# ECONOMIC AND FEASIBILITY STUDY FOR THE RELOCATION OF CHARLES A. LINDBERGH AIRPORT TO MIRAMAR

**JANUARY 14, 1993** 

SAN DIEGO INTERNATIONAL AIRPORT FOUNDATION

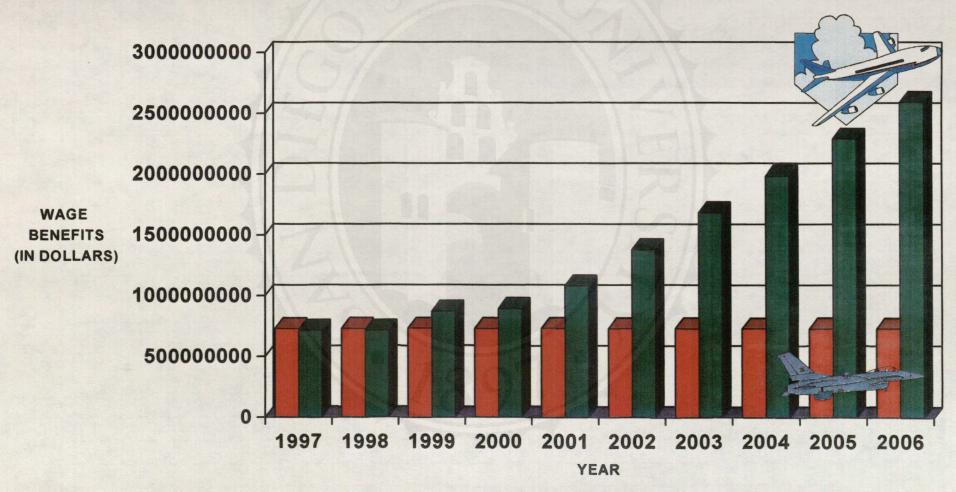
> One Market Place Thirty-Third Floor San Diego, CA 92101 (619) 231-3800

Prepared by the San Diego International Airport Foundation

This report was financed by funds from the San Diego International Airport Foundation.
A nonprofit organization.

# FORECAST FOR SAN DIEGO'S POTENTIAL GROWTH RELATIVE TO LINDBERGH FIELD BEING RELOCATED TO NAS MIRAMAR: 1997-2006

■ Potential Wage Benefit ■ Potential Wage Benefit Assuming No Relocation Assuming Relocation



This graph does not include positive increases in property values and increased sales and property taxes in perpetuity.

Relocate Airport to Miramar	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
								8 1	8-	
Airport Wages										
Construction	85,943,333	85,943,333	85,943,333							
Operations	172,000,000	172,000,000	172,000,000	183,000,000	193,980,005	205,424,831	217,339,459	229,727,817	242,592,573	255,813,864
Additional Development			1							
Wages		7//								
Construction	28,320,000	28,320,000	28,320,000		76,7/4				(B) 9-	
Operations			62,933,333	125,866,667	188,800,000	188,800,000	188,800,000	188,800,000	188,800,000	188,800,000
Lindbergh Field	34 3/1	A/A								
Redevelopment Wages		W//A								
Construction		9//	6,5	49,280,000	49,280,000	49,280,000	49,280,000	49,280,000	49,280,000	49,280,000
Wages						108,800,000	217,600,000	326,400,000	435,200,000	544,000,000
Sub Total	286,263,333	286,263,333	349,196,666	358,146,667	432,060,005	552,304,831	673,019,459	794,207,817	915,872,573	1,037,893,864
Multiplier Effect (2.5)	4									
Direct Benefit	715,658,333	715,658,333	872,991,667	895,366,667	1,080,150,012	1,380,762,077	1,682,548,648	1,985,519,543	2,289,681,432	2,594,734,66
MOVE MARINES							7/ASS 7/ABS			
TO MIRAMAR										
Military Wages	201,885,000	201,885,000	201,885,000	201,885,000	201,885,000	201,885,000	201,885,000	201,885,000	201,885,000	201,885,00
Multiplier Effect(1.5)				[49]						
Airport Wages										
Multiplier Effect(2.5)	172,000,000	172,000,000	172,000,000	172,000,000	172,000,000	172,000,000	172,000,000	172,000,000	172,000,000	172,000,00
Total Before Multiplier	373,885,000	373,885,000	373,885,000	373,885,000	373,885,000	373,885,000	373,885,000	373,885,000	373,885,000	373,885,00
Direct Benefit										
Total After Multiplier	732,827,500	732,827,500	732,827,500	732,827,500	732,827,500	732,827,500	732,827,500	732,827,500	732,827,500	732,827,50

١

EAST TO

# SAN DIEGO INTERNATIONAL AIRPORT FOUNDATION

The San Diego International Airport Foundation is a nonprofit organization formed by residents, businesses, and concerned officials of the County of San Diego. The coalition includes a diverse assembly of members that have united to fight for a common thread, prosperity and safety for the future of San Diego

# Foundation Members

Douglas F. Manchester, Chairman John Seymour III. Executive Director Scott Alevy Richard D. Alexander David W. Anderson David Armstrong Hon. George Bailey Stephen A. Barnard Hon. Jim Bartell Ned Baumer John Burnham Benjamin Harvey C. Berger Vincent Benstead Hon. Brian P. Bilbray Eugene M Bischoff Thomas A. Blackman **Buddy Bohrer** Dirk Broekema, Jr. C. Terry Brown Casey A. Brown Mac Busby Jeffrey H. Byroads Chris Callipari Raymond Carpenter William F. Chana John R. Chesire Josef A. Citron Lenore S. Citron Dallas Clark Ben Clay Phillip Cleary Hon, Brian Cochran Dr. John Comito Gen. Richard M. Cooke Craig Cornell L.J. Cornick Maruice P. Correia Hon. Greg Cox Michael Crom Rug Cunningham

Gina Zanotti Cunningham Gerald M. Dallas Jeffrey Davis John de Blanc Matthew DeLine Neil Derrough Tom Driscoll Molly Eldredge Martin Fenton, Jr. Tom Fetter J. Todd Figi Dr. Anita Figueredo Ed Fike Ferdinand E. Fletcher III Douglas J. Forseth Douglas Foxworthy Murray Galinson Rick Ghio Todd Ghio Richard V. Gibbons John M. Gilchrest Gail Stoorza Gill Bernard W. Gilmore Karsten Gjemre Michael E. Gleason Sanford R. Goodkin Murray H. Goodrich Dan Greenblat John Hadivi Ronald E. Hahn David Hale Jerry Harris Dr. Author Hughes Richard J. Hughes Edward B. Huntington Karen Hutchens Hon. Dianne Jacob James D. Jameson Gordon Johnson Keith Johnson Scott Jones Roger A.P. Joseph

John P. Keating Richard W. Keatinge Gen. Victor H. Krulak William R. Kuntz, Jr. Mitchell L. Lathrop Roy Lessard Skip Lewis Robert J. Lichter Michael D. Liuzzi John T. Lynch Hon. John MacDonald Hon. Art Madrid Hon. David Malcolm Ricard Manter Joseph Martinez Maureen Maughan Joseph A. McInerney Herbert Meistrich George J. Mitchell Daniel S. Mitrovich Bruce Moore Hon. Leonard Moore Janice Mulligan James F. Mulavaney Dan Mulvihill Bill Munster Gen. Michael Neil John C. O'Neill David L. Osias Nancy Palmtag Robert Payne Michael J. Perez Alan R. Perry Matthew Peterson Robert Petrossian Keith E. Plank David A. Potter Douglas Price Anthony Principi Philip Pryde Bradford N. Raulston

Gary C. Reif

Dr. Vincent Richiutti Dr. Mark J. Riedy Leonard A. Rifkind Dr. Dennis P. Riley Dr. Daniel A. Rivetti John Robbins Hon. Donald Rodee Fred Rogers Scott Rogers David R. Samppala G. Bradford Saunders Dr. Edward L. Schechter Dr. James Schultz Jerry Schultz Dr. Louis Schwartz Neil Senturia Lawrence W. Shea Craig Sherman Jay Shumaker Dean Spooner Daniel Stanford J.F. Stillwell, Jr. Steven M Strauss Ed Struiksma Chris Sullivan Alman J. Taranton, Sr. Thomas W. Turner, Jr. Denis K. Vanier Hon. Juan Vargas Victor Vilaplana Frank Warren Robert J. Watkins Mitch Weiss James H. West Dr. Maura Wiegand Bruce H. White Harvey White Col. Leo J. Whited Hon. Leon L. Williams Gary B. Wood Richard A. Wright Larry Yeakel

# TABLE OF CONTENTS

PART I: PROJECT INTRODUCTION
San Diego's Solution to the 21st Century
PART 2: THE AIRPORT ANSWER
Executive Summary.  Miramar Meets Aviation Demand.  Forecasts of Air Passengers from 1987-2010.  Miramar Can Accommodate Long-Range Aviation Demand Right Now.  Lindbergh Field will never be Adequate or Safe.  Miramar will Reduce Noise Levels.  Miramar will be Safer.  Miramar Reduces Capital Costs.  Miramar Conversion has Financial Advantages.  Miramar will have a Positive Effect on Property Valuation.  The Public will Welcome Miramar.  Miramar has Environmental Advantages.  Miramar would Alleviate Aircraft Delays.  Miramar has Minimal Airspace Conflicts.  Miramar has Improved Ground Access.  Implementation Feasibility.
PART 3: WHY MIRAMAR? THE EXPERT OPINIONS
Airport Economic and Feasibility Study: ZHA IncExhibit A
Safety Implications: The San Diego International Airport Foundation "A Pilot's Eye View of Lindbergh Field" Exhibit E
Ground Access Report: Federhart EngineeringExhibit C
Noise Contours: Brown-Buntin Associates Inc Exhibit D
Environmental Impact: The San Diego International Airport Foundation Exhibit I
Military Advisement: General Richard M. Cooke, Former Commandant of USMC El Toro
Anthony J. Principi- Former Chief Counsel, U.S. Senate, Committee on Armed Services
Financial Consideration: Washington Airports Task Force Exhibit C

# PART ONE: PROJECT INTRODUCTION

### SAN DIEGO'S SOLUTION TO THE 21ST CENTURY

A distinguished list of concerned San Diegans have united to form the San Diego International Airport Foundation (SDIAF). It is an alliance that is both deeply concerned and highly optimistic about the future of the City of San Diego. SDIAF feels that there is an immediate need for the City of San Diego to do something about the enduring airport predicament. The answer, in SDIAF's opinion, is straightforward. The existing Charles A. Lindbergh Airport must be relocated to Miramar. There is an unanimous belief that the current situation at Charles A. Lindbergh Airport is becoming, or has already become, intolerable. Something has to be done now and the small window of opportunity that is presenting itself for the relocation to Miramar is open. Understanding there is a rebuttal to our mission, SDIAF asks you to review this study objectively and with the long term goals of our great city of San Diego at the front of your focus.

## **VISION STATEMENT**

The San Diego International Airport Foundation believes that a vibrant regional quality of life is inherently linked to flourishing economic opportunities and that establishing a legitimate international airport at Miramar is essential to insuring San Diego County's participation in global air passenger service, tourism and international trade.

Elimination of flight safety and technical restrictions associated with the existing regional airport is urgently needed.

Simply stated, San Diego County needs an airport for the 21st Century and Lindbergh Field is not and cannot be that airport.

### MISSION STATEMENT

The San Diego International Airport Foundation is a countywide-based community coalition, comprised of residents; businesses and concerned officials, dedicated to improving San Diego's economy by establishing an international airport which provides safe, world wide air passenger transport service and trade to San Diego County, through the construction of such a facility at Miramar Naval Air Station, through cooperation, collaboration and voter consensus.

### PREFACE

Aviation has been and always will be, a key element in the economy of San Diego County. Kitty Hawk, North Carolina may be considered the birthplace of aviation, but San Diego is where air transportation as we know it today grew into adulthood.

San Diegans have always had a rich and varied love affair with planes, air lines and air travel -- from the historic Spirit of St. Louis designed by T. Claude Ryan to the energy of PSA, student discount fares that allowed thousands of young people to pour in and out of San Diego to world-renown Nobel prize-winners coming to consult with Jonas Salk. Convenient travel has been essential to us. It must continue to be a strong thread in the fabric of San Diego life.

Although numerous studies have been made of various sites for the relocation of Lindbergh Field, never before have we had the detailed information and the comprehensive facts and figures put forth so clearly as you will read in this report. In an unbiased and factual analysis, the San Diego International Airport Foundation has demonstrated that creating a new Charles A. Lindbergh Field airport on the site of Miramar is an opportunity that San Diego must seize immediately.

The new Charles A. Lindbergh Field will be vastly more safe, more convenient to a greater number of people, have significantly less noise impact than military use and will actually relieve traffic congestion on I-15 and other thoroughfares. Relocation can be accomplished with absolutely no new taxes and it can all be financed through A rated bonds based on the current usage of 12 million plus passengers. We won't have to grow into it.

Each of these assertions are documented in this report. Together they provide the answer to the airport problem that we have been seeking for decades. All that is left to do is act. The security of San Diego's future generations demands that we act now.

This report is composed of facts drawn from the 1990 SANDAG Air Carrier Airport Site Selection Study as well as verifications and expert opinions provided to the San Diego International Airport Foundation.

The San Diego International Airport Foundation respectfully requests adoption of the following recommendation:

# **RECOMMENDATION:**

It is the recommendation of the Foundation that SANDAG conducts an immediate analysis and adopt a resolution in support of the June, 1994 ballot that directs all government officials to cooperate to make every effort to relocate Charles A. Lindbergh International Airport to Miramar.

# PART TWO: THE AIRPORT ANSWER

# **EXECUTIVE SUMMARY**

The San Diego International Airport Foundation in a combined effort with the Washington Airport Task Force submit this executive summary.

In today's global market, a major city will require a full-service airport if it is to sustain in the 21st century a vibrant economy offering attractive employment, a sound environment and an enviable quality of life.

Despite the presence of Los Angeles International Airport, approximately 120 miles to the north, the San Diego region will not achieve its full economic potential if it continues to rely upon Lindbergh Field for its air service needs. Lindbergh's limitations already are hampering the economic growth of San Diego. The developments we can expect in air travel will render the existing downtown facility ever more obsolete, regardless of the convenience of its location or the excellence of its management.

While it is technically feasible to design an airplane to fly great distances from Lindbergh Field's limited runways, such an aircraft would not be economically attractive to the air carriers and would not sell. As a result, the majority of San Diego's long distance travelers and those flying beyond North America must drive to Los Angeles or fly via a connection at another international gateway. Lindbergh's limitations thus deny San Diego the benefit of even single plane service to destinations on other continents.

The outer limits of a company's marketing outreach and delivery is defined by the timeliness and responsiveness of the transportation services available at its location. The ability of a company to act or react in a timely manner is a function of its ability to move its people swiftly to the point of need. Over the last thirty years the jet airplane has compressed the time and cost barriers to long distance travel, bringing us face to face with the realities of one small world and making possible a truly global business environment. Today's products are produced on a Multi-national basis, major employers are Multinational in scope and many smaller manufacturers rely on sales in world as well as domestic markets. San Diego will not survive in these growing market unless Miramar is

utilized as a site for the new Charles A. Lindbergh International Airport.

The speed and efficiency of the jet airplane has catalyzed a massive international tourism industry. In many areas of the United States, the domestic tourism market is maturing and most growth is projected to come from overseas. Also, the foreign visitor typically spends more and stays longer. Today, San Diego is one of the top ten tourism destinations for foreign visitors in the United States. However, the city is unlikely to be reaping the full potential of its tourist attractions as it does not have direct access to international markets. For many international visitors, San Diego is a stop on an itinerary which began and will end at another city with a gateway airport. Most of the visitors spending will accrue to his primary destination, not San Diego.

Development of a full service commercial airport capable of sustaining a full range of today's domestic and international air services is an essential ingredient if the San Diego region is to sustain a sound economy and good quality of life into the next century. Without a modern airport facility offering potential for growth, including a 12,000 foot runway, unrestricted approaches, good ground access, and environmental compatibility, none of which are offered by Lindbergh Field, the San Diego region will have no ability to attract direct international air service for passengers and cargo, nor will the region be able to sustain a full level of domestic service.

Continued reliance on Lindbergh Field will lead to the progressive slow decline of the region's economy as the community is relegated to secondary and short-haul status in the nation's air transportation system. The mission of the San Diego International Airport Foundation is timely and vital.

### MIRAMAR MEETS AVIATION DEMAND

Forecasts of air passenger demand through the year 2010 have already been prepared by SANDAG, as reported in the SANDAG Working Paper, "Aviation Demand Forecasts, 1987 to 2010, Lindbergh Field, San Diego," dated November, 1988. Additional forecasts were taken from the 1990 SANDAG Air Carrier Airport Site Selection Study and represent future trends in "unconstrained" demand. That is, the forecasts were made without airport capacity constraints and on the assumption that a replacement airport for Lindbergh Field would be available. Forecasts of aircraft operations prepared for the Port District ADS were based on assumptions that there would be increasing capacity limitations at Lindbergh Field. The approach of the SANDAG study emphasized specific future activity levels and secondary emphasis on the exact year at which those levels would be reached.

# FORECASTS OF AIR PASSENGERS FROM 1987 TO 2010

Table 1 presents the forecasts prepared by SANDAG of certified airline and commuter airline air passengers at Lindbergh Field from 1987 through 2010. Annual air passenger demand (enplanements and deplanements) is forecast to nearly double from about 10.1 million annual passengers (MAP) in 1987 to about 19.8 MAP in 2010. The forecast of air passengers is based on a time series regression model that related the number of annual air passengers to specific years.

# Table 1 FORECASTS OF AIR PASSENGERS THROUGH 2010 San Diego Air Carrier Airport Site Selection Study 1987-2010

These forecasts have been prepared on the basis of the information and assumptions given in the SANDAG Working Paper. The achievement of any forecast is dependent upon the occurrence of future events which cannot be assured.

Historical	Forecast				
1987	<u>1990</u>	1995	2000	2005	2010
10.1	11.7	13.7	15.8	17.8	19.8

Million of Annual Passengers (MAP) — Total passengers (enplanements and deplanements).

Source:

San Diego Association of Governments, "Aviation Demand Forecasts, 1987-2010, Lindbergh Field, San Diego," Working Paper, November 1988

# MIRAMAR CAN ACCOMMODATE LONG-RANGE AVIATION DEMAND RIGHT NOW

The facts and figures in this study are based on the current annual passenger usage of 12 million plus passengers, with all findings capable of pertaining to 20 million passengers without modification of any runways. The 24,000 acres include a 12,000 ft. runway that will allow arrival and departure of international flights with significantly reduced noise impact than currently exists.

If and when expansion becomes necessary, the site at Miramar has the space and the infrastructure to allow safe and convenient expansion with a minimum of noise or ground access impact. It is the best possible site to accommodate long-range aviation demand.

# LINDBERGH FIELD WILL NEVER BE ADEQUATE OR SAFE

Lindbergh Field, according to air traffic experts, has the steepest approach in the United States of any major airport. The minimum descent altitude on Lindbergh's Runway 27 approach is 660 feet, more than three times greater than what would be required for Runway 24 right at Miramar. Based on the alternatives studied in the 1990 SANDAG study, even expansion of Lindbergh Field will only allow for an approximate 7,500 ft. runway useful only for departures of international flights. The expansion alternatives are summarily deemed inadequate for long-term use past 2010 and only increase density and noise impacts.

This reports documents that Lindbergh Field in its present form is at the farthest margins of safety not only in the flight path, the difficulty of the landing and the shortness of the runway, but also because of delayed arrivals and airspace congestion.

# MIRAMAR WILL REDUCE NOISE LEVELS

With the relocation of Lindbergh Field to Miramar, any residential area west of I-805 would have the same or less noise impact that current military use allows. Any residential area west of I-5 will have no noise impact whatsoever.

The current noise levels created by the military aircraft at Miramar are significantly greater than noise levels at Lindbergh Field today. If Miramar continues its military use, additional aircraft will be relocated there, including an estimate of approximately 150 helicopters flying below 1500 ft., and noise will increase.

By changing to a commercial use airport, the community surrounding Miramar would benefit from significantly reduced noise levels. The neighborhoods around Lindbergh Field would, of course, have aircraft noise levels reduced to zero.

In addition, the nearest residence to the runways at Miramar would be <u>six times</u> further away, a distance of nearly 2 miles, than the nearest residence to the current Lindbergh Field runways. With the ability to utilize the same flight path currently in use at

Miramar, the minimal noise that does occur will only affect industrial and commercial zones.

### MIRAMAR WILL BE SAFER

Miramar's approximately 24,000 acres surrounded by open space and landfill provide a tremendous margin of safety for the passengers as well as the ground population that we have never enjoyed in San Diego. It has been demonstrated that even if aircraft do crash, a landing on open space versus developed land greatly increases the number of survivors.

No one in San Diego wants to experience another tragic crash such as the PSA disaster. With an international airport at Miramar, the magnitude of the tragedy can be diminished.

In addition, the safety of a commercial airport versus a military airport has been demonstrated. Increased military use of Miramar may increase the safety risk for all surrounding residents.

### MIRAMAR REDUCES CAPITAL COSTS

The relocation of Charles A. Lindbergh Field can be accomplished at significant less cost than building a new airport as outlined in the June 1990 SANDAG report.. Utilizing the existing runways, hangers, tarmac and equipment saves literally hundreds of millions of dollars.

The SDIAF asserts that total expenditures would be approximately \$880 million to convert the airport to civilian use. It is also estimated that development by private enterprise in support of the airport would result in an additional \$440 million in building and construction improvements.

The financial advantages of using Miramar for the relocation of Lindbergh Field go beyond the capital cost savings. Bonds may be issued on the current usage of 12 million plus passengers without any passenger growth demand. The projected revenue from the airport operations will pay for the cost of operations and fully service the debt service over the life of the bonds.

		1:	able 2			
	Costs Feasi	bility Analysis Fed. & State	for Funding PFC'S	of Project Bonds	Airline Fund	Total Project Cost
Terminal Project Cost	\$519,750,000	\$10,000,000	\$26,500,000	\$483,250,000	\$0	\$519,750,000
Aircraft Support Systems	\$72,900,000		\$4,000,000	\$41,800.000	\$27,000,000	\$72.900.000
Airfield Cost	\$81,000,000	\$60,750,000	\$4,500,000	\$15,750.000	\$0	\$81.000.000
Landside Civil Cost	\$124,200,000	\$82,100,000	\$8,500,000	\$53,800,000	\$0	\$124,200.000
Total Project Cost:	\$797,850,000	\$132,850,000	\$43,500,000	\$594,500,000	\$27,000,000	\$797,850.000
Capitalize Interest During Construction Escalator During	\$48,477,000	\$0	\$0	\$48,477,000	\$0	\$48,477.000
Construction	\$34,028,303	\$0	\$0	\$34,028,303	\$0	\$34,028.303
TOTAL COSTS:	\$880,355,303	\$132,850,000	\$42,500,000	\$677,005,303	\$27,000,000	\$880,355,303

SOURCE	AREA	RATE	REVENUES
Airlines	648,649	\$48.75	\$31,621,639
Car Rental Agencies	1,501,662	\$10	\$31,621,639
Concessions	6,757,480	\$2.00	\$13,514,960
Ground Transportation	6,757,480	\$0.26	\$1,756,945
Parking	6,000	\$2000	\$12,000,000
Landing Fees	7,000,000	\$1.03	\$7,210,000
Apron Fees	54	\$25,000	\$1,350,000
Fueling Fees			\$1,500,000
Property Lease	200	\$6,500	\$1,300,000
Intl. Flights	845,000	\$4	\$3,380,000
Total Rates & Charges			\$88,650,164
Passenger Facility Charge			\$15,204,330
TOTAL REVENUE			\$103,854,494
EXPENSES			
OPERATION & MAINTENANCE			
Terminal	\$28,350,000		
Airfield	\$5,250,000		
I/S Site	\$6,615,000		
TOTAL EXPENSES			\$40,215,000
NET OPERATING INCOME	\$63		
DEDT CEDVICE AND COVE		\$6'	

COST PER PASSENGER: \$6.65

DEBT SERVICE AND COVERAGE

NET INCOME

\$63,639,494

\$62,555,290

\$1,084,204

According to Carol Canfield, First Vice President & Manager of the Airport Finance Group at PaineWebber, Inc., their firm has underwritten "billions of dollars of airport revenue funds." In her evaluation, the new Lindbergh Field would merit an "A" rated bonds by Standard & Poors and Moody. The financing of this plan will call for no General Obligation Bonds with no new taxes needed from any member of SANDAG or the Unified Port District.

# MIRAMAR CONVERSION HAS FINANCIAL ADVANTAGES

In addition to the positive financial structure of relocation, there will be a positive financial benefit to all of San Diego. It is estimated that the GRP, which now stands at approximately \$65.5 billion will increase 2% per year, or \$1.3 billion, as the result of relocation.

The financial advantages of the redevelopment of Lindbergh Field's present location and the conversion of Miramar are clear. The closing of Miramar will, in the opinion of high-ranking military personnel, in no way jeopardize the community's reliance on other military payroll. The SDIAF finds that conversion will result in \$2.6 billion in direct wages to the economy of San Diego in the year 2006.(see chart) This compares favorably to the 1997 projected \$716 million in wages from Lindbergh Field and Miramar without this conversion.

In terms of the possible redevelopment revenues of the current Lindbergh Field site, a comparison may be made to waterfront revenues currently in place. Rents from the Marriott, Hyatt and Sheraton hotels paid to the Unified Port District alone currently exceed total airport net revenues from Lindbergh Field.

# RELOCATION TO MIRAMAR WILL HAVE A POSITIVE EFFECT ON PROPERTY VALUATION

According to the Comprehensive Land Use Plan prepared by SANDAG in February 1992, the total population within Lindbergh Field's airport influence area is 86,800. 69,690 persons embody 35,500 households and 17,200 persons live within group quarters.

An analysis using Equifax and the 1990 U.S. Census and determined that the estimated value of residential property in the airport influence area is in excess of \$5.6 billion. (see report)

Assuming a 10% increase in property value as a result of relocating the airport to Miramar, the increased value to the residential property would be \$560 million. The increased values would result in greater real estate tax revenues upon revaluation after sale.

A similar increase in values would result in property values in the Miramar area due to reduction in noise, contour levels and an increase in economic vitality. The estimate increase in property values in the Miramar area would be in excess of \$250 million.

# THE PUBLIC WILL WELCOME MIRAMAR

San Diegans are well aware of the problems of Lindbergh Field and the need to relocate the airport. One-third of all residents use the airport up to four times a year, with nearly a quarter of all San Diegans traveling to Lindbergh Field up to 10 times a year.

According to SDIAF polls, 70% percent of all San Diegans recognize that San Diego needs an improved, world-class international airport. 51% of the region's voters favor relocating Lindbergh Field to Miramar compared to only 29% who want Lindbergh Field to remain in its current location. 72% believe the region's economy will suffer if we cannot achieve a world class airport. 70% firmly believe that a new international airport will create jobs and revenue. Lastly, 47% believe that Lindbergh Field is too dangerous.

# MIRAMAR HAS ENVIRONMENTAL ADVANTAGES

In this plan to relocate Lindbergh Field on the Miramar site, there would be no environmental issues beyond those already identified by the U.S. Navy. In this plan, all of the vernal pools and mima mounds will remain untouched.

The conversion to civilian airport use and the maintenance of the open space east of Interstate 15 as a secure area, would save the taxpayer significant costs for environmental clean-up.

### MIRAMAR WOULD ALLEVIATE AIRCRAFT DELAYS

The increased capacity at Miramar would satisfy demand up to 20 million air passengers and consequently alleviate aircraft delays without any added runways.

# MIRAMAR HAS MINIMAL AIRSPACE CONFLICTS

With the transfer of Lindbergh Field to Miramar, there would be no major airspace conflicts. Minor interactions with Montgomery Field would necessitate a slight modification of procedures. In fact, Miramar is already the air traffic control center for the region through the FAA San Diego Terminal Radar Approach Control (TRACON) facility.

# MIRAMAR HAS IMPROVED GROUND ACCESS

Current access to Lindbergh Field is woefully inadequate, with only one approach, and is inconvenient for the largest amount of county residents. According to the 1993 SANDAG Regional Economic Prosperity Strategy, "accessibility to a viable international airport and first class airport facilities is of paramount concern."

The relocation to Miramar would provide improved access to the greatest amount of residents. Average travel time to the airport would be 35 minutes. With the building of the Charles A. Lindbergh Airport Expressway connecting I-5 and I-805 at Miramar Ave., access would be available from all sides of the airport.

The newly expanded I-52 and the projected extension of I-125, plus the projected expansion of North County roadways allow access from the far reaches of the county.

In addition, rail service already exists from Oceanside to Escondido that could be easily linked at Miramar. Light rail corridors could be built into these new transportation links to fit into the existing light rail plans for the county.

# IMPLEMENTATION FEASIBILITY

The Navy is leaving Miramar. Currently the Base Realignment and Closure Commission (BRAC) has mandated that the Naval Aircraft Squadron be relocated to Lemoore and the Top Gun School be relocated to Fallon. By the same law, the USMC from El Toro, Tustin and Hawaii are scheduled to be relocated to Miramar. According to Major General Richard M. Cooke, USMC former commandant of the El Toro base, "The proposed closing of these facilities is the result of a badly flawed process which unnecessarily wastes billions of dollars..." Such a transfer is estimated to cost taxpayers \$1 billion.

Implementation of the SDIAF calls for the U.S. Navy to vacate the site and convert it to civilian airport. According to the BRAC policy, if any base closure can be used to benefit the transportation needs of the region, that use will have the highest priority. The City of Orlando has already had tremendous success in converting McCoy Air Force Base into the Orlando International Airport.

Upon approval of the closure of Miramar as a military base the Pryor amendment provides an exception to the standard reuse procedures for public benefit transfers to public authorities.

The Federal Aviation Authority makes a recommendation to the Department of Transportation that a new regional airport be located at Miramar. The Department of Transportation then makes the application to the Department of Defense to make the public benefit transfer for development of a regional airport.

San Diego has the opportunity now to recommend to the BRAC '95 commission that Miramar be converted to civilian use. Strong leadership and a mass public consensus are needed to achieve this conversion. The SDIAF is the beginning of this effort and its level of support is an indication that the feasibility of this plan is greater than any other airport relocation plan ever considered.

# PART THREE:

WHY MIRAMAR?
THE EXPERT OPINIONS





January 11, 1994

Mr. Douglas Manchester Chairman San Diego International Airport Foundation One Market Place, 33rd Floor San Diego, CA 92101

Re: Preliminary Analysis

New San Diego International Airport at NAS Miramar

Dear Mr. Manchester:

I am pleased to transmit to you our preliminary analysis on a new San Diego International Airport at NAS Miramar. We have reviewed a great deal of information in the last month and a half to prepare this report and from our preliminary analysis would recommend the city of San Diego, the San Diego Port Authority, and the surrounding communities favorably support this project.

