SOUND INFORMATION

Sea-Tac Noise Abatement Report

A quarterly update of noise abatement program monitoring presented to the Sea-Tac Noise Advisory Committee

Port of Seattle **Fourth Quarter 1992 - Published Apr. 21, 1993**

MEASURING SEA-TAC SUCCESS

Fleet Mix. The number of quieter Stage 3 jet flights at Sea-Tac rose significantly to 71.0% from 63.4% in the third quarter.

Noise Budget. All airlines allocated a "noise budget" operated under their noise allocation. Therefore, Sea-Tac operated within its allowable noise limits.

Nighttime Limitations. Effective October 1, 1992, only Stage 2 flights with special permission (variance) were allowed to operate between midnight and 6:00 am. Although Alaska Airlines, Evergreen Airways, Federal Express, Postal Air, and United Airlines operated under temporary or regular variances only three or four Stage 2 jets were flown during the restricted hours. Of the 1,765 flights monitored between midnight and six, 84% were Stage 3.

Noise Monitoring Trends. Airport noise monitoring data shows a gradual decline of noise levels in communities around Sea-Tac.

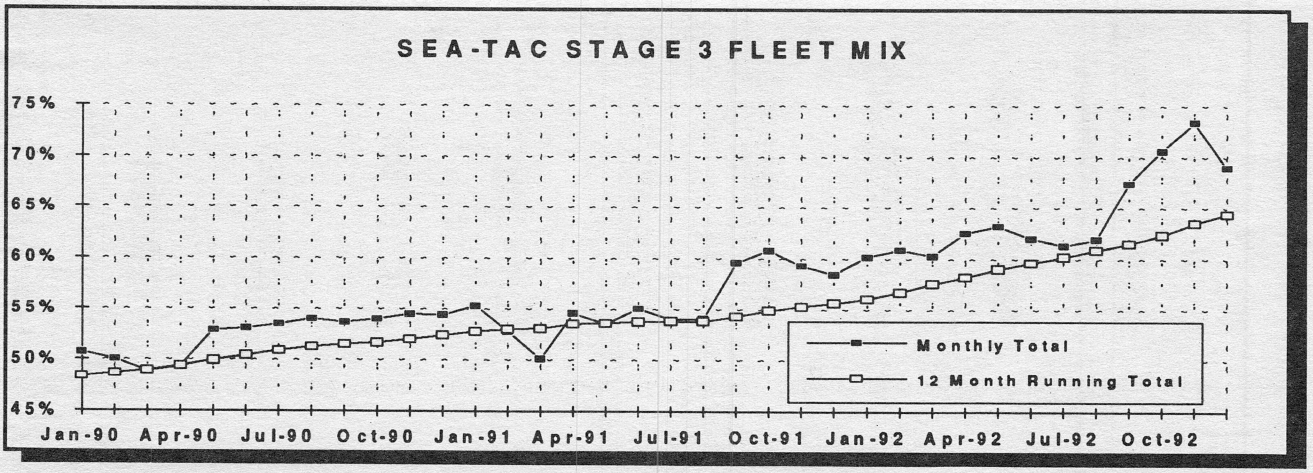
Noise Remedy. 79 homes were insulated this quarter and one Transaction Assistance Sales was completed.

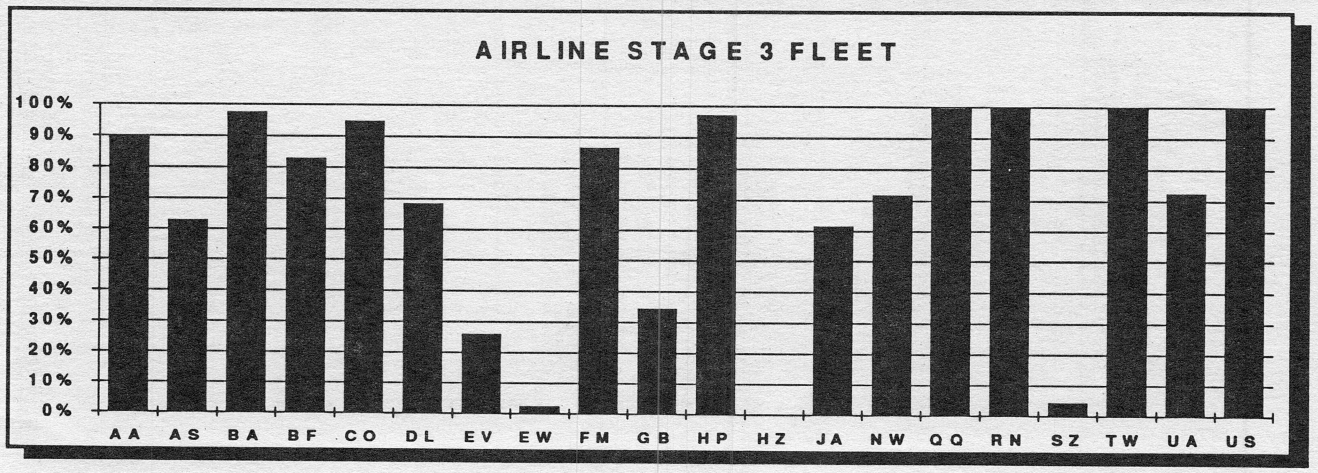
Aircraft Noise and Operations Monitoring System. ANOMS, the Port's new sophisticated monitoring system, was used to investigate complaints and to monitor the Nighttime Limitations Program.

