



**CHAPTER 3
FORECAST
MASTER PLAN UPDATE**

Nogales International Airport
Santa Cruz County

April 2002

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Chapter 3 – Forecast

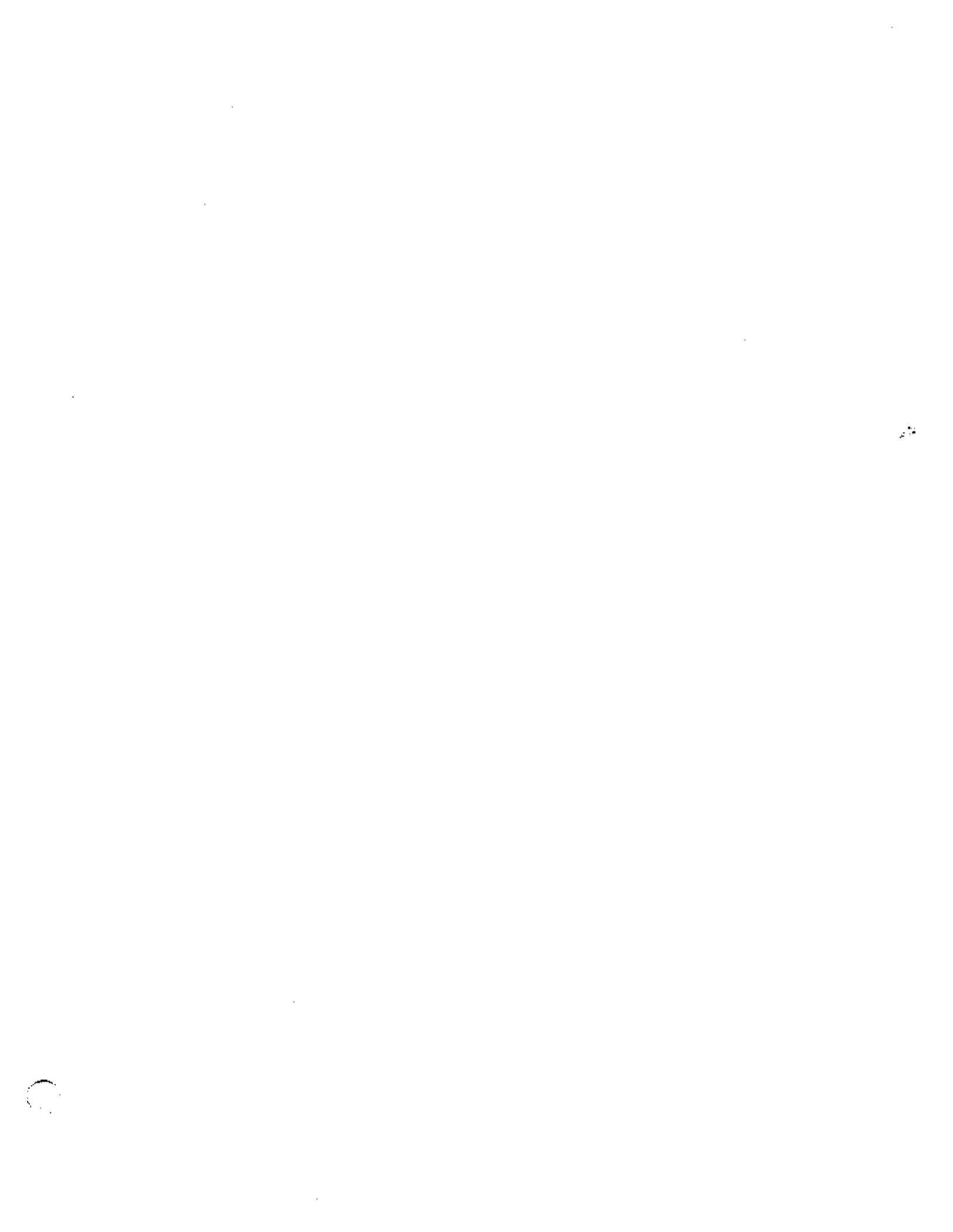
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CHAPTER 3 FORECAST

Forecasts serve to define future aviation demand. Aviation demand, when measured with existing inventory, identifies the needs of an airport, which is the basis for effective airport planning. This effort strives to maximize efficient use and return on capital investments while minimizing premature costs and unnecessary operating expenses.

Although forecasts deal with quantity levels, the attempt is not to quantify future demand, but to illustrate the likely behavior of demand relative to the underlying factors that define and dictate the inclination of air travel.

3.1 METHODOLOGY

Development of forecasts begins with historical aviation activity levels, which become the baseline for the forecasts. Analytical and judgmental techniques are then applied to project future demand. The levels indicated in the FAA Terminal Area Forecast (TAF), which is available from the FAA Office of Aviation Policy and Plans, typically serves as the source for historical aviation levels. However, review of available data is recommended to ensure the activity base for the forecasts reflect the true level and nature of the airport activity.

Once the historical base is identified, an analytical process is undertaken to generate preliminary projection levels. It forms statistical reasoning of the aviation demand based on mathematical testing of aviation activity relationships. Analytical models include the trend line and linear regression. The trend line measures the historical "trend" and projects a straight-line continuation of this trend into the future. Linear regression, which is also called linear estimation, is a statistical method for finding a straight line that best fits a set of data.

A judgment process involving the task of weighing the probable impact from external factors then formulates the forecasts. The process encompasses an assessment and understanding of aviation and socioeconomic trends in the national and local levels, and how they may or may not impact activity at an airport.

Beyond the forecasting process, monitoring of actual activity levels should be exercised over time. This is because regardless of the methodology used in formulating the aviation demand forecasts, it is virtually impossible to predict with certainty the levels of activity to take place at the airport, especially when looking 20 years into the future. Through monitoring, forecast demand levels and timing of development thresholds can be updated and refined, allowing for an effective and continuous planning process.

3.2 HISTORICAL AVIATION ACTIVITY AND AIRPORT USERS

3.2.1 Historical Activity

Aviation activity levels recorded in the FAA Terminal Area Forecast are derived from the FAA Airport Master Record (Form 5010) at non-towered airports such as Nogales International Airport. Form 5010 reports aviation activity at the airport as estimated by FAA

inspectors and State planning agencies using information provided by airport managers and others. **Table 3-1** depicts activity levels between 1990 and 1997 in the FAA TAF for Nogales International Airport. Levels for 1998 and 1999 are not presented because they reflect the FAA forecast for those years and not actual activity levels as per the TAF.

The Fixed Base Operator (FBO) at Nogales International Airport, who operates and maintains the airport for Santa Cruz County, has on file logs indicating aviation activity taking place at Nogales International Airport since 1994. Unfortunately, there are no records available from neither the FBO nor the County describing the aviation activity prior to 1994. **Table 3-2** depicts the aviation activity between 1994 and 1999 as observed and logged by the airport FBO.

Table 3-1 - FAA TAF Logged Aviation Activity Levels

Year	Itinerant Operations				Local Operations			Total Ops
	Air Taxi	GA	Military	Total	GA	Military	Total	
1990	4,000	18,000	200	22,200	6,800	0	6,800	29,000
1991	4,200	18,900	210	23,310	7,140	0	7,140	30,450
1992	4,200	18,900	210	23,310	7,140	0	7,140	30,450
1993	4,200	18,900	210	23,310	7,140	0	7,140	30,450
1994	4,200	18,900	210	23,310	7,140	0	7,140	30,450
1995	2,240	10,800	1,250	14,290	8,600	0	8,600	22,890
1996	2,240	10,800	1,250	14,290	8,600	0	8,600	22,890
1997	2,240	10,800	1,250	14,290	8,600	0	8,600	22,890

Source: APO TAF Quick Summary Report created on July 17, 1998.

