

October 7, 2024

Arizona Regional Airspace EIS c/o Stantec  
501 Butler Farms Rd. Suite H  
Hampton, VA 23666

### **Comments on the USAF Draft EIS for Regional Special Use Airspace Optimization**

I am Dr. Diane (“Dinah”) Davidson, a former rainforest biologist living in Cave Creek Canyon in rural Portal, AZ, on the eastern slope of the Chiricahua Mountains. I was introduced to this area as a graduate student in Biology (Ecology) and returned to teach multiple University of Utah field classes. My teaching alternated with research in the Peruvian Amazon, Borneo and New Guinea, before I retired to this uniquely biodiverse region of our country.

I write in response to the alternative proposals in the Department of the Air Force’s EIS for Regional Special Use Airspace Optimization. Although my comments on threats posed by these activities apply more broadly within MOAs of southern Arizona, they are targeted especially to the proposed expansion/intensification of activities at the Tombstone MOA, which crosses the Chiricahua Mountains into New Mexico’s Bootheel. **Because of the special biological and ecological significance of this area, I would prefer to have *no* military training flights here, and to have *all* such flights reserved to the unpopulated and government controlled Goldwater Range, but that alternative is not offered. Therefore, I strongly urge you to adopt the ‘no-action’ alternative (Alternative 1).**

#### **Inadequacies of Process**

I also request that the comment period on this EIS be delayed at least for 60-90 days to allow opportunity for the public involvement required by NEPA regulations. Additional in-person hearings should be held in population centers in Cochise County, the area most affected by proposed changes in boundaries of the Tombstone MOA and activities therein. Added hearings are also warranted in tribal lands. Virtual hearings in both tribal and rural lands discriminate against people living in areas with inadequate broadband service. For those in the Tombstone MOA, in-person hearings during both the scoping and EIS review were limited (intentionally?) to remote tiny or small communities where attendance could be anticipated to be light. Furthermore, despite having many AirForce representatives there, none seemed well enough informed to answer attendees’ questions (or were permitted to do so), and questions were not permitted during oral statements by community members.

The response of the AirForce to public comments during scoping has been inadequate. Further, the military has not responded at all to legitimate FOIA public records requests, nor has it shared comments made by government agencies or citizens during scoping. Involvement of the US Forest Service and the National Park Service, both supposedly cooperating agencies has not been adequately disclosed. Despite many complaints having been filed against nuisance flights, including over violations of FAA regulations calling for avoidance of people, vehicles and structures in uncongested areas (14CFR 91.119), they have failed to respond.

#### **Inadequacies of Content**

The Draft Environmental Impact Statement (DEIS) for the planned expansion / intensification of AirForce activities at the Tombstone MOA is mendacious and fatally flawed. It mentions and then discounts (evidence-free) several potential threats from its Preferred Alternative: hearing damage from F-16 and F-35 flights as low as 100'; wildfire ignition by flares dropped from just 2000' or above; pollution of dwindling waters by non-biodegradable chaff and flares, and property damage beneath supersonic flights. All of these threats are discounted deceptively by averaging their impacts over the entire area of the MOA, despite impacts being concentrated along particular flight paths.

### *Noise*

Discounting threats related to damaging noise is risible. The AirForce proposes a 132% increase in flights within the Tombstone MOA (an extra 8,000 flights) and training as low as 100' AGL. Based on my personal experiences with multiple *illegal* flyovers of F-16s and A-10s annually at 100-400' directly overhead in the forest, and over and near my home in pristine Cave Creek Canyon, Portal, AZ, effects on human ears are excruciating, and speed of the aircraft precludes protecting one's ears. Measures of DNL (Day-Night Sound Level), used in the EIS, sum sound exposure during daytime hours with weighted measure for nighttime hours and average this sum over a 24-hr period. A better measure of threats to ears<sup>a,b</sup> from individual flyovers would be Lmax, which can be as high as ~ 116 dB for F-16s at 500', 131 dB at 100', and much higher still for flights of F-35. Moreover, apparently preferred flight paths through canyons both magnify the sound and extend it temporally. Both domestic animals and wildlife have ears even more sensitive to noise in the range of these flight sounds<sup>c</sup>. Despite these data, the DEIS deceptively presumes that sound attenuation in canyons will be identical to that in flat, open terrain. Additionally, because the AirForce lays out specific flight paths within the MOA, and requires aircraft to intersect specific nodes on the map, they wrongly presume that every area within the MOA will receive the same average flight frequency annually. These dishonest practices not only exhibit a lack of professionalism, they might be legally prosecutable.

