United States General Accounting Office
Report to Congressional Requestors

GAO

November 1985

SUPERSONIC FLIGHTS

Air Force Use of Training Areas in Texas and New Mexico

GAO/NSIAD-86-4

About Our New Look . . .

This GAO report was produced using a new design and printing process to help you get the information you need more easily.

GAO will phase in this new design during 1985. As we do so, we welcome any comments you wish to share with us.

GAO

United States
General Accounting Office
Washington, D.C. 20548

National Security and International
Affairs Division

B-220128

November 8, 1985

The Honorable Ronald D. Coleman
House of Representatives

The Honorable Bill Richardson
House of Representatives

In your letters of July 9 and August 22, 1984, you expressed concern over the Air Force's decision to use two military operations areas—Valentine in southwest Texas and Reserve in west central New Mexico—for training involving supersonic flights by the 49th Tactical Fighter Wing (TFW) based at Holloman Air Force Base, New Mexico. In a subsequent meeting with your offices, we agreed to review (1) the Air Force's need for the number of supersonic flights projected for the 49th TFW, (2) the adequacy of the Air Force's evaluation of the alternatives to supersonic flights over both Valentine and Reserve, (3) the Air Force's compliance with the National Environmental Policy Act's procedural requirements, and (4) the actions the Air Force has taken to ensure that supersonic flights do not enter Mexican airspace and the repercussions if Mexican airspace is entered. Our objectives, scope, and methodology are discussed in appendix I.

Since F-15 aircraft were first placed at Holloman in 1977, supersonic operations have been conducted primarily over the White Sands Missile Range. However, because of a projected decrease in the availability of this range and an increase in F-15 pilot training involving supersonic flight, the Air Force initiated actions in 1978 to obtain additional airspace for supersonic operations. In 1979 the Air Force issued draft environmental impact statements for supersonic flight operations at both Valentine and Reserve where flight operations were being flown in a subsonic mode. The statements were revised in July 1983 and finalized in June 1984. In September 1984 the Air Force decided to begin supersonic flights in Valentine and Reserve in January 1985.

Based on our review, we conclude that:

- The number of supersonic flights for the 49th TFW projected in the environmental impact statements was reasonable given the Tactical Air Command's training requirements and the wing's flying program.
- The Air Force adequately assessed the alternatives considered in the statements.

- The Air Force complied with the procedural requirements of the National Environmental Policy Act for preparing environmental impact statements.
- The 49th TFW is acting to avoid entering Mexican airspace and repercussions in the event of such overflights seem unlikely.

Supersonic Flight Projection Was Reasonable

The Air Force projected in the environmental impact statements that the 49th TFW would need to make 1,200 supersonic flights per month to ensure that pilots maintain proficiency. This projection was developed from historical data involving air-to-air combat scenarios which, while not always requiring supersonic speeds, require the flexibility to operate in a supersonic mode to fully accomplish training objectives. These scenarios involve tactics used to effectively employ fighter aircraft against hostile aircraft.

The Tactical Air Command's regulations setting out training requirements address air-to-air training but not supersonic flying. Air Force officials, however, consider supersonic flying to be an integral part of F-15 pilot air-to-air training. The air-to-air training requirements cite the number of flights that pilots must accomplish to maintain their proficiency, depending on their experience levels.

In order to comply with these training requirements, we estimate that about 1,180 air-to-air flights would be required of the 49th TFW each month. During calendar year 1984, the 49th TFW flew a monthly average of 1,216 air-to-air flights. Data was unavailable as to the number of flights that have involved supersonic speeds, but the Chief of Wing Scheduling and Airspace Management estimated that 76 percent would have involved supersonic speeds. The 49th TFW's fiscal year 1985 flying program also reflects a similar level of air-to-air flights.

We compared the number of flights of the 49th TFW to the number of flights of the 33d TFW at Eglin Air Force Base, Florida, which has the same number of F-15 aircraft and squadrons and a similar number of pilots. We found that the number of flights needed to meet the Tactical Air Command's air-to-air training requirements at the 33d TFW is about the same as that for the 49th TFW. The 33d TFW's monthly average air-to-air flights for 1984 was 1,307.