Current conditions at San Diego International Airport at Lindbergh Field are considerably constrained and passenger traffic is off substantially from passenger forecasts completed in 1988. Where passenger growth was projected in 1993 of 15,000,000, you will only achieve approximately 11,888,000. This results in an annual growth of less than 1% when you projected to have more than 6% growth.

From our involvement in the convention center activities, it is obvious the airport constraints is affecting San Diego's ability to increase its tourist market because of the poor conditions at the airport at Lindbergh Field.

The airport operations at Lindbergh Field subject more than 85,000 people to airport noise (41,000 within the immediate airfield exposure) and will continue to have a negative impact on vertical growth of downtown. This is unfortunate because allowing a downtown area to grow vertically generally reduces the growth in costs of government-provided services; thus keeping taxes down.

Relocating San Diego International Airport to NAS Miramar would provide an opportunity for the airport to be built to accommodate up to 20 million passengers and provide a real recovery of passenger growth in an unconstrained manner.

Mr. Douglas Manchester January 11, 1994 Page Two

Our preliminary feasibility analysis indicates a new facility with a design capacity of 20 million, constructed at a cost of \$880,355,300, and providing 54-aircraft gates can be operated the first year with surplus revenues. In the year 2000, the first year of operation, revenues are generated with a rate structure that will be very competitive in the U.S. We project cost per passenger to the airlines to be \$6.55. This can be compared to the new Denver Airport, opening sometime this spring, at a cost per passenger of \$14.45. From our discussion with PaineWebber, this project can be financed at investment grade ratings without any pledge of taxpayers' revenues from the City of San Diego or surrounding communities.

The environmental concerns, noise, and the sanitary landfill adjacent to NAS Miramar are legitimate concerns and can be managed acceptably. Our review of the noise conditions suggests noise levels in the surrounding community by a commercial operation at NAS Miramar will be significantly less than the current military operation. The current program for managing bird accumulation at the sanitary landfill, provided by the City of San Diego and the Navy, has been successful for the past two years with no additional hazards over normal and natural conditions. No bird strikes have been experienced within NAS Miramar airspace or approaches.

This project would provide in excess of \$600 million in wages during the period of design and construction.

This project could help significantly in revitalizing current stagnation in passenger traffic and could open February, 2000.

sincerely,

R.W. Sipperly President

RWZ:mmk

# PRELIMINARY ANALYSIS

# SAN DIEGO INTERNATIONAL AIRPORT AT NAS MIRAMAR

# TABLE OF CONTENTS

Passenger Forecasts	1
Design Capacity	2
Lindbergh Field Capacity Analysis	2
New San Diego International Airport Scope	2
Project Costs and Funding	4
Revenues	4
Preliminary Feasibility	5
Passenger Facility Charge (PFC)	6
Project Schedule	7
Noise Considerations	7
Sanitary Landfill	8
Conclusions	9

#### PRELIMINARY ANALYSIS

# SAN DIEGO INTERNATIONAL AIRPORT AT NAS MIRAMAR

#### **JANUARY 4, 1994**

The San Diego International Airport Foundation (SDIAF) requested we prepare a preliminary analysis relocating San Diego International Airport at NAS Miramar. Our investigation included the review of information on the current San Diego International Airport operations at Lindbergh Field, forecast and growth projections, noise and other environmental data, comparable other airport data, and information on the NAS Miramar site.

# Passenger Forecasts

In July 1988, P&D Technologies, in association with Thompson Consultants International, Burns & McDonnell, and Stevens & Garland Associates completed an Airport Development Study, demand/capacity and facility requirements. Excerpts from this report on forecasted passengers from 1988 through the year 2010 (see Exhibit A, Historical Passenger Traffic), indicated an average growth in excess of 6% and projected passenger traffic in 1995 to be 16,700,000. At the close of 1993, actual passenger traffic has not yet exceeded 12 million.

The Airport Development Study did indicate these forecasts were based on unconstrained growth. Our preliminary analysis suggests passenger traffic growth has been significantly constrained by the current facilities at Lindbergh Field due to the lack of capacity of the facility. Average growth in this period has been less than 2% per year, and further degradation in growth rates will continue at the Lindbergh Field facility.

Although improvements could be made to Lindbergh Field to increase capacity in the short term, in our opinion, it is not a prudent expenditure of funds since the Lindbergh Field facility has outlived its useful life and expansion for long-term capacity improvements is not possible due to site constraints.

previous to 1988, average passenger traffic increased annually in excess of 10%; a very robust growth during a 7-year period beginning in 1981. It appears saturation of the Lindbergh Field facility occurred in 1988 and the growth in traffic has been substantially constrained since.

To reimplement robust growth in passenger traffic, a new facility is needed which will immediately provide ample capacity for growth in the near-term future. A new facility will take 6 years to develop, and we recommend a design capacity of 20 million passengers be considered. With a new terminal opening in the year

2000, our preliminary passenger forecast suggests 13,500,000 passengers will be using the facility the first year. The 20 million passengers design capacity would not be reached until the year 2008. This provides at least 8 years of use of the new facility prior to any expansion and is consistent with the design approach in many other major hub airports in the U.S.

# Design Capacity

The capacity of an airport facility is comprised of 3 components; i.e., airfield, terminal, and ground access. Each of these components should be designed in concert with the design capacity of the overall facility so that balance is achieved in each of the three components. Over building one particular component with excess capacity over other components should be avoided. Such over building expends funds unwisely by building capacity that cannot be effectively utilized due to limitations in other components.

With the design capacity of 20 million annual passengers, the following individual component capacities result:

Airfield Capacity 62 to 75 operations per hour (IFR)
Terminal Capacity 54 gates (370,000 passengers per gate)
Ground Access 3,000 vehicles per hour

# Lindbergh Field Capacity Analysis

When examining the facts of Lindbergh Field under the current operation (see Exhibit B, San Diego/Lindbergh Field Fact Sheet), it appears the following capacities currently exist:

Airfield Capacity 46 operations per hour (IFR)
Terminal Capacity 30 gates (314,000 passengers per gate)
Ground Access 1,500 vehicles per hour

In the current terminal facility, approximately 14,400 sf of terminal space is provided per gate. Holdroom areas for each gate is approximately 1,557 sf. Daily gate use yields 6.9 turns per day. Square footage in the terminal reflects space standards back in the days when aircraft average capacities were less than 100 people. Standards today provide substantially more square footage in the terminal per gate, with considerably larger holdrooms, yielding slightly better passenger thru-put per gate and fully developed concession areas. Some comparable data for consideration is:

Orlando International Airport New Denver Airport 42,500 sf per gate 53,570 sf per gate

# New San Diego International Airport Scope

When creating the scope of a new international airport, providing improvements for a balance in capacity of airfield, terminal and

ground access is necessary to efficiently use capital for a new facility which is cost competitive with other new airports in the air transport system.

# Airfield

The airfield at NAS Miramar with two parallel runways and one diagonal runway can provide 70 to 77 operations at peak hour (IFR). Ample airfield runway capacity exists to meet requirements of 20 million passenger design capacity. Improvements will need to be made to provide a second parallel taxiway, taxi connectors to the apron areas, and high-speed turnoffs to provide a balanced airfield for the new airport.

The assets NAS Miramar provides San Diego for a new facility are substantial. The airfield is in excellent condition and can be used immediately. NAS Miramar airfield meets design capacity requirements and provides savings of \$100 million by not requiring new runway to be built with the project.

# Terminal

A new terminal building must meet current standards for space and passenger convenience to be competitive in today's air transport environment. We propose the following criteria be utilized for terminal facilities:

- 35,000 sf per gate gross terminal space
- 370,000 passengers per gate thru-put
- 6.5 turns per day of gate utilization

These standards will bring this facility in line with current design standards providing adequate square footage in terminal facilities and more comfortable holdrooms, more adequate airline space, enhanced concession space to generate retail/food & beverage sale increases over current revenue, adequate public circulation space to enhance the travel experience for users and avoid crowding in key terminal areas which leads to delays, frustration by the traveling public, and safety/security problems.

A new terminal with 54-aircraft gates (narrow-body, wide-body, and jumbo aircraft) yields 1,890,000 sf of space (see Exhibit C, Preliminary Feasibility).

# Ground Access

The proper ground access for the scope of the project would include:

- Roadway systems with access from both east and west
- Loop-road system with 3 lanes of traffic.

- Enplaning (ticketing) roadway would be vertically separate from the deplanement (bag claim) roadway.
- On-site public parking with 6,000 spaces (25% of the spaces for short-term parking).
- Additional parking for employees, commercial vehicles, and VIPs.

The current roadway network around NAS Miramar provides wonderful access and capacity for a new airport. Access from the east and west with interchanges on the interstate highways exists and meet ground access capacity requirements for 20 million passengers.

# Project Costs and Funding

The scope as outlined heretofore results in a total project cost in today's dollars of \$798,850,000. Including capitalized interest and escalation during construction for a 6-year construction period, a total cost of \$880,355,300 is projected (see Exhibit C, Preliminary Feasibility).

Funding of this overall project can occur from the following sources:

Federal and State Grants	\$132,850,000
Passenger Facility Charges (PFCs) (Collections during construction only)	\$ 43,500,000
Airport Revenue Bonds	\$677,005,300
Airline Funds	\$ 27,000,000
Total	\$880,355,300

Based on the preliminary analysis, funding from these sources for the project as heretofore outlined appear to be achievable for a new airport facility at NAS Miramar. This assumes the existing facility at Lindbergh Field would be closed and cease to operate upon the opening of the new facility at NAS Miramar.

#### Revenues

When examining revenues for the first year of operation in the year 2000, revenues would be received from a number of sources. These sources would include the following:

- Airline terminal rent.
- Rent-a-car concession fees and terminal rent.
- Concessions fees (food & beverage, retail).
- Ground transportation fees.
- Parking fees.

- Airline landing fees.
- Airline apron fees.
- Fueling charges.
- Property leases (catering facilities, aircraft maintenance, FBOs, and other on-site airport services)
- International flight processing fees.

From analysis of these revenue sources, utilizing a rate base competitive in the industry, a gross revenue of \$88,650,000 can be achieved. Airline rates compared with other major U.S. airports are as follows:

Airline terminal ramp Airline landing fees \$48.75 per sf \$1.03 per thousand pounds

# Preliminary Feasibility

Feasibility of a new airport facility today depends on three cost factors comparable to other airport facilities in the country; i.e., landing fees, terminal rent, and cost per passenger (see Exhibit D, Comparable Airport Costs to Operate).

# Landing Fees

Landing fees at a number of key airports across the country range from a low of \$.89 to a high of \$2.09 per thousand pounds. In 1993 Lindbergh Field charged \$.89 per thousand pound and has scheduled an increase in 1994 to \$1.19 per thousand pound.

### Terminal Rent

Terminal rent for major hub facilities has a significant range of charges, with a low of \$22.14 per square foot to a high range of \$120.53 per square foot. These terminal rents are the average rent for a variety of classifications of space in the terminal facility rented by airline tenants. These average rental rates include high cost rental space such as ticket counters and a lower cost rental space such as ramp operation space. These rates are blended to provide an average rental rate which has been heretofore mentioned. The 1993 rental rate for Lindbergh Field was \$41.00. 1994 projected rental rate is \$39.68.

# Cost Per Passenger

cost per passenger is a new criteria beginning to emerge in the airline industry as a method to compare the costs to operate by the airlines in airport facilities across the country. Basically, all the costs to the airlines are divided by the enplanements to yield the cost per passenger. Many airports do not have these costs available yet, but the current range for most major airports is from the low of \$4.05 per passenger to an upper range of \$14.45 per passenger. The \$14.45 per passenger cost is for the new Denver

airport, scheduled to open in the spring of 1994. This is the highest cost per passenger of any airport in the country. From review of the data available on most major hub airports, approximately \$7.00 per passenger appears to be a reasonable cost, competitive in price with other airports in the country.

# Analysis

When analyzing the first year of operation, utilizing all the information mentioned above, a surplus in the first year of operation of over \$1 million is achieved after meeting payments for debt service, coverage, and operation and maintenance expenses.

We have assumed the interest rate on the bonds of \$677,005,300 is 6.25% on a tax-exempt basis. We have assumed 25% coverage in the cost. Coverage is an overpayment on debt service in the amount of 25% that serves as a reserve fund for any shortages in revenue collections to ensure the debt service is payable on the bonds without interruption regardless of an operational revenue problem. As the reserve fund accumulates, portions of the fund could be reallocated for renewal and replacement and as prepared credit to the airlines on terminal rent. Operating and maintenance costs assumed are comparable to other facilities of this size and character and represents 40% of the overall budget in the first year of operation.

As a result, cost per passenger would be \$6.55 per passenger.

If you compare this cost with other airport costs (see Exhibit D, Comparable Airport Costs), these costs are extremely favorable and competitive in the U.S. market.

# Passenger Facility Charge (PFC)

Congress created the ability for airports to raise money for airport facility improvements with a Passenger Facility Charge (PFC) in 1991. Basically, with a FAA approved program, an airport can collect up to \$3.00 per departure for up to 25 years. To receive FAA approval, a detailed comprehensive application must be prepared and undergo a year-long process to become approved. Airline consultation occurs during the process. The application must outline in detail eligible projects which expand capacity, improve safety and security, and increase competition between the air carriers for the benefit of the traveling public. The \$3.00 charge is hidden in the ticket price for departures from the airport, is collected by the airlines, and collections are sent monthly less an allowable collection charge to the airport operator.

The new San Diego International Airport at NAS Miramar would be considered an eligible project and would generate substantial funds

for this new facility. Any existing PFC program at Lindbergh Field would need to end by the start date of this program, projected to start in 1997. Coordinating the two programs could easily be done with the new application.

A PFC program for the new San Diego International Airport at NAS Miramar could not be started much sooner than indicated because the new project must be fully programmed and scoped, all environmental assessments complete, a complete financial plan disclosed with the application, and the authority operating the airport be authorized to do so.

We have projected PFC collections for this feasibility study (see Exhibit E, PFC Projected Collections). 75% of enplanement was used to allow for frequent flyer tickets and multiple destination passengers which would not pay PFCs in their ticket.

# Project Schedule

We have developed a preliminary schedule for the project (see Exhibit F, Preliminary Project Schedule). The first phase of work should begin with the selection of a general consultant, starting the second quarter of 1994. Further site analysis, program development and scope document preparation as well as preparation of the master plan and the new airport layout plan need to be completed by 1995. The next major phase of work would include the preparation of passenger facility charge (PFC) application to FAA and the completion of the environmental assessment report.

Design would occur beginning in 1996 and ending the first quarter of 1997. Construction would begin in the first quarter of 1997 and be completed in the last quarter of 1999. Construction would probably occur in multipackages overlapping the design phase.

The preliminary schedule indicates an opening of the new facility in February, 2000. This date was selected as the traditional least traffic month of the year and the best time to relocate the operation from Lindbergh Field to NAS Miramar.

# Noise Considerations

Considerable attention has been given to noise considerations at NAS Miramar and the relocation of all commercial traffic from Lindbergh Field to NAS Miramar. Our noise consultant has reviewed in-depth the current operation at Lindbergh Field, relocation of commercial service to NAS Miramar, current military operation at NAS Miramar, and has made a number of conclusions as outlined in his letter dated January 4, 1994.

The first conclusion is by the year 2000, the entire commercial fleet will be composed of a stage 3 aircraft. Stage 3 aircraft,

significantly quieter than stage 2 aircraft, have the ability to climb after take off and achieve higher altitudes in shorter distances, than stage 2 aircraft. With the vast land area of NAS Miramar around the primary airfield with at least 5,000 feet of land on this property off the end of departure runway, significant altitude can be reached by stage 3 aircraft at this distance before flying over property owned by others. It is his conclusion noise levels will be significantly less than the current military operation and, in general, at least 25% reduction noise exposure could be achieved.

He further concludes with participation of surrounding communities and an airspace management plan, departure routes could be designated to further reduce noise impact to surrounding communities.

His other significant conclusion is at Lindbergh Field 41,000 people reside within the noise impact area of the airport. By relocating commercial activity from Lindbergh Field to NAS Miramar and shutting down the Lindbergh Field operation, these 41,000 people would no longer be exposed to the noise from the airport operation. The concentration of people surrounding the NAS Miramar in the proposed flight patterns for commercial operations, less than 5,000 people are currently affected by aircraft noise. The 5,000 people currently affected by military operations will be the same people affected by the commercial operations. 46,000 people are affected by noise in the Greater San Diego area by airport operations at these two fields, by relocating the commercial operation from Lindbergh Field to NAS Miramar, noise exposure can be eliminated from 41,000 people and the remaining 5,000 can enjoy at least 25% reduction in current noise levels.

Since airspace requirements have restricted vertical growth of downtown San Diego with Lindbergh Field operation, these restrictions could be removed with the relocation to NAS Miramar. This should allow downtown San Diego and surrounding communities to reinstitute vertical growth opportunities. Vertical growth tends to keep government services cost lower and should affect taxes similarly.

# Sanitary Landfill

We have also preliminarily examined the sanitary landfill operation at NAS Miramar and its potential effects on commercial operation. FAA 5200.5A provides guidelines for waste disposal sites on or near airports. We are familiar with this regulation and its application to the NAS Miramar operation. The landfill operation is within 10,000 feet of the runway and would require FAA's close inspection and examination. The FAA prepared guidelines to help communities foster safe airport operations, but clearly left the regulation of sanitary landfills up to other environmental agencies. Their involvement in the inspection is to ensure bird populations do not

accumulate more than would normally occur in the environment and a bird hazard for aviation is not created by the landfill operation.

We are aware the Navy and the City of San Diego have for some time operated a program to control bird population at the landfill site and have successfully achieved zero accumulation of bird population above what can be considered normal populations in any environment. Their program is called BASH (Bird Aircraft Strike Hazard) and has kept detailed records and reports no bird strikes in the vicinity of NAS Miramar and the landfill. There have been bird strikes outside the area in normal airspace.

With FAA's close inspection of the site, examination of the existing program and its results, commitments to maintain the current program and the analysis of other commercial airports operating with landfills within 10,000 feet of their runways, the FAA would not prevent the development of a new San Diego International Airport at NAS Miramar.

# Conclusions

Our preliminary analysis of relocating the Lindbergh Field operation to NAS Miramar appears to be a viable opportunity for the Greater San Diego community. The current operations at Lindbergh Field are highly constrained and the ability of passenger traffic to grow to help reinitiate prosperity in San Diego is not possible. Improvements made to Lindbergh Field to help relieve current capacity constraints would only have very short term benefit and would not provide a permanent solution.

Design capacity for a new San Diego International Airport should be 20 million passengers. This provides unconstrained growth of passenger traffic in the Greater San Diego area until approximately the year 2008.

A new facility utilizing current design standards would create a new airport facility with the following characteristics:

- 1,890,000 sf of terminal space.
- 54-aircraft gates.
- 6,000 public parking spaces.
- Ground access from the east and west.

A project of this scope would cost \$880,355,300. Funding from federal and state grants, PFCs, general revenue bonds, and airline funds would provide adequate funding to build this facility.

The first year revenues from airline space rent, landing, rent-a-car, concession, parking, and other applicable fees, would generate sufficient revenues with a comprehensive PFC program to meet debt service, coverage, operation and maintenance expenses, and provide a surplus in excess of \$1 million. First year comparable costs to other airport are:

Airline terminal space rental Airline landing fees Cost per passenger \$48.75 per square foot \$1.03 per thousand pounds \$6.55 per passenger

These costs are most attractive when looking at other major airports in the United States. In comparison to the new Denver airport cost per passenger at \$14.45, San Diego International Airport at NAS Miramar would be considered a real bargain.

Project implementation would take approximately 6 years, with an anticipated opening in February, 2000.

In consultation with PaineWebber, investment grade airport revenue bonds could be sold by an aviation authority operating this facility without any additional pledge of tax revenue from the City of San Diego or surrounding communities.

San Diego International Airport at NAS Miramar appears, in our opinion, to be a very viable alternative for the Greater San Diego community to pursue to revitalize its economy and again initiate robust growth.

### HISTORICAL PASSENGER TRAFFIC PASSENGER FORECASTS VS ACTUAL

Jan. 4, 1994

Year	Forecast PAX	Actual PAX		Forecast Growth	Actual Growth		
1982		5,630,343	a.		12.10%		-
1983		6,547,439			16.30%		
1984		7,173,272			9.60%		
1985		7,937,806	a.		10.70%		
1986		9,084,438			14.40%		
1987		10,101,030	a.		11.20%		
1988	11,000,000	. 10,705,006	b.	8.90%	6.27%		
1989	11,800,000	. 11,047,178	b.	7.27%	3.20%		
1990	12,800,000	1. 11,194,694	b.	8.47%	1.34%		
1991	13,400,000	. 11,344,840	b.	4.69%	1.34%		
1992		1. 11,776,842		5.22%			
1993	15,000,000	11,888,000	b.	6.38%	0.94%		
1994	15,800,000			5.33%	0.95%	12,000,898	
1995	16,700,000			5.70%	2.00%	12,240,916	
2000	19,900,000	. \				13,514,960	
2005	22,300,000	. \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\				17,916,005	
2010	24,000,000					23,029,427	

#### Notes:

- a. Source is Demand Forecast Report dated July 1988 by P & D Technologies, Inc.
- b.Actual passenger traffic reported.
- c.Preliminary revised forecast based on constrained growth until year 2000 with new terminal opening.

## San Diego Lindberg Field Fact Sheet

Traff	ic	Enplanement (000)	% Change	Aircraft Operations (000)	% Change
198	8	4,480	-	164	-
198		4,989	11.4%	193	17.7%
198		5,328	6.8%	206	6.7%
198		5,467	2.6%	207	0.5%
199	0	5,488	0.4%	212	2.4%
Average	Day - Peal	k Month -		35,600	
Average	Day - Peal	k Month, Peak H	our -	2,730 Enplanements	
Average	Day - Peal	k Month, Peak H	our -	2,140 Deplanements	
Peak Ho	ur Overall .			4:00 p.m. to 5:00 p.m.	
Peak Ho	ur Comme	rcial Traffic -		5:00p.m. to 6:00 p.m.	
Airfie	ld ]				
				0.400 (0.27)	
Runway	75.71			9,400 (9-27) 224,900 Operations	
Annual C				54 Operations	
	apacity - V			48 Operations	
ноипу С	apacity - IF	*		40 Operations	
Termi	nal				
Gates	Wide Bo	dv		8	
Galos	Narrow E			22	
	Commut			5	
				35	
Area				432,000 s.f.	
Terminal	Curb			4,530 l.f.	
Parking	Public O	n-site and Remo	te	3,796	
1 arrang	Public O			3,120 (Private Operators)	
		blic Parking		6,916	
	Employe			869	
	Total			7,785	
FIS	Passeng	er/Hour Capacity	y	240	
	Total Are			4,000 s.f.	
RAC	Hertz, A	vis, & National C	n-site usir	ng 4 Acres Total.	
In	teresting	Information			
Cate Car	pacity - for	1990		314,000 pax./gate	
Holdman	n Area/Gat	e		1,557 s.f.	
	to Lice			6.9 tums/day	

Daily Gate Use

6.9 tums/day

PRELIMINARY FEASIBILITY SAN DIEGO INTERNATIONAL AIRPORT

---

PRE INTHATY DRAFT

	Jan. 4, 1994 MIRANAR BITE		for review an	id revision only		
	************************	***************	********************	*************	*******************	******
	SCOPE: Assumptions				Airside Terminal / gate	SF
					*************************	
	Annual Passenger Capacity:	20,600,090 a.			Haldresa (HS, NS, Jumbo Nix	4200
	Year annual passenger capacity reache	d: 2008 b.			Hidra.Gircul.	4000
	Current arrival passenger activity:	11,000,000	Average passengers/flight:	126	Ramp Opa.	3000
	Passenger/gate annual thruput:	370,000 c.	Turns per gate per day:	0.5	Concessione	1200
	Aircraft gates required for capacity:	54	54.05 gates		Toilets, support, etc.	1200
	Airelds space required / gate 11,2	00 87.			Vert.Circul.	100
	Landside space required / gate 17,8	04 sf.			Gen. Public Circul.	3500
	Total / gate: 35,0	00 af.				
	Gross SF terminal (Alreids and Landwi	de) 1,890,000 sf.			Total Aireide	17,200
	CONCEPTUAL COSTS:				Landside Terminal / gate	BF
•	Teratnat		Aircraft Support Systems		Ticket Counter	200
	Project cost per SF:	\$275 e.f.	Project cost per gate:	\$1,350,000 1.4.	Ticket Labby	2000
	Terminal project cost:	\$519,750,000	Air. Sup. Sys. cost:	\$72,900,000	A.T.Q.	800
					Bag Claim	2200
	SiteAirfield				Sag Hekeup	1800
	Freject cost per gate:	\$1,500,000 g.f.			RAC & Ground Trans.	200
	Site project cost:	\$81,000,000			RAC & Grnd. Lobby	1500
					Vart. Circul.	200
	SiteLandside Civil				Curbetde	1000
	Project cost per gate:	\$2,300,000 h.f.			Toilets, support, stc.	800
	Site project cost:	\$124,200,000			Security Lebby	500
					Concessions	2000
	Total Project Cost:	\$727,850,000 f.			Public space	3500
					Physical Plant	400
	Note: a. Ossign expacity of facili	ity can absorb 10% over	cepacity operation with minor	peak hour delays.	•••	
	b. Assumes growth in passen	per traffic remains 2%	annually until new terminal op	en; 6% growth lat year	of operation, Total L/3	17,800
	gradually decreasing to	verage 3.3% annually %	hereafter.			

- gradually decreasing to sverage 3.3% annually thereafter.
- c. Annual thruput of passengers assumes preferrential use gate lease agreements.
- d. SF required based on current standards for balanced facilities with BOX load factors.
- e. Unit costs include all components for finished public space including F.\*.& E. excluding tenant fituo of lease space.
- f. Project costs include construction costs, all prof.fees. acein.costs, contingencies. Assets at Mirasar are no tost to project; however, no evenue from Lindbargh Field for property lease or sale included.
- g. Unit cost assume saisting runways, aeron used with minor improvements, environmental cleanur by Havy.
- h. Unit cost assume scope for loop road system, parking, interstate interchange, utilities, signage & landscaping.
- i. Lnit cest assure scope for loading bridges, ground power, capin air, bag conveyors (inbound and outboard), \$105, \$102.

PRELIMINARY PEASANTLITY SAN DIEGO INTERNATIONAL AIRPORT

PRELIMINARY DRAFT

For review and revision only

Jan. 4. 1994 HTP MAD SITE Fed. & State FUNDING: ECEMARIO I #1r7 ine Total Cests Grants P.F.C. 's Funds \_\_\_\_\_ Terminal project cost: \$919.750.000 \$16.000,000 \$25,500,000 \$483,250,000 86 \$518,750,000 Aircraft Support Systems \$12,900,000 \$4,000,000 \$41,000,000 \$27,000,000 \$72,900,600 Bite project cost-Airfie'd: \$81,000,000 \$40.750.000 \$4.500,000 \$15,750,000 \$8. .000 .600 Site project cost -- landside Civ'l: \$124.200,000 \$82,100,000 \$8,500,000 \$53,500,000 \$4 \$124,200,000 ------Total Project Cost: \$797,850,000 \$132,850,900 \$43,500,000 \$594,200,000 \$27,000,000 \$787,850,000 Capitalized Interest during Constr.: \$48,477,000 3. \$0 \$48,477,000 \$41.477.000 Escalation during construction: \$34.028.303 K. 50 \$34,028,303 \$34,028,303 -----\$830,355,303 \$132,850,000 \$43,500,000 \$877,005,303 \$27,600,000 \$850,355,303 TOTAL COSTS:

		. F. C. nro	jection of collec	ct tone			Revenues			first Year	
	4						Source	Unit	Rate/unit		
		TORF E	inplanements % Co	94102%	Reversus		Airlines	648,641		\$31,821,822	
	1st	1997	6,307,724	753	\$16,327,380		RAG	1,501,661		815,018,623	
	Sth	2001	7,162,329	75×	\$18,116,580		Concessions	8,757,489		\$13.514.960	
	toek	2008	9,448,314	751	\$21,253,881		Ground Trans.	6,757,480	\$0.26	\$1,756,945	
	15th	2011	12,050.148	75x	\$27,112,833		Parking	8,000	\$2,000.00	\$12,000,000	1.
	20th	2015	14,868,050	75x	\$33,048,135		Landing Fees	7,000,000	\$1.03	\$7,210,000	t.
	25th	1505	17,002,297	73%	\$38,255,148		Apron fees	51	\$25,000.00	\$1,350,000	
							Fueling fees		18	\$1,500,000	
		1	TOTAL PFC's:		\$829,275,396		Property Leas	203	\$8,500.00	\$1,300,000	
							Int.Flights	845,043	\$4.00	\$3,380,000	
PERFORMA:											
								TOTAL REVERUE:		588.650,149	n.
			Debt Service		DEM	0 & H	D & M	Total			
			+ Coverage	9	Terminal	Airfiela	L'E Site	0 8 4		Ravenue	PFC's
First Comrational	Year Budget		\$62,551.290 n.		\$28.250,C00	\$5.217.000	\$6.315,000	\$40.215,000 e.		128.650,149	\$15.204,230

COST PER PASSENGER:

15.53 p.

151 year coerating salance:

\$1.034.195 surplus (deficit)

Page:

1

3 of 3 Page:

Note:

- ]. Assumes 6 year design/construction period, cash from grants and PFC's used first before bond proceeds.
- K. Assumas esculation rate increases during 6 year design/construction period starting at 2% and ending at 6%.
- 1. Assumes Passanger Facility Charge (PFC) program for 25 years, 1st year of collection is 1997.
- a. Assumes Origination and Costination (O & D) traffic characteristics wimilar to NCO. Detailed study required of San Diego conditions to finalize assumptions and verify viability of conclusions.
- n. Assumes interest rate 6 6.26% on debt + 25% coverage on principle 8 interest. Market analysis required to determine actual rates applicable.
- O. Assumes Operation and Maintenance (0 & H) expenses similar to HOO.
- Cetailed study required of San Diego conditions to finalize assumptions and verify viability of conclusions.
- p. Cost per passenger defined as costs of airlines (terminal rental, landing fees, apron fees and fueling fees) at airport
- q. turrent rate at Lindberg Field is \$41.00; ascalated at 2.5% per year the rate in year 2000 would be \$48.75.
- r. Assumes average yield per rental agreement of \$10.00; 40% of emplanements use rental cars with 1.6 people par car.
- S. Assumes average yield of \$5.50 per stace per day.
- t. Current rate at Lindberg field is \$0.85/1008 landed weight; excelated at 2.5% per year the rate in year 2000 would be \$1.03.