Neither the FAA nor the EPA regulates the noise levels of military aircraft, as they do for commercial aircraft, despite the vastly greater noise produced because aerodynamics and engine design are geared to enhancing power and performance in these weapons of war. The principal mitigating strategy available for reducing these noise effects is for the military to limit where its aircraft train, yet the USAF seeks northward expansion of the Tombstone MOA in order to fly military jets in a manner that is not otherwise allowed because of the known detrimental effects. Thus, despite a requirement that precludes low level training flights over communities, people, homes and other structures, violations of these regulations have resulted in hundreds of complaints filed by residents and visitors in Cave Creek Canyon, a haven for wildlife and quiet recreation. Standard metrics for quantifying noise are inadequate when applied uniformly across communities regardless of their size, character, and economy, and are misguided when applied in quiet rural and wild landscapes.<sup>d</sup>

**The extremely impactful noise produced by jet training exercises is only appropriate in military reserves such as the Goldwater Range. Training flights should remain there.**

Currently, supersonic flights do not occur in our area, but the AirForce now proposes to allow 80 such flights annually, and from just 5,000', rather than the more standard (over land)

altitude of 30,000' for commercial aircraft. Approximately 18% of Cochise County residents are veterans, and many of these individuals suffer from PTSD. Preliminary analyses indicate that reactions to sonic booms are far more severe than reactions to other types of noise at similar levels of noise exposure. In addition, pressure waves attending sonic booms may damage windows, stucco, and the sensitive and expensive observatories on properties of residents in Sky Village outside Portal, properties whose owners pay high taxes to Cochise County. **By outlawing supersonic flights here and restricting them to the Goldwater Range, we should protect our residents (especially veterans) and our properties from the associated destructive pressure waves.**

<sup>a</sup> Aviation Noise Impacts: State of the Science. Noise Health. 2017 Mar-Apr; 19(87): 41–50. Mathias Basner, MD, PhD, MSc, Charlotte Clark, Anna Hansell, James I. Hileman, Sabine Janssen, Kevin Shepherd, and Victor Sparrow

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5437751/>

<sup>b</sup> Military Aviation Noise: A Comprehensive Literature Survey. Draft. Stirling Consulting Reference Publication No. 2 ©. March 2017. Dale A. Sterling  
[https://www.researchgate.net/publication/313997245\\_Military\\_Aviation\\_Noise\\_A\\_Comprehensive\\_Literature\\_Survey\\_Draft](https://www.researchgate.net/publication/313997245_Military_Aviation_Noise_A_Comprehensive_Literature_Survey_Draft)

<sup>c</sup> A synthesis of two decades of research documenting the effects of noise on wildlife. Graeme Shannon, Megan F. McKenna, Lisa M. Angeloni, Kevin R. Crooks, Kurt M. Fristrup, Emma Brown, Katy A. Warner, Misty D. Nelson, Cecilia White, Jessica Briggs. First published: 26 June 2015.

<https://doi.org/10.1111/brv.12207>

<sup>d</sup> Chapter 3. Technology for a Quieter America. National Academy of Engineering of the National Academies. The National Academies Press.

### *Flares*

From as low as 2,000', the USAF proposes to drop up to 30,000 decoy flares annually onto landscapes that are increasingly arid under climate change, as well as increasingly threatened by the accumulation of dry fuels due to decades of fire suppression. Flares are fired individually or in salvos as aircraft take evasive maneuvers, and they defend aircraft from heat seeking missiles. Weighing as much as 6.8 to 13 oz, and hotter than engine exhaust, flares are meant to burn out in 3.5 to 5 sec, and within 150-100' of descent. However, approximately 1% of flares are estimated to fall to the ground without burning out, due to failure to ignite, release at inappropriately low altitude, magnification of descent rate by vertical shear or wind burst, or manufacture error leading to slow burn rates. By this calculation, as many as 300 dud flares might reach the ground in the Tombstone MOA, and as many as 300 wildfires could be ignited in remote areas where they could be spread by wind prior to being reached by firefighting personnel.