In light of the Tactical Air Command's air-to-air training requirements and the comparability of the 49th TFW's air-to-air flying to a similar wing, we believe the projected 1,200 flights per month are reasonable.

Alternatives Were Adequately Evaluated

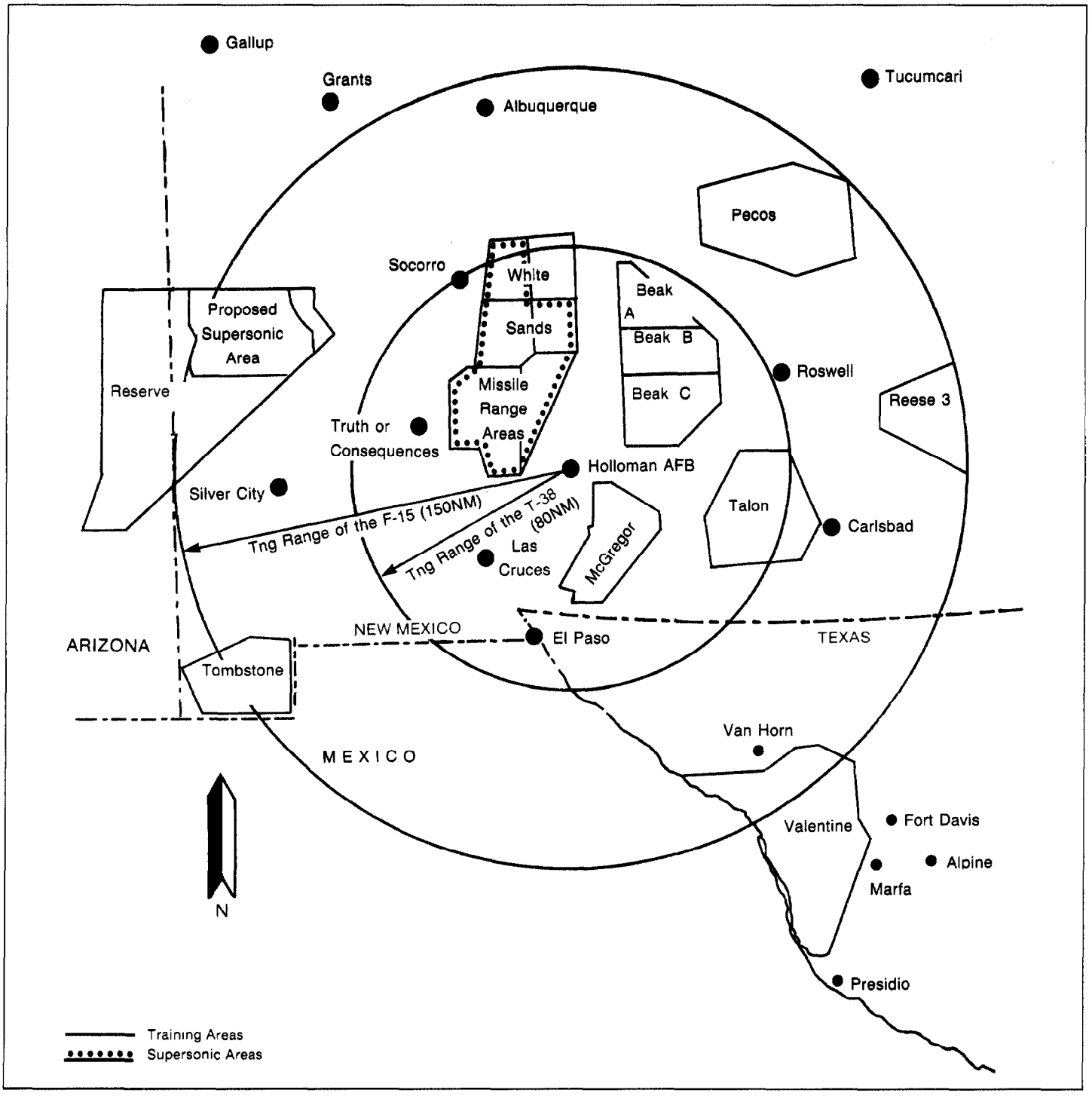
The Air Force's environmental impact statements addressed a number of alternatives to the use of Valentine and Reserve for supersonic operations. As discussed with your offices, we reviewed all of these alternatives except those involving the use of only Valentine or only Reserve and the alternative of taking no action. In addition, we queried Air Force officials on two alternatives that were not addressed in the statements. We were unable to identify any other alternatives which had not been addressed that appeared to be both operationally feasible and cost-effective.

