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Special Use Airspace Optimization Holloman AFB



Col Joseph Campo
49th Wing Commander
Holloman AFB, NM
18 Nov 19

UNCLASSIFIED

Integrity | Service | Excellence



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America's military has no preordained right to victory on the battlefield.

Jim Mattis

Secretary of Defense, 2018

Why Airspace Expansion

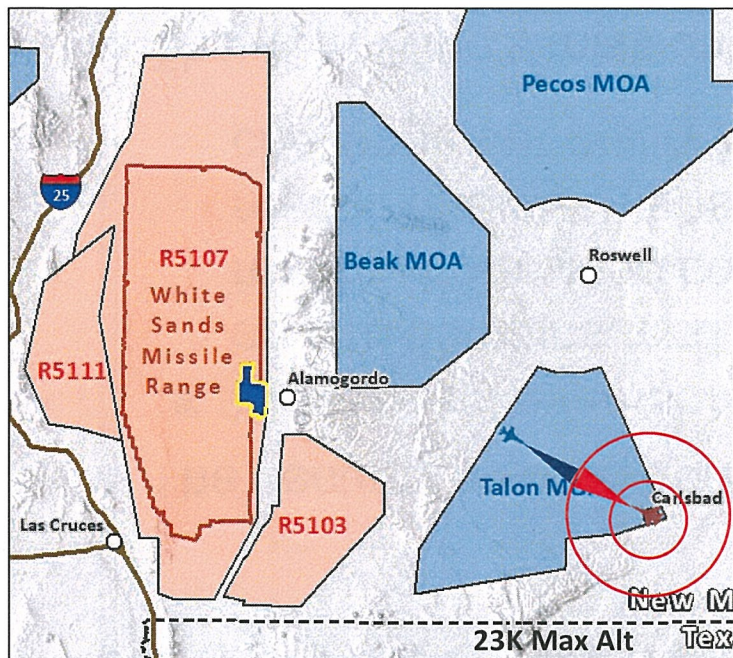


- The security environment has changed:
 - We face an ever more lethal and disruptive battlefield, combined across domains, and conducted at increasing speed and reach—from close combat, throughout overseas theaters, and reaching to our homeland... These trends, if unaddressed, will challenge our ability to deter aggression (National Defense Strategy, 2018)
- The 49th Wing's mission is to build the backbone of combat airpower by producing operationally-ready F-16 aircrew
 - The Joint Force must be able to strike diverse targets inside adversary air and missile defense networks to destroy mobile power-projection platforms (National Defense Strategy, 2018)
- 49th Wing graduates are the backbone of the Joint Force

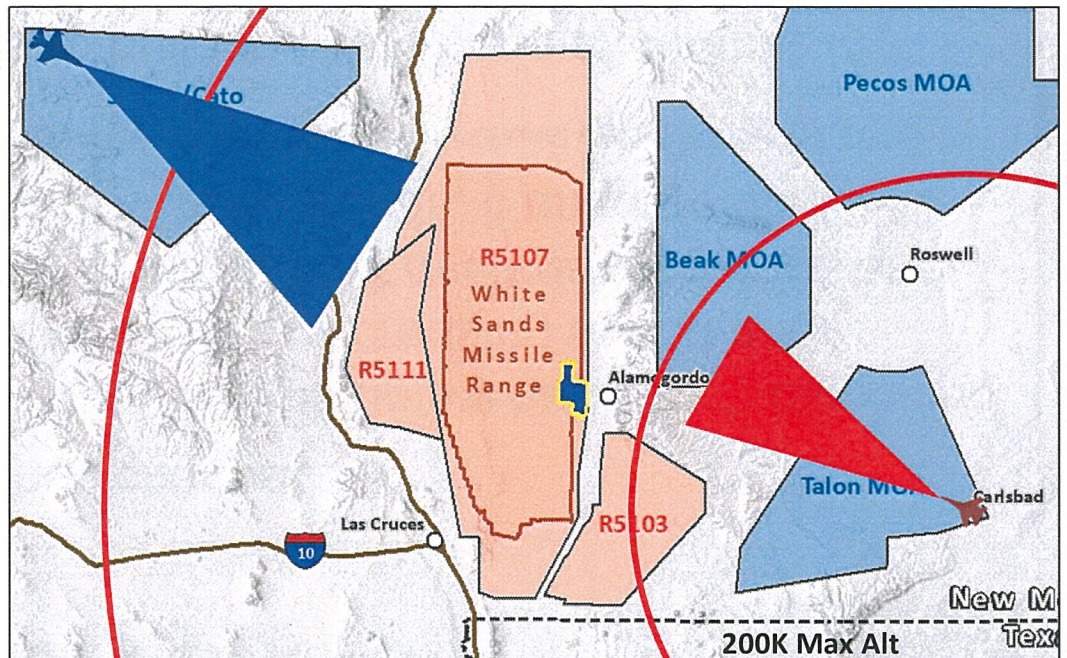
Advanced Threats / Aircraft



- Airspace designed 60 years ago for a pre-1990 threat environment
 - Threats and aircraft capabilities have evolved drastically
 - We have more advanced...NOT more aircraft at Holloman AFB



Pre-1990s



Now



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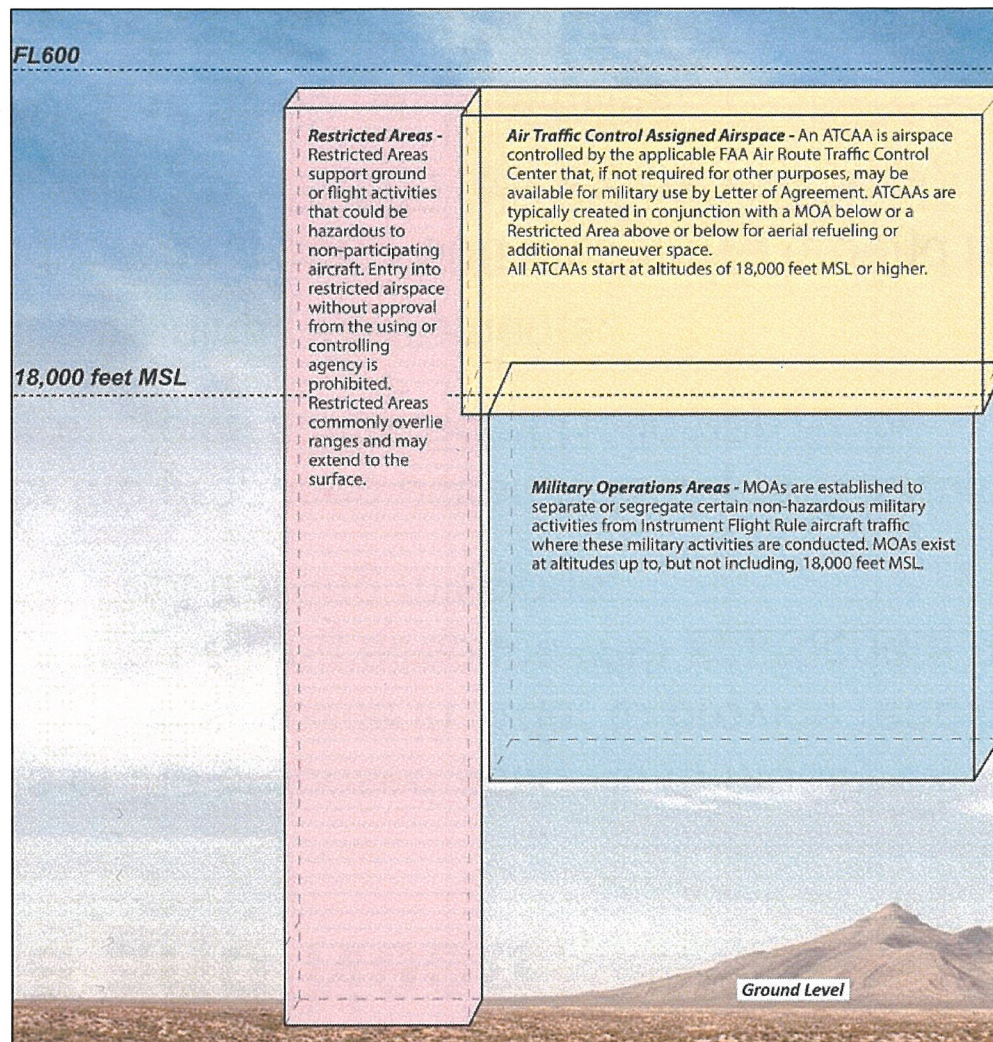
Purpose and Need

- The purpose of the proposed action is to modify existing airspace and establish new airspace in order to provide readily available and adequately sized training airspace with appropriate attributes needed to conduct training missions.
- The need for the proposed action is to support required training missions for aircrews stationed at Holloman AFB.
- F-16 airspace training requirements:
 - High and low airspace—500 feet above ground level up to Flight Level 510 (~51,000 feet mean seal level).
 - Dimensions 30 by 80 nautical miles.
 - Supports supersonic flight and defensive countermeasures.
- The proposed action would increase training efficiencies and provide suitable F-16 pilot training airspace.

