DRAFT

ENVIRONMENTAL ASSESSMENT

REPLACEMENT CONCOURSE B

JACKSONVILLE INTERNATIONAL AIRPORT (JAX)

JACKSONVILLE, DUVAL COUNTY, FLORIDA

Prepared for:

Jacksonville Aviation Authority

and

U.S. Department of Transportation

Federal Aviation Administration

As lead Federal Agency pursuant to the National Environmental Policy Act of 1969

Prepared by:

RS&H, Inc

This environmental assessment becomes a federal document when evaluated, signed, and dated by the responsible FAA official.

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(Responsible FAA Official)

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PURPOSE AND NEED

The Jacksonville Aviation Authority (JAA or Authority) has undertaken an Environmental Assessment (EA) for the construction and operation of a new Concourse B (i.e., Proposed Project) at Jacksonville International Airport (JAX or Airport).

The FAA is the lead federal agency to ensure compliance with NEPA for airport development actions. This EA is prepared pursuant to Section 102(2)(c) of the National Environmental Policy Act (NEPA), the President's Council on Environmental Quality (CEQ) Regulations Title 40 Code of Federal Regulations (CFR) §§ 1500-1508, the implementing regulations for NEPA, and per FAA Order 1050.1F, Environmental Impacts: Policies and Procedures, and FAA Order 5050.4B, National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions, as well as applicable Executive Orders (EOs), and other applicable federal, state, and local requirements.

1.1 DOCUMENT ORGANIZATION

This EA is structured to follow the document format described in FAA Orders 1050.1F and 5050.4B. In addition, this document follows the 2020 Council on Environmental Quality (CEQ) National Environmental Policy Act Implementing Regulations regarding an EA not exceeding 75 pages,[1] not including appendices. (CEQ, 2020). ***Table 1-1*** lists the EA's chapters and describes the information contained within each.

TABLE 1-1: DOCUMENT ORGANIZATION

Chapter	Description
Chapter 1: Purpose and Need/Proposed Project	This chapter provides an overview of the Airport and discusses the purpose and need of the project.
Chapter 2: Alternatives	This chapter describes the No Action Alternative and alternatives considered in this EA.
Chapter 3: Affected Environment / Environmental Consequences	This chapter presents an overview of the existing environment in the EA's study areas. It describes the potential effects of the alternative on each of the environmental resources identified in the FAA Order 5050.4B.
Chapter 4: Agency and Public Involvement	This chapter describes the coordination process to applicable agencies and the public's opportunity to comment on the EA.
Chapter 5: List of Preparers	This chapter lists the staff at the Authority and consulting associates who researched, wrote, reviewed, and documented the EA.

[1] "Page" means 500 words and does not include explanatory maps, diagrams, graphs, tables, and other means of graphically displaying quantitative or geospatial information.

Chapter	Description
Chapter 6: References	This chapter identifies the reference materials used to prepare the EA.
Appendices	The appendices present relevant material, exhibits, and technical reports developed as part of preparing the EA.

Source: RS&H, 2022

1.2 AIRPORT OVERVIEW

The Airport opened as a commercial airport to replace the smaller Imeson Airport in 1968. The Airport is part of the Jacksonville Aviation Authority (JAA), which operates three other public-use airports in the Jacksonville area (Jacksonville Aviation Authority, 2015).

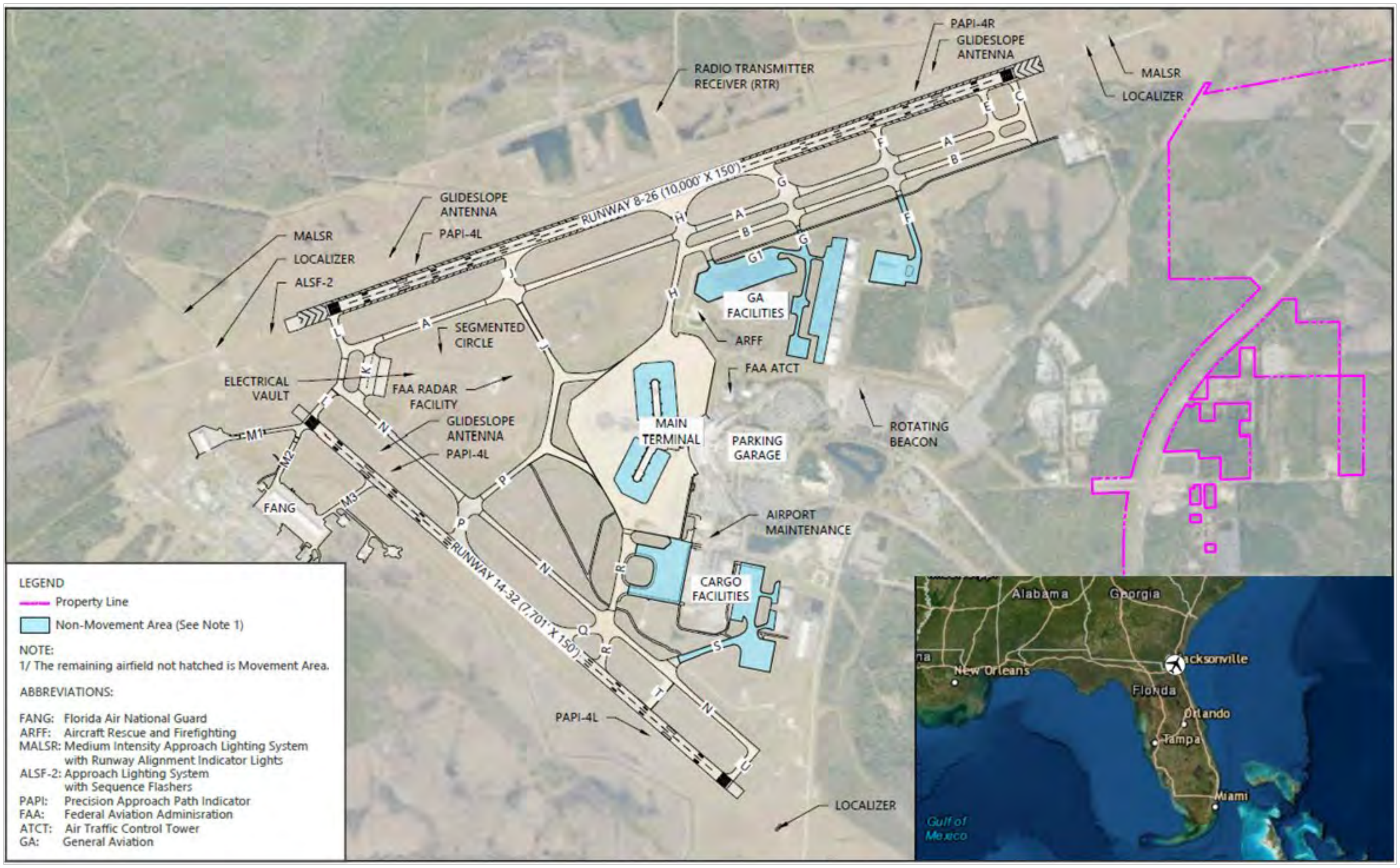
JAX is located in Duval County, about 12 miles north of downtown Jacksonville. The Airport has two runways, with the longest runway, Runway 8/26, measuring 10,000 feet (see ***Figure 1-1***). JAX supports the general aviation community with two fixed-based operators (FBO), the operation of several cargo operators and freight forwarders. JAX also supports the Florida Air National Guard (FANG) 125th Fighter Wing (JAA, 2020). The JAX Airport Layout Plan (ALP) is shown in ***Figure 1-2***.

The Airport has two existing concourses (Concourse A and Concourse C). Each concourse has 10 aircraft gates, each with a passenger boarding bridge. Concourses A and C also have holdrooms, restrooms, and retail/food and beverage concessions for passengers. Concourse A is nearly 600 linear feet from the terminal courtyard and approximately 111,000 square feet in total area. “A” gates primarily serve Delta Airlines, JetBlue Airways, and United Airlines. Level 2 of Concourse A (i.e., passenger circulation and holdroom space) is approximately 55,700 square feet in area. Concourse C is also nearly 600 feet from the terminal courtyard and approximately 112,000 square feet in total area. “C” gates primarily serve Southwest Airlines and American Airlines. Level 2 of Concourse C is approximately 56,200 square feet in area. Frontier Airlines, Allegiant Air, Air Canada, and Spirit Airlines use common use gates[2] on Concourses A and C (Ricondo & Associates, 2020).

The Airport is a vital component of the region’s economy and boasts an exceptional geographic location in northeast Florida that offers easy access to major highways (e.g., Interstate 10 and Interstate 95). The Airport helps move the state and local economy by creating jobs, supporting business growth, and connecting global markets. The Airport’s economic impact supports approximately 26,400 jobs, which provide $994 million in personal income, and its total economic output is approximately $3.19 billion (FDOT, 2019).

[2] Common Use Gates - assigned to airlines as-needed by JAA.

FIGURE 1-1: JACKSONVILLE INTERNATIONAL AIRPORT



Source: Ricondo & Associates, 2020. ESRI, 2022.

Figure is not to scale and is for graphic purposes only.

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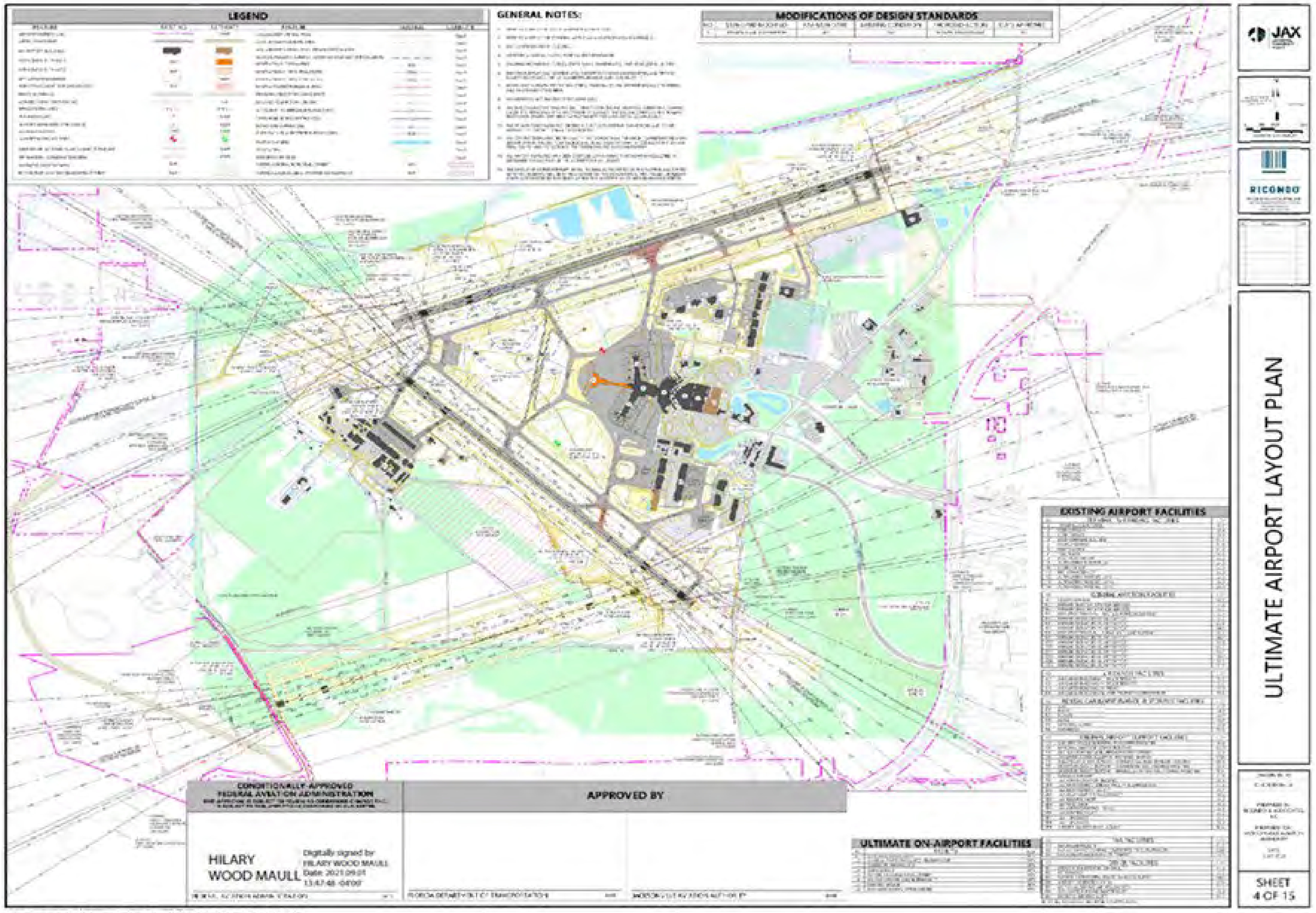
FIGURE 1-2: JACKSONVILLE INTERNATIONAL AIRPORT LAYOUT PLAN



Source: Ricondo & Associates, 2022.

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Figure is not to scale and is for graphic purposes only.

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The operation of the Airport is important to the economy, providing continued economic benefits to Duval County, the northeast Florida region, and the State (FDOT, 2019).

Aircraft operations at the Airport include commercial, corporate/business, general aviation, charter, recreational, and military flights. ***Table 1-2*** shows the FAA's Terminal Area Forecast (TAF) summarizing the Airport's historical and forecast itinerant, local, and total operations from 2019 to 2033.

TABLE 1-2: AIRPORT OPERATIONS - FAA TERMINAL AREA FORECAST

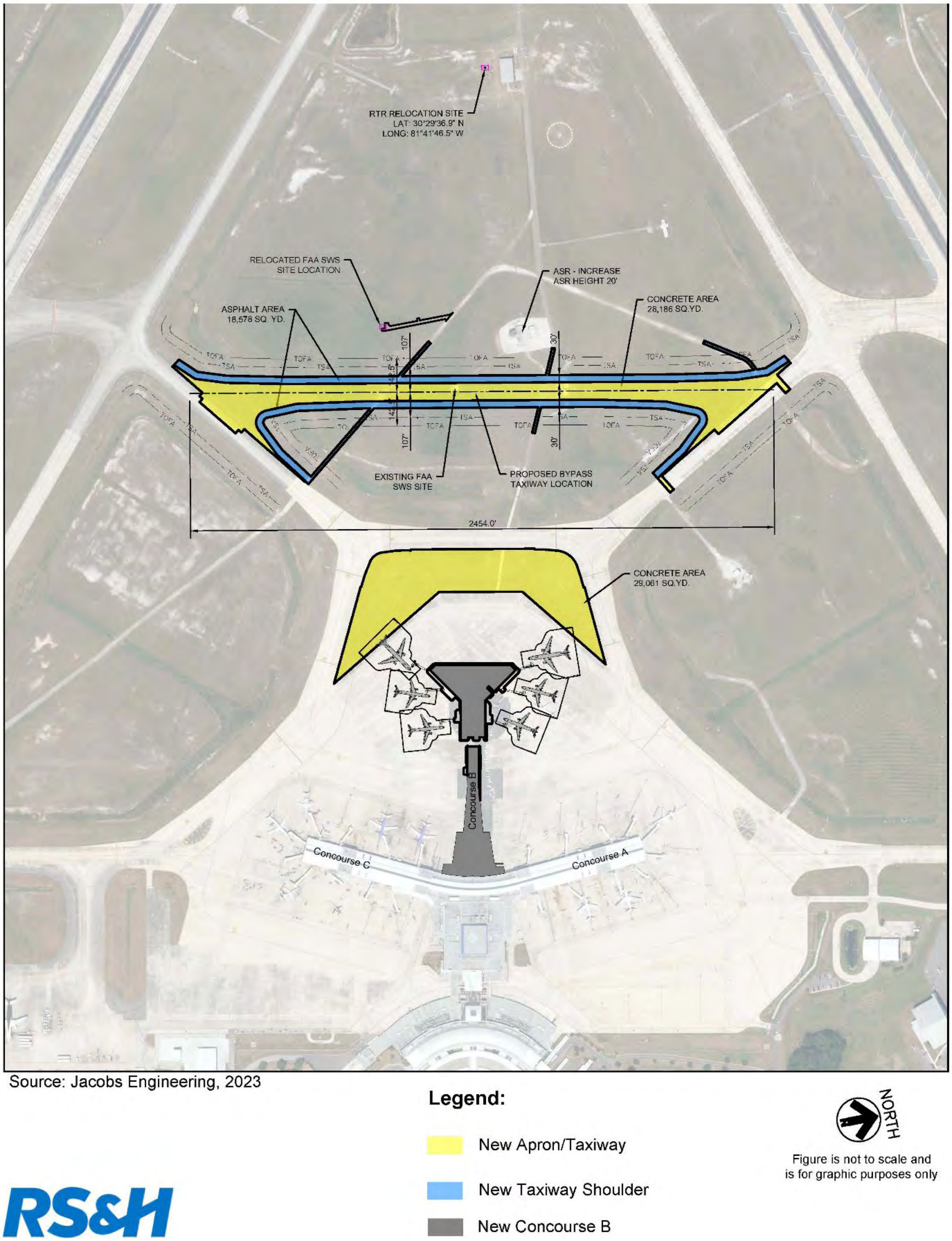
Year	Itinerant Operations	Local Operations	Total Operations	Based Aircraft
2019	103,243	6,021	109,264	61
2020	72,805	5,723	78,528	56
2021	75,288	5,884	81,172	58
2022	94,443	5,008	99,451	59
2023	86,365	5,321	91,686	59
2024	93,655	5,559	99,214	59
2025	101,274	5,828	107,102	59
2026	103,239	5,838	109,077	59
2027	105,107	5,848	110,955	59
2028	107,014	5,858	112,872	59
2029	108,997	5,869	114,846	60
2030	110,936	5,880	116,816	60
2031	112,952	5,891	118,843	60
2032	114,996	5,902	120,898	60
2033	117,032	5,913	122,945	60

Source: (FAA, 2023)

1.3 PROPOSED PROJECT

The Proposed Project includes improvements at the Airport (see ***Figure 1-3***) to accommodate demand at the Airport. The Proposed Project is the construction and operation of replacement Concourse B and the associated ramp area, as well as the relocation of Taxiway V, raising the existing Airport Surveillance Radar (ASR), relocating the existing Remote Transmitter Receiver (RTR) and Surface Weather Station (SWS) systems, and demolishing an unused on-Airport building.

FIGURE 1-3: PROPOSED PROJECT



Source: Jacobs Engineering, 2023

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The proposed Concourse B would increase the number of concourses at the JAX Terminal to three (3), like the original terminal layout. Concourse B would consist of up to three levels with approximately 190,000 total square feet and include the development of new holdrooms, six new aircraft gates, concessions, restrooms, and a connecting corridor with moving sidewalks.

- The operations (or ground) level would support the Airport and airline operations and contain the building's mechanical and electrical rooms (approximately 52,000 square feet).
- The concourse (or second) level would be largely passenger circulation and holdroom space (approximately 119,000 square feet). The concourse level would also include concession space. The east end, or Hub area, would connect to existing concourses A and C directly across from the existing TSA passenger security screening checkpoint (SSCP). The new concession areas would tie into the existing concession areas and become one large retail space visible to all passengers as they emerge from the SSCP. Services such as mother's nursing rooms, men’s and women’s restrooms, and a pet relief area would also be on the concourse level.
- The mezzanine (or third) level would be located at the hub and would be approximately 19,000 square feet, which can be subdivided as needed for club areas and/or a potential restaurant.

To accommodate the construction of Concourse B, the air carrier apron would be expanded by 29,061 square yards west up to existing Taxiway V. Taxiway V would then be relocated approximately 600 feet west of the current location to improve aircraft maneuverability and eliminate the line-of-sight obstruction for air traffic control personnel that results from the construction of Concourse B. In addition, the Proposed Project would include an approximate 5,200-gallon above-ground diesel storage tank for Concourse B backup generators.

The Proposed Project would require modifying the existing ASR-9/Mode S, SWS, and RTR systems to maintain existing communications equipment. Through the Obstruction Evaluation/Airport Airspace Analysis, the FAA identified potential conflicts with the ASR and aircraft taxiing on the proposed taxiway as well as aircraft parked on the apron of the proposed Concourse B. The FAA ATCT personnel also identified existing RTR issues with the current terminal layout. An FAA RTR study was initiated to study further impacts of the proposed Concourse B. The FAA’s two studies evaluated the performance of these communications equipment for the Proposed Project and recommendations for continued FAA communication services to the Air Traffic Control System. The studies included an alternatives analysis for these communication services (see ***Appendix D***). The ASR-9/Mode S study recommended that the existing tower be raised 20 feet at its current location and orientation (FAAa, 2023). The SWS system would be relocated from its current location to the west and adjacent to the relocated Taxiway V. The RTR study recommended relocating the existing RTR to an area close to the existing windsock (FAAb, 2023). The RTR site would be on approximately one acre of land, with one 32-foot consolidated platform (or three 32-foot towers) and a 12-foot x 36-foot precast shelter. The relocated RTR would provide a clear line of sight to both ends of the runways, hold short points/areas, and provide easy access for local maintenance technicians. Additionally, lowering the RTR antenna heights to 32 feet from the current 45 feet would increase the ground coverage and improve the overall communication coverage for Air Traffic.

A replacement Concourse B would also improve aircraft operations on the ground. The original Concourse B gated aircraft around all sides of the concourse, creating dependent push-back and taxi-in operations within the western gates of Concourses A and C. The length of the replacement Concourse B connector would be extended, compared to the original Concourse B, to facilitate independent push-back and taxi-in operations, as well as gate aircraft further west to avoid conflict with the geometric changes to the new Concourses A and C. Extending the connector requires pavement to be extended from the existing ramp up to Taxiway V to accommodate aircraft parking on the westernmost end of the concourse and movement around a replacement Concourse B without transitioning multiple times between movement and non-movement areas. As a result of constructing Taxiway V, new SJRWMD permitted stormwater management swales would be constructed in the airfield to convey, store, and treat runoff.

1.4 PURPOSE AND NEED

According to FAA Order 1050.1F, Section 6-2.1(c), the purpose and need briefly describe the underlying purpose and need for the federal action and provides the foundation for identifying reasonable alternatives to a Proposed Project. The purpose and need identifies the problem facing the airport sponsor (i.e., the "need" for the project) and describes what would be achieved by the Proposed Project (i.e., the "purpose" of the project).

The Purpose and Need provides the foundation for identifying intended results or benefits for future conditions. In addition, it defines the range of reasonable alternatives to a proposed action. The FAA federal action is the unconditional approval of the Airport Layout Plan (ALP) for those parts of the ALP which are defined in this EA (e.g., Concourse B, apron, Taxiway V, relocation of navaids, etc.). Pursuant to 49 U.S.C. § 47107(a)(16), the FAA Administrator (under authority delegated from the Secretary of Transportation) must approve any revisions or modifications to an ALP before a revision or modification takes effect.

The following sections describe the project's background, purpose, and need in accordance with FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions,* and FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*.

1.4.1 Need

Airport projects that accommodate passenger traffic should be undertaken to the maximum possible extent to increase safety and efficiency and avoid passenger delays. Such projects are typically conducted to answer different needs. The terminal at JAX originally had three (3) concourses (A, B, and C) with associated aircraft parking positions. The layout of the terminal has evolved to adapt to demand, usage, and maintenance/modernization needs. Ultimately, the original Concourse B was demolished as part of that adaptation.

In a continuation of that adaptation process, the JAA currently needs additional gates for the following reasons:

- Meet gate and holdroom requirements based on forecasted passenger demands.
- Complete the terminal modernization program and restore the original number of three concourses by replacing the old Concourse B, demolished in 2009.
- Maintain an adequate number of gates and aircraft positions to, at a minimum, restore capacity to pre-Concourse B demolition and meet future demand.
- Maintain the appropriate Level of Service (LOS) and safe handling of passengers under all circumstances.

1.4.1.1 Airport Master Plan

The FAA approved a forecast of aviation activity in 2019 as part of the latest 2020 JAX Airport Master Plan (2020 AMP). Aviation activity can be affected by external factors unknown at the time of the forecast analysis. The COVID-19 pandemic (2020-2021) significantly affected civil aviation operations across the World, including at JAX. As shown in ***Figure 1-4***, the industry is recovering, and aviation activity is forecast to be at a pre-pandemic level and continue growing. Also shown in ***Figure 1-5***, the 2019 forecast remains valid for the upcoming years.

The validity of the 2019 forecast is also justified by the following reasons:

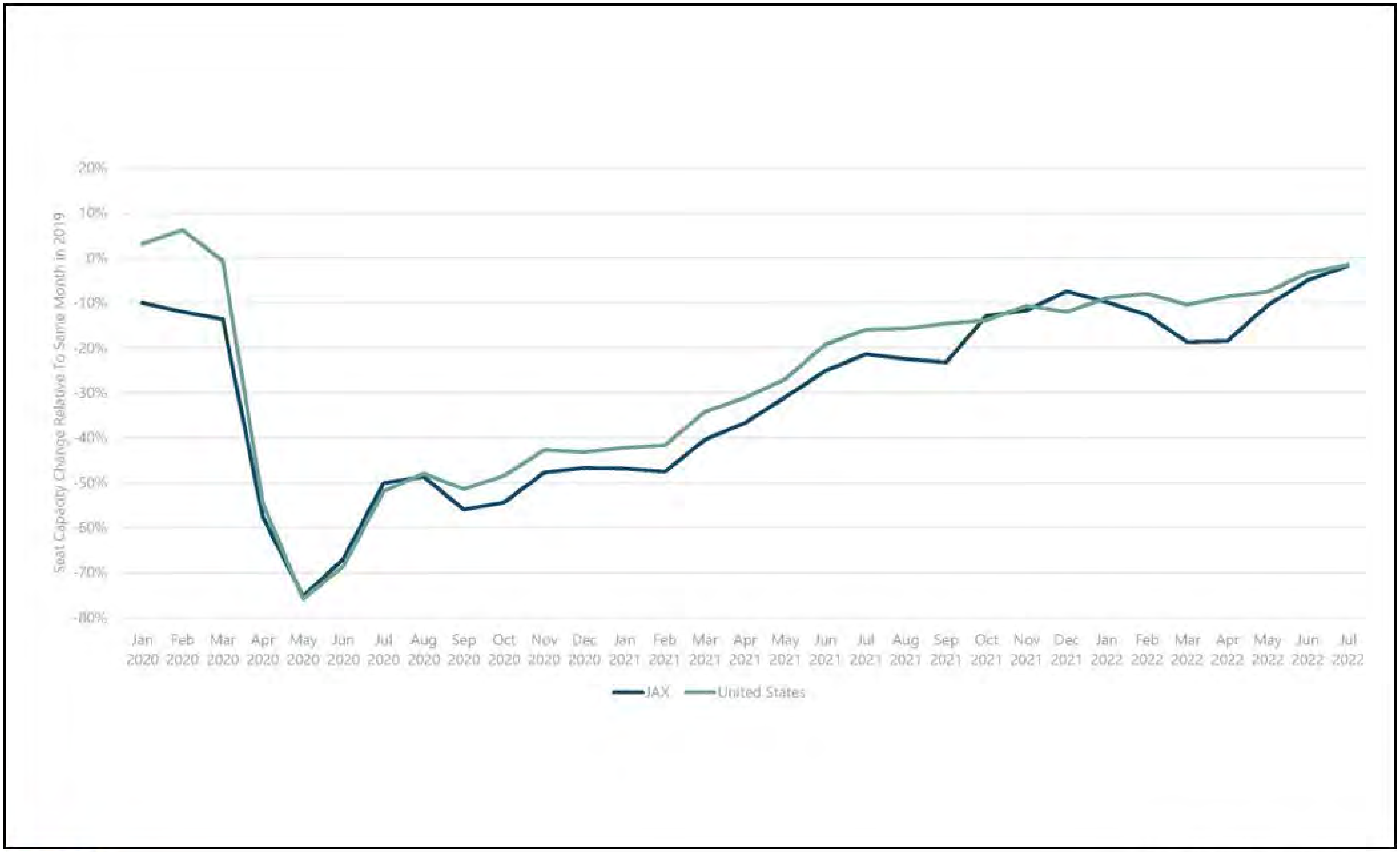
- In 2022, JAA verified the forecast recovery of aviation activity at the Airport. The results of this analysis are conclusive and match the pre-pandemic 2019 forecast within the next five years.

The FAA TAF published in March 2022 predicts slightly greater growth at the Airport than the 2019 forecast.

In the 2020 AMP, design day flight schedules (DDFS) were developed from the annual forecast of aviation activity for 2019 and each Planning Activity Level (PAL).[3] The DDFS represents passenger airline activity that is forecast during the peak period for an average day. The 2020 AMP concludes that the peak hour of passenger airline operations is between 11:00 -11:59 am, with a total of 16 passenger airline arrivals and 11 passenger airline departures for a total of 27 movements either going to or coming from the passenger terminal during this time. This increases to 29 in PAL 1 (2025) and 31 in PAL 3 (2035).

[3] Passenger Activity Levels (PAL) are selected activity levels that may trigger the need for additional facilities or improvements. PAL 1 is assumed to be reached by the end of 2025, PAL 2 by the end of 2030, and PAL 3 by the end of 2035 (JAA, 2020).

FIGURE 1-4: ACTIVITY RECOVERY AT JAX



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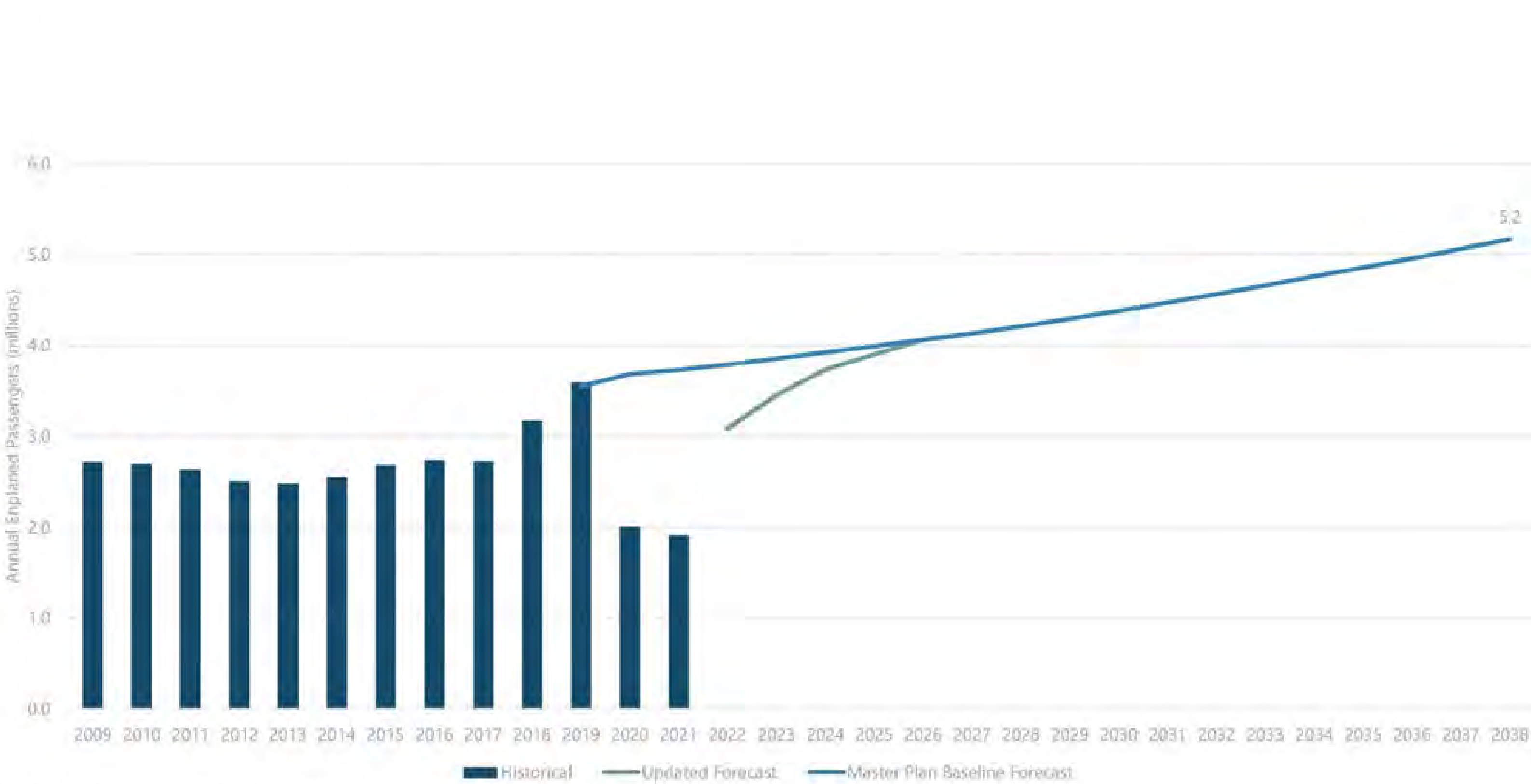
Source: Ricondo & Associates, 2022.

FIGURE 1-5: PASSENGER FORECAST COMPARISON



Note: The forecasts were prepared in Spring 2019, and accepted by the FAA on May 16, 2019.
Sources: Jacksonville Aviation Authority (historical; Ricondo & Associates, Inc. (analysis), April 2022.

RS&H

Source: Ricondo & Associates, 2022.

The 2020 AMP concludes that the existing terminal holdroom space and gates were at capacity in 2019. The results from the analysis in the 2020 AMP triggered requirements in terms of holdroom space and the number of gates at the Airport, requiring Concourse B to be replaced at the terminal (see 2020 AMP for additional details).

1.4.1.2 Terminal Deficiencies

Currently, the Airport has deficiencies in the number of concourses and gates and concerns about planning for future levels of service and passenger safety.

Concourses - The original Airport terminal was constructed in 1968. It was programmed for modernization in 1998 due to age, a layout that no longer effectively served the fleet mix and an increasing financial burden for facility maintenance. The terminal modernization program at the Airport was initially staged in four phases to avoid excessive operational impacts:

- Phase 1, completed in March 2003, provided approximately 95,000 square feet of additional space and included an expansion of the baggage claim/makeup processing space and additional ticketing and rental car counter space.
- Phase 2, completed in late 2004, added 46,500 square feet and included an expansion of the main courtyard to accommodate a new centralized security screening checkpoint and provided more concession space.
- Phase 3, completed in 2008, replaced Concourses A and C.

Phase 4 commenced in 2009 with the demolition of Concourse B, but the subsequent construction of a replacement concourse has not yet occurred.

Phase 4 was interrupted, which created a delay between the demolition of the old Concourse B and its replacement. Initially, Concourse B was set to be replaced immediately following demolition. But the aviation industry experienced a downturn in response to the economic recession in 2008-2009, which created the delay from 2010 to 2019.

In 2019, the JAA revived the replacement Concourse B because of the Airport's 16% increase in passengers in 2018. In 2020, plans to construct and operate a replacement Concourse B were again delayed due to the COVID-19 pandemic and a sharp decline in operations and passengers. A decrease in COVID-19 pandemic cases, recovery of air traffic, and economic trends showing growing stability in the aviation industry initiated the JAA to once again proceed with the concourse replacement.

Gates - In 2005, before the demolition of the old Concourse B, JAX had a total of 29 gates across the three concourses, as follows:

- 7 gates at Concourse A
- 12 gates at the old Concourse B (mix of contact gates and hardstands)
- 10 gates at Concourse C

Since then, Concourse B was demolished, and Concourse A added 3 more gates for a total of 10, bringing the total number of gates available today at JAX to 20.

In the 2020 AMP, a gating analysis was completed for each PAL using a detailed overview of airline operations and the 2019 approved forecast. The Airport operates a mixture of common-use gates (i.e., assigned to airlines as-needed by JAA) and preferential-use gates (i.e., leased by airlines). The gating analysis assumed that a minimum of one-hour ground time would be required between the departure of one flight and the arrival of another on a single gate when the carriers of successive flights are not the same. For operations occurring by a single air carrier, it was assumed that 30 minutes would be required between flights. The conclusion of the gating analysis in the 2020 AMP describes the Airport's immediate need for an additional three (3) gates (contact and spare gates), with a total of four (4) gates needed by PAL 1 (or 2025) and six (6) gates by PAL 3 (2035). Since the completion of the 2020 AMP, the 2022 FAA Terminal Area Forecast (TAF) now projects more total passengers than the 2018 aviation forecast. Enplaned passengers are expected to exceed 2019 volumes by 2024, resulting in the need for six (6) total gates significantly before PAL 3.

Spare Gates[4] – Multiple factors can affect the previous analysis, and it is good practice to construct spare gates for the reasons explained below:

- According to *ACRP Report 163, Guidebook for Preparing and Using Airport Design Day Schedules*, spare gates are intended to provide additional gate capacity in case flight schedules are disrupted, and off-schedule flights result in a higher demand for gates than anticipated under the original schedule.
- Airfield and terminal improvement projects can affect airport operations significantly and require the closure of existing gates throughout construction. Spare gates help the Airport maintain safe and efficient operations during Airport maintenance/development projects around the terminal and construction of the replacement concourse itself.
- The fleet mix used by airlines can change regularly, requiring the Airport to adapt and adjust the gate layout. In addition, limited apron space can lead to a smaller clearance between aircraft and an increased safety risk. Spare gates provide an airport with more space and flexibility to safely shift aircraft positions around the facility for new aircraft types.
- The air transportation industry relies on the ability to arrive and depart an airport facility without unnecessary service interruptions. Ground delays could lead to significant adverse operational and economic consequences and environmental impact if aircraft remain on the ramp with an engine running while waiting for a gate.
- Florida, including Duval County, is subject to unpredictable severe weather events (e.g.,

4 As described in the 2020 AMP, spare gates are necessary to prepare for irregular operations due to maintenance or weather, causing an aircraft to remain on a scheduled gate longer than anticipated.

significant thunderstorms/rainfalls) that can affect air traffic and require aircraft to remain grounded at gates longer than scheduled. To avoid additional ground delay, gates need to be available during such events. In addition, other southeast U.S. airports have the potential to be closed for the weather as well, requiring aircraft to be diverted to JAX.

Passenger Service and Safety **-** Level of Service (LOS) is the quality or conditions passengers experience at a facility. JAA uses it as a measurement for meeting passenger demand. Passenger LOS can refer to a range of established values combining qualitative and quantitative criteria relative to comfort and convenience. It is expressed as the current comfort level and a desirable threshold of the air traveler's experience.

At JAX, the historical performance of the Airport to passenger processing efficiency and convenience is considered the benchmark for LOS standards. This benchmark includes the sole use of contact gates (no non-contact gates/hardstands) and convenient and accessible amenities.

Contact gates are of critical concern at JAX due to the extreme summer meteorological conditions when daytime temperatures frequently exceed 95 degrees. In addition, the ability to shelter JAX passengers from monsoon-like seasonal storms (e.g., heavy rain and lightning) is also a primary consideration. Historical weather data from the National Oceanic and Atmospheric Administration (NOAA) shows that Duval County has thousands of lightning strikes and severe storms yearly. Cloud-to-ground lightning flashes recorded from 1988 to 2017 show that the County had 522,000 total flashes, with storm activity significantly increased in May through September, with 1 pm-7 pm local time as the peak time range for storms and lightning, when passenger activity is at its highest.

Additional contact gates, as opposed to the addition of hardstand positions around the existing concourses, are needed to provide safety and maintain its current level of comfort to passengers.

1.4.2 Purpose

The JAA is proposing improvements at the Airport that are intended to maintain its current level of service and proactively prevent near-future congestion.

The additional concourse was a part of the original modernization program and then re-emphasized in the previous AMP. Due to various reasons described previously that were out of JAA's control, the project was put on hold. The 2020 AMP highlighted the need to replace the concourse and triggered the current project. Additional gates would ensure that JAX can meet latent demand and maintain its current LOS. Additional gates are needed to provide additional holdroom space for contact gates to load and unload passengers, maintain the Airport's current LOS, and continue safe passenger operations.

1.4.2.1 Construction and Operation of New Additional Gates

The 2020 AMP documented the need for additional gates to accommodate the projected growth in passenger enplanements. An increase of six (6) gates (4 additional and 2 spares) would leave the Airport with a three-gate deficit when compared to its original terminal (see ***Table 1-2***).

The JAA has determined that implementing the construction and operation of additional gates would meet increased forecast passenger demand, maintain the Airport's current level of service, accommodate additional aircraft, and continue to provide safe and efficient aircraft movement at the Airport.

TABLE 1-3: AIRPORT GATE HISTORY

Number of Gates	Concourse A	Concourse B	Concourse C	Airport Total	Comparison to the Original Terminal
Original Terminal (2005)	7	12[1]	10	29	-
Existing Terminal (2022)	10	0	10	20	(9.00)
With Replacement Concourse B (2026)	10	6	10	26	(3.00)

Notes: [1] - Contact / Hardstand Gates

Source: RS&H, 2023.

JAX facilities are consistent with the LOS standards referenced in the International Air Transportation Association (IATA) *Airport Development Reference Manual* and the FAA AC 150/5360-13A, *Airport Terminal Planning.* New contact gates at JAX would provide airline passengers and tenant airlines with a LOS consistent with that historically provided at the Airport. In addition, it would ensure sheltering of passengers during severe weather conditions and limit passenger circulation on the apron for safer operations with contact gates.[5]

Construction and Operation of Spare Gates - Spare gates are needed at JAX due to the number of flights proposed for each gate per day, especially on the preferential-use gates.[6] Preferential-use gates (i.e., leased by a single carrier with first right-of-refusal) only have 30 minutes between flights and average seven to nine turns (i.e., deplaning and boarding of an aircraft) per day, which can quickly compound delay during irregular operations and peak periods. Therefore, the 2020 AMP gating analysis recommended four (4) new gates and two (2) spare gates (6 total gates) for the safe, efficient, and best passenger experience.

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[5] JAA determined that common departure lounge/holdroom concept and use of remote gate/aircraft hardstand operations do not provide an acceptable LOS

[6] JAA determined the 2020 AMP gating analysis should plan for an operational spare gate on each concourse.

1.5 FEDERAL ACTION

The following are the federal actions for the Proposed Project.

- Unconditional approval of the Airport Layout Plan (ALP) to depict the proposed improvements pursuant to 49 USC § 40103(b) and 47107(a)(16).
- Determination under 49 USC § 44502(b) that the airport development is reasonably necessary for use in air commerce or in the interests of national defense.
- Approval of a Construction Safety and Phasing Plan to maintain aviation and airfield safety during construction pursuant to FAA Advisory Circular (AC) 150/5370-2, Operational Safety on Airports During Construction (14 CFR Part 139 [49 USC § 44706]).
- Determinations under 49 USC 47106 and 47107 relating to the eligibility of the Proposed Project for federal funding under the Airport Improvement Program (AIP) and/or determinations under 49 USC 40117, as implemented by 14 CFR 158.25, to impose and use passenger facility charges (PFCs) collected at the airport to assist with construction of potentially eligible development items shown on the ALP including the proposed construction of Concourse B and associated actions.

2

ALTERNATIVES

FAA Order 1050.1F, Paragraph 6-2.1.d describes the requirements of an alternatives analysis within an FAA EA. EAs discuss the alternatives the approving official will consider. There is no requirement for a specific number of alternatives, and an EA may limit the range of alternatives to the Proposed Project and no action. For alternatives considered but eliminated from further study, the EA should briefly explain why these were eliminated.

As stated in Federal Aviation Administration (FAA) Order 5050.4B, paragraph 706 (d)(7), an alternative can be eliminated from further consideration when the alternative has been judged "not reasonable." Whether a proposed alternative is reasonable depends, in large part, upon the extent to which it meets the purpose and need for the Proposed Action (FAA Order 1050.1F, paragraph 7-1.1[e]). In addition, 40 C.F.R. 1502.14(c)[2020] requires the evaluation of the No Action alternative regardless of whether it meets the stated purpose and need or is reasonable to implement.

This chapter evaluates the Proposed Project (i.e., the proposed replacement Concourse B) and alternatives. CEQ regulations (Title 40 Code of Federal Regulations [C.F.R.] Section 1502.14) regarding implementation of the NEPA require that federal agencies rigorously explore and objectively evaluate all reasonable alternatives and, for alternatives eliminated from detailed study, briefly discuss the reasons for elimination.

2.1 OVERVIEW OF THE ALTERNATIVES SCREENING PROCESS

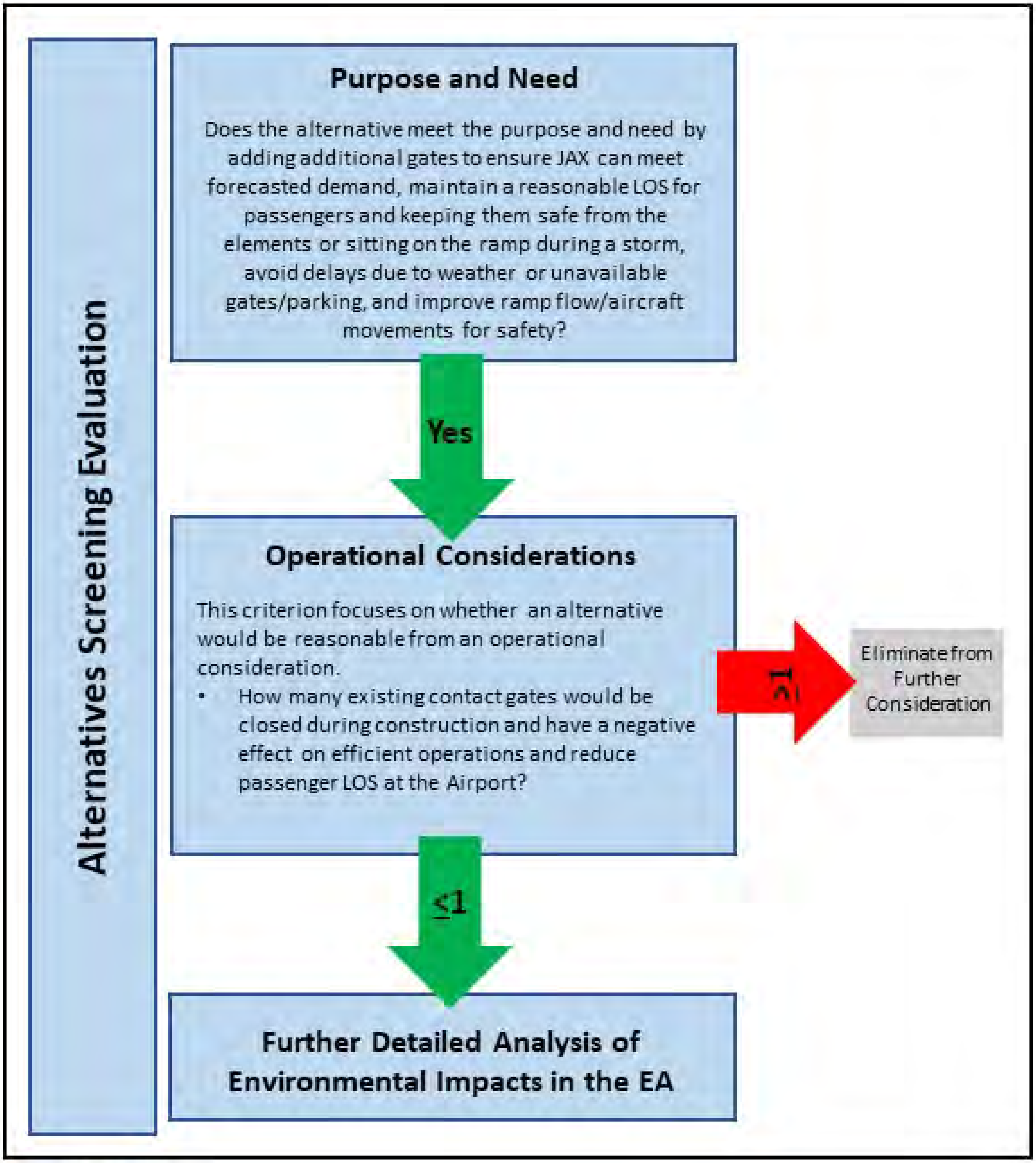
The alternatives evaluation involves a two-step screening process. The first step addresses whether the alternative meets the purpose and need for the project as described in Chapter 1, Purpose and Need. The second step is to determine if the alternative would be reasonable, including constructability and operational considerations.

Alternatives that did not meet the evaluation criteria established were eliminated from further consideration and were not subject to a detailed analysis of environmental impacts in this EA.

2.1.1 SCREENING CRITERIA FOR ALTERNATIVES

This section introduces and describes the evaluation process for the No Action Alternative, Proposed Project, and alternatives (see ***Figure 2-1***). The purpose is to evaluate the reasonableness of the implementation of each alternative. Each criterion is used to evaluate each alternative independently on its own merits. The criteria include evaluation of the ability of the alternative to achieve the Purpose and Need and maintain the functionality of the overall operations of the Airport. If an alternative cannot fulfill the criteria described below, it is not carried forward for further environmental analysis.

FIGURE 2-1: ALTERNATIVES EVALUATION PROCESS



Source: RS&H, 2022

2.1.1.1 Purpose and Need

This criterion evaluates the alternative's ability to achieve the Purpose and Need by ensuring JAX can meet forecasted demand, maintain its current LOS for passengers, and keep them safe from the elements or sitting on the ramp during a storm. The alternative must also help JAA users avoid delays due to weather or unavailable gates/parking and improve ramp flow/aircraft movements for safety.

2.1.1.2 Operational Considerations

This criterion focused on whether an alternative would be reasonable from an operational consideration. This criterion considers whether an alternative would impact overall operations at the Airport. Of primary concern would be each alternative's number of existing gates that would be closed during construction, as this would contribute most to continued inefficient operations at the Airport.

The Airport must keep all existing gates open and operational to meet the existing demand. A temporary shutdown of existing Airport gates to construct additional gates would substantially affect air carrier operations and passenger LOS during construction. Construction that would close existing gates would require shutting down portions of a concourse for long periods (multiple years). This would have a negative effect on efficient operations and reduce passenger LOS at the Airport. If an alternative requires closing (temporarily or permanently) at least one (1) existing gate for the construction of new gates, there would be a substantial impact on efficient operations at JAX.

2.2 ALTERNATIVES CONSIDERED AND EVALUATED

Alternatives were prepared to identify options to meet increased passenger demand, maintain the Airport's current level of service, accommodate additional aircraft, including at least one (1) spare gate, and continue to provide a safe and efficient movement of aircraft at the Airport. The Proposed Project is the identified JAA preferred alternative to achieve the Purpose and Need. Other development alternatives to the Proposed Project were also prepared to determine if other reasonable options to the Proposed Project exist. Alternatives 1 and 2 were originally proposed and evaluated in the 2010 AMP and are described as reasonable alternatives in this EA.

In addition, NEPA requires agencies to consider a "no action" alternative in NEPA analyses and to compare the effects of no development with the effects of the development alternative(s). The No Action Alternative serves as a baseline to assess the effects of the Proposed Project.

The following describes and evaluates the No Action, Proposed Project, and other alternatives.

2.2.1 No Action Alternative

Under the No Action Alternative, the project (i.e., replacement Concourse B) would not be constructed. This alternative would not involve airside or landside improvements beyond those already programmed or that the Airport will undertake for safety, security, or maintenance reasons. The No Action Alternative would not satisfy the project's purpose and need.

The EA retains the No Action Alternative for environmental baseline comparative purposes, to fulfill CEQ regulations (40 CFR Part 1502) implementing NEPA, and to comply with FAA Order 1050.1F, E*nvironmental Impacts: Policies and Procedures*, and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*. Therefore, the No Action Alternative is retained as the base against which the project's effects can be assessed.

2.2.2 Proposed Project

As described in ***Chapter 1***, the Proposed Project includes improvements at the Airport (see ***Figure 1-3***) to accommodate demand at the Airport. The Proposed Project is the construction and operation of replacement Concourse B and connected actions.

The Proposed Project would achieve the Purpose and Need by ensuring JAX can meet forecasted demand, maintain its current LOS for passengers, and keep them safe from the elements or sitting on the ramp during a storm. The Proposed Project also helps JAA users avoid delays due to weather or unavailable gates/parking and improves ramp flow/aircraft movements for safety.

The Proposed Project would also improve aircraft operations on the ground. The original Concourse B gated aircraft around all sides of the concourse, creating dependent push-back and taxi-in operations within the western gates of Concourses A and C. The length of the replacement Concourse B connector would be extended, compared to the original Concourse B, to facilitate independent push-back and taxi-in operations, as well as gate aircraft further west to avoid conflict with the geometric changes to the new Concourses A and C. Extending the connector requires pavement to be extended from the existing ramp up to Taxiway V to accommodate aircraft parking on the westernmost end of the concourse and movement around a replacement Concourse B without transitioning multiple times between movement and non-movement areas.

The Proposed Project would meet the EA Purpose and Need by including six new gates (including 2 spare gates), keeping all existing gates open and operational during construction, accommodating air carrier airfield movements, and maintaining existing communication and surveillance systems. Therefore, the Proposed Project is carried forward for further environmental analysis.

2.2.3 Alternative 1 – Expand Concourse C

For Alternative 1, Concourse C would be expanded further south to include six new gates (including 2 spare gates) for 26 gates (see ***Figure 2-2***). This alternative would require the closure of four existing aircraft gates (C7, C8, C9, and C10) during construction, substantially reducing the Airport's existing gate capacity. This alternative would also require the existing apron to be increased to provide dual taxilanes around the end of extended Concourse C. Alternative 1 would not affect the Airport's existing ATCT communications systems (i.e., ASR-9/Mode S, SWS, or RTR systems) and, therefore, they would remain in their current positions.

Alternative 1 would substantially affect air carrier operations and passenger LOS during construction. Four existing gates would close during construction, and portions of the concourse could be shut down for long periods. Overall, this can have a negative effect on the passenger's perception of the Airport and the overall level of service being provided.

Losing four existing gates during construction would negatively impact Airport operations and passenger LOS. Without these gates, the Airport could have disrupted schedules and constrained operations during Airport maintenance/development projects around the terminal. In addition, flexibility to safely shift aircraft positions as needed around the facility for new aircraft types would not be achievable. The Airport is subject to unpredictable severe weather events (e.g., significant thunderstorms/rainfalls) that can affect air traffic and require aircraft to remain grounded at gates longer than scheduled. A temporary reduction in overall contact gates during construction under Alternative 1 could result in additional ground delays.

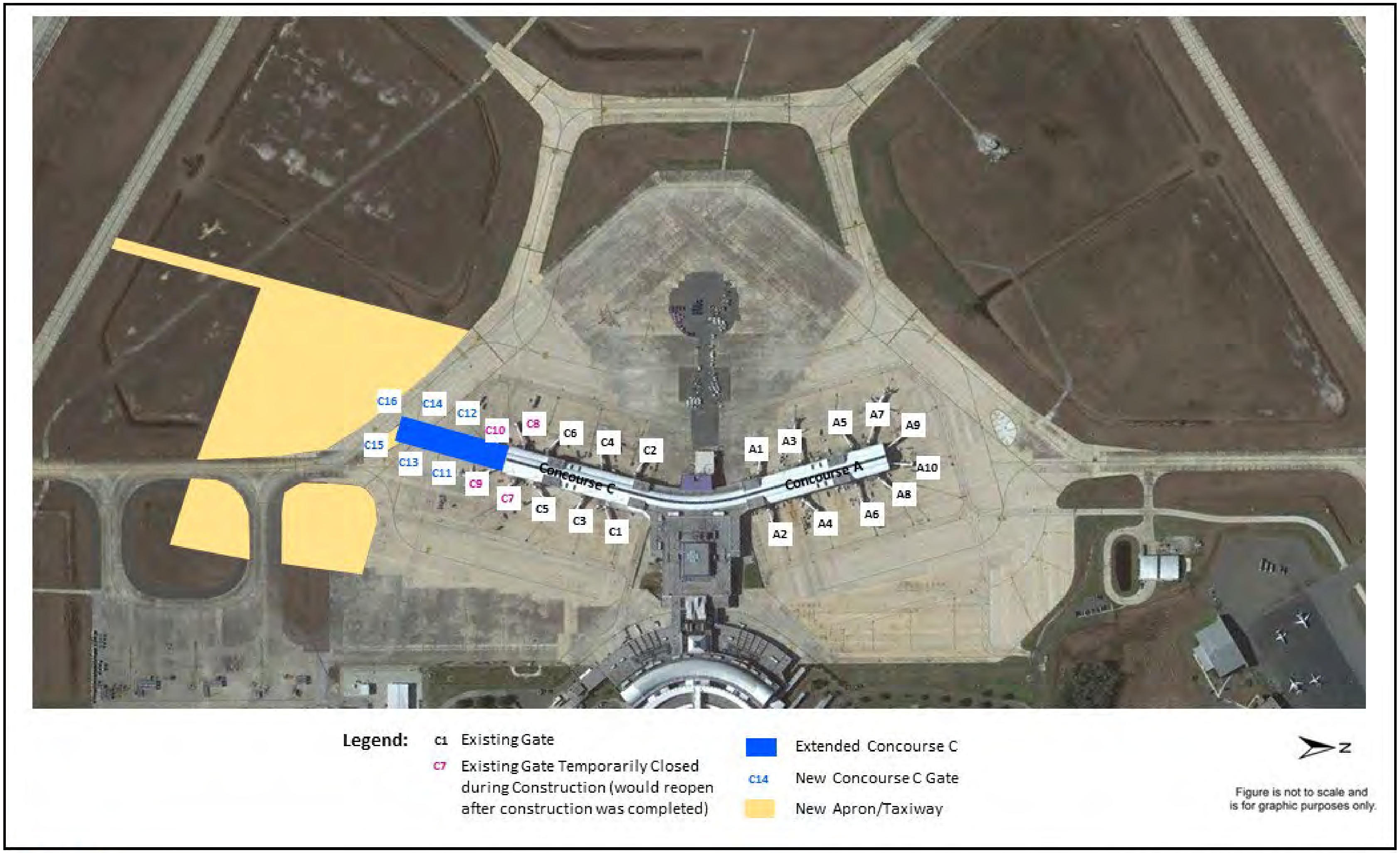
Alternative 1 would provide new aircraft gates but would reduce the overall functionality of the Airport. Alternative 1 would not allow the Airport to continue to operate safely and efficiently. As a result, Alternative 1 was rejected from further environmental consideration.

2.2.4 Alternative 2 – Expand Concourse A

For Alternative 2, Concourse A would be expanded further north to include six new gates (including 2 spare gates) for 26 gates (see ***Figure 2-3***). This alternative would require the closure of four aircraft gates (A7, A8, A9, and A10) during construction, reducing the Airport's existing gate capacity. This alternative would also require the existing apron areas to be increased to provide dual taxilanes around the end of extended Concourse A. Alternative 2 would not affect the Airport's existing ATCT communications systems (i.e., ASR-9/Mode S, SWS, or RTR systems) and, therefore, they would remain in their existing locations.

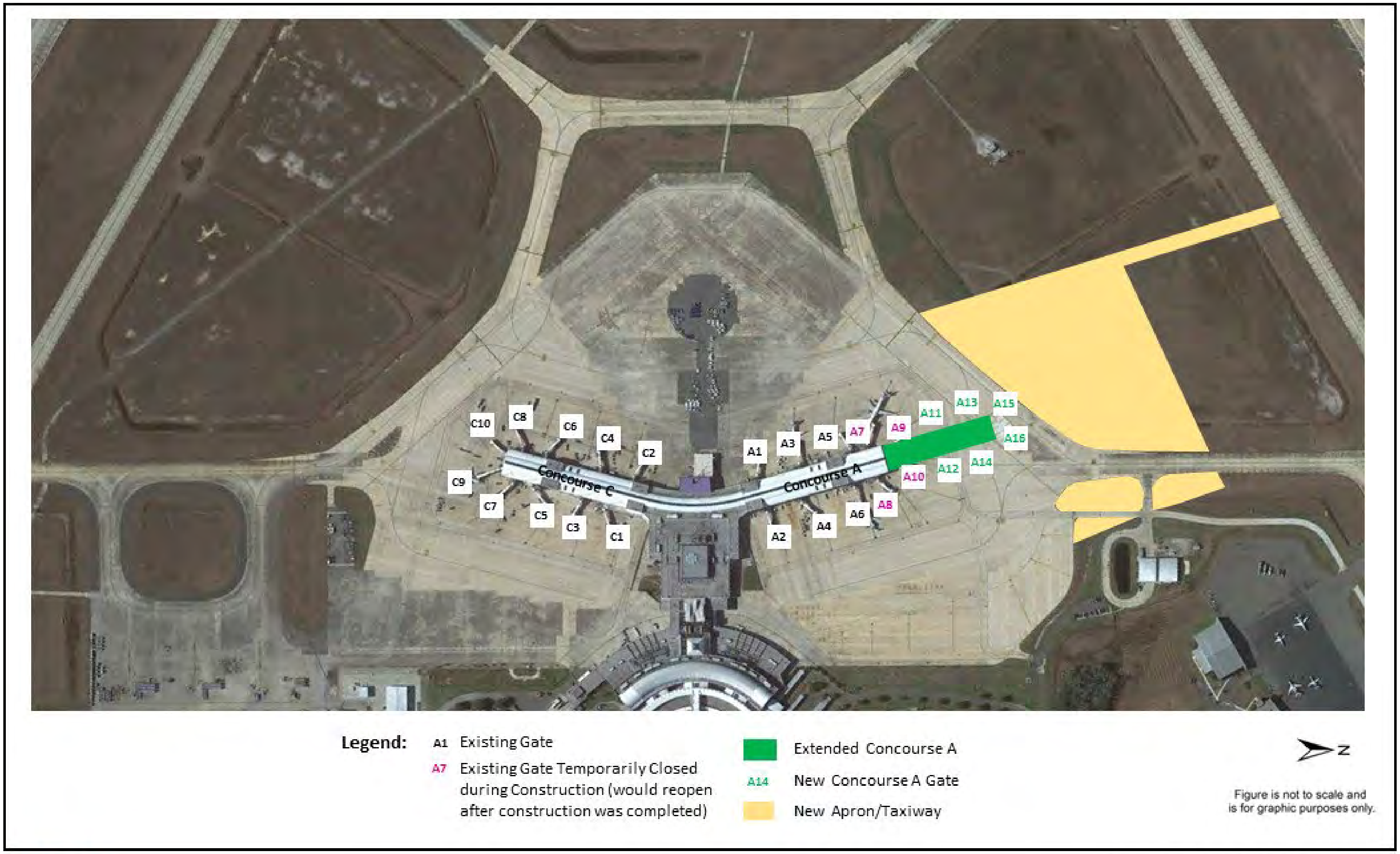
Alternative 2 would substantially affect air carrier operations or passenger LOS during construction. Construction would close four gates and could require shutting down portions of the concourse for long periods. Overall, this can have a negative effect on the passenger's perception of the Airport and the overall level of service being provided.

FIGURE 2-2: ALTERNATIVE 1



Source: Google Earth, 2022; RS&H, Inc. 2022

FIGURE 2-3: ALTERNATIVE 2



RS&H

Source: Google Earth, 2022; RS&H, Inc. 2022

With the loss of four existing gates during construction, the Airport would have a reduction in functionality with the overall operations of the Airport and a decreased passenger level of service. Without these gates, the Airport could have disrupted schedules and constrained efficient operations during Airport maintenance/development projects around the terminal.

Without the four existing gates, during the construction of this alternative, flexibility to safely shift aircraft positions as needed around the existing facility would be eliminated because of the aircraft characteristics and the existing remaining contact gates (i.e., aircraft at existing Gates A7-A10 would be temporarily relocated to other existing gates; however, those existing gates may not be able to board/deplane passengers). In addition, the Airport is subject to unpredictable severe weather events that can affect air traffic and require aircraft to remain grounded at gates longer than scheduled. A temporary reduction in overall contact gates during construction under Alternative 2 could result in additional ground delays.

Alternative 2 would provide new aircraft gates but would reduce the overall functionality of the Airport. Alternative 2 would not allow the Airport to continue to operate safely and efficiently. As a result, Alternative 2 was rejected from further environmental consideration.

2.3 ALTERNATIVES RETAINED FOR DETAILED ANALYSIS

Table 2-1 summarizes the alternatives evaluation results.

The No Action Alternative would not satisfy the Purpose and Need and does not satisfy the evaluation criterion. However, the EA retains the No Action Alternative for environmental baseline comparative purposes, to fulfill CEQ regulations (40 CFR Part 1502.14(c))[2020], and to comply with FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*.

Based on the evaluation of reasonable alternatives to achieve the project’s purpose and the evaluation comparison of alternatives, the Proposed Project is the JAA’s preferred alternative. It is retained for further environmental analysis (see ***Chapter 3*** for further details).

TABLE 2-1: ALTERNATIVES EVALUATION

Evaluation Criteria	No Action Alternative	Proposed Project	Alternative 1	Alternative 2
Purpose and Need				
Does the alternative meet forecasted demand and address terminal deficiencies in providing adequate hold rooms and gates to address concerns about the level of service and safety for passengers?	No	Yes	Yes	Yes
Operational Considerations				
The number of contact gates that would be temporarily shut down due to the construction of new gates resulting in inefficient Airport operations?	-	0	4	4
Retained for Further Analysis?	**Yes**[1]	**Yes**	No	No

Notes: [1] – No Action Alternative for environmental baseline comparative purposes, to fulfill CEQ regulations (40 CFR Part 1502) implementing NEPA, and to comply with FAA Order 1050.1F and FAA Order 5050.4B.

Source: RS&H, 2022.

3

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

As per the Council on Environmental Quality (CEQ) National Environmental Policy Act (NEPA) Implementing Regulations 40 CFR Parts 1500 – 1508, dated 2020, FAA Orders *1050.1F Environmental Impacts: Policies and Procedures,* and *5050.4B National Environmental Policy Act Implementing Instructions for Airport Actions*, this chapter describes the existing environmental condition (i.e., Affected Environment) as well as environmental resources that the Proposed Project may affect (i.e., Environmental Consequences).

Study areas were established for this Environmental Assessment (EA) to identify the environmental characteristics that may be directly or indirectly affected by the construction and operation of the Proposed Project.

To evaluate potential impacts, the analyses in this chapter overlay the components of the Proposed Project and No Action Alternative onto the conditions within the approximate 81-acre Direct Study Area (see ***Figure 3-1***) for each environmental impact category presented. The Direct Study Area is where ground-disturbing activities could occur. In addition, an Indirect Study Area is also established to assess the potential aviation noise impacts of the Proposed Project compared to the No Action Alternative (see ***Figure 3-2***). The Indirect Study Area is the 2031 Proposed Project DNL 65 dBA noise contour (see ***Section 3.2.11*** for further information).

The environmental analyses in this chapter are consistent with FAA Orders *1050.1F* and *5050.4B* and discloses the potential impacts for the projected future conditions in 2026. The EA uses 2026 as a basis for analysis because 2026 is the projected opening year for the Proposed Project. The EA also includes a +5-year project study year (2031).

3.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, the construction and operation of the proposed replacement Concourse B would not occur. Future development at the Airport would be subject to review under NEPA and is not assumed under the No Action Alternative. The affected environment of the study areas under the No Action Alternative would not differ from existing conditions.

Because there would be no anticipated construction or change in Airport facilities under the No Action Alternative, no impacts would be expected to occur related to Air Quality; Biological Resources; Climate; Coastal Resources; DOT Section 4(f) Resources; Hazardous Materials, Solid Waste, and Pollution Prevention; Historical, Architectural, Archaeological, and Cultural Resources; Land Use; Natural Resources and Energy Supply; Noise and Noise-Compatible Land Use; Socioeconomics, Environmental Justice, and Children’s Environmental Health and Safety Risks; Visual Effects; or Water Resources in the study areas or vicinity of the Airport.

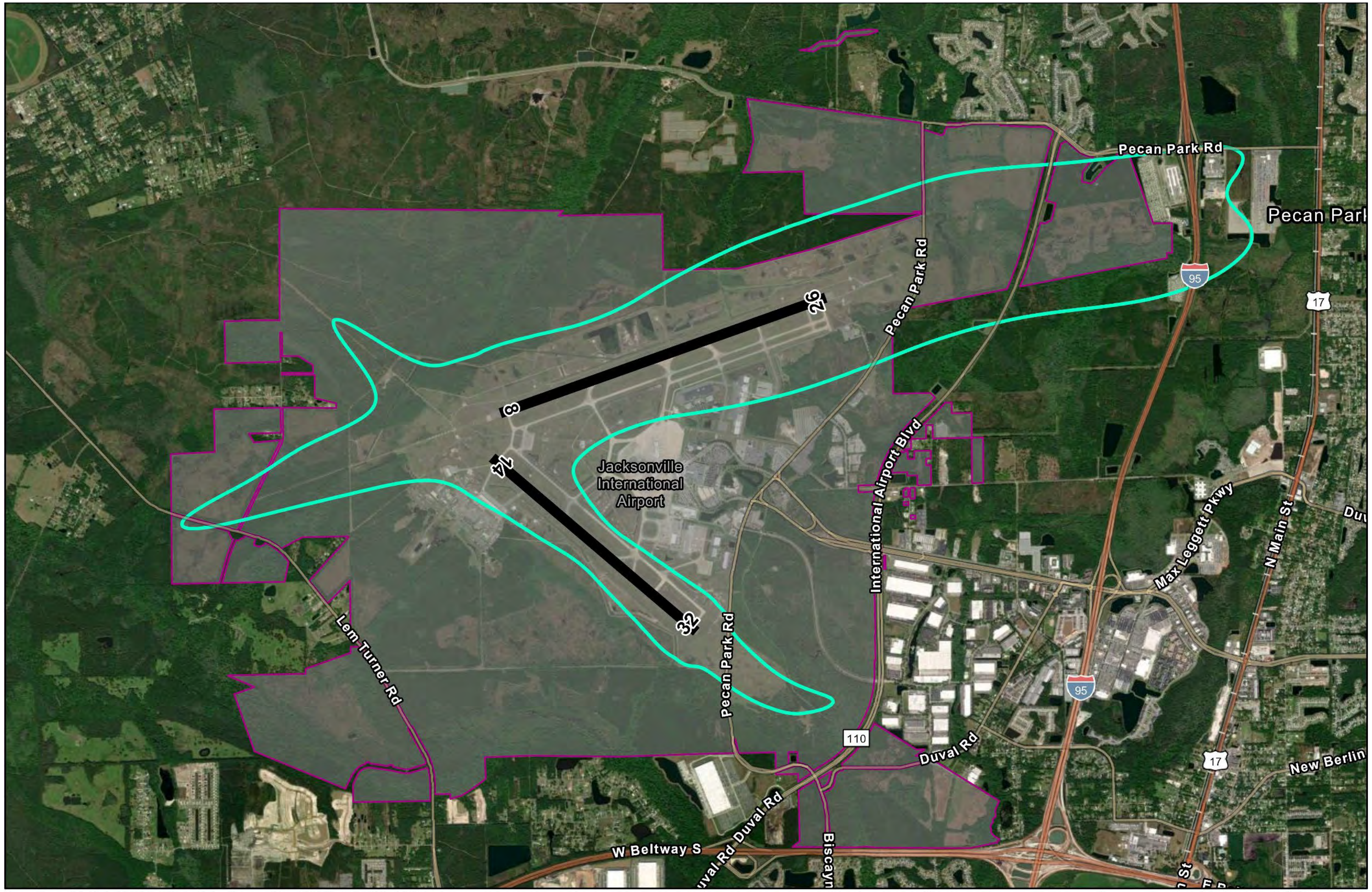
FIGURE 3-1: DIRECT STUDY AREA

Sources:ESRI, 2022; RS&H, 2022.

Legend

Direct Study Area
Raised ASR
Relocated RTR
Existing RTR
Relocated SWS

FIGURE 3-2: INDIRECT STUDY AREA



Sources: ESRI, 2023; City of Jacksonville, 2022; RS&H, 2023

0 1 2 Miles

N

Legend

Airport Property Boundary

Indirect Study Area

Runways

RS&H

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3.2 ENVIRONMENTAL ANALYSIS

This section describes the significance threshold, general characteristics of the environment within the study areas, and the Proposed Project's potential environmental effects compared to the No Action Alternative.

3.2.1 Air Quality

This section describes the existing condition, the FAA's significance threshold(s), the potential air quality effects of the Proposed Project compared to the No Action Alternative, and the potential mitigation measures.

3.2.1.1 Affected Environment

The Clean Air Act (CAA) is the primary statute related to air quality. The CAA regulates air pollutant emissions from stationary and mobile sources and authorizes the U.S. Environmental Protection Agency (USEPA) to establish National Ambient Air Quality Standards (NAAQS) for criteria pollutants. The CAA also gives the USEPA authority to regulate Hazardous Air Pollutants.

The United States Environmental Protection Agency (USEPA) sets National Ambient Air Quality Standards (NAAQS) to protect public health and environmental welfare. The USEPA has identified the following six criteria air pollutants for which NAAQS are applicable: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO2), ozone (O3), particulate matter (PM10 and PM2.5), and sulfur dioxide (SO2). USEPA calls these pollutants "criteria" air pollutants because it regulates them by developing human health-based and/or environmentally based criteria (science-based guidelines) for setting permissible levels (USEPA, 2022).

The USEPA has three classifications for areas regarding their ability or inability to meet the NAAQS. "Nonattainment" areas are geographic areas that violate one or more NAAQS. "Attainment" areas are geographic areas where concentrations of the criteria pollutants are below (i.e., within) the NAAQS. Lastly, "maintenance" areas are geographic areas with prior nonattainment status that have since transitioned to attainment.

The study areas are located entirely within Duval County. The USEPA classifies all of Duval County as an "attainment" area for all National Ambient Air Quality Standards (NAAQS) (EPA Greenbook, 2022).[7] See ***Table 3-1*** for the existing aircraft air pollutant emissions for each NAAQS category.

TABLE 3-1: EXISTING AIRCRAFT OPERATIONAL EMISSIONS

Year	CO	VOC	NOx	SOx	PM2.5	PM10
2022	323.59	44.09	172.74	19.94	2.19	2.19

Source: FAA ATADS, 2023. AEDT, 2024. RS&H, 2024.

[7] NAAQS are six criteria pollutants: carbon monoxide, lead, ozone, sulfur dioxide, nitrogen dioxide, and ozone.

3.2.1.2 Environmental Consequences

***Significance Threshold* -** FAA Order 1050.1F, Exhibit 4-1, provides the FAA's significance threshold for air quality, which states, "The action would cause pollutant concentrations to exceed one or more of the NAAQS, as established by the USEPA under the Clean Air Act, for any of the time periods analyzed, or to increase the frequency or severity of any such existing violations."

Potential Impacts

Construction - Construction of the Proposed Project would cause a minor increase in surface vehicles using area roadways to access the construction site. However, this would be temporary, lasting the duration of construction. A Construction Emissions Inventory (CEI) of the Proposed Project was conducted through EPA's MOtor Vehicle Emissions Simulator 3 (MOVES3.1) program. MOVES3.1 uses EPA-approved emission factors for non-road construction equipment and on-road vehicles. Exhaust and fugitive emission factors were developed for non-road construction equipment and on-road vehicles. ***Table 3-2*** shows an increase in temporary construction air pollutant emissions for each NAAQS category and CO2. See ***Appendix B*** for CEI data and calculations.

TABLE 3-2: TEMPORARY CONSTRUCTION EMISSIONS

2024-2026	CO	VOC	NOx	SOx	PM10	PM2.5	CO2
Nonroad[1]	0.62	0.14	2.39	0.13	0.13	0.01	4,861.73
On road[2]	71.97	0.62	2.40	0.07	0.06	0.04	5,939.19
Fugitive[3]	0.40	6.21	0.03	1.07	N/A	0.00	N/A
Total[4]	**73.00**	**6.97**	**4.81**	**1.27**	**0.19**	**0.06**	**10,800.92**

Notes: 1 – Nonroad: Emissions from construction equipment (e.g., bulldozer); 2 – Onroad: Emissions from cars, trucks, and buses; 3 – Fugitive: Emissions of particulate matter from vehicles driving over paved roads. 4- Totals may not sum due to rounding. N/A – not applicable. Source: RS&H, 2024.

Operational - Compared to the No Action Alternative, the Proposed Project would increase aircraft operations (7,737 operations in 2026 and 23,971 operations in 2031) and air emissions in 2026 and 2031. As previously described, Duval County is in "attainment" for all NAAQS. Therefore, air quality *de minimis* thresholds do not apply. However, for informational purposes, ***Table 3-3*** shows the increased aircraft operational emissions compared to the No Action Alternative for each study year. The Proposed Project would not significantly affect air quality or violate local, state, tribal, or federal air quality standards under the Clean Air Act Amendments of 1990.

TABLE 3-3: FUTURE AIRCRAFT OPERATIONAL EMISSIONS

Year	CO	VOC	NOx	SOx	PM2.5	PM10
2026						
No Action Alternative	350.51	60.62	183.95	21.58	2.31	2.31
Proposed Project	373.75	63.77	196.89	23.21	2.43	2.43
Difference	**23.25**	**3.14**	**12.95**	**1.62**	**0.12**	**0.12**
2031						
No Action Alternative	380.45	64.86	200.77	23.64	2.46	2.46
Proposed Project	452.47	74.60	240.85	28.67	2.83	2.83
Difference	**72.02**	**9.74**	**40.08**	**5.03**	**0.37**	**0.37**

Source: FAA TAF; Virtower™, 2023. AEDT, 2023. RS&H, 2024.

Mitigation, Avoidance, and Minimization Measures – Because the Proposed Project would not cause significant direct or indirect effects to air quality, the JAA does not propose mitigation measures.

3.2.2 Biological Resources

This section describes the existing condition, the FAA's significance threshold(s), the potential biological resource effects of the Proposed Project compared to the No Action Alternative, and the potential mitigation measures.

3.2.2.1 Affected Environment

Biological resources are valued for their intrinsic, aesthetic, economic, and recreational qualities and include fish, wildlife, plants, and their respective habitats. Typical categories of biological resources include terrestrial and aquatic plant and animal species, game and non-game species, special status species (state or federally listed threatened or endangered species, marine mammals, or species of concern, such as species proposed for listing or migratory birds), and environmentally sensitive or critical habitats.

Section 7(a)(2) of the Endangered Species Act (ESA) requires that each federal agency, in consultation with the U.S. Fish and Wildlife Service (USFWS) or National Marine Fisheries Service (NMFS), ensures that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. The FAA is required to consult the USFWS or NMFS if an action may affect a federally listed species or critical habitat.

The Migratory Bird Treaty Act (MBTA) prohibits taking any migratory birds, their parts, nests, or eggs, except as permitted by regulations. It does not require intent to be proven. The Bald and Golden Eagle Protection Act (BGEPA) provides additional protection for bald and golden eagles. It prohibits taking bald or golden eagles, including their parts, nests, or eggs.

According to the U.S. Fish & Wildlife Service (USFWS) Information for Planning and Conservation (IPaC), there are federally listed species with the potential to occur within the study areas (U.S. Fish & Wildlife Service Information for Planning and Consultation, 2023). ***Table 3-4*** identifies threatened and/or endangered species and their federal/state designation for Duval County. According to the USFWS, neither study area has a critical habitat.

TABLE 3-4: THREATENED OR ENDANGERED SPECIES WITHIN THE STUDY AREAS

Common Name	Scientific Name	Federal Listing[1]	State Listing[1]
Eastern Black Rail	*Leterallus jamaicensis ssp. Jamaicensis*	FT	ST
Red-Cockaded Woodpecker	*Picoides borealis*	FE	ST
Wood Stork	*Mycteria americana*	FT	SE
Eastern Indigo Snake	*Drymarchon corais couperi*	FT	ST
Gopher Tortoise	*Gopherus polyphenus*	C	ST
Green Sea Turtle	*Chelonia mydas*	FT	ST
Hawksbill Sea Turtle	*Eretmochelys imbricata*	FE	SE
Leatherback Sea Turtle	*Dermochelys coriacea*	FE	SE
Loggerhead Sea Turtle	*Caretta caretta*	FT	ST
Frosted Flatwoods Salamander	*Ambystoma cingulatum*	FT	ST
Monarch Butterfly	*Danaus plexippus*	C	C

Note: [1] – FE-Federally Endangered, FT-Federally Threatened, SE- State Endangered, ST- State Threatened, C-Candidate.
Source: (U.S. Fish & Wildlife Service Information for Planning and Consultation, 2023).

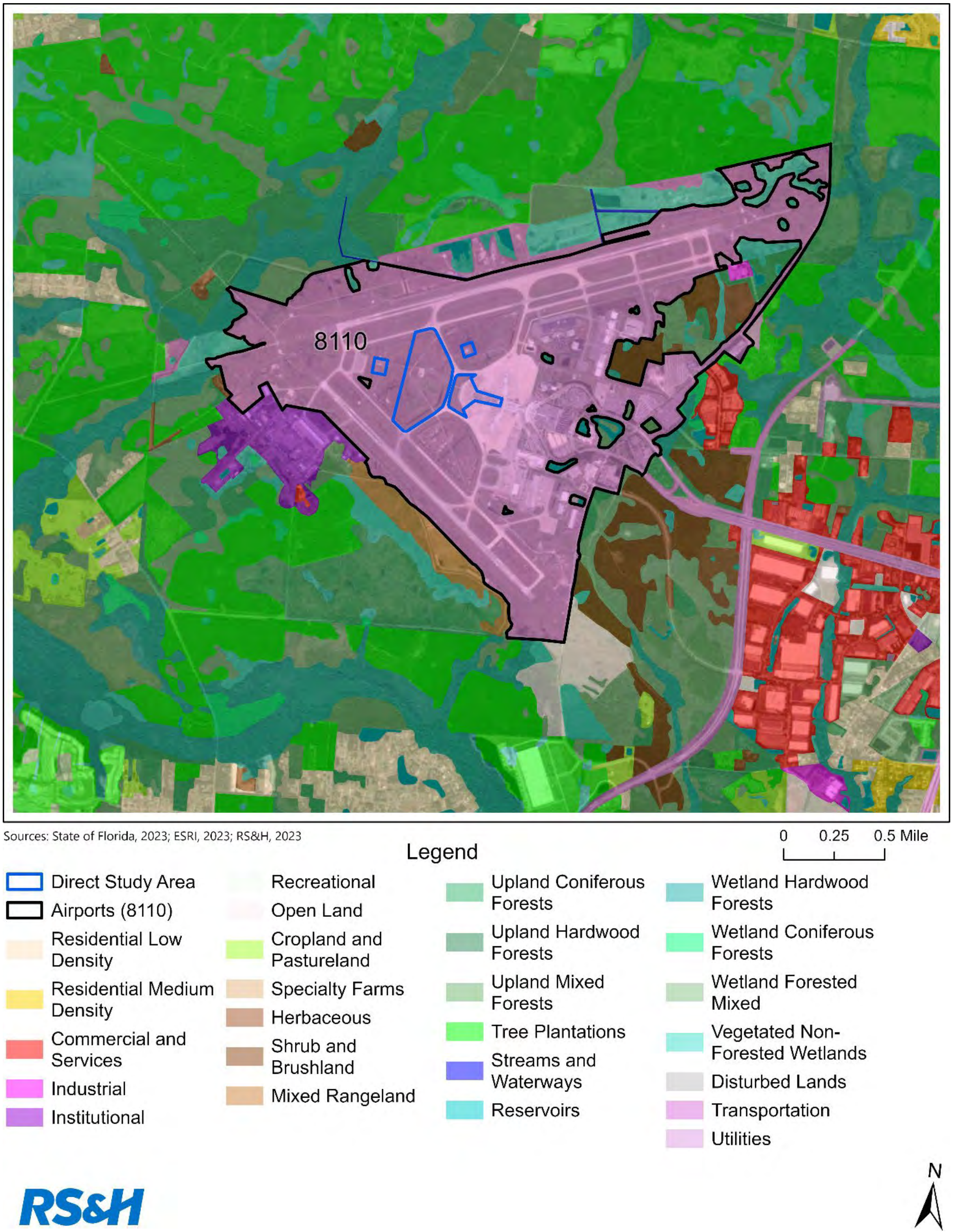
Habitat within the Direct Study Area was inspected and classified using the Florida Department of Transportation (FDOT) Florida Land Use, Cover and Forms Classification System (FLUCFCS, 1999). As shown in ***Figure 3-3***, the FLUCCS shows the Direct Study Area as Airport (i.e., runways, intervening land, terminals, service buildings, navigational aids, fuel storage, parking lots, and a limited buffer zone).

3.2.2.1 Environmental Consequences

Significance Threshold – FAA Order 1050.1F, Exhibit 4-1, provides the factors that should be considered in evaluating the context and intensity of potential environmental impacts on biological resources, which include:

- "A long-term or permanent loss of unlisted plant or wildlife species, i.e., extirpation of the species from a large project area (e.g., a new commercial service airport); or
- Adverse impacts to special status species (e.g., state species of concern, species proposed for listing, migratory birds, bald and golden eagles) or their habitats; or

FIGURE 3-3: FLUCCS OF THE DIRECT STUDY AREA



- Substantial loss, reduction, degradation, disturbance, or fragmentation of native species' habitats or their populations; or
- Adverse impacts on a species' reproductive success rates, natural mortality rates, non-natural mortality (e.g., road kills and hunting), or ability to sustain the minimum population levels required for population maintenance."

Potential Impacts – Although there is the potential for federal/state threatened and endangered species within the study areas, the Proposed Project would take place on previously disturbed land that includes existing airfield pavements and mowed and maintained airfield turf. These characteristics of the Direct Study Area do not provide habitat for any federal/state-protected species.

The Proposed Project does not require removing trees or altering environmental characteristics outside the Direct Study Area; therefore, the Proposed Project would not affect birds protected by the Migratory Bird Treaty Act.

According to the Florida Fish and Wildlife Conservation Commission (FWC), there are no land mammal, reptile, or invertebrate habitat areas within the Direct Study Area (Florida Fish and Wildlife Conservation Commission, 2022). Therefore, neither natural habitat nor designated critical habitat are within the Direct Study Area.

The existing characteristics of the study areas do not provide suitable habitats for protected species. Additionally, there is no designated critical habitat within the study areas. Therefore, the Proposed Project would not affect biological resources.

The closest bald eagle (*Haliaeetus leucocephalus*) nests are approximately 3 miles southeast of the Direct Study Area.

Mitigation, Avoidance, and Minimization Measures – The JAA does not propose mitigation measures because the Proposed Project would not cause significant direct or indirect effects to biological resources.

3.2.3 Climate

This section describes the existing condition, the FAA's significance threshold(s), the potential climate effects of the Proposed Project compared to the No Action Alternative, and the potential mitigation measures.

Research has shown that increased atmospheric greenhouse gas (GHG) emissions affect the Earth's climate. These conclusions are based upon a scientific record that includes substantial contributions from the U.S. Global Change Research Program (USGCRP), a program mandated by Congress in the Global Change Research Act to "assist the Nation and the world to understand, assess, predict, and respond to human-induced and natural processes of global change."[8] In 2009, based primarily on the scientific assessments of the USGCRP, as well as the National Research Council (NRC) and the Intergovernmental Panel on Climate Change (IPCC), the USEPA issued a finding that it was reasonable to assume that changes in our climate caused by elevated concentrations of GHG in the atmosphere endanger the public health and public welfare of current and future generations.[9] In 2015, the USEPA acknowledged more recent scientific assessments that "highlight the urgency of addressing the rising concentration of carbon dioxide (CO2) in the atmosphere."[10]

3.2.3.1 Affected Environment

Greenhouse gases (GHG) trap heat in the earth's atmosphere. Naturally occurring and man-made GHGs include water vapor, carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Activities that require fuel or power are the primary stationary sources of GHGs at airports. Aircraft and ground access vehicles, which are not under the control of an airport, typically generate more GHG emissions than airport-controlled sources.