FLEET MIX REPORT

The **Sea-Tac Stage 3 Fleet Mix** chart is compiled from the individual airline landing reports provided to the Port of Seattle. This chart represents all turbojet operations. The **Airline Stage 3 Fleet** chart contains selected data from the same source. Carriers that had at least 100 landings during the quarter are included in this chart. **During this quarter, TWA, USAir, Ryan International, China Eastern, Scandinavian Airlines, and Thai Airlines operated only Stage 3 aircraft.**

Note: See page 8 for airline codes index and Seattle-Tacoma International Airport telephone number listing.





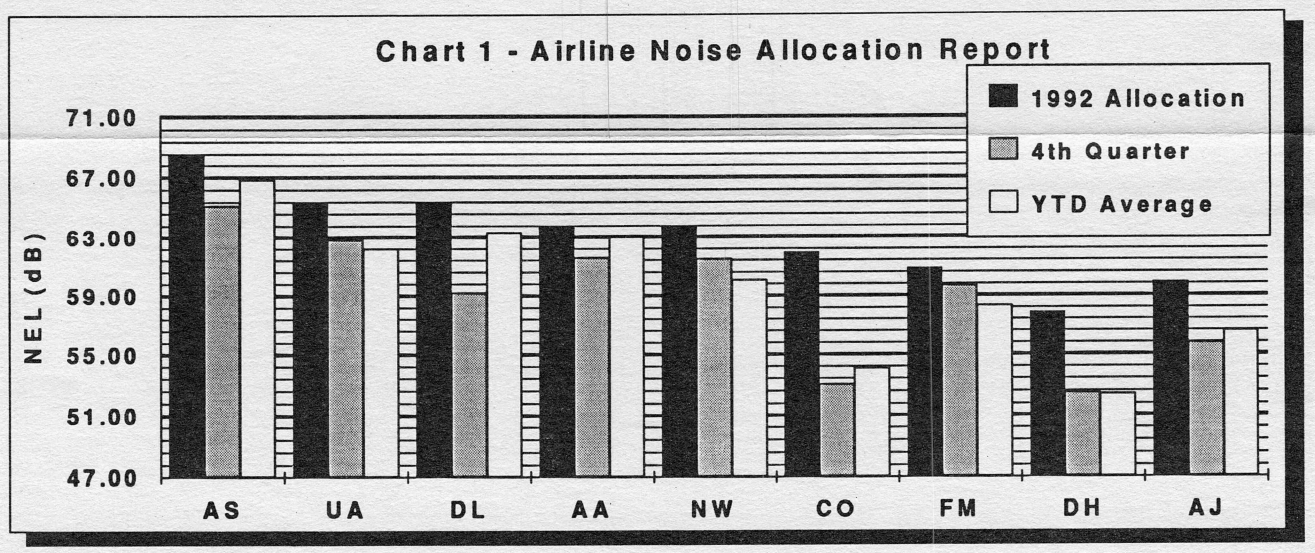
NOISE BUDGET PROGRAM

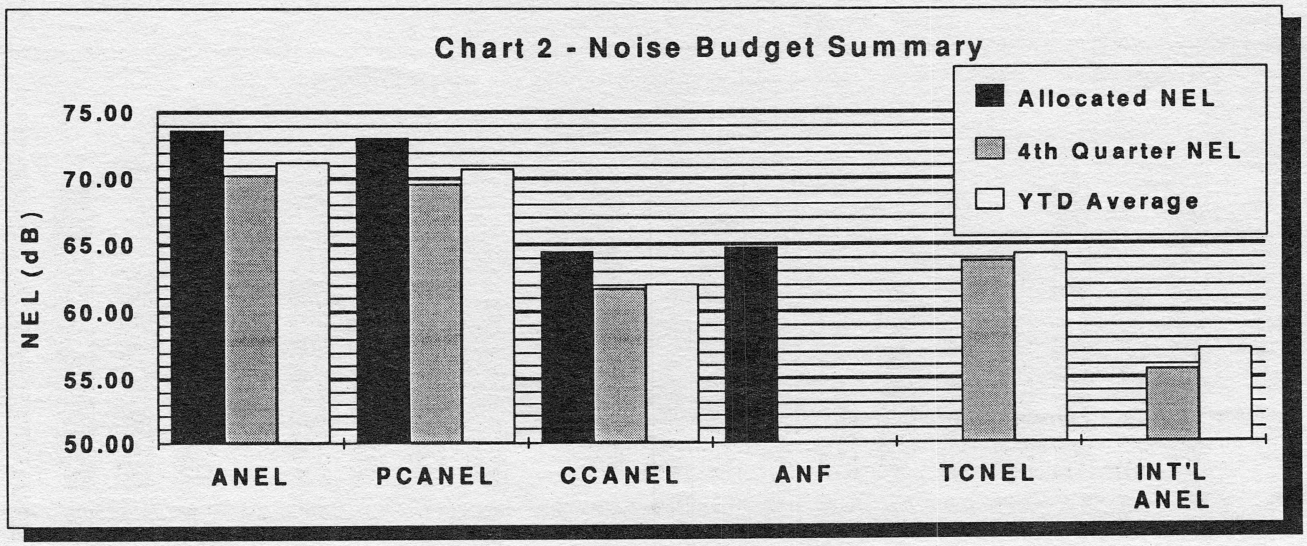
The Noise Budget is the cornerstone of Sea-Tac's noise reduction program and promotes a steady progression to an all-Stage 3 fleet by requiring noise reductions each year to the year 2001. The budget defines the maximum amount of noise that Sea-Tac is allowed annually. This consists of airline noise allocations plus an unused portion of noise retained in the Airport Noise Fund. Compliance is monitored on a quarterly and annual basis by the Port of Seattle and the Sea-Tac Noise Advisory Committee.