Based on our review of the alternatives, we believe that the Air Force's proposal to use both Valentine and Reserve for supersonic operations was appropriate because none of the alternatives were more cost-effective or operationally feasible than the use of Valentine and Reserve. For example, creating a new military operations area or using other existing areas within 150 nautical miles (NM) of Holloman (see fig. 1), which is the training range of the F-15, would not be operationally feasible due to a number of factors, including limited available airspace for conducting supersonic operations. Also, using the closest supersonic operations area to Holloman, but outside 150 NM could cost approximately $23,000 per flight, which is about 2-1/2 times the cost to train at Valentine and Reserve.

Two alternatives that were not addressed, but were proposed in the public comments to the environmental impact statements were (1) relocating the 49th TFW to another military base and (2) using simulators for supersonic training. The Tactical Air Command's Chief of Programs Division told us that relocating the 49th TFW is not cost-effective because adequate facilities are not available, and the cost to relocate a wing to an existing base and expand the support operations is estimated to be over $100 million. The Tactical Air Command's Division Chief for Training Systems told us that using simulators for supersonic training is not operationally feasible because current and planned F-15 simulators will not provide enough realism to reduce the need for supersonic air-to-air combat training.

Appendix II discusses the alternatives we reviewed in more detail.

Figure 1: Flying Training Areas in the Vicinity of Holloman Air Force Base, New Mexico.



The Air Force Complied With the National Environmental Policy Act

The National Environmental Policy Act (Public Law 91-190) requires federal agencies to consider the significant environmental impacts of proposed major federal actions. Specifically, this act requires federal agencies to prepare environmental impact statements that assess the potential environmental impacts of the proposed actions and that analyze all reasonable alternatives. The Congress established the Council on Environmental Quality to, among other things, assist federal agencies in complying with the act. Executive Order 11514 required the Council to provide guidelines for this process.

According to the General Counsel of the Council on Environmental Quality, the most important requirements of the act are that agencies thoroughly analyze all reasonable alternatives to the proposed actions and that they ensure early public participation. Our review of the available supporting documentation for the Valentine and Reserve statements and our discussions with Air Force officials indicated that the Air Force complied with the procedural requirements of the act for preparing environmental impact statements. For example, the Air Force provided adequate time for public comments, responded to all relevant comments, and allowed more than the required minimum of 30 days between issuing the final statements and deciding to implement the proposed actions.

Alleged violations of the act, as stated in public comments to the statements, were not substantiated by our review. For example, allegations that procedures had not been followed because a worst-case scenario was not included in the statements and that the Air Force did not designate a preferred alternative were unfounded because such actions were not required by the guidelines.

