

October 2, 2024

Response to U.S. Air Force Proposal to lower floors of Military Operations Areas (MOA) and military support of training that requires supersonic flight at lower altitudes.

Arizona Aviation Safety Advisory Group

The Arizona Aviation Safety Advisory Group is a 501 (c) 3 working with all users of Arizona's airspace. We wish to support the Air Force's mission but feel the lowering of the MOA floors to 500 feet AGL, and in the case of the Tombstone MOA proposing 100' AGL, as is currently allowed in Jackal Low and Fuzzy, and proposing "adjusting the attributes to allow for supersonic speed at lower altitude"¹ are serious impediments to safe use of Arizona's airspace by General Aviation Pilots.

Our concerns are:

1. Current General Aviation flight instruction practice areas extensively use the airspace below the existing MOA floors as shown in Figure 1. The Gladden and Bagdad MOAs overlap the practice areas used by the Prescott area flight schools that include Embry-Riddle Aeronautical University, North-Aire, Guidance Aviation, Leighnor, and Yavapai Community College. The proposed expansion of these MOAs will eliminate approximately 25% of the available airspace currently in use, and force flight activity into already saturated areas. This increases the potential for a mid-air collision which has happened multiple times among training aircraft in our state.² The Prescott area also sits close to noise sensitive areas and the flight schools must be mindful of noise complaints over many of their eastern practice areas. Moving one quarter of the flight operations to other areas will only exacerbate the noise problem. Prescott Airport ranks third in the state behind Mesa, Falcon, and Phoenix Deer Valley, and is 24th in the nation for all airports for total traffic counts. See Table 2. Student and general aviation VFR southwest cross-country flights to locations such as Wickenburg, Parker, Blythe, Yuma, and southern California will not be possible under the proposed MOA expansion.
2. The Outlaw MOA expansion will have a similar impact to flight operations using the airspace in the Southeast Practice Area as shown in Figure 1. This area is primarily used by pilots and dozens of flight schools based out of Gateway, Chandler, and Falcon Fields, but also sees use from flight schools and pilots based at any of the seven Phoenix area general aviation airports. These schools include University of North Dakota, Arizona State University, CAE Oxford Academy, ATP Flight Schools, California Aeronautical University, Aeroguard Training Academy, Sierra Charlie Flight Academy, United Aviate Academy, Lufthansa's Flight Training Academy, as well as

¹ Draft EIS Cover Sheet page 7 of the 212-page document

² NTSB Investigation WPR13FA254, WPR13LA004, WPR09FA437, WPR22FA001,

many smaller training schools. Together, Falcon, Gateway, and Chandler account for 818,732 operations as shown in Table 1. The Phoenix area has four airports in the top 100 busiest in the nation with Phoenix Sky Harbor 9th, Mesa Falcon 20th, Phoenix Deer Valley 21st, and Scottsdale 72nd. If we include Prescott, as previously mentioned, the state has five of the busiest airports in the top 100. Aviation Performance Systems operating out of IWA is the Nation's and World's leading provider of Upset Recovery Training for many of the world's airlines and government operators. They operate a fleet of Extra 300s and jet trainers, operating southeast of IWA and are equally concerned with the mid-air collision potential with today's traffic intensity and the MOA expansion will impact them negatively. In addition, there are military contractor training providers using both Falcon and Gateway airports providing high speed flight maneuvering using the airspace around the Outlaw MOA. Also affected will be Superior Airport glider operations, training high school students for Glider ratings which is located inside the western part of the Outlaw MOA. Figure 2 shows the traffic tracks for the Phoenix area during a 24-hour period. Figure 3 depicts the traffic out of IWA for a 24-hour period and as pointed out, over 800 aircraft a day transit below 5000'AGL in or near the western area of the Outlaw MOA. Figure 4 shows the area between Phoenix and Tucson and the gray circles show the Notices to Air Missions for active parachute drop operations. Many of these operations are conducted by other government agencies and contractors operating around the clock. ASAG, the jump operators, FAA, and flight training providers are genuinely concerned for the potential for a mid-air collision between aircraft and jumpers and we have an extensive education program in place to try and mitigate the risk. The expansion of the Outlaw MOA will force more aircraft into an already dangerous airspace.

