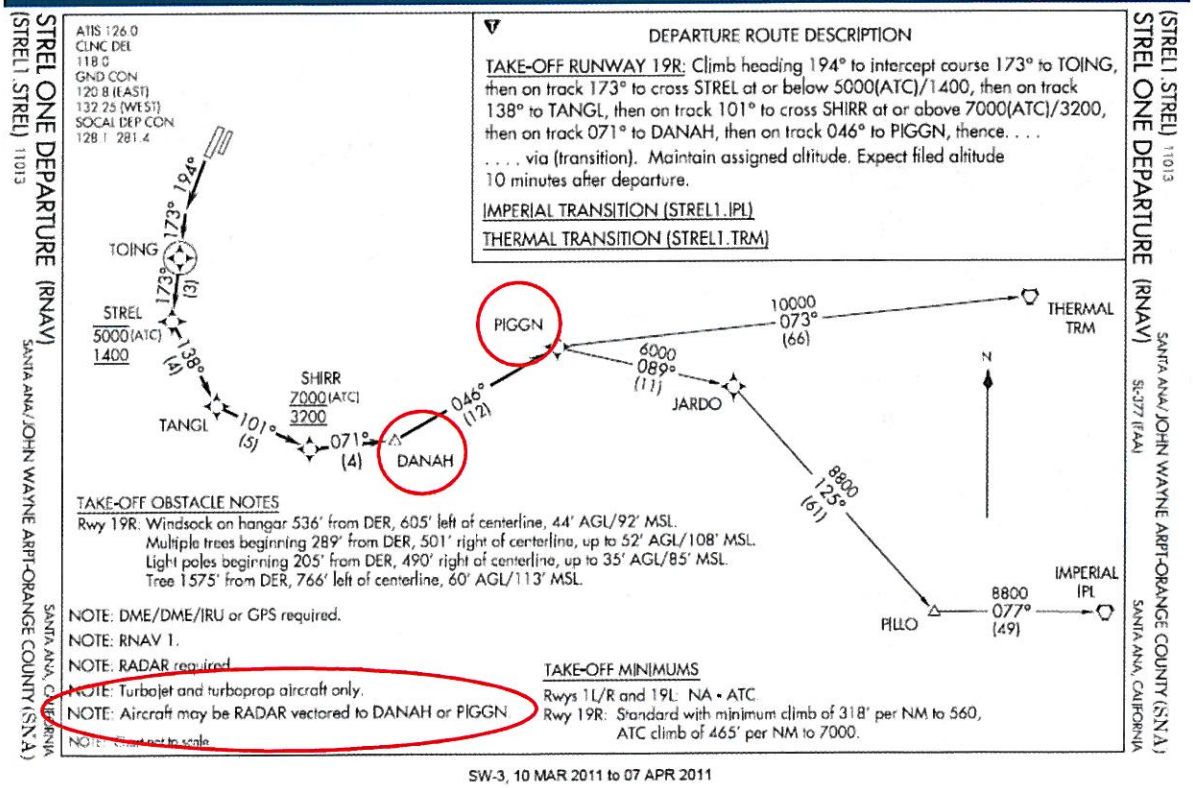



March 10, 2011
LAX Departures
SNA Departures
LGB Departures
LAX Arrivals
LGB Arrivals
LAX Departures
LGB Departures
LAX Arrivals
LGB Arrivals
SNA Departures
PDARS