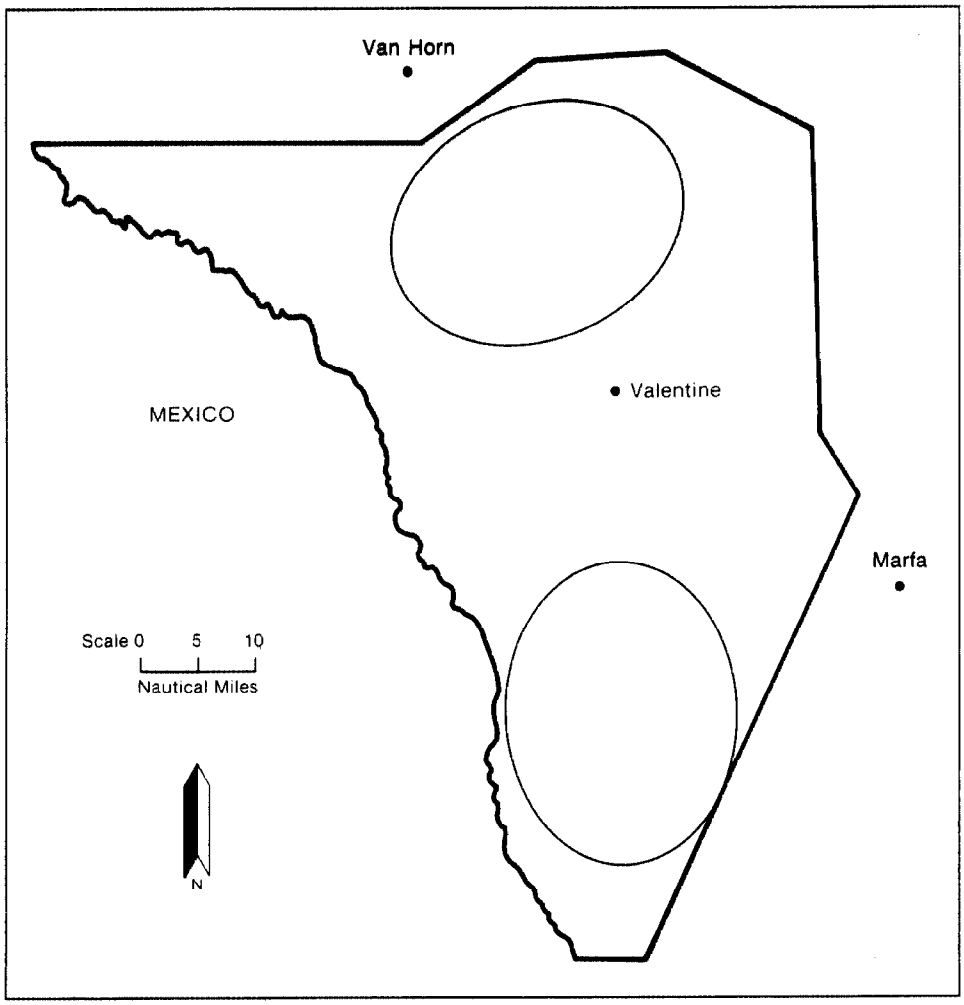
Action Is Being Taken to Avoid Flights Into Mexican Airspace

Our review indicated that the Air Force is acting to avoid entering Mexican airspace and that no repercussions seem likely in the event of such overflights. According to Air Force officials from the 49th TFW, before each flight pilots are briefed on the restrictions specific to the area in which they will be training. When pilots are to conduct operations in Valentine, they are informed of the location of the Mexican border and the prohibition against entering Mexican airspace.

Air Force officials gave several other reasons why pilots are not likely to enter Mexican airspace during supersonic operations. First, the pilots of the 49th TFW are experienced, mission-ready pilots. Second, Valentine, which borders Mexico, has two areas designated for supersonic operations—one in the northern and one in the southern regions (see fig. 2).

The southern area, which is the closest to Mexico, is infrequently used by the 49th TFW for supersonic operations. Third, supersonic operations do not appreciably increase the potential for entering Mexican airspace when compared to subsonic operations.

Figure 2: Valentine.



Air Force and Department of State officials believed that repercussions are unlikely in the event that pilots of the 49th TFW inadvertently enter Mexican airspace. These officials and a Federal Aviation Administration official were unable to document or recall any Mexican objections to overflights by the Air Force resulting from flight operations over Valentine.

The report was discussed with responsible Air Force officials and they agreed with the facts and conclusions. Because of this and because the results of our review were not inconsistent with the Air Force's analyses of the use of Valentine and Reserve for supersonic operations, we did not request official agency comments on a draft of the report.

Unless you publicly announce its contents earlier, we plan no further distribution of this report until 5 days from the date of the report. At that time, we will send copies to the Secretaries of Defense, the Air Force, and the Army and the Director, Office of Management and Budget. We will also send copies to interested parties and make copies available to others upon request.

