ACOUSTICAL ANALYSIS ASSOCIATES, INCORPORATED

AAAI Report 1533
AAAI Project 88018

QUARTERLY NOISE MONITORING AT HOLLYWOOD BURBANK AIRPORT FOURTH QUARTER 2018

FEBRUARY 2019

Prepared for:

BURBANK -GLENDALE -PASADENA AIRPORT AUTHORITY

950 Enchanted Way • Suite 105 • Simi Valley, CA 93065 • (805) 584-9428 • Fax (805) 584-8274

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Prepared for:

Burbank-Glendale-Pasadena Airport Authority
2627 Hollywood Way
Burbank, CA 91505

Prepared by:

Acoustical Analysis Associates, Inc.
950 Enchanted Way, Suite 105
Simi Valley, CA 93065

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QUARTERLY NOISE MONITORING AT HOLLYWOOD BURBANK AIRPORT FOURTH QUARTER 2018

I. INTRODUCTION

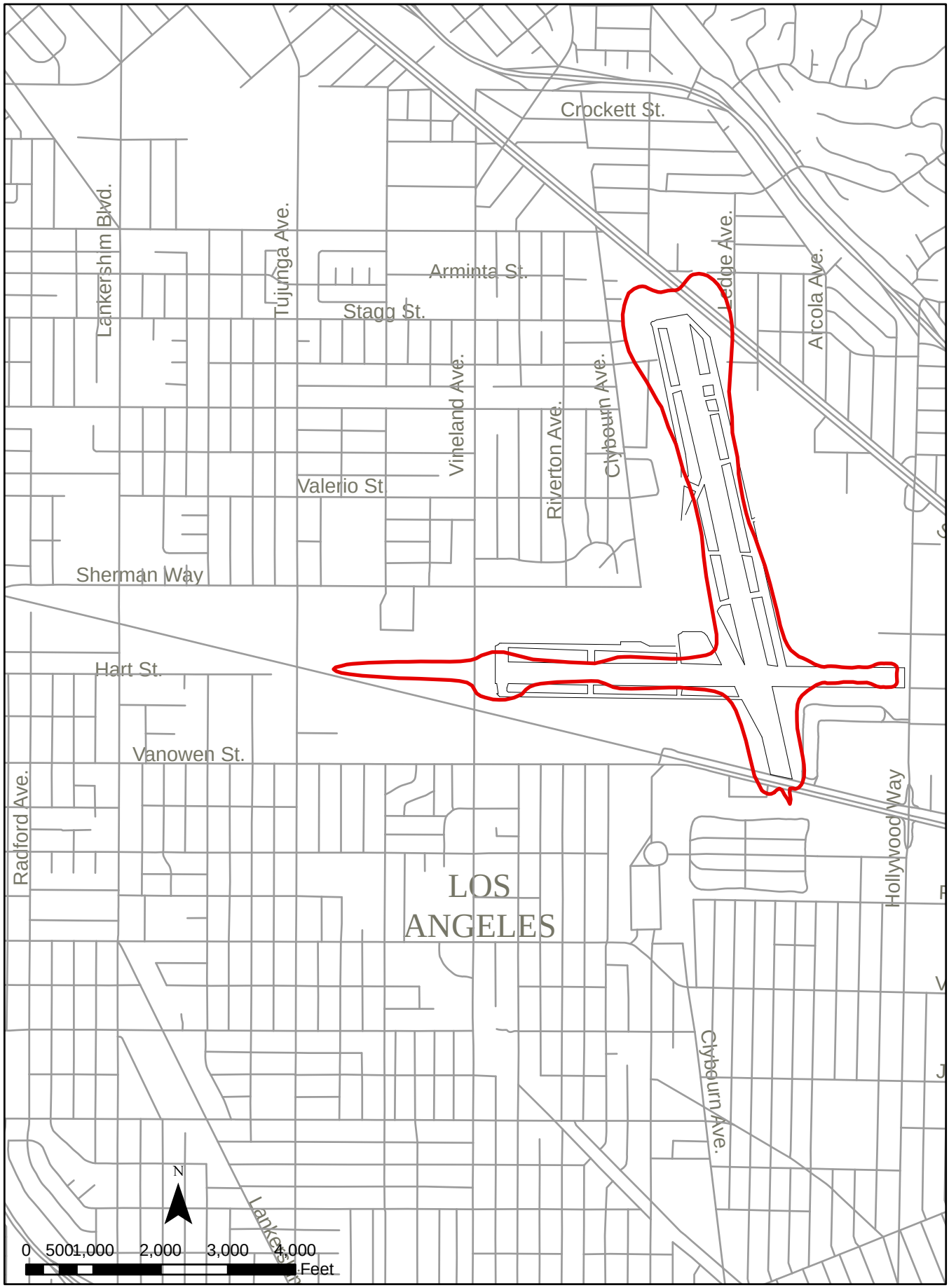
In compliance with the California Noise Standards (Reference 1) and the current variance from certain provisions of the Standards (Reference 2), the operator of the Hollywood Burbank Airport is required to perform noise monitoring in the vicinity of the airport for the purpose of establishing a noise impact boundary. The Noise Standards currently specify a community noise equivalent level (CNEL) of 65 dB for the noise impact boundary[1]. The airport is required to provide, each quarter, an updated annual noise impact contour based on measurement data over the four preceding quarters.

A permanent noise monitoring system became operational in April 1980 and, with brief interruption for system expansion, maintenance, and program changes, has been operational since that time. Of the original nine noise monitor sites, eight have remained unchanged since 1980. The monitor at site 8 was removed in 1997 and replaced by a monitor at site 18. Two sites were added east of the airport in late 1980. Four sites were added south of the airport in January 1986 in response to the requirement to determine the 65 dB contour. Three more locations were added in February 1997. Two of these, identified as 16 and 17, are south of the airport, and one, 18, is to the west. These locations were added to permit monitoring closer to the 65 dB contour. The noise monitoring computer at the airport was replaced in August 1995.