Training Airspace Overview



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FAA Minimum Safe Altitudes

14 CFR part 91.119



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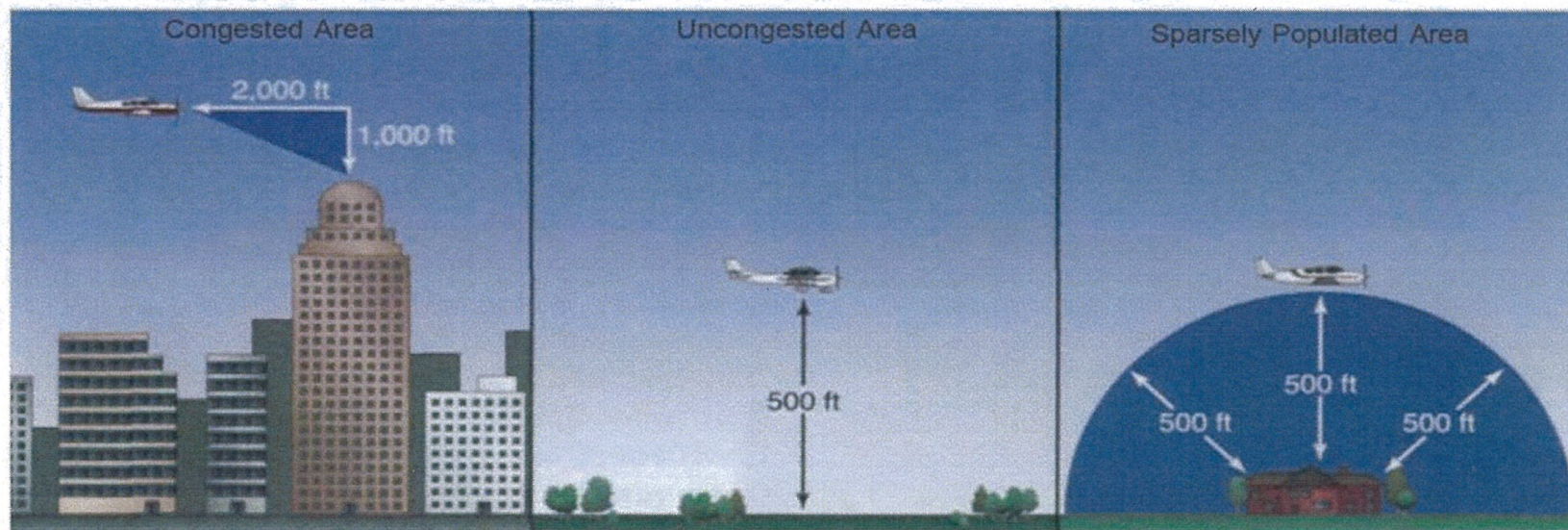


Figure 4-7. Minimum safe altitudes over congested areas are based on obstruction clearance. A congested area may be a city, town, settlement, or an open air assembly of people. Obstacle clearance over uncongested and sparsely populated areas is reduced significantly.



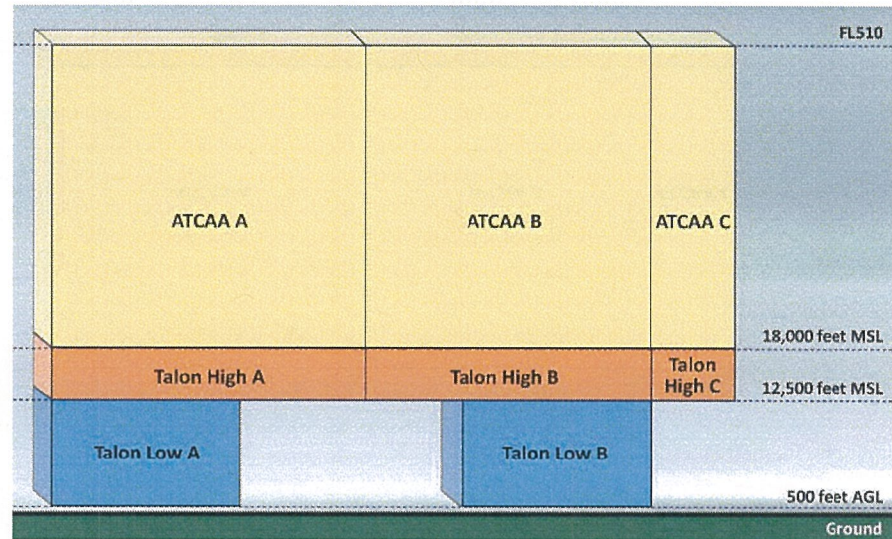
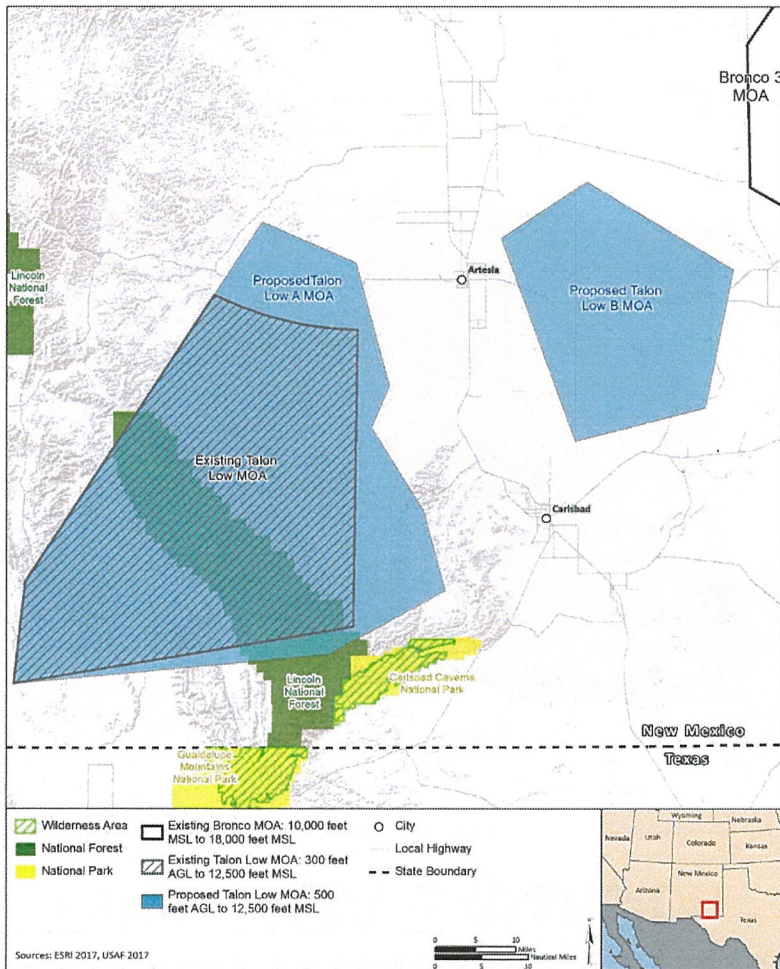
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ALTERNATIVE 1 (Talon MOA Expansion)



Alternative 1 (Low)

Talon MOA Expansion

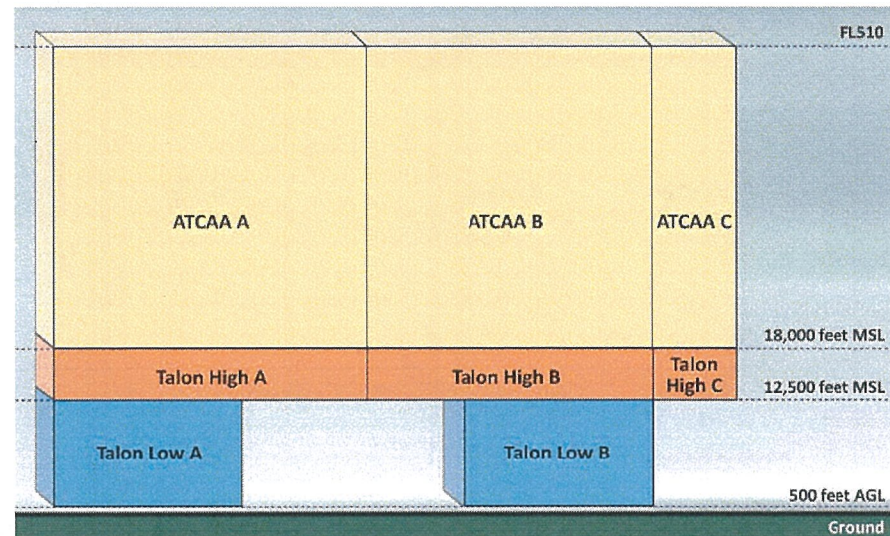
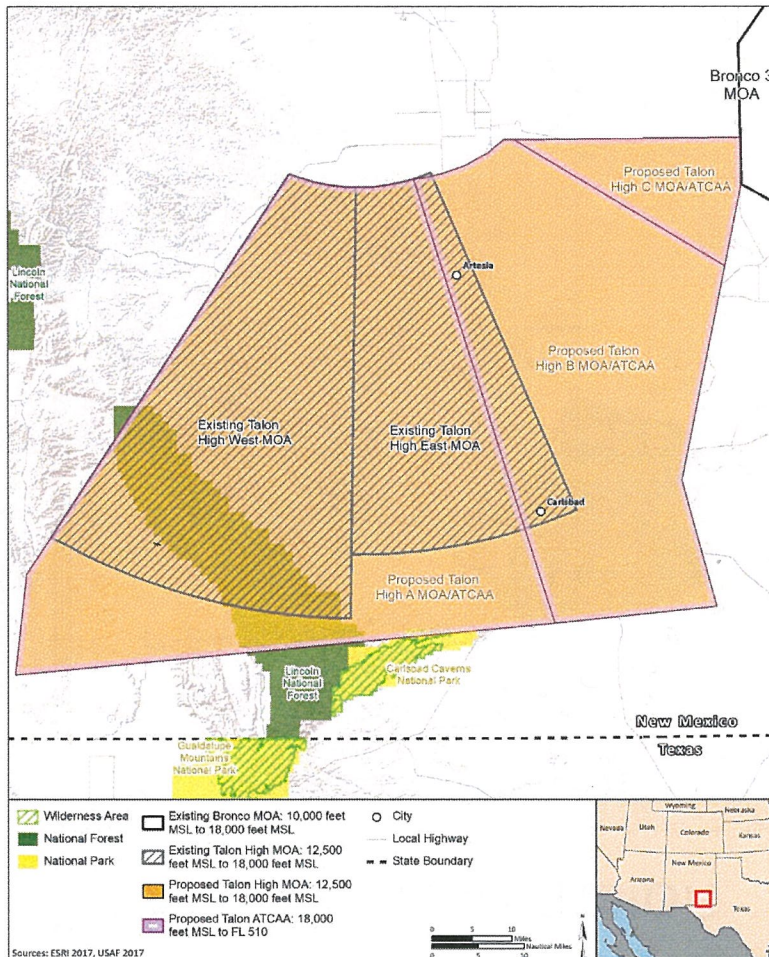


