APPENDIX A
GLOSSARY OF TERMS

ACRONYMS

AC	Advisory Circular
ADF	Automatic Direction Finder
AGL	Above Ground Level
AIP	Airport Improvement Program
ALP	Airport Layout Plan
ALS	Approach Lighting System
AOPA	Aircraft Owners and Pilots Association
ARC	Airport Reference Code
ARFF	Airport Rescue and Fire Fighting
ARP	Airport Reference Point
ARTCC	Air Route Traffic Control Center
ASDA	Accelerate-Stop Distance Available
ASR	Airport Surveillance Radar
ASV	Annual Service Volume
ATC	Air Traffic Control
ATCT	Airport Traffic Control Tower
AVGAS	Aviation Gasoline
BRL	Building Restriction Line
CFR	Code of Federal Regulations
CIP	Capital Improvement Program
dBA	A-weighted Decibels
DH	Decision Height

DME	Distance Measuring Equipment
DNL	Day-Night Sound Levels
DOT	Department of Transportation
EA	Environmental Assessment
EIS	Environmental Impact Statement
EP	Enplaned Passenger
EPA	The United States Environmental Protection Agency
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FBO	Fixed Base Operator
FIS	Federal Inspection Service
FL	Flight Level
FSS	Flight Service Station
FTZ	Foreign Trade Zone
GA	General Aviation
GPS	Global Positioning System
HIRL	High Intensity Runway Lights
IFR	Instrument Flight Rules
ILS	Instrument Landing System
INM	Integrated Noise Model
LDA	Landing Distance Available
LDA	Landing Directional Aid
LDN	Day-Night Sound Levels (See DNL)
LIRL	Low Intensity Runway Lights

MALSR	Medium-Intensity Approach Lighting System with Runway Alignment Indicator Lights
MIRL	Medium Intensity Runway Lights
MITL	Medium Intensity Taxiway Lighting
MLS	Microwave Landing System
MSL	Mean Sea Level
NAVAID	Air Navigation Facility/Aid
NDB	Non-Directional Beacon
NPIAS	National Plan of Integrated Airport Systems
OFA	Object Free Area
OFZ	Obstacle Free Zone
PAPI	Precision Approach Path Indicator
PFC	Passenger Facility Charge
PIR	Precision Instrument Runway
REIL	Runway End Identifier Lights
RSA	Runway Safety Area
RPZ	Runway Protection Zone
TAF	FAA Terminal Area Forecasts
TODA	Take-Off Distance Available
TORA	Take-Off Run Available
VASI	Visual Approach Slope Indicator
VFR	Visual Flight Rules

DEFINITIONS

Active Aircraft: Aircraft registered with the FAA and reported to have flown during the preceding calendar year.

Activity: Used in aviation to refer to any kind of movement, e.g., cargo flights, passenger flights, or passenger enplanements. Without clarification it has no particular meaning.

ADF: Automatic Direction Finder.

Advisory Circular (AC): A series of Federal Aviation Administration (FAA) publications providing guidance and standards for the design, operation and performance of aircraft and airport facilities.

AGL: Above Ground Level.

Airport Improvement Program (AIP): A congressionally mandated program through which the FAA provides funding assistance for the development and enhancement of airport facilities.

Air Cargo: Commercial freight, including express packages and mail, transported by passenger or all-cargo airlines.

Air Carrier: An airline providing scheduled air service for the commercial transport of passengers or cargo.

Air Navigation Facility (NAVAID): Although generally referring to electronic radio wave transmitters (VOR, NDB, ILS), it also includes any structure or mechanism designed to guide or control aircraft involved in flight operations.

Air Route Traffic Control Center (ARTCC): FAA-manned facility established to provide air traffic control services to aircraft operating in controlled airspace, en route between terminal areas. Although designed to

handle aircraft operating under IFR conditions, some advisory services are provided to participating VFR aircraft when controller workloads permit.

Air Taxi: An air carrier certificated in accordance with FAR Part 135 and authorized to provide, on demand, public transportation of persons and property by aircraft. Air taxi operators generally operate small aircraft "for hire" for specific trips.

Air Traffic Hub: Air traffic hubs are not airports; they are cities and Metropolitan Statistical Areas requiring aviation services and may include more than one airport. Communities fall into four classes as determined by each community's percentage of the total enplaned passengers by scheduled air carriers in the 50 United States, the District of Columbia, and other U.S. areas designated by the Federal Aviation Administration. Hub designations are determined by the following criteria:

1. Large Hub: 1.00 percent
2. Medium Hub: 0.25 percent to 0.99 percent
3. Small Hub: 0.05 percent to 0.249 percent
4. Non-Hub: Less than 0.05 percent.

Aircraft Approach Category: A grouping of aircraft based on a speed of 1.3 times the stall speed in the landing configuration at maximum gross landing weight. The aircraft approach categories are:

Category A: Approach Speed less than 91 knots;
Category B: Approach Speed 91 knots or more but less than 121 knots;
Category C: Approach Speed 121 knots or more but less than 141 knots;
Category D: Approach Speed 141 knots or more but less than 166 knots; and,
Category E: Approach Speed 166 knots or more.

