

Appendix D
Joint-Use Evaluation Study



1. Joint-Use Evaluation

The following section explores preliminary considerations associated with relocating future commercial airline traffic and facilities from Key West International Airport (EYW) and accommodating such operations at Naval Air Station (NAS) Key West – Boca Chica Field (NAS Key West), thus creating a joint-use military and civilian facility. Joint-use airfields are owned and operated by the Department of Defense (DOD) but civilian use is sometimes permitted. There are currently 21 joint-use military airfields in the United States with Eglin Air Force Base (AFB) being the sole joint-use facility in Florida. While joint-use is permitted by Federal law, determination of whether civilian operations are compatible with the military mission is required. The process must be initiated by the Airport owner (in this case Monroe County) through a formal proposal to the base commander. A formal Feasibility Study and Cost Benefit Analysis for Joint-Use of Boca Chica Field was completed by Greiner, Inc. in August 1995 for Monroe County. Additionally, according to NAS Key West personnel a feasibility study was also completed by the Navy in roughly 2008 but was never published or formally considered by Monroe County.

The review conducted in this section does not constitute such a formal proposal but rather a preliminary review of the opportunities and/or challenges that may be expected with such an operation and which should be evaluated further if joint-use is pursued. This review will assist Monroe County, Airport management and other stakeholders decide if a formal proposal should be developed for submittal to the Navy. Further, it should be noted that under this joint-use scenario only commercial airline operations and facilities would be relocated to NAS Key West and all general aviation (GA) activity and facilities would remain at EYW.

Criteria reviewed and evaluated under this task includes; airspace/air traffic control, airfield operations/traffic mix, military activity and security, and facility needs and land use. NAS Key West operations were reviewed to determine potential impacts to existing military missions and operations, as well as reasonably foreseen future conditions. The potential impacts to existing military mission and operations, and possible mitigating alternatives, were largely identified through two coordination meetings with NAS Key West personnel, conducted on September 29, 2016 and April 4, 2017, to discuss the overall challenges and potential mitigating requirements associated with a joint-use operation at NAS Key West.

1.1 Existing Conditions

An overview of the existing facilities and activity types at both EYW and NAS Key West was completed through this master plan report and coordination meetings with NAS Key West personnel. The following sections summarize the existing conditions considered in the joint-use evaluation.

1.1.1 KEY WEST INTERNATIONAL AIRPORT

Significant challenges and constraints exist that impact the current day to day operation and future growth of EYW. These include; a single short runway with a length of 4,801 feet, limited available land for development due to the location of adjacent environmental areas (i.e. mangroves, salt ponds and the Atlantic Ocean), residential development, and a major highway (South Roosevelt Boulevard). The short runway length limits the size and type of commercial aircraft that can operate at the Airport. In addition, a low airfield elevation of 2.8 feet above mean sea level (AMSL) results in periodic, and localized flooding that impacts airport operations during periods of increased rainfall or higher than average tides (e.g. King Tides) due to the tidal nature of the surrounding salt ponds and drainage system. The level and frequency of flooding is projected to increase over the planning period due to the impacts of sea level rise on the low airfield elevation.

1.1.2 NAS KEY WEST – BOCA CHICA FIELD

NAS Key West's mission is to support the operational and readiness requirements for Department of Defense, Department of Homeland Security, Air National Guard units and other Federal agencies and Allied forces. NAS Key West has favorable flying conditions year-round and expansive over-water aerial combat training ranges within minutes of the station that provide training for air-to-air combat fighter aircraft of all military services using sophisticated combat training systems (e.g. P5 Combat Training System/Tactical Combat Training System (P5CTS/TCTS)). The combat training ranges, known as the Key West Complex airspace, is a system of over-water Warning Areas between the Florida Keys and Cuba, to the west beyond the Dry Tortugas, and to the northwest over the Gulf of Mexico.

The airfield regularly hosts active and reserve squadrons from around the country including; U.S. Navy strike fighter squadrons, U.S. Marine Corps attack and fighter squadrons, and U.S. Air Force, Air Force Reserve and Air National Guard fighter and rescue squadrons for training exercises. NAS Key West is also host to additional tenant commands supporting such critical missions as naval research, development testing, counter-drug operations, and special warfare training.