Table 3-2- FBO Logged Aviation Activity Levels

Year	Itinerant Operations				Local Operations			Total Ops
	Air Taxi	GA	Military	Total	GA	Military	Total	
1994	587	2,462	456	3,505	2,358	180	2,538	6,043
1995	1,283	5,380	997	7,660	5,154	393	5,547	13,207
1996	1,784	7,480	1,387	10,651	7,168	545	7,713	18,364
1997	2,138	8,967	1,662	12,767	8,591	654	9,245	22,012
1998	2,317	9,717	1,802	13,836	9,312	708	10,020	23,856
1999	2,696	11,305	2,096	16,097	10,833	824	11,657	27,754

Source: Tiffin Aviation, 2000.

Upon reviewing the aviation levels indicated by the FAA TAF, certain elements become subject to their accuracy. The FAA TAF indicates Nogales International Airport experienced a drop of almost 25 percent in total operations from 1994 to 1995, and that every category has remained flat since. The data also indicates that the military has not conducted any local operations. FAA classifies aircraft operating in a local traffic pattern or within sight of the airport, and aircraft known to fly within a 25-mile radius of the airport as local operations. As shown, the FAA TAF data is contrary to the activity observed and logged by the FBO.

3.2.2 Airport Users

Based on the FBO logs, the airport users for Nogales International Airport consist of the armed forces, government agencies, cargo haulers, passenger air taxi and charters, corporate, and private general aviation. Descriptions of the airport users presented here are grouped according to the FAA's user categories, which include military, air taxi, and general aviation for conformity. As the following descriptions indicate, the FBO observations and records better reflect the true level and nature of the activity at Nogales International Airport. Therefore, the forecasts are formulated using the FBO aviation activity levels.

MILITARY

Each of the four armed forces conducts operations at Nogales International Airport. Both the Army and Marines practice instrument approaches, approximately three to four approaches per week, utilizing the C-12 aircraft. The C-12 is a modified Super King Air. The Air Force, working with the Border Patrol, makes two to three stops per week into the airport as it conducts drug surveillance in the area. The Air Force originates from Davis Monthan AFB. A Navy team also conducts training operations. They train at the airport once every other month, conducting touch-and-go and full stop approaches. Touch-and-go activity refers to an operation by an aircraft that lands and departs on a runway without coming to a full stop.

Other military airport users include the Army National Guard and the Border Patrol/U.S. Customs. Working with the Forest Service, two Army National Guard units, one based at Pinal Airpark and the other at Papago, fly drug surveillance over national parks around the region. Surveillance is conducted utilizing rotorcraft. Consequently, they stop at Nogales International Airport approximately twice a month for the Pinal Park unit and once a week for two to three weeks on a quarterly basis for the Papago unit. In addition to those based at Nogales International Airport, other Border Patrol/U.S. Customs operations originate from Sierra Vista, Douglas, Tucson, and Davis Monthan. The Border Patrol averages one to two approaches per day utilizing small fixed-wing aircraft as they patrol the international border and conduct business in the City of Nogales. U.S. Customs averages two approaches per week with both rotorcraft and fixed-wing aircraft.

AIR TAXI AND COMMUTERS

Air taxi and commuters include transport of passengers and cargo. Tiffin Aviation is the only passenger air taxi operator based at Nogales International Airport. It is 135 certified and operates a Beech Baron. Tiffin Aviation departs Nogales about twice a week carrying passengers throughout Arizona. It averages two passengers per flight. Charters enroute to Mexico, California, Phoenix, and various other places also stop at Nogales International Airport. It provides the passengers an opportunity to tour and do some sightseeing in the City of Nogales and along the international border. The charters average two flights per week with four passengers per flight.

In the year 2000, North-South Airways joined Ameriflight as the only two-cargo/freight operators based at Nogales International Airport. Although operations by North-South Airways are not included in the base levels for the forecast, it should be noted that the company flies twice a day six days a week into Phoenix. They carry between 4,000 and 7,000 pounds per flight utilizing the Embraer 120 aircraft. Ameriflight operates the Beech 99 and 1900 carrying 2,000 and 5,000 pounds of parcels and packages per flight to Phoenix and various borderland communities. They conduct two flights per day five days a week. Various other cargo haulers operate in and out Nogales International Airport averaging

between 24 and 100 flights per year. Further breakdown of cargo activity will be presented as the forecast for cargo is formulated.

GENERAL AVIATION

Operations by the flight school, corporate, and private aircraft owners makeup the general aviation activity at the airport. Private operations include individual airplane owners flying in and out of Nogales International Airport for the purpose of conducting business or recreational purposes. General aviation accounts for almost 80 percent of the total operations and approximately 93 percent of the local operations. It is not surprising considering the flight school operates 10 to 15 flights per day. Certified pilots keeping licenses current contribute to the percentage of local operations. A pilot at Nogales International Airport may fly out on business one day, take a scenic flight the next, and practice touch-and-go operations on yet another day.

3.3 AVIATION TRENDS AND ACTIVITY INDICATORS

Prior to generating preliminary projections, an assessment of the aviation and socioeconomic trends is necessary to understand the inclination of aviation demand. It helps establish the rationale and logic that goes into formulating the aviation demand forecasts from the preliminary projections.

3.3.1 Aviation Industry

The aviation industry has been going through a robust period for the last few years and the FAA forecasts more of the same for the next 12 years. Both the major and regional/commuter airlines are experiencing traffic growth and increasing load factors, the result being improved financial conditions for the airlines. Consequently, there have been higher orders and deliveries of aircraft and numbers of airline pilots. Even general aviation appears to be turning around and sharing some of the same prosperity. Increases in both business and recreational flying, including the number of student pilots, provide positive statistics for general aviation.

MAJOR AND REGIONAL/COMMUTER AIRLINES

For the past five years national traffic growth has averaged 5.3 percent annually for the major and regional/commuter airlines. The major airlines' revenue passenger miles (RPMs) increased 4.9 percent annually and load factors were recorded at new high levels with a new all time high of 70.9 percent in 1998. The regional/commuter airlines continue to be the fastest growing sector of the commercial aviation industry as reflected in the RPMs growth. Since 1993, the RPMs have increased at an average annual rate of 10.3 percent. The load factor was 56.6 percent in 1998, which was also an all-time high for the regional/commuter airlines.

The traffic growth and higher passenger yields have generated increased profits for the airlines. The major air carriers reported cumulative operating profits of almost \$31 billion over the past five years and \$500 million for 1998 in combined operating profits for regional/commuter airlines. However, the profit levels were not constant throughout the regional/commuter industry. The larger regional/commuter airlines, those that operate aircraft with 60 seats or more, reported healthier profits than the smaller airlines. There were losses reported by 22 of the smaller regional/commuter airlines.

The improved financial condition of the industry is reflected in the increase in orders and deliveries of commercial aircraft. Orders by the major airlines were up 40.5 percent and

deliveries 23.7 percent in 1998 over the same period in 1997. Orders for the 30- to 75-seat regional jets by the larger regional/commuter airlines totaled over 642 in 1997 and 1998 combined.

The FAA credits the healthy economy for the growth the airlines have been experiencing. However, the higher rate of growth for the regional/commuter airlines is primarily due to the integration of high-speed turboprops and regional jets into the fleet, which have increased the average passenger trip length. The FAA's expectation for the healthy economy to continue is reflected in their forecasts. For the major airlines, the FAA projects passenger enplanements and aircraft traffic to increase 3.4 and 2.8 percent annually, respectively. The lower traffic growth is a reflection of the air carriers' attempt to maintain the current high load factor levels. For the regional/commuter airlines, the FAA not only projects continued growth but also indicates this level of airline will start playing a larger part in the commercial aviation industry. In 1998, the regional/commuter airlines enplaned 11.2 percent of all passenger traffic in scheduled domestic air service. By the year 2010, the FAA projects these airlines will carry 14 percent of all domestic passenger enplanements. The number of passengers reflects a 5.4 percent annual growth. However, the growth is mostly expected for the larger regional/commuter airlines. These airlines operate and benefit from the larger and faster turboprops and regional jets.