February 15, 2012
John Wayne Airport
All IFR Traffic
4054 Tracks
PDARS

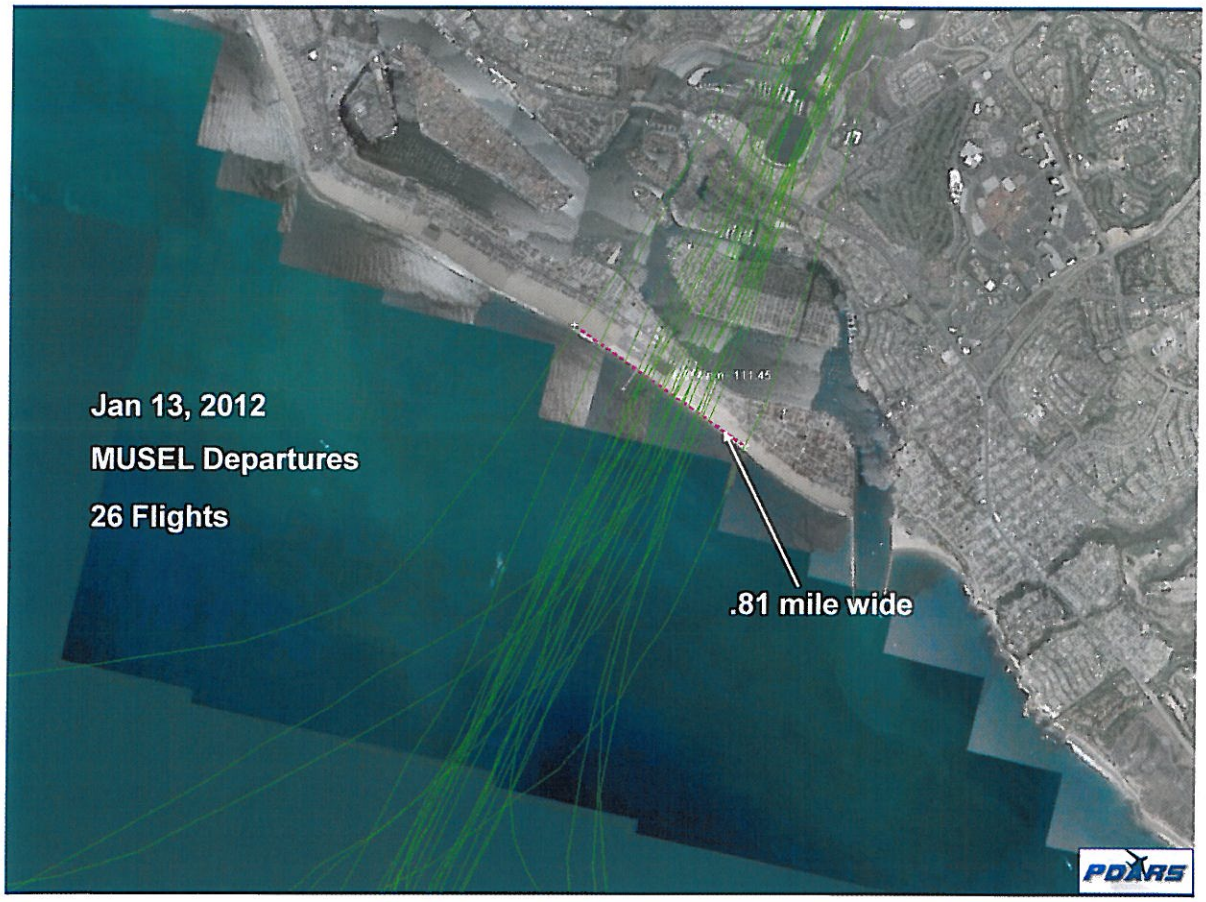


STREL ONE DEPARTURE



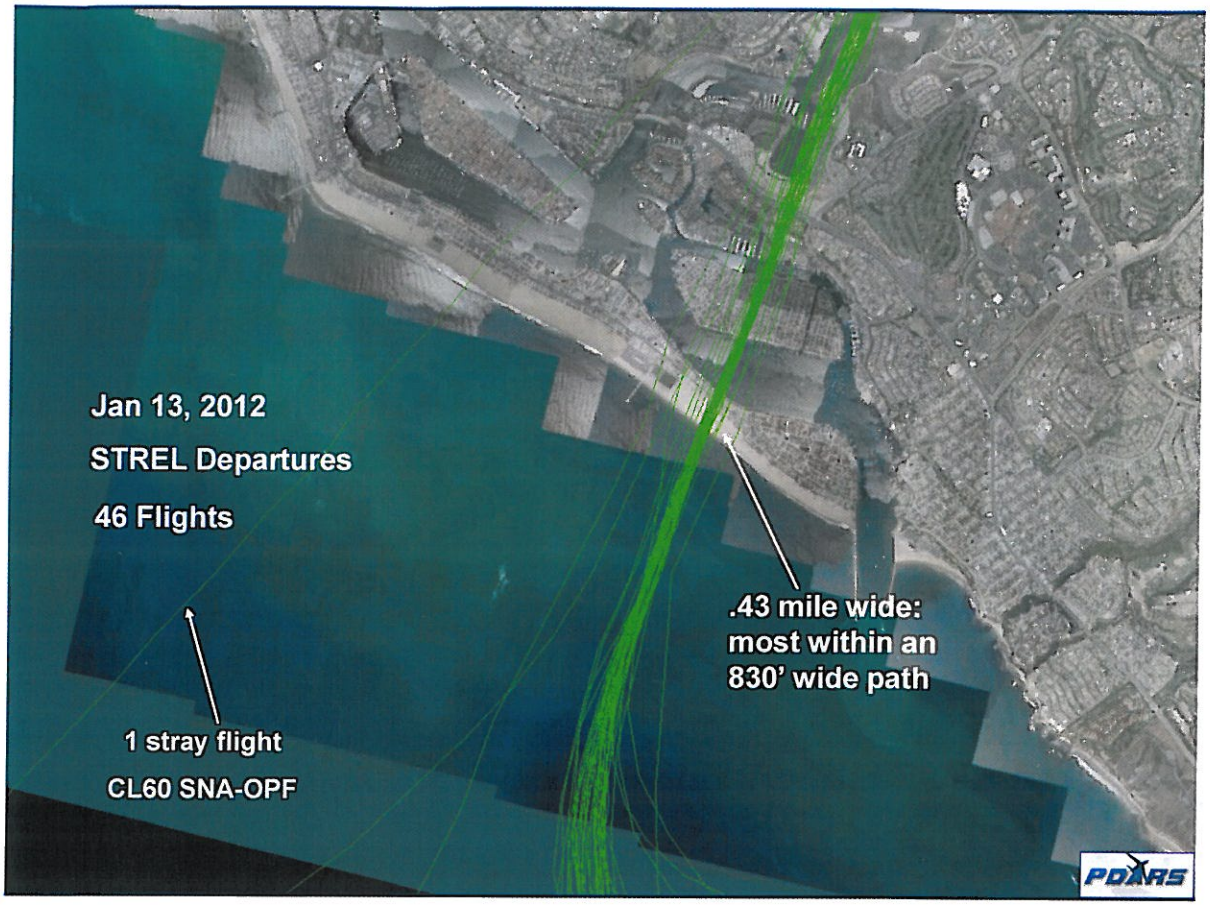