NAS Key West is located on Boca Chica Key, just east of the City of Key West, and includes roughly 4,700 acres of land. The airfield is at an elevation of 5.7 feet AMSL and experiences periodic flooding of infield areas, though impacts to the primary runway and taxiway are not typical. The airfield has three available runways as follows:

- Runway 8-26: 10,001 x 200 ft. – Concrete/asphalt surface with arresting cables (both ends)

- Runway 4-22: 7,002 x 150 ft. – Concrete/asphalt surface with arresting cables (both ends)
- Runway 14-32: 7,001 x 150 ft. – Concrete/asphalt surface with arresting cables (both ends)

The airfield includes runway lighting and associated equipment to support both precision and non-precision instrument approach procedures with visibility minimums as low as one-half mile.

Based on discussions with NAS Key West personnel, aircraft that are either based at or make regular use of the airfield for mission support or through seasonal or periodic training detachments are largely fighter aircraft and typically include; F/A-18 Hornet, F/A-18 Super Hornet, F-5 Tiger, F-22 Raptor, and F-35 Lightning. Additional aircraft that routinely use NAS Key West for training exercises and mission support include; EA-18 Growler, P-3 Orion, P-8 Poseidon, E-2 Hawkeye and UH-60 helicopters. Training exercises generally occur daily and increase in frequency during the winter months with transient aircraft from northern locations. NAS Key West has the capacity and capability to host a wide variety of other aircraft, and does at times, for various training, mission support and emergency/relief operations.

1.2 Airspace and Air Traffic Control

Due to the proximity of NAS Key West to EYW, the airspace for each facility overlaps and requires close coordination between NAS Key West air traffic control tower (ATCT) and radar approach/departure control personnel and the EYW ATCT. Enroute civilian aircraft entering the terminal area are handled first by NAS Key West radar approach/departure control and only handed off to the EYW ATCT once that destination is known and no conflicts with other military or civilian aircraft in the area exist. A similar procedure occurs in reverse for aircraft departing EYW. General aviation (GA) aircraft operating under visual flight rules (VFR) must remain west of an established line of demarcation, roughly running north to south over Stock Island, and will remain in contact with the EYW ATCT until transitioning out of the terminal airspace. Military aircraft are handled by NAS Key West and typically transition to/from designated warning areas and training airspace to the south north of Cuba and to the west over the Gulf of Mexico.

Due to the overlapping nature of the airspace various types of air traffic (including military aircraft, commercial airline traffic and GA aircraft, regularly mix within the airspace structure and are coordinated through the radar approach/departure control and appropriate ATCTs depending on aircraft destination or origin. This mix of high and low speed aircraft has been and continues to be manageable within the terminal airspace structure. Thus, limited impacts to the terminal area airspace operation could be anticipated under the commercial airline only joint-use scenario described previously.

Potential conflicts could become evident however, with a varying mix of high speed and low speed traffic operating simultaneously within the landing patterns of NAS Key West. The military aircraft operating on training exercises at NAS Key West typically return to the station with limited fuel

reserves and any unforeseen delay to their normal landing protocol could create an increased risk. Restricting any joint-use operation to only commercial airline traffic and maintaining slower GA traffic at EYW could mitigate a portion of this risk. Additionally, implementing standard operating procedures that give arriving military aircraft priority over civilian commercial aircraft would provide an additional level of mitigation. Lastly, an effort to coordinate military training schedules with airline flight schedules/slot times could further facilitate traffic flow and minimize potential local airspace conflicts in the landing patterns. For example, commercial airline slot times could be established with early morning departures, mid-day turns (arrival/departure) and evening arrivals to minimize the periods where military and civilian aircraft both utilize the local airspace and landing patterns. Extensive coordination between the Airport, airlines and NAS Key West would be required to implement such procedures.

