FACILITY REQUIREMENTS
SUMMARY OF KEY ISSUES
OVERVIEW

This summary is intended to provide a brief overview of the key issues associated with conformance to FAA standards at Methow Valley State Airport. A comprehensive technical evaluation of all airport facility requirements will be provided in the Facility Requirements chapter.

CONFORMANCE WITH FAA AIRPORT DESIGN AND AIRSPACE PLANNING STANDARDS

Prior Planning

The current Airport Layout Plan (ALP) drawing for Methow Valley State Airport was approved by FAA and WSDOT Aviation in 1995. The "current" planning criteria reflected on the drawing was based on a design aircraft in common use at the USFS smoke jumper base, a short takeoff and landing (STOL) twin-engine turboprop (deHavilland DHC-6 Twin Otter). This aircraft is included in FAA Airplane Design Group II (ADG II) and Aircraft Approach Category A.[1] These design parameters are combined to create an Airport Reference Code (ARC) A-II. The 1995 ALP also indicates that other planning criteria are based on the requirements of small aircraft. By FAA definition, "small aircraft" weigh 12,500 pounds or less. The DHC-6 weighs 12,500 pounds. Airspace planning for Runway 13/31 was based visual approaches for utility runways. By FAA definition, "utility" runways are designed for small aircraft (weighing 12,500 pounds or less). The 1995 ALP indicates a change in future design aircraft and ARC (Beechcraft Super King Air and B-II). The use of "small aircraft" or "utility runway" planning criteria and visual approaches is maintained.

[1] ADG is based on wingspan and tail height of aircraft; Approach Category is based on the typical approach speed of an aircraft. ADG II aircraft have wingspans 49 to 78.9 feet or tail heights from 20 to 30 feet. Approach Category A aircraft have approach speeds less than 91 knots. Approach Category B aircraft have approach speeds from 91 knots or more but less than 121 knots.

Activity

Recent WSDOT forecasts of aviation activity[2] for Methow Valley State Airport reflect modest air traffic volumes (2005: 2,600 annual takeoffs and landings, projected to increase to 3,650 by 2030). The current ARC is A-II, which is projected through 2015. Beyond 2015, the ARC is B-II. This change in ARC reflects an expectation that the airport will eventually generate sufficient business category turbine aircraft activity (turboprops and/or business jets) to meet FAA criteria for defining the design aircraft. These aircraft have higher approach speeds, with similar physical characteristics. The LATS forecasts are being reviewed and will be included as one projection of airport activity in the updated forecast chapter.

Although it appears that the forecasts may not fully capture the aircraft operations associated with USFS operations, the broad assessment of activity and the design aircraft appears to be reasonable. The forecasts suggest that demand for aircraft parking and hangar space will be modest. Based on recent development trends at the airport, it appears that a portion of future demand for hangar space will be met through off-airport developments already in place. Given the relatively low levels of airport activity, other specific facility needs such as helicopter parking and runway/taxiway improvements will be driven by basic need (safety, etc.) rather than activity levels.

Local airport users report that the airport is used on regular basis by a variety of business class aircraft, including large business jets (Gulfstream, Learjet, Hawkers, etc.). It appears that current activity levels are below the FAA-defined threshold of 500 annual itinerant operations needed to define the design aircraft, although local airport users indicate that this segment of activity has grown noticeably in recent years.

Existing Facility Characteristics

Runway 13/31 reflects design related features that are consistent with use by large ADG II aircraft.

- Runway Length. Based on the FAA runway length model, at 5,049 feet Runway 13/31 can accommodate 100 percent of small aircraft (12,500 pounds or less) and 75 percent of large aircraft weighing less than 60,000 pounds at 60 percent useful load on a typical summer day.
- Pavement Strength. Runway 13/31 has a runway weight bearing capacity of 30,000 pounds for aircraft with a single-wheel landing gear. The standard pavement rating for runways designed to accommodate small aircraft is 12,500 pounds. Pavement sections

[2] Long Term Air Transportation Study (LATS) Forecasts (July 2007)

can typically accommodate heavier aircraft that are equipped with a dual wheel landing gear, which are common on larger business class turboprops and business jets.