Alternative 1 (High)

Talon MOA Expansion



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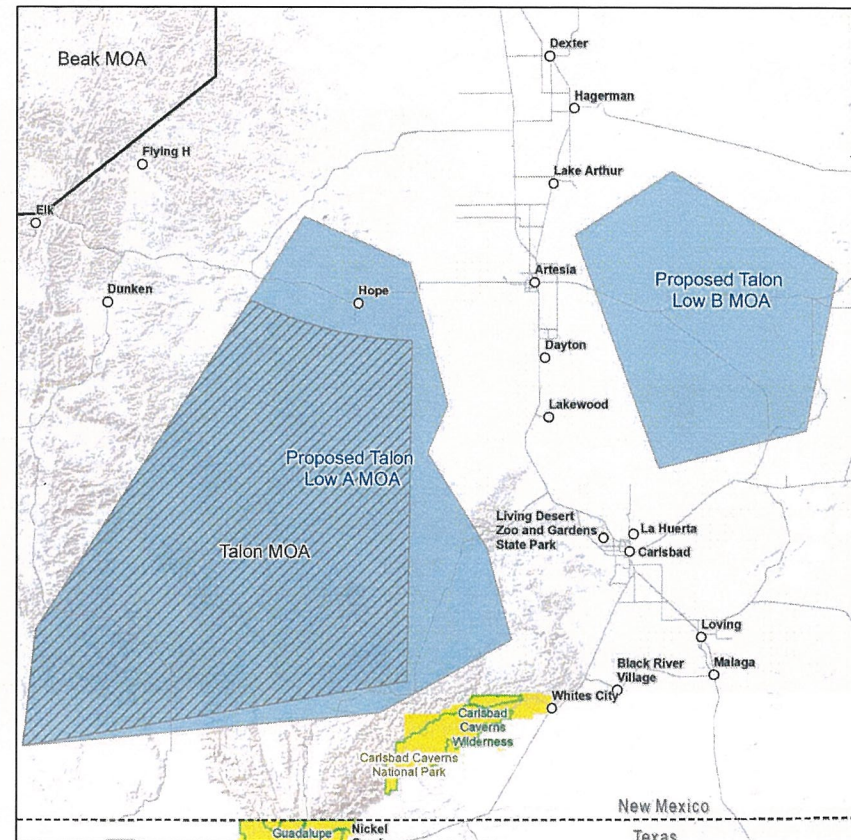
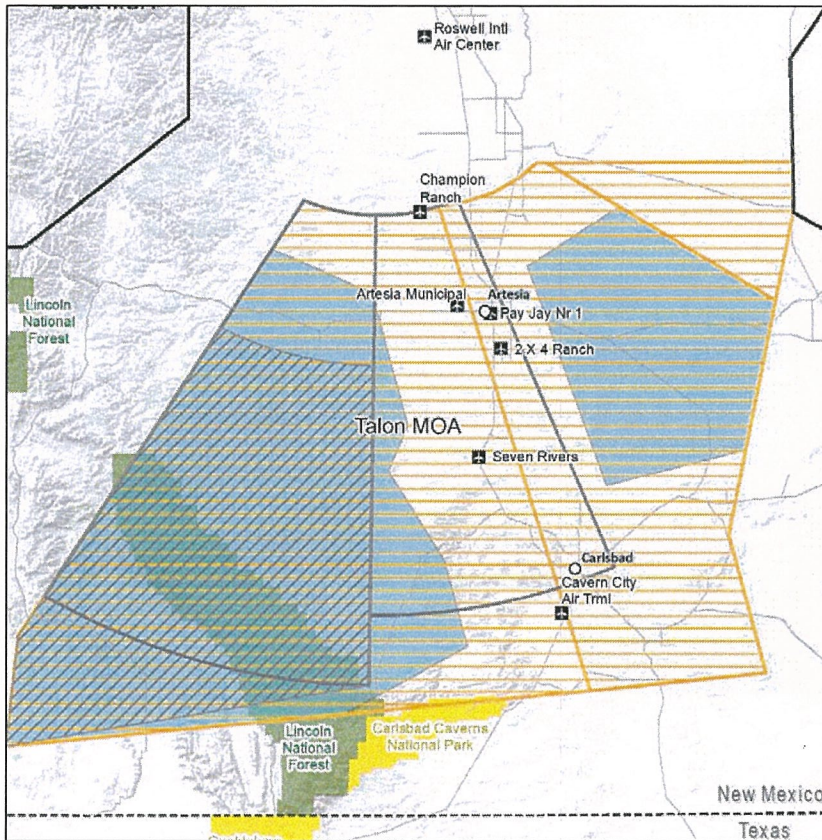


Alternative 1 (Airports & POIs)

Talon MOA Expansion



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ALTERNATIVE 2 (Western MOA Expansion)

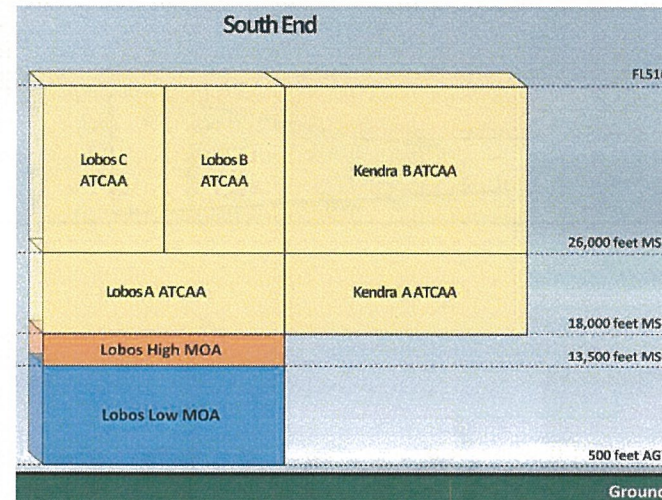
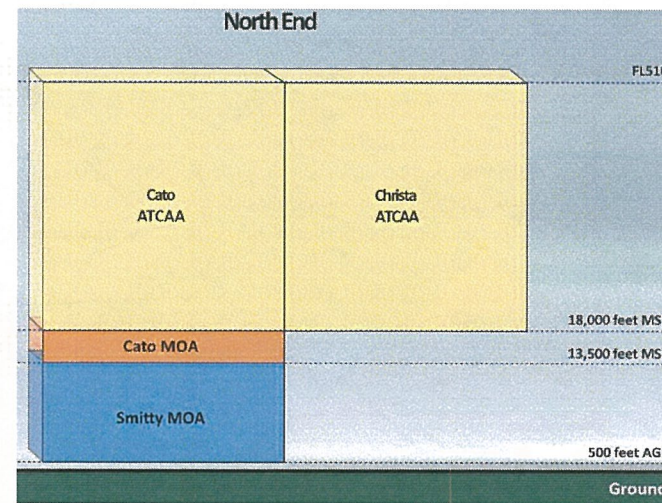
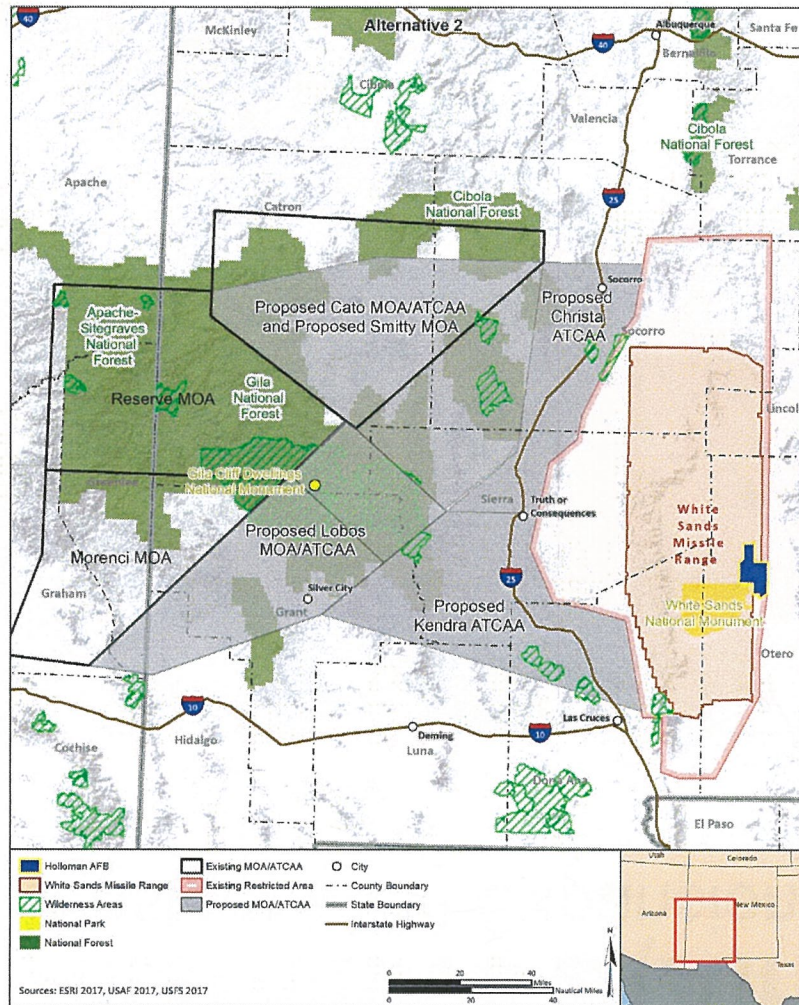