Wildfire danger. I know a bit about fires, having been associated with Portal Fire and Rescue as a board member (9 years) and radio operator (16 years), and having written both the CWPP and Firewise application. I have been evacuated twice from my residence and treated with oxygen at Fire Camp.

In recent years, natural and human-caused ignitions have produced three major wildfires within the Chiricahua range in the Tombstone MOA. Ignited by lightning, the 1994 Rattlesnake Fire crowned and burned for over a month, eventually extending over >27,500 acres. During the monsoon immediately following the fire, erosion modified downstream water courses. Changes in stream paths killed off numerous trees in South Fork Canyon, a hotspot for birding and wildlife enthusiasts. Later, the Horseshoe 1 and Horseshoe 2 Fires were started by smugglers on the Burro Trail in the upper reaches of Horseshoe Canyon. Beginning in late May, after a wet El Niño Winter, Horseshoe 1 burned for 10 days, into early June of 2010, and eventually spanned 3,401 acres. The many dead trees left behind by a 50-yr freeze on February 3, 2011, contributed to the severity of the Horseshoe 2 fire, which started on May 8, 2011, after a dry winter, and was far more widespread and destructive than Horseshoe 1. Evolving into one of the largest fires in Arizona history at 222,954 acres, Horseshoe 2 destroyed 23 structures and cost ~ \$50 million to contain. Ignited long before the onset of the monsoon, it burned for 7 weeks and left over 42% of the Chiricahuas moderately or severely affected. (Affected acreages by ownership were private lands - 13,934; State - 2,874; USFS - 192,647; BLM - 1,336; NPS - 12,163.) Extremely low fuel moistures and high winds (26 red-flag days) often drove extreme fire behaviors. At its start, Horseshoe 2 razed much of Sulphur Canyon, immediately south of Cave Creek Canyon and, propelled by high winds, descended 9 miles in just an hour. Only a few degrees of wind direction saved Portal, which was evacuated overnight. A second, partial evacuation was implemented as fire later descended within the Cave Creek watershed.

Although the AirForce recommends suspension of flare release during periods of high fire danger, and supposedly restricts release under the extreme fire danger now so common under climate warming, implementation of these practices is known to vary markedly, probably due to reluctance to interrupt training. If jets commonly violate regulations about where and how low they may fly, how can we trust them to suspend flare release in exceptionally dry conditions? Who will police this activity and hold pilots accountable? Although emergency fire equipment and trained personnel may be put on standby on Military Ranges and other DOD properties during exceptional droughts, similar practices would not be available to protect our remote rural area. Portal, AZ, and Rodeo, NM, are defended by tiny departments of volunteer fire-fighters, who must assemble from homes distant from fire stations.

In summary, residents of the eastern Chiricahuas have already had to experience dangerous wildfires and the habitat rearrangements and floods that followed. It is *unconscionable* to subject them to the danger, inconvenience and property losses of fires started by flares. Despite the DEIS minimizing such dangers, flares released from much higher than 2,000' are known or believed to have caused wildfires in Oregon, on Arizona's San Carlos Apache Reservation, and elsewhere in AZ (the Telegraph Fire near Globe). It defies credulity to assert that flares released over extremely arid and combustible fuels will not cause wildfires. **In our arid environment, burned over forest landscapes take decades to recover, and if burned twice, they never recover.**

**Release of flares should not be permitted within the Tombstone MOA, nor should training flights, like the crash of an F-16 with an Iraqi pilot north of Douglas in 2017. Both F-16s and F-35s are known to crash and burn during training (3.55 crashes per 100,000 flight hours, and 1.6 crashes per 100,000 flight hours, respectively). Training flights should remain**

## **in the Goldwater Range.**

Other dangers. In addition to starting wildfires, duds with a terminal velocity estimated at 100 mph, could injure people, domestic animals or wildlife. Hiking trails in populated areas, and even the backcountry of the Chiricahuas, are heavily utilized, and both university classes and researchers from the Southwest Research Station of the American Museum of Natural History are constantly conducting studies in the field. Given the propensity for military pilots to fly, even illegally, in canyons where activities of humans and wildlife are concentrated, it's just a matter of time before individuals are injured. As is the case for noise, it makes no sense to average the drop rate of duds over the entire MOA.