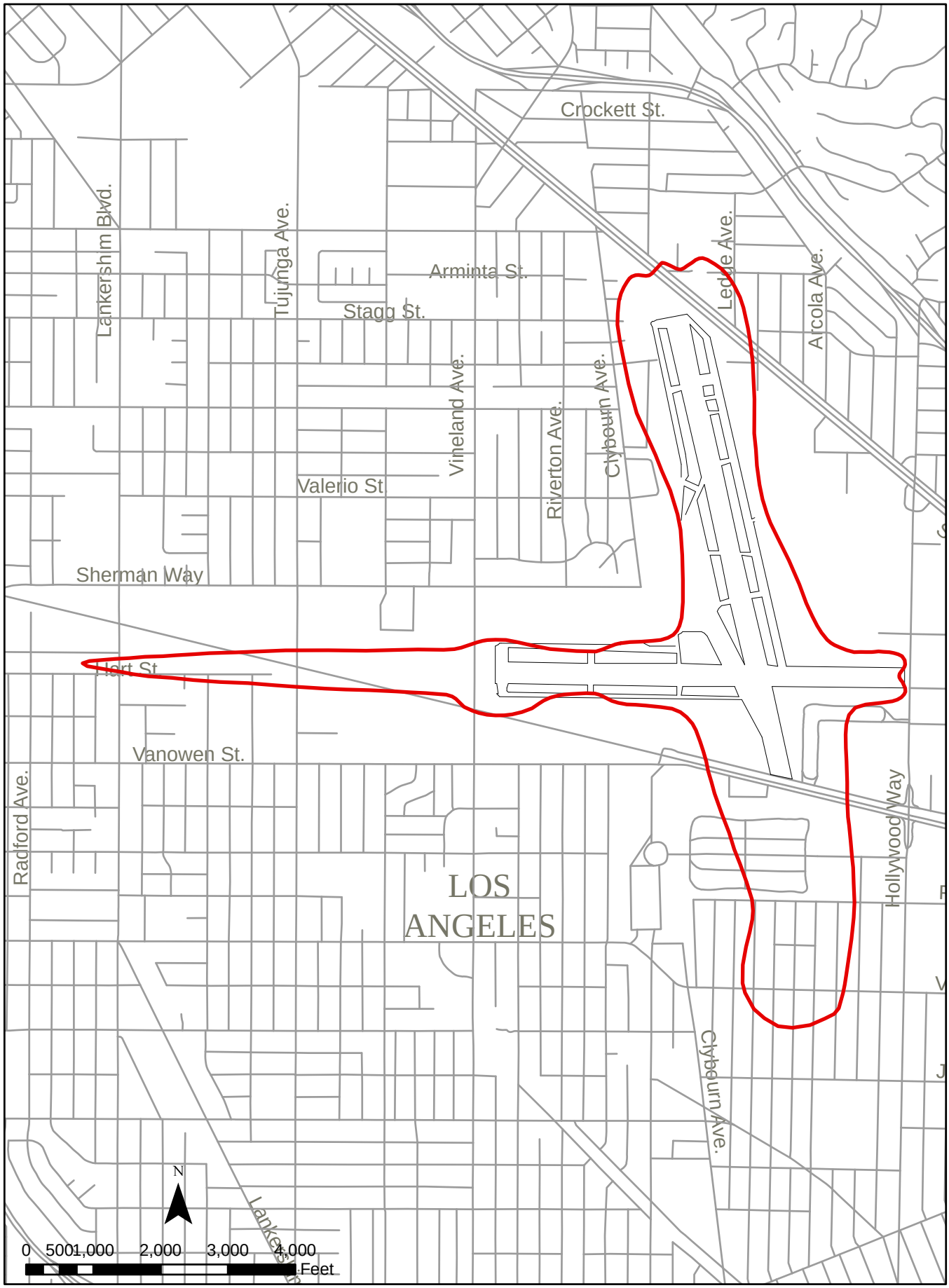
The Hollywood Burbank Airport Noise Monitoring System was modernized and augmented in late December 2012 by replacing the noise and flight track matching software, the noise monitoring hardware, and by adding sites 19, 20, 21, and 22 to allow closer monitoring to the current 65 dB CNEL contour. The old site 17 was removed as redundant with site 15, so the updated noise monitoring system contains 20 permanent microphone locations.

This report describes the data acquired by the monitoring system during the fourth quarter of 2018. Noise impact boundaries for 65 dB and 70 dB are shown based on these measurements and measurements obtained during the first, second and third quarter 2018 reported in

1 Prior to January 1, 1986, a CNEL of 70 dB defined the noise impact boundary.



BURBANK AIRPORT - 70 CNEL CONTOUR for 4th QUARTER 2018



BURBANK AIRPORT - 65 CNEL CONTOUR for 4th QUARTER 2018

References 3, 4 and 5. Figure 1 shows the 70 dB contour and Figure 2 shows the 65 dB contour, based on the measured noise data.

II. NOISE MEASUREMENTS

A. Sites

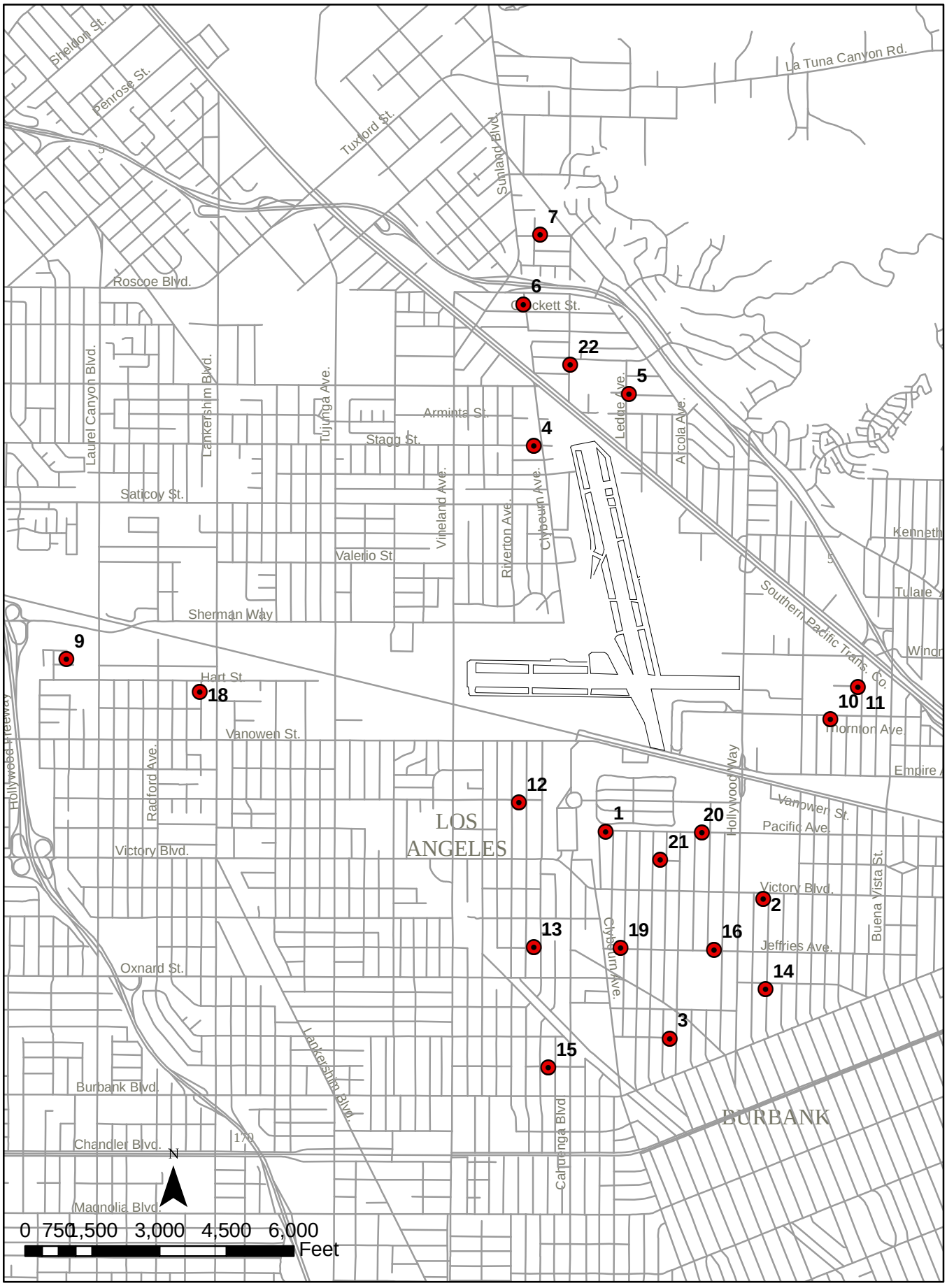
Aircraft noise levels were monitored at 15 locations prior to February, 1997. Two sites were added in February 1997, and equipment at one site west of the airport was moved to a new location. In July 2003, the monitor station at site 9 was moved 105 feet further west to accommodate new construction at the Fire Station. In December 2012, four new monitor sites were added and one existing site removed as redundant, leaving a total of twenty noise monitoring locations. The noise monitor sites are shown in Figure 3.