Research has shown a direct correlation between fuel combustion and greenhouse gas emissions. In terms of U.S. contributions, the U.S. Government Accountability Office (GAO) reports that "domestic aviation contributes about three percent of total carbon dioxide (CO_2) emissions, according to USEPA data," compared with other industrial sources, including the remainder of the transportation sector (20 percent) and power generation (41 percent) (GAO, 2009). The International Civil Aviation Organization (ICAO) estimates that GHG emissions from aircraft account for roughly three percent of all anthropogenic GHG emissions globally (Melrose, 2010). Climate change due to GHG emissions is a global phenomenon, so the affected environment is the global climate (USEPA, 2009).

The scientific community is continuing efforts to understand the impact of aviation emissions on the global atmosphere. The FAA is leading and participating in several intended to clarify commercial aviation's role in GHG emissions and climate. The FAA, with support from the U.S. Global Change Research Program and its participating federal agencies (e.g., National Aeronautics and Space Administration, National Oceanic and Atmospheric Administration, USEPA, and U.S. Department of Energy), has developed the Aviation Climate Change Research Initiative to advance scientific understanding of regional and global climate impacts from aircraft emissions. The FAA also funds the Partnership for Air Transportation Noise & Emissions Reduction Center of Excellence research initiative to quantify the effects of aircraft exhaust and

[8] The National Academies of Sciences, Engineering, and Medicine. (2017). *Accomplishments of the U.S. Global Change Program*.
[9] USEPA. (2009, December 15). *Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act*, 74 Federal Register 66496.
[10] USEPA. (2015, October 23). *Final Rule for Carbon Pollution Emission Guidelines for Existing Stationary Sources Electric Utility Generating Units*, 80 Federal Register 64661, 64677.

contrails on global and U.S. climate and atmospheric composition. ICAO is examining similar research topics at the international level (Maurice & Lee, 2007).

As described previously, the study areas are located entirely within Duval County. The USEPA classifies Duval County as an “attainment” area for all NAAQS criteria pollutants (EPA Greenbook, 2022). In 2020, the GHG emissions for the U.S. were 5,981 million metric tons of Carbon Dioxide equivalent (MMT CO_{2e}), and the State of Florida was 262 MMT CO_{2e} (EPA, 2022).

3.2.3.2 Environmental Consequences

***Significance Threshold* -** While FAA 1050.1F does not provide a significance threshold for aviation-related GHG emissions, the projected increase in GHG emissions from the Proposed Project is discussed in the context of national and global GHG emissions from all sources.

Although there are no federal standards for aviation-related GHG emissions, it is well established that GHG emissions can affect climate. The Council on Environmental Quality (CEQ) has indicated that climate should be considered in NEPA analyses (FAA, 2012). As noted by CEQ, "it is not useful, for NEPA purposes, to link GHG emissions from a proposal to specific climatological changes to a particular site. When considering the GHG emissions, agencies do not need to calculate a proposal’s GHG emissions as a percentage of nationwide or worldwide GHG emissions unless the agency determines that such information would be helpful to decision makers and the public to distinguish among alternatives and mitigations, or that the emissions and sequestration associated with a Proposed Project may rise to a significant level (CEQ, 2014).”

Potential Impacts

Construction GHG Emissions – GHG emissions would occur during the construction of the Proposed Project (approximately 73.27 MT from 2024-2026) (see ***Appendix B*** for additional information). Using fossil fuel-powered machinery during the construction of the Proposed Project would emit GHGs such as CO_2. Increasing the number of construction-related personal vehicles traveling to and from the Airport would increase vehicle-related GHG emissions. For this EA, it is assumed that most construction-related workers already live and work in the region; therefore, the region's vehicle-related GHG emissions would not significantly change. Therefore, the construction of the Proposed Project would not have a significant effect on GHG emissions for the State of Florida, the U.S., or the global climate.

Operational GHG Emissions - The Proposed Project would increase the number of aircraft operating at the Airport. Following the Federal protocol to provide a single metric that embodies all GHGs, emissions are reported in metric tons of CO2 equivalent (CO_{2e}). The CO_{2e} is estimated by taking the mass equivalent of each pollutant and multiplying it by the global warming potential (GWP) equivalent of each pollutant and adding them together. For example, the IPCC Fifth Assessment Report shows the GWP of CO_2 is 1 and NO_2 is 265 GWP.[11] The additional aircraft emissions from the Proposed Project were converted to CO2e using this methodology (see ***Appendix B***). The Proposed Project's aircraft operations emissions would increase by 445 MT (0.00045 MMT) CO_{2e} in 2026 and 1,400 MT (0.00140 MMT) CO_{2e} in 2031. Therefore, the operation of the Proposed Project would not have a significant effect on GHG emissions for the State of Florida, the U.S., or the global climate.

Social Costs of Greenhouse Gases (SC-GHGs) - In January 2023, the Council on Environmental Quality (CEQ) issued interim guidance, *National Environmental Policy Act Guidance on Consideration of Greenhouse Gas Emissions and Climate Change*, to assist agencies in analyzing GHG emissions (and climate change effects of a proposed project under NEPA. The CEQ identified Social Cost-Greenhouse Gases (SC-GHG) as the metric for assessing potential climate impacts and represents the monetary estimate of the effect associated with each additional metric ton of carbon dioxide released into the air (Interagency Working Group, 2021).

To calculate SC-GHG, the carbon dioxide equivalent CO_2e[12] must be calculated first. The project's total construction CO_2e would be approximately 0.0002 MMT (i.e., 200 MT).

The Interagency Working Group (IWG) developed average discount rates to assess possible climate impacts over time. The higher the discount rate, the lower the social climate cost (SCC) for future generations. Three integrated assessment models (IAMs) were used to develop discount rates that were based on the results from the three IAMs used by the IWG: William Nordhaus' DICE model (Yale University), Richard Tol's FUND model (Sussex University), and Chris Hope's PAGE model (Cambridge University) (Interagency Working Group, 2021). The IWG average discount rates are 5 percent, 3 percent, and 2.5 percent, and the 95th percentile estimate at the 3 percent discount rate represents the potential for low-probability catastrophic climate impacts. The IWG average discount rates represent a range of possible climate impacts to future generations. For example, the 5 percent average rate represents a situation where future generations are best suited to handle potential climate impacts from the Proposed Project, leading to a minimal social cost impact. The IWG determined the social cost of CO_2 (SC-CO_2) through 2050 and assigned a monetary value[13] for each additional metric ton of CO_2 produced. SC-CO_2 is equivalent to SC-GHGs and represents the social costs of the total greenhouse gases converted to the CO_2e equivalent. The SC-CO_2 helps weigh the benefits of climate mitigation against its costs.

[11] https://www.ipcc.ch/assessment-report/ar5/

[12] CO_2e: Number of metric tons of CO2 emissions with the same global warming potential as one metric ton of another greenhouse gas.

[13] These monetary values are based on the results from three economic models used by the IWG: William Nordhaus' DICE model (Yale University), Richard Tol's FUND model (Sussex University), and Chris Hope's PAGE model (Cambridge University).

The calculated social costs are estimates only and subject to change depending on various factors (i.e., flooding, energy supply).[14] ***Table 3-5*** calculations are for information purposes only and represent the potential social costs from construction emissions in years 2024 -2026 (30 months) and operational emissions in years 2026 and 2031. The social cost calculations represent a range of possibilities and are not guaranteed to occur. Advances in technology and operational practices could lead to lower social impacts than disclosed. This range represents the potential social costs of adding GHGs to the global atmosphere in a given year (Interagency Working Group, 2021). The range of potential social costs for 2024 from construction emissions is approximately $2,200 – $23,000; for 2025, the potential social cost is approximately $600 – $5,800. The potential social cost for 2026 construction emissions is approximately $600 - $5,900. For operational emissions in 2026, the potential social cost ranges from approximately $59,000 to $600,000; for 2031, the potential social cost ranges from approximately $214,000 to just over $2,000,000 (see ***Appendix B*** for further information). It is important to note that this climate analysis does not include positive impacts from the Proposed Project (e.g., economic development, meeting forecast passenger demand, maintaining the Airport's current level of service, and continuing to provide safe and efficient aircraft movement at the Airport).

Mitigation, Avoidance, and Minimization Measures – The JAA does not propose mitigation measures because the Proposed Project would not cause significant direct or indirect effects to climate.

TABLE 3-4: SOCIAL COST – CARBON DIOXIDE FOR THE PROPOSED PROJECT

Year	Proposed Project CO_2e	Average Estimate at 5% Discount Rate	Average Estimate at 3% Discount Rate	Average Estimate at 2.5% Discount Rate	95th Percentile Estimate at 3.0% Discount Rate
Construction Emissions					
2024	138.42	$2,214	$7,613	$11,350	$22,977
2025	34.19	$581	$1,914	$2,838	$5,778
2026	33.84	$575	$1,928	$2,842	$5,854
Operational Emissions					
2026	3,455.0	$58,735	$196,935	$290,220	$597,715
2031	10,693.22	$213,864	$673,672	$973,083	$2,042,405

Note: Per the 2023 IPCC Sixth Assessment Report, CO_2e equivalent for SC-GHG were calculated using the Interagency Working Group[15] average discount rates: 5 percent, 3 percent, 2.5 percent, and the 95th percentile estimate applying the 3 percent discount rate. CO_2e Values are multiplied by the discount rate to calculate SC-CO_2.

[14] https://costofcarbon.org/files/Omitted_Damages_Whats_Missing_From_the_Social_Cost_of_Carbon.pdf; Accessed November 2023

[15] Technical Support Document: Social Cost of Carbon, Methane, (whitehouse.gov); Accessed November 2023

Per the 2023 IPCC[16] Sixth Assessment Report, the CO_2 equivalent for N_2O is calculated by multiplying the N_2O emissions by the GWP of 265. The CO_2 equivalent for CH_4 is calculated by multiplying the CH_4 emissions by the GWP of 28. For example, the 2024 Average Estimate at 5% Discount Rate was calculated using the 2024 CO_2e value of 43.51 multiplied by 2024's $16 determined value for the 5% Discount Rate. Sources: Interagency Working Group, 2021, IPCC Sixth Assessment 2023, RS&H, 2024.

3.2.4 Coastal Resources

This section describes the existing condition, the FAA's significance threshold(s), the potential coastal resources effects of the Proposed Project compared to the No Action Alternative, and the potential mitigation measures.

3.2.4.1 Affected Environment

FAA Order 1050.1F, Desk Reference states, "Coastal resources include all natural resources occurring within coastal waters and their adjacent shorelands. Coastal resources include islands, transitional and intertidal areas, salt marshes, wetlands, floodplains, estuaries, beaches, dunes, barrier islands, and coral reefs, as well as fish and wildlife and their respective habitats within these areas. Coastal resources include the coastlines of the Atlantic and Pacific oceans, the Great Lakes, and the Gulf of Mexico."

According to the Florida Department of Environmental Protection (FDEP) Coastal Office, the entire state of Florida is located within a coastal zone, including the study areas. The Florida Department of Environmental Protection (FDEP), Office of Intergovernmental Programs, Florida State Clearinghouse (FSC) coordinates the review of Federal actions in the State of Florida for consistency with the Florida Coastal Management Program (FCMP).

The Direct Study Area is located entirely on Airport property and not in a Coastal Barrier Resource System (CBRS). The closest CBRS unit, Talbot Islands (P02), is 15 miles east of the Direct Study Area (USFWS, 2022).

3.2.4.2 Environmental Consequences

Significance Threshold - FAA Order 1050.1F does not define a significance threshold for coastal resources; however, it does provide factors to consider in evaluating the context and intensity of potential environmental impacts to coastal resources. These include when the action would have the potential to:

- Be inconsistent with the relevant state coastal zone management plan(s);
- Impact a coastal barrier resource system unit (and the degree to which the resource would be impacted);
- Pose an impact to coral reef ecosystems (and the degree to which the ecosystem would be affected);

[16] https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_LongerReport.pdf; Accessed November 2023

- Cause an unacceptable risk to human safety or property; or
- Cause adverse impacts to the coastal environmental that cannot be satisfactorily mitigated.

Potential Impacts - The Proposed Project would be consistent to the maximum extent practicable with the enforceable policies of the Florida Coastal Management Program. The Proposed Project would not affect coastal resources, create plans to direct future agency actions, propose rulemaking that alters uses of a coastal zone that are inconsistent with the Program, or involve Outer Continental Shelf (OCS) leases (FDEP, 2022). Therefore, the Proposed Project would not affect coastal resources.

Mitigation, Avoidance, and Minimization Measures – The JAA does not propose mitigation measures because the Proposed Project would not cause significant direct or indirect effects to coastal resources.

3.2.5 Department of Transportation Act, Section 4(f) and 6(f)

This section describes the existing condition, the FAA's significance threshold(s), the potential Section 4(f) and Section 6(f) effects of the Proposed Project compared to the No Action Alternative, and the potential mitigation measures.

3.2.5.1 Affected Environment

According to FAA Order 5050.4B Desk Reference, "Section 4(f) of the U.S. DOT Act of 1966 (now codified at 49 U.S.C. § 303) protects significant publicly owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites." Section 4(f) provides that the Secretary of Transportation may approve a transportation program or project requiring the use of a Section 4(f) resource only if there is no feasible and prudent alternative to the using that land and the program or project includes all possible planning to minimize harm resulting from the use. USDOT Section 4(f) properties are publicly-owned lands, including public parks, recreation areas, wildlife and waterfowl refuges, or publicly- or privately-owned historical sites of National, State, and/or local importance. Historical sites include prehistoric and historic districts, sites, buildings, structures, or objects listed in, or eligible for listing in, the National Register of Historic Places (NRHP).

There are no Section 4(f) resources within the Direct Study Area. The closest Section 4(f) resource is Oceanway Park, about 4 miles southeast of the Direct Study Area and 2 miles southeast of the Indirect Study Area (City of Jacksonville, 2022).

Section 6(f) of the Land and Water Conservation Fund Act of 1965 (LWCFA) provides funds for buying or developing public-use recreational lands through grants to local and state governments. Section 6(f) prevents the conversion of lands purchased or developed with LWCFA funds to non-recreation uses, like airport projects, unless the Secretary of the

Department of Interior (DOI), through the National Park Service (NPS), approves the conversion of the land use.

The closest Section 6(f) resource is the Timucuan Ecological and Historic Preserve, about 5 miles northeast of the Direct Study Area and approximately 1.5 miles north of the Indirect Study Area (Land and Water Conservation Fund, 2022).

3.2.5.2 Environmental Consequences

Significance Threshold – FAA Order 1050.1F, Exhibit 4-1, provides the FAA's significance threshold for Section 4(f), which states, "The action involves more than a minimal physical use of a Section 4(f) resource or constitutes a 'constructive use' based on an FAA determination that the aviation project would substantially impair the Section 4(f) resource." For Section 4(f) purposes, a project would "use" a resource in one of two ways (see ***Table 3-6***).

Potential Impacts - The Proposed Project would not require the direct (physical) use or indirect use (i.e., constructive use) of Section 4(f) resources. The Proposed Project would not require using any recreational or park land purchased with Section 6(f) Land and Water Conservation Funds. In addition, the Proposed Project would not affect environmental resources (e.g., air quality, noise, etc.) in a manner that would indirectly affect (constructively use) Section 4(f) and 6(f) resources. Therefore, the Proposed Project would have no effect on Section 4(f) or 6(f) resources.

TABLE 3-5: DOT SECTION 4(F) RESOURCE "USES"

Use	Description
Physical	The action physically occupies and directly uses the DOT Section 4(f) resource. An action's occupancy or direct control (via purchase) causes a change in the use of the DOT Section 4(f) resource. For example, building a runway safety area across a fairway of a publicly owned golf course is a physical taking because the transportation facility physically used the course by eliminating the fairway.
Constructive	The action indirectly uses a DOT Section 4(f) resource by substantially impairing the resource's intended use, features, or attributes. For example, a constructive use of an overnight camping area would occur when project-related aircraft noise eliminates the camping area's solitude. Although not physically occupying the area, the project indirectly uses the area by substantially impairing the features and attributes (i.e., solitude) that are necessary for the area to be used as an overnight camping area.

Source: (FAA, 2020).

Mitigation, Avoidance, and Minimization Measures – Because the Proposed Project would not cause significant direct or indirect effects to Section 4(f) or Section 6(f) resources, the JAA does not propose mitigation measures.

3.2.6 Farmlands

This section describes the existing condition, the FAA's significance threshold(s), the potential farmland effects of the Proposed Project compared to the No Action Alternative, and the potential mitigation measures.

3.2.6.1 Affected Environment

According to FAA Order 1050.1F, Desk Reference, "Farmlands are defined as those agricultural areas considered important and protected by federal, state, and local regulations. Important farmlands include all pasturelands, croplands, and forests (even if zoned for development) considered to be prime, unique, or of statewide or local importance. Farmland does not include land already in or committed to urban development or water storage."

The Natural Resource Conservation Service (NRCS) Web Soil Survey does not classify any soil types in and near the Direct Study Area as prime, unique, state, or locally important farmlands. Additionally, the Direct Study Area has been previously disturbed and is primarily a paved area with mowed and maintained airfield turf.

3.2.6.2 Environmental Consequences

Significance Threshold – A significant impact would occur if the conversion impact rating score on the NRCS Form AD-1006 is between 200 and 260 points. According to FAA Order 1050.1F, "if the total score on Form AD-1006, 'Farmland Conservation Impact Rating,' is below 160, no further analysis is necessary." When Form AD-1006 indicates a score that exceeds 160, then two alternative sites should be considered with the NRCS. If the conversion impact rating score is over 220 points, then three alternative sites should be considered.

Potential Impacts - The Proposed Project would not require the acquisition or conversion of farmland. Also, the Airport is located within the U.S. Census Bureau Designated Urban Area (Jacksonville). It, therefore, is exempt from the Farmland Policy Protection Act (FPPA) (US Census Bureau Urban Area Reference Map, 2022). Thus, the Proposed Project would have no effect on farmland.

Mitigation, Avoidance, and Minimization Measures – The JAA does not propose mitigation measures because the Proposed Project would not cause direct or indirect effects to Farmlands.

3.2.7 Hazardous Materials, Solid Waste, and Pollution Prevention

This section describes the existing condition, the FAA's significance threshold(s), the potential hazardous materials, solid waste, and pollution prevention effects of the Proposed Project compared to the No Action Alternative, and the potential mitigation measures.

3.2.7.1 Affected Environment

According to FAA 1050.1F Desk Reference, "hazardous material is any substance or material that has been determined to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce" and includes hazardous wastes and hazardous substances. According to the Resource Conservation and Recovery Act (RCRA), solid waste includes construction and demolition debris, food waste from concession activities in the terminal, and paper/cardboard. Pollution prevention includes methods to avoid, prevent, or reduce pollutant discharges or emissions as a result of a project.

Hazardous Materials - Fixed Based Operators, Signature Flight Support and Sheltair Aviation Services provide fuel for all airport commercial and general aviation aircraft. Sheltair Aviation Services serves UPS, Allegiant Air, and Spirit Airlines. Signature Flight Support provides fuel to all other airlines. The main fuel farm is located southeast of the passenger terminal building, adjacent to and west of the JAA maintenance facilities. Sheltair Aviation Services operates two 50,000-gallon Jet A fuel tanks and one 10,000-gallon AVGAS tank. The second Airport fuel farm is in the general aviation area between Yonge Drive and Signature Flight Support Hangar. The aboveground tanks in this area provide a total capacity of 90,000 gallons for the storage of Jet-A fuel and 20,000 gallons for the storage of Avgas (Ricondo & Associates, 2020). There are no superfund sites within the Direct Study Area or the Airport (JAA, 2020). The JAA implements a Spill Prevention, Control, and Countermeasures (SPCC) Plan and Storm Water Pollution Prevention Plan (SWPPP) for the entire Airport. According to the JAA General Rules and Regulations, a best management practice (BMP) for managing and cleaning minor hazardous material spills includes the use of appropriate absorbent material(s) and containment measures capable of damming/diking a fuel spill.

Solid Waste and Pollution Prevention – Municipal solid waste (MSW) includes everyday items like plastic and cardboard. MSW is sorted between trash and recycling at the time of disposal at the trash receptacles located throughout the Airport. MSW is collected by Waste Management and is transported to a Trail Ridge Landfill. Trail Ridge Landfill has an estimated remaining capacity through December 2076 (Waste Management, 2022).

Waste Management Old Kings Road Landfill is the closest landfill, located approximately five miles southwest of the Airport (Waste Management, 2022). The Old Kings Road Landfill is a construction and demolition debris landfill that accepts 850 tons per day. At the current tonnage, the landfill has capacity until 2041 (Waste Management, 2022).

The JAA has established multiple sustainability initiatives to reduce the environmental footprint at the Airport. The initiatives cover the Airport's energy, water, waste management, and design. For energy use, the Airport has implemented energy-efficient lighting, installed electric vehicle charging stations, and installed solar arrays on the top of the terminal and the top level of the parking garage (JAA, 2020). For water use, the Airport has implemented low-flow fixtures and reclaimed water for irrigation to reduce potable water usage and adherence to the City of Jacksonville landscaping regulations to minimize irrigation water use (JAA, 2020). Waste Management at the Airport is handled sustainably, and recycle bins are located throughout the Airport. Waste generated elsewhere at the Airport is handled by the tenants or airlines (JAA, 2020). The JAA has initiatives to minimize non-municipal solid waste (MSW) by the following:

- Storing used tires, oils, and lubricants generated within maintenance areas.
- Disposing of fluorescent lamps, electronic waste, and toner cartridges in compliance with applicable environmental laws and regulations.
- Providing space to collect scrap metal generated by JAA and tenants.
- Prioritizing the reuse of wood and composite pallets.
- Replanting landscaping waste in a designated area for future reuse.
- Requiring that independent contractors manage waste generated during construction and demolition activities on a project-by-project basis.

3.2.7.2 Environmental Consequences

Significance Threshold - FAA Order 1050.1F does not define a significance threshold for hazardous materials, solid waste, and pollution prevention; however, it does provide several factors to consider in evaluating the context and intensity of potential environmental impacts. FAA Order 1050.1F, Exhibit 4-1 states that these include when the action would have the potential to:

- Violate applicable federal, state, tribal, or local laws or regulations regarding hazardous materials and/or solid waste management;
- Involve a contaminated site, including but not limited to a site listed on the National Priorities List. Contaminated sites may encompass relatively large areas. However, not all of the grounds within the boundaries of a contaminated site are contaminated, which leaves space for siting a facility on non-contaminated land within the boundaries of a contaminated site. An EIS is not necessarily required. Paragraph 6-2.3.a of [FAA Order 1050.1F] allows for mitigating impacts below significant levels (e.g., modifying an action to site it on non-contaminated grounds within a contaminated site). Therefore, if appropriately mitigated, actions within the boundaries of a contaminated site would not have significant impacts;
- Produce an appreciably different quantity or type of hazardous waste;

- Generate an appreciably different quantity or type of solid waste or use a different method of collection or disposal and/or would exceed local capacity; or
- Adversely affect human health and the environment.

Potential Impacts

Hazardous Materials - Construction of the Proposed Project would involve using hazardous materials (i.e., fuels), subject to Best Management Practices (BMPs). The hazardous materials would be stored and used at the construction site. The materials would be stored in compliance with federal, state, and local regulatory requirements and permit conditions requiring pollution prevention measures. Additionally, all construction debris and waste would be disposed of at the appropriate authorized disposal facility.

The Proposed Project would include an approximate 5,200-gallon aboveground diesel storage tank for Concourse B backup generators. The tank would comply with Chapter 62-762 F.A.C., as applicable, including requirements for aboveground storage tank systems having individual storage tank capacities greater than 550 gallons. Operation of the Proposed Project would not change the Airport's existing hazardous materials storage and handling procedures (e.g., oils, solvents, etc.). It would not involve any properties on the National Priorities List. The SWPPP and SPCC would be updated based on the Proposed Project. Therefore, the Proposed Project would not have a significant effect on the use of hazardous materials at the Airport.

Solid Waste and Pollution Prevention - Construction of the Proposed Project would cause a short-term, temporary increase in the quantity of solid waste generated at the Airport; however, the amount of solid waste anticipated would not adversely affect the capacity of landfills in the area. The selected construction contractor would be responsible for disposing waste per all federal, state, and local rules and regulations. The Proposed Project's solid waste would be managed by the applicable state solid waste regulations of Ch 62-701, F.A.C. The oil used to lubricate construction equipment could be recycled per federal, state, and local laws. Operation of the Proposed Project would increase the amount of solid waste produced at the Airport. Solid waste would continue to be handled, recycled, as applicable, and/or disposed of per federal, state, and local rules and regulations. A current JAA initiative to minimize non-MSW includes requiring independent contractors manage waste generated during construction and demolition activities on a project-by-project basis. Therefore, the Proposed Project would not have an effect on solid waste and pollution prevention.

Mitigation, Avoidance, and Minimization Measures – The JAA does not propose mitigation measures because the Proposed Project would not cause direct or indirect effects to hazardous materials, solid waste, and pollution prevention.

3.2.8 Historical, Architectural, Archeological, and Cultural Resources

This section describes the existing condition, the FAA's significance threshold(s), the potential historical, architectural, archeological, and cultural resource effects of the Proposed Project compared to the No Action Alternative, and the potential mitigation measures.

3.2.8.1 Affected Environment

The National Historic Preservation Act (NHPA)[17] establishes the Advisory Council on Historic Preservation (ACHP). The ACHP oversees federal agency compliance with the NHPA. The NHPA also established the National Register of Historic Places (NRHP), which the National Park Service (NPS) oversees. Section 106 of the NHPA requires federal agencies to account for the effects of their undertaking[18] and consult with the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officers (THPO), and other parties to develop and evaluate alternatives or modifications to the undertaking where necessary to avoid, minimize, or mitigate adverse effects on historic properties. In consultation with the SHPO/THPO, the FAA evaluates a property's eligibility for inclusion in the NRHP.

The Area of Potential Effects (APE) for this EA is shown in ***Figure 3-4***. According to the Florida Master Site File (FMSF) records, one archaeological resource exists in the APE. The Florida SHPO determined that the Jax Raceways Site (site ID 17810) was not eligible for listing on the NRHP (SHPO, 2024). The FMSF identified seven standing structures within the APE at the Florida Air National Guard (FANG) 125th Fighter Wing (FW).

All FANG 125th FW buildings and structures were surveyed and evaluated as described in the United States Air Force F-35A Operational Beddown – Air National Guard Final Environmental Impact Statement (USAF, 2021). The National Guard Bureau determined that the FANG 125th FW's structures were not eligible for listing on the NRHP. The Florida SHPO concurred with the determination of eligibility (USAF, 2021).

3.2.8.2 Environmental Consequences

Significance Threshold - FAA Order 1050.1F does not provide a significance threshold for historical, architectural, archeological, and cultural resources; however, it does provide a factor to consider in evaluating the context and intensity of potential environmental impacts. This would occur when the action results in a finding of adverse effect through the Section 106 process.

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17 54 U.S.C. §§ 300101 et seq.

18 Under Section 106, an undertaking is the proposed action, or project.

FIGURE 3-4: AREA OF POTENTIAL EFFECTS

Potential Impacts - The Proposed Project would not require the direct use of historic resources. In addition, the Proposed Project would be consistent with the Airport setting. It would not cause significant indirect effect (e.g., air quality or noise) or alter the surrounding environment in a way that would affect historic resources.

The Proposed Project would not affect tribal land or land of interest to tribes. The Proposed Project would occur entirely on Airport property and on land that has been previously disturbed and constructed, along with a small area of mowed and maintained grass. For those reasons, the Proposed Project would not affect tribal land or land of interest to tribes.

Therefore, the Proposed Project would not directly or indirectly affect historical, architectural, archeological, or cultural resources.

Mitigation, Avoidance, or Minimization Measures - The JAA does not propose mitigation measures because the Proposed Project would not cause direct or indirect effects to historical, architectural, archeological, or cultural resources. However, if archeological or paleontological resources are encountered during subsurface construction, all ground-disturbing activities within 25 feet of the discovered resources would stop immediately. The contractor would immediately contact the JAA, the SHPO, and the FAA. The aviation tenant’s construction contractor would ensure a qualified paleontologist is called as soon as possible to assess the situation. Consultation would be conducted to seek recommendations for the treatment of the discovery.

3.2.9 Land Use

This section describes the existing condition, the FAA’s significance threshold(s), the potential land use effects of the Proposed Project compared to the No Action Alternative, and the potential mitigation measures.

3.2.9.1 Affected Environment

Compatible land use around an airport increases safety and minimizes the effects of airport operations. Airport projects receiving federal funding may not be approved unless the Airport Sponsor provides written assurance that appropriate action, including the adoption of zoning laws, has been or will be taken, to the extent reasonable, to restrict the use of land adjacent to or near the airport to activities and purposes compatible with normal airport operations, including the landing and takeoff of aircraft.

An inventory of existing land use configurations and characteristics is necessary to assess compatibility issues. The Airport’s land use is classified as public buildings and facilities and is surrounded by several different land uses. North of the Airport are agriculture and light industrial land uses. West of the Airport is classified as “multi-use” land use. Low-density residential and rural residential are south and southwest of the Airport. East of the Airport are light industrial, business park, and community/general commercial land uses (Duval County, 2022).

As listed in ***Table 3-7***, multiple types of land uses surround the Airport. See ***Figure 3-5*** for the existing land use map of the Indirect Study Area and its surrounding environment.

TABLE 3-6: LAND USES BEYOND AIRPORT RUNWAY ENDS

Runway 8 Approach End	Runway 26 Approach End	Runway 32 Approach End	Runway 14 Approach End
Multi-Use (MU)	Community / General Commercial (CGC)	Community / General Commercial (CGC)	Multi-Use (MU)
Low-Density Residential (LDR)	Multi-Use (MU)	Heavy Industrial (HI)	Agriculture II (AGR-II)
Conservation (CSV)	Low-Density Residential (LDR) Rural Residential (RR) Light Industrial (LI)	Low-Density Residential (LDR) Light Industrial (LI)	Agriculture III (AGR-III) Rural Residential (RR)

Source: (City of Jacksonville, 2023)

3.2.9.2 Environmental Consequences

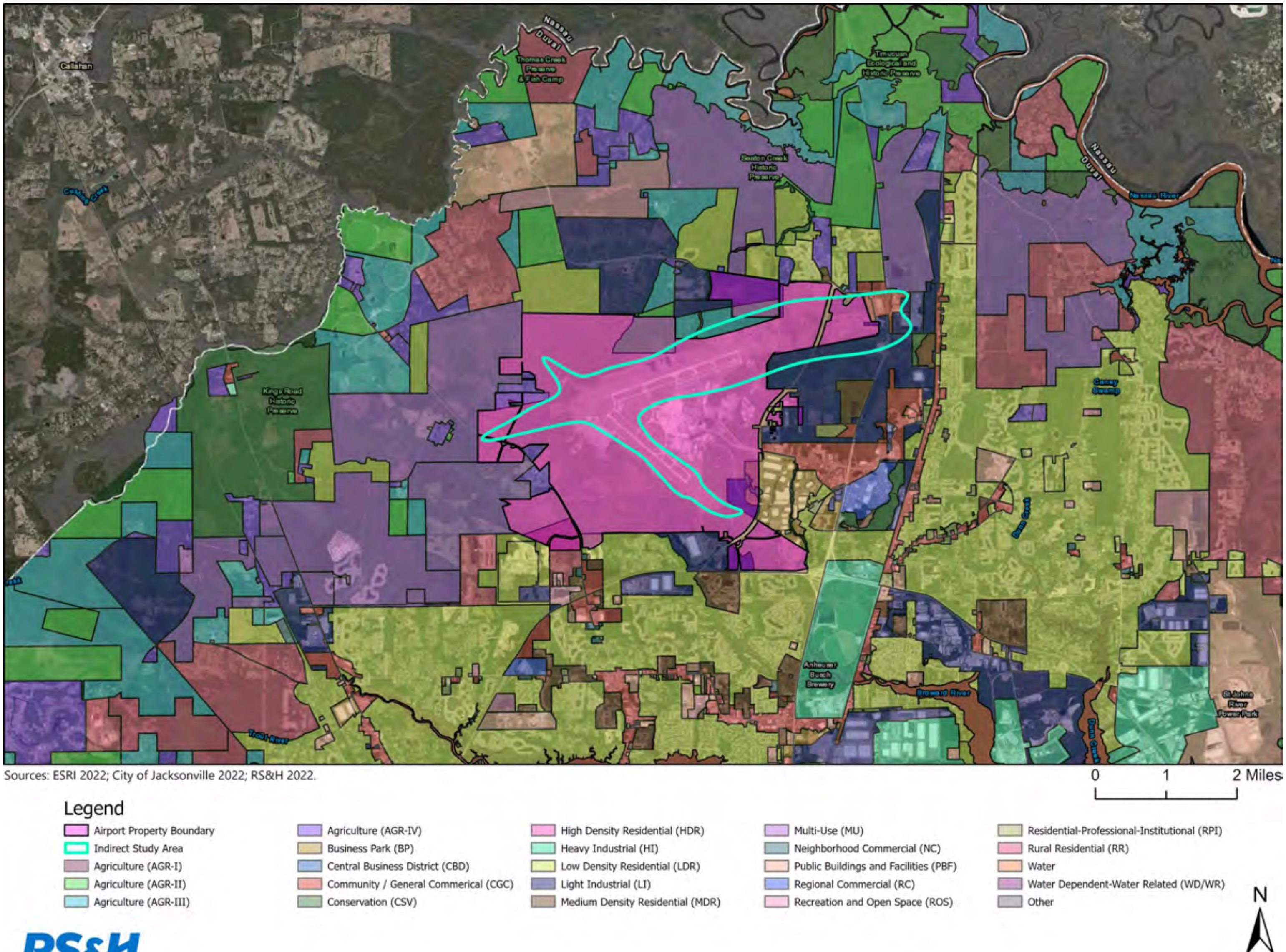
Significance Threshold – FAA Order 1050.1F does not define a significance threshold for land use nor provides factors to consider in evaluating the context and intensity of potential environmental impacts. Determining significant impacts regarding land use impacts depends on the significance of other impact categories.

According to 1050.1F Section (9)(3)(1), "If the proposal would result in other impacts that have land use ramifications, for example, disruption of communities, relocation, and induced socioeconomic impacts, the impacts on land use should be analyzed in these contexts and described accordingly under the appropriate impact category with any necessary cross-references to the Land Use section to avoid duplication."

Potential Impacts - The Proposed Project would occur entirely on-Airport property. It would not require the acquisition or use of surrounding off-Airport land. The Proposed Project would be consistent with the JAA and local governments' plans, goals, zoning, policies, and local controls. Therefore, the Proposed Project would not affect land use compared to the No Action Alternative.

Mitigation, Avoidance, and Minimization Measures – The JAA does not propose mitigation measures because the Proposed Project would not cause direct or indirect effects to land use.

FIGURE 3-5: LAND USE AROUND THE AIRPORT



Sources: ESRI 2022; City of Jacksonville 2022; RS&H 2022.

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3.2.10 Natural Resources and Energy Supply

This section describes the existing condition, the FAA's significance threshold(s), the potential natural resources and energy supply effects of the Proposed Project compared to the No Action Alternative, and the potential mitigation measures.

3.2.10.1 Affected Environment

Sections 1502.16(e) and (f) of the CEQ Regulations require federal agencies to consider the use of consumable natural resources and demands on energy supplies from projects, as well as the conservation potential of alternatives and mitigation measures. FAA policy also encourages developing facilities to use the highest design standards and to incorporate sustainable measures into designs.

Airport personnel and tenants regularly use consumable materials to maintain various airside and landside facilities and services. Those materials may include asphalt, concrete, aggregate for sub-base materials, various metals associated with such maintenance, and fuels associated with the operation of aircraft and vehicles.

Jacksonville Electric Authority (JEA) supplies water and electric utilities to the Airport. The Airport currently uses energy-efficient lighting to reduce energy demands. Additionally, the Airport has installed electric vehicle charging stations and solar arrays on the terminal and parking garage (JAA, 2020) to reduce energy needs further.

JEA is meeting all current utility demands at the Airport. The Airport's electrical distribution consists of up to three 1,200A (amp) feeds at 4.167 kilovolts (kV) (i.e., identified as M-1, M-2, and M-3). A series of switches can isolate onto one feed or split between two feeds. The Airport's normal operating condition is to use two feeds (M-1 and M-2). During the existing peak load (e.g., summer), the M-1 feed used 233A (of 1,200A capacity), the M-2 feed used 459A of the total 1,200A capacity, and the M-3 feed was not used. If, in an emergency, the Airport loses two of the three feeds, the total load on the third feed would be 692A (of 1,200A capacity).

3.2.10.2 Environmental Consequences

Significance Threshold – FAA Order 1050.1F does not define a significance threshold for natural resources and energy supply; however, it does provide a factor to consider in evaluating the context and intensity of potential environmental impacts. Potentially significant effects could occur if the action has the potential to cause demand to exceed available or future supplies of these resources, which include aviation and surface vehicle fuel, construction material, and electrical power.

Potential Impacts

Construction - Construction of the Proposed Project would temporarily increase the use of natural resources at the Airport. These natural resources could include prefabricated building components, aggregate, sub-base materials, and oils associated with the Proposed Project's construction. These resources are not rare or in short supply, and the quantity required for the development of this size would not place an undue strain on supplies. Construction would also increase the energy demand at the Airport; however, this increase would be temporary, minor, and within the supply capabilities of the JEA.

Construction of the Proposed Project would result in a temporary increase in fuel usage from construction-related vehicles accessing the Airport but would not result in a change in vehicle traffic patterns. During the construction of Concourse B, ground support equipment would need to travel around the site to traverse from Concourse A to Concourse C; however, this would only last for the duration of construction. Additionally, construction would not result in a change in aircraft traffic patterns.

Operational Impacts - The Proposed Project's operation would increase the use of electricity, fuel, and water. The Proposed Project's increase in aircraft operations would increase the use of aviation fuel at the Airport; however, additional fuel storage tanks are not needed to accommodate the increase in fuel demand. The Proposed Project would include an energy-efficient design using building automation, controlled daylight harvesting with LEDs, and intelligent sensing tinted glazing throughout the facility to minimize heat gain and mechanical equipment loads. The Proposed Project would also incorporate a condensate recovery system to reuse the air conditioning system's drained water. Airport custodial and maintenance employees would use electric vehicles to travel around the concourse/terminal areas. Police officers also would use electric "scooters" to patrol the Airport.

The existing airport Building Automation System (BAS) would be expanded to include Concourse B. The BAS would have a web-based front end for time-of-day scheduling, energy management, and sub-metering. The data collected within the BAS can be trended and used to continuously improve the building's energy performance. The BAS controls the following systems:

- During favorable weather conditions, the BAS would engage the chilled water plant operation to allow the building heat to be rejected directly to the outdoors instead of energizing the chiller motors and chilled water pumps.
- All lighting within Concourse B would be designed for integration into the BAS. This would allow building operators to use the BAS programming to assign time-of-day scheduling to control when lighting zones are de-energized and dimming features to provide proper illumination in a space without excessive energy use.

- To accurately track all utility data, tenant spaces within the Proposed Project would have sub-meters installed and integrated into the BAS. Tenant utility data is used for billing and identifying inefficient users.
- Light Emitting Diodes (LED) would be used to illuminate the interior and exterior sections of Concourse B. LEDs use a fraction of the energy and minimize heat output compared to other filament luminaires while producing equally effective illumination. Coupled with room occupancy light sensors, electrical savings would be maximized.
- Concourse B would feature all touch-free automatic shutoff valves in restrooms to prevent accidental water waste. Infrared sensor technology provides the code required flow of water for hand washing and automatically shuts off flow when not actively engaged.
- Domestic hot water systems serving restrooms would be provided with recirculating pumps. This design uses low-energy pumps to keep hot water moving through all major branches of a piping system to eliminate “dead end” branches that stagnate and cool off. This feature reduces the amount of water drained while waiting for hot water at the fixture. Digital mixing valve assemblies ensure that the hot water delivered is within a tolerable range for users.
- Variable Speed Drives (VSD) would be designed for all pump and fan motors in Concourse B. VSDs control the amount of electrical power supplied to the motors on heating, ventilation, and air conditioning (HVAC) and other mechanical equipment, ensuring the systems operate to the condition needed for service instead of constantly operating at a full load. This reduces electrical power consumption by the equipment and provides a means of rebalancing systems as demands change in the building.
- To increase indoor air quality, Concourse B HVAC units serving passenger areas would be equipped with electronic air cleaners. This Bipolar Ionization technology creates ions within the airstream, which bond to pollutants. The charged pollutants are ionically attracted to each other and agglomerate to a size where they can be captured in the air handling unit filters, leaving cleaner air to pass through and be supplied to the space. Additionally, all elevator units would incorporate cab air purifiers. These purifiers use bipolar ionization to kill harmful, disease-inducing microbes as well.
- A new central chilled water plant serving Concourse B would serve as a backup capacity to the existing Airport chiller plant. The new plant would feature magnetic bearing chillers, which reduce friction within the rotating components by magnetically suspending the rotor shafts and are the most energy-efficient machines available in the required capacities.
- The new chilled water plant would have waterside economizers or “free-cooling” heat exchangers. This feature uses plate and frame heat exchangers to cool the building's HVAC water loop directly from the outdoor cooling towers. HVAC air handler units

would be designed to recapture already cooled condensation. This would save water and reduce the required energy necessary to lower makeup water's temperature.

- Passenger Loading Bridges would use both Pre-Conditioned Air Units (PCA) and 400 HZ power units for aircraft to use instead of the aircraft's Auxiliary Power Units (APU). The electrically powered bridge units reduce APU noise, aircraft operating costs, fuel usage, and pollution levels on the ramp. Additionally, noise reduction improves ramp and employee safety. PCA units would also be able to provide cooling into the terminal areas if required during emergencies.

The Proposed Project would increase the electrical usage at the Airport. As previously described, the Airport's electrical distribution consists of up to three 1,200A feeds (M-1, M-2, and M-3). With the Proposed Project, the M-1 feed would increase to a total load of approximately 593A, and the M-2 feed would increase to a total load of approximately 657A. The total amps for each feed are less than the 1,200A total capacity of each feed. Therefore, the Proposed Project would not place an undue burden on JEA's electrical capacity.

Operation of the Proposed Project would change aircraft ground movements and require additional ground support equipment but would not significantly affect fuel usage. Coordination would occur with JEA to upsize the capacity of the lift station, which serves the area to manage additional wastewater.

Therefore, the Proposed Project would not significantly impact natural resources or energy supply compared to the No Action Alternative.

Mitigation, Avoidance, and Minimization Measures – The JAA does not propose mitigation measures because the Proposed Project would not cause significant direct or indirect effects to natural resources and energy supply.

3.2.11 Noise and Noise-Compatible Land Use

This section describes the existing condition, the FAA's significance threshold(s), the potential noise and noise-compatible land use effects of the Proposed Project compared to the No Action Alternative, and the potential mitigation measures.

3.2.11.1 Affected Environment

The noise analysis was developed using the FAA's Aviation Environmental Design Tool (AEDT). The AEDT is the required FAA tool to evaluate potential noise impacts from actions subject to NEPA. The AEDT produces aircraft noise contours that delineate areas of equal day-night average sound level (DNL).

DNL is based on sound levels measured in relative intensity of sound decibels (dB) on the A-weighted scale (dBA) over a time-weighted average normalized to 24 hours. A penalty of 10 dB to sound levels between 10 p.m. and 7 a.m. local time is added to aircraft operations occurring during those hours to account for greater sensitivity to noise during the nighttime hours and reduced ambient noise. DNL has been widely accepted as the best method to describe aircraft noise exposure. The USEPA identifies DNL as the principal metric for airport noise analysis. The FAA requires DNL as the noise descriptor in aircraft noise exposure analysis and noise compatibility planning. DNL levels are commonly shown as lines of equal noise exposure, similar to terrain contour maps, referred to as noise contours.

The noise environment is commonly depicted in lines of equal noise levels or noise contours. These noise contours are supplemented with noise data for selected points such as noise-sensitive receptors. The noise analysis takes the following operational characteristics into account:

- number of aircraft operations;
- aircraft fleet mix;
- aircraft noise and performance characteristics;
- flight tracks; and
- runway use.

Noise modeling requires the use of specific noise data and performance data for each aircraft type operating at the Airport. Noise data includes particular aircraft with engines at a range of thrust levels at a range of distances (from 200 feet to 25,000 feet). Performance data include thrust, speed, and altitude profiles for takeoff and landing operations. AEDT has standard aircraft flight profiles for takeoffs, landings, and flight patterns or touch-and-go operations, which were used for all civilian and military aircraft types. The AEDT database contains standard noise and performance data for over 300 fixed-wing aircraft types, most of which are civilian aircraft. Within the AEDT database, it is standard for aircraft takeoff or departure profiles to be defined by a range of trip distances identified as "stage lengths." Higher stage lengths (longer trip distances) are associated with heavier aircraft due to the flight's increased fuel requirements.

The 2022 65, 70, and 75 day-night average sound level (DNL)[19] contours are provided in ***Figure 3-6***. ***Table 3-8*** identifies the areas within the DNL contour ranges. As shown in the table, the total area within the 65 DNL and greater contour is 4.49 square miles and is primarily located within the limits of the Airport property boundary. The 65 DNL encompasses 0.7 square mile of the off-Airport property, primarily commercial and industrial compatible land uses. One residence, located near Interstate 95 and Pecan Park Road intersection, is within the contour and is exposed to the 65 DNL. See ***Appendix C*** for further information.

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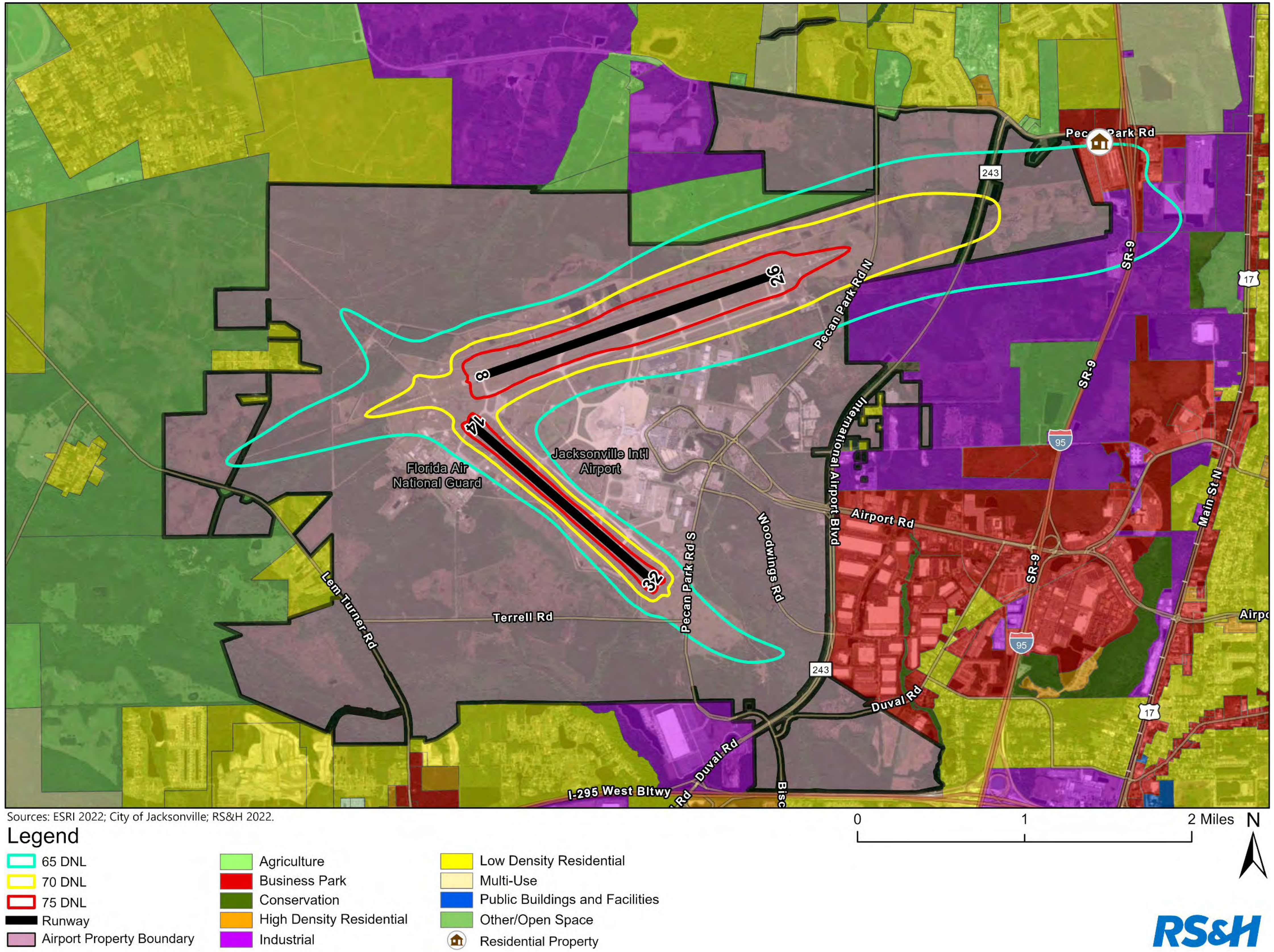
[19] The DNL is a 24-hour time-weighted sound level that is expressed in A-weighted decibels. The FAA and other federal agencies use DNL as the primary measure of noise impact because it: correlates well with the results of attitudinal surveys regarding noise; increases with the duration of noise events; and accounts for an increased sensitivity to noise at night by increasing each noise event that occurs during nighttime hours (i.e., 10:00 pm to 6:59 am) by 10 decibels (dB).

FIGURE 3-6: EXISTING NOISE CONTOURS



RS&H

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TABLE 3-8: AREA WITHIN THE 2022 EXISTING CONDITION DNL CONTOURS

DNL Contour Range	Area (sq. miles)
65-70	2.75
70-75	1.09
>75	0.65
Total	**4.49**

Source: AEDT, 2023. RS&H, 2023.

3.2.11.1 Environmental Consequences

Significance Threshold – Per FAA Order 1050.1F, "a significant noise impact would occur if the action would increase noise by DNL 1.5 dB or more for a noise sensitive area that is [already] exposed to noise at or above the DNL 65 dB noise exposure level, or that will be exposed at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase when compared to the no action alternative for the same timeframe." Noise-sensitive areas generally include residential neighborhoods; educational, health, and religious facilities; and cultural and historic sites.

For example, an increase from DNL 65.5 dB to 67 dB is considered a significant impact, as is an increase from DNL 63.5 dB to 65 dB. The determination of significance must be obtained using noise contours and/or grid point analysis along with local land use information and general guidance contained in Appendix A of 14 CFR Part 150. In addition to defining significant impacts, FAA Order 1050.1F includes additional reporting requirements, including:

- The location and number of noise-sensitive uses at or above DNL 65 dB;
- The disclosure of potentially newly non-compatible land use, regardless of whether there is a significant noise impact; and
- Maps reporting the number of residences or people residing at or above DNL 65 dB for at least the 65-, 70-, and 75-dB exposure levels.

Potential Impacts

Construction-related Noise - The Proposed Project's construction involves the temporary use of heavy machinery, equipment, and construction activities that generate noise. The intensity and duration of construction noise can vary depending on the specific construction techniques and equipment used. Construction noise can occur during various times of the day, including daytime, evenings, and potentially even overnight shifts, depending on the construction schedule and local regulations.

The impact of construction noise can be influenced by the local environment and the sensitivity of nearby communities. Noise-sensitive areas, such as residential neighborhoods, hospitals, or schools, may be more affected by construction noise. Vegetation and man-made structures can reduce noise exposure. The nearest noise sensitive residential area is located 1.7 miles west of the Direct Study Area and is buffered by approximately 1,900 feet of existing dense vegetation.

The standard noise drop-off rate is 6 dB per doubling of distance. Normal background sound levels in residential/suburban areas range from 45-55 dB. Noise levels calculated at the closest residential area range from 30 dB to 44 dB and are at or below typical background levels.

2026 DNL Contours - Annual aircraft operations for the 2026 No Action Alternative total 109,077, or an average of 299 operations per day (see ***Appendix C***). The 2026 No Action Alternative aircraft fleet mix was determined by multiplying the percentages by aircraft type that occurred in 2022 by the FAA TAF operations forecast to occur in 2026. The 2026 Proposed Project annual operations total 116,814, or an average of 320 operations per day. The 2026 Proposed Project aircraft fleet mix was determined by multiplying the percentages by aircraft type that occurred in 2022 by the FAA TAF operations forecast to occur in 2026. The 2026 Proposed Project includes an additional 7,737 passenger aircraft operations, which were distributed proportionally among the passenger aircraft fleet mix that occurred in 2022.

The operations and fleet mix modeled for the 2026 No Action Alternative and Proposed Project are shown in ***Table 3-9***. The runway use, flight tracks, and time of day modeled for the 2026 condition were the same as the 2022 condition.

TABLE 3-9: 2026 AIRCRAFT OPERATIONS AND FLEET MIX

Aircraft Type (s)	AEDT Aircraft	No Action Alternative Operations	Proposed Project Operations	Difference
Embraer 175	EMB175	17,860	19,555	1,694
Boeing 737-800/900	737800	10,524	11,523	998
Boeing 757-200	757PW	10,050	11,004	954
Airbus A320-200	A320-211	8,397	9,194	797
Boeing 737-700	737700	8,389	9,185	796
Canadair CRJ 700/900	CRJ9-ER	6,746	7,386	640
Airbus A319-100	A319-131	6,158	6,742	584
Embraer 190	EMB190	3,102	3,396	294
Embraer 170	EMB170	2,855	3,126	271
Boeing 767-300	767300	1,666	1,666	0
Airbus A321-200	A321-232	2,165	2,370	205
Airbus A300	A300B4-203	990	990	0
Embraer 135/145	EMB145	997	1,091	95
Airbus A320neo	A320-271N	841	921	80
Boeing 737 MAX8	7378MAX	825	903	78
Beechcraft 1900	1900D	691	756	66
Boeing 717-200	717200	654	716	62
ATR-42	DHC8	431	472	41
Dash 8-300	DHC830	429	470	41

Aircraft Type (s)	AEDT Aircraft	No Action Alternative Operations	Proposed Project Operations	Difference
Boeing 757-300	757300	181	198	17
Boeing 737-400	737400	116	127	11
Boeing 737-300	737300	110	120	10
Boeing 747-400	747400	36	36	0
Challenger 300/600	CL600	21	23	2
King Air/Super King Air	DHC6	9	10	1
Learjet 35/40/45/55/60/75	LEAR35	1,837	1,837	0
Cessna 560 Citation XLS	CNA560XL	1,346	1,346	0
Citation II/Bravo,Premier,Phenom 300	CNA55B	1,018	1,018	0
Cessna Citation CJ1/CJ3/CJ4	CNA525C	1,003	1,003	0
Beechcraft Beechjet	MU3001	992	992	0
Cessna Citation Sovereign/Latitude	CNA680	867	867	0
Gulfstream G280	CL601	780	780	0
Challenger 300/600	CL600	729	729	0
Cessna Citation Ultra/Encore	CNA560E	573	573	0
Gulfstream GV/G500/G550	GV	537	537	0
Cessna Citation X, Falcon 2000	CNA750	475	475	0
Dassault Falcon 50/900	FAL900EX	340	340	0
Gulfstream GIV/G400	GIV	329	329	0
Cirrus Vision, Citation Mustang	CNA510	240	240	0
IAI Astra/Galaxy	IA1125	152	152	0
Cessna Citation CJ1/CJ2/CJ3	CNA500	79	79	0
Cessna Citation III	CIT3	72	72	0
Bombardier Global 7500	BD-700-1A10	63	63	0
Gulfstream G650	G650ER	60	60	0
Eclipse 500	ECLIPSE500	49	49	0
Bombardier Global 5000	BD-700-1A11	29	29	0
King Air/Super King Air	DHC6	769	769	0
Pilatus PC-12, Cessna 208, Socata TBM9	CNA208	200	200	0
Cessna 172/177	CNA172	2,333	2,333	0
Cessna 152	GASEPF	568	568	0
Piper 46 Malibu, Lancair 4, Bonanza 36	GASEPV	266	266	0
Piper Seminole, Diamond 42/62	PA30	212	212	0
Baron 58, Cessna 310/414	BEC58P	163	163	0

Aircraft Type (s)	AEDT Aircraft	No Action Alternative Operations	Proposed Project Operations	Difference
Cirrus SR20/22	COMSEP	151	151	0
Boeing P-8	737800	5,232	5,232	0
F-15	F15E20	3,368	3,368	0
Total		**109,077**	**116,814**	**7,737**

Source: FAA TAF; Virtower™; RS&H, 2023.

The 2026 No Action Alternative and Proposed Project 65, 70, and 75 DNL contours are provided in ***Figure 3-7*** and ***Figure 3-8, respectively. Table 3-10***, which identifies the areas within the DNL contour ranges, shows that the total area within the 65 DNL contour is 4.57 square miles for the No Action Alternative and 4.66 square miles for the Proposed Project. The No Action Alternative 65 DNL contour encompasses 0.70 square mile of off-Airport property, and the Proposed Project encompasses 0.73 square mile of off-Airport property. One residence near the Interstate 95 and Pecan Park Road intersection is within the 65 DNL for both conditions. The residence is exposed to 65.25 DNL for the No Action Alternative and 65.39 DNL for the Proposed Project. Therefore, the residence would experience an increase of 0.14 DNL as a result of the Proposed Project. The 0.14 DNL increase is below the FAA significance threshold of DNL 1.5 dB.

TABLE 3-10: AREA WITHIN THE 2026 DNL CONTOURS

DNL Contour Range	No Action Alternative (sq. mile)	Proposed Project (sq. mile)	Difference (sq. mile)
65-70	2.80	2.86	+0.06
70-75	1.11	1.13	+0.02
>75	0.66	0.67	+0.01
Total	**4.57**	**4.66**	**+0.09**

Source: AEDT, 2023. RS&H, 2023

2031 DNL Contours - Annual aircraft operations for the 2031 No Action Alternative total 118,843, or an average of 326 operations per day. The 2031 No Action Alternative aircraft fleet mix was determined by multiplying the percentages by aircraft type that occurred in 2022 by the FAA TAF operations forecast to occur in 2031. The 2031 Proposed Project annual operations total 142,814, or an average of 391 operations per day. The 2031 Proposed Project aircraft fleet mix was determined by multiplying the percentages by aircraft type that occurred in 2022 by the FAA TAF operations forecast to occur in 2031. The 2031 Proposed Project includes an additional 23,971 passenger aircraft operations, which were distributed proportionally among the passenger aircraft fleet mix that occurred in 2022

FIGURE 3-7: 2026 NO ACTION ALTERNATIVE NOISE CONTOURS

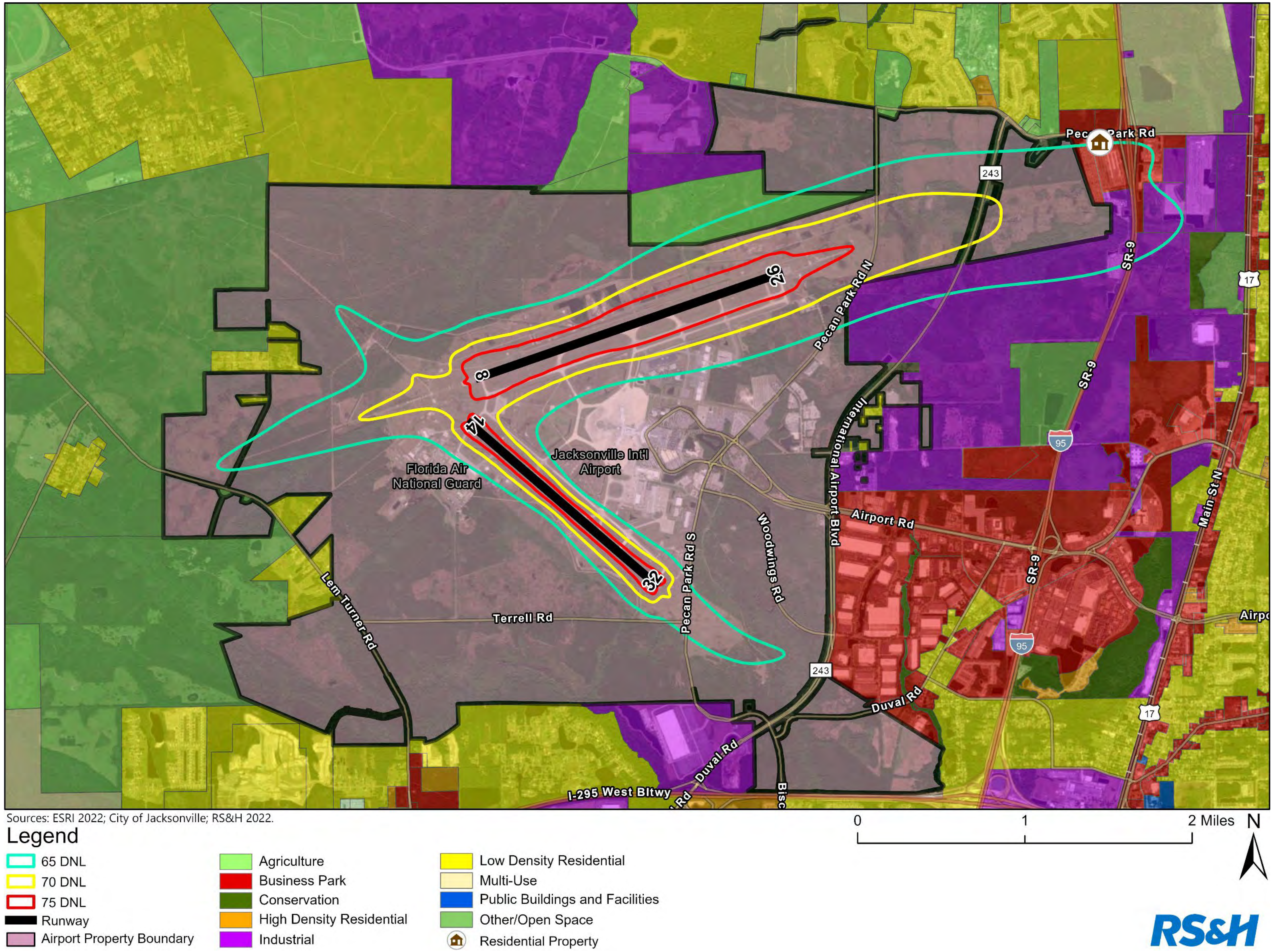

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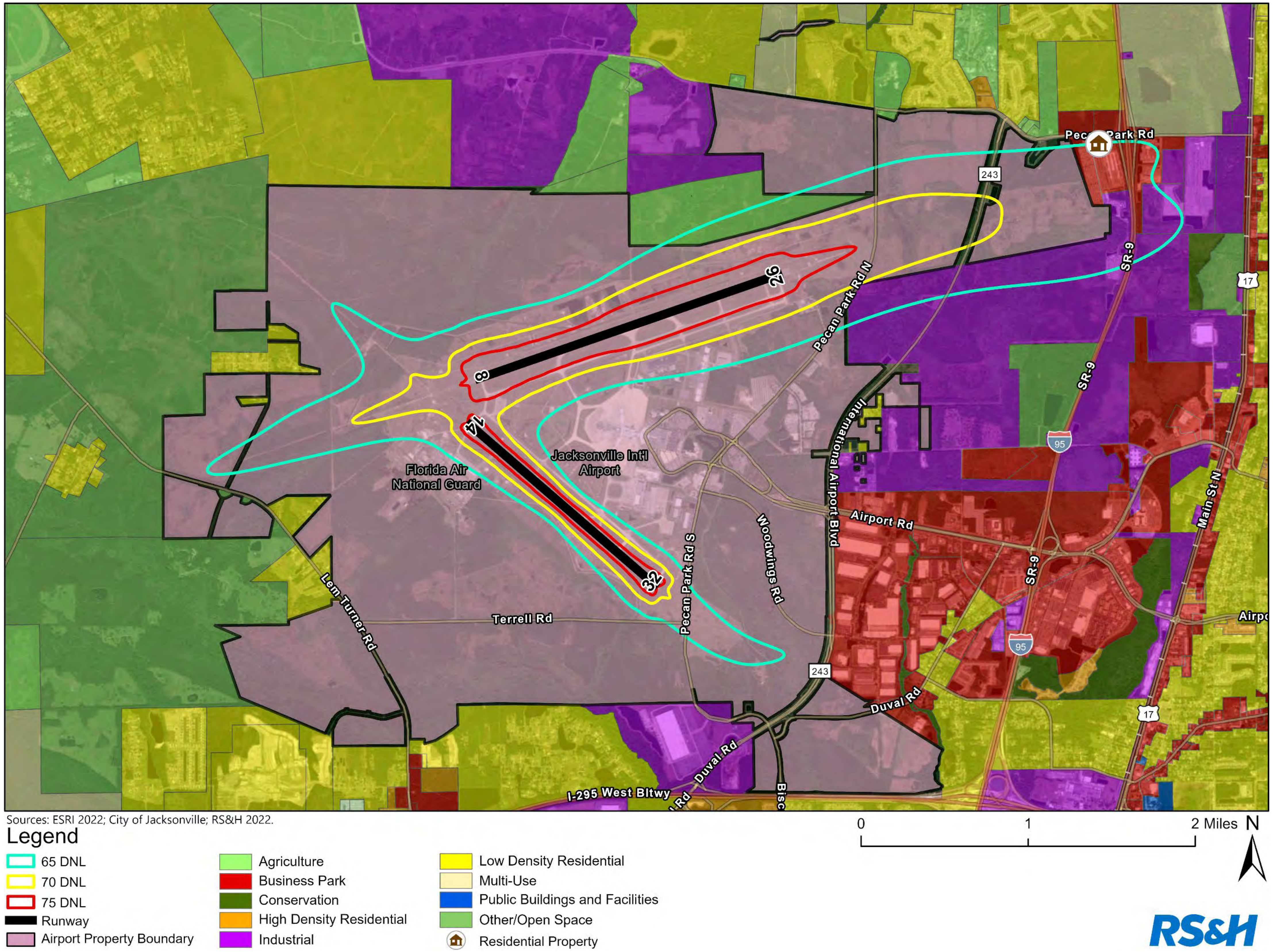
FIGURE 3-8: 2026 PROPOSED PROJECT NOISE CONTOURS



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The operations and fleet mix modeled for the 2031 No Action and Proposed Project are shown in ***Table 3-11***. The runway use, flight tracks, and time of day modeled for the 2031 condition were the same as the 2022 condition.

The 2031 No Action Alternative and Proposed Project 65, 70, and 75 DNL contours are provided in ***Figure 3-9*** and ***Figure 3-10***, respectively. ***Table 3-12***, which identifies the areas within the DNL contour ranges, shows that the total area within the 65 DNL contour is 4.70 square miles for the No Action Alternative and 5.02 square miles for the Proposed Project. The No Action Alternative 65 DNL contour encompasses 0.74 square mile of off-Airport property, and the Proposed Project encompasses 0.82 square mile. One residence near Interstate 95 and Pecan Park Road intersection is within the 65 DNL for both conditions. The residence is exposed to 65.62 DNL for the 2031 No Action Alternative and 66.01 DNL for the Proposed Project, an increase of 0.39 DNL as a result of the Proposed Project. The 0.39 DNL increase is below the FAA significance threshold of DNL 1.5 dB. Therefore, compared to the No Action Alternative, the Proposed Project would not have a significant effect on noise. See ***Appendix C*** for further information.

Mitigation, Avoidance, and Minimization Measures – The JAA does not propose mitigation measures because the Proposed Project would not cause significant direct or indirect effects to noise and noise-compatible land use.

TABLE 3-11: 2031 AIRCRAFT OPERATIONS AND FLEET MIX

Aircraft Type (s)	AEDT Aircraft	No Action Operations	Proposed Project Operations	Difference
Embraer 175	EMB175	19,917	25,167	5,250
Boeing 737-800/900	737800	11,736	14,830	3,093
Boeing 757-200	757PW	11,208	14,162	2,954
Airbus A320-200	A320-211	9,364	11,832	2,468
Boeing 737-700	737700	9,356	11,822	2,466
Canadair CRJ 700/900	CRJ9-ER	7,523	9,506	1,983
Airbus A319-100	A319-131	6,867	8,677	1,810
Embraer 190	EMB190	3,459	4,371	912
Embraer 170	EMB170	3,184	4,024	839
Boeing 767-300	767300	1,768	1,768	0
Airbus A321-200	A321-232	2,414	3,050	636
Airbus A300	A300B4-203	1,051	1,051	0
Embraer 135/145	EMB145	1,112	1,405	293
Airbus A320neo	A320-271N	938	1,185	247
Boeing 737 MAX8	7378MAX	919	1,162	242

Aircraft Type (s)	AEDT Aircraft	No Action Operations	Proposed Project Operations	Difference
Beechcraft 1900	1900D	770	973	203
Boeing 717-200	717200	729	921	192
ATR-42	DHC8	480	607	127
Dash 8-300	DHC830	479	605	126
Boeing 757-300	757300	202	255	53
Boeing 737-400	737400	129	163	34
Boeing 737-300	737300	123	155	32
Boeing 747-400	747400	38	38	0
Challenger 300/600	CL600	23	29	6
King Air/Super King Air	DHC6	10	13	3
Learjet 35/40/45/55/60/75	LEAR35	1,856	1,856	0
Cessna 560 Citation XLS	CNA560XL	1,360	1,360	0
Citation II/Bravo, Premier, Phenom 300	CNA55B	1,029	1,029	0
Cessna Citation CJ1/CJ3/CJ4	CNA525C	1,014	1,014	0
Beechcraft Beechjet	MU3001	1,003	1,003	0
Cessna Citation Sovereign/Latitude	CNA680	876	876	0
Gulfstream G280	CL601	788	788	0
Challenger 300/600	CL600	737	737	0
Cessna Citation Ultra/Encore	CNA560E	579	579	0
Gulfstream GV/G500/G550	GV	543	543	0
Cessna Citation X, Falcon 2000	CNA750	480	480	0
Dassault Falcon 50/900	FAL900EX	344	344	0
Gulfstream GIV/G400	GIV	332	332	0
Cirrus Vision, Citation Mustang	CNA510	243	243	0
IAI Astra/Galaxy	IA1125	153	153	0
Cessna Citation CJ1/CJ2/CJ3	CNA500	80	80	0
Cessna Citation III	CIT3	73	73	0
Bombardier Global 7500	BD-700-1A10	64	64	0
Gulfstream G650	G650ER	61	61	0
Eclipse 500	ECLIPSE500	49	49	0
Bombardier Global 5000	BD-700-1A11	30	30	0
King Air/Super King Air	DHC6	777	777	0
Pilatus PC-12, Cessna 208, Socata TBM9	CNA208	202	202	0
Cessna 172/177	CNA172	2,397	2,397	0
Cessna 152	GASEPF	574	574	0
Piper 46 Malibu, Lancair 4, Bonanza 36	GASEPV	269	269	0

Aircraft Type (s)	AEDT Aircraft	No Action Operations	Proposed Project Operations	Difference
Piper Seminole, Diamond 42/62	PA30	215	215	0
Baron 58, Cessna 310/414	BEC58P	165	165	0
Cirrus SR20/22	COMSEP	152	152	0
Boeing P-8	737800	5,232	5,232	0
F-15	F15E20	3,368	3,368	0
Total		**118,843**	**142,814**	**23,971**

Source: FAA TAF; Virtower™; RS&H, 2023

TABLE 3-7: AREA WITHIN THE 2031 DNL CONTOURS

DNL Contour Range	No Action Alternative (sq. mile)	Proposed Project (sq. mile)	Difference (sq. mile)
65-70	2.88	3.08	+0.20
70-75	1.14	1.21	+0.07
>75	0.68	0.73	+0.05
Total	**4.70**	**5.02**	**+0.32**

Source: AEDT, 2023. RS&H, 2023

FIGURE 3-9: 2031 NO ACTION ALTERNATIVE NOISE CONTOURS

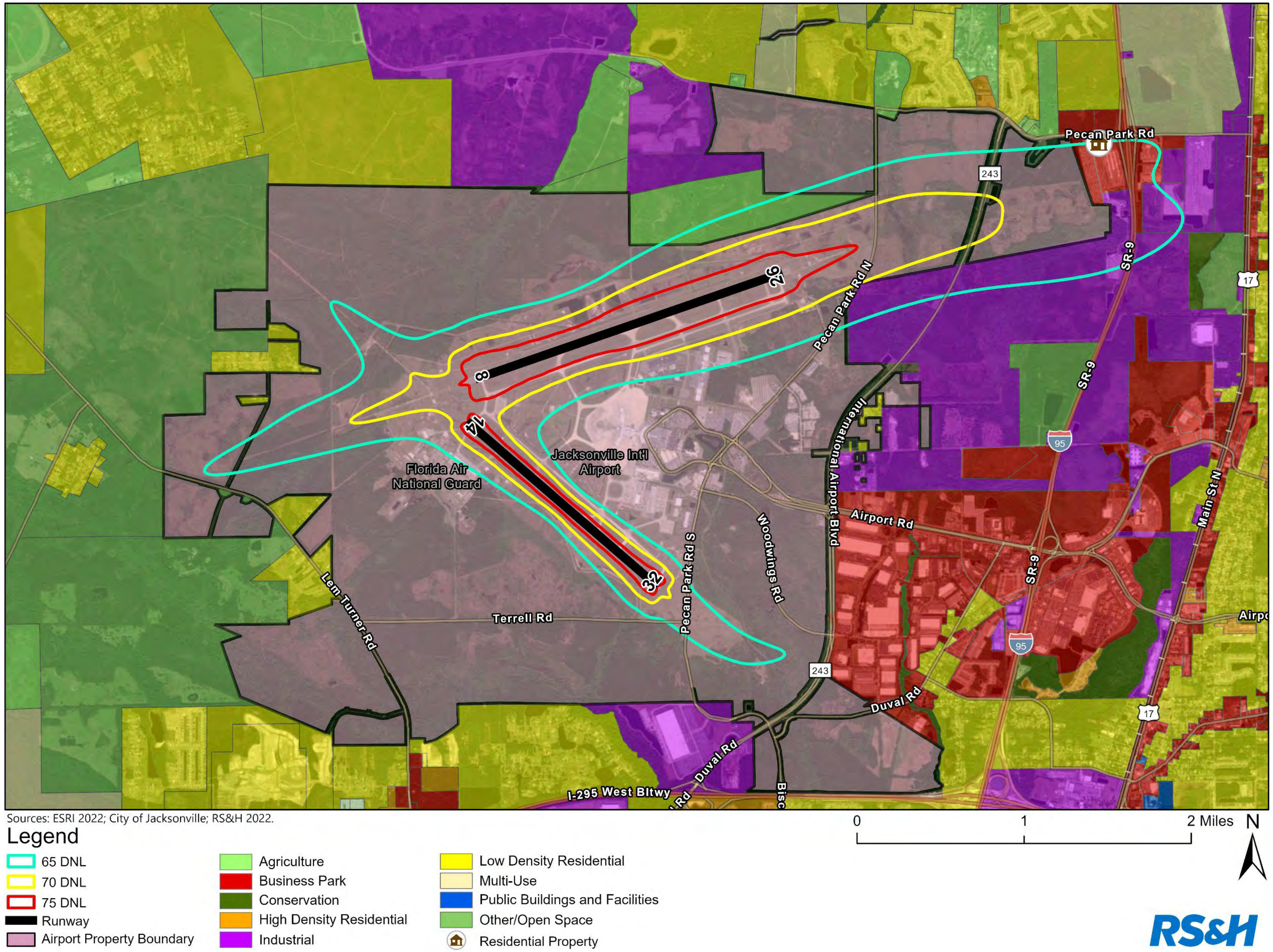

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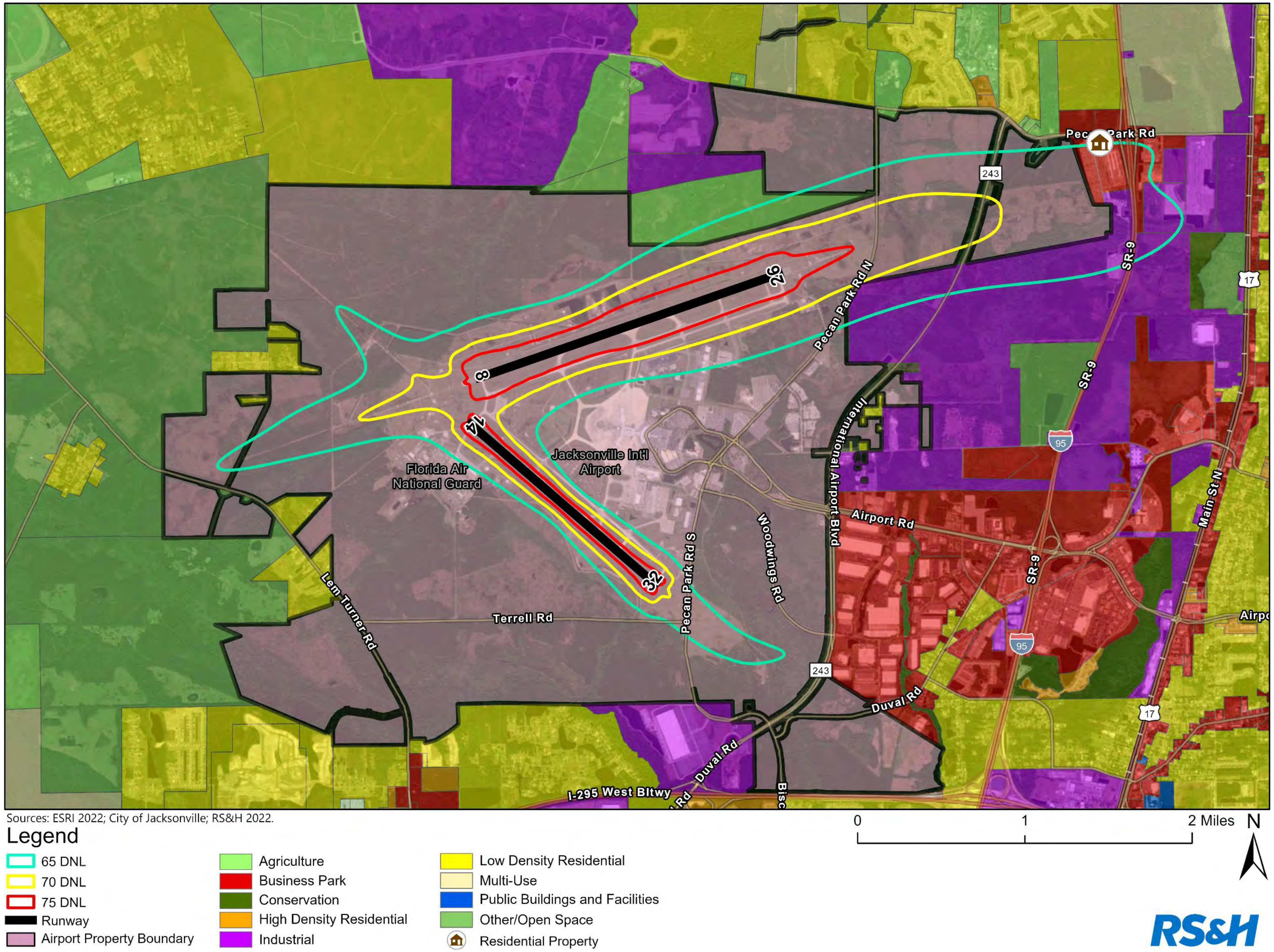
FIGURE 3-10: 2031 PROPOSED PROJECT NOISE CONTOURS



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3.2.12 Socioeconomics, Environmental Justice, and Children's Environmental Health and Safety Risks

This section describes the existing condition, the FAA's significance threshold(s), the potential socioeconomics, environmental justice, and children's environmental health and safety risks effects of the Proposed Project compared to the No Action Alternative, and the potential mitigation measures.

3.2.12.1 Affected Environment

Socioeconomics is an umbrella term to describe a project's social or economic aspects or a combination of the two. A socioeconomic analysis evaluates how elements of the human environment, such as population, employment, housing, and public services, might be affected by a Proposed Project and alternative(s). The Uniform Relocation Assistance and Real Property Acquisitions Policy Act of 1970 is the main regulation governing socioeconomics. It includes provisions that must be followed if property acquisition or displacement of people would occur due to implementing the Proposed Project. More information on socioeconomics, environmental justice, and children's environmental health and safety risk and regulations can be found in the FAA Order 1050.1F Desk Reference (FAA, 2020).

The existing demographics of the area in and around the study areas as they relate to socioeconomics, environmental justice, and children's environmental health and safety risks are described. U.S. Census Bureau information for the city and county is the basis of the socioeconomic and environmental justice analyses. Census tracts are the smallest units that provide information on poverty, which is needed to determine the effects on low-income populations. For consistency, this EA uses information from the U.S. Census Bureau for Census Tract 103.01 (see ***Figure 3-11***).

Socioeconomics - Population, housing, and labor force data for the City of Jacksonville and Duval County is included as the basis for evaluating potential socioeconomic impacts.

Population **-** ***Table 3-13*** lists the population growth from 2010 to 2020 in the census tract that the Indirect Study Area intersects, as well as the City, County, State, and U.S. for comparison purposes. Between 2010 and 2020, the population in and around the Indirect Study Area increased by an average of 54.3%. Comparatively, the population in the City, Duval County, the State of Florida, and the U.S. increased slower.

FIGURE 3-11: U.S. CENSUS BUREAU TRACTS

Sources: U.S. Census Bureau; ESRI 2022; RS&H 2022.

Not to scale. Graphics use only.

Legend

Airport Location

Census Tract

N

RS&H

U.S. Census Bureau Census Tracts

TABLE 3-8: POPULATION CHANGE BETWEEN 2010 AND 2020

Area	2010	2020	Percent Change
Census Tract 103.01	4,120	6,359	54.3%
City of Jacksonville	821,784	902,488	9.8%
Duval County	864,263	995,567	15.2%
State of Florida	18,801,310	21,538,187	14.6%
United States	308,745,538	331,449,281	7.4%

Source: (United States Census Bureau, 2020)

Transportation – The primary access roads to/from the Airport are located along Yankee Clipper Drive, Dixie Clipper Road, and Pecan Park Road. Passengers, tenants, and employees use these roads to access the Airport facilities (passenger terminal, hourly and daily parking garages, daily surface lots, rental car return facility, and JAA offices). According to the FDOT, the Average Annual Daily Traffic (AADT) volume along Yankee Clipper Drive and Dixie Clipper Road is between 13,500 and 14,000 trips. These roads have a 2020 Level of Service (LOS) C and A, respectively (FDOTa, 2022).

Other roadway access to/from the Airport includes Pecan Park Road. Pecan Park Road stretches from the I-95–Pecan Park Road North interchange, about 2.6 miles north of the Airport Road exit, to International Airport Boulevard, just north of I-295. North of Airport Road, Pecan Park Road provides access to the general aviation area, the FAA ATCT, the ARFF station, the Commercial Parking Lot via Barnstormer Road, the economy parking lots, the U.S. Postal Service, and Rental Car Road. South of Airport Road, Pecan Park Road provides access to the Flex-Office/Warehouse Building, JAA office maintenance facilities, Air Cargo Building #4, Cole Flyer Road, and Woodwings Road (Ricondo & Associates, 2020).

Housing - ***Table 3-14*** lists the total and vacant housing units in the referenced Census Tract and surrounding geographies. An average of 14.3% of housing units are vacant in the referenced Census Tract. About ten percent of the housing units in the City and County, respectively, are vacant.

TABLE 3-9: HOUSING UNITS

Area	Total Units	Vacant Units (percentage)
Census Tract 103.01	2,566	14.3%
City of Jacksonville	389,130	10.4%
Duval County	413,084	10.5%
State of Florida	9,562,324	17.1%
United States	138,432,751	11.6%

Note: The U.S. Census Bureau considers vacant housing units for rent; rented but not occupied; for sale; sold but not occupied; for seasonal, recreational, or occasional use; for migrant workers; and other vacant units. Source: (United States Census Bureau, 2020).

Labor Force - The U.S. Census Bureau lists 2,011 employed civilians in the Census Tract that intersects the Indirect Study Area. The unemployment rate averages about five percent in the tract. Comparatively, the unemployment rate in the City and County is about three percent.

Economic Impact – The Airport is vital to the region's economy. As described previously, the Airport helps the state and local economy by creating jobs, supporting business growth, and connecting Jacksonville to global markets. The Airport's economic impact supports approximately 26,400 jobs, which provide $994 million in personal income, and its total economic output is approximately $3.19 billion (FDOT, 2019).

Environmental Justice - ***Table 3-15*** describes the share of the population in poverty within the referenced Census Tract compared to the City and County. About 18% of the population in the referenced Census Tract is below the poverty level. ***Table 3-16*** shows the total minority presence in the referenced Census Tract compared to the City and County. According to the U.S. Census Bureau, about 48% of the population in the referenced Census Tract are minorities.

TABLE 3-10: POPULATION BELOW THE POVERTY LEVEL

Area	Population for Whom Poverty Status is Determined	Percent of the Population Living Below the Poverty Level
Census Tract 103.01	1,145	18.0%
City of Jacksonville	135,373	15.0%
Duval County	137,554	14.5%

Source: (United States Census Bureau, 2020).

TABLE 3-11: MINORITY POPULATION

Area	Total Population	Percent Minority
Census Tract 103.01	6,359	48.0%
City of Jacksonville	902,488	50.0%
Duval County	995,567	48.0%

Source: (United States Census Bureau, 2020).

Children's Environmental Health and Safety Risks - Areas of particular concern for children's environmental health and safety risks include schools, daycare facilities, children's health clinics, and recreational facilities. The closest school is Biscayne Elementary School, about three miles southeast of the Direct Study Area. ***Figure 3-12*** shows the location of Biscayne Elementary School in relation to the Proposed Project. ***Table 3-17*** shows the percentage of children under 18 years in the referenced Census Tract compared to the City and County.

FIGURE 3-12: CLOSEST SCHOOL TO THE STUDY AREAS

TABLE 3-12: PERCENTAGE OF CHILDREN (UNDER 18)

Area	Total Population	Percentage Under 18 Years of Age
Census Tract 103.10	1,548	24.3%
City of Jacksonville	206,050	22.8%
Duval County	214,225	22.6%

Source: (United States Census Bureau, 2020).

3.2.12.2 Environmental Consequences

The following sections describe the Proposed Project's potential effect on socioeconomics, environmental justice, and children's environmental health and safety compared to the No Action Alternative.

Significance Threshold

Socioeconomics - FAA Order 1050.1F does not provide a significance threshold for socioeconomics. It does provide several factors to consider in evaluating the context and intensity of potential environmental effects. Those factors to consider include the potential of the action to:

- Induce substantial economic growth in an area, either directly or indirectly (e.g., through establishing projects in an undeveloped area)
- Disrupt or divide the physical arrangement of an established community
- Cause extensive relocation when sufficient replacement housing is unavailable
- Cause extensive relocation of community businesses that would cause severe economic hardship for affected communities
- Disrupt local traffic patterns and substantially reduce the levels of service of roads serving an airport and its surrounding communities
- Produce a substantial change in the community tax base

Environmental Justice - FAA Order 1050.1F does not provide a significance threshold for environmental justice. It does provide several factors to consider, including the potential of the action to have a disproportionately high and adverse impact on low-income or minority populations due to the following:

- Significant impacts in other environmental impact categories
- Impacts on the physical or natural environment that affect an environmental justice population in a way that the FAA determines are unique to the environmental justice population and significant to that population.

Children's Environmental Health and Safety - FAA Order 1050.1F does not provide a significance threshold for children's environmental health and safety risks. It does provide a factor to consider in evaluating the context and intensity of potential environmental impacts. This is when the action would have the potential to lead to a disproportionate health or safety risk to children.

Potential Impacts

Socioeconomics - The Proposed Project would increase the economic activity in the community compared to the No Action Alternative through the development and operation of the Concourse. The Proposed Project would result in the short-term construction-related employment of local contractors, which could be considered a positive effect. Construction-related impacts would be temporary and are not expected to cause a significant secondary (induced) impact on the surrounding area.