Fallen duds can also result in accumulation and leakage of contaminants that jeopardize water quality. Concentration of training for evasive maneuvers in canyons (over stream channels), or other areas with high densities of humans and wildlife, would magnify these risks. Among the dangerous chemical components of flares are:

Barium chromate – dangerous if swallowed, inhaled, or touched, and a very toxic and long-term hazard to aquatic life

Boron – toxic if swallowed and a long-term hazard to aquatic life

Potassium perchlorate (an irritant and danger to eyes, skin, respiratory systems, and the thyroid gland), and acutely hazardous to aquatic life and ecosystems.

Magnesium – releasing flammable gas that can ignite spontaneously and produce toxic fumes upon contact with water, and extremely toxic to aquatic life.

Both surface and ground waters in the Chiricahuas are dwindling because of recent year of drought. During two of the past three years, the once perennial Cave Creek (dissecting the central eastern slope), has run at the canyon mouth for just two weeks annually. Water is an increasingly limited and precious factor in our lives, and we cannot afford to have toxic chemicals accumulate and concentrate in dwindling supplies. **Release of flares should be completely outlawed over the Chiricahuas, including wilderness and other protected areas.**

### *Chaff*

Under the Preferred Alternative of the AirForce, up to 7,000 bundles of chaff would be dropped annually from as low as 2,000', into a pristine environment with dwindling surface and ground waters and not previously exposed to deposition of chaff. Potential impacts include: 1) drift of chaff in skies during release, 2) potential for inhalation of chaff fibers or degraded debris that will accumulate over time, and 3) impact of constituent chemicals on waters and species in the area. Bundles of aluminized glass fibers are ejected from aircraft to confuse enemy radar. Because chaff can obstruct radar, its use is coordinated with the Federal Aviation Administration (FAA), which places more stringent restrictions on DOD use of any type of chaff that operates within the bands used by air traffic control radar and navigational systems. It has also restricted the locations, altitudes, and/or time periods within which specific types of chaff can be

employed. Before settling to the ground, clouds of fiberglass can drift distances ranging from 500' to 140 miles, and can be deposited well outside boundaries of an MOA, including on private lands. Dense masses can cloud radar images used for weather forecasting and even alter weather, because the aluminized fiberglass suppress lightning, and they also cause power interruptions when drifting onto utility lines. Local residents depend on online radar data to identify safe routes into and out of our rural area for medical trips, etc. Power outages are not just inconvenient, but are increasingly dangerous given extremely high temperatures due to climate change. In our remote, rural area, they also restrict access to well water and also are not quickly repaired. During my 16 years in Portal, I have experienced power outages as long as 39 hours.

<sup>e</sup> <https://www.gao.gov/assets/230/226441.pdf>

<sup>f</sup> <https://www.bostonglobe.com/metro/2018/12/13/those-strange-radar-sightings-over-maine-were-probably-caused-military-planes-dumping-chaff/m9rBtyeyRU3Cj0hIZe0uML/story.html>

Little is known scientifically about the effects of chaff on waters and species, including humans, but a report<sup>g</sup> utilized by the USAF to respond to NEPA requests expresses concerns about small, confined freshwater environments with sensitive species, especially those used by waterfowl or protected species, as well as concerns about Wilderness Areas, parks and outstanding visual resource areas. Included within the proposed expansion area for the Tombstone MOA are parts of the Chiricahua Wilderness Area, Chiricahua National Monument (now proposed for elevation to National Park status), and Vista Point, which overlooks the junction of the North Fork and South Fork of Cave Creek. Also affected by newly proposed chaff release would be Willow Pond, near the mouth of Sulphur Canyon. This facility has been maintained for years by Friends of Cave Creek Canyon, with water supplied *gratis* by a local rancher, and it is much used by migrating waterfowl and listed bat species. Finally, a report<sup>h</sup> by the Naval Research Laboratory highlights a need to study the extent to which chaff may degrade to inhalable particles (dangerous to humans and wildlife), either after break-up in atmospheric turbulence or when abraded and re-suspended after surface deposition.