3. ASAG is concerned about access to any airport underlying the MOA. Many of these airports are used for student cross-country training as well as by other general aviation pilots. Under the proposed lowering of the floor to 500 feet AGL, VFR access to these airports is almost impossible and is impossible under IFR if the MOA is active. There are many backcountry airstrips used by slow-moving aircraft that typically operate anywhere from 1000 to 2000 AGL. Access will be impossible for these pilots. The mountains east of IWA are used annually in the spring for wild-land fire training with extensive flight training taking place for air-attack lead and bomber pilots.
4. Secondary to the floor of the MOAs being lowered to 500 AGL, and lower, ASAG is worried about the extent of supersonic flight within the MOAs. With the large amount of training activity by both military and civilian pilots in and around the MOAs, the task saturation, and demands of maneuvering flight, will leave truly little time for pilots to devote to traffic awareness or avoidance. Will pilots be counting on Air Traffic Control to separate VFR traffic in the MOA? This will not be possible

when aircraft are maneuvering below ATC's RADAR coverage at 500 feet AGL. Using Luke AFB's own Mid-Air Collision Avoidance charts, see Figures 5,6, and 7, and speeds for the F-16, the time to see and react to a target is 12.5 seconds. This presumes clear conditions and clearing for traffic. These numbers cannot be counted on while maneuvering at higher speeds, at lower altitudes, with terrain and ground clutter obscuring the view of other airplanes. At supersonic speeds what will the times be compared to those as shown in Figure 7? Will a civilian or military pilot have any hope of picking up a converging aircraft? Very unlikely.

ASAG wishes to support the U.S. Air Force's mission; however, the proposed expansion of the floors to 500 AGL, and in the case of Tombstone to 100 AGL, and aircraft maneuvering at supersonic speeds as low as 5000' AGL, creates hazards for which we do not see a safe way of mitigating the risks and we cannot endorse this plan as it is currently proposed.