The Proposed Project's employment opportunities could also be considered a positive, long-term secondary impact. Compared to the No Action Alternative, the Proposed Project would increase the number of airline employees, airport employees, including baggage handlers, janitors, and airport tenant concessionaire employees at JAX. Construction of the Proposed Project would have the potential to employ hundreds of construction workers. Operation of the Proposed Project would hire approximately 16 maintenance and police union employees, approximately 48 concession, and 15-30 airline-related employees. Most employees for the Proposed Project would be from the local area or northeast Florida region. Therefore, the Proposed Project would not cause extensive relocations or substantially change the community tax base.

The Proposed Project is not anticipated to increase the demand for local law enforcement and fire and life safety services. For these reasons, the Proposed Project would not affect public service. The Proposed Project would not cause shifts in the projected population growth, relocate community businesses, or cause changes to population movement. Compared to the No Action Alternative, the Proposed Project would not disrupt any nearby communities of any planned development, and it would be consistent with the plans or goals of the community.

The JAA's 2022 Landside Planning Study analyzed future roadway operating conditions by calculating the volume of roadway links compared to the capacity of the roadway system at that location. Roadways accessing the Airport that were analyzed included Yankee Clipper Drive, Pecan Park Road, and Dixie Clipper Drive. The Landside Planning Study included the same forecast of enplaned passengers used for the Proposed Project studied in this EA.

Total inbound and outbound traffic volumes for the Yankee Clipper Drive and Dixie Clipper Drive corridors were calculated using the Airport traffic demand model. The traffic volumes were calculated for the arrivals and departures peak hour, which is anticipated to generate the peak hour demand for traffic. The posted speed limit on Yankee Clipper Drive is 45 miles per hour (mph) entering the Airport and is reduced to 35 mph approaching Pecan Park Road. The posted speed limit approaching the terminal curbside roadway and ramps is 20 mph. The field observations indicate that curbside free-flow speeds are generally within this range. To analyze the future operating conditions along the Airport roadway system, the calculated volume for each roadway link was compared to the roadway's capacity at that location. LOS E is the trigger for roadway improvements. According to the 2022 Landside Planning Study, the LOS of these roadways servicing the Airport would remain A, B, or C through 2032 (a year beyond this EA's study years) (Ricondo, 2022).[20] Therefore, compared to the No Action Alternative, the Proposed Project would not disrupt local traffic patterns and substantially reduce the LOS of roads serving the Airport and its surrounding communities.

Environmental Justice - Compared to the No Action Alternative, the Proposed Project would not directly or indirectly affect low-income or minority populations. The Direct Study Area is located entirely on Airport property and does not include any residences. All direct impacts would be limited to this area. The Proposed Project would not cause significant, short-term, or long-term environmental effects disproportionately affecting minority and/or low-income populations. The closest minority and/or low-income area is about three miles southwest of the Direct Study Area (EPA, 2022). According to the USEPA, a minority and/or low-income area is located within the Indirect Study Area (EPA, 2022). However, the affected area is wooded, does not contain any residences, and is owned by the JAA.

As shown in ***Section 3.2.11.2***, one residence is located within the 65 DNL contour in 2026 and 2031. The increase in noise exposure at the residence in both conditions when comparing the No Action Alternative and Proposed Project is less than the significance threshold for noise. Therefore, there are no significant noise impacts, and there would be no disproportionately affected minority and/or low-income populations.

Children's Environmental Health and Safety - Construction and operation of the Proposed Project would not significantly affect surrounding communities. The construction and operation of the Proposed Project would occur in a secure and controlled environment and would not affect the closest school, Biscayne Elementary School, which is located about three miles southeast of the Direct Study Area. The Proposed Project would not have a substantial effect on products or substances that a child would likely touch, digest, or be exposed to. Therefore, the Proposed Project would not affect children's environmental health and safety risks.

[20] According to the Transportation Research Board, National Research Council, Highway Capacity Manual, LOS A (Excellent) refers to traffic that is free flowing, with volumes and high speeds; LOS B (Very Good) refers to drivers having reasonable freedom to select their speed and lane of operation; LOS C (Good) refers to drivers become restricted in their ability to select their speed or to change lanes; LOS D (Fair) occurs when drivers have little freedom to maneuver and driving comfort is low; LOS E (Poor) occurs when the roadway is operating at or near capacity; and LOS F (Failure) is forced-flow operations where excessive roadway queuing develops.

Mitigation, Avoidance, and Minimization Measures – The JAA does not propose mitigation measures because the Proposed Project would not cause significant direct or indirect effects to socioeconomic, environmental justice, or children's environmental health and safety.

3.2.13 Visual Effects

This section describes the existing condition, the FAA's significance threshold(s), the potential visual effects of the Proposed Project compared to the No Action Alternative, and the potential mitigation measures.

3.2.13.1 Affected Environment

According to FAA 1050.1F Desk Reference, "visual effects deal broadly with the extent to which the Proposed Project or alternative(s) would either: 1) produce light emissions that create an annoyance or interfere with activities; or 2) contrast with, or detract from, the visual resources and/or the visual character of the existing environment."

The Direct Study Area is within the central portion of the Airport. The viewshed of the Direct Study Area includes the Airport facilities such as the terminal, concourses, and ATCT. Thick vegetation surrounds the airfield, and no residents have a line of sight to the Direct Study Area. Existing permanent outside lighting for the safe movement of vehicles (e.g., aircraft and personnel vehicles) and people illuminates the Airport facilities.

3.2.13.2 Environmental Consequences

Significance Threshold – FAA Order 1050.1F does not define a significance threshold for visual effects; however, Exhibit 4-1 of the Order provides several factors to consider in evaluating the context and intensity of potential environmental impacts.

For light emissions, these factors include the degree to which the action would have the potential to:

- "Create annoyance or interfere with normal activities from light emissions; and
- Affect the visual character of the area due to the light emissions, including the importance, uniqueness, and aesthetic value of the affected visual resources."

For visual resources/visual character, these include the extent the action would have the potential to:

- "Affect the nature of the visual character of the area, including the importance, uniqueness, and aesthetic value of the affected visual resources;
- Contrast with the visual resources and/or visual character in the study area; and
- Block or obstruct the views of visual resources, including whether these resources would still be viewable from other locations."

Potential Impacts - Potential aesthetic effects of an action are generally assessed by comparing the visual characteristics of the proposed development to existing development in the areas and to the environmental setting and by determining if a jurisdictional agency considers this contrast objectionable. The visual effects resulting from constructing and operating the Proposed Project would result from physical changes to the visual character of the Direct Study Area, including existing development, landforms, vegetation, and water surfaces.

Construction of the Proposed Project would occur mainly during the day. Some minor nighttime work would require additional lighting; however, this lighting would be directional and last only for nighttime construction work. The temporary use of directional lighting for construction purposes would not result in light emission impacts on the surrounding area.

A conceptual illustration of the Proposed Project is shown in ***Figure 3-13***. Operation of the Proposed Project would include permanent outside lighting for the safe movement of vehicles (e.g., aircraft and personnel vehicles) and people. The closest residential home is approximately 1.7 miles west of the Proposed Project beyond thick vegetation at the end of Ogilvie Road. The Proposed Project would occur entirely on-Airport property. It would not result in viewshed changes or additional light emissions for off-Airport residents.

3.2.14 Water Resources

This section describes the existing condition, the FAA’s significance threshold(s), the potential wetlands, floodplains, surface water, groundwater, and wild and scenic rivers effects of the Proposed Project compared to the No Action Alternative, and the potential mitigation measures.

3.2.14.1 Affected Environment

For regulatory purposes under the Clean Water Act (CWA), wetlands are *“areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.”*[21]

The CWA establishes the basic structure for regulating the discharge of pollutants into the waters of the United States, and Section 303(d), Section 404, Section 401, and Section 402 of the CWA relating to waters of the United States establishes the National Pollutant Discharge Elimination System (NPDES) permit program.

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[21] USACE. (1987, January). *Wetlands Delineation Manual*. Retrieved September 2021, from USACE: https://usace.contentdm.oclc.org/digital/collection/p266001coll1/id/4530.

FIGURE 3-13: CONCEPTUAL ILLUSTRATION

Source: RS&H, Inc. 2022

RS&H

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The Safe Water Drinking Act is the primary statute regulating groundwater. It prohibits federal agencies from funding actions that would contaminate an EPA-designated sole-source aquifer or its recharge area.

The following sections describe the existing condition for wetlands, floodplains, surface water and groundwater, and wild and scenic rivers.

Wetlands – The CWA defines wetlands as "…those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." ***Table 3-18*** describes wetland characteristics.

TABLE 3-13: WETLAND CHARACTERISTICS

Characteristic	Description
Water	Presence of water at or near the ground surface for a part of the year
Hydrophytic Plants	A preponderance of plants adapted to wet conditions
Hydric Soils	Soil developed under wet conditions

Source: RS&H, 2023.

Figure 3-14 shows that the Direct Study Area includes a drainage swale associated with the Airport's stormwater system and is not a wetland. According to the Master Plan Update, no wetlands are in the Direct Study Area (Ricondo & Associates, 2020).

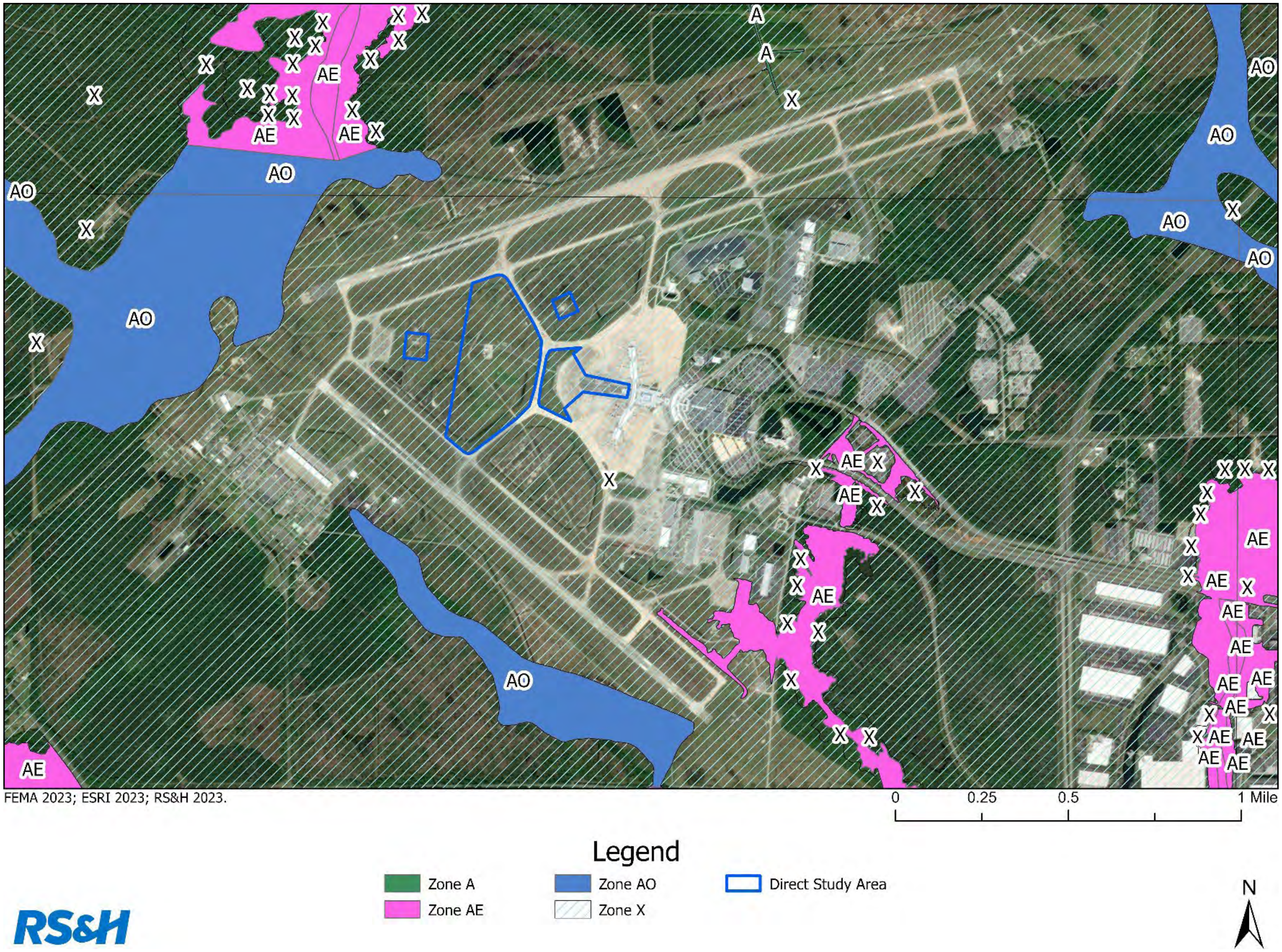
Floodplains - Floodplains are low-lying or flat areas adjoining waters with a one percent or greater chance of a flood in any given year; also referred to as a 100-year flood event. FEMA defines a "regulatory floodway" as "the channel of a river or other watercourse and the adjacent land areas that must be reserved to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height" (FEMA, 2021). According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), the Direct Study Area is located in FIRM Map 12031C0177H and 12031C0181H. As shown in ***Figure 3-15***, the Direct Study Area is in Zone X and not within the 100-year floodplain.

Surface Water and Groundwater – Surface waters at the Airport consist of drainage swales, stormwater ponds, and ditches that capture and convey stormwater away from the aircraft movement areas (e.g., apron, taxiways, runways). There are no surface water resources, sole source aquifers, groundwater supplies, or public water supplies in the Direct Study Area. The Direct Study Area does include about 2,000 linear feet of Airport drainage swales to temporarily detain rainfall runoff.

According to FAA Order 1050.1F, Desk Reference, groundwater is subsurface water that occupies the space between sand, clay, and rock formations. The Direct Study Area is within the Broward River Watershed, Hydrologic Unit Code (HUC) 12, ID# 030801031601 (NEPAssist, 2022).

FIGURE 3-14: STORMWATER SYSTEM IN THE DIRECT STUDY AREA

FIGURE 3-15: FLOODPLAINS



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Wild and Scenic Rivers - The closest Wild and Scenic River is the Wekiva River, about 115 miles south of the Airport (National Wild And Scenic Rivers System, 2022). The closest Nationwide Rivers Inventory Segment is the St. Marys River, located about 17 miles north of the Airport (Nationwide Rivers Inventory, 2022).

3.2.14.1 Environmental Consequences

Significance Thresholds

Wetlands - FAA Order 1050.1F, Exhibit 4-1, defines the FAA's significance threshold for wetlands, which states, "The action would:

- Adversely affect a wetland's function to protect the quality or quantity of municipal water supplies, including surface waters and sole source and other aquifers;
- Substantially alter the hydrology needed to sustain the affected wetland system's values and functions or those of a wetland to which it is connected;
- Substantially reduce the affected wetland's ability to retain floodwaters or storm runoff, thereby threatening public health, safety, or welfare (the term welfare includes cultural, recreational, and scientific resources or property important to the public);
- Adversely affect the maintenance of natural systems supporting wildlife and fish habitat or economically important timber, food, or fiber resources of the affected or surrounding wetlands;
- Promote development of secondary activities or services that would cause the circumstances listed above to occur; or 6. Be inconsistent with applicable state wetland strategies.
- Be inconsistent with applicable state wetland strategies."

Floodplains – FAA Order 1050.1F, Exhibit 4-1 defines the FAA's significance threshold for floodplains, which states, "The action would cause notable adverse impacts on natural and beneficial floodplain values."[22]

Surface Water - FAA Order 1050.1F, Exhibit 4-1, defines the FAA's significance threshold for surface waters, which states, "The action would:

- Exceed water quality standards established by Federal, state, local, and tribal regulatory agencies
- Be inconsistent with applicable state wetland strategies; or
- Contaminate public drinking water supply such that public health may be adversely affected."

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22 According to DOT Order 5650.2, Paragraph 4.k, "Natural and Beneficial Floodplain Values include but are not limited to: natural moderation of floods, water quality maintenance, groundwater recharge, fish, wildlife, plants, open space, natural beauty, scientific study, outdoor recreation, agriculture, aquaculture, and forestry."

Groundwater - FAA Order 1050.1F, Exhibit 4-1, defines the FAA's significance threshold for groundwater, which states, "The action would:

- Exceed groundwater quality standards established by Federal, state, local, and tribal regulatory agencies; or
- Contaminate an aquifer used for public water supply such that public health may be adversely affected."

Wild and Scenic Rivers – FAA Order.1F, Exhibit 4-1, states that the FAA has not established a significance threshold for Wild and Scenic Rivers; however, it does provide factors to consider in evaluating the context and intensity of potential environmental impacts to Wild and Scenic Rivers. These factors include, but are not limited to:

- Destroying or altering a river's free-flowing nature;
- A direct and adverse effect on the values for which a river was designated (or under study for designation);
- Introducing a visual, audible, or other type of intrusion that is out of character with the river or would alter outstanding features of the river's setting;
- Causing the river's water quality to deteriorate;
- Allowing the transfer or sale of property interests without restrictions needed to protect the river or the river corridor (which cannot exceed an average of 320 acres per mile, which, if applied uniformly along the entire designated segment, is one-quarter of a mile on each side of the river); or

Any of the above impacts preventing a river on the Nationwide Rivers Inventory (NRI) or a Section 5(d) river that is not included in the NRI from being included in the Wild and Scenic River System or causing a downgrade in its classification (e.g., from wild to recreational).

Potential Impacts - As described below, the Proposed Project would not significantly affect water resources in the area.

Wetlands - There are no wetlands within the Direct Study Area. Therefore, compared to the No Action Alternative, the Proposed Project would not affect wetlands.

Floodplains - The Direct Study Area is in Zone X and not within the 100-year floodplain. The Proposed Project would not directly or indirectly affect a 100-year floodplain. Therefore, the Proposed Project would cause notable adverse impacts on natural and beneficial floodplain values.

Surface Water - The surface waters analysis considered potential changes in hydrology and water quality associated with the construction and operation of the Proposed Project compared to the No Action Alternative. The analysis considered changes in impervious surfaces that affect stormwater runoff and hydrology and construction activities that have the potential to affect surface waters. Federal, state, and local regulations and permitting requirements were also reviewed for applicability. Construction of the Proposed Project would use a silt fence, inlet protection, and ditch barriers to limit the transport of sediment and debris from the project site to the northern ditch which outfalls to a Nassau River tributary and the southern ditch outfalls to the Cedar River. Stabilization measures such as sodding and mulching would be required in disturbed areas during and following construction to reduce the potential for erosion. Additionally, stormwater management facilities designed to meet post-construction requirements would act as sediment basins during construction. The construction of the Proposed Project would add impervious surfaces but would not affect any surface water resources, sole source aquifers, or public water supplies near the Direct Study Area. The Proposed Project would impact existing treatment swales in the infield west of Taxiway V. However, new SJRWMD-permitted stormwater management swales would convey, store, and treat runoff. Outfall pipes from the infield swales have adequate capacity to convey the runoff to the outfall ditches. The operation of the Proposed Project would not affect any surface water resources.

Groundwater - Assessments of potential groundwater effects were based on location, primary planning results, and the intended function of the Proposed Project. Impacts from the Proposed Project were based on evaluations concerning groundwater recharge and any changes in operational activities for potable water consumption and domestic water treatment. Potable water is sourced from the Floridian Aquifer. JEA uses deep well turbine pumps to draw water from the aquifer to JEA's water treatment plant. JEA treats the water in its treatment plants using an aerator to remove sulfur odor and disinfect the water with chlorine (JEA, 2023). The Proposed Project's additional apron and bypass taxiway would increase the impervious surface at the Airport, which would lead to a minor increase in stormwater runoff during construction and operation. This increase can be accommodated by the Airport's existing stormwater drainage system. A Stormwater Construction Activity Permit that includes non-contaminated dewatering would be acquired before construction. The contractor would be required to meet all relevant requirements of the NPDES Generic Permit for Stormwater Discharges from Large and Small Construction Activities. Some conditions of the permit include: developing and implementing a Stormwater Pollution Prevention Plan (SWPPP), constructing temporary sedimentation basins for disturbed areas larger than 10 acres, installing silt fences on all side slopes and downslope boundaries, stabilizing inactive disturbed areas within 7 days, and achieve final stabilization (at least 70% cover) before permit coverage termination. Implementing these BMPs and construction permit conditions would minimize project-related effects on water resources. Therefore, the Proposed Project would not adversely affect groundwater.

Wild and Scenic Rivers - Given the distances of the Wekiva River and the St. Marys River to the Direct Study Area, the Proposed Project would not directly or indirectly affect any wild and scenic river within 0.25-mile of its ordinary high-water mark.

Mitigation, Avoidance, and Minimization Measures – Because the Proposed Project would not cause significant direct or indirect effects to water resources, the JAA does not propose mitigation measures.

3.3 CUMULATIVE IMPACTS

Cumulative impacts to environmental resources result from the incremental effects of the Proposed Project when combined with other past, present, and reasonably foreseeable future projects in the project's vicinity. Cumulative impacts can result from individually minor, but collectively substantial, actions undertaken over a period of time by various agencies (Federal, state, and local) or individuals. FAA Order 1050.1F does not identify a specific significance threshold for assessing cumulative impacts. The scope and extent of the cumulative effects analysis depend on the project type, geographic location, potential to impact resources, and other factors, such as the current condition of potentially affected resources. Cumulative impacts could be significant if the combined impacts from the Proposed Project and other known or reasonably foreseeable actions would cause unique problems or impacts of extraordinary magnitude for a given resource.

A qualitative cumulative impacts analysis was performed for development actions within the Indirect Study Area from 2019 - 2031. Future impacts associated with cumulative projects were qualitatively assessed where impacts are possible, but data are unavailable. The analysis considered the potential cumulative impact of these projects when combined with the potential impact of the Proposed Project on each environmental resource category.

A search of local government planning documents, capital improvement plans, transportation agency databases (e.g., DOT), and other resources was performed to identify cumulative projects within the Indirect Study Area to include in the cumulative impacts assessment. There are no known off-Airport cumulative projects within the Indirect Study Area from 2019 - 2031.

Table 3-19 lists and describes the on-Airport projects that have occurred in the past (2019-2022), present (2023-2024), and future (2025-2031). See ***Figure 3-16*** for the locations of the on-Airport cumulative projects.

3.3.1 Environmental Consequences

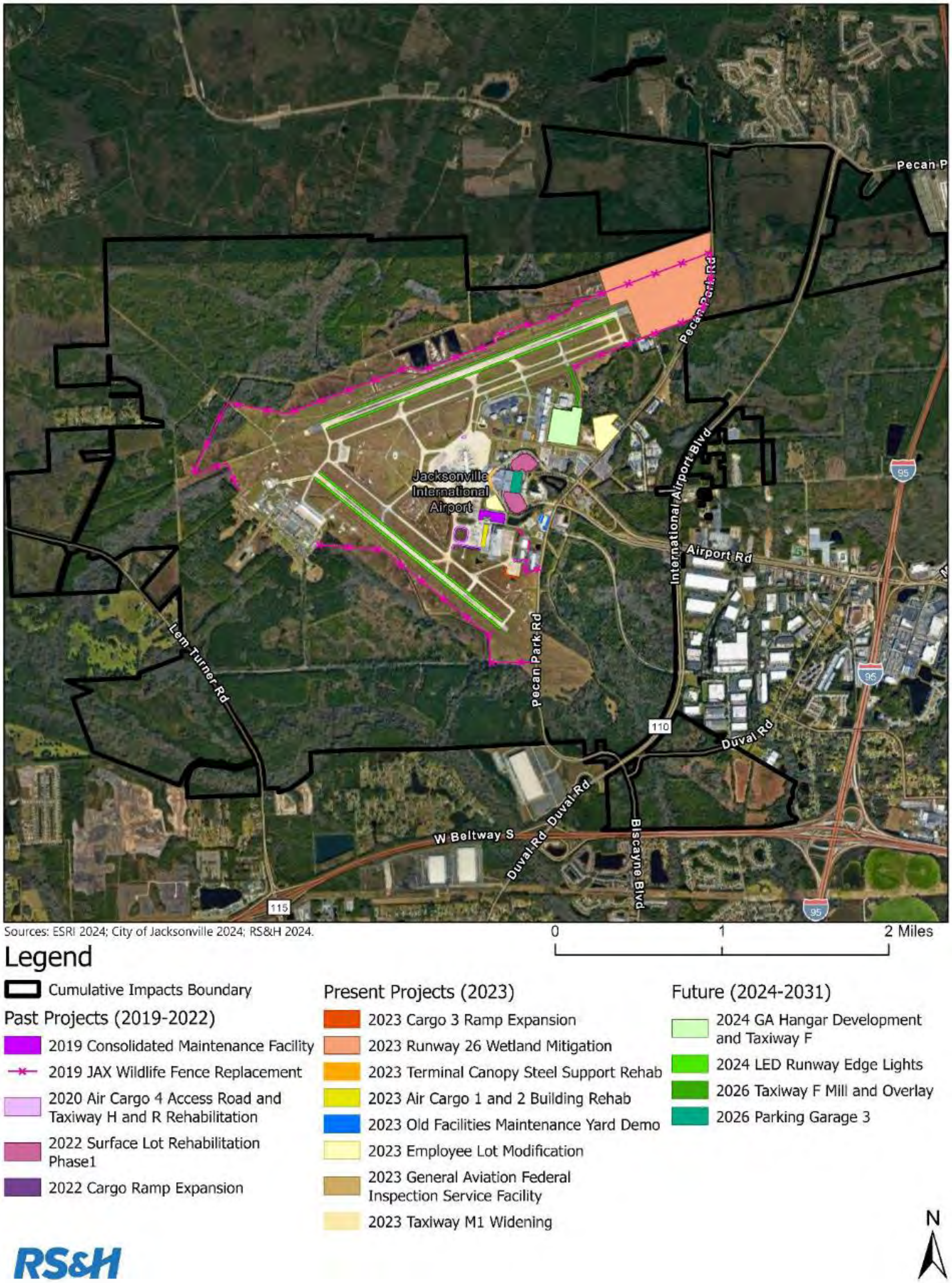
The Proposed Project is the only capacity project in the foreseeable future. Implementation of the Proposed Project would cause less than significant environmental effects related to Air Quality (temporary construction-related air emissions and a minor increase in surface transportation vehicle emissions); Biological Resources (no suitable habitats or critical habitats); Climate; Coastal Resources; DOT Act, Section 4(f) and 6(f) Resources; Farmlands; Hazardous Materials (minor increase fuel use), Solid Waste (minimal construction waste and MSW), and Pollution Prevention; Historical, Architectural, Archaeological, and Cultural Resources; Land Use; Land use; Natural Resources and Energy Supply; or Noise and Noise-Compatible Land Use.

TABLE 3-14: CUMULATIVE PROJECTS

	Cumulative Project	Description
Past	2019 Consolidated Maintenance Facility	This JAA project was the construction and operation of a relocated maintenance facility. The former facility had outlived its useful life.
	2019 JAX Wildlife Fence Replacement	This project replaced the Airport's fencing of the airport operations area with a new wildlife fence to improve the safety of the airfield.
	2020 Air Cargo 4 Access Road and Taxiways H and R Rehabilitation	This JAA project improved an existing access road and rehabilitated two airfield taxiways.
	2022 Surface Lot Rehabilitation Phase 1	This project rehabilitated a surface transportation parking lot.
	2022 Cargo Ramp Expansion	This project expanded a cargo ramp to alleviate apron congestion. It did not increase the Airport's capacity or operations.
Present	2023 Runway 26 Wetland Mitigation	This project mitigated wetland areas off the end of Runway 26 that were considered a hazardous wildlife attractant.
	2023 Terminal Canopy and Steel Support Rehab	This JAA project rehabilitated the Airport's curb-front canopy.
	2023 Air Cargo 1 & 2 Building Rehab	This project is the rehabilitation of two air cargo buildings. It is not increasing the Airport's capacity or operations.
	2023 Old Facilities Maintenance Yard Demo	JAA is demolishing old, unused facilities at the former maintenance yard.
	2023 Employee Lot Modification	JAA is relocating the existing employee surface transportation parking lot and modifying the current lot to accommodate existing demand.
	2023 General Aviation Federal Inspection Services Facility	This project is constructing and operating the Airport's general aviation federal inspection services facility. This project did not increase the Airport's capacity or operations.
	2023 Taxiway M1 Widening	JAA is widening Taxiway M1 to meet FANG standards as part of the F-35 conversion.
	2024 Cargo 3 Ramp Expansion	This JAA project will expand the existing Air Cargo 3 Ramp to better accommodate large aircraft that currently use the ramp. It will not increase the Airport's capacity or operations.
	2024 GA Hangar Development and Taxiway F	New general aviation hangars would be constructed along extended Taxiway F, increasing general aviation operations. Both fixed-base operators have a waitlist for hangar space.
	2024 LED Runway Edge Lights	JAA proposes replacing the Airport's incandescent runway edge lighting with LED lights.
Future	2026 Taxiway F Mill and Overlay	This project is the rehabilitation of Taxiway F.
	2026 Parking Garage 3	JAA is proposing constructing and operating a third parking garage, east of its two current parking garages. This project will meet existing and forecasted demand. The current parking garages close due to full utilization regularly.

Source: RS&H, 2024.

FIGURE 3-16: CUMULATIVE PROJECTS



Implementation of the Proposed Project would also cause less than significant environmental effects related to Socioeconomics (positive increase in construction and permanent jobs), Environmental Justice, and Children's Environmental Health and Safety Risks; Visual Effects; and Water Resources (small additional rainfall-runoff).

As previous sections describe, the construction and operation of the Proposed Project would have less than significant impacts. When considered with projects that have occurred, are occurring, and are planned to occur in the reasonably foreseeable future, the Proposed Project would not cause significant environmental effects. It would not cause or contribute to significant cumulative environmental effects. See ***Table 3-20*** for a summary of potential cumulative impacts. Each project's cumulative impact is assigned a rating of no impact or low impact. There would not be any moderate or high impacts associated with the cumulative projects in conjunction with the Proposed Project's potential impacts.

As shown in ***Table 3-20,*** although there is the potential for cumulative impacts to specific environmental resources, no reasonably foreseeable cumulative effects would be considered unique or of extraordinary magnitude. The likelihood that the Proposed Project would have a notable cumulative impact is generally low for most environmental resource categories. Additionally, no identified past, present, or future projects are considered enabling to, dependent upon, or otherwise connected to the Proposed Project.

All cumulative projects would result in construction activities affecting air quality, climate, hazardous waste, solid waste, pollution prevention, socioeconomics, and natural resources and energy supply. Cumulative projects that increase impervious surfaces have the potential to affect biological resources. However, each on-Airport cumulative project is located where mowed and maintained vegetation exists; therefore, cumulative impacts would be low. Cumulative projects that increase impervious surfaces have the potential to increase rainfall runoff into local waterways; however, each project would include stormwater system development or improvements; therefore, cumulative impacts would be low.

The Airport Sponsor's compliance with all federal, state, and local regulations and permit requirements outlined for the resources in the previous sections would ensure that the Proposed Project would not exceed any significance thresholds identified in FAA Order 1050.1F. All future projects involving federal funding or approval would be subject to review under NEPA to determine the potential for significant environmental impacts to result from their construction or implementation. Therefore, the construction and operation of the Proposed Project, in combination with the past, present, and reasonably foreseeable future projects, would result in no significant cumulative environmental impacts.

TABLE 3-20: SUMMARY OF POTENTIAL CUMULATIVE IMPACTS ANALYSIS

	Cumulative Project	Air Quality	Biological Resources	Climate	Coastal Resources	DOT Section 4(f) Resources	Farmlands	Hazardous Materials, Solid Waste, Pollution Prevention	Historical, Architectural, and Archaeological Resources	Land Use	Natural Resources and Energy Supply	Noise and Noise-Compatible Land Use	Socioeconomics, Environmental Justice, and Childrens Environmental Health and Safety Risks	Visual Effects	Water Resources
Past	2019 Consolidated Maintenance Facility	L	L	L	N	N	N	L	N	N	L	N	N	L	L
Past	2019 JAX Wildlife Fence Replacement	L	L	L	N	N	N	L	N	N	L	N	N	L	L
Past	2020 Air Cargo 4 Access Road and Taxiways H and R Rehabilitation	L	N	L	N	N	N	L	N	N	L	N	N	L	N
Past	2022 Surface Lot Rehabilitation Phase 1	L	N	L	N	N	N	L	N	N	L	N	N	L	N
Past	2022 Cargo Ramp Expansion	L	L	L	N	N	N	L	N	N	L	N	N	L	L
Present	2023 Runway 26 Wetland Mitigation	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Present	2023 Terminal Canopy and Steel Support Rehab	L	N	L	N	N	N	L	N	N	L	N	N	L	N
Present	2023 Air Cargo 1 & 2 Building Rehab	L	N	L	N	N	N	L	N	N	L	N	N	L	N
Present	2023 Old Facilities Maintenance Yard Demo	L	N	L	N	N	N	L	N	N	L	N	N	L	N
Present	2023 Employee Lot Modification	L	N	L	N	N	N	L	N	N	L	N	N	L	N
Present	2023 General Aviation Federal Inspection Services Facility	L	N	L	N	N	N	L	N	N	L	N	N	L	L
Present	2023 Taxiway M1 Widening	L	L	L	N	N	N	L	N	N	L	N	N	L	L
Present	2024 Cargo 3 Ramp Expansion	L	L	L	N	N	N	L	N	N	L	N	N	L	L
Present	2024 GA Hangar Development and Taxiway F	L	L	L	N	N	N	L	N	N	L	L	N	L	L
Present	2024 LED Runway Edge Lights	L	N	L	N	N	N	L	N	N	L	N	N	L	N
Future	2026 Taxiway F Mill and Overlay	L	N	L	N	N	N	L	N	N	L	N	N	L	N
Future	2026 Parking Garage 3	L	N	L	N	N	N	L	N	N	L	N	N	L	N

Notes: N – No impacts; L – Low impacts
Source: RS&H, 2024.

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4

AGENCY AND PUBLIC INVOLVEMENT

The EA coordination process described in this chapter provided applicable agencies and the public the opportunity to comment on the potential effects of the construction and operation of the Proposed Project.

As NEPA and FAA Order 1050.1F require, a public involvement process will be conducted. This process provides the opportunity for public and agency input regarding the Proposed Project analyzed in this EA. The public and agency involvement process will:

- Provide information about the Proposed Project's purpose and need and the alternatives the EA discusses.
- Obtain feedback about the Proposed Project and its potential environmental impacts from the public and agencies interested in and affected by the Proposed Project.
- Inform those interested that the EA provides a full and fair discussion of project-related environmental effects.
- Provide timely public notices to the interested parties so they may submit comments concerning the Proposed Project.
- Record comments received from interested parties.

4.1 PUBLIC INVOLVEMENT AND AGENCY COORDINATION APPROACH AND PROCESS

Pertinent federal statutes, regulations, executive orders, and guidance are considered when conducting the public involvement process. ***Table 4-1*** lists the agencies that were sent an initial coordination letter providing details on the Proposed Project's components and providing the opportunity to comment (see ***Appendix A***). The agency comments received in response to coordination letters are reflected in the application sections of ***Chapter 3*** (Affected Environment and Environmental Consequences). The Florida Department of Environmental Protection (FDEP) responded to early agency coordination in October 2022. FDEP comments included guidance for potential "Planned Unit Development" application through the City of Jacksonville Planning and Development Department. Additionally, the FDEP suggested coordinating the project with the St. Johns River Water Management District (SJRWMD). The FAA is currently coordinating with the Florida State Historic Preservation Office (SHPO). The Final EA will include this agency-to-agency coordination.

Copies of the agency response letters are included in ***Appendix A***.

4.2 DISTRIBUTION OF DRAFT EA

A notice of availability for the Draft EA was published in the Florida-Times Union on March 19, 2024. The Draft EA is available for a 30-day review (30 days after the notice of availability advertisement) at the Airport's administrative office during normal business hours and on the Airport's website (https://www.flyjacksonville.com/content2015.aspx?id=1389), and at the Highlands Regional Library (see ***Table 4-2***).

Electronic copies were sent to agencies who requested a copy of the Draft EA for review. ***Table 4-3*** lists the agencies that were sent a copy of the Draft EA.

TABLE 4-1: EARLY AGENCY COORDINATION

Agency	Coordination Method	Date Initiated
Florida Department of Environmental Protection (FDEP) State Clearinghouse	Email	9/26/22*

*Note – An early agency coordination letter was sent to the Clearinghouse on Sept 26, 2022 (no FDEP reply). RS&H followed up on Oct 25, 2022 (no FDEP reply) and Nov 17, 2022 (FDEP replied to the wrong project on Nov 18, 2022). RS&H followed up with FDEP on Nov 18, 2022, inquiring about this project (no FDEP reply).

Source: RS&H, 2024

TABLE 4-2: DRAFT EA AVAILABLE LOCATIONS

Location Name	Address
Jacksonville Aviation Authority	14201 Pecan Park Rd, Jacksonville, FL 32218
Highlands Regional Library	1826 Dunn Ave, Jacksonville, FL 32218

Source: RS&H, 2024

TABLE 4-3: DRAFT EA DISTRIBUTION

Agency	EA Format
Federal Aviation Administration	Electronic
Florida Department of Environmental Protection State Clearinghouse	Electronic
Florida State Historic Preservation Office	Electronic

Source: RS&H, 2024

5

LIST OF PREPARERS

This section lists the EA's principal preparers, including JAA and RS&H, Inc. associates.

5.1 Jacksonville Aviation Authority

Lauren Scott, A.A.E, ACE
Position: Senior Manager of Aviation Planning

Ashley Shorter
Position: Planning & Grants Administrator

5.2 RS&H, Inc.

David Alberts
Position: Project Manager, Senior Environmental Planner
Education: B.S. Geography
Experience: Mr. Alberts has 25 years of NEPA-related experience. He is the RS&H Project Manager and is responsible for the Purpose and Need, Alternatives, technical NEPA documentation, and quality assurance of the NEPA analyses in the EA.

Dave Full, AICP
Position: Vice President, Aviation Environmental Planning Service Group
Education: M.A. Urban Planning; B.A. Urban Planning
Experience: Mr. Full has 37 years of experience. He is responsible for the independent quality assurance of the NEPA analyses in the EA.

Mike Alberts
Position: Senior Aviation Specialist
Education: B.S. Geography
Experience: Mr. Alberts has 29 years of aviation noise modeling/mitigation experience. He is responsible for the technical noise analysis in the EA.

Jon Erion
Position: Aviation Planner
Education: B.S. Urban Planning
Experience: Mr. Erion has 23 years of aviation planning and NEPA-related experience. He assisted with developing the No Action alternative, Noise Analysis, Purpose and Need, Alternatives, and technical NEPA documentation.

Michael Fesanco
Position: Aviation Environmental Specialist
Education: M.S. Aviation Management; B.S. Aviation Management
Experience: Mr. Fesanco has 1 year of experience in the environmental field. He is responsible for assisting with construction emissions inventory, data collection, analysis, and technical writing.

Monica Hamblin

Position: Aviation Environmental Specialist

Education: B.S. Interdisciplinary Studies-Environmental Science

Experience: Ms. Hamblin has 3 years of experience in the environmental field. She is responsible for assisting with data collection, technical writing, and exhibit production.

Alex Philipson

Position: Aviation Environmental Specialist

Education: M.S. Geology

Experience: Mr. Philipson has two years of experience in the environmental field. He is responsible for assisting with exhibit production.

Audrey Hsu

Position: Aviation Environmental Specialist

Education: B.S. Environmental Management and Science

Experience: Ms. Hsu has two years of experience in the environmental field. She is responsible for assisting with exhibit production.

6
REFERENCES

References

CEQ. (2014, 24 December). *Revised Draft Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in NEPA Reviews*. Retrieved from Federal Register: https://energy.gov/sites/prod/files/2014/12/f19/CEQ%20Guidance%20on%20Greenhouse%20Gas%20Emissions%20-%20Revised%20Draft%20for%20Public%20Comment2014-30035.pdf

CEQ. (2020). *Council on Environmental Quality (CEQ) National Environmental Policy Act Implementing Regulations 40 CFR 1500-1508.*

City of Jacksonville. (2022). Retrieved from https://www.coj.net/departments/parks-and-recreation/recreation-and-community-programming/parks/oceanway-center-and-park-and-pool

City of Jacksonville. (2023, October 19). *Land Development Review*. Retrieved from City of Jacksonville: https://maps.coj.net/landdevelopmentreview/#

Duval County, C. o. (2022, September). *JAX GIS*. Retrieved from https://maps.coj.net/jaxgis/

EPA. (2022, October 25). *EJScreen*. Retrieved from EJScreen: https://ejscreen.epa.gov/mapper/

EPA Greenbook. (2022). Retrieved from EPA Greenbook: https://www3.epa.gov/airquality/greenbook/anayo_fl.html

EPA, U. (2022, Oct 7). *Greenhouse Gas Inventory Data Explorer*. Retrieved from Inventory of U.S. Greenhouse Gas Emissions and Sinks: https://cfpub.epa.gov/ghgdata/inventoryexplorer/#allsectors/allsectors/allgas/econsect/all

FAA. (2020). *1050.1F Desk Reference.* Retrieved August 2020

FAA. (2020). *1050.1F Desk Reference (Version 2).*

FAA. (2023). *Terminal Area Forecast*. Retrieved from https://taf.faa.gov/

FDEP. (2022). Retrieved from FDEP: https://floridadep.gov/fcmp

FDEP. (2022). *Florida Coastal Zone Map*. Retrieved from https://floridadep.gov/rcp/rcp/media/florida-coastal-zone-map

FDOT. (2019). *Statewide Aviation Economic Impact Study - Airport Profile.* FDOT.

FDOT. (2019). *The Economic Impact of Jacksonville International Airport (JAX)*. Retrieved from FDOT: https://www.flyjacksonville.com/content2015.aspx?id=1648

FDOT. (2019). *The Economic Impact of Jacksonville International Airport (JAX)*. Retrieved from FDOT: file:///C:/Users/FesancoM/Downloads/Jacksonville_International_Airport.pdf

FDOT. (2022). *FL Aviation System Database*. Retrieved from https://www.florida-aviation-database.com/dotsite/economicimpact/VQQ.pdf

FDOTa. (2022, October). *FDOT D2 LOS Report*. Retrieved from https://fdot-d2-los.hdrgateway.com/

FEMA. (2021, November). *Floodway*. Retrieved from https://www.fema.gov/glossary/floodway

FEMA Flood Map Service Center. (2022). Retrieved from FEMA FIRM Mapper: https://msc.fema.gov/portal/search?AddressQuery=Jacksonville%20International%20Airport#searchresultsanchor

Florida Fish and Wildlife Conservation Commission. (2022, October 25). *GIS & Mapping Data Downloads*. Retrieved from Florida Fish and Wildlife Conservation Commission: https://geodata.myfwc.com/search?collection=Dataset&tags=Fish%20and%20Wildlife%20Habitat

GAO. (2009). *Aviation and Climate Change: Aircraft Emissions Expected to Grow, but Technological and Operational Improvements and Government Policies Can Help Control Emissions.* Washington, DC: GAO. Retrieved February 2016, from http://www.gao.gov/news.items/d09554.pdf

Interagency Working Group. (2021, February). *Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990*. Retrieved from White House: https://www.whitehouse.gov/wp-content/uploads/2021/02/TechnicalSupportDocument_SocialCostofCarbonMethaneNitrousOxide.pdf

IPCC. (2023). *Climate Change 2023 Synthesis Report.* Geneva: UN.

JAA. (2020). *JAX Master Plan Update.* Jacksonville: Jacksonville Aviation Authority.

JAA. (2020). *Master Plan Update.* Jacksonville: Jacksonville International Airport.

Jacksonville Aviation Authority. (2015). *History of Aviation*. Retrieved from Fly Jacksonville: https://www.flyjacksonville.com/content2015.aspx?id=84

JEA. (2023, February 13). *Jacksonville's Drinking Water System*. Retrieved from JEA: https://www.jea.com/about/water_supply/

Land and Water Conservation Fund. (2022). Retrieved from Land and Water Conservation Fund: https://lwcf.tplgis.org/mappast/

Maurice, L. Q., & Lee, D. S. (2007). Aviation Impacts on Climate. In Interactional Civil Aviation Organization, *Final Report of the Interactional Civil Aviation Organization Committee on Aviation and Environmental Protection Workshop* (pp. 25-32). Washington, DC, and

Manchester: U.S. Federal Aviation Administration and Manchester Metropolitan University. Retrieved February 2016

Melrose, A. (2010). European ATM and Climate Change Adaptation: A Scoping Study. In ICAO Environmental Branch, *ICAO Environmental Report 2010: Aviation and Climate Change* (pp. 195-198). Montreal: ICAO. Retrieved February 2016, from http://www.icao.int/environmental-protection/Documents/Publications/ENV_Report_2010.pdf

National Wetlands Inventory, Wetlands Mapper. (2022). Retrieved from NWI Surface waters and wetlands mapper: https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/

National Wild And Scenic Rivers System. (2022). Retrieved from National Wild and Scenic Rivers System: https://www.rivers.gov/florida.php

Nationwide Rivers Inventory. (2022). Retrieved from National Park Service Nationwide Rivers Inventory, Wild & Scenic Rivers: https://www.nps.gov/maps/full.html?mapId=8adbe798-0d7e-40fb-bd48-225513d64977

NEPAssist. (2022). Retrieved from NEPAssist Mapper: https://nepassisttool.epa.gov/nepassist/nepamap.aspx?wherestr=Jacksonville+International+Airport

NEPAssist. (2022). Retrieved from NEPAssist Mapper: https://nepassisttool.epa.gov/nepassist/nepamap.aspx?wherestr=Jacksonville+International+Airport

NRCS. (2022, May). *Web Soil Survey*. Retrieved from https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx

NRHP. (2022, May). Retrieved from NRHP: https://www.nps.gov/maps/full.html?mapId=7ad17cc9-b808-4ff8-a2f9-a99909164466

Ricondo & Associates, I. (2020). *Master Plan Update.*

Ricondo. (2022). *Jacksonville International Airport Landside Planning Study.* JAA.

U.S. Fish & Wildlife Service Information for Planning and Consultation. (2023). Retrieved from U.S. Fish & Wildlife: https://ipac.ecosphere.fws.gov/location/5UKPC7TVXJBIDCS353AYDBU4VE/resources

United States Census Bureau. (2020). *2020: ACS 5-Year Estimates Data Profiles*. Retrieved from United States Census Bureau: https://data.census.gov/cedsci/table?tid=ACSDP5Y2020.DP02&g=0400000US12_1400000US12031010301

US Census Bureau Urban Area Reference Map. (2022). Retrieved from Jacksonville Florida Urban Area Map: https://www2.census.gov/geo/maps/dc10map/UAUC_RefMap/ua/ua42346_jacksonville_fl/DC10UA42346.pdf

US EPA. (2022, May). Retrieved from US EPA Greenbook: https://www3.epa.gov/airquality/greenbook/anayo_fl.html

USEPA. (2009, December 7). *Technical Support Document for Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act.* USEPA, Climate Change Division. Washington, DC: USEPA. Retrieved February 2016, from http://www3.epa.gov/climatechange/Downloads/endangerment/Endangerment_TSD.pdf

USEPA. (2021, Nov). *NEPAssist*. Retrieved from https://nepassisttool.epa.gov/nepassist/nepamap.aspx?wherestr=cecil+airport

USEPA. (2022). *Criteria Air Pollutants*. Retrieved February 2017, from USEPA: https://www.epa.gov/criteria-air-pollutants

USEPA. (2022). *EvnirAtlas*. Retrieved from https://enviroatlas.epa.gov/enviroatlas/interactivemap/?extent=-81.95326323764807,30.192501780360956,-81.82803626316093,30.245605305934095

USFWS. (2022). *Coastal Barrier Resource System Mapper*. Retrieved from US Fish and Wildlife CBRS Mapper: https://www.fws.gov/CBRA/Maps/Mapper.html

USFWS. (2022). *Coastal Barrier Resources System Mapper*. Retrieved from https://www.fws.gov/cbra/maps/mapper.html

Waste Management. (2022, October 12). *Drop-Off Locations*. Retrieved from Waste Management: https://www.wm.com/us/en/drop-off-locations

Waste Management. (2022, October). *Old Kings Road Landfill*. Retrieved from https://www.wmsolutions.com/locations/details/id/953#:~:text=Old%20Kings%20Road%20Landfill%20is,landfill%20has%20capacity%20until%202041.

Waste Management. (2022, Oct). *Trail Ridge Landfill*. Retrieved from https://fldeploc.dep.state.fl.us/WWW_WACS/REPORTS/SW_Facility_Docs.asp?wacsid=33628

APPENDICES

APPENDIX A

Agency and Public Involvement

RS&H

10748 Deerwood Park Boulevard S
Jacksonville, Florida 32256

O 904-256-2500
F 904-256-2501
rsandh.com

9/26/22

Mr. Chris Stahl
Florida Department of Environmental Protection
Environmental Review Clearinghouse
3900 Commonwealth Blvd., MS 47
Tallahassee, FL 32399
Sent via email: State.Clearinghouse@FloridaDEP.gov

RE: Jacksonville International Airport – Replacement Concourse B EA – Early Coordination

Dear Mr. Stahl,

The Jacksonville Aviation Authority (Authority) proposes the replacement of Concourse B at Jacksonville International Airport (Airport or JAX) in Duval County, Jacksonville, Florida (see **Figure 1**, attached). The Proposed Project includes airside and landside improvements at the Airport (see **Figure 2**, attached) to accommodate existing demand. The Proposed Project is the construction and operation of a six-gate concourse (replacement Concourse B) and associated ramp area and bypass taxiway. The replacement Concourse B would consist of up to three levels and include holdrooms, aircraft gates, concessions, restrooms, and a connecting corridor to the main terminal with moving sidewalks.

The Authority will request the Federal Aviation Administration's (FAA) unconditional approval of the improvements on its Airport Layout Plan. This request is a Federal action, and through the requirement for the Authority to meet FAA grant assurances, RS&H, Inc. will prepare an Environmental Assessment (EA) for the Proposed Project.

In accordance with the National Environmental Policy Act (NEPA) and FAA Orders 1050.1F, *Environmental Impacts: Policies and Procedures* and 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions of Airport Actions*, the EA will analyze the potential environmental effects of the Proposed Project. A project study area has been developed for the EA (see **Figure 3**, attached). Preliminary environmental analysis indicates that the Proposed Project would not result in significant impacts.

On behalf of the Authority, we are sending you this early notification letter to:

1. Advise your agency of the preparation of the EA;
2. Request any relevant information that your agency may have regarding the project site or environs; and
3. Solicit early comments regarding potential environmental, social, and economic issues for consideration during the preparation of the EA.

You may send any information and comments to me via email at David.Alberts@rsandh.com or to the address provided at the top of this letter. We would appreciate your prompt response within 30 days.

On behalf of the Authority, we would like to thank you for your interest in this project and look forward to working with you as we prepare the EA. If you have any questions or need additional information regarding the Proposed Project or EA, please do not hesitate to contact me at (904) 256-2469.

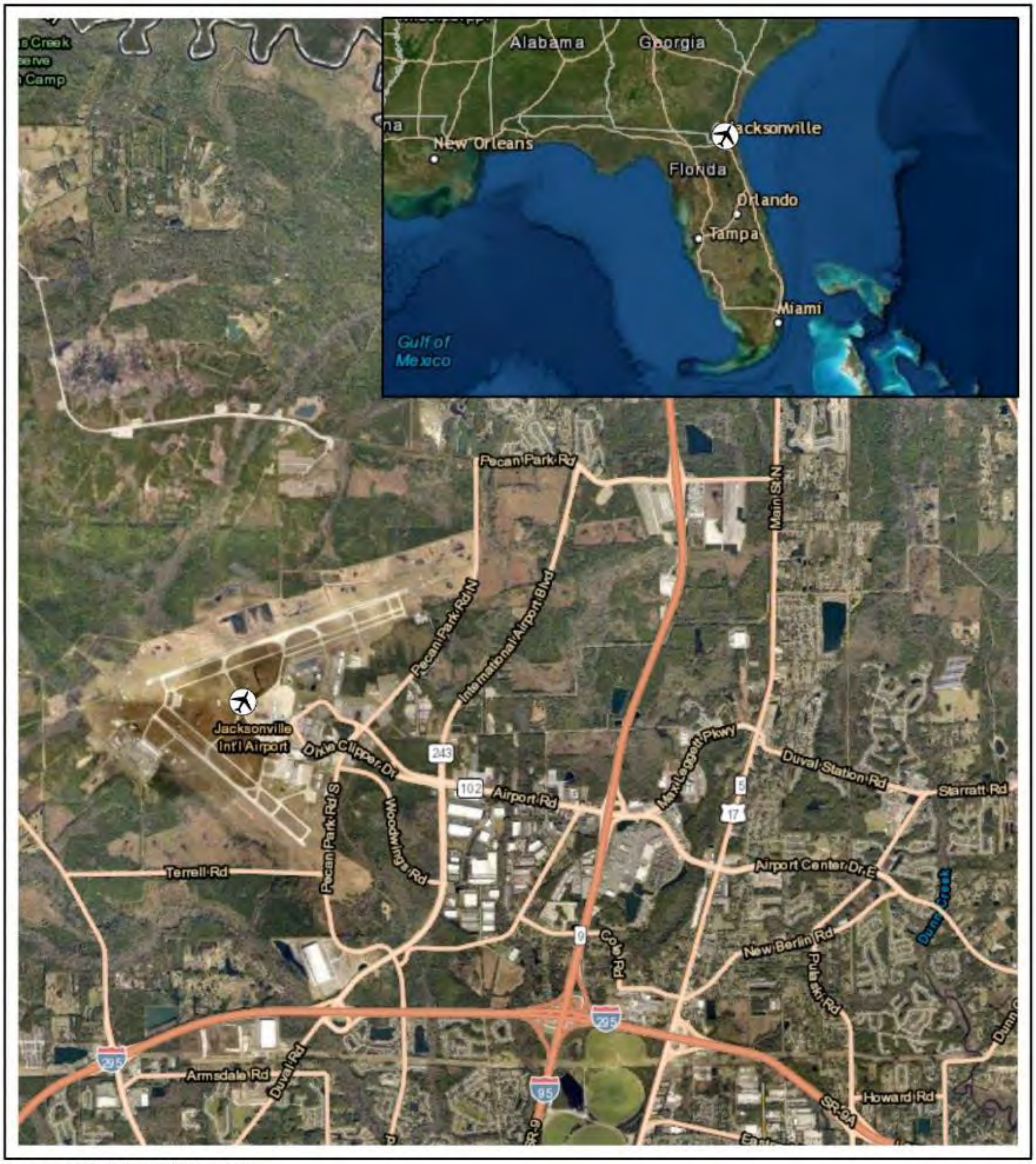
Sincerely,

D D Alberts

David Alberts
Project Manager
RS&H, Inc.

Attachments

cc: Jacksonville Aviation Authority
Federal Aviation Administration Orlando ADO
Project File



Sources:ESRI, 2022; RS&H, 2022

Figure is not to scale and is for graphic purposes only.

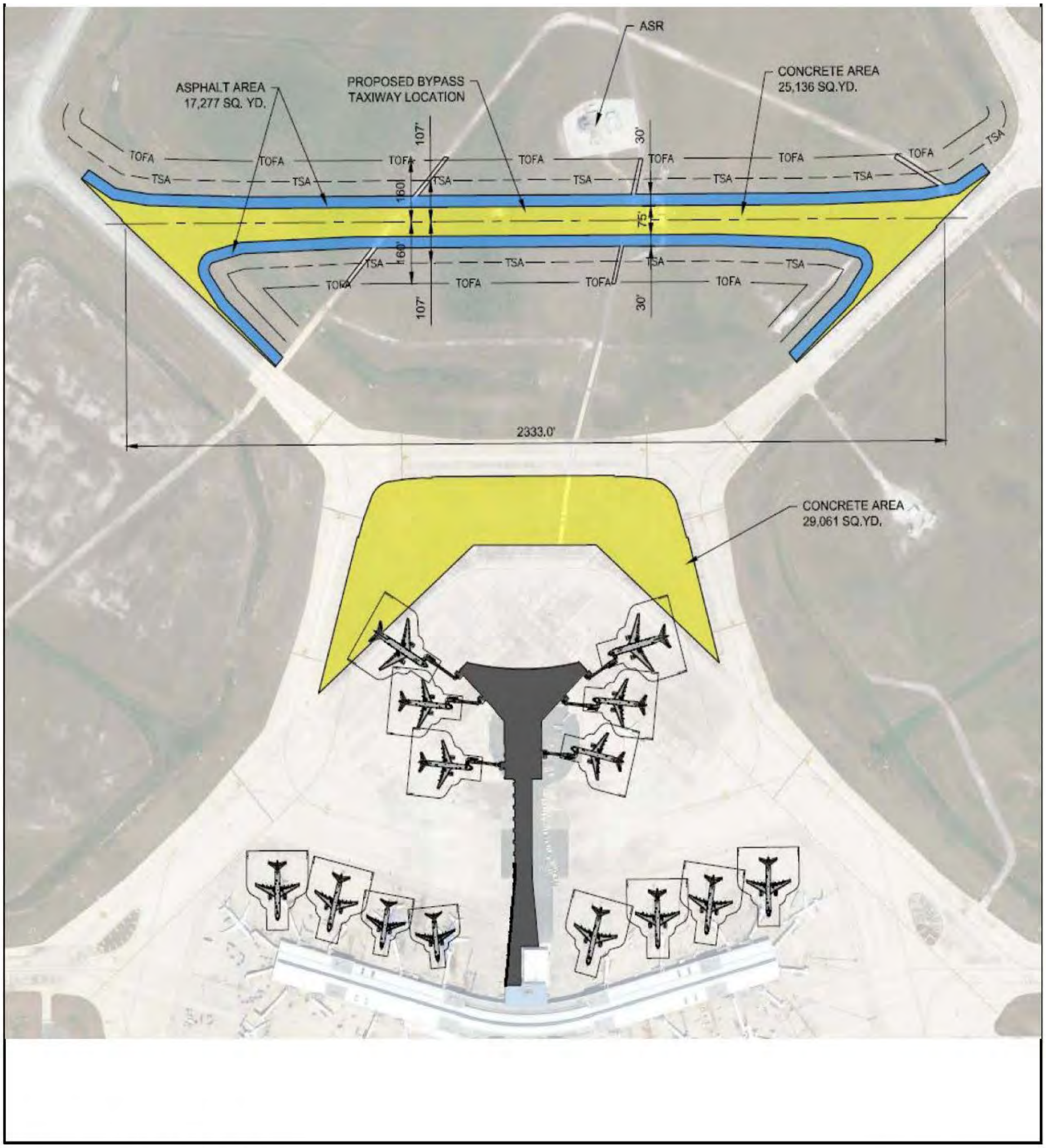
N

Legend

Airport Location

RS&H

Figure 1
Airport Location



Sources: Jacobs, 2022; RS&H, 2022.

N

RS&H

Figure 2
Proposed Project

Sources:ESRI, 2022; RS&H, 2022.

Z

Legend

Project Study Area

RS&H

Figure 3
Project Study Area

FLORIDA DEPARTMENT OF
Environmental Protection

Northeast District
8800 Baymeadows Way West, Suite 100
Jacksonville, Florida 32256

Ron DeSantis
Governor

Jeanette Nuñez
Lt. Governor

Shawn Hamilton
Secretary

October 24, 2022

Sent electronically to: David.Alberts@rsandh.com

Mr. David Alberts, Project Manager
RS&H, Inc.
10748 Deerwood Park Boulevard, S.
Jacksonville, Florida 32256

**RE: Jacksonville International Airport – Replacement Concourse B
Environmental Assessment (EA) – Early Coordination**

Dear Mr. Alberts,

On September 26, 2022, the Northeast District office of the Florida Department of Environmental Protection (DEP) has received your notification letter via the DEP's State Clearinghouse Coordinator, regarding an early coordination review effort for the proposed replacement of Concourse B at Jacksonville International Airport, located in Duval County, Florida.

Based on the information provided, the following comments and recommendations are offered for this project:

Air Permitting
As this proposed project will be located within Duval County, we recommend contacting the City of Jacksonville's Planning and Development Department to inquire if a Planned Unit Development application would be required for an environmental review by local agencies. You may contact the City's Planning Division at (904) 255-7800.

Environmental Resource Permitting and Stormwater Permitting
This project should be reviewed by the St. Johns River Water Management District's (SJRWMD) Environmental Resource Permitting Program, according to the Operating Agreement between FDEP and SJRWMD. Please contact the SJRWMD at (800) 451-7106, to request a permit determination, or if you have questions about permitting requirements.

Groundwater
Any dewatering from pumping groundwater and discharging to a stormwater drainage system, or surface waters, may require a non-contaminated dewatering, or a Petroleum Contaminated

Dewatering Generic Permit, and if the site is larger than one (1) acre, it may require a Stormwater Construction Activity Permit that can include non-contaminated dewatering, in accordance with Chapter 62-621, Florida Administrative Code (F.A.C.).

Please contact Robert L. Martin, of NED's Permitting Program, at (904) 256-1613, or via email at Robert.L.Martin@FloridaDEP.gov, regarding these requirements.

Solid Waste

Solid waste including construction and demolition debris (C&D) that may be generated by the construction project should be managed in accordance with the applicable, state solid waste regulations of Chapter 62-701, F.A.C. The C&D waste may be taken to a permitted C&D or Class III Disposal Facility, materials recovery facility, or transfer station.

The land clearing debris may also be taken to a registered yard trash processing facility, composting facility, or permitted yard trash disposal facility. Any Class I waste should be taken to a permitted Class I facility such as a landfill or waste processing facility.

Furniture, but not appliances, may go to a Class III facility, unless it is commingled or in contact with Class I waste, in which case it needs to go to a Class I facility.

Regarding the demolition of structures, it is recommended that any hazardous materials, if present, be removed from the structure and managed properly prior to its demolition, and be managed in accordance with applicable federal, state, and local regulations. The document titled, *Hazardous Materials Removal Prior to Demolition*, may be helpful and can be found at the following link: https://floridadep.gov/waste/permitting-compliance-assistance/content/hazardous-waste-publications.

Please contact Julia Boesch, of NED's Permitting Program, at (904) 256-1577, or via email at Julia.Boesch@FloridaDEP.gov, regarding these requirements.

Tanks

If this project includes the installation of a petroleum storage tank system to fuel an emergency generator and the tank storing the fuel is greater than a 550-gallon aboveground storage (AST) tank, or greater than a 110-gallon underground storage tank (UST), then the tank will be regulated by the Department and the facility must comply with Chapter 62-761 or 62-762, F.A.C., as applicable.

In addition, please note that 30- to 45-days' prior notice for the installation of the tank is required, and the tank must be registered with the Department.

Please contact Brierra Mack, of NED's Tanks Section, at (904) 256-1679, or via email at Brierra.Mack@FloridaDEP.gov, regarding these requirements.

If you have any questions or need further assistance, please contact Vic Ford at Victoria.Ford@FloridaDEP.gov, or by phone at (904) 256-1505.

Sincerely,

Gregory J. Strong
District Director

GS/vic

cc Chris Stahl, State Clearinghouse

APPENDIX B

Air Quality, Climate, and GHG Social Cost Analysis

B.1 Construction Emission Inventory

This construction emission inventory (CEI) assessment was prepared for informational purposes to disclose the potential construction-related emissions generated by the Proposed Project.

The U.S. Environmental Protection Agency (USEPA) sets National Ambient Air Quality Standards (NAAQS) to protect public health and the environment. The USEPA has identified the following seven criteria air pollutants for which NAAQS are applicable: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM_{10} and $PM_{2.5}$), and sulfur dioxide (SO_2). The USEPA describes these pollutants as "criteria" air pollutants because the agency regulates them by developing human health-based and/or environmentally-based criteria (science-based guidelines) for setting permissible levels (EPA, 2023).

According to the USEPA, Duval County, where all study areas are located, is classified as “attainment for all criteria pollutants (EPA, 2023).

The EA’s Direct and Indirect Study areas are located entirely within Duval County. All construction activity would occur in the Direct Study Area. The Direct Study Area is an “attainment” area for all National Ambient Air Quality Standards (NAAQS) (EPA, 2023).[1]

B.1.1 Construction Emissions Inventory Approach

Construction requirements for the Proposed Project include a variety of construction emissions sources: off-road, on-road, and fugitive dust. The emissions from these sources are most commonly associated with the following types of activities: earthwork, grading and leveling, and construction equipment storage and movement. Construction of the Proposed Project is anticipated to begin in 2024 and end in 2026. Construction emissions are estimated based on these factors: construction schedule; the number of construction vehicles and/or equipment; the types of construction vehicles and/or equipment; types of fuel used to power the equipment and vehicles; vehicle and equipment hourly activity/vehicle miles traveled; construction materials used and their quantities; and the duration of construction.

Non-road Emission Sources

Non-road sources associated with the Proposed Project's construction include exhaust from heavy construction equipment (e.g., graders, excavators, rollers, dump trucks) and fugitive dust emissions). The CEI assessment was based on the factors described in the above paragraph.

On-road Emission Sources

On-road emission sources associated with the Proposed Project's construction include material delivery vehicles (e.g., dump trucks, 18-wheelers carrying asphalt) and passenger vehicles transporting construction personnel to and from the job site.

Fugitive Emissions

Paving or dust emission sources associated with the Proposed Project's construction include asphalt storage, material movement on paved and unpaved roads, soil handling, un-stabilized land, and wind erosion. Paving or dust emissions were based on the number of months for construction.

[1] NAAQS are six criteria pollutants: carbon monoxide, lead, ozone, sulfur dioxide, nitrogen dioxide, and ozone.

B.1.2 MOVES3

The CEI used the EPA's MOtor Vehicle Emissions Simulator 3 (MOVES3.1) to analyze the Proposed Project's potential construction emissions.

Inputs

The Proposed Project's cost estimates and typical construction practices were used to develop the CEI inputs displayed in ***Table B-1***, ***Table B-2***, ***Table B-3***, and ***Table B-4***. Inputs are based on engineering judgment and past experience with airport construction projects. These equipment types and hours were used in MOVES3.1 to develop non-road and on-road engine emissions and load factors to determine the Proposed Project's emissions.

Table B-1 2024 Non-Road Construction Emissions Inventory Inputs

Equipment Type	Fuel Type	Operating Hours
90 Ton Crane	Diesel	320
Air Compressor	Diesel	191
Asphalt Paver	Diesel	23
Backhoe	Diesel	320
Chain Saw	Diesel	130
Chipper/Stump Grinder	Diesel	130
Concrete Pump	Diesel	12
Concrete Ready Mix Trucks	Diesel	60
Concrete Saws	Diesel	191
Concrete Truck	Diesel	818
Distributing Tanker	Diesel	77
Dozer	Diesel	1,402
Dump Truck	Diesel	577
Dump Truck (12 cy)	Diesel	2,385
Excavator	Diesel	441
Flatbed Truck	Diesel	1,560
Fork Truck	Diesel	1,480
Generator	Diesel	300
Grader	Diesel	83
Hydroseeder	Diesel	47
Loader	Diesel	377
Man Lift	Diesel	1,080
Off-Road Truck	Diesel	47
Other General Equipment	Diesel	2,510
Pickup Truck	Diesel	3,868
Pumps	Diesel	68
Roller	Diesel	896
Rubber Tired Loader	Diesel	191
Scraper	Diesel	316
Skid Steer Loader	Diesel	107
Slip Form Paver	Diesel	191
Surfacing Equipment (Grooving)	Diesel	220
Survey Crew Trucks	Diesel	10

Equipment Type	Fuel Type	Operating Hours
Tool Truck	Diesel	302
Tractor Trailer- Material Delivery	Diesel	286
Tractor Trailer- Steel Deliveries	Diesel	40
Tractor Trailers Temp Fac.	Diesel	4
Tractors/Loader/Backhoe	Diesel	257
Trowel Machine	Diesel	12
Water Truck	Diesel	8,640

Source: RS&H 2023

Table B-2 2025 Non-Road Construction Emissions Inventory Inputs

Equipment Type	Fuel Type	Operating Hours
Fork Truck	Diesel	1,920
High Lift	Diesel	920
Man Lift	Diesel	1,920
Man Lift (Fascia Construction)	Diesel	24
Material Deliveries	Diesel	60
Tool Truck	Diesel	440
Tractor Trailer- Material Delivery	Diesel	540

Source: RS&H 2023

Vehicle Miles Traveled (VMT) is based on the distance traveled by employees and material deliveries for the Proposed Project. MOVES3.1 uses a 30-mile round trip per passenger car and a 40-mile trip per material delivery.

Table B-3 2024 On-Road Construction Emissions Inventory Inputs

Equipment	Fuel Type	VMT*
Single Unit Short-haul Truck	Diesel	210,466.30
Combination Short-haul Truck	Diesel	2,481.65
Passenger Car	Gasoline	8,885,520.00

Note – VMT = vehicle miles traveled
Source: MOVES3.1, RS&H 2023

Table B-4: 2025 On-Road Construction Emissions Inventory Inputs

Equipment	Fuel Type	VMT*
Single Unit Short-haul Truck	Diesel	6,914.70
Combination Short-haul Truck	Diesel	103.35
Passenger Car	Gasoline	10,846,836.00

Note – VMT = vehicle miles traveled
Source: MOVES3.1, RS&H 2023

Construction Emissions Inventory Results

For informational purposes, ***Table B-5*** shows the criteria pollutants in tons per year during the Proposed Project's construction.

Table B-5: Proposed Project MOVES3 Results (Tons Per Year)

							GHGs		
2024	**CO**	**VOC**	**NOx**	**PM_{10}**	**$PM_{2.5}$**	**SOx**	**CO_2**	**CH_4**	**N_2O**
NONROAD	0.03	0.00	0.06	0.00	0.00	0.00	53.13	N/A	N/A
ONROAD	13.90	0.12	0.41	0.01	0.01	0.01	1,015.06	0.04	0.00
TOTAL	13.93	0.12	0.47	0.01	0.01	0.01	1,068.19	0.04	0.00

							GHGs		
2025	**CO**	**VOC**	**NOx**	**PM_{10}**	**$PM_{2.5}$**	**SOx**	**CO_2**	**CH_4**	**N_2O**
NONROAD	0.17	0.03	0.61	0.03	0.03	0.00	1,137.32	N/A	N/A
ONROAD	29.55	0.25	0.89	0.02	0.02	0.01	2,260.33	0.07	0.01
TOTAL	29.72	0.28	1.51	0.06	0.05	0.02	3,397.65	0.07	0.01

							GHGs		
2026	**CO**	**VOC**	**NOx**	**PM_{10}**	**$PM_{2.5}$**	**SOx**	**CO_2**	**CH_4**	**N_2O**
NONROAD	0.43	0.10	1.71	0.09	0.09	0.01	3,671.28	N/A	N/A
ONROAD	28.52	0.25	1.10	0.04	0.03	0.02	2,663.80	0.08	0.01
TOTAL	28.94	0.35	2.81	0.13	0.12	0.03	6,335.09	0.08	0.01

							GHGs		
Total	**CO**	**VOC**	**NOx**	**PM_{10}**	**$PM_{2.5}$**	**SOx**	**CO_2**	**CH_4**	**N_2O**
NONROAD	0.62	0.14	2.39	0.13	0.13	0.01	4,861.73	N/A	N/A
ONROAD	71.97	0.62	2.40	0.07	0.06	0.04	5,939.19	0.18	0.02
FUGITIVE	0.40	6.21	0.03	1.07	N/A	0.00	N/A	N/A	N/A
TOTAL (TPY)	73.00	6.97	4.81	1.27	0.19	0.06	10,800.92	0.18	0.02

Note – N/A = not applicable. Totals may not sum due to rounding
Source: MOVES3.1, RS&H 2024.

B.2 Aviation Operational Emissions

When compared to the No Action Alternative, the Proposed Project would result in an increase in aircraft operations in 2026 and 2031. The EA's Direct and Indirect study areas are in "attainment" for all NAAQS. Therefore, air quality *de minimis* thresholds do not apply.

For informational purposes, operational aviation emissions were calculated for the opening year 2026 and five years after the opening year in 2031 for the Proposed Project. Operational aviation emissions were calculated using the FAA's Aviation Environmental Design Tool (AEDT) up to the 10,000-foot mixing height. See ***Table B-6*** for emissions that would be generated from the Proposed Project.

Table B-6: Operational Aviation Emissions in Tons Per Year (up to 10,000-foot Mixing Height)

Year	CO	VOC	NOx	SOx	PM2.5	PM10
2026						
No Action Alternative	350.51	60.62	183.95	21.58	2.31	2.31
Proposed Project	373.75	63.77	196.89	23.21	2.43	2.43
Difference	**23.25**	**3.14**	**12.95**	**1.62**	**0.12**	**0.12**
2031						
No Action Alternative	380.45	64.86	200.77	23.64	2.46	2.46
Proposed Project	452.47	74.60	240.85	28.67	2.83	2.83
Difference	**72.02**	**9.74**	**40.08**	**5.03**	**0.37**	**0.37**

Note: Calculated up to the 10,000-foot mixing height for social cost calculations.
Source: AEDT, 2023, RS&H, 2023.

B.3 Climate and GHG Social Costs

In January 2023, the Council on Environmental Quality (CEQ) issued interim guidance, *National Environmental Policy Act Guidance on Consideration of Greenhouse Gas Emissions and Climate Change,*[2] to assist agencies in analyzing greenhouse gas emissions (GHG) and climate change effects of a proposed project under NEPA. The CEQ identified Social Cost-Greenhouse Gases (SC-GHG) as the metric for assessing potential climate impacts and represents the monetary estimate of the effect associated with each additional metric ton of carbon dioxide released into the air (Interagency Working Group, 2021). The three GHGs[3] that are analyzed are carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), which represent more than 97% of U.S. GHG emissions.

To calculate SC-GHG, the carbon dioxide equivalent CO_2e[4] must be calculated first. CO_2e is calculated using the Global Warming Potential (GWP) metric to compare the impact a gas has on the global climate concerning CO_2. GWP values are based on the Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report (AR6) (IPCC, 2023). For example, CH_4 has 28 times the GWP of CO_2 and absorbs 28 times more energy in the atmosphere when compared to CO_2 (IPCC, 2023). ***Table B-7*** shows the CO_2e values for the construction years of 2024, 2025, and 2026 using the CEI results from ***Table B-5***. Operational aviation emissions from the Proposed Project are represented in 2026[5] and 2031[6] (see

[2] 88 FR 1196, National Environmental Policy Act Guidance on Consideration of Greenhouse Gas Emissions and Climate Change, https://www.federalregister.gov/documents/2023/01/09/2023-00158/national-environmental-policy-act-guidance-on-consideration-of-greenhouse-gas-emissions-and-climate; Accessed November, 2023
[3] These three GHGs are identified in the CEQ's National Environmental Policy Act Guidance on Consideration of Greenhouse Gas Emissions and Climate Change.
[4] CO_2e: Number of metric tons of CO2 emissions with the same global warming potential as one metric ton of another greenhouse gas.
[5] 2026 represents the opening year of the Proposed Project.
[6] 2031 represents five years after the opening year of the Proposed Project.

Table B-6). The associated CO_2e emissions from the operation of the Proposed Project are included in ***Table B-7***.

Table B-7: Proposed Project CO_2e

Year	Pollutant	Emissions Quantity (Tons)	AR6 GWP	CO_2e
		Construction Emissions		
2024	CO_2	13.93	1	13.93
	CH_4	0.04	28	0.99
	N_20	0.47	265	123.49
			Total	***138.42***
2025	CO_2	29.72	1	29.72
	CH_4	0.07	28	2.05
	N_20	0.01	265	2.42
			Total	***34.19***
2026	CO_2	28.94	1	28.94
	CH_4	0.08	28	2.12
	N_20	0.01	265	2.78
			Total	***33.84***
		Operational Emissions		
2026	CO_2	23.25	1	23.25
	CH_4	0.0	28	0.0
	N_20	12.95	265	3,431.75
			Total	***3,455***
2031	CO_2	72.02	1	72.02
	CH_4	0.0	28	0.0
	N_20	40.08	265	10,621.2
			Total	***10,693.22***

Note: Totals may not sum due to rounding
Sources: MOVES 3.1; Interagency Working Group, 2021[7],
IPCC Sixth Assessment 2023[8]

The Interagency Working Group (IWG) developed average discount rates to assess climate impacts over time. The higher the discount rate, the lower the social climate cost (SCC) for future generations. Three integrated assessment models (IAMs) were used to develop discount rates that were based on the results from the three IAMs used by the IWG: William Nordhaus' DICE model (Yale University), Richard

[7] https://www.whitehouse.gov/wpcontent/uploads/2021/02/TechnicalSupportDocument_SocialCostofCarbonMethaneNitrousOxide.pdf; Accessed November 2023
[8] https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_LongerReport.pdf; Accessed November 2023

Tol's FUND model (Sussex University), and Chris Hope's PAGE model (Cambridge University) (Interagency Working Group, 2021). The IWG average discount rates are 5 percent, 3 percent, 2.5 percent, and the 95th percentile estimate at the 3 percent discount rate, which represents the potential for low-probability catastrophic climate impacts. The IWG average discount rates represent a range of possible climate impacts to future generations. For example, the 5 percent average rate represents a situation where future generations are best suited to handle potential climate impacts from the Proposed Project, leading to a minimal social cost impact. The IWG determined the social cost of CO_2 (SC-CO_2) through 2050 and assigned a monetary value[9] for each additional metric ton of CO_2 produced. SC-CO_2 is equivalent to SC-GHGs and represents the social costs of the total greenhouse gases converted to the CO_2e equivalent. The SC-CO_2 helps weigh the benefits of climate mitigation against its costs.

Table B-8 shows the monetary value of each additional metric ton of CO_2 for 2024, 2025, 2026, and 2031. The SC-CO_2 models project the future cost of each additional ton of CO_2 (Institute for Policy Integrity, 2017).

Table B-9 shows the Social Cost of Carbon Dioxide (SC-CO_2) for the Proposed Project. The construction emissions inventory's CO_2e (see ***Table B-7***) was multiplied by the average discount rates (see ***Table B-8***) to determine the monetary impact for 2024, 2025, and 2026. The Proposed Project's CO_2e operational aviation emissions data was multiplied by the average discount rate (see ***Table B-8)*** to determine the monetary impact for 2026 and 2031.

Table B-8: Annual SC-CO_2 Per Metric Ton of CO_2 (in 2020 dollars)

Emissions year	Average Estimate at 5% Discount Rate	Average Estimate at 3% Discount Rate	Average Estimate at 2.5% Discount Rate	95th Percentile Estimate at 3.0% Discount Rate
Construction Emissions				
2024	$16	$55	$82	$166
2025	$17	$56	$83	$169
2026	$17	$57	$84	$173
Operational Emissions				
2026	$17	$57	$84	$173
2031	$20	$63	$91	$191

Note: Discount Rates from IWG 2021 represent the monetary value of each additional metric ton of CO_2 produced for 2024, 2025, 2026, and 2031. The year 2026 represents the opening year of the Proposed Project, and 2031 represents five years after the opening year of the Proposed Project. These monetary values are based on the results from three economic models used by the IWG: William Nordhaus' DICE model (Yale University), Richard Tol's FUND model (Sussex University), and Chris Hope's PAGE model (Cambridge University). The model projects the future cost of each additional metric ton of CO_2.
Sources: Interagency Working Group, 2021, IPCC Sixth Assessment 2023, RS&H, 2024.

[9] These monetary values are based on the results from three economic models used by the IWG: William Nordhaus' DICE model (Yale University), Richard Tol's FUND model (Sussex University), and Chris Hope's PAGE model (Cambridge University).

The calculated social costs are estimates only and subject to change depending on various factors (i.e., flooding, energy supply).[10] These calculations are for information purposes only and represent the potential social costs from construction emissions in 2024, 2025, and 2026 and operational emissions in 2026 and 2031. The social cost calculations represent a range of possibilities and are not guaranteed to occur. Advances in technology and operational practices could lead to lower social impacts than disclosed. As shown in ***Table B-9***, the range of potential social costs for 2024 from construction emissions is approximately $2,200 – $23,000; for 2025, the potential social cost is approximately $600 – $5,800. The potential social cost for 2026 is approximately $600 - $5,900. For operational emissions in 2026, the potential social cost ranges from approximately $59,000 to $600,000; for 2031, the potential social cost ranges from approximately $214,000 to just over $2,000,000. This cost range represents the potential social costs of adding GHGs to the atmosphere in a given year. It includes the value of all climate change impacts, including (but not limited to) changes in net agricultural productivity, human health effects, property damage from increased flood risk natural disasters, disruption of energy systems, risk of conflict, environmental migration, and the value of ecosystem services. It is important to note that this climate analysis does not include positive impacts from the Proposed Project (e.g., economic development, meeting forecast passenger demand, maintaining the Airport's current level of service, and continuing to provide safe and efficient aircraft movement at the Airport).

Table B-9: Social Cost - Carbon Dioxide for the Proposed Project

Year	Proposed Project CO_2e	Average Estimate at 5% Discount Rate	Average Estimate at 3% Discount Rate	Average Estimate at 2.5% Discount Rate	95th Percentile Estimate at 3.0% Discount Rate
Construction Emissions					
2024	138.42	$2,214	$7,613	$11,350	$22,977
2025	34.19	$581	$1,914	$2,838	$5,778
2026	33.84	$575	$1,928	$2,842	$5,854
Operational Emissions					
2026	3,455.0	$58,735	$196,935	$290,220	$597,715
2031	10,693.22	$213,864	$673,672	$973,083	$2,042,405

Note: Per the 2023 IPCC Sixth Assessment Report, CO_2e equivalent for SC-GHG were calculated using the Interagency Working Group[11] average discount rates: 5 percent, 3 percent, 2.5 percent, and the 95th percentile estimate applying the 3 percent discount rate. CO_2e Values are multiplied by the discount rate to calculate SC-CO_2.
Per the 2023 IPCC[12] Sixth Assessment Report, the CO_2 equivalent for N_2O is calculated by multiplying the N_2O emissions by the GWP of 265. The CO_2 equivalent for CH_4 is calculated by multiplying the CH_4 emissions by the GWP of 28. For example, the 2024 Average Estimate at a 5% Discount Rate was calculated using the 2024 CO2e value of 43.51 multiplied by 2024's $16 determined value for the 5% Discount Rate. Sources: Interagency Working Group, 2021, IPCC Sixth Assessment 2023, RS&H, 2024.

[10] https://costofcarbon.org/files/Omitted_Damages_Whats_Missing_From_the_Social_Cost_of_Carbon.pdf; Accessed November 2023
[11] https://www.whitehouse.gov/wpcontent/uploads/2021/02/TechnicalSupportDocument_SocialCostofCarbonMethaneNitrousOxide.pdf; Accessed November, 2023
[12] https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_LongerReport.pdf; Accessed November, 2023

APPENDIX C

Aircraft Noise Analysis

C.1 INTRODUCTION

This technical report presents the aircraft noise exposure for the Jacksonville International Airport (JAX or Airport) Concourse B Environmental Assessment (EA). The noise analysis was prepared to comply with the *National Environmental Policy Act (NEPA) of 1969*; *Federal Aviation Administration (FAA) Order 1050.1F, Environmental Impacts: Policies and Procedures*; and *FAA Order 5050.4B, NEPA Implementing Instructions for Airport Actions*. The following describes the regulatory background, noise analysis methodology, noise model input data, and noise exposure results.

C.1.1 Regulatory Guidelines and Aircraft Noise Model

The noise analysis was developed using the FAA's Aviation Environmental Design Tool (AEDT) Version 3e. The AEDT is the required FAA tool to evaluate potential noise impacts from actions subject to NEPA. The AEDT produces aircraft noise contours that delineate areas of equal day-night average sound level (DNL). The DNL is a 24-hour time-weighted sound level that is expressed in A-weighted decibels. The FAA and other federal agencies use DNL as the primary measure of noise impact because it: correlates well with the results of attitudinal surveys regarding noise; increases with the duration of noise events; and accounts for an increased sensitivity to noise at night by increasing each noise event that occurs during nighttime hours (i.e., 10:00 pm to 6:59 am) by 10 decibels (dB).

The AEDT defines a network of grid points at ground level around an airport. The model then selects the shortest distance from each grid point to each flight track and computes the noise exposure generated by each aircraft operation, along each flight track. Customizations are applied for atmospheric acoustical attenuation, acoustical shielding of the aircraft engines by the aircraft itself, and aircraft speed variations. The noise exposure levels for each aircraft are then summed at each grid location. The cumulative noise exposure levels at all grid points are then used to develop aviation noise exposure contours for selected compatible land use values (e.g., DNL 65, 70 and 75).

Guidelines regarding the compatibility of land uses within various DNL contour intervals are specified in *Appendix A of 14 Code of Federal Regulations (CFR) Part 150*. As shown in ***Table C-1***, the FAA identifies, as a function of annual (365-day average) DNL values, land uses which are compatible and land uses that are not compatible in an airport environ. The FAA determined that all the land uses listed in the table are compatible with aircraft noise exposure below the 65 DNL contour. When evaluating land use compatibility, attention is therefore focused on land uses within the 65 DNL contour or greater.

TABLE C-1: FAA LAND USE COMPATIBILITY GUIDELINES – 14 CFR PART 150

Land Use	DNL Expressed in dB(A)					
	Below 65	65-70	70-75	75-80	70-85	Over 85
Residential						
Residential, other than mobile homes and transient lodgings	Y	N(1)	N(1)	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N(1)	N(1)	N(1)	N	N
Public Use						
Schools	Y	N(1)	N(1)	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Governmental services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking	Y	Y	Y(2)	Y(3)	Y(4)	N
Commercial Use						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail—building materials, hardware and farm equipment	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail trade—general	Y	Y	25	30	N	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication	Y	Y	25	30	N	N
Manufacturing and Production						
Manufacturing, general	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y(6)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock farming and breeding	Y	Y(6)	Y(7)	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
Recreational						
Outdoor sports arenas and spectator sports	Y	Y(5)	Y(5)	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts and camps	Y	Y	Y	N	N	N
Golf courses, riding stables and water recreation	Y	Y	25	30	N	N

Table Notes: SLUCM=Standard Land Use Coding Manual. Y (Yes) = Land Use and related structures compatible without restrictions. N (No) = Land Use and related structures are not compatible and should be prohibited. NLR = Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.

25, 30, or 35=Land use and related structures generally compatible; measures to achieve NLR of 25, 30, or 35 dB must be incorporated into design and construction of structure.

(1) Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year-round. However, the use of NLR criteria will not eliminate outdoor noise problems. (2) Measures to achieve NLR 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low. (3) Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low. (4) Measures to achieve NLR 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal level is low. (5) Land use compatible provided special sound reinforcement systems are installed. (6) Residential buildings require an NLR of 25. (7) Residential buildings require an NLR of 30. (8) Residential buildings not permitted.
Source: 14 CFR Part 150

C.1.2 Affected Environment

In the development of DNL contours, the AEDT uses both default and airport-specific factors. The default factors include meteorological data, engine noise levels, thrust settings, aircraft arrival and departure flight profiles and aircraft speed. The airport-specific factors include the number of aircraft operations, the types of aircraft, runway use, the assignment of aircraft operations to flight tracks, operational time (day/night), and, for departures, the stage (i.e., trip) length. The following describes these data.

C.1.2.1 Meteorological Data

The AEDT accounts for the influences of meteorological conditions on aircraft performance and atmospheric sound absorption. Meteorological conditions affect the transmission of aircraft noise through the air. Humidity and temperature materially affect the transmission of air-to-ground sound through absorption associated with the instability and viscosity of the air. The AEDT uses temperature and relative humidity to calculate atmospheric absorption coefficients, which in turn are used to adjust aircraft performance and noise propagation. The average-annual meteorological conditions included in the AEDT for the airport are:

Temperature: 69.1° Fahrenheit
Barometric pressure: 1013.6 millibars
Relative humidity: 77.0%

C.1.2.2 2022 Aircraft Operations and Fleet

The aircraft operations[1] modeled for 2022 were obtained from the FAA's Air Traffic Activity System (ATADS) for fiscal year 2022 (October 1, 2021, through September 30, 2022). These data, by aircraft category, are provided in ***Table C-2***. As shown, the 2022 annual operations totaled 99,451, or an average of approximately 272 operations per day.