Alternative 2

Western MOA Expansion



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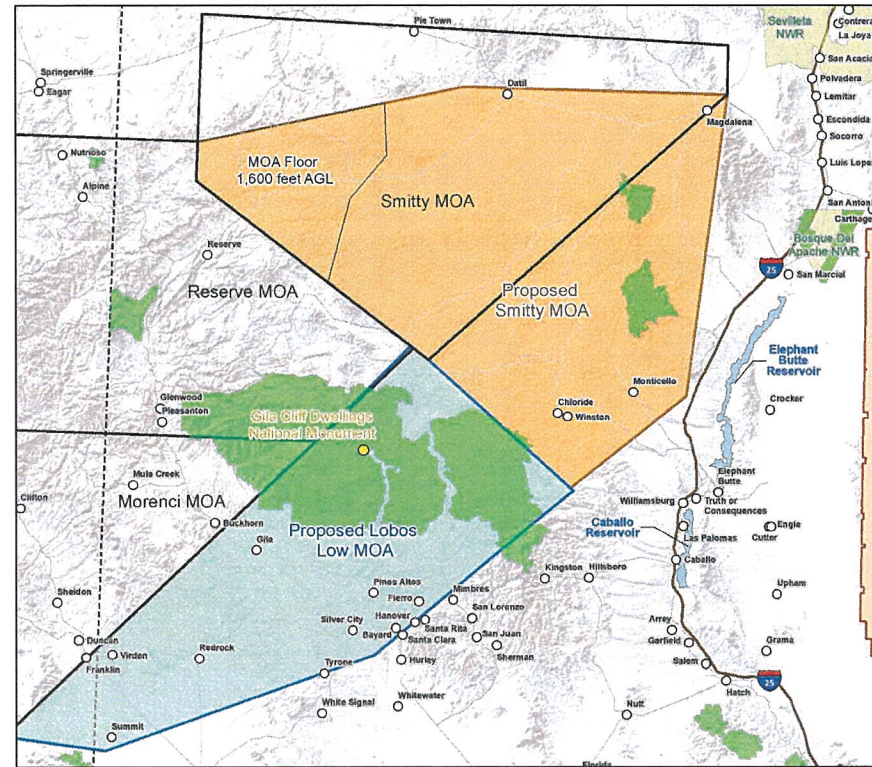
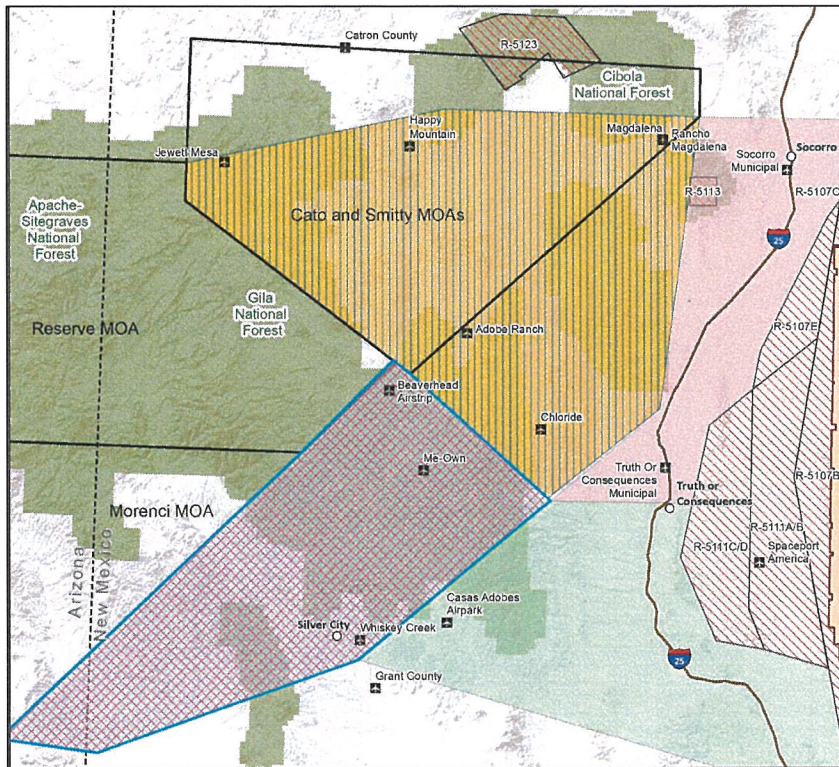


Alternative 2 (Airports & POIs)

Western MOA Expansion



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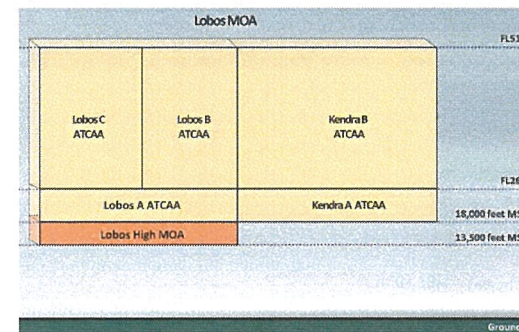
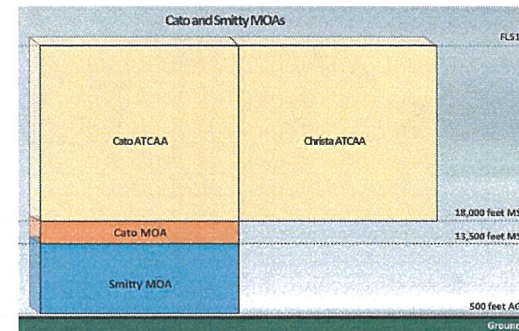
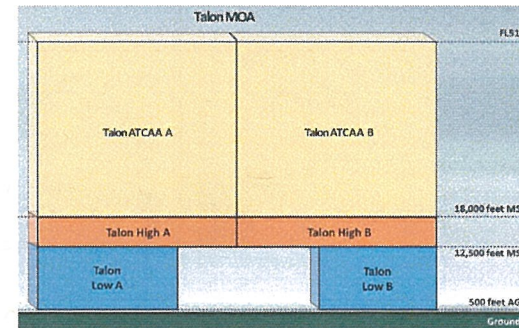
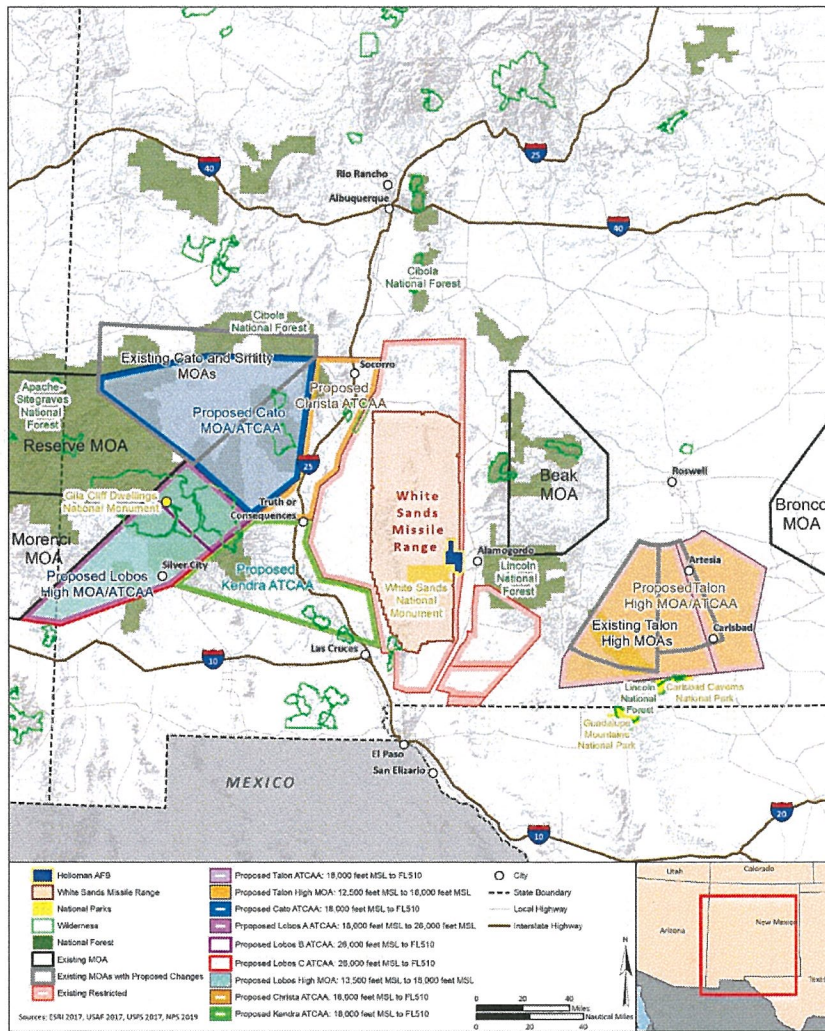
ALTERNATIVE 3 (Combination Expansion)



Alternative 3 Combination Expansion



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AMPLIFYING INFORMATION



Alternative Comparisons

Pros / Cons



Alt 1 (Talon MOA)

PROs

- 3 MOAs returned
- Low floor raised to 500 feet
- No major POI / Airport impacts
- Short transit time

CONs

- Single operating area
 - More congested ops
 - Limited alternate airspace if unusable for weather

Alt 2 (Western MOA)

PROs

- 3 MOAs returned
- 180K acres of Natl Forest no longer under airspace
- Talon MOA still utilized

CONs

- Longer transit time
- New Lobos MOA w/ 500 foot AGL floor
- 4 private / 1 public airports overlain by 500' MOA floor

Alt 3 (Combination MOA)

