

# **APPENDIX E**

## **AIRSPACE MANAGEMENT**

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This appendix provides information on consultation and coordination with the FAA regarding proposed Global Hawk operations, definitions of airspace types and classes, and a listing of the airspace and airfields within the affected environment for each base.

### ***FAA CONSULTATION AND COORDINATION***

Air Force personnel visited with regional FAA Regional Headquarter staff, Air Route Traffic Control Centers (ARTCC), and Terminal Radar Approach Controls, to discuss potential Global Hawk operations in airspace associated with the five alternative bases. The visits, which occurred between July and August, 2000 involved the following:

1. Explaining and describing the normal and emergency Global Hawk operations and procedures;
2. Determining the feasibility of integrating Global Hawk operations with existing operations; and
3. Determining which terminal and enroute radar facilities can provide primary radar coverage to satisfy the FAA's requirement for an equivalent level of safety.

To accomplish these objectives, personnel at the Denver, Fort Worth, Indianapolis, Kansas City, Los Angeles, and Oakland ARTCCs, the Dayton, High Desert, Oklahoma City, and Sacramento TRACONS, and the Ellsworth AFB Radar Approach Control (RAPCON) were consulted. The findings of these consultations are summarized in Section 4.2 of this assessment.

Consultation with the FAA is important because there are certain rules and regulations that apply to unmanned aerial vehicles when they are flying through the National Airspace System. In particular, the FAA has designated three "blocks" of airspace over the United States: controlled, special use, and other. The affected environment for the Global Hawk beddown includes all three types of airspace, depending upon the base.

- a) Controlled airspace is a generic term that covers different classifications of airspace.
- b) Special use airspace includes restricted areas, military operations areas (MOAs), as well as warning, prohibited, alert, and controlled firing areas.
- c) Other airspace areas include military training routes, airport advisory areas, temporary flight restricted areas, and other special designated areas.

**AIRSPACE DEFINITIONS**

Definitions of airspace units would be traversed or used by Global Hawk aircraft are provided below:

*Controlled and Uncontrolled Airspace:* Controlled airspace includes Class A, B, C, D, and E. Class G airspace applies to uncontrolled airspace. Figure E-1 provides an illustration as well as definition of these classes of airspace.

*Restricted Area*—Airspace designated under federal aviation regulations, within which the flight of aircraft is subject to restriction. Most restricted areas are designated joint use and IFR/VFR operations in the area may be authorized by the controlling air traffic control facility when it is not being utilized by the using (military) agency.

*Military Operations Area (MOA)*—This is airspace established to separate certain non-hazardous military activities from IFR traffic, and to identify to the pilots of VFR traffic where these activities are conducted.

*Military Training Area (MTR)*—An MTR is a corridor of airspace of defined vertical and lateral dimensions established for conducting military flight training at airspeeds in excess of 250 nautical miles per hour.

*Victor Route*—Victor routes are the network of airways serving commercial aircraft operations up to 18,000 feet MSL.