CHART 1: This graph reports on each noise allocated airline. The black columns show the NEL (noise exposure level) that has been allocated; the shaded columns show the NEL reported this quarter; and the white columns show the average year-to-date NEL.

CHART 2: This graph reports on the Noise Budget for all airport operations. **ANEL** is the average daily noise exposure level at the airport produced by the sum of the **PCANEL** and the **CCANEL**. **PCANEL** and **CCANEL** represent the NEL made by the passenger and cargo allocated airlines, respectively. **ANF** is the Airport "noise fund", an unused portion of NEL retained by the Port of Seattle and, under special circumstances, can be loaned or given to an airline. The noise fund and the airlines' allocation of noise is reduced each year. **TCNEL** represents the combined NEL of a number of small airlines that have so few operations individually that they are not included in the budget. **Int'l ANEL** represents the combined NEL of the international operations which are not subject to requirements of the Noise Budget. The black columns show the NEL that has been provided in each category; the shaded columns show the NEL reported this quarter; and the white columns show the average year-to-date NEL.

The Noise Budget contains provisions allowing airlines to trade or sell NEL decibels subject to a "noise fee" and to apply for extra NEL decibels from the Airport Noise Fund or extraordinary relief from the Director of Aviation. **No activity under these provisions has occurred in 1992.**





NOISE ABATEMENT FLIGHT PROCEDURE MONITORING

The Port of Seattle was unable to monitor the noise abatement flight procedures during the fourth quarter of 1992 due to the installation and training required for ANOMS, the new Airport Noise and Operations Monitoring System.

NOISE ABATEMENT PROCEDURES

NORTH FLOW PROCEDURES

Procedures below are in effect during north flow conditions.

INITIAL DEPARTURE

The objective of this procedure is to have pilots intercept and proceed along the SEA 338 Radial* in order to fly jet aircraft within a narrow corridor when departing the airport Each side of the corridor extends out 5 nm from the VOR*, which is located at the southern end of the runways.

DUWAMISH/ELLIOTT BAY DEPARTURE - DAY

The objective of this procedure is to have jet aircraft fly over a corridor defined by the Duwamish Industrial Area and Elliott Bay to the maximum extent possible, traffic permitting. Jet aircraft flying over Elliott Bay are considered flying in a manner which meets the objective established for this procedure.

Procedures below are in effect from 10:00 p.m. until 6:00 a.m. during north flow conditions.

DUWAMISH/ELLIOTT BAY DEPARTURE - NIGHT

The objective of this procedure is to have jet aircraft turn westward at Boeing Field so that they remain over the Duwamish Industrial Area and Elliott Bay to the maximum extent possible, traffic permitting.
(NOTE: Aircraft turning east during these hours are identified and reported separately.)

PUGET SOUND DEPARTURE - NIGHT

The objective of this procedure is to have jet aircraft fly over Puget Sound on departure to the maximum extent possible, traffic permitting. Aircraft heading north should not be turned eastbound or westbound to recross land east or west of Puget Sound until reaching the SEA 320 Radial/20 nm DME fix at or above 10,000 feet MSL. Aircraft heading south should not be turned eastbound to recross land east of Puget Sound until after passing the SEA 220 Radial/12 nm DME fix at or above 10,000 feet MSL.

SOUTH FLOW PROCEDURES

Procedures below are in effect during south flow conditions.

INITIAL DEPARTURE

The objective of this procedure is to have pilots intercept and proceed along the SEA 158 Radial in order to fly jet aircraft within a narrow corridor for 5 nm from the VOR when departing the airport.

PUGET SOUND ARRIVAL

The objective of this procedure is to have jet aircraft fly north of West Seattle when arriving from Puget Sound. Jet aircraft meet the objective of this procedure when flown over Elliott Bay or if necessary north of the bay.