Cary B. Grant

President, Arizona Aviation Safety Advisory Group

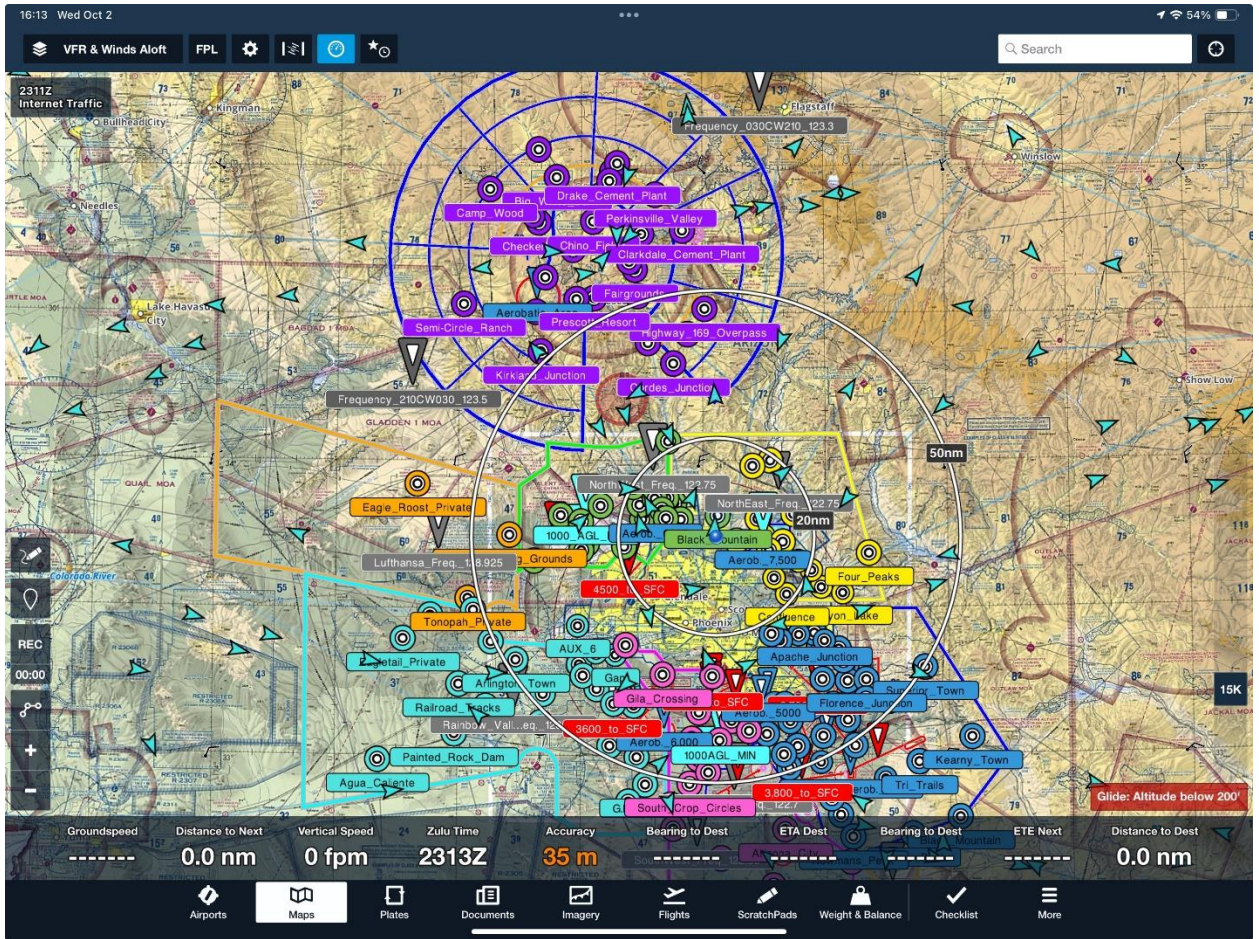


Figure 1.