B. Noise Measurement Equipment

Each of the microphone locations uses an identical set of equipment connected to a central control unit. The noise level at each site is stored locally and transmitted by broad band connection to the central site once per 24-hour period. The automated noise and flight track monitoring software processes the data to produce (among other measures) the CNEL at each site. Appendix A provides a brief description of the system.

C. Noise Data

During this quarter, there were occasional power interruptions and monitor equipment failures, causing some loss of data. Tables 1, 2, and 3 show the aircraft CNEL measured at each monitoring site for each day of the quarter. The dashed lines indicate days for which a monitor was operating for less than 94% of the time. The data for these days was excluded from the averages.



BURBANK AIRPORT - NOISE MONITOR LOCATIONS

D. Operational Data

Departure and arrival schedules are provided by the airlines. In addition, operations of air carrier, general aviation and rotary-wing aircraft are determined from the airport's computerized flight tracking system.

III. MEASURED NOISE DATA

Daily CNEL values for the noise monitoring system are listed in Tables 1, 2, and 3. Table 4 lists the average values for each quarter together with the annual average.

IV. SCHEDULED AIRLINE AND AIR TAXI OPERATIONS

The scheduled air carrier and commuter operations for the quarter are shown in Table 5.

V. CNEL CONTOUR DEVELOPMENT

The contours shown in Figures 1 and 2 are based upon computer-generated "master" contours which are adjusted to reflect the monitoring data. Beginning with the second quarter 2009, noise contours are developed using the master contours produced by Version 7.0 of the Integrated Noise Model (INM), a sophisticated aircraft noise modeling program developed for the Federal Aviation Administration. Inputs to the program consist of aircraft types and performance data, flight paths, numbers of operations, and day/evening/night distribution of flights. The program calculates CNEL values at equally spaced grid points and produces CNEL contour lines at 1 dB intervals. The annual average CNEL values at each site were marked at the appropriate locations on the contour map and the locations of the 65 and 70 dB CNEL contours were determined in the vicinity of each measuring point. These points were then joined following the general shape of the computed contours.

The master contours used in developing the contours for this quarter are based on operations for the 12-month period from January 1, 2014 through December 31, 2014. These replaced the previous master set of CNEL Contours which were based on operations for the 12-month period from July 2008 through June 2009.

TABLE 1. CNEL VALUES FOR OCTOBER 2018

RMS NUMBER

Date	1	2	3	4	5	6	7	9	10	11	12	13	14	15	16	18	19	20	21	22
10/01/18	63.5	60.8	62.2	52.6	55.9	63.2	54.4	62.7	48.8	---	53.5	57.8	58.6	60.4	64.7	61.5	63.7	66.8	68.1	63.6
10/02/18	62.4	60.1	61.7	56.4	56.7	52.7	55.2	62.7	51.9	---	57.6	58.4	57.9	60.6	62.4	62.5	63.4	65.8	67.1	60.6
10/03/18	62.5	60.4	61.7	56.5	56.0	49.1	51.5	63.4	51.7	---	53.6	58.2	58.3	60.9	62.8	63.4	63.6	66.2	67.6	57.1
10/04/18	---	61.5	62.6	51.7	56.3	54.5	54.6	63.9	58.4	---	53.2	58.6	59.3	61.2	63.9	63.6	64.0	67.3	68.4	59.1
10/05/18	63.6	60.8	62.8	55.8	55.8	53.2	55.6	64.3	51.5	---	53.3	58.3	59.7	61.7	64.6	63.8	64.5	67.2	68.6	60.8
10/06/18	61.2	56.8	60.3	53.3	55.2	47.3	48.3	60.6	49.4	---	49.4	57.1	57.4	59.6	64.5	59.5	61.7	64.4	67.2	53.0
10/07/18	62.3	60.7	62.1	56.2	57.5	55.2	56.5	62.1	50.5	47.7	53.2	58.0	58.7	61.7	63.6	60.8	64.3	66.6	68.0	61.0
10/08/18	62.4	60.2	61.5	59.2	56.3	57.1	55.2	63.0	49.0	46.8	54.6	59.0	58.4	61.4	62.8	62.9	64.0	66.2	67.8	61.0
10/09/18	61.8	59.8	61.4	57.6	57.9	54.4	55.2	63.9	47.5	48.6	53.8	59.0	57.7	61.1	62.7	64.3	63.5	65.5	67.1	61.1
10/10/18	62.7	61.2	63.2	55.6	56.0	53.9	54.2	64.0	51.3	50.8	53.2	58.9	59.4	61.4	64.3	64.3	63.9	67.2	68.2	59.8
10/11/18	62.2	61.2	62.9	52.3	54.0	50.5	54.0	63.3	50.8	52.1	53.5	63.4	59.6	60.8	64.0	62.5	63.6	67.1	67.9	58.9
10/12/18	56.3	61.3	62.2	59.0	57.1	54.6	54.6	63.5	55.3	51.3	53.5	59.5	59.2	61.9	64.1	62.4	64.1	67.0	68.7	61.3
10/13/18	60.7	54.7	59.8	50.9	55.1	52.8	49.2	60.9	51.0	44.1	50.1	55.7	56.3	58.8	62.0	59.7	61.0	64.0	65.2	55.3
10/14/18	62.3	61.0	62.5	53.9	56.6	48.5	53.7	62.8	55.2	47.6	53.3	56.2	60.2	60.6	64.1	61.6	63.5	66.8	68.0	55.8
10/15/18	57.3	51.5	54.1	59.1	60.3	61.8	58.3	59.5	55.3	50.5	50.6	49.5	50.8	50.2	55.3	58.2	55.3	58.8	59.9	64.7
10/16/18	60.5	58.3	59.2	61.1	60.5	59.9	57.9	61.5	52.8	54.1	54.2	56.6	56.1	57.4	55.8	60.7	60.8	64.3	65.4	63.8
10/17/18	60.9	59.5	60.9	55.9	57.0	54.2	53.6	61.3	49.3	52.9	54.4	56.9	57.7	59.9	63.0	60.3	62.6	65.5	66.7	59.5
10/18/18	62.1	60.6	62.3	57.1	57.8	53.0	56.7	61.2	55.0	53.1	54.4	57.2	58.7	60.1	63.6	60.7	63.1	66.7	67.8	61.7
10/19/18	61.4	57.4	60.0	59.4	60.0	59.4	56.6	62.7	55.5	56.7	53.4	56.7	56.5	59.1	61.4	61.7	61.7	64.8	66.2	63.9
10/20/18	57.3	53.4	56.9	52.7	53.5	49.5	53.6	57.9	47.2	50.9	46.7	53.2	53.7	56.9	58.6	56.8	58.6	61.8	63.6	59.2
10/21/18	62.9	60.4	61.9	60.0	59.7	47.0	52.4	61.6	52.0	48.9	53.2	57.9	58.9	60.5	63.6	60.7	64.4	67.2	68.7	57.5
10/22/18	62.5	60.9	62.6	56.2	55.5	50.0	51.0	62.8	55.2	51.5	53.5	58.1	59.1	60.9	63.8	61.9	63.9	67.1	68.2	56.5
10/23/18	62.3	60.5	62.0	55.3	54.6	54.2	55.5	63.9	52.9	53.6	54.9	58.1	58.3	61.0	---	65.4	63.6	66.3	67.7	59.5
10/24/18	61.0	59.7	61.5	55.2	55.9	50.5	55.0	63.7	50.9	51.4	55.8	56.4	57.7	60.2	63.3	62.3	62.9	65.5	67.0	59.6
10/25/18	62.3	60.7	62.3	55.4	55.5	50.3	53.5	62.4	51.9	45.8	53.7	57.8	58.6	61.1	63.4	61.3	63.9	66.7	68.1	57.8
10/26/18	62.7	60.7	62.6	55.6	59.5	54.7	56.6	63.5	52.3	54.6	54.3	57.4	58.9	60.7	60.6	65.5	63.8	67.0	68.4	60.6
10/27/18	62.3	58.0	61.3	61.1	64.7	53.7	55.7	60.3	50.0	49.5	52.0	56.7	58.2	60.1	---	61.4	62.4	66.0	67.7	59.7
10/28/18	62.6	61.0	61.9	58.7	58.0	52.1	53.6	61.5	51.4	49.7	54.9	56.8	58.7	60.8	---	60.5	63.8	66.7	68.0	59.7
10/29/18	67.7	61.1	61.8	56.3	58.8	53.5	55.8	63.1	52.3	53.0	61.3	64.3	58.7	61.6	65.8	62.1	66.0	66.6	68.5	61.1
10/30/18	62.3	60.1	61.8	55.8	55.3	57.2	58.1	63.4	48.3	48.2	53.8	58.4	58.1	60.8	55.7	62.5	63.5	66.1	67.5	63.7
10/31/18	60.0	57.9	59.2	57.1	57.8	55.7	56.0	61.6	51.1	50.6	53.8	55.5	55.6	58.3	58.9	60.8	60.9	63.7	64.9	61.1
AVERAGE	62.2	59.9	61.6	57.0	57.9	55.6	55.1	62.6	52.6	51.5	54.3	58.3	58.2	60.4	62.9	62.2	63.2	66.0	67.4	60.7
NO. DAYS	30	31	31	31	31	31	31	31	31	25	31	31	31	31	28	31	31	31	31	31