### COMPARABLE AIRPORT COSTS TO OPERATE

Jan. 4, 1994

Location	Data	Total	Landing	Terminal	Cost per
	Year	Traffic	Fees	Rent	Passenger
Orlando	1993	21,147,888	\$2.09	\$55.00	\$7.10
Maimi	1993	26,483,717	\$0.99	\$33.00	N/A
Tampa	1994	9,562,839	\$1.12	\$120.53	N/A
Pittsburg	1993	18,748,884	\$1.35	\$118.54	N/A
Wash.D.C.	1993	26,764,421	\$1.49	\$55.49	\$4.40
Philadephia	1994	15,986,500	\$1.31	\$46.17	\$8.50
Chicago	1994	69,065,311	\$1.89	\$65.00	N/A
Baltimore	1993	8,839,987	\$1.38	\$35.00	\$6.71
Las Vegas	1993	20,913,054	\$1.23	\$73.29	\$4.05
Phoenix	1993	22,111,555	\$0.91	\$40.00	\$4.54
Ft.Lauderdale	1993	8,344,138	\$1.05	\$22.15	N/A
West Palm Bch	1994	5,023,963	\$1.39	\$51.05	N/A
Sarasota	1993	1,713,939	\$1.85	\$43.07	\$10.11
New Denver	1994	31,300,000	N/A	N/A	\$14.45
Lindbergh Field	1993	11,588,000	\$0.89	\$41.00	N/A
Lindbergh Field	1994	12,000,898	\$1.19	\$39.68	N/A
New San Diego	2000	13,514,960	\$1.03	\$48.75	\$6.55

Note: Greater Orlando Aviation Authority is source of data; collected from contacting each airport directly.

San	Diego Int	ernat	ional Airport	PROJECTED COLLECTION Amo	unt:	an. 4, 1994 \$3.00
	ection	· ~ ~ ~ ~ ~ ~	Annual		FC %	Projected
0011	Year	Year	Enplanements			Revenue
		1994	6,000,449	12,000,898	0	\$0
		1995	6,120,458	12,240,916	0	\$0
		1996	6,242,867	12,485,734	0	\$0
	1st	1997	6,367,724	12,735,449	75%	\$14,327,380
	2nd	1998		12,990,158	75%	\$14,613,928
	3rd	1999	6,624,981	13,249,961	75%	\$14,906,206
New	terminal	opens	year 2000			
	4th	2000	6,757,480	13,514,960	75%	\$15,204,330
	5th	2001	7,162,929	14,325,858	75%	\$16,116,590
	6th	2002	7,585,542	15,171,084	75%	\$17,067,469
	7th	2003	8,025,503	16,051,006	75%	\$18,057,382
	8th	2004	8,482,957	16,965,914	75%	\$19,086,653
	9th	2005	8,958,002	17,916,005	75%	\$20,155,506
	10th	2006	9,446,214	18,892,427	75%	\$21,253,981
	11th	2007	9,946,863	19,893,726	75%	\$22,380,442
	12th	2008	10,459,126	20,918,253	75%	\$23,533,034
	13th	2009	10,982,083	21,964,165	75%	\$24,709,686
	14th	2010	11,514,714	23,029,427	75%	\$25,908,106
	15th	2011	12,050,148	24,100,296	75%	\$27,112,833
	16th	2012	12,585,777	25,171,554	75%	\$28,317,998
	17th	2013	13,120,672	26,241,345	75%	\$29,521,513
	18th	2014	A STATE OF THE PARTY OF THE PAR	27,304,119	75%	\$30,717,134
	19th	2015	14,177,664	28,355,328	75%	\$31,899,744
	20th	2016	14,688,060	29,376,120	75%	\$33,048,135
	21st	2017	15,187,454	30,374,908	75%	\$34,171,771
	22nd	2018	15,673,452	31,346,905	75%	\$35,265,268
	23rd	2019	16,143,656	32,287,312	75%	\$36,323,226
	24th	2020	16,587,607	33,175,213	75%	\$37,322,115
	25th	2021	17,002,297	34,004,594	75%	\$38,255,168
			TOTAL PFC's:			\$629,275,598
				collection annually:		\$25,171,024

# PRELIMINARY PROJECT SCHEDULE NEW SAN DIEGO INTERNATIONAL AIRPORT MIRAMAR

Jan. 4, 1994 MIRAMAR

Start	Quarter	**************************************	Finish	
1994	2nd.	Select general consultant for project.	1994	2nd.
1994	3rd.	Analyze site, prepare program and scope documents.	1995	4th.
1995	1st.	Prepare master plan, new airport layout plan (ALP)	1996	1st.
1995	4th.	Prepare passenger facility charge application (PFC).	1996	3rd.
1995	3rd.	Prepare environmental assessment report (EA).	1996	2nd.
1996	1st.	Select design teams and special consultants.	1996	1st.
1996	2nd.	Design new airport and prepare final construction documents.	1997	1st.
1996	3rd.	Environmental remediation (if required).	1999	4th.
1996	4th.	Bid and award 1st. phase of construction.	1996	4th.
1997	1st.	Construction.	1999	3rd.
1999	4th.	Tenant fit-up, occupancy and relocation of operations.	1999	4th.
2000	1st.	GRAND OPENING. February (least traffic month of year).	2000	1st.

### TRANSPORTATION SOLUTIONS, INC.



January 4, 1994

Mr. Richard Zipperly ZHA, Inc. Landmark Center Two 225 East Robinson Street, Suite 660 Orlando, FL 32801

Reference:

Miramar Noise Exposure Review

Dear Mr. Zipperly:

We have reviewed the information you supplied to us related to the Miramar facility and Lindbergh Field. You have asked us to review the available information and indicate to you the noise related opportunities and constraints associated with the possible relocation of commercial service from Lindbergh to Miramar.

### Miramar Noise Contours (Military versus Commercial Activity)

Miramar is currently a naval facility operating a variety of military fighter jet and transport aircraft into and out of the facility. Noise contours prepared by the San Diego International Airport Foundation, using the CNEL descriptor, were provided to us as well as an overlay of noise contours for the use of Miramar as a commercial facility. The relationship indicates a reduction in CNEL noise exposure with the commercial facility compared to the military operation. The CNEL noise descriptor takes into account the number of average daily operations, the peak noise level resulting from departure and arrival by the individual aircraft and weights the evening (7:00pm-10:00pm) and nighttime (10:00pm-7:00am) operations as being more annoying than those which occur during the daytime (7:00am to 7:00pm timeframe).

The cause of the reduction in noise exposure with commercial activity is likely to be the significantly reduced noise exposure at the source (most individual commercial alicraft being significantly quieter than the military fleet mix). The commercial fleet has been required to phase out the noisier Stage 2 aircraft over recent years with a full Phase out to a quieter Stage 3 fleet required by the year 2000. Although some reduction in noise exposure by military aircraft has also occurred, the military fleet is not subject to the Phase out requirements and most military aircraft remain much noisier than their commercial counterparts.

Since the airfield at Miramar is active, airspace has been reserved for its use by FAA's Air Traffic Control. It would be anticipated that with commercial service at Miramar, similar flight corridors could be utilized by the commercial fleet and new areas of land would not need to be exposed to flyover activity by the commercial fleet.

Page 2 January 4, 1994 Mr. Richard Zipperly

From a land use perspective, a Comprehensive Land Use Plan for NAS Miramar was prepared by the San Diego Council of Governments in October, 1990 (and amended on September 25, 1992). This plan was prepared to ensure compatible land use development in areas affected by noise contours and within accident potential zones. Thus, the land planning protection needed for the compatibility of airport activity with off-Airport communities is in place at Miramar.

In summary, the relocation of commercial service to Miramar would appear to result in smaller areas of CNEL noise exposure than currently exists, would likely result in flight patterns similar to those occurring today, would result in reduced peak noise levels from individual aircraft and future commercial activity would occur at a location which has been planned to account for the effects of aviation activity.

### Lindbergh Field

From a noise and airspace perspective the possible relocation of commercial facilities to Miramar has significant effects on the areas surrounding Lindbergh Field. As indicated in the fourth quarter 1992 Noise Report for Lindbergh Field, an estimated 20,700 dwelling units occur and 41,000 people reside in the Airport's noise impact area. In addition, due to the impact of aircraft noise on close-in communities, the Airport operates with nighttime restrictions on departure activity - with no departures allowed between the hours of 11:30 pm and 6:30 am. The relocation of commercial activity to Miramar and the closure of Lindbergh Field would, in effect, eliminate aircraft noise impacts to 41,000 people currently located in high noise exposure areas around Lindbergh Field.

The relocation of Lindbergh activity to Miramar and closure of Lindbergh would also release some surrounding property from land use restrictions imposed primarily as a result of high noise exposure. Other properties in the City, currently affected by FAR Part 77 height restrictions, would revert to local zoning requirements for building heights and not be restricted by FAA requirements.

Based on this brief review, it appears that there would be a significant noise benefit to the overall San Diego region if the commercial service was transferred to Miramar and the existing Lindbergh Field closed.

Page 3 January 4, 1994 Mr. Richard Zipperly

Should the decision be reached to begin the evaluation process to use Miramar as the region's commercial facility, one of the initial areas of review should be to consider additional operational and land use possibilities to further reduce the long term noise exposure on affected communities and to review whether the constraints on time of day of aircraft departures for commercial aircraft now enforced at 1 indbergh would remain at the new site.

Should you need any additional information at this time, please do not hesitate to contact me.

Sincerely,

TRANSPORTATION SOLUTIONS, INC.

Richard D. Alberts, P.E.

Principal

RDA:ar

Municipal Securities Group

PaineWebber Incorporated 1285 Avenue of the Americas New York, NY 10019 212 713-3000

## PaineWebber

January 6, 1994

San Diego International Airport Foundation One Market Place 33rd Floor San Diego, CA 92101

#### Gentlemen:

PaineWebber Incorporated has, over the past several years, underwritten billions of dollars of airport revenue funds in connection with new airports and also with renovations of existing airport facilities.

We have examined ZHA and San Diego International Airport Foundation's proposal to relocate Charles A. Lindbergh Airport to NAS Miramar and have concluded that financing options for the project are very feasible.

The estimated per passenger cost pursuant to proposed financing is below the current market. It is also our opinion that if the current passenger activity level at Charles A. Lindbergh Airport were to transfer to NAS Miramar, the debt for the project would receive an "A" rating from Moody's and Standard & Poor's Corporation.

PaineWebber Incorporated is hopeful for success in the efforts to bring an International Airport to the City of San Diego. We will be prepared to assist you as you proceed forward on this endeavor.

Sincerely,

Curel S. Languid

Carol Smith Canfield
First Vice President & Manager
Airport Finance Group



#### SAFETY IMPLICATIONS

"I'll tell you what it's like to land at Lindbergh Field. Imagine coming down Laurel Street in an 18-wheeler at 150 miles an hour with no brakes."

— A Lindbergh Field-based airline pilot San Diego magazine, April 1990

"I'll tell you something my company doesn't want you to know and the FAA doesn't want you to know, and that my main job is this: staying alive. My company doesn't want that attitude to become public knowledge because it puts the element of danger in air travel. They want to believe you are sitting in your living room. However, if I stay alive, you stay alive."

- Lindbergh Field - based airline pilot with 35 years of experience

San Diego Magazine, April 1990

Their exists today at Lindbergh Field extraordinary safety risks. The largest and most obvious safety factor is the urbanization engulfing Lindbergh Field. Unlike the natural open space surrounding Miramar, Lindbergh Field is constrained on the arrival and departure paths. Miramar's 24,000 acres provide a tremendous "built-in" margin of safety which will never exist at Lindbergh Field's 500 acres. The community is well aware that it is only a matter of time before a devastating disaster occurs within Lindbergh's highly urbanized Airport Influence Area.

The engulfing urbanization is clearly demonstrated by review of the January 1991 Land Use Inventory around Lindbergh Field. 9,600 acres are located within the Lindbergh Field Airport Influence Area (AIA). The total population within this area is approximately 86,800. According to the Lindbergh Field Comprehensive Land Use Plan, the AIA engulfs about 35,500 households. Contrast this with the fact that the nearest residence to the runways at Miramar is about six times further away, a distance of nearly 2 miles, than the nearest residence to the current Lindbergh Field runways. Miramar's natural open space provides an incredible safety buffer — one which the current Lindbergh Field will never enjoy.

While Miramar has in place today a 12,000 foot long runway, Lindbergh Field has only 7,590 feet of usable runway when landing from the east. Landing from the west, there is only 7,200 usable feet. When the runway is wet from fog or rain, a mixture of water, oil, fuel, dirt and rubber covers the same surface where some wants to drop a quarter-million pound airplane and 200 people at 150 miles per hour. When it's wet, pilots describe Lindbergh's runway in graphic terms: "slicker than snot on a doorknob."

SANDAG has investigated several alternatives to enhance safety at Lindbergh Field. For example, alternatives include "2D2" and "2D3". However, both fail to meet safety criteria set forth in the FAA standards regarding safety for several reasons not limited to:

- a. There is no 1.000-foot Object Free Area (clearway) at the ends of existing main runways;
- b. There is no Runway Protection Zone.
- c. <u>Airspace Obstructions</u>. There are approximately 16 penetrations within the Obstacle Free Zone, varying in height up to 74 feet. In addition, there are 171 penetrations of the FAR Part 77.25 surfaces, varying in height up to 341 feet according to Peat Marwick Main and Company "Evaluation of Lindbergh Field Alternatives," March 1990.
- d. Lindbergh Field cannot have a normal precision approach. Topographical obstructions make the ground proximity warning systems useless. For basic safety, Lindbergh Field should have, but cannot meet Category 3 precision approach standards. Category 3 is the state of the art and is in place at most major airports. Category 2 is the norm today for Third World Countries. Category 1 is the minimum standards anywhere in the world. <u>Lindbergh Field lacks even Category 1 status</u>.
- e. Another safety issue not covered in the Peat Marwick Main & Company March, 1990 "Evaluation of Lindbergh Field Alternatives" is the taxi way problem for state 3 wide-bodies. Because Teledyne Ryan's buildings, which intrude into the taxi way, a 747 must cross the runway twice in order to position itself for takeoff, constraining ground and air traffic. As brought about in the 1988 FAA Study, with two or more 747's operating simultaneously, non-standards

separation between runway and taxi way and limited wing-tip clearance on some taxi ways and ramps are safety problems.

- f. In a letter from the Airline Pilots Association (ALPA) to SANDAG on October 25, 19989, ALPA states, "ALPA has called Lindbergh Field an accident waiting to happen. It is a hazard to wide-bodied airliners. To propose that this field be retained for major commercial traffic is not only absurd, it is dangerous."
- g. Lindbergh Field will continue to lack Category 1 status even if MCRD is acquired and the Midway Post Office is demolished.

# A Pilot's-Eye View of Lindbergh Field

Landing at San Diego's tiny, poorly located airport can make even veteran air travelers nervous. Now take a look at it from the point of view of the pilots who land there every day.

#### BY ROBERT VAUGHN YOUNG

"I'll tell you something my company doesn't want you to know and the FAA doesn't want you to know, and that is that my main job is this: staying alive. My company doesn't want that attitude to become public knowledge because it puts the element of danger in air travel. They want you to believe you are sitting in your living room. However, if I stay alive, you stay alive."

-Lindbergh Field-based airline pilot with 35 years of experience

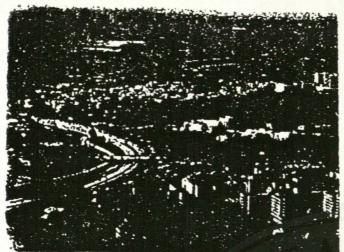
To no one's surprise, it was a typical San Diego City Council Monday. Progress on the September 11, 1989, agenda was behind schedule, and the chamber's population ebbed and flowed with the approach and the completion of each item. But by midafternoon, the number of spectators was steadily declining with each vote. As they left through the foyer, they passed three men who stood quietly, watching the proceedings around them and in the adjoining chamber.

There was nothing particularly unusual about the appearance of the trio. They looked about 50ish. Each was well but not overly dressed. What was most unusual was their demeanor. They did not pace or wander about. Nor did they stand with their bands pushed into their pockets, as most men are apt to do when waiting. These three simply stood quietly, calmly, occasionally exchanging pleasantries to pass the time.

What especially distinguished them could not be seen: Among them, they had more than 111 years of flight experience and were about to address the City Council on the shortcomings of Lindbergh Field.

Captain Tom Carroll stood between the other two, his white hair contrasting with his dark-blue suit. A 58-year-old native of San Diego with 34 years of commercial flight experience, Carroll's expertise is the jumbo 747s he ferries regularly across the Pacific. Today, however, he was appearing as a representative of the 60,000-member Air Line Pilots Association (ALPA).

[Editor's note: Robert Vaughn Young is coauthor of 'The Interpol Connection," a book probing the practices of the International Criminal Police Organization. In preparing this article, Young interviewed nearly a dozen veteran airline pilots, each with 8 to 30 years of experience flying into Lindbergh Fiela. Most of the pilots, however, requested their names not be used.]





PHOTOS COURTESY OF THE AIR LINE PERTS ASSOCIATION

Airport Manager McDonald insists Lindbergh's runway is adequate. Pilots disagree "It's like a glass of beer with a head of foam," said one. "You have a full glass but you can't drink the foam. At Lindbergh, you have 9,400 feet, but a lot of it is foam."

On his left was Captain Charley Jenson, a professional pilot with 37 years in the air. Jenson's expertise is the Boeing 757s and 767s he flies east out of Lindbergh to cities like Chicago and Dallas-Foit Worth. Jenson was representing the 7,000-member Allied Pilots Association.

The third man was Captain Neale "Snuffy" Smith, who had recently retired after 40 years in the cockpit. His last 30 years had been spent flying out of Lindbergh Field.

A woman stepped up to the trio.

"Do you think we'll get on?" Carroll asked her. She nodded and explained that

they would go on during the public comment section at the end of the agenda. She locked at her watch and back to the chambet. It was now after 4 o'clock. "Hopefully it will be soon," she said.

The men nodded and continued their patient vigil,

After a few minutes, a tall, slender man in a dark suit left the chamber. As he passed the pilots, one of them called out, "You should stick around and hear us."

The tall man apparently knew the nature of the trio's visit, for he replied, "I watch them take off all the time. I haven't seen one fall yet." With hardly a glance, the man strode on to the elevator as the trio looked at each other and gave imperceptible shrugs.

Someone standing next to the pilots watched the odd exchange and asked, "Who was that?"

"John Witt, the city attorney," Jensen replied matter-of-factly.

At about 6 p.m., a woman stepped into the foyer and spoke to the three pilots. They nodded and followed her into the City Council chamber, moving to the front row. There was no problem with seat selection as there were only a half-dozen spectators and five councilmembers left.

It was close to 6:30 p.m. when Councilmember Judy McCarty announced there could be no further business because there was no longer a quorum present.

Ann Jackson, chair of the Peninsula Community Planning Board, stepped quickly to the inforophone and objected. There was supposed to be a public comment section, she stated. When Jackson was reminded there was actually no quorum and that it was getting late, she insisted they had waited patiently for the public comment section and had a right to be heard.

McCarry conceded, with the proviso, that they were to take no more than three minutes.

Carroll went first. In his allocated minute, Carroll said he had provided the Council with copies of ALPA's basic requirements for a safe airport, and that Lindbergla's safety standards are not up to what pilots want and expect. Although he files into Hung Kong, considered to be one of the most dangerous airports in the world, he said he would rather fly that airport than Lindbergh.

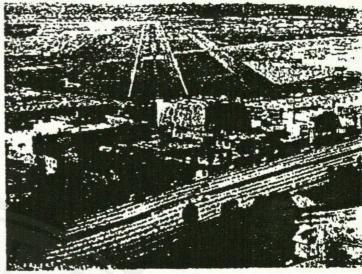
"America's Finest City has America's worst airport," he told the four council-members.

As Carroll started to step away from the microphone, Councilmember Bob Filner asked if the pilot considered the airport unsafe. Carroll turned and paused. "No comment," he replied pointedly before suting down.

Jensen was next. Referring to the steep hills on each side of the airport, he said that pilots are forced to land "in a teacup" and are "increasingly disappointed and angry concerning the inertia displayed by successive administrations about moving Lindbergh to a safet location."

Smith closed by noting that in his 30 years of flying Lindbergh, "all that was ever done was a Band-Aid apptoach" to the problems of the field.





When Smith had used up his 60 accords, the Council officially retired. The pilots and four others who had doggedly remained smiled wearifully at each other and headed for the elevator.

"Do you think it made any difference?" one of them asked.

"We'll see," come a reply. "At least it's a start."

"If we could only get them so see Lindbergh from the pilot's perspective," Carroll said, "they just might understand why we talk about safety."

"I'll tell you what it's like to land at Lindbergh Field. Imagine coming down Laurel Street in an 18-wheeler at 150 miles an hour with no brakes."

—A Lindbergh Field-based airline pilot

"Two-four-three, reduce speed to twoone-zero then descend to and maintain eight thousand."

Flight 243 is about nine minutes and 40 miles from touchdown when the captain is told by San Diego Approach Control to slow and then descend to 8,000 feet. After he gives an acknowledgment, the final checklist begins for landing at SAN, the official abbreviation for San Diego's Lindbergh Field. In the process, he reaches over and flips the no-smoking sign off and back on.

Inside the catin of the Boeing 767.

most passengers hear the chime but few see the sign flash. Fewer know that it is a signal to the flight attendante sterile cockpit, no person or communication may enter unless it concerns the landing or the safety of the flight. Until then, a simple request such as asking that a wheelchair be waiting at the gate would have been relayed as a countesy. But not now. All attention is on the safety of the landing.

The captain and his first officer have picked up the latest weather information from the Air Traffic Information System (ATIS) that includes the temperature, visibility and wind direction at Lindbergh. It gives them good news and had news.

The good news is that the rain that was reported earlier has stopped, and there is seven miles of visibility with a 10-knot breeze coming in off the ocean, which means they will be able to land into the wind.

The bad news is that the runway is still wet, and the ceiling has dropped to 750 feet.

Lindbergh's runway is too short to begin with, even under ideal conditions. Airport Manager Bud McDonald insists that Lindbergh's 9,400 feet is adequate, but the pilots who fly it disagree. As one pilot said, "It is like your pay versus taxes. What they say they pay you and whet you bring home are two different things. In this case, what they say they are giving you in runway length is one amount, but what you actually get and can safely use is another."

Another said, "It's like a glass of beer with a head of foars. You have a full glass

Lindbergh's "white knuckle" approach as seen from the cockpit. Beginning at left, the airliner swoops over the U.S. Naval Hospital in Balboa Park at 800 feet and skirts the fraetops near the Aerospace Museum and the Starlight Bowl before roaning over roofs on the outskirts of downtown San Diego. Finally, the aircraft passes as close as 78 feet to the top of the Laurel Travel Center (fourth photo, center) before touching down nearly 2,000 feet from the end of the airport's short runway, it is a landing procedure that pilots say allows little room for error.

but you can't drink the foam. At Lindbergh, you have 9,400 feet, but a lot of it is foam."

According to official approach maps for the sirport, there are 7,590 feet of usable runway when landing from the east, not 9,400. Landing from the west, there are only 7,200 usable feet. The discrepancy has to do with the angles of descent large jets must use to avoid obstacles when landing at Lindbergh from either direction.

When the runway is wet from fog or rain, a mixture of water, oil, fuel, dut and rubber covers the same surface where someone wants to drop a quarter-million-pound airplane and 200 people at 150 miles an hour. When it's wet, pilots describe Lindbergh's runway in graphic terms: "slicker than snot on a doorknob."

A 750-foot ceiling means that although one can see for seven miles when standing on the runway, at 750 feet and higher, visibility is zero. This is not a problem at most airports because they are able to offer electronic guidance onto the run-

Most airports are able to offer electronic guidance onto the runways. At Lindbergh, however, a landing method as old as canvas-winged airplanes is used.

ways or down to altitudes as low as 100 feet. At Lindbergh, however a landing method as old as canvas winged air planes is used, and Flight 243 will have to employ it.

"Two-four-three, reduce speed to oneeight-zero and descend to six thousand, heading two-four-zero and intercept localizer Runway two-seven."

The acknowledgment is given and the throttles pulled back. The plane wants to drop, but the pilot lifts its nose to hold the aititude until 180 knots is reached. Then the descent to 6,000 feet begins, the miles below slipping by as the checklist continues, and the flight attendants gather the last lew cups and ensure that everything is secure.

The passengers can feel the turn to the west and hear the whine as the plane's flaps dig into the atmosphere. They are being brought around in a curve to intercept the "localizer," one of the oldest methods of navigation: An electronic signal is sent down the runway so planes can tell if they are too far to the left or the right as they approach. The problem is that there is no vertical guidance to tell them if they are too high or low.

Despite space-age advances in landing techniques, the terrain to the east of Lindbergh prevents anything more modern. In standard Federal Aviation Administration (FAA) terms, Lindbergh is a "non-precision approach," something rarely found in airports today.

"Localizer intercepted," the pilot calls as the needle swings. He begins to pull the craft to the west, watching the needle as it moves to the center of the dial. They are now on a direct course for Lindbergh Field, Runway 27, about 17 miles and six minutes from touchdown.

On a video screen before the pilot, a map is displayed showing their location and destination. "Two-four-three, descend and maintain four thousand. Cross VYDDA four thousand. Cleared localizer, two-seven approach. Contact Lindbergh over SWATT one-one-eightpoint-three. G'duy."

Until now, they have been under the control of San Diego Approach, the airtraffic facility at Miramar. But they are now on their own, cleared to follow the localizer and to begin a series of stepdowns, lowering their altitude at very precise, predetermined locations. Each location is named on air-traffic maps with a five-letter designation that has no significance except that it is the only location with those letters in the United States.

The first location is VYDDA (pronounced as one word, "vyda"), which must be crossed at 4,000 feet. The next is SWATT, which must be intercepted at 3,600 feet. The last is REEBO at 2,000 feet. Each of the three locations are on a direct line into Lindbergh Field. Plight 243 has also been told to call Lindbergh Tower on frequency 118.3 when they reach SWATT.

Flight 243 is now four minutes from touchdown. The plane has reached 4,000 feet, but there is zero visibility. The pilot is relying mainly on a video screen that shows a map and their course, a needle designating the localizer and instruments showing altitude and speed.

On the video screen, the location marked as VYDDA turns from magenta to white, signifying that VYDDA has been passed. They are over the San Miguel Mountains and have to "step down" 400 feet by the time they reach the next location, SWATT, in 1.7 nautical miles.

The no-smoking sign flashes as the announcement is made, "Flight attendants prepare for landing."

The attendants make a 'ast check of seats and tray tables as they move to their positions and strap themselves firmly in.

SWATT's location on the video screen turns magenta at exactly 3,600 feet. Perfect. They are over the Sweetwater Reservoir, about 11 miles to go. They now tell the Lindbergh Control Tower they are at SWATT.

"Lindbergh tower, two four three, SWATT."

"Two-four-tluce. Clear to land. Wind at two-nine-oh at ten. Braking action poor."

The ten-knot breeze from the ocean is holding but the braking problem, because of the wet runway, calls for two tactics: Get the bird down as fast as possible to grab as much runway as possible, and then reverse the engines fast and hard. Usually a pilot has a choice between applying brakes manually or setting them to work for him automatically, as soon as the wheels touch. But not with a wet runway. The pilot of Flight 243 sets them on automatic. He wants braking as soon as he hits Runway 27.

But first, he has to get onto Runway 27. The plane has 6 miles to go until REEBO, the last navigational mark that a pilot has before landing at Lindbergh. It is 5.1 miles from the end of the runway, just a few blocks southeast of the intersection of the 94 and 805 freeways. These last few miles are the ones pilots say they dislike the most. Although they are flying state-of-the art jets, when landing at San Diego from the east, airline pilots must rely on the "time back," a method of dead-reckoning navigation that originated long before radio directional sigrals were invented, and which relies simply on a compass and a clock.

In the 1920s, a time back to find an airport might have read: "When you intercept the river, turn borth and follow it. When you cross the covered bridge, fly for five minutes and then turn 90 degrees to the right and climb to 500 feet. (There are some tall trees you may not see in the fog.) Fly for six minutes, and then you can descend until you see land. If it is not too foggy, you will see the airport on your left after passing two red barns."

Incredible as it may seem, that style of navigation is still used to land from the east at Lindbergh field when it is overcast or foggy and the runway cannot be seen. The Lindbergh time hack begins at REEBO, 5.1 miles from the end of the runway. It involves only three elements: speed, time and altitude.

Speed. The pilot will select a speed that he will use to descend from REEBO to the sirport, for example, 140 knots.

Time. As part of his approach map, he has a grid that will tell him how long it will take to fly 5.1 miles at 140 knots.

Altitude. The lowest that a plane can safely descend when landing to the west is 660 feet, because of Balboa Park trees.

When they pass REEBO, the stopwatch will start along with the descent. If the airplane breaks through the cloud cover before 660 feet, the pilot can level out and look for the airport. Just as they tild in the 1920s, high-tech jets must go looking for Lindbergh Field.

If the pilot sees the airport, he automatically has visual clearance to land. If he cannot see the airport by the time he reaches 660 feet, he must level out and continue his course. He knows after two minutes and 11 seconds that he is over the end of the runway and can inform the control tower what his next step is. He might want to try again (known as a "go around"), or he might choose to go to another airport.

Flight 243 is approaching REEBO. Speed is 140 knots Altitude 2,000. The wheels go down. The sudden thunk startles some passengers. The pilot notes the three green lights that mean the three gears are down and locked.

"REEBO," comes the call. The clock is started. The time hack begins.



Down through the overcast, steadily, watching the speed and the altimeter, pulling back on the throttles and then easing it forward to hold the 140 knots while dropping at quickly as possible. Flight 243 is descending at about 1,000 feet per minute, nearly 15 miles an hour, but the ground is actually coming up faster because the hilly terrain of Balboa Park is rising beneath them.

This combination of a rising land mass and a swiftly sinking plane sometimes sets off a safety device known as the Ground Proximity Waming System, which automatically sounds a recorded voice alert. When the system detects that the ground is approaching too fast, a recorded voice will shout, "Pull up! Pull up!" which can startle not only pilots but first-class passengers as well. (When the wheels are down, the system says, "Sink rate! Sink rate!")

When approaching San Diego from the east, the worst offender is the San Miguel Mountains. So many automatic alerts have been set off while planes are descending that the FAA has sent out notices to all pilots to warn them about the situation.

Flight 243 hasn't had any alerts yet.

"SINK ONE THOUSAND, on the bug." the first officer calls out, signaling that they are sinking at 1,000 feet a minute, and their speed is what was set with the

The Laurel Travel Center's location within the final approach pattern for Lindbergh Field forced airport officials to change their landing system when pilots discovered the old system could cause a 747 jumbo jet to strike the parking structure. Pilots still say the building is a hazard

marker, or "bug."

At about 800 feet, they are incity. The plane descends below the cloud cover. Balboa Park and the Naval Hospital are below and the runway dead ahead, about one minute away.

As they continue their descent, the buildings of downtown San Diego are on the left and Mr. A's, the brunt of cockpit humor, is on the right. Pilots like to remark they know they are at the right altitude when they are at eye level with diners at the restaurant.

Flight 243 no longer has to complete its time hack as it is now on visual approach. But there is more: the tinal visual glide path, the Laurel Travel Center and a too-short, wet runway.

The visual glide path is literally measured in degrees, the angle that the plane is coming into the runway. Most airports operate at 2.5 degrees or a maximum of 3 degrees. Boeing Aircraft's manuals for the air carriers and the pilors contain computations and recommendations based on a glide path of 2.5 degrees or a maximum of 3 degrees.