## Global Hawk Main Operating Base Beddown EA

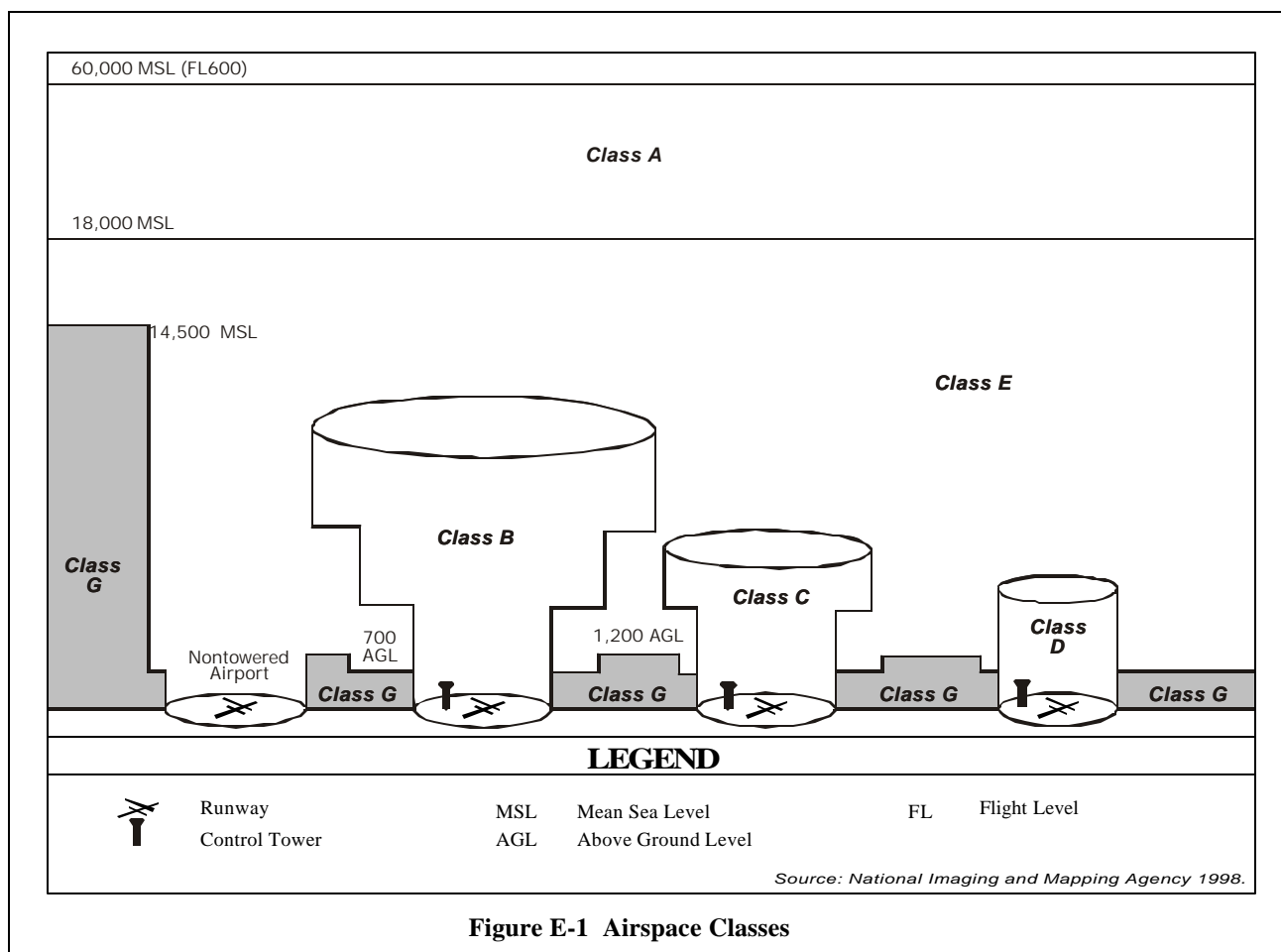


Figure E-1 Airspace Classes

**Class A** is generally that airspace from 18,000 feet MSL up to and including 60,000 feet MSL. Aircraft traveling in this airspace must be equipped with a two-way radio capable of communicating with Air Traffic Control (ATC) and maintain two-way communications with ATC while operating in this airspace. In addition, all aircraft flying in this airspace must be equipped with a transponder and automatic altitude-reporting equipment. Jet Routes are found in this airspace class and are used by commercial aircraft when traveling between destinations. These routes cross the U.S. between airports and are designated using a J and a 2-number suffix (e.g., J-22).

**Class C** is that airspace surrounding an airport with an operational control tower and serviced by a radar approach control system. Although the form of the airspace is individually tailored around an airport, it usually consists of a 5 NM radius that extends from the surface to 4,000 feet above the airport elevation and a 10 NM radius shelf area that extends from 1,200 to 4,000 feet above airport elevation. In addition, all aircraft flying in Class C airspace must maintain two-way communication with ATC, be equipped with a transponder, and have altitude-reporting equipment.

**Class D** airspace extends from the surface to 2,500 feet above the airport elevation surrounding those airports that have an operational control tower. The form of this airspace is individually tailored to the airport. Two-way communication must be established with the ATC prior to entry and maintain communication while within the Class D airspace.

**Class E** is, generally, airspace not classified as A, B, C, D, yet is controlled in some manner. Unless designated at a lower altitude, Class E airspace begins at the surface to 1,500 feet AGL in controlled airspace not specifically classified as A, B, C, or D and from 14,500 feet MSL to, but not including 18,000 feet MSL. This airspace can be used in conjunction with other airspace classifications to aid in communications procedures or be used for transition to/from the terminal or enroute to a destination. Communication must be maintained with an operational control tower while flying in this airspace. Within this airspace is found Victor routes (designated with a V and a 2-number digit, e.g., V-48). These routes serve general aviation and smaller commuter flights flying below 18,000 feet MSL.