TABLE C-1: 2022 ANNUAL AIRCRAFT OPERATIONS

Air Carrier	Air Taxi & Commuter	General Aviation	Military	Total
62,658	12,912	15,281	8,600	99,451

Source: FAA ATADS (October 1, 2021, through September 30, 2022)

[1] An aircraft operation is defined as one arrival or one departure.

For the purposes of preparing DNL contours, aircraft operational data were segregated by aircraft type. Data from the JAA's Virtower™ Airport Operations Tracking System (system) was used to develop the civilian AEDT aircraft fleet mix. The system records the aircraft type, the operation type (arrival or departure), the runway assignment, and the time that the aircraft operation occurred. System data from October 2021 through September 2022 was obtained and each aircraft type was assigned the corresponding AEDT aircraft type. All aircraft that operated at the Airport in 2022 were in the AEDT model and no aircraft substitutions were required. As required for use in the AEDT, annual aircraft operations were converted to average-day operations.

The Florida Air National Guard (FANG) 125th Fighter Wing is located on Airport property. The FANG 125th Fighter Wing currently operates a fleet of F-15C jet aircraft. The F-15C aircraft was used to model the military jet operations at the Airport. Additional information used to develop the military aircraft fleet mix was data included in the *Draft Noise Analysis in Support of United States Air Force F-35A Operational Beddown Air National Guard Environmental Impact Statement (EIS), March 2018,* prepared for the U.S. Air Force (Cardno, 2018).

Aircraft operations modeled in the AEDT are assigned as occurring during daytime (7:00 a.m. to 9:59 p.m.) or nighttime (10:00 p.m. to 6:59 a.m.). The DNL calculation includes an additional weight of 10 decibels for those aircraft events occurring at night. The 2022 modeled aircraft operations and fleet is provided in ***Table C-3***.

TABLE C-3: 2022 EXISTING CONDITION AIRCRAFT OPERATIONS AND FLEET MIX

Aircraft Type (s)	AEDT Aircraft	Annual Operations	Average Annual Day		
			Day	Night	Total
Embraer 175	EMB175	15,811	37.95	5.37	43.32
Boeing 737-800/900	737800	9,317	19.11	6.41	25.53
Boeing 757-200	757PW	8,897	19.01	5.36	24.38
Airbus A320-200	A320-211	7,434	16.12	4.25	20.37
Boeing 737-700	737700	7,427	17.09	3.26	20.35
Canadair CRJ 700/900	CRJ9-ER	5,972	15.21	1.15	16.36
Airbus A319-100	A319-131	5,451	12.26	2.68	14.94
Embraer 190	EMB190	2,746	5.78	1.74	7.52
Embraer 170	EMB170	2,528	6.54	0.39	6.93
Boeing 767-300	767300	2,089	4.13	1.59	5.72
Airbus A321-200	A321-232	1,916	3.84	1.41	5.25
Airbus A300	A300B4-203	1,242	2.47	0.93	3.40
Embraer 135/145	EMB145	882	2.38	0.03	2.42
Airbus A320neo	A320-271N	744	2.02	0.02	2.04
Boeing 737 MAX8	7378MAX	730	1.49	0.51	2.00
Beechcraft 1900	1900D	612	1.53	0.14	1.68
Boeing 717-200	717200	579	1.58	0.00	1.59
ATR-42	DHC8	381	1.03	0.01	1.04
Dash 8-300	DHC830	380	0.99	0.05	1.04

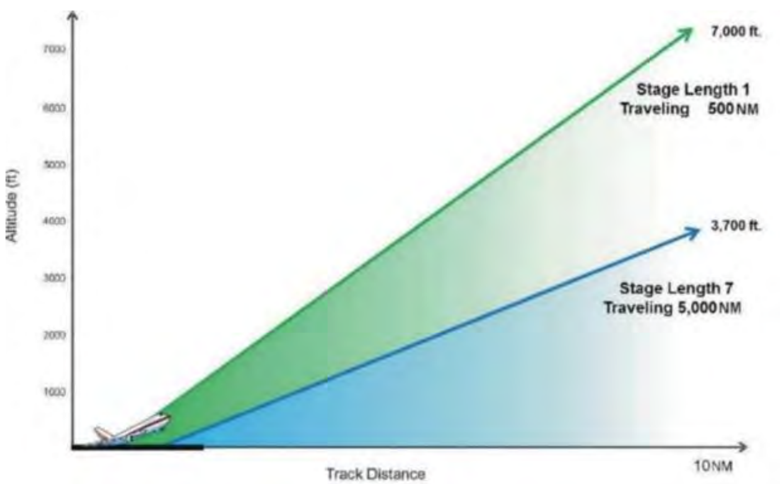
Aircraft Type (s)	AEDT Aircraft	Annual Operations	Average Annual Day		
			Day	Night	Total
Boeing 757-300	757300	160	0.44	0.00	0.44
Boeing 737-400	737400	103	0.27	0.01	0.28
Boeing 737-300	737300	97	0.25	0.01	0.27
Boeing 747-400	747400	45	0.08	0.04	0.12
Challenger 300/600	CL600	18	0.05	0.00	0.05
King Air/Super King Air	DHC6	8	0.02	0.00	0.02
Learjet 35/40/45/55/60/75	LEAR35	1,822	4.51	0.48	4.99
Cessna 560 Citation XLS	CNA560XL	1,335	3.52	0.14	3.66
Citation II/Bravo, Premier, Phenom 300	CNA55B	1,010	2.64	0.13	2.77
Cessna Citation CJ1/CJ3/CJ4	CNA525C	995	2.62	0.10	2.73
Beechcraft Beechjet	MU3001	984	2.57	0.13	2.70
Cessna Citation Sovereign/Latitude	CNA680	860	2.29	0.06	2.36
Gulfstream G280	CL601	774	1.98	0.14	2.12
Challenger 300/600	CL600	723	1.91	0.07	1.98
Cessna Citation Ultra/Encore	CNA560E	569	1.24	0.32	1.56
Gulfstream GV/G500/G550	GV	533	1.38	0.08	1.46
Cessna Citation X, Falcon 2000	CNA750	471	1.23	0.06	1.29
Dassault Falcon 50/900	FAL900EX	338	0.89	0.03	0.92
Gulfstream GIV/G400	GIV	326	0.83	0.06	0.89
Cirrus Vision, Citation Mustang	CNA510	238	0.63	0.03	0.65
IAI Astra/Galaxy	IA1125	150	0.38	0.03	0.41
Cessna Citation CJ1/CJ2/CJ3	CNA500	79	0.14	0.07	0.22
Cessna Citation III	CIT3	72	0.19	0.01	0.20
Bombardier Global 7500	BD-700-1A10	62	0.16	0.01	0.17
Gulfstream G650	G650ER	60	0.16	0.00	0.16
Eclipse 500	ECLIPSE500	48	0.12	0.01	0.13
Bombardier Global 5000	BD-700-1A11	29	0.07	0.01	0.08
King Air/Super King Air	DHC6	762	1.97	0.11	2.09
Pilatus PC-12, Cessna 208, Socata TBM9	CNA208	199	0.50	0.04	0.54
Cessna 172/177	CNA172	1,492	3.75	0.35	4.10
Cessna 152	GASEPF	564	1.37	0.18	1.54
Piper 46 Malibu, Lancair 4, Bonanza 36	GASEPV	264	0.66	0.06	0.72
Piper Seminole, Diamond 42/62	PA30	211	0.46	0.12	0.58
Baron 58, Cessna 310/414	BEC58P	162	0.42	0.03	0.44
Cirrus SR20/22	COMSEP	150	0.39	0.02	0.41
Boeing P-8	737800	5,232	14.33	0.00	14.33
F-15	F15E20	3,368	9.23	0.00	9.23
Total		**99,451**	**234.20**	**38.27**	**272.47**

Source: FAA ATADS; Virtower™; RS&H, 2022

C.1.2.3 Departure Stage Lengths

The noise exposure from aircraft departures varies depending on takeoff weight. For example, a fully-loaded aircraft departing on a long-haul flight[2] typically weighs more on departure than the same fully loaded aircraft departing on a short-haul flight[3], due to the weight of the additional fuel needed to travel a longer distance. A heavier aircraft typically requires higher power (thrust settings) to reach its takeoff speed, uses more runway length, and climbs at a slower rate than lighter aircraft (see ***Figure C-1***). To account for this, the AEDT contains 11 departure climb profiles (corresponding to different departure weights), depending on the type of aircraft. These profiles represent aircraft origin-to-destination trip lengths from less than 500 nautical miles to over 8,500 nautical miles. The distances for each stage length and the percentage of operations modeled for the air carrier aircraft for the noise analysis are shown in ***Table C-4***. All general aviation and military aircraft were modeled with a Stage Length 1.

FIGURE C-1: DEPARTURE STAGE LENGTH COMPARISON



C.1.2.4 Runway Use and Modeled Aircraft Flight Tracks

Runway use refers to the frequency with which aircraft use each runway end for departures and arrivals. The more often a runway is used, the more noise is generated in areas located off each end of that runway. Wind direction and speed primarily dictate the runway directional use (or flow) of airports. From a safety and operational standpoint, it is preferable for aircraft to arrive and depart into the wind.

JAX has two runways, Runway 8/26 which is 10,000 feet long and 150 feet wide and Runway 14/32 which is 7,701 feet long, and 150 feet wide. At JAX, the airport flow is either to the east (i.e., aircraft arrive and depart on Runways 8 or 14) or to the west (i.e., aircraft arrive and depart on Runways 26 or 32). Modeled runway use by aircraft category is included in ***Table C-5***.

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[2] Long-haul are flights lasting greater than 6 hours

[3] Short-haul are flights lasting 3 hours or less

TABLE C-4: AIRCRAFT DEPARTURE STAGE LENGTHS

AEDT Aircraft	Stage Length 1 <500nm	Stage Length 2 501-1000nm	Stage Length 3 1001-1500nm	Total
717200		100%		100%
737300	100%			100%
737400	100%			100%
737700	85%	15%		100%
737800	30%	70%		100%
747400		100%		100%
757300	100%			100%
767300		100%		100%
1900D	100%			100%
7378MAX		100%		100%
757PW	30%	70%		100%
A300B4-203		100%		100%
A319-131	30%	70%		100%
A320-211		100%		100%
A320-271N			100%	100%
A321-232	100%			100%
CL600	100%			100%
CRJ9-ER	45%	55%		100%
DHC6	100%			100%
DHC8	100%			100%
DHC830	100%			100%
EMB145	100%			100%
EMB170		100%		100%
EMB175	50%	50%		100%
EMB190		100%		100%

Notes: nm = nautical miles
Source: Virtower™; RS&H, 2022

TABLE C-5: MODELED RUNWAY USE PERCENTAGES BY AIRCRAFT CATEGORY

	Runway End				
Category	**8**	**26**	**14**	**32**	**Total**
	Departures Day				
Air Carrier	58%	30%	5%	7%	100%
General Aviation	53%	33%	11%	3%	100%
Military	48%	32%	17%	3%	100%
	Departures Night				
Air Carrier	57%	25%	4%	14%	100%
General Aviation	58%	30%	9%	3%	100%
Military	-	-	-	-	-
	Arrivals Day				
Air Carrier	53%	35%	10%	2%	100%
General Aviation	53%	33%	10%	4%	100%
Military	52%	33%	8%	7%	100%
	Arrivals Night				
Air Carrier	53%	32%	14%	1%	100%
General Aviation	65%	29%	5%	1%	100%
Military	-	-	-	-	-

Source: Virtower™; RS&H, 2022

Flight tracks refer to the route an aircraft follows when arriving to or departing from a runway. The location of flight tracks is an important factor in determining the geographic distribution of noise contours on the ground. The AEDT uses airport-specific ground tracks and vertical flight profiles to compute three-dimensional flight paths for each modeled aircraft operation. The "default" AEDT vertical profiles, which consist of altitude, speed, and thrust settings, are compiled from data provided by aircraft manufacturers. The modeled flight tracks were developed from the recently prepared *Draft Noise Analysis in Support of United States Air Force F-35A Operational Beddown Air National Guard EIS.* Current radar flight track data was then reviewed to adjust the tracks as needed. The modeled flight tracks for east flow and west flow are depicted on ***Figures C-2*** and ***C-3***, respectively.

C.1.2.5 2022 DNL Contours

The 2022 65-75 DNL contours are provided on ***Figure C-4***. ***Table C-6*** identifies the areas within the DNL contour ranges. As shown in the table, the total area within the 65 DNL and greater contour is 4.49 square miles and is primarily located within the limits of the airport property boundary. The 65 DNL encompasses 0.7 square miles of off-Airport property that is primarily commercial and industrial compatible land uses. One residence, located near the intersection of Interstate 95 and Pecan Park Road, is within the contour and is exposed to 65.0 DNL for the 2022 condition.

TABLE C-6: AREA WITHIN THE 2022 EXISTING CONDITION DNL CONTOURS

DNL Contour Range	Area (sq. miles)
65-70	2.75
70-75	1.09
>75	0.65
Total	4.49

Source: RS&H, 2022

C.1.3 Environmental Consequences

This section describes the methodology, significance thresholds pertaining to noise and compatible land uses, and the potential effects that the Proposed Project would have on aircraft noise exposure compared to the No Action Alternative for 2026 and 2031.

C.1.3.1 Methodology and Significance Threshold

The methodology for assessing noise exposure included preparing DNL contours for the No Action and Proposed Project for the years 2026 and 2031. The contours were developed to assess if a significant noise impact would occur.

Per FAA Order 1050.1F, *"a significant noise impact would occur if the action would increase noise by DNL 1.5 dB or more for a noise sensitive area that is [already] exposed to noise at or above the DNL 65 dB noise exposure level, or that will be exposed at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase, when compared to the no action alternative for the same timeframe."* Noise sensitive areas generally include residential neighborhoods; educational, health, and religious facilities; and cultural and historic sites.

Attachment 1 describes the methodology used to develop the 2026 and 2031 No Action Alternative and Proposed Project total aircraft operations used in this aircraft noise analysis.

C.1.3.2 2026 Noise Exposure

Annual aircraft operations for the 2026 No Action Alternative total 109,077, or an average of 299 operations per day. The 2026 No Action Alternative aircraft fleet mix was determined by multiplying the percentages by aircraft type that occurred in 2022 by the FAA TAF operations forecast to occur in 2026.

The 2026 Proposed Project annual operations total 116,814, or an average of 320 operations per day. The 2026 Proposed Project aircraft fleet mix was determined by multiplying the percentages by aircraft type that occurred in 2022 by the FAA TAF operations forecast to occur in 2026. The 2026 Proposed Project includes an additional 7,737 passenger aircraft operations. The additional 7,737 passenger aircraft operations were distributed proportionally among the passenger aircraft fleet mix that occurred in 2022.

The runway use, flight tracks, and time of day modeled for the 2026 No Action Alternative and the Proposed Project were the same as the 2022 condition. The 2026 aircraft operations and fleet mix for the No Action Alternative and the Proposed Project are shown in ***Tables C-7*** and ***C-8***.

FIGURE C-2: MODELED FLIGHT TRACKS – EAST FLOW

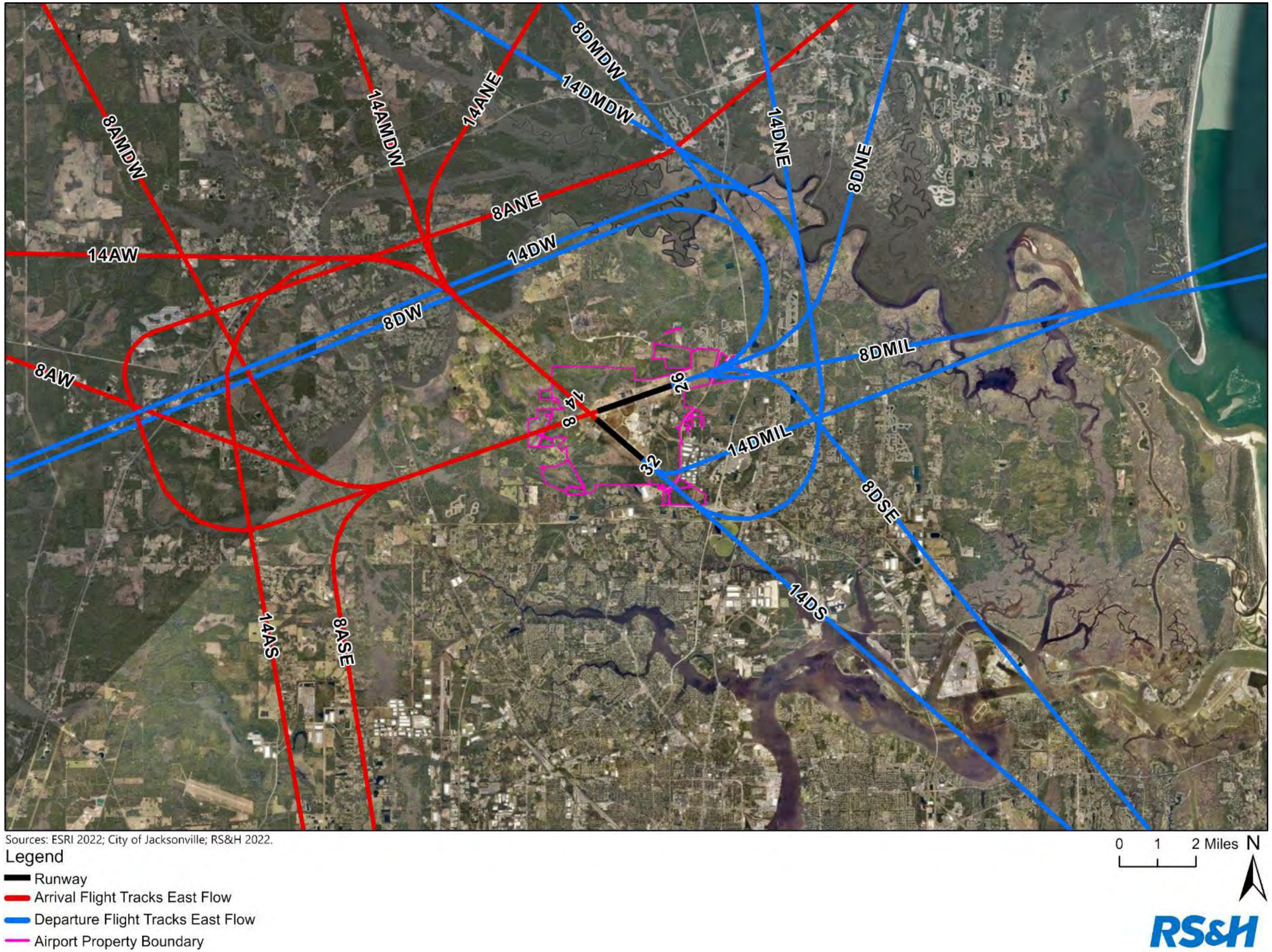

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FIGURE C-3: MODELED FLIGHT TRACKS – WEST FLOW

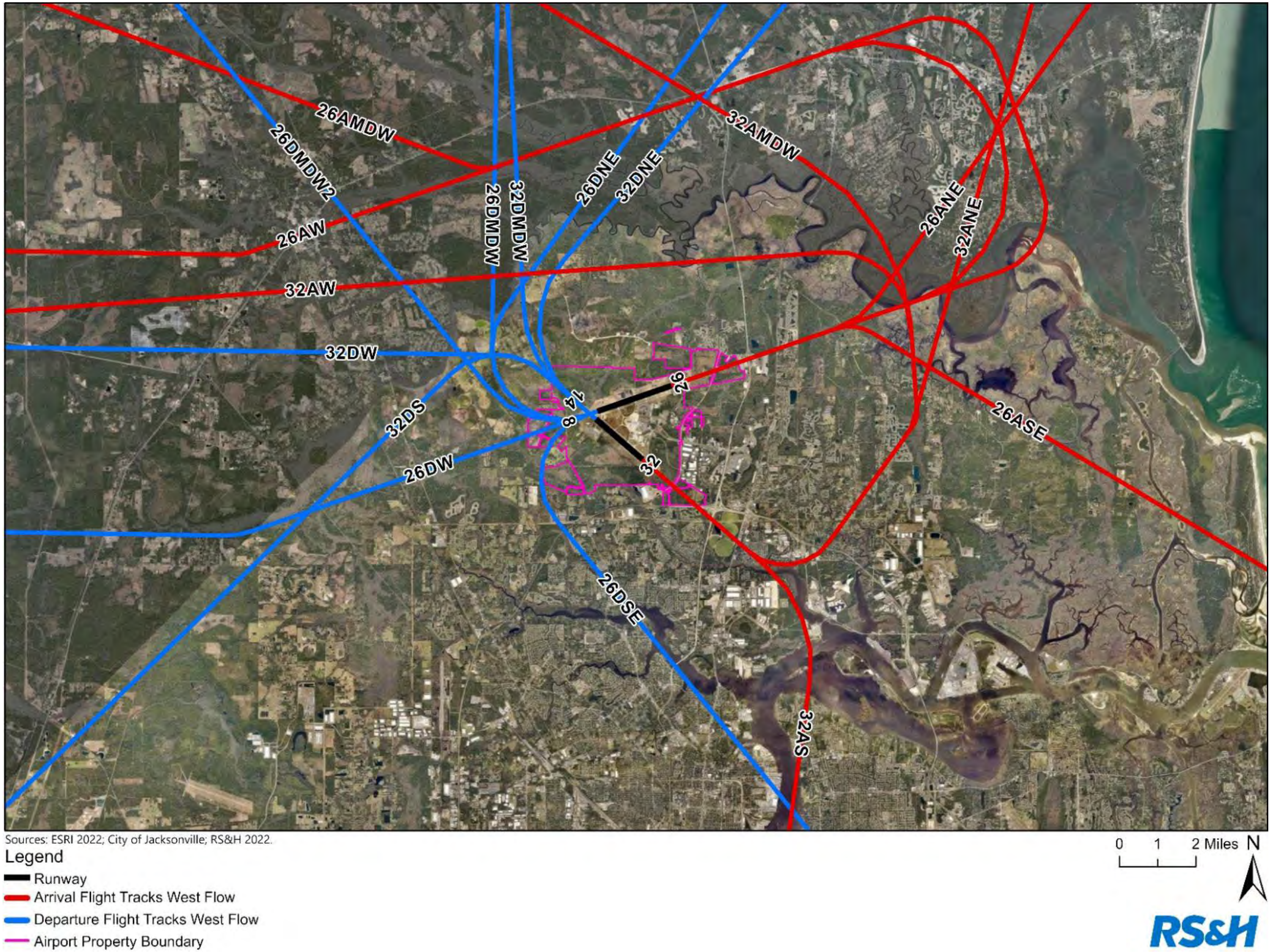

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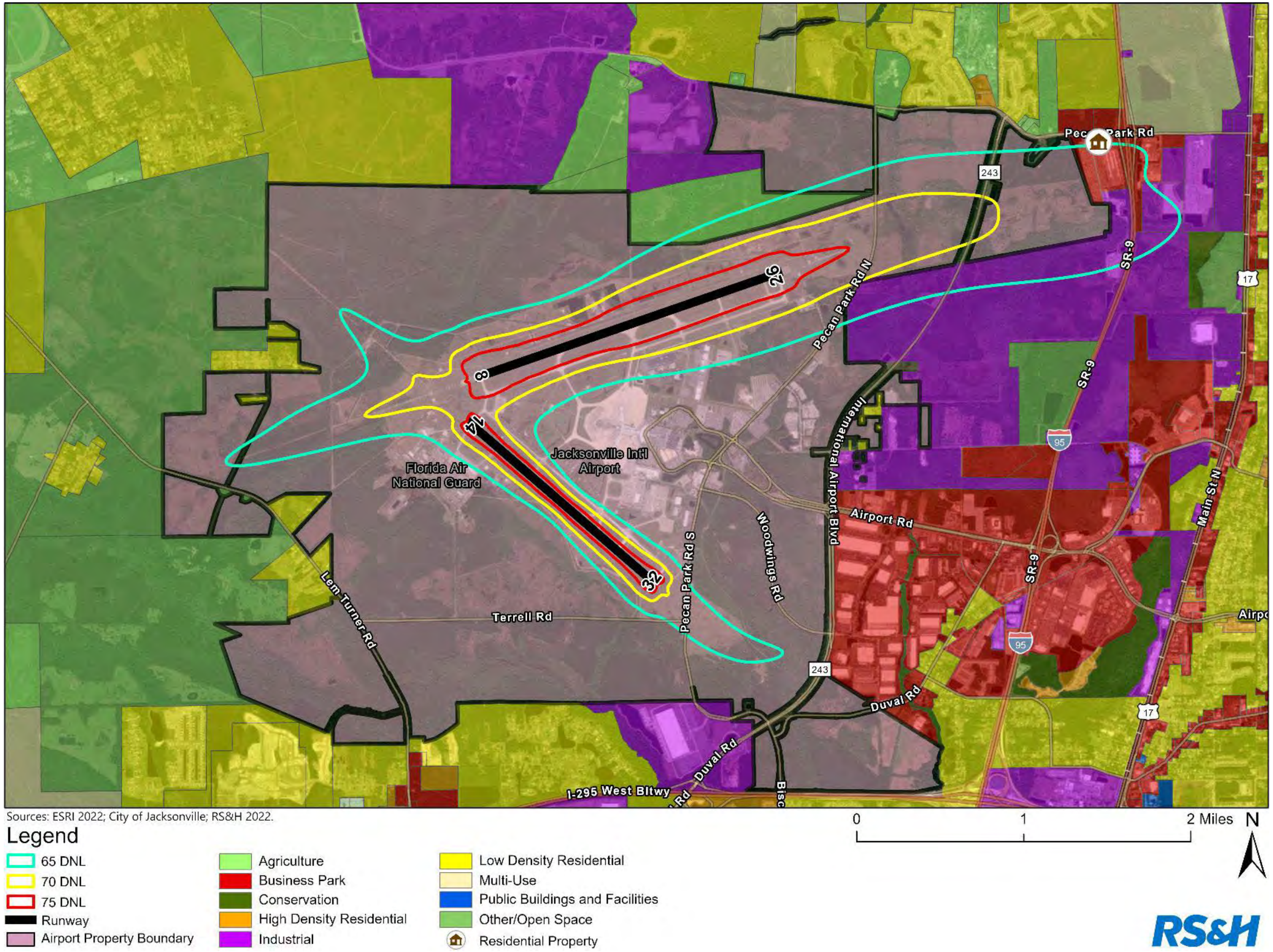
FIGURE C-4: 2022 DNL CONTOURS



Sources: ESRI 2022; City of Jacksonville; RS&H 2022.

TABLE C-7: 2026 NO ACTION ALTERNATIVE AIRCRAFT OPERATIONS AND FLEET MIX

Aircraft Type (s)	AEDT Aircraft	Annual Operations	Average Annual Day		
			Day	Night	Sum
Embraer 175	EMB175	17,860	42.87	6.06	48.93
Boeing 737-800/900	737800	10,524	21.59	7.24	28.83
Boeing 757-200	757PW	10,050	21.48	6.05	27.53
Airbus A320-200	A320-211	8,397	18.20	4.80	23.01
Boeing 737-700	737700	8,389	19.30	3.69	22.98
Canadair CRJ 700/900	CRJ9-ER	6,746	17.19	1.30	18.48
Airbus A319-100	A319-131	6,158	13.85	3.02	16.87
Embraer 190	EMB190	3,102	6.53	1.97	8.50
Embraer 170	EMB170	2,855	7.39	0.43	7.82
Boeing 767-300	767300	1,666	3.29	1.28	4.56
Airbus A321-200	A321-232	2,165	4.35	1.59	5.93
Airbus A300	A300B4-203	990	1.96	0.75	2.71
Embraer 135/145	EMB145	997	2.69	0.04	2.73
Airbus A320neo	A320-271N	841	2.28	0.03	2.30
Boeing 737 MAX8	7378MAX	825	1.68	0.58	2.26
Beechcraft 1900	1900D	691	1.73	0.16	1.89
Boeing 717-200	717200	654	1.79	0.00	1.79
ATR-42	DHC8	431	1.17	0.01	1.18
Dash 8-300	DHC830	429	1.12	0.06	1.18
Boeing 757-300	757300	181	0.49	0.01	0.50
Boeing 737-400	737400	116	0.31	0.01	0.32
Boeing 737-300	737300	110	0.29	0.01	0.30
Boeing 747-400	747400	36	0.06	0.04	0.10
Challenger 300/600	CL600	21	0.06	0.00	0.06
King Air/Super King Air	DHC6	9	0.02	0.01	0.02
Learjet 35/40/45/55/60/75	LEAR35	1,837	4.55	0.49	5.03
Cessna 560 Citation XLS	CNA560XL	1,346	3.56	0.13	3.69
Citation II/Bravo, Premier, Phenom 300	CNA55B	1,018	2.66	0.13	2.79
Cessna Citation CJ1/CJ3/CJ4	CNA525C	1,003	2.65	0.10	2.75
Beechcraft Beechjet	MU3001	992	2.59	0.13	2.72
Cessna Citation Sovereign/Latitude	CNA680	867	2.31	0.07	2.38
Gulfstream G280	CL601	780	1.99	0.14	2.14
Challenger 300/600	CL600	729	1.92	0.08	2.00
Cessna Citation Ultra/Encore	CNA560E	573	1.25	0.32	1.57
Gulfstream GV/G500/G550	GV	537	1.39	0.08	1.47
Cessna Citation X, Falcon 2000	CNA750	475	1.24	0.07	1.30
Dassault Falcon 50/900	FAL900EX	340	0.90	0.03	0.93

Aircraft Type (s)	AEDT Aircraft	Annual Operations	Average Annual Day		
			Day	Night	Sum
Gulfstream GIV/G400	GIV	329	0.84	0.07	0.90
Cirrus Vision, Citation Mustang	CNA510	240	0.62	0.03	0.66
IAI Astra/Galaxy	IA1125	152	0.38	0.03	0.42
Cessna Citation CJ1/CJ2/CJ3	CNA500	79	0.14	0.08	0.22
Cessna Citation III	CIT3	72	0.19	0.01	0.20
Bombardier Global 7500	BD-700-1A10	63	0.16	0.01	0.17
Gulfstream G650	G650ER	60	0.16	0.00	0.16
Eclipse 500	ECLIPSE500	49	0.12	0.01	0.13
Bombardier Global 5000	BD-700-1A11	29	0.08	0.00	0.08
King Air/Super King Air	DHC6	769	1.99	0.12	2.11
Pilatus PC-12, Cessna 208, Socata TBM9	CNA208	200	0.50	0.04	0.55
Cessna 172/177	CNA172	2,333	5.84	0.55	6.39
Cessna 152	GASEPF	568	1.38	0.18	1.56
Piper 46 Malibu, Lancair 4, Bonanza 36	GASEPV	266	0.66	0.07	0.73
Piper Seminole, Diamond 42/62	PA30	212	0.46	0.12	0.58
Baron 58, Cessna 310/414	BEC58P	163	0.42	0.02	0.45
Cirrus SR20/22	COMSEP	151	0.39	0.02	0.41
Boeing P-8	737800	5,232	14.33	0.00	14.33
F-15	F15E20	3,368	9.23	0.00	9.23
Total		**109,077**	**256.59**	**42.25**	**298.84**

Source: FAA TAF; Virtower™; RS&H, 2023

Note: Totals may not sum due to rounding

TABLE C-8: 2026 PROPOSED PROJECT AIRCRAFT OPERATIONS AND FLEET MIX

Aircraft Type (s)	AEDT Aircraft	Annual Operations	Average Annual Day		
			Day	Night	Total
Boeing 737-800/900	737800	11,523	23.64	7.93	31.57
Boeing 757-200	757PW	11,004	23.52	6.63	30.15
Airbus A320-200	A320-211	9,194	19.93	5.26	25.19
Boeing 737-700	737700	9,185	21.13	4.04	25.16
Canadair CRJ 700/900	CRJ9-ER	7,386	18.82	1.42	20.24
Airbus A319-100	A319-131	6,742	15.17	3.30	18.47
Embraer 190	EMB190	3,396	7.15	2.16	9.30
Embraer 170	EMB170	3,126	8.09	0.47	8.56
Boeing 767-300	767300	1,666	3.29	1.28	4.56
Airbus A321-200	A321-232	2,370	4.76	1.74	6.49
Airbus A300	A300B4-203	990	1.96	0.75	2.71
Embraer 135/145	EMB145	1,091	2.95	0.04	2.99

Aircraft Type (s)	AEDT Aircraft	Annual Operations	Average Annual Day		
			Day	Night	Total
Airbus A320neo	A320-271N	921	2.49	0.03	2.52
Boeing 737 MAX8	7378MAX	903	1.84	0.63	2.47
Beechcraft 1900	1900D	756	1.89	0.18	2.07
Boeing 717-200	717200	716	1.96	0.00	1.96
ATR-42	DHC8	472	1.28	0.01	1.29
Dash 8-300	DHC830	470	1.22	0.06	1.29
Boeing 757-300	757300	198	0.53	0.01	0.54
Boeing 737-400	737400	127	0.34	0.01	0.35
Boeing 737-300	737300	120	0.32	0.01	0.33
Boeing 747-400	747400	36	0.06	0.04	0.10
Challenger 300/600	CL600	23	0.06	0.00	0.06
King Air/Super King Air	DHC6	10	0.02	0.01	0.03
Learjet 35/40/45/55/60/75	LEAR35	1,837	4.55	0.49	5.03
Cessna 560 Citation XLS	CNA560XL	1,346	3.56	0.13	3.69
Citation II/Bravo, Premier, Phenom 300	CNA55B	1,018	2.66	0.13	2.79
Cessna Citation CJ1/CJ3/CJ4	CNA525C	1,003	2.65	0.10	2.75
Beechcraft Beechjet	MU3001	992	2.59	0.13	2.72
Cessna Citation Sovereign/Latitude	CNA680	867	2.31	0.07	2.38
Gulfstream G280	CL601	780	1.99	0.14	2.14
Challenger 300/600	CL600	729	1.92	0.08	2.00
Cessna Citation Ultra/Encore	CNA560E	573	1.25	0.32	1.57
Gulfstream GV/G500/G550	GV	537	1.39	0.08	1.47
Cessna Citation X, Falcon 2000	CNA750	475	1.24	0.07	1.30
Dassault Falcon 50/900	FAL900EX	340	0.90	0.03	0.93
Gulfstream GIV/G400	GIV	329	0.84	0.07	0.90
Cirrus Vision, Citation Mustang	CNA510	240	0.62	0.03	0.66
IAI Astra/Galaxy	IA1125	152	0.38	0.03	0.42
Cessna Citation CJ1/CJ2/CJ3	CNA500	79	0.14	0.08	0.22
Cessna Citation III	CIT3	72	0.19	0.01	0.20
Bombardier Global 7500	BD-700-1A10	63	0.16	0.01	0.17
Gulfstream G650	G650ER	60	0.16	0.00	0.16
Eclipse 500	ECLIPSE500	49	0.12	0.01	0.13
Bombardier Global 5000	BD-700-1A11	29	0.08	0.00	0.08
King Air/Super King Air	DHC6	769	1.99	0.12	2.11
Pilatus PC-12, Cessna 208, Socata TBM9	CNA208	200	0.50	0.04	0.55
Cessna 172/177	CNA172	2,333	5.84	0.55	6.39
Cessna 152	GASEPF	568	1.38	0.18	1.56
Piper 46 Malibu, Lancair 4, Bonanza 36	GASEPV	266	0.66	0.07	0.73
Piper Seminole, Diamond 42/62	PA30	212	0.46	0.12	0.58

Aircraft Type (s)	AEDT Aircraft	Annual Operations	Average Annual Day		
			Day	Night	Total
Baron 58, Cessna 310/414	BEC58P	163	0.42	0.02	0.45
Cirrus SR20/22	COMSEP	151	0.39	0.02	0.41
Boeing P-8	737800	5,232	14.33	0.00	14.33
F-15	F15E20	3,368	9.23	0.00	9.23
Total		**116,814**	**274.27**	**45.77**	**320.04**

Source: FAA TAF; Virtower™; RS&H, 2023
Note: Totals may not sum due to rounding

C.1.3.3 2026 DNL Contours

The 2026 No Action Alternative and Proposed Project 65-75 DNL contours are provided on ***Figures C-5*** and ***C-6***. ***Table C-9*** identifies the areas within the DNL contour ranges. As shown in the table, the total area within the 65 DNL contour is 4.57 square miles for the No Action Alternative and 4.66 square miles for the Proposed Project. The No Action Alternative 65 DNL contour encompasses 0.7 square mile of off-Airport property, and the Proposed Project encompasses 0.73 square mile of off-Airport property. One residence near Interstate 95 and Pecan Park Road intersection is within the 65 DNL for both conditions. The residence is exposed to 65.25 DNL for the No Action Alternative and 65.39 DNL for the Proposed Project. Therefore, the residence would experience an increase of 0.14 DNL as a result of the Proposed Project. The 0.14 DNL increase is below the FAA significance threshold of DNL 1.5 dB.

TABLE C-9: AREA WITHIN THE 2026 DNL CONTOURS

DNL Contour Range	No Action Alternative (sq. miles)	Proposed Project (sq. miles)	Difference (sq. miles)
65-70	2.80	2.86	+0.06
70-75	1.11	1.13	+0.02
>75	0.66	0.67	+0.01
Total	4.57	4.66	+0.09

Source: RS&H, 2023

C.1.3.4 2031 Noise Exposure

Annual aircraft operations for the 2031 No Action Alternative total 118,843, or an average of 326 operations per day. The 2031 No Action Alternative aircraft fleet mix was determined by multiplying the percentages by aircraft type that occurred in 2022 by the FAA TAF operations forecast to occur in 2031.

The 2031 Proposed Project annual operations total 142,814, or an average of 391 operations per day. The 2031 Proposed Project aircraft fleet mix was determined by multiplying the percentages by aircraft type that occurred in 2022 by the FAA TAF operations forecast to occur in 2031. The 2031 Proposed Project includes an additional 23,971 passenger aircraft operations. The additional 23,971 passenger aircraft operations were distributed proportionally among the passenger aircraft fleet mix that occurred in 2022. The runway use, flight tracks, and time of day modeled for the 2031 No Action Alternative and the Proposed Project were the same as the 2022 condition. The 2031 aircraft operations and fleet mix for the No Action Alternative and the Proposed Project are shown in ***Tables C-10*** and ***C-11***.

FIGURE C-5: 2026 NO ACTION ALTERNATIVE DNL CONTOURS

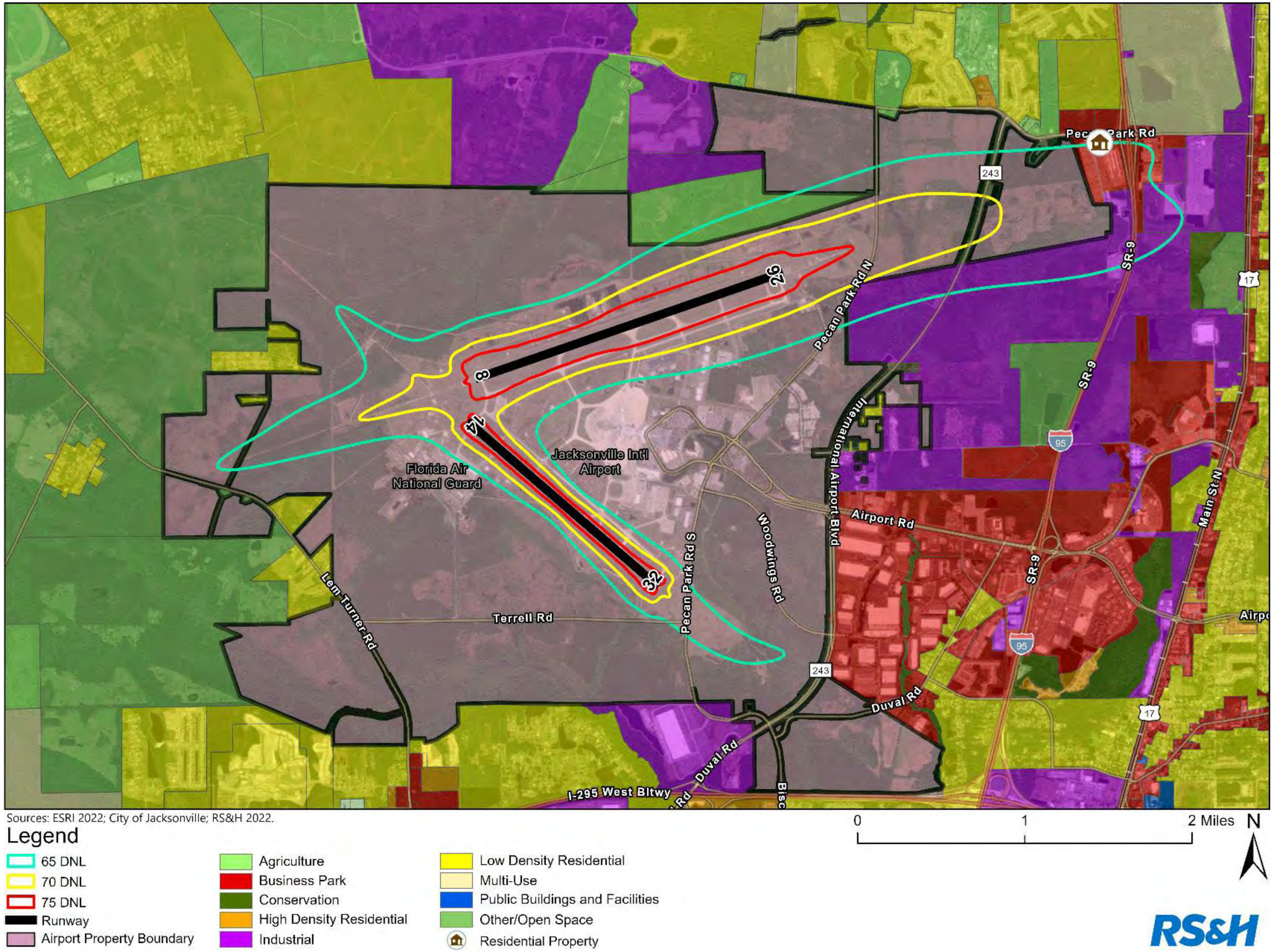


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FIGURE C-6: 2026 PROPOSED PROJECT DNL CONTOURS

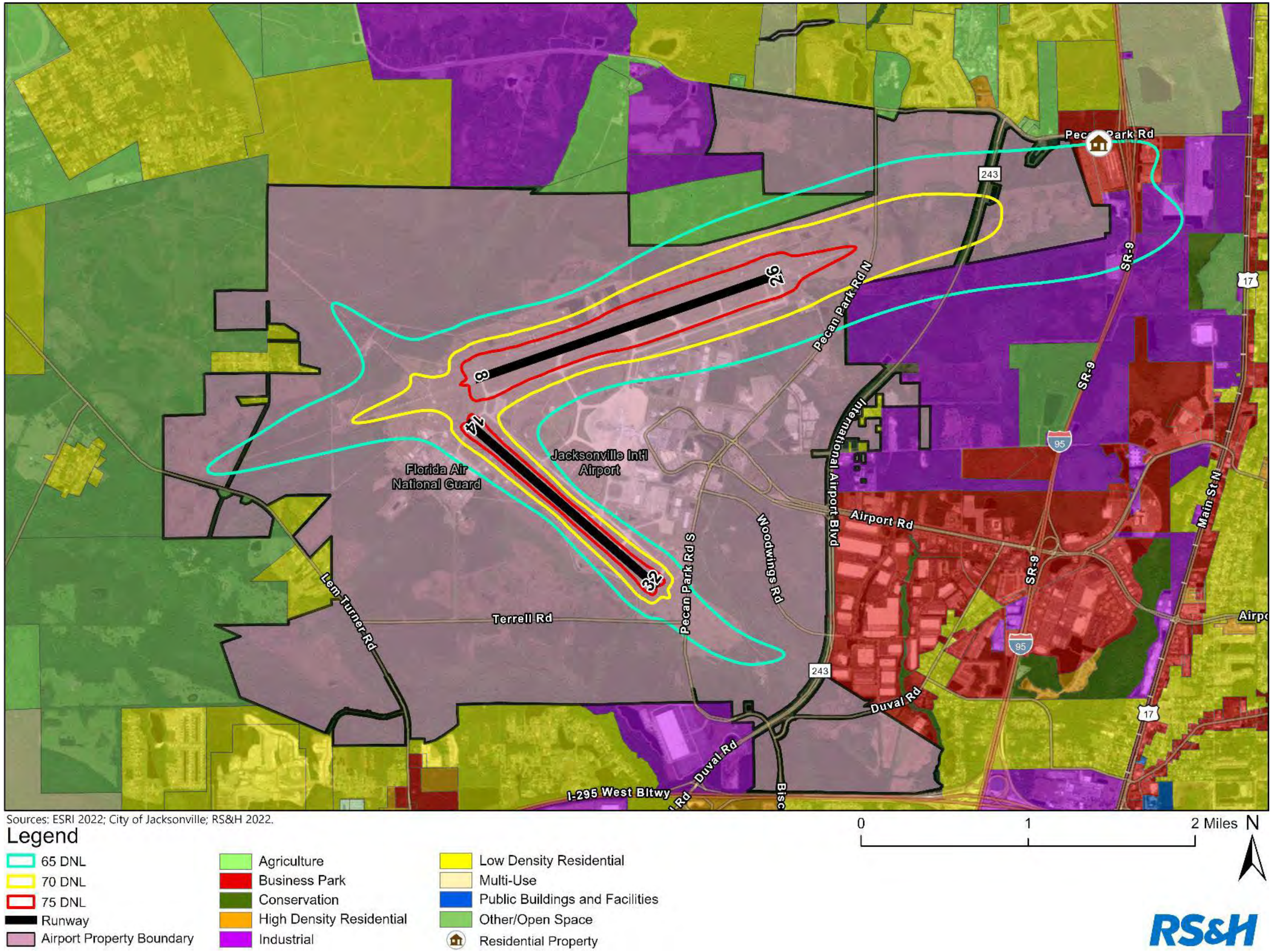

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TABLE C-10: 2031 NO ACTION ALTERNATIVE AIRCRAFT OPERATIONS AND FLEET MIX

Aircraft Type (s)	AEDT Aircraft	Annual Operations	Average Annual Day		
			Day	Night	Sum
Embraer 175	EMB175	19,917	47.81	6.76	54.57
Boeing 737-800/900	737800	11,736	24.08	8.08	32.15
Boeing 757-200	757PW	11,208	23.96	6.75	30.71
Airbus A320-200	A320-211	9,364	20.30	5.36	25.65
Boeing 737-700	737700	9,356	21.52	4.11	25.63
Canadair CRJ 700/900	CRJ9-ER	7,523	19.16	1.45	20.61
Airbus A319-100	A319-131	6,867	15.45	3.36	18.81
Embraer 190	EMB190	3,459	7.28	2.20	9.48
Embraer 170	EMB170	3,184	8.24	0.48	8.72
Boeing 767-300	767300	1,768	3.49	1.35	4.84
Airbus A321-200	A321-232	2,414	4.85	1.77	6.61
Airbus A300	A300B4-203	1,051	2.08	0.79	2.88
Embraer 135/145	EMB145	1,112	3.00	0.04	3.05
Airbus A320neo	A320-271N	938	2.54	0.03	2.57
Boeing 737 MAX8	7378MAX	919	1.87	0.64	2.52
Beechcraft 1900	1900D	770	1.93	0.18	2.11
Boeing 717-200	717200	729	2.00	0.00	2.00
ATR-42	DHC8	480	1.30	0.01	1.32
Dash 8-300	DHC830	479	1.25	0.06	1.31
Boeing 757-300	757300	202	0.54	0.01	0.55
Boeing 737-400	737400	129	0.34	0.01	0.35
Boeing 737-300	737300	123	0.33	0.01	0.34
Boeing 747-400	747400	38	0.06	0.04	0.10
Challenger 300/600	CL600	23	0.06	0.00	0.06
King Air/Super King Air	DHC6	10	0.02	0.01	0.03
Learjet 35/40/45/55/60/75	LEAR35	1,856	4.59	0.49	5.08
Cessna 560 Citation XLS	CNA560XL	1,360	3.59	0.13	3.73
Citation II/Bravo, Premier, Phenom 300	CNA55B	1,029	2.69	0.13	2.82
Cessna Citation CJ1/CJ3/CJ4	CNA525C	1,014	2.68	0.10	2.78
Beechcraft Beechjet	MU3001	1,003	2.61	0.13	2.75
Cessna Citation Sovereign/Latitude	CNA680	876	2.33	0.07	2.40
Gulfstream G280	CL601	788	2.01	0.14	2.16
Challenger 300/600	CL600	737	1.94	0.08	2.02
Cessna Citation Ultra/Encore	CNA560E	579	1.26	0.32	1.59
Gulfstream GV/G500/G550	GV	543	1.41	0.08	1.49
Cessna Citation X, Falcon 2000	CNA750	480	1.25	0.07	1.32
Dassault Falcon 50/900	FAL900EX	344	0.91	0.03	0.94

Aircraft Type (s)	AEDT Aircraft	Annual Operations	Average Annual Day		
			Day	Night	Sum
Gulfstream GIV/G400	GIV	332	0.84	0.07	0.91
Cirrus Vision, Citation Mustang	CNA510	243	0.63	0.03	0.67
IAI Astra/Galaxy	IA1125	153	0.39	0.03	0.42
Cessna Citation CJ1/CJ2/CJ3	CNA500	80	0.14	0.08	0.22
Cessna Citation III	CIT3	73	0.19	0.01	0.20
Bombardier Global 7500	BD-700-1A10	64	0.16	0.01	0.18
Gulfstream G650	G650ER	61	0.17	0.00	0.17
Eclipse 500	ECLIPSE500	49	0.12	0.01	0.13
Bombardier Global 5000	BD-700-1A11	30	0.08	0.00	0.08
King Air/Super King Air	DHC6	777	2.01	0.12	2.13
Pilatus PC-12, Cessna 208, Socata TBM9	CNA208	202	0.51	0.04	0.55
Cessna 172/177	CNA172	2,397	6.00	0.56	6.57
Cessna 152	GASEPF	574	1.39	0.18	1.57
Piper 46 Malibu, Lancair 4, Bonanza 36	GASEPV	269	0.67	0.07	0.74
Piper Seminole, Diamond 42/62	PA30	215	0.47	0.12	0.59
Baron 58, Cessna 310/414	BEC58P	165	0.43	0.02	0.45
Cirrus SR20/22	COMSEP	152	0.39	0.02	0.42
Boeing P-8	737800	5,232	14.33	0.00	14.33
F-15	F15E20	3,368	9.23	0.00	9.23
Total		**118,843**	**278.91**	**46.69**	**325.60**

Source: FAA TAF; Virtower™; RS&H, 2023

Note: Totals may not sum due to rounding

TABLE C-11: 2031 PROPOSED PROJECT AIRCRAFT OPERATIONS AND FLEET MIX

Aircraft Type (s)	AEDT Aircraft	Annual Operations	Average Annual Day		
			Day	Night	Sum
Embraer 175	EMB175	25,167	60.41	8.54	68.95
Boeing 737-800/900	737800	14,830	30.43	10.20	40.63
Boeing 757-200	757PW	14,162	30.27	8.53	38.80
Airbus A320-200	A320-211	11,832	25.65	6.77	32.42
Boeing 737-700	737700	11,822	27.19	5.20	32.39
Canadair CRJ 700/900	CRJ9-ER	9,506	24.22	1.83	26.04
Airbus A319-100	A319-131	8,677	19.52	4.25	23.77
Embraer 190	EMB190	4,371	9.20	2.77	11.98
Embraer 170	EMB170	4,024	10.42	0.61	11.02
Boeing 767-300	767300	1,768	3.49	1.35	4.84
Airbus A321-200	A321-232	3,050	6.12	2.23	8.36
Airbus A300	A300B4-203	1,051	2.08	0.79	2.88

Aircraft Type (s)	AEDT Aircraft	Annual Operations	Average Annual Day		
			Day	Night	Sum
Embraer 135/145	EMB145	1,405	3.80	0.05	3.85
Airbus A320neo	A320-271N	1,185	3.21	0.04	3.25
Boeing 737 MAX8	7378MAX	1,162	2.37	0.81	3.18
Beechcraft 1900	1900D	973	2.44	0.23	2.67
Boeing 717-200	717200	921	2.52	0.00	2.52
ATR-42	DHC8	607	1.65	0.01	1.66
Dash 8-300	DHC830	605	1.58	0.08	1.66
Boeing 757-300	757300	255	0.69	0.01	0.70
Boeing 737-400	737400	163	0.43	0.01	0.45
Boeing 737-300	737300	155	0.41	0.01	0.42
Boeing 747-400	747400	38	0.06	0.04	0.10
Challenger 300/600	CL600	29	0.08	0.00	0.08
King Air/Super King Air	DHC6	13	0.02	0.01	0.04
Learjet 35/40/45/55/60/75	LEAR35	1,856	4.59	0.49	5.08
Cessna 560 Citation XLS	CNA560XL	1,360	3.59	0.13	3.73
Citation II/Bravo, Premier, Phenom 300	CNA55B	1,029	2.69	0.13	2.82
Cessna Citation CJ1/CJ3/CJ4	CNA525C	1,014	2.68	0.10	2.78
Beechcraft Beechjet	MU3001	1,003	2.61	0.13	2.75
Cessna Citation Sovereign/Latitude	CNA680	876	2.33	0.07	2.40
Gulfstream G280	CL601	788	2.01	0.14	2.16
Challenger 300/600	CL600	737	1.94	0.08	2.02
Cessna Citation Ultra/Encore	CNA560E	579	1.26	0.32	1.59
Gulfstream GV/G500/G550	GV	543	1.41	0.08	1.49
Cessna Citation X, Falcon 2000	CNA750	480	1.25	0.07	1.32
Dassault Falcon 50/900	FAL900EX	344	0.91	0.03	0.94
Gulfstream GIV/G400	GIV	332	0.84	0.07	0.91
Cirrus Vision, Citation Mustang	CNA510	243	0.63	0.03	0.67
IAI Astra/Galaxy	IA1125	153	0.39	0.03	0.42
Cessna Citation CJ1/CJ2/CJ3	CNA500	80	0.14	0.08	0.22
Cessna Citation III	CIT3	73	0.19	0.01	0.20
Bombardier Global 7500	BD-700-1A10	64	0.16	0.01	0.18
Gulfstream G650	G650ER	61	0.17	0.00	0.17
Eclipse 500	ECLIPSE500	49	0.12	0.01	0.13
Bombardier Global 5000	BD-700-1A11	30	0.08	0.00	0.08
King Air/Super King Air	DHC6	777	2.01	0.12	2.13
Pilatus PC-12, Cessna 208, Socata TBM9	CNA208	202	0.51	0.04	0.55
Cessna 172/177	CNA172	2,397	6.00	0.56	6.57
Cessna 152	GASEPF	574	1.39	0.18	1.57
Piper 46 Malibu, Lancair 4, Bonanza 36	GASEPV	269	0.67	0.07	0.74

Aircraft Type (s)	AEDT Aircraft	Annual Operations	Average Annual Day		
			Day	Night	Sum
Piper Seminole, Diamond 42/62	PA30	215	0.47	0.12	0.59
Baron 58, Cessna 310/414	BEC58P	165	0.43	0.02	0.45
Cirrus SR20/22	COMSEP	152	0.39	0.02	0.42
Boeing P-8	737800	5,232	14.33	0.00	14.33
F-15	F15E20	3,368	9.23	0.00	9.23
Total		**142,814**	**333.70**	**57.58**	**391.27**

Source: FAA TAF; Virtower™; RS&H, 2023

C.1.3.5 2031 DNL Contours

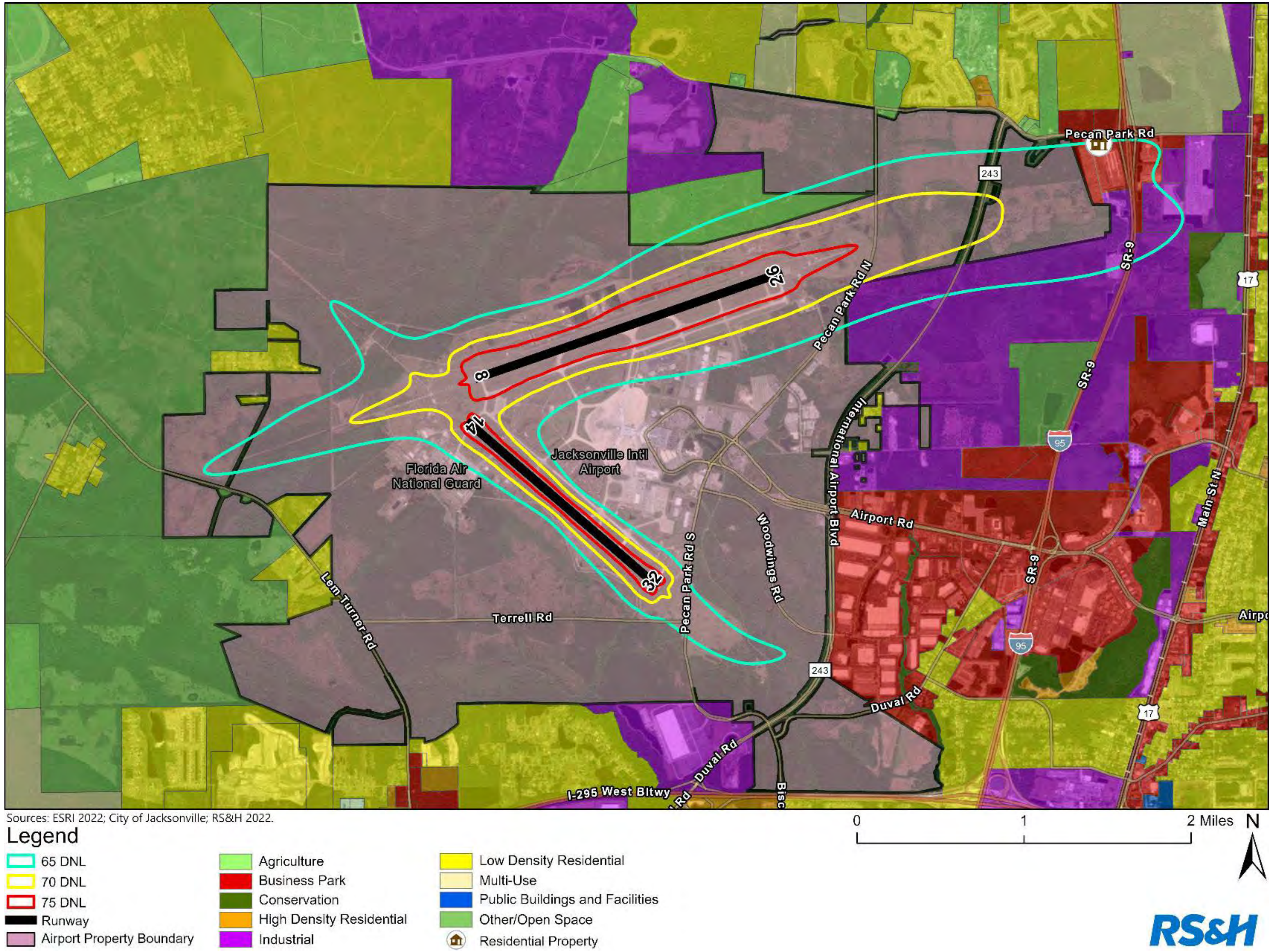
The 2031 No Action Alternative and Proposed Project 65-75 DNL contours are provided on ***Figures C-7*** and ***C-8***. ***Table C-12*** identifies the areas within the DNL contour ranges. As shown in the table, the total area within the 65 DNL contour is 4.70 square miles for the No Action Alternative and 5.02 square miles for the Proposed Project. The No Action Alternative 65 DNL contour encompasses 0.74 square mile of off-Airport property, and the Proposed Project encompasses 0.82 square mile. One residence near Interstate 95 and Pecan Park Road intersection is within the 65 DNL for both conditions. The residence is exposed to 65.62 DNL for the No Action Alternative and 66.01 DNL for the Proposed Project. Therefore, the residence would experience an increase of 0.39 DNL as a result of the Proposed Project. The 0.39 DNL increase is below the FAA significance threshold of DNL 1.5 dB.

TABLE C-12: AREA WITHIN THE 2031 DNL CONTOURS

DNL Contour Range	No Action Alternative (sq. miles)	Proposed Project (sq. miles)	Difference (sq. miles)
65-70	2.88	3.08	+0.20
70-75	1.14	1.21	+0.07
>75	0.68	0.73	+0.05
Total	4.70	5.02	+0.32

Source: RS&H, 2023

FIGURE C-7: 2031 NO ACTION ALTERNATIVE DNL CONTOURS



RS&H

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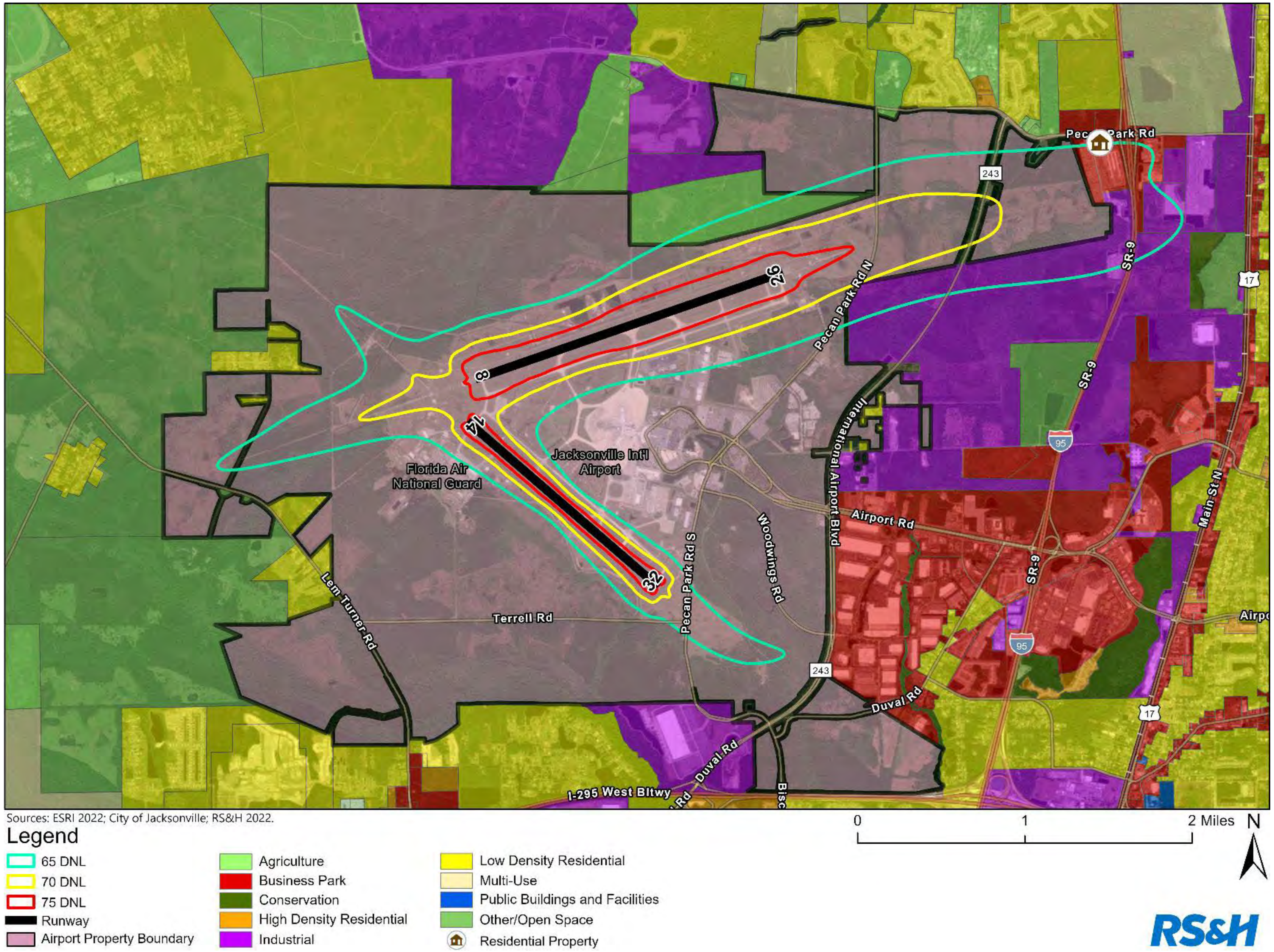
FIGURE C-8: 2031 PROPOSED ACTION DNL CONTOURS



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ATTACHMENT 1: JAA JAX CONCOURSE B EA AVIATION NO ACTION AND PROPOSED PROJECT TOTAL AIRCRAFT OPERATIONS FOR AIRCRAFT NOISE ANALYSIS METHODOLOGY

This aircraft noise techinical report attachment describes the methodology used to develop the 2026 and 2031 No Action and Proposed Project total aircraft operations used in the noise analysis for the Jacksonville International Airport (JAX) Concourse B Environmental Assessment (EA). The methodology was developed through a collaborative planning effort between the Federal Administration (FAA), Orlando Airport Districts Office (ADO), the Jacksonville Aviation Authority (JAA), and RS&H, Inc.

Background

RS&H provided the FAA with an initial methodology that the FAA did not approve during a conference call held on January 31, 2023, between the JAA, RS&H, and FAA. The FAA stated that a special purpose forecast could be submitted to the FAA or that the FAA Terminal Area Forecast (TAF) could be used for the future No Action condition. Due to the time sensitivity of the project, the JAA and RS&H agreed to use the FAA TAF. The TAF contains historical and forecast data for enplanements and airport operations. It is a demand-driven forecast for aviation services based on local and national economic conditions.[4] To calculate the future Proposed Project aircraft passenger operations, the FAA informed the JAA and RS&H that a simple turns per gate method could estimate the additional passenger operations that the six (6) new Concourse B gates would generate beyond the TAF. Also, the TAF should be seen as a baseline, and the six (6) new Concourse B gates would induce additional demand. However, following FAA guidance on numerous other projects involving additional gates at an airport, JAA and RS&H aviation planners concurred that the additional six (6) new Concourse B gates under the Proposed Project would meet the FAA-approved forecast demand of aircraft operations and would not induce additional demand (see JAA JAX Concourse B EA’s Purpose and Need).

Therefore, this attachment provides the FAA-suggested methodology (i.e., turns per gate analysis) as the preferred approach for JAA and RS&H to develop the Proposed Project’s future aircraft noise analysis. Per FAA’s direction received on a conference call on January 31, 2023, JAA and RS&H agreed to add passenger aircraft operations beyond the aircraft operation levels of the FAA’s TAF. However, it should be noted that there are no supporting JAX data or planning studies reflecting that there will be additional aircraft passenger operations beyond what is already described in the JAX Master Plan Update or forecasted in the TAF. Therefore, RS&H developed a conservative, linear approach representing the highest possible delta between the future Proposed Project and No Action passenger aircraft operations to model the potential change in aircraft noise. The Proposed Project’s additional passenger aircraft operations are for the sole use in future aircraft noise modeling and do not have any other purpose in the JAA JAX Concourse B EA.

This attachment, its descriptions, calculations, and results are exclusively for use in aviation noise modeling purposes of the future No Action and Proposed Project (2026 and 2031). While the descriptions below describe how the No Action and Proposed Project aircraft operations were calculated, these numbers are only for JAX Concourse B EA aircraft noise analysis purposes and do not constitute an aviation forecast.

---

[4] FAA. (2023). Forecast Process, 2022 TAF. Retrieved December 2023 from https://www.faa.gov/sites/faa.gov/files/Forecast%20Process%20for%202022%20TAF.pdf

2026 and 2031 Turns Per Gate Analysis

The 2026 and 2031 No Action aircraft annual operations are based on the most recent FAA TAF (February 2023) shown in ***Table 1***.

Table 1: Terminal Area Forecast for 2026 and 2031

TAF Year	Air Carrier	Air Taxi and Commuter	General Aviation	Military	Total Operations
2026	73,440	10,803	16,234	8,600	109,077
2031	82,415	11,386	16,400	8,600	118,801

Source: FAA TAF, 2023. RS&H, 2023.
Notes:
"Air Carrier" operations include passenger aircraft operations performed with aircraft with more than 60 seats or a maximum payload capacity of more than 18,000 pounds, carrying passengers or cargo for compensation.
"Air Taxi and Commuter" operations include aircraft operations performed by aircraft with 60 seats or less or a maximum payload capacity of 18,000 pounds or less, carrying passengers or cargo for compensation.
"General Aviation" and "Military" aircraft operations include all local and itinerant aircraft operations.

The 2026 passenger aircraft operations equal "Air Carrier" plus "Air Taxi and Commuter" aircraft operations minus air cargo aircraft operations (i.e., 2026 TAF Air Carrier Aircraft Operations + 2026 TAF Air Taxi & Commuter Aircraft Operations – Air Cargo Aircraft Operations = 2026 No Action Annual Passenger Aircraft Operations). This calculation was repeated for 2031 No Action Annual Passenger Aircraft Operations. Using this approach, the 2026 and 2031 No Action Passenger Aircraft Operations are 79,903 and 89,194, respectively (see ***Table 2***).

Air cargo operations were determined using JAA's Virtower™ Airport Operations Tracking System, which totaled 4,138 air cargo operations. Air cargo aircraft operations were calculated to increase by 1.2% per year, matching the average annual growth rate presented in the JAX Master Plan Update (i.e., Air Cargo Aircraft Operations). The 2026 and 2031 Air Cargo Operations are 4,340 and 4,607, respectively (see ***Table 2***).

The total annual 2026 and 2031 No Action aircraft operations are 109,077 and 118,843, respectively (see ***Table 2***).

Table 2: 2026 and 2031 No Action Total Annual Aircraft Operations

Year	Passenger Aircraft Operations	Air Cargo Operations	General Aviation Operations	Military Operations	Total Aircraft Operations
2026	79,903	4,340	16,234	8,600	109,077
2031	89,194	4,607	16,442	8,600	118,843

Source: FAA TAF, 2023; Virtower™, 2022; RS&H, 2023.
Notes: An aircraft operation is one takeoff and one landing. Therefore, annual passenger aircraft operations are divided by 2 to determine the number of turns.

The 2026 and 2031 No Action Annual Passenger Aircraft Operations were then broken down into daily turns per gate (e.g., 2026 No Action Annual Passenger Aircraft Operations (79,903) / 2 / 365 (annual days) / 20 (gates) = 5.47 turns per gate per day). This calculation was repeated for 2031. Therefore, as shown in ***Table 3***, the 2026 and 2031 No Action are 5.47 and 6.11 turns per gate, respectively.

Table 3: 2026 and 2031 No Action Passenger Operations Turns per Gate

	No Action				
Year	Aircraft Passenger Operations[1]	Turns = 1 Takeoff + 1 Landing	Days per Year	No Action Aircraft Passenger Gates	Turns Per Gate
2026	79,903	2	365	20	5.47
2031	89,194	2	365	20	6.11

Note: [1] The 2023 TAF was used for passenger aircraft operations (total air carrier and commuter operations). Cargo aircraft operations (4,340 in 2026 and 4,607 in 2031) were deducted from the total air carrier and commuter aircraft operations because cargo airlines do not use the Airport's passenger gates.
Numbers may not total due to rounding.
Source: FAA TAF, 2023; Virtower™, 2022; RS&H, 2023.

No Action and Proposed Project Annual Aircraft Operations Methodology

The JAX Concourse B EA uses 2026 as a basis for analysis because 2026 is the projected opening year for the Proposed Project. The JAX Concourse B EA also includes a +5-year project study year (2031).
For the 2026 and 2031 Proposed Project, a conservative methodology to calculate the passenger aircraft operations of the additional six (6) gates was conducted. This was accomplished using 2026 No Action Alternative turns per gate of 5.47 (see ***Table 4***).

Table 4: 2026 No Action Passenger Aircraft Operations and Turns Per Gate

	No Action	
Year	Passenger Aircraft Operations	Turns Per Gate
2026	79,903	5.47

Source: FAA TAF, 2023; RS&H, 2023.

The 2026 and 2031 Proposed Project passenger aircraft operations analysis consisted of three steps.
Step 1: To calculate the passenger aircraft operations, the 2026 No Action Alternative turns per gate (5.47 turns per gate) were multiplied against the 2026 Proposed Project's six (6) additional gates. The 2026 No Action Alternative's 5.47 turns per gate was used because it represents the highest throughput the existing 20 gates would experience without the Proposed Project.

- *Calculation*: 5.47 turns per gate (2026 No Action Alternative) x 6 (2031 Proposed Project new gates) x 2 (a "turn" equals 1 takeoff and 1 landing) x 365 (calendar year) = 23,971 (Proposed Project additional passenger aircraft operations); or 5.47 x 6 x 2 x 365 = 23,971. Note: Numbers may not total due to rounding.

This results in an annual increase of 23,971 passenger aircraft operations for the six (6) additional gates. The 23,971 passenger operations were added to the 2031 No Action Alternative passenger aircraft operations (i.e., 89,194), resulting in 2031 Proposed Project 113,165 passenger aircraft operations (see ***Table 5***).

- *Calculation*: 23,971 additional passenger operations + 89,194 2031 No Action Alternative passenger operations = 113,165; 2031 Proposed Project passenger aircraft operations; or 23,971 + 89,194 = 113,165.

This results in the Airport's 2031 Proposed Project of 26 total gates having 6.0 turns per gate (see ***Table 5***).

Table 5: 2031 No Action and Proposed Project Turns Per Gate

	No Action		Proposed Project			
Year	Passenger Aircraft Operations	Turns Per Gate	Turns Per Gate (6 Additional Gates)	Additional Passenger Aircraft Operations	Total Passenger Aircraft Operations	Turns Per Gate (26 Total Gates)
2031	89,194	6.11	5.47	23,971	113,165	6.0

Source: FAA TAF, 2023; RS&H, 2023.

Step 2: This step calculates the average annual growth rate of the adjusted passenger aircraft operations from the 2022 total passenger aircraft operations (71,432) to the 2031 Proposed Project (113,165) total passenger aircraft operations. The adjusted passenger aircraft operations' average annual growth rate between 2022 and 2031 is 5.25% (see ***Table 6***).

Table 6: Passenger Annual Aircraft Operations Growth Rate Comparisons

Year	Passenger Aircraft Operations	Adjusted Passenger Aircraft Operations[1]
2022	71,432	71,432
2031	**89,194**	**113,165**
Average Annual Growth Rate		
2022-2031	2.50%	5.25%

Note:

[1] Adjusted passenger aircraft operations represent the additional passenger aircraft operations added in 2031 under the Proposed Project. The 2022 passenger aircraft operations (71,432) are carried into this column for reference and to calculate the average annual growth rate comparison between 2022 and 2031 passenger aircraft operations under the No Action and adjusted under the Proposed Project.

The calculated average annual growth rate is 5.25%.

Numbers may not total due to rounding.

Source: FAA TAF, 2023. RS&H, 2023.

Step 3: The 2022 passenger aircraft operations (71,432) were extrapolated with a 5.25% average annual growth rate and calculated through 2031. This resulted in the 2026 Proposed Project's 87,640 passenger aircraft operations and the 2031 Proposed Project's 113,165 passenger aircraft operations (see ***Table 7***).

Table 7: Average Annual Growth of Passenger Aircraft Operations

Year	Passenger Aircraft Operations Extrapolated at 5.25%
2022	71,432
2023	75,179
2024	79,122
2025	83,272
2026	**87,640**
2027	92,237
2028	97,075
2029	102,166
2030	107,525
2031	**113,165**

Note: Calculated average annual growth rate is 5.25%.
Numbers are rounded to the nearest whole number.
Source: FAA TAF, 2023. RS&H, 2023.

The 2026 and 2031 No Action Alternative and Proposed Project total passenger aircraft operations and resulting total annual aircraft operations for aviation noise modeling purposes are shown in ***Table 8***. The annual 2026 and 2031 No Action aircraft operations are 109,077 and 118,843, respectively. The Proposed Project includes 7,737 additional passenger operations in 2026 and 23,917 in 2031. The resulting 2026 and 2031 Proposed Project total annual aircraft operations are 116,814 and 142,814, respectively.

Table 8: No Action and Proposed Project Annual Aircraft Operations for Aircraft Noise Modeling

	No Action					Proposed Project	
Year	Passenger Aircraft Operations	Cargo Operations	General Aviation Operations	Military Operations	Total Operations	Additional Passenger Operations	Total Aircraft Operations
2026	79,903	4,340	16,234	8,600	**109,077**	7,737	**116,814**
2031	89,194	4,607	16,442	8,600	**118,843**	23,971	**142,814**

Source: FAA TAF, 2023; Virtower™, 2022; RS&H, 2023.

APPENDIX D

FAA ASR-9 AND RTR REPORTS

Federal Aviation
Administration

Memorandum

Date: November 15, 2023

To: Mark D. VanLoh
CEO, Jacksonville Aviation Authority
14201 Pecan Park Road
Jacksonville, FL 32218

From: Donna Alexander
Manager, Surveillance/Weather/Terminal Engineering Center, Atlanta, GA
1701 Columbia Avenue
College Park, GA

Subject: Summary and Analysis for AJW-FN-ESA-23-SO-005788

Scope:

The Jacksonville Aviation Authority (JAA) is developing a terminal, ramp, and taxiway expansion at Jacksonville International Airport (JAX). This construction may have adverse impacts on FAA services due to the potential for interference caused by the new construction on existing FAA equipment. The purpose of this analysis is to evaluate the performance of JAX ASR-9/Mode S system equipment with respect to this new construction plan and to determine a mitigation strategy for continued FAA services. As part of the executed reimbursable agreement AJW-FN-ESA-23-SO-005788, the FAA will perform radar analysis and provide a detailed report of the evaluations and recommendations to enable continued service within the context of the sponsor proposal to construct a bypass taxiway, ramp expansion, and concourse addition.

Executive Summary:

Considering the Terminal B Expansion structure, false target analysis, and subsequent discussions with the FAA radar community concluded the ASR-9/Mode S system will be able to mitigate any operational effects caused by the construction of the building at its present location, design, and orientation. Labor and travel costs will be requested to support up to three (3) site visits to Jacksonville during and/or after construction to perform optimization as needed of the ASR-9/WSP and Mode S systems. Optimization will be performed by FAA technical operations personnel.

Regarding the Bypass Taxiway "W" and increased apron parking, analysis and subsequent discussions with the FAA radar community did not provide a clear consensus on how well the ASR-9/Mode S systems would react to aircraft passing close to the radar or parked in front of the new Terminal B Expansion structure. Empirical data suggests that aircraft parked, or stationary, within 500 feet of the radar generates false target zones that optimization or post-processing was not able to filter out. Based on the empirical data and subsequent analysis contained in Appendix B, the FAA recommends that a design reimbursable agreement be established with the airport to raise the existing tower by 20 feet. In the interim, a 'no loitering' zone will be established to prevent aircraft from slowing or stopping while on the new taxiway. Additionally, aircraft parking lines closest to the radar should be redrawn so that their tails are lined up with radials originating from the antenna’s center of rotation where possible.

If you have any questions on this subject, please contact Michael Armstrong in the Terminal/Surveillance/Weather Engineering Center at 404-305-7239.

Initial Conditions:

1. The JAX ASR-9/Mode S Facility is equipped with the Weather Systems Processor (WSP) which is why it was removed from the FAA’s radar divestiture list. The WSP is JAX’s only source of wind shear information critical to air traffic operations. This means the radar will need to remain in service at JAX as their primary surveillance sensor.

2. In addition to the JAX ASR-9/Mode S, the Standard Terminal Automation Replacement System (STARS) at JAX also receives sensor input from Jacksonville NAS (Towers Field) ASR-11/ATCBI-6, Whitehouse Naval Outlying Field (NEN) ARSR-4/ATCBI-5, Gainesville (GNV) ASR-9/Mode S, Daytona Beach (DAB) ASR-9/Mode S, Cross City (CTY) ARSR-4/ATCBI-6, and Surveillance and Broadcast Services (SBS).

3. The software tools used to develop this analysis consist of the Radar Support System (RSS) version 7.66, Rhinoceros 7 (a 3D modeling tool), and Lucernhammer suite (a radar cross-section generator/viewer, consisting of lucern_x64.exe, m3d_x64.exe, and emerald_x64.exe).

Terminal Building Expansion Analysis Setup:

The first six slides of Appendix A, pages 2 through 7, show the evolution from the AutoCAD file provided by the JAA to a stereolithic (*.stl) file format generated by Rhinoceros 7, then to a *.facet file generated by Lucernhammer. The *.facet file format is needed to generate the radar cross-sectional model required as an input into the FAA’s RSS program. Figures 7 and 8, pages 8 and 9, were provided to show how the centroid was calculated. The Lucernhammer m3d_x64.exe application has a subroutine that centers the *.facet model and the centroid coordinates, elevation, and horizontal tilt are needed to place the model inside the RSS program at its 'real world' location and orientation. Figure 9 on page 10 shows the azimuth calculations from the radar center of rotation coordinates to the left and right corners of the building. Figure 10 on page 11 provides the calculation sheet required to set up the files needed for Lucernhammer Radar Cross Section (RCS) analysis.

Figures 11 through 13 on pages 12 through 14 show the product of Lucernhammer's lucern_x64.exe application. The three RCS charts shown here provide the reflectivity or RCS of the different models shown in Figures 4 through 6. The x-axis of the charts is in spherical degree from the centroid of the model outward toward the "illuminator". The y-axis represents RCS units expressed in dB relative to one square meter (dbsm) as the illuminator sweeps the incident angle vertically toward the centroid of the model from 0 to 90 spherical degrees. In other words, each x-axis tick contains 90 spherical degrees of RCS units as the illuminator is panned vertically across the model.

Figure 14 shows that each RCS file (*.rcs) needs a corresponding context file (*.con) created which provides the RSS tool with the variables it needs to properly interpret the RCS files. False target analysis can begin once these files have been generated and properly loaded into the RSS file structure. Figures 15 through 20 show additional setup steps that were performed to set up the RSS program for analysis. Some of the steps were not needed but the slides were kept in the presentation for future training purposes.

Terminal Building Analysis Interpretation:

The analysis starts with Figures 21 through 30 which show the RSS range azimuth false target plots without the Terminal B Expansion Building model. In other words, these figures represent the current false target environment. To explain these diagrams, every reflective surface surrounding the radar site has the potential for generating false targets. These zones appear when a structure meets very specific requirements. Zones are displayed in three different types: red zones represent areas where true aircraft if present could generate the false targets shown in the false target plot, green zones are where the false targets generated by true targets crossing through the red zones might appear, and blue zones are a combination of both types of zones. Charts are further defined by altitude ranges since the false target environment surrounding a radar changes with respect to the altitude of true targets in relation to the reflectors. In short, these figures were provided to show a baseline of the current false target environment prior to including the Terminal B Expansion building.

Figures 31 through 60 show the false target plots with ONLY the Terminal B Expansion Building model being analyzed. One expectation going into this project was that the building design might need to be modified so that the surfaces facing the radar become less reflective or at least reoriented so that the beacon signal is dispersed or absorbed. What was discovered however is that changing the orientation/tilt of the windows did not provide the level of improvement that was expected. For example, comparing Figure 33 (no tilt) with Figure 43 (10° tilt) shows that tilting the windows spreads the area of affect from 10 nautical miles to 25.

Bypass Taxiway “W” Analysis Setup:

Figure 61 on page 64 includes a clip of a drawing that was provided by the JAA showing the Bypass Taxiway “W” coordinates and taxiway surface elevations. The figure was also updated after analysis with the “no loitering zone” that will be used by local JAX air traffic control as a guide after taxiway construction. Figures 62 through 64 show Google Earth representations of the tail surface zones illuminated by the Mode S beacon antenna, one for each aircraft type included in the taxiway’s category classification. Figures 65 through 69 show the set-up process for generating files needed for Lucernhammer RCS analysis. These figures were generated using the Boeing 767 400ER tail only since it represents the worst-case scenario of aircraft that might use this new taxiway.

Bypass Taxiway “W” Analysis Interpretation:

Figures 70 through 111 show the RSS false target plots including the tail section of a 767 400ER as a moving reflective surface along Bypass Taxiway “W”. What these diagrams show is that the tail surfaces provide the potential for false target generation as it moves along the taxiway. However, both the RSS software team and FAA ASR-9 and Mode S system experts raised a concern that the software may not be processing reflectors this close to the radar facility properly and may not be providing a real-world picture of system performance.

A recent case mentioned during those discussions occurred at the Los Angeles International Airport (LAX) LAXS ASR-9/Mode S/WSP system. The LAXS ground elevation is approximately 117 feet MSL and operates with a 37-foot tower placing its focal point at 170.9 feet MSL. When a McDonald Douglas MD-11 aircraft parked about 500 feet from the radar site, false targets were generated from the aircraft tail section on approach from the west of the airport in a region about 20 nautical miles to the east of the airport. The MD-11 tail is only slightly taller than the 767 400ER at 57 feet-9 inches above ground level which places its maximum tail height at 178 feet MSL. The tail of the aircraft in this case is higher in elevation than the focal point of the radar placing the centroid of the tail at basically the same height. Obviously, this case is an extreme one but was mentioned by FAA radar experts as a reason to be cautious when considering aircraft parked or moving so close in front of a radar facility like JAX.

A determination was made because of these discussions to request funds to raise the tower by at least 20 feet at Jacksonville to provide more vertical separation between the antenna focal point and the tail surfaces of aircraft moving along the new taxiway. Figure 112 shows the false target plot using the tail section at station 313 (the closest point to the antenna) and raising the tower height to 57 feet (adding 10 feet to the height). Figure 113 shows the false target plot after adding 20 feet to the tower height. Analysis shows that adding 20 feet to the height eliminates all false target zones from the tail section closest to the radar. Finally, Figure 114 shows the predicted benefit to the false target zones generated by the Terminal Expansion B building. The range of the zones decreases from about 37 nautical miles to about 20 nautical miles by raising the tower.