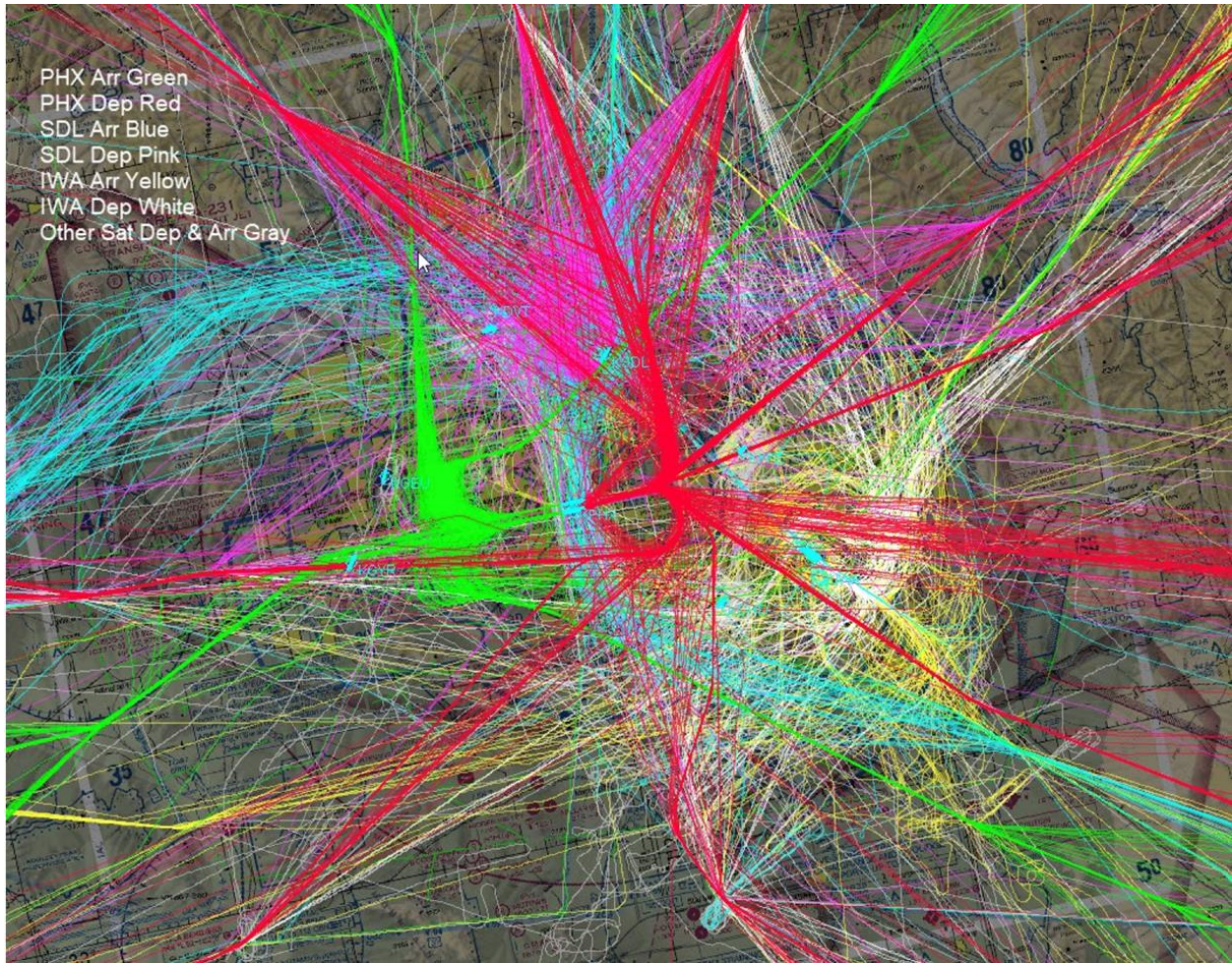


Figure 2

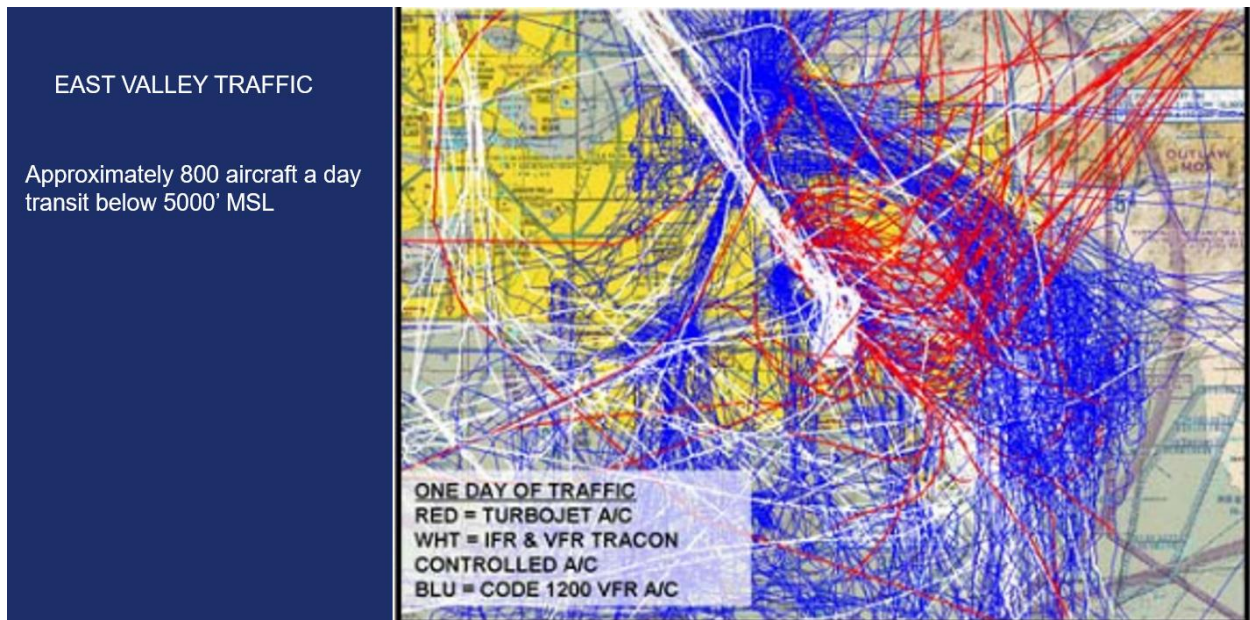


Figure 3.