1.3 Airfield Operations and Traffic Mix

The airfield layout at NAS Key West is illustrated in the airport diagram presented in **Exhibit 1-1**. Runway 8-26 is the primary runway and receives the majority of use. The military passenger terminal, transient aircraft parking ramp, aircraft hangars and fighter aircraft parking/staging ramp are all located north of Runway 8-26. Access to these areas from either end of Runway 8-26 is through a combination of Taxiways 'A', 'B', 'C', 'F', 'G' and 'H'. Full length parallel taxiways do not currently exist on either side of Runway 8-26. Thus, any civilian aircraft taxiing to either end of Runway 8-26 would currently be required to utilize the taxiways described previously or to back taxi on the runway. Mixing of traffic on these taxiways would result in potential airfield conflicts between aircraft of varying types and operational characteristics. Pilot training and military mission requirements may also require that specific areas remain out of view from civilian aircraft and the general public. As a result, not all existing taxiways may be accessible for civilian commercial operations. Additionally, potential delays to arriving or departing military aircraft, like those discussed in Section 6.2, could be experienced if delays in the scheduled departure or arrival of commercial airline traffic created competing demands for runway use. However, this mix of varying aircraft performance characteristics is currently experienced periodically when large cargo, charter and transport planes operate to/from NAS Key West in coordination with regular flight training operations.

Typically, all runways and taxiways within the airfield operations areas (AOA) would be available for use under a joint-use operation. However, specific restrictions or other operational procedures may be implemented through the joint-use agreement to mitigate potential airfield operational and traffic mix conflicts like those described previously. Airfield infrastructure improvements such as parallel taxiways to the primary runway could also mitigate these potential conflicts and effectively maintain civilian aircraft operations away from military facilities. If implementation of standard procedures for military priority on departure and/or arrival and coordination of flight schedules, as discussed in Section 6.2, does not effectively mitigate potential delays to military aircraft additional runway capacity could eliminate those conflicts. Additional runway capacity may need to be provided by a parallel runway to allow for simultaneous operations in emergency situations or during required simultaneous operations by civilian and military aircraft. Based on discussions with NAS Key West

personnel during the coordination meetings completed as part of this evaluation, the addition of a parallel runway and a combination of the above procedures would be required to adequately safeguard against potential military aircraft delays and associated operational risks.

1.4 Military Activity and Security

The nature of the military mission and associated activity at NAS Key West requires that a high level of security be provided to protect the station's assets, operations, and overall ability to meet mission goals in support of national security. Certain activities may involve aircraft, operations or other equipment that must be secured from public view and/or photograph. The nature of military operations also often includes procedures that are dangerous to the general public such as; high-pressure and "hot" fueling, ordinance storage and maintenance and active aircraft armament. At NAS Key West the presence of new fifth generation aircraft, such as the F-22 and F-35, require armed manned security when parked on the aircraft ramp. This high level of security is an important consideration in any joint-use operation to ensure mission standards are met.

Based on discussions during the coordination meetings with NAS Key West personnel, security would be a priority and significant factor in any joint-use scenario. Measures to maintain existing levels of protection and overall security for military facilities and equipment would need to be incorporated into any joint-use analysis or proposal. Improved airfield infrastructure to maintain civilian aircraft an acceptable distance from sensitive military facilities and equipment could be utilized to provide necessary levels of security. Further, the location and security provisions included with any required civilian facilities, such as a passenger terminal and auto parking, would need to include varying levels of protection against any potential public incursion onto secure military areas.

1.5 Facility Needs and Land Use

There are currently no existing facilities at NAS Key West that could be repurposed for civilian use. Therefore, any scenario for joint-use of NAS Key West with commercial airline traffic from EYW will require the location and construction of civilian support facilities to accommodate that activity. In general, the facilities that would be required to be constructed at NAS Key West in order support civilian commercial airline operations include the following:

- Parallel runway and supporting taxiway
- Commercial aircraft parking apron and associated lighting
- Commercial passenger terminal building and aircraft boarding gates
- Automobile access road and terminal curb-front
- Automobile parking facilities for passengers and employees
- Rental car and bus parking and associated facilities
- Airport maintenance building/storage

- Airport fuel farm/storage

In general, NAS Key West has limited available land for development that is not classified as environmentally sensitive, currently in use for military operations/facilities, or reserved for future military use. The location and construction of any future civilian facilities to support a joint-use operation at NAS Key West should consider the infrastructure, operational and security factors discussed in the previous sections, as well as general land use compatibility in the area. The location for such facilities must be outside of the AOA but adjacent to the airfield and provide access to surface transportation, ideally US Highway 1.

