



APPENDIX A – FAA DESIGN STANDARDS SUMMARY

**TABLE A-1: SANDERSON FIELD
SUMMARY OF NON CONFORMING ITEMS (FAA STANDARDS)**

Item Number	Item	Description	Non Conforming Items Airport Design Standards	Non Conforming Items FAR Part 77 Airspace Surfaces
1.	Public roads located beyond east end of Runway 5/23 and along the south side of the runway.	<p>U.S. Highway 101 is located approximately 1,300 feet beyond the end of Runway 23 (on the extended runway centerline).</p> <p>West Fairgrounds Road (northern one way section) is located approximately 270 feet south of runway centerline at its nearest point. Vehicles traveling on the southern section of the road will penetrate the transitional surface associated with the future precision instrument approach. Portions of the road located beyond the east end of the runway are within the southern edges of the ultimate Runway 23 precision approach surface (vehicle obstruction to surface) and future runway protection zone.</p>	<p>Runway Protection Zone (Future)</p> <p><i>Highway 101 and West Fairgrounds Road are located within the future runway protection zone for Runway 23. Highway 101 is located within the existing runway protection zone for Runway 23.</i></p>	<p>Approach Surface (Rwy 23)</p> <p>Primary Surface</p> <p>Transitional Surface</p> <p><i>Vehicles traveling on Highway 101 penetrate the existing non-precision and ultimate precision approach surfaces for Runway 23. The current penetration (based on National Ocean Service survey) is 5 feet, which increases to 14 feet with a 50:1 precision approach surface.</i></p> <p><i>Vehicles traveling on West Fairgrounds Road penetrate the ultimate precision approach surface for Runway 23 and enter the adjoining primary surfaces at distances from 350 to 450 feet from runway centerline. At the point where the approach surface and primary surface join 200 feet beyond the end of the runway, a vehicle traveling on West Fairgrounds Road would penetrate the approach surface by approximately 15 feet, resulting in unobstructed approach surface slope of 0:1.</i></p> <p><i>The WSDOT Aviation Division</i></p>



Item Number	Item	Description	Non Conforming Items Airport Design Standards	Non Conforming Items FAR Part 77 Airspace Surfaces
				<p><i>Database list the actual (clear) slopes (based on 2002 survey) as:</i></p> <p><i>Rwy 5 (visual surface): 15:1 (75' trees at 1,384', 122' left of center)</i></p> <p><i>Rwy 23 (non-precision instrument surface): 22:1 (74' tree at 1,862', 461' left of center)</i></p>
2.	Airport fence located on south side of Runway 5/23 (north side of West Fairgrounds Road).	A 6-foot chain link fence located on the south side of the runway is located approximately 270 feet from runway centerline at its nearest point adjacent to the fairgrounds.	None.	<p>Primary Surface</p> <p><i>The fence is located within the primary surface for the future precision instrument runway.</i></p>
3.	Runway Markings (Rwy 5 end).	There are currently published straight-in non-precision instrument approaches to both ends of Runway 5/23. The Runway 5 markings are basic (visual) and Runway 23 has non-precision instrument runway markings.	<p>Marking Standards</p> <p><i>Runway Markings: Replace existing markings with Non-precision Instrument Runway Markings (threshold bars, runway numbers, aiming point markings), standard for runway ends with straight-in non-precision instrument approaches.</i></p>	None
4.	South T-Hangar Taxilane Clearances.	<p>The clearance between taxilane centerlines and the adjacent T-hangars in the south T-hangar development area is less than the standard for Airplane Design Group I aircraft (the type accommodated in the hangars).</p> <p>Other obstructions located within existing T-Hangar taxilane object free areas include 3 non frangible (non break away) post mounted fire extinguisher boxes on south side of Hangar 87, exposed edges (4-6") of</p>	<p>Taxilane Object Free Area</p> <p><i>Airplane Design Group I standards are appropriate for taxilanes serving T-hangars and light airplane tiedowns.</i></p> <p><i>The standard Airplane Design Group I distance from taxilane centerline to a fixed or moveable object is 39.5 feet, which coincides with the edges of the taxilane object free area. Currently undeveloped hangar sites adjacent to existing taxilanes should be evaluated to determine maximum building</i></p>	None



Item Number	Item	Description	Non Conforming Items Airport Design Standards	Non Conforming Items FAR Part 77 Airspace Surfaces
		<p>PVC covers for various cleanouts or drains located adjacent to hangars; and two fire hydrants located within 10 feet of the edges of 2 hangar taxilanes, near the connections to Taxiway A1.</p>	<p><i>footprints that can be accommodated without conflicting with taxilane object free area clearance standard.</i></p> <p><i>FAA modification to standards may be permitted based on the following formula: 1.2 times aircraft wingspan + 20 feet. A modification to standards would limit use of specific areas to certain sized aircraft. For larger areas with multiple aircraft types, this formula could be based on the largest hangar door widths, which reflects the practical size limits for aircraft use.</i></p> <p><i>Exposed items (drain covers, fire hydrants, etc.) should be modified by grading or replacement with flush mounted devices. All future items that need to be located within the defined areas should be flush mounted or frangible.</i></p>	
5.	<p>Non Frangible (non break away) Obstructions located adjacent to Taxiway A1 and B.</p>	<p>Several non frangible (non break away) items are located between Taxiway A1 and the west ends of the adjacent T-Hangars.</p> <p>Items include two 20" high (+/-) cast iron fire hydrants; one wooden "no parking" sign post, one "hot box" electrical equipment enclosure (24-30"), and several exposed PVC covers (4-6") of for various cleanouts or drains located adjacent to hangars. These items are located approximately</p>	<p>Taxiway Object Free Area Taxiway Safety Area</p> <p><i>All noted items appear to be located within defined object free area that extends 65.5 feet from taxiway centerline; some items also appear to be located with defined safety area for taxiway (39.5 feet from centerline).</i></p> <p><i>Exposed items (drain covers, fire hydrants, etc.) should be modified by grading or replacement with flush</i></p>	None



Item Number	Item	Description	Non Conforming Items Airport Design Standards	Non Conforming Items FAR Part 77 Airspace Surfaces
		<p>36 to 60 feet from taxiway centerline.</p> <p>Other items located adjacent to Taxiway A1 include 12' tree located adjacent to FBO; parked aircraft located on main apron and in gravel area along the east edge of the main apron; and aircraft service equipment observed near the north end of the main apron.</p> <p>A non frangible (non break away) sign is located on the east side of Taxiway B near the connection to the main apron.</p>	<p><i>mounted or frangible supports. All future items that need to be located within the defined areas should be flush mounted or frangible.</i></p> <p><i>Areas for parked aircraft, service vehicles and equipment should be defined to remain clear of taxiway object free area.</i></p>	
6.	Parked Aircraft and Aircraft Tiedowns on Main Apron.	Based on the configuration of adjacent taxiways and taxilanes, some parked aircraft appear to be partially located within defined clearance areas.	<p>Taxiway/Taxilane Object Free Area</p> <p><i>Some aircraft parking positions conflict with taxiway/taxilane defined areas. Aircraft parking positions and aircraft tiedowns should be configured so that the entire aircraft remains clear of object free area (65.5 feet from Taxiway A1 and B and 39.5 feet from apron taxilane centerlines)</i></p>	None
7.	Non Frangible (non break away) Obstruction, Terrain located adjacent to Taxiway A on south side, between Taxiway A1 and B.	A concrete survey marker, elevated approximately 1 to 2' above the taxiway surface, is located approximately 60 feet from taxiway centerline. The exposed portion of the concrete marker is approximately 4-6" above the surface on a 12-18" elevated embankment located along the edge of the taxiway.	<p>Taxiway Object Free Area</p> <p><i>Noted item appears to be located near the outer edge of the defined area that extends 65.5 feet from taxiway centerline. An area of slightly elevated terrain appears to be located partially within the defined area. Verification of lateral distances and elevations recommended. Elevated terrain (> 3" above taxiway safety area) should be graded. Survey</i></p>	None.



Item Number	Item	Description	Non Conforming Items Airport Design Standards	Non Conforming Items FAR Part 77 Airspace Surfaces
			<i>marker should be replaced with a flush mounted marker on re-graded terrain.</i>	
8.	Trees beyond ends of Runway 5 and 23.	<p>2006-2007 tree clearing conducted on approximately 42 acres within the future runway protection zone for Runway 5 (as depicted on 1997 Airport Layout Plan). Additional tree clearing appears to have been conducted within the runway protection zone for Runway 23.</p> <p>1992 National Ocean Service obstruction survey identified trees within the approaches (beyond runway protection zones) for Runway 5/23.</p> <p>Trees identified in the 2002 WSDOT survey (controlling obstructions) appear to be located within areas that have recently been cleared.</p>	None	<p>Approach Surfaces</p> <p><i>Updated survey required to evaluate trees previously identified approximately 3,000 to 5,000 feet, and 8,000 to 10,000 feet beyond the current end of Runway 5. Trees previously identified approximately 2,000 to 3,500 feet from the end of Runway 23 also require updated evaluation.</i></p> <p><i>Maintaining clear 34:1 approach surfaces for current non-precision instrument approaches for Runways 5 and 23 should be regularly monitored. Future upgrades to precision instrument approaches require projection of 50:1 approach surface near the runway ends.</i></p>
9.	Bushes and trees located on south side of runway.	<p>1992 National Ocean Service obstruction survey identified numerous trees on the south side of Runway 5/23 based on non-precision instrument runway designation. The planned upgrade to a precision instrument approach will increase the size and configuration of airspace surfaces, which will likely result in an increase in tree and bush obstructions.</p>	None	<p>Primary Surface</p> <p>Transitional Surface</p> <p><i>Large number of trees and bushes are located within 500 feet of runway centerline, on the south side (primary surface); trees and bushes continue beyond 500 feet and many appear to penetrate transitional surface slope.</i></p> <p><i>New survey recommended to evaluate potential obstructions.</i></p>
10.	Fairgrounds complex located on	Items within the fairgrounds complex	None	Transitional Surface



Item Number	Item	Description	Non Conforming Items Airport Design Standards	Non Conforming Items FAR Part 77 Airspace Surfaces
	south side of runway.	(buildings, access roads, fences, trees, parked vehicles, etc.) are located approximately 550 to 1,200 feet south of runway centerline.		<i>Large number of items located within this area may penetrate the surface. Verification of lateral distances and elevations recommended through survey.</i>
11.	Tree covered rising terrain south, west and north of runway.	Areas of tree or terrain penetrations located west, north and south of the runway are identified on the 1997 Airspace Plan.	None	Transitional Surface (north side of runway) Horizontal Surface (west, north and south) Conical Surface (south) <i>Areas of trees/terrain depicted on 1997 Airspace Plan penetrate FAR Part 77 imaginary surfaces. Removal recommended where feasible; obstruction lighting may be recommended by FAA for high terrain in vicinity of runway.</i>



TABLE A-2: SANDERSON FIELD SUMMARY OF CONFORMANCE WITH FAA STANDARDS

Standard	Non Conforming Use	Feasibility of Mitigating Item		
		Low	Medium	High
1. Runway Length	<p>The existing length of Runway 5/23 is 5,000 feet, which exceeds the length required (3,570 feet) to accommodate 100% of small airplane fleet, per the FAA's runway length model.</p> <p>The FAA model indicates that a runway length of 5,290 feet is needed at Sanderson Field to accommodate 75% of large airplanes (less than 60,000 pounds) with 60% useful load. See chapter for additional details on methodology used.</p> <p>Property acquisition has been completed for 500-foot extension at west end of runway; no east extension is feasible due to close proximity to Highway 101.</p>			High
2 Runway Protection Zones	Public roads located within existing and future Runway 23 runway protection zones. Relocation of some roads may be feasible; reconfiguration of Runway 5/23 to fully clear future runway protection zones not considered highly feasible.	Low		
3. Taxilane Object Free Area	<p>Numerous obstructions are located within taxilane object free areas (as measured 39.5 feet from taxilane centerline) on airport. Relocation of hangars is not considered highly feasible. Use of alternative wingtip clearance formula for taxilanes may support modification to standards, with restrictions on the size of aircraft that can be accommodated based on wingspan.</p> <p>Removal/modification of objects located within taxilane object free area appears feasible.</p>			High
4. Taxiway Object Free Area	Numerous obstructions are located within taxiway object free areas (as measured 65.5 feet from taxiway centerline) on airport.			High



Standard	Non Conforming Use	Feasibility of Mitigating Item		
		Low	Medium	High
	<p>Removal of trees appears feasible.</p> <p>Removal or modification of built objects appears feasible.</p> <p>Relocation/Reconfiguration of areas used for aircraft parking, service vehicles and equipment appears feasible.</p> <p>Grading of areas of slightly elevated terrain adjacent to taxiways appears feasible.</p>			High
5. Taxiway Safety Area	<p>Two obstructions (2 fire hydrants) are located within taxiway safety area (as measured 39.5 feet from taxiway centerline) for Taxiway A1</p> <p>One obstruction (sign) is located within taxiway safety area for Taxiway B.</p> <p>Removal or modification of physical objects appears feasible.</p>			High
6. Runway Marking	<p>Runway Marking: Upgrade marking configuration for Runway 5 to be consistent with current non-precision instrument approach capabilities.</p>			High
FAR Part 77 (Ultimate)				
Larger than Utility/Precision (Rwy 23)/Non-precision Visibility Lower than 3/4 –statute mile (Rwy 5)				
1. Primary Surface	<p>Roads, fence, trees, bushes located within primary surface on south side of runway. Vehicles traveling on West Fairgrounds Road penetrate the surface and the planned precision instrument approach surface for Runway 23.</p> <p>Options for clearing primary surface of obstructions may require changes in vehicle access and fencing; installation of obstruction lights on fence may be permitted by FAA.</p>		Medium	



Standard	Non Conforming Use	Feasibility of Mitigating Item		
		Low	Medium	High
2. Approach Surfaces	<p>The 1997 Airspace Plan depicts areas of tree/terrain penetration within the planned 10,000-foot approach surface for Runway 5 (based on the recommended 1,800-foot runway extension). The 1992 National Ocean Service Obstruction Chart identifies terrain/tree penetrations to the approach for the <i>current</i> end of Runway 5. Tree removal has been completed for area within future runway protection zone for Runway 5; an updated survey is required for remainder of 10,000-foot approach surface for Runway 5.</p> <p>Any proposed changes in airspace structure associated with the master plan's preferred runway configuration will be evaluated for Part 77 surface penetration.</p> <p>The approach surface associated with a planned precision instrument approach on Runway 23 will be penetrated by vehicles traveling on West Fairgrounds Road (based on its current configuration). Options for clearing the Runway 23 approach surface of obstructions may require changes in vehicle access.</p>			
3. Transitional Surface	<p>1997 Airspace Plan depicts a small area of terrain penetration north of the runway (based on proposed runway extension). The 1997 plan does not identify any obstructions within the surface on the south side of the runway that were identified in the 1992 National Ocean Service survey or those that were identified from general observation (buildings, trees, etc.).</p> <p>Adding obstruction lights on all structures/items that penetrate the surface is recommended. Obstructing trees should be removed or lowered. No new</p>			



Standard	Non Conforming Use	Feasibility of Mitigating Item		
		Low	Medium	High
	development should be permitted on the airport that penetrates FAR Part 77 surfaces.		/	
4. Horizontal Surface	<p>1992 National Ocean Service Obstruction Chart and the 1997 Airspace Plan depict large areas of terrain and/or tree penetration south, west and north of the runway.</p> <p>Any proposed changes in airspace structure will be evaluated for Part 77 surface penetration. Not considered feasible to remove terrain or relocate runway on current site to mitigate current penetration. Tree removal or lower may be feasible.</p>	/		
5. Conical Surface	<p>1992 National Ocean Service Obstruction Chart and the 1997 Airspace Plan depict large areas of terrain and/or tree penetration southwest of the runway.</p> <p>Any proposed changes in airspace structure will be evaluated for Part 77 surface penetration. Not considered feasible to remove terrain to mitigate current penetration. Tree removal or lower may be feasible.</p>	/		



APPENDIX B – FAA AIRFIELD DESIGN PRINTOUTS

SANDERSON FIELD – RUNWAY 5/23 AIRPORT AND RUNWAY DATA

Airport elevation 269 feet
Mean daily maximum temperature of the hottest month 76.90 F.
Maximum difference in runway centerline elevation 15 feet
Length of haul for airplanes of more than 60,000 pounds 500 miles
Wet and slippery runways

RUNWAY LENGTHS RECOMMENDED FOR AIRPORT DESIGN

Small airplanes with approach speeds of less than 30 knots . . . 310 feet
Small airplanes with approach speeds of less than 50 knots . . . 820 feet
Small airplanes with less than 10 passenger seats
 75 percent of these small airplanes 2450 feet
 95 percent of these small airplanes 2990 feet
 100 percent of these small airplanes 3570 feet
Small airplanes with 10 or more passenger seats 4090 feet

Large airplanes of 60,000 pounds or less
 75 percent of these large airplanes at 60 percent useful load 5290 feet
 75 percent of these large airplanes at 90 percent useful load 6780 feet
 100 percent of these large airplanes at 60 percent useful load 5500 feet
 100 percent of these large airplanes at 90 percent useful load 7500 feet

Airplanes of more than 60,000 pounds Approximately 5110 feet

REFERENCE: Chapter 2 of AC 150/5325-4A, Runway Length Requirements
for Airport Design, no Changes included.



RUNWAY 5/23 (EXISTING APPROACH CAPABILITIES)
AIRPORT DESIGN AIRPLANE AND AIRPORT DATA

Aircraft Approach Category B
Airplane Design Group II
Airplane wingspan 78.99 feet
Primary runway end approach visibility minimums are not lower than 1 mile
Other runway end approach visibility minimums are not lower than 1 mile
Airplane undercarriage width (1.15 x main gear track) . . . 14.95 feet
Airport elevation 269 feet

RUNWAY AND TAXIWAY WIDTH AND CLEARANCE STANDARD DIMENSIONS

Airplane Group/ARC

Runway centerline to parallel runway centerline simultaneous operations
when wake turbulence is not treated as a factor:

VFR operations with no intervening taxiway 700 feet
VFR operations with one intervening taxiway 700 feet
VFR operations with two intervening taxiways 700 feet
IFR approach and departure with approach to near threshold 2500 feet less
100 ft for each 500 ft of threshold stagger to a minimum of 1000 feet.