Aircraft Gate Position: An aircraft operational stand close to the terminal building and related to a specific passenger loading gate.

Aircraft Mix: The classification of aircraft into groups that are similar in size, noise, and operational characteristics.

Aircraft Operations: The airborne movement of aircraft. There are two types of operations: local and itinerant defined as follows:

1. Local Operations are performed by aircraft which:
   (a) operate in the local traffic pattern or within sight of the airport;
   (b) are known to be departing for or arriving from a local practice area.

2. Itinerant operations are all others.

Airfield: A defined area on land or water including any buildings, installations, and equipment intended to be used either wholly or in part for the arrival, departure or movement of aircraft.

Airplane Design Group: A grouping of airplanes based on wingspan. The groups are:

Group I:	Up to, but not including 49 feet
Group II:	49 feet up to, but not including 79 feet
Group III:	79 feet up to, but not including 118 feet
Group IV:	118 feet up to, but not including 171 feet
Group V:	171 feet up to, but not including 214 feet
Group VI:	214 feet up to, but not including 262 feet.

Airport Layout Plan (ALP): An FAA required map of an airport depicting existing and proposed facilities and uses, with clearance and dimensional information showing compliance with applicable standards.

Airport Reference Code (ARC): A coding system used to relate airport design criteria to the operational and physical characteristics of the airplanes intended to operate at the airport. It is a combination of the aircraft approach category and the airplane design group.

Airport Reference Point (ARP): The location at which the designated latitude and longitude for an airport are measured.

Airport Service Area: The geographic area that generates demand for aviation services at an airport.

Airport Surveillance Radar (ASR): Radar providing position of aircraft by azimuth and range data without elevation data. It is designed for a range of approximately 50 miles.

Airport Traffic Area: Unless otherwise specifically designated that airspace with a horizontal radius of five statute miles from the geographic center of any airport at which a control tower is operating, extending from the surface up to but not including 3,000 feet above the surface.

Airside: That portion of the airport facility where aircraft movements take place, airline operations areas, and areas that directly serve the aircraft (taxiway, runway, maintenance, and fueling areas). It is also called the airport operations area.

Airspace: The area above the ground in which aircraft travel. It is divided into corridors, routes, and restricted zones for the control and safety of aircraft.

Airspace Classifications: Airspace in the United States is classified as controlled, uncontrolled, special use, and other. Controlled airspace is further classified as Class A, B, C, D, and E. Each of these classes have different dimensions, purposes, and requirements as follows:

1. **Class A – Airspace**: Generally, that airspace from 18,000 feet MSL up to and including FL 600, including the airspace overlying the waters within 12 nautical miles of the coast of the 48 contiguous States and Alaska; and designated international airspace beyond 12 nautical miles of the coast of the 48 contiguous States and Alaska within areas of domestic radio navigational signal or ATC radar coverage, and within which domestic procedures are applied. Unless otherwise authorized, all persons must operate their aircraft under IFR in Class A airspace.

2. **Class B – Airspace:** Generally, that airspace from the surface to 10,000 feet MSL surrounding the nation's busiest airports in terms of IFR operations or passenger enplanements. The configuration of each Class B airspace area is individually tailored and consists of a surface area and two or more layers (some Class B airspace areas resemble upside-down wedding cakes), and is designed to contain all published instrument procedures once an aircraft enters the airspace. An ATC clearance is required for all aircraft to operate in the area, and all aircraft that are so cleared receive separation services within the airspace. The cloud clearance requirement for VFR operations is "clear of clouds." Regardless of weather conditions, an ATC clearance is required prior to operating within Class B airspace. Pilots should not request a clearance to operate within Class B airspace unless the requirements of 14 CFR Section 91.215 and 14 CFR Section 91.131 are met.

3. **Class C – Airspace**: Generally, that airspace from the surface to 4,000 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower, are serviced by a radar approach control, and that have a certain number of IFR operations or passenger enplanements. Although the configuration of each Class C airspace area is individually tailored, the airspace usually consists of a 5 NM radius core surface area that extends from the surface up to 4,000 feet above the airport elevation, and a 10 NM radius shelf area that extends no lower than 1,200 feet up to 4,000 feet above the airport elevation. Two-way radio communication must be established with the ATC facility providing ATC services prior to entry and thereafter maintain those communications while in Class C airspace. Pilots of arriving aircraft should contact the Class C airspace ATC facility on the publicized frequency and give their position, altitude, and destination. Radio contact should be initiated far enough from the Class C airspace boundary to preclude entering Class C airspace before two-way radio communications are established.

4. **Class D – Airspace**: Generally, that airspace from the surface to 2,500 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower. The configuration of each Class D airspace area is individually tailored and when instrument procedures are published, the airspace will normally be designed to contain the procedures. Aircraft operating in Class D airspace must maintain radio contact with the appropriate control facility while operating

in this airspace. Pilots must also abide by certain operating, pilot, and equipment rules while operating within Class D airspace.

5. **Class E – Airspace**: Class E airspace includes the entire airspace that is not classified as A, B, C, or D, and has no special restrictions with respect to pilot or aircraft equipment rules. However, it is controlled airspace, meaning that aircraft can be provided with air traffic control services.