. CONTINUED ON PAGE 200

#### LINDDERCH FIELD

continued from page 103

They do not offer figures for a 3.5 simply because it is nonstandard and highly unusual, bordering on the 4-degree glide slope used by combat-attack aircraft. However, the visual glide path into Lindbergh Field is 3.5 degrees, off the scale of the manuals. It is, in brief, steeper than most airports in the entire world.

Passengers in the cabin cannot see the Travel Center, but it now begins to loom into the pilot's view. Situated near the intersection of Laurel Street and Pacific Highway, the building has been cursed by every pilot who files Lindbergh. Besides its obvious hulk and general posture for arriving flights, few San Diegans knew how close they were to an actual disaster until the Air Line Pilots Association stepped in.

Located only 710 feet from the end of the runway, the six-story Laurel Travel Center was opened in May 1986. Although it was directly in the flight path and was 94 feet high, the FAA ruled that it was "no hazard" to aviation. For a still-unexplained reason, ALPA was never notified of its construction. Building specifications are normally provided to that organization with adequate time for them to respond and make recommendations. But on this occasion, the structure was completed without the national office in Hearndon, Virginia, being told.

When Dick Russell, ALPA's regional safety coordinator in Los Angeles, began to receive reports from pilots about the structure, he decided to investigate. He asked Captain Al Schlegel, who lives in Del Mar, to look into the matter. When Russell saw Schlegel's photographs, he quickly called Mike Moore of ALPA's Engineering and Safety Department in Hearndon.

Moore found there was another element of danger besides the building itself. The other element was a series of lights that pilots use for guidance onto the runway, called VASI or Visual Approach Slope Indicator. The VASI lets an approaching pilot know if he is too high or too low in his approach to the runway. The lights can be seen from several miles away. If the plane is coming in too high, the lights appear to be all white. If too low, they appear to be all red. If the plane is descending at the correct angle, or "on path," the lights will be red and white. The VASI was installed and approved by the FAA in 1971.

Moore's study found that if the pilot of a DC-10 jumbo jet correctly used the VASI system to land at Lindbergh Field, his landing gear would clear the Laurel Travel Center by only 3.82 feet. The geat of an L-1011 jumbo would miss by only 1.8 teet. Most disturbing was Moore's discovery that the landing gear of a 747 would actually hit the travel center on a VASI-guided approach.

One pilot later downplayed Moore's findings by insisting that the VASI system was never set up to handle jumbos such as the 747s. But Russell retorted that it didn't make any difference. 'If it's there, pilots will fly it.' he said.

On January 6, 1988, ALPA provided the FAA with details of its investigation and challenged the ruling of "no hazard." ALPA called the situation at Lindbergh "an accident waiting to happen." They said the building should either come down or a new slope indicator should be installed.

Despite the evidence, the FAA dragged its bureaucratic feet. As one former official explained it, somebody in the FAA was trying to "savo face" despite the danger. Meanwhile, ALPA was getting alerts out to pilots, warning them that jumbo jets should not use the VASI and to give the Travel Center wide beath.

Moore stayed on the issue, however, dogging FAA officials until he found an official who was willing to help. On May 3, 1988, the FAA finally responded. They explained the five-month lag by saying. "The scope of the satety evaluation has necessitated a delay in our reply..." However, they did concede that a new lighting system would "mitigate the problems."

The new system, a Precision Approach Path Indicator (PAPI), was finally installed in November 1988. It ensures 78 feet of clearance on a glide path of 3.5 degrees. But Russell, Schlagel and Moore have not changed their basic views. The new PAPI, they maintain, makes it safer to clear the Travel Center, but the safest solution is still to get rid of the building altogether.

TO THE WEST of Interstate 5, Flight 243 is aliding down the long approach as the first officer calls out the elevation: "Five hundred."

The captain is watching the runway, the red-and-white lights of the PAPI, and the USAir and American flights waiting to taxt onto the runway. They are slightly to the left and below where he is going to be touching down, but he must still watch, just in case a mistake is made. He holds the throttles firmly now, ready to give the engines full power should a last-minute emergency require it. His grip is so tight that the skin across his knuckles is white.

"Three hundred."

The throttles are pulled back and the plane sinks slightly, so he gives it more power. The plane surges and then lifts slightly as an updraft hits. Back on the throttles, jockeying, balancing, using every perception to feel the dips and rolls and vibrations of the 767.

"Two hundred."

The steering is as good as one can expect for a quarter-million pounds at 150 miles an hour.

"One hundred."

They can read the license plates of cars parked on the top of the Laurel Travel Center as they cross over it at 150 miles an hour with 85 feet to spare. The plane drops over the gas station, the crowded intersection, the blast fence and a small block building.

The fence and building have drawn complaints, being at the end of the runway. The fence is non-frangible, meaning it is not built to easily break apart when hit to not damage the airplane or cause injuries. The stucco building 10 feet behind the tence is an airport sewage dump that airport staff call "the summer cottage." It is very non-frangible. Airport Manager McDonald shrugs off any complaints. He said since the blast fence is needed to protect Pacific Highway, it

#### LINDBERGH FIELD

would be "silly" to remove the building if the fence is going to stay.

According to FAA regulations, there cannot be any non-frangible structures within the safety area of the airport, which is basically the entire area where airplanes operate. This is reiterated in the Airport Certification Manual, which was signed by McDonald on December 29, 1986, and stamped as "FAA Approved" on May 8, 1989. That manual specifically states there are no non-frangible structures in the area. However, a map that is part of the manual shows that the boundary of the "safety area" goes up to the foot of the blast tence and stops, gerrymandering the fence and building out of the FAA's jurisdiction.

Ellsworth Chan, manager of the FAA's Regional Branch of Safety and Standards, which approved the manual, was asked if he knew about the fence and building. Yes, he said, he knows of them. "That's where they bring the 'honey-buckets,'" he said of the sewage dump.

Asked why the boundary of the safety area was drawn to stop at the base of the non-frangible fence on the runway. Chan replied: "If you include the fence and structure, it wouldn't be a safety area."

When a pilot with 30 years experience was told about Chan's explanation, he laughed "That's how the FAA works! Remember, they're the ones who approved the Laurel Travel Center, too."

Plight 243 is over the end of Runway 27, rushing past the planes that are lined up, waiting to take off. There are three planes carrying a total of 400 to 500 people. The FAA predicted there will be considerably more planes lined up in the coming years.

In their "Air and Ground Delay Study: Impact of Increased Operations at Lindbergh Field" of September 1989, they estimated a 25 percent increase in traffic with no changes in the airfield will create "chronic delays" surpassing the busiest airports.

The study was driven home with a computer presentation to San Diego officials. A computer program was able graphically to depict what traffic would look like at Lindbergh Field as the num-

ber of flights continued to grow. Small blips of light on a color monitor represented the planes waiting to leave on the outlines of Lindbergh Field. The line waiting to leave finally grow until there were 20 planes quoued to take off.

The FAA official explained how this affected passenger waiting time, automobile traffic into the airport, and fuel consumption as the planes waited in line.

After the demonstration. Captain Tom Carroll pointed out how there was not one word about safety or the effect that 20 fully loaded planes might have in an accident.

"Remember that Lindbergh has only one airstrip," he said. "They can't bring in an emergency on another runway. So imagine a flight in trouble, serious trouble. He can't steer well, he may have only one engine, there are 200 people on board and he has only one chance to land. He can't circle for hours.

"He has to come in now, and you have 20 fully loaded planes lined up like sitting ducks. There is no way you can get them out of there in time. You have perhaps 4,000 people and enough fuel to cover Lindbergh ankle deep. Think about that potential disaster, and you'll see if this airport continues to expand that there is more at stake than someone getting home late."

On top of that, when planes start to get in line at Lindbergh. Boeing 747s will have a particular problem, said Carroll, who flies 747s. The wingspan of the jumbo planes is simply too wide for Lindbergh's taxiways, which were originally built for the twin-prop DC-3s of the 1930s.

When a 747 moves down the taxiway, toward Pacific Highway, the engines sair up so much dirt along the right-hand side that the engines on that side have to be shut off so they will not suck in damaging objects.

When the 747 reaches the Teledyne Ryan Aeronautical building, the 747 has to alter its taxi because it cannot safely pass the building and its fencing. The size of the 747s is not fully to blame for this; the Ryan building actually protudes into a prohibited zone that is supposed to be

cleared for aircraft. The Port District's Airport Layout Plan map shows the protrusion ecross an "obstacle line."

McDonald admits the lack of space is one of the nonstandard aspects of the airport that simply continues to exist. The lack of taxiway space is not noted in the FAA approved Airport Certification Manual.

In order to reach the end of the runway so it can take off, a 747 must turn at the Ryan building and cross the runway. There it continues east until encountering the smaller planes parked on the other side, and then again it must cross the runway a second time to taxl to a takeoff position. Airline safety experts agree that a tully loaded 141 crossing a busy runway twice just to get into position is far from optimum.

In 1977, two 747s collided on an airstrip in Tenerife, on the Canary Islands, when one jet began taxiing across the runway as another began its takeoff. Nearly 600 people died.

If planes-crossing and planes-in-waiting aren't enough of a fuel hazard, the Port District proposed on May 15, 1989, to build three above-ground tanks—each capable of holding one million gallons of highly explosive fuel—behind the control tower at Lindbergh Field.

That plan was quickly opposed by safety officials, including San Diego Fire Chief John Delotch, who expressed "concerns regarding the safety of the tanks at this location because it is a high-risk area for aircraft crashes."

The Port has temporarily shelved the plan and is looking at options that will reduce the fuel stored above ground in the same location to "only 500,000 gallons." The alternatives might be ready to be released this month

Since fuel fires are one of the most serious dengers in an air crash, the FAA requires that airports conduct "hot drills" where flammable material is ignited in a "burn pit" so tire-fighting personnet can simulate fighting a burning airplane. However, San Diego no longer does these drills and is asking the FAA to be exempted from the regulations. ALPA is objecting and insisting the regulation be

#### LINDBERCH FIELD

followed.

Elloworth Chan said the FAA really can't do anything about it because the problem stems from the Environmental Protection Agency and the San Diego County An Pollution Courtol District, who have regulations against the type of air pollution that such drids create. Chan said there have also been complaints about soil pollution because of chemicals that are used to put out the practice fires. He said a solution is to find a facility in each area where airport personnel can go and train.

"FIFIY," BAKKS the first officer.

The pilot pulls back on the throttles and lifts the nose. The sudden arresting of the descent to create a soft landing is called the "flare" or "scooping it out." but that takes up a lot of runway, sometimes another 1,000 feet before touching down. Today, Flight 243 needs concrete, and since safety comes before comfort, the pilot pulls back on the throttles and drops the nose slightly to suddenly increase the descent.

"Forty-thirty-twenty ... "

The numbers are almost too fast for the first officer to rattle.

"Sink rate! Sink rate!"

It is the automatic Ground Proximity Warning System, but before it can hark again, the wheels hit the runway with a thunk. Good aircraft-carrier landing, as one Lindbergh pilot describes such arrivals. He flew 170 combat missions for the Navy and said he doesn't consider flying a commercial airliner into Lindbergh all that tough. "Of course, it may have helped that I made 400 carrier landings," be said. "After that many, Lindbergh looks pietly big."

Flight 243's automatic brakes grab instandy as the nose gear drops and the pilot reverses the engines.

As the engines roar into life, the antiskid device senses that the tires are skidding on the slick runway and releases momentarily and grab again to give the tires a chance to gain traction. But the tires cannot grip the runway. They are literally hydroplaning across the slippery oil-water-rubber mixture like a waterskier on a lake, and the device tries to compensate by rapidly releasing and grabbing, releasing and grabbing, send ing a vibration through the plane that some passengers can feel. Very few know the vibration means that they have no brakes.

Lights at the edge of the runway are flashing by at about 110 miles an hour. The plane is slowing but not as fast as they would like. More power is added to the reversed engines.

The lights along the edge of the runway are now alternating red and white, warning that there are only 3,000 feet to go. Engines are at full-reverse. The skidding has stopped. The friction between tire and runway is holding.

"Eighty!" the first orficer calls, naming their ground speed. Engines shouldn't be held this long in reverse, but they are held just a bit longer as the fence at the end of the runway grows nearer. On the other side of the fence is a legoon.

Every airport is required to have an Emergency Plan to deal with natural disasters and aircraft accidents. Federal Aviation Regulation (FAR) 139,325 says that the plan is to include provisions "for the rescue of aircraft accident victims from significant bodies of water or marshlands adjacent to the airport which are crossed by the approach and departure flights of the air carriers."

The regulation defines a body of water as "significant" if it "execeds one querter square mile and cannot be traversed by conventional vehicles."

Lindbergh Field's Airport Certification Manual says, "Since there are no significant bodies of water adjacen: to the airport which are crossed by approaching/departing air carriers, no water rescue plan is included."

Lindbergh Field sits on the shore of San Diego Bay. At the end of Runway 27 is a small saltwater Inlet. According to the Port's Airport Layout Plan, most of the "clear zone" at the end of the smaller Runway 13 extends into the bay. And as passengers know, most flights leaving San Diego take off over the Pacific

Ocean. When weather is very bad, they also come in over the ocean

When Ellsworth Chan was asked how Lindbergh Field could be stamped "FAA Approved" with "no significant bodies of water adjacent to the airport," he laughed and said his assistant, Ron Simpson, might know. After several days of calls and messages failed to produce the juniot, Chan said he didn't have an explanation. "It could be possible that the Port has an agreement with the Navy," he said. "It would have to be explored."

Airport Manager McDonald said, "My attitude has always been that the ocean or the bay is a Coast Guard function. I don't know if the Coast Guard knows it. But if a plane crashes a half-mile off the Ocean Beach Pier, that is really not an airport function any more than when that PSA flight crashed in North Park."

McDenald did offer that there will be a water plan to handle the small lagoon at the end of the runway "in the not-toodistant future."

If an airport doesn't meet FAA standards, it may not have to. Despite the San Diego airport's shortcomings, the FAA has agreed in the Airport Certification Manual for Lindbergh Field that the airport "is not subject to any exemptions or limitations to [Federal Aviation Regulation] Part 139," the section dealing with airport certification.

An explanation can be found in the comments section of FAR 139, where it says that "certificate holders" (in this case the Port District) "should not be required to upgrade safety areas each time the FAA changes its criteria." The FAA says it may not be "practicable either physically or economically."

"I've never requested a walver in my 22 years here," McDonald said. "Things that require waivers are ancient history."

This attitude is exemplified throughout FAR 139, where the key term is "... to the extent practicable ..." For example, runways must meet FAA criteria "to the extent practicable." Lighting must be according to FAA standards "to the extent practicable." Rescue vehicles should be of a certain size "to the extent practicable."

#### LINDBERGH FIELD

The wording explains why there are no waivers or exemptions for the too-short runways, too-narrow taxiways and too-steep approach slope at Lindbergh Field.

FAA Air Traffic Manager Robert Vaughn was asked at a panel discussion if an airport were built today with the standards of Lindbergh Field, would the FAA certify it? Vaughn said no, because airport standards are higher today.

When asked if it were true that the city could have built the Laurel Travel Center 40 stories high and the FAA would not have stopped it, Vaughn said it was true because "the federal government does not get involved in any local laud-use

issues. It is a local issue." All the FAA can do, he said, is change the approach angle.

IS LINDBERGH FIELD a safe airport? Some of the most experienced pilots in San Diego will agree that Lindbergh Field is, at best, "marginal," and that it is stretched to the "ragged edge" of safety. Some say it is "an accident waiting to happen. It is only a matter of when."

Most agree that pilot skill, more than any other factor, has kept Lindbergh free of fatalities.

"Sixty."

The pilot pulls back on the throttles,

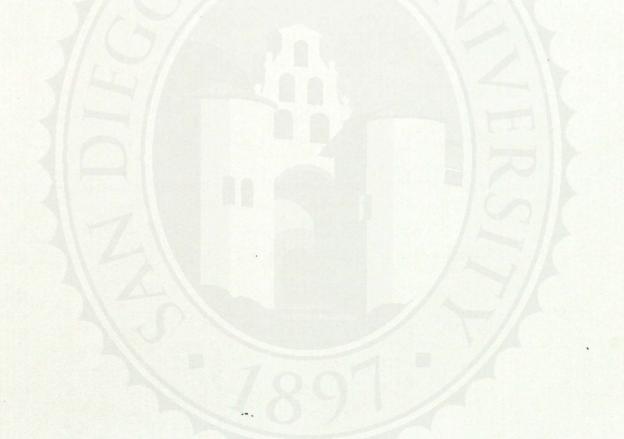
reducing the thrust. The brakes are holding now, the plane is slowing nicely. The captain and first officer can see the masts of the sailboats in the lagoon at the end of the runway.

The automatic brakes are switched to manual, and the captain relaxes his grip on the throttles. His knuckles are no longer white. The airplane continues to slow.

The 767 is moving slowly now. It turns gently at the last exit and moves toward the taxiway and the terminal.

In the cabin, the attendant turns on the public address system.

It's time to welcome passengers to San Diege's Lindbergh Field





#### Vehicular Access

In an auto oriented area such as the San Diego Region, vehicular access to major traffic destinations is of critical importance. Whether it is UCSD with its planned 110,000 ADT, Mission Bay, the Central Business District, or the regional airport, good, simple, adequate highway/street access is a very important factor to residents, businessmen, and visitors.

As we all know, vehicular access to the existing Lindbergh Field is found wanting by all of us except perhaps residents of the close-in beach communities. Most of the rest of the users of Lindbergh Field must use Harbor Drive east of the airport and all have experienced the Laurel Street congestion trying to go north on I-5, or the southbound Kettner Boulevard backups trying to turn right on Laurel to approach the airport. The eastbound Grape Street congestion while trying to get to southbound I-5 is an additional fact of life in peak hours.

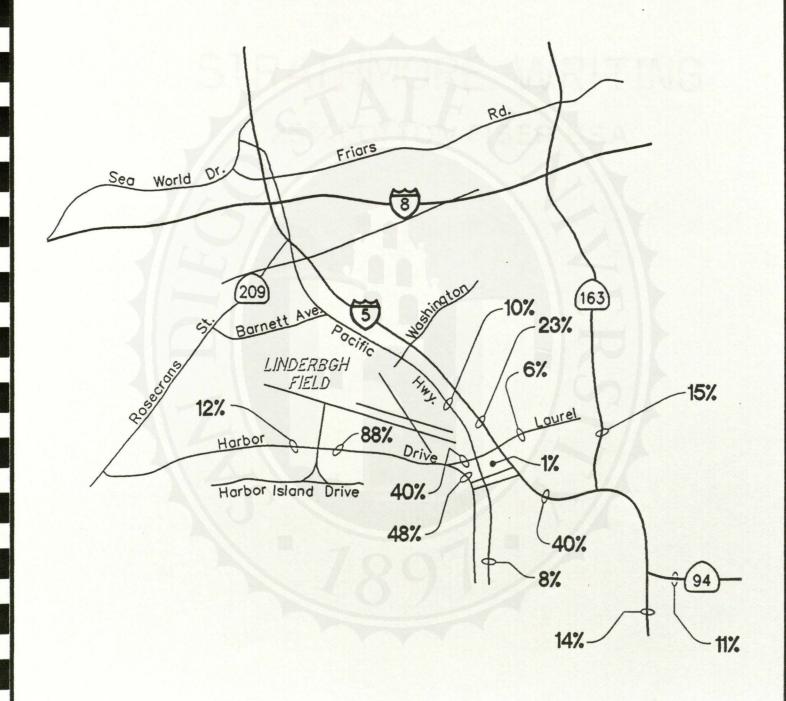
Figure 1 shows SANDAG's 1990 traffic forecast for Lindbergh Field using the latest Series 8 land use data. As can be seen, 88% of the airport traffic travels to and from the east with 40% destined for southbound I-5 to go to Route 163, Route 94, and I-5. Also, as shown, this latest data shows 23% of the daily traffic traveling to/from the north on I-5.

As you all know, the Port District is planning to implement a Lindbergh Field Immediate Action Program (IAP). This program will add eight new gates west of the west terminal, modify parking lots and street access, add fuel tanks, and widen Laurel Street by one lane between Harbor Drive and Pacific Highway. Nothing is planned for Laurel Street from Pacific Highway east. The IAP plan is expected to increase air passenger capacity at Lindbergh Field from the existing 12.2 million air passengers (MAP) to about 14.7 MAP. Vehicular traffic is expected to increase by 31% at capacity. Anyone traveling to/from Lindbergh Field today can only imagine what this 31% increase will mean on Laurel and Kettner — especially with the realization that soon many, many San Diego Trolley trains will be blocking Laurel Street on their run to/from Old Town.

In addition to Figure 1, we also had SANDAG perform a Series 8 forecast for 1990 for the existing Miramar Navel Air Station (MNAS). Figure 2 shows the distribution percentages derived from that study. Also, from existing traffic count data, a peak hour comparison was made between Lindbergh Field and MNAS. Here it was found that even though Lindbergh Field has higher daily traffic volumes, in the inbound peak hour to MNAS, Lindbergh had about 80% of that volume. In the outbound PM peak from MNAS, Lindbergh had about 78% of the Navy facility. This data shows that the Navy peaks are greater than that now experienced at Lindbergh where the counts throughout the airport hours are more level. This data also proves that Lindbergh Field could be moved today to MNAS, without any roadway improvements, and the peak hour observed congestion on the nearby streets and freeways would be decreased—

# Existing Traffic Distribution Percentages To/From Lindbergh Field

As Per SanDag Series 8 Forecast for 1990



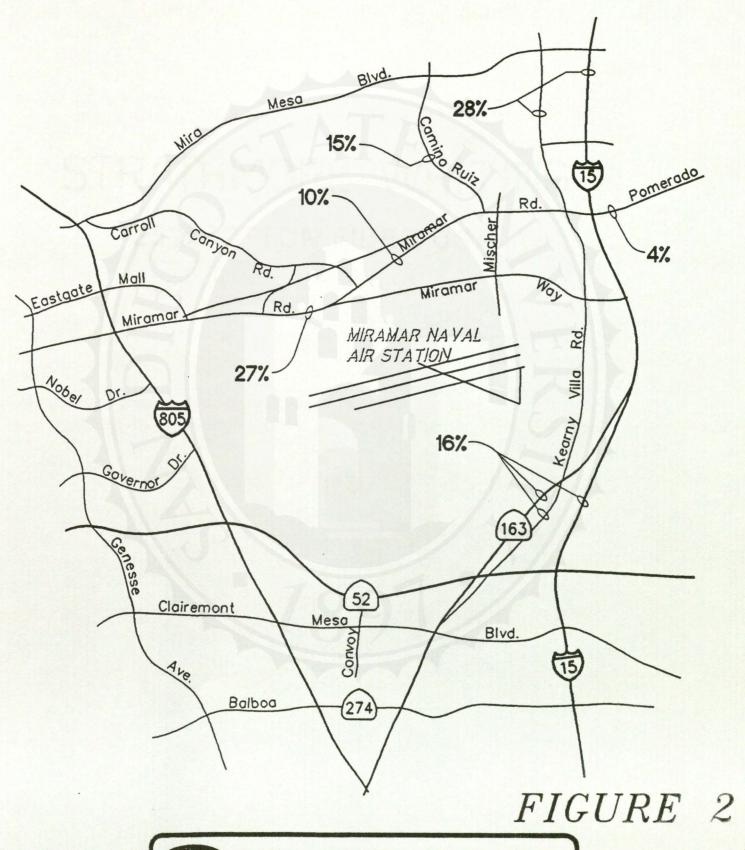
FIGURE



ENTRANCO

# Existing Traffic Distribution Percentages To/From Miramar Naval Air Station

As Per SanDag Series 8 Forecast for 1990





ENTRANCO

especially when it is realized that I-15 is already carrying 3,000 to 4,000 ADT traveling to/from Lindbergh Field!

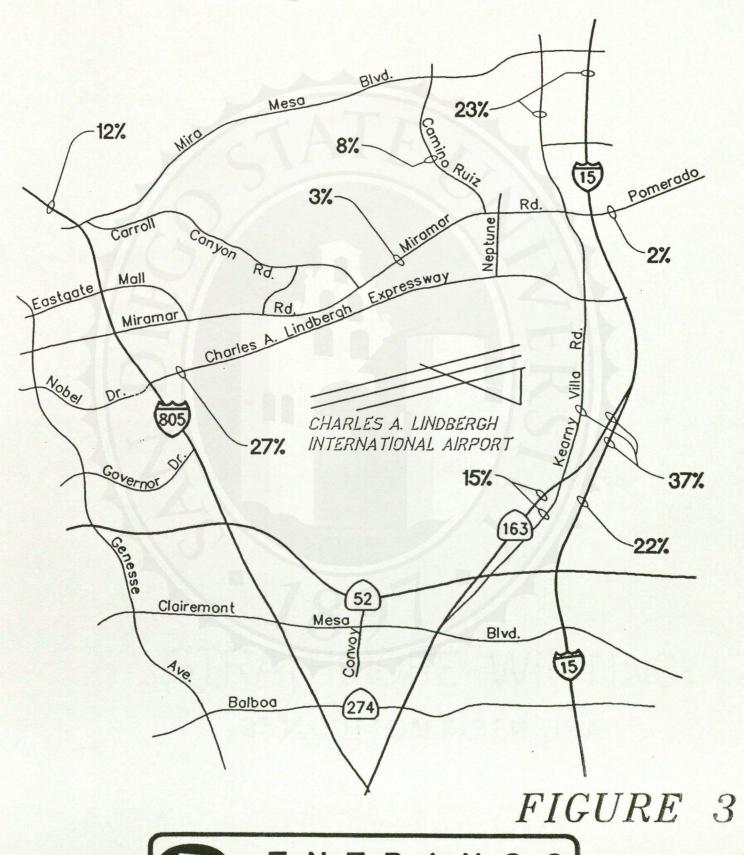
With regard to moving the San Diego International Airport to MNAS, roadway access is planned to be vastly improved. With all airport terminal construction and taxiway improvements planned on the north side of the runways, this plan also includes an east-west expressway from I-15 on the east, to I-805 on the west. It would use the improved Miramar Way interchanges with I-15 and Kearney Villa Road (Old 395) and extend westerly to interchange with I-805 at the planned Nobel Drive interchange. Additionally, at least one roadway would be planned to access Miramar Road from the Charles A. Lindbergh Expressway, just as today, from Miramar Way on the base.

With the San Diego International Airport moved to MNAS, SANDAG performed a Series 8 travel forecast for when 21 million annual passengers would use it (about double today's usage). The roadway system was assumed to include access on the west directly to I-805, to Kearney Villa Road and I-15 on the east, and Miramar Road on the north. Figure 3 shows the future traffic distribution to/from the relocated airport as derived from the SANDAG data which generated about 87,500 ADT. As shown on Figure 3, the access to I-805 means that I-5, Route 52, the University Community, and the coastal communities all have access to the International Airport without traveling I-15. Its improvement on access over the existing Lindbergh Field can easily be envisioned because of the regional facilities surrounding MNAS and the ease with which airport travelers could reach them by use of the east-west expressway. As touted by transportation planners in San Diego since the 60's, MNAS is a superb site for the regional airport from a vehicular access standpoint.

Jim Federhart, R.T.E.

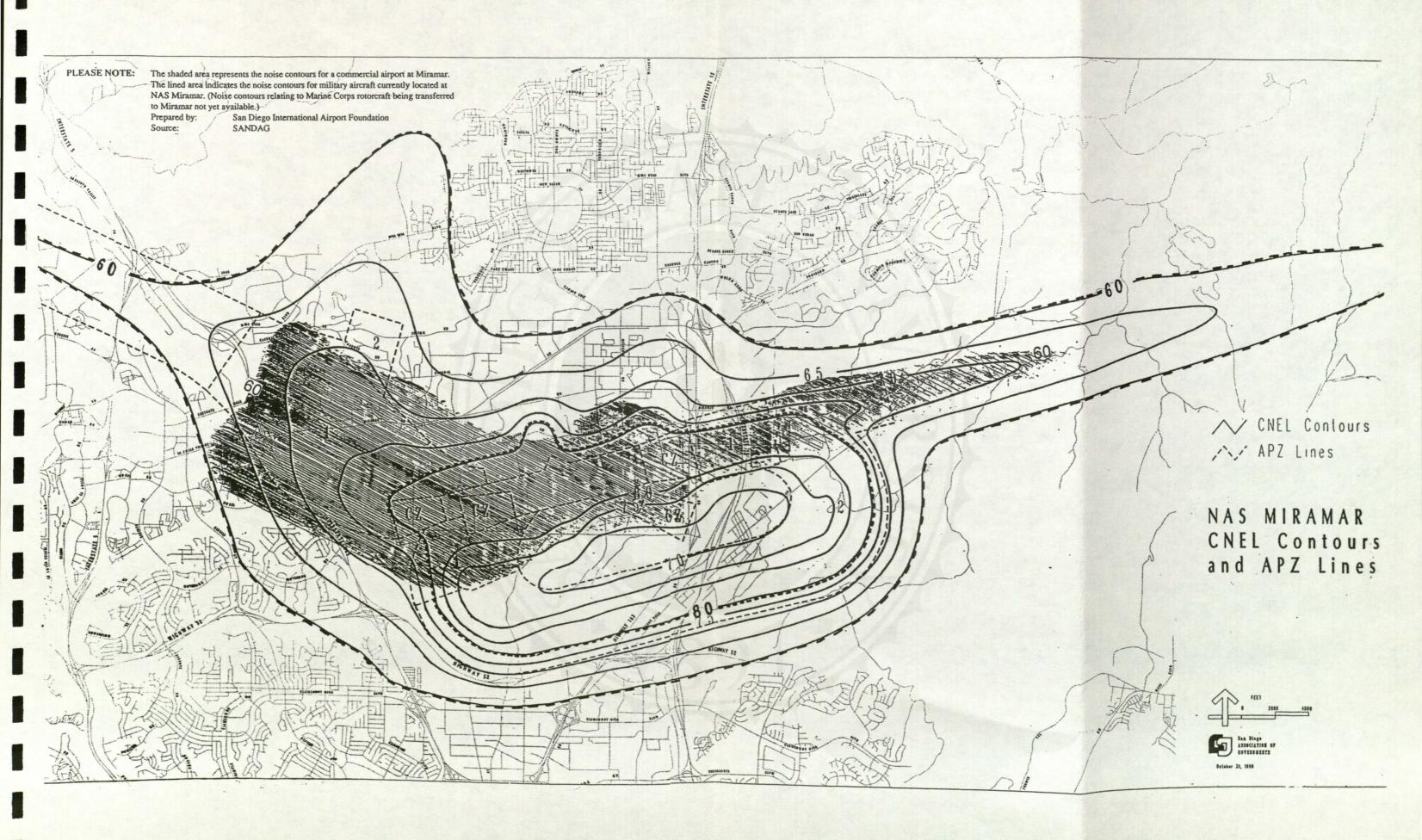
# Future Traffic of Miramar Naval Air Station as San Diego International Airport with 21 Million Anual Passengers

As Per SanDag Series 8 Forecast for 1990



ENTRANCO





# INITIAL AIRCRAFT NOISE ANALYSIS ALTERNATIVE USES OF NAS MIRAMAR

San Diego, California

Prepared For

San Diego International Airport Foundation

1 Market Place, 33rd Floor

San Diego, CA 92101

January 10, 1994

Prepared By

Brown-Buntin Associates, Inc. Fair Oaks, California



#### INTRODUCTION

The purpose of this analysis is to provide an initial appraisal of the potential noise impacts associated with alternative uses of NAS Miramar. This study consists of a review of published noise level data for the existing operations at NAS Miramar, as well as documents which may be applied to the possible use of the NAS site for operations by aircraft currently using MCAS El Toro and MCAS (H) Tustin, and to its possible use for civilian aircraft operations to replace San Diego International Airport (Lindbergh Field).