TABLE 2. CNEL VALUES FOR NOVEMBER 2018

RMS NUMBER

Date	1	2	3	4	5	6	7	9	10	11	12	13	14	15	16	18	19	20	21	22
11/01/18	61.7	59.9	61.2	58.0	59.4	54.0	56.6	61.9	59.6	53.9	53.4	57.9	57.7	60.8	62.7	60.9	62.9	65.8	67.1	61.8
11/02/18	61.4	59.6	61.5	58.0	60.9	55.8	57.8	61.8	55.4	55.1	54.1	56.4	57.9	60.3	62.8	60.8	62.3	65.9	67.0	62.6
11/03/18	58.7	54.0	58.6	54.8	55.8	52.6	54.6	58.3	51.0	50.3	49.7	53.7	55.0	56.7	60.1	57.5	58.9	63.1	64.5	59.3
11/04/18	61.1	60.0	61.4	57.3	57.6	50.6	56.3	61.6	50.9	49.4	53.2	56.5	57.7	59.8	62.6	60.5	62.3	66.0	67.2	60.5
11/05/18	62.3	60.0	61.5	55.8	56.3	50.5	52.2	62.3	48.4	48.3	53.7	58.2	58.1	60.9	60.0	62.9	63.9	66.2	67.8	56.4
11/06/18	61.5	59.4	61.0	55.0	54.8	53.4	56.7	63.7	52.7	49.8	53.0	58.1	57.3	60.5	62.6	63.0	63.3	65.3	66.9	59.6
11/07/18	61.9	59.9	61.0	53.7	55.4	52.1	55.1	63.7	50.6	52.9	53.4	57.8	57.7	60.7	62.5	62.7	63.6	66.1	67.6	60.6
11/08/18	60.6	58.4	60.6	60.2	60.5	61.0	57.1	61.6	49.2	47.6	52.7	55.1	57.0	57.8	62.3	60.4	60.8	64.8	66.0	63.7
11/09/18	57.5	55.2	56.2	60.0	59.3	59.1	56.2	60.4	51.1	48.7	49.3	50.4	52.6	53.6	59.8	59.9	57.0	62.4	63.2	62.9
11/10/18	57.8	49.1	57.5	49.9	58.0	46.6	43.6	57.6	44.0	41.6	48.0	52.1	53.5	55.7	59.4	56.4	58.2	61.9	63.6	52.7
11/11/18	60.1	58.9	60.2	60.4	60.2	47.3	50.3	60.7	49.8	50.1	52.4	54.8	56.3	58.6	61.3	60.0	61.6	64.7	66.2	54.3
11/12/18	59.6	57.8	59.1	57.8	58.7	53.7	53.7	59.7	50.9	56.2	51.3	54.5	55.2	57.6	60.5	58.3	61.1	64.1	65.6	59.3
11/13/18	58.6	57.3	58.6	56.6	57.1	51.9	54.7	60.7	51.8	52.9	51.0	55.5	55.0	57.3	59.9	60.3	60.3	63.5	64.7	57.5
11/14/18	59.3	57.0	58.8	56.2	54.4	54.9	52.9	60.5	50.8	52.7	53.1	53.9	55.3	57.2	60.3	59.4	60.3	63.7	64.8	58.6
11/15/18	62.3	51.7	60.5	55.6	55.6	52.4	54.1	62.1	53.7	57.0	53.0	56.9	57.2	59.5	62.7	61.4	59.1	65.0	67.2	57.1
11/16/18	61.7	52.4	57.0	56.2	58.7	71.0	57.4	64.1	57.0	57.3	51.3	58.1	56.1	56.6	63.4	63.0	52.5	57.9	59.1	68.3
11/17/18	57.6	45.9	46.4	46.6	51.9	50.5	51.2	63.4	48.3	48.3	44.1	56.5	47.3	55.3	58.1	61.3	47.8	51.1	52.8	54.1
11/18/18	61.8	60.5	61.8	61.2	61.1	48.9	52.9	61.8	49.9	51.3	52.5	56.3	58.2	60.1	63.1	60.8	63.2	66.6	68.0	54.7
11/19/18	62.2	60.7	61.4	59.3	59.3	49.6	51.6	61.8	53.0	54.1	56.2	57.5	58.1	60.4	62.9	61.0	63.7	66.6	67.9	56.1
11/20/18	62.7	61.2	62.9	60.6	57.3	62.7	54.6	63.4	56.4	46.4	55.8	59.1	59.3	61.0	63.7	63.5	64.2	67.1	68.4	58.8
11/21/18	65.1	61.5	63.0	58.2	59.5	53.3	53.5	65.1	52.0	53.5	55.5	60.7	59.9	63.5	64.8	63.9	65.9	68.4	69.8	58.4
11/22/18	60.8	54.0	60.2	51.2	52.6	50.9	53.2	58.6	50.5	45.2	50.8	55.8	57.0	60.1	61.9	58.1	61.7	65.1	66.2	58.2
11/23/18	60.5	48.2	55.8	50.4	53.6	49.3	53.4	62.7	54.1	51.6	49.3	55.2	56.4	57.9	62.5	61.9	52.4	57.7	59.0	58.4
11/24/18	58.0	45.8	46.4	50.1	53.7	49.8	54.4	61.8	48.8	50.1	47.2	54.5	47.8	50.5	58.2	60.1	46.5	53.7	55.9	59.9
11/25/18	62.8	61.5	63.0	54.8	56.7	50.0	52.0	62.6	49.5	50.3	54.1	57.0	59.3	61.1	64.2	61.3	64.0	67.6	68.8	57.7
11/26/18	62.6	61.3	62.7	59.2	57.5	52.1	53.4	61.7	52.3	52.6	54.4	57.0	59.0	60.4	63.8	60.8	63.5	67.3	68.3	58.2
11/27/18	61.6	59.4	60.9	55.9	55.6	51.6	54.9	62.8	53.2	51.1	54.8	57.3	57.2	59.9	61.9	61.5	62.6	65.4	66.8	60.0
11/28/18	62.5	59.9	61.0	56.8	56.6	49.8	51.8	63.9	54.9	52.9	55.1	58.8	57.7	60.7	62.1	62.6	64.8	65.8	67.2	55.9
11/29/18	63.8	61.7	62.4	60.6	59.7	55.9	55.5	64.2	54.3	55.1	55.6	59.4	59.7	61.8	64.4	62.9	64.7	67.2	68.3	---
11/30/18	60.8	60.8	60.3	60.8	62.0	62.2	59.1	61.2	52.8	56.1	52.6	53.5	60.1	56.3	65.7	61.4	59.7	65.6	65.8	---
AVERAGE	61.3	58.8	60.5	57.6	58.1	58.7	54.8	62.2	53.0	52.7	53.0	56.8	57.3	59.4	62.4	61.3	62.0	65.1	66.5	60.2
NO. DAYS	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28