SW-3, 10 MAR 2011 to 07 APR 2011


Jan 13, 2012
MUSEL Departures
26 Flights
Spread out over community
PDARS

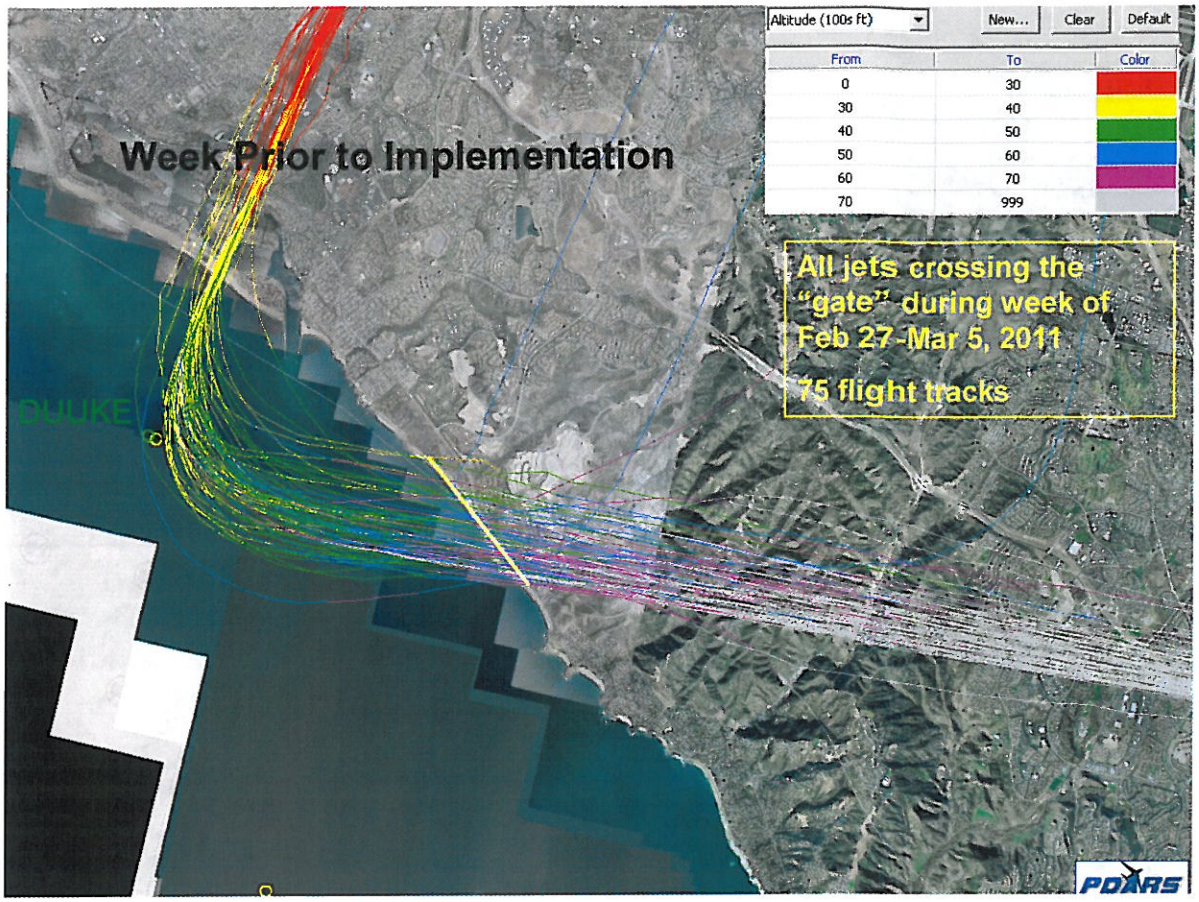

Jan 13, 2012
MUSEL Departures
