



MEMORANDUM

Date: January 3, 2017

To: The Honorable Chair and Members
Pima County Board of Supervisors

From: C.H. Huckelberry
County Administrator

A handwritten signature in black ink, appearing to read "CHH", is written over the printed name "C.H. Huckelberry".

Re: **Encroachment Issues Regarding Davis-Monthan Air Force Base Operations**

Please see the attached Encroachment Report authored by Lieutenant General Eugene Santarelli (Retired) and Deputy Assistant Air Force Secretary Gerald "Fred" Pease, Jr. (Retired). The report distinctly identifies the issue of encroachment on US Air Force military facilities, particularly Davis-Monthan Air Force Base (DMAFB).

Encroachment is multifaceted and is not simply urban encroachment around DMAFB itself. It is also encroachment and/or restrictions in the flight corridors used for pilot training and gaining access to training ranges; in this case, the Barry M. Goldwater Range. Operational encroachment can also be defined as light and electronic pollution and other factors that would impair a full range of military pilot training.

The County first recognized the importance of urban encroachment that would threaten future military missions at DMAFB in 2004 and asked the voters to approve \$10 million in bonds to purchase lands in the DMAFB Departure Corridor to significantly reduce and eliminate urban encroachment issues. It is likely there are additional acquisitions that need to be undertaken to protect the actual Departure Corridor; hence, the need for future investment. We also need to continue with our advanced planning to ensure flight corridors necessary for pilot training are protected from all levels of potential operational encroachment.

The County is committed to ensuring DMAFB can fully function as an important military installation and will continue our efforts in eliminating all forms of encroachment that could impair existing or future missions at DMAFB.

CHH/anc

Attachment

c: Bob Logan, President, DM-50
Dr. John Moffatt, Director, Economic Development Office
Diana Durazo, Special Staff Assistant to the County Administrator
Eugene Santarelli, Retired Lieutenant General
Gerald "Fred" Pease Jr., Retired Deputy Assistant Air Force Secretary
Michael Toriello, Deputy Base Civil Engineer, Davis-Monthan Air Force Base

Encroachment – A Multi-faceted Issue

Davis Monthan Base origins

On April 12, 1926, the sixty-ninth congress of the United States authorized the Secretary of the Interior to lease to the city of Tucson, Arizona, 1,280 acres (sections 26 and 27) for the establishment and maintenance of a municipal aviation field. It was located about 5 miles from the University of Arizona “Old Main”.



University of Arizona Old Main 1889 (University of Arizona website)

The act was contingent on two provisions: the first being that “Government departments and agencies operating aircraft shall always have free and unrestricted use of said field and the right to erect and install upon said land such structures and improvements as the heads of such departments and agencies may deem advisable, including facilities for maintaining supplies of fuel, oil, and other materials for operating aircraft...;” and the second being that “...in case of emergency, or in event it shall be deemed advisable, the Government of the United States may assume absolute control of the management and operation of said field for military purposes.” On May 25, 1932, President Hoover exercised that provision with Executive Order 5850, officially transferring the airfield to the military.



D-M airfield circa 1932 (image from DMAFB Office of Natural/Cultural Resources)