TABLE 3. CNEL VALUES FOR DECEMBER 2018

RMS NUMBER

Date	1	2	3	4	5	6	7	9	10	11	12	13	14	15	16	18	19	20	21	22
12/01/18	57.5	58.0	59.1	56.9	59.0	59.7	57.0	55.8	50.6	52.5	51.3	52.5	56.0	55.8	62.3	55.5	58.0	63.1	64.0	---
12/02/18	58.6	53.2	54.9	62.4	65.0	65.9	63.3	56.6	51.4	50.9	46.6	48.5	54.0	46.4	63.0	58.3	50.9	60.4	61.0	---
12/03/18	62.9	61.1	62.2	57.6	55.4	52.5	56.8	61.8	50.8	51.2	55.8	58.8	58.9	61.0	63.7	61.4	64.7	67.0	68.4	---
12/04/18	61.3	59.2	59.6	55.9	58.2	54.4	57.6	62.1	56.0	54.4	54.6	58.8	56.6	60.0	61.1	60.9	61.9	64.7	65.8	---
12/05/18	63.5	59.0	60.6	57.0	55.5	56.4	58.7	64.8	50.6	52.4	61.6	59.3	57.6	61.4	62.9	63.3	64.2	66.6	68.1	---
12/06/18	61.5	56.9	60.5	62.6	62.8	60.8	59.4	59.3	53.7	53.6	57.8	55.3	58.2	58.0	65.9	58.2	61.0	65.0	66.3	---
12/07/18	62.1	53.1	57.5	57.1	57.2	55.9	56.4	61.4	52.5	52.4	57.5	57.3	55.4	58.0	65.3	60.3	54.8	62.6	63.2	---
12/08/18	57.8	44.2	45.7	47.5	53.7	51.7	53.5	60.0	50.6	50.2	53.0	52.6	43.1	55.9	57.4	59.4	46.9	53.6	53.3	---
12/09/18	61.8	60.8	61.4	54.8	52.7	52.2	53.7	62.1	52.2	52.6	55.0	52.2	58.2	60.3	63.0	61.2	62.8	66.4	67.5	---
12/10/18	62.6	60.5	61.8	56.2	54.5	53.1	55.0	62.7	51.2	53.0	54.9	53.0	58.5	60.9	63.3	61.8	63.6	66.7	67.9	---
12/11/18	62.5	61.3	62.3	59.3	58.8	55.4	55.8	63.3	51.3	52.8	68.4	58.7	58.5	61.5	63.3	62.6	64.0	66.6	68.0	---
12/12/18	63.2	61.1	62.3	57.6	58.5	51.6	55.2	63.9	54.3	51.0	58.9	58.7	59.0	61.5	63.7	62.5	64.2	67.1	68.3	---
12/13/18	62.8	59.9	60.8	60.6	62.7	63.6	60.8	63.2	58.0	55.8	60.5	56.0	57.7	58.5	62.7	62.1	61.4	66.1	66.6	---
12/14/18	61.9	60.2	61.2	58.8	58.0	54.5	52.5	61.8	51.1	50.7	55.3	56.8	57.6	59.8	62.8	61.2	62.9	66.4	67.6	---
12/15/18	59.2	57.7	58.8	53.2	57.2	51.7	51.2	59.4	50.9	51.6	52.8	54.6	55.1	57.3	60.2	58.7	60.3	63.7	64.8	---
12/16/18	62.1	60.7	61.8	56.8	57.0	47.0	50.3	62.1	51.4	49.0	54.5	57.0	58.3	60.3	63.2	60.8	63.4	66.8	68.0	---
12/17/18	62.2	61.6	62.6	52.1	56.7	53.3	56.4	62.8	53.6	52.0	54.1	58.1	59.1	61.1	63.7	62.0	63.6	66.6	68.0	60.3
12/18/18	62.6	61.4	62.7	56.6	58.0	53.9	53.0	63.5	51.5	48.8	55.3	57.9	59.2	61.2	63.8	62.5	63.8	67.3	68.2	57.9
12/19/18	63.1	61.8	63.3	61.9	63.5	55.9	54.4	63.5	62.5	54.2	56.9	58.8	59.6	61.4	64.8	62.3	64.1	67.8	68.7	58.7
12/20/18	63.2	62.0	63.3	58.4	60.3	49.9	53.2	63.5	54.1	53.4	56.8	58.4	60.5	61.2	65.0	62.4	64.6	67.9	69.2	57.3
12/21/18	64.1	62.6	63.7	60.3	60.0	53.5	55.1	65.0	53.9	55.0	56.6	59.2	60.7	62.1	65.0	63.5	65.1	68.5	69.7	61.5
12/22/18	62.0	60.9	61.7	56.5	56.9	49.4	51.0	63.4	50.7	53.4	55.2	57.4	58.4	60.6	63.4	62.3	63.4	66.8	68.0	52.5
12/23/18	62.9	61.6	63.0	57.3	58.3	50.1	57.0	62.6	53.2	53.7	55.2	58.2	59.4	61.4	64.0	61.5	64.1	67.3	68.5	53.7
12/24/18	61.3	59.0	59.6	57.2	54.2	44.8	52.3	61.1	52.5	51.2	52.7	57.2	56.4	59.4	60.9	60.0	62.4	65.0	66.2	50.4
12/25/18	59.2	56.0	59.0	62.1	64.5	65.0	61.2	52.0	50.8	48.9	48.7	51.4	56.5	51.6	63.8	49.7	55.7	62.9	63.5	66.8
12/26/18	62.7	61.1	62.3	58.2	59.2	58.9	56.1	62.8	53.6	52.6	55.1	57.7	59.0	60.4	64.0	61.8	63.5	67.0	68.2	61.8
12/27/18	61.5	59.9	61.4	63.6	64.8	65.2	61.2	60.6	55.1	53.0	56.3	55.3	58.8	57.3	65.4	59.7	60.6	66.1	66.5	67.0
12/28/18	58.9	55.1	56.4	61.0	63.3	64.4	62.8	59.4	51.0	49.6	51.9	53.9	53.3	54.3	60.2	58.2	57.6	61.8	62.6	68.0
12/29/18	60.8	59.1	59.9	59.2	56.8	52.1	54.1	60.6	50.8	52.2	55.2	56.5	56.0	58.6	61.0	59.7	61.6	64.8	65.9	58.5
12/30/18	62.2	60.2	61.5	59.7	60.2	51.1	53.8	62.3	50.9	49.9	54.5	58.6	57.7	60.9	62.4	61.2	63.6	66.0	67.5	56.5
12/31/18	58.1	54.8	55.6	60.0	64.6	63.0	59.3	60.0	49.5	44.5	52.7	52.0	52.8	54.0	58.2	59.7	57.3	61.2	61.6	65.0
AVERAGE	61.8	59.8	61.0	59.0	60.3	59.0	57.5	62.0	53.8	52.3	57.8	56.9	57.8	59.7	63.3	61.0	62.4	65.8	67.0	62.5
NO. DAYS	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	15
QTR. AVG.	61.8	59.5	61.0	57.9	58.9	58.0	55.9	62.2	53.0	52.1	55.5	57.4	57.7	59.8	62.8	61.5	62.5	65.6	66.9	60.9
NO. DAYS	91	92	92	92	92	92	92	92	92	86	92	92	92	92	89	92	92	92	92	74