26 Flights
.81 mile wide
PDARS

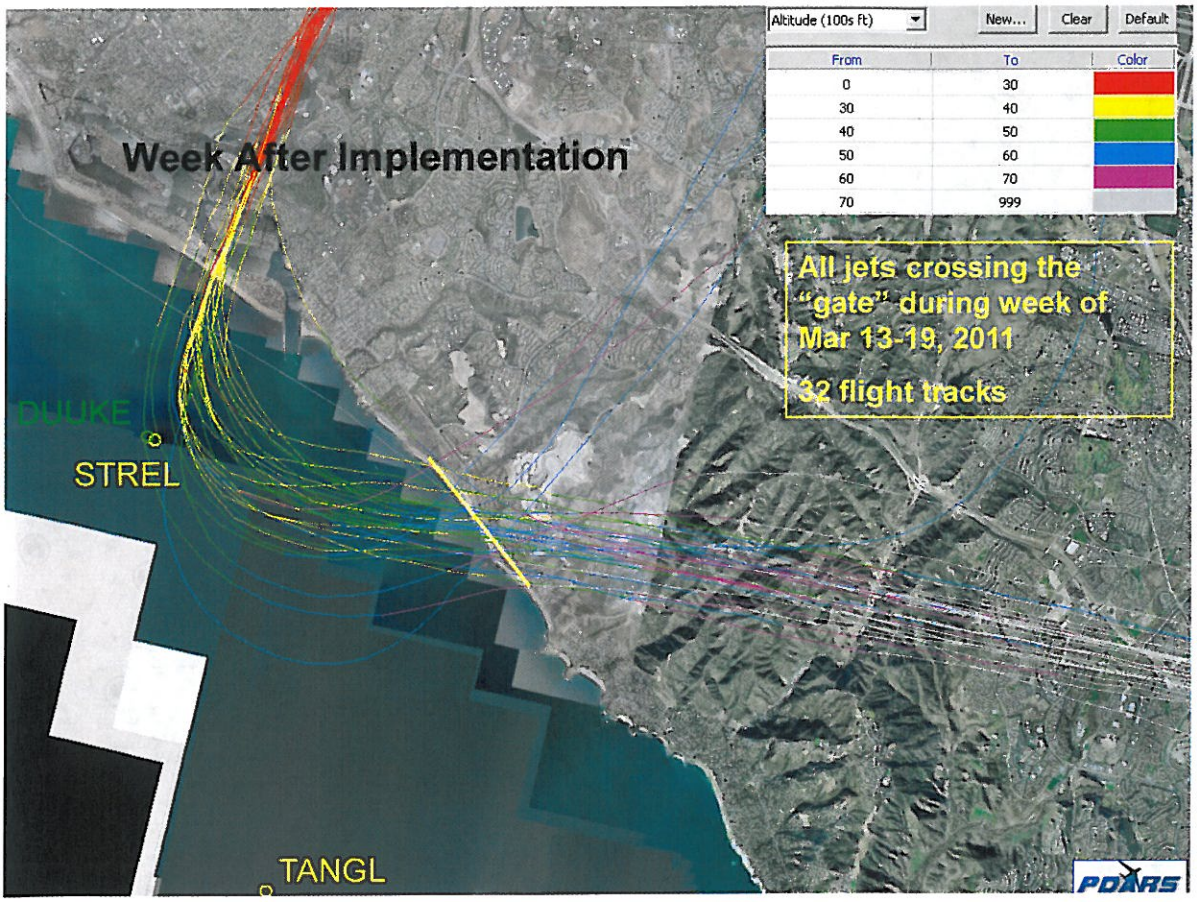

TOING
Jan 13, 2012
MUSEL Departures
Altitude (100s ft)
From To Color
0 20
20 40
40 60
60 80
10 80
PDARS