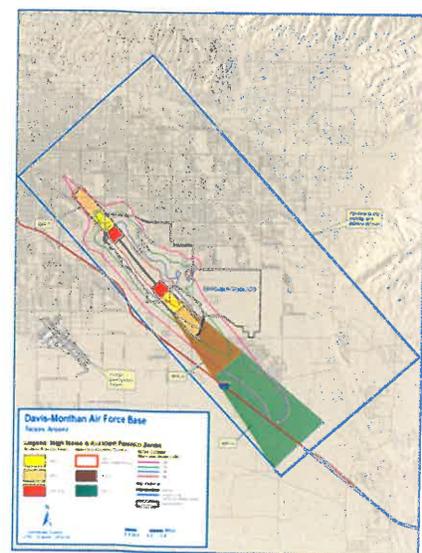
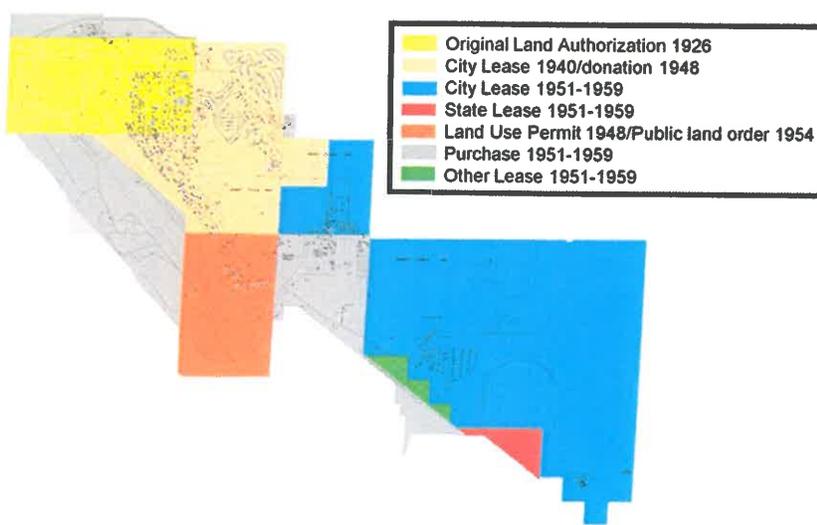
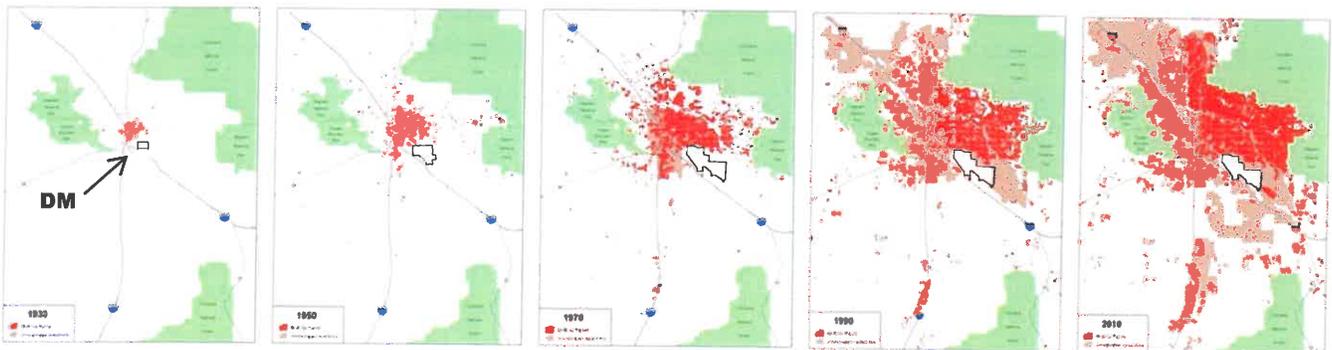
The original two sections of land referenced in the 1926 law in relation to the base today.

Since that Presidential decision, Tucson, like many other cities in the Southwest, has grown significantly.

Base/Urban Encroachment

The DoD defines the word “encroachment” as “the cumulative impact of urban and rural development that can hamper the military’s ability to carry out its testing and training mission.”

The illustrations below show the population growth of Tucson in 1930, 1950, 1970, 1990 and 2010. The result has been that the Tucson community has grown to the east and is much closer to the base on the north and west sides, compelling the base to expand to meet new mission needs to the southeast paralleling I-10 away from the population pressure (see illustrations below). This pattern of urban growth near air bases has become quite common, especially throughout the “Sunbelt”.



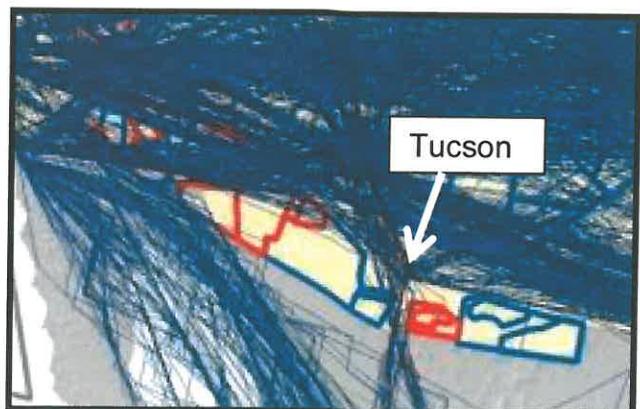
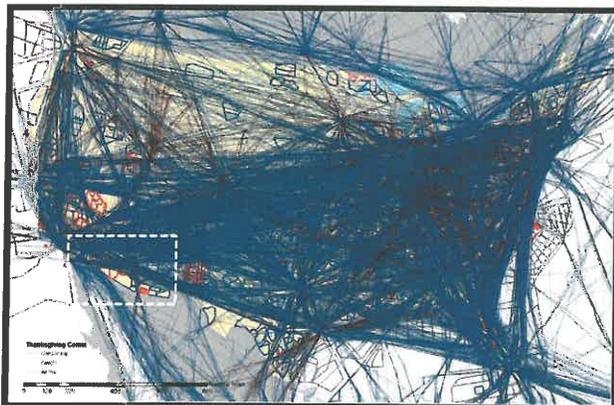
When the Air Force and communities discuss “encroachment”, the focus most often refers to base/urban encroachment...homes, businesses, schools, etc., close enough to the base to be within the airfield’s sound patterns.

Arizona was one of the first states to recognize the importance of legislation to address the regulation of the development of land that could restrict training, testing and other military base activities. A series of Arizona statutes defined territory in the vicinity of a military airport and rural low level routes and directed communities to adopt and enforce zoning regulations. Certainly motivating factors were the traditional role Arizona has played in supporting the national defense of the United States and the fact that southern Arizona bases contribute about 96,000 direct and indirect jobs and \$9.1B to Arizona’s economy (The Maguire Company, “Economic Impact of Arizona’s Principal Military Operations” 2008).