Attachments:

Appendix A – Terminal Building B Expansion Analysis

Appendix B – Bypass Taxiway “W” Analysis

Appendix A
Terminal B Expansion Building Analysis

Original Model

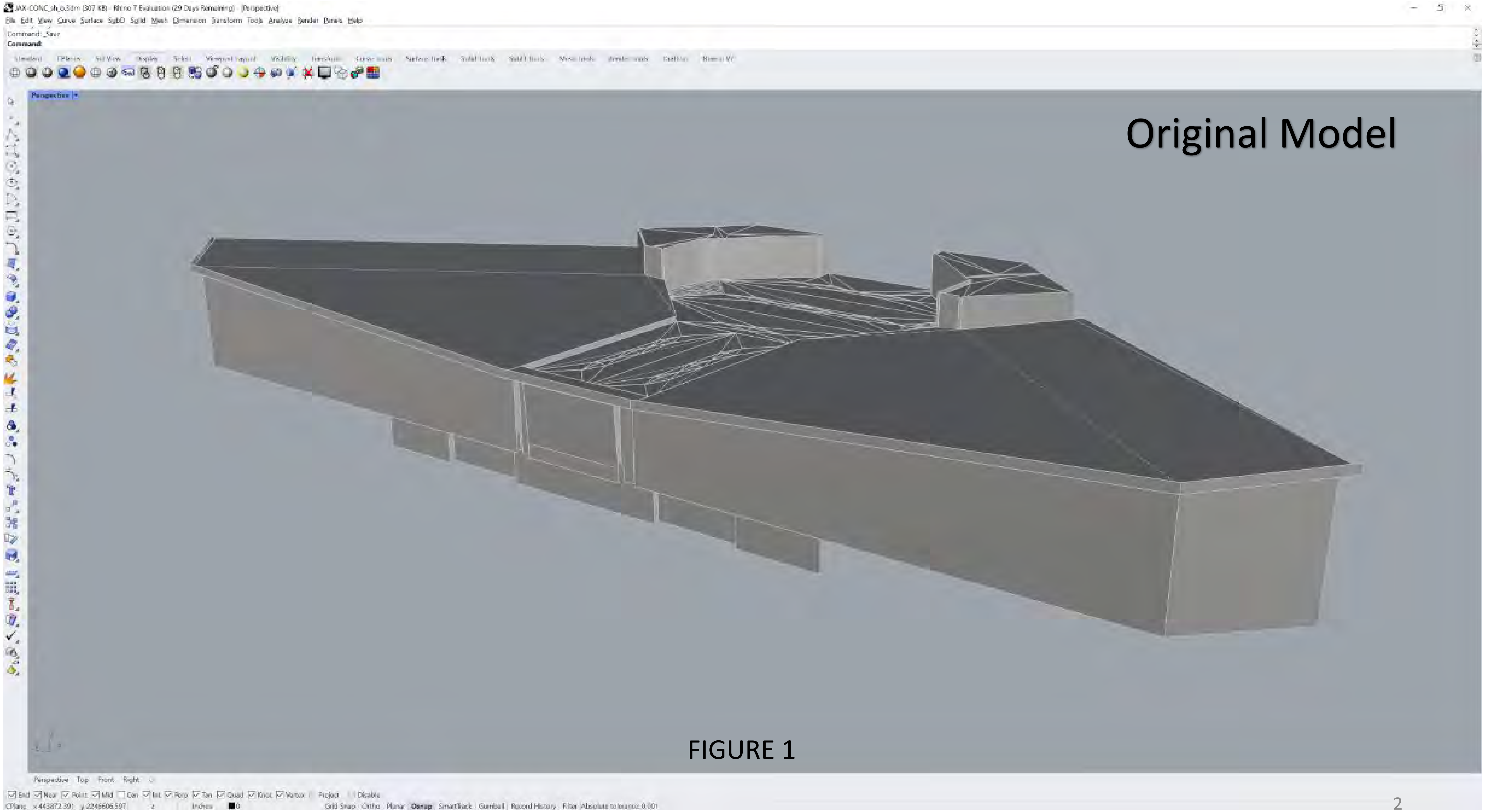


FIGURE 1

All Windows @ 10° Tilt

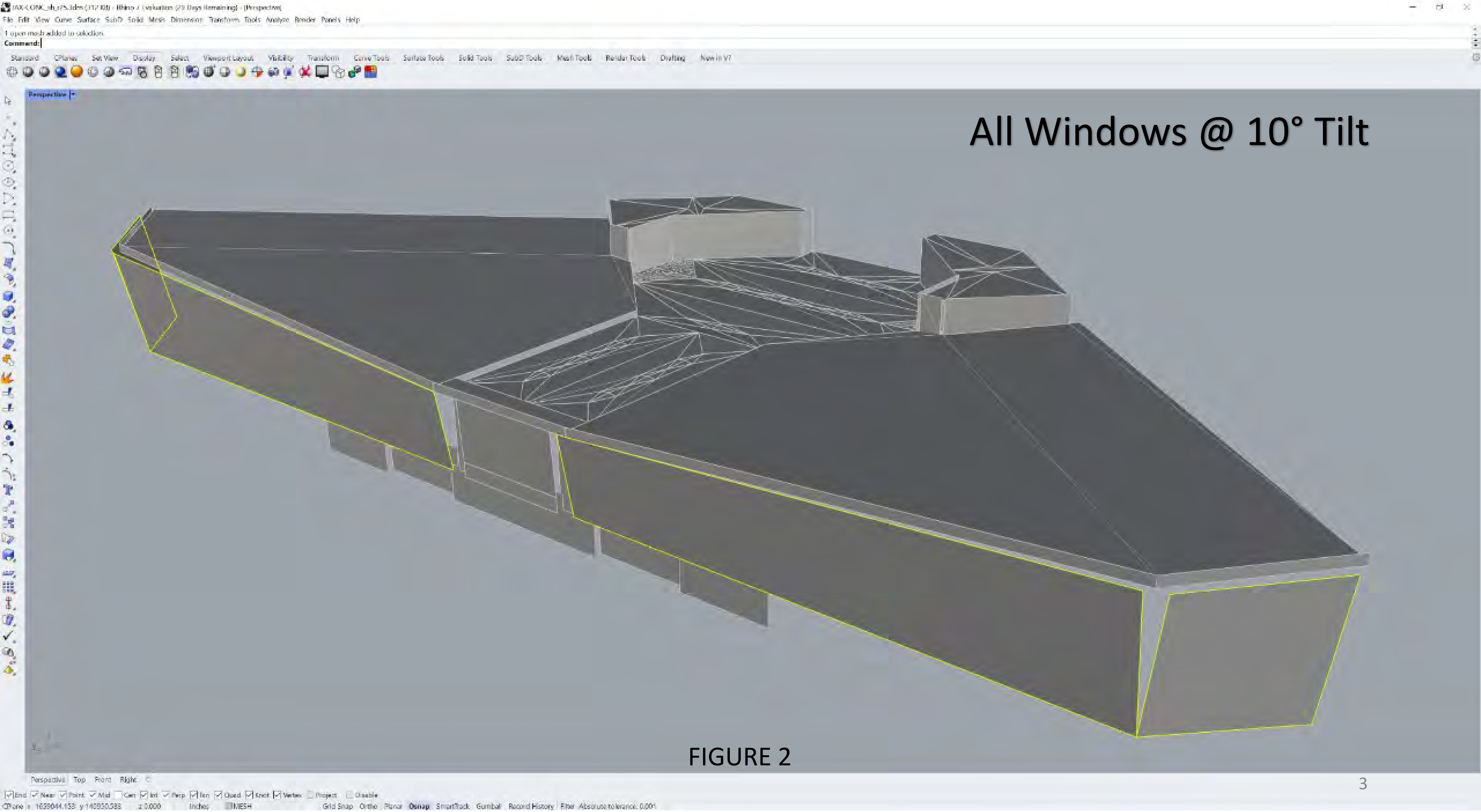


FIGURE 2

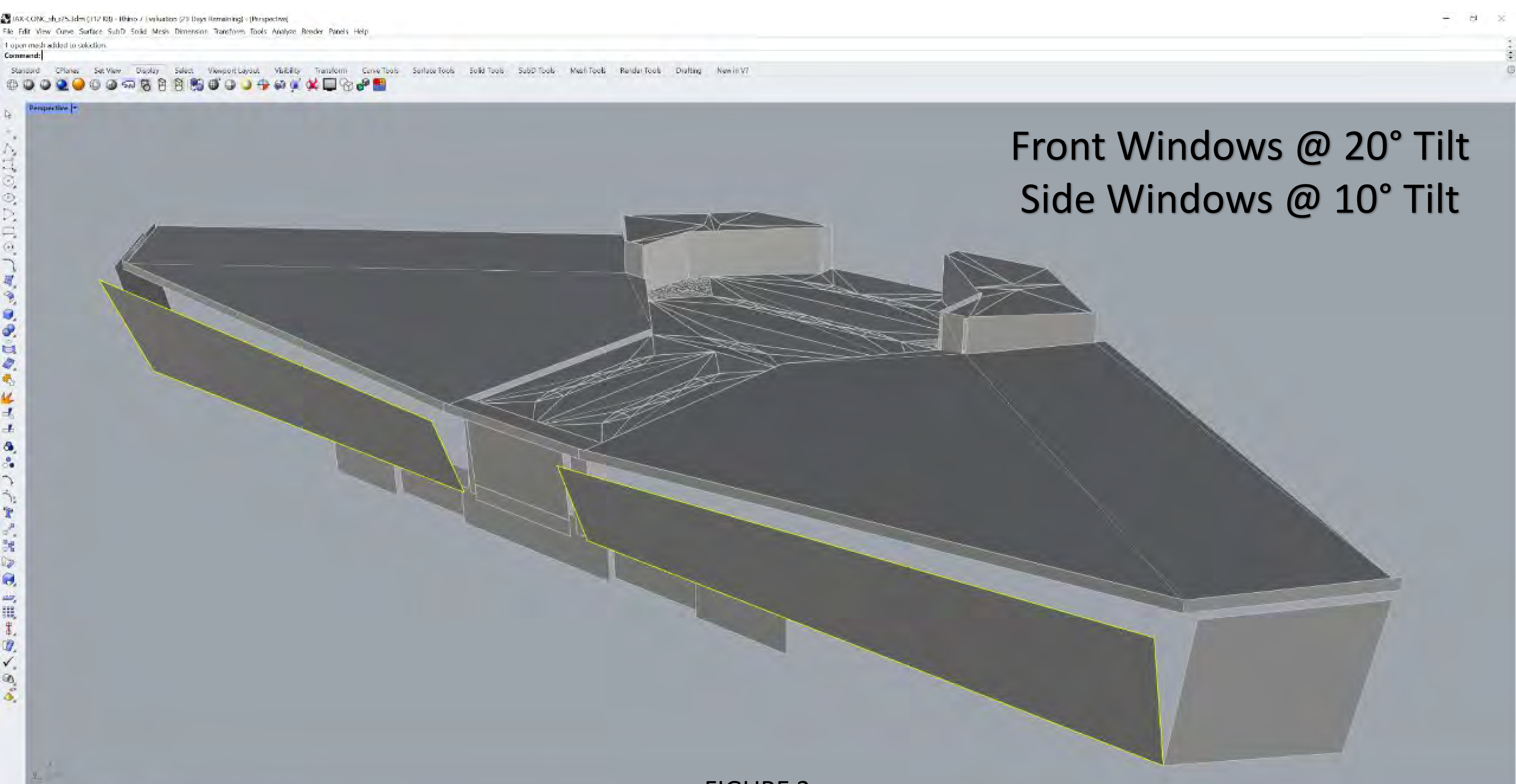


FIGURE 3

Original Model *.facet
(Emerald Viewer)

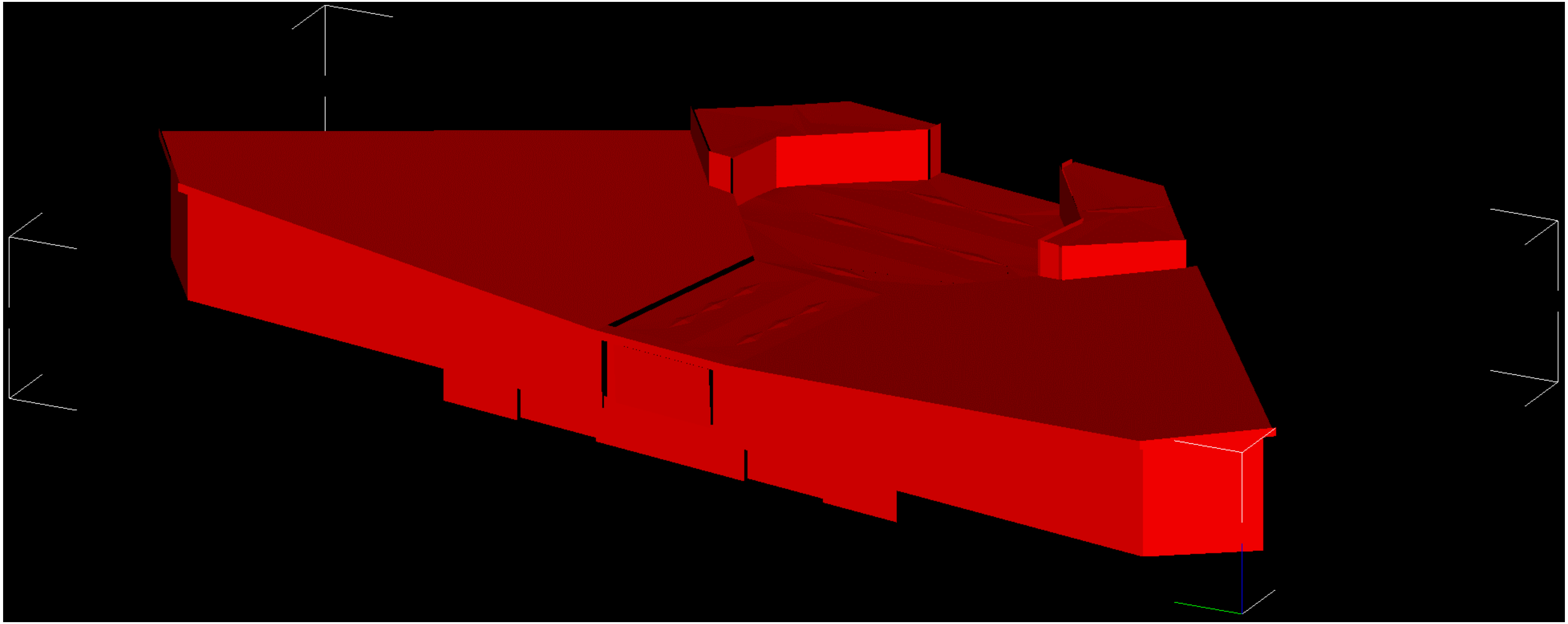


FIGURE 4

10° Tilt Model *.facet (Emerald Viewer)

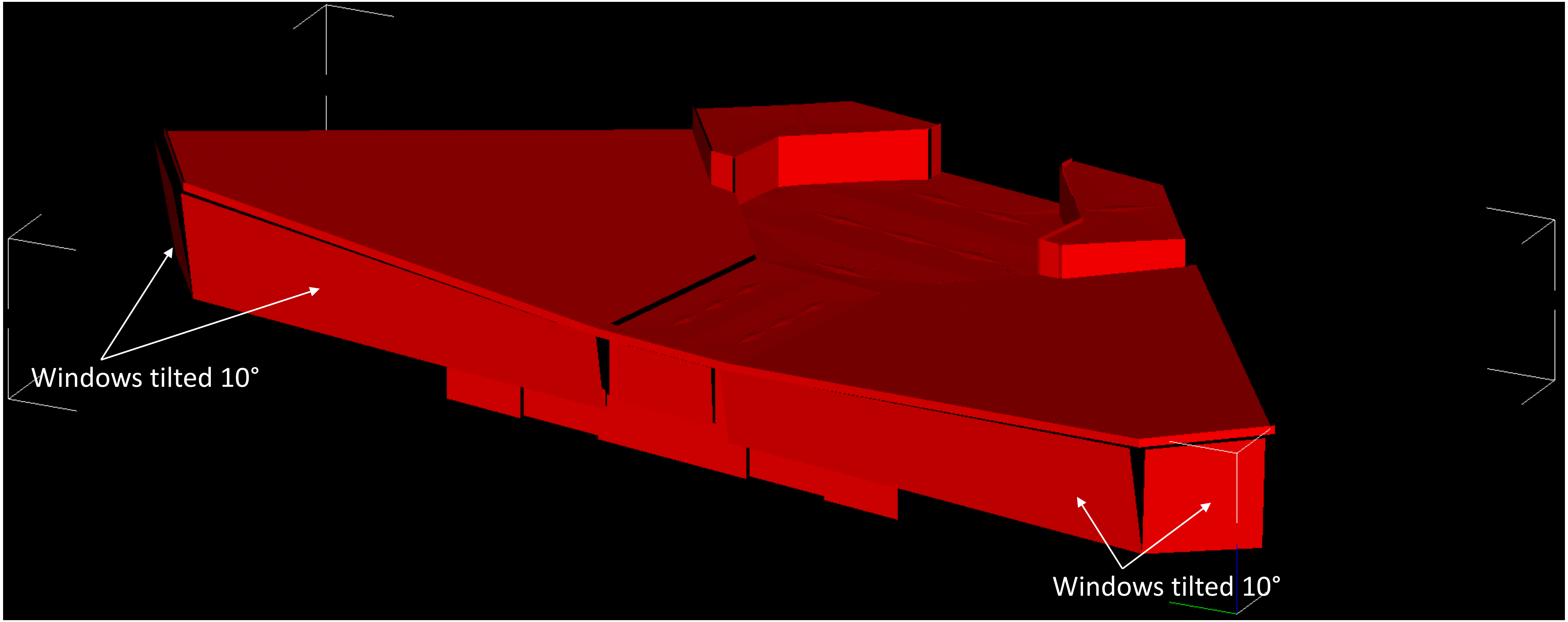


FIGURE 5

20°/10° Model *.facet (Emerald Viewer)

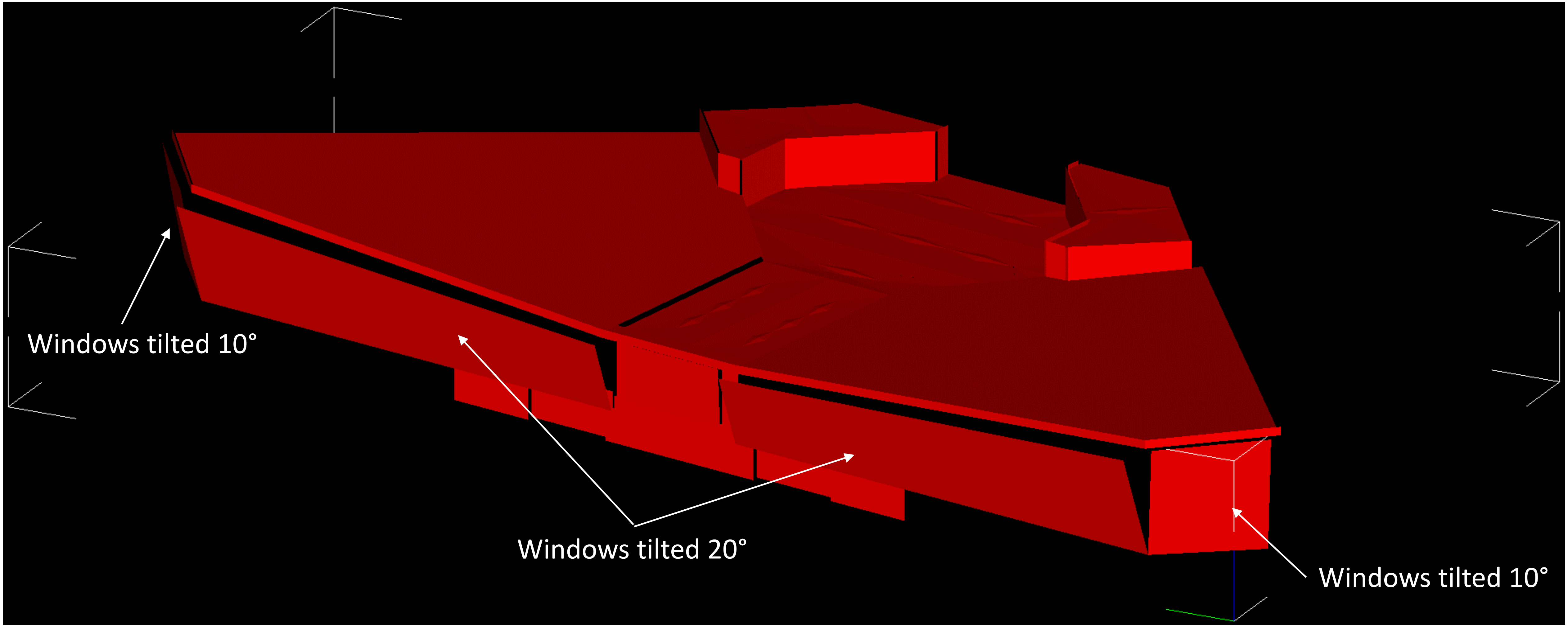
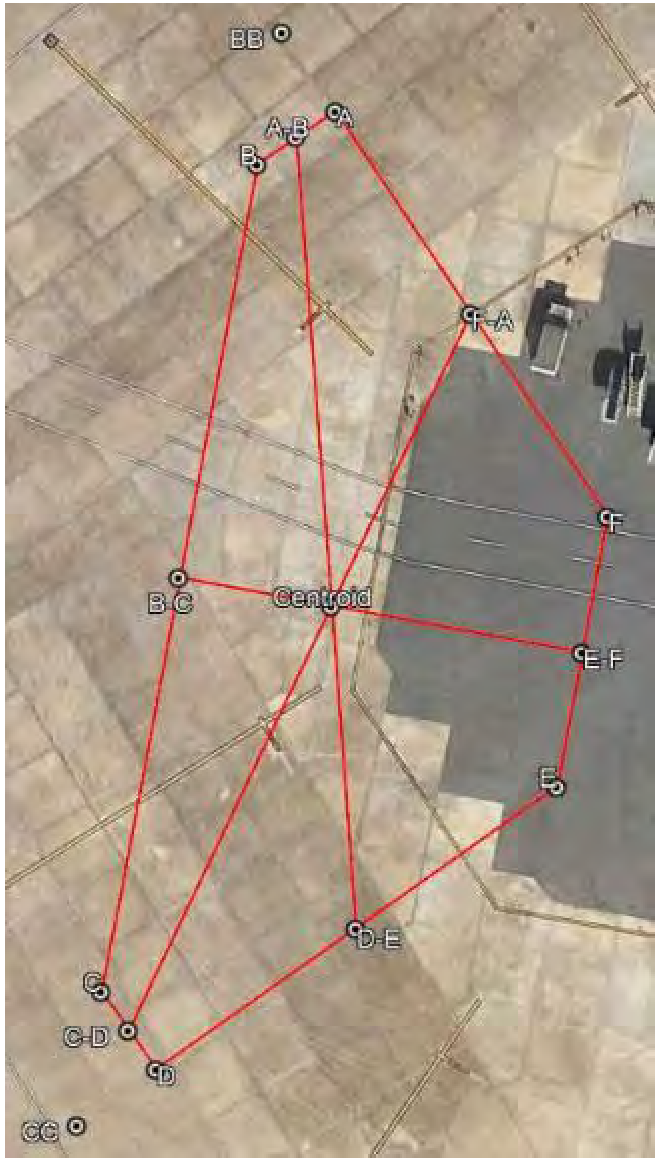


FIGURE 6



DETERMINE DISTANCE BETWEEN POINTS IN METERS (POINTS DERIVED FROM MODEL)

**********Ellipsoid : GRS80 / WGS84 (NAD83)
Equatorial axis, a = 6378137.0000
Polar axis, b = 6356752.3141
Inverse flattening, 1/f = 298.25722210088

First Station : A

\----------------

LAT = 30 29 33.57000 North
LON = 81 41 17.80000 West

Second Station : B

\----------------

LAT = 30 29 33.37000 North
LON = 81 41 18.14000 West

Forward azimuth FAZ = 235 48 49.3198 From North
Back azimuth BAZ = 55 48 49.1473 From North
Ellipsoidal distance S = 10.9612 m

**********Ellipsoid : GRS80 / WGS84 (NAD83)
Equatorial axis, a = 6378137.0000
Polar axis, b = 6356752.3141
Inverse flattening, 1/f = 298.25722210088

First Station : B

\----------------

LAT = 30 29 33.37000 North
LON = 81 41 18.14000 West

Second Station : C

\----------------

LAT = 30 29 30.28000 North
LON = 81 41 18.80000 West

Forward azimuth FAZ = 190 28 47.1965 From North
Back azimuth BAZ = 10 28 46.8616 From North
Ellipsoidal distance S = 96.7697 m

**********Ellipsoid : GRS80 / WGS84 (NAD83)
Equatorial axis, a = 6378137.0000
Polar axis, b = 6356752.3141
Inverse flattening, 1/f = 298.25722210088

First Station : C

\----------------

LAT = 30 29 30.28000 North
LON = 81 41 18.80000 West

Second Station : D

\----------------

LAT = 30 29 29.99000 North
LON = 81 41 18.57000 West

Forward azimuth FAZ = 145 31 1.8187 From North
Back azimuth BAZ = 325 31 1.9354 From North
Ellipsoidal distance S = 10.8340 m

**********Ellipsoid : GRS80 / WGS84 (NAD83)
Equatorial axis, a = 6378137.0000
Polar axis, b = 6356752.3141
Inverse flattening, 1/f = 298.25722210088

First Station : D

\----------------

LAT = 30 29 29.99000 North
LON = 81 41 18.57000 West

Second Station : E

\----------------

LAT = 30 29 31.04000 North
LON = 81 41 16.86000 West

Forward azimuth FAZ = 54 39 42.7087 From North
Back azimuth BAZ = 234 39 43.5763 From North
Ellipsoidal distance S = 55.9033 m

**********Ellipsoid : GRS80 / WGS84 (NAD83)
Equatorial axis, a = 6378137.0000
Polar axis, b = 6356752.3141
Inverse flattening, 1/f = 298.25722210088

First Station : E

\----------------

LAT = 30 29 31.04000 North
LON = 81 41 16.86000 West

Second Station : F

\----------------

LAT = 30 29 32.05000 North
LON = 81 41 16.65000 West

Forward azimuth FAZ = 10 12 26.5912 From North
Back azimuth BAZ = 190 12 26.6978 From North
Ellipsoidal distance S = 31.6028 m

**********Ellipsoid : GRS80 / WGS84 (NAD83)
Equatorial axis, a = 6378137.0000
Polar axis, b = 6356752.3141
Inverse flattening, 1/f = 298.25722210088

First Station : F

\----------------

LAT = 30 29 32.05000 North
LON = 81 41 16.65000 West

Second Station : A

\----------------

LAT = 30 29 33.57000 North
LON = 81 41 17.80000 West

Forward azimuth FAZ = 326 46 1.6389 From North
Back azimuth BAZ = 146 46 1.0554 From North
Ellipsoidal distance S = 55.9602 m

DETERMINE COORDINATES FOR MIDPOINT

Ellipsoid : GRS80 / WGS84 (NAD83)
Equatorial axis, a = 6378137.0000
Polar axis, b = 6356752.3141
Inverse flattening, 1/f = 298.25722210088

First Station : A

\----------------

LAT = 30 29 33.57000 North
LON = 81 41 17.80000 West

Second Station : A-B Center Point

\----------------

LAT = 30 29 33.47000 North
LON = 81 41 17.97000 West

Forward azimuth FAZ = 235 48 49.3198 From North
Back azimuth BAZ = 55 48 49.2335 From North
Ellipsoidal distance S = 5.4806 m

Ellipsoid : GRS80 / WGS84 (NAD83)
Equatorial axis, a = 6378137.0000
Polar axis, b = 6356752.3141
Inverse flattening, 1/f = 298.25722210088

First Station : B

\----------------

LAT = 30 29 33.37000 North
LON = 81 41 18.14000 West

Second Station : B-C Center Point

\----------------

LAT = 30 29 31.82500 North
LON = 81 41 18.47000 West

Forward azimuth FAZ = 190 28 47.1965 From North
Back azimuth BAZ = 10 28 47.0290 From North
Ellipsoidal distance S = 48.3849 m

Ellipsoid : GRS80 / WGS84 (NAD83)
Equatorial axis, a = 6378137.0000
Polar axis, b = 6356752.3141
Inverse flattening, 1/f = 298.25722210088

First Station : C

\----------------

LAT = 30 29 30.28000 North
LON = 81 41 18.80000 West

Second Station : C-D Center Point

\----------------

LAT = 30 29 30.13500 North
LON = 81 41 18.68500 West

Forward azimuth FAZ = 145 31 1.8187 From North
Back azimuth BAZ = 325 31 1.8771 From North
Ellipsoidal distance S = 5.4170 m

Ellipsoid : GRS80 / WGS84 (NAD83)
Equatorial axis, a = 6378137.0000
Polar axis, b = 6356752.3141
Inverse flattening, 1/f = 298.25722210088

First Station : D

\----------------

LAT = 30 29 29.99000 North
LON = 81 41 18.57000 West

Second Station : D-E Center Point

\----------------

LAT = 30 29 30.51500 North
LON = 81 41 17.71500 West

Forward azimuth FAZ = 54 39 42.7087 From North
Back azimuth BAZ = 234 39 43.1425 From North
Ellipsoidal distance S = 27.9517 m

Ellipsoid : GRS80 / WGS84 (NAD83)
Equatorial axis, a = 6378137.0000
Polar axis, b = 6356752.3141
Inverse flattening, 1/f = 298.25722210088

First Station : E

\----------------

LAT = 30 29 31.04000 North
LON = 81 41 16.86000 West

Second Station : E-F Center Point

\----------------

LAT = 30 29 31.54500 North
LON = 81 41 16.75500 West

Forward azimuth FAZ = 10 12 26.5912 From North
Back azimuth BAZ = 190 12 26.6445 From North
Ellipsoidal distance S = 15.8014 m

Ellipsoid : GRS80 / WGS84 (NAD83)
Equatorial axis, a = 6378137.0000
Polar axis, b = 6356752.3141
Inverse flattening, 1/f = 298.25722210088

First Station : F

\----------------

LAT = 30 29 32.05000 North
LON = 81 41 16.65000 West

Second Station : F-A Center Point

\----------------

LAT = 30 29 32.81000 North
LON = 81 41 17.22500 West

Forward azimuth FAZ = 326 46 1.6389 From North
Back azimuth BAZ = 146 46 1.3471 From North
Ellipsoidal distance S = 27.9801 m

FIGURE 7

DETERMINE CENTROID OF TRAPEZOID BY CALCULATION

DETERMINE HEIGHT OF TRAPEZOID IN METERS

Ellipsoid : GRS80 / WGS84 (NAD83)
Equatorial axis, a = 6378137.0000
Polar axis, b = 6356752.3141
Inverse flattening, 1/f = 298.25722210088

First Station : B-C

LAT = 30 29 31.83000 North
LON = 81 41 18.47000 West

Second Station : E-F

LAT = 30 29 31.55000 North
LON = 81 41 16.75000 West

Forward azimuth FAZ = 100 38 45.4889 From North
Back azimuth BAZ = 280 38 46.3616 From North
Ellipsoidal distance S = 46.6732 m

DETERMINE LENGTH OF TRAPEZOID BASE IN METERS

Ellipsoid : GRS80 / WGS84 (NAD83)
Equatorial axis, a = 6378137.0000
Polar axis, b = 6356752.3141
Inverse flattening, 1/f = 298.25722210088

First Station : BB

LAT = 30 29 33.86000 North
LON = 81 41 18.03000 West

Second Station : CC

LAT = 30 29 29.78000 North
LON = 81 41 18.90000 West

Forward azimuth FAZ = 190 27 45.5971 From North
Back azimuth BAZ = 10 27 45.1557 From North
Ellipsoidal distance S = 127.7665 m

Centroid of Trapazoid Calcs

y' = Centroid Height in meters from Base (BB-CC) to Top (E-F)
a = Length of Top in meters (E-F) = 31.6028 m
b = Length of Base in meters (BB-CC) = 127.7665 m
h = Height of Trapezoid in meters (B-C--E-F) = 46.6732 m

y' = h (b + 2a) / 3 * (b + a)
= 46.6732 (127.7665 + 2 (31.6028)) / 3 * (127.7665 + 31.6028)
= 8913.279 / 478.1079
= 18.6428 m

Ellipsoid : GRS80 / WGS84 (NAD83)
Equatorial axis, a = 6378137.0000
Polar axis, b = 6356752.3141
Inverse flattening, 1/f = 298.25722210088

First Station : BC

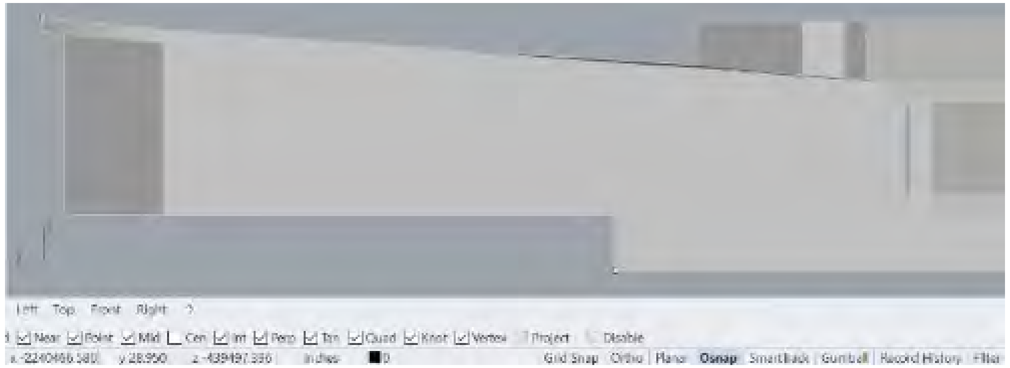
LAT = 30 29 31.83000 North
LON = 81 41 18.47000 West

Second Station : CENT_CALC

LAT = 30 29 31.71816 North
LON = 81 41 17.78298 West

Forward azimuth FAZ = 100 38 45.4889 From North
Back azimuth BAZ = 280 38 45.8375 From North
Ellipsoidal distance S = 18.6428 m

NOTE: CENTROID BY MIDPOINT LINE CROSSING IS IDENTIFIED BY 'CENTROID' WHEREAS CENTROID BY TRAPEZOID CALCULATIONS IDENTIFIED BY 'CENT-CALC'. DIFFERENCE BETWEEN TWO POINTS IS 3.34 FT. DETERMINED TO USE MIDPOINT LINE CROSSING AS CENTROID. RIGHT CHOICE?



DETERMINE HEIGHT OF CENTROID

Per drawing, terminal measures 549.243 inches from its base to its highest point (578.193"-28.95")

This equates to 45.77025 Feet
This also equates to 13.9508 meters
Ground elevation at Centroid per 2019 LIDAR is 28.83 Feet MSL

THEREFORE,
Height Centroid MSL of the Terminal Building is 28.83 + 1/2*45.77025 = 51.715 Feet MSL

FIGURE 8

DETERMINE AZIMUTH BEACON ANTENNA CL TO LEFT CORNER OF TERMINAL

Ellipsoid : GRS80 / WGS84 (NAD83)
Equatorial axis, a = 6378137.0000
Polar axis, b = 6356752.3141
Inverse flattening, 1/f = 298.25722210088

First Station : CL Ant Rot, Point R

LAT = 30 29 35.97330 North
LON = 81 41 33.61022 West

Second Station : A

LAT = 30 29 33.57000 North
LON = 81 41 17.80000 West

Forward azimuth FAZ = 99 57 16.4693 From North (99.954°T)
Back azimuth BAZ = 279 57 24.4919 From North
Ellipsoidal distance S = 428.0775 m

DETERMINE AZIMUTH BEACON ANTENNA CL TO RIGHT CORNER OF TERMINAL

Ellipsoid : GRS80 / WGS84 (NAD83)
Equatorial axis, a = 6378137.0000
Polar axis, b = 6356752.3141
Inverse flattening, 1/f = 298.25722210088

First Station : CL Ant Rot, Point R

LAT = 30 29 35.97330 North
LON = 81 41 33.61022 West

Second Station : D

LAT = 30 29 29.99000 North
LON = 81 41 18.57000 West

Forward azimuth FAZ = 114 40 18.0491 From North (114.671°T)
Back azimuth BAZ = 294 40 25.6809 From North
Ellipsoidal distance S = 441.3952 m

FIGURE 9

DETERMINE RANGE & AZIMUTH FROM BEACON ANTENNA CENTER OF ROTATION TO CENTROID

Ellipsoid : GRS80 / WGS84 (NAD83)
Equatorial axis, a = 6378137.0000
Polar axis, b = 6356752.3141
Inverse flattening, 1/f = 298.25722210088

First Station : Centroid

LAT = 30 29 31.72000 North
LON = 81 41 17.82000 West

Second Station : CL ANT ROT, POINT R

LAT = 30 29 35.97330 North
LON = 81 41 33.61022 West

Forward azimuth **FAZ = 287 16 44.1483 From North (287.27893°T)**
Back azimuth BAZ = 107 16 36.1359 From North
Ellipsoidal distance S = 440.9988 m (1446.843563 US feet)

```
*JAX-CONC_sh_o.con - Notepad
File  Edit  Format  View  Help
0             #0 = no bistatic data, 1 = bistatic data
30.49332592   #radar latitude
-81.69266951  #radar longitude
28.1195       #antenna height (MSL m)
30.49214444   #building latitude
-81.68828333  #building longitude
15.762        #building center height (MSL m)
22.74         #building maximum height (MSL m)
0.36          #start elevation below vertical
90.0          #stop elevation below vertical
0.36          #elevation increment below vertical
0.0           #start azimuth CCW from E
359.28        #stop azimuth CCW from E
0.72          #azimuth increment CCW from E
335.329       #azimuth start of building CCW from E
350.046       #azimuth end of building CCW from E
Ln 10, Col 49    100%    Unix (LF)    UTF-8
```

***.lh file edits**

\#   Uniformly spaced angle specification. Note: All angles should be in degrees.
\#
\# --- Incident elevation/theta : start end step

88.39482134	90	0	Note: 90 was added as end but not used since step is 0

\# --- Incident azimuth/phi : start end step

162.72107	180	0	Note: 180 was added as end but not used since step is 0

Beacon Antenna Coordinates (NAD83)	30°29'35.97330"N	81°41'33.61022"W	30.49332592	-81.69266951	
Centroid Coordinates (NAD83)	30°29'31.72"N	81°41'17.82"W	30.49214444	-81.68828333	
Beacon Antenna Focal Point (Feet MSL)	E20 → 92.26		28.11947577	(meters)	
(From Precision Survey; CL Antenna Rotation, Point R)					
Ground Elevation at Centroid (Feet MSL)	28.83	From 2019 Lidar Data			
Max. Height of Structure (Feet)	45.77025	/ 0.5 =	22.885125	13.95009144	(meters)
Max. Elevation of Structure (Feet MSL)	74.60025		22.73704663	(meters)	
Centroid Elevation (Feet MSL)	E25 → 51.715125		15.76200091	(meters)	
Calculated Range Ant. to Centroid in Feet	E26 → 1446.843563				
Calculated Elev Angle Centroid to Ant. FP	1.605178664	=DEGREES(ATAN((E20-E25)/E26))			
Spherical of Above	88.39482134				
Calculated Azimuth Ant. to Centroid in °T	287.27893				
Spherical of Above	162.72107				
L Corner of Hanger (CW)	99.954				
Spherical of Above	350.046				
R Corner of Building (CW)	114.671				
Spherical of Above	335.329				

RSS Context File Information (*.con)

0	#0 = no bistatic data, 1 = bistatic data
30.49332592	#radar latitude
-81.69266951	#radar longitude
28.12	#antenna height (MSL m)
30.49214444	#building latitude
-81.68828333	#building longitude
15.76	#building center height (MSL m)
22.74	#building maximum height (MSL m)
0.36	#start elevation below vertical
90	#stop elevation below vertical
0.36	#elevation increment below vertical
0	#start azimuth CCW from E
359.28	#stop azimuth CCW from E
0.72	#azimuth increment CCW from E
335.329	#azimuth start of building CCW from E
350.046	#azimuth end of building CCW from E

FIGURE 10

Original Model *.facet (Lucernhammer RCS)

JAX-CONC_sh_o.lh - Notepad

File Edit Format View Help

```
#
# --- Incident elevation/theta : start end step
88.39482134     90.00       0
# --- Incident azimuth/phi : start end step
162.72107        180.00      0
# --- Observation elevation/theta : start end step (disregarded if monostatic)
0.36        90       249
# --- Observation azimuth/phi : start end step (disregarded if monostatic)
0        359.28       499
```

Ln 1, Col 1 | 100% | Windows (CRLF) | UTF-8

Command Prompt

```
C:\Lucernhammer\dlls>lucern_x64.exe JAX-CONC_sh_o.lh -threads 7 -rcsfile -rcshead

lucernhammer MT v. 2.00 (Win/x64), high frequency RCS analysis
(c) 1998-2014 Tripoint Industries, Inc., All Rights Reserved.

--> reading input file (JAX-CONC_sh_o.lh) ...
--> reading ACAD facet file (JAX-CONC_sh_o.facet) ...

             --- Facet File Summary ---

 File    Big Parts    Nodes    Good Facets    Bad Facets   Units
---------------------------------------------------------------
   1         1         537         572           0      Inches

--> combining coincident nodes in facet geometry (1) ...
--> building edge geometry from facet geometry (1) ...
--> found (314) edges, (0) interior edges, (314) knife edges.
--> adding facet geometry (1) to Embree ray tracing scene ...

    --- Electromagnetics Summary  ---

       Method      Active      To Disk
       ------      ------      -------
        PO          yes           no
        PTD         yes           no
        SBR         no
        ILDC        no

--> setting up (7) work threads ...
--> Bistatic PO contribution using ray tracer ...
--> Bistatic PTD contribution using ray tracer ...
--> calculation complete.
--> writing ASCII RCS file (JAX-CONC_sh_o.rcs) ...
--> writing ASCII field file (JAX-CONC_sh_o.field) ...
```

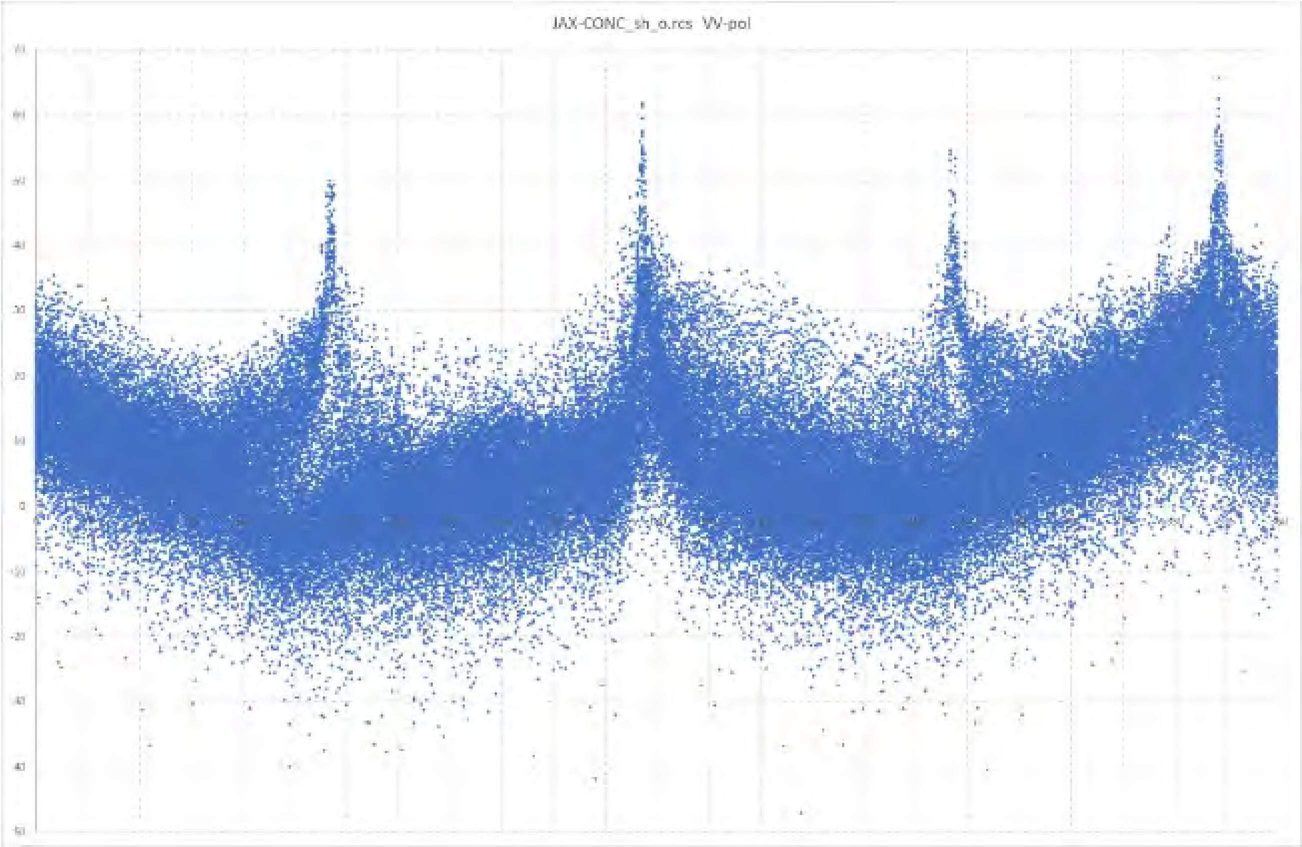


FIGURE 11

10° Tilt Model *.facet (Lucernhammer RCS)

JAX-CONC_sh_r10.lh - Notepad

File Edit Format View Help

```
#
# --- Incident elevation/theta : start end step
88.39482134     90.00     0
# --- Incident azimuth/phi : start end step
162.72107       180.00     0
# --- Observation elevation/theta : start end step (disregarded if monostatic)
0.36        90       249
# --- Observation azimuth/phi : start end step (disregarded if monostatic)
0        359.28       499
```

Ln 1, Col 1 | 100% | Windows (CRLF) | UTF-8

Command Prompt

```
C:\Lucernhammer\dlls>lucern_x64.exe JAX-CONC_sh_r10.lh -threads 7 -rcsfile -rcshead

lucernhammer MT v. 2.00 (Win/x64), high frequency RCS analysis
(c) 1998-2014 Tripoint Industries, Inc., All Rights Reserved.

--> reading input file (JAX-CONC_sh_r10.lh) ...
--> reading ACAD facet file (JAX-CONC_sh_r10.facet) ...

             --- Facet File Summary ---

 File    Big Parts    Nodes    Good Facets    Bad Facets  Units
---------------------------------------------------------------
   1          1         541         572            0      Inches

--> combining coincident nodes in facet geometry (1) ...
--> building edge geometry from facet geometry (1) ...
--> found (318) edges, (0) interior edges, (318) knife edges.
--> adding facet geometry (1) to Embree ray tracing scene ...

    --- Electromagnetics Summary  ---

       Method      Active     To Disk
       ------      ------     -------
        PO          yes          no
        PTD         yes          no
        SBR         no
        ILDC        no

--> setting up (7) work threads ...
--> Bistatic PO contribution using ray tracer ...
--> Bistatic PTD contribution using ray tracer ...
--> calculation complete.
--> writing ASCII RCS file (JAX-CONC_sh_r10.rcs) ...
--> writing ASCII field file (JAX-CONC_sh_r10.field) ...
```

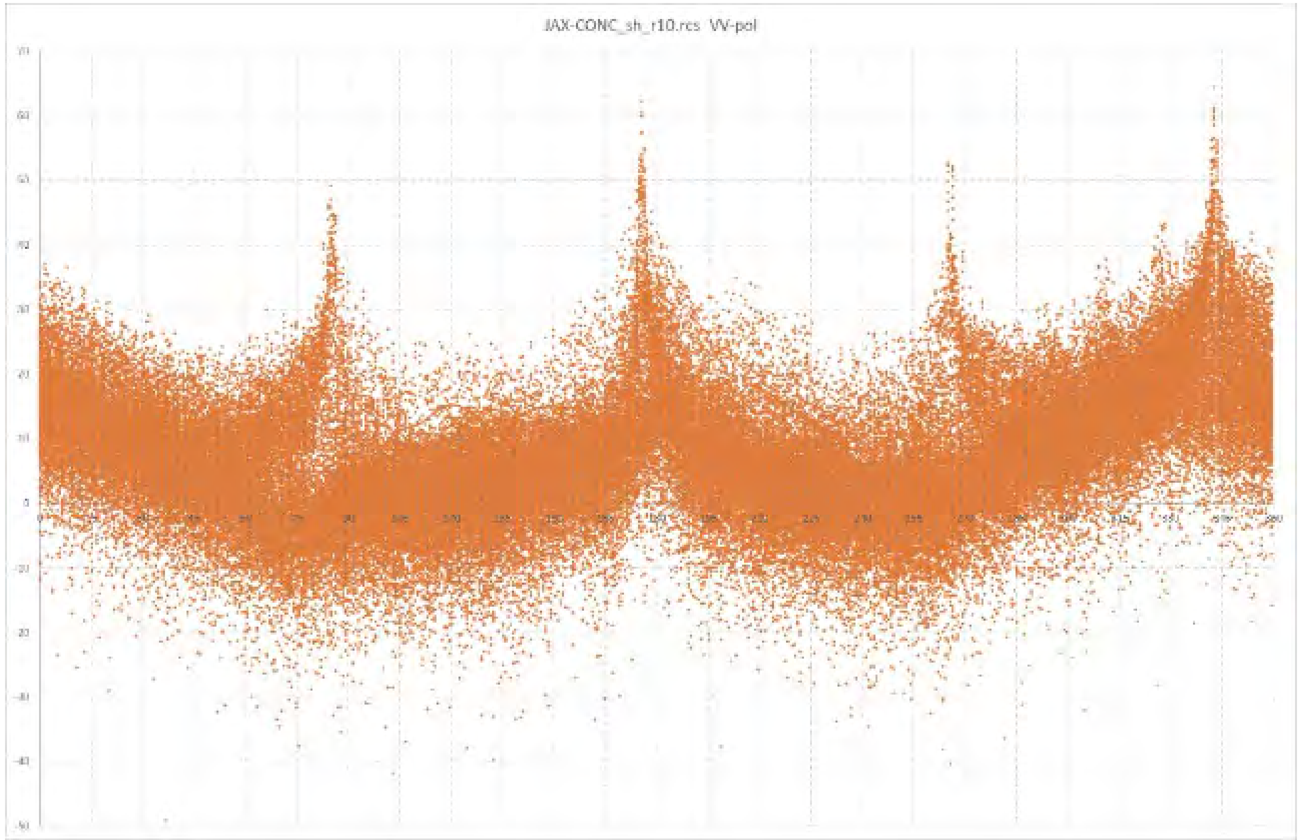


FIGURE 12

20°/10° Model *.facet (Lucernhammer RCS)

```
*JAX-CONC_sh_r20.lh - Notepad
File  Edit  Format  View  Help
#
# --- Incident elevation/theta : start end step
88.39482134     90.00       0
# --- Incident azimuth/phi : start end step
162.72107        180.00      0
# --- Observation elevation/theta : start end step (disregarded if monostatic)
0.36        90       249
# --- Observation azimuth/phi : start end step (disregarded if monostatic)
0        359.28       499
Ln 84, Col 1    100%    Windows (CRLF)    UTF-8
```

```
Command Prompt

C:\Lucernhammer\dlls>lucern_x64.exe JAX-CONC_sh_r20.lh -threads 7 -rcsfile -rcshead

lucernhammer MT v. 2.00 (Win/x64), high frequency RCS analysis
(c) 1998-2014 Tripoint Industries, Inc., All Rights Reserved.

--> reading input file (JAX-CONC_sh_r20.lh) ...
--> reading ACAD facet file (JAX-CONC_sh_r20.facet) ...

             --- Facet File Summary ---

 File   Big Parts    Nodes    Good Facets   Bad Facets  Units
---------------------------------------------------------------
   1         1         541         572           0      Inches

--> combining coincident nodes in facet geometry (1) ...
--> building edge geometry from facet geometry (1) ...
--> found (318) edges, (0) interior edges, (318) knife edges.
--> adding facet geometry (1) to Embree ray tracing scene ...

    --- Electromagnetics Summary  ---

       Method     Active     To Disk
       ------     ------     -------
        PO         yes         no
        PTD        yes         no
        SBR        no
        ILDC       no

--> setting up (7) work threads ...
--> Bistatic PO contribution using ray tracer ...
--> Bistatic PTD contribution using ray tracer ...
--> calculation complete.
--> writing ASCII RCS file (JAX-CONC_sh_r20.rcs) ...
--> writing ASCII field file (JAX-CONC_sh_r20.field) ...
```

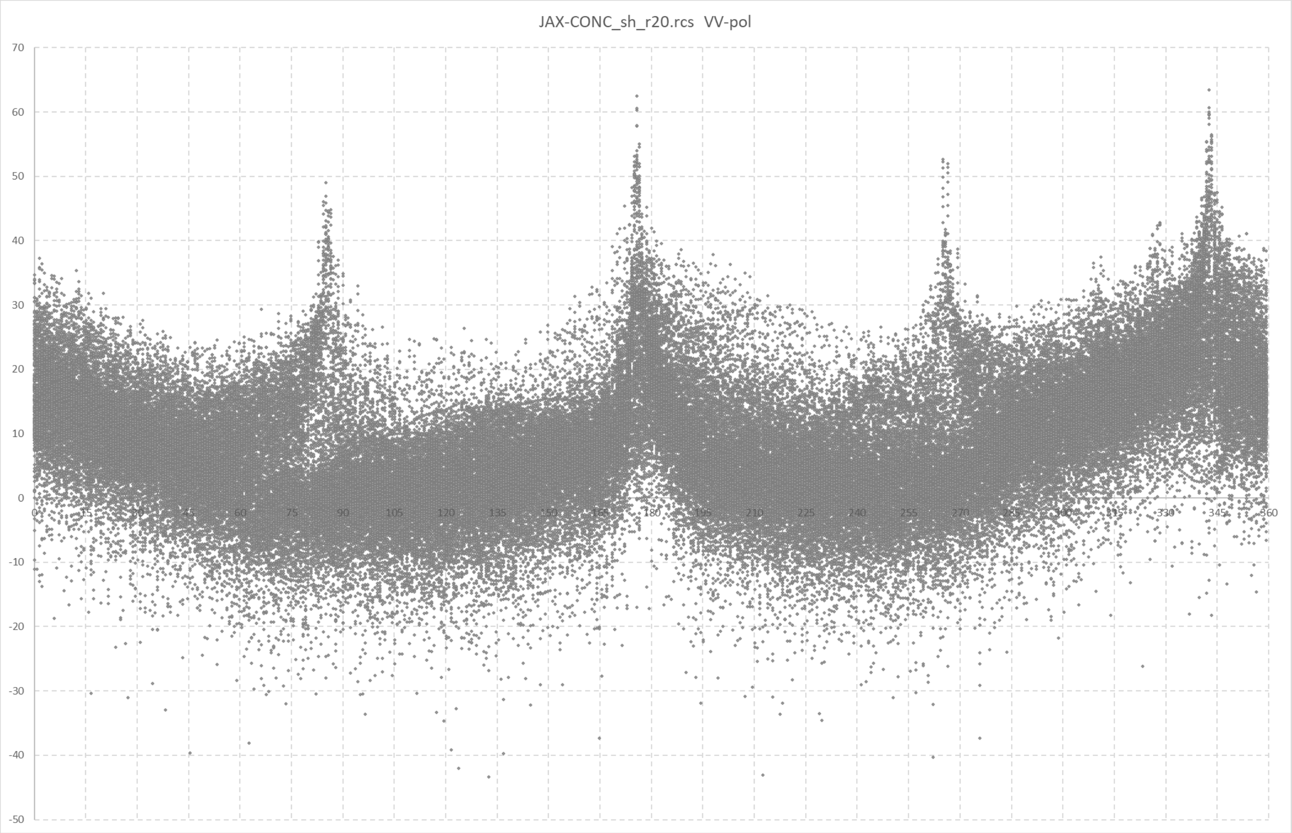
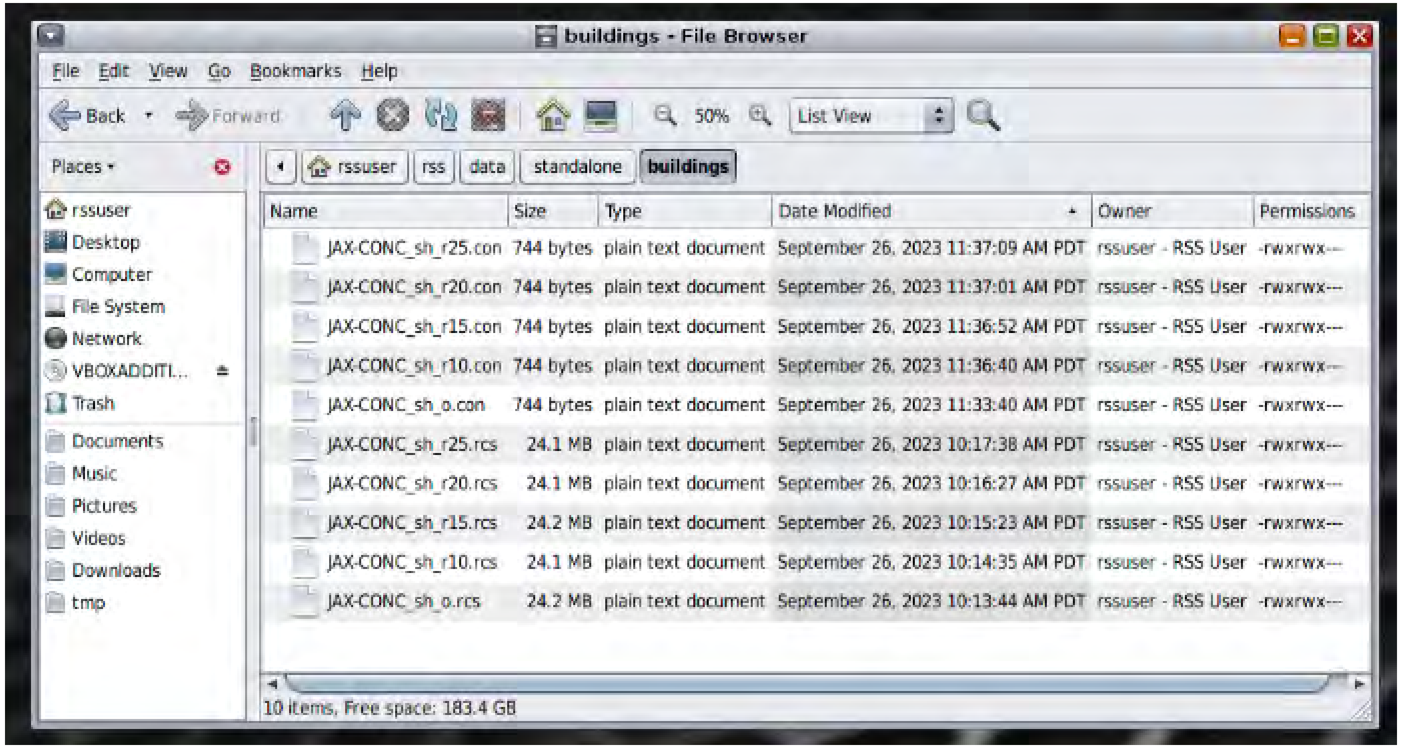


FIGURE 13

RSS BSAT Analysis – Initialization:
Save the *.field files as *.rcs files and Create *.con files



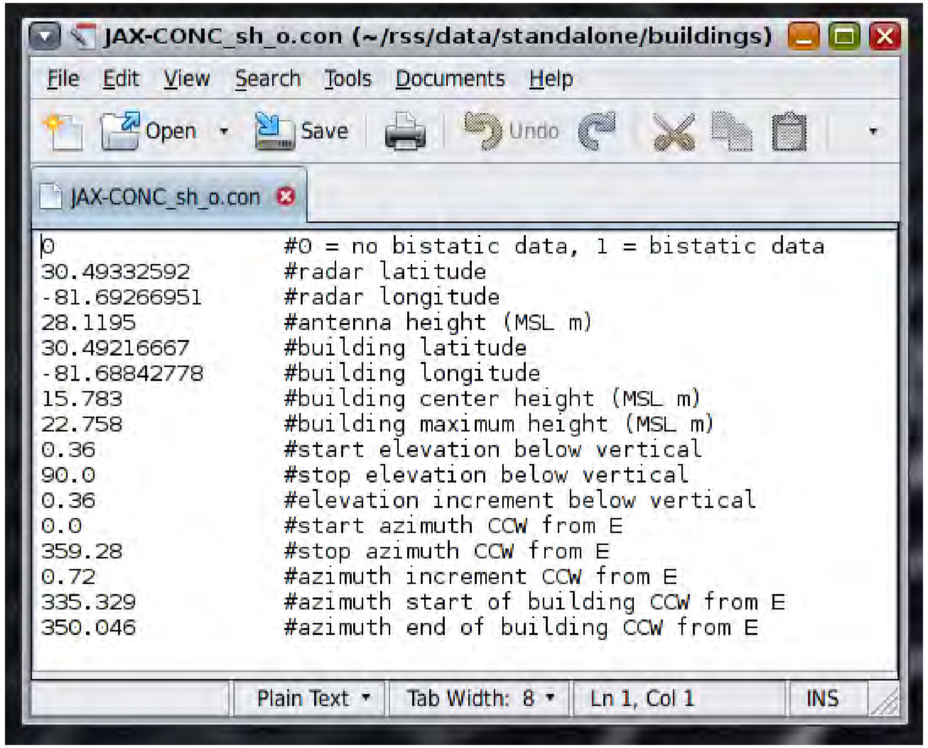


FIGURE 14

RSS BSAT Analysis – Initialization: Edit the Cultural Database (if Needed)

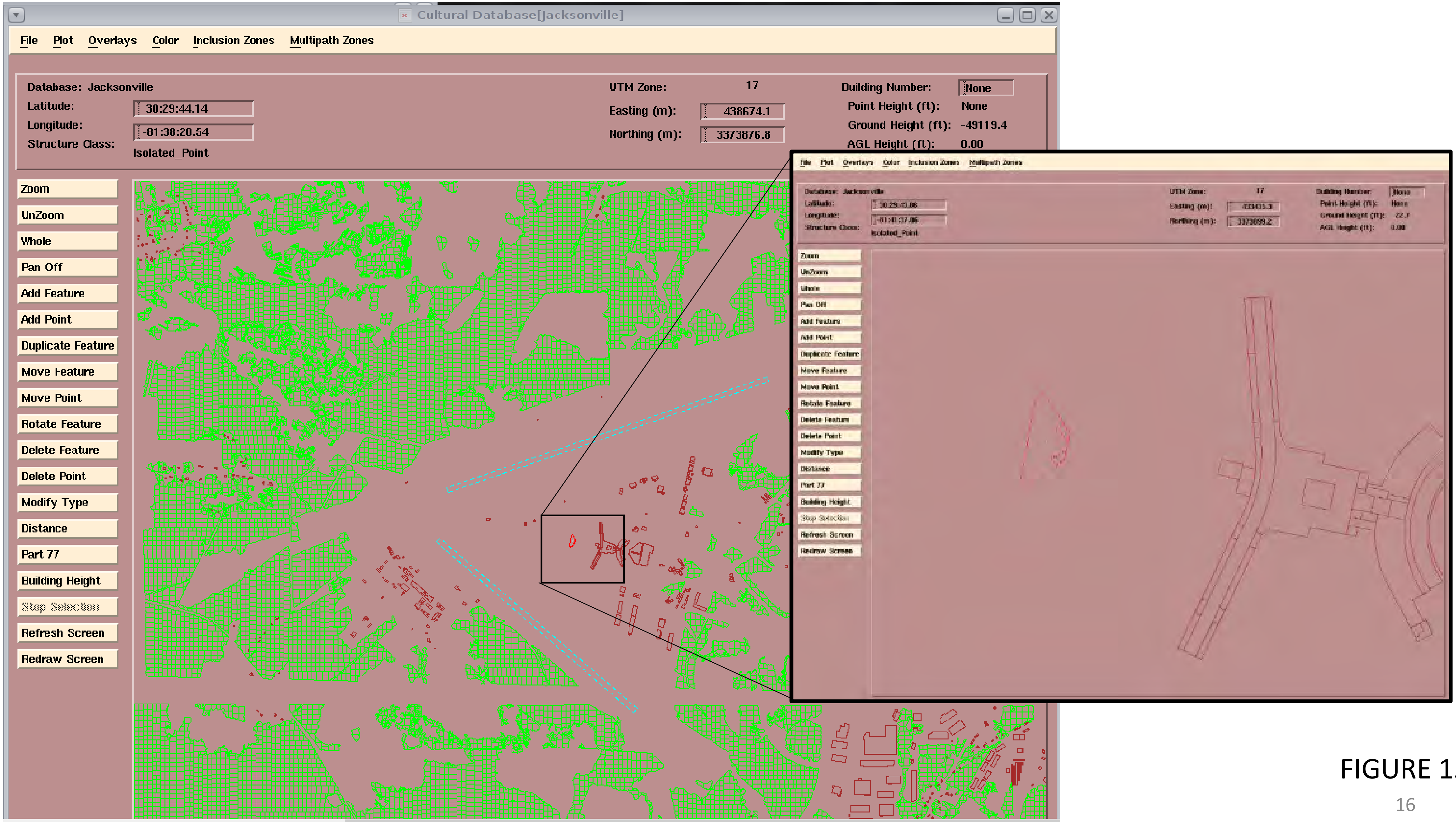
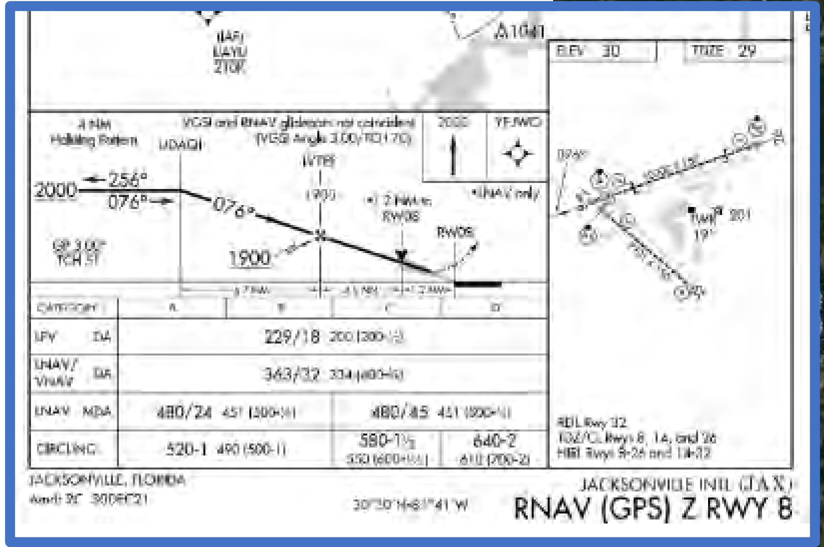


FIGURE 15

RSS BSAT Analysis – Initialization: Generate Point Fix File, Approaches



Source: AIRNAV.COM

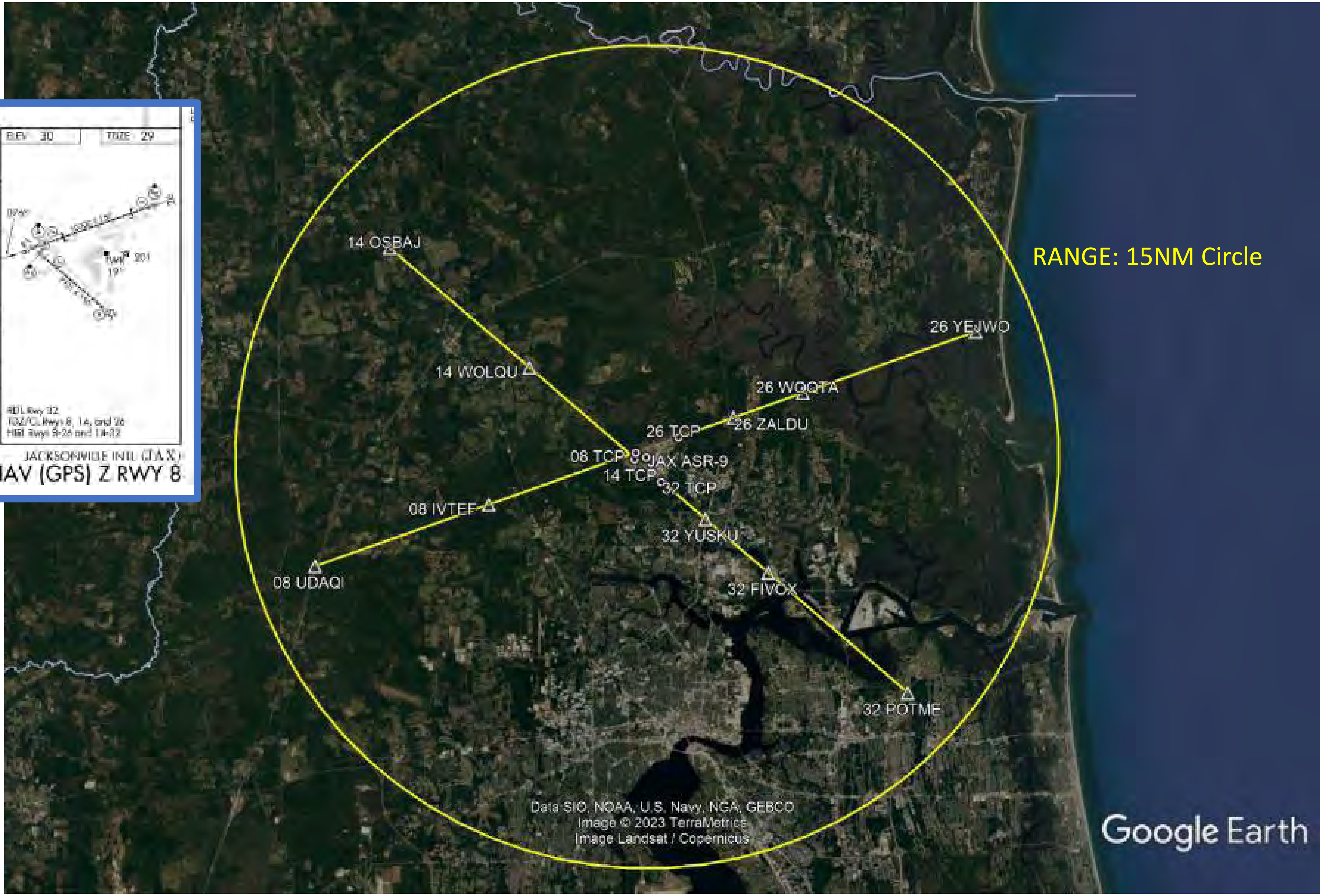
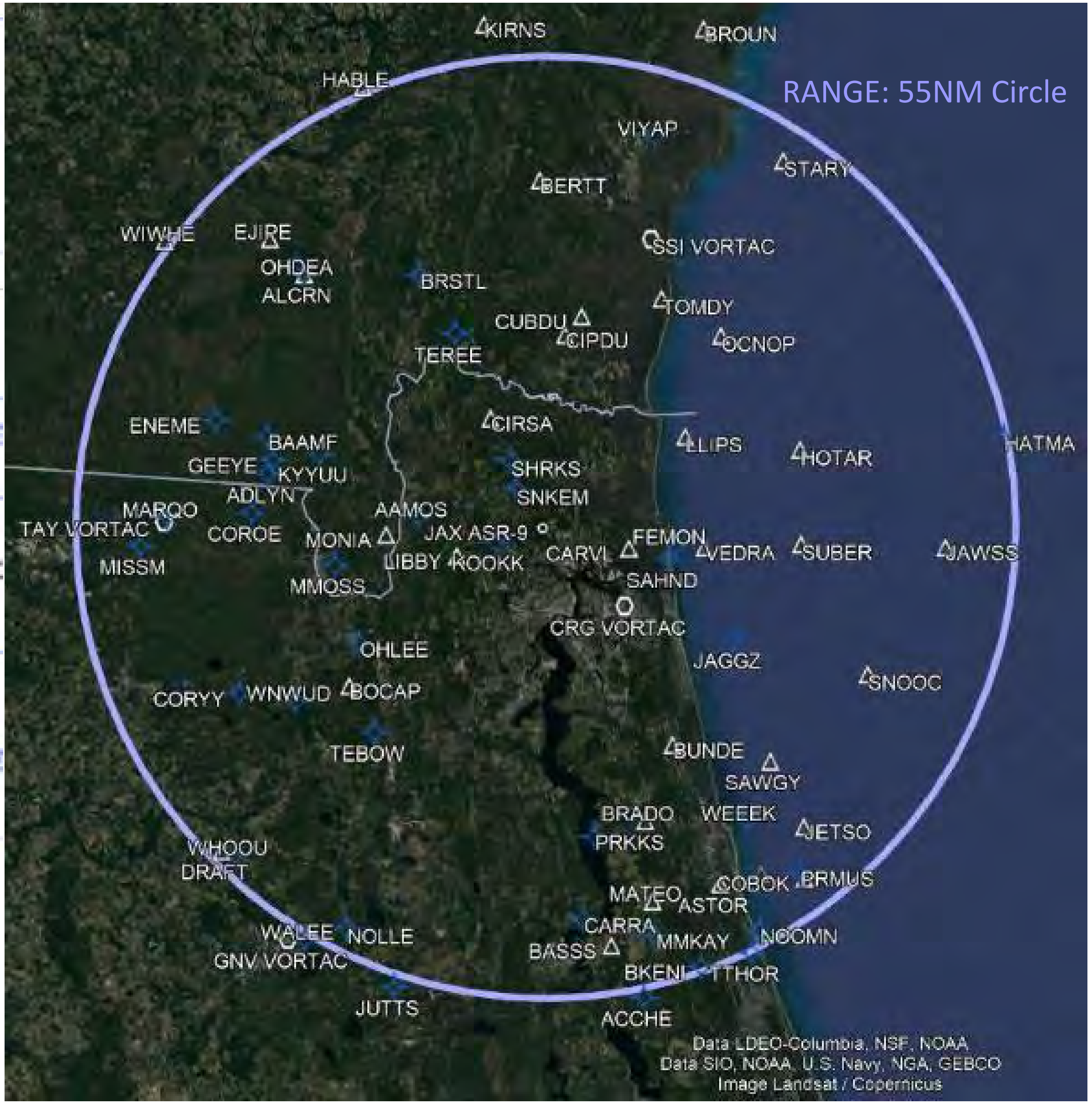


FIGURE 16

NOTE: Important information, but not used in the end. Stephen Hawk provided me STARS maps downloaded from Falcon which provided better visualization. Keeping this information for training purposes.

RSS BSAT Analysis – Initialization: Gather Fixes/Waypoints for Airspace



NOTE: Important information, but not used in the end. Stephen Hawk provided me STARS maps downloaded from Falcon which provided better visualization. Keeping this information for training purposes.

FIGURE 17

RSS BSAT Analysis – Initialization: Generate Point Fix File for RSS

Jacksonville_JAX_Waypoints.fix (~/rss/data/stan

File Edit View Search Tools Documents Help

Open Save Undo

Jacksonville_JAX_Waypoints.fix

08_UDAQI	0	2000	30	25	36.40	-81	55	33.99
08_IVTEF	0	1900	30	27	51.76	-81	48	13.87
08_TCH	0	80	30	29	46.38	-81	41	59.87
26_YEJWO	0	2000	30	34	8.30	-81	27	40.43
26_WOQTA	0	1600	30	31	55.09	-81	34	58.35
26_ZALDU	0	740	30	31	1.35	-81	37	54.54
26_TCH	0	76	30	30	19.34	-81	40	12.10
14_OSBAJ	0	2000	30	37	11.93	-81	52	25.85
14_WOLQU	0	1700	30	32	50.42	-81	46	31.54
14_TCH	0	81	30	29	31.78	-81	42	3.01
32_POTME	0	2100	30	21	0.33	-81	30	33.97
32_FIVOX	0	1700	30	25	22.57	-81	36	26.85
32_YUSKU	0	740	30	27	20.14	-81	39	5.35
32_TCH	0	74	30	28	42.24	-81	40	56.13
SSI_VORTC	0	2000	31	3	1.85	-81	26	45.47
TAY_VORTC	0	2000	30	30	16.70	-82	33	10.45
CRG_VORTC	0	2000	30	20	19.96	-81	30	35.74
GNV_VORTC	0	2000	29	41	31.61	-81	16	22.70
SSI	0	269	31	9	7.08	-81	23	27.81
BQK	0	276	31	15	32.53	-81	27	58.74
4J1	0	335	31	12	21.90	-81	54	21.60
09J	0	261	31	4	28.10	-81	25	40.00
FHB	0	266	30	36	42.60	-81	27	40.30
NRB	0	265	30	23	28.95	-81	25	28.28
CRG	0	291	30	20	10.80	-81	30	52.00
HEG	0	336	30	16	40.03	-81	48	21.40
VQQ	0	330	30	13	7.60	-81	52	37.80
SGJ	0	260	29	57	33.30	-81	20	23.03
NIP	0	273	30	14	1.34	-81	40	33.81
NEN	0	347	30	20	58.18	-81	52	1.16
28J	0	298	29	39	30.18	-81	41	22.21
42J	0	446	29	50	41.10	-82	2	51.10
LCQ	0	451	30	10	55.40	-82	34	36.70
AAMOS	0	2000	30	30	53.90	-81	58	30.20
ACCHE	0	2000	29	34	43.02	-81	28	29.19
ADLYN	0	2000	30	35	53.97	-82	19	0.11
ALCRN	0	2000	30	59	12.93	-82	14	9.03
ASTOR	0	2000	29	47	55.30	-81	18	6.11
BAAMF	0	2000	30	40	13.18	-82	19	2.47
BASSS	0	2000	29	40	50.20	-81	32	44.28
BERTT	0	2000	31	10	2.12	-81	41	53.99
BKENI	0	2000	29	38	17.84	-81	20	45.89
BOCAP	0	2000	30	11	11.14	-82	7	56.72
BRADO	0	2000	29	55	21.88	-81	28	7.89
BROUN	0	2000	31	27	36.31	-81	19	25.94
BRSTL	0	2000	30	58	58.55	-81	58	13.83
BUNDE	0	2000	30	4	10.69	-81	24	20.99
CAMJO	0	2000	30	30	32.00	-82	41	11.00
CARRA	0	2000	29	43	50.91	-81	36	29.10
CARVL	0	2000	30	27	5.86	-81	29	59.52
CIPDU	0	2000	30	51	56.36	-81	38	32.04
CIRSA	0	2000	30	42	18.28	-81	48	42.70
COBOK	0	2000	29	48	30.53	-81	6	45.71
COROE	0	2000	30	31	22.29	-82	21	11.77

Plain Text Tab Width: 8 Ln 41, Col 5

Jacksonville_JAX_Waypoints.fix (~/rss/data/stand

File Edit View Search Tools Documents Help

Open Save Undo

Jacksonville_JAX_Waypoints.fix

CUBDU	0	2000	30	54	7.39	-81	36	13.39
DRAFT	0	2000	29	51	50.71	-82	25	18.24
EJIPE	0	2000	31	3	22.04	-82	18	50.00
ENEME	0	2000	30	42	12.09	-82	26	9.31
FEMON	0	2000	30	27	31.57	-81	23	36.20
FETAL	0	2000	30	11	3.69	-82	30	24.76
GEEYE	0	2000	30	37	30.00	-82	18	20.00
HABLE	0	2000	31	21	9.68	-82	6	9.96
HATMA	0	2000	30	39	27.09	-80	39	15.73
HOTAR	0	2000	30	38	23.32	-81	6	45.71
JAGGZ	0	2000	30	16	23.63	-81	15	51.49
JAWSS	0	2000	30	26	49.58	-80	47	18.15
JETSO	0	2000	29	54	32.12	-81	6	45.70
JUTTS	0	2000	29	36	0.00	-82	2	0.00
KIRNS	0	2000	31	28	20.83	-81	49	33.78
KOOKK	0	2000	30	27	54.13	-81	48	5.26
KYYUU	0	2000	30	38	13.83	-82	11	55.76
LIBBY	0	2000	30	26	18.61	-81	53	16.94
LLIPS	0	2000	30	40	0.97	-81	22	18.28
MARQO	0	2000	30	30	53.57	-82	32	45.62
MATEO	0	2000	29	46	0.71	-81	27	12.60
MISSM	0	2000	30	27	28.15	-82	36	32.24
MMKAY	0	2000	29	41	55.42	-81	26	49.15
MMOSS	0	2000	30	25	14.32	-82	9	52.08
MONIA	0	2000	30	28	49.00	-82	2	53.44
NOLLE	0	2000	29	42	56.80	-82	8	25.96
NOOMN	0	2000	29	42	28.05	-81	12	51.29
OCNOP	0	2000	30	51	43.99	-81	17	20.62
OCNOP	0	2000	30	51	43.99	-81	17	20.62
OHLEE	0	2000	30	16	6.04	-82	6	32.53
PAINN	0	2000	29	53	24.66	-81	30	11.05
PRKKS	0	2000	29	53	31.23	-81	34	55.91
PRMUS	0	2000	29	49	5.67	-81	7	20.74
ROYES	0	2000	29	32	26.01	-81	25	52.86
ROYES	0	2000	29	32	26.01	-81	25	52.86
SAWGY	0	2000	30	2	11.92	-81	11	11.16
SEBAG	0	2000	29	49	4.24	-81	12	34.72
SHRKS	0	2000	30	37	23.23	-81	45	59.13
SNKEM	0	2000	30	34	6.24	-81	45	15.10
SNOOC	0	2000	30	12	12.78	-80	58	1.40
STARY	0	2000	31	12	4.70	-81	8	40.48
SUBER	0	2000	30	27	24.49	-81	6	45.46
TEBOW	0	2000	30	5	45.93	-82	4	32.70
TEREE	0	2000	30	52	10.90	-81	53	27.25
TOMDY	0	2000	30	56	6.64	-81	25	24.93
TTHOR	0	2000	29	39	53.20	-81	14	0.03
VEDRA	0	2000	30	27	6.36	-81	19	49.40
VIYAP	0	2000	31	15	8.15	-81	26	8.18
WALEE	0	2000	29	41	36.05	-82	14	7.07
WEEEK	0	2000	29	55	18.81	-81	14	37.77
WHOOU	0	2000	29	51	25.91	-82	23	30.65
WHYYT	0	2000	31	0	45.37	-82	15	20.17
WIWHE	0	2000	31	3	11.97	-82	33	19.57
WNWUD	0	2000	30	9	28.11	-82	15	10.74

Plain Text Tab Width: 8 Ln 41, Col 58

```
01234567890123456789012345678901234567890123456
08_UDAQI      0  2000  30 25 36.40  -81 55 33.99
08_IVTEF      0  1900  30 27 51.76  -81 48 13.87
08_TCH        0    80  30 29 46.38  -81 41 59.87
26_YEJWO      0  2000  30 34  8.30  -81 27 40.43
26_WOQTA      0  1600  30 31 55.09  -81 34 58.35
26_ZALDU      0   740  30 31  1.35  -81 37 54.54
26_TCH        0    76  30 30 19.34  -81 40 12.10
14_OSBAJ      0  2000  30 37 11.93  -81 52 25.85
14_WOLQU      0  1700  30 32 50.42  -81 46 31.54
14_TCH        0    81  30 29 31.78  -81 42  3.01
32_POTME      0  2100  30 21  0.33  -81 30 33.97
32_FIVOX      0  1700  30 25 22.57  -81 36 26.85
32_YUSKU      0   740  30 27 20.14  -81 39  5.35
32_TCH        0    74  30 28 42.24  -81 40 56.13
SSI_VORTC     0  2000  31  3  1.85  -81 26 45.47
TAY_VORTC     0  2000  30 30 16.70  -82 33 10.45
CRG_VORTC     0  2000  30 20 19.96  -81 30 35.74
GNV_VORTC     0  2000  29 41 31.61  -81 16 22.70
.....
```

SAMPLE TEXT FILE SETUP

* Create file using Excel and save as a CSV (space delimited) file
* Edit CSV file to match spacing as shown above
* Top line "0123…" is used for spacing only. Do not leave this line in the file.

NOTE: Important information, but not used in the end. Stephen Hawk provided me STARS maps downloaded from Falcon which provided better visualization. Keeping this information for training purposes.