**Other designations include** Class B airspace which occurs from the ground to 10,000 feet MSL surrounding the nation's busiest airports. Global Hawk aircraft activities would not intersect this type of airspace under any of the alternatives. Class G, or uncontrolled, airspace is that portion of the airspace not designated as A, B, C, D, or E. Global Hawk activities would occur in this airspace and would follow FAA procedures established for this uncontrolled airspace.

**AIRSPACE AND AIRFIELDS**

The following tables list the airports, federal airways, and airspace encompassed within a 38 NM radius of the base indicated in each table.

<b>Table E-1. Beale AFB Airfield and Airspace Environment</b>			
<i>Airports</i>	<i>Victor Routes</i>	<i>Military Training Routes</i>	<i>Special Use Airspace</i>
Auburn Airport	V-6	IR-207	China MOA
Cameron Park	V-23	VR-202	
Colusa County	V-195		
Georgetown Airport	V-200		
Lincoln Regional Airport	V-301		
Nevada County Airport	V-332		
Oroville Airport	V-392/494		
Sacramento Executive Airport			
Sacramento International Airport			
University Airport			
Watts-Woodland Airport			
Willows-Glenn Airport			
Yuba County Airport			

<b>Table E-2. Edwards AFB Airfield and Airspace Environment</b>			
<i>Airports</i>	<i>Victor Routes</i>	<i>Military Training Routes</i>	<i>Special Use Airspace</i>
Agua Dulce Airport	V-12	IR-200	Bakersfield MOA
Barstow-Daggett Airport	V-65	IR-236	Barstow MOA
Burbank-Glendale-Pasadena Airport	V-137	IR-425	Buckhorn MOA
California City Airport	V-197	VF-1206	Isabella MOA
General Fox Airport	V-201	VR-1257	R-2506
Inyokern Airport	V-386	VR-1262	R-2515
Los Angeles International Airport	V-459	VR-1293	R-2524
Mohave Airport			
Palmdale Airport			
Rosamond Airport			
Southern California Airport			
Tehachapi Airport			
Van Nuys Airport			
Whiteman Airport			

<b>Table E-3. Ellsworth AFB Airfield and Airspace Environment</b>			
<i>Airports</i>	<i>Victor Routes</i>	<i>Military Training Routes</i>	<i>Special Use Airspace</i>
Sturgis Airport	V-26	--	--
Rapid City Regional Airport	V-86		
Black Hills – Clyde Ice Airport	V-169 V-491 V-536		

<b>Table E-4. Tinker AFB Airfield and Airspace Environment</b>			
<i>Airports</i>	<i>Victor Routes</i>	<i>Military Training Routes</i>	<i>Special Use Airspace</i>
Chandler Airport	V-14	VR-137	--
Chickasha Airport	V-14/440	VR-152	
Cushing Airport	V-17	VR-562	
David Perry Airport	V-17/358	VR-1126	
El Reno Municipal Airport	V-77		
Guthrie Municipal Airport	V-140		
Logan County Airport	V-163		
Normal Airport	V-210/272		
Page Airport	V-210/507		
Pauls Valley Airport	V-272		
Prague Airport	V-354		
Seminole Airport	V-358		
Shawnee Airport	V-436		
Sundance Airpark Airport			
Wiley Post Airport			
Will Rogers Regional Airport			

<b>Table E-5. Wright-Patterson AFB Airfield and Airspace Environment</b>			
<i>Airports</i>	<i>Victor Routes</i>	<i>Military Training Routes</i>	<i>Special Use Airspace</i>
Airborne Airport	V-5	Slow Route - 711	--
Armstrong Airport	V-12		
Bellefontaine Municipal Airport	V-12/517		
Brownies Airport	V-47		
Cincinnati-Blue Ash	V-50		
Clinton Field Airport	V-55		
Darke County Airport	V-98		
Dayton General Airport	V-192		
Fayette County Airport	V-210		
Greene County Airport	V-275		
Grimes Airport	V-277		
Hamilton-Fairfield Airport	V-340		
Hook Airport			
James M. Cox Dayton International Airport			
Lebanon-Warren County Airport			
Lakefield Airport			
Madison County			
Miami University Airport			
Moraine Airport			
Phillipsburg Airport			
Randolph County Airport			
Red Stewart Airfield			
Richmond Airport			
Sidney Airport			
Springfield-Beckley Airport			
Union County Airport			
Waynesville Airport			