#### **METHODS**

Brown-Buntin Associates, Inc. (BBA) reviewed available documents describing aircraft operations and noise levels for NAS Miramar, MCAS El Toro, MCAS (H) Tustin, San Diego International Airport, and the proposed San Diego Air Carrier Airport. The specific document citations are provided in the References section of this study.

Noise contours available for each of these facilities were examined to determine the potential significance of noise impacts if the facilities were relocated to NAS Miramar. The noise contours were scaled to allow overlaying on the NAS Miramar base map, and adjustments were made as needed to account for differences in operational assumptions. BBA arrived at conclusions as appropriate for the level of detail which was available at the time of this study.

It is recognized that this study is preliminary in nature, and its conclusions may be applied in a general manner. No specific noise modeling or aircraft operations forecasts were performed for this study. Rather, the available data were applied, and are subject to the limitations of the original assumptions. However, the findings of this study may be used to gain an understanding of the potential noise effects of the described airfield development alternatives.

#### CRITERIA

The Draft Comprehensive Land Use Plan for NAS Miramar, prepared by the San Diego Association of Governments (SANDAG), indicates that an exterior aircraft noise level of 60 dB CNEL or less is compatible with noise sensitive land uses. Residential land uses are considered "conditionally compatible" where the exterior aircraft noise exposure is from 60 to 65 dB CNEL, and incompatible where the noise exposure exceeds 65 dB CNEL.

"Conditionally compatible" means that the exterior noise level is acceptable for associated outdoor activities, but the interior noise level must be attenuated to satisfy a specific standard, which is 45 dB CNEL for residential uses. For the purposes of this analysis, noise due to aircraft operations will be considered potentially significant if the exterior noise level exceeds 60 dB CNEL.

#### SETTING

The noise levels associated with current (1987) and projected future (1994) levels of operations at NAS Miramar are described by the draft <u>Aircraft Noise Survey</u> prepared by Harris Miller Miller and Hanson (HMMH) in 1989. The CNEL contours shown in the HMMH document for 1994 were incorporated into the draft Comprehensive Land Use Plan for NAS Miramar. The CNEL contours associated with projected 1994 operations at NAS Miramar are shown by Figure 1.

In the HMMH report, there were no estimates of the numbers of persons affected by different levels of aircraft noise at NAS Miramar. However, based upon the CNEL contour map, it is possible to conclude that residences in the University City and Mira Mesa areas are exposed to aircraft noise levels exceeding 60 dB CNEL. Some residences in the University City area are exposed to aircraft noise levels exceeding 65 dB CNEL.

About 27% of the aircraft departures at NAS Miramar use the Julian Departure, which involves a right turn to a 360 degree heading shortly after liftoff. These departures are responsible for the "bulge" in the CNEL contours near Mira Mesa. The remaining departures use the Seawolf Departure, which includes a right turn to a 280 degree radial. These departures are responsible for the corridor formed by the CNEL contours in the direction of the Pacific Ocean. Air traffic constraints affect noise from departures on both the Julian and Seawolf departure paths, as aircraft elevation is limited to 3,000 feet MSL (for Julian) and 2,000 feet MSL (for Seawolf). These constraints mean that aircraft remain at low elevations over the nearest populated areas, and that they are operated in level flight, typically at reduced power settings.

#### ALTERNATIVE USES OF THE NAS MIRAMAR SITE

#### Relocation of MCAS El Toro and MCAS (H) Tustin:

One alternative use of the NAS Miramar site which has been discussed is the relocation of aircraft operations at MCAS El Toro and MCAS (H) Tustin. For this review, it has been assumed that the MCAS El Toro operations would generally adhere to the current NAS flight procedures. The helicopter operations at MCAS (H) Tustin would use new flight procedures consistent with the constraints in effects at the NAS Miramar site.

Operations at MCAS El Toro currently include F-18 Hornet flights. The available CNEL contours for El Toro apparently reflect operations including F-4 Phantom flights. Although the F-4 has been replaced by the F-18, one acoustical consultant working in the vicinity of MCAS El Toro reports that there is little difference in cumulative noise exposures due to the change in fleet mix.

There is a substantial difference in air station layout between MCAS El Toro and NAS Miramar, which prohibits a direct overlay of predicted CNEL contours for MCAS El Toro over the NAS Miramar base map. To estimate the noise exposure due to MCAS El Toro operations at the NAS Miramar site, BBA measured the distance from the start of takeoff roll at MCAS El Toro to the closure point of the 65 dB CNEL contour along the primary departure flight tracks. The same distance was measured along the curved Julian flight tracks, in a manner consistent with the operational assumptions used for the HMMH report. The shapes of the 65 and 60 dB CNEL contours reflecting departures at MCAS El Toro were then transferred, in scale, to the NAS Miramar base map. A similar process was used for arrivals, except that it was not necessary to curve the flight tracks. The resulting CNEL contours are shown by Figure 2.

The accuracy of the process described above is limited by the fact that no accounting has been made for departures on the Seawolf departure route, and that no adjustments were made to account for the dispersal of Julian departures over five flight paths, as done for NAS Miramar. Thus the noise exposure shown by Figure 2 for MCAS El Toro operations is likely to be overstated to a certain degree. The extent of the over prediction cannot be assessed without a more thorough analysis of the proposed aircraft operations.

However, the projected locations of the CNEL contours for MCAS El Toro operations at NAS Miramar indicate that CNEL contours for a relocation of the MCAS El Toro

operations to NAS Miramar would likely be of the same general magnitude and locations as those due to the existing operations.

The published CNEL contours for MCAS (H) Tustin are relatively small by comparison to those associated with fixed-wing aircraft operations at El Toro. It is anticipated that noise due to the relocated helicopter operations would be insignificant in terms of CNEL values when combined with the MCAS El Toro operations, if operations were combined so that the helicopters used flight paths similar to those used by the fixed wing aircraft. However, it is possible that helicopter operations would result in air space conflicts with fixed wing aircraft unless the helicopter activity were displaced from the main runways. There is no way at this time to determine whether such a displacement would occur, or where the helicopter activity would be located. Given the possibility that helicopter operations would be displaced, it is expected that the CNEL contours due to those operations would be similarly displaced, with possible effects on adjacent land uses.

Helicopters would also be expected to approach and depart the air station using flight tracks which are different than those currently observed. This would result in a new noise source for residents living near the flight paths. Helicopters commonly follow major roadways when approach an airport, so they might be expected to approach NAS Miramar in such a manner.

The available data do not allow estimates of the number of people which might be affected by this alternative.

# Relocation of San Diego International Airport (Lindbergh Field):

Another potential use of the NAS Miramar site would be the relocation of Lindbergh Field. This option was explored in detail by SANDAG in the draft final San Diego Air Carrier Airport Site Selection Study. For this study, three alternative runway configurations were considered, describing the potential noise impacts of a forecast 40 million annual passengers, and 398,000 annual aircraft operations. In each case, three new parallel runways were used to address concerns for noise and airport capacity; only the locations of the runways varied for each alternative. The potential noise effects of new runway alignments were not considered to be pertinent to this analysis, as the current proposal involves retaining the existing NAS Miramar runways.

The alternative in question at this time includes relocation of the current level of aircraft activity at Lindbergh Field to the existing NAS Miramar runways. It is also anticipated that the Seawolf departure route would be retained for noise abatement and air traffic considerations. It is also anticipated that the Julian departure route could be used for eastbound flights.

To assess the potential noise impacts associated with this alternative, the CNEL contours presented for 1991 operations in the Lindbergh Field FAR Part 150 Study were transposed on the NAS Miramar base map, accounting for a realignment of right-turn Runway 27 departures to the Seawolf departure route. It was assumed that standard air carrier departure profiles would be flown. As in the MCAS El Toro analysis, the distance from the start of takeoff roll to the closure of the right turn 65 dB CNEL contour was measured, and the contour was placed at the same distance from the start of takeoff roll on Runway 24R along the Seawolf departure flight tracks. It was not possible to combine the CNEL contours for straight-out and right turn departures, nor was it possible to account for possible use of the Julian departure routes. The CNEL contours for arrivals were transposed directly to Runway 24R, as no corrections for flight tracks were required.

The resulting CNEL contours as shown by Figure 3. These contours indicate that the cumulative noise exposure of the relocated 1991 Lindbergh Field operations to NAS Miramar would be 5 to 10 dB less than for current operations at NAS Miramar. There would be a correspondingly lower noise exposure in the Mira Mesa area if the Julian departure were to be implemented. The Lindbergh Field CNEL contour projections assume relatively few touch-and-go operations, as compared to the intensive left pattern training conducted at NAS Miramar. This difference in assumptions results in a significant decrease in noise-impacted land area south of the runways, as compared to the NAS Miramar CNEL contours.

The available data do not allow estimates of the number of people which might be affected by this alternative, but it does not appear that the 65 dB CNEL contour would include any residential land uses.

The accuracy of the CNEL contours developed as described above is limited by several factors. The number of air carrier operations and the types of aircraft in the year 1991 which were used for the FAR Part 150 study were based upon projections prepared in 1988. The supposed number of air carrier operations for 1991 was 139,000 per year, which may not be comparable to current operations at Lindbergh Field. The air carrier fleet at airports

on the West Coast has changed in character since 1988, so the FAR Part 150 study assumption of 35% Stage 2 aircraft may not be valid for current conditions. In forecasting aircraft noise levels for future conditions, recent federal requirements should be taken into consideration. Current federal law calls for the complete phase-out of Stage 2 aircraft in the year 2000, which would result in smaller CNEL contours in the near future.

As noted above, it was not possible to account directly for the combination of straight-out and right turn Runway 27 departures in the Seawolf departure routes, nor was it possible to account for possible use of the Julian departure routes. The combined use of the Seawolf route could result in slightly larger CNEL contours in that direction, but they would be reduced in size if operations were assigned to the Julian departure route.

#### CONCLUSIONS

Based upon the available data, it appears that continued military use of the NAS Miramar site by operations equivalent to those at MCAS El Toro and MCAS (H) Tustin would result in noise exposure similar to that experienced for current NAS Miramar operations, except that noise from MCAS (H) Tustin helicopter operations could be displaced to new areas to avoid air space conflicts. In addition, it is anticipated that military helicopter operations would introduce new noise sources along new flight paths.

Based upon the available data, it appears that relocation of Lindbergh Field to the NAS Miramar site would result in a significant reduction in noise exposures as compared to current NAS Miramar operations.

Respectfully submitted,

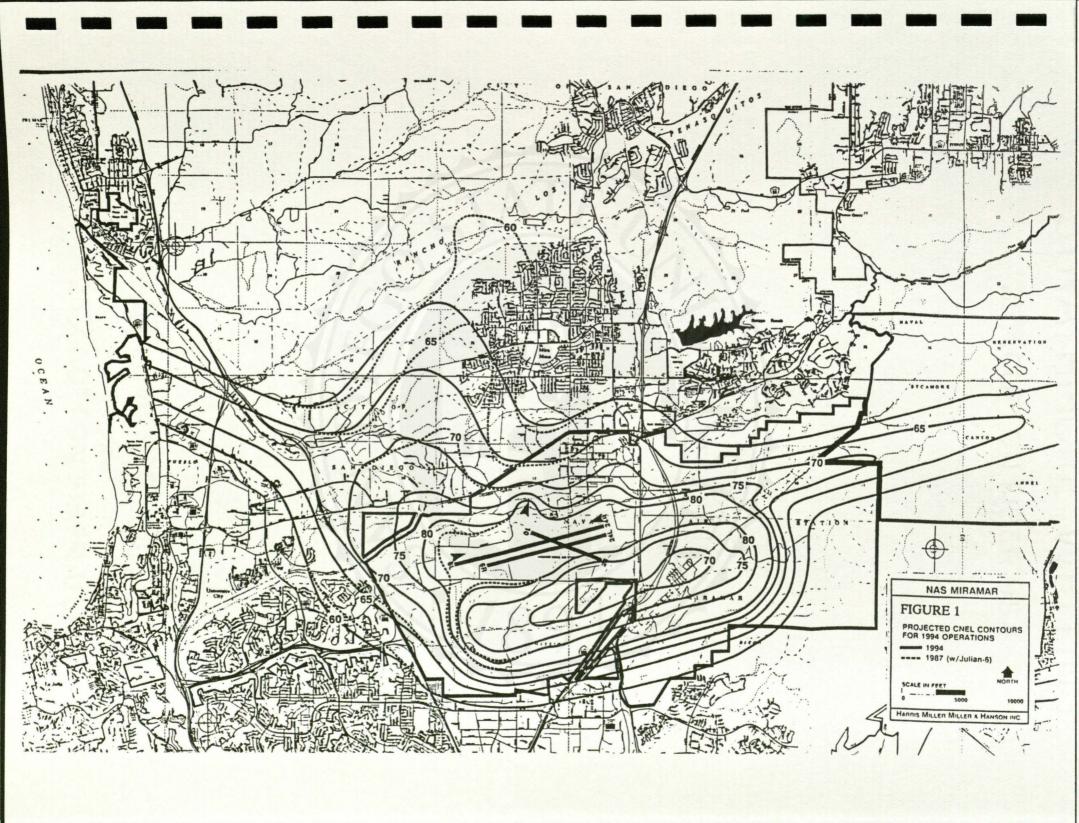
Jim Buntin

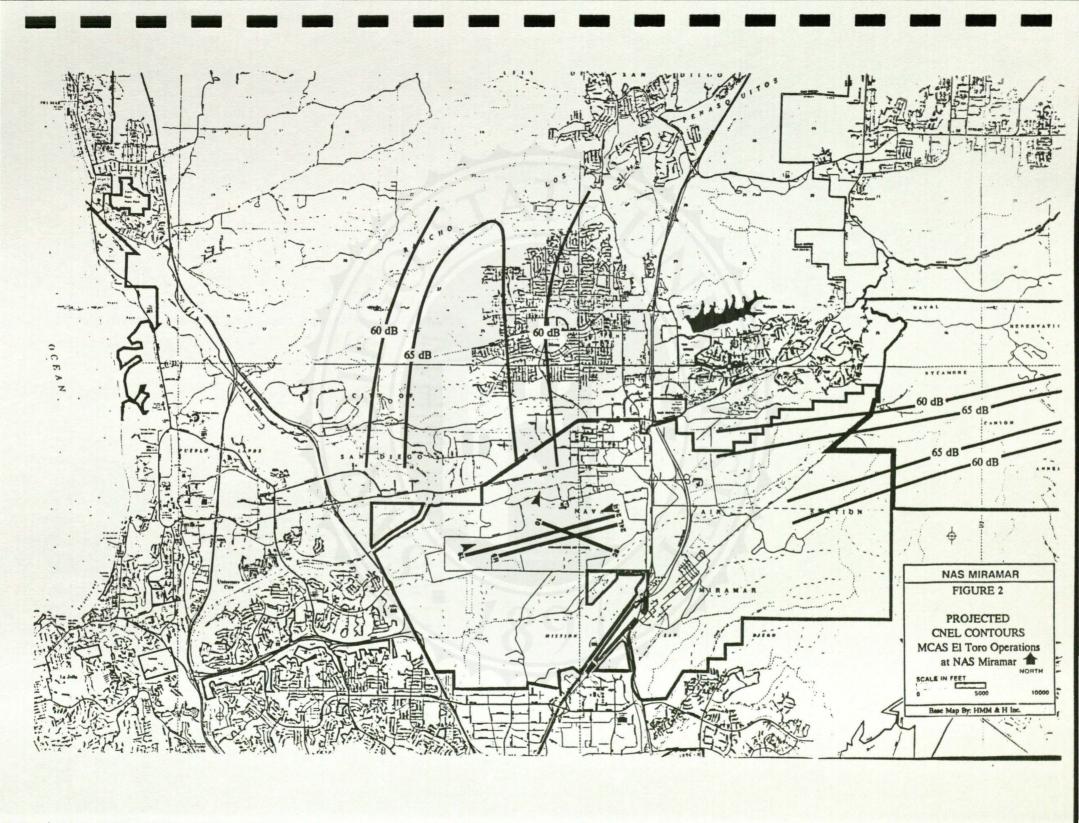
Vice President

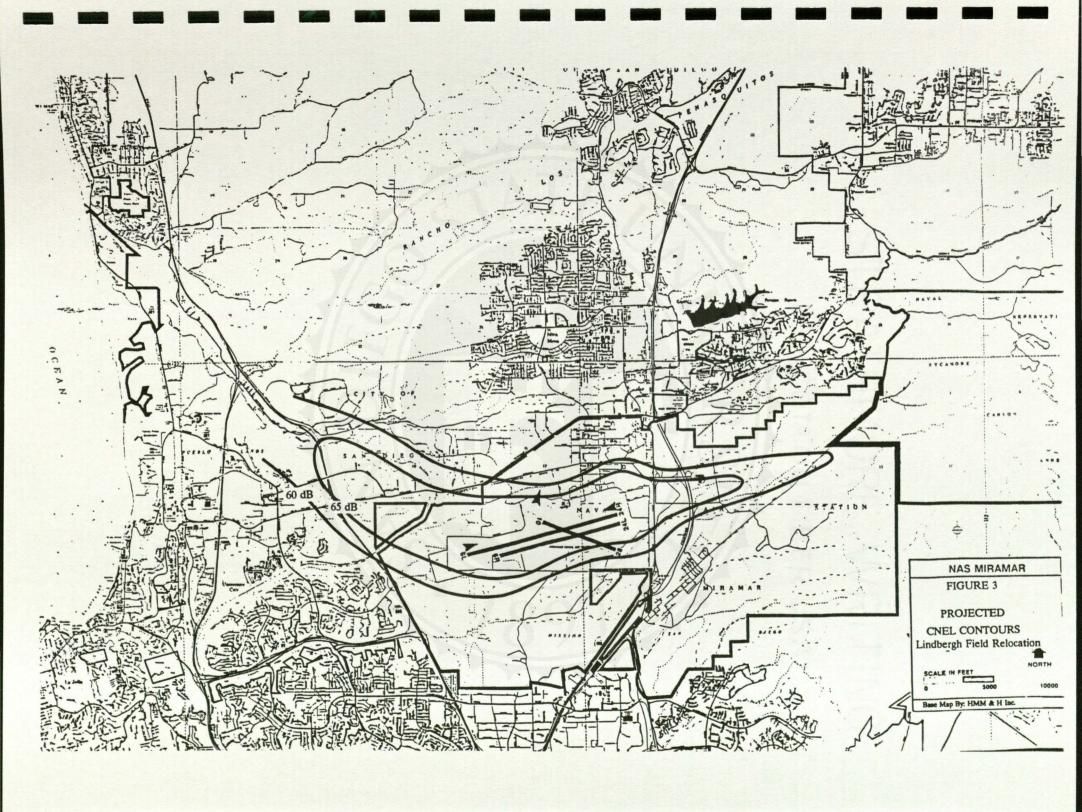
#### REFERENCES

- Draft Comprehensive Land Use Plan NAS Miramar, San Diego Association of Governments, January 1990.
- Draft Aircraft Noise Survey Naval Air Station Miramar San Diego, California, Harris Miller Miller and Hanson, January 1989.
- 3. <u>Air Installation Compatible Use Zone Study MCAS El Toro</u>, Western Division, Naval Facilities Engineering Command, no date available.
- 4. Noise Study MCAS (H) Tustin, no date available.
- 5. <u>Draft Final San Diego Air Carrier Airport Site Selection Study</u>, prepared by Peat Marwick Main & Co. for San Diego Association of Governments, December 1989.
- 6. Environmental Assessment and Initial Study for San Diego International Airport

  Lindbergh Field Airport Development Study, prepared by P&D Technologies, Inc.
  for the San Diego Unified Port District, April 1989.
- 7. San Diego International Airport Lindbergh Field FAR Part 150 Study, prepared by CH2M Hill for the San Diego Unified Port District, May 1988.







# APPENDIX A ACOUSTICAL TERMINOLOGY

AMBIENT NOISE LEVEL:

The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise a given location.

CNEL:

Community Noise Equivalent Level. The average equivalent sound level during a 24-hour day, obtained after addition of approximately five decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and ten decibels to sound levels in the night before 7:00 a.m. and after 10:00 p.m.

DECIBEL, dB:

A unit for describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the reference pressure, which is 20 micropascals (20 micronewtons per square meter).

Ldn:

Day-Night Average Sound Level. The average equivalent sound level during a 24-hour day, obtained after addition of ten decibels to sound levels in the night after 10:00 p.m. and before 7:00 a.m.

Leq:

Equivalent Sound Level. The sound level containing the same total energy as a time varying signal over a given sample period.  $L_{eq}$  is typically computed over 1, 8 and 24-hour sample periods.

Note: CNEL and  $L_{dn}$  represent daily levels of noise exposure averaged on an annual basis, while  $L_{eq}$  represents the average noise exposure for a shorter time period, typically one hour.

Lmax

The maximum sound level recorded during a noise event.

L.

The sound level exceeded "n" percent of the time during a sample interval.  $L_{10}$  equals the level exceeded 10 percent of the time ( $L_{90}$ ,  $L_{50}$ , etc.)



# A-2 ACOUSTICAL TERMINOLOGY

NOISE EXPOSURE CONTOURS:

Lines drawn about a noise source indicating constant levels of noise exposure. CNEL and  $L_{dn}$  contours are frequently utilized to describe community exposure to noise.

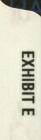
SEL OR SENEL:

Sound Exposure Level or Single Event Noise Exposure Level. The level of noise accumulated during a single noise event, such as an aircraft overflight, with reference to a duration of one second. More specifically, it is the time-integrated A-weighted squared sound pressure level for a stated time interval or event, based on a reference pressure of 20 micropascals and a reference duration of one second.

SOUND LEVEL:

The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear and gives good correlation with subjective reactions to noise.





#### ENVIRONMENTAL ADVANTAGES

MIRAMAR is by far the most environmentally superior site as compared to all other suggested site alternatives.

- o Historical and archeological considerations
- o Endangered and threatened species
- o Water quality
- o Air quality
- o Coastal zone management
- o Wetlands and floodplains
- o Landfill and birds

#### Historical and Archeological Considerations

The 1990 SANDAG Air Carrier Airport Site Selection Study has indicated that there are areas of vernal pool complexes located on the Kearny Mesa north and south of San Clemente Canyon and immediately to the west of Interstate 15. Also in this area are a number of mima mounds. If not already destroyed by military operations, the preservation of vernal pools and mima mounds are essential and should remain a high priority. Strict coordination to preserve the vernal pools and mima mounds must become part of the Multiple Species Conservation Program (MSCP) and the Multiple Habitat Conservation Program (MHCP).

According to the 1990 SANDAG Air Carrier Airport Site Selection Study, one of the areas of vernal pools and mima mounds south of San Clemente Canyon has been designed as the Miramar Mounds Natural Landmark and has been listed in the National

Registry of Natural Landmarks. The National Registry of Natural Landmarks includes nationally significant ecological and geological features. An analysis of various runway orientations indicates that the MIRAMAR site could be developed as a civil airport without disturbing the Miramar Mounds Natural Landmark.

#### Endangered and Threatened Species

The San Diego International Airport Foundation supports the efforts of the MCSP and the MHCP. Through this effort, preservation of thousands of acres adjacent to MIRAMAR could be preserved in perpetuity and protect the habitat of endangered, candidate and other key species.

#### Water Quality / Drainage / NPDES

The relocation of Lindbergh Field to MIRAMAR should not significantly impact water quality in the area if proper precautions are taken. Potential pollutants associated with airport operations include residual oil and grease buildup on runway and apron surfaces, rubber buildup on the runways, and fuel spills. The inclusion of special settling ponds and oil skimming ponds in the surface drainage network would prevent these pollutants from contaminating surface water supplies. In contrast, Lindbergh field has a far greater change to pollute the San Diego Bay due to its close proximity to that body of water.

#### Air Quality

MIRAMAR would be closest to concentrations of originating passengers and would have the lowest total vehicle-miles traveled, resulting in the lowest net air quality impact of the sites. This is extremely important given the federal, state and local Clean Air Act requirements.

The operation of MIRAMAR as a replacement of Lindbergh Field will decrease air pollutive emissions in the surrounding areas and the region due to several reasons not limited to:

- (a) Extraordinary mass transit opportunities;
- (b) Existing rail line;
- (c) The underground fuel line extending from Long Beach to MIRAMAR will save transport time, fuel costs, and burning of fuel;
- (d) Although Lindbergh Field departures are on time, arrivals will soon begin to "cue" and thus cause increased fuel burnage. This in turn will cause air quality impacts and also cause unnecessary airline fuel costs increases.

### Coastal Zone Management

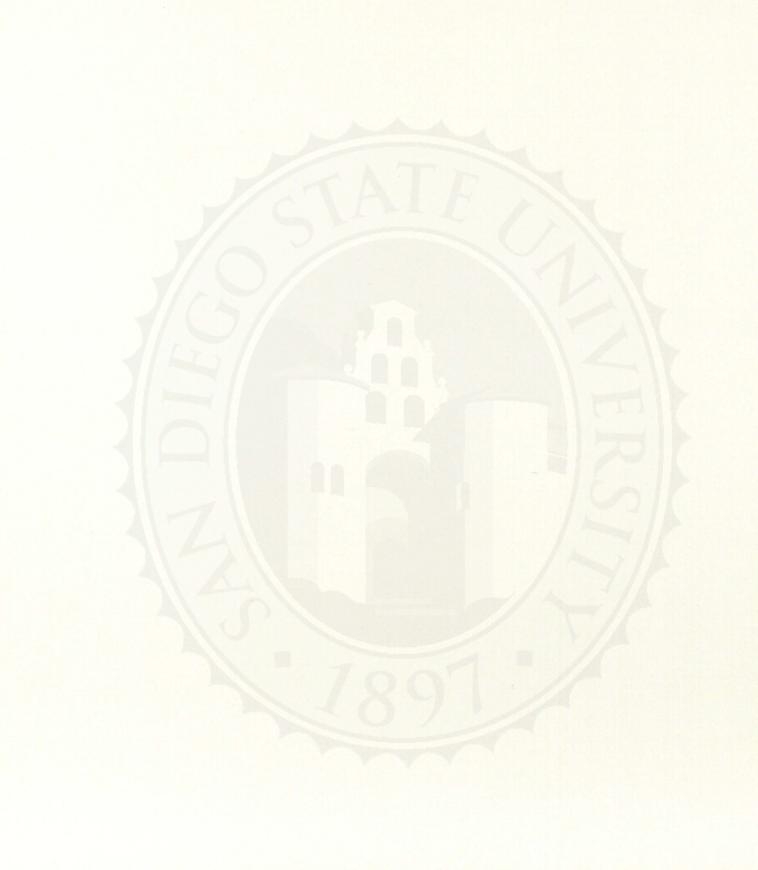
The MIRAMAR site does not fall within five miles of the coast; therefore, coastal zone management considerations would not be required. Lindbergh Field is within the Coastal Zone and thus is restricted to Local Coastal Plans.

### Wetlands and Floodplains

The San Diego International Airport Foundation supports the efforts of the MCSP and the MHCP. Through this effort, preservation of thousands of acres adjacent to MIRAMAR could be preserved in perpetuity and protect the habitat of endangered, candidate and other key species.

# Environmental Stewardship Example in San Diego

In the 1960's, Camp Matthews land was redeveloped into UCSD, which has become a significant part of the San Diego community.



November 16, 1993

#### POINT PAPER FOR MAYOR BUD LEWIS

#### Subject: MCAS El Toro- NAS Miramar- Lindbergh Field

- \* BRAC-93 recommended that MCAS El Toro be closed and that tenant units be transferred to NAS Miramar.
- \* DOD's plan called for transfer of Miramar tenant units to NAS Leemoore and NAS Fallon in order to accommodate the move of Marine Corps Aviation units from MCAS El Toro and MCAS (H) Tustin.
- \* BRAC-93 Recommendations were passed without change by the Congress and are now public law.

#### Discussion:

MCAS El Toro and MCAS (H) Tustin are first class Aviation facilities. During the decade of the 80's, over \$550M was spent building barracks, hangars, housing, maintenance facilities, aircraft parking ramps, supply buildings, etc. The proposed closing of these facilities is the result of a badly flawed process which unnecessarily wastes billions of dollars by targeting the wrong bases.

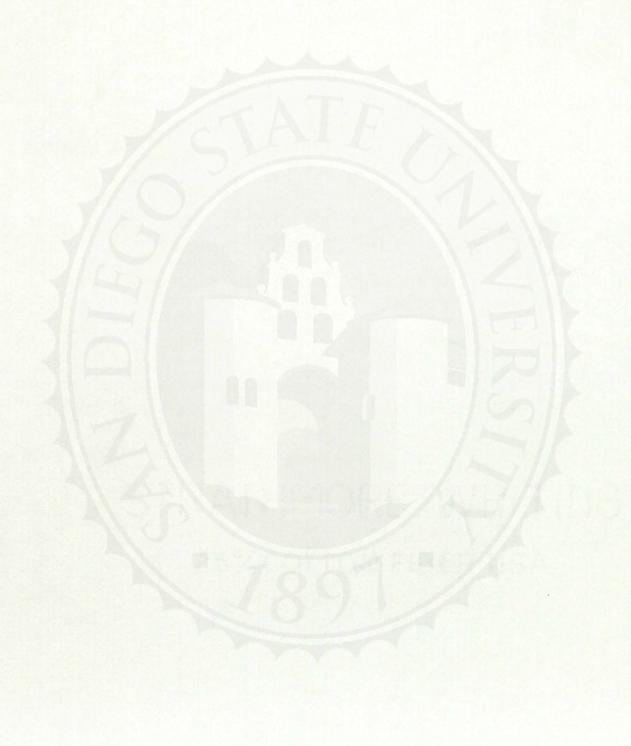
Closing costs for the Marine Corps facilities and transfer of the tenant units has been revalidated at \$1.28B. There is no money either budgeted or appropriated for the move. In fact, the \$583M planned for housing at Miramar for Marines has been pushed back to FY 98. BRAC is to fund for base closures, but has no money for this purpose.

The operational problems with aircraft operations at Lindbergh are well documented. Repeated studies have delineated the hazards and shortfalls of conducting aircraft operations there and in the future. Additionally, it is essential that San Diego be prepared for the trading boom associated with the passage of NAFTA and the just concluded GATT Agreement, and the rapid growth in aircraft operations that surely will follow.

