SECTION 1 – PURPOSE AND NEED

1.0 INTRODUCTION

This section of the EA begins by describing the purposes of the OSUA expansion project. It then presents relevant background information that is helpful in understanding the need for the project, including a discussion of the project location, history of project development, existing facilities, and projected future operations. The remainder of the section describes the specific problems and deficiencies with the existing facilities at OSUA that collectively make up the need for the project. These include a primary runway length that is less than the FAA recommended length. Finally, this section identifies the requested Federal action, provides a timeframe for such action and describes the Proposed Action reviewed in this EA.

1.1 PROJECT PURPOSE

The first purpose of this project is to accommodate the airport's critical aircraft and user needs by meeting FAA's recommended runway length for the Gulfstream V (G5). The G5 represents the largest group of aircraft operating at OSUA, and has been identified as the "critical aircraft" for OSUA. This group of aircraft conducted approximately 2,936 operations (i.e., takeoffs and landings) at OSUA in 2003. The second purpose of the project is to accommodate existing and future demand for hangar space at OSUA. The third purpose is to improve navigational aids for the new primary runway. The final purpose for the project is to minimize the potential for incursions (i.e., aircraft accidentally straying into areas where they are not supposed to be) onto the new primary runway from crosswind runways/taxiways.

1.2 BACKGROUND INFORMATION

1.2.1 Project Location and Political Jurisdictions

OSUA is located in northwestern Franklin County and lies within the City of Columbus, Ohio. Franklin County is located in central Ohio, and the airport is approximately ten miles northwest of downtown Columbus. OSUA is owned and operated by The Ohio State University (OSU). The airport, also known as Don Scott Field, is approximately 1,400 acres in size. The primary entrance to the airport is from West Case Road, which bounds the airport to the south. The airport is also bounded by Sawmill Road on the west, Dublin-Granville Road (State Route 161) to the north and Godown Road to the east (Figure 1).

There are several political entities within close proximity to OSUA. Perry Township is adjacent on the north side of the airport, the City of Worthington is located approximately two miles east of the airport, and the City of Dublin is approximately two miles west of the airport.

1.2.2 History of Project Development

The OSUA began a planning process in 1990 to identify long-term capacity and infrastructure needs at the airport. Those needs were identified in the 1990 Master Plan and a subsequent 2002 draft Master Plan update. These documents provide a comprehensive plan for future growth and development at OSUA. OSUA initiated preparation of this EA in 2001 to evaluate the potential impacts of implementing some of the proposed airport improvements identified in the 1990 Master Plan and the 2002 Master Plan update. The long-range goal documented in the 1990 Master Plan was to develop a 6,000-foot primary runway and a 5,000-foot parallel runway. In order to meet the long-range goals, a Preferred Alternative was

identified. The Preferred Alternative included the following components: extending RWY end 9L by 1,800 feet and RWY end 27R by 1,200 feet, for a total runway length of 6,000 feet; closing of RWY 14/32; and installing a precision approach on runway end 27R. The 2002 Master Plan update added a full parallel taxiway and connecting taxiways between the north and south runways to the Preferred Alternative identified in the 1990 Master Plan. The 2002 update included an updated forecast of operations as well as updates to other study elements. The 2002 Master Plan forecast of operation has been recently updated and now includes 2003 as the base year of operations.

1.2.3 Existing Airport Facilities

The OSUA Airport Layout Plan (ALP) has been previously approved by FAA, and an updated ALP is currently under review. The existing airfield consists of four runways: two parallel runways (RWY 9R/27L, RWY 9L/27R) and two crosswind runways (RWY 5/23, RWY 14/32) (Figure 2). All four runways are serviced by parallel taxiways that extend along their full length as well as connector taxiways. The taxiways are 50 feet in width, as are the connectors.