<sup>g</sup> Environmental Effects of Self-Protection Chaff and Flares. Final Report. August 1997. Prepared for U.S. Air Force. Headquarters Air Combat Command. Langley Air Force Base. Virginia.  
<https://ntrl.ntis.gov/NTRL/dashboard/searchResults/titleDetail/PB98110620.xhtml>

<sup>h</sup> Environmental effects of RF chaff: A select panel report to the Undersecretary of Defense for Environmental Security. Naval Research Laboratory. January 1999. Hullar, T.L. & Fales, S.L. & Hemond, H.F. & Koutrakis, Petros & Schlesinger, W.H. & Sobonya, R.R. & Teal, J.M. & Watson, John.

Adding to the potential hazard of chaff release and deposition is the fact that chaff can contain forever chemicals which accumulate in human and animal tissues with still poorly understood affects. Thus, some chaff is wrapped in Kapton<sup>i</sup>, a plastic material used in delayed opening combat chaff and approved in military aircraft training ranges and combat outside the U.S.<sup>j</sup> Kapton is coated or laminated on one or both sides with a fluoropolymer (Teflon<sup>k,l</sup>). Accumulation of PFAS chemicals (per- and polyfluoroalkyl substances) in tissue of both humans

and wildlife is understudied, but a global concern<sup>m,n,o</sup>. The DEIS fails to comment on release of this type of chaff.

Either as windblown particles, or by direct deposition onto lands and waters, chaff constitutes a non-biodegradable and accumulating hazard to the environment and all within it. Unsurprisingly, the AirForce has failed to respond to requests to clean up this polluting material in other parts of the country. **In the interests of both humans and wildlife, the USAF not release chaff over or near the Chiricahuas, their wildlife, protected areas and human communities.**

<sup>l</sup> Kapton is a registered <sup>i</sup> Dupont. (2000). *Kapton Polyimide Film*. Bulletin GS-96-7 (as cited in the Final PROGRAMMATIC ENVIRONMENTAL ASSESSMENT FOR TESTING AND TRAINING WITH DEFENSIVE COUNTERMEASURES, United States Department of the Air Force, December 2023).

<sup>j</sup> FINAL SUPPLEMENTAL REPORT UPDATE ENVIRONMENTAL EFFECTS OF TRAINING WITH DEFENSIVE COUNTERMEASURES, prepared for: Air Force Civil Engineer Center by U.S. Army Corps of Engineers, Appendix A, (starts on page 113 of 320), March 2023. [https://www.airforcechaffandflareprogrammicea.com/documents/Clean\\_Final%20PEA\\_Chaff-Flare\\_Dec%202023\\_wFONSI\\_reducedsize.pdf](https://www.airforcechaffandflareprogrammicea.com/documents/Clean_Final%20PEA_Chaff-Flare_Dec%202023_wFONSI_reducedsize.pdf)

<sup>k</sup> Fluoropolymers are a group of polymers within the class of per- and polyfluoroalkyl substances (PFAS)

<sup>l</sup> Trademark of DuPont in the United States. Reference: DuPont Kapton Polyimide Film data sheet, undated. <https://www.dupont.com/electronics-industrial/kapton-fn.html>

<sup>m</sup> <https://www.epa.gov/pfas/our-current-understanding-human-health-and-environmental-risks-pfas>

<sup>n</sup> <https://www.ewg.org/news-insights/news/2023/02/wildlife-warning-more-330-species-contaminated-forever-chemicals>

<sup>o</sup> <https://news.mongabay.com/2023/09/pfas-forever-chemicals-harming-wildlife-the-world-over-study/>

### **Potential Hazards for Natural Environments, Their Human and Biotic Communities**

Unbelievably, the dangerous USAF activities described here are programmed for skies over designated wilderness, a National Monument (now proposed as a national park), and areas specifically designated to protect botanical and zoological resources, including birds-of-prey and listed avian and amphibian species. To put this absurdity in context, the U.S. Forest Service required me, years ago as a course instructor, to complete a 47-page form seeking permission for students to make non-destructive measurements using tape measures, and to conduct experiments with different colors of hummingbird feeders, and our studies were in National Forest, not in Wilderness! Are we really to believe that, as stated in the DEIS, the USAF will mitigate harm to birds by monitoring their activity and adjusting their flights accordingly? The many potential dangers of USAF activities to wildlife are described in letters from numerous of my colleagues.