Frank C. Conahan
Director

Objectives, Scope, and Methodology

The objectives of our review were to review (1) the Air Force's need for the number of supersonic flights projected for the 49th TFW, (2) the adequacy of the Air Force's evaluation of the alternatives to supersonic flights over both Valentine and Reserve, (3) the Air Force's compliance with the National Environmental Policy Act's procedural requirements, and (4) the actions the Air Force has taken to ensure supersonic flights do not enter Mexican airspace and the repercussions if Mexican airspace is entered. As agreed with the congressmen's offices, we did not evaluate the Air Force's assessment of the environmental, physiological, or economic effects of supersonic operations because of the amount of attention already given to this particularly subjective issue by knowledgeable individuals on behalf of the public and the Air Force.

To accomplish our objectives, we reviewed the Air Force's environmental impact statements and supporting documents for both Valentine and Reserve, the National Environmental Policy Act, pertinent Air Force regulations, and the Council on Environmental Quality guidelines. We also interviewed Air Force and other federal officials. Our review, which was conducted in accordance with generally accepted government auditing standards, was performed from August 1984 to June 1985 at:

- Air Force Headquarters, Washington, D.C.
- Tactical Air Command, Langley Air Force Base (AFB), Virginia
- 49th Tactical Fighter Wing, Holloman AFB, New Mexico
- 479th Tactical Training Wing, Holloman AFB, New Mexico
- 33d Tactical Fighter Wing, Eglin AFB, Florida
- Headquarters, Air Defense Tactical Air Command, Langley AFB, Virginia
- Council on Environmental Quality, Washington, D.C.
- Headquarters, Environmental Protection Agency, Washington, D.C.
- Environmental Protection Agency, Region VI, Dallas, Texas
- Department of State, Washington, D.C.
- White Sands Missile Range, White Sands, New Mexico

We also queried officials of the Federal Aviation Administration, the Twelfth Air Force Headquarters at Bergstrom AFB, Texas, and the Air Force Inspection and Safety Center at Norton AFB, California.

Because of the time since the environmental impact statements were initially developed in 1979, supporting documentation and agency officials directly involved in their development were not always available. As a result, much of our review was conducted with Air Force officials and

officials from other agencies who, although not directly involved, were in positions to address our questions.

In addressing the need for the supersonic flights projected for the 49th TFW, we compared this projection to both the flights the wing flew during a 1-year period and the wing's flight training requirements. We also compared the projected supersonic flights for the 49th TFW to the actual flying program and training requirements of a similar tactical fighter wing. We did not evaluate each wing's flying program or the Tactical Air Command's stated training requirements.

To determine the adequacy of the Air Force's evaluation of alternatives, we verified key cost and qualitative factors for all the alternatives addressed in the environmental impact statements except those involving the use of only Valentine or only Reserve and the alternative of no action. We identified how these factors were used and compared the results to those in the statements. We also discussed with Air Force officials two alternatives not addressed in the statements. We did not, however, conduct a detailed study of these alternatives.

We reviewed the Air Force's compliance with the National Environmental Policy Act's procedural requirements by comparing the provisions of the act and applicable Council on Environmental Quality guidelines to actions taken by the Air Force. We also discussed procedural requirements with officials of the Environmental Protection Agency and the General Counsel of the Council on Environmental Quality.

We reviewed the actions the Air Force has taken to safeguard against entering Mexican airspace and discussed past objections and potential repercussions resulting from Air Force flights entering Mexico with Air Force, Department of State, and Federal Aviation Administration officials.

Alternatives to Using Valentine and Reserve for the 49th TFW's Supersonic Training

Alternatives Considered by the Air Force

In its environmental impact statements, the Air Force assessed a number of alternatives for supersonic flight operations in the Valentine and Reserve military operations areas. These alternatives include (1) using existing airspace within 150 NM of Holloman, (2) establishing new supersonic airspace within 150 NM of Holloman, (3) using existing supersonic airspace further than 150 NM from Holloman by temporarily deploying squadrons to other bases, (4) using existing supersonic airspace further than 150 NM from Holloman by inflight refueling, (5) using Mexican airspace, (6) increasing the use of White Sands Missile Range, and (7) using White Sands Missile Range for weekend flying.