GENERAL AVIATION

Trends in general aviation activity indicate that the industry is on an upswing. FAA is logging an increase in annual traffic at combined FAA and contract towers and FAA en route centers, up 3.3 percent and 5.7 percent, respectively. Annual growth in the type of operations includes 1.9 percent of itinerant, 5.4 percent for local, and 4.3 percent for instrument operations. The traffic increase at FAA centers and in instrument operations indicates that an upturn in business and corporate flying is underway. Recreational and instructional flying are also showing a positive trend as indicated by the increase in local operations, basically comprised of touch-and-go activity. However, the positive statistic on student pilots is probably the best indication that the environment for the general aviation industry is improving. The number of active student pilots increased by 1.7 percent in 1998 and the FAA processed 2.7 percent more student pilot certificates over 1997. Higher shipments of general aviation aircraft also represents the good news for the industry. Piston-powered aircraft almost doubled between 1994 and 1997. During the first nine months of 1998, turboprop aircraft shipments were up 3.2 percent.

Along with the healthy economy, growth in the general aviation industry is attributed to the passage of the General Aviation Revitalization Act in 1994 and a number of industry-wide programs instituted over the past several years, including *GA Team 2000*. These programs were designed to attract new pilots to general aviation.

Forecasts by the FAA reflect continued growth for general aviation. Hours flown are projected to increase at an average annual rate of 1.6 percent. The number of active and student pilots are expected to increase 1.5 percent and 2.3 percent annually, respectively. In regards to the general aviation active fleet, annual growth is projected at 1.0 percent through the forecast period. However, the character of the fleet mix is expected to change towards business use with the more expensive and sophisticated turbine-powered aircraft, which includes turboprops and turbojets, outpacing the piston aircraft. Similarly, the turbine-powered helicopters are also anticipated to increase at 1.0 percent annually. The piston-powered helicopters are predicted to stay constant through the forecast period. Combined, the turbine- and piston-powered helicopters are expected to account for 3.4 percent of the general aviation fleet.

3.3.2 Socioeconomic Trends

ECONOMY

The robust period the aviation industry has been experiencing is attributed to the growing economic activity. The current U.S. economic expansion is well into its eighth year, and most likely will become the second longest expansion in post-war history according to the FAA. Gross Domestic Product (GDP) growth has averaged 2.9 percent over the eight-year period and 3.3 percent over the past five years. In addition, inflation in 1998 was at its lowest level since 1965 when inflation also measured 1.4 percent as per the consumer price index.

There is general agreement among most economic forecasters that the U.S. economy will continue to sustain growth. GDP is projected to increase at an average annual growth rate of 2.3 percent, with the consumer price index increasing at an average annual rate of 2.3 percent. As an indication, the current rise in fuel prices reflects the increased demand for oil that results from increased economic activity.

The healthy national economy is also being felt closer to Nogales International Airport, as reflected in unemployment rates and personal income levels (**Table 3-3**). The unemployment rate for Arizona fell from 6.4 percent in 1994 to 4.4 percent in 1999. For Santa Cruz County, it dropped 2.7-percentage points in the last five years with an unemployment rate of 17.1 percent in 1999. Nogales' unemployment rate dropped 5.3-percentage points from 27.1 percent in 1994 to 21.8 percent in 1999. Additionally, personal income at Nogales has been improving. The personal income per capita and average earning per job increased annually at 3.5 and 2.9 percent, respectively, between 1994 and 1997.

The events of September 11, 2001 are generally acknowledged to have a negative affect on the economy as a whole and may in fact invalidate the above projections. It is too soon to tell the specific impacts to the Nogales area and to the airport itself since the data necessary to make this understand these impacts has not yet been generated.

Table 3-3 - Labor Force and Personal Income Data

Elements	1994	1995	1996	1997	1998	1999
Labor Force						
Nogales						
• Labor Force	9,838	10,284	10,233	9,423	8,871	8,815
• Employment	7,171	7,705	6,948	6,943	6,838	6,891
• Unemployment Rate	27.1%	25.1%	32.1%	26.3%	22.9%	21.8%
Santa Cruz County						
• Labor Force	14,729	15,485	15,103	14,139	13,438	13,396
• Employment	11,561	12,423	11,202	11,194	11,025	11,110
• Unemployment Rate	21.5%	19.8%	25.8%	20.8%	18.0%	17.1%
Arizona						
• Labor Force	2,013,045	2,190,700	2,209,458	2,182,073	2,254,983	2,363,705
• Employment	1,885,059	2,079,452	2,087,744	2,080,658	2,161,621	2,259,547
• Unemployment Rate	6.4%	5.1%	5.5%	4.6%	4.1%	4.4%
Nogales Personal Income						
Per Capita	\$12,929	\$13,111	\$13,670	\$14,312	NA	NA
Average Earning per Job	\$18,747	\$19,128	\$19,644	\$20,434	NA	NA

Note: *Average Earning per Job* refers to the Arizona Department of Economic Security tabulation of the average earning per job for reporting regional economic profiles for Arizona.

NA = Not Available.

Source: Arizona Department of Economic Security

ECONOMIC DEVELOPMENT FACTORS

Economic development initiatives that are in place or proposed need consideration in determining the probable impact on aviation activity. These factors may have a significant impact as they foster the acceleration of the economy or they may have minimal influence on the inclination of air travel.

In the last several years, there has been a lot of interest and promotion of the international market as it relates to the state and region. However, the idea dates back to 1959 when then Governors Paul Fannin of Arizona and Alvaro Obregon of Sonora, Mexico created the Arizona-Sonora West Coast Trade Commission, which later evolved into the Arizona-Mexico Commission (AMC). Today the AMC is a non-profit corporation consisting of thirteen working committees. The committees include agribusiness, art and culture, education, environment, financial and business services, health services, legal advisory, livestock, manufacturing, mining, small business, tourism, and transportation. The focus continues to be to promote bi-national initiatives that improve the economy and quality of life in the region.

The next milestone came with the passage of the North American Free Trade Agreement (NAFTA), which came into effect on January 1, 1994. It is a comprehensive trade agreement between the United States and its two neighbors, Mexico and Canada. The focus of the agreement was to foster trade between the NAFTA countries through reduced tariffs and trade barriers.

Consequently, Congress passed the National Highway Systems Act of 1995 to facilitate the NAFTA agreement. The Act defined high priority corridors throughout the United States,

including the CANAMEX Trade Corridor. The name CANAMEX refers to the three countries, Canada, America, and Mexico, making up the western trade corridor. The objective of the corridor is to promote economic development and provide opportunity for accelerated economic growth through mobility and infrastructure improvements. Funding for the development of the corridor is provided by the Transportation Equity for the 21st Century (TEA-21).

The CANAMEX Corridor consists of 1,700 miles of highway and interstate extending from Mexico to Canada, encompassing states of Arizona, Nevada, Utah, Idaho, and Montana. The five states appointed a representative from the private and public sectors to establish the CANAMEX Corridor Coalition with the intent for the representatives to work together in promoting economic development opportunities and transportation efficiency within the corridor. The coalition responsibilities include the development of the CANAMEX Corridor Plan. It should also be noted that even though the CANAMEX Corridor is defined by the National Highway System and a key goal is the development of a continuous four-lane highway from Mexico City to Edmonton, Canada, the focus includes development opportunities of safe and efficient multi-modal transportation networks.

These economic development engines have spawn similar initiatives within the south Arizona region, such as the Tucson-Mexico Project and the Nogales-Santa Cruz County Economic Development Foundation. The Tucson-Mexico Project is the promotion of *Puerto Nuevo*. The project involves the development of Tucson International Airport into a multi-modal transportation hub that would include a cargo consolidation and distribution center, industrial development center, and a high-tech research development center. The focus is for *Puerto Nuevo* to become a trade catalyst providing accessibility to the worldwide market within the NAFTA and CANAMEX scope.