Runway centerline to parallel runway centerline simultaneous operations
when wake turbulence is treated as a factor:

VFR operations 2500 feet
IFR departures 2500 feet
IFR approach and departure with approach to near threshold . . 2500 feet
IFR approach and departure with approach to far threshold 2500 feet plus
100 feet for each 500 feet of threshold stagger.
IFR approaches 3400 feet

Runway centerline to parallel taxiway/taxilane centerline . 239.5 240 feet
Runway centerline to edge of aircraft parking 250.0 250 feet
Runway width 75 feet
Runway shoulder width 10 feet
Runway blast pad width 95 feet
Runway blast pad length 150 feet
Runway safety area width 150 feet
Runway safety area length beyond each runway end
or stopway end, whichever is greater 300 feet
Runway object free area width 500 feet
Runway object free area length beyond each runway end
or stopway end, whichever is greater 300 feet
Clearway width 500 feet
Stopway width 75 feet

Obstacle free zone (OFZ):

Runway OFZ width 400 feet
Runway OFZ length beyond each runway end 200 feet
Inner-approach OFZ width 400 feet
Inner-approach OFZ length beyond approach light system 200 feet
Inner-approach OFZ slope from 200 feet beyond threshold . . . 50:1



Inner-transitional OFZ slope	0:1
Runway protection zone at the primary runway end:	
Width 200 feet from runway end	500 feet
Width 1200 feet from runway end	700 feet
Length	1000 feet
Runway protection zone at other runway end:	
Width 200 feet from runway end	500 feet
Width 1200 feet from runway end	700 feet
Length	1000 feet
Departure runway protection zone:	
Width 200 feet from the far end of TORA	500 feet
Width 1200 feet from the far end of TORA	700 feet
Length	1000 feet
Threshold surface at primary runway end:	
Distance out from threshold to start of surface	0 feet
Width of surface at start of trapezoidal section	400 feet
Width of surface at end of trapezoidal section	1000 feet
Length of trapezoidal section	1500 feet
Length of rectangular section	8500 feet
Slope of surface	20:1
Threshold surface at other runway end:	
Distance out from threshold to start of surface	0 feet
Width of surface at start of trapezoidal section	400 feet
Width of surface at end of trapezoidal section	1000 feet
Length of trapezoidal section	1500 feet
Length of rectangular section	8500 feet
Slope of surface	20:1
Taxiway centerline to parallel taxiway/taxilane centerline	104.8 105 feet
Taxiway centerline to fixed or movable object	65.3 65.5 feet
Taxilane centerline to parallel taxilane centerline	96.9 97 feet
Taxilane centerline to fixed or movable object	57.4 57.5 feet
Taxiway width	30.0 35 feet
Taxiway shoulder width	10 feet
Taxiway safety area width	79.0 79 feet
Taxiway object free area width	130.6 131 feet
Taxilane object free area width	114.8 115 feet
Taxiway edge safety margin	7.5 feet
Taxiway wingtip clearance	25.8 26 feet
Taxilane wingtip clearance	17.9 18 feet

REFERENCE: AC 150/5300-13, Airport Design, including Changes 1 through 4.



RUNWAY 5/23 (FUTURE APPROACH CAPABILITIES)
AIRPORT DESIGN AIRPLANE AND AIRPORT DATA

Aircraft Approach Category B
Airplane Design Group II
Airplane wingspan 78.99 feet
Primary runway end approach visibility minimums are not lower than CAT I
Other runway end approach visibility minimums are not lower than 3/4 mile
Airplane undercarriage width (1.15 x main gear track) . . . 14.95 feet
Airport elevation 269 feet
Airplane tail height 24.00 feet

RUNWAY AND TAXIWAY WIDTH AND CLEARANCE STANDARD DIMENSIONS

Airplane Group/ARC

Runway centerline to parallel runway centerline simultaneous operations
when wake turbulence is not treated as a factor:

VFR operations with no intervening taxiway 700 feet
VFR operations with one intervening taxiway 700 feet
VFR operations with two intervening taxiways 705 feet
IFR approach and departure with approach to near threshold 2500 feet less
100 ft for each 500 ft of threshold stagger to a minimum of 1000 feet.

Runway centerline to parallel runway centerline simultaneous operations
when wake turbulence is treated as a factor:

VFR operations 2500 feet
IFR departures 2500 feet
IFR approach and departure with approach to near threshold . . 2500 feet
IFR approach and departure with approach to far threshold 2500 feet plus
100 feet for each 500 feet of threshold stagger.
IFR approaches 3400 feet

Runway centerline to parallel taxiway/taxilane centerline . 239.5 300 feet
Runway centerline to edge of aircraft parking 400.0 400 feet
Runway width 100 feet
Runway shoulder width 10 feet
Runway blast pad width 120 feet
Runway blast pad length 150 feet
Runway safety area width 300 feet
Runway safety area length beyond each runway end
or stopway end, whichever is greater 600 feet
Runway object free area width 800 feet
Runway object free area length beyond each runway end
or stopway end, whichever is greater 600 feet
Clearway width 500 feet
Stopway width 100 feet

Obstacle free zone (OFZ):

Runway OFZ width 400 feet
Runway OFZ length beyond each runway end 200 feet
Inner-approach OFZ width 400 feet
Inner-approach OFZ length beyond approach light system 200 feet



Inner-approach OFZ slope from 200 feet beyond threshold . . . 50:1
Inner-transitional OFZ height H 52.8 52.8 feet
Inner-transitional OFZ slope 6:1

Runway protection zone at the primary runway end:
Width 200 feet from runway end 1000 feet
Width 2700 feet from runway end 1750 feet
Length 2500 feet

Runway protection zone at other runway end:
Width 200 feet from runway end 1000 feet
Width 1900 feet from runway end 1510 feet
Length 1700 feet

Departure runway protection zone:
Width 200 feet from the far end of TORA 500 feet
Width 1200 feet from the far end of TORA 700 feet
Length 1000 feet

Threshold surface at primary runway end:
Distance out from threshold to start of surface 200 feet
Width of surface at start of trapezoidal section 1000 feet
Width of surface at end of trapezoidal section 4000 feet
Length of trapezoidal section 10000 feet
Length of rectangular section 0 feet
Slope of surface 34:1

Threshold surface at other runway end:
Distance out from threshold to start of surface 200 feet
Width of surface at start of trapezoidal section 1000 feet
Width of surface at end of trapezoidal section 4000 feet
Length of trapezoidal section 10000 feet
Length of rectangular section 0 feet
Slope of surface 20:1

Taxiway centerline to parallel taxiway/taxilane centerline 104.8 105 feet
Taxiway centerline to fixed or movable object 65.3 65.5 feet
Taxilane centerline to parallel taxilane centerline 96.9 97 feet
Taxilane centerline to fixed or movable object 57.4 57.5 feet
Taxiway width 30.0 35 feet
Taxiway shoulder width 10 feet
Taxiway safety area width 79.0 79 feet
Taxiway object free area width 130.6 131 feet
Taxilane object free area width 114.8 115 feet
Taxiway edge safety margin 7.5 feet
Taxiway wingtip clearance 25.8 26 feet
Taxilane wingtip clearance 17.9 18 feet

REFERENCE: AC 150/5300-13, Airport Design, including Changes 1 through 4.



RUNWAY 5/23 (EXISTING CONFIGURATION)
DECLARED DISTANCE LENGTHS (feet)

Aircraft Approach Category B
Airplane Design Group II
Runway 5 approach visibility minimums are not lower than 1 mile
Runway 23 approach visibility minimums are not lower than 1 mile
Airport elevation 269 feet

Runway 5 and 23

Runway length 5000 5000
Stopway length 0 0
Clearway length 0 0
Runway safety area length beyond the stop end of runway 300 300
Runway object free area length beyond the stop end of runway . . 300 300

The following distances are positive in the direction of aircraft operations and negative in the opposite direction:

Distance from:

the departure end of runway to the beginning of clearway . . . 0 0
the departure end of runway to the beginning of departure RPZ 200 200
the approach end of runway to the start of takeoff 0 0
the approach end of runway to the threshold 0 0
the end of approach RPZ to the approach end of runway 200 200

The following lengths are standard RSA and ROFA lengths:

Runway safety area length to be provided:
beyond the stop end of ASDA 300 300
beyond the stop end of LDA 300 300
before the approach end of LDA 300 300

Runway object free area length to be provided:
beyond the stop end of ASDA 300 300
beyond the stop end of LDA 300 300
before the approach end of LDA 300 300

The following declared distances are for Approach Category A and B airplanes exclusively.

Runway 5 Runway 23
(feet) (feet)
Takeoff run available (TORA) 5000 5000
Takeoff distance available (TODA) 5000 5000
Accelerate-stop distance available (ASDA) 5000 5000
Landing distance available (LDA) 5000 5000
Usable stopway length 0 0
Distance from the stop end of LDA to runway end 0 0
Distance from the departure end of TORA to RPZ 200 200
Distance from the approach RPZ to the threshold 200 200

REFERENCE: Appendix 14 of AC 150/5300-13, Airport Design, including Changes 1 through 4.



APPENDIX C – FAA INM (NOISE MODEL) REPORT DOCUMENTATION

INM 7.0 SCENARIO RUN INPUT REPORT 27-Oct-08 10:02

STUDY: C:\PROGRAM FILES\INM7.0\SHELTON-2007\

Created: 24-Sep-08 14:50

Units: English

Airport: SHN

Description:

OPERATIONS

SCENARIO: Shelton Airport

Created: 02-Oct-08 10:33

Description:

Last Run: 05-Oct-08 22:10

Run Duration: 000:00:09

STUDY AIRPORT

Latitude: 47.233559 deg

Longitude: -123.147543 deg

Elevation: 269.0 ft

CASES RUN:

CASENAME: 2007

Temperature: 76.9 F

Pressure: 29.92 in-Hg

AverageWind: 8.0 kt

ChangeNPD: No

STUDY RUNWAYS

23

Latitude: 47.236131 deg

Longitude: -123.138224 deg

Xcoord: 0.3810 nmi

Ycoord: 0.1544 nmi

Elevation: 269.0 ft

OtherEnd: 5

Length: 5000 ft

Gradient: -0.29 %

TkoThresh: 0 ft

AppThresh: 0 ft

CASENAME: 2007

RwyWind: 8.0 kt

5

Latitude: 47.230978 deg

Longitude: -123.156871 deg

Xcoord: -0.3814 nmi

Ycoord: -0.1549 nmi

Elevation: 254.7 ft

OtherEnd: 23



Length: 5000 ft
Gradient: 0.29 %
TkoThresh: 0 ft
AppThresh: 0 ft

CASENAME: 2007
RwyWind: 8.0 kt

CASENAME: 2007
RwyWind: 8.0 kt

STUDY HELIPADS

HELI-1
Latitude: 47.239428 deg
Longitude: -123.142357 deg
Xcoord: 0.2120 nmi
Ycoord: 0.3523 nmi

STUDY TRACKS

RwyId-OpType-TrkId
Sub PctSub TrkType Delta(ft)
23-APP-7
0 100.00 Vectors 0.0
23-APP-8
0 100.00 Vectors 0.0
23-DEP-3
0 100.00 Vectors 0.0
23-DEP-4
0 100.00 Vectors 0.0
23-TGO-10
0 100.00 Vectors 0.0
5-APP-5
0 100.00 Vectors 0.0
5-APP-6
0 100.00 Vectors 0.0
5-DEP-1
0 100.00 Vectors 0.0
5-DEP-2
0 100.00 Vectors 0.0
5-TGO-9
0 100.00 Vectors 0.0
HELI-1-APP-13
0 100.00 Vectors 68.0
HELI-1-APP-14
0 100.00 Vectors 248.0
HELI-1-DEP-11
0 100.00 Vectors 68.0
HELI-1-DEP-12
0 100.00 Vectors 248.0

STUDY TRACK DETAIL

RwyId-OpType-TrkId-SubTrk
SegType Dist/Angle Radius (nmi)
23-APP-7-0



1 Straight 8.2300 nmi
23-APP-8-0
1 Straight 0.2500 nmi
2 Right-Turn 45.0000 deg 0.2500
3 Straight 1.4114 nmi
4 Left-Turn 90.0000 deg 0.2500
5 Straight 0.2500 nmi
6 Left-Turn 90.0000 deg 0.2500
7 Straight 1.0000 nmi
23-DEP-3-0
1 Straight 8.2300 nmi
23-DEP-4-0
1 Straight 1.8229 nmi
2 Left-Turn 90.0000 deg 0.2500
3 Straight 0.2500 nmi
4 Left-Turn 90.0000 deg 0.2500
5 Straight 1.4114 nmi
6 Right-Turn 45.0000 deg 0.2500
7 Straight 0.2500 nmi
23-TGO-10-0
1 Straight 1.8229 nmi
2 Left-Turn 90.0000 deg 0.2500
3 Straight 0.2500 nmi
4 Left-Turn 90.0000 deg 0.2500
5 Straight 2.8229 nmi
6 Left-Turn 90.0000 deg 0.2500
7 Straight 0.2500 nmi
8 Left-Turn 90.0000 deg 0.2500
9 Straight 1.0000 nmi
5-APP-5-0
1 Straight 8.2300 nmi
5-APP-6-0
1 Straight 0.2500 nmi
2 Left-Turn 45.0000 deg 0.2500
3 Straight 1.4114 nmi
4 Right-Turn 90.0000 deg 0.2500
5 Straight 0.2500 nmi
6 Right-Turn 90.0000 deg 0.2500
7 Straight 1.0000 nmi
5-DEP-1-0
1 Straight 8.2300 nmi
5-DEP-2-0
1 Straight 1.8229 nmi
2 Right-Turn 90.0000 deg 0.2500
3 Straight 0.2500 nmi
4 Right-Turn 90.0000 deg 0.2500
5 Straight 1.4114 nmi
6 Left-Turn 45.0000 deg 0.2500
7 Straight 0.2500 nmi
5-TGO-9-0
1 Straight 1.8229 nmi
2 Right-Turn 90.0000 deg 0.2500
3 Straight 0.2500 nmi
4 Right-Turn 90.0000 deg 0.2500



5 Straight 2.8229 nmi
6 Right-Turn 90.0000 deg 0.2500
7 Straight 0.2500 nmi
8 Right-Turn 90.0000 deg 0.2500
9 Straight 1.0000 nmi
HELI-1-APP-13-0
1 Straight 1.5000 nmi
HELI-1-APP-14-0
1 Straight 1.5000 nmi
HELI-1-DEP-11-0
1 Straight 1.5000 nmi
HELI-1-DEP-12-0
1 Straight 1.5000 nmi

AIRCRAFT GROUP ASSIGNMENTS

STUDY AIRPLANES

BEC58P Standard data
CNA172 Standard data
CNA441 Standard data
CNA55B Standard data
DHC6 Standard data
GASEPF Standard data
GASEPV Standard data
GIV Standard data

STUDY SUBSTITUTION AIRPLANES

CNA150 Standard data
CNA208 Standard data

USER-DEFINED NOISE CURVES

USER-DEFINED METRICS

USER-DEFINED PROFILE IDENTIFIERS

USER-DEFINED PROCEDURAL PROFILES

USER-DEFINED FIXED-POINT PROFILES

USER-DEFINED FLAP COEFFICIENTS

USER-DEFINED JET THRUST COEFFICIENTS

USER-DEFINED PROP THRUST COEFFICIENTS

USER-DEFINED GENERAL THRUST COEFFICIENTS

STUDY MILITARY AIRPLANES

USER-DEFINED MILITARY NOISE CURVES

USER-DEFINED MILITARY PROFILE IDENTIFIERS



USER-DEFINED MILITARY FIXED-POINT PROFILES

STUDY HELICOPTERS

H500D Standard data

USER-DEFINED HELICOPTER PROFILE IDENTIFIERS

USER-DEFINED HELICOPTER PROCEDURAL PROFILES

USER-DEFINED HELICOPTER NOISE CURVES

USER-DEFINED HELICOPTER DIRECTIVITY

CASE FLIGHT OPERATIONS - [2007]

Acft	Op	Profile	Stg	Rwy	Track	Sub	Group	Day	Evening	Night
BEC58P	APP	STANDARD	1	23	7	0	---	0.4505	0.0000	0.0188
BEC58P	APP	STANDARD	1	23	8	0	---	0.4505	0.0000	0.0188
BEC58P	APP	STANDARD	1	5	5	0	---	0.0792	0.0000	0.0033
BEC58P	APP	STANDARD	1	5	6	0	---	0.0792	0.0000	0.0033
BEC58P	DEP	STANDARD	1	23	3	0	---	0.4505	0.0000	0.0188
BEC58P	DEP	STANDARD	1	23	4	0	---	0.4505	0.0000	0.0188
BEC58P	DEP	STANDARD	1	5	1	0	---	0.0792	0.0000	0.0033
BEC58P	DEP	STANDARD	1	5	2	0	---	0.0792	0.0000	0.0033
BEC58P	TGO	STANDARD	1	23	10	0	---	0.4505	0.0000	0.0188
BEC58P	TGO	STANDARD	1	5	9	0	---	0.0792	0.0000	0.0033
CNA172	APP	STANDARD	1	23	7	0	---	0.1502	0.0000	0.0063
CNA172	APP	STANDARD	1	23	8	0	---	0.1502	0.0000	0.0063
CNA172	APP	STANDARD	1	5	5	0	---	0.0264	0.0000	0.0011
CNA172	APP	STANDARD	1	5	6	0	---	0.0264	0.0000	0.0011
CNA172	DEP	STANDARD	1	23	3	0	---	0.1502	0.0000	0.0063
CNA172	DEP	STANDARD	1	23	4	0	---	0.1502	0.0000	0.0063
CNA172	DEP	STANDARD	1	5	1	0	---	0.0264	0.0000	0.0011
CNA172	DEP	STANDARD	1	5	2	0	---	0.0264	0.0000	0.0011
CNA172	TGO	STANDARD	1	23	10	0	---	0.1502	0.0000	0.0063
CNA172	TGO	STANDARD	1	5	9	0	---	0.0264	0.0000	0.0011
CNA441	APP	STANDARD	1	23	7	0	---	0.2252	0.0000	0.0094
CNA441	APP	STANDARD	1	23	8	0	---	0.2252	0.0000	0.0094
CNA441	APP	STANDARD	1	5	5	0	---	0.0396	0.0000	0.0016
CNA441	APP	STANDARD	1	5	6	0	---	0.0396	0.0000	0.0016
CNA441	DEP	STANDARD	1	23	3	0	---	0.2252	0.0000	0.0094
CNA441	DEP	STANDARD	1	23	4	0	---	0.2252	0.0000	0.0094
CNA441	DEP	STANDARD	1	5	1	0	---	0.0396	0.0000	0.0016
CNA441	DEP	STANDARD	1	5	2	0	---	0.0396	0.0000	0.0016
CNA441	TGO	STANDARD	1	23	10	0	---	0.2252	0.0000	0.0094
CNA441	TGO	STANDARD	1	5	9	0	---	0.0396	0.0000	0.0016
CNA55B	APP	STANDARD	1	23	7	0	---	0.0751	0.0000	0.0031
CNA55B	APP	STANDARD	1	23	8	0	---	0.0751	0.0000	0.0031
CNA55B	APP	STANDARD	1	5	5	0	---	0.0132	0.0000	0.0005
CNA55B	APP	STANDARD	1	5	6	0	---	0.0132	0.0000	0.0005
CNA55B	DEP	STANDARD	1	23	3	0	---	0.0751	0.0000	0.0031
CNA55B	DEP	STANDARD	1	23	4	0	---	0.0751	0.0000	0.0031
CNA55B	DEP	STANDARD	1	5	1	0	---	0.0132	0.0000	0.0005
CNA55B	DEP	STANDARD	1	5	2	0	---	0.0132	0.0000	0.0005
CNA55B	TGO	STANDARD	1	23	10	0	---	0.0751	0.0000	0.0031