Miramar presents a large open area for expansion, existing taxiways and runways, freeways for easy access on three sides, plus a rail head for rapid transit. While nothing is simple, SANDAG should seize the moment by supporting every effort that seeks to acquire Miramar for civilian use while redeveloping Lindbergh. Resulting funds from the development of Lindbergh will help to defray the costs of the Navy move as well as the construction of the required facilities at Miramar.

#### Conclusion:

The BRAC-93 process has opened a window of opportunity to acquire Miramar that must be seized. SANDAG should move quickly to support all efforts to acquire Miramar for a civil airport now!!!.



LAW UFFICES OF

# ADAMS, DUQUE & HAZELTINE

401 WEST A STREET

TWENTY SIXTH FLOOR

SAN DIEGO, CALIFORNIA 92101 TELEPHONE (619) 232-1240

FAX (6:9) 232-1351

NEW YORK OFFICE
CITICCHE CENTER
153 EAST SOM STREET
TWENTY-SIXTH FLOOR
NEW YORK, NEW YORK 10022
TELEPHONE (212) 750-1240

FAX (212) 844-9727

HENRY DUOUE (1904-1971) EARL C. ADAMD (109E 1964) HERBERT S. HAZELTINE (1907-1893)

January 7, 1994

Honorable Mayor Susan Golding 202 "C" Street, 11th Floor San Diego, CA 92101

Re: Relocation of Lindbergh Field Airport

Dear Mayor Golding:

LOS ANGELES OFFICE

977 SOUTH FIGUEROA STREET

TENTH FLOOR

LOS ANGELES, CALIFORNIA 90017

TELEPHONE (213) 023-1240

FAX (213) 896-5500

SAN FHANLISLO SFFICE

SCO WASHINGTON STREET

RIYTH FLOOR SAN FRANCISCO, CALIFORNIA 94III TELEPHONE (415) 952-1240 FAX (415) 952-0/30

Based upon my experience in Washington, D.C., in both the Senate and the Executive Branch of the Government during the past 13 years and after consultation with the military, it is my firm conviction that an economic impact study on alternative uses for Miramar Naval Air Station would not send the wrong signal to the Department of the Navy. Further, I do not believe that such a study and/or the actual closure of NAS Miramar would adversely impact or result in the closure of other naval military facilities in Southern California.

BRAC 1993's decision to close Miramar was based upon operational considerations and excess naval air field capacity. San Diego's decision to look at alternative uses for Miramar would be viewed as a responsible decision by the Department of the Navy and 1995 BRAC members.

Sincerely,

Anthony Principi (lgr)

granding in districtions and the contract of the

AJP:lgr

. . . . . .

#### ANTHONY J. PRINCIPI

Adams, Duque & Hazeltine 401 West A Street, 26th Floor San Diego, California 92101-7910

Office: (619) 232-1240 Home: (619) 756-2155

Fax: (619) 232-1351

#### CAREER HISTORY

Present

Partner, Adams, Duque & Hazeltine, San Diego, New York, Los Augeles and San Francisco.

1993

Republican Chief Counsel and Staff Director, U.S. Senate Committee on Armed Services.

1992-1993

Secretary of Veterans Affairs. Appointed by President Bush to serve as Secretary upon the resignation of Edward Derwinski.

1989-1992

Deputy Secretary of Veterans Affairs, Washington, DC. Appointed by President George Bush and confirmed by the U.S. Senate to be the first Deputy Secretary, the second highest position in the newly created Cabinet Department. As chief operating officer I directed the day-to-day activities of the Federal government's second largest department with a \$35 billion budget and 250,000 employees. I interacted with the White House, Congress, all federal departments and the private sector to coordinate activities for the provision of health-care services and benefits delivery to 27.3 million veterans, their dependents and survivors.

1991-1993

Chairman of the Board of Directors of the Federal Quality Institute, Washington, D.C. The Board oversees the Institute in its responsibility to promote and adopt the culture of Total Quality Management within the Federal Government.

1988-1989

General Counsel - Navy Broadway Redevelopment Project, San Diego, California. Worked with city, county and state officials in the Navy's first publicprivate venture involving real estate development.

1984-1988	Republican Chief Counsel and Staff Director, Senate Committee on Veterans Affairs. Principal legal and legislative policy advisor to Chairman and members of the Committee on all matters affecting the VA. Developed health, benefit and facility construction policy, formulated the VA budget, supervised professional staff and drafted legislation for consideration by the U.S. Senate. Chairman - Alan K. Simpson (Wyoming) 1984-86 Ranking Minority Member - Frank H. Murkowski (Alaska) 1986-88.
1983-1984	Deputy Administrator for Congressional and Public Affairs, Veterans Administration, Washington, D.C.
1980-1983	Counsel, Senate Committee on Armed Services.  Advisor to Chairman and members of the Committee on all matters related to military and civilian manpower in the Department of Defense, including military and civilian manpower levels, health-care delivery and programs, housing, education, military justice, pay and benefits. Chairman - John Tower (Texas)
1975-1980	Judge Advocate General's Corps, U.S. Navy. Trial attorney, legal counsel to Commander, Training Command, U.S. Pacific Fleet and legal and legislative counsel, Office of the Secretary of the Navy.
1970-1972	Company Officer, Naval Training Command, Newport, RI.
1969-1970	Unit Commander assigned to River Patrol Squadron V, Tra Cu, Republic of Vietnam.

# **EDUCATION**

1967-1969

Engineering Officer, USS Joseph P. Kennedy.

1967 U.S. Naval Academy, Annapolis, Maryland - B.S.

1975 Seton Hall University, School of Law, Newark, NJ - J.D.



SELECTORS OF DESCRIPTIONS CHAMBUAN Former Senor Pairer McGure Woods Shirle & Dovine BP WOOM? ed & Schular The Landwicht Could L Dallies Paynton & Wilsons on P. Danneste President & CEO BynCurp Midson Diseasen U.S.A. les Dr. Edward M. Dornoff Preside CEC DTG. Inc Horisto. bort fluctures Prosidery Rudinner Commerce Parties ANN CAND SHIELD Mobil Land Development IVA COR later W. Craigle. Jr Managing Crimiter VrFS Emilical Subcration James A. Davis Sheeth: dawn Lifton wh Sharman Ing ! Lares Artesascan Dana da Victoria CE ASELVA DURAL D ENGAN on # Erhyetun Physicial
Enables Currelluction Gorborshon
harder B. Gwing, Jr.
Fanculus Vice The sident
WCST - G110UP
rephen L. Gerband Semior Partifer Newes Mousia. Celband & Lamberton P.C. Rana E. Greenvaaf VIGO PEDENDEN DELINENS DOMINUM-OM THE EVAIM COMMENT here V Maparie Fur Lincoln New York Contraves Inc Swaw vice Pirectone Administration Octobe Approposes the iom Harris Const North A Gen de D. Ararchastinstia Presentition Fund one ? Herel de Chamman is the Uliand Genge W Johnson Tucing hasin transity HILLIA AND GALIGE OF BERNARAGIE CATRIBON & MAYOUNE introlon L. Traine Liverymen Curmonanan of Aryma DAY'S FAMILY AND Manual Corpulation
Manual Corpul MCChamies Associates Jan FH Miller ויאוביותו דו mes G More WEST FRECH 14700 שו אלן ב רווים: כחווים Citables in the n Reads ישונים ויני עדו דוו בניום worth A Remo ally the (a-spartment of Avillage Linguis (a-spartment of Avillage Linguis A Schools entities & as nothing aries trenty South THE TARE THE UTTER OF LUCES HIM SMITH I transport to the state of the state of Oneman President & CFG CONTRACTOR THE B POLL Land Coloragion



Washington Airports Task Force

January 9, 1994

Mr. Douglas Manchester Chairman SDIAF 1 Market Place, Thirty-Third Floor San Diego, California 92101

Dear Mr. Manchester:

Thank you for your letter of January 4th. The Washington Airports Task Force is a community-based organization dedicated to the provision of the air service and supporting infrastructure required by our region to sustain quality employment and a healthy economy in today's global market.

The attached report for your Board of Directors is based upon our experience over the last twelve years working with the Metropolitan Washington Airports Authority to develop a full range of air services at Washington Dulles. A key goal was to remove the warp created in our air service capability by the limitations inherent in downtown Washington National Airport.

Some further points for your consideration:

# Competition and the Puture

Communities today compete for air service just as they compete for economic development.

Creation of a full service airport is a first step; it makes you a player. However the "Build it and they will come." philosophy does not work for airports any more than it works for any other form of commerce. Washington Dulles lay fallow for 20 years until the community became disturbed and launched a marketing program. Major carriers are seeking consolidation, not expansion, and while the volatile nature of the airline industry can provide a major underserved market with good opportunities for service expansion, that is unlikely to happen at Miramar (or anywhere else), without a sustained, aggressive, strategic, marketing campaign.

Mr. Douglas Manchester January 9, 1994 Page Two

#### Some suggestions;

- Get the airlines on side early extremely difficult as the carriers are cynical of community needs and new airport projects, and polarized by their own problems. Credible guarantees that airline costs really will be held low is highly desirable. Airline support would benefit everything that's difficult from getting the lowest possible interest rates to federal funding.
- A "deficiency analysis" conducted over the next few months using realistic criteria credible to the industry would:
  - a) quantify the warp created by Lindbergh Field and demonstrate the importance of the Miramar project,
  - b) provide a realistic assessment for initial facility requirements at Miramar, and
  - c) add credibility to the project with the financial and airline industries.

Incidently, our last deficiency study in 1992 showed that 250,560 passengers moved between Washington and San Diego in 1990, but only 139,224 were able to travel on a nonstop flight. The remainder took connecting flights due to fare incentives or lack of direct service.

Recent noise legislation requires the retirement of noisier stage-two aircraft around the year 2000. This mandate causes all the noise contours projected by the FAA's Part 150 process to move in towards the airport. The higher and best use of the land between the airport noise contours and the existing communities is for commercial development which generates business tax revenues for local governments.

The credentials for our comments are the results achieved. Since 1982, on the international front alone, markets served nonstop from Washington Dulles have been increased from one to 19, passenger use from 350,000 to over 2 million, and cargo grew at 17% per year, two and a half times the U.S. average. As a result, our businesses and tourism industry now have fifty percent of the world's total GNP at the end of a nonstop flight, and Dulles has come from obscurity to be the third largest gateway to Europe on the east coast and we vie with Newark for the second place as a gateway to the Pacific Rim. Both are based on the availability of a nonstop flight frequencies. In parallel, state and local tax revenues increased substantially, on-airport employment grew from 3,159 in 1983 to 11.704 in 1992, and new business has been attracted to our region.

<sup>&#</sup>x27;As late as 1986, Dulles was routinely referred to as a White Elephant, a federal mistake; now it is considered "a masterpiece of wise, long-range planning".

Mr. Douglas Manchester January 9, 1994 Page Three

A note on the Task Force, its goals and results, forms Appendix 2. Developing Miramar into a full service international gateway will take more than ten years of sustained community and political commitment but it can be done; if you don't do it, the San Diego area will never reach its full potential as a place to live and work.

Your foundation and this Task Force may be the only two organizations of their type in the nation, and as you will find it can be lonely out in front! We welcome this opportunity to serve you and I hope that the information is helpful to your very worth cause.

Yours sincerely,

heo Schifer

Leo J. Schefer

LJS/ask

attachments



# AIR SERVICE AND THE ECONOMY

A REPORT FOR THE SAN DIEGO INTERNATIONAL AIRPORT FOUNDATION
PREPARED BY
THE WASHINGTON AIRPORTS TASK FORCE
JANUARY 9, 1994

In today's global market, a major city will require a full-service airport if it is to sustain in the 21st century a vibrant economy offering attractive employment, a sound environment and an enviable quality of life.

Despite the presence of Los Angeles International Airport, approximately 120 miles to the north, the San Diego region will not achieve its full economic potential if it continues to rely upon Lindbergh Field for its air service needs. Lindbergh's limitations already appear to have caused the loss of the limited European service your community once enjoyed. The developments we can expect in air travel will render your existing downtown facility ever more obsolete, regardless of the convenience of its location or the excellence of its management.

Strong parallels exist between Washington and San Diego. Washington's National Airport, like Lindbergh Field, is downtown, largely surrounded by urban development, has short runways and restricted approaches which are unpopular with pilots and many passengers. While both National and Lindbergh Field offer great convenience for many short-haul travelers, neither can provide the full range of quality air service required by the communities they serve.

Unlike San Diego, Washington had a largely unused existing civilian facility with full service potential at Washington Dulles.<sup>1</sup>

The Washington Airports Task Force was formed in 1982 by the business community to attract needed air services to Washington Dulles, and we are pleased to have the opportunity to support a kindred organization in San Diego. The Washington Airports Task Force is a coalition of approximately 1,000 business, travel industry, civic, and government leaders in the "gateway" region served by Washington Dulles. We are dedicated to the provision of the quality air service and supporting infrastructure which we believe is needed to sustain our region's long-term economic health.

This report is based on our experience gained as Washington Dulles was moved from obscurity to the front rank of growing international gateways, and to prominence as a domestic facility. This experience also included the transfer of the Metropolitan Washington Airports Authority, legislation which allegedly consumed more Congressional time than the restructuring of the nation's tax laws during that same year. Results achieved by the coalition working in harmony with the Airports Authority are given in Appendix 2.

<sup>&</sup>lt;sup>1</sup>The distance between downtown Washington, D.C. and Washington Dulles is more than twice the distance between downtown San Diego and Miramar, NAS.

#### The laws of physics work against Lindbergh Field.

While it is technically feasible to design an airplane to fly great distances from Lindbergh Field's limited runways, such an aircraft would not be economically attractive to the air carriers and would not sell. Aircraft are optimized in their design for safe, economic operation over the majority of routes. Short hauls - stage lengths of up to 1,000 miles - call for competitive frequencies in dense markets as well as the ability to operate into smaller, sometimes restricted, air fields. Aircraft primarily designed for short and medium hauls can operate without economic penalty from Lindbergh Field. At the other extreme, large widebodied aircraft optimized for long-haul and international routes between major markets cannot operate at gross weight from Lindbergh Field's limited runways and therefore cannot reach their full economic potential. Other considerations apart, the small dimensions of Lindbergh Field would so limit the economic potential of a long-haul airplane, that it would be impractical for a carrier to operate such aircraft in a competitive air service environment. As a result, the majority of San Diego's long distance travelers and those flying beyond North America must drive to Los Angeles or fly via a connection at another international gateway. Lindbergh's limitations thus deny San Diego the benefit of even single plane service to destinations on other continents.

#### High tech industries pay high wages and are dependent upon air travel.

High tech and service oriented industries which represent a key part of our nation's competitive strength in world markets have a 50 percent higher demand for air travel than traditional industries. The output of these high tech industries typically has a high value to weight ratio, and to keep inventory costs down, these companies also make extensive use of air cargo.

Much of modern commerce is volatile as successful companies must respond rapidly to change. This is particularly true of new entrepreneurial companies often built around new products with high growth potential. Many of these companies tend to lease rather than buy their facilities and as a result they can and do move. Around 70 percent of a region's business growth traditionally comes from existing employers, a figure which assumes the maintenance by the community of a favorable business environment. A key parameter today for companies looking to expand is the availability of air transportation services, and even for small companies that means access to international as well as domestic markets.

Also, as the airline's assets are mobile and many employees use leased space, only the region has fixed assets.

## Will telecommunications change travel habits?

The marriage of new computer science and telecommunications capabilities likely will have a profound effect on our work, social interaction, and travel habits. For more than thirty years

it has been argued that telecommunications advances will reduce the need for travel. To date, the reverse has been true. The growth of travel and communications have followed a similar upward path. The new telecommunications capabilities will increase our ability to do business over great distances. While the electronic capability may remove the need for some forms of routine business travel, in the author's opinion, the available evidence strongly suggests that by facilitating business growth improved telecommunications will increase the need for business, and as a secondary result, pleasure travel. The new telecommunication capabilities will not reduce a major city's need for a full service airport.

#### Historic Pattern

The outer limits of a company's marketing outreach and delivery is defined by the timeliness and responsiveness of the transportation services available at its location.<sup>2</sup> If a product can be delivered only by road, the market for that product extends only as far as it can be moved to meet schedules. It stands to reason that products moved by air are available to a much wider market area.

Businesses other than manufacturers have similar limitations on their markets. The ability of a company to act or react in a timely manner is a function of its ability to move its people swiftly to the point of need.

Research into the influence of speed on transportation through the ages shows that as soon as two population centers are brought within the span of a twelve hour journey, there has been an upsurge in travel and trade between them and a stimulus to economic and population growth at either end.<sup>3</sup>

As the jet airplane was progressively introduced into service after 1958, the pattern of reduced journey time followed by growth has been repeated in many parts of the world. A notable example is the North Atlantic. In 1958 when jet service commenced, two million people journeyed across the North Atlantic, one million by sea, and one million by air. This year, approximately 30 million travellers will cross the North Atlantic, and only a few thousand will go sea for the novelty.

#### Global Market

Over the last thirty years the jet airplane has compressed the time and cost barriers to long distance travel, bringing us face to face with the realities of one small world and making

<sup>&</sup>lt;sup>2</sup>Gordan and Schefer, Economic Development Commentary, Fall 1990.

<sup>&</sup>lt;sup>3</sup>Presidential address to the Royal Aeronautical Society by Sir George Edwards - London, 1958.

possible a truly global business environment. Today's products are produced on a multinational basis, major employers are multi-national in scope and many smaller manufacturers rely on sales in world as well as domestic markets.

The speed and efficiency of the jet airplane has catalyzed a massive international tourism industry. In many areas of the United States, the domestic tourism market is maturing and most growth is projected to come from overseas. Also, the foreign visitor typically spends more and stays longer.

Today, San Diego is one of the top ten tourism destinations for foreign visitors in the United States. However, the city is unlikely to be reaping the full potential of its tourist attractions as it does not have direct access to international markets. For many international visitors, San Diego is a stop on an itinerary which began and will end at another city with a gateway airport. Most of the visitor's spending will accrue to his primary destination, not San Diego.

#### Transportation is an economic throttle.

A community which has the market base to attract direct international air service will relegate itself to secondary status if it does not have a full service airport. The argument over which comes first, a strong business base or air service, is irrelevant, particularly for San Diego. A community won't for long retain a strong business base, nor be able to attract new business in the modern world, without a full service airport. It is quite simple; you cannot trade if you cannot get there, and communities which have not put themselves on the world's international air service map by the end of this century will not for long be on the world's economic map in the next.

Practical examples to support these comments follow. Supporting documents form Appendix 1.

# Supporting Examples

 One year after the first nonstop services had been inaugurated between Washington Dulles and the markets served through Frankfort and Tokyo, German visitors to Washington, D.C. and the Commonwealth of Virginia had grown by 180 percent, and Japanese visitors had increased by 260 percent.<sup>4</sup>

<sup>&</sup>lt;sup>4</sup>Virginia Department of Tourism.

- New international services attracted to Washington Dulles in 1992 and 1993 created an estimated 700,000 and 196,000 new room nights per year for the region's hotel industry.<sup>5</sup>
- Progressive annual studies conducted by KPMG Peat Marwick of foreign-owned companies in the National Capital Area concluded that the availability of air service, together with access to markets, were the two primary reasons for foreign investment in the region.
- From 1978 through the mid-80s, Atlanta made significant gains in international air service. A study conducted by the Atlanta Chamber of Commerce demonstrated the linkage between new service and the creation of new international investment from the country served. As in the KPMG study of the National Capital Area, foreign multinationals chose to locate at a U.S. city connected to their headquarters by a nonstop flight.

Foreign companies stand out. The corollary is that American companies with international business also choose to locate in communities offering convenient air service to their major markets as well as an attractive business environment. Further, companies tend to locate headquarters and divisions with extensive travel needs close to airports. Thus, the availability of good air service tends to attract the higher paying jobs, a further benefit to a region's economy, culture, and quality of life.

- Three years after the first nonstop service was inaugurated between Dallas-Ft. Worth and Tokyo airports:
  - Pacific Rim investment in the North Texas region had increased nearly threefold, from 59 to 161 companies.
  - Passenger travel had grown 377 percent.
  - Trade sustained by the service was valued at \$1.1 billion per year.
- According to the State of Maryland, the introduction of a KLM combined passenger cargo 747 service to Amsterdam four days per week in 1991 had added \$100 million to the region's economy one year later.

<sup>&</sup>lt;sup>5</sup>Washington Airports Task Force Analysis

#### International Gains by Ten Cities

The linkage between the availability of international air service and a strong economy also is recognized by at least 30 major communities in the United States whose airports in 1989 formed a coalition to seek federal policies which would give equal weight to the economic need of cities in the execution of international aviation agreements. The coalition is known as the United States Airports for Better International Air Service (USA-BIAS). To support their claims, the coalition published a study in 1990 covering the positive economic impact experienced by ten of their members through the introduction of new international services. The study was conducted by Kurth & Company of Washington, D.C. and it concluded that the introduction of a nonstop daily service to a new international market generated new economic activity worth between \$265 million and \$720 million per year for the region surrounding the airport. The variation came with aircraft size and the wealth of the market served. The extremes were a B767 service to London and a B747 service to Tokyo. Visitors and airline expenditures accounted for \$125 million to \$500 million of the first year gain, induced exports, and foreign investment for the other \$140 million to \$220 million.

In response to USA-BIAS, the federal government introduced the Cities Program to help communities gain service from foreign carriers when U.S. carriers were unwilling to respond. By October 1992, nine USA-BIAS members had gained a total of 17 new services under the Cities Program. A further Kurth & Company analysis concluded that these new services had added \$3.9 billion a year in new economic activity and 83,000 jobs to the U.S. economy.

#### Canada

The value of air service to a community also can be demonstrated in a negative sense. The current air service agreement between the United States and Canada dates from the late 1960s and is obsolete. Air service is excluded from the trade agreement between the United States and Canada, as well as from NAFTA. This outdated agreement reflects the travel patterns of the late 1960s when many services still were operated by propeller aircraft and when the air transport industries in both countries were regulated by government. As a result of the obsolescence:

- Only 30 percent of the 264 major trans-border city-pair markets are allowed nonstop or one-stop service today and only 8 percent are allowed competitive service.
- Canadian trans-border passenger service grew only 15 percent during the 1980s compared to an average of 78.3 percent between the United States and the rest of the world. The lost service and trade opportunities caused by this bilateral restriction today is costing both countries an estimated \$10.3 billion a year in lost economic activity and 211,000 jobs, including 6,000 jobs in the air transport industry, a source of singular frustration to many communities throughout the United States and Canada.

A further study by Bombardier of Canada showed that Canadian industry is cut off from direct access to more than 100 million American consumers by this outdated air service agreement and Fokker Aircraft concluded that an open skies agreement between the United States and Canada would lead to a progressive requirement for 48 additional 100-passenger jet aircraft, plus a further unspecified number of wide-body units.

#### International Air Service and Jobs

The National Governors Association in 1990 and the National Commission to Ensure a Strong and Competitive Airline Industry in 1992 stressed the importance of air service to the maintenance of employment and a strong economy. A direct measure of this linkage can be found in the National Capital Area.

Studies and surveys conducted for the Washington Airports Task Force demonstrate that:

- For every job in the Washington region, ten airline tickets are sold each year.
- Eighty percent of adult voters in the region visit Washington's Dulles or National Airports at least once each year.
- Fifty percent of the region's households make three or more trips by air each year.

#### Air transportation means cargo as well as passengers.

A 1990 study conducted for the Commonwealth of Virginia by SH&E showed that 21.9 percent by value of the mid-Atlantic region's exports were going by air. As the cost of shipping by air steadily reduces, and the value per pound of our exported product increases, the percentage of goods moving by air will expand substantially.

The beneficiaries however will be the communities with efficient multi-modal ground access for their airports and an abundance of wide-body passenger or freighter service. Cargo activity typically accounts for 35-45 percent of the economic activity on a mature full service airport.

#### Conclusion

Development of a full service commercial airport capable of sustaining a full range of today's domestic and international air services is an essential ingredient if the San Diego region is to sustain a sound economy and good quality of life into the next century. Without a modern

<sup>&</sup>quot;Most air cargo today moves in the belly of a wide-body passenger aircraft, or in "combi" aircraft which carry cargo and passengers on the main deck.

airport facility offering potential for growth, parallel and multiple 11,000 feet (or longer) runways, unrestricted approaches, good ground access, and environmental compatibility, none of which are offered by Lindbergh Field, the San Diego region will have no ability to attract direct international air service for passengers and cargo, nor will the region be able to sustain a full level of domestic service.

Continued reliance on Lindbergh Field will lead to the progressive slow decline of the region's economy as the community is relegated to secondary and short-haul status in the nation's air transportation system. The mission of the San Diego International Airport Foundation is timely and vital.

# STUDIES PREPARED FOR

UNITED STATES AIRPORTS FOR BETTER INTERNATIONAL AIR SERVICE

#### APPENDIX 1

#### Table of Contents

1. U.S. - Canada Air Transportation: A Macro-Analytic Review of Traffic Services and Economic Underperformance

Leeper, Cambridge & Campbell, Inc.

1992 Update

 Economic Impact of International Air Services Instituted at USA-BIAS Cities Since June 30, 1989

Kurth & Company, Inc.

October 14, 1992

3. Better International Air Service: Economic Base and Economic Benefits

Kurth & Company, Inc.

June 1990

# U.S. - CANADA AIR TRANSPORTATION: A Macro-Analytic Review of Traffic Services And Economic Underperformance

1992 Update

Sponsored by:

United States Airports for Better International Air Service

**USA-BIAS** 

Dr. Brian M. Campbell, President Thomas E. Stalnaker, Sr. Analyst Leeper, Cambridge & Campbell, Inc.

700 N. Fairfax Street, Suite 502 Alexandria, VA 22314 Tel. (703) 836-0522 Fax (703) 683-0345

#### SUMMARY AND CONCLUSIONS

#### Purpose

USA-BIAS invited the aviation consulting firm of Leeper, Cambridge & Campbell, Inc. to examine the trends in U.S.-Canada air traffic, and to interpret those trends in relation to air service constraints and measures of economic performance. The ultimate finding is that the absence of a liberal aviation bilateral agreement between the U.S. and Canada is costing North American communities more than \$10 billion annually, or \$28 million per day, in lost economic benefits and 211,000 jobs.

#### **Empirical Observations**

The analysis in this study clearly supports three fundamental observations:

- 1. The growth in U.S.-Canada air travel has stagnated. Total growth from 1980 to 1991 was only 15% while the eleven-year growth in total trade between the U.S. and Canada was 51%. (Charts 1 and 2; and Exhibits 1 and 6).
- 2. U.S. International air travel to and from other major countries increased very significantly during the decade of the 1980's (Chart 3 and Exhibit 2). From 1980 to 1990, for example, U.S. international passenger travel increased as follows:

U.S World, Excluding Canada	78.3%
(a) Liberal Operating Regimes	
U.S France	156.9%
U.S West Germany	104.2
U.S Netherlands	93.1

A "liberal" aviation bilateral agreement is one which contains the major elements of a procompetitive agreement, as postulated in DOT order 90-1-62, such as open entry and a liberal pricing environment.

<sup>&</sup>lt;sup>2</sup> This is equivalent to 1.2% per year.

<sup>3</sup> Measured in constant U.S. dollars.

#### (b) Other Significant Markets

U.S Japan	179.0%
U.S United Kingdom	73.2
U.S Mexico	46.4
(c) <u>U.S Canada</u>	26.2%

- 3. U.S. Canada scheduled capacity has increased very little since 1980, and U.S. hubs are not well connected to the major Canadian cities.
  - Only 30% of the 264 U.S. hub major Canadian city-pair markets have non-stop or one-stop service (Chart 6). Only 8% of these 264 transborder markets have competitive single-plane service.
  - In the top 25 O&D transborder markets, non-stop seat capacity has increased by only 31% during the last 12 years (Chart 4).
  - While the U.S. flag share of non-stop seats increased from 59% to 64% between 1980 and 1992, much of the increase has been with small aircraft.

#### Analysis

- 1. Customarily, long term air travel growth is significantly higher than trade in general (or total economic growth); however, the opposite has occurred in the U.S.-Canada transborder market. Under a liberal aviation bilateral agreement, air travel growth in the U.S.-Canada transborder market would have conservatively grown at twice the rate for overall trade between the two countries (as it did between the U.S. and the EC-12).
- 2. If U.S.- Canada air travel had increased at twice the rate of growth in total trade between the two countries since 1980, scheduled air passengers would have been 15.5 million (Chart 7) instead of 8.3 million.
- A liberal aviation bilateral agreement would therefore have produced \$10.3 billion more in economic benefits to airport communities in 1991. (Chart 8).
- 4. A liberal aviation bilateral agreement would have generated approximately 211,000 more jobs for communities on both sides of the border in 1991, and 6,000 of those jobs would be in the airline industry (Chart 9).

# Inc. Aviation Marketing & Management Consultants

ECONOMIC IMPACT OF INTERNATIONAL AIR SERVICES INSTITUTED AT USA-BIAS CITIES SINCE JUNE 30, 1989

Prepared for

U.S. Cities for Better International Air Service (USA-BIAS)

October 14, 1992

Kurth & Company, Inc.
4400 MacArthur Boulevard, N. W., Suite 303
Washington, D. C. 20007
(202) 342-1691

# TOTAL PASSENGER AND CARGO ECONOMIC IMPACT

Entity	Passenger	Cargo	TOTAL
Transatlantic	2,123,354,743	\$129,245,147	2,252,599,890
Transpacific	878,042,950	\$43,641,218	921,684,168
South America	173,775,100	\$6,714,034	180,489,134
Canada	308,328,219		308,328,219
Mexico	295,836,710		295,836,710
Total	\$3,779,337,722	\$179,600,399	\$3,958,938,121

Total Estimated Job Impact 1/

85,418

<sup>1/</sup> Based on the study "The Economic Impact of an Open Skies Agreement between the United States and the European Community", by Brian Campbell, with assistance from KCInc. Exhibit 7, page 1.
Jobs generated is estimated by dividing total impact by \$46,348, the U.S. GNP per job in 1989.