Use Existing Airspace Within 150 NM of Holloman

To evaluate the existing training areas that the 49th TFW could use for supersonic operations, the Air Force established the following criteria:

- The area had to be located within 150 NM of Holloman to minimize the time and fuel required to travel to and from the training area and to maximize training time.
- The area had to be at least 40 NM by 50 NM to accomplish effective F-15 training.
- The area had to be sparsely populated so that the fewest number of people would be affected by the noise resulting from the supersonic flight activity.
- The use of the area for supersonic operations should avoid or minimize the effect on other airspace users.
- The use of the area for supersonic operations could not dislodge any existing operations.

With the exception of the White Sands Missile Range, there are eight military flying areas within 150 NM of Holloman, as shown in figure 1. Table II.1 summarizes our review of these areas in light of the Air Force's selection criteria.

Table II.1: Summary of Training Areas' Suitability for Supersonic Operations.

Training area	Adequate size	Sparsely populated	Commericial impact	Mission impact
Beak	Yes	No	Some	Some
Talon	No	No	Some	Some
Pecos	Yes	No	Some	Some
Reese 3	Yes	No	Some	Some
McGregor	No	Yes	None	Some
Tombstone	No	Yes	None	Some
Valentine	Yes	Yes	None	None
Reserve	Yes	Yes	None	None

As shown above, Valentine and Reserve are the only training areas that meet all the criteria.

Establish New Supersonic Airspace Within 150 NM of Holloman

Based on the Air Force's selection criteria, no new airspace within 150 NM of Holloman is suitable for supersonic operations. According to Air Force officials, the airspace surrounding Holloman is saturated with military operations areas and restricted military use areas. All other areas are currently used as commercial airways and/or are too small for use by the 49th TFW for supersonic operations.

Use Existing Airspace Further Than 150 NM From Holloman by Temporarily Deploying Squadrons to Other Bases

Under this alternative, the 49th TFW's squadrons would be deployed to a satellite location and deployment would rotate among the squadrons at 60-day intervals. Tyndall AFB, Florida, was selected because of its access to supersonic training areas over the Gulf of Mexico, where minimum environmental impact would be anticipated.

According to Air Force officials, operational changes made at Tyndall since 1979, such as the addition of an F-15 wing, have resulted in no facilities or airspace being available to support another squadron at this base. In fact, Air Force officials stated that there was no Tactical Air Command base with both adequate facilities and airspace to continuously accommodate another F-15 tactical fighter squadron.

If airspace were available, our cost analysis showed that the 49th TFW's cost per flight for training at Tyndall would not be much higher than that at Valentine and Reserve. However, this cost projection does not include the cost for additional facilities that would be necessary to continuously support another squadron at Tyndall.

In addition, according to Air Force officials, the 49th TFW was located at Holloman for strategic reasons, and the continuous deployment of one squadron to Tyndall would seriously degrade the wing's state of readiness. For example, the wing would not be able to conduct wing training exercises, and various Air Force inspections would be significantly complicated with one-third of the wing continuously deployed.

Use Existing Supersonic Airspace Further Than 150 NM From Holloman by Inflight Refueling

This alternative involved the 49th TFW using airspace further than 150 NM from Holloman by inflight refueling. The Sells military operations area, in southern Arizona, was proposed since it is the closest supersonic training area to Holloman, outside 150 NM. Sells is approximately 400 NM from Holloman and, according to Air Force officials, could be used about 2 hours per day by the 49th TFW. This would not be enough time to meet the 49th TFW's projected need for supersonic flights.

Even if sufficient time were available, the cost and availability of tanker support would be constraining factors with this alternative. Based on Air Force estimates, inflight refueling to Sells for an average of 10 flights per day would require more than a 600-percent increase in the 49th TFW's current KC-135 tanker allocation, at an annual estimated KC-135 cost of $11.5 million. According to Air Force officials, KC-135s are very scarce resources, and the only way the Tactical Air Command could increase the 49th TFW's current tanker allocation would be to decrease the tankers allocated to other Tactical Air Command units.