CNA55B	TGO	STANDARD	1	5	9	0	---	0.0132	0.0000	0.0005
DHC6	APP	STANDARD	1	23	7	0	---	0.5856	0.0000	0.0244
DHC6	APP	STANDARD	1	23	8	0	---	0.5856	0.0000	0.0244
DHC6	APP	STANDARD	1	5	5	0	---	0.1029	0.0000	0.0043
DHC6	APP	STANDARD	1	5	6	0	---	0.1029	0.0000	0.0043
DHC6	DEP	STANDARD	1	23	3	0	---	0.5856	0.0000	0.0244
DHC6	DEP	STANDARD	1	23	4	0	---	0.5856	0.0000	0.0244
DHC6	DEP	STANDARD	1	5	1	0	---	0.1029	0.0000	0.0043
DHC6	DEP	STANDARD	1	5	2	0	---	0.1029	0.0000	0.0043
DHC6	TGO	STANDARD	1	23	10	0	---	0.0586	0.0000	0.0244
DHC6	TGO	STANDARD	1	5	9	0	---	0.1029	0.0000	0.0043
GASEPF	APP	STANDARD	1	23	7	0	---	6.9071	0.0000	0.2878
GASEPF	APP	STANDARD	1	23	8	0	---	6.9071	0.0000	0.2878
GASEPF	APP	STANDARD	1	5	5	0	---	1.2140	0.0000	0.0506
GASEPF	APP	STANDARD	1	5	6	0	---	1.2140	0.0000	0.0506
GASEPF	DEP	STANDARD	1	23	3	0	---	6.9071	0.0000	0.2878
GASEPF	DEP	STANDARD	1	23	4	0	---	6.9071	0.0000	0.2878
GASEPF	DEP	STANDARD	1	5	1	0	---	1.2140	0.0000	0.0506
GASEPF	DEP	STANDARD	1	5	2	0	---	1.2140	0.0000	0.0506
GASEPF	TGO	STANDARD	1	23	10	0	---	6.9071	0.0000	0.2878
GASEPF	TGO	STANDARD	1	5	9	0	---	1.2140	0.0000	0.0506
GASEPV	APP	STANDARD	1	23	7	0	---	6.6068	0.0000	0.2753
GASEPV	APP	STANDARD	1	23	8	0	---	6.6068	0.0000	0.2753
GASEPV	APP	STANDARD	1	5	5	0	---	1.1612	0.0000	0.0484
GASEPV	APP	STANDARD	1	5	6	0	---	1.1612	0.0000	0.0484
GASEPV	DEP	STANDARD	1	23	3	0	---	6.6068	0.0000	0.2753
GASEPV	DEP	STANDARD	1	23	4	0	---	6.6068	0.0000	0.2753
GASEPV	DEP	STANDARD	1	5	1	0	---	1.1612	0.0000	0.0484
GASEPV	DEP	STANDARD	1	5	2	0	---	1.1612	0.0000	0.0484
GASEPV	TGO	STANDARD	1	23	10	0	---	6.6068	0.0000	0.2753
GASEPV	TGO	STANDARD	1	5	9	0	---	1.1612	0.0000	0.0484
GIV	APP	STANDARD	1	23	7	0	---	0.0156	0.0000	0.0006
GIV	APP	STANDARD	1	23	8	0	---	0.0150	0.0000	0.0006
GIV	APP	STANDARD	1	5	5	0	---	0.0026	0.0000	0.0001
GIV	APP	STANDARD	1	5	6	0	---	0.0026	0.0000	0.0001
GIV	DEP	STANDARD	1	23	3	0	---	0.0150	0.0000	0.0006
GIV	DEP	STANDARD	1	23	4	0	---	0.0150	0.0000	0.0006
GIV	DEP	STANDARD	1	5	1	0	---	0.0026	0.0000	0.0001
GIV	DEP	STANDARD	1	5	2	0	---	0.0026	0.0000	0.0001
GIV	TGO	STANDARD	1	23	10	0	---	0.0150	0.0000	0.0006
GIV	TGO	STANDARD	1	5	9	0	---	0.0026	0.0000	0.0001
H500D	APP	STANDARD	1	HELI-1	13	0	---	0.6825	0.0000	0.0284
H500D	APP	STANDARD	1	HELI-1	14	0	---	0.6825	0.0000	0.0284
H500D	DEP	STANDARD	1	HELI-1	11	0	---	0.6825	0.0000	0.0284
H500D	DEP	STANDARD	1	HELI-1	12	0	---	0.6825	0.0000	0.0284

CASE RUNUP OPERATIONS - [2007]

Acft	RunupId	X(nmi)	Y(nmi)	Head	Thrust	Dur(sec)	Day	Evening	Night
BEC58P	23	0.3810	0.1544	248.0	80.0 %	30.0	0.4505	0.0000	0.0188
BEC58P	5	-0.3814	-0.1549	68.0	80.0 %	30.0	0.0792	0.0000	0.0033
GASEPF	23	0.3810	0.1544	248.0	80.0 %	30.0	6.6068	0.0000	0.2753
GASEPF	5	-0.3814	-0.1549	68.0	80.0 %	30.0	1.6120	0.0000	0.0484
GASEPV	23	0.3810	0.1544	248.0	80.0 %	30.0	6.6068	0.3034	0.2753
GASEPV	5	-0.3814	-0.1549	68.0	80.0 %	30.0	1.6120	0.0000	0.0484



SCENARIO RUN OPTIONS

Run Type: Single-Metric
NoiseMetric: DNL
Do Terrain: No Terrain
Do Contour: Recursive Grid
Refinement: 10
Tolerance: 0.20
Low Cutoff: 60.0
High Cutoff: 85.0
Ground Type: All-Soft-Ground
Do Population: No
Do Locations: No
Do Standard: Yes
Do Detailed: No
Compute System Metrics:
DNL: Yes
CNEL: No
LAEQ: No
LAEQD: No
LAEQN: No
SEL: Yes
LAMAX: Yes
TALA: Yes
NEF: No
WECPNL: No
EPNL: No
PNLTM: No
TAPNL: No
CEXP: No
LCMAX: No
TALC: No

SCENARIO GRID DEFINITIONS

Name	Type	X(nmi)	Y(nmi)	Ang(deg)	DisI(nmi)	DisJ(nmi)	NI	NJ	Thrsh	dAmb (hr)
CONTOUR	Contour	-8.0000	-8.0000	0.0	16.0000	16.0000	2	2	65.0	0.0 0.00
DETAILED	Detailed	-8.0000	-8.0000	0.0	16.0000	16.0000	2	2	65.0	0.0 0.00
STANDARD	Standard	-8.0000	-8.0000	0.0	16.0000	16.0000	2	2	65.0	0.0 0.00



INM 7.0 SCENARIO RUN INPUT REPORT 27-Oct-08 10:01

STUDY: C:\PROGRAM FILES\INM7.0\SHELTON-2012\
Created: 24-Sep-08 14:50
Units: English
Airport: SHN
Description:
OPERATIONS

SCENARIO: Shelton Airport
Created: 02-Oct-08 10:33
Description:
Last Run: 05-Oct-08 18:19
Run Duration: 000:00:09

STUDY AIRPORT
Latitude: 47.233559 deg
Longitude: -123.147543 deg
Elevation: 269.0 ft

CASES RUN:

CASENAME: 2012
Temperature: 76.9 F
Pressure: 29.92 in-Hg
AverageWind: 8.0 kt
ChangeNPD: No

STUDY RUNWAYS
23
Latitude: 47.236131 deg
Longitude: -123.138224 deg
Xcoord: 0.3810 nmi
Ycoord: 0.1544 nmi
Elevation: 269.0 ft
OtherEnd: 5
Length: 5000 ft
Gradient: -0.29 %
TkoThresh: 0 ft
AppThresh: 0 ft

CASENAME: 2012
RwyWind: 8.0 kt
5
Latitude: 47.230978 deg
Longitude: -123.156871 deg
Xcoord: -0.3814 nmi
Ycoord: -0.1549 nmi
Elevation: 254.7 ft
OtherEnd: 23
Length: 5000 ft
Gradient: 0.29 %



TkoThresh: 0 ft
AppThresh: 0 ft

CASENAME: 2012
RwyWind: 8.0 kt

CASENAME: 2012
RwyWind: 8.0 kt

STUDY HELIPADS

HELI-1
Latitude: 47.239428 deg
Longitude: -123.142357 deg
Xcoord: 0.2120 nmi
Ycoord: 0.3523 nmi

STUDY TRACKS

RwyId-OpType-TrkId
Sub PctSub TrkType Delta(ft)
23-APP-7
0 100.00 Vectors 0.0
23-APP-8
0 100.00 Vectors 0.0
23-DEP-3
0 100.00 Vectors 0.0
23-DEP-4
0 100.00 Vectors 0.0
23-TGO-10
0 100.00 Vectors 0.0
5-APP-5
0 100.00 Vectors 0.0
5-APP-6
0 100.00 Vectors 0.0
5-DEP-1
0 100.00 Vectors 0.0
5-DEP-2
0 100.00 Vectors 0.0
5-TGO-9
0 100.00 Vectors 0.0
HELI-1-APP-13
0 100.00 Vectors 68.0
HELI-1-APP-14
0 100.00 Vectors 248.0
HELI-1-DEP-11
0 100.00 Vectors 68.0
HELI-1-DEP-12
0 100.00 Vectors 248.0

STUDY TRACK DETAIL

RwyId-OpType-TrkId-SubTrk
SegType Dist/Angle Radius(nmi)
23-APP-7-0
1 Straight 8.2300 nmi
23-APP-8-0



1 Straight 0.2500 nmi
2 Right-Turn 45.0000 deg 0.2500
3 Straight 1.4114 nmi
4 Left-Turn 90.0000 deg 0.2500
5 Straight 0.2500 nmi
6 Left-Turn 90.0000 deg 0.2500
7 Straight 1.0000 nmi
23-DEP-3-0
1 Straight 8.2300 nmi
23-DEP-4-0
1 Straight 1.8229 nmi
2 Left-Turn 90.0000 deg 0.2500
3 Straight 0.2500 nmi
4 Left-Turn 90.0000 deg 0.2500
5 Straight 1.4114 nmi
6 Right-Turn 45.0000 deg 0.2500
7 Straight 0.2500 nmi
23-TGO-10-0
1 Straight 1.8229 nmi
2 Left-Turn 90.0000 deg 0.2500
3 Straight 0.2500 nmi
4 Left-Turn 90.0000 deg 0.2500
5 Straight 2.8229 nmi
6 Left-Turn 90.0000 deg 0.2500
7 Straight 0.2500 nmi
8 Left-Turn 90.0000 deg 0.2500
9 Straight 1.0000 nmi
5-APP-5-0
1 Straight 8.2300 nmi
5-APP-6-0
1 Straight 0.2500 nmi
2 Left-Turn 45.0000 deg 0.2500
3 Straight 1.4114 nmi
4 Right-Turn 90.0000 deg 0.2500
5 Straight 0.2500 nmi
6 Right-Turn 90.0000 deg 0.2500
7 Straight 1.0000 nmi
5-DEP-1-0
1 Straight 8.2300 nmi
5-DEP-2-0
1 Straight 1.8229 nmi
2 Right-Turn 90.0000 deg 0.2500
3 Straight 0.2500 nmi
4 Right-Turn 90.0000 deg 0.2500
5 Straight 1.4114 nmi
6 Left-Turn 45.0000 deg 0.2500
7 Straight 0.2500 nmi
5-TGO-9-0
1 Straight 1.8229 nmi
2 Right-Turn 90.0000 deg 0.2500
3 Straight 0.2500 nmi
4 Right-Turn 90.0000 deg 0.2500
5 Straight 2.8229 nmi
6 Right-Turn 90.0000 deg 0.2500



7 Straight 0.2500 nmi
8 Right-Turn 90.0000 deg 0.2500
9 Straight 1.0000 nmi
HELI-1-APP-13-0
1 Straight 1.5000 nmi
HELI-1-APP-14-0
1 Straight 1.5000 nmi
HELI-1-DEP-11-0
1 Straight 1.5000 nmi
HELI-1-DEP-12-0
1 Straight 1.5000 nmi

AIRCRAFT GROUP ASSIGNMENTS

STUDY AIRPLANES

BEC58P Standard data
CNA172 Standard data
CNA441 Standard data
CNA55B Standard data
DHC6 Standard data
GASEPF Standard data
GASEPV Standard data
GIV Standard data

STUDY SUBSTITUTION AIRPLANES

CNA150 Standard data
CNA208 Standard data

USER-DEFINED NOISE CURVES

USER-DEFINED METRICS

USER-DEFINED PROFILE IDENTIFIERS

USER-DEFINED PROCEDURAL PROFILES

USER-DEFINED FIXED-POINT PROFILES

USER-DEFINED FLAP COEFFICIENTS

USER-DEFINED JET THRUST COEFFICIENTS

USER-DEFINED PROP THRUST COEFFICIENTS

USER-DEFINED GENERAL THRUST COEFFICIENTS

STUDY MILITARY AIRPLANES

USER-DEFINED MILITARY NOISE CURVES

USER-DEFINED MILITARY PROFILE IDENTIFIERS

USER-DEFINED MILITARY FIXED-POINT PROFILES



STUDY HELICOPTERS

H500D Standard data

USER-DEFINED HELICOPTER PROFILE IDENTIFIERS

USER-DEFINED HELICOPTER PROCEDURAL PROFILES

USER-DEFINED HELICOPTER NOISE CURVES

USER-DEFINED HELICOPTER DIRECTIVITY

CASE FLIGHT OPERATIONS - [2012]

Acft	Op	Profile	Stg	Rwy	Track	Sub	Group	Day	Evening	Night
BEC58P	APP	STANDARD	1	23	7	0	---	0.3348	0.0000	0.0139
BEC58P	APP	STANDARD	1	23	8	0	---	0.3348	0.0000	0.0139
BEC58P	APP	STANDARD	1	5	5	0	---	0.0588	0.0000	0.0025
BEC58P	APP	STANDARD	1	5	6	0	---	0.0588	0.0000	0.0025
BEC58P	DEP	STANDARD	1	23	3	0	---	0.3348	0.0000	0.0139
BEC58P	DEP	STANDARD	1	23	4	0	---	0.3348	0.0000	0.0139
BEC58P	DEP	STANDARD	1	5	1	0	---	0.0588	0.0000	0.0025
BEC58P	DEP	STANDARD	1	5	2	0	---	0.0588	0.0000	0.0025
BEC58P	TGO	STANDARD	1	23	10	0	---	0.3348	0.0000	0.0139
BEC58P	TGO	STANDARD	1	5	9	0	---	0.0588	0.0000	0.0025
CNA172	APP	STANDARD	1	23	7	0	---	0.1674	0.0000	0.0070
CNA172	APP	STANDARD	1	23	8	0	---	0.1674	0.0000	0.0070
CNA172	APP	STANDARD	1	5	5	0	---	0.0294	0.0000	0.0012
CNA172	APP	STANDARD	1	5	6	0	---	0.0294	0.0000	0.0012
CNA172	DEP	STANDARD	1	23	3	0	---	0.1674	0.0000	0.0070
CNA172	DEP	STANDARD	1	23	4	0	---	0.1674	0.0000	0.0070
CNA172	DEP	STANDARD	1	5	1	0	---	0.0294	0.0000	0.0012
CNA172	DEP	STANDARD	1	5	2	0	---	0.0294	0.0000	0.0012
CNA172	TGO	STANDARD	1	23	10	0	---	0.1674	0.0000	0.0070
CNA172	TGO	STANDARD	1	5	9	0	---	0.0294	0.0000	0.0012
CNA441	APP	STANDARD	1	23	7	0	---	0.3348	0.0000	0.0139
CNA441	APP	STANDARD	1	23	8	0	---	0.3348	0.0000	0.0139
CNA441	APP	STANDARD	1	5	5	0	---	0.0588	0.0000	0.0025
CNA441	APP	STANDARD	1	5	6	0	---	0.0588	0.0000	0.0025
CNA441	DEP	STANDARD	1	23	3	0	---	0.3348	0.0000	0.0139
CNA441	DEP	STANDARD	1	23	4	0	---	0.3348	0.0000	0.0139
CNA441	DEP	STANDARD	1	5	1	0	---	0.0588	0.0000	0.0025
CNA441	DEP	STANDARD	1	5	2	0	---	0.0588	0.0000	0.0025
CNA441	TGO	STANDARD	1	23	10	0	---	0.3348	0.0000	0.0139
CNA441	TGO	STANDARD	1	5	9	0	---	0.0588	0.0000	0.0025
CNA55B	APP	STANDARD	1	23	7	0	---	0.1674	0.0000	0.0070
CNA55B	APP	STANDARD	1	23	8	0	---	0.1674	0.0000	0.0070
CNA55B	APP	STANDARD	1	5	5	0	---	0.0294	0.0000	0.0012
CNA55B	APP	STANDARD	1	5	6	0	---	0.0294	0.0000	0.0012
CNA55B	DEP	STANDARD	1	23	3	0	---	0.1674	0.0000	0.0070
CNA55B	DEP	STANDARD	1	23	4	0	---	0.1674	0.0000	0.0070
CNA55B	DEP	STANDARD	1	5	1	0	---	0.0294	0.0000	0.0012
CNA55B	DEP	STANDARD	1	5	2	0	---	0.0294	0.0000	0.0012
CNA55B	TGO	STANDARD	1	23	10	0	---	0.1674	0.0000	0.0070
CNA55B	TGO	STANDARD	1	5	9	0	---	0.0294	0.0000	0.0012
DHC6	APP	STANDARD	1	23	7	0	---	0.6528	0.0000	0.0272