FIGURE 18

RSS BSAT Analysis – Initialization: Import Point Fix File using RSS Point Fix Editor

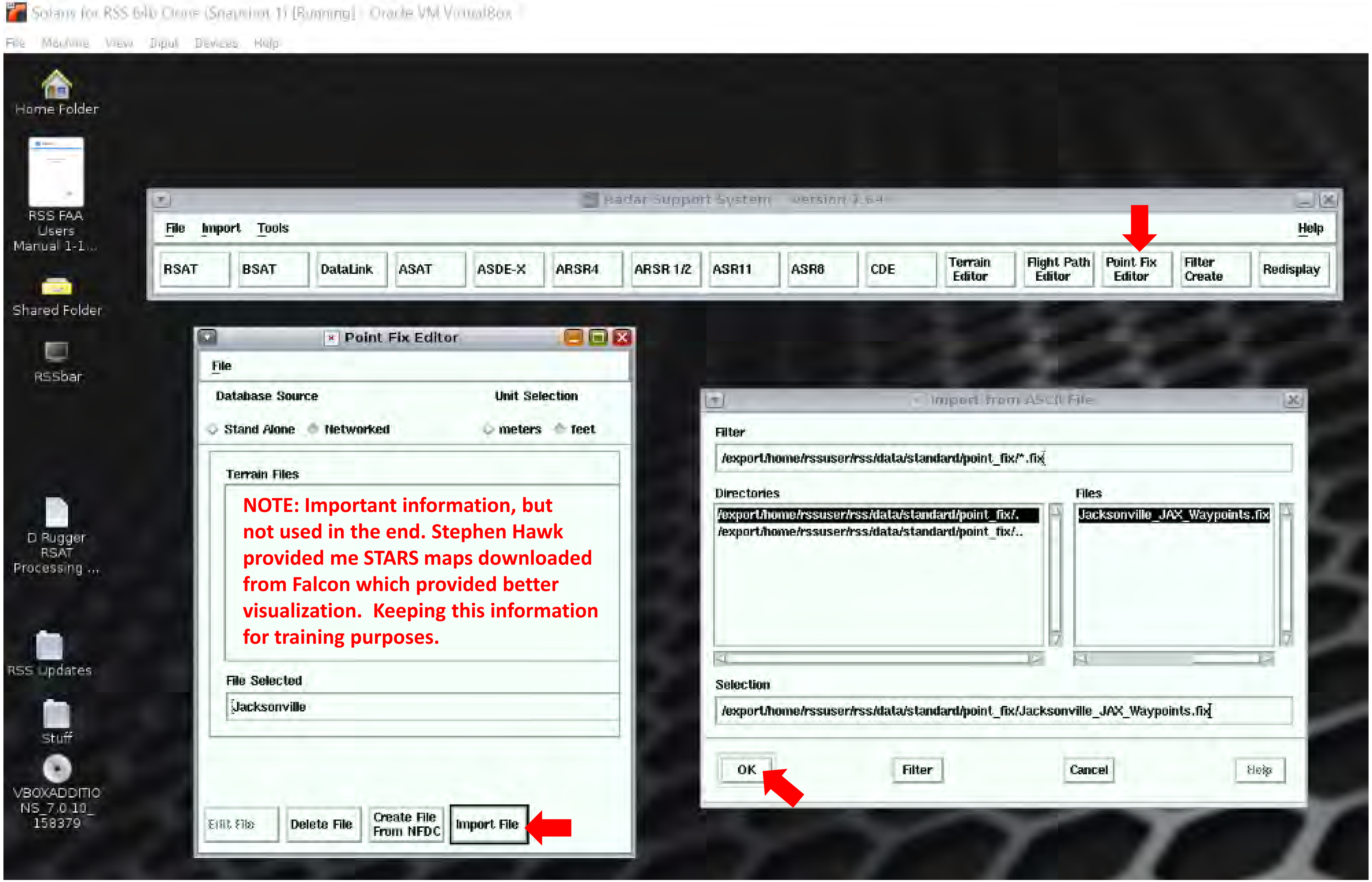


FIGURE 19

RSS BSAT Analysis – Initialization: Generate Point Fix Visibility Table

RADAR LOCATION DATA : JAX_ASR9

LATITUDE (DEG MIN SEC)	LONGITUDE (DEG MIN SEC)	ELEVATION (FT MSL)	ANTENNA HT (FT)
30:29:35.97	-81:41:33.61	92.3	63.8

FIX DATA :

NO.	NAME	LATITUDE (DEG MIN SEC)	LONGITUDE (DEG MIN SEC)	RNG (nmi)	AZ (DEG-TRUE)	SCREEN ANGLE (DEG)	TARGET ANGLE (DEG)	REQ ALT (FT MSL)	ADJ ALT (FT MSL)	SCREEN ALT (FT MSL)	VISIBLE
1	08_UDAQI	30:25:36.40	-81:55:33.99	12.74	251.84	0.023	1.332	2000.	1887.	231.	YES
2	08_IVTEF	30:27:51.76	-81:48:13.87	6.02	253.30	-0.077	2.792	1900.	1847.	67.	YES
3	08_TCH	30:29:46.38	-81:41:59.87	0.42	294.60	-1.430	-0.280	80.	76.	29.	YES
4	26_YEJWO	30:34:08.30	-81:27:40.43	12.82	69.26	-0.053	1.322	2000.	1887.	130.	YES
5	26_WOQTA	30:31:55.09	-81:34:58.35	6.14	67.85	-0.006	2.274	1600.	1546.	114.	YES
6	26_ZALDU	30:31:01.35	-81:37:54.54	3.46	65.75	-0.038	1.743	740.	709.	87.	YES
7	26_TCH	30:30:19.34	-81:40:12.10	1.38	58.43	-0.462	-0.120	76.	64.	26.	YES
8	14_OSBAJ	30:37:11.93	-81:52:25.85	12.06	308.98	-0.071	1.415	2000.	1893.	98.	YES
9	14_WOLQU	30:32:50.42	-81:46:31.54	5.37	307.03	-0.097	2.786	1700.	1653.	56.	YES
10	14_TCH	30:29:31.78	-81:42:03.01	0.43	260.66	-1.442	-0.250	81.	77.	27.	YES
11	32_POTME	30:21:00.33	-81:30:33.97	12.80	132.00	-0.058	1.398	2100.	1987.	130.	YES
12	32_FIVOX	30:25:22.57	-81:36:26.85	6.11	133.62	-0.033	2.443	1700.	1646.	96.	YES
13	32_YUSKU	30:27:20.14	-81:39:05.35	3.11	136.60	-0.034	1.945	740.	713.	88.	YES
14	32_TCH	30:28:42.24	-81:40:56.13	1.04	148.86	-0.621	-0.171	74.	65.	24.	YES
15	SSI_VORTC	31:03:01.85	-81:26:45.47	35.69	20.86	0.014	0.280	2000.	1684.	993.	YES
16	TAY_VORTC	30:30:16.70	-82:33:10.45	44.57	271.09	0.013	0.124	2000.	1606.	1473.	YES
17	CRG_VORTC	30:20:19.56	-81:30:35.74	13.24	134.23	-0.044	1.275	2000.	[illegible]	[illegible]	[illegible]
18	GNV_VORTC	29:41:31.61	-81:16:22.70	52.67	155.40	-0.069	0.011	2000.	[illegible]	[illegible]	[illegible]
19	SSI	31:09:07.08	-81:23:27.81	42.37	21.49	0.014	-0.227	269.	[illegible]	1351.	NO
20	BQK	31:15:32.53	-81:27:58.74	47.27	14.25	-0.010	-0.260	276.	[illegible]	[illegible]	[illegible]
21	4J1	31:12:21.90	-81:54:21.60	44.04	345.58	-0.097	-0.224	335.	54.	928.	NO
22	09J	31:04:28.10	-81:25:40.00	37.36	21.41	0.014	-0.192	261.	[illegible]	[illegible]	[illegible]
23	FHB	30:36:42.60	-81:27:40.30	13.92	59.33	-0.012	0.030	266.	143.	204.	MARG
24	NRB	30:23:28.95	-81:25:28.28	15.18	113.62	0.187	0.012	265.	[illegible]	[illegible]	[illegible]
25	CRG	30:20:10.80	-81:30:52.00	13.18	135.42	0.048	0.059	291.	174.	275.	MARG
26	HEG	30:16:40.03	-81:48:21.40	14.17	204.52	0.134	0.074	336.	[illegible]	[illegible]	NO
27	VQQ	30:13:07.60	-81:52:37.80	19.01	210.28	0.155	-0.001	330.	162.	644.	NO
28	SGJ	29:57:33.30	-81:20:23.03	36.83	150.06	-0.050	-0.188	260.	[illegible]	[illegible]	NO
29	NIP	30:14:01.34	-81:40:33.81	15.55	176.82	-0.022	0.012	273.	[illegible]	[illegible]	MARG
30	NEN	30:20:58.18	-81:52:01.16	12.48	226.45	0.036	0.115	347.	237.	243.	MARG
31	28J	29:39:30.18	-81:41:22.21	49.94	179.81	0.024	-0.274	298.	-144.	1877.	NO
32	42J	29:50:41.10	-82:02:51.10	42.96	205.52	0.161	-0.191	446.	68.	2052.	NO
33	LCQ	30:10:55.40	-82:34:36.70	49.51	248.13	0.134	-0.242	451.	13.	2424.	NO
34	AAMOS	30:30:53.90	-81:58:30.20	14.69	275.13	0.005	1.132	2000.	1870.	243.	YES
35	ACCHE	29:34:43.02	-81:28:29.19	55.88	168.24	0.088	-0.029	2000.	1506.	2690.	NO
36	ADLYN	30:35:53.97	-82:19:00.11	32.92	281.16	0.043	0.340	2000.	1709.	961.	YES
37	ALCRN	30:59:12.93	-82:14:09.03	40.74	316.59	-0.008	0.186	2000.	1640.	1160.	YES
38	ASTOR	29:47:55.30	-81:18:06.11	46.26	153.83	-0.060	0.099	2000.	1591.	1221.	YES
39	BAAMF	30:40:13.18	-82:19:02.47	34.03	288.29	-0.079	0.315	2000.	1699.	577.	YES
40	BASSS	29:40:50.20	-81:32:44.28	49.22	171.02	0.181	0.057	2000.	1565.	2651.	NO
41	BERTT	31:10:02.12	-81:41:53.99	40.32	359.59	-0.093	0.193	2000.	1643.	777.	YES
42	BKENI	29:38:17.84	-81:20:45.89	54.23	160.49	-0.029	-0.009	2000.	1520.	1882.	MARG
43	BOCAP	30:11:11.14	-82:07:56.72	29.29	231.29	-0.045	0.430	2000.	1741.	524.	YES
44	BRADO	29:55:21.88	-81:28:07.89	36.06	161.13	-0.011	0.273	2000.	1681.	914.	YES
45	BROUN	31:27:36.31	-81:19:25.94	60.88	18.10	-0.048	-0.067	2000.	1462.	2251.	NO
46	BRSTL	30:58:58.55	-81:58:13.83	32.62	333.96	-0.094	0.347	2000.	1712.	473.	YES
47	BUNDE	30:04:10.69	-81:24:20.99	29.40	149.49	-0.028	0.427	2000.	1740.	579.	YES
48	CAMJO	30:30:32.00	-82:41:11.00	51.49	271.29	0.013	0.027	2000.	1545.	1924.	MARG
49	CARRA	29:43:50.91	-81:36:29.10	45.83	174.47	-0.026	0.105	2000.	1595.	1362.	YES
50	CARVL	30:27:05.86	-81:29:59.52	10.30	103.97	0.443	1.680	2000.	1909.	647.	YES
51	CIPOU	30:51:56.36	-81:38:32.04	22.43	6.67	-0.046	0.661	2000.	1802.	318.	YES
52	CIRSA	30:42:18.28	-81:48:42.70	14.09	334.07	-0.094	1.187	2000.	1875.	84.	YES
53	COBOK	29:48:30.53	-81:06:45.71	50.87	143.50	-0.013	0.034	2000.	1550.	1744.	MARG
54	CORDE	30:31:22.29	-82:21:11.77	34.27	273.12	-0.056	0.310	2000.	1697.	668.	YES

NOTE: Important information, but not used in the end. Stephen Hawk provided me STARS maps downloaded from Falcon which provided better visualization. Keeping this information for training purposes.

RADAR LOCATION DATA : JAX_ASR9

LATITUDE (DEG MIN SEC)	LONGITUDE (DEG MIN SEC)	ELEVATION (FT MSL)	ANTENNA HT (FT)
30:29:35.97	-81:41:33.61	92.3	63.8

FIX DATA :

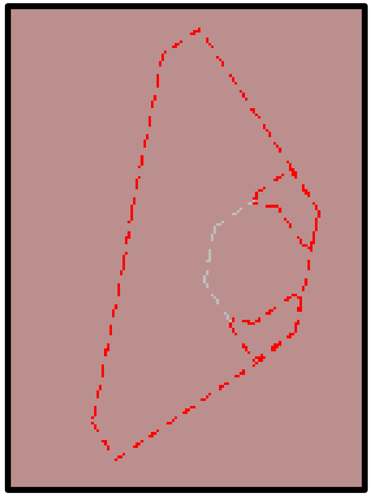
NO.	NAME	LATITUDE (DEG MIN SEC)	LONGITUDE (DEG MIN SEC)	RNG (nmi)	AZ (DEG-TRUE)	SCREEN ANGLE (DEG)	TARGET ANGLE (DEG)	REQ ALT (FT MSL)	ADJ ALT (FT MSL)	SCREEN ALT (FT MSL)	VISIBLE
55	CORYY	30:10:15.89	-82:22:46.33	40.52	241.77	-0.052	0.190	2000.	1642.	962.	YES
56	CUBDU	30:54:07.39	-81:36:13.39	24.88	10.63	0.018	0.566	2000.	1780.	552.	YES
57	DRAFT	29:51:50.71	-82:25:18.24	53.41	225.37	-0.025	0.002	2000.	1528.	1846.	MARG
58	EJIPE	31:03:22.04	-82:18:50.00	46.51	316.53	-0.008	0.095	2000.	1589.	1490.	YES
59	ENEME	30:42:12.09	-82:26:09.31	40.47	288.28	-0.079	0.191	2000.	1642.	842.	YES
60	FEMON	30:27:31.57	-81:23:36.20	15.65	97.52	-0.022	1.050	2000.	1862.	220.	YES
61	FETAL	30:11:03.69	-82:30:24.76	46.12	246.58	-0.006	0.101	2000.	1592.	1476.	YES
62	GEEYE	30:37:30.00	-82:18:20.00	32.70	284.10	-0.019	0.345	2000.	1711.	736.	YES
63	HABLE	31:21:09.68	-82:06:09.96	55.60	337.74	-0.057	-0.025	2000.	1508.	1809.	MARG
64	HATMA	30:39:27.09	-80:39:15.73	54.64	79.38	0.008	-0.014	2000.	1517.	2130.	NO
65	HOTAR	30:38:23.32	-81:06:45.71	31.28	73.58	-0.057	0.378	2000.	1723.	556.	YES
66	JAGGZ	30:16:23.63	-81:15:51.49	25.83	120.54	-0.002	0.534	2000.	1772.	532.	YES
67	JAWSS	30:26:49.58	-80:47:18.15	46.94	93.15	0.004	0.088	2000.	1585.	1582.	YES
68	JETSO	29:54:32.12	-81:06:45.70	46.16	139.09	0.025	0.100	2000.	1592.	1631.	MARG
69	JUTTS	29:36:00.00	-82:02:00.00	56.30	198.44	0.057	-0.033	2000.	1502.	2541.	NO
70	KIRNS	31:[illegible]8:20.83	-81:49:33.78	58.98	353.34	-0.084	-0.065	2000.	1478.	1883.	MARG
71	[illegible]	30:[illegible]7:54.13	-81:48:05.26	5.89	253.32	-0.077	3.015	2000.	1948.	67.	YES
72	[illegible]	30:[illegible]8:13.83	-82:11:55.76	27.58	288.31	-0.079	0.479	2000.	1756.	367.	YES
73	LIBBY	30:[illegible]6:18.61	-81:53:16.94	10.65	252.10	0.023	1.622	2000.	1906.	193.	YES
74	[illegible]	30:[illegible]0:00.97	-81:22:18.28	19.59	57.90	-0.027	0.794	2000.	1827.	292.	YES
75	MARQO	30:[illegible]0:53.57	-82:32:45.62	44.22	271.89	-0.057	0.129	2000.	1609.	1126.	YES
76	[illegible]	29:[illegible]6:00.71	-81:27:12.60	45.20	163.97	-0.014	0.114	2000.	1600.	1306.	YES
77	MISSM	30:[illegible]7:28.15	-82:36:32.24	47.53	267.67	-0.064	0.081	2000.	1580.	1270.	YES
78	[illegible]	29:[illegible]1:55.42	-81:26:49.15	49.22	164.89	-0.049	0.057	2000.	1565.	1450.	YES
79	MMOSS	30:[illegible]5:14.32	-82:09:52.08	24.84	260.04	-0.053	0.568	2000.	1780.	364.	YES
80	[illegible]	[illegible]8:49.00	-82:02:53.44	18.44	267.66	-0.064	0.860	2000.	1837.	193.	YES
81	[illegible]	[illegible]2:56.80	-82:08:25.96	52.02	206.72	0.163	0.020	2000.	1540.	2789.	NO
82	NOOMN	29:[illegible]2:28.05	-81:12:51.29	53.17	151.98	-0.042	0.005	2000.	1530.	1739.	MARG
83	OCNOP	30:[illegible]1:43.99	-81:17:20.62	30.38	43.30	-0.007	0.401	2000.	1731.	684.	YES
84	OCNOP	30:[illegible]1:43.99	-81:17:20.62	30.38	43.30	-0.007	0.401	2000.	1731.	684.	YES
85	OHLEE	30:16:06.04	-82:06:32.53	25.45	238.17	-0.034	0.547	2000.	1775.	431.	YES
86	PAINN	29:53:24.66	-81:30:11.05	37.40	164.68	-0.049	0.246	2000.	1669.	829.	YES
87	PRKKS	29:53:31.23	-81:34:55.91	36.43	170.90	0.182	0.265	2000.	1678.	1676.	YES
88	PRMUS	29:49:05.67	-81:07:20.74	50.10	143.58	0.015	0.045	2000.	1557.	1845.	MARG
89	ROYES	29:32:26.01	-81:25:52.86	58.60	166.51	-0.027	-0.060	2000.	1482.	2208.	NO
90	ROYES	29:32:26.01	-81:25:52.86	58.60	166.51	-0.027	-0.060	2000.	1482.	2208.	NO
91	SAWGY	30:02:11.92	-81:11:11.16	37.91	135.97	0.048	0.236	2000.	1665.	1242.	YES
92	SEBAG	29:49:04.24	-81:12:34.72	47.57	148.02	-0.051	0.080	2000.	1579.	1342.	YES
93	SHRKS	30:37:23.23	-81:45:59.13	8.66	333.83	-0.094	2.022	2000.	1924.	56.	YES
94	SNKEM	30:34:06.24	-81:45:15.10	5.52	324.66	0.021	3.226	2000.	1951.	125.	YES
95	SNOOC	30:12:12.78	-80:58:01.40	41.45	114.54	0.404	0.174	2000.	1634.	3013.	NO
96	STARY	31:12:04.70	-81:08:40.48	50.94	33.69	-0.015	0.033	2000.	1550.	1738.	MARG
97	SUBER	30:27:24.49	-81:06:45.46	30.14	94.01	-0.036	0.407	2000.	1734.	582.	YES
98	TEBOW	30:05:45.93	-82:04:32.70	30.99	220.02	-0.001	0.386	2000.	1726.	726.	YES
99	TEREE	30:52:10.90	-81:53:27.25	24.74	335.57	-0.081	0.572	2000.	1781.	288.	YES
100	TOMDY	30:56:06.64	-81:25:24.93	29.87	27.68	0.035	0.414	2000.	1736.	797.	YES
101	TTHOR	29:39:53.20	-81:14:00.03	55.02	154.14	-0.067	-0.018	2000.	1513.	1714.	MARG
102	VEDRA	30:27:06.36	-81:19:49.40	18.94	97.45	-0.022	0.830	2000.	1833.	288.	YES
103	VIYAP	31:15:08.15	-81:26:08.18	47.30	16.22	-0.069	0.083	2000.	1582.	1237.	YES
104	WALEE	29:41:36.05	-82:14:07.07	55.56	210.67	0.154	-0.024	2000.	1509.	3053.	NO
105	WEEEK	29:55:18.81	-81:14:37.77	41.38	145.58	-0.032	0.175	2000.	1634.	1090.	YES
106	WHOOU	29:51:25.91	-82:23:30.65	52.62	223.06	-0.005	0.012	2000.	1535.	1903.	MARG
107	WHYYT	31:00:45.37	-82:15:20.17	42.56	317.03	0.002	0.156	2000.	1624.	1306.	YES
108	WIWHE	31:03:11.97	-82:33:19.57	55.76	307.15	-0.097	-0.027	2000.	1507.	1586.	MARG

FIGURE 20

Terminal B Expansion Building

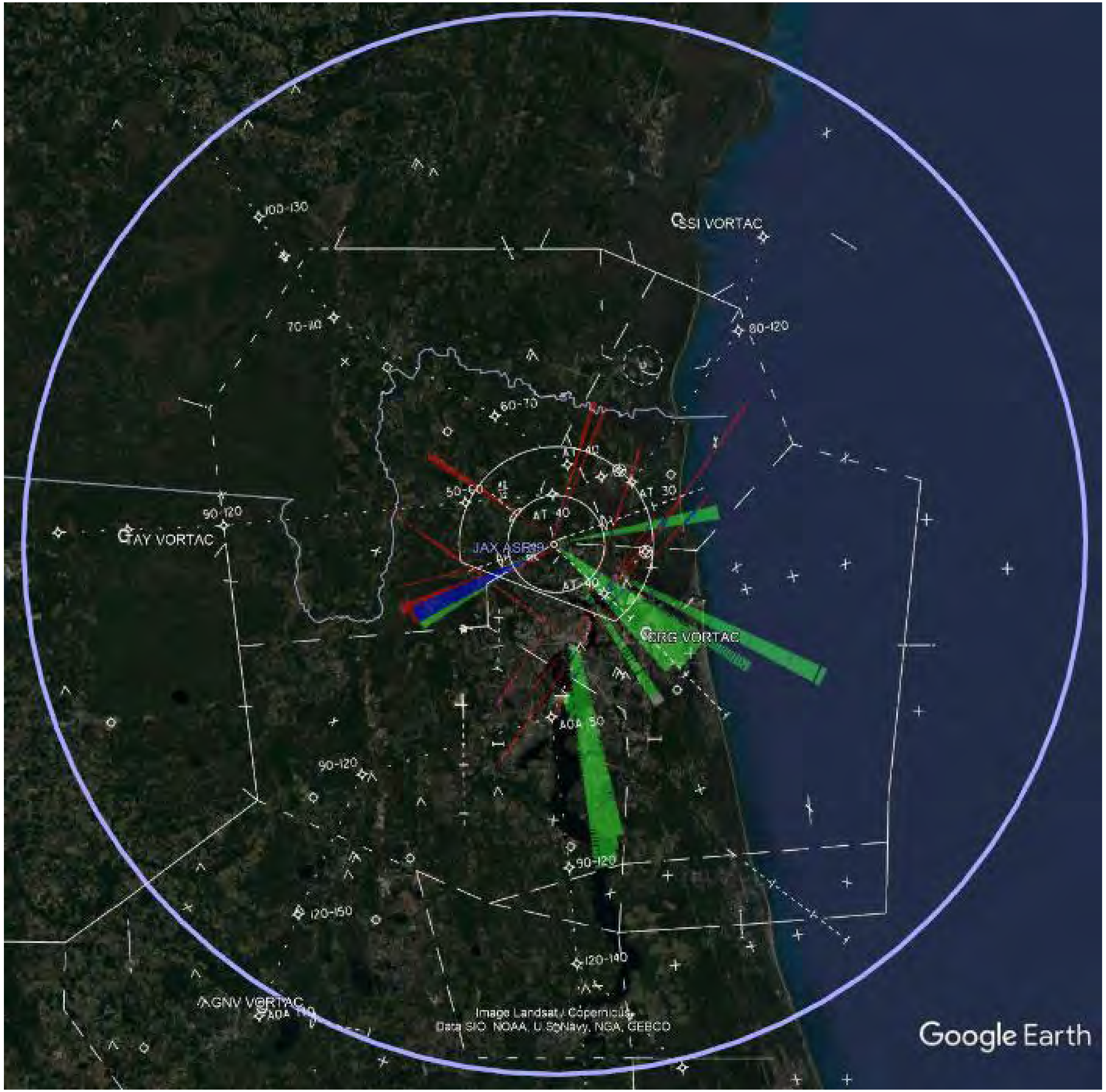
RSS BSAT Analysis
Range Azimuth False Target Plots

RSS BSAT Analysis: 60 NM Range 50 to 250 FT MSL



No RCS/CDE Only

FIGURE 21



Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

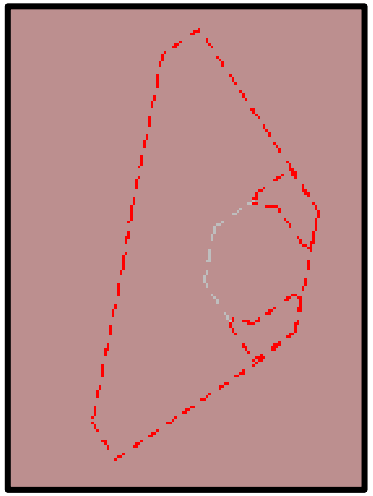
LEGEND

- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

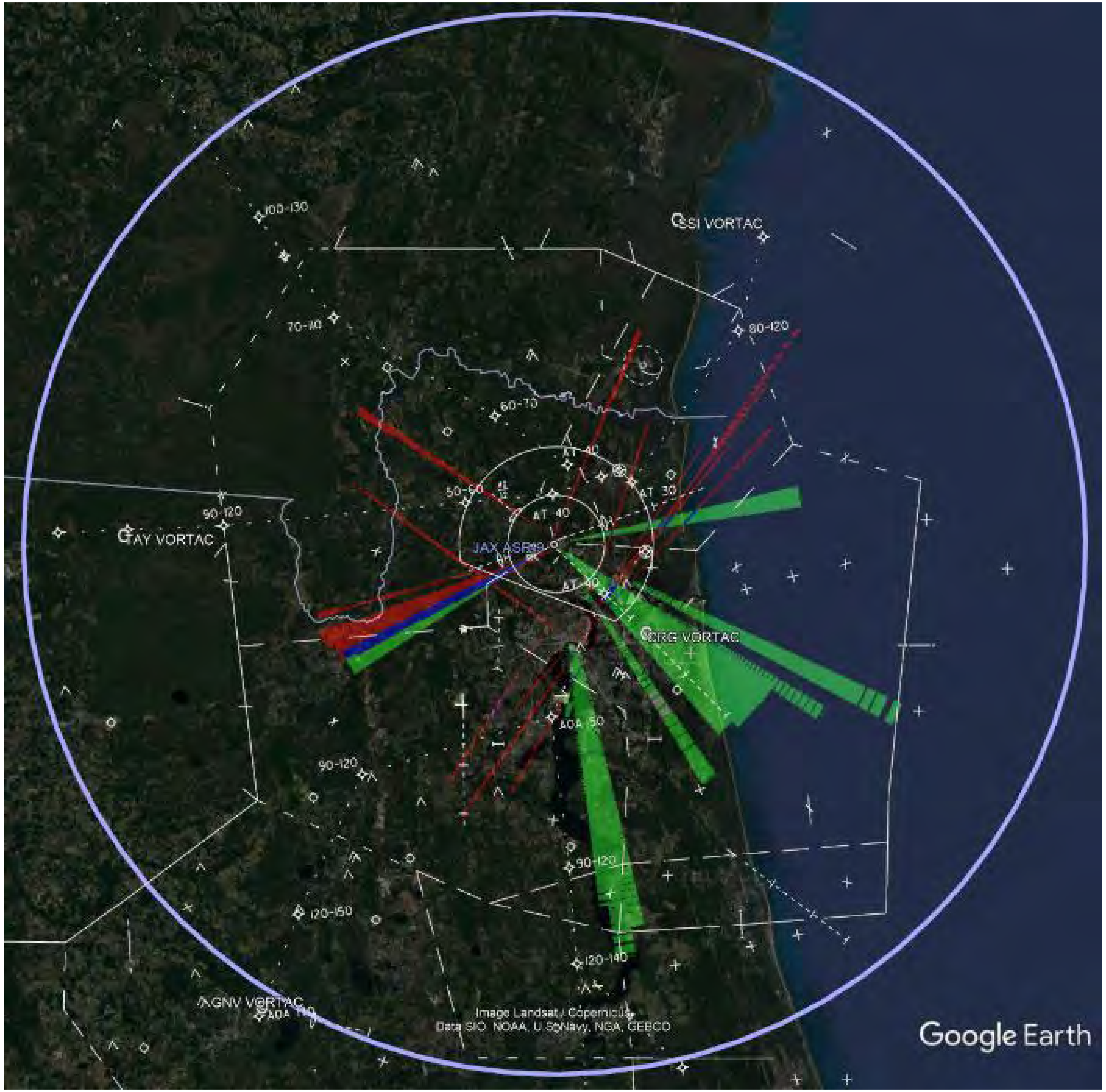
INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)

TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

RSS BSAT Analysis: 60 NM Range 250 to 500 FT MSL



No RCS/CDE Only



Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

INTERROGATOR PARAMETERS

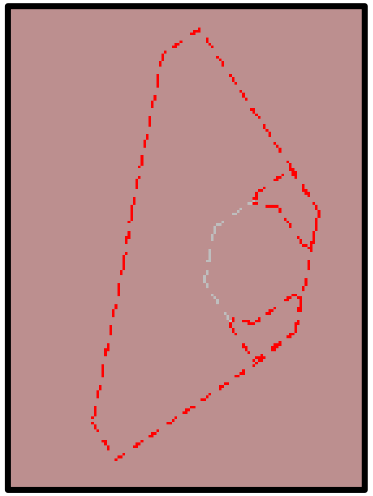
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)

TRANSPONDER PARAMETERS

Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

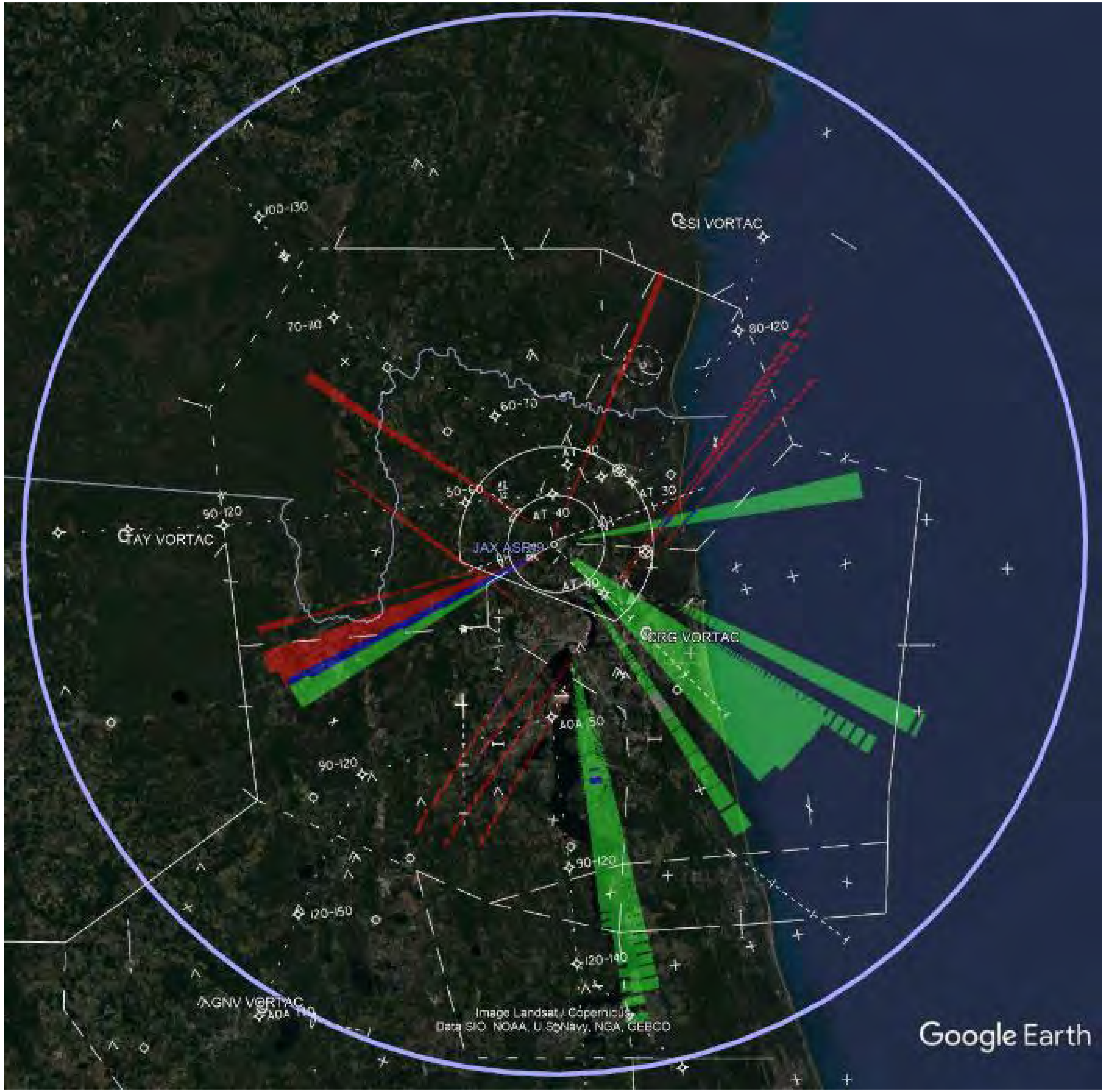
FIGURE 22

RSS BSAT Analysis: 60 NM Range 500 to 750 FT MSL



No RCS/CDE Only

FIGURE 23



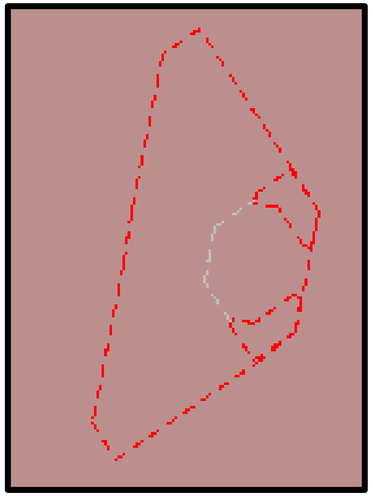
Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

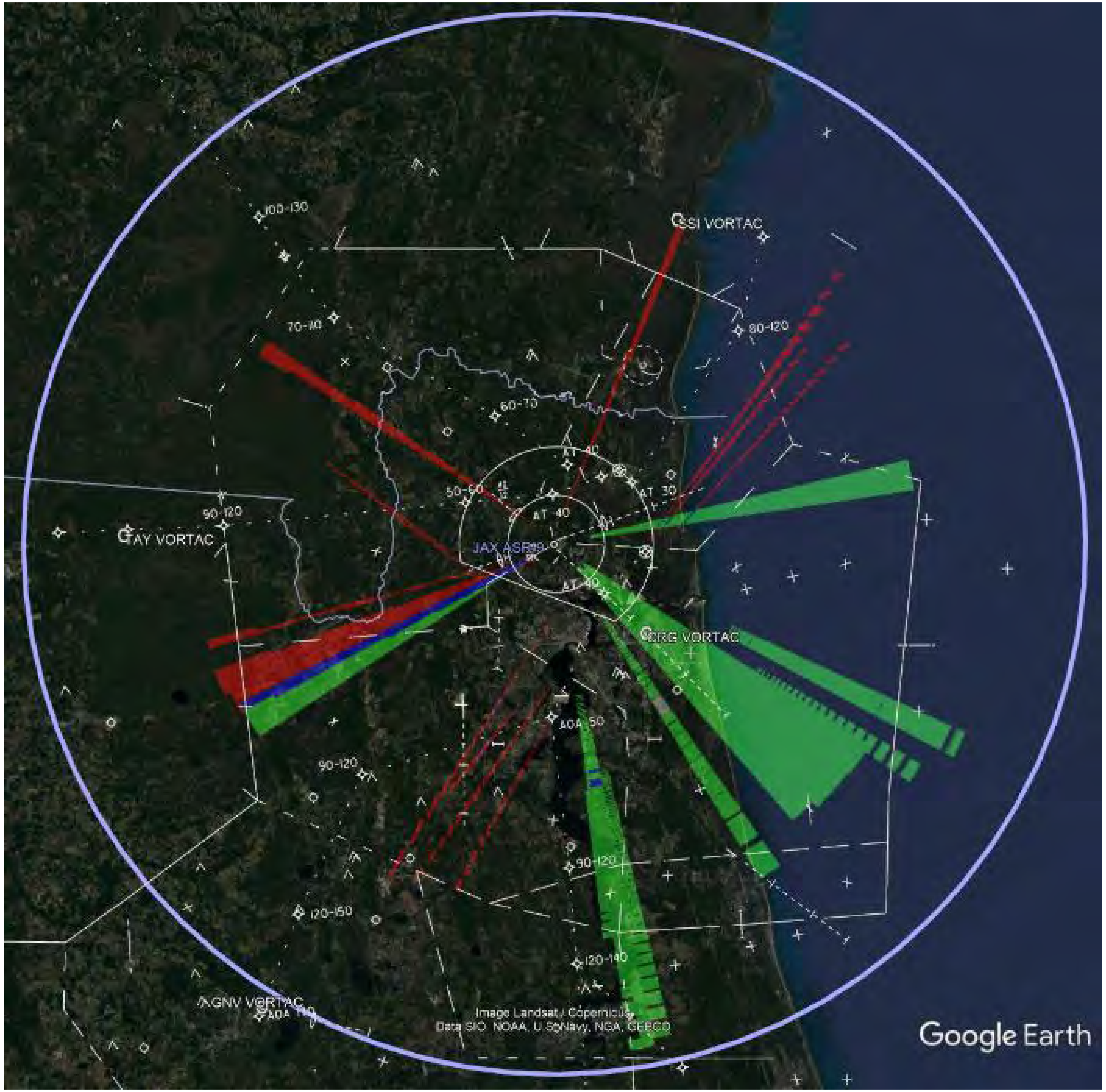
INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)

TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

RSS BSAT Analysis: 60 NM Range 750 to 1K FT MSL



No RCS/CDE Only



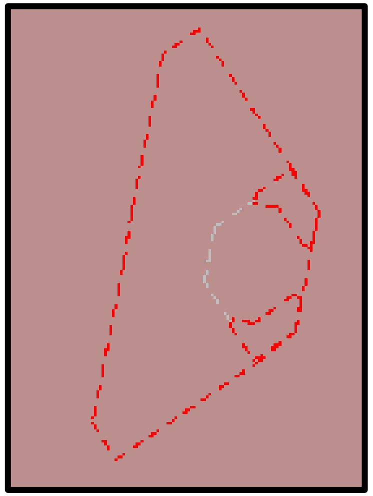
Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

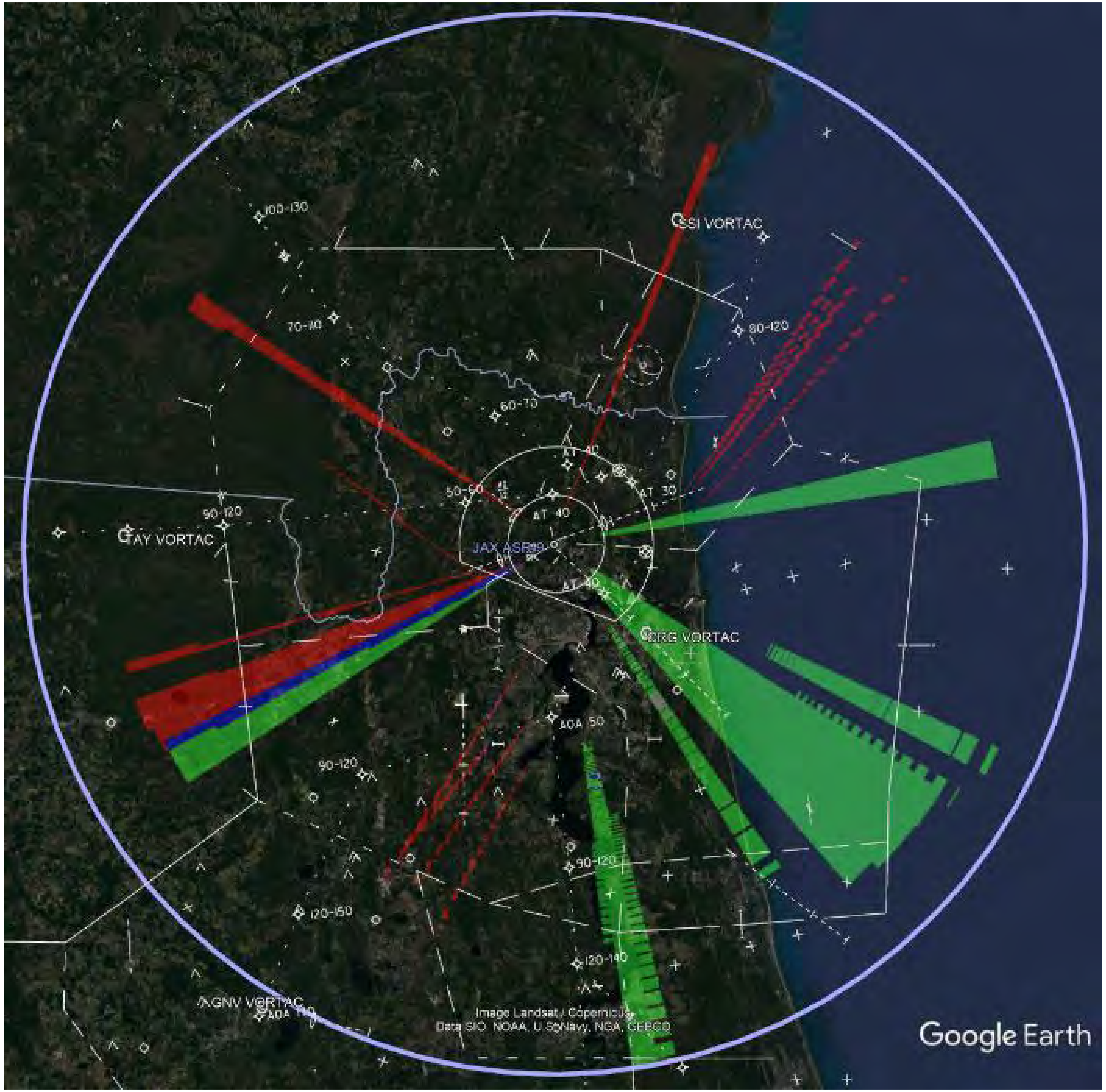
FIGURE 24

RSS BSAT Analysis: 60 NM Range 1K to 1500 FT MSL



No RCS/CDE Only

FIGURE 25



Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

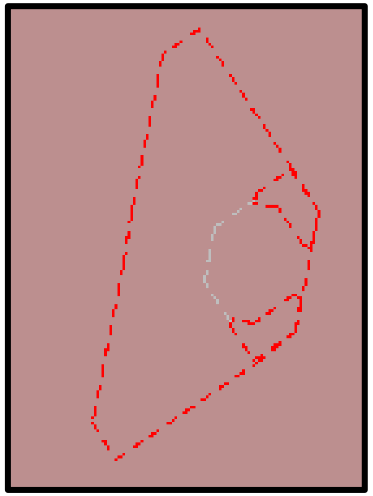
INTERROGATOR PARAMETERS

Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)

TRANSPONDER PARAMETERS

Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

RSS BSAT Analysis:
60 NM Range
1500 to 2K FT MSL



No RCS/CDE Only

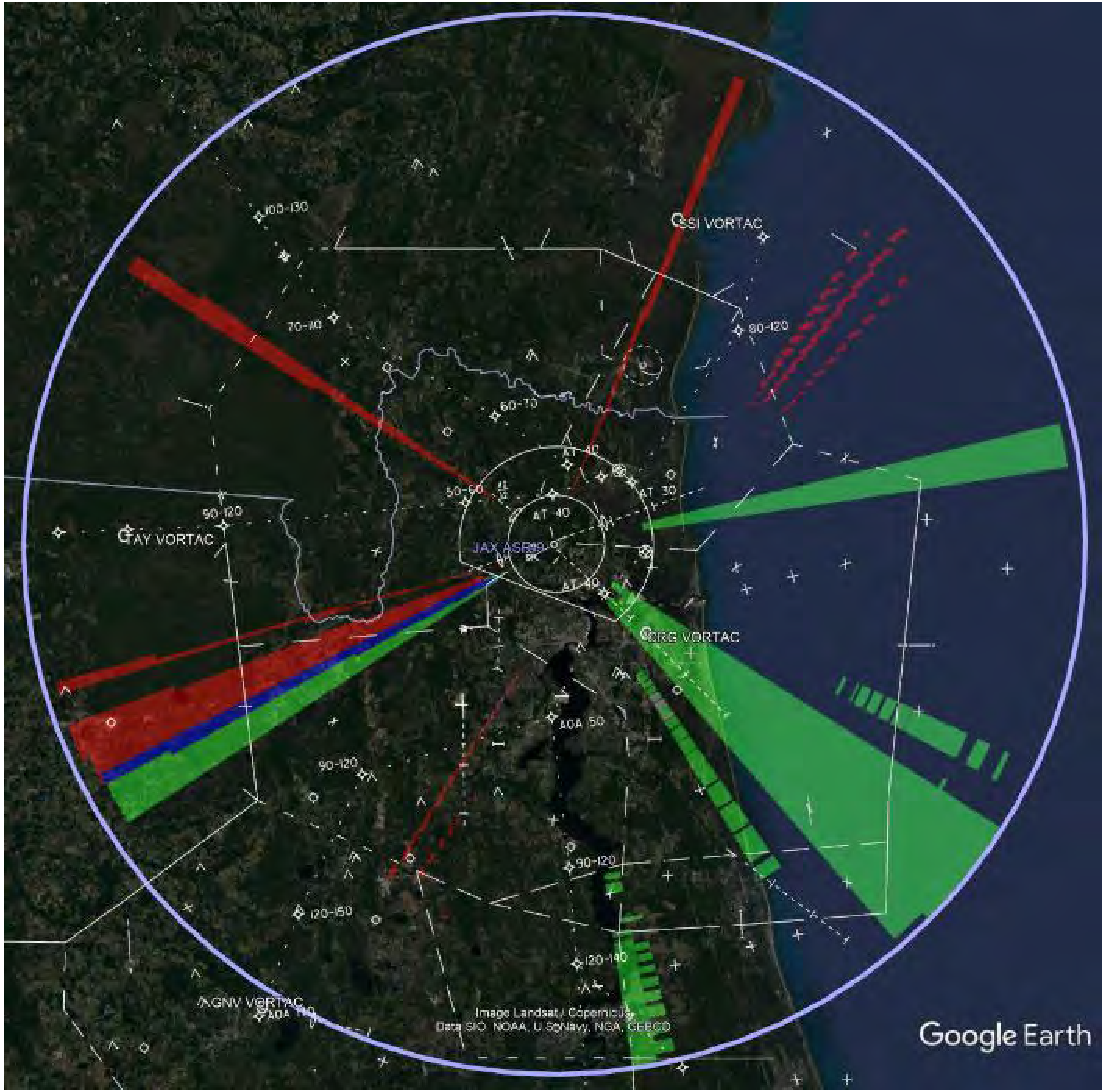


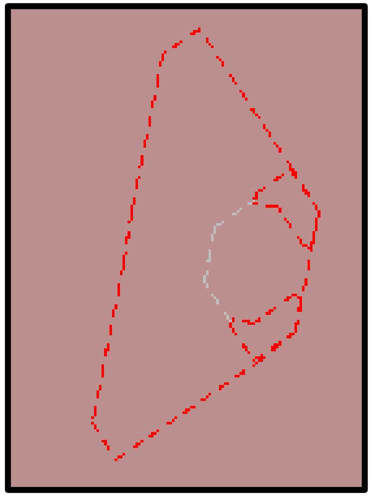
FIGURE 26

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

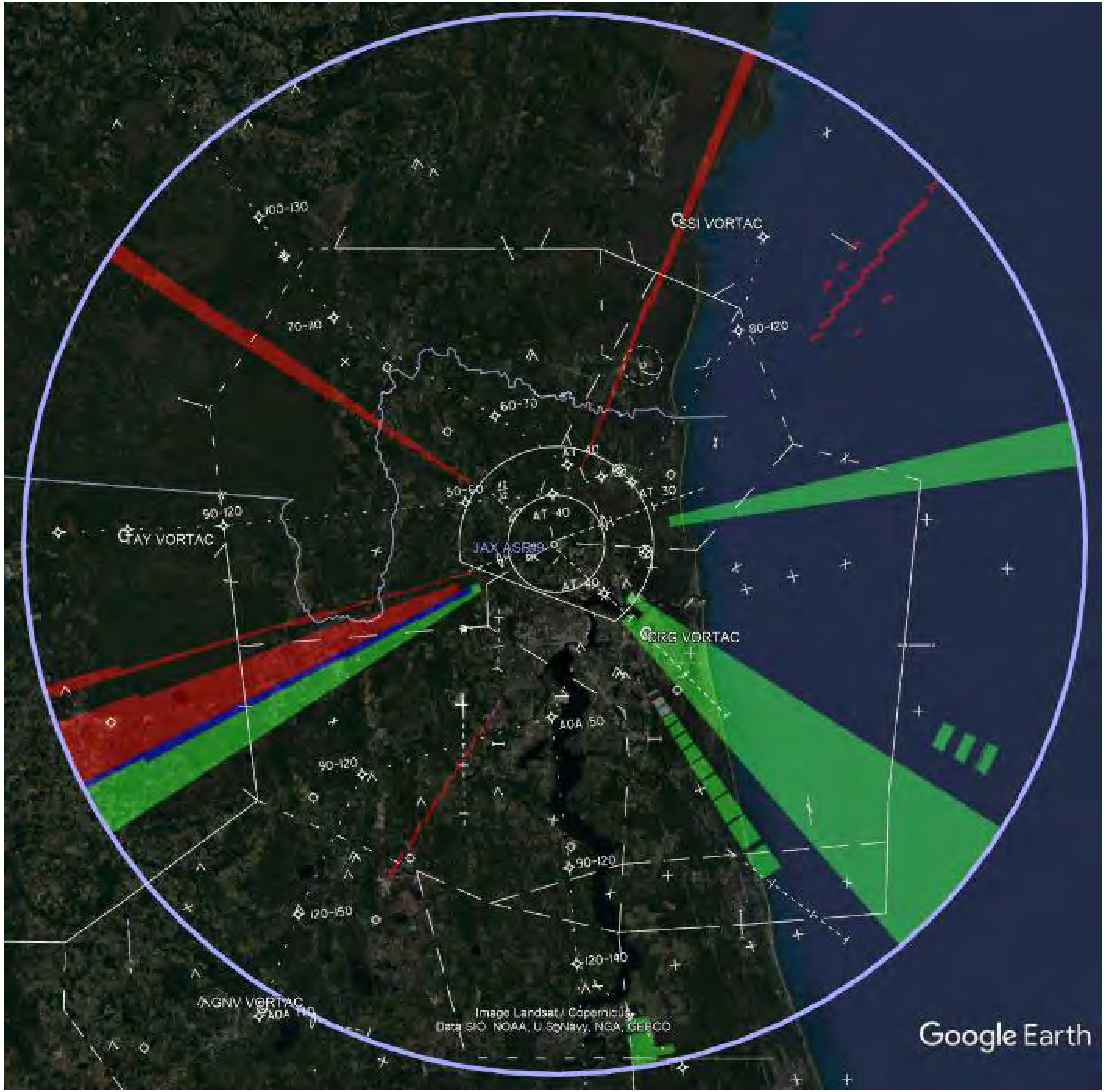
LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

RSS BSAT Analysis:
60 NM Range
2K to 2500 FT MSL



No RCS/CDE Only



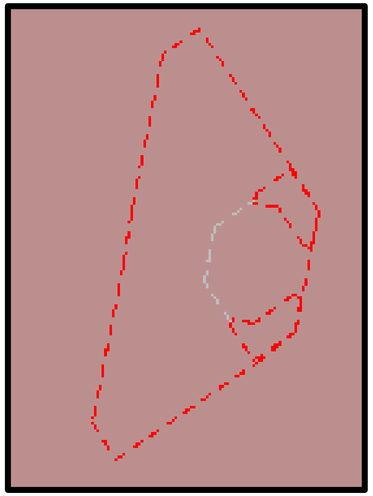
Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

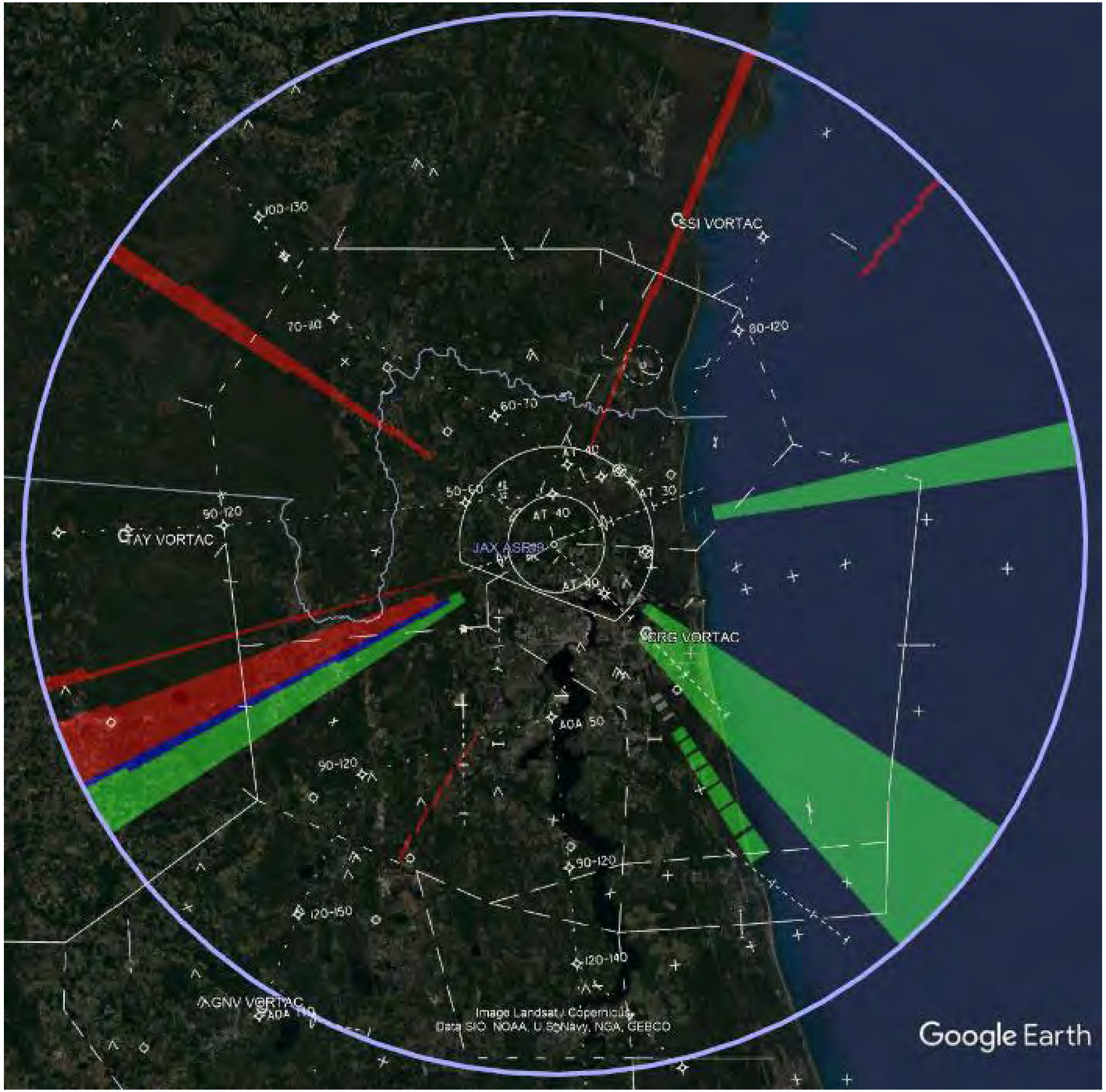
INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	3.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 27

RSS BSAT Analysis: 60 NM Range 2500 to 3K FT MSL



No RCS/CDE Only



Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

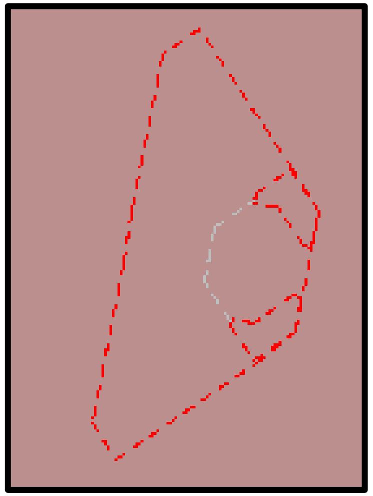
LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)

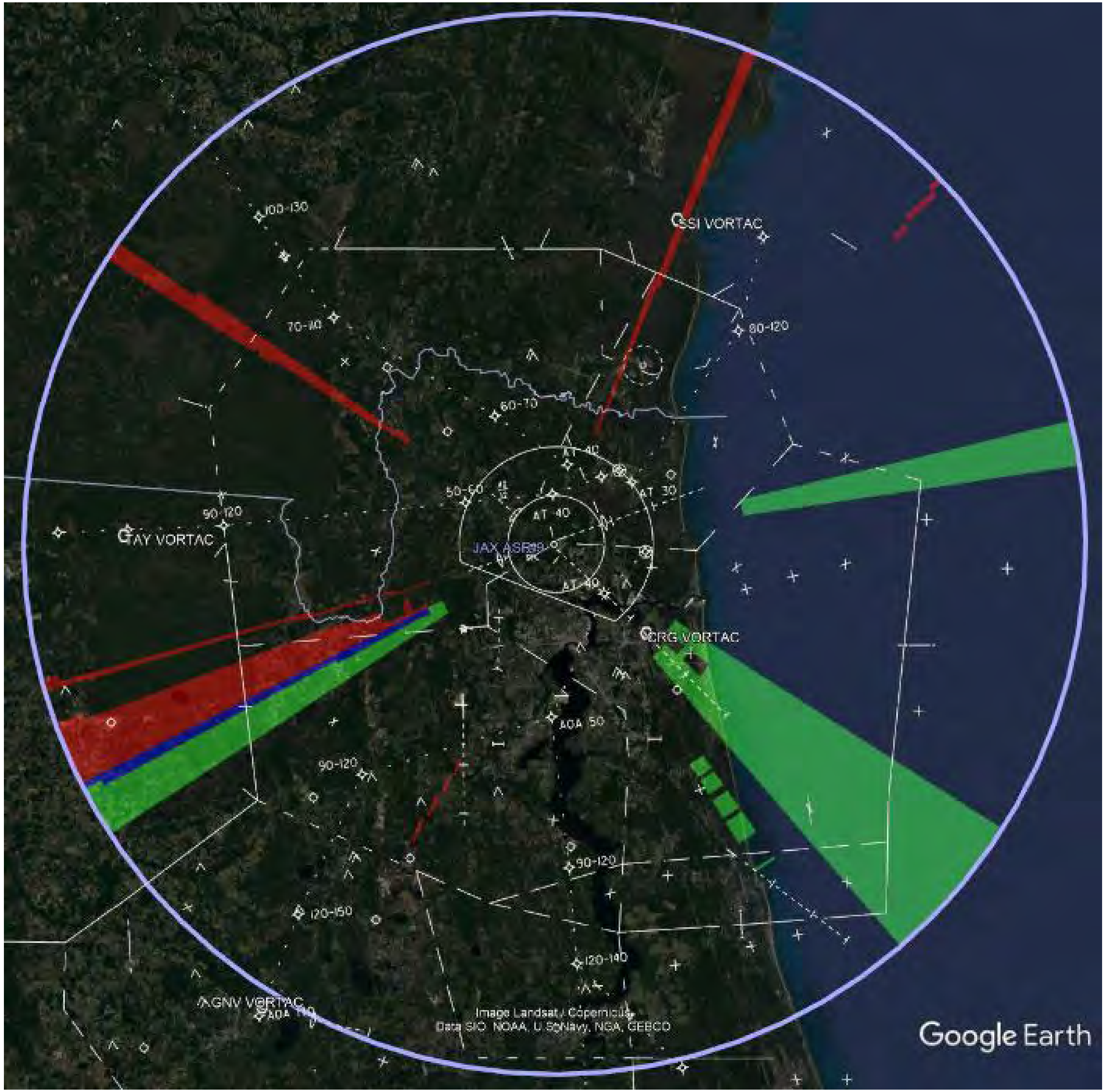
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 28

RSS BSAT Analysis: 60 NM Range 3K to 3500 FT MSL



No RCS/CDE Only



Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

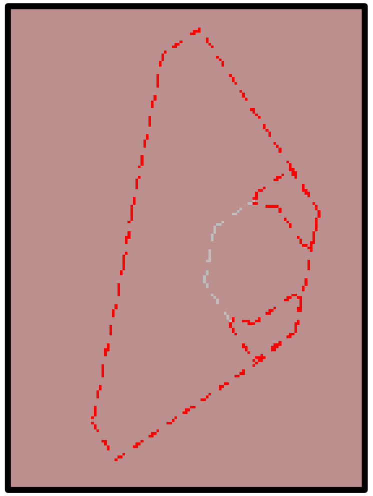
LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	38.0 (dB)
STC Range Step	1.0 (nmi)

TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

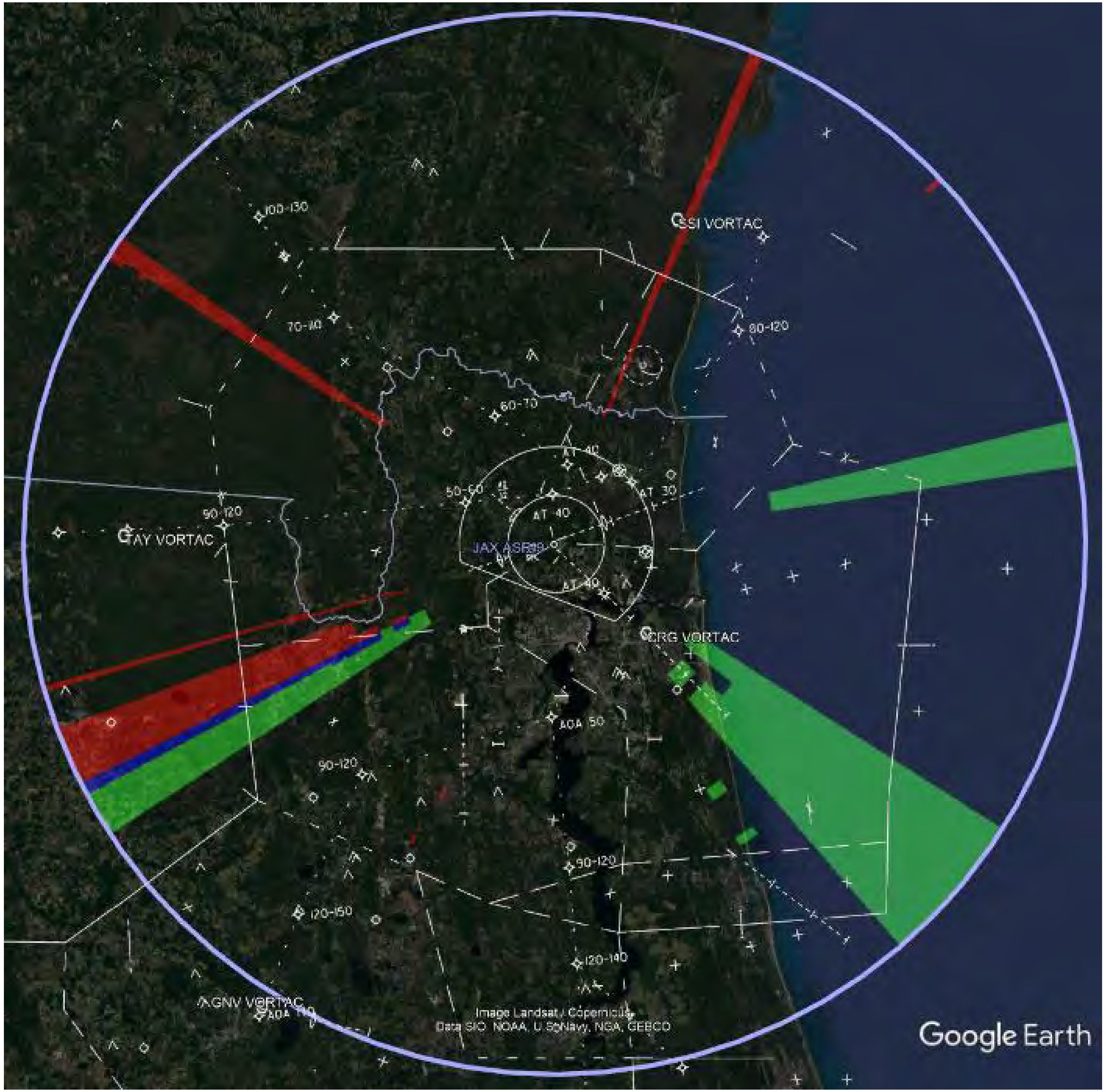
FIGURE 29

RSS BSAT Analysis: 60 NM Range 3500 to 4K FT MSL



No RCS/CDE Only

FIGURE 30

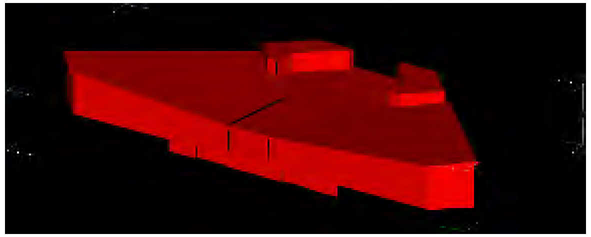


Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

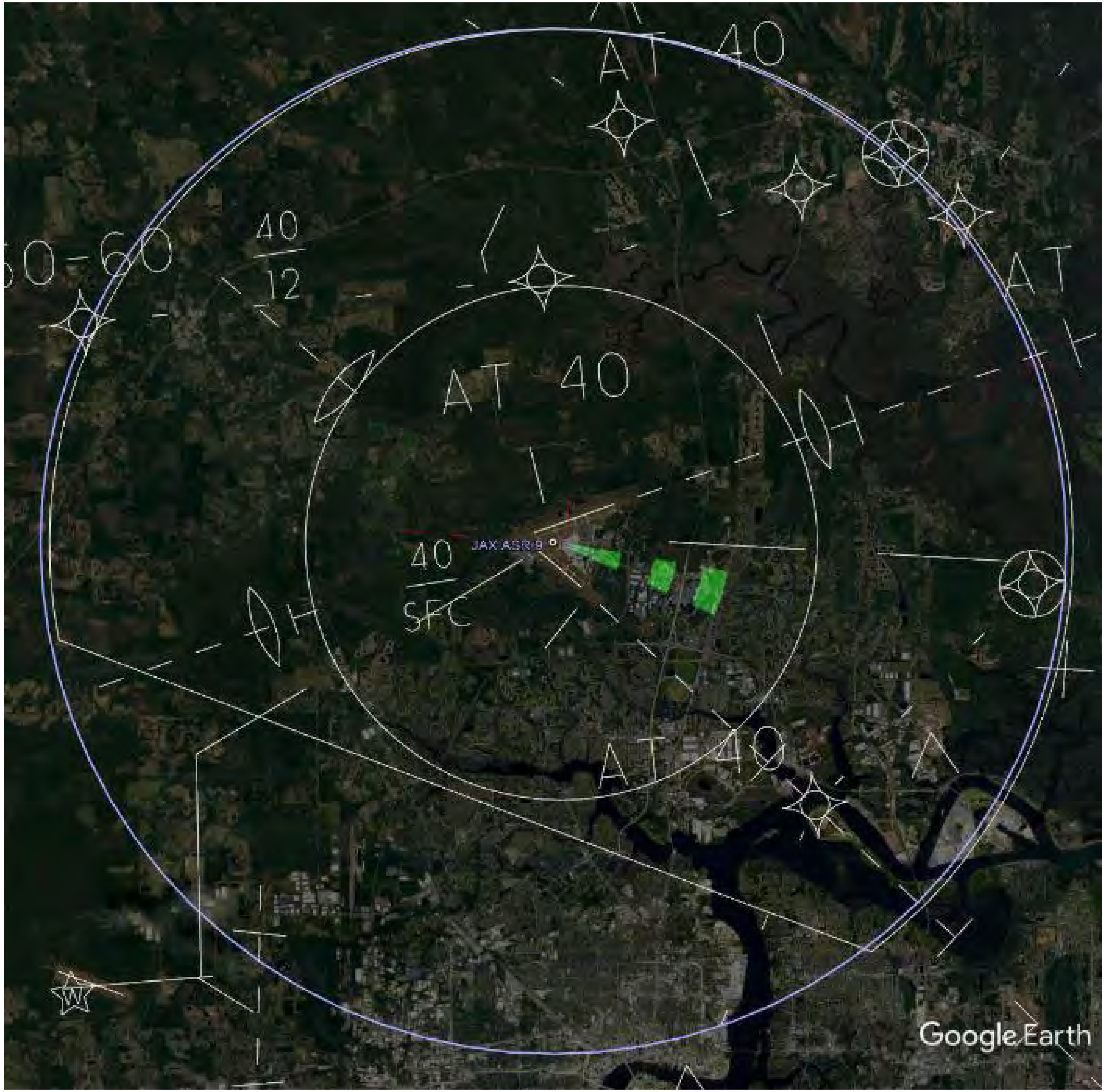
LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

RSS BSAT Analysis: 10 NM Range 50 to 250 FT MSL



JAX-CONC_sh_o.rcs
Terminal B Expansion
Building Only
ORIGINAL – NO TILT



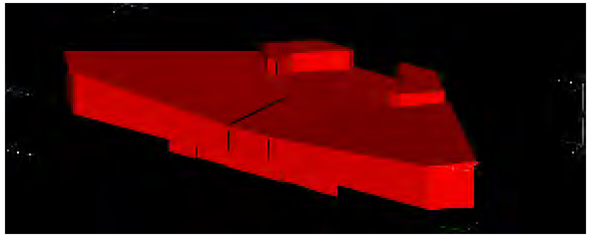
Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

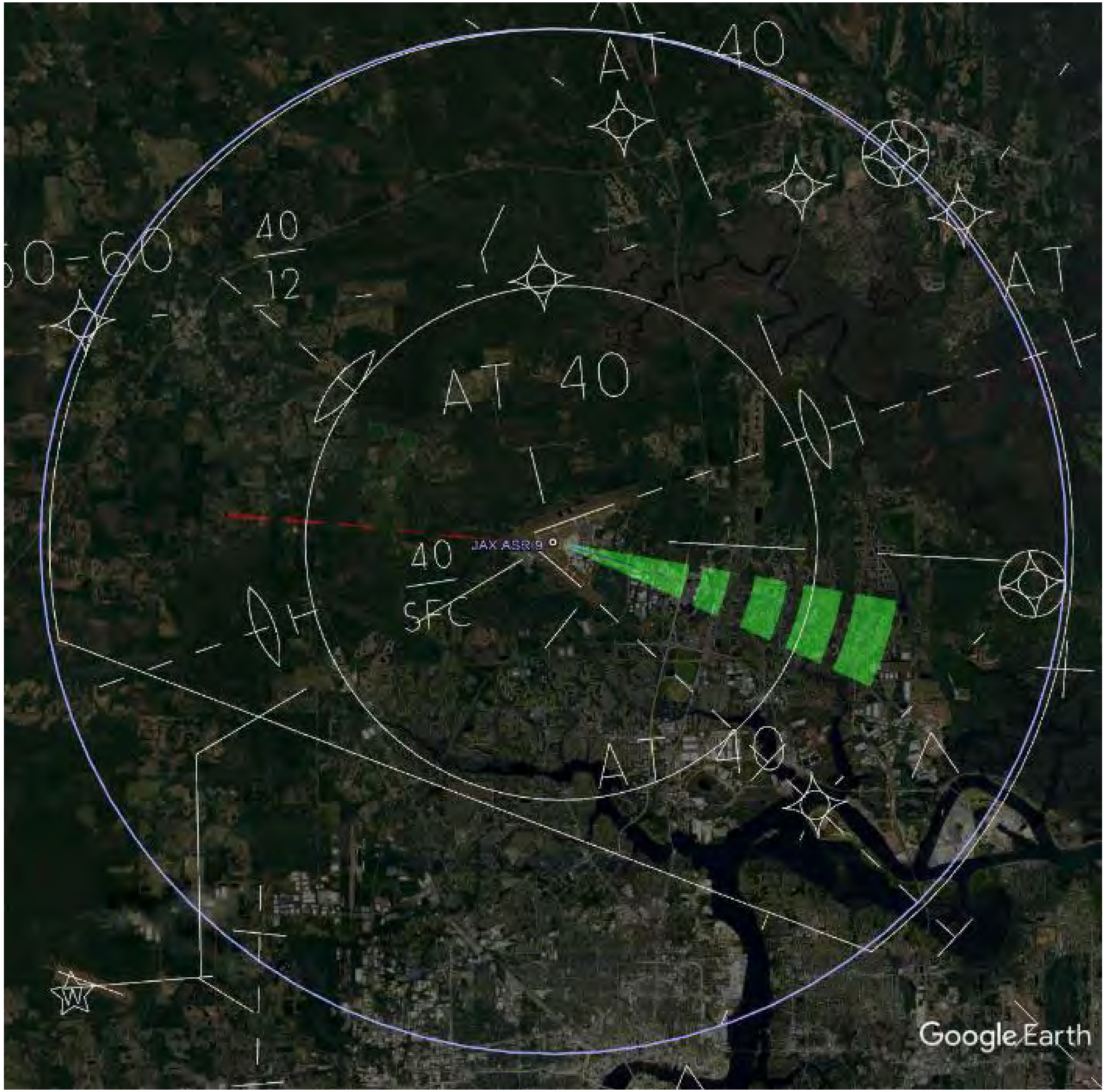
FIGURE 31

RSS BSAT Analysis: 10 NM Range 250 to 500 FT MSL



JAX-CONC_sh_o.rcs
Terminal B Expansion
Building Only
ORIGINAL – NO TILT

FIGURE 32



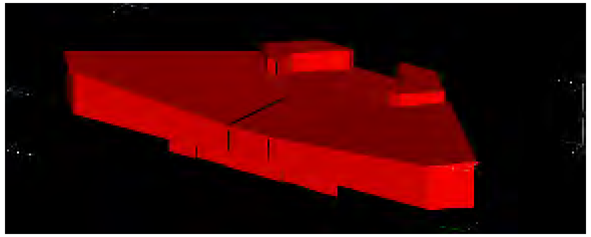
Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)

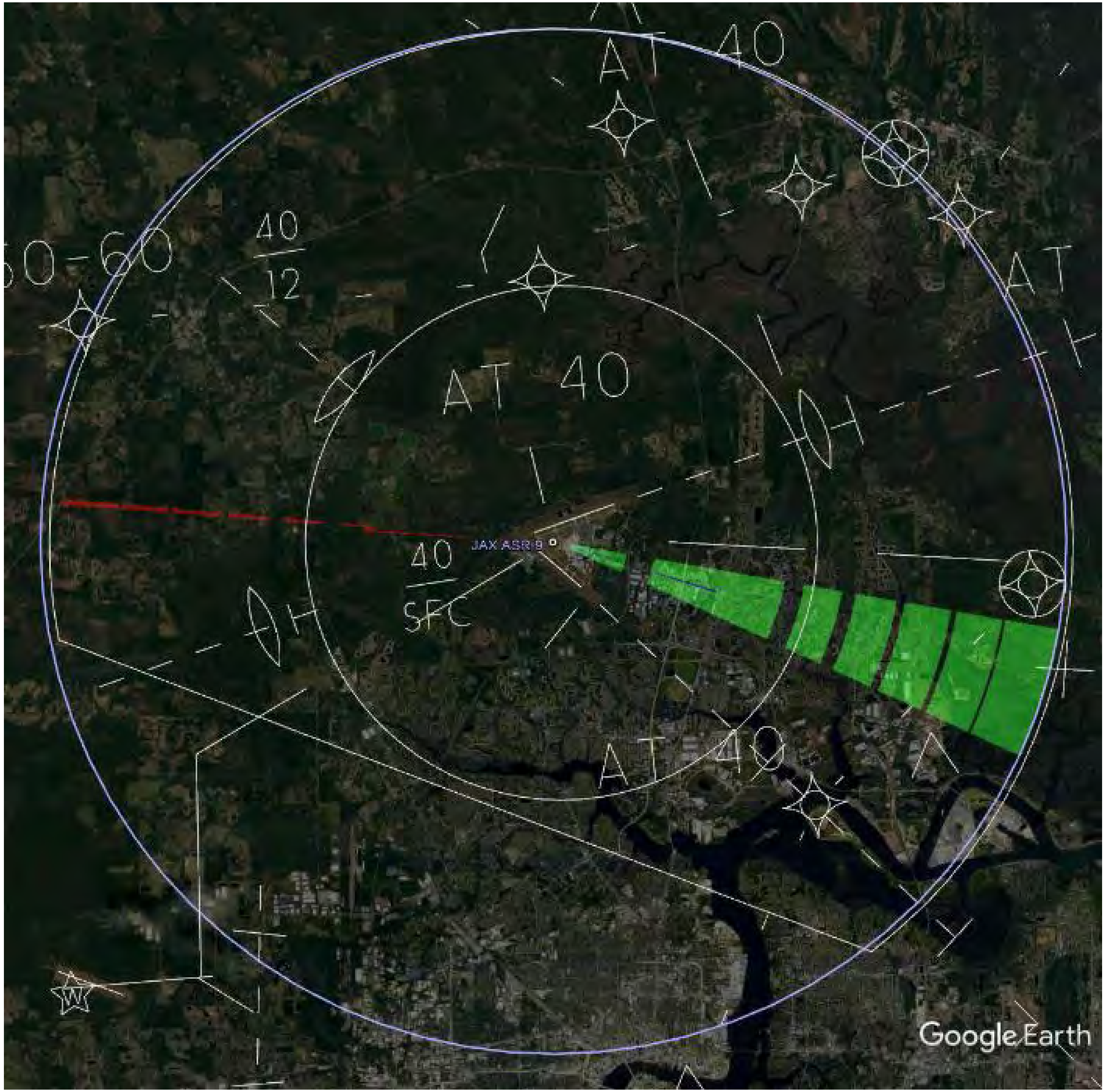
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

RSS BSAT Analysis: 10 NM Range 500 to 750 FT MSL



JAX-CONC_sh_o.rcs
Terminal B Expansion
Building Only
ORIGINAL – NO TILT

FIGURE 33

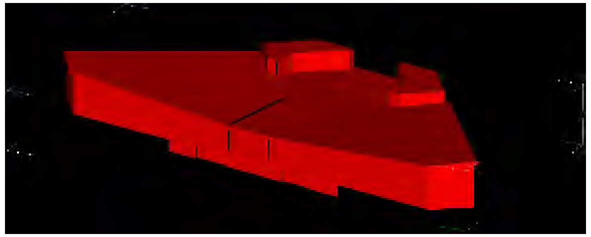


Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

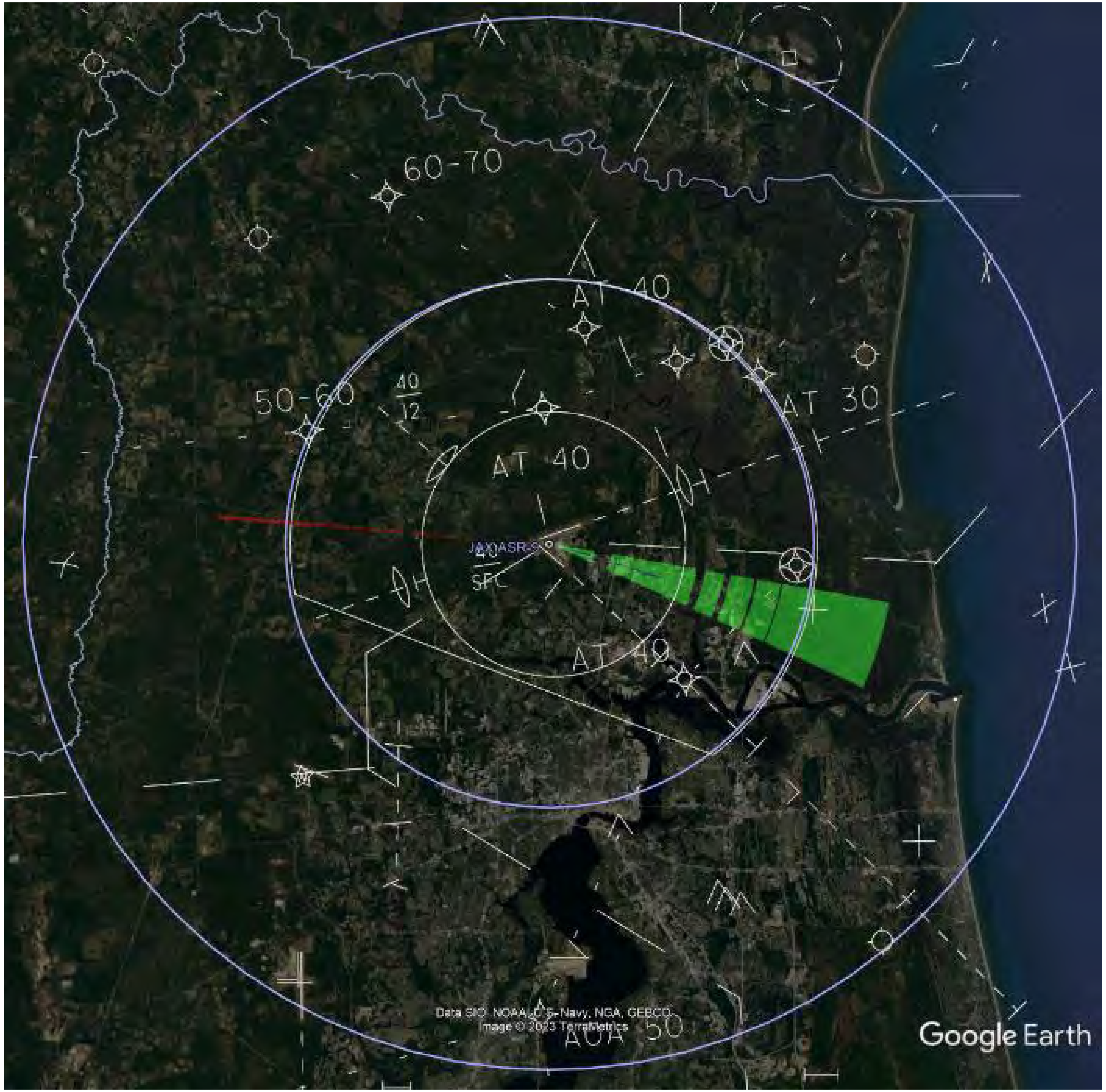
LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

RSS BSAT Analysis: 20 NM Range 750 to 1K FT MSL



JAX-CONC_sh_o.rcs
Terminal B Expansion
Building Only
ORIGINAL – NO TILT



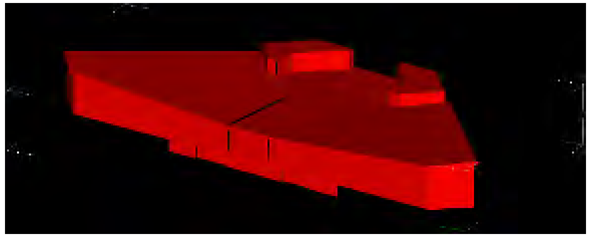
Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	3.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

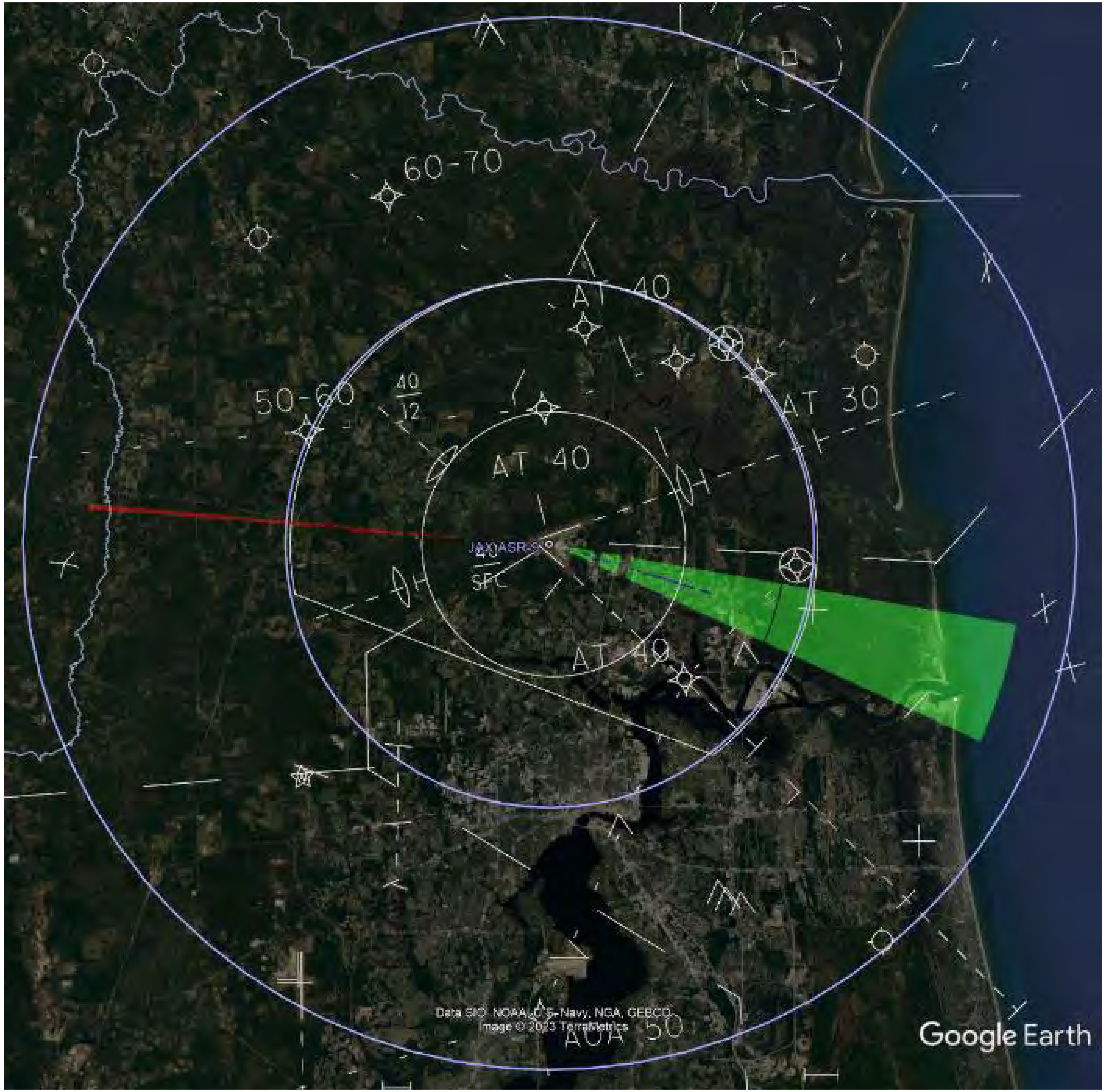
FIGURE 34

RSS BSAT Analysis: 20 NM Range 1K to 1500 FT MSL



JAX-CONC_sh_o.rcs
Terminal B Expansion
Building Only
ORIGINAL – NO TILT

FIGURE 35

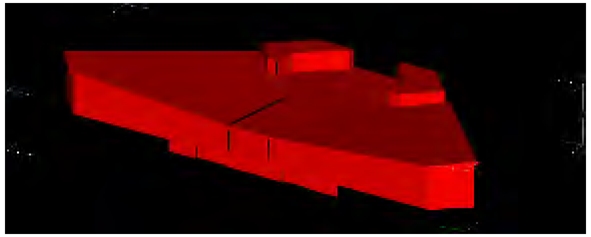


Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

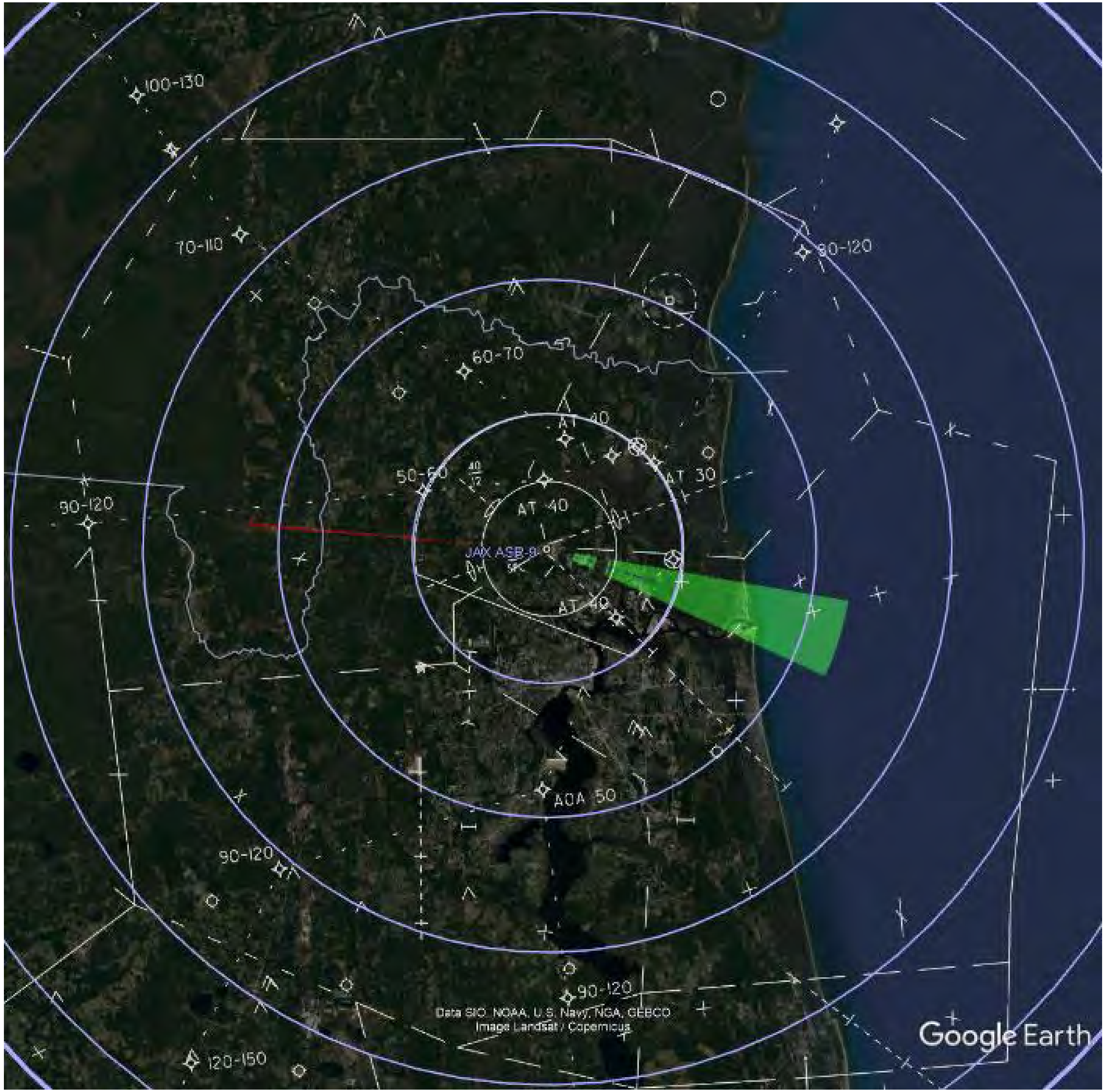
INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