All-Cargo Carrier: An air carrier certificated in accordance with FAR Part 121 to provide scheduled air freight, express, and mail transportation over specific routes, as well as the conduct of nonscheduled operations that may include passengers.

Alternate Airport: An alternate destination airport if flight to the original destination cannot be completed.

Ambient Noise Level: Background noise level, exclusive of the contribution made by aircraft.

Annual Service Volume (ASV): A reasonable estimate of an airport's annual capacity. It accounts for differences in runway use, aircraft mix, weather conditions, etc., that would be encountered over a year's time.

Approach End of Runway: The near end of the runway as viewed from the cockpit of a landing aircraft.

Approach Surface: An imaginary surface longitudinally centered on the extended runway centerline and extending outward and upward from each end of the primary surface. An approach surface is applied to each end of the runway based upon the planned approach. The inner edge of the approach surface is the same width as the primary surface and expands uniformly depending upon the planned approach.

Approved Instrument Approach: Instrument approach meeting the design requirements, equipment specifications, and accuracies, as determined by periodic FAA flight checks, and which are approved for general use and publication by the FAA.

Apron: A defined area where aircraft are maneuvered and parked and where activities associated with the handling of flights can be carried out.

ARFF: Aircraft Rescue and Fire Fighting.

ATC: Air Traffic Control

ATCT: Airport Traffic Control Tower.

AVGAS: Aviation gasoline. Fuel used in reciprocating (piston) aircraft engines. Avgas is manufactured in the following grades; 80/87, 100LL, 100/130, and 115/145.

Avigation Easement: A form of limited property right purchase that establishes legal land-use control prohibiting incompatible development of areas required for airports or aviation related purposes.

Based Aircraft: Aircraft stationed at an airport on an annual basis.

BRL: Building Restriction Line.

Capacity: (Throughput capacity). A measure of the maximum number of aircraft operations which can be accommodated on the airport or airport component in an hour.

Capital Improvement Program (CIP): A scheduled of planned projects and costs, often prepared and adopted by public agencies.

CAT I (one): Category I Instrument Landing System which provides for approach to a height above touchdown of not less than 200 feet and with Runway Visual Range of not less than 1,800 feet.

CAT II (two): Category II ILS approach procedure which provides for approach to a height above touchdown of not less than 100 feet and a RVR of not less than 1,200 feet.

CAT III (three): Category III ILS approach that provides for an approach with no decision height and a RVR of not less than 700 feet.

Ceiling: The height above the ground of the base of the lowest layer of clouds or obscuring phenomena aloft that is reported as broken or overcast and not classified as scattered, thin, or partial. Ceiling figures in aviation weather reports may be determined as measured, estimated, or indefinite.

Certificated Route Air Carrier: One of a class of air carriers holding certificates of public convenience and necessity. These carriers are authorized to perform scheduled air transportation over specified routes and a limited amount of nonscheduled activity.

Charter: A nonscheduled flight offered by either a supplemental or certificated air carrier.

Circling Approach: An instrument approach procedure in which an aircraft executes the published instrument approach to one runway, then maneuvers visually to land on a different runway. Circling approaches are also used at airports that have published instrument approaches with a final approach course that is not aligned within 30 degrees of any runway.

Clear Zone: See Runway Protection Zone

Clearway: A clearway is an area available for the continuation of the take-off operation that is above a clearly defined area connected to and extending beyond the end of the runway. The area over which the clearway lies need not be suitable for stopping aircraft in the event of an aborted take-off. Clearways are applicable only in the take-off operations of turbine-engined aircraft.

Commercial Air Carriers: An air carrier certificated in accordance with FAR Parts 121 or 127 to conduct scheduled services on specified routes. These air carriers may also provide nonscheduled or charter services as a secondary operation. Four carrier groupings have been designated for statistical and financial data aggregation and analysis:

1. Majors: Air carriers with annual operating revenues greater than $1 billion.
2. Nationals: Air carriers with annual operating revenues of between $100 million and $1 billion.
3. Large Regionals: Those carriers whose revenues are between $10 million and $99,999,999.
4. Medium Regionals: Air carriers with annual revenues less than $10 million.

Commuter Air Carrier: An air carrier certificated in accordance with FAR Part 135 which operates aircraft with a maximum of 60 seats, and provides at least five scheduled round trips per week between two or more points, or carries mail.

Commuter / Air Taxi Operations: Those arrivals and departures performed by air carriers certificated in accordance with FAR Part 135.

Condemnation: Proceedings under which a property interest may be forcibly acquired: government may condemn land through the power of eminent domain: an individual may apply inverse condemnation to obtain just compensation for a property interest taken by the government without prior agreement.

Conical Surface: An imaginary surface extending outward and upward from the periphery of the horizontal surface at a slope of 20:1 for a horizontal distance of 4,000 feet.

Control Areas: These consist of the airspace designated as Federal Airways, additional Control Areas, and Control Area Extensions, but do not include the Continental Control Areas.