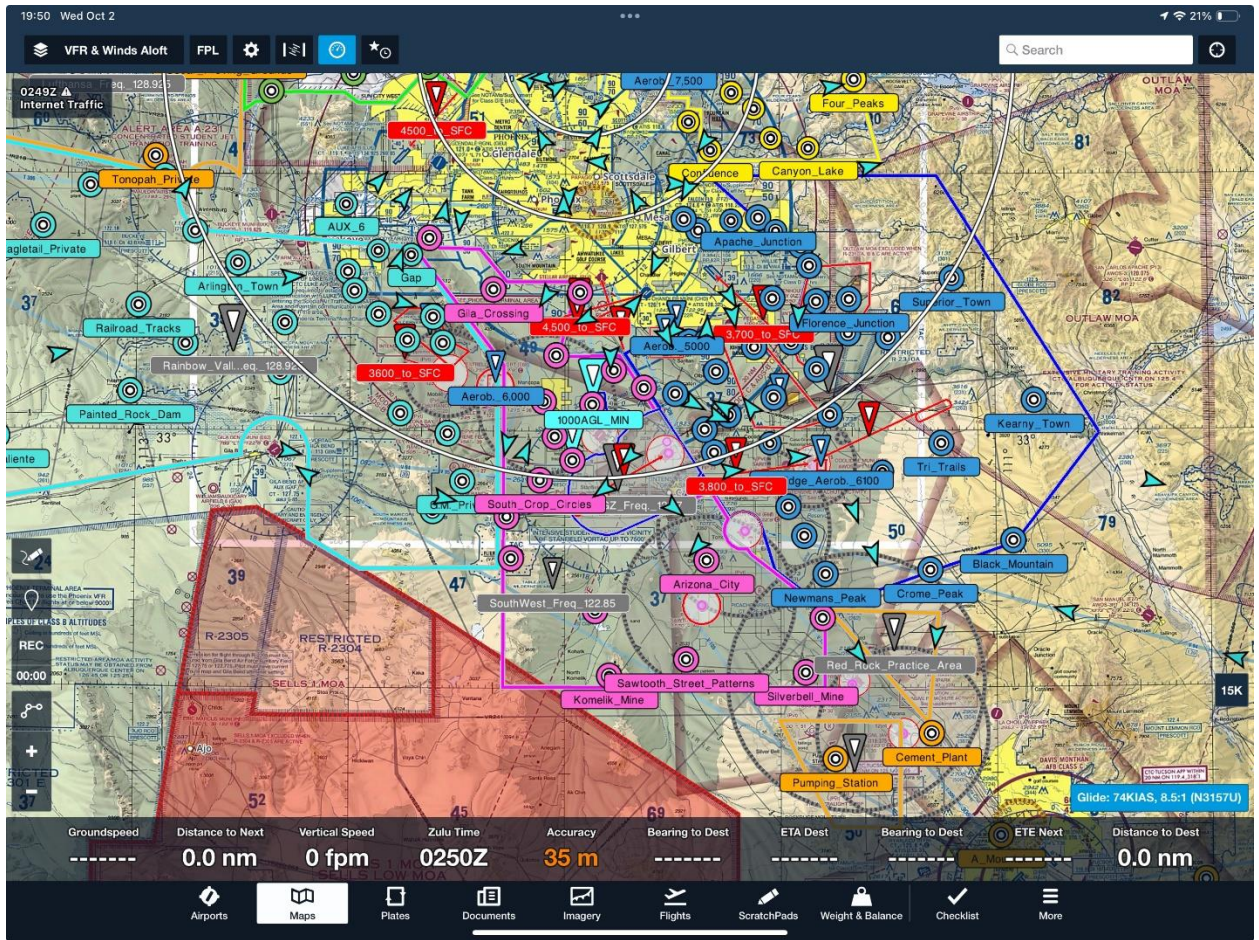


Figure 4.



Reaction Chart

Critical Seconds

Move away from the F-16 illustration about 3 feet. The F-16 silhouette represents the aircraft as it would appear from the distance indicated on that page. The time required to cover these distances is given in seconds for the combined speeds of 360 and 600 mph.

The blocks on the lower left corner of the previous page mark the danger area, based on the reaction times on the lower right of this page.

see object	0.1
recognize aircraft	1.0
became aware of a collision course	5.0
decision to turn left or right	4.0
muscular reaction	0.4
aircraft lag time	2.0
TOTAL	12.5

Figure 5.