TABLE 4. AVERAGE CNEL VALUES

Site No.	1st Quarter 2018	2nd Quarter 2018	3rd Quarter 2018	4th Quarter 2018	4 Quarter Average
1	61.4	62.2	61.5	61.8	61.7
2	59.2	59.8	59.3	59.5	59.5
3	60.4	61.3	61.0	61.0	60.9
4	57.3	57.2	56.2	57.9	57.2
5	57.9	57.0	55.8	58.9	57.5
6	55.6	54.2	52.7	58.0	55.6
7	55.2	56.0	55.2	55.9	55.6
9	61.7	62.5	62.3	62.2	62.2
10	52.4	56.1	52.9	53.0	53.9
11	52.7	51.9	---	52.1	52.2
12	54.2	54.2	52.9	55.5	54.3
13	57.4	58.3	56.9	57.4	57.5
14	57.4	58.4	57.5	57.7	57.8
15	59.5	60.5	60.0	59.8	60.0
16	61.7	62.7	62.1	62.8	62.4
18	61.5	62.1	61.9	61.5	61.8
19	62.3	63.4	63.0	62.5	62.8
20	65.0	65.9	65.7	65.6	65.6
21	66.5	67.5	67.2	66.9	67.0
22	60.6	60.9	60.5	60.9	60.8

Table 5. WEEKLY SCHEDULED AIR CARRIER AND AIR TAXI FLIGHTS FOR THE FOURTH QUARTER 2018

SCHEDULE IN EFFECT FROM 10/1/18 to 10/2/18 2 DAYS

AIRCRAFT	AS EMB175		AS B7377		AS CRJ7		AS B7378		AS B7379	
	DEP	ARR	DEP	ARR	DEP	ARR	DEP	ARR	DEP	ARR
DAY	28	28	0	0	0	0	0	0	6	13
EVENING	13	13	0	0	0	0	0	0	7	0
NIGHT	0	0	0	0	0	0	0	0	0	0
TOTAL	41	41	0	0	0	0	0	0	13	13

SCHEDULE IN EFFECT FROM 10/1/18 to 10/2/18

	AS A320		US CRJ9				WN B7379		WN B7377	
	DEP	ARR	DEP	ARR			DEP	ARR	DEP	ARR
DAY	14	7	12	14			300	265	1	1
EVENING	0	7	0	5			63	98	1	1
NIGHT	0	0	7	0			0	0	0	0
TOTAL	14	14	19	19			363	363	2	2

SCHEDULE IN EFFECT FROM 10/1/18 to 10/2/18

	WN B7378		UA A320		UA A319		UA RJ		UA CRJ7	
	DEP	ARR	DEP	ARR	DEP	ARR	DEP	ARR	DEP	ARR
DAY	1	1	7	0	0	0	0	0	14	7
EVENING	1	1	0	7	7	7	0	0	0	7
NIGHT	0	0	0	0	0	0	0	0	0	0
TOTAL	2	2	7	7	7	7	0	0	14	14

SCHEDULE IN EFFECT FROM 10/1/18 to 10/2/18

	FE A300		FE A310		UPS A300		DL E175		DL CRJ	
	DEP	ARR	DEP	ARR	DEP	ARR	DEP	ARR	DEP	ARR
DAY	2	7	0	0	3	4	27	20	0	0
EVENING	9	0	0	0	5	0	0	7	0	0
NIGHT	0	4	0	0	0	4	0	0	0	0
TOTAL	11	11	0	0	8	8	27	27	0	0

SCHEDULE IN EFFECT FROM 10/1/18 to 10/2/18

	DL CRJ7		DL CRJ9		B6 A320		C208		**TOTALS**	
	DEP	ARR	DEP	ARR	DEP	ARR	DEP	ARR	**DEP**	**ARR**
DAY	0	0	0	0	6	13	14	14	**435**	**394**
EVENING	0	0	0	0	14	7	0	0	**120**	**160**
NIGHT	0	0	0	0	0	0	0	0	**7**	**8**
TOTAL	0	0	0	0	20	20	14	14	**562**	**562**

Table 5. WEEKLY SCHEDULED AIR CARRIER AND AIR TAXI FLIGHTS FOR THE FOURTH QUARTER 2018

SCHEDULE IN EFFECT FROM 10/3/18 to 10/8/18 6 DAYS

AIRCRAFT	AS EMB175		AS B7377		AS CRJ7		AS B7378		AS B7379	
	DEP	ARR	DEP	ARR	DEP	ARR	DEP	ARR	DEP	ARR
DAY	28	28	0	0	0	0	0	0	6	13
EVENING	13	13	0	0	0	0	0	0	7	0
NIGHT	0	0	0	0	0	0	0	0	0	0
TOTAL	41	41	0	0	0	0	0	0	13	13

SCHEDULE IN EFFECT FROM 10/3/18 to 10/8/18

	AS A320		US CRJ9				WN B7379		WN B7377	
	DEP	ARR	DEP	ARR			DEP	ARR	DEP	ARR
DAY	14	7	12	14			287	262	8	3
EVENING	0	7	0	5			70	95	1	6
NIGHT	0	0	7	0			0	0	0	0
TOTAL	14	14	19	19			357	357	9	9

SCHEDULE IN EFFECT FROM 10/3/18 to 10/8/18

	WN B7378		UA A320		UA A319		UA RJ		UA CRJ7	
	DEP	ARR	DEP	ARR	DEP	ARR	DEP	ARR	DEP	ARR
DAY	8	3	7	0	0	0	0	0	14	7
EVENING	1	6	0	7	7	7	0	0	0	7
NIGHT	0	0	0	0	0	0	0	0	0	0
TOTAL	9	9	7	7	7	7	0	0	14	14

SCHEDULE IN EFFECT FROM 10/3/18 to 10/8/18

	FE A300		FE A310		UPS A300		DL E175		DL CRJ	
	DEP	ARR	DEP	ARR	DEP	ARR	DEP	ARR	DEP	ARR
DAY	2	7	0	0	3	4	27	20	0	0
EVENING	9	0	0	0	5	0	0	7	0	0
NIGHT	0	4	0	0	0	4	0	0	0	0
TOTAL	11	11	0	0	8	8	27	27	0	0