The Nogales-Santa Cruz County Economic Development Foundation (EDF) is a private/public partnership responsible for creating an environment for economic development in the Santa Cruz region. EDF focuses in positioning the region for economic growth by stabilizing and protecting the local economy from fluctuations in the international market. A *Focused Future*, which serves as the region's strategic action plan for economic development, was sponsored by EDF, who is also responsible for overseeing implementation and facilitating efforts. Other responsibilities include providing representation within the *Focused Future* action teams, business recruitment, research and data collection, marketing, and communicating with all involved in economic development for the region.

STUDIES

The economic development initiatives mentioned above have in one form or another conceptual plans and studies describing strategic course of action and recommendations for fostering economic development. However, much is still unknown as to their probable impact on aviation-related activity. On the other hand, the Arizona-Mexico Commission has on file two known studies presenting some inclination as to how some of the initiatives may impact aviation activity as they unfold.

The Arizona Trade Corridor Study took an overview of trade-related opportunities and made recommendations to benefit the state. Although the study was conducted prior to the implementation of NAFTA, the study findings may provide insight in economic growth. The following summarizes the study findings and recommendations as they relate to the Master Plan Update:

- Arizona became the third largest exporter to Mexico after 1992.

- Arizona accounts for 4.5 percent of the total U.S. exports to Mexico (1992).
- Exports increased 12 percent from 1988 to 1990 and 112 percent from 1990 to 1992.
- The top export classification from Arizona to Mexico is electric and electronic components.
- Trade forecast shows exports from the CANAMEX Corridor to Mexico through Nogales growing at a 20 percent annual rate.
- An average annual growth of 35 percent was estimated from 1989 to 1992 in Arizona exports to Sonora.
- Nogales accounts for 67.7 percent of all commercial traffic entering Arizona from Mexico.
- Only 0.3 percent of about 530 million tons of trade cargo moved through Arizona via air transport (1990).
- Airlines carried only 1.1 percent of approximately 2 billion passengers, while road transport moved 98 percent of total passengers.
- Tucson airport has excess passenger capacity, and improvements to the cargo facility are being implemented.

The *Three-Year Review of North American Free Trade Agreement* is the second study, and as the title implies, it provides an assessment of the NAFTA's impact on the State of Arizona during the first three years of implementation. The following summarizes the study findings as they relate to the Master Plan Update:

- Arizona exports to Mexico grew by nearly 50 percent from 1993 to 1996, and are expected to grow 250 percent over the full fifteen-year NAFTA phase-in.
- The annual growth rate in Arizona's exports to Mexico averaged 14.5 percent during the first three years of NAFTA.
- Mexico continues to be Arizona's largest trade partner.
- The annual growth rate in trade to Mexico from 1993 to 1994 was 11.2 percent and 5.5 percent from 1994 to 1995.
- Electronic components are the largest contributor of sales to Mexico.

POPULATION

Population trends also serve as indicators of aviation activity. In the past five years, the population in Nogales, Santa Cruz County, and Arizona averaged an increase of 1.22, 3.83, and 3.88 percent annually, respectively. The Arizona Department of Economic Security Research Administration (DES) projects the growth to continue. DES predicts the population in Nogales will average 1.23 percent annual growth, reaching almost 28,000 by 2020 from almost 21,000 in 1997. Santa Cruz County's population is expected to reach over 55,000, averaging 1.89 percent growth annually. It is anticipated that the state population will exceed 7.3 million by the year 2020, averaging an annual growth rate of 2.07 percent.

3.4 BASED AIRCRAFT AND FLEET MIX

3.5 FORECASTS

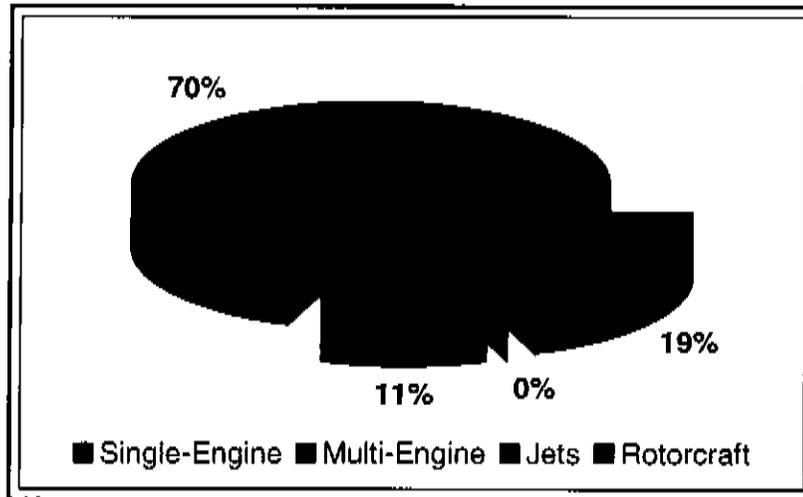
3.5.1 1999 Based Aircraft and Fleet Mix

Nogales International Airport recorded 36 based aircraft in 1999 (Table 3-4). The airport tenants include the Border Patrol/U.S. Customs, Ameriflight, Tiffin Aviation, a flight school, corporate, and private owners. The majority (70%) of the based aircraft is single-engine (Figure 3-1). Border Patrol/U.S. Customs have three helicopters and the flight school has one helicopter for a total of four-based rotorcraft. Multi-engine represents 19 percent of the based aircraft.

Table 3-4 -1999 Based Aircraft

Tenant/Equipment	Type	Quantity
<u>Military</u>		
Border Patrol/U.S. Customs		
• MD 500	Rotorcraft	2
• Bell 204/UH-1	Rotorcraft	1
<u>Cargo</u>		
Ameriflight		
• Beech 99	Multi-engine	1
• Beech 1900	Multi-engine	1
<u>Passenger Air Taxi</u>		
Tiffin Aviation		
• Beech Baron	Multi-engine	1
<u>General Aviation</u>		
Flight School		
• Beech Baron	Multi-engine	1
• Cessna 172	Single-engine	5
• Piper Arrow	Single-engine	1
• Schweizer 300	Rotorcraft	1
Corporate & Private		
• Beechcraft	Multi-engine	1
• Twin Cessna	Multi-engine	2
• Single Cessna & Pipers	Single-engine	19
Total		36

Source: Tiffin Aviation, 2000.

Figure 3-1 -1999 Based Aircraft Fleet Mix

Source: Tiffin Aviation, 2000.

3.5.2 Based Aircraft Forecast

Formulating the Study Forecast for the based aircraft began by first generating preliminary projections based on analytical models. The models used were the trend line and linear regression. The linear regression model calculates projections of a dependent variable (based aircraft) based upon its relationship to an independent variable. How closely the calculated projections fit the data is measured by the correlation coefficient for the data, which is a number in the range of -1 to +1.

Population is generally a good indicator of based aircraft levels. Therefore, the correlation coefficient between based aircraft at Nogales International Airport and the population for the City of Nogales, Santa Cruz County, and Arizona was tested. Of the three population areas, Santa Cruz County tested the highest correlation coefficient at 0.9902. The indication being that the tenants may not necessarily reside within Nogales' city limits, but the majority probably live inside the County. Therefore the county's population was used as the independent variable for the linear regression model.

The trend line model indicates the number of based aircraft at Nogales International Airport will more than triple by the year 2020, averaging an annual growth rate of 5.85 percent. The linear regression model projects an average growth rate of 4.72 percent with the number of based aircraft more than doubling by the end of the planning period.

The next step in formulating the Study forecast is to weigh in the probable impact from the external factors (**Table 3-5**). The FAA national forecasts indicate the general aviation active fleet will increase 1.0 percent annually, and that there will be 1.5 percent and 2.3 percent more active and student pilots, respectively, each year. These growth rates are significantly lower than what the analytical models indicate.