Due to the extended flight time needed to fly to Sells to train, the F-15 cost per flight would be almost double that of training in Valentine and Reserve. This cost, plus the cost for tanker support would bring the total cost-per-flight for the 49th TFW to train in Sells for an average of 10 flights per day to about $23,000 per flight, or 2-1/2 times the cost to train in Valentine and Reserve.

Use Mexican Airspace

According to an Air Force official, the United States and Mexico reached an agreement in 1941 that specified clearance procedures and requirements for U.S. military flights entering Mexican airspace. For example, the United States agreed to limit the number of military aircraft within Mexican airspace to no more than five at any one time and to provide advance notice of these flights. Therefore, these limitations make this alternative operationally infeasible.

Increase the Use of White Sands Missile Range

The Department of Defense set the White Sands Missile Range user priorities in 1952. Priority for range usage was broken into three categories with the highest priority given to guided missile research and development firings. The second priority was given to other types of guided missile firings, and the third priority was given to other activities, which includes Air Force training such as that of the 49th TFW.

In order for the 49th TFW to get more use of this range, the user priorities would have to be changed. A White Sands Missile Range official stated that increasing the 49th TFW's current use of the range could not be done without adversely affecting the development of national defense projects.

Use White Sands Missile Range for Weekend Flying

According to White Sands Missile Range officials, the range is currently used most Saturdays and some Sundays. White Sands Missile Range and Air Force officials estimated that the 49th TFW could use the range about 50 percent more on an average weekend day than it does currently during weekdays. However, there would be no guarantee of increased use of the range on weekends since the 49th TFW would still have the lowest priority for range usage. Even if the 49th TFW got the estimated 50 percent increase through weekend use, this would not be enough time to meet the wing's projected need for supersonic flights.

In order for the 49th TFW to operate on weekends, additional personnel would, according to Air Force officials, be needed at the 49th TFW and the White Sands Missile Range. The cost for additional personnel at the 49th TFW alone was estimated by Air Force officials to be about $1 million to $3 million annually. Also, Air Force officials estimated that some additional facilities would probably be necessary to accommodate the additional personnel.

Weekend operations would also complicate coordination with other Air Force units. According to Air Force officials, normal day-to-day operations would be difficult because the 49th TFW's schedules would not be compatible with other units' schedules. This could result in a substantial decrease in training for dissimilar air combat, air refueling, airborne warning and control systems, and tow capability for aerial gunnery.

Some of the intangible costs Air Force officials associated with working weekends would include problems with morale and retention.

Alternatives Not Considered by the Air Force

We discussed with Air Force officials two alternatives that were not included in the statements but which were proposed in public comments. These were (1) relocating the 49th TFW to another military base and (2) using simulators for supersonic training.

Relocate the 49th TFW

In regard to moving the 49th TFW to an existing Tactical Air Command base and/or a deserted military base, the Tactical Air Command's Chief of Programs Basing Division explained that there are no existing Tactical Air Command bases with facilities available to support another wing. He estimated the cost to relocate a wing to an existing base and to expand support operations to be over $100 million. Additionally, he stated that deserted military base facilities would be outdated and that the cost of making improvements would be about the same, if not more, than relocating a wing to an existing operational base.

Use Simulators for Supersonic Training

According to the Tactical Air Command's Division Chief for Training Systems, using simulators for supersonic training would not replace the need for supersonic airspace. The F-15 simulators, according to this official, are primarily intercept procedural trainers and do not provide enough realism in air-to-air combat to replace supersonic flying. He was not aware of any planned modifications to the F-15 simulators that would change its training capabilities.

Requests for copies of GAO reports should be sent to:

U.S. General Accounting Office
Post Office Box 6015
Gaithersburg, Maryland 20877

Telephone 202-275-6241

The first five copies of each report are free. Additional copies are $2.00 each.

There is a 25% discount on orders for 100 or more copies mailed to a single address.

Orders must be prepaid by cash or by check or money order made out to the Superintendent of Documents.

35180

United States
General Accounting Office
Washington, D.C. 20548

Official Business
Penalty for Private Use, $300

Bulk Rate
Postage & Fees Paid
GAO
Permit No. G100