*A VOR is an electronic navigational device located on the ground. It transmits a radio signal known as a RADIAL that is used by a pilot to follow a specified flight path. The VOR at Sea-Tac is identified as SEA. Distance from a VOR is measured in nautical miles (nm). A geographical point in reference to a VOR is known as a DME fix. For example, the SEA 20 nm DME fix is 20 nm from the SEA VOR. Altitude is measured in feet above mean sea level (MSL).

NIGHTTIME LIMITATIONS PROGRAM

In the Nighttime Limitations Program, the Port of Seattle requires significant reductions in the noise level at Sea-Tac Airport by phasing out the use of noisier Stage 2 jet aircraft during nighttime hours. This program requires the Port to phase-in a schedule of restrictions on these noisy jets. Air carriers may request variances or exemptions to these restrictions. If an air carrier demonstrates a compelling need to operate a Stage 2 jet aircraft during the restricted hours, it may be granted a temporary or regular variance by the Port. The decision to grant a variance is made by the Airport Director. The director will decide on variance requests after reviewing relevant factors, including public comments.

During the 4th quarter of 1992 variances were granted to Alaska Airlines, Evergreen Airways, and Federal Express. A request from Burlington AirExpress was denied. Temporary variances, to haul extra cargo during the winter holiday season, were given to Postal Air, Federal Express and Alaska Airlines. United Airlines requested a variance and was granted a short term temporary variance to allow time to make alternate aircraft scheduling arrangements.

ACTIVITY MONITORED	Total	% of Total
JET FLIGHTS	1765	100%
Stage 3 Jets	1488	84%
Average/Night	**16.2**	
Stage 2 Jets	277	16%
Average/Night	**3.0**	

ACTIVITY MONITORED	Total	% of Total
STAGE 2 JET FLIGHTS	277	100%
Regular Variance	164	59%
Temporary Variance	63	23%
Exemptions	30	11%
Under Review	20	7%

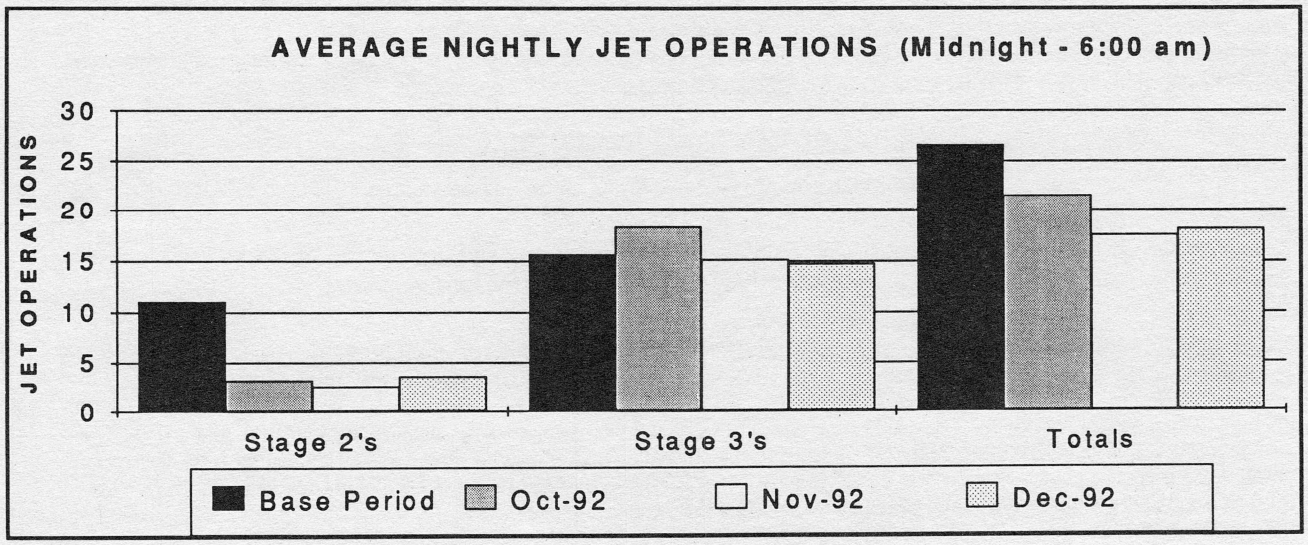
Regular Variance — A regular variance is defined as written permission to operate outside the provisions of this program for a period of longer than 4 months. Issuance of a regular variance requires public notification and comment process.

Temporary Variance — A temporary variance is defined as written permission to operate outside the provisions of this program for a maximum of four months.

Exemptions — Exemptions are allowed in cases where maintenance of the aircraft, delays due to unforeseen or emergency circumstances, or factors beyond the control of the carrier affect the scheduled time of the operation.

Under Review — A flight under review is a Stage 2 aircraft that operated in the restricted hours and the Port needs more information from the airline(s) to determine its status. Subsequent quarterly reports will provide results from this review.

The chart below compares jet operations occurring on an average night during the restricted hours to those jet operations conducted during the Base Period. The Base Period is defined as the level of jet operations during the restricted hours when the Nighttime Limitations Program was implemented in October 1990.