From a socioeconomic standpoint, the National GDP is projected to grow at 2.3 percent. The Arizona Department of Economic Security projects the personal income per capita and average earnings for Nogales to increase 3.5 percent and 2.9 percent, respectively. These

growth rates are higher than the FAA forecasts, but still lower than the rates calculated by the analytical models.

Table 3-5 - Based Aircraft Growth Rate Indicators

Elements	Growth Rates
Analytical Models	
Trend Line	5.85%
Linear Regression	4.72%
FAA Forecasts	
GA Fleet	1.0%
Active Pilots	1.5%
Student Pilots	2.3%
Economics	
National GDP	2.3%
Nogales Income per Capita	3.5%
Nogales Average Earning per Job	2.9%

Note: *Average Earning per Job* refers to the Arizona Department of Economic Security tabulation of the average earning per job for reporting regional economic profiles for Arizona.

Sources: Terminal Area Forecasts, FY 1998-2015.

Arizona Department of Economic Security. Revised May 1999.

The various growth rates implied by the different indicators suggest an average annual growth rate of 2.87 percent after the high- and low-end are excluded. In comparison, the 2.87 percent growth rate does fall within the range of the forecasts of based aircraft for other airports and for Nogales International Airport by other sources (Table 3-6 and Figure 3-2). As shown, the number of based aircraft is projected to grow less than 1.0 percent annually at Laredo International Airport. Las Cruces International Airport and Ryan Airfield forecast growth rates of 3.0 percent and 2.3 percent, respectively. The 2000 Arizona State Aviation Needs Study (SANS) has the number of based aircraft in Nogales International Airport growing at 2.0 percent. The previous master plan for the airport forecast an average annual growth rate of 3.69 percent; however, the number of based aircraft being realized in recent years is below the previous master plan forecast. Consequently, a 2.87 percent growth rate suggests a reasonable estimate of future based aircraft at Nogales International Airport. This 2.87 percent growth rate, used for the Study Forecast, nearly doubles the number of based aircraft during the 20-year planning period.

Table 3-6 - Comparison of Based Aircraft Growth Rates

Elements	Growth Rates
Forecast of Other Airports	
Laredo International Airport, TX	< 1.0%
Las Cruces International Airport, NM	3.0%
Ryan Airfield, AZ	2.3%
Nogales Forecast by Other Sources	
Nogales International Airport Master Plan (1992)	3.69%
Arizona State Aviation Needs Study (2000)	2.00%

Sources: Laredo International Airport Master Plan.

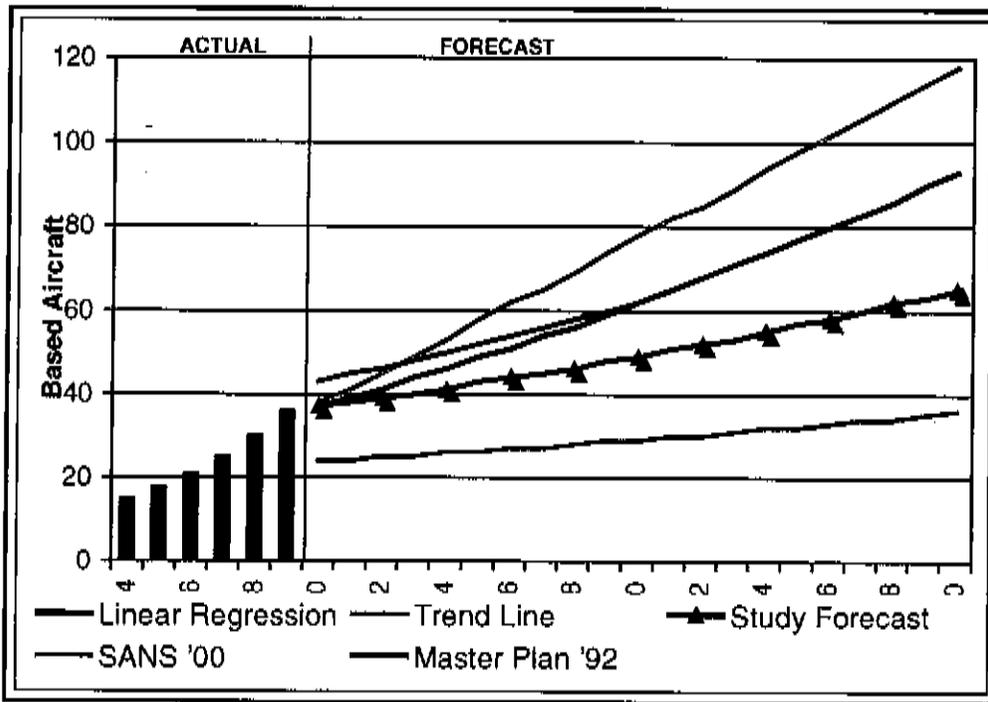
Las Cruces International Airport Master Plan.

Ryan Airfield Airport Master Plan.

Nogales International Airport Master Plan 1990-2010.

Arizona State Aviation Needs Study, 2000.

Figure 3-2 - Based Aircraft Forecasts



Source: Stantec Consulting Inc.

It should be noted that the 2.87 percent growth rate is the estimated medium-growth scenario for the Nogales International Airport. For planning purposes, low-growth and high-growth scenarios are defined as average annual growth rates of 1.8 and 3.8 percent, respectively. Low growth (1.8 percent) assumes that demand will fall approximately 1.0 percent below the medium growth scenario or approximately 0.2 percent below the 2000 SANS projections as a result of over-estimated GA growth trends. The high growth (3.8 percent) scenario assumes that demand will exceed the medium growth scenario by approximately 1.0 percent annually or 1.8 percent above the 2000 SANS as a result of increased economic development growth in the community and region beyond current projections.

It should also be noted that Laredo International Airport is being used for comparison purposes in this study. Even though Laredo International Airport is larger in size and activity, the general opinion of the Planning Advisory Committee is that as Nogales International Airport works toward positioning itself within the international market and the CANAMEX Trade Corridor, it should model itself after an airport similar to Laredo International Airport. The idea is based on the success Laredo International Airport has had in benefiting from its location along the Texas - Mexico border and North American International Trade Corridor.

The fleet mix is expected to indicate a higher percentage of turbo-prop and jet aircraft based at Nogales International Airport (Table 3-7). The increase is generated by the economic activity taking place in the region.

Table 3-7 - Based Aircraft Fleet Mix Forecast

Year	SE	ME	Jet	Rotorcraft	Total
1999	25	7	0	4	36
2005	26	10	2	5	43
2010	30	11	3	5	49
2015	32	14	5	6	57
2020	37	16	6	6	65

Source: Stantec Consulting Inc.

3.6 AIRCRAFT OPERATIONS

3.6.1 Aircraft Operations 1994 - 1999

Nogales International Airport recorded nearly 28,000 operations in 1999 (Table 3-8). Itinerant operations accounted for approximately 58 percent. The majority of the total operations were general aviation at nearly 80 percent. Approximately 49 percent were local operations. Air taxis are estimated at almost 10 percent of the total aircraft operations. For the tabulated time period, Nogales International Airport experienced a larger increase in aircraft operations between 1994 and 1996. After 1996, the number of aircraft operations only grew half as much. Growth ranged between 8.38 percent in 1998 to 19.86 percent in 1997. The growth rate in 1999 was at 16.34 percent.

Table 3-8 - Historical Aircraft Operations

Year	Itinerant Operations				Local Operations			Total Ops
	Air Taxi	GA	Military	Total	GA	Military	Total	
1994	587	2,462	456	3,505	2,358	180	2,538	6,043
1995	1,283	5,380	997	7,660	5,154	393	5,547	13,207
1996	1,784	7,480	1,387	10,651	7,168	545	7,713	18,364
1997	2,138	8,967	1,662	12,767	8,591	654	9,245	22,012
1998	2,317	9,717	1,802	13,836	9,312	708	10,020	23,856
1999	2,696	11,305	2,096	16,097	10,833	824	11,657	27,754

Source: Tiffin Aviation, 2000.