Geometry of a Collision

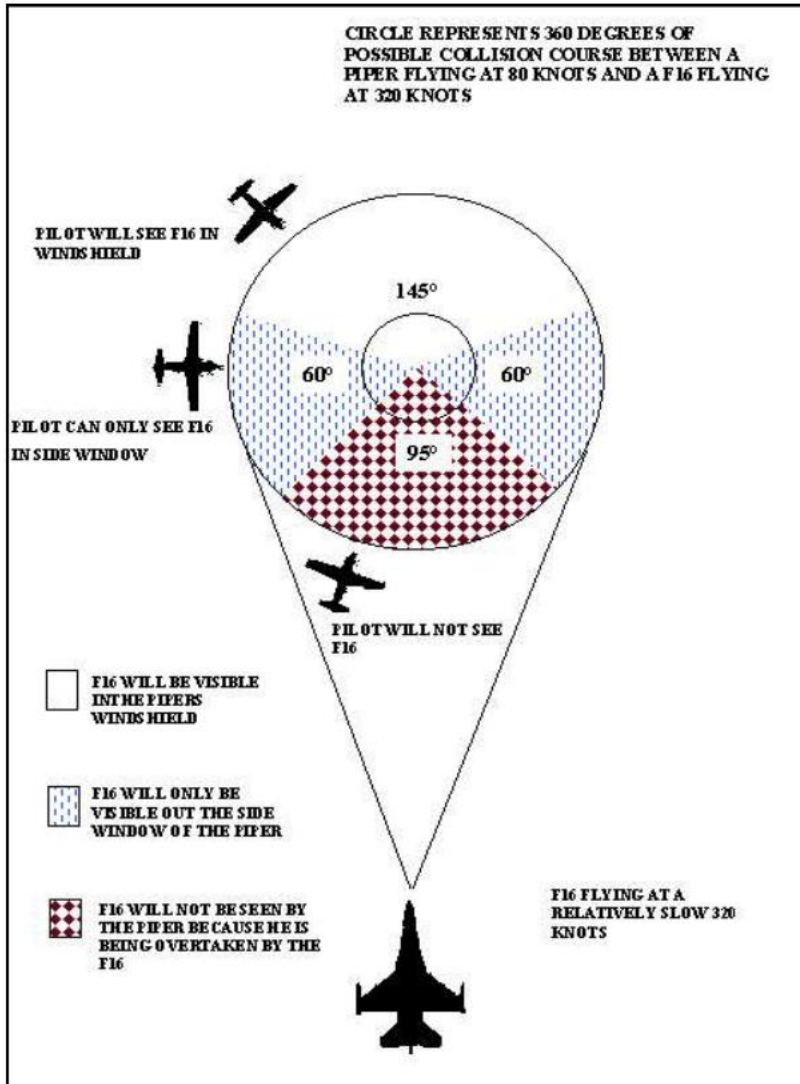


Figure 7

ID	YEAR	IFR Itinerants	IFR Overflights	VFR Itinerants	VFR Overflights	Local VFR	Total Tower Ops
DVT	2023	13241	1387	101402	6027	229743	351800
FFZ	2023	6600	542	134926	5050	207341	354459
PHX	2023	443440	5954	11225	29447	0	490066
PRC	2023	18174	37	82542	1149	234864	336766
SDL	2023	61469	132	69137	4672	45212	180622
TUS	2023	69880	125	48718	4057	27535	150315
CHD	2023	4,211	47	70,636	2,792	140,874	218,560
FLG	2023	6,972	4	18,087	1,694	5,701	32,458
GEU	2023	2,420	669	33,565	2,289	72,115	111,058
GYR	2023	5,650	374	75,218	3,034	119,641	203,917
IFP	2023	1,398	12	7,000	1,197	2,378	11,985
IWA	2023	23,976	252	68,855	4,153	148,477	245,713
RYN	2023	2,409	10	31,999	325	66,206	100,949

Table 1.