RSS BSAT Analysis: 40 NM Range 1500 to 2K FT MSL



JAX-CONC_sh_o.rcs
Terminal B Expansion
Building Only
ORIGINAL – NO TILT

FIGURE 36

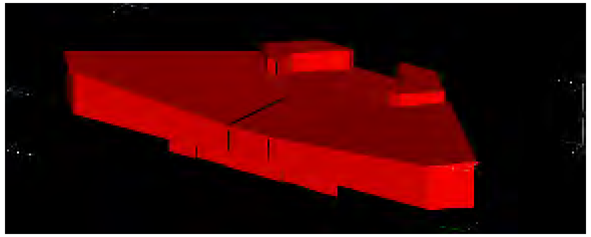


Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

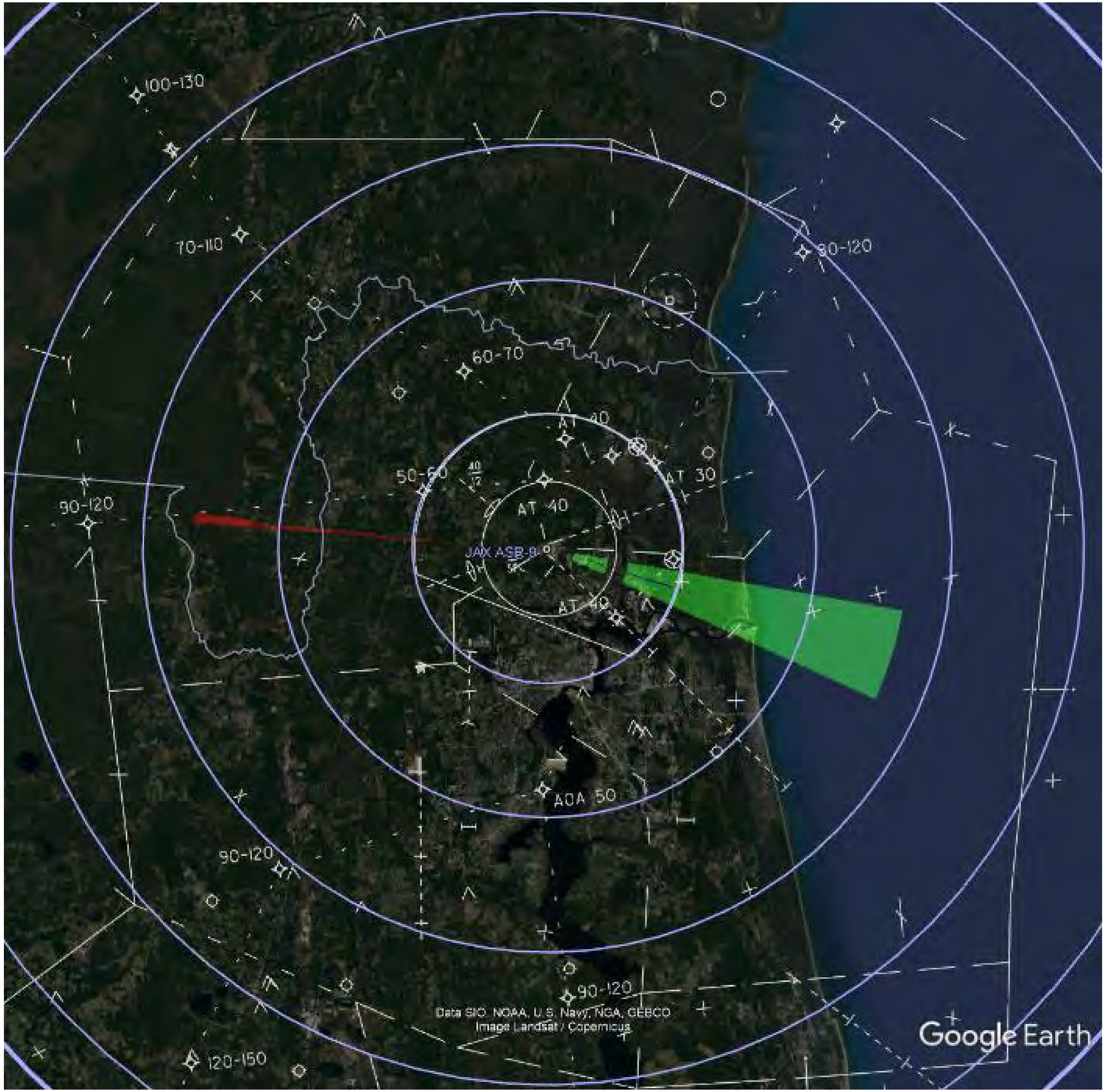
LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

RSS BSAT Analysis: 40 NM Range 2K to 2500 FT MSL



JAX-CONC_sh_o.rcs
Terminal B Expansion
Building Only
ORIGINAL – NO TILT



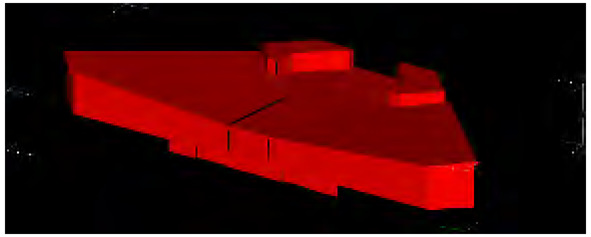
Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

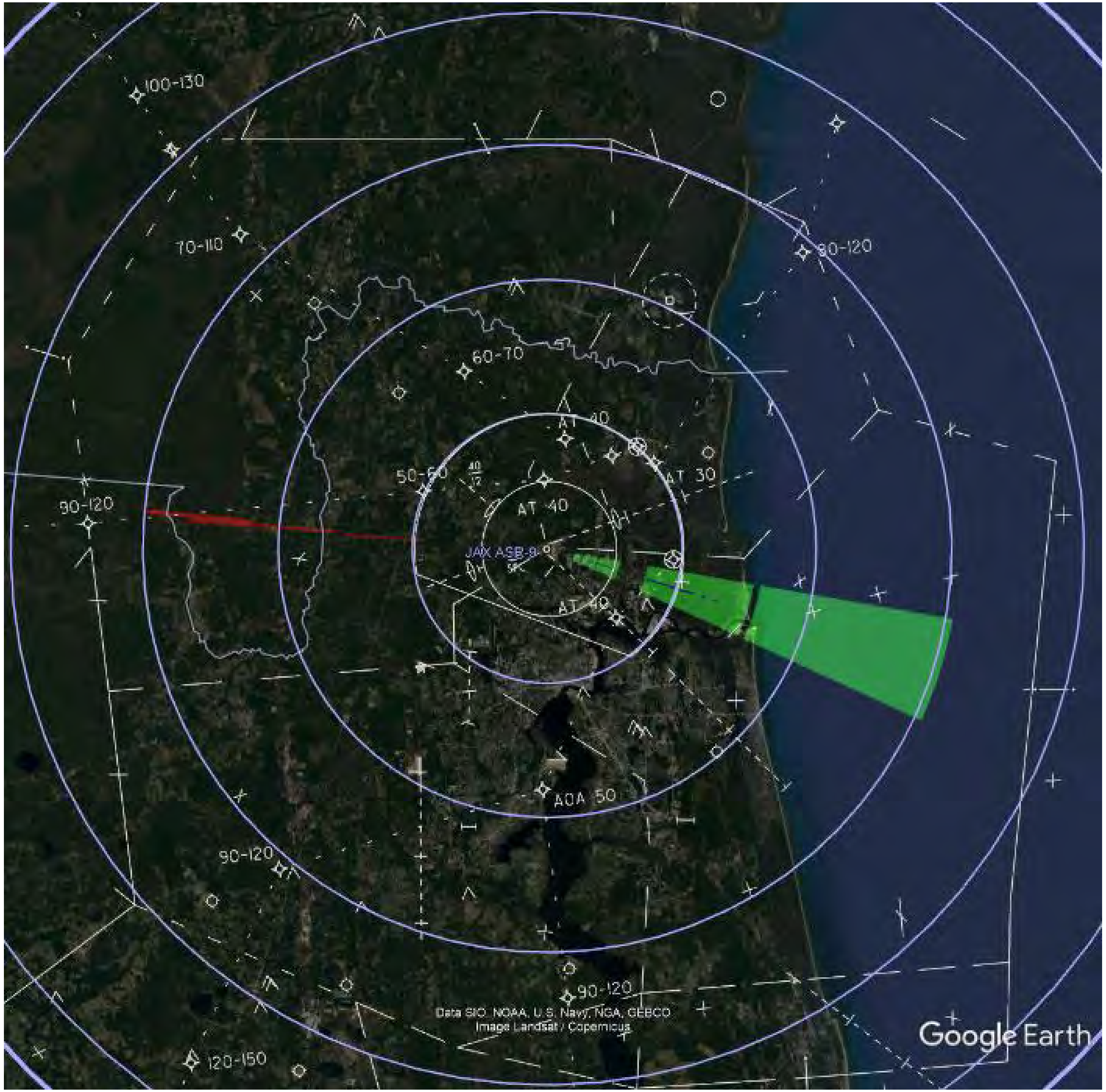
FIGURE 37

RSS BSAT Analysis: 40 NM Range 2500 to 3K FT MSL



JAX-CONC_sh_o.rcs
Terminal B Expansion
Building Only
ORIGINAL – NO TILT

FIGURE 38



Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

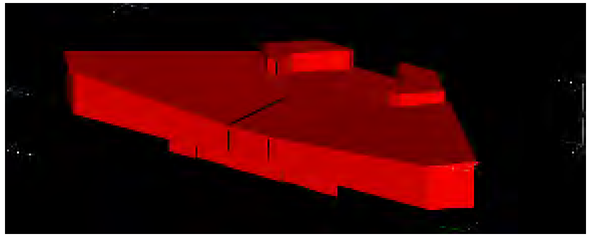
INTERROGATOR PARAMETERS

Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)

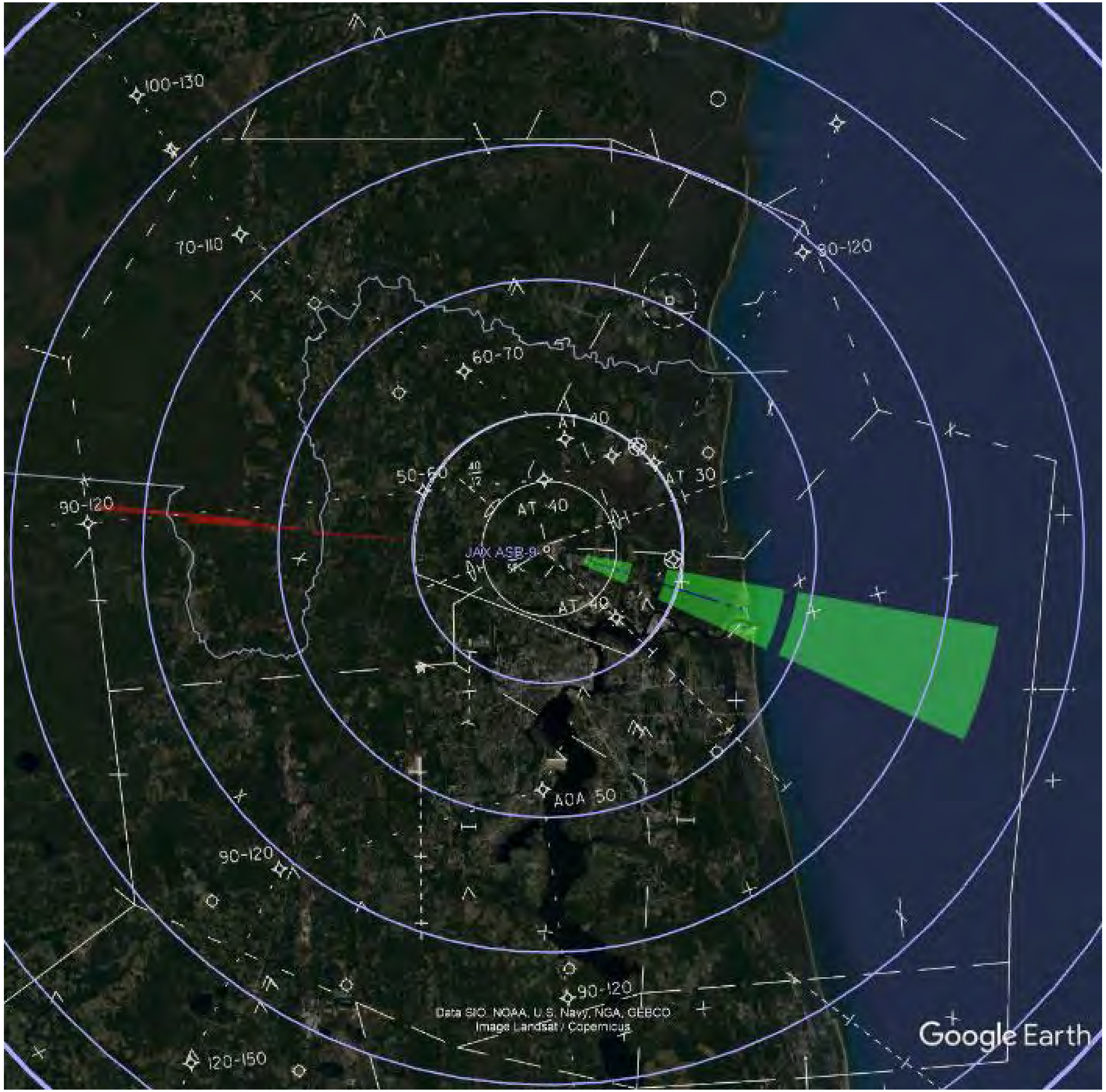
TRANSPONDER PARAMETERS

Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

RSS BSAT Analysis: 40 NM Range 3K to 3500 FT MSL



JAX-CONC_sh_o.rcs
Terminal B Expansion
Building Only
ORIGINAL – NO TILT



Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

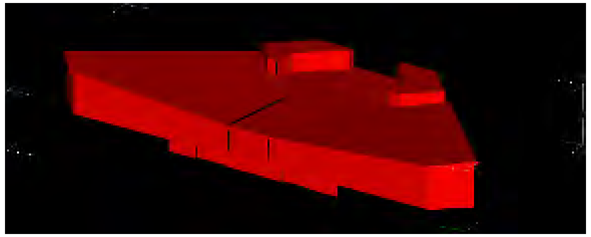
LEGEND

- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

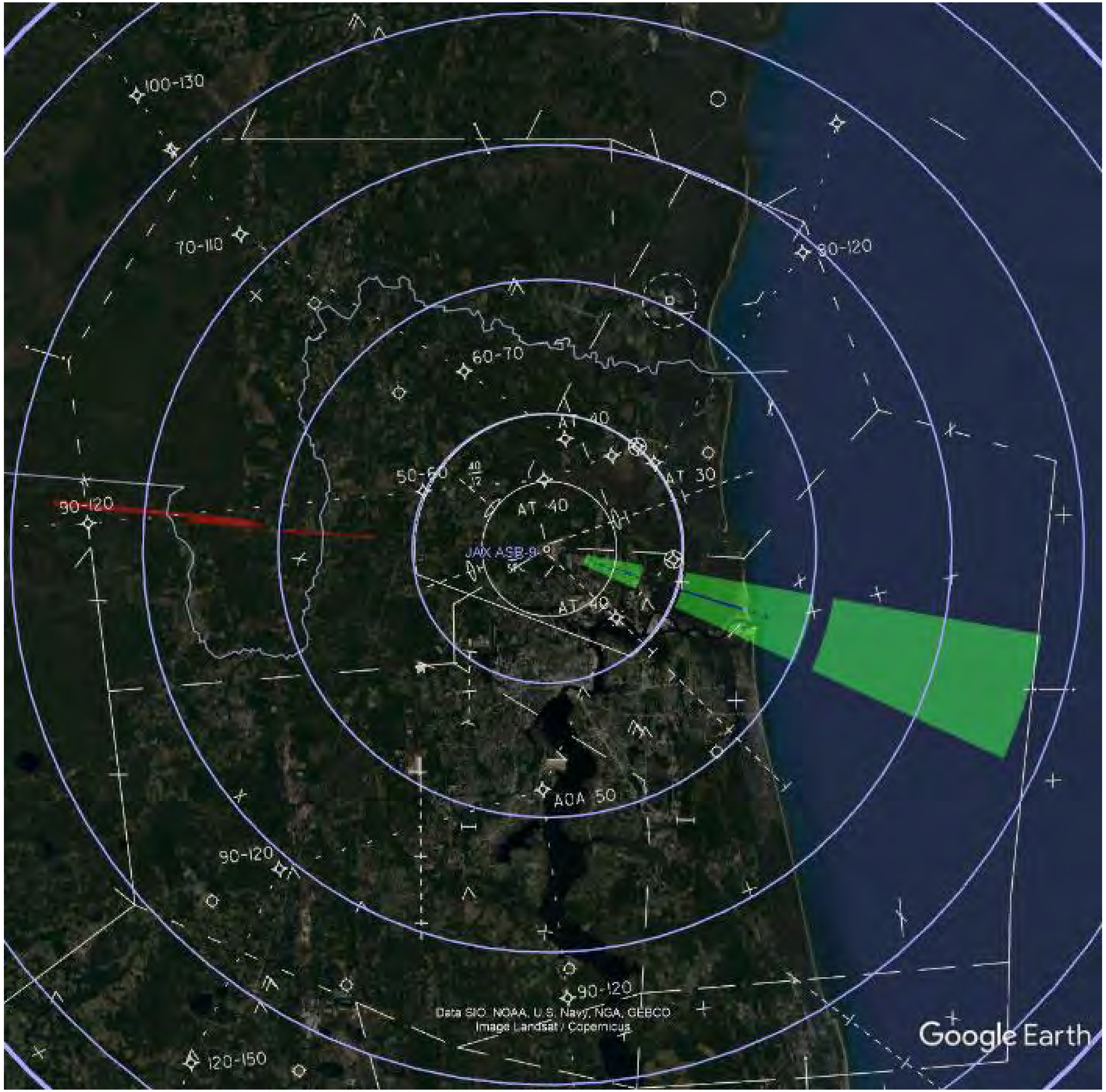
INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 39

RSS BSAT Analysis: 40 NM Range 3500 to 4K FT MSL



JAX-CONC_sh_o.rcs
Terminal B Expansion
Building Only
ORIGINAL – NO TILT



Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS

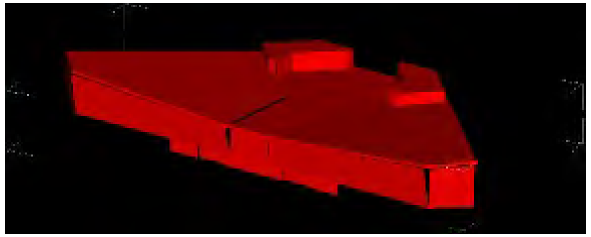
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)

TRANSPONDER PARAMETERS

Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 40

RSS BSAT Analysis: 20 NM Range 50 to 250 FT MSL



JAX-CONC_sh_r10.rcs
Terminal B Expansion
Building Only

Front & Side
Windows Tilted 10°

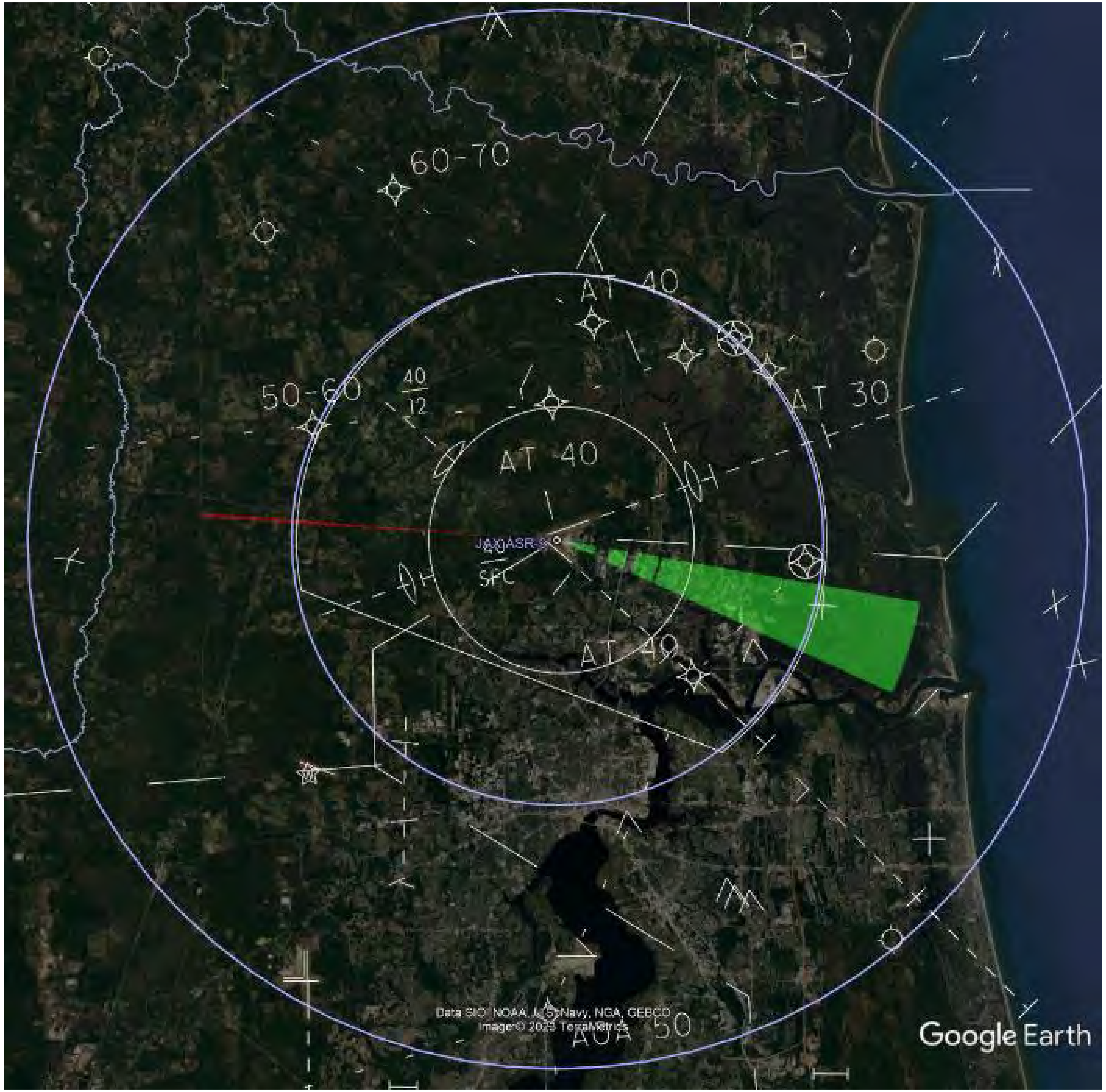


FIGURE 41

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND

- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

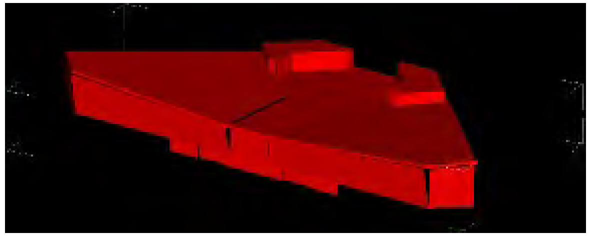
INTERROGATOR PARAMETERS

Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)

TRANSPONDER PARAMETERS

Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

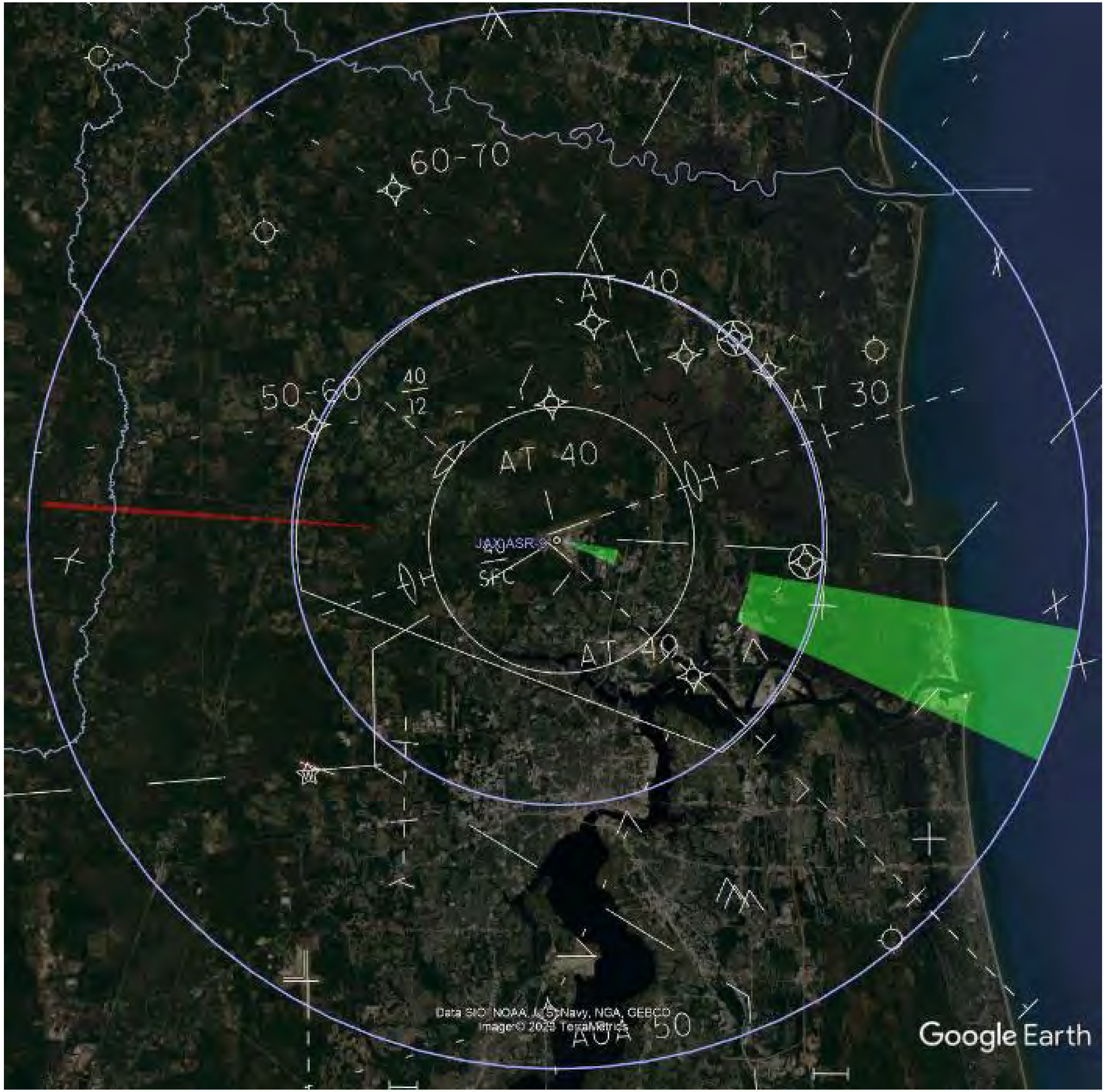
RSS BSAT Analysis: 20 NM Range 250 to 500 FT MSL



JAX-CONC_sh_r10.rcs
Terminal B Expansion
Building Only

Front & Side Windows Tilted 10°

FIGURE 42

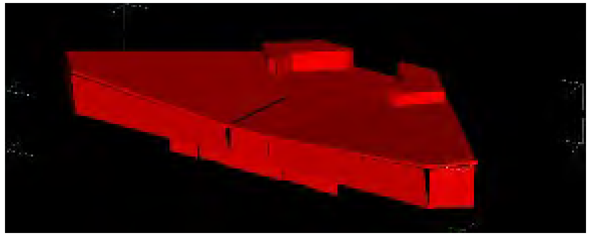


Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	3.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

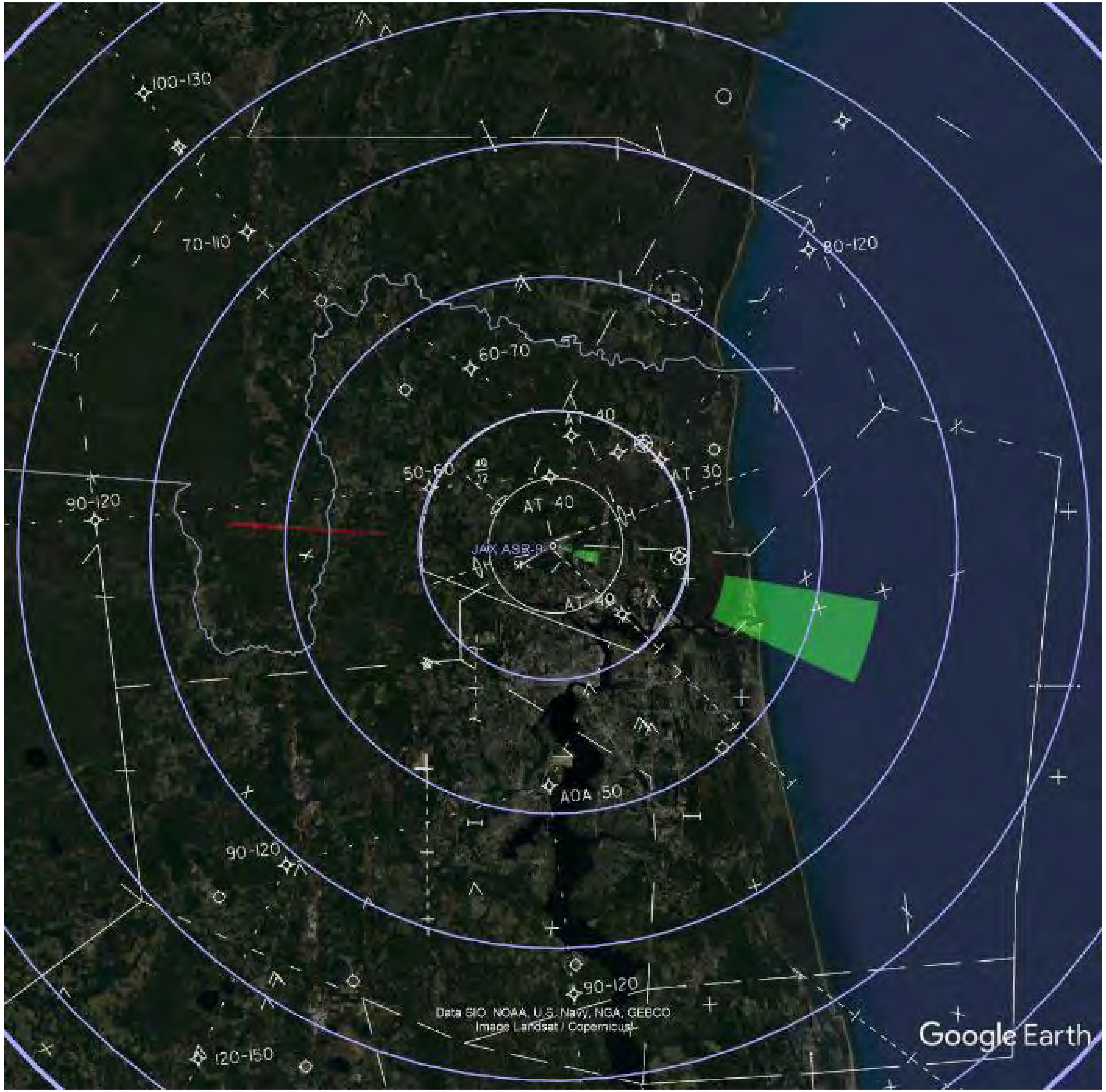
RSS BSAT Analysis: 40 NM Range 500 to 750 FT MSL



JAX-CONC_sh_r10.rcs
Terminal B Expansion
Building Only

Front & Side
Windows Tilted 10°

FIGURE 43

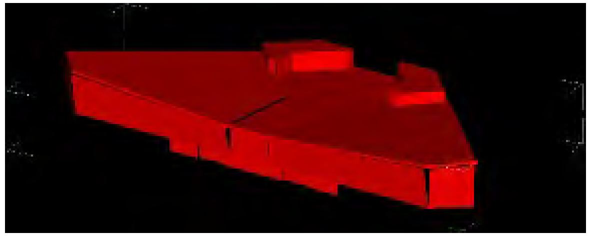


Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

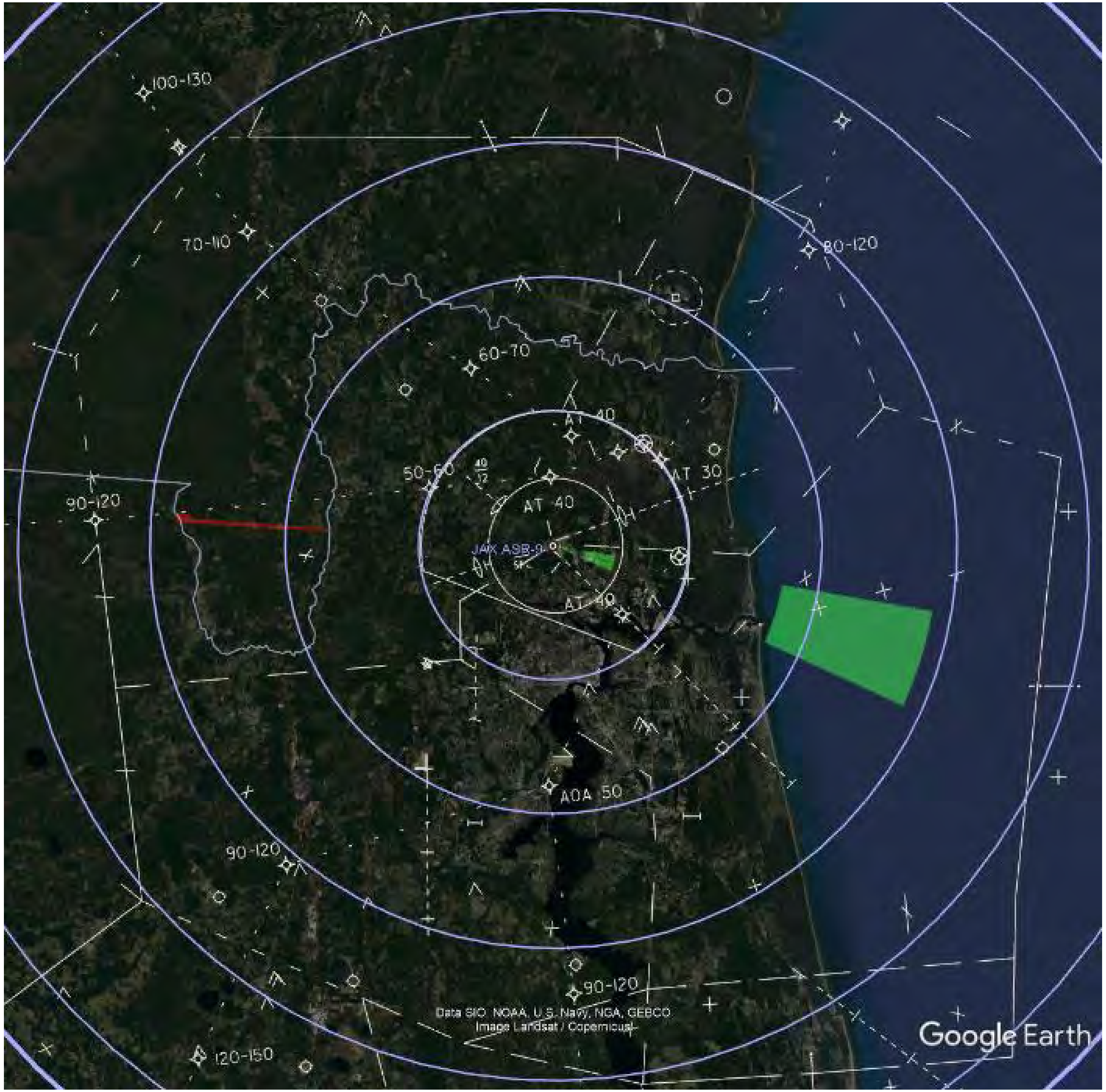
INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

RSS BSAT Analysis: 40 NM Range 750 to 1K FT MSL



JAX-CONC_sh_r10.rcs
Terminal B Expansion
Building Only

Front & Side
Windows Tilted 10°



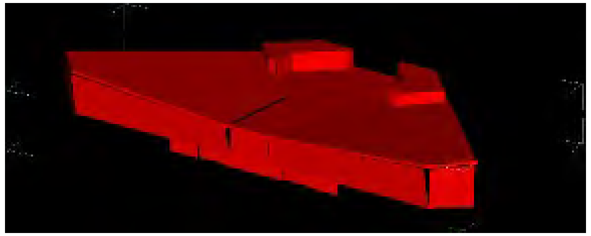
Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	3.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 44

RSS BSAT Analysis: 40 NM Range 1K to 1500 FT MSL



JAX-CONC_sh_r10.rcs
Terminal B Expansion
Building Only

Front & Side
Windows Tilted 10°

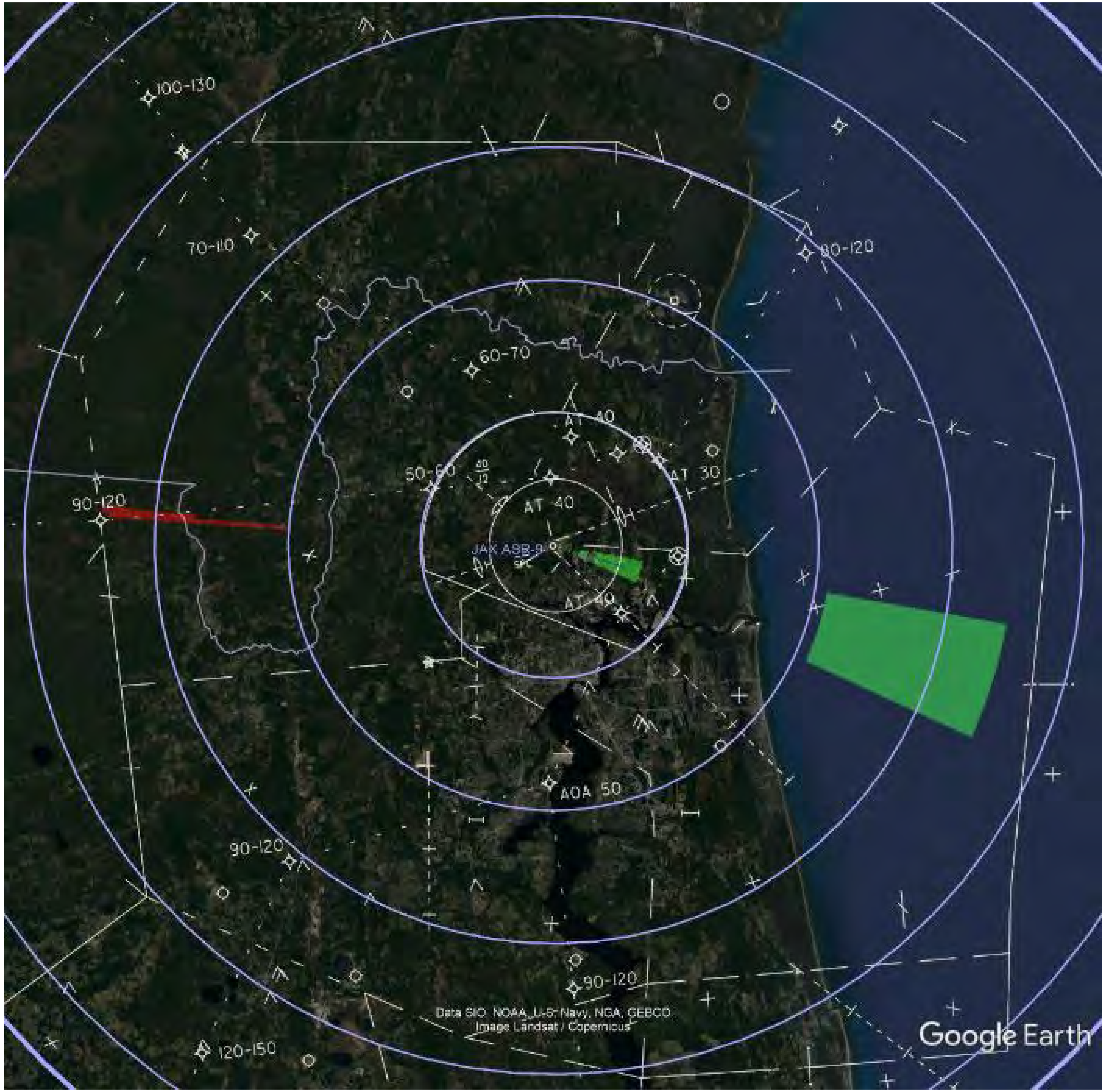


FIGURE 45

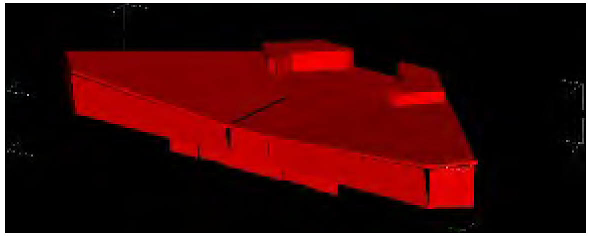
Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)

TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

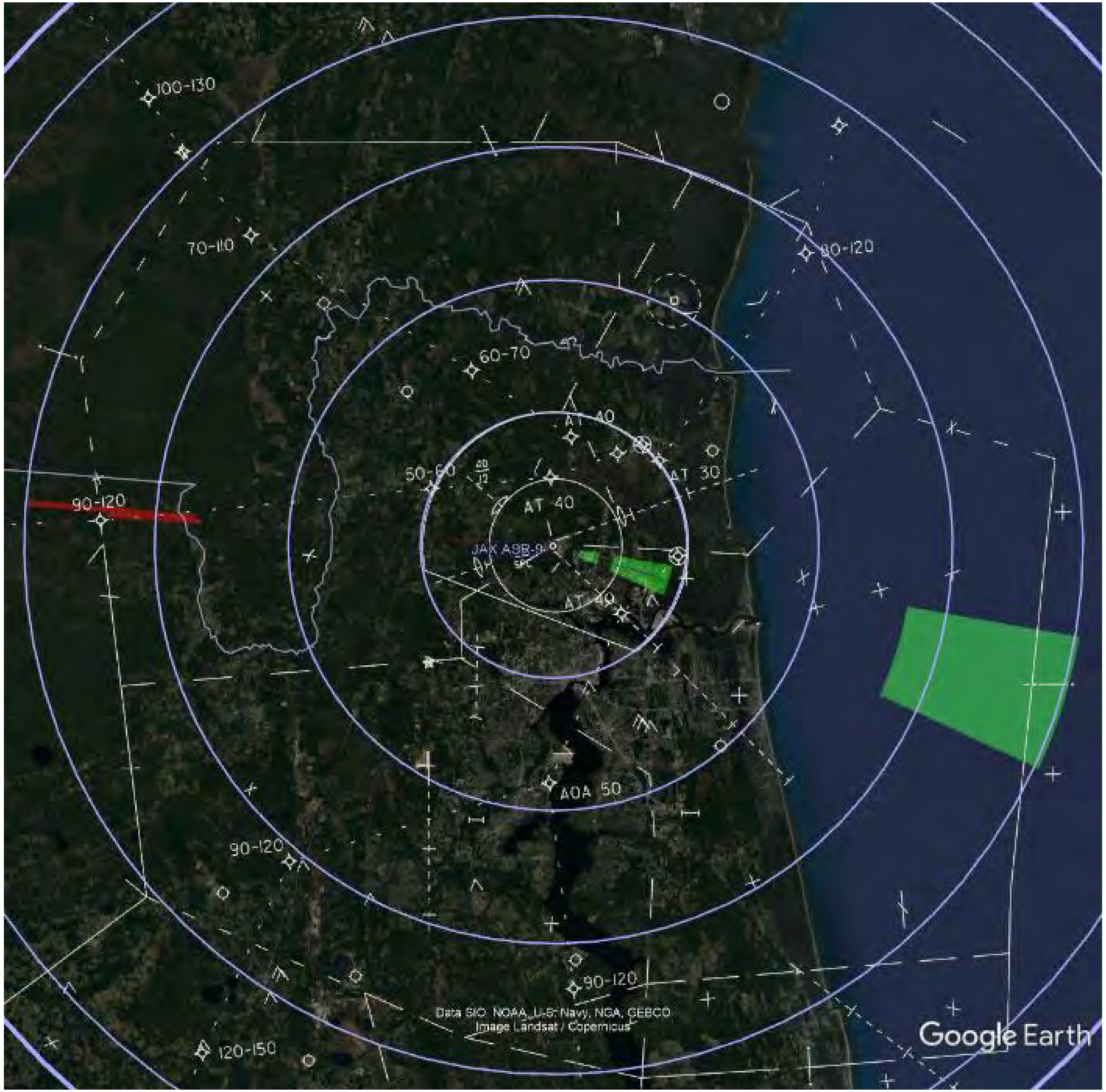
RSS BSAT Analysis: 40 NM Range 1500 to 2K FT MSL



JAX-CONC_sh_r10.rcs
Terminal B Expansion
Building Only

Front & Side Windows Tilted 10°

FIGURE 46



Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

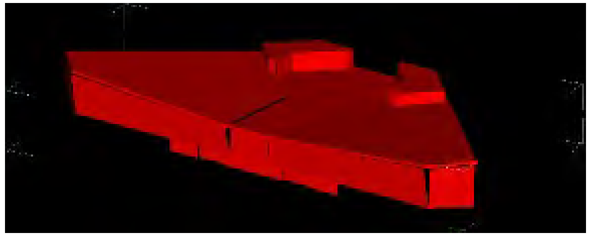
INTERROGATOR PARAMETERS

Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)

TRANSPONDER PARAMETERS

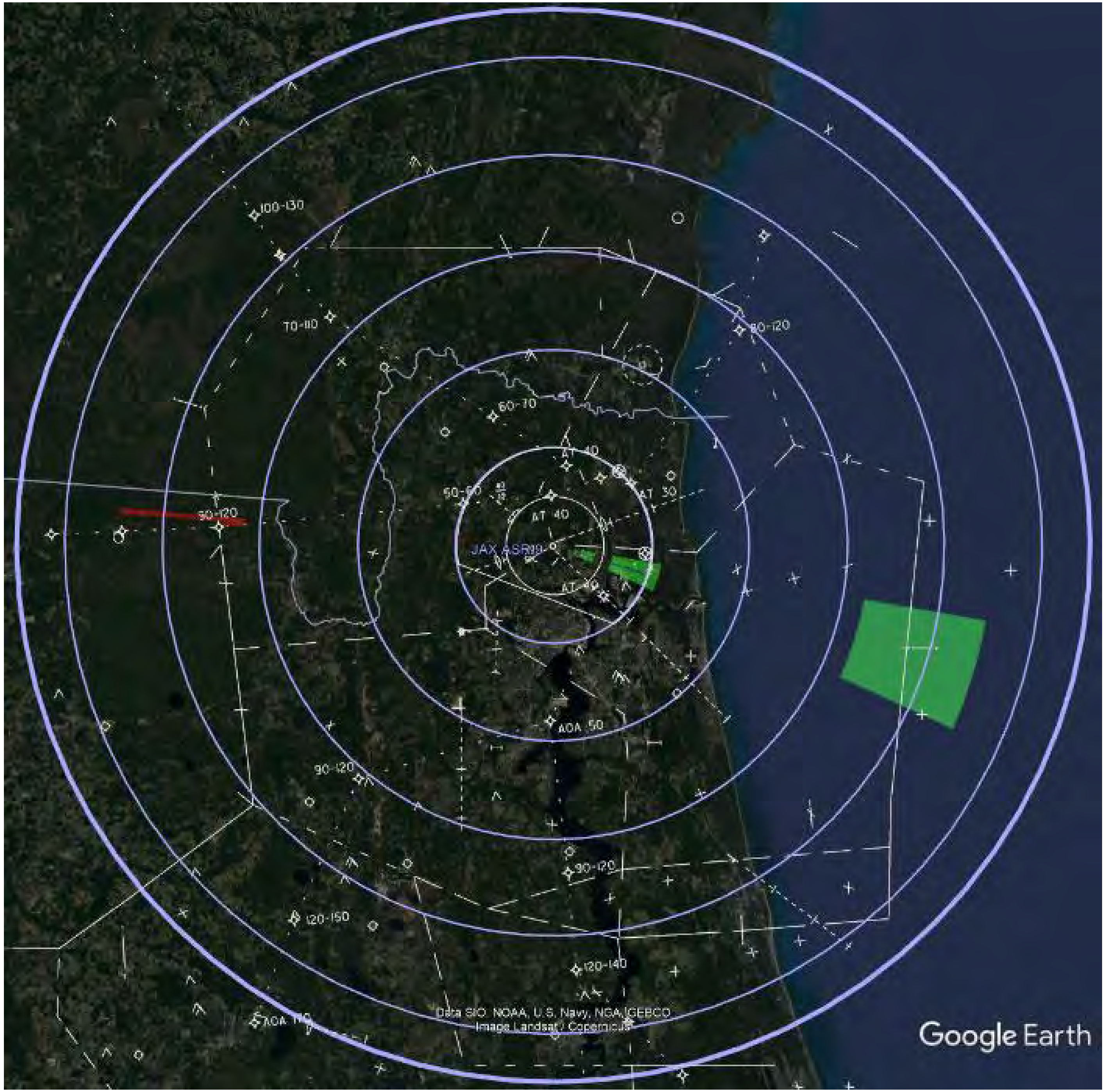
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

RSS BSAT Analysis: 60 NM Range 2K to 2500 FT MSL



JAX-CONC_sh_r10.rcs
Terminal B Expansion
Building Only

Front & Side
Windows Tilted 10°



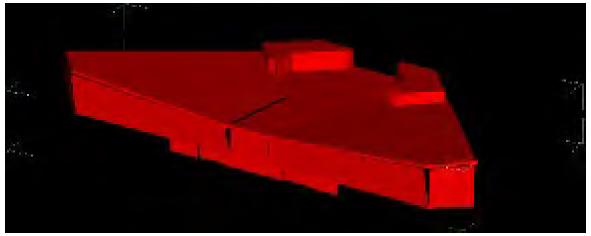
Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

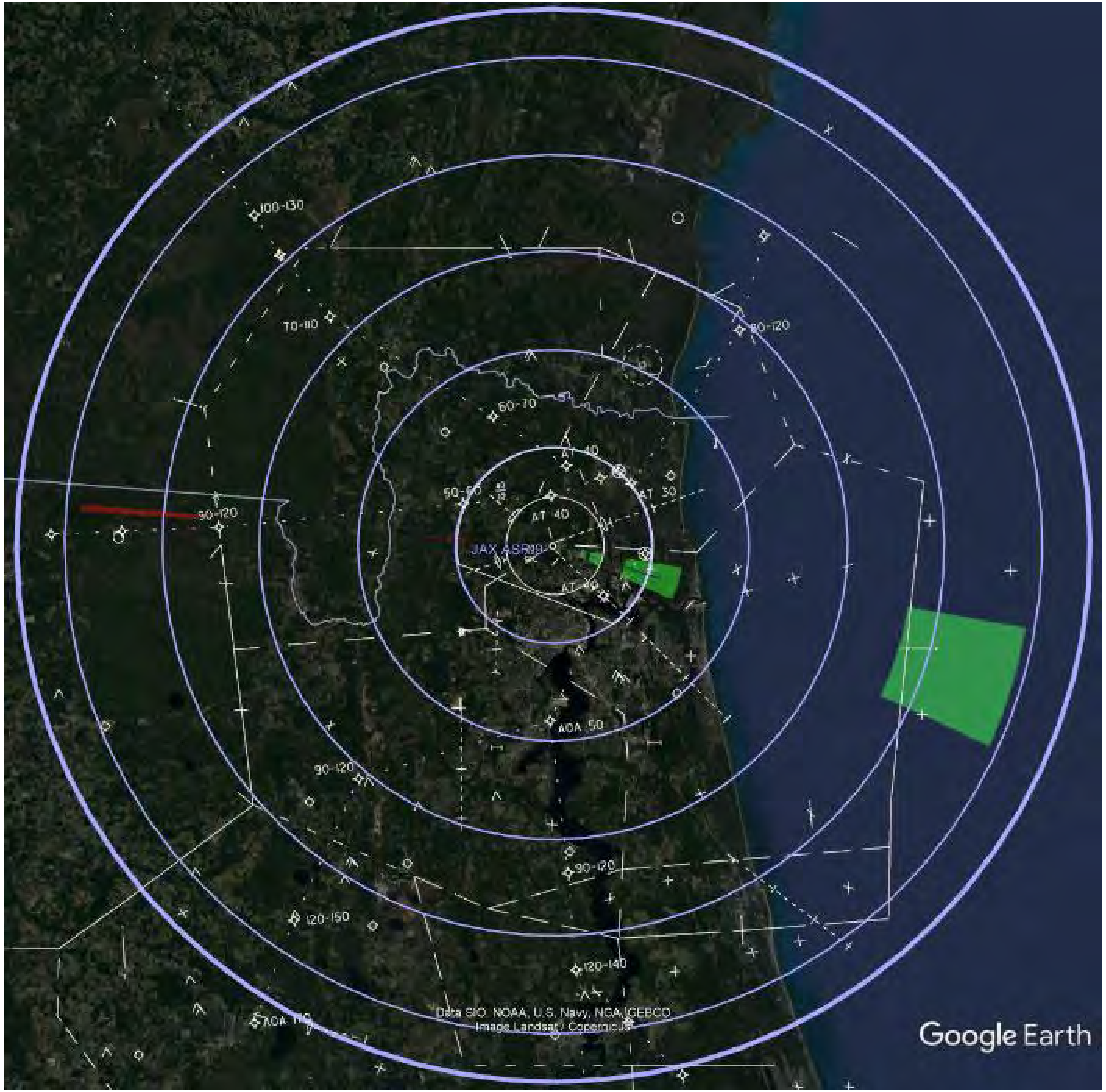
FIGURE 47

RSS BSAT Analysis: 60 NM Range 2500 to 3K FT MSL



JAX-CONC_sh_r10.rcs
Terminal B Expansion
Building Only

Front & Side Windows Tilted 10°



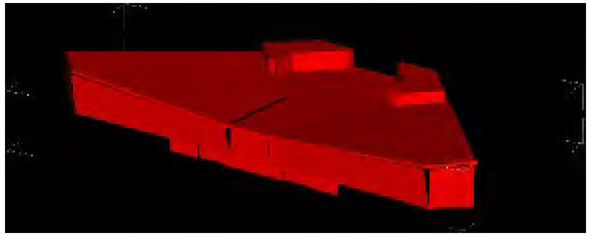
Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

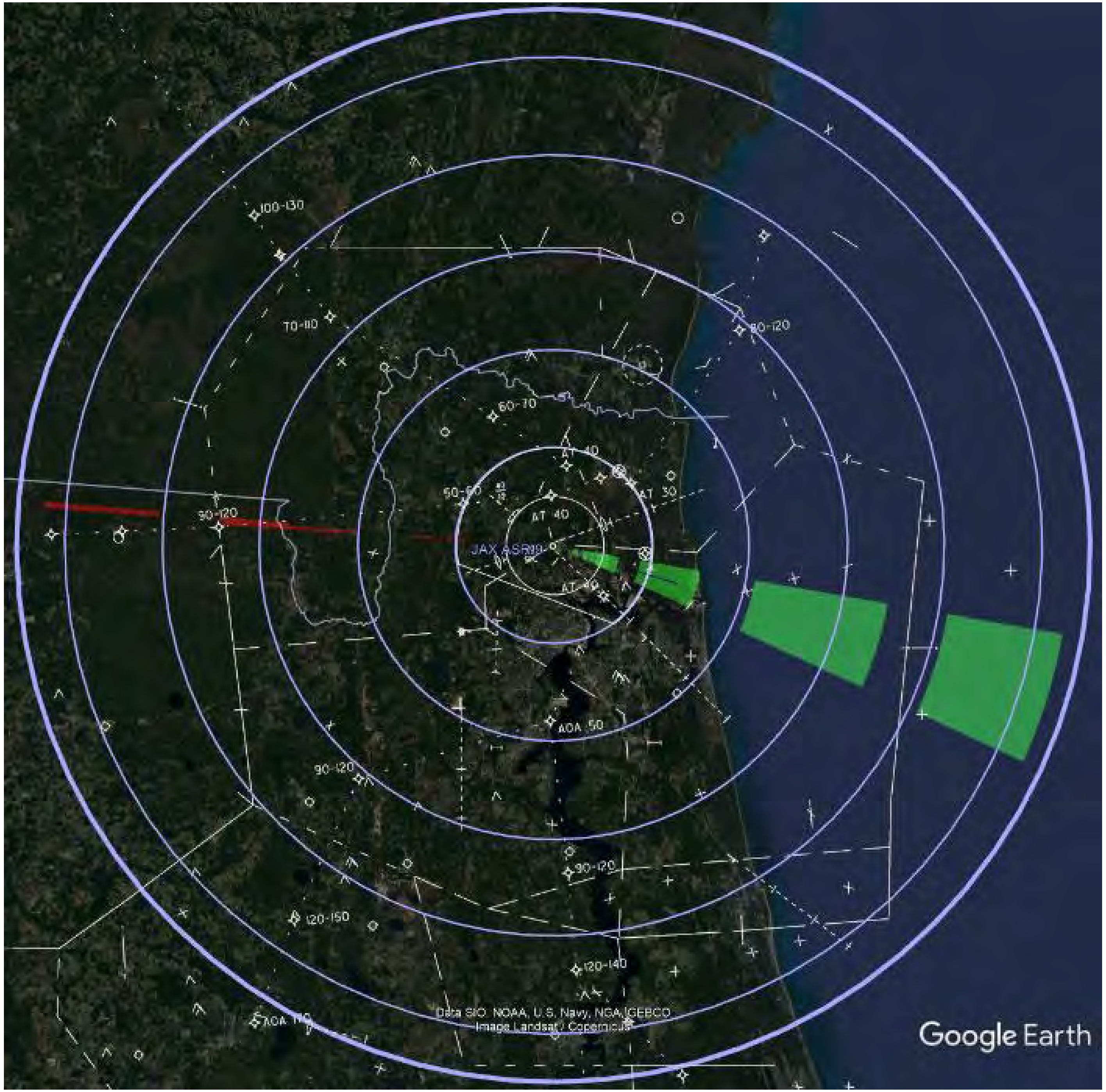
FIGURE 48

RSS BSAT Analysis: 60 NM Range 3K to 3500 FT MSL



JAX-CONC_sh_r10.rcs
Terminal B Expansion
Building Only

Front & Side
Windows Tilted 10°



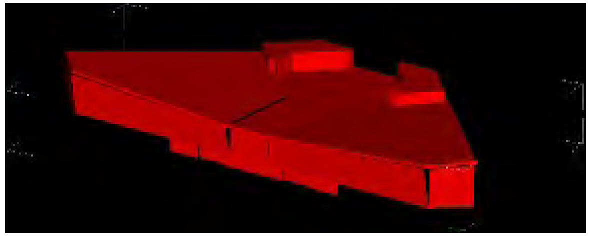
Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 49

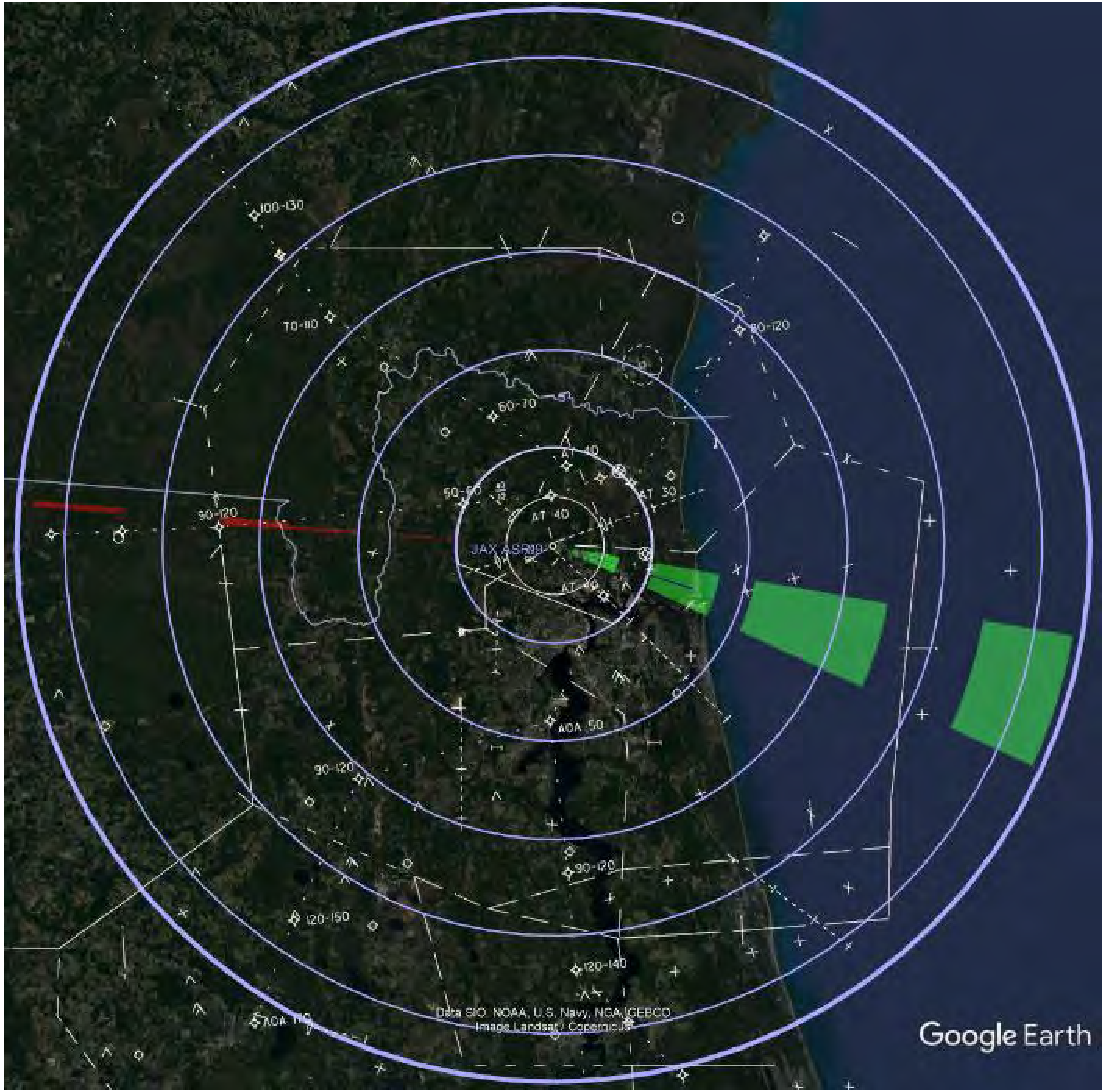
RSS BSAT Analysis: 60 NM Range 3500 to 4K FT MSL



JAX-CONC_sh_r10.rcs
Terminal B Expansion
Building Only

Front & Side
Windows Tilted 10°

FIGURE 50

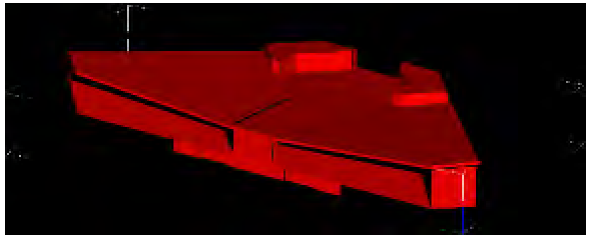


Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

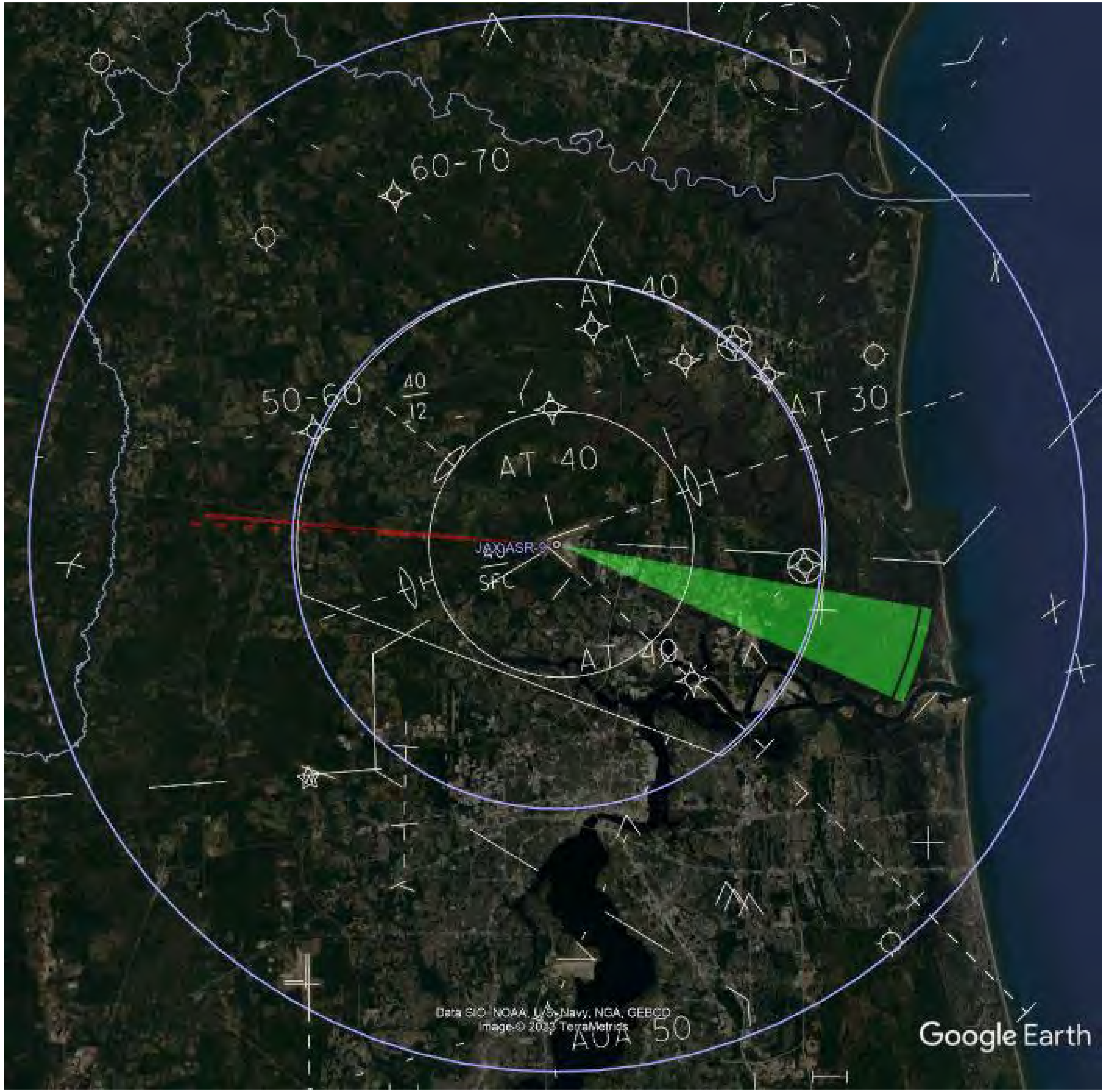
RSS BSAT Analysis: 20 NM Range 50 to 250 FT MSL



JAX-CONC_sh_r20.rcs
Terminal B Expansion
Building Only

Side Windows Tilted 10°
Front Windows Tilted 20°

FIGURE 51

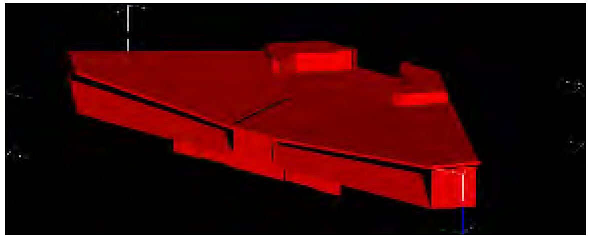


Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

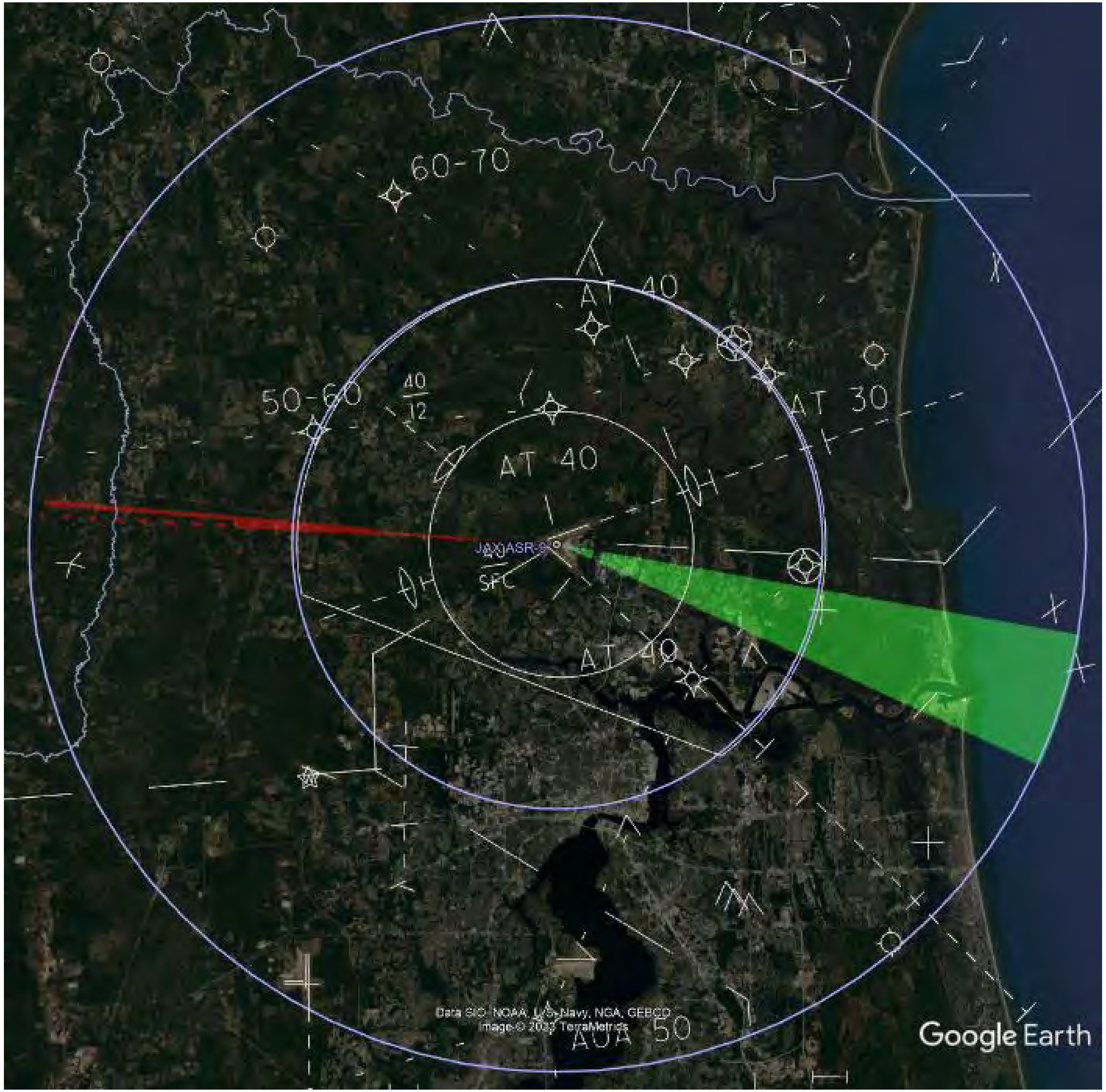
RSS BSAT Analysis: 20 NM Range 250 to 500 FT MSL



JAX-CONC_sh_r20.rcs
Terminal B Expansion
Building Only

Side Windows Tilted 10°
Front Windows Tilted 20°

FIGURE 52

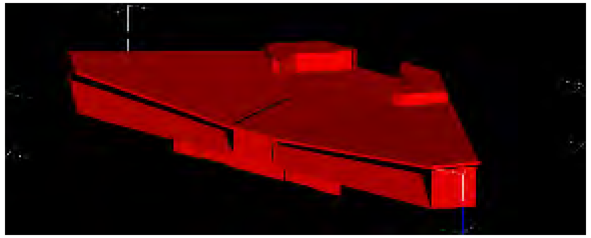


Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

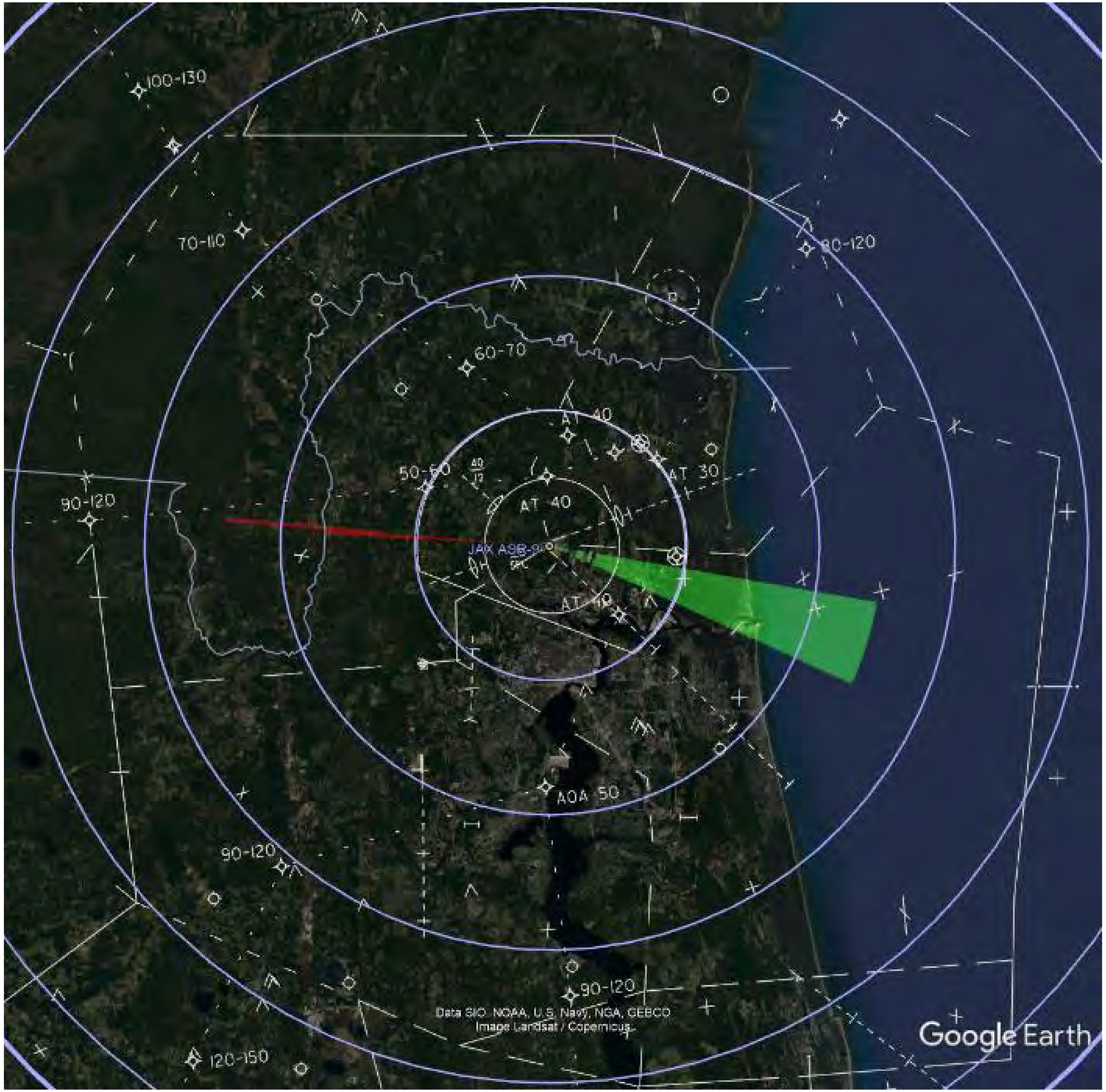
RSS BSAT Analysis: 40 NM Range 500 to 750 FT MSL



JAX-CONC_sh_r20.rcs
Terminal B Expansion
Building Only

Side Windows Tilted 10°
Front Windows Tilted 20°

FIGURE 53

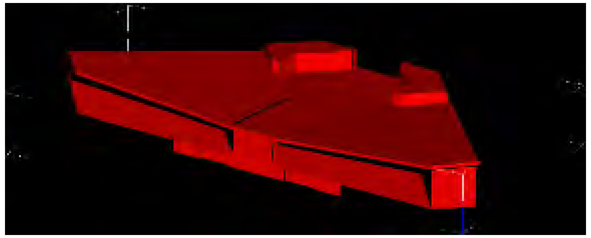


Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	3.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

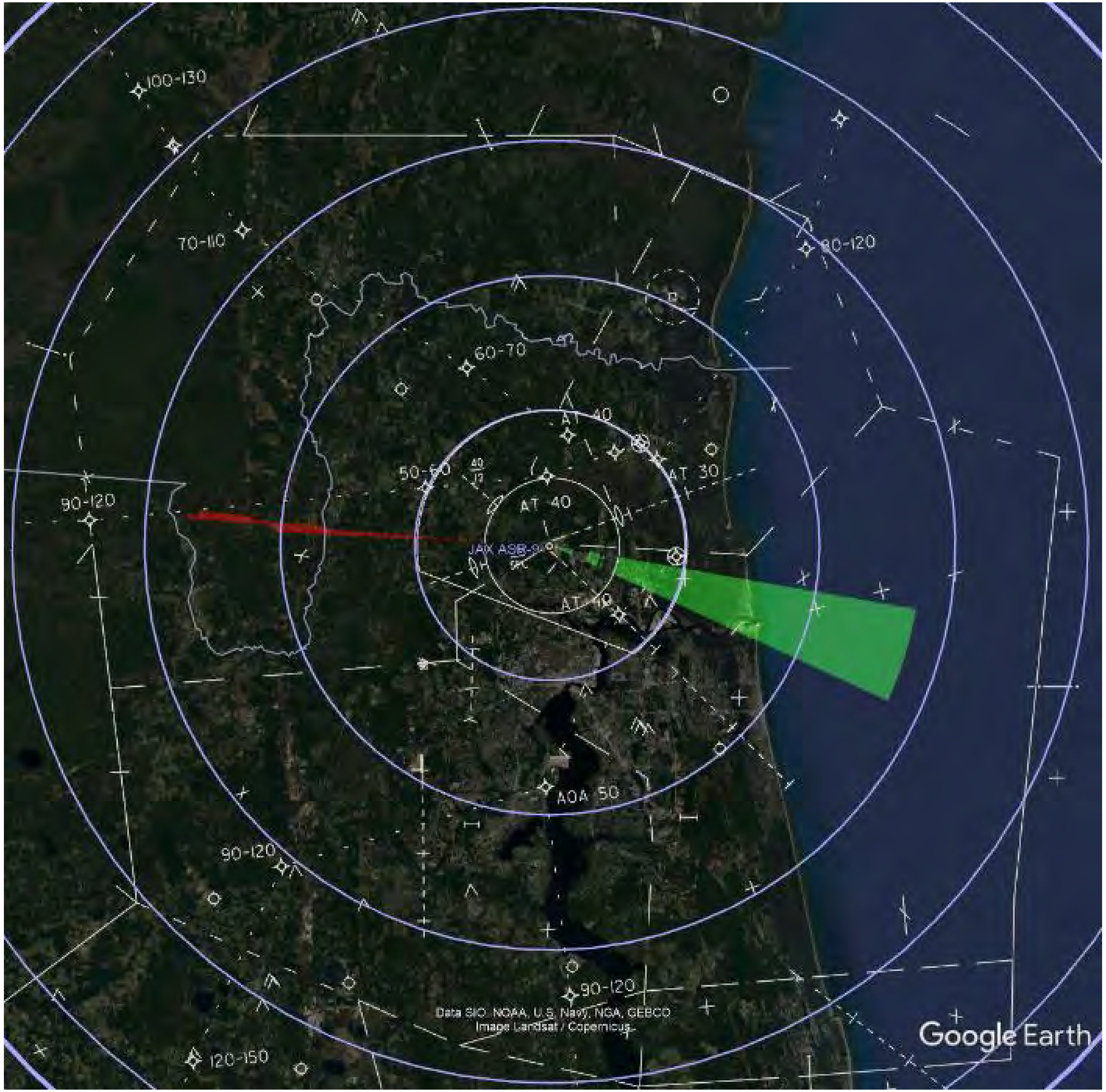
RSS BSAT Analysis: 40 NM Range 750 to 1K FT MSL



JAX-CONC_sh_r20.rcs
Terminal B Expansion
Building Only

Side Windows Tilted 10°
Front Windows Tilted 20°

FIGURE 54

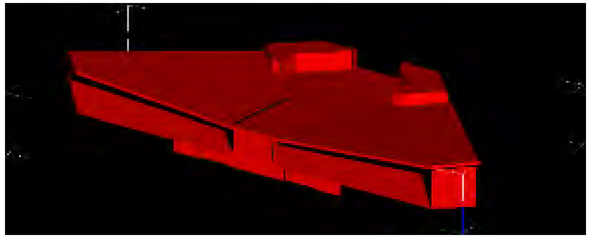


Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

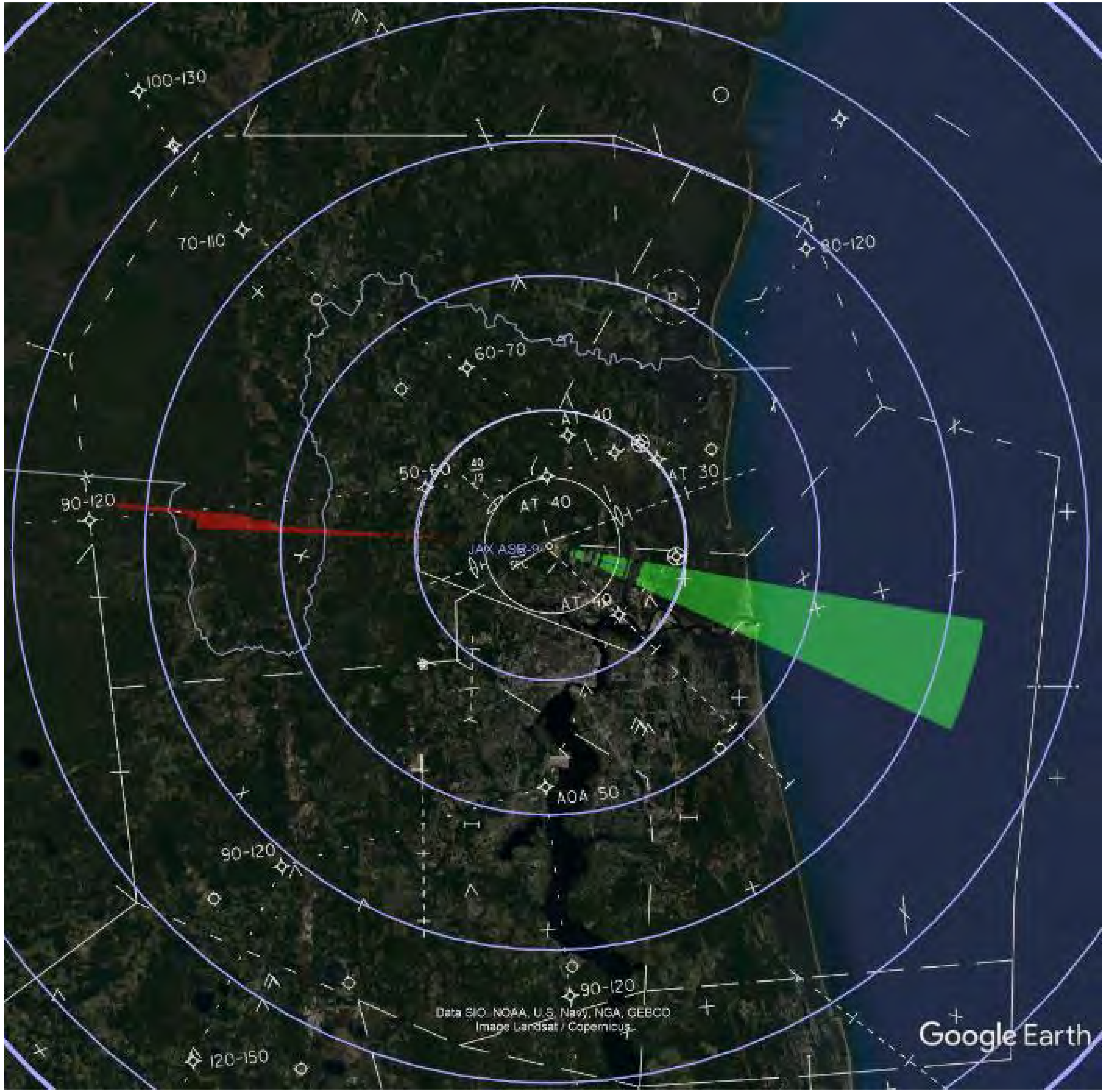
RSS BSAT Analysis: 40 NM Range 1K to 1500 FT MSL