DHC6 APP STANDARD 1 23 8 0 --- 0.6528 0.0000 0.0272
DHC6 APP STANDARD 1 5 5 0 --- 0.1147 0.0000 0.0048
DHC6 APP STANDARD 1 5 6 0 --- 0.1147 0.0000 0.0048
DHC6 DEP STANDARD 1 23 3 0 --- 0.6528 0.0000 0.0272
DHC6 DEP STANDARD 1 23 4 0 --- 0.6528 0.0000 0.0272
DHC6 DEP STANDARD 1 5 1 0 --- 0.1147 0.0000 0.0048
DHC6 DEP STANDARD 1 5 2 0 --- 0.1147 0.0000 0.0048
DHC6 TGO STANDARD 1 23 10 0 --- 0.6528 0.0000 0.0272
DHC6 TGO STANDARD 1 5 9 0 --- 0.1147 0.0000 0.0048
GASEPF APP STANDARD 1 23 7 0 --- 7.7833 0.0000 0.3243
GASEPF APP STANDARD 1 23 8 0 --- 7.7833 0.0000 0.3243
GASEPF APP STANDARD 1 5 5 0 --- 1.3853 0.0000 0.0570
GASEPF APP STANDARD 1 5 6 0 --- 1.3680 0.0000 0.0570
GASEPF DEP STANDARD 1 23 3 0 --- 7.7833 0.0000 0.3243
GASEPF DEP STANDARD 1 23 4 0 --- 7.7833 0.0000 0.3243
GASEPF DEP STANDARD 1 5 1 0 --- 1.3853 0.0000 0.0570
GASEPF DEP STANDARD 1 5 2 0 --- 1.3853 0.0000 0.0570
GASEPF TGO STANDARD 1 23 10 0 --- 7.7833 0.0000 0.3243
GASEPF TGO STANDARD 1 5 9 0 --- 1.3680 0.0000 0.0570
GASEPV APP STANDARD 1 23 7 0 --- 7.2812 0.0000 0.3034
GASEPV APP STANDARD 1 23 8 0 --- 7.2812 0.0000 0.3034
GASEPV APP STANDARD 1 5 5 0 --- 1.2797 0.0000 0.0533
GASEPV APP STANDARD 1 5 6 0 --- 1.2797 0.0000 0.0533
GASEPV DEP STANDARD 1 23 3 0 --- 7.2812 0.0000 0.3034
GASEPV DEP STANDARD 1 23 4 0 --- 7.2180 0.0000 0.3034
GASEPV DEP STANDARD 1 5 1 0 --- 1.2797 0.0000 0.0533
GASEPV DEP STANDARD 1 5 2 0 --- 1.2797 0.0000 0.0533
GASEPV TGO STANDARD 1 23 10 0 --- 7.2812 0.0000 0.3034
GASEPV TGO STANDARD 1 5 9 0 --- 1.2797 0.0000 0.0533
GIV APP STANDARD 1 23 7 0 --- 0.0167 0.0000 0.0007
GIV APP STANDARD 1 23 8 0 --- 0.0167 0.0000 0.0007
GIV APP STANDARD 1 5 5 0 --- 0.0029 0.0000 0.0001
GIV APP STANDARD 1 5 6 0 --- 0.0029 0.0000 0.0001
GIV DEP STANDARD 1 23 3 0 --- 0.0167 0.0000 0.0007
GIV DEP STANDARD 1 23 4 0 --- 0.0167 0.0000 0.0007
GIV DEP STANDARD 1 5 1 0 --- 0.0029 0.0000 0.0001
GIV DEP STANDARD 1 5 2 0 --- 0.0029 0.0000 0.0001
GIV TGO STANDARD 1 23 10 0 --- 0.0167 0.0000 0.0007
GIV TGO STANDARD 1 5 9 0 --- 0.0029 0.0000 0.0001
H500D APP STANDARD 1 HELI-1 13 0 --- 0.7925 0.0000 0.0317
H500D APP STANDARD 1 HELI-1 14 0 --- 0.7608 0.0000 0.0317
H500D DEP STANDARD 1 HELI-1 11 0 --- 0.7608 0.0000 0.0317
H500D DEP STANDARD 1 HELI-1 12 0 --- 0.7608 0.0000 0.0317

CASE RUNUP OPERATIONS - [2012]

Acft	RunupId	X(nmi)	Y(nmi)	Head	Thrust	Dur(sec)	Day	Evening	Night
BEC58P	23	0.3810	0.1544	248.0	80.0 %	30.0	0.3348	0.0000	0.0139
BEC58P	5	-0.3814	-0.1549	68.0	80.0 %	30.0	0.0588	0.0000	0.0025
GASEPF	23	0.3810	0.1544	248.0	80.0 %	30.0	7.2812	0.0000	0.3034
GASEPF	5	-0.3814	-0.1549	68.0	80.0 %	30.0	1.2797	0.0000	0.0533
GASEPV	23	0.3810	0.1544	248.0	80.0 %	30.0	7.2812	0.3034	0.0000
GASEPV	5	-0.3814	-0.1549	68.0	80.0 %	30.0	1.2797	0.0000	0.0533

SCENARIO RUN OPTIONS



Run Type: Single-Metric
NoiseMetric: DNL
Do Terrain: No Terrain
Do Contour: Recursive Grid
Refinement: 10
Tolerance: 0.20
Low Cutoff: 60.0
High Cutoff: 85.0
Ground Type: All-Soft-Ground
Do Population: No
Do Locations: No
Do Standard: Yes
Do Detailed: No
Compute System Metrics:
DNL: Yes
CNEL: No
LAEQ: No
LAEQD: No
LAEQN: No
SEL: Yes
LAMAX: Yes
TALA: Yes
NEF: No
WECPNL: No
EPNL: No
PNLTM: No
TAPNL: No
CEXP: No
LCMAX: No
TALC: No

SCENARIO GRID DEFINITIONS

Name	Type	X(nmi)	Y(nmi)	Ang(deg)	DisI(nmi)	DisJ(nmi)	NI	NJ	Thrsh	dAmb (hr)
CONTOUR	Contour	-8.0000	-8.0000	0.0	16.0000	16.0000	2	2	65.0	0.0 0.00
DETAILED	Detailed	-8.0000	-8.0000	0.0	16.0000	16.0000	2	2	65.0	0.0 0.00
STANDARD	Standard	-8.0000	-8.0000	0.0	16.0000	16.0000	2	2	65.0	0.0 0.00



INM 7.0 SCENARIO RUN INPUT REPORT 27-Oct-08 10:02

STUDY: C:\PROGRAM FILES\INM7.0\SHELTON-2027\

Created: 24-Sep-08 14:50

Units: English

Airport: SHN

Description:

OPERATIONS

SCENARIO: Shelton Airport

Created: 02-Oct-08 10:33

Description

Last Run: 05-Oct-08 15:43

Run Duration: 000:00:11

STUDY AIRPORT

Latitude: 47.233559 deg

Longitude: -123.147543 deg

Elevation: 269.0 ft

CASES RUN:

CASENAME: 2027

Temperature: 76.9 F

Pressure: 29.92 in-Hg

AverageWind: 8.0 kt

ChangeNPD: No

STUDY RUNWAYS

23

Latitude: 47.236131 deg

Longitude: -123.138224 deg

Xcoord: 0.3810 nmi

Ycoord: 0.1544 nmi

Elevation: 269.0 ft

OtherEnd: 5

Length: 5300 ft

Gradient: -0.29 %

TkoThresh: 0 ft

AppThresh: 0 ft

CASENAME: 2027

RwyWind: 8.0 kt

5

Latitude: 47.230669 deg

Longitude: -123.157990 deg

Xcoord: -0.4275 nmi

Ycoord: -0.1733 nmi

Elevation: 254.7 ft

OtherEnd: 23

Length: 5300 ft

Gradient: 0.29 %

TkoThresh: 0 ft



AppThresh: 0 ft

CASENAME: 2027
RwyWind: 8.0 kt

CASENAME: 2027
RwyWind: 8.0 kt

STUDY HELIPADS

HELI-1
Latitude: 47.239428 deg
Longitude: -123.142357 deg
Xcoord: 0.2120 nmi
Ycoord: 0.3523 nmi

STUDY TRACKS

RwyId-OpType-TrkId
Sub PctSub TrkType Delta(ft)
23-APP-7
0 100.00 Vectors 0.0
23-APP-8
0 100.00 Vectors 0.0
23-DEP-3
0 100.00 Vectors 0.0
23-DEP-4
0 100.00 Vectors 0.0
23-TGO-10
0 100.00 Vectors 0.0
5-APP-5
0 100.00 Vectors 0.0
5-APP-6
0 100.00 Vectors 0.0
5-DEP-1
0 100.00 Vectors 0.0
5-DEP-2
0 100.00 Vectors 0.0
5-TGO-9
0 100.00 Vectors 0.0
HELI-1-APP-13
0 100.00 Vectors 68.0
HELI-1-APP-14
0 100.00 Vectors 248.0
HELI-1-DEP-11
0 100.00 Vectors 68.0
HELI-1-DEP-12
0 100.00 Vectors 248.0

STUDY TRACK DETAIL

RwyId-OpType-TrkId-SubTrk
SegType Dist/Angle Radius(nmi)
23-APP-7-0
1 Straight 8.2300 nmi
23-APP-8-0
1 Straight 0.2500 nmi



2 Right-Turn 45.0000 deg 0.2500
3 Straight 1.4114 nmi
4 Left-Turn 90.0000 deg 0.2500
5 Straight 0.2500 nmi
6 Left-Turn 90.0000 deg 0.2500
7 Straight 1.0000 nmi
23-DEP-3-0
1 Straight 8.2300 nmi
23-DEP-4-0
1 Straight 1.8229 nmi
2 Left-Turn 90.0000 deg 0.2500
3 Straight 0.2500 nmi
4 Left-Turn 90.0000 deg 0.2500
5 Straight 1.4114 nmi
6 Right-Turn 45.0000 deg 0.2500
7 Straight 0.2500 nmi
23-TGO-10-0
1 Straight 1.8229 nmi
2 Left-Turn 90.0000 deg 0.2500
3 Straight 0.2500 nmi
4 Left-Turn 90.0000 deg 0.2500
5 Straight 2.8229 nmi
6 Left-Turn 90.0000 deg 0.2500
7 Straight 0.2500 nmi
8 Left-Turn 90.0000 deg 0.2500
9 Straight 1.0000 nmi
5-APP-5-0
1 Straight 8.2300 nmi
5-APP-6-0
1 Straight 0.2500 nmi
2 Left-Turn 45.0000 deg 0.2500
3 Straight 1.4114 nmi
4 Right-Turn 90.0000 deg 0.2500
5 Straight 0.2500 nmi
6 Right-Turn 90.0000 deg 0.2500
7 Straight 1.0000 nmi
5-DEP-1-0
1 Straight 8.2300 nmi
5-DEP-2-0
1 Straight 1.8229 nmi
2 Right-Turn 90.0000 deg 0.2500
3 Straight 0.2500 nmi
4 Right-Turn 90.0000 deg 0.2500
5 Straight 1.4114 nmi
6 Left-Turn 45.0000 deg 0.2500
7 Straight 0.2500 nmi
5-TGO-9-0
1 Straight 1.8229 nmi
2 Right-Turn 90.0000 deg 0.2500
3 Straight 0.2500 nmi
4 Right-Turn 90.0000 deg 0.2500
5 Straight 2.8229 nmi
6 Right-Turn 90.0000 deg 0.2500
7 Straight 0.2500 nmi



8 Right-Turn 90.0000 deg 0.2500
9 Straight 1.0000 nmi
HELI-1-APP-13-0
1 Straight 1.5000 nmi
HELI-1-APP-14-0
1 Straight 1.5000 nmi
HELI-1-DEP-11-0
1 Straight 1.5000 nmi
HELI-1-DEP-12-0
1 Straight 1.5000 nmi

AIRCRAFT GROUP ASSIGNMENTS

STUDY AIRPLANES

BEC58P Standard data
CNA172 Standard data
CNA441 Standard data
CNA55B Standard data
DHC6 Standard data
GASEPF Standard data
GASEPV Standard data
GIV Standard data

STUDY SUBSTITUTION AIRPLANES

CNA150 Standard data
CNA208 Standard data

USER-DEFINED NOISE CURVES

USER-DEFINED METRICS

USER-DEFINED PROFILE IDENTIFIERS

USER-DEFINED PROCEDURAL PROFILES

USER-DEFINED FIXED-POINT PROFILES

USER-DEFINED FLAP COEFFICIENTS

USER-DEFINED JET THRUST COEFFICIENTS

USER-DEFINED PROP THRUST COEFFICIENTS

USER-DEFINED GENERAL THRUST COEFFICIENTS

STUDY MILITARY AIRPLANES

USER-DEFINED MILITARY NOISE CURVES

USER-DEFINED MILITARY PROFILE IDENTIFIERS

USER-DEFINED MILITARY FIXED-POINT PROFILES

STUDY HELICOPTERS



H500D Standard data

USER-DEFINED HELICOPTER PROFILE IDENTIFIERS

USER-DEFINED HELICOPTER PROCEDURAL PROFILES

USER-DEFINED HELICOPTER NOISE CURVES

USER-DEFINED HELICOPTER DIRECTIVITY

CASE FLIGHT OPERATIONS - [SHELTON 2027]

Acft	Op	Profile	Stg	Rwy	Track	Sub	Group	Day	Evening	Night
BEC58P	APP	STANDARD	1	23	7	0	---	0.4914	0.0000	0.0205
BEC58P	APP	STANDARD	1	23	8	0	---	0.4914	0.0000	0.0205
BEC58P	APP	STANDARD	1	5	5	0	---	0.0864	0.0000	0.0036
BEC58P	APP	STANDARD	1	5	6	0	---	0.0864	0.0000	0.0036
BEC58P	DEP	STANDARD	1	23	3	0	---	0.4914	0.0000	0.0205
BEC58P	DEP	STANDARD	1	23	4	0	---	0.4919	0.0000	0.0205
BEC58P	DEP	STANDARD	1	5	1	0	---	0.0864	0.0000	0.0036
BEC58P	DEP	STANDARD	1	5	2	0	---	0.0864	0.0000	0.0036
BEC58P	TGO	STANDARD	1	23	10	0	---	0.1024	0.0000	0.1024
BEC58P	TGO	STANDARD	1	5	9	0	---	0.0180	0.0000	0.0180
CNA172	APP	STANDARD	1	23	7	0	---	1.2286	0.0000	0.0512
CNA172	APP	STANDARD	1	23	8	0	---	1.2286	0.0000	0.0512
CNA172	APP	STANDARD	1	5	5	0	---	0.2159	0.0000	0.0090
CNA172	APP	STANDARD	1	5	6	0	---	0.2159	0.0000	0.0090
CNA172	DEP	STANDARD	1	23	3	0	---	1.2286	0.0000	0.0512
CNA172	DEP	STANDARD	1	23	4	0	---	1.2286	0.0000	0.0512
CNA172	DEP	STANDARD	1	5	1	0	---	0.2159	0.0000	0.0090
CNA172	DEP	STANDARD	1	5	2	0	---	0.2159	0.0000	0.0090
CNA172	TGO	STANDARD	1	23	10	0	---	0.2560	0.0000	0.2560
CNA172	TGO	STANDARD	1	5	9	0	---	0.0450	0.0000	0.0450
CNA441	APP	STANDARD	1	23	7	0	---	0.4914	0.0000	0.0205
CNA441	APP	STANDARD	1	23	8	0	---	0.4914	0.0000	0.0205
CNA441	APP	STANDARD	1	5	5	0	---	0.0864	0.0000	0.0036
CNA441	APP	STANDARD	1	5	6	0	---	0.0864	0.0000	0.0036
CNA441	DEP	STANDARD	1	23	3	0	---	0.4914	0.0000	0.0205
CNA441	DEP	STANDARD	1	23	4	0	---	0.4914	0.0000	0.0205
CNA441	DEP	STANDARD	1	5	1	0	---	0.0864	0.0000	0.0036
CNA441	DEP	STANDARD	1	5	2	0	---	0.0864	0.0000	0.0036
CNA441	TGO	STANDARD	1	23	10	0	---	0.1024	0.0000	0.1024
CNA441	TGO	STANDARD	1	5	9	0	---	0.0180	0.0000	0.0180
CNA55B	APP	STANDARD	1	23	7	0	---	0.2457	0.0000	0.0102
CNA55B	APP	STANDARD	1	23	8	0	---	0.2457	0.0000	0.0102
CNA55B	APP	STANDARD	1	5	5	0	---	0.0432	0.0000	0.0018
CNA55B	APP	STANDARD	1	5	6	0	---	0.0432	0.0000	0.0018
CNA55B	DEP	STANDARD	1	23	3	0	---	0.2457	0.0000	0.0102
CNA55B	DEP	STANDARD	1	23	4	0	---	0.2457	0.0000	0.0102
CNA55B	DEP	STANDARD	1	5	1	0	---	0.0432	0.0000	0.0018
CNA55B	DEP	STANDARD	1	5	2	0	---	0.0432	0.0000	0.0018
CNA55B	TGO	STANDARD	1	23	10	0	---	0.0512	0.0000	0.0512
CNA55B	TGO	STANDARD	1	5	9	0	---	0.0090	0.0000	0.0090
DHC6	APP	STANDARD	1	23	7	0	---	0.9583	0.0000	0.0399
DHC6	APP	STANDARD	1	23	8	0	---	0.9583	0.0000	0.0399