OPSNET : Tower Operations : Ranking Report

From 05/01/2023 To 05/31/2024 | FAA Only
Ranked by : Tower Operations

#	Facility	IFR Inland				IFR Overflight				VFR Inland				VFR Overflight				Local		Airport		Tower				
		Carrier	Taxi	Aviation	Military	Carrier	Taxi	Aviation	Military	Carrier	Taxi	Aviation	Military	Carrier	Taxi	Aviation	Military	Total	Civil	Military	Total	Operations	Operations			
1	ATL	837,597	9,374	5,644	237	852,752	721	153	707	8	1,589	4	56	1,599	31	1,690	0	2,392	2,126	238	4,756	0	0	0	854,442	860,787
2	ORD	654,664	134,985	3,550	110	793,409	175	174	71	3	423	3	6	1,824	17	900	0	300	335	19	654	0	0	0	770,512	778,477
3	DFW	747,561	16,637	4,993	87	769,278	2,564	1,236	810	25	4,635	23	207	927	77	1,234	0	1,031	2,265	34	3,330	0	0	0	770,512	778,477
4	DEN	646,948	83,915	3,180	163	730,216	1,254	381	117	10	1,752	21	116	366	16	519	0	257	546	136	938	0	0	0	770,512	778,477
5	LAS	448,679	56,659	38,617	8,986	553,851	394	1,414	2,003	52	3,863	3	108,875	2,552	697	112,127	0	10,903	6,677	207	17,780	0	0	0	685,978	687,628
6	LAX	593,499	21,751	13,115	355	628,720	436	71	59	3	569	18	21	680	141	860	0	169	15,552	1,248	16,969	0	0	0	629,580	647,118
7	CLT	483,143	93,227	21,836	813	599,019	468	161	201	4	834	1	595	4,389	65	5,500	0	1,908	5,190	170	7,268	0	0	0	604,519	612,621
8	EWR	438,104	10,022	4,784	43	452,953	275	307	407	24	1,013	28	968	10,848	111	11,955	0	12,288	96,086	6,496	114,871	0	0	0	464,308	580,792
9	PHX	440,251	32,746	18,781	2,255	492,033	359	3,243	1,423	1,683	6,706	35	4,434	7,600	387	12,456	0	29,099	5,839	3,887	34,885	0	0	0	504,489	546,982
10	JFK	493,438	5,637	3,358	244	502,677	427	61	77	4	569	5	1,297	12,497	169	13,968	0	767	19,515	543	20,825	0	0	0	516,645	538,039
11	MIA	475,283	26,521	12,461	431	514,696	364	15	9	12	400	1,193	620	2,093	67	3,973	3	53	7,432	220	7,708	0	0	0	518,669	526,777
12	IAH	402,036	55,597	7,874	54	465,561	592	164	82	4	842	2	335	338	76	1,051	0	796	3,959	826	5,581	0	0	0	466,612	473,035
13	LGA	376,742	5,282	2,559	119	384,702	1,029	28	106	18	1,181	2	391	1,793	77	2,263	0	11,748	59,253	5,982	76,993	0	0	0	386,965	465,139
14	SEA	455,491	4,190	1,014	38	460,733	418	622	369	21	1,430	9	22	353	12	396	0	64	595	14	673	0	0	0	461,129	483,232
15	MCO	428,760	16,595	12,769	186	458,310	194	8	2	2	206	21	971	1,888	65	2,945	0	286	366	9	661	0	0	0	461,255	462,122
16	BOB	362,013	51,100	8,428	163	421,704	251	1,322	1,288	26	2,867	39	9,977	2,251	159	12,426	0	7,357	5,730	276	13,363	0	0	0	434,130	450,380
17	LGB	38,387	8,752	24,820	420	72,739	30	76	290	17	403	1	6,043	94,826	297	101,267	0	203	14,013	473	14,689	241,626	13	241,639	415,185	430,277
18	WNY	115,841	41,131	106	78,171	131,388	10,825	5,945	108	48,354	0	745	95,972	391	97,108	0	312	19,640	298	20,250	180,596	7	180,603	355,862	424,466	
19	SFO	380,364	25,929	6,841	400	413,534	318	75	608	21	1,022	1	972	7,027	2,527	4,172	0	487	4,326	115	4,928	0	0	0	417,706	423,656
20	FFZ	15	2,746	3,839	125	6,725	335	85	93	19	532	0	79,108	70,846	1,371	151,325	0	1,267	3,796	79	5,142	254,939	8	254,947	412,997	418,617
21	DVT	11	6,651	8,045	16	14,723	0	736	835	4	1,575	2	66,254	55,259	80	121,595	0	1,733	4,362	275	6,371	272,118	274	272,392	408,710	416,656
22	APA	34	32,888	38,908	2,278	74,108	4	43	97	34	178	56	24,527	85,116	1,447	111,146	2	422	999	90	1,513	209,428	332	209,760	395,014	396,705
23	MYF	0	3,086	27,619	529	31,234	18	89	259	99	658	1	4,218	89,604	1,014	94,837	6	352	631	2,724	9,713	259,885	232	260,117	386,188	386,359
24	PRC	7	14,030	7,173	270	21,480	0	30	10	4	44	0	57,759	34,100	229	92,178	0	1,087	237	33	1,357	259,171	140	259,311	372,969	374,370
25	MSP	325,997	21,600	8,508	1,928	358,033	112	1,489	3,960	33	5,594	2	87	562	121	772	0	9,339	3,729	298	7,966	0	0	0	358,805	372,365
26	DCA	315,629	3,136	2,225	387	321,377	350	21	553	44	968	7	64	48	2,084	2,203	24	12,532	17,533	16,179	46,268	0	0	0	323,580	370,816
27	SLC	257,493	38,210	24,847	1,685	322,035	9	26	131	8	174	3	3,586	16,330	3,244	25,469	1	4,673	10,595	601	15,876	984	0	984	348,468	354,532
28	HNL	182,700	44,125	7,477	13,917	248,219	0	11	4	19	34	1	59,695	52,009	2,020	113,725	0	17	4	6	27	44	5	49	361,993	362,054
29	DAB	6,465	44,672	14,897	538	66,572	1	46	52	1	100	0	137,186	28,408	229	165,823	0	634	685	60	1,379	124,449	9	124,458	356,853	358,332
30	LL	264,659	30,903	27,714	581	323,857	784	60	98	29	971	791	3,408	9,096	1,236	14,531	7	447	16,388	759	17,611	0	0	0	338,388	356,970
31	SNA	104,851	29,666	40,257	80	174,854	877	262	390	59	1,588	3	224	69,949	148	66,324	1	62	5,185	153	5,421	94,015	62	94,077	335,255	342,284
32	PH	244,454	25,151	11,546	628	323,547	300	234	148	9	690	4	50,626	37,734	274	2,251	0	5,564	3,489	347	9,274	644	0	644	339,330	340,460
33	TMB	9	5,403	26,977	123	32,512	17	11	63	2	93	0	797	122,859	207	123,863	0	40	2,952	43	3,035	172,203	203	172,233	328,608	331,736
34	TEB	69	102,689	72,040	149	174,947	123,691	2,454	1,304	9	127,458	2	4,537	12,353	295	17,187	18	2,377	3,481	393	6,269	0	0	0	192,134	325,861
35	GFK	2,370	35,109	47,388	42	84,305	0	44	3	1	48	24	90,938	8,676	45	99,883	0	92	342	14	448	180,203	0	180,203	322,191	322,687
36	DTW	305,371	6,748	4,491	81	316,691	892	673	601	23	2,174	3	751	6,906	13	7,653	0	62	851	23	836	0	0	0	330,330	330,436
37	IAD	212,845	68,256	34,473	527	312,101	294	384	348	55	1,081	12	330	840	83	1,265	0	1,751	2,507	959	5,217	0	0	0	313,366	319,664
38	ANC	144,335	50,225	14,214	3,880	213,514	443	437	543	4,155	5,578	45	28,710	54,903	3,296	86,954	0	851	2,734	420	4,005	9,725	0	9,725	309,833	319,416
39	BNA	222,511	32,771	26,818	1,064	283,164	420	622	1,629	58	2,729	3	413	10,939	1,961	13,316	0	3,558	10,104	402	14,064	8	8	8	296,488	313,281
40	BUC	13	13,590	16,514	343	30,460	8	139	293	9	449	35	9,417	95,324	1,093	105,869	0	501	2,388	58	2,947	171,846	1,441	173,287	309,616	313,012
41	SFB	19,986	25,151	11,546	628	53,547	4	56	157	8	177	13	143	1,112	744	2,012	1	1,234	17,253	13,148	31,636	158	158	158	241,016	272,831
42	ALB	213,517	26,261	37,044	2,663	279,485	990	415	492	67	1,964	79	1,622	5,088	15	6,400	1	2,813	5,084	3,332	11,230	366	226	592	294,417	307,611
43	DAL	163,713	56,064	46,285	616	266,678	176	1,736	5,682	26	7,620	1	1,022	10,986	95	11,808	0	10,308	11,685	432	22,426	0	0	0	273,484	303,530
44	FRG	103	11,285	12,839	74	24,301	11,749	110	91	9	12,059	35	16,990	81,397	899	99,321	17	1,029	2,739	569	4,354	135,585	78			