3.6.2 Aircraft Operation Forecasts

In testing the correlation coefficient between aircraft operations and the population for the City of Nogales, Santa Cruz County, and Arizona, the state population tested the highest at 0.9843. The results indicate that aircraft operations at Nogales International Airport are not limited to the immediate area but consist of traffic from throughout the state.

The preliminary projections calculated by the analytical models suggest that the number of aircraft operations at Nogales International Airport might not only triple but might even quadruple by the end of the planning period. The linear regression model estimates operations to grow over 92,000 by the year 2020 from less than 28,000 in 1999 at an average annual growth rate of 5.61 percent. Suggesting a higher growth rate (6.49

percent), the trend line model figures aircraft operations to exceed the 115,000 level for the same period.

The next step in the forecasting process typically calls for evaluating the preliminary projections with external factors that influence aviation traffic. However, aircraft operations consist of diverse activity categories that are affected differently by various external factors. The different FAA categories of aircraft operations include air carriers, air taxis, general aviation, and military operations; however, Nogales International Airport only experiences air traffic from the last three categories. Therefore, it is better to look at the operation categories individually. After which, the resulting aircraft operations forecast is compared with the analytical models' forecasts, operation forecasts of other airports, and operations forecast for Nogales International Airport from other sources, concluding by defining the Study Forecast.

AIR TAXI OPERATIONS

Air taxi operations refer to scheduled and/or nonscheduled aircraft operations carrying passengers and/or cargo for compensation. Considering that passengers and cargo shipments are impacted differently by different factors, air taxi operations are broken down further into these two groups.

At over 85 percent, cargo traffic represents the majority of the air taxi operations at Nogales International Airport. It is also anticipated to be impacted the most by the economic development initiatives taking shape in the region. Unfortunately, most of these initiatives are in their conceptual or early stages of implementation and much is still unknown as to the impact they will have. However, a study assessing NAFTA's impact on Arizona during the first three years of implementation has been conducted, and its findings can be used to build the forecast on.

Formulating the Study Forecast for the cargo air taxi operations began with the assumption that Nogales International Airport will experience future growth in cargo traffic similar to the level of trading between Arizona and Mexico. According to the three-year review study, trading between Arizona and Mexico has been increasing 5.5 percent annually. Therefore cargo air taxi projections, started with a 5.5 percent growth rate with subsequent adjustments to arrive at a reasonable growth rate for Nogales International Airport.

The economic development initiative with the most probable impact on the amount of cargo traffic Nogales International Airport experiences in the future is the development of Tucson International Airport into the *Puerto Nuevo*. As *Puerto Nuevo* is developed as the multi-modal transportation hub with a cargo consolidation and distribution center for the CANAMEX Corridor and Arizona southern region, it will certainly attract the bulk of the trade and export traffic. As indicated by the higher growth rate of the exports (14.5 percent) compared to the level of trading (5.5 percent), larger volume of cargo per shipment is being transported. Cargo hubs and distribution centers cater to and attract more of this type of traffic carrying larger volumes of cargo. Although an argument can be made that shippers may be more attracted to Nogales International Airport's proximity to the border, the schedule, facilities, and additional accommodations cargo hubs and distribution centers provide cargo shippers significantly outweighs the additional short distance between Tucson and the border. Consequently, there is a high likelihood, Nogales International Airport will lose out to the *Puerto Nuevo* regarding increase in cargo traffic. Therefore the cargo air taxi projections is adjusted to a conservative 3.5 percent growth rate (2.0 percent below the 5.5 percent trading growth).

Even with the development of the *Puerto Nuevo*, Nogales International Airport is still expected to receive a share of the cargo traffic increases generated by the economic development initiatives. As *Puerto Nuevo* attracts the large shippers and becomes more congested, Nogales International Airport will be in position to attract the smaller shippers and provide relief, very similar to the way the reliever airport system interacts with large commercial service airports. This means that Nogales International Airport will probably continue to see similar cargo traffic it currently experiences, with the operations increasing at the adjusted 3.5 percent.

The estimated growth rate calculates cargo operations to more than double by the end of the planning period reaching almost 4,700 operations in 2020 from less than 2,300 in 1999 (**Table 3-9**). Assuming, as indicated previously, that the cargo operations will continue to average the same volume (3,200 pounds) of cargo per flight, the cargo air taxi forecast projects Nogales International Airport will handle over 7,500 tons of cargo by the end of the planning period.

Passenger service operations through Nogales International Airport account for only 15 percent of the total air taxi operations. Tourist activity is the primary purpose of the flights. The lower percentage is anticipated to continue even as economic and industry (aviation) developments are realized. Even though the economic development initiatives include promotion of tourism, the primary focus and energies are spent on trade development and enhancing the CANAMEX Trade Corridor. Introduction of a more sophisticated aircraft fleet certainly suggests an expansion of the passenger service market. The new aircraft travel farther and provide more comfortable accommodations. However, the new aircraft also board more passengers per flight minimizing growth in air taxi operations. Consequently, air taxi operations providing passenger service are anticipated to remain below cargo air taxi operations and increase at a 2.5 percent growth rate. For the planning period, they are expected to grow from just over 400 operations in 1999 to almost 700 operations in 2020 (**Table 3-9**).

Table 3-9 - Air Taxi Operations Forecast

Year	Cargo		Passenger	Total
	Ops	Tons		
1999	2,280	3,648	416	2,696
2005	2,803	4,485	482	3,285
2010	3,329	5,326	546	3,875
2015	3,953	6,325	618	4,571
2020	4,696	7,514	699	5,394

Source: Stantec Consulting Inc.

Combining cargo and passenger service operations provides the total number of air taxi operations (**Table 3-9**). They are calculated to increase from almost 2,700 operations in 1999 to almost 5,400 operations in 2020. The increase results in an average annual growth rate of 3.36 percent for the air taxi category.

GENERAL AVIATION OPERATIONS

General aviation operations include business, recreational, and instructional traffic. Even though each type of general aviation is affected differently from various external factors, it is

very difficult to separate the different types because the same aircraft may be used for business one day, sight-seeing the next day, and for flight training on yet another day. Therefore, an assessment of the whole general aviation category is taken weighing the probable impact from external factors.

Table 3-10 lists growth rates of external factors that provide a probable indication on how general aviation traffic may increase. Nationally, general aviation operations have been growing at 1.9 percent and 5.4 percent for itinerant and local operations, respectively. The FAA is forecasting hours flown to increase 1.6 percent annually. Other increases forecasted by the FAA include 1.5 percent and 2.3 percent in the number of active and student pilots, respectively, and the GA fleet at one percent. Economics, which also influence how general aviation grows, indicate growth rates between 2.3 percent and 3.5 percent. The 2.3 percent growth represents the National Gross Domestic Product. At Nogales, the personal income per capita is increasing at 3.5 percent, and the average earning per job is growing at 2.9 percent.

Table 3-10 - General Aviation Growth Rate Indicators

Elements	Growth Rates
Aviation Industry	
GA Itinerant Operations	1.9%
GA Local Operations	5.4%
FAA Forecasts	
GA Hours Flown	1.6%
Active Pilots	1.5%
Student Pilots	2.3%
GA Fleet	1.0%
Economics	
National GDP	2.3%
Nogales Income per Capita	3.5%
Nogales Average Earning per Job	2.9%

Note: *Average Earning per Job* refers to the Arizona Department of Economic Security tabulation of the average earning per job for reporting regional economic profiles for Arizona.

Sources: Terminal Area Forecasts, FY 1998-2015.
Arizona Department of Economic Security. Revised May 1999.

The external factors seem to indicate an average growth rate of 2.3 percent when the high- and low-end growth rates are excluded. However, general aviation for Nogales International Airport is expected to benefit from the economic development initiatives in the form of increased corporate and business operations. Therefore, the general aviation growth rate is anticipated closer to three percent. At 3.0 percent growth rate, general aviation operations are expected to nearly double exceeding 41,000 operations in 2020 from over 22,000 in 1999.