# SUMMARY OF ECONOMIC IMPACT OF INTERNATIONAL AIR SERVICES INSTITUTED AT USA-BIAS CITIES SINCE JUNE 30,1989 (except cargo)

Entity	Annual Scats	Estimated Passengers 65% Load Factor		Average Expenditure Per Foreign Visitor	Airline Expenditures	Primary Economic Impact (Col d + e)	Induced Downstream Econ. Impact with 2.5 Multiplier	Total Primary & Induced Impact From Visitors and Airline Expenditures	Export Expansion (Arriving Passengers • \$1,693)	Foreign Per Fgn. Visitor	Time Saved From Nonstop Service	Total Economic Impact in U.S.
	(a)	(b)	(c)	(d)	(e)	(1)	(g)	(h)	(i)	(j)	(k)	(1)
Transatlantic	612,222	389,011	188,946	\$239,338,833	\$54,986,755	\$294,325,588	\$735,813,970	\$1,030,139,559	\$658,595,115	\$424,616,849	\$10,003,220	\$2,123,354,743
Transpacific	190,736	123,978	88,025	138,902,920	31,483,968	170,386,888	425,967,219	596,354,107	209,895,431	69,995,725	1,797,687	878,042,950
South America	44,928	29,203	19,082	17,967,269	8,304,696	26,271,965	65,679,912	91,951,877	49,441,018	31,876,169	506,037	173,775,100
Canada	135,356	87,981	47,070	27,065,278	4,459,098	31,524,376	78,810,940	110,335,317	148,952,510	48,017,609	1,022,784	308,328,219
Mexico	138,320	89,908	26,523	\$15,250,645	\$11,311,855	\$26,562,500	\$66,406,249	\$92,968,748	\$152,214,244	\$49,069,089	\$1,584,629	\$295,836,710
Total	1,121,562	720,082	369,646	<b>\$</b> 438,524,944	\$110,546,372	\$549,071,316	\$1,372,678,291	\$1,921,749,608	\$1,219,098,318	\$623,575,441	\$14,914,355	\$3,779,337,722

(except cargo)

#### TRANSATLANTIC

					\$1,150			Induced	Total Primary &	Export		Time	
			Estimated		Average		Primary	Downstream	Induced Impact	Expansion	Foreign	Saved	Total
			Passengers		Expenditure		Economic	Econ. Impact	From Visitors	(Arriving	Investment	From	Economic
		Annual	65% Lond	Foreign	Per Foreign	Airline	Impact	with 2.5	and Airline	Passengers	Approx. \$1,092	Nonstop	Impact
To	From	Seats	Factor	Visitors	Visitor	Expenditures	(Col d + e)	Multiplier	Expenditures	* \$1,693)	Per Fgn. Visitor	Service	in U.S.
		(a)	(b)	(c)	(d)	(c)	(1)	(g)	(h)	(i)	(j)	(k)	(1)
BWI	AMS	54,275	35,279	18,874	\$21,705,251	\$5,523,350	\$27,228,601	\$68,071,502	\$95,300,103	\$59,726,924	\$38,507,814	\$820,231	\$194,355,072
BWI	TLV 1/	14,872	5,200	2,782	3,199,300	2,131,074	5,330,374	13,325,935	18,656,309	8,803,600	5,675,956	120,900	33,256,765
CLT	FRA	39,156	25,451	13,616	15,658,974	5,523,350	21,182,324	52,955,810	74,138,133	43,089,220	27,780,967	591,745	145,600,065
DFW	MAD	89,180	57,967	23,766	35,664,197	5,523,350	41,187,547	102,968,867	144,156,414	98,138,131	63,272,720	1,710,027	307,277,291
DFW	TLV I/	14,872	5,200	2,782	3,199,300	3,145,531	6,344,831	15,862,078	22,206,909	8,803,600	5,675,956	120,900	36,807,365
DTW	AMS	94,640	61,516	32,911	37,847,719	5,523,350	43,371,069	108,427,673	151,798,742	104,146,588	67,146,559	1,430,247	324,522,136
MSP	AMS	53,625	34,856	18,648	21,445,308	5,523,350	26,968,658	67,421,645	94,390,302	59,011,631	38,046,643	810,408	192,258,984
MCO	LGW	74,880	48,672	26,040	29,945,448	5,523,350	35,468,798	88,671,995	124,140,793	82,401,696	53,126,948	1,131,624	260,801,061
мсо	ORY	41,314	26,854	11,064	16,521,985	5,523,350	22,045,335	55,113,338	77,158,673	45,463,991	29,312,056	789,511	152,724,230
IAD	BRU	67,704	44,008	20,420	27,075,676	5,523,350	32,599,026	81,497,565	114,096,591	74,504,867	48,035,616	1,179,404	237,816,477
IAD	MAD	67,704	44,008	18,043	\$27,075,676	\$5,523,350	\$32,599,026	\$81,497,565	\$114,096,591	\$74,504,867	\$48,035,616	\$1,298,224	\$237,935,297
Trans	atlantic												
Total		612,222	389,011	188,946	\$239,338,833	\$54,986,755	\$294,325,588	\$735,813,970	\$1,030,139,559	\$658,595,115	\$424,616,849	\$10,003,220	\$2,123,354,743

<sup>1/</sup> Since these services make a stop at JFK, passengers were estimated to be 50 per flight per direction for both LY flights. Airline expeditures were reduced by basing fuel and food expenses on the mileage to JFK only.

6

(except cargo)

#### SOUTH AMERICAN

То	From	Annual Scats	Estimated Passengers 65% Load Factor (b)	Foreign Visitors	Visitor	Airline Expenditures	Primary Economic Impact (Col d + e)	Induced Downstream Econ. Impact with 2.5 Multiplier	Total Primary & Induced Impact From Visitors and Airline Expenditures	Export Expansion (Arriving Passengers + \$1,693)	Foreign Investment Approx. \$1,092 Per Fgn. Visitor	Time Saved From Nonstop Service	Total Economic Impact in U.S.
IAD	SCL 1/ BSB	8,268 36,660	5,374 23,829	(c) 3,117 15,965	(d) \$3,306,477 \$14,660,792	(e) \$2,781,346 \$5,523,350	(f) \$6,087,823 \$20,184,142	(g) \$15,219,556 \$50,460,356		(i) \$9,098,521 \$40,342,497	(j) \$5,866,101	(k) \$112,858 \$393,179	(1) \$36,384,858 \$137,390,242
Total		44,928	29,203	19,082	\$17,967,269	\$8,304,696	\$26,271,965	\$65,679,912	\$91,951,877	<b>\$</b> 49,441,018	\$31,876,169	\$506,037	\$173,775,100

<sup>1/</sup> Since this service makes a stop at MIA, passengers were estimated to be 35 per flight per direction for UC. Airline expeditures were reduced by basing fuel and food expenses on the mileage to MIA only.

(except cargo)

#### TRANSPACIFIC

То	From	Annual Scats	Estimated Passengers 65% Lond Factor		\$1,578 Average Expenditure Per Foreign Visitor	Airline Expenditures	Primary Economic Impact (Col d + e)	Induced Downstream Econ. Impact with 2.5 Multiplier	Total Primary & Induced Impact From Visitors and Airline Expenditures	Export Expansion (Arriving Passengers • \$1,693)	Foreign Investment Approx. \$565 Per Fgn. Visitor	Time Saved From Nonstop Service	Total Economic Impact in U.S.
PDX SJC	NGO NRT	(a) 114,296 76,440		(c) 52,748 35,277	(d) \$83,235,719 \$55,667,201	(c) \$15,741,984 \$15,741,984	(f) \$98,977,703 \$71,409,185	(g) \$247,444,258 \$178,522,962		(i) \$125,777,033 \$84,118,398	(j) \$41,944,003 \$28,051,722	(k) \$1,077,240	(l) \$515,220,237
Trans	spacific	190,736		88,025	\$138,902,920	\$31,483,968	\$170,386,888	\$425,967,219		\$209,895,431	\$69,995,725	\$720,447 \$1,797,687	\$362,822,713 \$878,042,950

#### TRANSBORDER - CANADIAN

To From	Annual Scats	Estimated Passengers 65% Load Factor	Foreign Visitors	Visitor	Airline Expenditures	Primary Economic Impact (Col d + c)	Induced Downstream Econ. Impact with 2.5 Multiplier	Total Primary & Induced Impact From Visitors and Airline Expenditures	Export Expansion (Arriving Passengers * \$1,693)	Foreign Investment Approx. \$546 Per Fgn. Visitor	Time Saved From Nonstop Service	Total Economic Impact in U.S.
	(a)	(b)	(c)	(d)	(c)	(1)	(g)	(h)	(i)	(j)	(k)	(1)
PDX YVR I/ BWI YYZ	82,992 52,364	53,945 34,037	28,860 18,210	\$16,594,769 \$10,470,509	\$2,191,348 \$2,267,750	\$18,786,117 \$12,738,259	\$46,965,293 \$31,845,648		\$91,328,546 \$57,623,964	\$29,441,453 \$18,576,155	\$627,108 \$395,675	\$187,148,518 \$121,179,701
Canadian Total	135,356	87,981	47,070	\$27,065,278	\$4,459,098	\$31,524,376	\$78,810,940	\$110,335,317	\$148,952,510	\$48,017,609	\$1,022,784	\$308,328,219

<sup>1/</sup> Since the mileage is considerably lower compared to transatlantic, food and fuel were reduced to 6.0% of transatlantic. Time saved estimated @1 hour = \$25.

0

(except cargo)

#### CHARTERS - TRANSBORDER - MEXICO

To	From	Annual Scats	Estimated Passengers 65% Lond Factor		\$575 Average Expenditure Per Foreign Visitor	Airline Expenditures	Primary Economic Impact (Col d + c)	Downstream Econ. Impact with 2.5 Multiplier	Total Primary & Induced Impact From Visitors and Airline Expenditures	Export Expansion (Arriving Passengers • \$1,693)	Foreign Investment Approx. \$546 Per Fgn. Visitor	Time Saved From Nonstop Service	Total Economic Impact in U.S.
		(a)	(b)	(c)	(d)	(c)	(f)	(g)	(h)	(i)	(j)	(k)	(1)
PDX	SJD	45,864	29,812	8,794	\$5,056,793	\$3,435,013	\$8,491,806	\$21,229,514	\$29,721,320	\$50,471,039	\$16,270,277	\$525,429	\$96,988,065
PDX	CUN	44,408	28,865	8,515	\$4,896,260	\$4,217,715	\$9,113,975	\$22,784,936	\$31,898,911	\$48,868,784	\$15,753,760	\$508,749	\$97,030,204
PDX	PVR	48,048	31,231	9,213	\$5,297,592	\$3,659,127	\$8,956,719	\$22,391,798	\$31,348,518	\$52,874,422	\$17,045,052	\$550,450	\$101,818,441
Mexi	can Charte	rs											
Total		138,320	89,908	26,523	\$15,250,645	\$11,311,855	\$26,562,500	\$66,406,249	\$92,968,748	\$152,214,244	\$49,069,089	\$1,584,629	\$295,836,710

<sup>1/</sup> Food and fuel were reduced proportionately to mileage as compared with transatlantic, i.e. to between 41% - 63% of transatlantic.

(except cargo)

Notes to Table 2.

Most calculations were estimated from the "Better International Air Service Economic Base and Economic Benefits" study which was prepared for U.S. Airports for Better International Service (USA-BI which is referenced throughout this analysis as the USA-BIAS study.

#### Columns:

- (a) Table 4.
- (b) 65% load factor except footnoted markets.
- (c) Percent of col.(b) that are foreign visitors:

  Transatlantic 53.5% from USA-BIAS study, Transpacific 71% from U.S. Carrier I-92 data for CY 90, Canadian 53.5% (same as transatl), and Mexican 29.5% per foreign flag carrier I-92 data
- (d) Estimates from USA-BIAS Study: Transatlantic \$1,150, Transpacific \$1,578, Canadian and Mexican estimated at 50% of transatlantic or \$575.
- (e) Estimates from USA-BIAS Study except footnoted markets: Transatlantic \$5,523,350 and Transpacific \$15,741,984, and South American (same as transatlantic).

  Canadian, Mexican and footnoted markets were reduced for fuel and food costs proportionate to mileage differences in transatlantic service.
- (f) Col. (d) plus (c).
- (g) Source: USA-BIAS study, Table I-A & II-A.
- (h) Col. (f) plus col (g).
- (i) Source: USA-BIAS study, Table I-A & II-A.
- (j) Based on the USA-BIAS study, we have estimated the average amount of foreign investment per foreign visitor for transatlantic at \$1,091.53, for transpacific at \$564.58, and estimated at 50% of transatlantic for Canada and Mexico and 100% of transatlantic for South America.
- (k) Time savings calculated for all markets except Canada and Mexico as follows: U.S. citizens (Col. b-c) \* 2 hours \* \$25. Canada and Mexico calculated the same but for 1 hour only.
- (1) The sum of columns h, i, j, and k.

9

BETTER INTERNATIONAL AIR SERVICE: ECONOMIC BASE AND ECONOMIC BENEFITS

#### Prepared For

U.S. Airports for Better International Air Service (USA-BIAS)

June 1990

Kurth & Company, Inc.
4400 MacArthur Boulevard, N.W., Suite 303
Washington, D.C. 20007
(202) 342-1691

#### I. EXECUTIVE SUMMARY

This analysis, prepared for 10 members of U.S. Airports for Better International Air Service (USA-BIAS), demonstrates the economic and other benefits of new nonstop international air service. It also shows that at present most of the participant airports' international service is not at all commensurate with either their service areas' population and buying power or their own role in U.S. domestic aviation.

#### A. The Benefits of International Air Service

A new daily nonstop service across either the Atlantic or the Pacific can be expected to result in measurable economic benefits to the United States, concentrated primarily in the U.S. gateway's local service area, of between \$260 and \$720 million in the first year.

These benefits are compounded by normal growth. For example, if growth is a steady 5% per year, the annual benefits will double in less than 15 years.

Visitor and airline expenditures alone, counting both direct and induced effects, will have a positive economic impact of between \$125 and \$500 million in the first year, depending primarily on the size of aircraft used on the route and the proportion of travelers who are foreign visitors.

Induced exports and foreign investment, plus direct time savings for American travelers, account for another \$140-220 million. In this case economic ripple effects have not been counted.

These estimates have been derived from an analysis of two hypothetical routes: first service to London (with a Boeing 767) and first service to Tokyo (with a Boeing 747). They do not apply directly to additional services in already served markets, even London and Tokyo markets.

<sup>1.</sup> The 10 are Baltimore/Washington, Dallas/Ft. Worth, Denver, Charlotte, Kansas City, Phoenix, Portland, Seattle, Tampa, and Washington-Dulles. In addition to these 10, Las Vegas' McCarran International Airport is also now a direct participant although their statistics are not reflected in this report.

On the other hand, the London results should not vary significantly from those of similar new service to other West European points, nor the Japanese results, after adjustment to reflect the smaller proportion of foreign visitors in other trans-Pacific markets, from those of similar new service to other points in Asia and the Pacific.

Analysis of comparable new service by U.S. carriers would show similar benefits. Operating revenues would of course flow to U.S. rather than foreign airlines, although in terms of national benefits that might be offset by foreign passengers' predilection to fly carriers of their own nationality. From a U.S. community and national economic point of view, the important issue is the attraction of additional service, regardless of carrier nationality.

#### B. Effect on Existing U.S. Carrier Services

First nonstop foreign airline services in markets that previously had to rely solely on connecting services (however described in computer reservations systems) are unlikely to have any significant impact on existing U.S. carrier international services. Numerous examples<sup>2</sup> show that, even in the short run, and even in markets with a U.S. incumbent nonstop, a first foreign flag nonstop ordinarily has only a minimal impact on U.S. carriers. The benefits of this new service are thus not gained at the expense of U.S. carrier traffic and revenue.

#### C. The Artificial Paucity of International Service

To estimate the degree to which international service at the participating airports has been restricted by government regulation, we compared their share of U.S. international enplanements with their share of U.S. domestic enplanements and their local communities' economic status relative to the rest of the country. The comparison suggests that their international service is only half what it might have been in a deregulated environment. Although the 10 airports for which data has been collected and their surrounding metropolitan areas collectively represent over 10% of U.S. Effective Buying Income and over 20% of U.S. domestic enplanements, they account for only 9.0% of

<sup>2.</sup> See page 16 below.

<sup>3.</sup> Because Las Vegas joined the group after the project was well under way, its data is not included here.

emplanements on flights going nonstop from the U.S. to a foreign destination.  $^{4}$ 

That 9.0% of nonstop international enplanements includes feed traffic. Since the 10 USA-BIAS airports' combined share of total U.S. international <u>originating</u> passengers (i.e., without feed traffic) is 9.4%, it is no surprise that while 69.3% of the airports' domestic originating passengers can fly to their final destination on single-plane direct service, only 47.9% at most of their international originating passengers fly direct to <u>any</u> international destination, let alone the final one. The other 52.1% or more connect to international flights at other U.S. gateways, with all the inconvenience and lost time which that involves. Still other potential international travelers undoubtedly simply do not travel at all in the face of these inconveniences.

It should be noted that the international air service which <u>does</u> exist at the participating USA-BIAS airports is heavily weighted in favor of U.S. carriers. While foreign flag enplanements in the U.S. as a whole represented 49.1% of total nonstop international enplanements in 1988, foreign flag enplanements accounted for only 36.6% of total nonstop international enplanements at the 10 airports examined, i.e., one-third instead of one-half.

#### D. Conclusion

This study's sponsoring communities (and probably many others, both USA-BIAS members and not) need and could support much more international air service than they now enjoy. Many important markets have no nonstop (or even same-plane) service at all. If regulators allow airlines, including foreign airlines, to initiate service in such markets, each daily trans-oceanic service will add roughly half a billion dollars a year to the U.S. economy, at little or no cost to incumbents serving other citypairs.

<sup>4.</sup> Most of the participating USA-BIAS airports are large, efficient hubs, serving a much wider region than their immediate metropolitan areas, so it stands to reason that their share of U.S. domestic enplanements should be significantly larger than their share of U.S. population and buying power. Their share of U.S. international enplanements should also be significantly larger, roughly equivalent to their share of domestic enplanements. With reasonable service levels, it would be.



Washington Airports Task Force

The Task Force's eleven-year track record has yielded hundreds of millions of dollars in economic return for the Commonwealth and its business community, including investment and tourism income, trade opportunities, and jobs.

These results have been achieved through a working partnership between the Commonwealth's Department of Aviation, the Task Force regional coalition and the Metropolitan Washington Airports Authority. This partnership is unique in that it puts the purchasing power of the airlines' customers in the private sector and the strength of the region's public sector into the air service development program alongside the Airport's Authority. Communities compete for international air service just as they compete for other forms of economic development, however most regions do not work in harmony with their airport operator and consequently do not gain the results being achieved at Washington Dulles. This partnership has been the region's "secret weapon" in the competition for increased and improved air service.

#### GOALS

In 1993 with the previous goal of doubling international use of Washington Dulles between 1988 and 1993 achieved, the Task Force membership took as their prime mission the goal to make Washington Dulles and the region "nonstop to the world". The Task Force believes that Washington Dulles can become one of the major U.S. International gateways, offering nonstop service for passengers and cargo to all major world markets within the range of capabilities of existing aircraft and one-stop single plane service to all others.

But this is not all the organization is doing. In today's changed air service climate the region will need a user friendly environment for air carriers, travelers and shippers as well as excellent supporting ground infrastructure if, as a region, we are to reap the full economic benefit offered by our airports. Among the Task Force's other priorities are the following:

- Accelerate the economic return from new air services, generate the air service needed to position the region strategically with respect to emerging world markets, and support the business and tourism initiatives of the region.
- 2. Support the Metropolitan Washington Airports Authority Capital Development Program at Washington Dulles.
- 3. Work for reliable access to Washington Dulles from all parts of the region.
- Support expansion of the National Air and Space Museum at Washington Dulles.

#### RESULTS

Since the Washington Airports Task Force was formed 11 years ago by the Commonwealth, the private sector and Congressman Frank Wolf to work with the Metropolitan Washington Airports Authority to attract expanded air service to Washington Dulles:

- Domestic flights at Washington Dulles have increased from 47 to almost 300 per day;
   destinations served nonstop increased from 24 to nearly 68.
- International services increased from 10 to 180 plus per week, and international destinations served nonstop increased from one to 19.
- Since 1988 (when the Commonwealth and the Task Force set a goal of doubling international air service by the end of 1992), international markets served have jumped from six to 19, and international passenger use of Washington Dulles has doubled from one to two million travelers a year.
- International service increases in 1992 and 1993 created an estimated 900,000 new room nights for the region's hotel industry.
- Travelers able to use Washington Dulles increased from two million to 11.5 million annually.
- Air cargo increased from 29,000 tons to 169,000 tons (representing an annual cargo growth rate averaging 17 percent - two and a half times the national average). As new flights have been attracted to Washington Dulles, we have seen a reduction in the volume of cargo diverted to other airports.

# WASHINGTON DULLES GROWTH OF INTERNATIONAL AND DOMESTIC SERVICE

May 1988	Domestic Nonstop Markets	International Nonstop Markets
May 1982	24	1
May 1988	65	7
Aug 1993	68	19

#### CURRENT TASK FORCE PROJECTS

#### AIR SERVICE DEVELOPMENT

- Toronto and other major Canadian business centers
- Korea
- Improved intra-Virginia services
- New European destinations
- Emerging markets, including South Africa

#### **GROUND ACCESS**

- Rail and other transportation improvements in the Dulles Corridor
- A new river crossing north of Dulles and creation of a western transportation corridor running east of Goose Creek and close to the airport's western border in Loudoun County

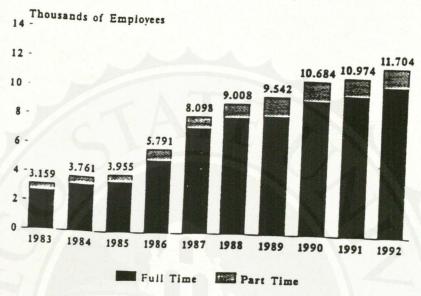
#### ECONOMIC GROWTH FROM AIR SERVICE

- A Gateways Program to showcase the region's assets to the 71,000 travelers a day using Dulles and National
- A conference program to bring local companies together with potential international clients
- Expanded use of the Washington Dulles Foreign Trade Zone #137

### Job Growth on Airport

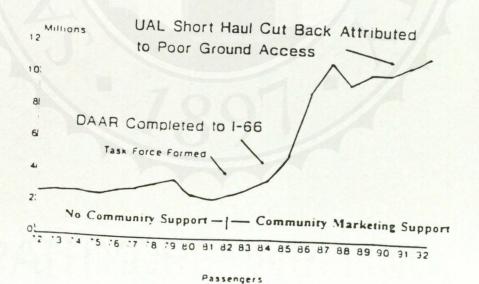
The air service growth stimulated with the region's investment in the Task Force has catalyzed nearly 9,000 new jobs on Washington Dulles alone.

# WASHINGTON DULLES EMPLOYMENT Has Grown with Air Service Expansion



## 11.5 MILLION PASSENGERS USED DULLES AIRPORT IN 1992

Passengers Using Dulles in a Calendar Year



CONFIDENTIAL

DATA ON REVENUE STREAMS OF A CROSS-SECTION OF AIRPORTS

# Large Hub Airport Section

# 1991-92 Rates and Charges Survey

Large Hub Airports

			/ABA			Genera	Informat	tion				Landing Fees			
Airport	City	State	Total Passengers (CY 91)	Region	Size	# Alrports Under Control	Annual Air Carrier Ops. (CY 91)	Annual Reg. Carrier Ops. (CY 91)	Annual GA Ops. (CY 91)	# of Airport Gates	Airline Agrement	Signatory (per 1000 lbs.)	Non-Signatory (per 1000 lbs.)	Scheduled Commuter/ Regional (per 1000 lbs.)	
Baltimore/Washington Int'l	BWI Airport	MD	9,885,615	1	I.	2	226,207		46,043	47	Residual	\$1.15	\$1.15	\$1.15	
Boston Logan Int'l	Boston	MA	21,451,858	1	L	1	209,905	163,385	23,766	85	Compensatory	-	\$1.69	\$1.69	
Cincinnati/ Northern Kentucky Int'l	Boone County	KY	10,126,819	2	L	1	145,076	135,958	14,899	44	Residual	\$1.35	\$1.45	\$1.45	
Dalfas/Ft.Worth Int'l	DFW Airport	TX	48,198,208	4	L	-	550,494	465,529	15,378	113	Residual	\$1.75	\$2.00	\$2.00	
Detroit Metro. Wayne County	Romulus	MI	20,704,555	3	L	2	270,784	74,023	50,491	89	Residual	\$1.80	\$2.70	\$2.70	
Greater Pittsburg Int'l	Pittsburg	PA	16,735,015	1	L	1	252,968	108,260	25,858	77	Residual	\$0.97	\$1.20	\$0.97	
Hartsfield Atlanta Int'l	Aslanta	GA	37,915,024	2	L	1	420,596	146,088	19,181	146	Compensatory	\$0.65	\$0.80		
Honoleiz Int'l	Henololu	HI	22,224,595	6	L	13	196,037		113,799	28	Other	\$0.70	\$1.69	\$0.30	
Houston Intercontinental	Hooston	TX	18,117,113	4	L	3	207,980	57,919	42,872	80	Hybrid	\$1.54	\$1.54	\$1.54	
Kennedy Int'l	New York	NY	26,300,000	1	L	L	195,500	72,300	9,300	154	Compensatory	\$2.21	\$2.21	\$2.30	
La Goardia	New York	NY	19,700,000	1	L	1	250,900	58,500	17,400	61	Compensatory	\$3.27	\$3.27	\$3.25	
Lambert-St.Louis Int'l	St. Louis	MO	19,151,278	3	L	1	262,371	105,589	35,985	81	Compensatory	\$1.20	\$1.50	\$1.50	
Los Angeles Ins'l	Los Angeles	CA	45,668,204	6	L	4	403,002	187,372	53,589	133	Residual	\$0.48	\$0.53	\$0.48	
McCarran lot'l	Las Vegas	NV	20,171,557	6	L	5	200,013	81,904	100,655	68	Hybrid	\$1.23	\$1.23	\$1.23	
Miami Int'l	Miami	FL	26,591,415	2	L	5	407,299	404,416	70,768	116		\$1.03	\$1.03	\$1.03	
Minneapolis-St. Paul Int'1	St. Paul	MN	20,601,177	3	L	7	231,743	75,856	51,889	69	Compensatory	\$0.75	\$0.80	\$0.80	
Newark Int'l	Newark	N	22,300,000	1	L	1	275,300	84,400	19,100	97	Compensatory	\$2.27	\$2.27	\$2.50	
O'Hare Int'l	Chicago	IL	59,787,391	3	L	3	813,896		33,969	153	Residual	\$1.89	\$2.36	\$1.89	
Philadelphia Int'l	Philadelphia	PA	15,041,936	1	L	2	198,313	119,435	49,474	61	Other	\$1.37	\$1.49	\$1.37	
Phoenix Sky Harbor Int'l	Phoenix	AZ	22,140,437	6	L	3	373,455	11.	115,522	89	Compensatory	-	\$0.93	\$0.93	
Salt Lake City Int'l	Salt lake City	UT	12,477,926	6	L	2	179,948	37,704	79,353	50	Compensatory	\$0.65	\$0.65	30.61	
San Diego Int'l	San Diego	CA	11,423,067	6	L	1	132,3B1	49,616	20,934	36	Compensatory	\$0.89	\$0.89	\$0.89	
Sun Francisco Int'l	San Francisco	CA	31,197,209	6	L	1	302,381	88,682	25,195	80	Residual	\$0.75	\$0.89	\$0.75	
Seattle-Tacoma Int'l	Scattle	WA	16,313,289	5	L	1	186,717		8,593	75	Residual	\$1.98	\$1.98	\$1.98	
Tampa Int'i	Тапре	FL	9,448,137	2	L	3	172,297	-	49,351	55	Residual	\$1.55	\$1.55	\$1.55	
Washington Dulles Int'l	Chantilly	VA	10,970,899	2	L	-	136,930	-	54,829	71	Hybrid	\$2.16	\$2.70	-	

	La	iding Fees		Fix	ed Base C	perations		Hangars a	Hangars and Tie-Downs (Average Monthly Rate)						
Airport	GA Non- Revenue (per Landing)	GA Revenus Flights (per landing)	Unscheduled/Non- Contract Carriers (per 1000 lbs.)	Average Ground Rental (sq. ft./yr.)	Average Hangar Rental (sq. fl.yr.,)	% of Gross Receipts	Fuel Flowage Fee (% of sales)	Tie-Down	Translent Aircraft Tie-Down Fee	T-Hangar Rate for S.E. Aircraft	Large Hangar Rate for S.E. Aircraft	T. Hangar Rate for T.E. Aircraft	Lerge Hanger Reie for T.E. Airerest		
Baltimore/Washington Int'l	-	\$1.64	\$1.64	\$0.65	\$2.30	5%	\$0.10								
Boston Logan Int'l	\$1.69/1000/bs	\$1.69/1000lbs	\$1.69			5%	\$0.07			-	-	-	\$4-10/sq. f		
Cincinnati/ Northern Kentucky Int'l				\$0.20	\$0.81	5%	\$.50/gall or 5%		-			-			
Dellas/Ft. Worth Int'l	\$1500	\$15.00	\$2.25	///				* see below	-			-			
Detroit Metro. Wayne County		110	\$2.70	\$0.15	\$3.00	5% or \$100,000	\$0.04	-	7	•	-				
Greater Pittsburg Int'l			\$1.20	\$0.49	\$5.60	-	\$0.08	-	-		-	-	• • • • • • • • • • • • • • • • • • • •		
Hartsfield Atlanta Int'l	\$0 80	\$0.80	\$0.80	\$0.35				-	1 / -			-			
Honokula Int'l		30.30	\$0.30	\$3.30	\$408/mo.		-	538	\$38/mo.	\$408	-	\$408			
Houston Intercontinental	-			\$0.11			\$0.05				-	-			
Kennedy Int'l	\$2,30/10001bs	\$2.30/1000lbs	\$2.30			5-10%	10.00		-	-					
La Guardia	\$3.25/1000lbs	\$3.25/1000lbs	\$3.25	-	-	9%		E Income	-		-				
Lambert-St. Louis Int'l	\$10.00	\$10.00	\$1.50	\$0.14	\$3.50		\$0.06		0.400			-			
Los Angeles Int's		\$.53/1000lbs	\$0.53	\$75,000/acre/yr.	\$14.00		\$0.03	\$4,200	\$50 or \$100 fuel purchase				\$14/sq. ft/y		
McCarran Int's		51125	\$1.23	\$0.35		1%	\$0.05	\$70	\$45.00	\$45	\$90	\$55	\$100.0		
Miami Int'l	\$19-49	\$19-49	\$1.03	\$0.39	\$8.50	7%	\$0.04	\$90	\$3.00	\$250	\$450	\$340	\$450.0		
Minneapolis-St. Paul Int'l	\$0.80	\$0.80	\$0.80	\$0.14	\$1.00	8%	-				-	-			
Newark Lot's	\$2.25/t000lbs	\$2.25/1000lbs	\$2.50			5-10%	\$0.06	E(0.50/2)/2			-				
O'Hare Int'l	\$6-37.50	\$1.89	\$2.36	\$0.65		8%	\$0.05				-	-			
Philadelphia Int'l			\$1.49	1		10%	\$0.06	musta fel.			-	-			
Phoenix Sky Harbor Int'l		\$5-18	\$0.93			2%	\$0.08	\$64.75 covered, \$24 open	\$5-18	\$115	\$212	\$212	\$212.2		
Salt Lake City Int'l	-		\$0.61	\$0.14	\$1.30	1000	\$0.05	\$30		\$130	-	\$185			
San Diego Int'I		\$14.00	\$0.89	\$1.23		3-25%	\$0.05	6	\$86.00	-	-				
San Francisco Int'l	\$25.00	\$25.00	\$0.89	\$0.51		-	\$0.03	568	\$6-12	-	-		\$550.0		
Seattle-Tacoma Int'1			\$1.98	\$0.44	\$0.40		\$0.06		-		-				
Tampe Int'i	7-	\$1.55	\$3.11	\$0.10	\$1.75	2%	\$0.03	\$28	\$4.67	\$198	\$115	\$198	\$25		
Washington Dolles Int'l		\$2.16/1000lbs	\$2.70	\$.015 and \$.065	\$0.15	3-8%	\$0.03			-	-				