DHC6 APP STANDARD 1 5 5 0 --- 0.1684 0.0000 0.0070
DHC6 APP STANDARD 1 5 6 0 --- 0.1684 0.0000 0.0070
DHC6 DEP STANDARD 1 23 3 0 --- 0.9583 0.0000 0.0399
DHC6 DEP STANDARD 1 23 4 0 --- 0.9583 0.0000 0.0399
DHC6 DEP STANDARD 1 5 1 0 --- 0.1684 0.0000 0.0070
DHC6 DEP STANDARD 1 5 2 0 --- 0.1684 0.0000 0.0070
DHC6 TGO STANDARD 1 23 10 0 --- 0.1996 0.0000 0.1996
DHC6 TGO STANDARD 1 5 9 0 --- 0.0351 0.0000 0.0351
GASEPF APP STANDARD 1 23 7 0 --- 10.9343 0.0000 0.4556
GASEPF APP STANDARD 1 23 8 0 --- 10.9343 0.0000 0.4556
GASEPF APP STANDARD 1 5 5 0 --- 1.9218 0.0000 0.0797
GASEPF APP STANDARD 1 5 6 0 --- 1.9218 0.0000 0.0801
GASEPF DEP STANDARD 1 23 3 0 --- 10.9343 0.0000 0.4556
GASEPF DEP STANDARD 1 23 4 0 --- 10.9343 0.0000 0.4556
GASEPF DEP STANDARD 1 5 1 0 --- 1.9218 0.0000 0.0801
GASEPF DEP STANDARD 1 5 2 0 --- 1.9218 0.0000 0.0801
GASEPF TGO STANDARD 1 23 10 0 --- 2.2780 0.0000 2.2780
GASEPF TGO STANDARD 1 5 9 0 --- 0.4004 0.0000 0.4004
GASEPV APP STANDARD 1 23 7 0 --- 10.1972 0.0000 0.4249
GASEPV APP STANDARD 1 23 8 0 --- 10.1972 0.0000 0.4249
GASEPV APP STANDARD 1 5 5 0 --- 1.7922 0.0000 0.0747
GASEPV APP STANDARD 1 5 6 0 --- 1.7922 0.0000 0.0747
GASEPV DEP STANDARD 1 23 3 0 --- 10.1972 0.0000 0.4249
GASEPV DEP STANDARD 1 23 4 0 --- 10.1972 0.0000 0.4249
GASEPV DEP STANDARD 1 5 1 0 --- 1.7922 0.0000 0.0747
GASEPV DEP STANDARD 1 5 2 0 --- 1.7922 0.0000 0.0747
GASEPV TGO STANDARD 1 23 10 0 --- 2.1244 0.0000 2.1244
GASEPV TGO STANDARD 1 5 9 0 --- 0.3734 0.0000 0.3734
GIV APP STANDARD 1 23 7 0 --- 0.0246 0.0000 0.0010
GIV APP STANDARD 1 23 8 0 --- 0.0246 0.0000 0.0010
GIV APP STANDARD 1 5 5 0 --- 0.0043 0.0000 0.0002
GIV APP STANDARD 1 5 6 0 --- 0.0043 0.0000 0.0002
GIV DEP STANDARD 1 23 3 0 --- 0.0246 0.0000 0.0010
GIV DEP STANDARD 1 23 4 0 --- 0.0246 0.0000 0.0010
GIV DEP STANDARD 1 5 1 0 --- 0.0043 0.0000 0.0002
GIV DEP STANDARD 1 5 2 0 --- 0.0043 0.0000 0.0002
GIV TGO STANDARD 1 23 10 0 --- 0.0051 0.0000 0.0051
GIV TGO STANDARD 1 5 9 0 --- 0.0009 0.0000 0.0009
H500D APP STANDARD 1 HELI-1 13 0 --- 1.1169 0.0000 0.0465
H500D APP STANDARD 1 HELI-1 14 0 --- 1.1169 0.0000 0.0465
H500D DEP STANDARD 1 HELI-1 11 0 --- 1.1169 0.0000 0.0465
H500D DEP STANDARD 1 HELI-1 12 0 --- 1.1169 0.0000 0.0465

CASE RUNUP OPERATIONS - [SHELTON 2027]

Acft	RunupId	X(nmi)	Y(nmi)	Head	Thrust	Dur(sec)	Day	Evening	Night
BEC58P	23	0.3810	0.1544	248.0	80.0 %	30.0	0.0864	0.0000	0.0036
BEC58P	5	-0.3814	-0.1549	68.0	80.0 %	30.0	0.0864	0.0000	0.0036
GASEPF	23	0.3810	0.1544	248.0	80.0 %	30.0	1.7275	0.0000	0.0720
GASEPF	5	-0.3814	-0.1549	68.0	80.0 %	30.0	1.7275	0.0000	0.0720
GASEPV	23	0.3810	0.1544	248.0	80.0 %	30.0	1.7275	0.0000	0.0720
GASEPV	5	-0.3814	-0.1549	68.0	80.0 %	0.0	1.7275	0.0000	0.0720

SCENARIO RUN OPTIONS

Run Type: Single-Metric



NoiseMetric: DNL
Do Terrain: No Terrain
Do Contour: Recursive Grid
Refinement: 10
Tolerance: 0.20
Low Cutoff: 60.0
High Cutoff: 85.0
Ground Type: All-Soft-Ground
Do Population: No
Do Locations: No
Do Standard: Yes
Do Detailed: No
Compute System Metrics:
DNL: Yes
CNEL: No
LAEQ: No
LAEQD: No
LAEQN: No
SEL: Yes
LAMAX: Yes
TALA: Yes
NEF: No
WECPNL: No
EPNL: No
PNLTM: No
TAPNL: No
CEXP: No
LCMAX: No
TALC: No

SCENARIO GRID DEFINITIONS

Name	Type	X(nmi)	Y(nmi)	Ang(deg)	DisI(nmi)	DisJ(nmi)	NI	NJ	Thrsh	dAmb	(hr)
CONTOUR	Contour	-8.0000	-8.0000	0.0	16.0000	16.0000	2	2	65.0	0.0	0.00
DETAILED	Detailed	-8.0000	-8.0000	0.0	16.0000	16.0000	2	2	65.0	0.0	0.00
STANDARD	Standard	-8.0000	-8.0000	0.0	16.0000	16.0000	2	2	65.0	0.0	0.00



APPENDIX D – 2011 NOISE UPDATE

INM 7.0c SCENARIO RUN INPUT REPORT 15-Apr-12 19:17

STUDY: F:\SKWORK\INM7.0C\SHELTON-2027 - REVISED 1-12 - XRUNUP - REVD TRACKS\

Created : 24-Sep-08 14:50
Units : English
Airport : SHN
Description :
OPERATIONS

SCENARIO: Shelton Airport

Created : 02-Oct-08 10:33
Description :
Last Run : 15-Apr-12 19:10
Run Duration : 000:00:34

STUDY AIRPORT

Latitude : 47.233402 deg
Longitude : -123.148107 deg
Elevation : 273.0 ft

CASES RUN:

CASENAME: SHELTON 2027

Temperature : 77.4 F
Pressure : 29.92 in-Hg
AverageWind : 8.0 kt
ChangeNPD : No

STUDY RUNWAYS

23
Latitude : 47.236135 deg
Longitude : -123.138223 deg
Xcoord : 0.4041 nmi
Ycoord : 0.1641 nmi
Elevation : 269.0 ft
OtherEnd : 5
Length : 5299 ft
Gradient : -0.27 %
TkoThresh : 0 ft
AppThresh : 0 ft

CASENAME: SHELTON 2027

RwyWind : 8.0 kt
5
Latitude : 47.230670 deg
Longitude : -123.157990 deg
Xcoord : -0.4041 nmi
Ycoord : -0.1640 nmi
Elevation : 254.7 ft



OtherEnd : 23
Length : 5299 ft
Gradient : 0.27 %
TkoThresh : 0 ft
AppThresh : 0 ft

CASENAME: SHELTON 2027
RwyWind : 8.0 kt

CASENAME: SHELTON 2027
RwyWind : 8.0 kt

CASENAME: SHELTON 2027
RwyWind : 8.0 kt

STUDY HELIPADS

HELI-C

Latitude : 47.239924 deg
Longitude : -123.142784 deg
Xcoord : 0.2176 nmi
Ycoord : 0.3915 nmi

HELI-M

Latitude : 47.237308 deg
Longitude : -123.145519 deg
Xcoord : 0.1058 nmi
Ycoord : 0.2345 nmi

STUDY TRACKS

RwyId-OpType-TrkId

Sub	PctSub	TrkType	Delta(ft)
23-APP-51			
0	100.00	Vectors	0.0
23-APP-7			
0	100.00	Vectors	0.0
23-APP-8			
0	100.00	Vectors	0.0
23-DEP-3			
0	100.00	Vectors	0.0
23-DEP-4			
0	100.00	Vectors	0.0
23-DEP-50			
0	100.00	Vectors	0.0
23-TGO-10			
0	100.00	Vectors	0.0
23-TGO-55			
0	100.00	Vectors	0.0
5-APP-5			
0	100.00	Vectors	0.0
5-APP-53			
0	100.00	Vectors	0.0
5-APP-6			
0	100.00	Vectors	0.0



5-DEP-1			
0	100.00	Vectors	0.0
5-DEP-2			
0	100.00	Vectors	0.0
5-DEP-52			
0	100.00	Vectors	0.0
5-TGO-56			
0	100.00	Vectors	0.0
5-TGO-9			
0	100.00	Vectors	0.0
HELI-C-APP-13			
0	100.00	Vectors	68.0
HELI-C-APP-14			
0	100.00	Vectors	248.0
HELI-C-DEP-11			
0	100.00	Vectors	68.0
HELI-C-DEP-12			
0	100.00	Vectors	248.0
HELI-M-APP-30			
0	100.00	Vectors	248.0
HELI-M-APP-31			
0	100.00	Vectors	68.0
HELI-M-APP-32			
0	100.00	Vectors	68.0
HELI-M-APP-33			
0	100.00	Vectors	248.0
HELI-M-DEP-20			
0	100.00	Vectors	68.0
HELI-M-DEP-21			
0	100.00	Vectors	248.0
HELI-M-DEP-22			
0	100.00	Vectors	68.0
HELI-M-DEP-23			
0	100.00	Vectors	248.0
HELI-M-DEP-24			
0	100.00	Vectors	68.0
HELI-M-DEP-25			
0	100.00	Vectors	248.0

STUDY TRACK DETAIL

RwyId-OpType-TrkId-SubTrk	#	SegType	Dist/Angle	Radius (nmi)
23-APP-51-0				
	1	Straight	0.2500 nmi	
	2	Right-Turn	45.0000 deg	0.2500
	3	Straight	0.8706 nmi	
	4	Left-Turn	90.0000 deg	0.1500
	5	Straight	0.1345 nmi	
	6	Left-Turn	90.0000 deg	0.1500
	7	Straight	0.4345 nmi	
23-APP-7-0				
	1	Straight	8.2300 nmi	
23-APP-8-0				
	1	Straight	0.2500 nmi	



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2	Right-Turn	45.0000	deg	0.2500
3	Straight	1.4114	nmi	
4	Left-Turn	90.0000	deg	0.2500
5	Straight	0.2500	nmi	
6	Left-Turn	90.0000	deg	0.2500
7	Straight	1.0000	nmi	
23-DEP-3-0				
1	Straight	8.2300	nmi	
23-DEP-4-0				
1	Straight	1.8229	nmi	
2	Left-Turn	90.0000	deg	0.2500
3	Straight	0.2500	nmi	
4	Left-Turn	90.0000	deg	0.2500
5	Straight	1.4114	nmi	
6	Right-Turn	45.0000	deg	0.2500
7	Straight	0.2500	nmi	
23-DEP-50-0				
1	Straight	1.3068	nmi	
2	Left-Turn	90.0000	deg	0.1500
3	Straight	0.1345	nmi	
4	Left-Turn	90.0000	deg	0.1500
5	Straight	0.8706	nmi	
6	Right-Turn	45.0000	deg	0.2500
7	Straight	0.2500	nmi	
23-TGO-10-0				
1	Straight	1.8229	nmi	
2	Left-Turn	90.0000	deg	0.2500
3	Straight	0.2500	nmi	
4	Left-Turn	90.0000	deg	0.2500
5	Straight	2.8229	nmi	
6	Left-Turn	90.0000	deg	0.2500
7	Straight	0.2500	nmi	
8	Left-Turn	90.0000	deg	0.2500
9	Straight	1.0000	nmi	
23-TGO-55-0				
1	Straight	1.3068	nmi	
2	Left-Turn	90.0000	deg	0.1500
3	Straight	0.1345	nmi	
4	Left-Turn	90.0000	deg	0.1500
5	Straight	1.7413	nmi	
6	Left-Turn	90.0000	deg	0.1500
7	Straight	0.1345	nmi	
8	Left-Turn	90.0000	deg	0.1500
9	Straight	0.4345	nmi	
5-APP-5-0				
1	Straight	8.2300	nmi	
5-APP-53-0				
1	Straight	0.2500	nmi	
2	Left-Turn	45.0000	deg	0.2500
3	Straight	0.8706	nmi	
4	Right-Turn	90.0000	deg	0.1500
5	Straight	0.1345	nmi	
6	Right-Turn	90.0000	deg	0.1500
7	Straight	0.4345	nmi	



5-APP-6-0			
1	Straight	0.2500 nmi	
2	Left-Turn	45.0000 deg	0.2500
3	Straight	1.4114 nmi	
4	Right-Turn	90.0000 deg	0.2500
5	Straight	0.2500 nmi	
6	Right-Turn	90.0000 deg	0.2500
7	Straight	1.0000 nmi	
5-DEP-1-0			
1	Straight	8.2300 nmi	
5-DEP-2-0			
1	Straight	1.8229 nmi	
2	Right-Turn	90.0000 deg	0.2500
3	Straight	0.2500 nmi	
4	Right-Turn	90.0000 deg	0.2500
5	Straight	1.4114 nmi	
6	Left-Turn	45.0000 deg	0.2500
7	Straight	0.2500 nmi	
5-DEP-52-0			
1	Straight	1.3068 nmi	
2	Right-Turn	90.0000 deg	0.1500
3	Straight	0.1345 nmi	
4	Right-Turn	90.0000 deg	0.1500
5	Straight	0.8706 nmi	
6	Left-Turn	45.0000 deg	0.2500
7	Straight	0.2500 nmi	
5-TGO-56-0			
1	Straight	1.3068 nmi	
2	Right-Turn	90.0000 deg	0.1500
3	Straight	0.1345 nmi	
4	Right-Turn	90.0000 deg	0.1500
5	Straight	1.7413 nmi	
6	Right-Turn	90.0000 deg	0.1500
7	Straight	0.1345 nmi	
8	Right-Turn	90.0000 deg	0.1500
9	Straight	0.4345 nmi	
5-TGO-9-0			
1	Straight	1.8229 nmi	
2	Right-Turn	90.0000 deg	0.2500
3	Straight	0.2500 nmi	
4	Right-Turn	90.0000 deg	0.2500
5	Straight	2.8229 nmi	
6	Right-Turn	90.0000 deg	0.2500
7	Straight	0.2500 nmi	
8	Right-Turn	90.0000 deg	0.2500
9	Straight	1.0000 nmi	
HELI-C-APP-13-0			
1	Straight	1.5000 nmi	
HELI-C-APP-14-0			
1	Straight	1.5000 nmi	
HELI-C-DEP-11-0			
1	Straight	1.5000 nmi	
HELI-C-DEP-12-0			
1	Straight	1.5000 nmi	



HELI-M-APP-30-0			
1	Straight	0.2500 nmi	
2	Right-Turn	45.0000 deg	0.2500
3	Straight	1.0000 nmi	
4	Left-Turn	90.0000 deg	0.1500
5	Straight	0.2000 nmi	
6	Left-Turn	90.0000 deg	0.1500
7	Straight	0.1000 nmi	
8	Right-Turn	22.5000 deg	0.0400
9	Straight	0.4500 nmi	
10	Left-Turn	22.5000 deg	0.0400
11	Straight	0.2328 nmi	
HELI-M-APP-31-0			
1	Straight	0.2500 nmi	
2	Left-Turn	45.0000 deg	0.2500
3	Straight	1.0000 nmi	
4	Right-Turn	90.0000 deg	0.1500
5	Straight	0.2000 nmi	
6	Right-Turn	90.0000 deg	0.1500
7	Straight	0.1000 nmi	
8	Left-Turn	22.5000 deg	0.0400
9	Straight	0.4500 nmi	
10	Right-Turn	22.5000 deg	0.0400
11	Straight	0.6224 nmi	
HELI-M-APP-32-0			
1	Straight	1.0000 nmi	
2	Right-Turn	90.0000 deg	0.1500
3	Straight	0.2000 nmi	
4	Right-Turn	90.0000 deg	0.1500
5	Straight	0.1000 nmi	
6	Left-Turn	22.5000 deg	0.0400
8	Straight	0.4500 nmi	
9	Right-Turn	22.5000 deg	0.0400
10	Straight	0.6224 nmi	
HELI-M-APP-33-0			
1	Straight	1.0000 nmi	
2	Left-Turn	90.0000 deg	0.1500
3	Straight	0.2000 nmi	
4	Left-Turn	90.0000 deg	0.1500
5	Straight	0.1000 nmi	
6	Right-Turn	22.5000 deg	0.0400
7	Straight	0.4500 nmi	
8	Left-Turn	22.5000 deg	0.0400
9	Straight	0.2328 nmi	
HELI-M-DEP-20-0			
1	Straight	0.2328 nmi	
2	Right-Turn	22.5000 deg	0.0400
3	Straight	0.4500 nmi	
4	Left-Turn	22.5000 deg	0.0400
5	Straight	0.1000 nmi	
6	Right-Turn	90.0000 deg	0.1500
7	Straight	0.2000 nmi	
8	Right-Turn	90.0000 deg	0.1500
9	Straight	1.0000 nmi	