MILITARY OPERATIONS

Military operations, which include traffic from the armed forces and the Border Patrol/U.S. Customs, have been increasing steadily since 1994. The growth can be attributed to two primary factors. First, the armed forces have been using Nogales International Airport for training prior to 1994. However, when the FBO at the airport received authority to sell fuel to the military in 1997, it began to attract more traffic from the armed forces to Nogales

International Airport. It provided the armed forces the ability to train and refuel at the same location, making the airport attractive for training by the armed forces.

The second factor deals with the patrolling of the international border. As reported by *The Arizona Republic* (July 8, 2000), an aggressive strategy has been adopted in border enforcement. More agents are patrolling common border-crossing points including Nogales. Consequently, Nogales International Airport began experiencing an increase in border and drug surveillance traffic. According to the newspaper article, the strong border enforcement strategy has also led to an additional need for mercy flights along the border. Apparently, the increase of agent presence at border communities has forced immigrants seeking passage into the United States to do so via remote areas. However, the immigrants are more vulnerable to the elements at the isolated areas, which have led to an increase in desert deaths and rescues. Therefore, additional aircraft have been sent to patrol the remote areas, increasing the number of operations at Nogales International Airport.

However, the effect on military operations at Nogales International Airport from these two factors appears to have peaked and not much more growth is expected. Military traffic levels are anticipated to be relatively flat during the planning period; but an average annual growth rate of 0.5 percent will be used for this study. The growth rate is to account for any additional border presence needed due to the increase in commercial traffic. It calculates more than 300 additional military operations by the end of the planning period.

TOTAL AIRCRAFT OPERATIONS

The aircraft operations levels generated by the individual assessments are summed to arrive at the total operations (Table 3-11). The results indicate aircraft operations at Nogales International Airport will increase to almost 50,000 operations in the year 2020 from fewer than 28,000 in 1999. The increase represents an average annual growth rate of 2.83 percent. At almost 83 percent of the total operations, general aviation operations are expected to continue being the majority operator at the airport. Air taxi operation totals indicate an increase in their presence at Nogales International Airport.

Table 3-11 - Total Aircraft Operations Forecast

Year	Air Taxi	General Aviation	Military	Total
1999	2,696	22,138	2,920	27,754
2005	3,285	26,434	3,009	32,728
2010	3,875	30,644	3,085	37,603
2015	4,571	35,525	3,163	43,259
2020	5,394	41,183	3,242	49,820

Source: Stantec Consulting Inc.

In comparison (Table 3-12 and Figure 3-3), the aircraft operations forecast based on the individual categories is significantly lower than the projections implied by the analytical models. However, the preliminary forecast does fall within the range of the forecasts for other airports. The master plan for Laredo International Airport projected aircraft operations to increase 1.14 percent annually. However, a discussion with the airport director for Laredo International Airport suggests that the airport is probably realizing higher growth rates, closer to two to three percent, in recent years. Growth rates of 1.2 percent and 4.08 percent

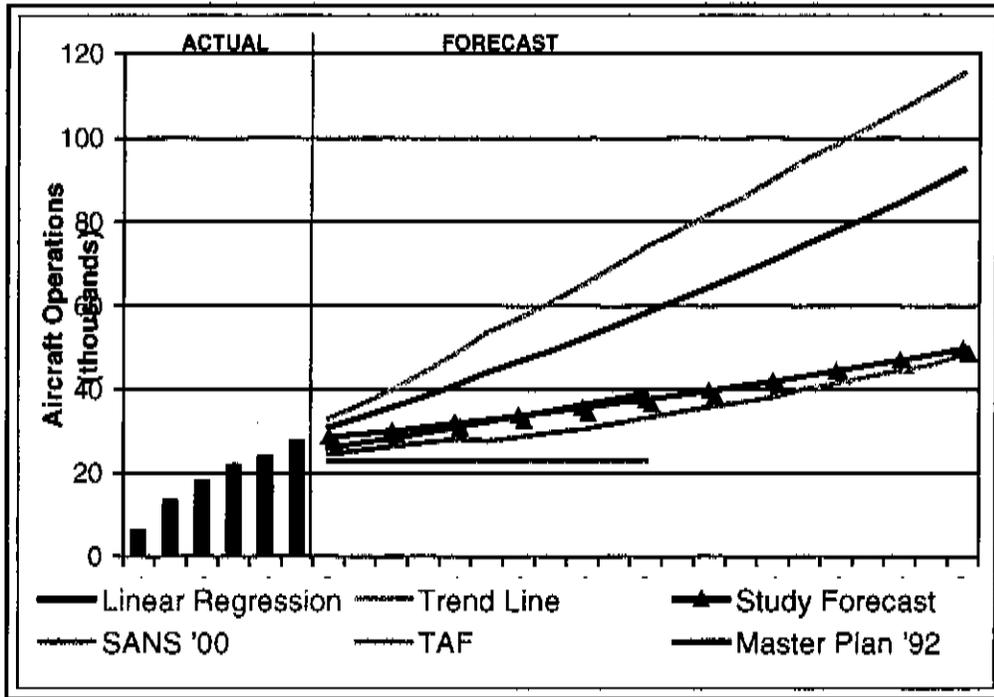
are forecast for Tucson International Airport and Bisbee-Douglas International Airport, respectively, by the airports' master plans. Forecasts of aircraft operations for Nogales International Airport by other sources also varied. The previous master plan for Nogales International Airport projected aircraft operations to increase 6.27 percent annually. However, an evaluation of traffic levels for the past few years suggest the projections were too high. For instance, the previous master plan projected 21,740 aircraft operations for 1995, but the airport only recorded 13,207 operations for the year. The Arizona State Aviation Needs Study (SANS) conducted in 2000 forecast aircraft operations at Nogales International Airport at a 3.5 percent average annual growth rate. In comparison, SANS 95 previously projected 2.9 percent average annual growth for Nogales. The comparison of the different forecasts suggest that even though the correlation coefficient tested high, the population for the state is not a good indication of the aircraft operations level at Nogales International Airport. Weighing the probable impact from external factors to the individual categories generated an overall projection of aircraft operations comparable with other forecasts. Therefore, its growth rate of 2.83 percent is applied to define the Study Forecast.

Table 3-12 - Comparison of Aircraft Operation Growth Rates

Elements	Growth Rates
Preliminary Forecast	
Total Operations	2.83%
Analytical Models	
Linear Regression	5.61%
Trend Line	6.49%
Forecast of Other Airports	
Laredo International Airport	1.14%
Tucson International Airport	1.2%
Bisbee-Douglas International Airport	4.08%
Nogales Forecast by Other Sources	
Nogales International Airport Master Plan (1992)	4.15%
Arizona State Aviation Needs Study (2000)	2.00%
Terminal Area Forecasts (1998)	0.0%

Sources: Laredo International Airport Master Plan.
Tucson International Airport Master Plan Update, November 1996.
Bisbee Douglas International Airport Comprehensive Airport Master Plan 1997-2016.
Nogales International Airport Master Plan 1990-2010.
Arizona State Aviation Needs Study, 2000.
Terminal Area Forecast Quick Summary Report. Created on July 17, 1998.

Figure 3-3 - Aircraft Operation Forecasts



Source: Startec Consulting Inc.

Similar to the based aircraft forecasts and for planning purposes only, low-, medium-, and high-growth scenarios were defined for total operations. The 2.83 percent average annual growth rate used for the Study, as described previously, is defined as the medium-growth scenario for total operations. The high- and low-growth scenarios are defined as 3.8 and 1.8 percent, respectively, or nearly 1.0 percent above (accelerated economic growth) and below (slow economic growth) the medium growth scenario. While the 2.83 percent growth rate is used in subsequent planning elements to determine the need for and timing of airport improvements, it is important to note that real demand and not forecast demand should drive airport development. For example, if actual demand in 2005 exceeds the forecast demand for 2005, then the airport's proposed development schedule should be accelerated. Thus, a high-growth scenario is simply representative of accelerated development.