PROs

- 3 MOAs returned
- Smaller Talon MOA
- No Lobos Low MOA
 - Floor 13,500 feet MSL
- Distributed training
 - West MOA ~63% reduction from Alt 2
 - Talon MOA ~30% reduction from Alt 1

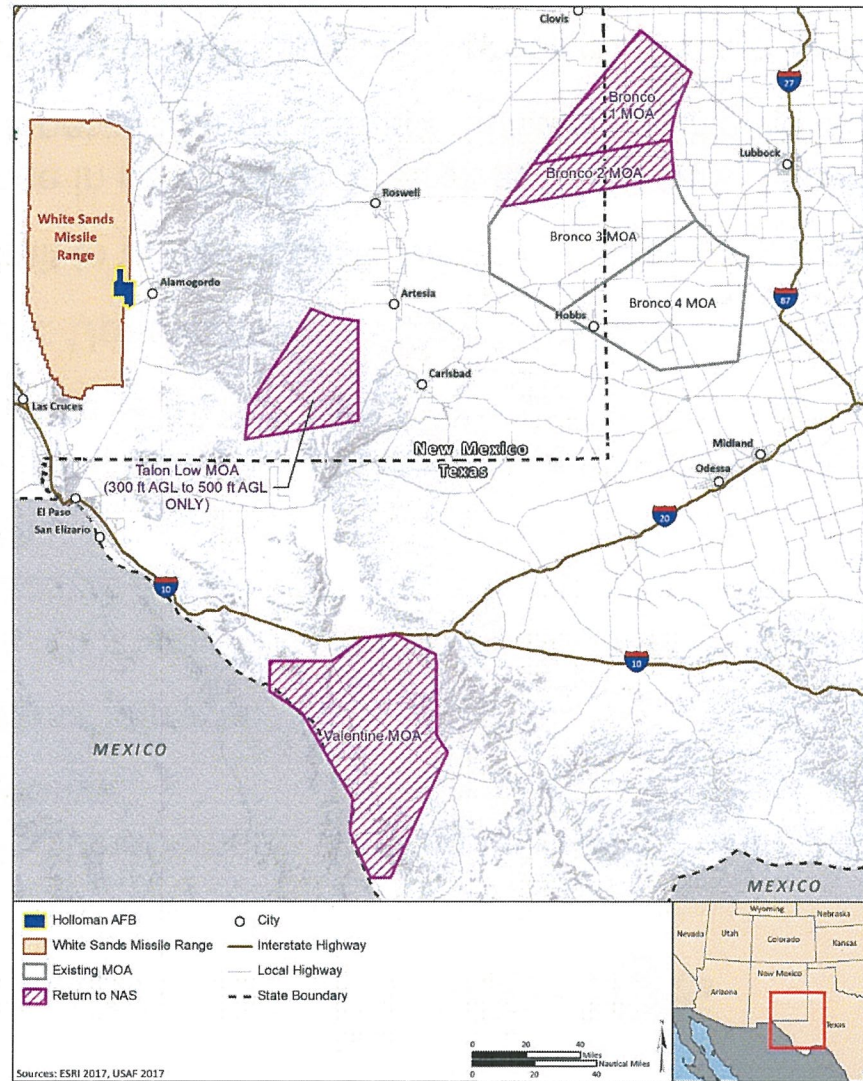
CONs

- New Lobos MOA
- 2 private airports overlain by 500' MOA floor
 - Down from Alt 2

Returned Airspace



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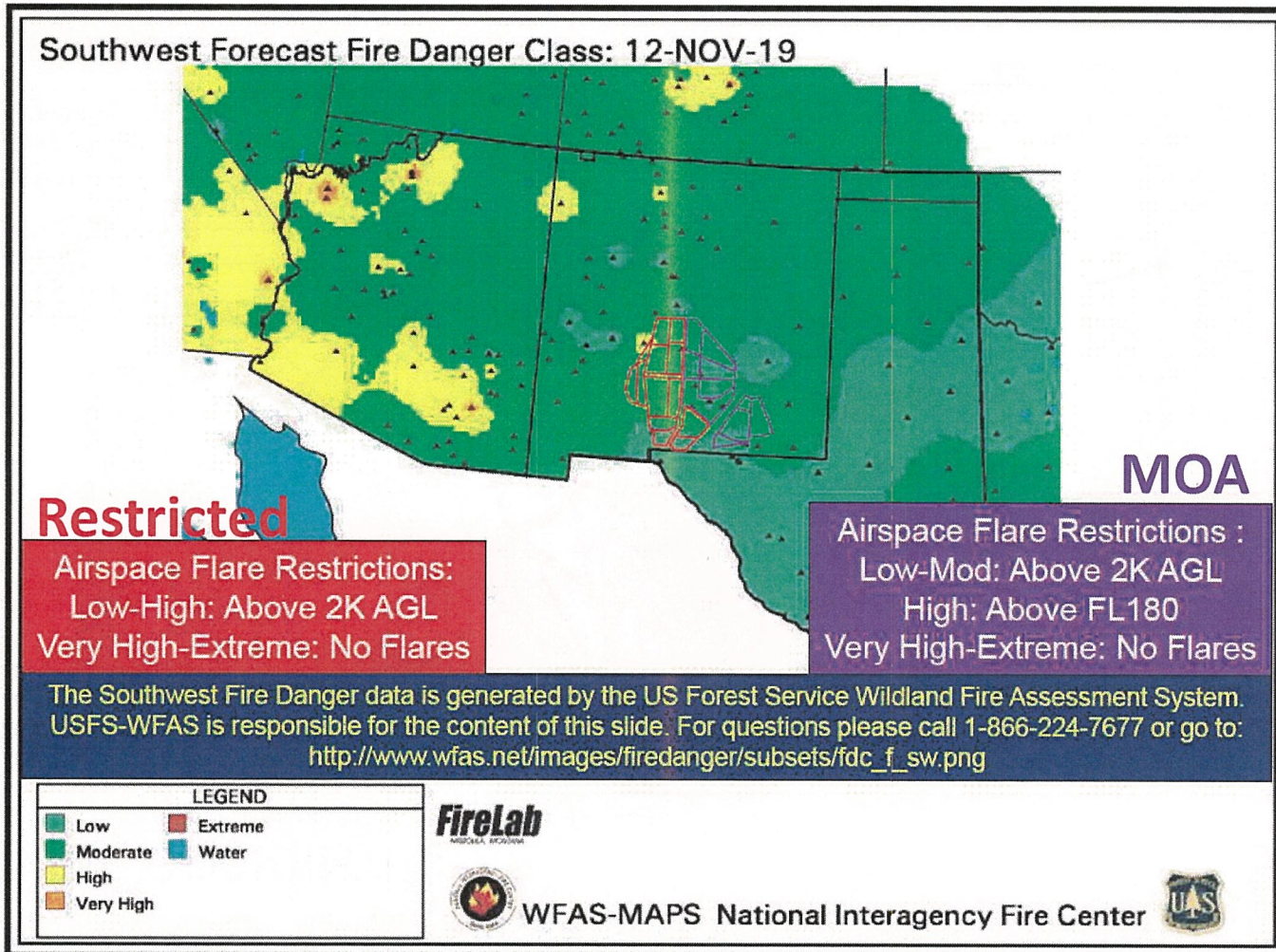