In summary, the floor of several MOAs would be lowered to provide additional airspace for low-altitude training for the current missions of the primary aircraft using each MOA. The proposed floor compared to the existing floor of the MOAs is presented in **Table 2.1-2**. In addition, required training terrain variety in the region would be improved by establishing new low-altitude training airspace that covers a variety of vertical terrain features. The only vertical change to the ATCAAs would be the default scheduling for Outlaw and Jackal ATCAAs to FL510.

Table 2.1-2 Summary of Proposed Altitude Changes

MOA	Existing Floor (No Action)	Proposed Floor
Tombstone	500 feet AGL	100 feet AGL
Outlaw	8,000 feet MSL or 3,000 feet AGL, whichever is higher	500 feet AGL
Jackal	11,000 feet MSL or 3,000 feet AGL, whichever is higher	500 feet AGL
Jackal Low	100 feet AGL	No change
Morenci	1,500 feet AGL	No change
Reserve	5,000 feet AGL	No change
Bagdad	7,000 feet MSL or 5,000 feet AGL, whichever is higher	500 feet AGL
Gladden	7,000 feet MSL or 5,000 feet AGL, whichever is higher	500 feet AGL
Sells	10,000 feet MSL	No change
Sells Low	3,000 feet AGL	No change
Ruby	10,000 feet MSL	No change
Fuzzy	100 feet AGL	No change

Legend: AGL = above ground level; ATCAA = Air Traffic Control Assigned Airspace; FL = Flight Level; MOA = Military MSL = mean sea level.

2-4 Draft Environmental Impact Statement (EIS)

Table 3.

Supersonic flight is currently authorized in Gladden, Bagdad, and Sells MOAs at 10,000 feet MSL and above and would remain unchanged with the Proposed Action. The Proposed Action includes authorizing supersonic flight down to 5,000 feet AGL in Tombstone, Outlaw, Jackal, Morenci, and Reserve MOAs. The existing and proposed supersonic flight authorizations are provided in **Table 2.1-3**. These changes would increase the capacity of the regional airspace to support non-hazardous training that requires supersonic flight at lower altitudes.

Table 2.1-3 Existing and Proposed Supersonic Flight Authorization

MOA/ATCAA	Existing Minimum Altitude (No Action)	Proposed Minimum Altitude
Tombstone	FL300	5,000 feet AGL
Outlaw	FL300	5,000 feet AGL
Jackal	FL300	5,000 feet AGL
Morenci	FL300	5,000 feet AGL
Reserve	FL300	5,000 feet AGL
Bagdad	10,000 feet MSL	No change
Gladden	10,000 feet MSL	No change
Sells	10,000 feet MSL	No change
Ruby	Not authorized	No change
Fuzzy	Not authorized	No change

Legend: AGL = above ground level; ATCAA = Air Traffic Control Assigned Airspace; FL = Flight Level; MOA = Military Operations Area; MSL = mean sea level.

2-7 Draft Environmental Impact Statement (EIS)

Table 4.