RWY 9R/27L is the primary runway and has an east-west alignment. It has a paved surface that is 5,002 feet long by 100 feet wide. It is lighted with a High Intensity Runway Lighting (HIRL) system. Visual Approach Slope Indicators (VASIs) are located on both runway ends and used for navigational purposes. RWY end 27L is also equipped with Runway End Identification Lights (REILs). RWY end 9R is equipped with an Instrument Landing System (ILS), Medium Intensity Approach Lighting System with runway alignment indicator lights (MALSR), Distance Measuring Equipment (DME), and a localizer.

RWY 9L/27R is the secondary runway and is 2,994 feet long and 100 feet wide. It is lighted by Medium Intensity Runway Lighting (MIRL), and both runway ends are equipped with two VASIs.

RWY 5/23 and RWY 14/32 serve as the crosswind runways. RWY 5/23 is 3,555 feet long and 100 feet wide with a northeast-southwest alignment. RWY 14/32 is 3,438 feet long and 100 feet wide with a northwest-southeast alignment.

In addition, several navigational aids exist at the airport to support incoming and outgoing aircraft. A rotating beacon, an air traffic control tower (ATCT), surface wind direction indicators, four lighted wind cones, and an Automated Surface Observing System (ASOS) are present.

Support facilities and buildings are also present at the site. The aviation terminal (1,929 square feet), administration (4,687 square feet) and maintenance (4,687 square feet) buildings are located on the south side of the airport. The University's Department of Aviation acts as the Fixed Base Operator (FBO), providing aeronautical services and operating the fuel facilities. The fuel facilities consist of eight above ground fuel tanks, six mobile refuelers and two tanks that can distribute fuel directly to aircraft. OSUA is able to store 24,00 gallons of AvGas, 48,000 gallons of Jet Fuel and 4,000 gallons of MoGas at any time.

Vehicle parking is provided off of West Case Road adjacent to the terminal and administration buildings. Airport storage facilities consist of seven conventional hangars, four T-hangars and 190 tie-downs on apron areas. The apron areas consist of three separate paved aprons: the west apron is 35,300 square feet, the east apron is 21,583 square feet and the itinerant apron is 2,000 square feet.

1.2.4 Airport Classification and Critical Aircraft

The FAA uses an Airport Reference Code (ARC) to classify airports. The ARC system is used to describe the types of aircraft that utilize an airport and identify the design criteria required to adequately support those aircraft. This classification is based upon aircraft approach speeds and wingspans. Table 1 illustrates the various categories of each element of the classification. The ARC for an airport is based upon the largest aircraft using the airport for at least 500 operations (i.e., takeoffs and landings) per year.

This aircraft is also known as the "critical aircraft". The critical aircraft using an airport determines the airport's runway lengths and classification. Based on current operations and future forecasted operations, the critical aircraft using OSUA belongs in the D-III category. According to current operations, the Gulfstream V is typical of the largest aircraft performing over 500 annual operations at the airport; therefore this aircraft is the critical aircraft for OSUA. In 2003, the Gulfstream V conducted 2,936 operations.

Table 1. Airport Reference Code Classification System

FAA Approach Category		FAA Airplane Design Group	
A	approach < 91 knots	I	wing < 49 ft
B	91 knots<= approach <121 knots	II	49 ft <= wing < 79 ft
C	121 knots<= approach <141 knots	III	79 ft <= wing <118 ft
D	141 knots<= approach < 166 knots	IV	118 <= wing < 171 ft
E	166 knots<= approach	V	171 ft <= wing <214 ft

Source: FAA Advisory Circular 150/5300-13, Airport Design

1.2.5 Forecast of Operations

A forecast of operations was developed for the 2002 OSU Master Plan update. Since that time, a number of factors have led to the need to again update the forecast of operations. Some of the factors that caused a significant change in the forecast included: the terrorist attacks of September 11, 2001; an economic recession; and the number of based aircraft reported at OSUA. The new 2004 forecast of operations has been included as an appendix to the 2002 OSU Master Plan Update and is also included as Appendix A in this EA. Forecasts were based on national aviation trends (*FAA Aerospace Forecast, Fiscal Years 2004-2015, USDOT, FAA March 2004*), projected employment for Franklin County, Ohio, (*The Woods and Poole Complete Economic and Demographic Data Source (CEDDS)*), and year to date activity in 2004 for the airport (OSUA management and FAA Contract Tower). Using these data sources, the number of based aircraft were identified in the new 2004 forecast, and these are shown in Table 2.