Control Tower: A central operations facility in the terminal air traffic control system consisting of a tower cab structure using air/ground communications and/or radar, visual signaling, and other devices to provide safe and expeditious movement of air traffic.

Control Zones: Control zones that do not underlie the continental control area have no upper limit. A control zone may include one or more airports and is normally a circular area with a radius of five statute miles and any extensions necessary to include instrument departure and arrival paths.

Controlled Airspace: Airspace designated as continental control area, control area, control zone, or transition area within which some or all aircraft may be subject to air traffic control.

Critical Aircraft: The aircraft that controls one or more design items based on wingspan, approach speed and/or maximum certificated takeoff weight. The same aircraft may not be critical to all design items.

Crosswind: When used concerning wind conditions, the word means a wind not parallel to the runway or the path of an aircraft.

dBA: Decibels measured on the A-weighted scale to factor out anomalies.

Decibel (dB): The standard unit of noise measurement relating to a logarithmic scale in which 10 units represent a doubling of acoustic energy.

Decision Height (DH): During a precision approach, the height (or altitude) at which a decision must be made to either continue the approach or execute a missed approach.

Declared Distances: The distances the airport owner declares available and suitable for satisfying an airplane's take-off distance, accelerated-stop distance, and landing distance requirements. The distances are:

Take-off run available (TORA): The runway length declared available and suitable for the ground run of an airplane taking off.

Take-off distance available (TODA): The TORA plus the length of any remaining runway and/or clearway (CWY) beyond the far end of the TORA.

Accelerate-stop distance available (ASDA): The runway plus stopway (SWY) length declared available and suitable for the acceleration and deceleration of an airplane aborting take-off.

Landing distance available (LDA): The runway length declared available and suitable for a landing airplane.

Design Hour: The design hour is an hour close to the peak but not the absolute peak, which is used for airport planning and design purposes. It is usually the peak hour of the average day of the peak month.

Displaced Threshold: Actual touchdown point on specific runways designated due to obstructions that make it impossible to use the actual physical runway end.

Distance Measuring Equipment (DME): An airborne instrument that indicates the distance the aircraft is from a fixed point, usually a VOR station.

DOT: Department of Transportation.

Effective Runway Gradient: The maximum difference between runway centerline elevations divided by the runway length, expressed as a percentage.

Eminent Domain: Right of the government to take property from the owner, upon compensation, for public facilities or other purposes in the public interest.

Environmental Assessment (EA): A report prepared under the National Environmental Policy Act (NEPA) analyzing the potential environmental impacts of a federally funded project.

Environmental Impact Statement (EIS): A report prepared under NEPA fully analyzing the potential significant environmental impacts of a federally funded project.

EPA: The United States Environmental Protection Agency.

FAR Part 77: Federal Aviation Regulations that establish standards for determining obstructions in navigable airspace.

Federal Aviation Administration (FAA): A branch of the U.S. Department of Transportation responsible for the regulation of all civil aviation activities.

Fixed Base Operator (FBO): An individual or company located at an airport providing commercial general aviation services.

Final Approach: The flight path of an aircraft which is inbound to the airport on an approved final instrument approach course, beginning at the point of interception of that course and extending to the airport or the point where circling for landing or missed approach is executed.

Fixed Wing: For the purposes of this report, any aircraft not considered rotorcraft.

Flight Plan: A description or outline of a planned flight that a pilot submits to the FAA, usually through a Flight Service Station.

Flight Service Station (FSS): Air traffic facility overseen by the FAA to provide flight service assistance such as pilot briefing, en route communications, search and rescue assistance and weather information.

General Aviation: All civil aviation operations other than scheduled air services and non-scheduled air transport operations for remuneration or hire.

Global Positioning System (GPS): GPS uses a group of many satellites orbiting the earth to determine the position of users on or above the earth's surface. This system will provide at least non-precision approach capability to any airport having published instrument approach procedures.

HIRL: High Intensity Runway Lights.

Horizontal Surface: A horizontal plane 150 feet above the established airport elevation, the perimeter of which is constructed by swinging arcs with a radius of 5,000 feet for all runways designated as utility or general; and 10,000 feet for all other runways from the center of each end of the primary surface and connecting the adjacent arc by tangent lines.

Instrument Flight Rules (IFR): These rules govern the procedures for conducting instrument flight. Pilots are required to follow these rules when operating in controlled airspace with visibility of less than three miles and/or ceiling lower than 1,000 feet.

Instrument Landing System (ILS): ILS is designed to provide an exact approach path for alignment and descent of aircraft. Generally consists of a localizer, glide slope, outer marker, middle marker, and approach lights.

Instrument Runway: A runway equipped with electronic and visual navigation aids for which a precision or non-precision approach procedure having straight-in landing minimums has been approved.

Itinerant Operation: All aircraft operations at an airport other than local.

Landing Area: That part of the movement area intended for the landing and takeoff of aircraft.

LDN: Day-night sound levels; a method of measuring noise exposure.

Local Operation: Aircraft operation in the traffic pattern or within sight of the tower, or aircraft known to be departing or arriving from flight in local practice areas, or aircraft executing practice instrument approaches at the airport.