Environmental Findings

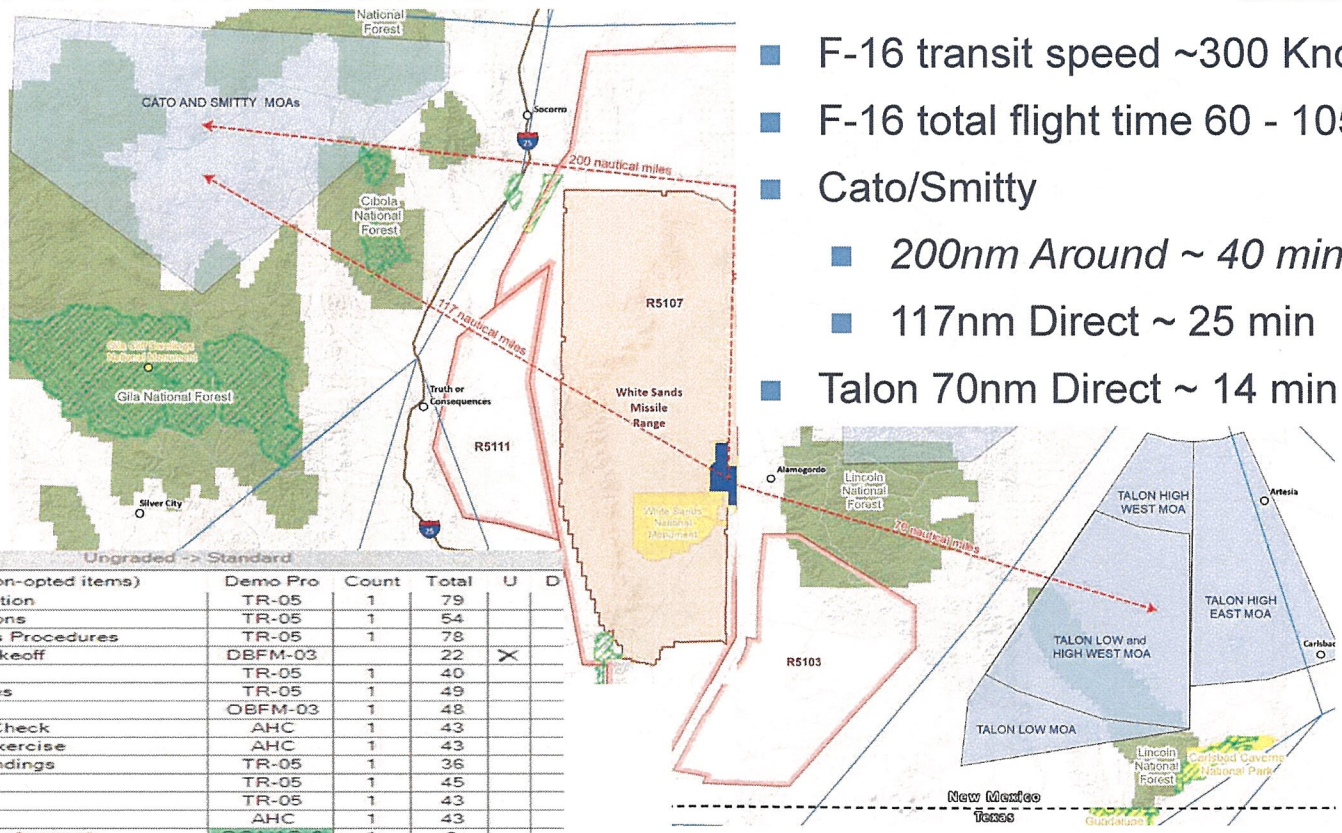


- Airspace Ops and Management: Working w/ FAA on minimized impact to civil aviation per alternative.
- Acoustic: No adverse impacts.
- Air Quality: VOCs, CO, NO_x, PM and HAPs less than thresholds of significance. Additional GHG across alternatives if sortie counts double – *no increase under current conditions*.
- Natural Resources: Minor noise impacts on wildlife below airspace. No chaff or flare impacts expected due to toxicological exposure or wildfires.
- Land Management: Up to 1.7M to 2.25M non-federal acres overlaid by airspace.
- Recreation: No limit to public access. Minor noise, but compatible with use.
- Safety: No increase in potential for overall accident rate. Minimal potential due to chaff / flare use. Operational procedures utilized to mitigate issues.
- Cultural Resource: No visual intrusions expected. Sonic booms below 1 psf; no impact to structures
- Hazardous Materials: An aircraft accident would introduce materials into the environment. Chaff / flares not expected to impact ground or water quality.

Fire Danger / Flare Mitigation



Airspace Utilization Transit Considerations

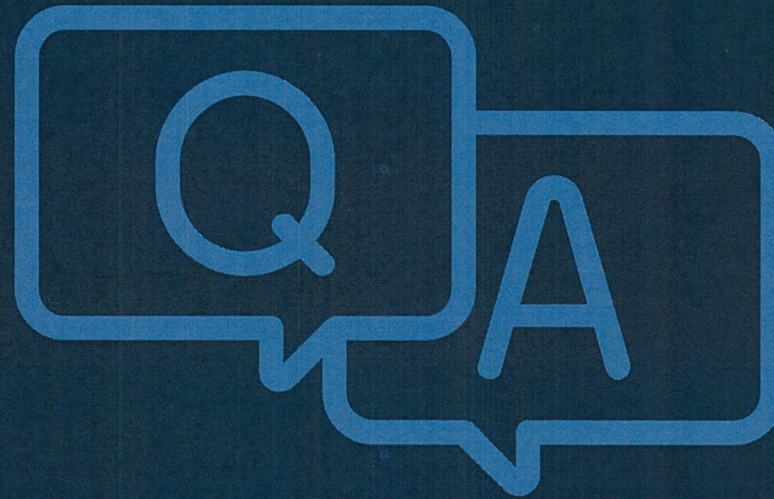


- F-16 transit speed ~300 Knots
- F-16 total flight time 60 - 105 min
- Cato/Smitty
 - 200nm Around ~ 40 min
 - 117nm Direct ~ 25 min
- Talon 70nm Direct ~ 14 min

#	Item (click to show non-opted items)	Demo Pro	Count	Total	U	D
1	001. Mission Preparation	TR-05	1	79		
2	002. Ground Operations	TR-05	1	54		
3	003. Communications Procedures	TR-05	1	78		
4	006. VMC Interval Takeoff	DBFM-03	22		X	
5	007. Departure	TR-05	1	40		
6	009. Flight Procedures	TR-05	1	49		
7	010. Fence Check	OBFM-03	1	48		
8	012. Battle Damage Check	AHC	1	43		
9	013. G-Awareness Exercise	AHC	1	43		
10	019. Patterns and Landings	TR-05	1	36		
11	023. Flight Debrief	TR-05	1	45		
12	026. Formation	TR-05	1	43		
13	031. AGSM	AHC	1	43		
14	049. 4-Ship A-A Employment	OCA/AO-0	1	6		
15	057. Air-to-Air TR Adherence	TI-06	1	20		
16	061. Surface Attack Tactics	OCA/AO-0	1	7		
17	067. PGM Employment	--	1	6		
18	074. Air-to-Surface TR Adherence	BSA-04	1	16		
19	080. Air-to-Air Threat Reactions	TI-06	1	20		
20	081. Surface-to-Air Threat Reactions	OCA/AO-0	1	18		
21	110. Communication	TR-05	1	45		
22	111. Flight Coordination	TR-05	1	45		
23	112. Mission Analysis	TR-05	1	45		
24	113. Risk Management / Decision Making	TR-05	1	45		
25	114. Situational Awareness	TR-05	1	45		
26	115. Task Management	TR-05	1	45		



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QUESTIONS?



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COMPARISON OF ENVIRONMENTAL IMPACTS



Table ES-4. Comparison of Environmental Impacts

Alternative 1	Alternative 2	Alternative 3	No Action Alternative
Airspace Operations and Management			
<ul style="list-style-type: none"> • Civilian aircraft operating under VFR could transit the MOAs. • Some civilian aircraft operating under IFR below 12,500 feet MSL would be required to be re-routed around Talon Low MOAs A/B when they are active. • Some civilian aircraft operating under IFR above 12,500 feet MSL would be either routed around Talon High MOAs A/B/C when they are active, or stay below 12,500 feet MSL for a portion of their route to stay beneath the SUA. • Some civilian aircraft operating under IFR would be re-routed around the Talon ATCAAs when active. • There is no anticipated impact to local public or private airports beneath the proposed Talon MOA. 	<ul style="list-style-type: none"> • Civilian aircraft operating under VFR could transit the MOAs. • Some civilian aircraft operating under IFR would be required to be re-routed around the proposed Smitty, Cato, and Lobos MOAs, and Christa and Kendra ATCAAs when they are active. Most of these deviations would be less than a minute. • The Catron County Airport, which is currently under the existing Smitty MOA, would no longer be under any SUA. • The Adobe Ranch and Chloride airstrips would lie beneath the proposed Smitty MOA boundaries. Aircraft using these airstrips would be VFR and would have to check NOTAMS to be aware of the MOA operating schedules. • The Beaverhead and Me-Own airstrips and the Whiskey Creek Airport would lie beneath the proposed Lobos Low MOA. Aircraft using these airstrips would be VFR and would have to check NOTAMS to be aware of the MOA operating schedules. • The Socorro Municipal and Truth or Consequences Municipal Airports would lie beneath the proposed Christa ATCAA. The ATCAA would begin at 18,000 feet MSL and would not impact the airports when active. 	<ul style="list-style-type: none"> • Alternative 3 results in impacts that are less than any described in Alternatives 1 or 2, since the total operations would be spread across the east area (Talon MOAs/ATCAAs) and the west area (Cato and Smitty MOAs, Lobos MOAs/ATCAA, and the Christa/Kendra ATCAAs). • Talon High A and B MOAs would be used 30 percent less than Alternative 1, and impacts to civil aviation would be reduced proportionally. • The use of Talon Low A MOA would be reduced by 20 percent, and the use of Talon Low B MOA would be reduced by 54 percent, when compared to Alternative 1. The impacts to civil aviation and local airports would be reduced proportionally. • The use of Cato MOA would be reduced by 60 percent, when compared to Alternative 2. The impacts to civil aviation would be reduced proportionally. • The use of Smitty MOA would be reduced by 62 percent, when compared to Alternative 2. The impacts to civil aviation would be reduced proportionally. • The use of proposed Lobos High MOA would be reduced by 67 percent, when compared to Alternative 2. The impacts to civil aviation would be reduced proportionally. • The proposed Lobos Low MOA would not exist under Alternative 3, so all impacts to civil air traffic and local airports due to the establishment of proposed Lobos Low MOA in Alternative 2 would be eliminated. 	<ul style="list-style-type: none"> • No change to existing airspace operations and management.

Table ES-4. Comparison of Environmental Impacts (cont.)

Alternative 1	Alternative 2	Alternative 3	No Action Alternative
Airspace Operations and Management (cont.)			
	<ul style="list-style-type: none"> The Casas Adobes Airpark would lie beneath the proposed Kendra ATCAA. The ATCAA would begin at 18,000 feet MSL and would not impact the airport when active. 	<ul style="list-style-type: none"> The use of proposed Christa ATCAA would be reduced by 60 percent, when compared to Alternative 2. The impacts to civil aviation would be reduced proportionally. The use of proposed Kendra ATCAA would be reduced by 67 percent, when compared to Alternative 2. The impacts to civil aviation would be reduced proportionally. 	
Acoustic Environment			
<ul style="list-style-type: none"> There would be no adverse impacts to hearing or health, and there would be no land use restrictions related to noise beneath the proposed Talon MOA. It would be anticipated that there would be a perceptible increase to the subsonic noise levels attributed to aircraft activity to some areas beneath the proposed Talon MOA and ATCAA. The greatest change in DNL would occur at Loco Hills, where the estimated DNL from aircraft operations would be 56 DNL. It would be near to the 55 DNL threshold set by USEPA for which adverse noise effects would not be expected to occur. The projected DNL would also be well below the 65 DNL threshold for land use restrictions. It would be anticipated that less than 6.48 percent of the population beneath the proposed airspace would be highly annoyed. 	<ul style="list-style-type: none"> There would be no adverse impacts to hearing or health, and there would be no land use restrictions related to noise beneath the proposed MOAs. It would be anticipated that there would be a perceptible increase to the subsonic noise levels attributed to aircraft activity to some areas beneath the proposed MOAs and ATCAAs. The greatest change in DNL would be at Magdalena and Old Horse Springs, which would have values of 50 DNL. All values would be well below the 65 DNL threshold for land use restrictions. 1.66 percent of the population beneath the proposed airspace would be expected to be highly annoyed at the subsonic noise. Noise levels from supersonic activity at all of the POIs would be less than 42 CDNL which is the lowest CDNL with a relationship to annoyance. The anticipated CDNL would not exceed the threshold identified by USEPA that would be harmful to public health. 	<ul style="list-style-type: none"> There would be no adverse impacts to hearing or health, and there would be no land use restrictions related to noise beneath the proposed MOAs. The greatest proposed increase in DNL value would occur at Loco Hills, with a projected 53 DNL. All values would be well below the 65 DNL threshold for land use restrictions. Approximately 3.31 percent of the population beneath the proposed airspace would be expected to be highly annoyed based on the highest DNL value. Noise levels from supersonic activity at all of the POIs would be less than 42 CDNL which is the lowest CDNL with a relationship to annoyance. Overpressures from sonic booms would be similar or less than those described for Alternatives 1 or 2 and would not be expected to cause structural damage. 	<ul style="list-style-type: none"> No change to the acoustic environment. Aircraft noise in the existing training airspace would continue as it does currently.