Table 2. Existing and Forecast Number of Based Aircraft*

Engine Types	2003	2008	2013	2018	2023
Jet	19	25	31	35	41
Multi, Turboprop	36	45	48	51	54
Single	166	202	214	226	237
Helicopter	9	8	8	8	8
Total	**230**	**280**	**301**	**320**	**340**

*Based on improvements identified in the 2002 Master Plan update

For the new 2004 forecast, annual operations were projected for different scenarios. Four of those scenarios are relevant to the need for the project as analyzed in this EA. These are:

- Existing (2003) Conditions – this is the baseline and includes the total number of annual operations that actually occurred in 2003.
- Future (2008) No Build Conditions - assumes that no capacity or operational improvement projects will be undertaken. Changes in operational characteristics are possible under this scenario, but assumes these changes are not caused by capital improvement projects.
- Preferred Alternative (2008) – This scenario includes both the Runway 9L/27R extension to 6,000 feet and the construction of new hangars on the south side of the airport with 50 additional based aircraft. This is the same scenario which is identified as the Preferred Alternative for this EA.
- Full Build Out Condition (2023) - The Full Build scenario includes the Preferred Alternative improvements as well as additional corporate hangars on the north side of the airport (the hangars

on the north side of the airport are not included as part of the Preferred Alternative in this EA, but are part of the 2002 Master Plan update, so this forecast is included for informational purposes).

The forecast of operations for each of these scenarios is shown in Table 3. These forecasts are different from FAA's Tower Forecasts. The master plan forecasts take into account local economic and populations trends, airport activity, and the actual number of based aircraft, while the FAA Tower Forecast uses broader regional and national trends to forecast operations at the airport. While the Tower Forecasts are useful for many other planning purposes, the master plan forecasts are more accurate and are therefore better suited for use in this EA. More detailed information regarding these forecasts can be found in Appendix A.

Table 3. Annual Forecast of Operations by Scenario.

Scenario	Engine Type			
	Single	Multi, Turboprop	Jet	**Total**
Existing Conditions (2003)	82,267	11,202	8,363	**101,832**
No Build (2008)	92,112	12,509	9,097	**113,718**
Preferred Alternative (2008)	109,932	14,929	11,307	**136,168**
Full Build (2023)	132,028	17,930	13,040	**162,997**

Source: The Ohio State University Airport Master Plan Update (2002), updated 2004

1.3 PROJECT NEEDS

1.3.1 Runway Length

The FAA Advisory Circular 150/5325-4A and the FAA's Airport Design computer program are used to determine recommended minimum runway lengths for airports. The method for determining the recommended primary runway length is based on either a family of aircraft having similar operating characteristics or by analysis of a specific aircraft (i.e., the critical aircraft). In accordance with the FAA Advisory Circular 150/5325-4A, when the maximum gross weight of airplanes forecasted to use a runway is 60,000 pounds or less, the runway length should be designed for a family of airplanes. Since pavement strengths at OSUA only allow aircraft up to 60,000 pounds to land, the requirements for families of aircraft were analyzed during the 2002 Master Plan update.

The FAA circular and computer program provide runway length curves for various percentages of the operating fleet at an airport. An aircraft's runway requirements will vary depending on the following: airport altitude, temperature, wind conditions, the aircraft's payload, fuel load, and intended range. For this analysis, runway length requirements for aircraft between 12,500 and 60,000 pounds were calculated using several runway design curves. This weight range accommodates most of the business jets in operation at OSUA today, including the Gulfstream V (critical aircraft at OSUA). Table 4 illustrates the recommended FAA lengths for runways at OSUA.