LIRL: Low Intensity Runway Lights.

Mean Sea Level (MSL): Elevation above Mean Sea Level.

Medium-Intensity Approach Lighting (MALSR): This system includes runway alignment indicator lights. An airport lighting facility which provides visual guidance to landing aircraft.

Microwave Landing System (MLS): An instrument landing system operating in the microwave spectrum that provides lateral and vertical guidance to aircraft with compatible equipment.

Minimums: Weather condition requirements established for a particular operation or type of operation.

MIRL: Medium-Intensity Runway Lights.

Movement Area: The runways, taxiways and other areas of the airport used for taxiing, takeoff and landing of aircraft, exclusive of loading ramps and parking areas.

Navigational Aid (NAVAID): Any visual or electronic device airborne or on the surface which provides point to point guidance information or position data to aircraft in flight.

Non-Directional Beacon (NDB): Transmits a signal on which a pilot may "home" using equipment installed in the aircraft.

Non-Precision Instrument Approach: An instrument approach procedure with only horizontal guidance or area-type navigational guidance for straight-in approaches.

Object Free Area (OFA): A two dimensional ground area surrounding runways, taxiways, and taxilanes which is clear of objects except those whose location is fixed by function.

Object Free Zone (OFZ): The airspace defined by the runway OFZ and, as appropriate, the inner- approach OFZ and the inner-transitional OFZ, which is clear of object penetrations other than frangible NAVAIDS.

Runway OFZ - The airspace above a surface centered runway centerline.

Inner-approach OFZ - The airspace above a surface centered on the extended runway centerline. It applies to runways with an approach lighting system.

Inner-transitional OFZ - The airspace above the surfaces located on the outer edges of the runway OFZ and the inner-approach OFZ. It applies to precision instrument runways.

Obstruction: An object that penetrates an imaginary surface described in FAR Part 77.

Peak Factor: The factor applied to the annual operations to determine the peak hour activity.

PIR: Precision Instrument Runway.

Precision Approach Path Indicator (PAPI): Provides visual approach slope guidance to aircraft during approach to landing by radiating a directional pattern of high intensity focused light beams.

Precision Instrument Approach: An instrument approach procedure in which electronic vertical and horizontal guidance is provided, e.g. ILS and MLS.

Primary Surface: A surface longitudinally centered on the runway, extending 200 feet beyond each end of the runway. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline.

Rotorcraft (e.g., Helicopter): A heavier-than-air aircraft supported in flight by the reactions of the air on one or more power-driven rotors on substantially vertical axis.

Runway End Identifier Lights (REIL): These lights aid in early identification of the approach end of the runway.

Runway Protection Zone (RPZ): The ground area under the approach surface that extends from the primary surface to a point where the approach surface is fifty feet above the ground. This was formerly known as the clear zone.

Runway Safety Area (RSA): A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway.

Segmented Circle: A system of visual indicators designed to provide traffic pattern information at airports without operating control towers.

Touch and Go Operation: Practice flight performed by a landing touchdown and continuous take off without stopping or exiting the runway.

Transitional Surfaces: These surfaces extend outward and upward at right angles to the runway centerline and the extended runway centerline at a slope of 7:1 from the sides of the primary surface and from the sides of the approach surfaces. Transitional surfaces for those portions of a precision approach surface which project through and beyond the limits of the conical surface extend a distance of 5,000 feet measured horizontally from the edge of the approach surface and at right angles to the runway centerline.

Transport Airport: An airport designed, constructed and maintained to serve airplanes in aircraft approach category C and D.

Utility Airport: An airport designed, constructed and maintained to serve airplanes in aircraft approach category A and B.

VASI: Visual Approach Slope Indicator. See definition of PAPI.

Visual Flight Rules (VFR): Flight rules by which aircraft are operated by visual reference to the ground. Weather conditions for flying under these rules must include a ceiling greater than 1,000 feet, three-miles visibility and standard cloud clearance.

Wind Coverage: Wind coverage is the percent of time for which aeronautical operations are considered safe due to acceptable crosswind components.

Wind Rose: A scaled graphical presentation of wind information.

APPENDIX B
BASE YEAR OPERATIONAL ESTIMATE

The year 2008 operational estimate for Nampa Municipal Airport was determined through a combination of visual surveys of operations on specific days and the use of pneumatic tube traffic count data collected over a period of three weeks. This operational data was extrapolated using a bottom up methodology to represent the entire year.

Data Collection

Visual observations were made between the hours of 7:00AM – 11:00AM and 3:00PM – 7:00PM on Tuesday, September 23rd , 2008 and Thursday, September 25th , 2008. These observations were used to calculate an average weekday. Visual observations were also made on Saturday, September 27th 2008 between the hours of 8:00AM - 8:00PM and were used to calculate the average weekend. Pneumatic tube data was counted during the weeks September 15th through 29th , and October 15th through October 21st, 2008. The tube count data was used to estimate the hourly spread of operations during both weekday and weekend time periods.