Table ES-4. Comparison of Environmental Impacts (cont.)

Alternative 1	Alternative 2	Alternative 3	No Action Alternative
Acoustic Environment (cont.)			
<ul style="list-style-type: none"> Supersonic noise levels at the POIs would be less than the 42 CDNL which is the lowest CDNL with a relationship to annoyance. The anticipated CDNL would not exceed the threshold identified by USEPA that would be harmful to public health. Overpressures from sonic booms under the Proposed Action would not be expected to cause structural damage. 	<ul style="list-style-type: none"> Overpressures from sonic booms under the Proposed Action would not be expected to cause structural damage. 		
Air Quality			
<ul style="list-style-type: none"> The estimated criteria pollutant emissions associated with Alternative 1 would not alter the current attainment status of Chaves, Eddy, or Otero Counties. Criteria pollutant emissions would increase though the proposed net increases for VOCs, CO, SO₂, PM, and HAPs would be less than the comparative thresholds used as a guide for assessing significance. An additional 125,518 tons of GHG emissions would be created. 	<ul style="list-style-type: none"> The estimated criteria pollutant emissions associated with Alternative 2 would not alter the attainment status of Sierra, Catron, Socorro, or Hidalgo Counties in New Mexico or Graham County in Arizona. Criteria pollutant emissions would increase though the proposed net increases for VOCs, CO, NO_x, PM, and HAPs would be less than the comparative thresholds used as a guide for significance. The SO₂ net change in emissions, at 3.25 tons per year, does not exceed the 100 ton per year <i>de minimis</i> threshold under General Conformity (applies to Grant County, New Mexico and Greenlee County, Arizona). An additional 102,525 tons of GHG emissions would be created. 	<ul style="list-style-type: none"> The estimated criteria pollutant emissions associated with Alternative 3 would not alter the attainment status of Chaves, Eddy, Otero, Hidalgo, Sierra, Catron, or Socorro Counties in New Mexico or Graham County in Arizona. Criteria pollutant emissions would increase though the proposed net increases for VOCs, CO, SO₂, PM, and HAPs would be less than the comparative thresholds used as a guide for assessing significance. The SO₂ emissions would not exceed the <i>de minimis</i> threshold (applicable to Grant County, New Mexico and Greenlee County, Arizona). An additional 122,997 tons of GHGs would be created. 	<ul style="list-style-type: none"> No change to the existing air quality.

Table ES-4. Comparison of Environmental Impacts (cont.)

Alternative 1	Alternative 2	Alternative 3	No Action Alternative
Natural Resources			
<ul style="list-style-type: none"> Based on estimated noise levels, the proposed pilot training in the proposed Talon MOA would be expected to have minor impacts to wildlife inhabiting land beneath the proposed airspace. Based on toxicological studies on chaff and flare residual materials, impacts to biological resources are not expected. The possibility of an animal being struck by a dud flare, undeployed clump of chaff, or residual materials would be extremely remote. The possibility of a wildfire from flare usage impacting wildlife habitat would be remote considering the release altitude under the Proposed Action. Flares would not be released below 2,000 feet AGL and are designed to burn completely within the first 400 feet of descent. The risk of wildfires from flare usage would be mitigated by operational constraints, including the prohibition of flares during periods of “Very High” or “Extreme” National Fire Danger Ratings. During periods of “High” fire danger, aircraft would not use flares below 18,000 feet MSL. Domestic animal responses to low overflights vary, but typically include startling and eventually habituating to the noise. Low overflights are not expected to occur with any sort of regularity or frequency at any given location. 	<ul style="list-style-type: none"> The potential impacts to wildlife from aircraft noise and use of chaff and flares would be the same as those described for Alternative 1. No significant impacts to special-status species expected. The potential impacts associated with the proposed training activities to special-status species would be the same as those described for wildlife. Consultation with USFWS on impacts to species protected by the Endangered Species Act is ongoing. 	<ul style="list-style-type: none"> The potential impacts to wildlife from aircraft noise and use of chaff and flares would be the same as those described for Alternative 1. No significant impacts to special-status species expected. The potential impacts associated with the proposed training activities to special-status species would be the same as those described for wildlife. Consultation with the USFWS on impacts to species protected by the Endangered Species Act is ongoing. 	<ul style="list-style-type: none"> No change to the existing natural resources.

Table ES-4. Comparison of Environmental Impacts (cont.)

Alternative 1	Alternative 2	Alternative 3	No Action Alternative
Natural Resources (cont.)			
<ul style="list-style-type: none"> Horses are likely to be startled by low overflights and possibly bolt from the noise and the safety of the rider or handler would be of concern. Low overflights are not expected to occur with any sort of regularity or frequency at any given location. No significant impacts to special-status species expected. The potential impacts associated with the proposed training activities to special-status species would be the same as those described for wildlife. Consultation with the USFWS on impacts to species protected by the Endangered Species Act is ongoing. 			
Land Management			
<ul style="list-style-type: none"> Nearly 1.6 million acres including Brantley and Avalon Reservoirs, Living Desert Zoo and Gardens, and the towns of Carlsbad, Artesia, La Huerta, Atoka, Happy Valley, and Livingston Wheeler lie beneath the existing Talon Low MOA, the floor of which would be raised from 300 to 500 feet AGL. The configuration of Talon MOA proposed under Alternative 1 would overlie an additional 1.17 million acres, primarily non-Federal lands, including the town of Loving, and land managed by the BLM in addition to smaller areas of the Lincoln National Forest and the extreme northern boundary of Carlsbad Caverns National Park. 	<ul style="list-style-type: none"> More than 2.25 million acres of land underlie the existing configuration of the Cato and Smitty MOAs. These lands are primarily non-Federal, including the town of Magdalena, or are managed by the BLM or USFS, including the Cibola, Gila, and Apache-Sitgreaves National Forests. The proposed configuration of the Cato and Smitty MOAs would overlie an additional 297,442 acres of lands, primarily non-Federal land and larger areas of the Cibola and Gila National Forests, including the Apache Kid and Aldo Leopold Wildernesses. Approximately 180,000 acres of the Apache-Sitgreaves National Forest that lie under the current configuration of the Cato and Smitty MOAs would not underlie the new configuration, and this airspace would be returned to the NAS. 	<ul style="list-style-type: none"> The proposed 10,000 annual flights would be divided among the Talon MOA to the east of Holloman AFB and the Cato, Smitty, and Lobos MOAs to the west, resulting generally in dispersal over a larger area and less frequent exposure to overflight noise on lands beneath all airspace. The configuration of Talon MOA proposed by Alternative 3 would not include Talon High C, resulting in approximately 150,000 fewer acres of BLM and non-Federal land lying beneath the configuration of Talon MOA. No areas beneath the configuration of Talon, Cato, Smitty, and Lobos MOAs and the Christa and Kendra ATCAAs proposed under Alternative 3 would be exposed to a noise level in excess of 65 DNL, though some increases in noise levels, similar to 	<ul style="list-style-type: none"> No change to existing land management.

Table ES-4. Comparison of Environmental Impacts (cont.)

Alternative 1	Alternative 2	Alternative 3	No Action Alternative
Land Management (cont.)			
<ul style="list-style-type: none"> • No areas would be exposed to a noise level in excess of 65 DNL, though some increases in noise levels from military aircraft would be experienced beneath the proposed Talon Low A and B MOAs. • The communities of Loco Hills and Loving lie beneath the expanded boundaries of Talon MOA and would experience an increase in noise (56 and 42 DNL, respectively) from proposed aircraft operations within the MOA. While these levels would be perceptible, they are well below the threshold of 65 DNL considered to be incompatible with residential and recreational land uses. Additionally, due to the size of the airspace, single event noise-related impacts in these areas associated with direct aircraft flyovers would be infrequent, temporary, and short-term. 	<ul style="list-style-type: none"> • The proposed Lobos MOA would overlie a total of nearly 1.5 million acres of federally-managed land, including nearly 1 million acres of the Gila National Forest that includes the Aldo Leopold and Gila Wildernesses, lands managed by the Las Cruces District and Safford Field Offices of the BLM, and the Gila Cliff Dwellings National Monument. Additionally more than 1.1 million acres of non-Federal land lie beneath the proposed Lobos MOA including the communities of Silver City, Santa Clara, Arenas Valley, and Tyrone. • The proposed Christa and Kendra ATCAAs would overlie a total of more than 1.35 million acres of federally-managed land including nearly more than 230,000 acres of the USFS land that includes the Aldo Leopold Wilderness, lands managed by the Las Cruces District and Socorro Field Offices of the BLM, The Bosque del Apache National Wildlife Refuge, the BOR-managed Elephant Butte and Caballo Reservoirs, and the Jornada Experimental Station. • Approximately 387,000 acres of non-Federal land lie beneath the proposed ATCAAs, including: Hurley, Bayard, Mimbres, Hatch, Doña Ana, Radium Springs, Salem, Placitas, Las Cruces, and Truth or Consequences. 	<p>those experienced under Alternatives 1 and 2, would occur.</p> <ul style="list-style-type: none"> • While these levels would be perceptible, they are well below the threshold of 65 DNL considered to be incompatible with residential and recreational land uses. Additionally, due to the size of the airspace, single event noise-related impacts in these areas associated with direct aircraft flyovers would be infrequent, temporary, and short-term. 	