10	Left-Turn	45.0000 deg	0.2500
11	Straight	0.2500 nmi	
HELI-M-DEP-21-0			
1	Straight	0.6224 nmi	
2	Left-Turn	22.5000 deg	0.0400
3	Straight	0.4500 nmi	
4	Right-Turn	22.5000 deg	0.0400
5	Straight	0.1000 nmi	
6	Left-Turn	90.0000 deg	0.1500
7	Straight	0.2000 nmi	
8	Left-Turn	90.0000 deg	0.1500
9	Straight	1.0000 nmi	
10	Right-Turn	45.0000 deg	0.2500
11	Straight	0.2500 nmi	
HELI-M-DEP-22-0			
1	Straight	5.0000 nmi	
HELI-M-DEP-23-0			
1	Straight	5.0000 nmi	
HELI-M-DEP-24-0			
1	Straight	0.2328 nmi	
2	Right-Turn	22.5000 deg	0.0400
3	Straight	0.4500 nmi	
4	Left-Turn	22.5000 deg	0.0400
5	Straight	0.1000 nmi	
6	Right-Turn	90.0000 deg	0.1500
7	Straight	0.2000 nmi	
8	Right-Turn	90.0000 deg	0.1500
9	Straight	1.0000 nmi	
HELI-M-DEP-25-0			
1	Straight	0.6224 nmi	
2	Left-Turn	22.5000 deg	0.0400
3	Straight	0.4500 nmi	
4	Right-Turn	22.5000 deg	0.0400
5	Straight	0.1000 nmi	
6	Left-Turn	90.0000 deg	0.1500
7	Straight	0.2000 nmi	
8	Left-Turn	90.0000 deg	0.1500
9	Straight	1.0000 nmi	

AIRCRAFT GROUP ASSIGNMENTS

STUDY AIRPLANES

BEC58P	Standard data
CNA172	Standard data
CNA208	Standard data
CNA441	Standard data
CNA55B	Standard data
DHC6	Standard data
GASEPF	Standard data
GASEPV	Standard data
GIV	Standard data



STUDY SUBSTITUTION AIRPLANES
CNA150 Standard data

USER-DEFINED NOISE CURVES

USER-DEFINED METRICS

USER-DEFINED PROFILE IDENTIFIERS

USER-DEFINED PROCEDURAL PROFILES

USER-DEFINED FIXED-POINT PROFILES

USER-DEFINED FLAP COEFFICIENTS

USER-DEFINED JET THRUST COEFFICIENTS

USER-DEFINED PROP THRUST COEFFICIENTS

USER-DEFINED GENERAL THRUST COEFFICIENTS

STUDY MILITARY AIRPLANES
C23 Standard data

USER-DEFINED MILITARY NOISE CURVES

USER-DEFINED MILITARY PROFILE IDENTIFIERS

USER-DEFINED MILITARY FIXED-POINT PROFILES

STUDY HELICOPTERS
B206L Standard data
CH47D Standard data
H500D Standard data
S70 Standard data

USER-DEFINED HELICOPTER PROFILE IDENTIFIERS

USER-DEFINED HELICOPTER PROCEDURAL PROFILES

USER-DEFINED HELICOPTER NOISE CURVES

USER-DEFINED HELICOPTER DIRECTIVITY

CASE FLIGHT OPERATIONS - [SHELTON 2027]

Acft	Op	Profile	Stg	Rwy	Track	Sub	Group	Day	Evening	Night
B206L	APP	STANDARD	1	HELI-M	30	0	---	0.5893	0.0000	0.0246
B206L	APP	STANDARD	1	HELI-M	31	0	---	0.5893	0.0000	0.0246



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B206L	APP	STANDARD	1	HELI-M	32	0	---	0.5893	0.0000	0.0246
B206L	APP	STANDARD	1	HELI-M	33	0	---	0.5893	0.0000	0.0246
B206L	DEP	STANDARD	1	HELI-M	20	0	---	0.0884	0.0000	0.0037
B206L	DEP	STANDARD	1	HELI-M	21	0	---	0.5009	0.0000	0.0209
B206L	DEP	STANDARD	1	HELI-M	22	0	---	0.0884	0.0000	0.0037
B206L	DEP	STANDARD	1	HELI-M	23	0	---	0.5009	0.0000	0.0209
B206L	DEP	STANDARD	1	HELI-M	24	0	---	0.1768	0.0000	0.0074
B206L	DEP	STANDARD	1	HELI-M	25	0	---	1.0018	0.0000	0.0417
BEC58P	APP	STANDARD	1	23	51	0	---	0.6030	0.0000	0.0251
BEC58P	APP	STANDARD	1	23	7	0	---	0.6030	0.0000	0.0251
BEC58P	APP	STANDARD	1	5	5	0	---	0.1124	0.0000	0.0047
BEC58P	APP	STANDARD	1	5	53	0	---	0.1124	0.0000	0.0047
BEC58P	DEP	STANDARD	1	23	3	0	---	0.6030	0.0000	0.0251
BEC58P	DEP	STANDARD	1	23	50	0	---	0.6030	0.0000	0.0251
BEC58P	DEP	STANDARD	1	5	1	0	---	0.1124	0.0000	0.0047
BEC58P	DEP	STANDARD	1	5	52	0	---	0.1124	0.0000	0.0047
BEC58P	TGO	STANDARD	1	23	55	0	---	0.6030	0.0000	0.0251
BEC58P	TGO	STANDARD	1	5	56	0	---	0.1124	0.0000	0.0047
C23	APP	NOISEMAP	1	23	7	0	---	0.5852	0.0000	0.0244
C23	APP	NOISEMAP	1	23	8	0	---	0.5852	0.0000	0.0244
C23	APP	NOISEMAP	1	5	5	0	---	0.1091	0.0000	0.0045
C23	APP	NOISEMAP	1	5	6	0	---	0.1091	0.0000	0.0045
C23	DEP	NOISEMAP	1	23	3	0	---	0.5852	0.0000	0.0244
C23	DEP	NOISEMAP	1	23	4	0	---	0.5852	0.0000	0.0244
C23	DEP	NOISEMAP	1	5	1	0	---	0.1091	0.0000	0.0045
C23	DEP	NOISEMAP	1	5	2	0	---	0.1091	0.0000	0.0045
CH47D	APP	STANDARD	1	HELI-M	30	0	---	0.2444	0.0000	0.0102
CH47D	APP	STANDARD	1	HELI-M	31	0	---	1.3848	0.0000	0.0577
CH47D	APP	STANDARD	1	HELI-M	32	0	---	0.1768	0.0000	0.0074
CH47D	APP	STANDARD	1	HELI-M	33	0	---	1.3848	0.0000	0.0577
CH47D	DEP	STANDARD	1	HELI-M	20	0	---	0.1222	0.0000	0.0051
CH47D	DEP	STANDARD	1	HELI-M	21	0	---	0.6924	0.0000	0.0289
CH47D	DEP	STANDARD	1	HELI-M	22	0	---	0.1222	0.0000	0.0051
CH47D	DEP	STANDARD	1	HELI-M	23	0	---	0.5009	0.0000	0.0209
CH47D	DEP	STANDARD	1	HELI-M	24	0	---	0.2444	0.0000	0.0102
CH47D	DEP	STANDARD	1	HELI-M	25	0	---	1.3848	0.0000	0.0577
CNA172	APP	STANDARD	1	23	7	0	---	1.2286	0.0000	0.0512
CNA172	APP	STANDARD	1	23	8	0	---	1.2286	0.0000	0.0512
CNA172	APP	STANDARD	1	5	5	0	---	0.2159	0.0000	0.0090
CNA172	APP	STANDARD	1	5	6	0	---	0.2159	0.0000	0.0090
CNA172	DEP	STANDARD	1	23	3	0	---	1.2286	0.0000	0.0512
CNA172	DEP	STANDARD	1	23	4	0	---	1.2286	0.0000	0.0512
CNA172	DEP	STANDARD	1	5	1	0	---	0.2159	0.0000	0.0090
CNA172	DEP	STANDARD	1	5	2	0	---	0.2159	0.0000	0.0090
CNA172	TGO	STANDARD	1	23	10	0	---	0.2560	0.0000	0.2560
CNA172	TGO	STANDARD	1	5	9	0	---	0.0450	0.0000	0.0450
CNA208	APP	STANDARD	1	23	51	0	---	1.1361	0.0000	0.0473
CNA208	APP	STANDARD	1	23	7	0	---	1.1361	0.0000	0.0473
CNA208	APP	STANDARD	1	5	5	0	---	0.2118	0.0000	0.0088
CNA208	APP	STANDARD	1	5	53	0	---	0.2118	0.0000	0.0088
CNA208	DEP	STANDARD	1	23	3	0	---	1.1361	0.0000	0.0473
CNA208	DEP	STANDARD	1	23	50	0	---	1.1361	0.0000	0.0473
CNA208	DEP	STANDARD	1	5	1	0	---	0.2118	0.0000	0.0088
CNA208	DEP	STANDARD	1	5	52	0	---	0.2118	0.0000	0.0088



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CNA441	APP	STANDARD	1	23	7	0	---	0.5852	0.0000	0.0244
CNA441	APP	STANDARD	1	23	8	0	---	0.5852	0.0000	0.0244
CNA441	APP	STANDARD	1	5	5	0	---	0.1091	0.0000	0.0045
CNA441	APP	STANDARD	1	5	6	0	---	0.1091	0.0000	0.0045
CNA441	DEP	STANDARD	1	23	3	0	---	0.5852	0.0000	0.0244
CNA441	DEP	STANDARD	1	23	4	0	---	0.5852	0.0000	0.0244
CNA441	DEP	STANDARD	1	5	1	0	---	0.1091	0.0000	0.0045
CNA441	DEP	STANDARD	1	5	2	0	---	0.1091	0.0000	0.0045
CNA441	TGO	STANDARD	1	23	10	0	---	0.5852	0.0000	0.0244
CNA441	TGO	STANDARD	1	5	9	0	---	0.1091	0.0000	0.0045
CNA55B	APP	STANDARD	1	23	7	0	---	0.4097	0.0000	0.0171
CNA55B	APP	STANDARD	1	23	8	0	---	0.4097	0.0000	0.0171
CNA55B	APP	STANDARD	1	5	5	0	---	0.0764	0.0000	0.0032
CNA55B	APP	STANDARD	1	5	6	0	---	0.0764	0.0000	0.0032
CNA55B	DEP	STANDARD	1	23	3	0	---	0.4097	0.0000	0.0171
CNA55B	DEP	STANDARD	1	23	4	0	---	0.4097	0.0000	0.0171
CNA55B	DEP	STANDARD	1	5	1	0	---	0.0764	0.0000	0.0032
CNA55B	DEP	STANDARD	1	5	2	0	---	0.0764	0.0000	0.0032
CNA55B	TGO	STANDARD	1	23	10	0	---	0.4097	0.0000	0.0171
CNA55B	TGO	STANDARD	1	5	9	0	---	0.0764	0.0000	0.0032
DHC6	APP	STANDARD	1	23	51	0	---	0.9144	0.0000	0.0381
DHC6	APP	STANDARD	1	23	7	0	---	0.9144	0.0000	0.0381
DHC6	APP	STANDARD	1	5	5	0	---	0.1705	0.0000	0.0071
DHC6	APP	STANDARD	1	5	53	0	---	0.1705	0.0000	0.0071
DHC6	DEP	STANDARD	1	23	3	0	---	0.9144	0.0000	0.0381
DHC6	DEP	STANDARD	1	23	50	0	---	0.9144	0.0000	0.0381
DHC6	DEP	STANDARD	1	5	1	0	---	0.1705	0.0000	0.0071
DHC6	DEP	STANDARD	1	5	52	0	---	0.1705	0.0000	0.0071
GASEPF	APP	STANDARD	1	23	51	0	---	12.5568	0.0000	0.5232
GASEPF	APP	STANDARD	1	23	7	0	---	12.5568	0.0000	0.5232
GASEPF	APP	STANDARD	1	5	5	0	---	2.3414	0.0000	0.0976
GASEPF	APP	STANDARD	1	5	53	0	---	2.3414	0.0000	0.0976
GASEPF	DEP	STANDARD	1	23	3	0	---	12.5566	0.0000	0.5232
GASEPF	DEP	STANDARD	1	23	50	0	---	12.5568	0.0000	0.5232
GASEPF	DEP	STANDARD	1	5	1	0	---	2.3414	0.0000	0.0976
GASEPF	DEP	STANDARD	1	5	52	0	---	2.3414	0.0000	0.0976
GASEPF	TGO	STANDARD	1	23	55	0	---	12.5568	0.0000	0.5232
GASEPF	TGO	STANDARD	1	5	56	0	---	2.3414	0.0000	0.0976
GASEPV	APP	STANDARD	1	23	51	0	---	8.7838	0.0000	0.3660
GASEPV	APP	STANDARD	1	23	7	0	---	8.7838	0.0000	0.3660
GASEPV	APP	STANDARD	1	5	5	0	---	1.6378	0.0000	0.0682
GASEPV	APP	STANDARD	1	5	53	0	---	1.6378	0.0000	0.0682
GASEPV	DEP	STANDARD	1	23	3	0	---	8.7838	0.0000	0.3660
GASEPV	DEP	STANDARD	1	23	50	0	---	8.7838	0.0000	0.3660
GASEPV	DEP	STANDARD	1	5	1	0	---	1.6378	0.0000	0.0682
GASEPV	DEP	STANDARD	1	5	52	0	---	1.6378	0.0000	0.0682
GASEPV	TGO	STANDARD	1	23	55	0	---	8.7838	0.0000	0.3660
GASEPV	TGO	STANDARD	1	5	56	0	---	1.6378	0.0000	0.0682
GIV	APP	STANDARD	1	23	7	0	---	0.0253	0.0000	0.0011
GIV	APP	STANDARD	1	23	8	0	---	0.0253	0.0000	0.0011
GIV	APP	STANDARD	1	5	5	0	---	0.0047	0.0000	0.0002
GIV	APP	STANDARD	1	5	6	0	---	0.0047	0.0000	0.0002
GIV	DEP	STANDARD	1	23	3	0	---	0.0253	0.0000	0.0011
GIV	DEP	STANDARD	1	23	4	0	---	0.0253	0.0000	0.0011



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GIV	DEP	STANDARD	1	5	1	0	---	0.0047	0.0000	0.0002
GIV	DEP	STANDARD	1	5	2	0	---	0.0047	0.0000	0.0002
GIV	TGO	STANDARD	1	23	10	0	---	0.0253	0.0000	0.0011
GIV	TGO	STANDARD	1	5	9	0	---	0.0047	0.0000	0.0002
H500D	APP	STANDARD	1	HELI-C	13	0	---	1.0629	0.0000	0.0443
H500D	APP	STANDARD	1	HELI-C	14	0	---	1.0629	0.0000	0.0443
H500D	DEP	STANDARD	1	HELI-C	11	0	---	1.0629	0.0000	0.0443
H500D	DEP	STANDARD	1	HELI-C	12	0	---	1.0629	0.0000	0.0443
S70	APP	STANDARD	1	HELI-M	30	0	---	0.3536	0.0000	0.0147
S70	APP	STANDARD	1	HELI-M	31	0	---	2.0037	0.0000	0.0835
S70	APP	STANDARD	1	HELI-M	32	0	---	0.3536	0.0000	0.0147
S70	APP	STANDARD	1	HELI-M	33	0	---	2.0037	0.0000	0.0835
S70	DEP	STANDARD	1	HELI-M	20	0	---	0.1768	0.0000	0.0074
S70	DEP	STANDARD	1	HELI-M	21	0	---	1.0018	0.0000	0.0417
S70	DEP	STANDARD	1	HELI-M	22	0	---	0.1768	0.0000	0.0074
S70	DEP	STANDARD	1	HELI-M	23	0	---	1.0018	0.0000	0.0417
S70	DEP	STANDARD	1	HELI-M	24	0	---	0.3536	0.0000	0.0147
S70	DEP	STANDARD	1	HELI-M	25	0	---	2.0037	0.0000	0.0835

CASE RUNUP OPERATIONS - [SHELTON 2027]

Acft	Runup Id	X(nmi)	Y(nmi)	Head	Thrust	Dur (sec)	Day	Evening	Night
BEC58P	23	0.3810	0.1544	248.0	80.0 %	30.0	0.0603	0.0000	0.0251
BEC58P	5	-0.3814	-0.1549	68.0	80.0 %	30.0	0.1124	0.0000	0.0047
CNA441	23	0.3810	0.1544	248.0	80.0 %	30.0	0.5852	0.0000	0.0244
CNA441	5	-0.3814	-0.1549	68.0	80.0 %	30.0	0.1091	0.0000	0.0045
CNA55B	23	0.3810	0.1544	248.0	80.0 lb	30.0	0.4097	0.0000	0.0171
CNA55B	5	-0.3814	-0.1549	68.0	80.0 lb	30.0	0.0764	0.0000	0.0032
GASEPF	23	0.3810	0.1544	248.0	80.0 %	30.0	13.2923	0.0000	0.5538
GASEPF	5	-0.3814	-0.1549	68.0	80.0 %	30.0	2.4785	0.0000	0.1033
GASEPV	23	0.3810	0.1544	248.0	80.0 %	30.0	8.0465	0.0000	0.3353
GASEPV	5	-0.3814	-0.1549	68.0	80.0 %	0.0	1.5004	0.0000	0.0625
GIV	23	0.3810	0.1544	248.0	80.0 lb	30.0	0.0253	0.0000	0.0011
GIV	5	-0.3814	-0.1549	68.0	80.0 lb	30.0	0.0047	0.0000	0.0002

SCENARIO RUN OPTIONS

Run Type : Single-Metric
 NoiseMetric : DNL
 Do Terrain : No Terrain
 Do Contour : Recursive Grid
 Refinement : 10
 Tolerance : 0.50
 Low Cutoff : 55.0
 High Cutoff : 85.0
 Ground Type : All-Soft-Ground
 Do Population : No
 Do Locations : No
 Do Standard : Yes
 Do Detailed : Yes
 Show All Ops : No
 Compute System Metrics:
 DNL : No



CNEL : No
 LAEQ : No
 LAEQD : No
 LAEQN : No
 SEL : Yes
 LAMAX : Yes
 TALA : Yes
 NEF : No
 WECPNL : No
 EPNL : No
 PNLTM : No
 TAPNL : No
 CEXP : No
 LCMAX : No
 TALC : No

SCENARIO GRID DEFINITIONS

Name	Type	X(nmi)	Y(nmi)	Ang(deg)	DisI(nmi)	DisJ(nmi)	NI
NJ Thrsh dAmb (hr)							
CONTOUR	Contour	-8.0000	-8.0000	0.0	16.0000	16.0000	2
2 55.0 0.0 0.00							
DETAILED	Detailed	-8.0000	-8.0000	0.0	16.0000	16.0000	2
2 55.0 0.0 0.00							
STANDARD	Standard	-8.0000	-8.0000	0.0	16.0000	16.0000	2
2 55.0 0.0 0.00							



GLOSSARY OF AVIATION TERMS

The following glossary of aviation terms was compiled from a variety of sources and edited by David Miller, AICP for use in aviation planning projects.