Methodology

An estimate of the month of September was built up from tabulated weekday and weekend days. The actual average daily operations were determined from an hourly profile of activity. For the hours observed, operations were calculated for arrivals, departures, and touch and go operations. An estimate of the percentage of operations that would have occurred during the times when there was no visual survey was determined from the tube count data. It was estimated that 42.7 percent of operations were observed during the weekdays and 79.9 percent of operations were observed during the weekend. **Table B-1** presents the observed daily operations, the percent of hourly spread, and the estimated total weekday and weekend operations.

TABLE B-1 – DAILY OPERATIONS ESTIMATE		
	Average Weekday	**Average Weekend**
Operations	76	220
Percent of Hourly Spread	42.7%	79.9%
Total Daily Operations	178	275

An operational estimate for the month of September was calculated. The month of September has 22 weekdays and eight weekend days. Therefore the total estimated operations for the month are 6,116 as presented in **Table B-2**.

TABLE B-2 – MONTH OF SEPTEMBER OPERATIONS ESTIMATE		
	Weekdays	**Weekends**
Number of Days	22	8
Average Daily Operations	178	275
Total Operations	3,916	2,200
Total Month of September	**6,116**	
Five-year Average Peaking Factor September (see Table B-3)	1.1647	
Average Month in 2008	**5,251**	

The base year was determined from the month of September by applying monthly peaking factors. Total monthly fuel sales were used to determine monthly peaking characteristics. The most recent five years, 2003 through 2007, were used. During this period, the peak month has been July or August. Table 3 presents this monthly peaking as a percentage of the average month which has a peaking factor of one. The month of September has historically been about 16.47 percent more active than the average month and therefore the average month is estimated to have 5,251 operations. The estimates for each month were determined by multiplying the peaking factors by the number of operations in the peak month.

TABLE B-3 – BASE YEAR OPERATIONS ESTIMATE		
Month	Five-yr Average Peaking Factor	Monthly Operations Estimates
January	0.3790	1,990
February	0.6213	3,263
March	0.8439	4,431
April	0.7981	4,191
May	1.0599	5,565
June	1.5324	8,046
July	1.6555	8,693
August	1.7016	8,935
September	1.1647	6,116
October	1.0859	5,702
November	0.6708	3,522
December	0.4869	2,557
	Subtotal Operations	*63,012*
	Estimated Ultra-light and Glider Operations	2,640
	10% Planning Allowance	6,301
	Total Operations Estimate	**71,953**

As ultra-light and glider operations were not observed, an annual estimate was made to account for these operations. It was assumed that the operators of these aircraft were mostly active during the months of March through October. It was also assumed that because of the mostly recreational nature of these operations these aircraft had an average utilization rate of 1.5 times per week or three operations per week. This results in an estimate of 2,640 annual operations. In addition, a 10 percent allowance was applied to the total monthly estimates to account for potential undercounting during the period of observation and was applied as a conservative measure for planning purposes.

Findings

The total annual estimate for the year 2008 is approximately 72,000 annual operations.

APPENDIX C
FAA SOUTHERN REGION: REGIONAL GUIDANCE LETTER

DRAFT

Regional Guidance Letter

Airports Division, Southern Region

Number: RGL 01-2

Line of Business: Airport Planning

Date: August , 2001

Subject: Runway Length and Strength Requirements for Business Jet Aircraft

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Purpose: This Regional Guidance Letter supplements RGL 00-1, Standard Development for "Business Jet" Aircraft, and Advisory Circular (AC) 150/5325-4A, Runway Length Requirements for Airport Design, and provides additional guidance for determining the appropriate runway length and strength for airports expected to serve business jet aircraft.

Background: There has been a rapid increase in the business jet aircraft fleet over the past few years. Many new models and several new manufacturers have been introduced into the marketplace. There has also been a general increase in the size of business jet aircraft. As a result, AC 150/5325-4A, and therefore the runway length portion of the Airport Design for Microcomputers program which is based on this AC, is out of date with regard to business jet aircraft. Most of the business jets listed in the AC are now obsolete. While the AC or the microcomputer program should still be used as a general guide in determining the appropriate runway length for airports serving business jet aircraft, additional guidance is needed to ensure the runway length is adequate for the specific makes and models of business jets expected to use the airport on a regular basis.

The FAA's Central Region Airports Division reviewed the performance characteristics of 64 different makes and models of business jet aircraft, 57 of which are listed in the attached table (ref: Table 1. Business Jet Statistics). There was not enough information available to determine the performance characteristics of the remaining models. An analysis of the information in Table 1 revealed the following:

Category B Business Jets: 23 of the models studied have approach speeds of 91 knots or more, but less than 121 knots. All of these jets have a wingspan of less than 79 feet, thus fall in Airplane Design Groups I or II. About 5,500 of these jets have been manufactured to date. These aircraft typically weigh between 10,000 and 45,000 pounds, with most weighing less than 30,000 pounds. The takeoff distance required at sea level, standard temperature, and maximum takeoff weight is between 3,200 and 5,500 feet. The landing distance required in dry conditions at sea level, standard temperature, and maximum landing weight ranges from 2,500 to 5,900 feet.