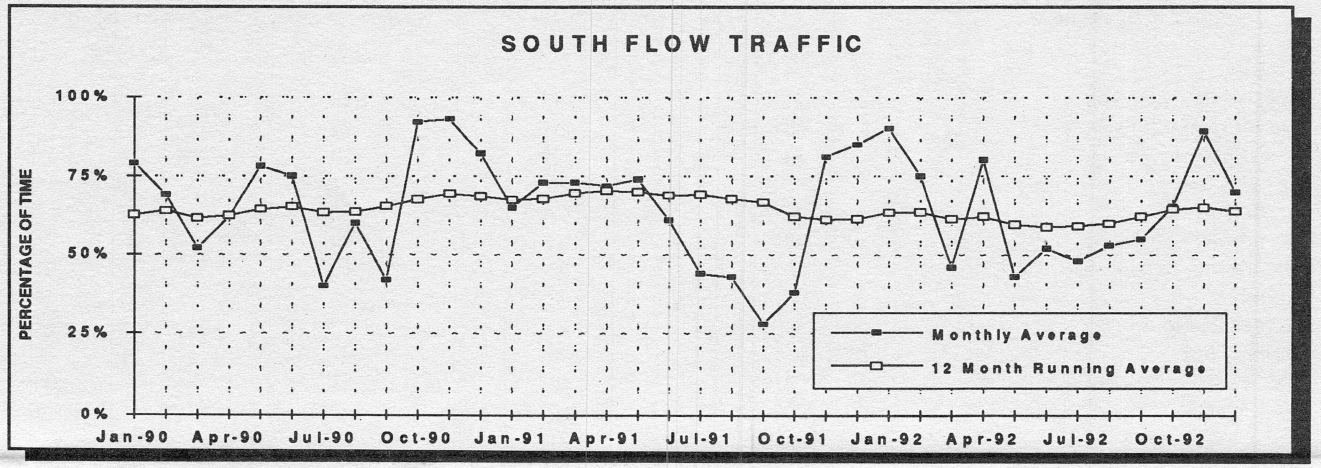


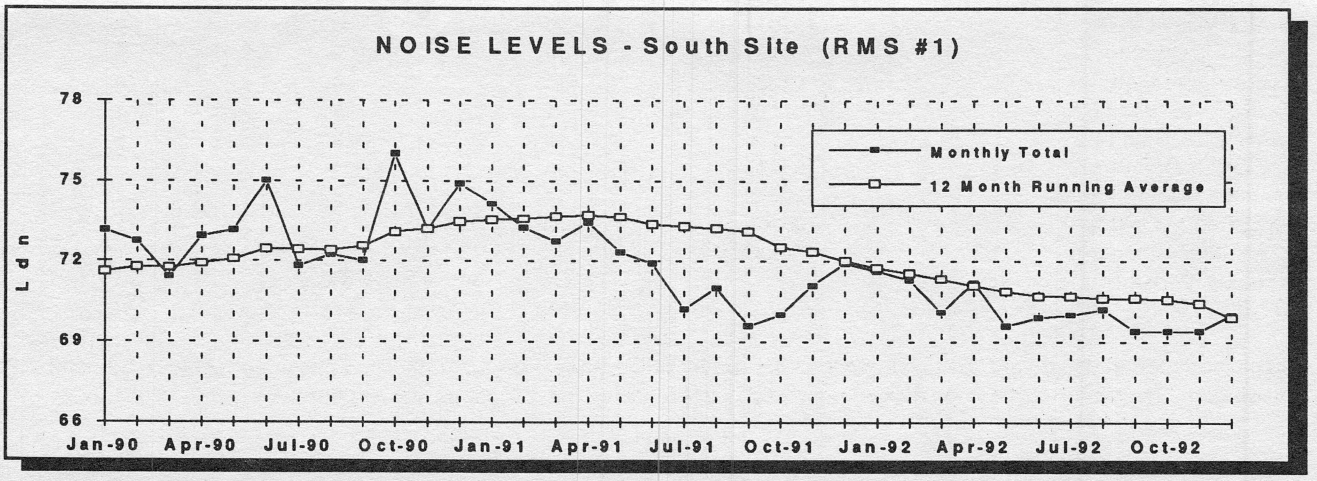
TRACKING NOISE TRENDS

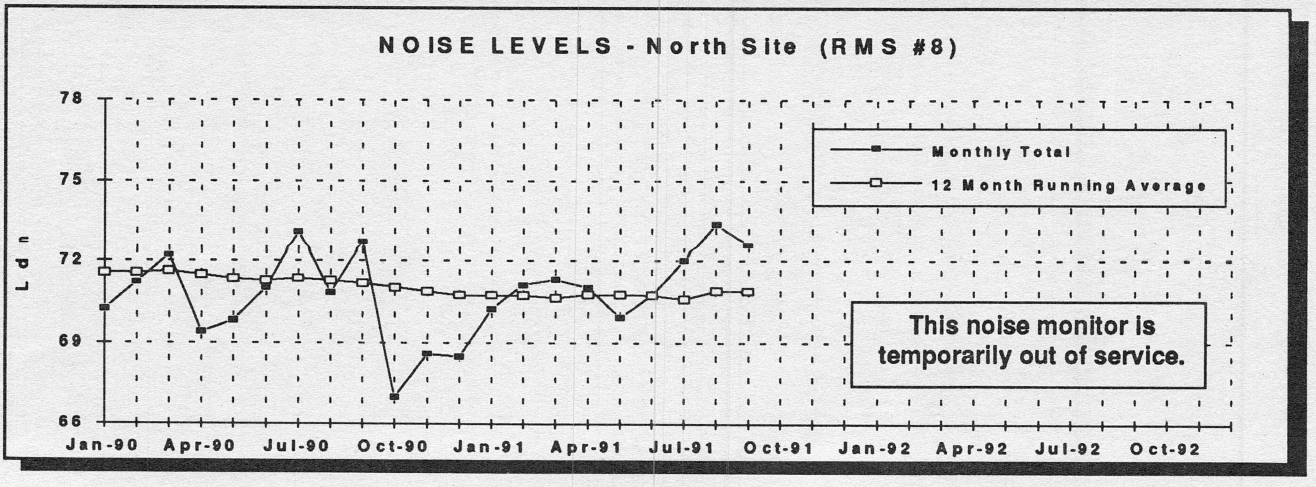
The direction aircraft depart from Sea-Tac impacts noise measurements. For example, a high rate of south flow departures results in higher composite noise levels at the south remote noise monitoring site (RMS 1) and lower composite noise levels at the north site (RMS 8). The charts below show the changes in composite noise over time. (NOTE: RMS #8 has been out of service since October 1991 due to construction on the school grounds where it is located.)

Noise data collected from the eleven remote sites of the permanent noise monitoring system indicate a continuing decline in noise levels since 1990.

Airport noise peaked in 1990 and has gradually declined since. The decline is more significant for communities south of Sea-Tac since there are more departures over those communities. Improvements in the fleet mix also help. There is a greater reduction in departure noise of Stage 3 jets compared to the noise reductions experienced for landing jets. Although Stage 3 jets are quieter on landing than Stage 2 jets, the differences in noise reductions are not as significant as they are for jet departures. Consequently the communities that experience a higher number of departures will also experience greater noise reductions.







HOTLINE PROGRAM

	4th Quarter '92	4th Quarter '91	Change	1992 Total	1991 Total	Change
Total Calls	1,089	1,701	-36%	7,963	10,568	-25%
Individual Callers	447	697	-36%	2,433	2,633	-8%
Unidentified Callers*	89	151	-41%	615	1,035	-41%
Traffic Flow						
North Flow	26%	32%		37%	39%	
South Flow	74%	68%		63%	61%	