Above Ground Level (AGL) – As measured above the ground; used to identify heights of built items (towers, etc.) on aeronautical charts in terms of absolute height above the ground.

Accelerate Stop Distance Available (ASDA) – The length of the takeoff run available plus the length of a stopway, when available.

Agricultural Aviation – The use of fixed-wing or rotor-wing aircraft in the aerial application of agricultural products (i.e., fertilizers, pesticides, etc.).

Air Cargo - All commercial air express and air freight with the exception of airmail and parcel post.

Air Carrier/Airline - All regularly scheduled airline activity performed by airlines certificated in accordance with Federal Aviation Regulations (FAR Part 121).

Air Taxi - Operations of aircraft "for hire" for specific trips, commonly referred to an aircraft available for charter (FAR Part 135).

Aircraft Approach Category - Grouping of aircraft based on the speed they are traveling when configured for landing (typically 1.3 times the aircraft stall speed in landing configuration). As a rule of thumb, slower approach speeds mean smaller airport dimensions and faster approach speeds require larger dimensions. The aircraft approach categories are:

- Category A - Speed less than 91 knots;
- Category B - Speed 91 knots or more but less than 121 knots
- Category C - Speed 121 knots or more but less than 141 knots
- Category D - Speed 141 knots or more but less than 166 knots
- Category E - Speed 166 knots or more

Aircraft Holding Area – An area typically located adjacent to a taxiway and runway end designed to accommodate aircraft prior to departure (for pre-takeoff engine checks, instrument flight plan

clearances, etc.). Per FAA design standards, aircraft holding areas should be located outside the runway safety area (RSA) and obstacle free zone (OFZ) and aircraft located in the holding area should not interfere with normal taxiway use (taxiway object free area). Sometimes referred to as holding bays or “elephant ear.” Smaller areas (aircraft turnarounds) are used to facilitate aircraft movement on runways without exit taxiways or where back-taxiing is required.

Aircraft Operation - A landing or takeoff is one operation. An aircraft that takes off and then lands creates two aircraft operations.

Aircraft Owners and Pilots Association (AOPA) – A general aviation organization.

Aircraft Parking Line (APL) – A setback depicted on an ALP or other drawings that defines the minimum separation between aircraft parking areas and an adjacent runway or taxiway. The APL dimension reflects runway and taxiway clearances (object free area, etc.) and FAR Part 77 airspace surface clearance (transitional surface penetrations) for parked aircraft. Typically the tail height of the parked aircraft is used to determine adequate clearance for the transitional surface.

Airplane Design Group - A grouping of airplanes based on wingspan and tail height. As with Approach Category, the wider the wingspan, the bigger the aircraft is, the more room it takes up for operating on an airport. The Airplane Design Groups are:

- | | |
|------------|---|
| Group I: | Up to but not including 49 feet or tail height up to but not including 20 feet. |
| Group II: | 49 feet up to but not including 79 feet or tail height from 20 up to but not including 30 feet. |
| Group III: | 79 feet up to but not including 118 feet or tail height from 30 up to but not including 45 feet. |
| Group IV: | 118 feet up to but not including 171 feet or tail height from 45 up to but not including 60 feet. |
| Group V: | 171 feet up to but not including 214 feet or tail height from 60 up to but not including 66 feet. |



Group VI: 214 feet up to but not including 262 feet or tail height from 66 up to but not including 80 feet.

Airport - A landing area regularly used by aircraft for receiving or discharging passengers or cargo, including heliports and seaplane bases.

Airport Beacon (also Rotating Beacon) – A visual navigational aid that displays alternating green and white flashes for a lighted land airport and white for an unlighted land airport.

Airports District Office (ADO) - The "local" office of the FAA that coordinates planning and construction projects. The Seattle ADO is responsible for airports located in Washington, Oregon, and Idaho.

Airport Improvement Program (AIP) - The funding program administered by the Federal Aviation Administration (FAA) with user fees which are dedicated to improvement of the national airport system. This program currently provides 95% of funding for eligible airport improvement projects. The local sponsor of the project (i.e., airport owner) provides the remaining 5% known as the "match."

Airport Layout Plan (ALP) - The FAA approved drawing which shows the existing and anticipated layout of an airport for the next 20 years. An ALP is prepared using FAA design standards. Future development projects must be consistent with the ALP to be eligible for FAA funding. ALP drawings are typically updated every 7 to 10 years to reflect significant changes, or as needed.

Airport Reference Code (ARC) - An FAA airport coding system that is defined based on the critical or design aircraft for an airport or individual runway. The ARC is an alpha-numeric code based on aircraft approach speed and airplane wingspan (see definitions in glossary). The ARC is used to determine the appropriate design standards for runways, taxiways, and other associated facilities. An airport designed to accommodate a Piper Cub (an A-1 aircraft) requires less room than an airport designed to accommodate a Boeing 747 (a D-V aircraft).

Airport Reference Point (ARP) – The approximate mid-point of an airfield that is designated as the official airport location.

Aircraft Rescue and Fire Fighting (ARFF) - On airport emergency response required for certificated commercial service airports (see FAR Part 139).

Airside – The portion of an airport that includes aircraft movement areas (runways, taxiways, etc.)

Airspace - The area above the ground in which aircraft travel. It is divided into enroute and terminal airspace, with corridors, routes, and restricted zones established for the control and safety of air traffic.

Alternate Airport – An airport that is available for landing when the intended airport becomes unavailable. Required for instrument flight planning in the event that weather conditions at destination airport fall below approach minimums (cloud ceiling or visibility).

Annual Service Volume (ASV) - An estimate of how many aircraft operations an airport can handle based upon the number, type and configuration of runways, aircraft mix (large vs. small, etc), instrumentation, and weather conditions with a "reasonable" amount of delay. ASV is a primary planning standard used to determine when a runway (or an airport) is nearing its capacity, and may require new runways or taxiways. As operations levels approach ASV, the amount of delay per operation increases; once ASV is exceeded, "excessive" delay generally exists.

Approach End of Runway - The end of the runway used for landing. Pilots generally land into the wind and choose a runway end that best aligns with the wind.

Approach Light System (ALS) – Configurations of lights positioned symmetrically beyond the runway threshold and the extended runway centerline. The ALS visually augments the electronic navigational aids for the runway.

Approach Surface (Also FAR Part 77 Approach) - An imaginary (invisible) surface that rises and extends from the ends of a runway to provide an unobstructed path for aircraft to land or take off. The size and slope of the approach surface vary depending upon the size of aircraft that are accommodated and the approach capabilities (visual or instrument).

Apron - An area on an airport designated for the parking, loading, fueling, or servicing of aircraft (also referred to as tarmac and ramp).

Aqueous Film Forming Foam (AFFF) – A primary fire fighting agent that is used to create a blanket that smothers flame or prevents ignition (fuel spills, etc.). AFFF is also used to foam runways during emergency landings.



Asphalt or Asphaltic Concrete (AC) – Flexible oil-based pavement used for airfield facilities (runways, taxiways, aircraft parking apron, etc.); also commonly used for road construction.

Automated Surface Observation System (ASOS) and Automated Weather Observation System (AWOS) – Automated observation systems providing continuous on-site weather data, designed to support aviation activities and weather forecasting.

AVGAS – Highly refined gasoline used in airplanes with piston engines. The current grade of AVGAS available is 100 Octane Low Lead (100LL).

Avigation Easement - A grant of property interest (airspace) over land to ensure unobstructed flight. Typically acquired by airport owners to protect the integrity of runway approaches. Restrictions typically include maximum height limitations for natural (trees, etc.) or built items, but may also address permitted land uses by the owner of the underlying land that are compatible with airport operations.

Back-Taxiing – The practice of aircraft taxiing on a runway before takeoff or after landing, normally, in the opposite direction of the runway's traffic pattern. Back-taxiing is generally required on runways without taxiway access to both runway ends.

Based Aircraft - Aircraft permanently stationed at an airport usually through some form of agreement with the airport owner. Used as a measure of activity at an airport.

Capacity - A measure of the maximum number of aircraft operations that can be accommodated on the runways of an airport in an hour.

Ceiling – The height above the ground or water to base of the lowest cloud layers covering more than 50 percent of the sky.

Charter - Operations of aircraft "for hire" for specific trips, commonly referred to an aircraft available for charter.

Circle to Land or Circling Approach – An instrument approach procedure that allows pilots to "circle" the airfield to land on any authorized runway once visual contact with the runway environment is established and maintained throughout the procedure.

Commercial Service Airport - An airport designed and constructed to serve scheduled or

unscheduled commercial airlines. Commercial service airports are certified under FAR Part 139.

Common Traffic Advisory Frequency (CTAF) – A frequency used by pilots to communicate and obtain airport advisories at an uncontrolled airport.

Complimentary Fire Extinguishing Agent – Fire extinguishing agents that provide rapid fire suppression, which may be used in conjunction with principal agents (e.g., foam). Examples include sodium-based and potassium-based dry chemicals, Halocarbons, and Carbon dioxide. Also recommended for electrical and metal fires where water-based foams are not used. Complimentary agents are paired with principal agents based on their compatibility of use.

Conical Surface - One of the "FAR Part 77 "Imaginary" Surfaces. The conical surface extends outward and upward from the edge of the horizontal surface at a slope of 20:1 to a horizontal distance of 4,000 feet.

Controlling Obstruction – The highest obstruction relative to a defined plane of airspace (i.e., approach surface, etc.).

Critical Aircraft - Aircraft which controls one or more design items based on wingspan, approach speed and/or maximum certificated take off weight. The same aircraft may not be critical to all design items (i.e., runway length, pavement strength, etc.). Also referred to as "design aircraft."

Crosswind - Wind direction that is not parallel to the runway or the path of an aircraft.

Crosswind Runway – An additional runway (secondary, tertiary, etc.) that provides wind coverage not adequately provided by the primary runway. Crosswind runways are generally eligible for FAA funding when a primary runway accommodates less than 95 percent of documented wind conditions (see wind rose).

Decision Height (DH) – For precision instrument approaches, the height (typically in feet or meters above runway end touchdown zone elevation) at which a decision to land or execute a missed approach must be made by the pilot.

Declared Distances – The distances the airport owner declares available for airplane operations (e.g., takeoff run, takeoff distance, accelerate-stop distance, and landing distance). In cases where runways meet all FAA design criteria without



modification, declared distances equal the total runway length. In cases where any declared distances are less than full runway length, the dimension should be published in the FAA Airport/Facility Directory (A/FD).

Departure Surface – A surface that extends upward from the departure end of an instrument runway that should be free of any obstacle penetrations. For instrument runways other than air carrier, the slope is 40:1, extending 10,200 feet from the runway end. Air carrier runways have a similar surface designed for one-engine inoperative conditions with a slope of 62.5: 1.

Design Aircraft - Aircraft which controls one or more design items based on wingspan, approach speed and/or maximum certificated takeoff weight. The same aircraft may not represent the design aircraft for all design items (i.e., runway length, pavement strength, etc.). Also referred to as “critical aircraft.”

Displaced Threshold – A landing threshold located at a point other than on the runway end, usually provided to mitigate close-in obstructions to runway approaches for landing aircraft. The area between the runway end and the displaced threshold accommodates aircraft taxi and takeoff, but not landing.

Distance Measuring Equipment (DME) – Equipment that provides electronic distance information to enroute or approaching aircraft from a land-based transponder that sends and receives pulses of fixed duration and separation. The ground stations are typically co-located with VORs, but they can also be co-located with an ILS.

Distance Remaining Signs – Airfield signs that indicate to pilots the amount of useable runway remaining in 1,000-foot increments. The signs are located along the side of the runway, visible for each direction of runway operation.

DNL - Day-night sound levels, a mathematical method of measuring noise exposure based on cumulative, rather than single event impacts. Night time operations (10pm to 7AM) are assessed a noise penalty to reflect the increased noise sensitivity that exists during normal hours of rest. Previously referred to as Ldn.

Easement – An agreement that provides use or access of land or airspace (see aviation easement) in exchange for compensation.

Enplanements - Domestic, territorial, and international revenue passengers who board an

aircraft in the states in scheduled and non-scheduled service of aircraft in intrastate, interstate, and foreign commerce and includes intransit passengers (passengers on board international flights that transit an airport in the US for non-traffic purposes).

Entitlements - Distribution of Airport Improvement Plan (AIP) funds by FAA from the Airport & Airways Trust Fund to commercial service airport sponsors based on passenger enplanements or cargo volumes and smaller fixed amounts for general aviation airports (Non-Primary Entitlements).

Experimental Aircraft – See homebuilt aircraft.

Federal Aviation Administration (FAA) - The FAA is the branch of the U.S. Department of Transportation that is responsible for the development of airports and air navigation systems.

FAR Part 77 - Federal Air Regulations (FAR) which establish standards for determining obstructions in navigable airspace and defines imaginary (airspace) surfaces for airports and heliports that are designed to prevent hazards to air navigation. FAR Part 77 surfaces include approach, primary, transitional, horizontal, and conical surfaces. The dimensions of surfaces can vary with the runway classification (large or small airplanes) and approach type of each runway end (visual, nonprecision instrument, precision instrument). The slope of an approach surface also varies by approach type and runway classification. FAR Part 77 also applies to helicopter landing areas.

FAR Part 139 - Federal Aviation Regulations which establish standards for airports with scheduled passenger commercial air service. Airports accommodating scheduled passenger service with aircraft more than 9 passenger seats must be certified as a “Part 139” airport. Airports that are not certified under Part 139 may accommodate scheduled commercial passenger service with aircraft having 9 passenger seats or less.

Final Approach Fix (FAF) – The fix (location) from which the final instrument approach to an airport is executed; also identifies beginning of final approach segment.

Final Approach Point (FAP) – For non-precision instrument approaches, the point at which an aircraft is established inbound for the approach and where the final descent may begin.



Fixed Base Operator (FBO) - An individual or company located at an airport providing aviation services. Sometimes further defined as a "full service" FBO or a limited service. Full service FBOs typically provide a broad range of services (flight instruction, aircraft rental, charter, fueling, repair, etc) where a limited service FBO provides only one or two services (such as fueling, flight instruction or repair).

Fixed Wing - A plane with one or more "fixed wings," as opposed to a helicopter that utilizes a rotary wing.

Flexible Pavement – Typically constructed with an asphalt surface course and one or more layers of base and subbase courses that rest on a subgrade layer.

Flight Service Station (FSS) – FAA or contracted service for pilots to contact (on the ground or in the air) to get weather and airport information. Flight plans are also filed with the FSS.

General Aviation (GA) - All civil (non-military) aviation operations other than scheduled air services and non-scheduled air transport operations for hire.

Glide Slope (GS) – For precision instrument approaches, such as an instrument landing system (ILS), the component that provides electronic vertical guidance to aircraft.

Global Positioning System (GPS) - GPS is a system of navigating which uses multiple satellites to establish the location and altitude of an aircraft with a high degree of accuracy. GPS supports both enroute flight and instrument approach procedures.

Helicopter Landing Pad (Helipad) – A designated landing area for rotor wing aircraft. Requires protected FAR Part 77 imaginary surfaces, as defined for heliports (FAR Part 77.29).

Helicopter Parking Area – A designated area for rotor wing aircraft parking that is typically accessed via hover-taxi or ground taxiing from a designated landing area (e.g., helipad or runway-taxiway system). If not used as a designated landing area, helicopter parking pads do not require dedicated FAR Part 77 imaginary surfaces.

Heliport – A designated helicopter landing facility (as defined by FAR Part 77).

Height Above Airport (HAA) – The height of the published minimum descent altitude (MDA) above

the published airport elevation. This is normally published in conjunction with circling minimums.

High Intensity Runway Lights (HIRL) - High intensity (i.e., very bright) lights are used on instrument runways to help pilots to see the runway when visibility is poor.

High Speed (Taxiway) Exit – An acute-angled exit taxiway extending from a runway to an adjacent parallel taxiway which allows landing aircraft to exit the runway at a higher rate of speed than is possible with standard (90-degree) exit taxiways.

Hold Line (Aircraft Hold Line) – Pavement markings located on taxiways that connect to runways, indicating where aircraft should stop before entering runway environment. At controlled airports, air traffic control clearance is required to proceed beyond a hold line. At uncontrolled airports, pilots are responsible for ensuring that a runway is clear prior to accessing for takeoff.

Hold/Holding Procedure – A defined maneuver in controlled airspace that allows aircraft to circle above a fixed point (often over a navigational aid or GPS waypoint) and altitude while awaiting further clearance from air traffic control.

Home Built Aircraft - An aircraft built by an amateur from a kit or specific design (not an FAA certified factory built aircraft). The aircraft built under the supervision of an FAA-licensed mechanic and are certified by FAA as "Experimental."

Horizontal Surface - One of the FAR Part 77 Imaginary (invisible) Surfaces. The horizontal surface is an imaginary flat surface 150 feet above the established airport elevation (typically the highest point on the airfield). Its perimeter is constructed by swinging arcs (circles) from each runway end and connecting the arcs with straight lines. The oval-shaped horizontal surface connects to other Part 77 surfaces extending upward from the runway and also beyond its perimeter.

Initial Approach Point/Fix (IAP/IAF) – For instrument approaches, a designated point where an aircraft may begin the approach procedure.

Instrument Approach Procedure (IAP) – A series of defined maneuvers designed to enable the safe transition between enroute instrument flight and landing under instrument flight conditions at a particular airport or heliport. IAPs define specific requirements for aircraft altitude, course, and



missed approach procedures. See precision or nonprecision instrument approach.

Instrument Flight Rules (IFR) - IFR refers to the set of rules pilots must follow when they are flying in bad weather. Pilots are required to follow these rules when operating in controlled airspace with visibility (ability to see in front of themselves) of less than three miles and/or ceiling (a layer of clouds) lower than 1,000 feet.