As in many other communities around the world, the Air Force works with affected communities, in our case the City of Tucson and Pima County, to balance the successful accomplishment of the Air Force mission, the effects of flying operations on the community, the economic benefits of the base and the community’s growth and prosperity. Over the years, low level training tracks and traffic pattern altitudes have been modified, and other actions have been taken to address urban/base encroachment issues. This process has required continuous dialogue with elected officials, informed community participants and the Air Force. It is a normal part of Air Force and community interaction worldwide.

Operational Encroachment

The term “encroachment” can and does mean much more. Since the 1990’s, the discussion of encroachment has also included encroachment factors which can affect operations away from the base. These factors are of significant importance to those senior military leaders who are responsible for determining an optimum location to beddown a particular military mission. For instance, without access to open airspace, fighter/bomber training can be significantly hampered.



The reason that DM has been a successful fighter/bomber base for over 75 years is because of the uncongested airspace in close proximity to the base and the excellent weather found in Arizona. In the pictures above, the blue maze of lines represents the civilian flight tracks in the US. The red boxes represent the military airspace used for training. As demonstrated by these illustrations, the national airspace system is very complex and access through many military training areas is shared with commercial airlines. However, the main training areas used by southern Arizona bases are generally not used by civilian air traffic. This lack of operational encroachment in the training areas is much more evident in the picture on the right.

Another form of operational encroachment is the lack of natural low light flying conditions. Due to technological and operational training advancements over the past two decades, the US military has become a world renowned “night fighting force”. Military pilots require low light conditions to successfully train with night vision devices. There are many areas in the nation where a low light, overland operating environment is difficult to find. The illustration below demonstrates how light encroachment in parts of the US might limit realistic night training. Southern Arizona is an excellent location for low ambient light training, especially when one considers that one of the largest training ranges in the United States, the Barry M Goldwater Range, located south of I-8 between Gila Bend and Yuma, has some of the best night skies in the nation.



NASA Photo

Other factors resulting in operational encroachment include:

- Frequency interference – can affect military aircraft radios, radars and instrumentation
- Radio tower, power line and wind turbine construction – create physical interference
- Wind turbines rotational Doppler effect – creates radar interference
- Air traffic control delays – cause late take-offs and limits operational efficiency/effectiveness.
- Restrictions associated with:

- Endangered species – limits to military ops, increased land management costs
- Invasive species – limits to land use, increased land management costs
- Wetlands – limits to land use for construction and operations, increased costs
- Air quality factors - restrictions to aircraft basing, increased costs
- Water overdraw and water treatment capacity limitations – limits base viability

Most of these operational encroachment factors are associated with population growth and activities associated with that growth. These encroachment issues can not only limit the effectiveness of military operations at installations and in training areas, they can also affect the community as well. Their management and potential resolution are best addressed by effective and long term base/community collaboration.

Encroachment and Basing Decisions

Senior military leaders look at encroachment in the very broadest sense when making basing and mission bed down decisions. They take all the above factors into consideration. Since military installations represent multi-billion dollar facilities, all the military departments pay close attention to urban encroachment and stress the importance of informed zoning during their discussions with local authorities. However, base/urban encroachment, an important factor, is just one of many. The lack of operational encroachment in Southern Arizona along training routes, in training areas and in night skies is also an important factor taken into consideration during the Air Force basing process. The process weighs criteria that maximize the value of the base to perform the military mission with an emphasis on efficient access to and from the base to proximate, unencumbered, available operating space with attributes needed to effectively accomplish the military mission.

Conclusion

Davis-Monthan's considerable operational advantages are the main reason that Air Force leaders continually look to the base to host future flying and non-flying missions. Within the past year alone, Major Command led site survey teams recently analyzed the base to host a squadron of F-35A aircraft, a squadron of Taiwanese F-16 aircraft, a limited number of HC-130H Forest Service fire-fighting aircraft, and an operational center for MQ-9 Remotely Piloted Vehicles (drones). Additionally, Headquarters AF is assessing DM for feasibility regarding mission expansion in testing, training, and rescue operations.

It is a testament to Arizona, the City of Tucson, Pima County and Davis-Monthan's succession of military leaders that training airspace and ranges in southern Arizona are generally "un-encroached" in most of these important operational areas and are adaptable to mission growth.

However, there are still significant challenges ahead to ensure that all aspects of urban and rural encroachment can be managed in the future. Both the Air Force and Southern Arizona communities have an important stake in the viability of the region's military installations. The Air Force values Davis-Monthan as a vital military asset with significant operational advantages. And the Tucson community values its contribution to our nation's defense for over 90 years and benefits from Davis-Monthan's \$1.5B annual contribution to the local economy. The close community/base relationship that has developed over the decades is the optimum mechanism to ensure that all-encompassing encroachment issues will properly receive close attention, dialogue, planning and action.