<sup>\*</sup> Rates based on weight/hr. 0-2 hrs-\$0, 2-10 hrs-\$8-25, each addition 8hrs is \$3-15

		Parking			F	Rental Cars		
Airport	Parking Operated by	If Operated by Concession, Annual Fee Minimum Guarantee	Annual Rev. from Parking	Highest Annual Concession Fet/Minimum Guarantee: On-Airport Companies	Lowest Annual Concession Fee/Minimum Guarratee: On-Airport Companies	Rate Siructure: Off-Airport Companies (% of Gross Receipts)	Annual Revenue: On-Airport Companies	Annual Revenue: Off-Alrport Companies
Baltimore/Washington Int'l	C	90%	\$12,500,000	8.5%, 1,106,377	\$8.5, \$160,000	\$25/vehicle	\$3,900,000	\$100
Boston Logan Int'l	Ā		\$35,391,767	10%	10%		\$10,404,657	-
Cincinnati/ Northern Kentucky Int'l	C	88.91%, \$2,480,000	\$5,887,534	\$582,113	\$350,328	4.5% of 90% total revenue	\$2,688,183	\$81,608
Dallas/Ft Worth Int'l	A		\$40,424,000			8%	\$7,195,000	\$1,085,000
Detroit Metro. Wayne County	M	-	\$15,356,031	\$1,595,012	\$260,000		\$7,050,813	•
Greater Pirisburg Int'l	M	2.1%,\$152,517	\$7,074,213	\$1,034,603	\$510,500	-	\$3,805,783	•
Partsfield Atlanta Im'l	M		\$22,876,374	10%, \$1,581,996	10%, \$36,000	8%	\$1,099,651	\$182,401
Renolute Int'l	C	\$6,800,000	1-1	10% or \$1,100,000	10% or \$421,000	\$20/vehicle	-	-
Houston Intercontinental	A		\$17,560,000	10%, \$962,000	10%, \$130,000	4%	\$5,025,000	
Kennedy Int'l	M	-		13%	13%	8%	-	-
a Goardia	M			13%	13%	8%		-
Lambert-St Louis Int'l	M	11.	\$6,326,449	10%, \$1,134,155	10%, \$115,000	\$150/mo./space	\$4,393,895	\$9,000
Los Angeles Int'l	M	\$125,079	\$45,700,000	10% vs \$3,330,000	10% vs \$1,104,000	7% over \$1 mil	\$21,146,857	\$5,050,529
McCarras Int'l	^	414	\$4,229,525	9%	9%/mo. min is 7% of prior year gross 8% or \$4/contract	\$936,843	\$0.76	\$1,338,655
Miami Int'I	A£		\$19,000,000	\$3,260,133	\$1,236,062		\$13,702,808	
Minneapolis-St. Paul Int'l	M		\$15,417,121	9%	9%	\$1.75/transaction	\$5,546,901	\$54,360
Vewark Int']	M			13%	13%	8%		
O'Hare lat'l	A	4.	\$36,333,192	\$100,000	\$40,000		\$10,182,180	
Philadelphia Int'l	M		\$7,981,000	10%			\$7,900,000	
Phoenix Sky Harbov Int'l	M	The second secon	\$14,550,000	10%, \$2,894,600	10%, \$85,000	7%	\$11,580,000	\$495,000
Salt Lake City Int'l	C	83% of 1st \$240,000, 1% for each \$30k over \$3,400,000	\$3,710,629	\$1,044,300	\$246,000	\$.50/car/trip	\$3,516,346	-
San Diego Int'l	M	-	\$8,134,000	10% vs \$1,200,000	10% vs \$211,000	7% in excess of \$300,000	\$6,512,913	\$1,141,990
an Francisco Int'l	М	-	\$32,741,240	10%	\$485,000 min for General Rent-A-Car	7%	\$13,917,448	\$2,035,976
eattle-Tacoma Int'i	A		\$14,776,241	10%, \$2,300,225	10%, \$231,900	4% w/\$40,000/mo. exempt	\$7,394,735	\$1,900
Campa Int'l	М	-	\$9,336,422	133,342 vs. 10%	\$75,001 vs. 10%	9% gross after \$500,000 yearly exemption is met	\$7,406,144	\$1,650,325
Washington Dalles Int'l	М		\$8,502,161	\$1,350,200	\$140,320		\$4,191,946	

<sup>\*</sup> A = Airport
C = Concession
M = Management Contract

			Cor	ncessions (Fe	e Structure and Revenue)			
	Advertising % gross and/or min. guarantee (fee structure)	Advertising Annual Revenue	Bar/Cocktall Lounge (fte structure)	Bar/Cocktail Launge Annual Revenue	Barber Shop (fee structure)	Barber Shop Annus! Revenue	Bank (fee structure)	Bank Angual Revenue
Baltimore/Washington Int'1	60% or \$540,000	\$483,482	15-20% or \$800,000	\$424,604	N. Y. A.			
Boston Logan Int'l	60% or \$385,000	\$448,500		\$512,947		\$6,000	•	\$64,192
Cincinnati/ N. Kentucky Int'l	55% or \$99,000	\$135,983	17-21% or \$673,598	\$294,375	flat rate	\$1,500	flat rate	\$14,500
Dallas/Ft Worth Int'l	55%, \$675,000	\$700,000	15-17%, \$4,000,000	\$4,170,000				
Detroit Metro. Wayne County	55% or \$269	\$675,895	17%	\$1,012,404				
Greater Pirtsburg Int'l	55%, \$342,000	\$342,000	17%	\$468,162	15%, \$30,362	\$30,362		
Hartsfield Atlanta Int'l	50%	\$1,400,000	25%	\$1,600,000	10%	\$22,000		
Honolafu Int'l	•	Al F	13% of \$4,000,000		5% to \$50,000 & 10% in excess, \$1,800 min		\$29,441	
Houston Intercontinental	100% + \$5,000/mo.	\$522,000	15%, \$1,050,000	\$450,000	11%, \$20,004	\$33,000		
Kennedy Int'l	67.5-72.5%		16.5% on alcoholic beverages	-	13%		1.5% on currency exchange	
La Guardia	70%	8 1 7 97	16.5% on alcoholic beverages				1.5% on currency exchange	
Lambert-St Louis Int'l	55%, \$250,000	\$417,097	15%	\$716,638	\$12,300	\$12,150	\$76.70	\$74,468
Los Angeles Int'l			15% see restaurant	\$1,851,750				
McCarran Int'l	\$1,338,655	\$0.18	\$732,302				\$56,775	
Miami Int'l	80%, \$902,400	\$945,725			15%, \$36,470.86	\$47,093	\$1,650,000	\$1,650,000
Minneapolis-St. Paul lat'l	65%	\$535,077	Branded Equor 11%, tiquor 15%	\$593,683		\$14,800		\$22,452
Newark Int'l	70%	in the second	16.5% on alcoholic beverages		10-12%		1.5% on currency exchange	
O'Hare Int'l	60%	\$1,783,066	included in restaurant		The state of the s		\$287,000	\$325,079
Philadelphia Int'l	50%, \$400,000	\$400,000	18% (ood, 27% alcohol, \$1,750,000	\$2,300,000	\$30,000	\$30,000	-	
Phoenix Sky Harbor Int'l	62%, \$535,163	\$610,000	20%	\$915,000	\$6,000	\$6,000	\$340,000	\$340,000
Salt Lake City Int'l	50% or \$240,000	\$305,551	16% 0-\$800,000, 17% \$800,000 to \$1,000,000		10%			
San Diego Int'I	72.5% vs \$313,200	\$462,916	17%	\$526,231			\$41,14/sq. ft./yr.	\$8,637
San Francisco Int'l	20-65%	\$448,966	9.24% food, 15.24% beverage	\$787,407	10%	\$12,603	\$189,663	\$189,663
Seattle-Tacoma Int'l	60-65%	\$584,760	17%	\$851,846	1296	\$19,584	\$.05/transaction	\$14,072
Tampa Int'l	50%	\$50,231	10-13%	\$2,701,198			\$6,771	
Washington Dulles Int'l	51% or \$25,704	\$350,207			10%	\$2,515	\$29.38/sq. ft./yr. or \$3,780.23/mo.	\$45,362

			Co	ncessions (Fe	e Structure and Revenue)			
Airport	Duty Free Shop (fee structure)	Duty Free Shop Annual Revenue	Game Room (fee structure)	Game Room Annual Revenue	Glft Shop (fee structure)	GIR Shop Angual Revenue	Newstand (fee structure)	Newstand Annual Revenue
Baltimore/Washington Int'l	12.5-20%	\$67,398	55% or \$400,000	\$19,441	10-16% or (\$400,000	\$39,818	12-16% or \$400,000	\$758,049
Boston Logan Int'l		3915,588	- // -			\$1,039,465	mm	-
Cincinnati/ N. Kentucky Int'l	13%	\$34,594	1/		15-20% or \$693,280	\$785,009		
Dallas/Pt.Worth Int'l	15%, \$510,325	\$1,189,000	//	-	20-22%	\$4,699,000		
Detroit Metro. Wayne County	15% or \$850,000/yr.	\$938,157	50.5% or \$24,000/yr.	\$46,880	15% or \$1,600,000/yr.	\$1,488,157	-	
Greater Pittsburg Int'l			50%, \$135,000	\$135,000	\$112,000	\$112,000	\$1,390,000	\$1,390,000
Hartsfield Atlanta Int'l	20%	\$920,000	35%	\$65,000	29%	\$3,500,000	29%	\$4,300,000
Resolute Est'l	20%, \$262,680	0			20%, \$3,008,000		6% to \$600,000, 7.5% to \$3,000, 8.5% excess of \$3,000,000	•
Houston Intercontinental	20%, \$1,502,000	\$1,502,000	50%, no mag	\$19,000	27%, \$2,700,000	\$2,462,000	18%, \$2,700,000	\$1,070,000
Kennedy Int'l	15-25%				10-15%		10-15%	
La Guardia	15-25%		-	-	10-15%		10-15%	-
Lambert-St Louis Int't	-		\$125,001	\$189,183	18%	\$2,487,498	included in gift shop	
Los Angeles Int'l	15% less \$80 mil,	1143		17%, \$7,200,000	\$9,035,840	included in gift abop		
McCarran tri'l	18% over \$13,923,120	THE ZA				777		
Misurai Ent'l	-		BANGE -		23%	\$1,909,391	10%	\$657,079
Minneapolis-St. Paul Int'l	5% Ist \$50k, 16% aver	\$11,368			31%, \$70,034	\$402,055		
Newark Int'l		Birth & G.	60%	\$218,338	16%	\$1,809,910	\$20/space/mo.	\$323,342
O'Hare Int'l	15-25%		-		10-15%		10-15%	-
Philadelphia Int'!	30%, \$78,000	\$1,444,115	50%, \$100,000	\$103,371	17.5-40%, \$400,000	\$1,401,031	25%, \$4,100,000	\$4,459,269
Phoenix Sky Harbor Int'l Salt Lake City Int'!			62% 35%	\$97,000 \$12,000	13-27%, \$876,000 18%	\$900,000 \$2,590,000	18%	\$1,595,000
San Diego Int'l	•				17% to \$3,000,000, 18% 3mit-4.5mil	\$1,509,564	•	
San Prancisco lat'l		-	-	-		-	18%	\$1,156,491
Seattle-Taconia Int'l	\$20,463,421	\$20,463,421	\$122,036	\$122,036	15-20%	\$11,324,866	20%	\$159,543
Tampa lut'l	16%	\$1,957,518		-	17%	\$938,962	12%	\$899,166
Washington Dutles Int'l	-	\$389,585 vs. 20%	\$511,124	-		13-25%	\$2,822,905	-

			Conc	essions (Fee	Structure and Revenue)			
Alrport	Limousine Services (fee structure)	Limousine Services Annual Revenue	Courtery Cars (fee structure)	Courtery Cars Annual Revenue	Taxicabs (fee structure)	Taxicabs Annual Revenue	Airport Motels/Rotels (fee structure)	Airport Moiels/Hotels Annuel Reveaue
Baltimore/Washington Int'l	\$4.12/trip	\$123,046	\$25/vehicle/yr.	\$12,000	\$1/trip	\$151,922	10%	\$620,000
Boston Logan Int'l	-	\$696,761	-	-	\$.40/trip	\$598,863	-	\$1,300,000
Cincinnati/ N. Kentucky Int'l	flat rate	\$27,536	flat rate	\$49,625	flat rate	\$35,595	flat rate	\$132,000
Dallas/Ft.Worth Im'l			2//				Food 3%, Liquer 5.5%, other 5%	\$4,233,000
Detroit Metro. Wayne County			10% or \$150,000/yr.	\$208,348		10 A A A A A A A A A A A A A A A A A A A		\$1,309,537
Greater Pittsburg Int'l		\$42,394		\$161,762	\$40,000	\$40,000	20%	\$78,601
Hartsfield Allenta Int'l	-	1 61 7-1	-		\$.50/trip	\$120,000	-	
Honolulu Int'l			\$250/vehicle		5.90/trip or \$341,000			-
Houston Intercontinental	\$4/departure	\$34,000	\$.75/trip	\$394,000	\$2.75/departure	\$569,000	\$.75/trip	\$40,000
Kennedy Int'I	\$272/seaVyr.						6%	
La Guardia	\$272/seal/yr.	KARALI.	-			-		
Lambort-St. Louis Int'1	\$8,167/mo.	\$93,951	\$150/mo.	\$63,000	\$30/mo/vehicle	\$46,440		
Los Angeles Int't	\$1.50/trip	\$263,190	\$.32-48/circus	\$606,689	\$.50/trip	\$349,347	\$1,050/mo.	\$600,000
McCarrasa Int'l	10%	\$936,647	\$200/vehicle	\$18,051	S.60/trip	\$620,400		
Miami Int'l				-	\$1/trip	\$820,000		
Minneapolis-St. Paul Int'l	Pixed rent	\$18,554	15%	\$37,640	Name and // and k			
Newark Int'l	\$272/seat/yr.		A Property		DE 2 2 3 7 A7-3 B		6%	-
O'Hare Int'l				-			\$1,650,000	\$1,750,000
Philadelphia Int'l		\$650,000	\$25/mo.	\$3,000		\$6,000		
Phoenia Sky Harbor Int'l	\$300/yr./vehicle	\$190,000	\$400/yr./vchicle	\$190,000	\$200/yr./vehicle	\$190,000		
Salt Lake City Int'l				\$78,816				
San Diego Int°l			-		(A)	-		-
San Prescisco Int'l	\$1/trip	\$292,525	\$1/trip	\$874,593	\$1.50/trip	\$836,149	\$599,999+5% gross	\$992,267
Seattle-Tacoma Int'l	\$2/trip, Downlown Airport 20%	\$280,000	\$.09/trip	\$40,000	\$1/trip	\$200,000		
Tampe Int'l			\$323,650	/ / -	\$90,000	-	\$231,796	5-60%
Washington Dulles Int'l					\$293,562	\$311,354	4.5%-10.5%, \$468,403	3850,508

Concessions	(Fee Structure and Revenue	(34
Compoundeding	TO DISCOURSE WITH THE ACTION	-

			COBA	Caarona (rec	ducine and b	Cevenocy			
Airport	Restaurant (fee structure)	Restaurant Annual Revenue	Flight Klichen (fee structure)	Flight Kitchen Annual Revenue	Travel Agency (fee structure)	Travel Agency Annual Revenue	Other Concession	Other (fee structure)	Other Annual Revenue
Baltimore/Washington Int'l	10-13% or \$800,000	\$845,620	7%	\$915,539					
Boston Logan Int'l		\$632,151		\$1,163,202			Vending Machines	-	\$202,548
Cincinnati/ N. Kentucky Int'l	McDonald's 8% or \$120,664, Concession Air 10-12% or \$673,598	\$644,580	7-8% or \$502,468	\$1,284,347		1			
Dallas/Ft Worth Int'l	12%		5%	-	-		Clothing	t5-18%	\$195,000
Detroit Metro. Wayne County	-	\$1,677,052	14%	\$3,206,646	-		Locker Rental	30%	\$9,974
Greater Pittsburg Int'l	12%	\$1,001,462	9.5%, \$2,175,440	\$2,535,340			Bus-Transportation	\$18,000	\$18,000
Hartsfield Atlanta Int'l Honolulu Int'l	18% 8%, \$4,000,000	\$6,100,000	5% of gross				Packaged Foods	20%, \$4,008,000	
Houston Intercontinental	10%, \$1,050,000	\$1,018,000		1 1 1 1 1 1 1			Baggage Cart	10%	\$29,000
Kennedy Int'l	12.5%-22%	100	8% on-airport, 10% off		-	-	Employee Cafeteria	5%	
La Guardia	12.5% food and non-alcoholic beverages		8% ca-airport, 10% off				Employee Cafeteria	5%	
Lambert-St.Louis Int'l	10%	\$1,199,672	5%	\$1,497,328	70000		Shoeshine	\$6,833/mo.	\$63,498
Los Angeles Int'l	11%/85% of last yrs. fcc	\$5,848,500	10% except sig. airlines	-	-				
McCarren Int'l	10%	\$1,078,535	8%	\$1,701,205	-		Garning		\$16,739,714
Miami Int'l		\$664,714	Allen and a			// //	Ramp Service	7%	\$2,144,292
Minnespolis-St. Paul Int'l		\$864,270	5%	\$420,550		\$144,714	Telephone	min	\$454,300
Newark Int'l	12.5% food and non-alcoholic beverages		6%				(//		
O'Hare Int'l	12-17%, \$11,000,000	\$10,745,721	2%, \$93,300	\$4,539	1	- 1	Longrance	15%	\$33,112
Philadelphia Int'l		1	8%	\$2,500,000	\$35,000	\$35,000	Travel Insurance	15%, \$60,000	\$60,000
Phoenia Sky Harbor Int'l	17%	\$2,800,000	7%	\$2,040,000	-		Air Cargo Commercial Tenants		\$530,000
Sait Lake City Int't	10%, 5% branded foods	\$744,876	8% on-airport, 3% off	\$2,046,717	\$120,000	\$108,000	Public Telephone	21% or \$304,000	\$315,914
San Diego Int'l	12%	\$821,173	7%	\$1,371,863		11.4 .	haurance, mo.neymo.ver	10%	\$8,991
San Francisco Int'l	9.24% food, 15.24% bev.	\$3,149,626	33.58 acres @ \$440/acre/yr.	\$14,775	25%	\$85,160	Catering	\$100/mo.	\$107,206
Scattle-Tacona Int'l	12%	\$1,367,123	8%	\$2,651,219			Candy Store	13%	\$36,071
Tempa (si')	\$1,164,303		5%	\$778,628	-		Tele-Trip	10-13%	\$17,293
Washington Dulles Int'l	12.1%, \$1,244,530	\$1,109,768	-	\$1,522,411	-1		Candy Store	13%, \$61,066	\$76,092

		Concessions	(Fee Structure	e and Revenue)			Air Ca	rriers and Re	gional Airlin	es (CY 91)
Airport	Other Concession	Other (fee structure)	Other Annual Revenue	Other	Other (fee structure)	Other Annual Revenue	Annusl Terruinel Rent Revenue	Annual Landing Fees Revenue	Other Revenue	Air Carries & Reg. Airline Total Revenue (CY 91)
Baltimore/Washington Int'l					WITE ALL.		\$10,200,000	\$11,700,000	\$3,000,000	\$24,900,000
Boston Logan Int'l							\$26,537,074	\$33,007,600	\$10,723,735	\$70,268,409
Cincinnati/ N. Kentucky Int'l		FA C					\$3,975,072	\$13,286,908	\$2,594,746	\$19,856,726
Dallas/Ft.Worth Int'l	Specialty Foods	17-20%	\$314,000	Telephone Companies	12-23%	\$2,039,000	\$16,987,000	\$71,296,000	\$25,717,000	\$114,000,000
Detroit Metro. Wayne County	Vending Machines	27.25% or \$21,000/yr.	\$86,547	Cart Rental	10%	\$9,088		-	-	
Greater Pittsburg Int'l	Book Store	12%, \$47,333	\$79,202			-	\$10,530,264	\$12,605,816	\$7,528,099	\$30,664,179
Hartsfield Atlanta Int'l			9// -				\$20,824,054	\$20,657,823	\$467,758	\$41,381,877
Honoložu Int'l	lewlery & Shells	20%, \$1,440,000	-	Sundries	20%, \$1,440,000	-				
Houston Intercontinental	Money Exchange	per sq. ft. per annum	\$20,200	25 (E) E E.			\$31,082,969	\$24,210,414	\$1,818,685	\$57,112,068
Kennedy Int'l									-	\$321,000,000
La Guardia	Travel Insurance	13%								\$136,000,000
Lambert-St.Louis Int'l	Vending Machines	\$2,196/machine	\$46,566	Baggage Carts	10%, \$14,400	\$28,326	\$15,271,950	\$23,952,747	\$2,571,635	\$41,796,332
Los Angeles Int'l							\$31,067,788	\$20,490,062	\$26,669,833	\$78,227,684
McCarran Int't				OA MERIOL			\$44,319,644	\$14,820,824	\$4,279,080	\$63,419,548
Miami Int'l	Drug and Sundries	35%, \$114,200.04	\$219,520	Storage Locker	\$2/locker \$10/key	\$180,256	\$12,408,944	\$31,916,034		
Miancapolis-St. Paul Int'l	Lobby Fees	\$1/domestic, \$3/Int'l	\$1,028,280	Term Bldg (non-airlines)	\$17.99/sq. ft./yr.	\$1,205,001	\$7,609,664	\$13,952,466	\$20,020,019	\$41,582,149
Newark Int'l						Person.				\$191,000,000
O'Hare Int'l	Telephone	25%	\$2,472,235	Cart Services	20%, \$41,646	\$68,585	\$117,606,217	\$103,119,118	\$18,058,030	\$238,783,365
Philadelphia Int'l	Vending Machines	20%, \$326,000	\$326,000				\$29,800,000	\$21,113,000	\$5,515,000	\$56,428,000
Phoenix Sky Harbor Int'l	Building Rentals		\$1,970,000	Pay Telephones		\$880,000	\$38,800,000	\$16,940,000	\$280,000	\$56,020,000
Salt Lake City Int'l							\$13,234,967	\$7,098,580	\$4,597,760	\$24,931,307
San Diego Int'l							\$6,968,067	\$5,955,614	-	\$12,923,681
San Francisco Int'l	Service Station	\$.03/gal + 10-15%	\$102,206	Other terminal services		\$1,510,137	\$27,490,035	\$20,624,428	\$10,683,437	\$58,797,900
Seattle-Tacoma lut'l	Employee Cafeteria	6%	\$42,484	Coin Lock & Vending	15%	\$48,044	\$35,582,153	\$29,156,059	\$2,331,936	\$67,070,148
Tampa Int'l							\$11,189,729	\$6,312,601		\$17,502,330
Washington Dulles Int'l	Book Store	10-16%, \$95,979	\$113,974			-	\$16,946,784	\$15,069,898	\$16,695,960	\$48,712,641

Total Annual Revenue from

	Tota Fixe	d Base Ope	evenue from	eral Aviation	(CY 91)			Total Annua Landside Re	al evenue (CY 9	1)	
	Landing Fees Fuel Flowage Fee Annual Revenue	Percentage Fee Angusi Revenue	Lend/Ground Rental Angual Revenue	Other Revenue	FBO/GA Total Revenue	Parking Revokue	Rental Car Revenue	Other Ground Transportation Revenue	Concession/ Services Revenue	Other Revenue	Landside Total Revenue
Baltimose/Washington Int'l	\$423,104	\$66,871	\$581,339	1 7 -	\$1,081,114	\$12,400,000	\$3,900,000	\$300,000	\$5,900,000		\$22,500,000
Boston Logan Int'l	\$70,268,409	\$1,005,946	B 84-	\$1,974,227	\$10,437,153	\$13,417,326	\$35,391,767	\$10,404,657	\$5,049,982	\$8,235,583	\$59,089,549
Cincinnati/ N. Kentucky Int'l		\$18,333	\$190,381		\$208,714	\$5,887,534	\$2,769,791	\$63,131	\$5,444,725	\$575,022	\$14,740,203
Dallas/Pt.Worth Int'l		-				\$40,424,000	\$8,280,000	\$5,022,000	\$11,532,000	\$11,081,000	\$76,339,000
Detroit Metro. Wayne County			11.				-			-	
Greater Pittsburg Int'l	\$1,005,405	\$18,255		\$5,068,497	\$6,092,157	\$7,074,243	\$3,805,783	\$262,152	\$7,433,690	\$357,874	\$18,933,712
Hartsfield Atlants Int'l	\$637,839	-	\$83,913		\$721,812	\$22,876,374	\$11,183,052	\$521,738	\$16,428,375	\$101,114	\$51,109,653
lonolalu Int'l	-		-						H / The second		
Housson Intercontinental	\$200,709		\$3,136,047	\$485,370	\$3,822,126	\$17,706,913	\$5,032,792	\$1,207,594	\$9,654,375	\$399,491	\$34,201,165
Kennady Int'l	-		1 / -			- 4	-			-	\$75,000,000
La Guardia	-		-		-		-			ALLENSON .	\$34,000,000
Lambert-St.Louis Int'l	\$518,383	\$707,041	\$531,771	\$115,001	\$1,872,196	\$6,326,449	\$4,393,895	\$180,090	\$9,742,881	\$1,709,097	\$22,352,412
Los Angeles Int'l	\$147,000		\$1,601,712	\$420,504	\$2,169,216	\$50,120,000	\$26,197,000	\$1,219,225	\$97,800	-	\$77,634,025
McCarran Int'l	\$320,752		\$80,863	\$207,192	\$608,807	\$4,229,525	\$4,749,808	\$1,738,676	\$25,281,787	\$7,114,286	\$43,114,082
Minari Int'l	-		\$8,159,259			\$19,000,000	-	\$1,310,000	1/2/2015	\$1,555,000	\$22,658,000
Minneapolis-St. Paul Int'l	\$754,828	\$333,573	\$336,638	\$774,411	\$2,199,450	\$15,417,121	\$5,601,261	\$644,640	\$5,243,370	\$3,677,380	\$30,583,772
Newark Int'l				/ G G G S S S			/.				\$54,000,000
O'Hare Int'l	\$100,093	3694,667	\$589,010	\$5,364,422	\$6,748,192	\$36,333,192	\$10,182,180	\$430,000	\$26,169,000	\$11,436,761	\$84,551,133
Philadelphia Int'l	\$903,000	\$28,000	\$440,000		\$1,371,000	\$7,931,000	\$7,900,000	\$659,000	*\$36,000	\$290,000	\$16,816,000
Phoenix Sky Harbor Int'l	\$555,000	\$375,000	\$982,000	\$2,770,000	\$4,682,000	\$14,550,000	\$12,075,000	\$570,000	\$15,058,000	\$2,598,000	\$44,851,000
Salt Lake City Int'l	\$147,730		\$355,184	\$496,372	\$999,286	\$3,710,629	\$3,516,346	\$78,816		-	\$7,305,791
San Diego Int'I	\$150,282	\$17,190	\$775,656	\$290,592	\$1,233,720	\$8,134,000	\$7,654,903	\$589,010	\$4,356,302	\$169,620	\$20,903,835
San Prancisco Int'I	\$397,573		\$92,480	\$64,465	\$554,878	\$32,741,240	\$15,953,464	\$2,913,763	\$42,414,770	\$4,066,470	\$98,089,707
Seattle-Tacoma Int'l	\$79,207			\$287,155	\$366,362	\$14,776,241	\$7,394,735	-		\$1,998,944	\$24,169,920
Campa Int'l		-			\$955,372	\$11,205,458	\$9,821,055	\$231,796	\$5,601,798	\$8,657,380	\$35,517,487
Washington Dulles Int'l	\$1,217,616	\$651,112	\$26,981	-	\$1,895,709	\$8,452,187	\$4,232,394	\$339,946	\$5,106,686	\$9,443,408	\$27,574,620

	Total Annu	Total Annual Revenues and Operating Expense (CY 91)					
	Annual Airide Revenue (Air Carrier, Reg., FBO, GA)	Annual Landaide Revenue	Government Subsidy	Total Annual Operating Revenue	Total Annual Operating Expense		
Balaimore/Washington Int'l	\$26,000,000	\$22,500,000		\$48,500,000	\$34,500,000		
Boston Logan Int'l	\$83,685,735	\$59,089,547		\$142,775,284	\$84,261,000		
Cincinnai/ N. Kentucky Int'l	\$15,881,654	\$20,269,724		\$36,151,378	\$16,951,671		
Dalfas/Pt.Worth Int'l	\$121,663,000	\$76,339,000		\$198,002,000	\$198,002,000		
Detroit Metro. Wayne County			1/	\$76,866,532	\$73,715,715		
Greater Pittsburg Int'l	\$36,756,336	\$18,933,712	10 -	\$55,690,048	\$55,690,048		
Hartsfield Atlanta Int'l	\$42,103,689						
Honolulu Ent'1	-		1				1 6
Houston Intercontinental	\$60,934,194	\$34,201,165	-4	\$95,135,359	\$42,789,952		
Keanedy Int'l	\$321,000,000	\$75,000,000	-	\$378,000,000	\$241,000,000	TORREST MADE	
La Guardia	\$136,000,000	\$34,000,000	-	\$170,000,000	\$125,000,000		
Lambert-St. Louis Int'l	\$41,796,332	\$22,352,412	-	\$64,148,744	\$53,466,674		
Los Angeles Int'l	\$80,396,900	\$77,634,025		\$158,030,925			
McCarran Int'l	\$64,028,355	\$43,114,082		\$107,142,437	\$40,913,160		3 10
Miami Int'l	-		-	AT E			
Minneapolis-St. Poul Int'l	\$43,781,599	\$30,583,772		\$74,365,371	\$57,359,000		7
Newark Int'l	\$191,000,000	\$54,000,000		\$245,000,000	\$123,000,000		1 /2
O'Hare Int'l	\$245,531,557	\$84,551,133	T-1/		\$312,330,000		1
Philadelphia Int'l	\$86,049,000	\$16,816,000	-	\$102,865,000	\$85,024,000		1
Phoenix Sky Harbor Int'l	\$65,384,000	\$44,851,000		\$110,235,000	\$82,200,000		-0.11
Salt Lake City Int'l	\$24,931,307	\$20,055,953		\$44,987,260	\$18,487,719		
San Diego Int'l	\$14,157,401	\$20,903,835	50 \ 3	\$35,061,236	\$23,288,500		17
San Francisco Int'l	\$59,352,778	\$98,089,707		\$157,442,485	\$120,722,975		BY /
Seattle-Tacome Int'l				\$91,606,430	\$48,140,731		3/3/
Tampa Int'l	\$20,282,113	\$33,920,937	-	\$54,203,050	\$29,257,928		
Washington Dulles Int'!	\$50,608,350	\$27,574,620	-	\$78,182,971			-