SCHEDULE IN EFFECT FROM 10/3/18 to 10/8/18

	DL CRJ7		DL CRJ9		B6 A320		C208		**TOTALS**	
	DEP	ARR	DEP	ARR	DEP	ARR	DEP	ARR	**DEP**	**ARR**
DAY	0	0	0	0	6	13	14	14	**436**	**395**
EVENING	0	0	0	0	14	7	0	0	**127**	**167**
NIGHT	0	0	0	0	0	0	0	0	**7**	**8**
TOTAL	0	0	0	0	20	20	14	14	**570**	**570**

Table 5. WEEKLY SCHEDULED AIR CARRIER AND AIR TAXI FLIGHTS FOR THE FOURTH QUARTER 2018

SCHEDULE IN EFFECT FROM 10/9/18 to 12/31/18 84 DAYS

AIRCRAFT	AS EMB175		AS B7377		AS CRJ7		AS B7378		AS B7379	
	DEP	ARR	DEP	ARR	DEP	ARR	DEP	ARR	DEP	ARR
DAY	28	28	0	0	0	0	0	0	6	13
EVENING	13	13	0	0	0	0	0	0	7	0
NIGHT	0	0	0	0	0	0	0	0	0	0
TOTAL	41	41	0	0	0	0	0	0	13	13

SCHEDULE IN EFFECT FROM 10/9/18 to 12/31/18

	AS A320		US CRJ9				WN B7379		WN B7377	
	DEP	ARR	DEP	ARR			DEP	ARR	DEP	ARR
DAY	14	7	14	17			287	262	8	3
EVENING	0	7	0	4			70	95	1	6
NIGHT	0	0	7	0			0	0	0	0
TOTAL	14	14	21	21			357	357	9	9

SCHEDULE IN EFFECT FROM 10/9/18 to 12/31/18

	WN B7378		UA A320		UA A319		UA RJ		UA CRJ7	
	DEP	ARR	DEP	ARR	DEP	ARR	DEP	ARR	DEP	ARR
DAY	8	3	7	0	0	0	0	0	14	7
EVENING	1	6	0	7	7	7	0	0	0	7
NIGHT	0	0	0	0	0	0	0	0	0	0
TOTAL	9	9	7	7	7	7	0	0	14	14

SCHEDULE IN EFFECT FROM 10/9/18 to 12/31/18

	FE A300		FE A310		UPS A300		DL E175		DL CRJ	
	DEP	ARR	DEP	ARR	DEP	ARR	DEP	ARR	DEP	ARR
DAY	2	7	0	0	3	4	27	20	0	0
EVENING	9	0	0	0	5	0	0	7	0	0
NIGHT	0	4	0	0	0	4	0	0	0	0
TOTAL	11	11	0	0	8	8	27	27	0	0

SCHEDULE IN EFFECT FROM 10/9/18 to 12/31/18

	DL CRJ7		DL CRJ9		B6 A320		C208		**TOTALS**	
	DEP	ARR	DEP	ARR	DEP	ARR	DEP	ARR	**DEP**	**ARR**
DAY	0	0	0	0	6	13	14	14	**438**	**398**
EVENING	0	0	0	0	14	7	0	0	**127**	**166**
NIGHT	0	0	0	0	0	0	0	0	**7**	**8**
TOTAL	0	0	0	0	20	20	14	14	**572**	**572**

TABLE 5. (CONTINUED)

FOURTH QUARTER 2018

PERIOD TOTALS FOR
AIR CARRIERS AND AIR TAXIS

AIR CARRIERS

	DEP	ARR
DAY	5197	4734
EVE	1341	1791
NIGHT	92	105
TOTAL	6630	6630

AIR TAXIS

	DEP	ARR
DAY	730	730
EVE	313	313
NIGHT	0	0
TOTAL	1043	1043

AIR CARRIERS AND AIR TAXIS

	DEP	ARR
DAY	5927	5464
EVE	1654	2104
NIGHT	92	105
TOTAL	7673	7673

VI. INCOMPATIBLE LAND USE

The contours shown in Figures 1 and 2 were digitized and overlaid on a digital land use map of the area around the Airport. The total areas enclosed by the 65 and 70 dB CNEL contours were 599.9 and 235.5 acres, respectively. The areas of incompatible land uses enclosed by the contours were then computed. The incompatible land use areas were 10.23 acres within the 65 dB contour of which 0.37 acres were also within the 70 dB contour.

It should be noted that the above incompatible land areas do not include the soundproofed schools in the vicinity of the Airport (the Luther Burbank Middle School, St. Patrick and Glenwood Schools). The above incompatible land use areas also do not include those residences to which the Airport has acquired avigation easements. Within the 65 dB contour, the Airport has acquired avigation easements, through its ongoing residential sound insulation program, to 306 parcels of land. Those 306 parcels total 46.13 acres. One of the 306 parcels is also located within the 70 dB contour. Within the 65 dB contour, the Airport has also acquired avigation easements, under the Court of Appeal decision in Baker v. Burbank-Glendale-Pasadena Airport Authority, 220 Cal. App. 3d 1602 (1990), to 71 parcels of land. For 48 of the 71 parcels, the Authority has acquired avigation easements both through Baker and through its ongoing sound insulation program. Those 48 parcels are included in the total number of sound insulation program avigation easements set forth above. The 7 remaining Baker easement parcels total 0.89 acres.

It should be noted that the Airport Authority has made repeated attempts over the past several years to acoustically treat and obtain avigation easements at 68 single family residential parcels, totaling approximately 9.70 acres of the incompatible land use area within the 65 dB contour. Owners of these parcels have either refused to respond to notices regarding the sound insulation program, have withdrawn from the program, or own properties with major building code deficiencies that prevent them from participating.

The estimated numbers of incompatible residences are 84 within the 65 dB contour, of which 2 are also within the 70 dB contour. The estimated numbers of people residing within the 65 and 70 dB CNEL contours are 227 and 5, respectively.

REFERENCES

1. California Department of Transportation, Division of Aeronautics, "Noise Standards", California Code of Regulations, Title 21, Chapter 2.5, Subchapter 6.

2. L-30488, Department of Transportation, State of California, 27 June 1984.

3. "Quarterly Noise Monitoring at Hollywood Burbank Airport, First Quarter 2018", AAAI Report 1530.

4. "Quarterly Noise Monitoring at Hollywood Burbank Airport, Second Quarter 2018", AAAI Report 1531.

5. "Quarterly Noise Monitoring at Hollywood Burbank Airport, Third Quarter 2018", AAAI Report 1532.

APPENDIX A
NOISE MONITOR INSTRUMENTATION

APPENDIX A
NOISE MONITOR INSTRUMENTATION

The permanent noise monitor system, manufactured by Bruel & Kjaer, consists of 20 noise monitoring terminals (NMT) connected to a central site by DSL or wireless connections. The system block diagram showing the major elements is shown in Figure A-1. The electrical signal generated by the microphone/preamplifier assembly at each site is processed and saved locally in the B & K sound level meter. The signal is passed through an A-weighting filter and is then detected and converted to a digital level signal in decibels with a resolution of 0.1 dB.

The stored sound level data at each site is dumped once every 24-hour period via wireless or DSL connection to the central site. The data received by the central site are processed by the ANOMS computer software. According to preset parameters, the noise is separated into two categories--aircraft noise and community noise. Each event attributed to an aircraft is saved in a noise event file. Computations are made of hourly noise level, community noise equivalent level, runway use, and other parameters. A wide variety of data presentations is available by exercising a number of routines provided by B & K, as well as special-purpose routines that can be generated by the user.