Much tighter ground path remains over waterway
Jan 13, 2012
STREL Departures
46 Flights
1 stray flight
CL60 SNA-OPF
PDARS


Jan 13, 2012
STREL Departures
46 Flights
.43 mile wide:
most within an
830' wide path
1 stray flight
CL60 SNA-OPF
PDARS


TOING
Altitude (100s ft)
From To Color
0 20
20 40
40 60
60 80
10 80
Jan 13, 2012
STREL Departures
PDARS


Week Prior to Implementation
Altitude (100s ft)
New...
Clear
Default
From
To
Color
0
30
30
40
40
50
50
60
60
70
70
999
All jets crossing the "gate" during week of Feb 27-Mar 5, 2011
75 flight tracks
DUUKE
PDARS


Week After Implementation
Altitude (100s ft)
New...
Clear
Default
From
To
Color
0
30
30
40
40
50
50
60
60
70
70
999
All jets crossing the "gate" during week of Mar 13-19, 2011
32 flight tracks
DUUKE
STREL
TANGL
PDARS

Alternate Route Possible?

- FAA was asked to look at possibility of modifying STREL departure slightly to more closely follow Newport Bay waterway and avoid overflying populated areas as much as possible
- The following slide shows what such a ground path might look like

Initial ground path is identical to turn point

Turn is further left to follow apparent channel

Distance from WP04 to WP05 is too short for aircraft to fly safely; would require far too steep bank angles

Flight Standards design criteria will not allow this route

Letter from SNA Airport Director to FAA Western Pacific Administrator requesting fix be placed over NMS 7S

William C. Withycombe
July 12, 2010
Page 2

We believe that the aircraft systems anticipate this early turn and, based on high resolution ADS-B tracking, it appears the aircraft are making a slight right turn to get back on the proper track. By the time aircraft reach the Airport's Noise Monitoring Station #7 (NMS7S) at Newport Dunes, they have returned to the desired track.

FAA has advised that, to correct the eastward shift in flight tracks, the STREL ONE includes a shift in the existing DUUKE waypoint west to a new location which would, theoretically, result in a delay in the turn and movement of aircraft operations more to the center of the Bay. However, it appears that STREL ONE maintains the same heading as DUUKE ONE and DUUKE TWO, but on a parallel course west of the original course. We are concerned that this combination of a new waypoint to the west and the use of the same course will result in a shift of aircraft toward the center of the upper Bay (between NMS4S and NMSSS), but will also move aircraft west of the traditional SID in the lower Bay (near NMS6S) and adversely impact communities in that location.

Dr. Clarke and Mr. Mestre have recommended, and we concur, that FAA consider: (1) retaining the turn location proposed in the STREL ONE; (2) establishing a new waypoint at NMS7S; and (3) moving the DUUKE waypoint to the east. Based on their preliminary analysis, it appears that a 1730 heading, based on a waypoint at NMS7S, would create a turn point where the STREL ONE turn point is currently planned. Assuming aircraft would continue to turn early, as they have with the DUUKE procedures, the track should follow the middle of the Bay and cross over NMS7S. From this point, aircraft would make a slight right turn to continue on to the existing DUUKE. We are aware, however, that some carrier representatives have expressed concern about unnecessary turns that result in both discomfort to passengers and additional expense to the air carriers due to fuel burn. The creation of a second new waypoint about 300 feet east of DUUKE could keep aircraft on a straight line from the turn over NMS7S and out to the new waypoint and would allow carriers to fly a more direct route to the east.

Based on our experience with the DUUKE procedures, we recognize that the RNAV design and simulation process does not always provide an accurate picture of where aircraft will fly once a new procedure is used in day-to-day operations. As a result, we recommend that FAA work with JWA's existing carriers to conduct test flights with the new STREL ONE before the procedure is published. In order to provide the best tracking data, it would be advantageous to have ADS-B equipped aircraft perform the test flights. These flights would allow FAA, JWA, the carriers and the Newport Beach community to better understand whether the STREL ONE will, in fact, perform as intended.

Page two of a four page document

STREL-MUSEL Observations

- Almost twice the number of flights use STREL compared to MUSEL
  - Jan 9-13/2012 (Mon-Fri): 828 SNA departures, 233 STREL, 124 MUSEL
- Flights using STREL maintain a more precise ground path
- The "window" as flights cross the shoreline is far smaller for STREL departures, with most inside an 830' area vs. over ¾ mile by MUSEL departures
- If the TOING waypoint was moved in any direction it would result in more flights over land instead of remaining over Upper Newport Bay waterway
- The location of TOING (over Noise Monitor 7) was decided by collaborative effort with the SNA airport authority