Contrary to laws and policies, the proposed new activities will also occur over the rapidly growing *residential* area of Portal. (Growth can't be documented by zip code, which lumps Portal with San Simon.) Property values along the primary flight paths are already being affected. Revealing AirForce activities is required as part of sales documents for properties, and

such revelation has already compromised residential property sales. Whom should we sue for 'takings'?

### **Current Violations of AirForce Regulations**

Even under the present status of Portal, the AirForce cannot be trusted to obey its own regulations, and flagrant violations of those strictures are likely to increase with the proposed expansion and intensification of USAF activities in our skies. When an illegal flight up Cave Creek Canyon in Portal (outside the Tombstone MOA) greeted me the first week of my retirement here 16 years ago, I was terrified, thinking the jet might fly through my dining room window. More recently, six such low-level flights took place between the morning of October 1, 2024, and mid-afternoon on October 2, and visitors with whom I spoke in the Canyon were aghast that this could occur. Further, these flights are dangerous to residents. In mid-morning on August 17, 2024, two F16s flew illegally at about 300 ft over a Saturday farmer's market at the mouth of the Canyon, endangering the hearing of the many people there. With my view obscured by trees, I was a mile further up canyon using a ShopVac to blow leaves from my patio, and (as always for these jet flights) couldn't detect their approach by vision or sound until too late to react and cover my ears. The shock of the sudden noise (imagine standing just 300 ft from the back of two F-16s!) knocked me onto hard patio stones, and I landed on an already damaged hip. The AirForce responded to my complaint with a form letter assuring me that they were trying to reduce noise in Tucson (Tucson!). Whom can we count on to police your cowboy pilots who regularly break the law? Is there any oversight or accountability for such violations? Whom should we sue when we break a hip or our hearing is compromised by your flights, and what documentation will be required as proof? Answers to these questions should be publicized in the final EIS.

### **Portal's Economy is Based on Quiet Recreation and Natural History Tourism**

The AirForce appears to believe that expansion of their activities would occur in empty space, not in rural, *residential* settings where people forego urban amenities to enjoy quiet lives and access to one of the most spectacularly biodiverse natural habitats in the U.S. The economic base of Portal is ecotourism - bird-watching, hiking, and scientific studies of animals, plants, hydrology, and geology, and our *economy will be destroyed* by the activities described (here, mendaciously) by the DEIS. Even existing USAF flights during intensive training occasionally bring annoying noise over the 6 AM to 9 PM hours; we have endured hours-long noise of some kind of propeller-driven aircraft circling Chiricahua Peak, well into the night, and forcing us to keep our windows closed. The Southwest Research Station, run by the American Museum of Natural History, has hosted scientists and their research programs for seven decades in this 'living laboratory' of Nature, and our community is full of retired scientists and naturalists, attracted by the extraordinary biodiversity of the area and the peace and quiet that existed here prior to increased and illegal military air traffic. Sky Village hosts world renowned, retired astronomers and their expensive observatories, here because of our dark skies. Clearly, the AirForce has yet to appreciate the very special attributes of our local environment, and it appears they would destroy all this without even bothering to discover it. What they propose is



akin to driving tanks through the Smithsonian Institution. **Please don't turn our peaceful skies into a war zone, jeopardizing all our reasons for residing here. Portal and nearby communities should not be forced to bear the costs of the AirForce's refusal to make the Barry M. Goldwater Range accessible for training flights during periods (e.g., weekends) when it is not being used for more destructive activities.**

### **Summary**

The dishonesty and lack of transparency of the AirForce are evidenced not just by a deceptive DEIS, but by the failure of this document to respond to issues raised during scoping, and by restriction of public meetings to small, remote communities outside population centers in Cochise County and other heavily impacted regions like reservations of Native Americans. Additionally, they are proven by flagrant violations of current regulations - transgressions for which there appears to be no oversight or accountability. No compelling argument is made for movement of training flights to our area from their present home in the Goldwater Range. Together with failure to respond to FOIA requests by the Center for Biological Diversity (CBD), these factors evidence **arrogant intent to abrogate regulations, oversight and citizen rights in order to assert dominion over most of Southeast Arizona's skies.**

Finally, although I understand very well our need for national defense, it is harder to fathom why defense should require sacrifice of all we value and are hoping to defend.

Sincerely,

Diane W. Davidson

Professor Emerita, University of Utah (though opinions expressed here are entirely my own)