Assessment

The above-noted characteristics indicate that Runway 13/31 has been designed in part to accommodate large aircraft. The updated evaluation of airport design standards and airspace planning standards for this project is intended to accurately reflect existing and future activity, which is in part determined by facility design characteristics.

Based on the information noted above, it appears that previously-defined ADG II design standards continue to be appropriate for both current and future facility planning (current/future: A-II/B-II) for Runway 13/31. However, it also appears that based on the physical characteristics of Runway 13/31, standards consistent with use by "large aircraft" are appropriate. This specific change presents a unique challenge to apply FAA standards to existing airfield facilities and the overall airport footprint, which is constrained by both property ownership and physical features.

The airspace planning criteria used for Runway 13/31 is based on visual approaches. Some interest in developing a nonprecision instrument approach has been expressed in recent years and is noted in the 1986 airport master plan. [3] The feasibility of developing a GPS-based approach to Runway 13/31 is currently being evaluated by FAA. The mountainous terrain surrounding the airport will be the primary determinant in both the feasibility of establishing an approach and the actual approach minimums (altitude and visibility) that can be obtained. However, in general upgrading a runway from visual to instrument requires larger protected areas along the sides of the runway and in some cases, requires flatter approach surface slopes. The significance of close-in obstructions beyond the ends or along the sides of a runway typically increase when a change is made from visual to instrument. At some airports, the benefits of establishing an instrument approach need to be balanced with potential impacts on existing facilities and tenants.

Summary

This technical information is intended to support the evaluation of options by the airport owner (WSDOT Aviation) to address overall airport development considerations and FAA standards. The future development of the airport will be based on decisions made by WSDOT Aviation and the FAA about the feasibility of applying and meeting specific design standards.

The figures on the following pages summarize the evaluation of facility conformance with ADG II design standard for large aircraft and visual approaches. As indicated in the figures, there are

[3] Master Plan Intercity/Methow Valley State Airport (1986, Reid Middleton)

two specific areas identified on the airport with a significant number of nonconforming items: the south end of the runway (affected by Evans Road and the Methow River) and the east side of the runway (affected by USFS facilities and aircraft hangars on and off airport property).

The table on the following page summarizes the ADG II design standards that could be applied to visual runways designed for exclusively for small aircraft or for both large and small aircraft. The critical design standard dimensions that are affected by the size of aircraft are highlighted in the table. The existing dimensions of the various items associated with Runway 13/31 are also provided for reference.

The runway safety area, object free area, and obstacle free zone are defined areas along both sides and beyond the ends of a runway that are required be free of parked aircraft, structures or items. Parallel taxiways are required be located outside of some of these clear areas. Additional technical information on these items will be included in the Facility Requirements chapter. The standard ADG II runway-parallel taxiway separation of 240 feet (applied to Runway 13/31) is depicted at the end of the section. This figure graphically illustrates how a standard parallel taxiway could be configured on either side of the runway (with the exception of the area limited by the Methow River) and the existing facilities affected.

A discussion of possible options to address the nonconforming items will be developed through the evaluation of this technical information.

TABLE S-1: AIRPORT DESIGN STANDARDS SUMMARY (DIMENSIONS IN FEET)

Standard	ADG II (small aircraft) visual approaches	ADG II (A&B Aircraft) visual approaches	Runway 13/31 Existing Conditions
Runway Length	4,250	5,500	5049
Runway Width	75	75	75
Runway Shoulder Width	10	10	10
Runway Safety Area Width	150	150	<150
Runway Safety Area Length (Beyond Rwy End)	300	300	<300
Obstacle-Free Zone Width	250	**400**	<250
Obstacle Free Zone Length (Beyond Rwy End)	200	200	<200
Object Free Area Width	500	500	<500
Object Free Area Length (Beyond Rwy End)	300	300	<300
Primary Surface Width	250	**500**	<250
Primary Surface Length (Beyond Rwy End)	200	200	<200
Runway Protection Zone Length	1,000	1,000	1,000
Runway Protection Zone Inner Width	250	**500**	250
Runway Protection Zone Outer Width	450	**700**	450
Runway-Parallel Taxiway Centerline Separation	240	240	n/a

Insert Conformance Figure 1

Insert Conformance Figure 2

Insert Taxiway Figure