Assuming that 75 percent of large aircraft would be accommodated, FAA Advisory Circular 150/5325-4A and the FAA's Airport Design computer program recommend a minimum runway length for aircraft at 90 percent useful load to be 6,470 feet in length. According to airport personnel, aircraft are currently leaving and landing with a 90 percent load on the primary runway that is 5,000 feet in total length (RWY 9R/27L). To utilize the 5,000-foot runway at 90 percent of useful load, aircraft using the airport land and immediately deploy their reverse thrusters to slow down in time for the end of the runway. Additionally, when taking off, aircraft start their takeoff at full throttle with brakes engaged. Once the minimum RPMs are reached, the brake is released, creating a slingshot effect and providing the aircraft with enough speed

to lift off of the runway. A primary runway of 5,000 feet does not provide the stopping and take-off distances recommended by the FAA for the large aircraft using the airport.

By extending the primary runway to 6,470 feet, approximately 75 percent of the planes between 12,500 and 60,000 pounds operating at 90 percent of useful load could safely utilize the airport.

Table 4. Recommended Runway Lengths.

	Dry Runways	Wet and Slippery Runways
Small airplanes with 10 or more passenger seats (12,500 lbs or less)	4,340 feet	4,340 feet
Large airplanes from 12,500 lbs to 60,000 lbs		
75 percent of these large airplanes at 60 percent useful load	4,850 feet	5,460 feet
75 percent of these large airplanes at 90 percent useful load	6,470 feet	7,000 feet
100 percent of these large airplanes at 60 percent useful load	5,540 feet	5,540 feet
100 percent of these large airplanes at 90 percent useful load	8,270 feet	8,270 feet

Source: The Ohio State University Airport Master Plan Update, 2002. Adopted from FAA Advisory Circular 150/5325-4A, Runway Length Requirements for Airport Design. Computer Program AD4.2

1.3.2 Hangars

There is currently a shortage of hangar space at OSUA. The current waiting list for hangars at OSUA totals over 120 individuals and companies, dating as far back as 1998. Due to economic growth in the area, this situation is expected to worsen in the future if additional hangar space is not provided. As identified in the 2002 Master Plan update, additional hangar space is needed to accommodate this existing demand.

1.3.3 Navigational Aids

The extension of Runway 9L/27R would result in this runway becoming the primary runway for the airport. The existing ILS is located at Runway end 9R which accommodates eastbound approaching aircraft. However, and the dominant wind/weather conditions at the airport usually require aircraft to land in a westerly direction at runway end 27L. This means that the ILS is currently on the wrong end of the primary runway for the most common weather conditions. Adding an additional ILS to runway end 27R would provide redundancy in case one system is down for repair, and it would allow additional flexibility in routing flights.

1.3.4 Runway 14/32 Closure

With runway 9L/27R becoming the primary runway, the possibility of unintentional incursions onto this runway from runway 14/32 would be increased due to the physical location of the two runways in relation to each other (Figures 2 and 3). This would create a potential safety concern that should be addressed.

1.4 REQUESTED FEDERAL ACTION

The current available funding over the next five years is adequate for the construction of the Preferred Alternative described in Chapter 2 of this EA. It is requested that a Finding of No Significant Impact (FONSI) be granted after review of the EA and public and agency comments provided during the official comment period.

1.5 TIME FRAME FOR ACTION

If a FONSI is granted and the necessary funds are appropriated for implementation of the project, the improvements covered by this EA could begin in 2005 or 2006.

1.6 PROPOSED ACTION

Based on the needs described above, the proposed action would include an extended primary runway, improved lighting, new navigational aids, new taxiways, additional hangars, and closure of one crosswind runway