Instrument Landing System (ILS) - An ILS is an electronic navigational aid system that guides aircraft for a landing in bad weather. Classified as a precision instrument approach, it is designed to provide a precise approach path for course alignment and vertical descent of aircraft. Generally consists of a localizer, glide slope, outer marker, and middle marker. ILS runways are generally equipped with an approach lighting system (ALS) to maximize approach capabilities. A Category I ILS allows aircraft to descend as low as 200 feet above runway elevation with ½ mile visibility.

Instrument Meteorological Conditions (IMC) - Meteorological conditions expressed in terms of visibility, distance from clouds, and ceiling less than minima specified for visual meteorological conditions.

Instrument Runway - A runway equipped with electronic navigational aids that accommodate straight-in precision or nonprecision instrument approaches.

Itinerant Operation - All aircraft operations at an airport other than local, i.e., flights that come in from another airport.

Jet Fuel – Highly refined grade of kerosene used by turbine engine aircraft. Jet-A is currently the common commercial grade of jet fuel.

Knot (Nautical Mile) – one nautical mile = 1.152 statute miles.

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

Landing Distance Available (LDA) – The length of runway which is available and suitable for the ground run of an airplane landing.

Landside – The portion of an airport that includes aircraft parking areas, fueling, hangars, airport terminal area facilities, vehicle parking and other associated facilities.

Larger than Utility Runway – As defined under FAR Part 77, a runway designed and constructed to serve large planes (aircraft with maximum takeoff weights greater than 12,500 pounds).

Ldn – Noise measurement metric (see DNL)

Left Traffic – A term used to describe which side of a runway the airport traffic pattern is located. Left traffic indicates that the runway will be to the pilot's left when in the traffic pattern. Left traffic is standard unless otherwise noted in facility directories at a particular airport.

Large Aircraft - An aircraft with a maximum takeoff weight more than 12,500 lbs.

Light Sport Aircraft (LSA) – A basic aircraft certified by FAA that can be flown by pilots with limited flight training (Sport Pilot certificates), but also provide lower cost access to basic aircraft for all pilot levels. LSA design limits include maximum a gross takeoff weight of 1,320 pounds (land planes) and a maximum of two seats.

Local Area Augmentation System (LAAS) – GPS-based instrument approach that utilizes ground-based systems to augment satellite coverage to provide vertical (glideslope) and horizontal (course) guidance.

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.

Localizer – The component of an instrument landing system (ILS) that provides electronic lateral (course) guidance to aircraft. Also used to support non-precision localizer approaches.

LORAN C - A navigation system using land based radio signals, which indicates position and ground speed, but not elevation. (See GPS)

Localizer Performance with Vertical Guidance (LPV) – Satellite navigation (SATNAV) based GPS approaches providing “near category I” precision approach capabilities with course and vertical guidance. LPV approaches are expected to eventually replace traditional step- down, VOR and NDB procedures by providing a constant, ILS glideslope-like descent path. LPV approaches use high-accuracy WAAS signals, which allow narrower glideslope and approach centerline obstacle clearance areas.



Magnetic Declination – Also called magnetic variation, is the angle between magnetic north and true north. Declination is considered positive east of true north and negative when west. Magnetic declination changes over time and with location. Runway end numbers, which reflect the magnetic heading/alignment (within 5 degrees +/-) occasionally require change due to declination.

MALS - **Medium-intensity Approach Lighting System with Runway alignment indicator lights.** An approach lighting system (ALS) which provides visual guidance to landing aircraft.

Medevac - Fixed wing or rotor-wing aircraft used to transport critical medical patients. These aircraft are equipped to provide life support during transport.

Medium Intensity Runway Lights (MIRL) - Runway edge lights which are not as intense as HIRLs (high intensity runway lights). Typical at medium and smaller airports which do not have sophisticated instrument landing systems.

Microwave Landing System (MLS) - An instrument landing system operating in the microwave spectrum, which provides lateral and vertical guidance to aircraft with compatible equipment. Originally developed as the “next-generation” replacement for the ILS, the FAA discontinued the MLS program in favor of GPS-based systems.

Minimum Descent Altitude (MDA) – The lowest altitude in a nonprecision instrument approach that an aircraft may descend without establishing visual contact with the runway or airport environment.

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

Missed Approach Procedure – A prescribed maneuver conducted by a pilot when an instrument approach cannot be completed to a landing. Usually requires aircraft to climb from the airport environment to a specific holding location where another approach can be executed or the aircraft can divert to another airport.

Missed Approach Point (MAP) – The defined location in a nonprecision instrument approach where the procedure must be terminated if the pilot has not visually established the runway or airport environment.

Movement Area - The runways, taxiways and other areas of the airport used for taxiing, takeoff and landing of aircraft, i.e., for aircraft movement.

MSL - Elevation above Mean Sea Level.

National Plan of Integrated Airport Systems (NPIAS). The NPIAS is the federal airport classification system that includes public use airports that meet specific eligibility and activity criteria. A “NPIAS designation” is required for an airport to be eligible to receive FAA funding for airport projects.

Navigational Aid (Navaid) - Any visual or electronic device that helps a pilot navigate. Can be for use to land at an airport or for traveling from point A to point B.

Noise Contours – Continuous lines of equal noise level usually drawn around a noise source, such as runway, highway or railway. The lines are generally plotted in 5-decibel increments, with higher noise levels located nearer the noise source, and lesser exposure levels extending away from the source.

Non-directional Beacon (NDB) - Non-Directional Beacon which transmits a signal on which a pilot may “home” using equipment installed in the aircraft.

Non-Precision Instrument (NPI) Approach - A non-precision instrument approach provides horizontal (course) guidance to pilots for landing. NPI approaches often involve a series of “step down” sequences where aircraft descend in increments (based on terrain clearance), rather than following a continuous glide path. The pilot is responsible for maintaining altitude control between approach segments since no “vertical” guidance is provided.

Obstacle Clearance Surface (OCS) – As defined by FAA, an approach surface that is used in conjunction with alternative threshold siting/clearing criteria to mitigate obstructions within runway approach surfaces. Dimensions, slope and placement depend on runway type and approach capabilities. Also know as Obstacle Clearance Approach (OCA).

Obstruction - An object (tree, house, road, phone pole, etc) that penetrates an imaginary surface described in FAR Part 77.

Obstruction Chart (OC) - A chart that depicts surveyed obstructions that penetrate an FAR Part 77 imaginary surface surrounding an airport. OC



charts are developed by the National Ocean Service (NOS) based on a comprehensive survey that provides detailed location (latitude/longitude coordinates) and elevation data in addition to critical airfield data.

Parallel Taxiway – A taxiway that is aligned parallel to a runway, with connecting taxiways to allow efficient movement of aircraft between the runway and taxiway. The parallel taxiway effectively separates taxiing aircraft from arriving and departing aircraft located on the runway. Used to increase runway capacity and improve safety.

Passenger Facility Charge (PFC) – A user fee charged by commercial service airports for enplaning passengers. Airports must apply to the FAA and meet certain requirements in order to impose a PFC.

Pavement Condition Index (PCI) – A scale of 0-100 that is used to rate airfield pavements ranging from failed to excellent based on visual inspection. Future PCIs can be predicted based on pavement type, age, condition and use as part of a pavement maintenance program.

Pavement Strength or Weight Bearing Capacity – The design limits of airfield pavement expressed in maximum aircraft weight for specific and landing gear configurations (i.e., single wheel, dual wheel, etc.) Small general aviation airport pavements are typically designed to accommodate aircraft weighing up to 12,500 pounds with a single-wheel landing gear.

Portland Cement Concrete (PCC) – Rigid pavement used for airfield facilities (runways, taxiways, aircraft parking, helipads, etc.).

Precision Approach Path Indicator (PAPI) - A system of lights located by the approach end of a runway that provides visual approach slope guidance to aircraft during approach to landing. The lights typically show green if a pilot is on the correct flight path, and turn red if a pilot is too low.

Precision Instrument Runway (PIR) - A runway equipped with a "precision" instrument approach (descent and course guidance), which allows aircraft to land in bad weather.

Precision Instrument Approach – An instrument approach that provides electronic lateral (course) and vertical (descent) guidance to a runway end. A nonprecision instrument approach typically provides only course guidance and the pilot is

responsible for managing defined altitude assignments at designated points within the approach.

Primary Runway - That runway which provides the best wind coverage, etc., and receives the most usage at the airport.

Primary Surface - One of the FAR Part 77 Imaginary Surfaces, the primary surface is centered on top of the runway and extends 200 feet beyond each end. The width is from 250' to 1,000' wide depending upon the type of airplanes using the runway.

Principal Fire Extinguishing Agent – Fire extinguishing agents that provide permanent control of fire through a fire-smothering foam blanket. Examples include protein foam, aqueous film forming foam and fluoroprotein foam.

Procedure Turn (PT) - A maneuver in which a turn is made away from a designated track followed by a turn in an opposite direction to permit an aircraft to intercept the track in the opposite direction (usually inbound).

Area Navigation (RNAV) - is a method of instrument flight navigation that allows an aircraft to choose a course within a network of navigation beacons rather than navigating directly to and from the beacons. Originally developed in the 1960, RNAV elements are now being integrated into GPS-based navigation.

Relocated Threshold – A runway threshold (takeoff and landing point) that is located at a point other than the (original) runway end. Usually provided to mitigate nonstandard runway safety area (RSA) dimensions beyond a runway end. When a runway threshold is relocated, the published length of the runway is reduced and the pavement between the relocated threshold and to the original end of the runway is not available for aircraft takeoff or landing. This pavement is typically marked as taxiway, marked as unusable, or is removed.

Required Navigation Performance (RNP) – A type of performance-based navigation system that allows an aircraft to fly a specific path between two 3-dimensionally defined points in space. RNP approaches require on-board performance monitoring and alerting. RNP also refers to the level of performance required for a specific procedure or a specific block of airspace. For example, an RNP of .3 means the aircraft navigation system must be able to calculate its position to within a circle with a radius of 3 tenths of a nautical mile. RNP approaches have been



designed with RNP values down to .1, which allow aircraft to follow precise 3 dimensional curved flight paths through congested airspace, around noise sensitive areas, or through difficult terrain.

Rigid Pavement – Typically constructed of Portland cement concrete (PCC), consisting of a slab placed on a prepared layer of imported materials.

Rotorcraft - A helicopter.

Runway – A defined area intended to accommodate aircraft takeoff and landing. Runways may be paved (asphalt or concrete) or unpaved (gravel, turf, dirt, etc.), depending on use. Water runways are defined takeoff and landing areas for use by seaplanes.

Runway Bearing – The angle of a runway centerline expressed in degrees (east or west) relative to true north.

Runway Designation Numbers – Numbers painted on the ends of a runway indicating runway orientation (in degrees) relative to magnetic north. “20” = 200 degrees magnetic, which means that the final approach for Runway 20 is approximately 200 degrees (+/- 5 degrees).

Runway End Identifier Lights (REILs) - Two high-intensity sequenced strobe lights that help pilots identify a runway end during landing in darkness or poor visibility.

Runway Object Free Area (OFA) – A defined area surrounding a runway that should be free of any obstructions that could interfere with aircraft operations. The dimensions for the OFA increase for runways accommodating larger or faster aircraft.

Runway Protection Zone (RPZ) – A trapezoid-shaped area located beyond the end of a runway that is intended to be clear of people or built items. The geometry of the RPZ often coincides with the inner portion of the runway approach surface. However, unlike the approach surface, the RPZ is a defined area on the ground that does not have a vertical slope component for obstruction clearance. The size of the RPZ increases as runway approach capabilities or aircraft approach speeds increase. Previously defined as “clear zone.”

Runway Safety Area (RSA) – A symmetrical ground area extending along the sides and beyond the ends of a runway that is intended to accommodate inadvertent aircraft passage

without causing damage. The dimensions for the RSA increase for runways accommodating larger or faster aircraft. FAA standards include surface condition (compaction, etc.) and absence of obstructions. Any items that must be located within an RSA because of their function (runway lights, airfield signage, wind cones, etc.) must be frangible (breakable) to avoid significant aircraft damage.

Segmented Circle - A system of visual indicators designed to show a pilot in the air the direction of the traffic pattern at that airport.

Small Aircraft - An aircraft that weighs 12,500 lbs or less.

Straight-In Approach – An instrument approach that directs aircraft to a specific runway end.

Statute Mile – 5,280 feet (a nautical mile = 6,080 feet)

Stop and Go – An aircraft operation where the aircraft lands and comes to a full stop on the runway before takeoff is initiated.

T-Hangar – A rectangular aircraft storage hangar with several interlocking "T" units that minimizes building per storage unit. Usually two-sided with either bi-fold or sliding doors.

Takeoff Distance Available (TODA) – the length of the takeoff run available plus the length of clearway, if available.

Takeoff Run Available (TORA) – the length of runway available and suitable for the ground run of aircraft when taking off.

Taxilane – A defined path used by aircraft to move within aircraft parking apron, hangar areas and other landside facilities.

Taxiway – A defined path used by aircraft to move from one point to another on an airport.

Threshold – The beginning of that portion of a runway that is useable for landing.

Threshold Lights – Components of runway edge lighting system located at the ends of runways and at displaced thresholds. Threshold lights typically have split lenses (green/red) that identify the beginning and ends of usable runway.

Through-the-Fence – Term used to describe how off-airport aviation users (private airparks,



hangars, etc.) access an airport “through-the-fence,” rather than having facilities located on airport property.

Tiedown - A place where an aircraft is parked and "tied down." Surface can be grass, gravel or paved. Tiedown anchors may be permanently installed or temporary.

Touch and Go – An aircraft operation involving a landing followed by a takeoff without the aircraft coming to a full stop or exiting the runway.

Traffic Pattern - The flow of traffic that is prescribed for aircraft landing and taking off from an airport. Traffic patterns are typically rectangular in shape, with upwind, crosswind, base and downwind legs and a final approach surrounding a runway.

Traffic Pattern Altitude - The established altitude for a runway traffic pattern, typically 800 to 1,000 feet above ground level (AGL).

Transitional Surfaces - One of the FAR Part 77 Imaginary Surfaces, the transitional surface 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.

Universal Communications (UNICOM) is an air-ground communication facility operated by a private agency to provide advisory service at uncontrolled airports.

Utility Runway – As defined under FAR Part 77, a runway designed and constructed to serve small planes (aircraft with maximum takeoff weights of 12,500 pounds or less).

Vertical Navigation (VNAV) – Vertical navigation descent data or descent path, typically associated with published GPS instrument approaches. The use of any VNAV approach technique requires operator approval, certified VNAV-capable avionics, and flight crew training.

VOR - Very High Frequency Omnidirectional Range – A ground based electronic navigational aid that transmits radials in all directions in the VHF frequency spectrum. The VOR provides azimuth guidance to aircraft by reception of radio signals.

VORTAC – VOR collocated with ultra high frequency tactical air navigation (TACAN)

Visual Approach Slope Indicator (VASI) - A system of lights located by the approach end of a runway which provides visual approach slope guidance to aircraft during approach to landing. The lights typically show some combination of green and white if a pilot is on the correct flight path, and turn red if a pilot is too low.

Visual Flight Rules (VFR) - Rules that govern the procedures to conducting flight under visual conditions. The term is also used in the US to indicate weather conditions that are equal to or greater than minimum VFR requirements. In addition, it is used by pilots and controllers to indicate type of flight plan.

Visual Guidance Indicator (VGI) – Equipment designed to provide visual guidance for pilots for landing through the use of different color light beams. Visual Approach Slope Indicators (VASI) and Precision Approach Path Indicators (PAPI) defined above are examples.

Waypoint – A specified geographical location used to define an area navigation route or the flight path of an aircraft ility, employing area navigation.

Wide Area Augmentation System (WAAS) – GPS-based instrument approach that can provide both vertical (glideslope) and horizontal (course) guidance. WAAS-GPS approaches are able to provide approach minimums nearly comparable to a Category I Instrument Landing System (ILS).

Wind Rose - A diagram that depicts observed wind data direction and speed on a 360-degree compass rose. Existing or planned proposed runway alignments are overlain to determine wind coverage levels based on the crosswind limits of the design aircraft.

Wind Cone – A device located near landing areas used by pilots to verify wind direction and velocity. Usually manufactured with brightly colored fabric and may be lighted for nighttime visibility. Also referred to as “wind sock.”



LIST OF ACRONYMS

AC – Advisory Circular	TSA- Taxiway Safety Area
AC – Asphaltic Concrete	TSA – Transportation Security Administration
ADG – Airplane Design Group	TODA – Takeoff Distance Available
ALP – Airport Layout Plan	TORA – Takeoff Run Available
ALS – Approach Lighting System	UGA – Urban Growth Area
APL – Aircraft Parking Line	UGB – Urban Growth Boundary
ARC – Airport Reference Code	UNICOM – Universal Communications
ARP - Airport Reference Point	VASI – Visual Approach Slope Indicator
ASDA – Accelerate-Stop Distance Available	VFR – Visual Flight Rules
ASV – Annual Service Volume	VGI - Visual Guidance Indicators
ATCT – Air Traffic Control Tower	
ASOS – Automated Surface Observation System	
AWOS – Automated Weather Observation System	
BRL – Building Restriction Line	
CTAF – Common Traffic Advisory Frequency	
FAA – Federal Aviation Administration	
FAR – Federal Air Regulation	
FBO – Fixed Base Operator	
GPS – Global Positioning System	
HIRL – High Intensity Runway Lighting	
IFR – Instrument Flight Rules	
IMC – Instrument Meteorological Conditions	
LDA – Landing Distance Available	
LDA - Localizer Directional Aid	
LIRL – Low Intensity Runway Lighting	
MIRL – Medium Intensity Runway Lighting	
MITL - Medium Intensity Taxiway Lighting	
NAVAID – Navigational Aid	
OCS – Obstacle Clearance Surface	
OFA – Object Free Area	
OFZ – Obstacle Free Zone	
PAPI – Precision Approach Path Indicator	
PCC – Portland Cement Concrete	
PCI – Pavement Condition Index	
REIL – Runway End Identifier Lights	
RPZ – Runway Protection Zone	
RSA – Runway Safety Area	
RVZ – Runway Visibility Zone	