Table ES-4. Comparison of Environmental Impacts (cont.)

Alternative 1	Alternative 2	Alternative 3	No Action Alternative
Land Management (cont.)			
	<ul style="list-style-type: none"> • The floor of these ATCAAs would be 18,000 feet MSL, consequently underlying lands such as the towns of Truth or Consequences and Socorro and managed lands like Bosque del Apache National Wildlife Refuge and Elephant Butte and Caballo Reservoirs would not experience any perceptible increase in noise above background levels. • No areas beneath the configuration of Cato, Smitty, and Lobos MOAs or the Christa and Kendra ATCAAs proposed under Alternative 2 would be exposed to a noise level in excess of 65 DNL, though some increases in noise levels would be experienced beneath the proposed airspace. • While these levels would be perceptible, they would be well below the threshold of 65 DNL considered to be incompatible with residential and recreational land uses. Additionally, due to the size of the airspace, single event noise-related impacts in these areas associated with direct aircraft flyovers would be infrequent, temporary, and short-term. 		
Recreation			
<ul style="list-style-type: none"> • The proposed airspace modifications would not alter, prohibit, or otherwise limit the public's access to recreational areas beneath the MOA. • The proposed pilot training would generate noise, which could detract from the public's enjoyment of outdoor recreational areas. 	<ul style="list-style-type: none"> • The impacts to recreation are similar to those described for Alternative 1, however recreational users of the lands under the ATCAAs would not experience an increase in noise from aircraft activity. 	<ul style="list-style-type: none"> • The impacts to recreation are similar to those described for Alternatives 1 and 2, however the potential noise impacts under Alternative 3 would be less than the potential noise impacts in Alternatives 1 and 2, and none of the projected noise levels would be considered incompatible with recreational uses. 	<ul style="list-style-type: none"> • No change to existing recreation resources.

Table ES-4. Comparison of Environmental Impacts (cont.)

Alternative 1	Alternative 2	Alternative 3	No Action Alternative
Recreation (cont.)			
<ul style="list-style-type: none"> Recreational users of some of the lands under the airspace would experience slight noise increases, but the projected noise would not be considered incompatible with recreational land uses. Some training activity would occur at night (approximately 10 percent of the operations); therefore, people camping on land beneath the airspace would have the potential to hear aircraft after dark. Many of the recreational areas beneath the proposed Talon MOA are under the existing Talon MOA and are currently subjected to aircraft training activity. Sonic booms, if heard, would be a sudden and startling noise that could adversely impact the experience of recreational users. 			
Socioeconomics			
<p>Impacts Common to All Action Alternatives:</p> <ul style="list-style-type: none"> The Proposed Action would not result in an increase in personnel at Holloman AFB or within the region. Therefore, the population within the ROI would remain unchanged. Given the low expected DNL values and the distribution of the training activity across such a large area, it would not be expected that the Proposed Action would have any quantifiable impacts to the existing housing values within the ROI. Noise analysis indicates that the average noise resulting from the Proposed Action would not be at a level that would be considered incompatible with recreational land uses. Though studies show that noise from a number of sources, including aircraft, can affect visitor experience and enjoyment of parks and forests, it is not clear how such experience affects visitation. While it is possible that noise could reduce visitation, potentially reducing contributions to local economies, it is not possible to quantify the economic impact. 			<ul style="list-style-type: none"> No change to existing socioeconomics.
Environmental Justice			
<p>Impacts Common to All Action Alternatives:</p> <ul style="list-style-type: none"> No significant impacts were identified in association with any resource areas that would be anticipated to adversely impact the health or environment of minority or low-income populations living under the areas affected by Alternative 1. Noise levels in the airspace would remain below 65 DNL. Because there would not be significant impacts that would adversely affect minority or low-income populations, there would be no impact to environmental justice. 			<ul style="list-style-type: none"> No change to environmental justice.

Table ES-4. Comparison of Environmental Impacts (cont.)

Alternative 1	Alternative 2	Alternative 3	No Action Alternative
Safety			
<p>Impacts Common to All Action Alternatives:</p> <ul style="list-style-type: none"> • Ground operations and maintenance procedures conducted by Holloman AFB personnel would not change from current conditions. All activities would continue to be conducted in accordance with applicable regulations, Technical Orders, and Air Force Occupational Safety and Health standards. There would be no aspects of the Proposed Action that would be expected to create new or unique ground safety issues or create additional risk. • Priority to life-flight status would not change with implementing the Proposed Action. Military training in the affected airspace would be stopped during such an event. • In the unlikely event of a crash within the proposed airspace area, local first responders would likely be first on the scene given the distance from Holloman AFB. Holloman AFB crash response would continue to follow standard procedures and plans. • Land within the proposed MOAs would continue to be managed for fire risk by local owners and agencies that manage that land. F-16 operations currently occur within airspace associated with Holloman AFB and have not presented an increased fire risk. • The type of training proposed would be the same as what is performed currently, and there would be no aspect of the Proposed Action that would increase the chances of Class A mishaps. The Air Force would make every effort to locate, document, and then clean up debris resulting from any accident. • It would be unlikely that F-16s using the proposed MOAs would generate vortices of sufficient strength or duration to reach the ground and pose a safety risk. • The safety risk to people under or immediately adjacent to the MOAs in which chaff and flares would be dispensed would be minimal. • Dud flares may be mishandled if discovered on non-DoD lands by the uninformed public; however, the probability of such an occurrence would be extremely low. • Additional fire restrictions for flare use would be implemented to reduce the risk of fires. Flares would not be used at altitudes less than 18,000 feet MSL under “High” fire conditions and flares would not be used at all under “Very High” or “Extreme” fire conditions. • The overall potential for bird aircraft strikes would not be anticipated to be statistically different with implementation of any of the alternatives. F-16 aircrews operating in the MOAs would be required to follow applicable procedures outlined in the Holloman AFB BASH Plan. • Vertical obstructions would be noted and avoided as they currently are in existing areas where obstructions intrude into proposed airspace. 			<ul style="list-style-type: none"> • No change to existing safety conditions or procedures.
Cultural Resources			
<p>Impacts Common to All Action Alternatives:</p> <ul style="list-style-type: none"> • The Proposed Action would result in flights being distributed over a vast area of airspace, most of which would occur above 10,000 feet AGL. Due to the altitude of the overflights, small size of the aircraft, and the high speeds, the aircraft are not expected to be a visual intrusion at archaeological or architectural sites. • Chaff and flares deployed from the aircraft would not pose a visual intrusion. The likelihood of residual chaff and flare material to land at archaeological or architectural sites would be very rare and would not have an adverse effect on these resources. • Sonic booms would occur during supersonic flights, however, no structural damage to NRHP-listed archaeological or architectural resources would be anticipated since the overpressures would not exceed 1 psf. The risk of damaging structures at this level of psf would be very low, one in a billion. 			<ul style="list-style-type: none"> • No change to existing cultural resources.

Table ES-4. Comparison of Environmental Impacts (cont.)

Alternative 1	Alternative 2	Alternative 3	No Action Alternative
Cultural Resources (cont)			
To date, no known traditional cultural properties have been identified through government-to-government consultation, and it would be expected these resources would not be impacted.			
Hazardous Materials			
Impacts Common to All Action Alternatives: <ul style="list-style-type: none"> • There would be the potential for hazardous materials to be introduced into the environment in the case of an aircraft mishap. However, aircraft mishaps are rare, and in the event that one occurs, the Air Force has SOPs to identify potential hazardous materials and situations, protect responding personnel and the environment from immediate hazards, and to provide guidelines for the ultimate cleanup and disposal of the crash residues. • The components of chaff are not considered toxic and distribution of chaff filaments (primarily aluminum and silica) and residual materials would not affect ground or water quality. • The components and combustion materials of flares are not considered toxic. The amount of magnesium dispersed from flares is too small to result in levels that would be associated with acute exposure. 			<ul style="list-style-type: none"> • No change to existing hazardous materials.

Legend: AFB-Air Force Base; AGL-Above Ground Level; ATCAA-Air Traffic Control Assigned Airspace; BASH-Bird Aircraft Strike Hazard; BLM-Bureau of Land Management; BOR-Bureau of Reclamation; CDNL-C-weighted Day-Night Average Sound Level; CO-Carbon Monoxide; DNL-Day-Night Average Sound Level; DoD-Department of Defense; FAA-Federal Aviation Administration; GHG-Greenhouse Gas; HAP-Hazardous Air Pollutant; IFR-Instrument Flight Rules; MOA-Military Operations Area; MSL-Mean Sea Level; NOTAM-Notice to Airmen; NO_x-Nitrogen Oxides; NRHP-National Register of Historic Places; PM-Particulate Matter; POI-Point of Interest; psf-Pounds per Square Foot; ROI-region of influence; SO₂-Sulfur Dioxide; SOP-Standard Operating Procedure; USFS-U.S. Forest Service; USFWS-U.S. Fish and Wildlife Service; VOC-Volatile Organic Compound; VFR-Visual Flight Rules.