Based on a review of the August 1995 study prepared by Greiner Inc. and discussions with NAS Key West personnel during the coordination meetings, potential sites for civilian commercial airline facilities have been reviewed previously with limited results. One area that was identified in previous evaluations is located just north of the Runway 26 approach end, between US Highway 1 and a canal that generally runs parallel to Taxiway 'F'. The area is largely federally owned land that appears to be comprised of both wetland and upland features and is approximately 75 acres in size. There are also a number of residential properties located in this area that would need to be evaluated for potential impacts. The site would require a taxiway connection/bridge over the existing canal to Taxiway 'F' and Runway 8-26 to access the airfield. However, the location of the canal would provide an additional level of security preventing access to the military AOA. Direct ground access from US Highway 1 could be provided. Other potential development sites on or adjacent the base should also be evaluated in any formal feasibility study or joint-use proposal.

1.6 Summary

The evaluation of possible joint-use of NAS Key West for the relocation of commercial airline operations and facilities at EYW completed in this section was based on existing published studies, discussions with NAS personnel through two coordination meetings and a review of current operating conditions and activity at both NAS Key West and EYW. The overall goal was to provide a preliminary review of the opportunities and/or challenges that may be expected with such an operation to assist Monroe County, airport management and other stakeholders decide if a formal proposal should be developed for submittal to the Navy.

Based on this review and preliminary coordination, several considerations were identified that could pose a challenge to implementation of a joint-use operation and include the following:

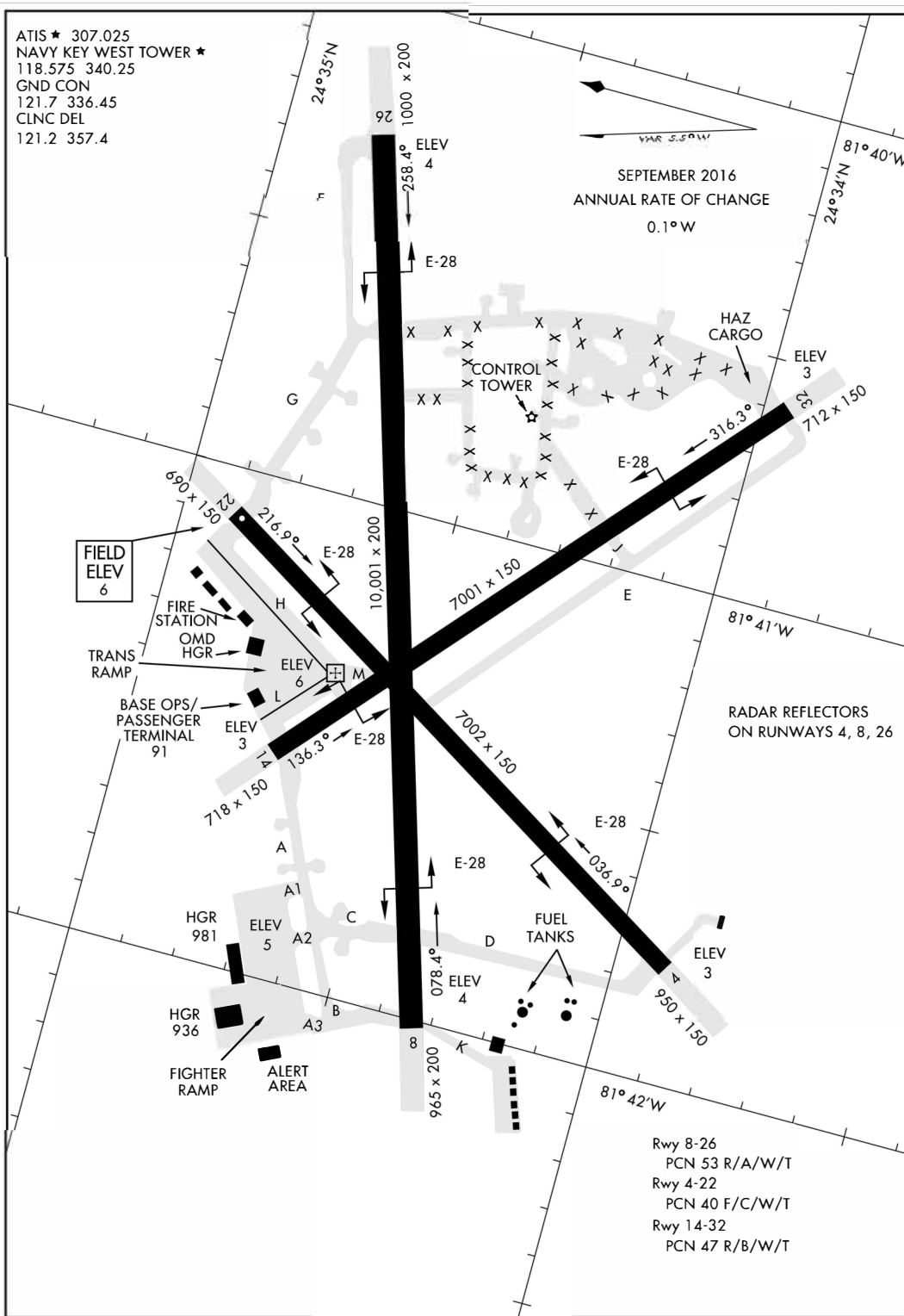
1. Potential delays to arriving military aircraft due to a mix of military and commercial aircraft in the landing patterns, resulting in increased operating risk due to low fuel reserves.
2. Potential airfield operational conflicts due to a mix of military and commercial aircraft with competing demands for taxiway and runway infrastructure.