The locations of the remote sites (shown in Figure 3) are listed by latitude and longitude in Table A-1.

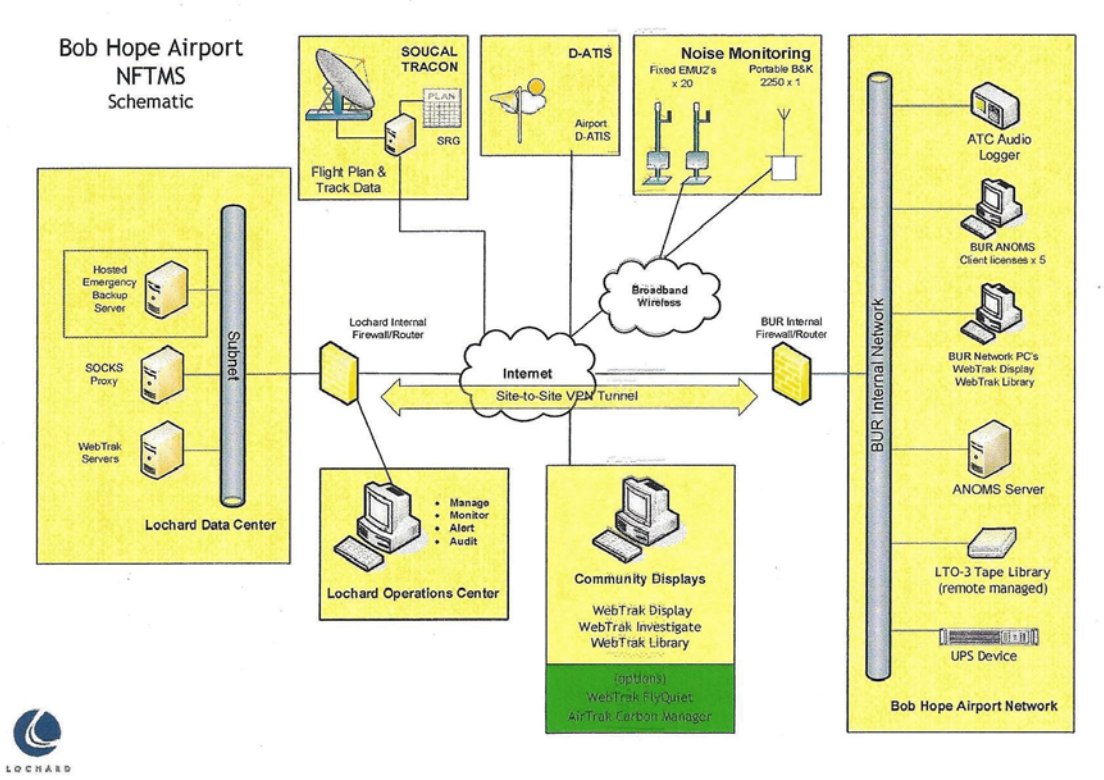


Figure A-1. Permanent Noise Monitor System Schematic

TABLE A-1
NOISE MONITOR SITE LOCATIONS

NMT	Latitude	Longitude
1	34.188424	-118.358983
2	34.184296	-118.347330
3	34.175731	-118.354197
4	34.212022	-118.364391
5	34.215261	-118.357381
6	34.220705	-118.365214
7	34.224979	-118.363989
9	34.198871	-118.398889
10	34.195336	-118.342392
11	34.197321	-118.340376
12	34.190175	-118.365404
13	34.181303	-118.345270
14	34.178786	-118.347134
15	34.173922	-118.363157
16	34.181185	-118.350949
18	34.196899	-118.389014
19	34.181277	-118.357866
20	34.188378	-118.351878
21	34.186700	-118.354939
22	34.217035	-118.361725

APPENDIX B
CALIBRATION

APPENDIX B
CALIBRATION

The system was calibrated during setup using a Bruel and Kjaer acoustic calibrator. Acoustic calibrations are performed annually. Electrical calibrations are performed automatically four times per 24-hour day. Figure B-1 shows the calibration summary for January 2013 and Figure B-2 shows the detailed electrical calibration report for Noise Monitor Site 1.

Devices Report

RMT Calibration Results

Bob Hope Airport

Start Date: 04-Jan-2013

End Date: 31-Jan-2013

Monitor Location: 1 - 1, (Fixed)

Seven Day Period Commencing: Friday January 04, 2013

Calibrated with Sound Calibrator : Never

Number of Calibrations: 27

Average adjustment for this RMT over this period: 0.10 dB

Date Time	Expected Result	Value Measured	Calibration Error
04-Jan-2013 0:00	87.1	87.2	0.1
04-Jan-2013 6:00	87.1	87.2	0.1
04-Jan-2013 12:00	87.1	87.2	0.1
04-Jan-2013 18:00	87.1	87.2	0.1
05-Jan-2013 0:00	87.1	87.2	0.1
05-Jan-2013 6:00	87.1	87.2	0.1
05-Jan-2013 12:00	87.1	87.2	0.1
05-Jan-2013 18:00	87.1	87.2	0.1
06-Jan-2013 0:00	87.1	87.2	0.1
06-Jan-2013 6:00	87.1	87.2	0.1
06-Jan-2013 12:00	87.1	87.2	0.1
06-Jan-2013 18:00	87.1	87.2	0.1
07-Jan-2013 0:00	87.1	87.2	0.1
07-Jan-2013 6:00	87.1	87.2	0.1
07-Jan-2013 12:00	87.1	87.2	0.1
07-Jan-2013 18:00	87.1	87.2	0.1
08-Jan-2013 0:00	87.1	87.2	0.1
08-Jan-2013 6:00	87.1	87.2	0.1
08-Jan-2013 12:00	87.1	87.3	0.2
08-Jan-2013 18:00	87.1	87.2	0.1
09-Jan-2013 0:00	87.1	87.2	0.1
09-Jan-2013 6:00	87.1	87.2	0.1
09-Jan-2013 12:00	87.1	87.2	0.1
09-Jan-2013 18:00	87.1	87.2	0.1
10-Jan-2013 0:00	87.1	87.2	0.1
10-Jan-2013 6:00	87.1	87.2	0.1
10-Jan-2013 12:00	87.1	87.2	0.1

Devices Report

RMT Calibration Results

Bob Hope Airport

Start Date: 04-Jan-2013

End Date: 31-Jan-2013

	Monitor Location	04-Jan-2013	11-Jan-2013	18-Jan-2013	25-Jan-2013
1	1	0.1	0.1	0.1	0.1
2	2	0.4	0.4	0.3	0.3
3	3	0.5	0.0	0.0	0.0
4	4	0.3	0.3	0.3	0.3
5	#5	0.2	0.2	0.2	0.2
6	6	0.0	0.0	0.0	0.0
7	7	0.3	0.3	0.3	0.3
9	9	0.2	0.2	0.2	0.2
10	10	0.2	0.2	0.2	0.2
11	11	0.6	0.0	0.0	0.0
12	12	0.3	0.3	0.3	0.3
13	13	0.0	0.0	0.0	0.0
14	14	0.0	0.0	0.0	0.0
15	15	0.0	0.0	0.0	0.0
16	16	0.4	0.4	0.4	0.4
18	18	0.0	0.0	0.1	0.1
19	19	0.0	0.0	0.0	0.0
20	20	0.1	0.0	0.1	0.1
21	21	0.0	0.0	0.0	0.0
22	22	0.0	0.0	0.0	0.0