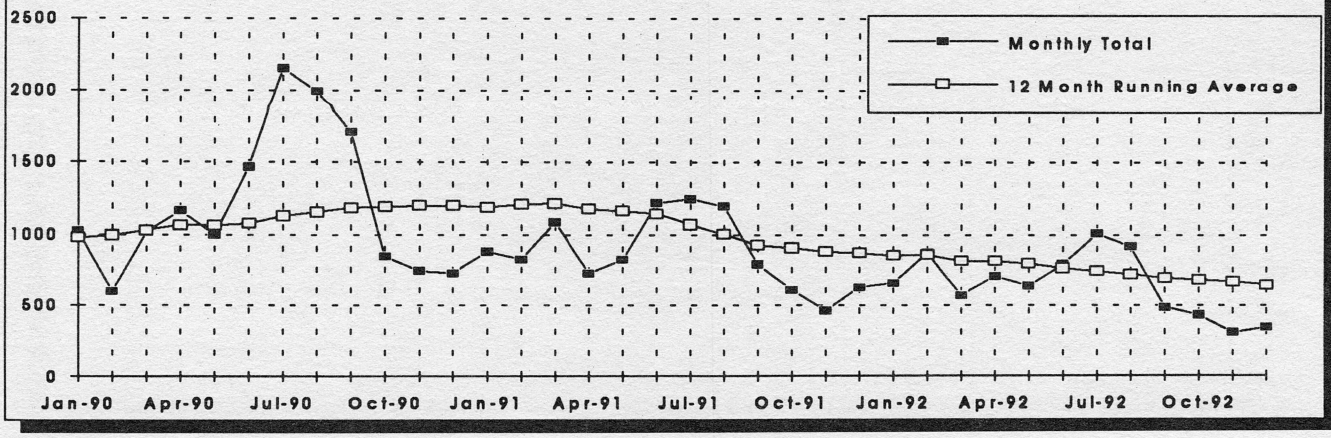
Busiest Day: Tuesday, October 27, 1992

Noise Complaint Summary - Fourth Quarter 1992

Zip Code Area	Zip Code	Total Calls	Individual Callers	Unidentified Callers
Sunnydale/North Hill	98148	143	36	10
Burien/Normandy Park	98166	141	62	10
Riverton Heights	98168	111	33	4
Des Moines	98198	59	37	8
North Burien	98146	57	30	7
Northgate	98115	51	18	10
West Bellevue/Medina	98004	49	16	3
Magnolia	98199	42	10	4
Mercer Island	98040	40	10	6
Wallingford	98103	33	7	0
McMicken/Southcenter	98188	29	23	0
West Kent	98032	28	9	1
Madrona/Leschi	98122	27	15	3
Beacon Hill/Mt Baker/Leschi	98144	26	7	2
Federal Way	98003	25	11	3
University District	98105	21	9	0
West Federal Way	98023	16	9	0