Category C Business Jets: 28 of the models studied have approach speeds of 121 knots or more, but less than 141 knots. All but one of these jets have wingspans of less than 79 feet, thus fall in Airplane Design Groups I or II. One jet has a wingspan of 94 feet, thus falls in Airplane Design

Group III. There have been about 5,400 of these jets manufactured to date. Most of them weigh between 13,000 and 45,000 pounds. The takeoff distance required at sea level, standard temperature, and maximum takeoff weight is between 3,200 and 5,700 feet. The landing distance required in dry conditions at sea level, standard temperature, and maximum landing weight ranges from 2,400 to 5,900 feet.

Category D Business Jets: Only 4 of the models studied have approach speeds greater than 141 knots. One of them has a wingspan less than 49 feet, thus falls in Airplane Design Group I. Two of them have wingspans greater than 49 feet, but less than 79 feet, thus fall in Airplane Design Group II. One of them has a wingspan greater than 79 feet, but less than 118 feet, thus falls in Airplane Design Group III. There have been about 1,100 of these jets manufactured to date. Three of these aircraft weigh between 60,000 and 95,000 pounds. The fourth weighs 23,500 pounds. The takeoff distance required at sea level, standard temperature, and maximum takeoff weight is between 5,500 and 6,000 feet. The landing distance required in dry conditions at sea level, standard temperature, and maximum landing weight ranges from 3,000 to 3,500 feet.

Guidance:

Determinations of Required Runway Length for Business Jets: ADO Program Managers should determine the required runway length based on AC 5325-4A or the Airport Design for Microcomputers program. However, this should be supplemented by checking the runway length required for the specific makes and models of business jet aircraft expected to use the airport on a regular basis (regular basis being defined as at least 250 annual takeoff operations).

The runway length required for specific business jets may be determined by adjusting the takeoff and landing runway lengths listed in Table 1 for altitude, temperature, maximum difference in runway centerline elevations, i.e., effective gradient (takeoff length only), and wet runway conditions (landing length only). Note that takeoff and landing lengths for some of the aircraft were not available in the data used to compile the table and must be obtained from the manufacturer. The attached spreadsheets (ref: Takeoff Runway Length Adjustment.xls and Landing Runway Length Adjustment.xls) are available electronically in the Airports Reference System to aid Program Managers in making the runway length adjustment calculations. Program Managers may enter the values for takeoff and landing runway length from Table 1, airport elevation, mean maximum daily temperature, and difference between the high and low points of the runway (takeoff runway length only), and have the spreadsheets calculate the adjusted takeoff and landing runway lengths required. The greater of the adjusted takeoff or landing lengths is the recommended runway length for airport design.

Note that the takeoff runway lengths in the table are based on the aircraft operating at maximum takeoff weight, i.e., 100 percent useful load. In determining the adjusted takeoff runway length, consideration should be given to the stage length (non-stop haul distance) of the aircraft using the airport on a regular basis. This affects the fuel load to be carried, thus the weight of the aircraft. It may not be appropriate to assume that the aircraft operates at the maximum takeoff weight, i.e., 100 percent useful load. Therefore, the calculated takeoff runway length may be longer than actually required. The use of judgment is necessary in such cases.

The longer of the adjusted runway length calculated for the specific critical business jet aircraft or the runway length obtained from the AC or microcomputer program should be used as the required runway length.

Determinations of Required Runway Strength for Business Jets: ADO Program Managers should determine the required runway strength for the specific critical business jet aircraft expected to use the airport on a regular basis (regular basis defined as at least 250 annual takeoff operations). The required strength may be determined based on the maximum takeoff weight listed in Table 1.

In general, runways should have a dual wheel pavement strength of 30,000 pounds if they accommodate only category B business jets, 60,000 pounds if they accommodate category B and C business jets, and 90,000 pounds if they accommodate category B, C, and D business jets. However, these are broad generalizations and some category B business jets have a maximum takeoff weight of more than 30,000 pounds. Likewise, some category C business jets have a maximum takeoff weight of more than 60,000 pounds. Therefore, in practice, the pavement strength required for the specific critical aircraft should be used.