3. The need to maintain a high level of security to protect the station's assets, operations, and overall ability to meet mission goals in support of national security.
4. Identification of an adequate development site that meets the needs of the civilian facilities while maintaining or enhancing security and land use compatibility.

Though outside the scope of this preliminary review, significant environmental and funding requirements would also need to be met in addition to the considerations outlined above. The evaluation and discussions with NAS personnel also identified possible mitigating alternatives to address the challenges identified above. These include:

1. Mitigate potential military aircraft delays by; restricting joint-use operations to commercial aircraft only, implementing standard operating procedures that give arriving military aircraft priority over civilian aircraft, and coordinate airline flight schedules/slot times with typical military training schedules (as feasible) to facilitate traffic flow and minimize potential local airspace conflicts in the landing patterns.
2. Mitigate potential airfield operational conflicts and further deconflict airspace interactions through airfield infrastructure improvements such as parallel taxiways to the primary runway and additional runway capacity with a new parallel runway to Runway 8-26.
3. Provide necessary levels of security through improved airfield taxiways to maintain civilian aircraft clear of sensitive military facilities and equipment and include enhanced security provisions with the construction of civilian facilities that provide multiple levels of security to protect against potential public incursion onto secure military areas.
4. Further evaluate potential development of the area north of the approach end of Runway 26 and south of US Highway 1 and others as potential sites for civilian commercial operations and facility needs.

As discussed previously, preliminary coordination with NAS Key West personnel outlined mitigation alternatives and operational requirements that should be included in any joint-use operation proposal or feasibility study. Based on this coordination, evaluation and the resulting challenges and mitigating opportunities outlined within this section, further study to fully determine the feasibility and benefit/cost impacts for relocation of commercial operations and facilities from EYW to NAS Key West and establishment of a joint-use facility may be warranted.



SOURCE: FAA Airport Diagram, January, 2018.
 PREPARED BY: McFarland Johnson, Inc., January, 2018.

EXHIBIT 1-1

NAS Key West Airport Diagram