Madison Park/Montlake	98112	15	9	2
West Seattle/Alki Pt	98116	15	6	1
Tacoma/Dash Point	98422	14	3	0
Issaquah/Cougar Mtn.	98027	12	5	4
White Center/Delridge	98106	10	8	1
W. Seattle/Fauntleroy	98136	10	7	1
Other Zip Codes		115	67	9
TOTAL		1089	447	89

Note: Unidentified callers are those people who did not leave their name or address. The calls are counted in the total call column. Neighborhood designations for zip codes are for reference purposes and are not necessarily all inclusive.

SEA-TAC HOTLINE CALLS



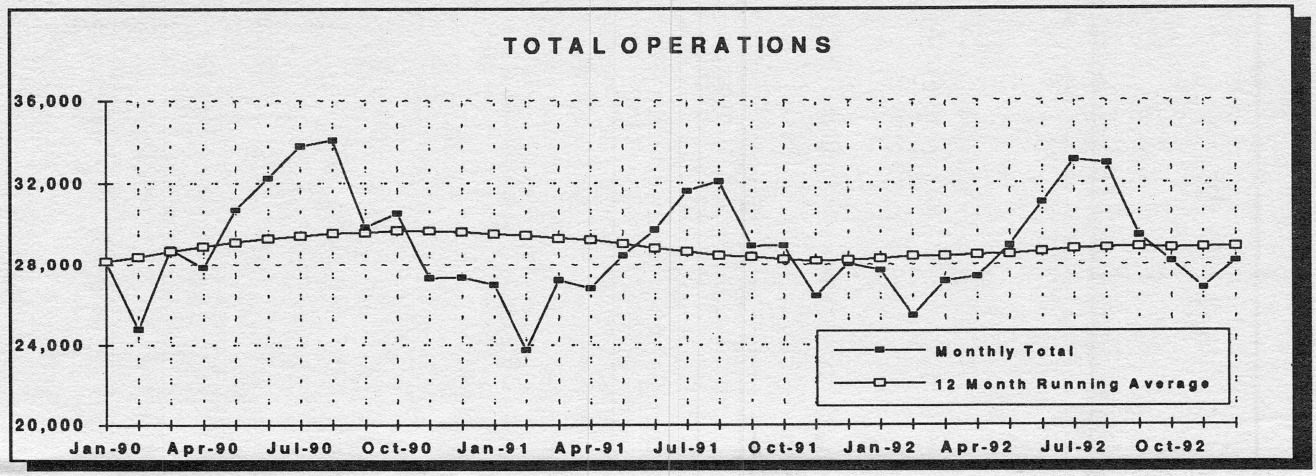
Fleet Mix

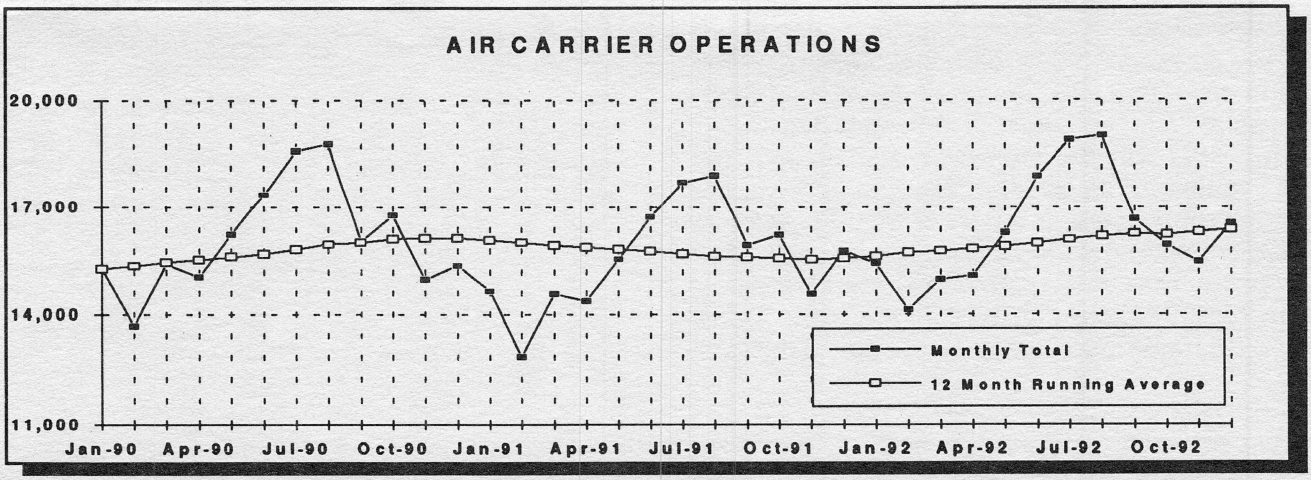
	4th Quarter 1992	4th Quarter 1991	Change	1992 Total
Stage 3 Jets	71.0%	59.5%	11.5%	60.5%
Stage 2 Jets	29.0%	40.5%	-11.5%	39.5%