Point of Contact: Troy Butler, ASO-610B, (404) 305-6722

Robert B. Chapman
Acting Manager, Airports Division

Table 1. Business Jet Statistics

BUISNESS JETS	# MFG.	ARC	1.3 X STALL SPEED KNOTS	WING SPAN FEET	MAX T.O. LBS.	T.O. DIST. ISO	LAND. DIST. ISO
AEROSPATIALE SN-601 CORVETTE	40	B-I	118	42.2	14550	NA	NA
BEECHJET 400A/T/ T-1A JAYHAWK	581	C-I	121	43.5	16100	4169	2960
BOMBARDIER CL-600 CHALLENGER	85	C-II	125	61.8	41250	5700	2775
BOMBARDIER CL-601 CHALLENGER	66	C-II	125	61.8	41250	5700	2775
BOMBARDIER CL-601-3A/3R CHALLENGER	194	C-II	125	61.8	41250	5700	2775
BOMBARDIER CL-604 CHALLENGER	180	C-II	125	61.8	47600	5700	2775
BOMBARDIER BD-700 GLOBAL EXPRESS	85	C-III	126	94	96000	6300	2700
CESSNA 500 CITATION	418	B-I	108	47.1	11850	2930	2270
CESSNA 501 CITATION I/SP	325	B-I	112	46.8	10600	2830	2350
CESSNA 525 CITATIONJET (CJ-1)	430	B-I	107	46.7	10400	3080	2750
CESSNA 525A CITATIONJET II (CJ-2)	30	B-II	118	49.5	12500	3420	2980
CESSNA 550 CITATION II	733	B-II	108	51.7	13300	2990	2270
CESSNA 550 CITATION BRAVO	161	B-II	112	52.2	14800	3600	3180
CESSNA 551 CITATION II/SP	94	B-II	108	51.8	12500	2650	2210
CESSNA 552/T-47A	15	B-II	107	52.2	16300	3180	2800
CESSNA S550 CITATION S/II	162	B-II	NA	52.2	15900	NA	NA
CESSNA 560 CITATION V Ultra	538	B-II	108	52.2	16300	3180	NA
CESSNA 560 CITATION ENCORE	25	B-II	108	52.2	16830	3560	2865
CESSNA 560 CITATION EXCEL	160	B-II	107	55.7	20000	3590	3180
CESSNA 650 CITATION III/VI	241	C-II	131	53.3	21000	5150	2900
CESSNA 650 CITATION VII	119	C-II	126	53.6	23000	4850	3220
CESSNA 750 CITATION X	160	C-II	131	63.6	36100	5140	3410
DASSAULT FALCON 10	226	B-I	104	42.9	18740	NA	NA
DASSAULT FALCON 20	515	B-II	107	53.5	28660	NA	NA
DASSAULT FALCON 2000	140	B-II	114	63.5	35800	5240	5220
DASSAULT FALCON 50	310	B-II	113	61.9	37480	4715	4875
DASSAULT FALCON 900	190	B-II	100	63.4	45500	4680	5880
DASSAULT FALCON 900 EX	85	C-II	126	63.5	48300	4985	5880
GULFSTREAM II	258	D-II	141	68.8	65300	NA	NA
GULFSTREAM III	199	C-II	136	77.8	68700	NA	NA
GULFSTREAM IV	469	D-II	149	77.8	71780	5450	3190
GULFSTREAM V	160	D-III	NA	98.6	89000	5990	2950
HAWKER-SIDDELEY 125-400	291	C-I	124	47	23300	NA	NA
HAWKER-SIDDELEY 125-600	71	C-I	125	47	25000	NA	NA
BAE 125-700	212	C-I	125	47	24200	NA	NA
RAYTHEON/HAWKER 125-800	533	B-I	120	51.3	28000	5380	4500
RAYTHEON/HAWKER 125-1000 HORIZON	50	C-II	130	61.9	36000	5250	2340

Continued on next page…

BUISNESS JETS	# MFG.	ARC	1.3 X STALL SPEED KNOTS	WING SPAN FEET	MAX T.O. LBS.	T.O. DIST. ISO	LAND. DIST. ISO
ISRAEL AIRCRAFT INDUSTRIES							
JET COMMANDER 1121 & WESTWIND 1123/1124	442	C-I	130	43.3	23500	NA	NA
ASTRA 1125	135	C-II	126	52.8	23500	5300	3500
GALAXY 1126	33	C-II	140	58.2	34850	5500	3500
LEARJET 23	100	C-I	124	NA	12500	4000	4300
LEARJET 24	257	C-I	128	35.6	13000	NA	NA
LEARJET 25	373	C-I	137	35.6	15000	NA	NA
LEARJET 28/29	9	B-I	120	43.7	15000	NA	NA
LEARJET 31	220	C-I	124	43.1	16500	3410	2870
LEARJET 35/36	739	C-I	133	39.5	18300	5000	2900
LEARJET 45	145	C-I	129	47.1	20200	4220	3140
LEARJET 55	147	C-I	138	43.7	21500	5310	3250
LEARJET 60	210	D-I	149	43.9	23500	5360	3420
MITSUBISHI MU-300 DIAMOND	111	B-I	109	43.5	14630	4300	3200
RAYTHEON 390 PREMIER	42	B-I	120	44	12500	3792	3300
SABRELINER T-39	140	NA	NA	NA	NA	NA	NA
SABRELINER 40	137	B-I	120	44.5	18650	4900	2950
SABRELINER 60	146	C-I	134	44.6	20200	3500	3400
SABRELINER 65	76	C-II	124	50.5	24000	5450	3345
SABRELINER 75	9	C-I	137	44.5	23300	5500	3750
SABRELINER 75a/80	72	C-II	128	50.4	24500	4460	3450

Notes:
NA = Not Available
Takeoff Distance is based on maximum takeoff weight and no effective gradient.
Landing Distance is based on maximum landing weight and dry pavement and no wind conditions.
ISO = Sea Level at 59 Degrees Fahrenheit
Some, but not all data has been checked against the approved aircraft flight manual.

APPENDIX D
SUGGESTED AIRPORT SECURITY ENHANCEMENTS

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Source: TSA, Security Guidelines for General Aviation Airports, IP A-001, May 2004