3.6.3 Operation Types and Fleet Mix

ITINERANT, LOCAL, AND INSTRUMENT OPERATIONS

Local operations are typically training type operations such as touch-and-goes, and Nogales International Airport experiences a significant amount of local operations (Table 3-13). They accounted for an average of approximately 42 percent of the total operations. Contributing to the high levels is that nearly all airport users conduct training at the Airport. The only exceptions are the air taxi operators.

Assuming an average of 72 percent and 51 percent of total military and general aviation, respectively, will continue conducting training at the airport, local operations are anticipated to exceed 21,000 by the end of the planning period. Approximately 95 percent would be from general aviation traffic.

Table 3-13 - Operation Types

Year	Itinerant Operations				Local Operations			Total Ops	IFR App.
	Air Taxi	GA	Military	Total	GA	Military	Total		
1999	2,696	11,306	2,095	16,097	10,832	825	11,657	27,754	1,167
2005	3,285	13,500	2,159	18,944	12,934	850	13,784	32,728	1,304
2010	3,875	15,650	2,214	21,738	14,994	871	15,865	37,603	1,438
2015	4,571	18,143	2,269	24,983	17,382	893	18,275	43,259	1,594
2020	5,394	21,032	2,327	28,753	20,151	916	21,067	49,820	1,776

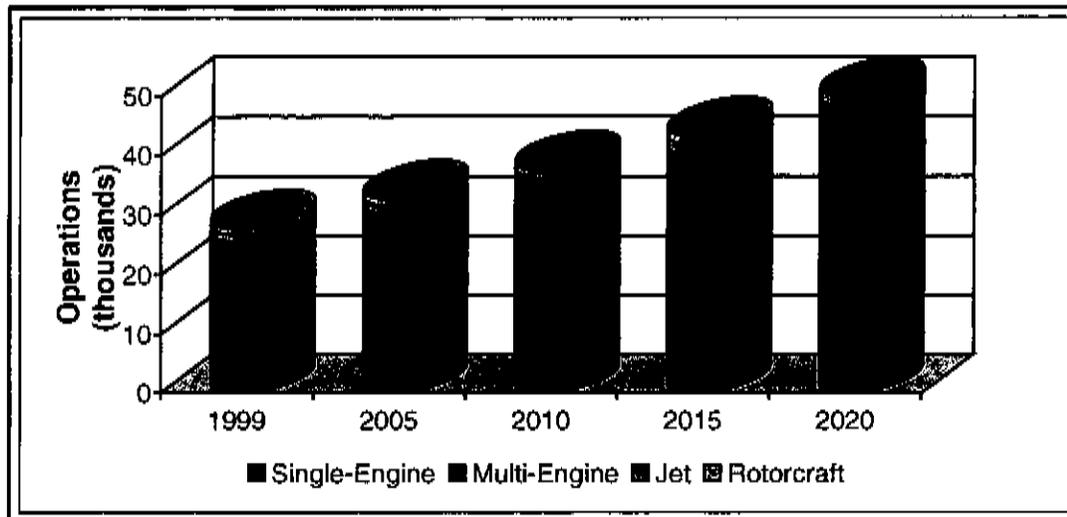
Source: Stantec Consulting Inc.

An instrument operation is an approach to an airport utilizing the airport's navigational aids for guidance. Generally, instrument approaches are intended for pilot's use during inclement weather when instrument flight rules (IFR) apply. IFR is rules governing the procedures for conducting instrument flight. Pilots are required to follow these rules when operating in controlled airspace with a visibility of less than three miles and/or a ceiling lower than 1,000 feet. However, instrument approaches are not restricted for that time only. Based on the FBO's observations, it is assumed that 43 percent and 30 percent of military and air taxi traffic, respectively, conduct instrument approaches. In addition, it is estimated that 10 percent of general aviation traffic also conducts instrument approaches. They include sophisticated general aviation aircraft and students practicing instrument approaches. Based on the Study Forecast, over 1,700 instrument approaches are anticipated in the year 2020 (Table 3-13).

OPERATIONS FLEET MIX

Nogales International Airport experiences everything from jet to single-engine aircraft activity (Figure 3-4). Currently, more than 50 percent of the operations fleet mix consists of single-engine aircraft. Multi-engine aircraft represent approximately 35 percent of the traffic. With the projected increase in cargo traffic, jet and multi-engine operations are anticipated to exceed 2,000 and 17,000 operations, respectively, by the end of the planning period. However, operations by single-engine aircraft are expected to continue representing the majority at the airport.

Figure 3-4 - Aircraft Operations Fleet Mix



Source: Stantec Consulting Inc.

3.6.4 Operation Peaking Characteristics

Airports are not planned to accommodate the highest volume of activity or for ultimate capacity. It cannot be justified economically. Instead, practical capacity or a reasonable level of activity is used in identifying the adequacy of facilities and planning airport development. However, peaking levels or peaking characteristics of aviation activity are used to define the threshold between reasonable and ultimate levels of activity for airport master planning.

Peaking characteristics of aviation activity include peak month, design day, and design hour. Peak month refers to the calendar month when peak operations occur. Design day is calculated as the average day of the peak month by dividing the peak month operations by the number of days in the month. Design hour represents the peak hour of the design day.

The busiest time for Nogales International Airport is the month of August. Although an increase in operations is experienced from each of the traffic categories, it is more evident from the flight school and air taxis. The average number of operations per day nearly triple during the month of August for the flight school. It is also the tourism season, generating an increase in passenger air taxis. Consequently, the peak month of August averages 13 percent of the annual operations (Table 3-14). The design hour was estimated at 12 percent of the design day.

Table 3-14 - Operation Peaking Characteristics

Year	Annual Operations	Peak Month	Design Day	Design Hour
1999	27754	3608	116	14
2005	32728	4255	137	16
2010	37603	4888	158	19
2015	43259	5624	181	22
2020	49820	6477	209	25

Source: Stantec Consulting Inc.

3.7 FORECASTS SUMMARY

Table 3-15 summarizes the forecasts for the Master Plan Update. The next element in the planning process proceeds to translate these aviation demand projections into future facility requirements for the airport through the 20-year planning period. Guidelines applied to the facility requirements are driven by the aircraft approach category and airplane design group of the most demanding aircraft or family of aircraft predominantly operating at the airport as described in the next chapter.

Table 3-15 - Forecasts Summary

Elements	1999	2005	2010	2015	2020	Average Annual Growth Rate
Based Aircraft/Fleet Mix						
Single-Engine	25	26	30	32	37	
Multi-Engine	7	10	11	14	16	
Jets	0	2	3	5	6	
Helicopters	4	5	5	6	6	
Total	36	43	49	57	65	2.87%
Operations						
Operation Types						
• Itinerant	16,097	18,944	21,738	24,983	28,753	
• Local	11,657	13,784	15,865	18,275	21,067	
• Total	27,754	32,728	37,603	43,259	49,820	2.83%
User Categories						
• Air Taxi	2,696	3,285	3,875	4,571	5,394	
• General Aviation	22,138	26,434	30,644	35,525	41,183	
• Military	2,920	3,009	3,085	3,163	3,242	
• Total	27,754	32,728	37,603	43,259	49,820	2.83%
Fleet Mix						
• Single-Engine	16,071	18,951	21,767	25,028	28,802	
• Multi-Engine	9,596	11,333	13,042	15,031	17,347	
• Jets	1,101	1,320	1,536	1,787	2,079	
• Helicopters	985	1,124	1,259	1,414	1,592	
• Total	27,754	32,728	37,603	43,259	49,820	2.83%
Instrument Operations	2,334	2,608	2,876	3,188	3,552	

Source: Stantec Consulting Inc.