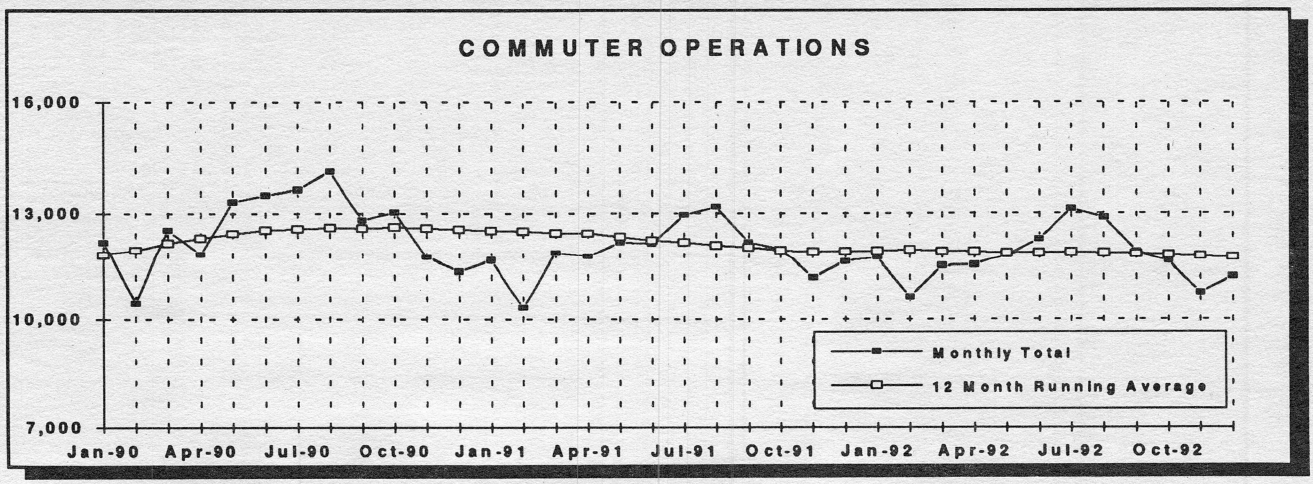
Operations (Take-offs and Landings)

Air Carrier	47,898	46,533	2.9%	196,141
Air Taxi	33,529	34,718	-3.4%	140,744
Other *	1,679	2,040	-17.7%	9,110
Total	83,106	83,291	-0.2%	345,995

* "Other" includes General Aviation and Military Operations







NOISE REMEDY PROGRAM

	4th Quarter	1992 YTD	Program Total
Sound Insulation Program			
Homes Insulated	79	314	845
Homeowners Initiated Into Program	58	451	1325
Transaction Assistance Sales Completed	1	14	32
Special Purchase Option Homes Bought	2	6	23
Acquisition Program Homes Bought	6	24	1308

Sound Insulation Program

On January 1, 1991, the rate of insulation was increased from 175 to 350 homes per year as the result of the Noise Mediation Agreement. The "Cost Share" program has been converted to the "Standard Insulation" program which means that the Port pays 100% of the costs. The Hardship Committee is made up of area residents and was formed in June, 1990. A modified priority system, giving credit for the length of time an individual is on the waiting list, began on January 1, 1991.

Sea-Tac Noise Advisory Committee

The Noise Mediation Agreement established the Sea-Tac Noise Advisory Committee (SNAC) to monitor implementation of all mediated noise abatement and mitigation programs. This report is published quarterly to assist SNAC with its function. SNAC membership represents the Air Transport Association, the Federal Aviation Administration, the Airline Pilots Association, airport users, the Port of Seattle, and five citizens representing various geographic areas. The citizens currently seated on SNAC are Irene Jones, Bob Rudolph, John Musgrave, Jim Lynch, and John Whitlock. Alternate members will be added in the near future.

SEATTLE-TACOMA INTERNATIONAL AIRPORT

Sea-Tac Noise Hotline	433-5393
Toll-free Noise Hotline	1-800-826-1147
Noise Abatement Office	248-7452 or 433-5216
Noise Remedy Office	431-5913
Community Relations	433-5342 or 248-6851

AIRLINE CODE INDEX

AA American Airlines	GB Airborne Express
AJ Amerijet Int'l	HP America West
AS Alaska Airlines	HZ Horizon Air
BA British Air	JA Morris Air
BF MarkAir	NW Northwest Airlines
CO Continental Airlines	QQ Reno Air
DH DHL Worldwide	RN Ryan International
DL Delta Airlines	SZ Sierra Pacific
EV Evergreen Int'l	TW Trans World Airline
EW Emery Worldwide	UA United Airlines
FM Federal Express	US USAir Airlines

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