JAX-CONC_sh_r20.rcs
Terminal B Expansion
Building Only

Side Windows Tilted 10°
Front Windows Tilted 20°

FIGURE 55

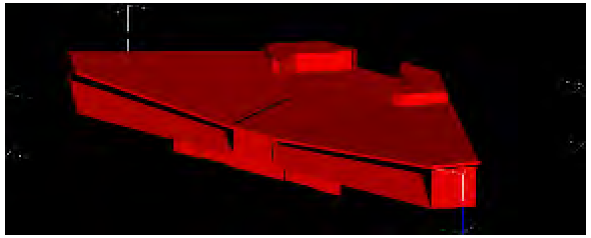


Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

RSS BSAT Analysis:
40 NM Range
1500 to 2K FT MSL



JAX-CONC_sh_r20.rcs
Terminal B Expansion
Building Only

Side Windows Tilted 10°
Front Windows Tilted 20°

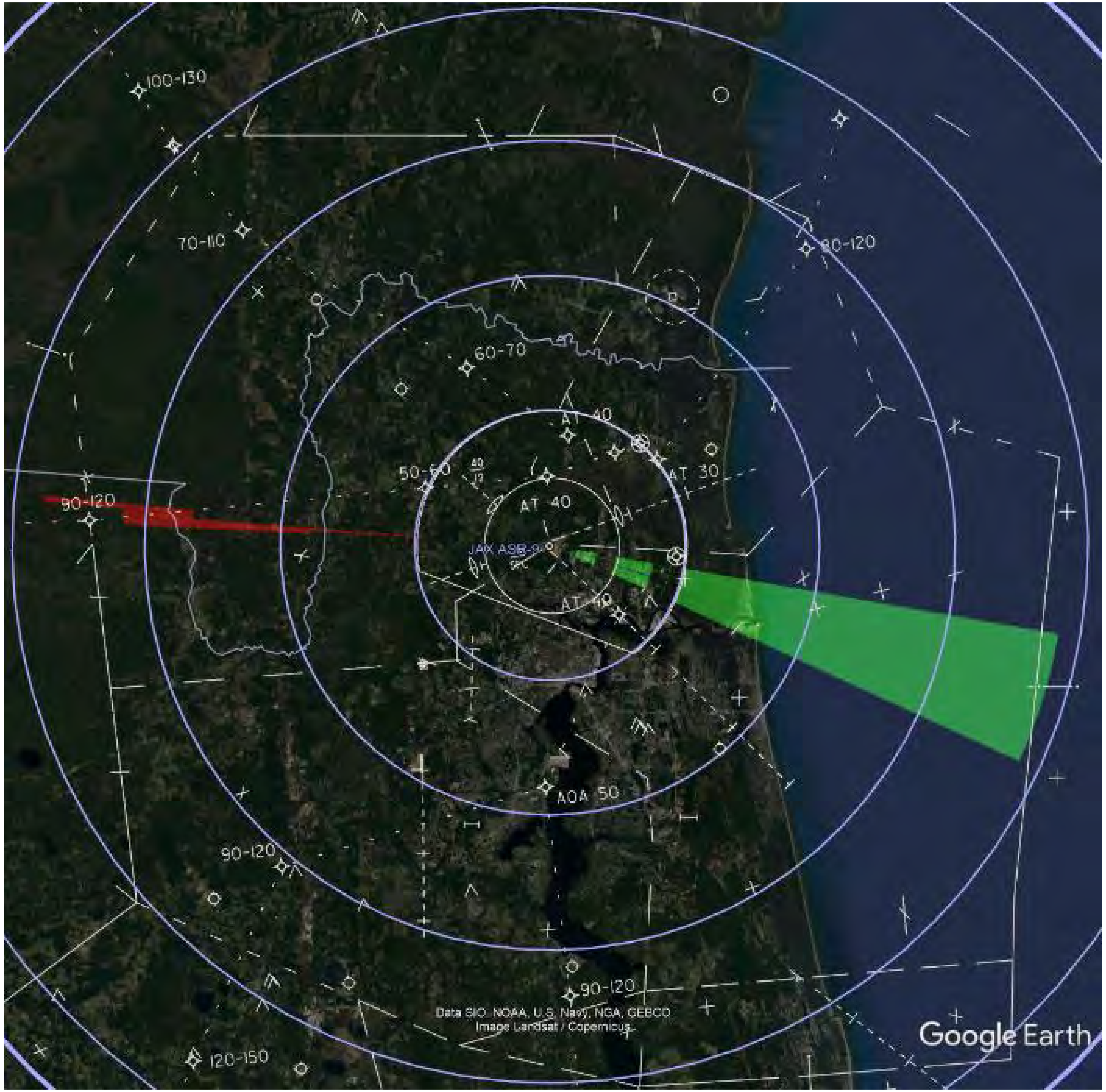


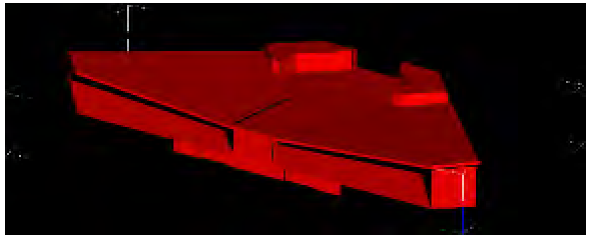
FIGURE 56

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

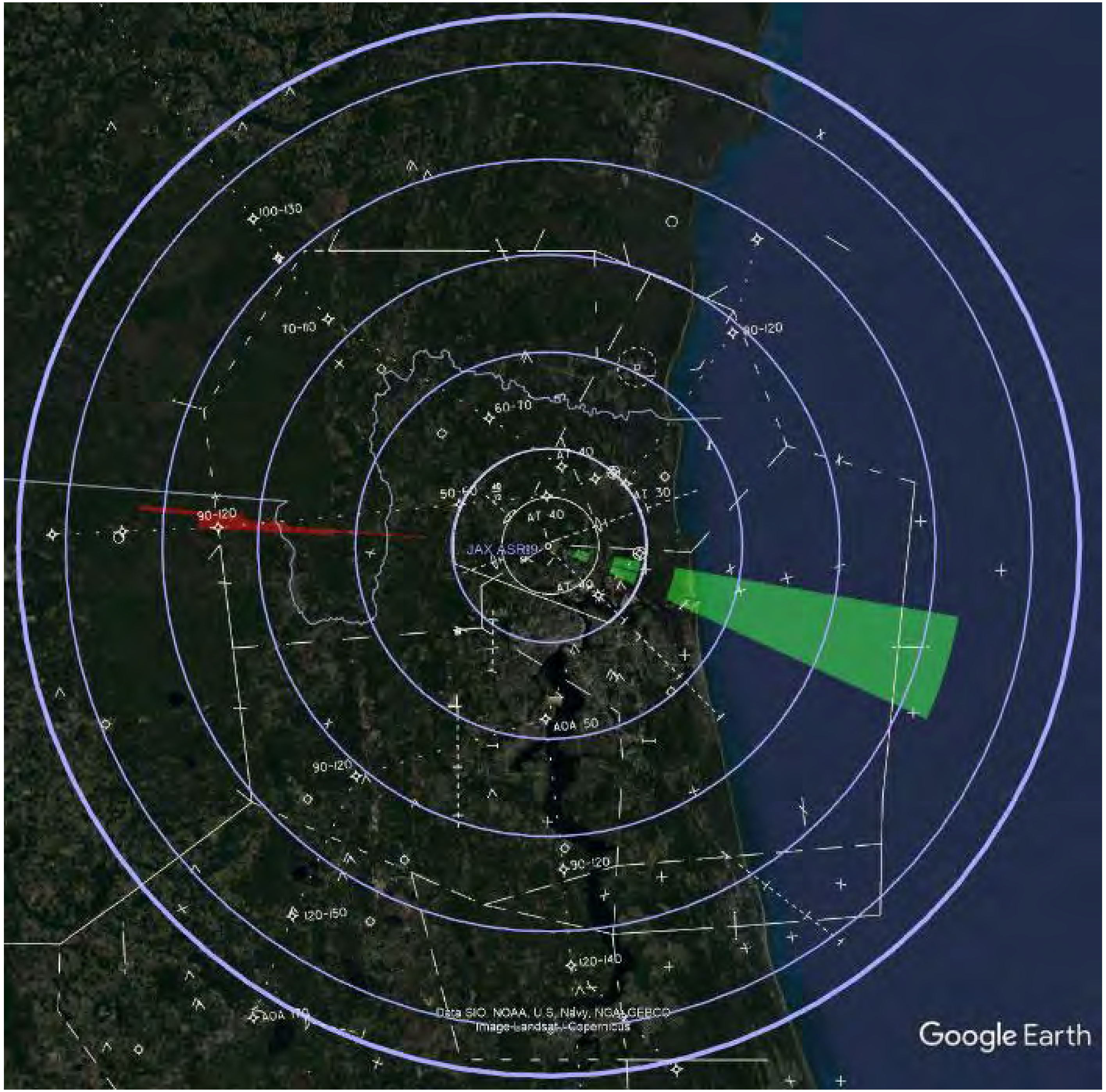
RSS BSAT Analysis: 60 NM Range 2K to 2500 FT MSL



JAX-CONC_sh_r20.rcs
Terminal B Expansion
Building Only

Side Windows Tilted 10°
Front Windows Tilted 20°

FIGURE 57

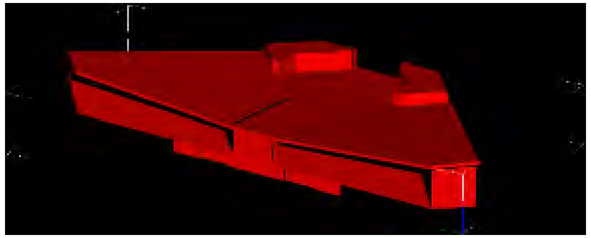


Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	38.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

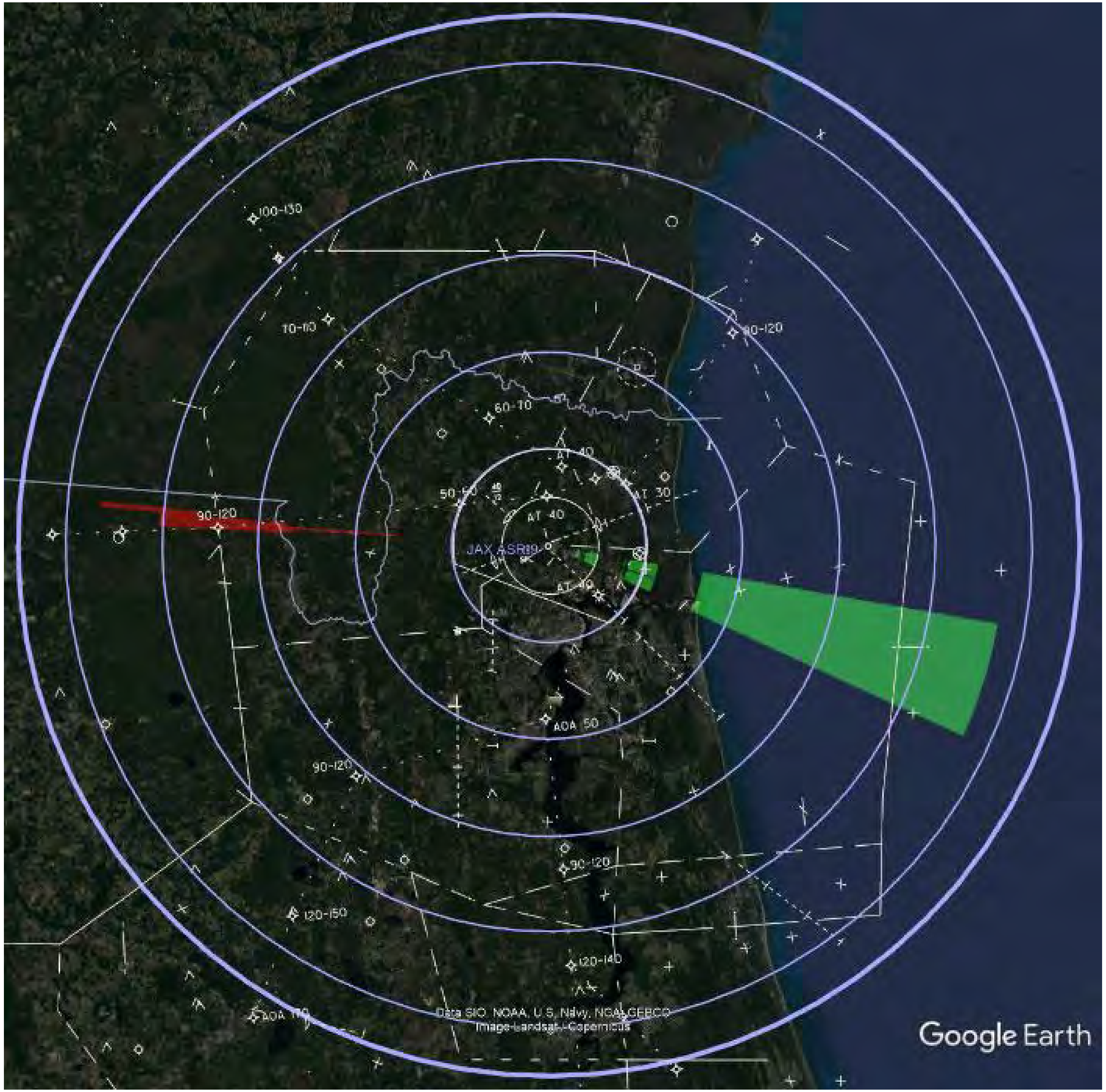
RSS BSAT Analysis: 60 NM Range 2500 to 3K FT MSL



JAX-CONC_sh_r20.rcs
Terminal B Expansion
Building Only

Side Windows Tilted 10°
Front Windows Tilted 20°

FIGURE 58



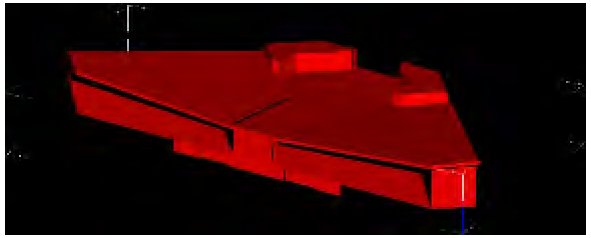
Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)

TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

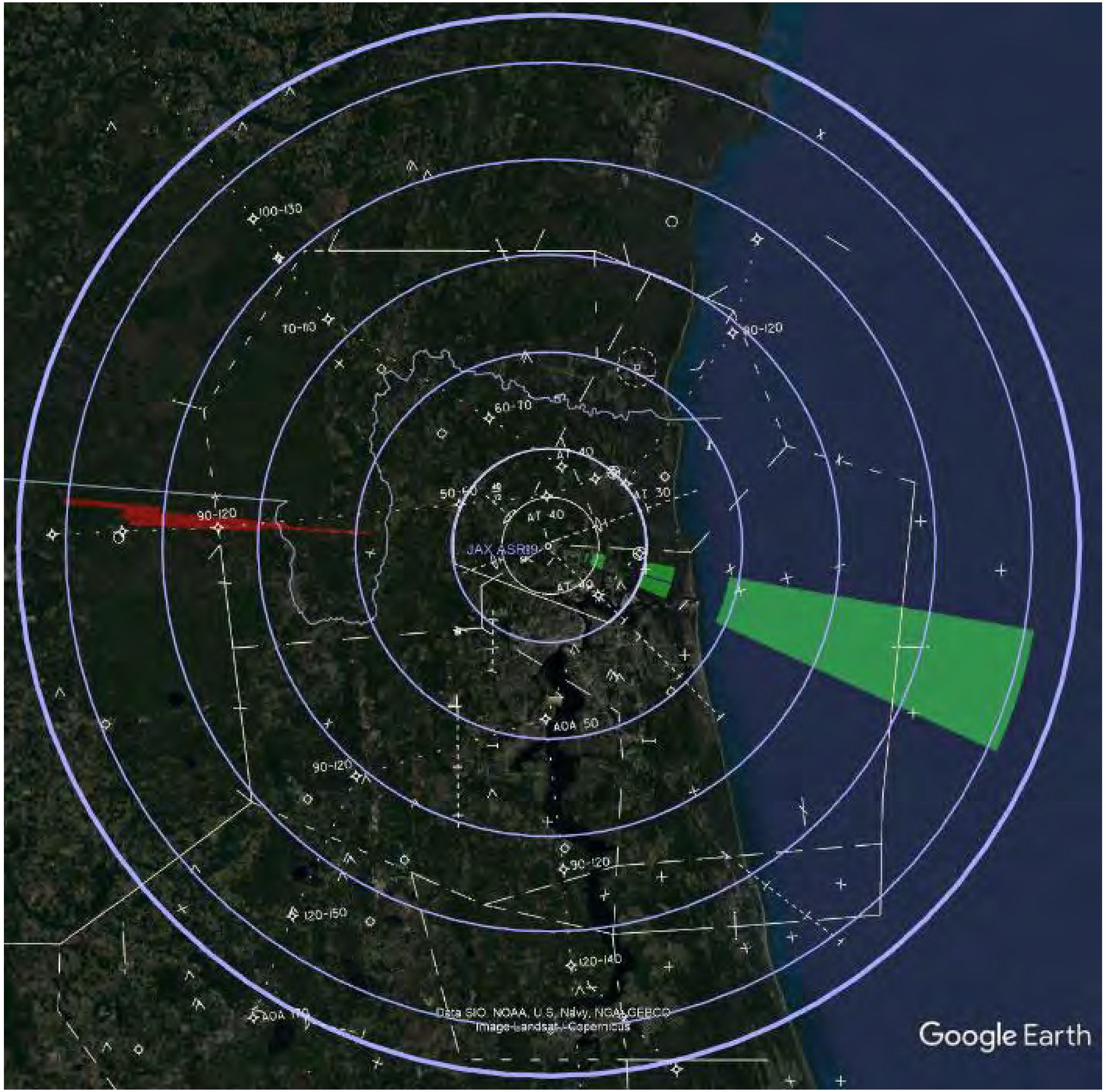
RSS BSAT Analysis: 60 NM Range 3K to 3500 FT MSL



JAX-CONC_sh_r20.rcs
Terminal B Expansion
Building Only

Side Windows Tilted 10°

FIGURE 59



Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

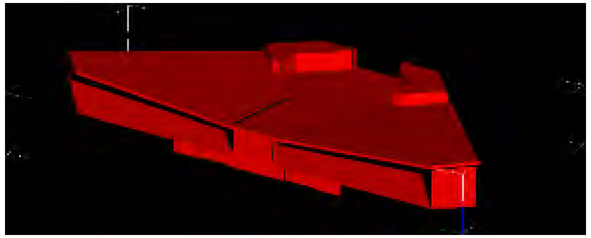
INTERROGATOR PARAMETERS

Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)

TRANSPONDER PARAMETERS

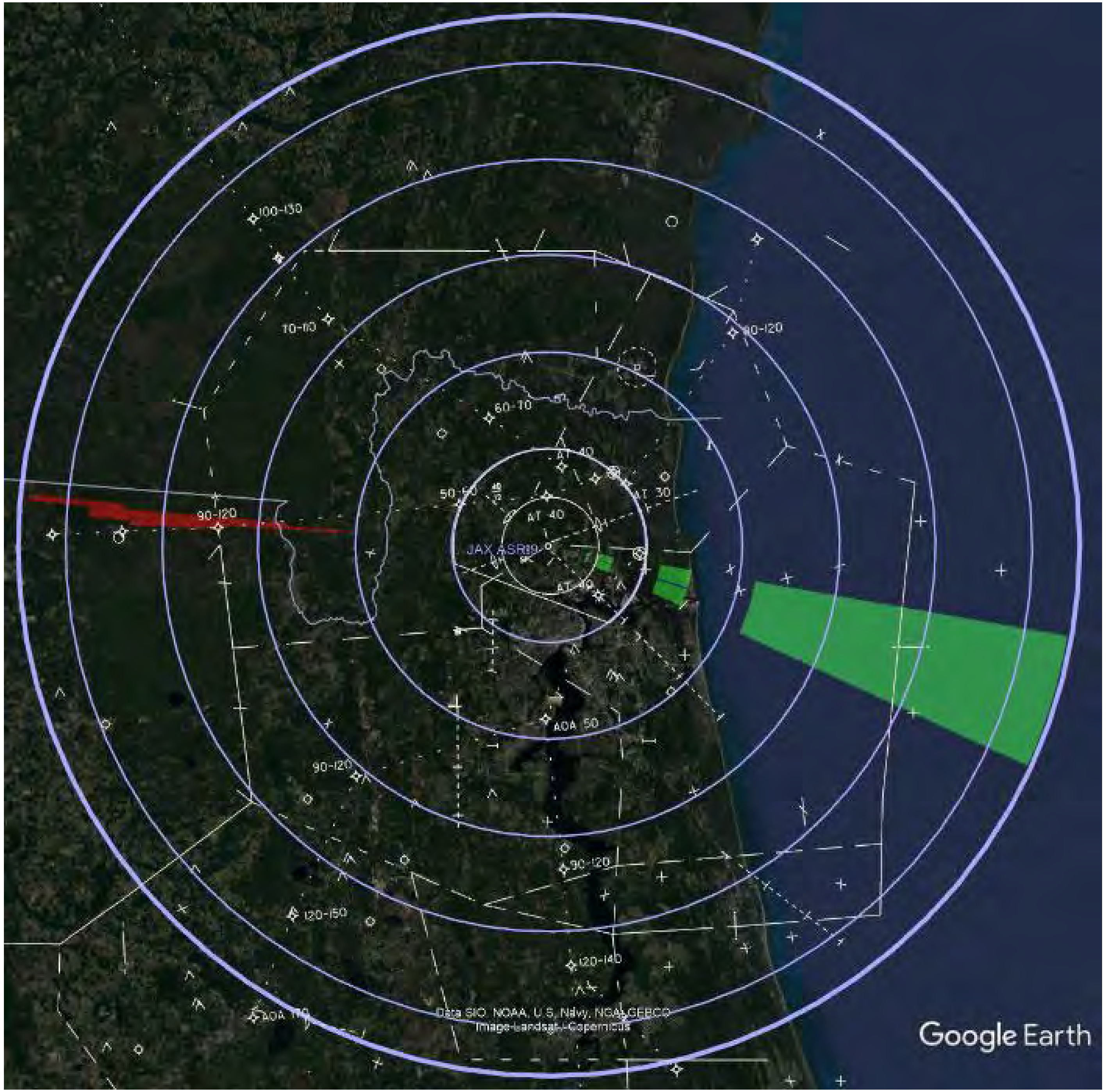
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

RSS BSAT Analysis: 60 NM Range 3500 to 4K FT MSL



JAX-CONC_sh_r20.rcs
Terminal B Expansion
Building Only

Side Windows Tilted 10°
Front Windows Tilted 20°



Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

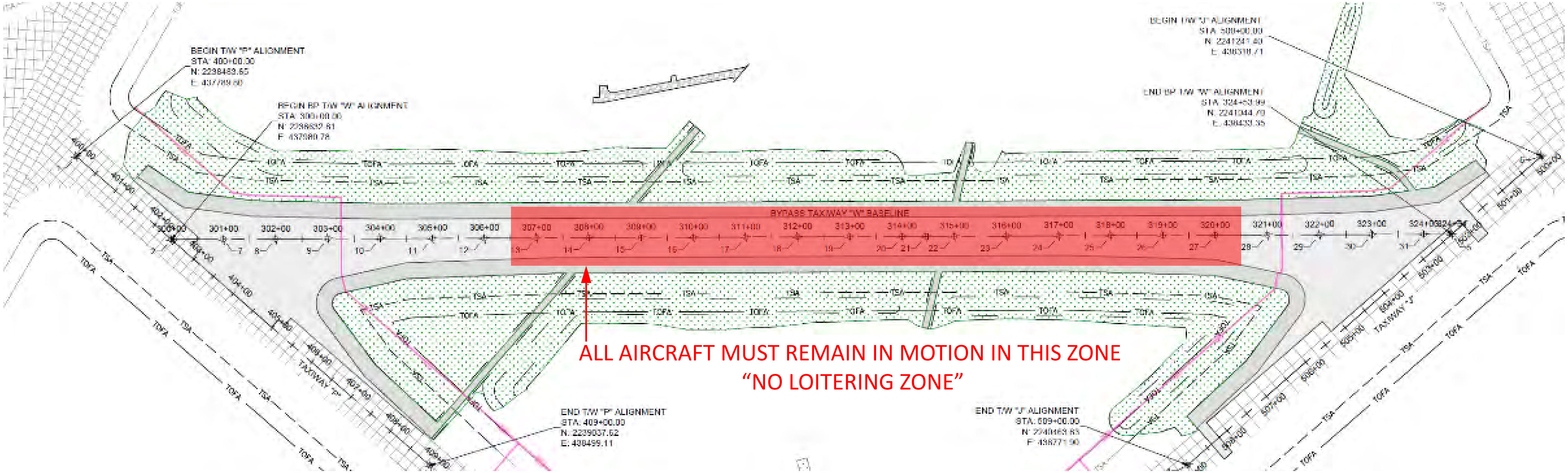
LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 60

Appendix B
Bypass Taxiway “W” Analysis

Clip from JAX Jacobs drawing SK-16, titled
FAA-TAXIWAY “W” ELEVATIONS AND COORDINATES



FAA CRITICAL POINTS FOR TAXIWAY "W"						
POINT NO.	ELEVATION	NORTHING	EASTING	LATITUDE	LONGITUDE	DESCRIPTION
1	24.41	2238463.64	437789.57	N30° 29' 20.84"	W81° 41' 35.92"	TWP BASELINE START
2	24.57	2238632.69	437980.78	N30° 29' 22.33"	W81° 41' 33.75"	TWW BASELINE START
3	25.56	2239037.62	438499.11	N30° 29' 26.37"	W81° 41' 27.85"	TWP BASELINE END
4	25.67	2240463.83	438771.90	N30° 29' 40.50"	W81° 41' 24.03"	TWJ BASELINE END
5	24.60	2241044.70	438433.35	N30° 29' 46.23"	W81° 41' 28.74"	TWW BASELINE END
6	26.41	2241241.40	438318.71	N30° 29' 48.17"	W81° 41' 30.07"	TWJ BASELINE START
7	24.11	2238731.09	437999.22	N30° 29' 23.30"	W81° 41' 33.54"	TWW STATION 301+00
8	23.92	2238829.38	438017.67	N30° 29' 24.26"	W81° 41' 33.34"	TWW STATION 302+00
9	23.87	2238927.66	438036.11	N30° 29' 25.20"	W81° 41' 33.14"	TWW STATION 303+00
10	24.08	2239025.95	438054.55	N30° 29' 26.22"	W81° 41' 32.93"	TWW STATION 304+00
11	24.42	2239124.31	438072.98	N30° 29' 27.20"	W81° 41' 32.73"	TWW STATION 305+00
12	24.76	2239222.52	438091.44	N30° 29' 28.17"	W81° 41' 32.52"	TWW STATION 306+00
13	25.09	2239320.80	438109.80	N30° 29' 29.15"	W81° 41' 32.32"	TWW STATION 307+00
14	25.43	2239419.09	438128.32	N30° 29' 30.12"	W81° 41' 32.13"	TWW STATION 308+00
15	25.76	2239517.37	438146.76	N30° 29' 31.09"	W81° 41' 31.91"	TWW STATION 309+00
16	26.10	2239615.66	438165.20	N30° 29' 32.07"	W81° 41' 31.71"	TWW STATION 310+00

FAA CRITICAL POINTS FOR TAXIWAY "W"						
POINT NO.	ELEVATION	NORTHING	EASTING	LATITUDE	LONGITUDE	DESCRIPTION
17	26.43	2239713.94	438183.65	N30° 29' 33.04"	W81° 41' 31.50"	TWW STATION 311+00
18	26.77	2239812.22	438202.09	N30° 29' 34.02"	W81° 41' 31.30"	TWW STATION 312+00
19	27.10	2239910.51	438220.53	N30° 29' 34.99"	W81° 41' 31.10"	TWW STATION 313+00
20	27.32	2240008.79	438238.97	N30° 29' 35.96"	W81° 41' 30.89"	TWW STATION 314+00
21	27.35	2240053.29	438247.31	N30° 29' 36.40"	W81° 41' 30.80"	TWW PROFILE HIGH POINT
22	27.31	2240107.08	438257.42	N30° 29' 36.94"	W81° 41' 30.69"	TWW STATION 315+00
23	27.07	2240205.36	438275.86	N30° 29' 37.91"	W81° 41' 30.49"	TWW STATION 316+00
24	26.60	2240303.65	438294.30	N30° 29' 38.89"	W81° 41' 30.28"	TWW STATION 317+00
25	26.01	2240401.93	438312.74	N30° 29' 39.86"	W81° 41' 30.08"	TWW STATION 318+00
26	25.42	2240500.22	438331.18	N30° 29' 40.83"	W81° 41' 29.87"	TWW STATION 319+00
27	24.83	2240598.50	438349.63	N30° 29' 41.81"	W81° 41' 29.67"	TWW STATION 320+00
28	24.29	2240696.79	438368.07	N30° 29' 42.78"	W81° 41' 29.47"	TWW STATION 321+00
29	24.11	2240795.07	438386.51	N30° 29' 43.75"	W81° 41' 29.26"	TWW STATION 322+00
30	24.27	2240893.36	438404.95	N30° 29' 44.73"	W81° 41' 29.06"	TWW STATION 323+00
31	24.46	2240991.64	438423.40	N30° 29' 45.70"	W81° 41' 28.86"	TWW STATION 324+00

FIGURE 61


View from Beacon Focal Point of 92.26 FT MSL
737 MAX 10
Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT
080°
090°
100°
110°
120°
130°
Aircraft Tail Reflective Zone: 67.95 FT MSL to Top
Google Earth

FIGURE 62


View from Beacon Focal Point of 92.26 FT MSL
757 300W
Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT
080°
090°
100°
110°
120°
130°
Aircraft Tail Reflective Zone: 71.62 FT MSL to Top
Google Earth

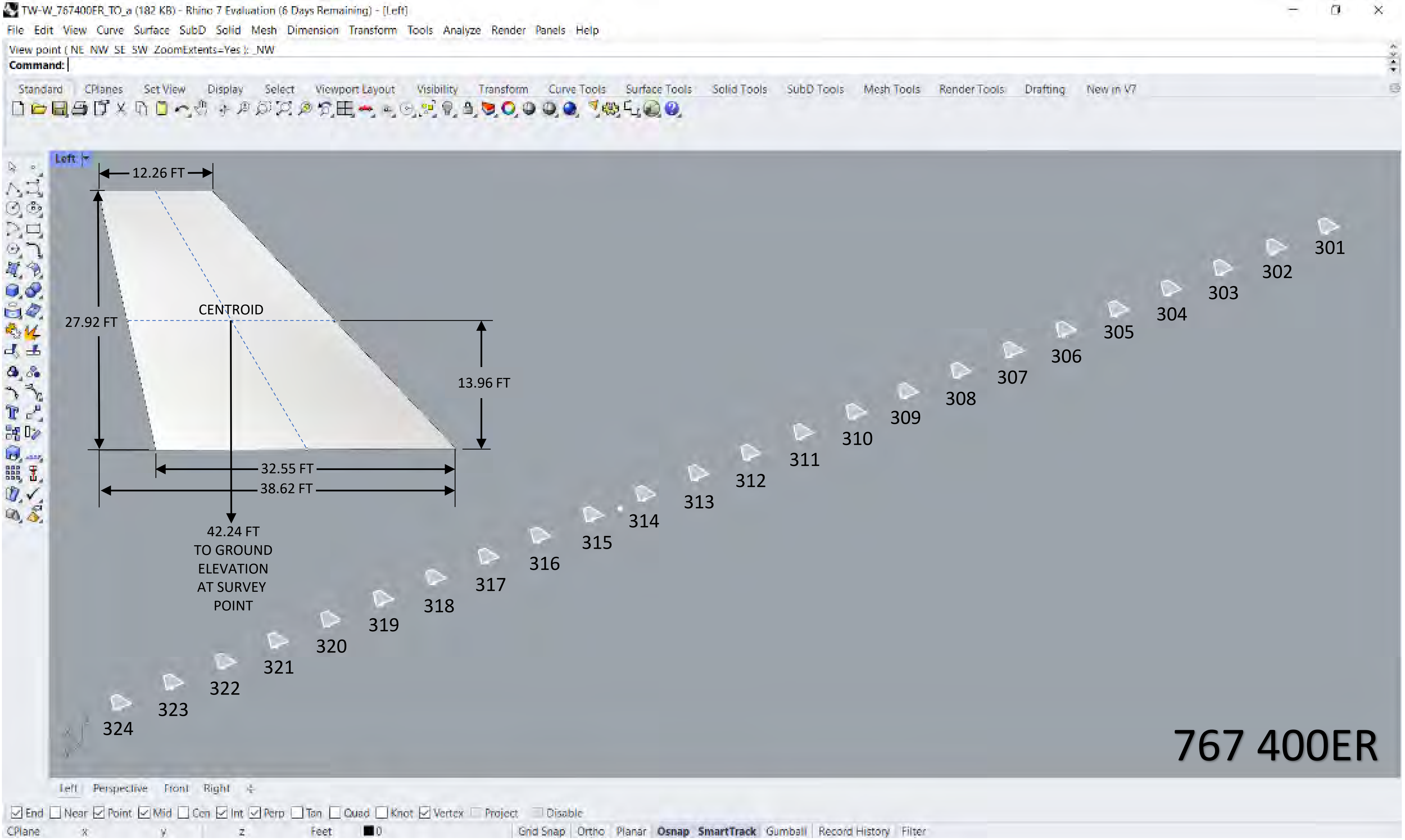
FIGURE 63


View from Beacon Focal Point of 92.26 FT MSL
767 400ER
Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT
080°
090°
100°
110°
120°
130°
Aircraft Tail Reflective Zone: 82.7 FT MSL to Top
Google Earth

FIGURE 64

	Centroid Latitude	Centroid Longitude	Ground Elevation	Centroid Elevation	Centroid Angle to Beacon Antenna	Centroid Range to Beacon Antenna	Left Ext. Angle of Tail	Right Ext. Angle of Tail
Tail #	**C_Lat**	**C_Lon**	**G_Elev (FT AMSL)**	**C_Elev (FT AMSL)**	**C_Az (Deg)**	**C_Rng (FT)**	**L_Az (Deg)**	**R_Az (Deg)**
301	N30° 29' 23.30"	W81° 41' 33.54"	24.11	66.352	359.7259	1280.155	179.622	179.937
302	N30° 29' 24.28"	W81° 41' 33.34"	23.92	66.162	358.8541	1181.361	178.715	179.083
303	N30° 29' 25.25"	W81° 41' 33.14"	23.87	66.112	357.8257	1083.901	177.641	178.079
304	N30° 29' 26.22"	W81° 41' 32.93"	24.09	66.332	356.5438	986.9074	176.353	176.881
305	N30° 29' 27.20"	W81° 41' 32.73"	24.42	66.662	355.0338	889.4358	174.778	175.427
306	N30° 29' 28.17"	W81° 41' 32.52"	24.76	67.002	353.0999	793.8419	172.814	173.629
307	N30° 29' 29.15"	W81° 41' 32.32"	25.09	67.332	350.6974	698.2559	170.304	171.354
308	N30° 29' 30.12"	W81° 41' 32.12"	25.43	67.672	347.5616	605.2753	166.997	168.393
309	N30° 29' 31.09"	W81° 41' 31.91"	25.76	68.002	343.2126	515.012	162.48	164.409
310	N30° 29' 32.07"	W81° 41' 31.71"	26.1	68.342	337.1255	427.6777	156.043	158.826
311	N30° 29' 33.04"	W81° 41' 31.50"	26.43	68.672	328.0509	348.8907	146.462	150.65
312	N30° 29' 34.02"	W81° 41' 31.30"	26.77	69.012	314.2687	282.2602	131.866	138.244
313	N30° 29' 34.99"	W81° 41' 31.10"	27.1	69.342	294.2684	240.9091	110.903	119.722
314	N30° 29' 35.96"	W81° 41' 30.89"	27.32	69.562	270.2436	237.9959	86.799	96.031
315	N30° 29' 36.94"	W81° 41' 30.69"	27.31	69.552	249.014	273.6462	66.574	73.64
316	N30° 29' 37.91"	W81° 41' 30.49"	27.07	69.312	234.3212	336.0738	52.699	57.389
317	N30° 29' 38.89"	W81° 41' 30.28"	26.6	68.842	224.6426	414.6531	43.588	46.679
318	N30° 29' 39.86"	W81° 41' 30.08"	26.01	68.252	218.1621	499.8758	37.438	39.554
319	N30° 29' 40.83"	W81° 41' 29.87"	25.42	67.662	213.6805	590.0905	33.097	34.613
320	N30° 29' 41.81"	W81° 41' 29.67"	24.83	67.072	210.2958	683.3831	29.906	31.035
321	N30° 29' 42.78"	W81° 41' 29.47"	24.29	66.532	207.7653	777.5934	27.473	28.342
322	N30° 29' 43.75"	W81° 41' 29.26"	24.11	66.352	205.8364	873.3681	25.564	26.252
323	N30° 29' 44.73"	W81° 41' 29.06"	24.27	66.512	204.2184	970.4988	24.029	24.586
324	N30° 29' 45.70"	W81° 41' 28.85"	24.48	66.722	202.9602	1067.677	22.77	23.23

FIGURE 65



TW-W_767400ER_TO_a (182 KB) - Rhino 7 Evaluation (6 Days Remaining) - [Left]
12.26 FT
27.92 FT
CENTROID
13.96 FT
32.55 FT
38.62 FT
42.24 FT TO GROUND ELEVATION AT SURVEY POINT
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
767 400ER

FIGURE 66

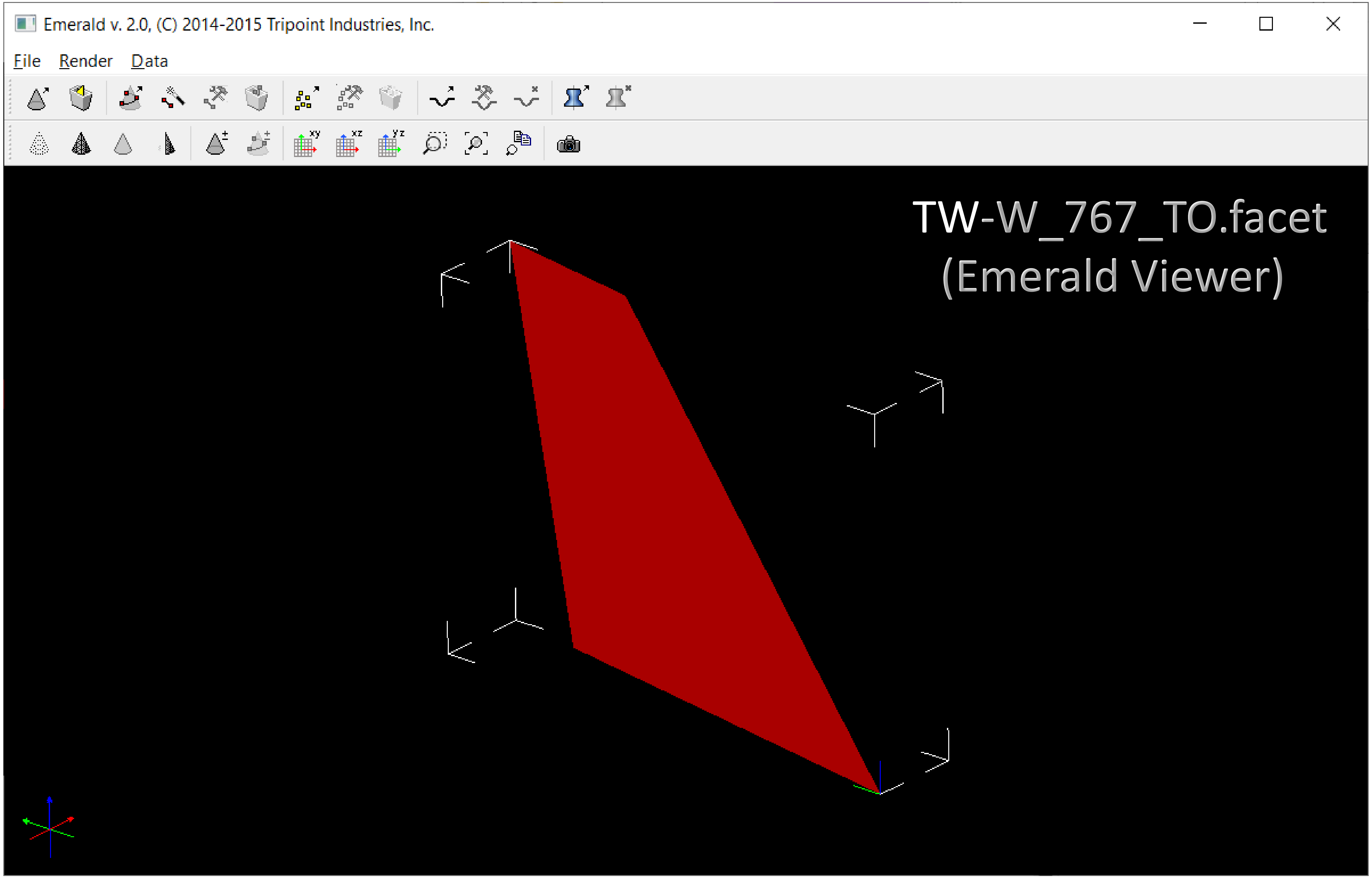

Emerald v. 2.0, (C) 2014-2015 Tripoint Industries, Inc.
File Render Data
TW-W_767_TO.facet
(Emerald Viewer)

FIGURE 67

TW-W_767_TO_315.lh - Notepad

File Edit Format View Help

```
# --- Incident elevation/theta : start end step
85.25628993     90.00       0
# --- Incident azimuth/phi : start end step
200.9860031        180.00      0
```

Ln 1, Col 1 | 100% | Windows (CRLF) | UTF-8

TW-W_767_TO_315.con - Notepad

File Edit Format View Help

```
0                  #0 = no bistatic data, 1 = bistatic data
30.49332592        #radar latitude
-81.69266951       #radar longitude
28.11947577        #antenna height (MSL m)
30.49359444        #building latitude
-81.69185833       #building longitude
21.19841512        #building center height (MSL m)
25.45199634        #building maximum height (MSL m)
0.36               #start elevation below vertical
90.0               #stop elevation below vertical
0.36               #elevation increment below vertical
0.0                #start azimuth CCW from E
359.28             #stop azimuth CCW from E
0.72               #azimuth increment CCW from E
16.36              #azimuth start of building CCW from E
23.426             #azimuth end of building CCW from E
```

Ln 1, Col 1 | 100% | Unix (LF) | UTF-8

*.lh file edits

\#   Uniformly spaced angle specification. Note: All angles should be in degrees.

Input Tail # Here: 315

\#

\# --- Incident elevation/theta : start end step

85.25628993	90	0	Note: 90 was added as end but not used since step is 0

\# --- Incident azimuth/phi : start end step

200.9860031	180	0	Note: 180 was added as end but not used since step is 0

Beacon Antenna Coordinates (NAD83)	30°29'35.97330"N	81°41'33.61022"W	30.49332592	-81.69266951
Centroid Coordinates (NAD83)	N30° 29' 36.94"	W81° 41' 30.69"	30.49359444	-81.69185833
Beacon Antenna Focal Point (Feet MSL)	92.26		28.11947577	(meters)
(From Precision Survey; CL Antenna Rotation, Point R)				
Ground Elevation at Centroid (Feet MSL)	27.31	From 2019 Lidar Data		
Max. Height of Structure (Feet)	n/a			
Max. Elevation of Structure (Feet MSL)	83.508		25.45199634	(meters)
Centroid Elevation (Feet MSL)	69.552		21.19841512	(meters)
Calculated Range Ant. to Centroid in Feet	273.6462273	0.045036343		
Calculated Elev Angle Centroid to Ant. FP in degrees	4.743710068			
Spherical of Above	85.25628993			
Calculated Azimuth Centroid to Ant. FP in °T	249.0139969			
Spherical of Above	200.9860031			
L Corner of Reflector (CW)	66.574			
Spherical of Above	23.426			
R Corner of Reflector (CW)	73.64			
Spherical of Above	16.36			

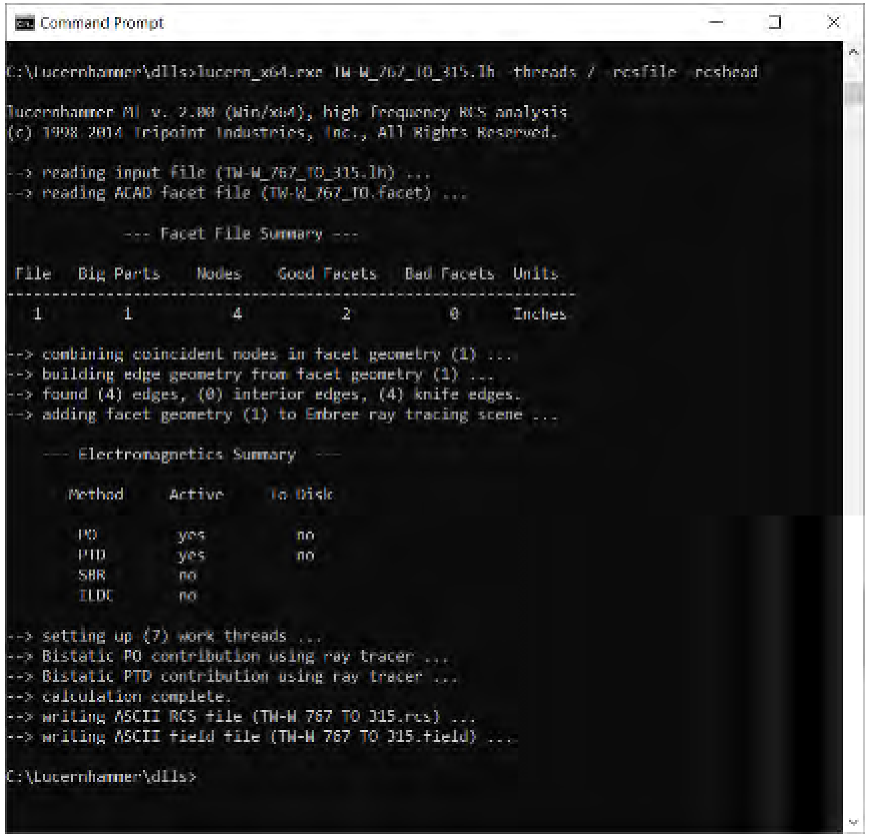
RSS Context File Information (*.con)

0	#0 = no bistatic data, 1 = bistatic data
30.49332592	#radar latitude
-81.69266951	#radar longitude
28.11947577	#antenna height (MSL m)
30.49359444	#building latitude
-81.69185833	#building longitude
21.19841512	#building center height (MSL m)
25.45199634	#building maximum height (MSL m)
0.36	#start elevation below vertical
90	#stop elevation below vertical
0.36	#elevation increment below vertical
0	#start azimuth CCW from E
359.28	#stop azimuth CCW from E
0.72	#azimuth increment CCW from E
16.36	#azimuth start of building CCW from E
23.426	#azimuth end of building CCW from E

Context and Lucernhammer File Setups for the 767 400ER Tail Only along Bypass TW "W" at Station 315+00

FIGURE 68

TW-W_767_TO_315.rcs (Lucernhammer RCS)



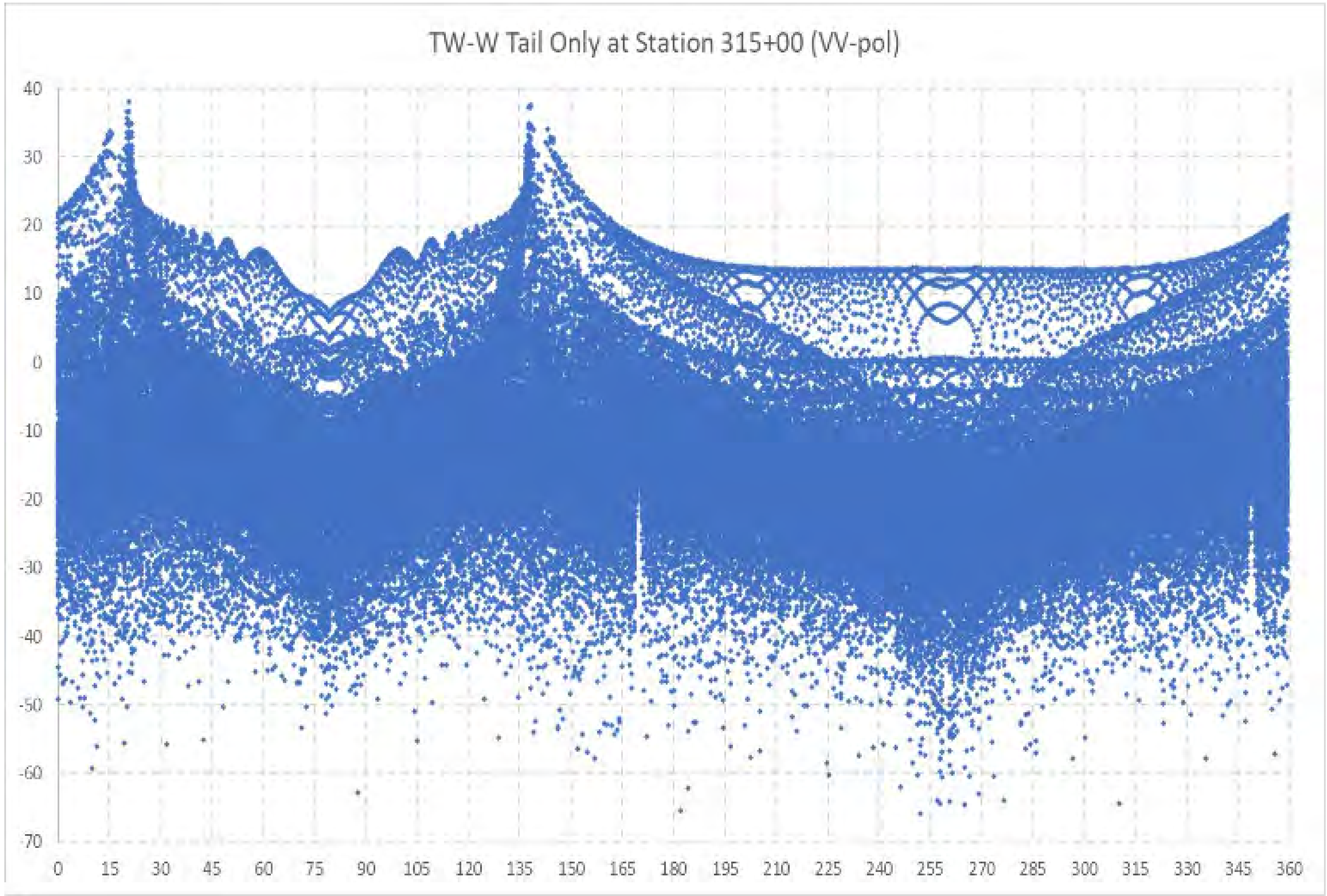


FIGURE 69

Bypass Taxiway “W”

RSS BSAT Analysis

Range Azimuth False Target Plots

RSS BSAT Analysis:
1.0 NM Range
50 to 500 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_321.rcs
Bypass Taxiway "W"
Station 321+00 (Point 28)
N30° 29' 42.78", W81° 41' 29.47"
Ground Elevation 24.29' MSL
Centroid Elevation 66.53' MSL
(+42.24' AGL)

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 70

RSS BSAT Analysis:
1.0 NM Range
500 to 4000 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_321.rcs
Bypass Taxiway “W”
Station 321+00 (Point 28)
N30° 29’ 42.78”, W81° 41’ 29.47”
Ground Elevation 24.29’ MSL
Centroid Elevation 66.53’ MSL
(+42.24’ AGL)

FIGURE 71

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

RSS BSAT Analysis:
1.0 NM Range
50 to 500 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_320.rcs
Bypass Taxiway "W"
Station 320+00 (Point 27)
N30° 29' 41.81", W81° 41' 29.67"
Ground Elevation 24.83' MSL
Centroid Elevation 67.07' MSL
(+42.24' AGL)

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 72

RSS BSAT Analysis: 1.0 NM Range 500 to 4000 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_320.rcs
Bypass Taxiway "W"
Station 320+00 (Point 27)
N30° 29' 41.81", W81° 41' 29.67"
Ground Elevation 24.83' MSL
Centroid Elevation 67.07' MSL
(+42.24' AGL)

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 73

RSS BSAT Analysis:
1.0 NM Range
50 to 500 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_319.rcs
Bypass Taxiway "W"
Station 319+00 (Point 26)
N30° 29' 40.83", W81° 41' 29.87"
Ground Elevation 25.42' MSL
Centroid Elevation 67.66' MSL
(+42.24' AGL)

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 74

RSS BSAT Analysis: 1.0 NM Range 500 to 4000 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_319.rcs
Bypass Taxiway “W”
Station 319+00 (Point 26)
N30° 29’ 40.83”, W81° 41’ 29.87”
Ground Elevation 25.42’ MSL
Centroid Elevation 67.66’ MSL
(+42.24’ AGL)

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 75

RSS BSAT Analysis:
1.0 NM Range
50 to 750 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_318.rcs
Bypass Taxiway "W"
Station 318+00 (Point 25)
N30° 29' 39.86", W81° 41' 30.08"
Ground Elevation 26.01' MSL
Centroid Elevation 68.25' MSL
(+42.24' AGL)

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

INTERROGATOR PARAMETERS

Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)

TRANSPONDER PARAMETERS

Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 76

RSS BSAT Analysis: 1.0 NM Range 750 to 4000 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_318.rcs
Bypass Taxiway "W"
Station 318+00 (Point 25)
N30° 29' 39.86", W81° 41' 30.08"
Ground Elevation 26.01' MSL
Centroid Elevation 68.25' MSL
(+42.24' AGL)

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 77

RSS BSAT Analysis:
1.0 NM Range
50 to 750 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_317.rcs
Bypass Taxiway "W"
Station 317+00 (Point 24)
N30° 29' 38.89", W81° 41' 30.28"
Ground Elevation 26.60' MSL
Centroid Elevation 68.84' MSL
(+42.24' AGL)

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	38.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 78

RSS BSAT Analysis:
1.0 NM Range
750 to 4000 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_317.rcs
Bypass Taxiway "W"
Station 317+00 (Point 24)
N30° 29' 38.89", W81° 41' 30.28"
Ground Elevation 26.60' MSL
Centroid Elevation 68.84' MSL
(+42.24' AGL)

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 79

RSS BSAT Analysis:
1.0 NM Range
50 to 500 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_316.rcs
Bypass Taxiway "W"
Station 316+00 (Point 23)
N30° 29' 37.91", W81° 41' 30.49"
Ground Elevation 27.07' MSL
Centroid Elevation 69.31' MSL
(+42.24' AGL)

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 80

RSS BSAT Analysis:
1.0 NM Range
500 to 900 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_316.rcs
Bypass Taxiway “W”
Station 316+00 (Point 23)
N30° 29’ 37.91”, W81° 41’ 30.49”
Ground Elevation 27.07’ MSL
Centroid Elevation 69.31’ MSL
(+42.24’ AGL)

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 81

RSS BSAT Analysis:
1.0 NM Range
900 to 4000 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_316.rcs
Bypass Taxiway "W"
Station 316+00 (Point 23)
N30° 29' 37.91", W81° 41' 30.49"
Ground Elevation 27.07' MSL
Centroid Elevation 69.31' MSL
(+42.24' AGL)

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 82

RSS BSAT Analysis:
1.0 NM Range
50 to 500 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_315.rcs
Bypass Taxiway “W”
Station 315+00 (Point 22)
N30° 29’ 36.94”, W81° 41’ 30.69”
Ground Elevation 27.31’ MSL
Centroid Elevation 69.55’ MSL
(+42.24’ AGL)

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS

Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)

TRANSPONDER PARAMETERS

Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 83

RSS BSAT Analysis:
1.0 NM Range
500 to 900 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_315.rcs
Bypass Taxiway "W"
Station 315+00 (Point 22)
N30° 29' 36.94", W81° 41' 30.69"
Ground Elevation 27.31' MSL
Centroid Elevation 69.55' MSL
(+42.24' AGL)

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 84

RSS BSAT Analysis:
1.0 NM Range
900 to 4000 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_315.rcs
Bypass Taxiway “W”
Station 315+00 (Point 22)
N30° 29’ 36.94”, W81° 41’ 30.69”
Ground Elevation 27.31’ MSL
Centroid Elevation 69.55’ MSL
(+42.24’ AGL)

FIGURE 85

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

RSS BSAT Analysis:
1.0 NM Range
50 to 500 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_314.rcs
Bypass Taxiway “W”
Station 314+00 (Point 20)
N30° 29’ 35.96”, W81° 41’ 30.89”
Ground Elevation 27.32’ MSL
Centroid Elevation 69.56’ MSL
(+42.24’ AGL)

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

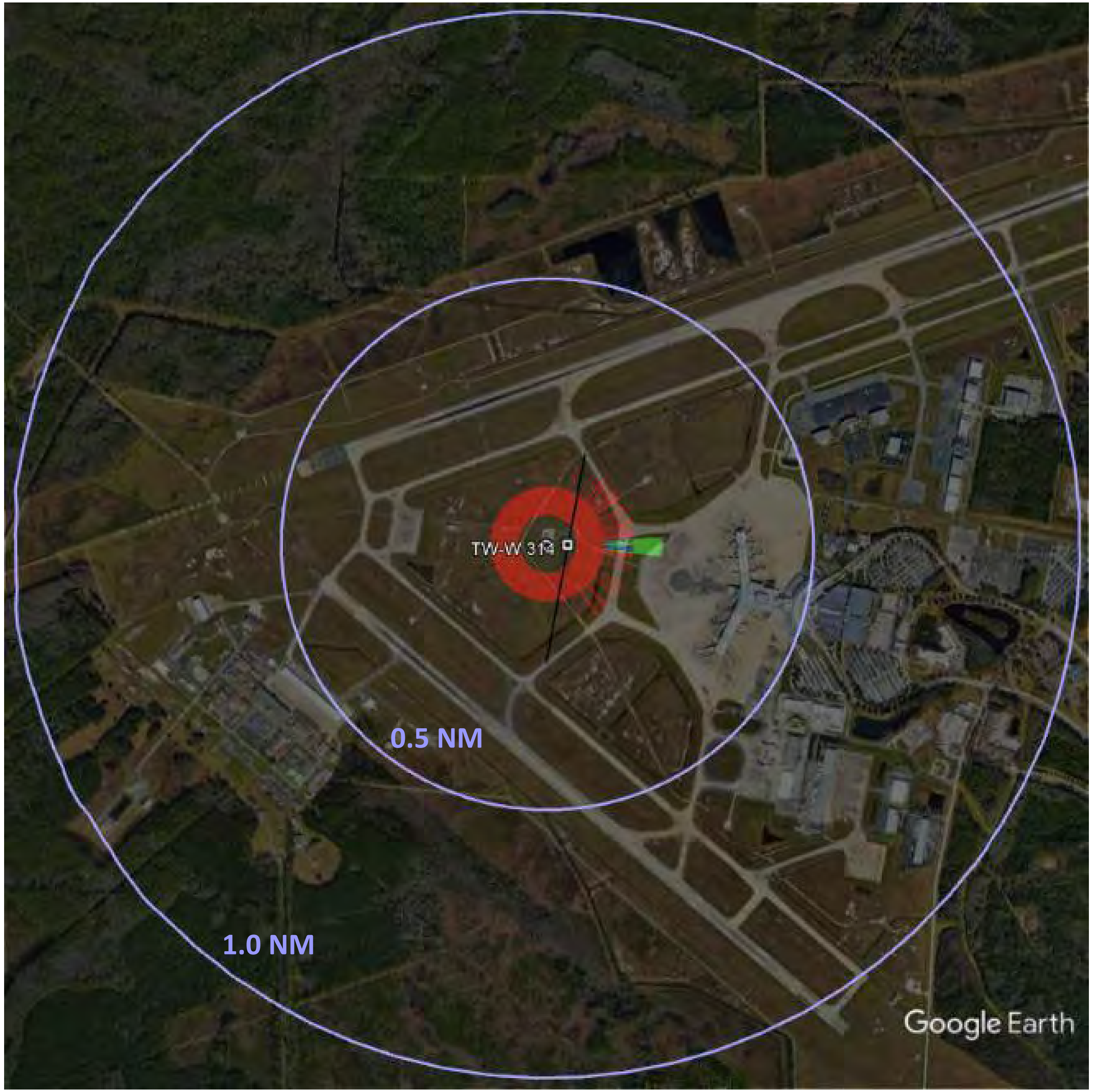
LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	38.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 86

RSS BSAT Analysis:
1.0 NM Range
500 to 900 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_314.rcs
Bypass Taxiway “W”
Station 314+00 (Point 20)
N30° 29’ 35.96”, W81° 41’ 30.89”
Ground Elevation 27.32’ MSL
Centroid Elevation 69.56’ MSL
(+42.24’ AGL)



Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS

Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)

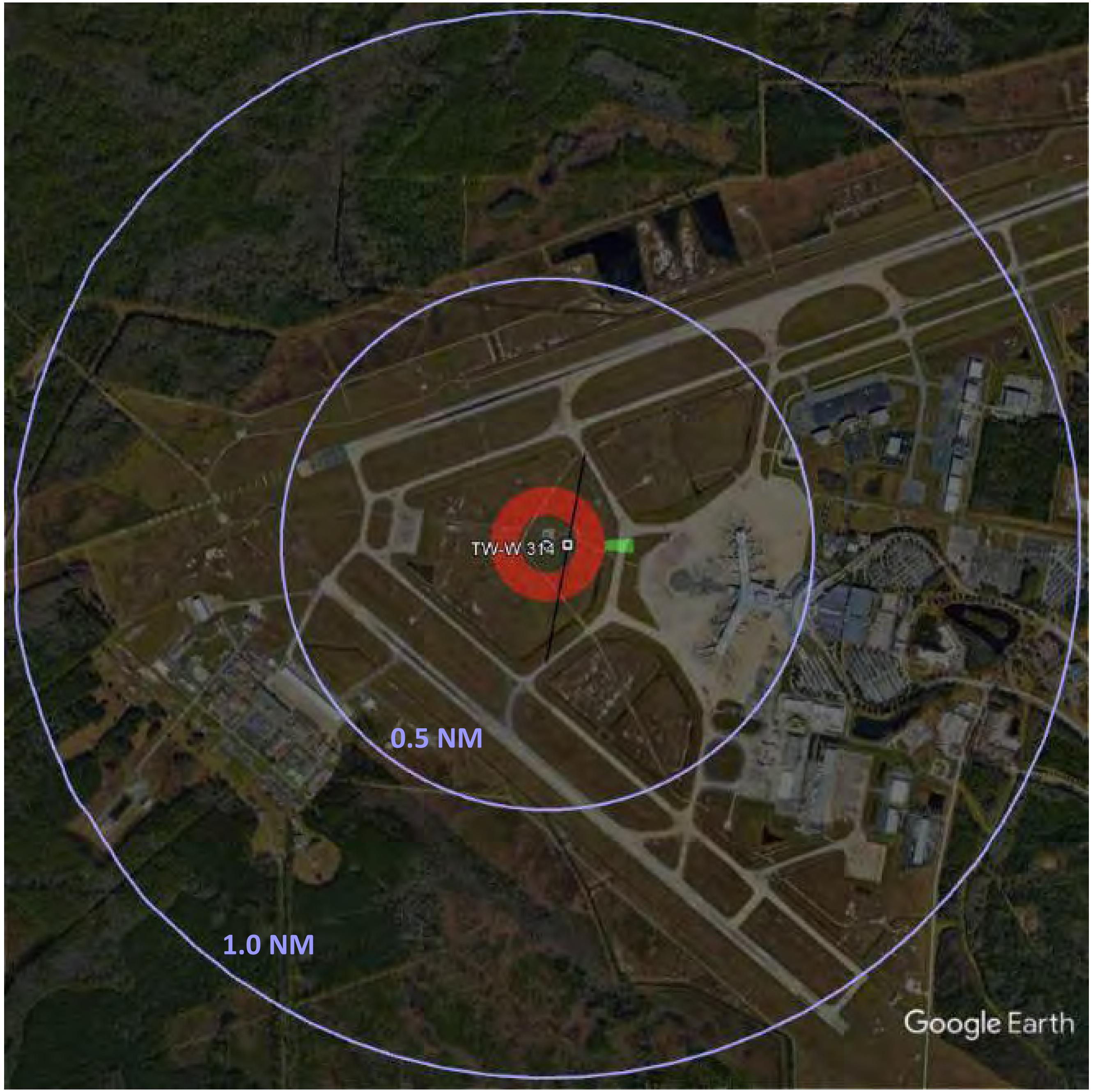
TRANSPONDER PARAMETERS

Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 87

RSS BSAT Analysis:
1.0 NM Range
900 to 4000 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_314.rcs
Bypass Taxiway “W”
Station 314+00 (Point 20)
N30° 29’ 35.96”, W81° 41’ 30.89”
Ground Elevation 27.32’ MSL
Centroid Elevation 69.56’ MSL
(+42.24’ AGL)



Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 88

RSS BSAT Analysis:
1.0 NM Range
50 to 500 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_313.rcs
Bypass Taxiway “W”
Station 313+00 (Point 19)
N30° 29’ 34.99”, W81° 41’ 31.10”
Ground Elevation 27.10’ MSL
Centroid Elevation 69.34’ MSL
(+42.24’ AGL)

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

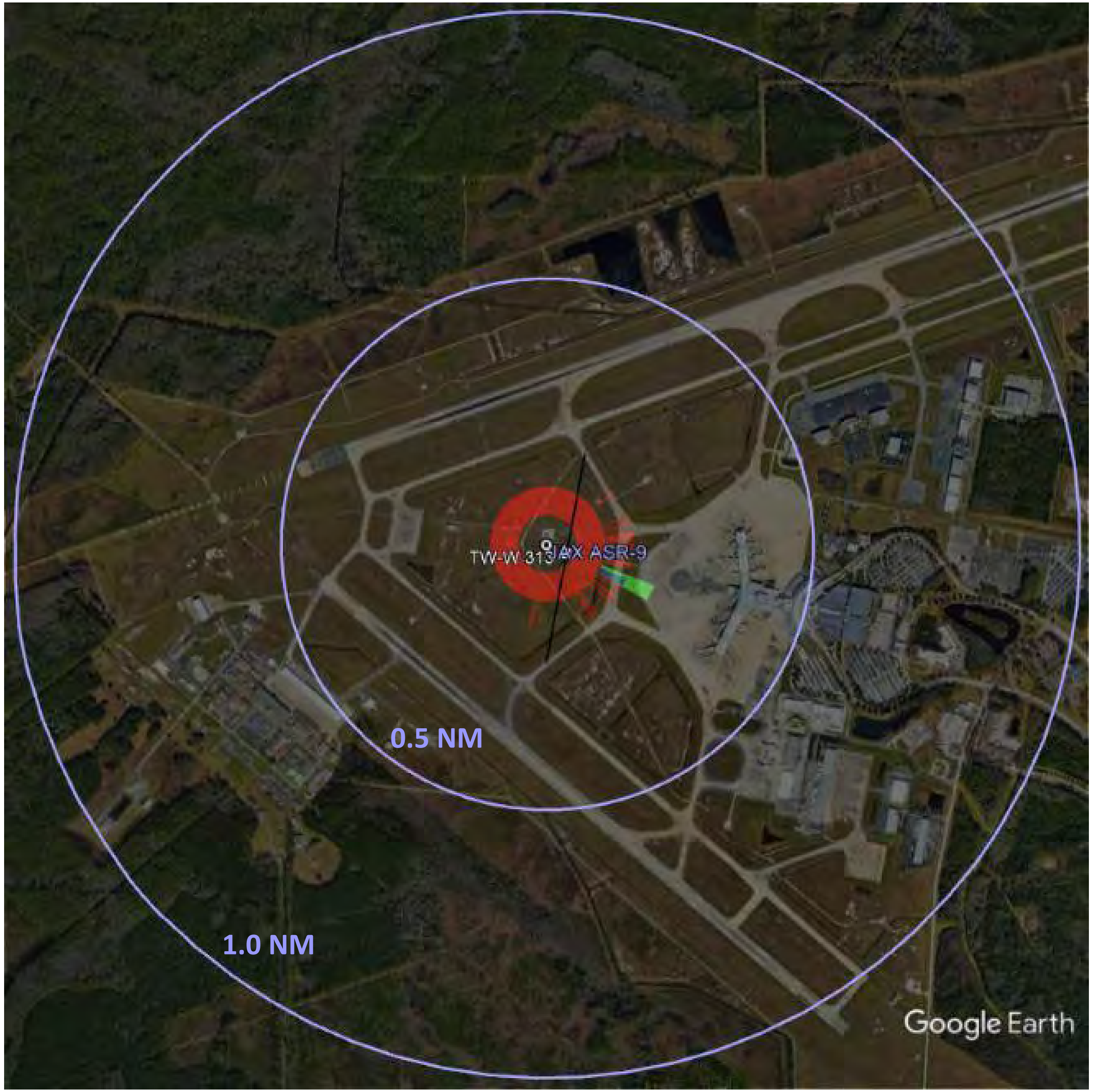
LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 89

RSS BSAT Analysis:
1.0 NM Range
500 to 900 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_313.rcs
Bypass Taxiway "W"
Station 313+00 (Point 19)
N30° 29' 34.99", W81° 41' 31.10"
Ground Elevation 27.10' MSL
Centroid Elevation 69.34' MSL
(+42.24' AGL)



Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

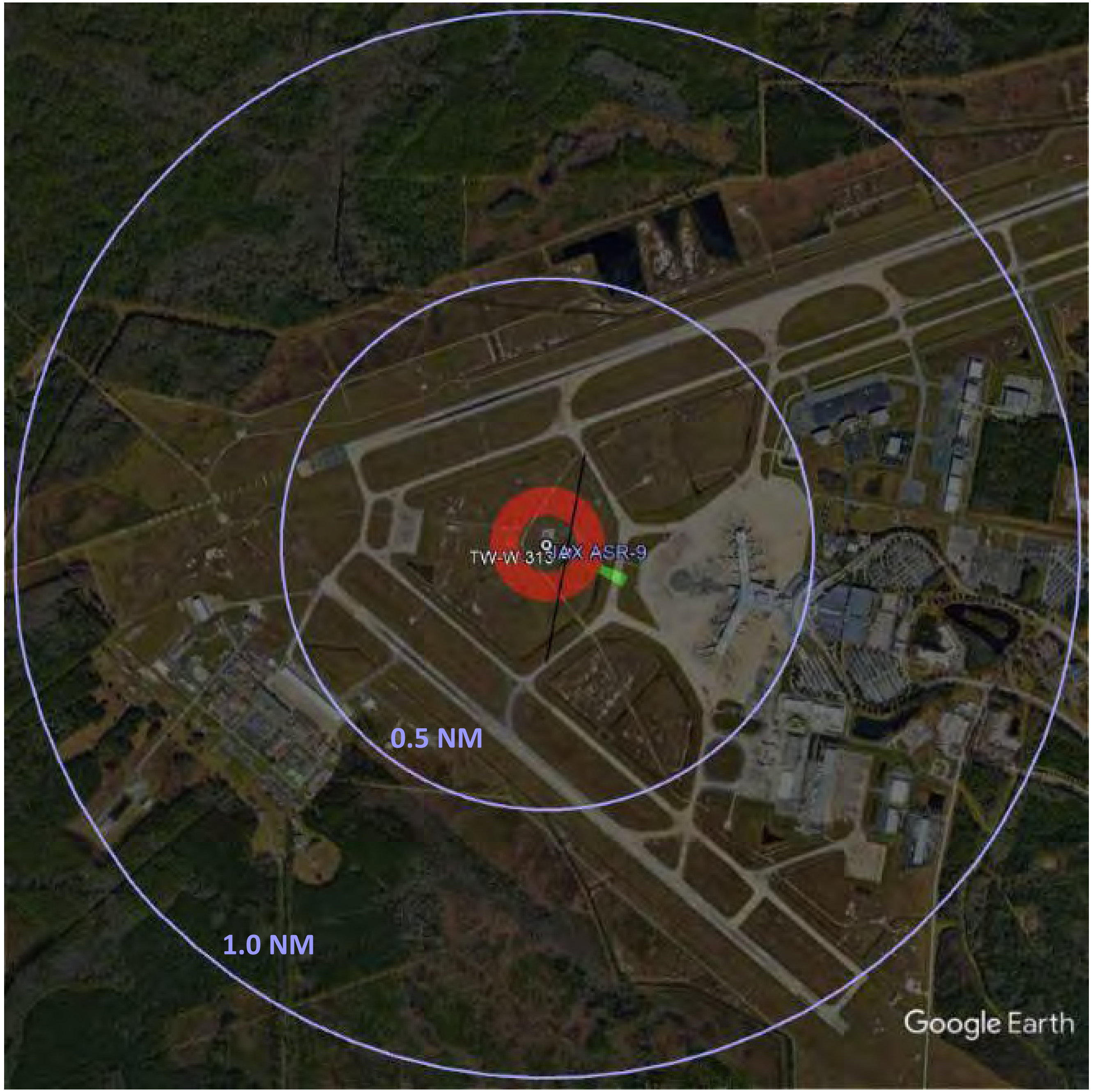
INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 90

RSS BSAT Analysis:
1.0 NM Range
900 to 4000 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_313.rcs
Bypass Taxiway "W"
Station 313+00 (Point 19)
N30° 29' 34.99", W81° 41' 31.10"
Ground Elevation 27.10' MSL
Centroid Elevation 69.34' MSL
(+42.24' AGL)

FIGURE 91



Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS

Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)

TRANSPONDER PARAMETERS

Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

RSS BSAT Analysis:
1.0 NM Range
50 to 500 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_312.rcs
Bypass Taxiway "W"
Station 312+00 (Point 18)
N30° 29' 34.02", W81° 41' 31.30"
Ground Elevation 26.77' MSL
Centroid Elevation 69.01' MSL
(+42.24' AGL)

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 92

RSS BSAT Analysis:
1.0 NM Range
500 to 1000 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_312.rcs
Bypass Taxiway “W”
Station 312+00 (Point 18)
N30° 29’ 34.02”, W81° 41’ 31.30”
Ground Elevation 26.77’ MSL
Centroid Elevation 69.01’ MSL
(+42.24’ AGL)

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

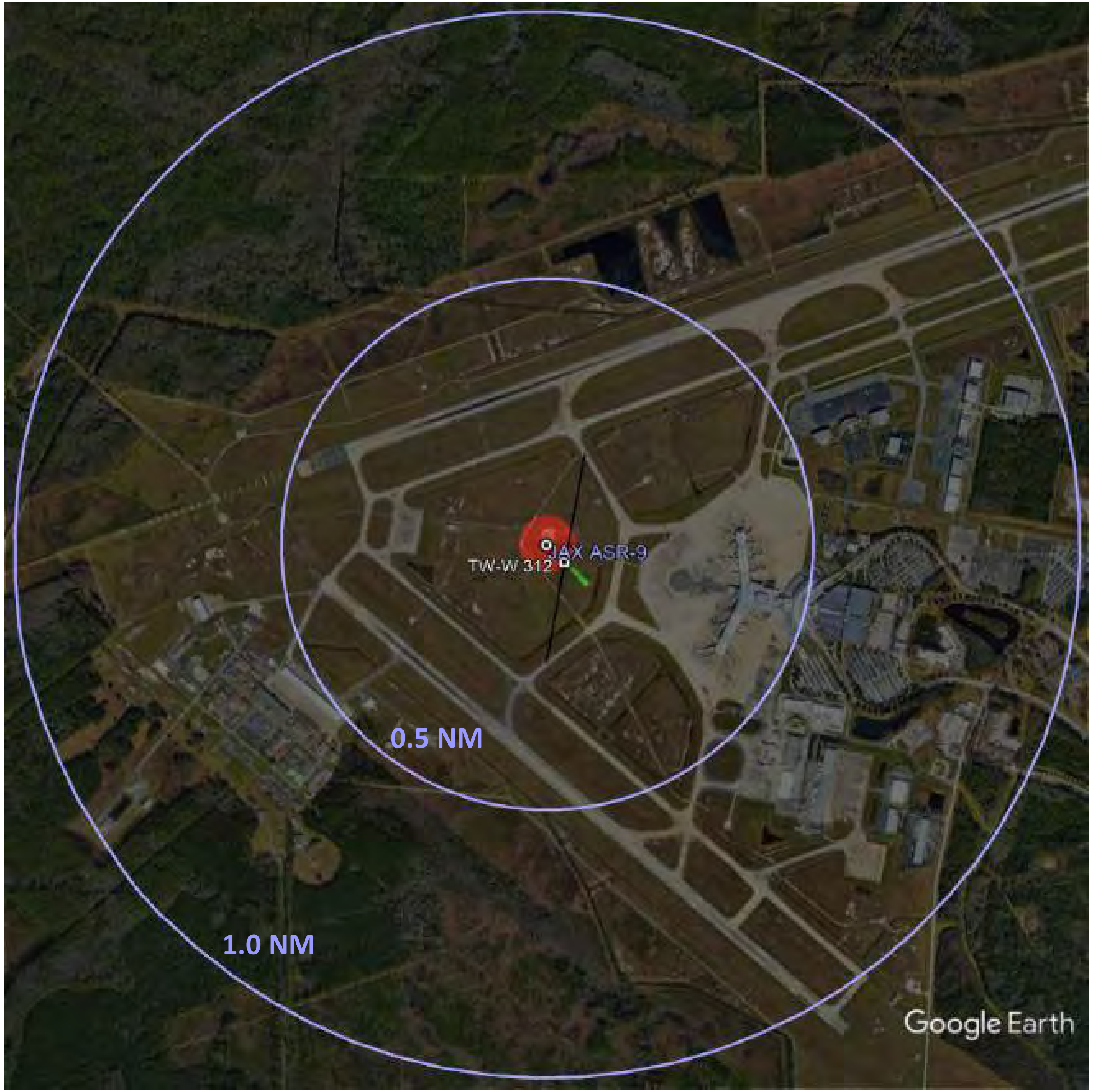
LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 93

RSS BSAT Analysis:
1.0 NM Range
1000 to 4000 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_312.rcs
Bypass Taxiway “W”
Station 312+00 (Point 18)
N30° 29’ 34.02”, W81° 41’ 31.30”
Ground Elevation 26.77’ MSL
Centroid Elevation 69.01’ MSL
(+42.24’ AGL)



Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 94

RSS BSAT Analysis:
1.0 NM Range
50 to 500 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_311.rcs
Bypass Taxiway "W"
Station 311+00 (Point 17)
N30° 29' 33.04", W81° 41' 31.50"
Ground Elevation 26.43' MSL
Centroid Elevation 68.67' MSL
(+42.24' AGL)

FIGURE 95

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

RSS BSAT Analysis:
1.0 NM Range
500 to 1000 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_311.rcs
Bypass Taxiway “W”
Station 311+00 (Point 17)
N30° 29’ 33.04”, W81° 41’ 31.50”
Ground Elevation 26.43’ MSL
Centroid Elevation 68.67’ MSL
(+42.24’ AGL)

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

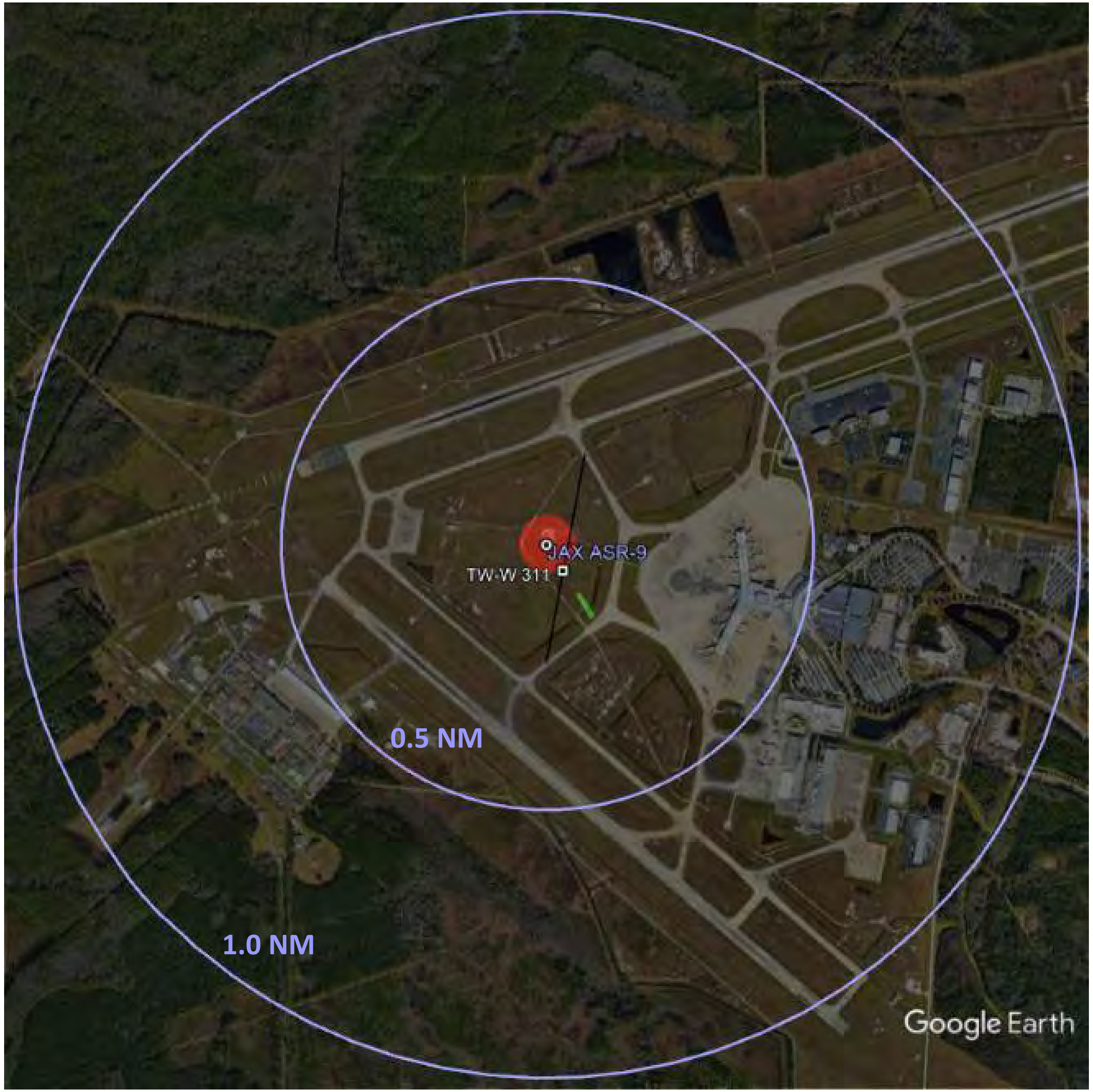
LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 96

RSS BSAT Analysis:
1.0 NM Range
1000 to 4000 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_311.rcs
Bypass Taxiway "W"
Station 311+00 (Point 17)
N30° 29' 33.04", W81° 41' 31.50"
Ground Elevation 26.43' MSL
Centroid Elevation 68.67' MSL
(+42.24' AGL)



Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 97

RSS BSAT Analysis:
1.0 NM Range
50 to 750 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_310.rcs
Bypass Taxiway "W"
Station 310+00 (Point 16)
N30° 29' 32.07", W81° 41' 31.71"
Ground Elevation 26.10' MSL
Centroid Elevation 68.34' MSL
(+42.24' AGL)

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	38.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 98

RSS BSAT Analysis:
1.0 NM Range
750 to 4000 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_310.rcs
Bypass Taxiway "W"
Station 310+00 (Point 16)
N30° 29' 32.07", W81° 41' 31.71"
Ground Elevation 26.10' MSL
Centroid Elevation 68.34' MSL
(+42.24' AGL)

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 99

RSS BSAT Analysis:
1.0 NM Range
50 to 750 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_309.rcs
Bypass Taxiway "W"
Station 309+00 (Point 15)
N30° 29' 31.09", W81° 41' 31.91"
Ground Elevation 25.76' MSL
Centroid Elevation 68.00' MSL
(+42.24' AGL)

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 100

RSS BSAT Analysis:
1.0 NM Range
750 to 4000 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_309.rcs
Bypass Taxiway “W”
Station 309+00 (Point 15)
N30° 29’ 31.09”, W81° 41’ 31.91”
Ground Elevation 25.76’ MSL
Centroid Elevation 68.00’ MSL
(+42.24’ AGL)

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 101

RSS BSAT Analysis:
1.0 NM Range
50 to 750 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_308.rcs
Bypass Taxiway "W"
Station 308+00 (Point 14)
N30° 29' 30.12", W81° 41' 32.12"
Ground Elevation 25.43' MSL
Centroid Elevation 67.67' MSL
(+42.24' AGL)

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 102

RSS BSAT Analysis:
1.0 NM Range
750 to 4000 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_308.rcs
Bypass Taxiway “W”
Station 308+00 (Point 14)
N30° 29’ 30.12”, W81° 41’ 32.12”
Ground Elevation 25.43’ MSL
Centroid Elevation 67.67’ MSL
(+42.24’ AGL)

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 103

RSS BSAT Analysis:
1.0 NM Range
50 to 500 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_307.rcs
Bypass Taxiway "W"
Station 307+00 (Point 13)
N30° 29' 29.15", W81° 41' 32.32"
Ground Elevation 25.09' MSL
Centroid Elevation 67.33' MSL
(+42.24' AGL)

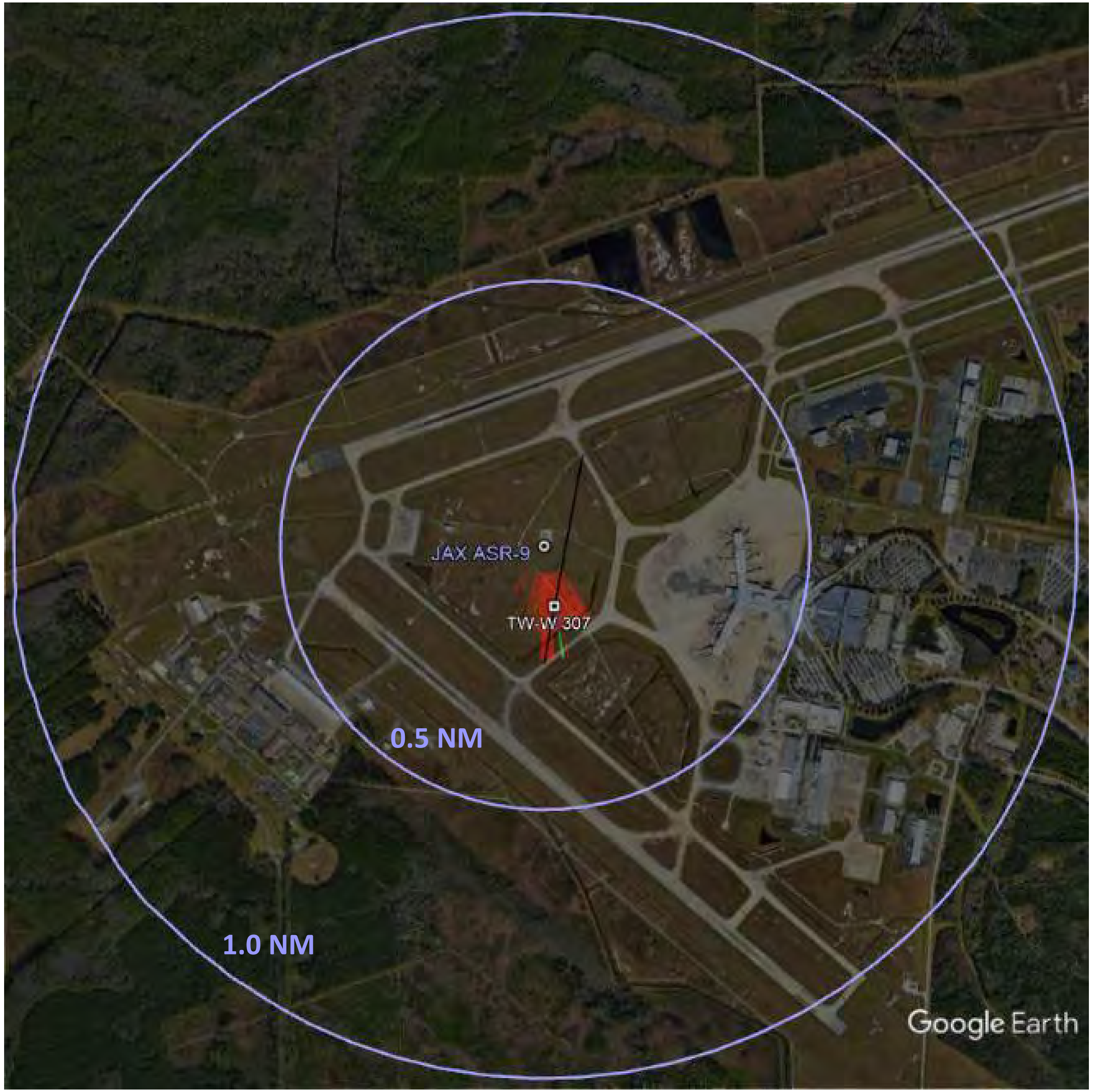


FIGURE 104

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

RSS BSAT Analysis:
1.0 NM Range
500 to 4000 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_307.rcs
Bypass Taxiway "W"
Station 307+00 (Point 13)
N30° 29' 29.15", W81° 41' 32.32"
Ground Elevation 25.09' MSL
Centroid Elevation 67.33' MSL
(+42.24' AGL)

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS

Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)

TRANSPONDER PARAMETERS

Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 105

RSS BSAT Analysis:
1.0 NM Range
50 to 500 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_306.rcs
Bypass Taxiway "W"
Station 306+00 (Point 12)
N30° 29' 28.17", W81° 41' 32.52"
Ground Elevation 24.76' MSL
Centroid Elevation 67.00' MSL
(+42.24' AGL)

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 106

RSS BSAT Analysis:
1.0 NM Range
500 to 4000 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_306.rcs
Bypass Taxiway "W"
Station 306+00 (Point 12)
N30° 29' 28.17", W81° 41' 32.52"
Ground Elevation 24.76' MSL
Centroid Elevation 67.00' MSL
(+42.24' AGL)

FIGURE 107

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

RSS BSAT Analysis:
1.0 NM Range
50 to 500 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_305.rcs
Bypass Taxiway "W"
Station 305+00 (Point 11)
N30° 29' 27.20", W81° 41' 32.73"
Ground Elevation 24.42' MSL
Centroid Elevation 66.66' MSL
(+42.24' AGL)

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 108

RSS BSAT Analysis: 1.0 NM Range 500 to 4000 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_305.rcs
Bypass Taxiway “W”
Station 305+00 (Point 11)
N30° 29’ 27.20”, W81° 41’ 32.73”
Ground Elevation 24.42’ MSL
Centroid Elevation 66.66’ MSL
(+42.24’ AGL)

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 109

RSS BSAT Analysis:
1.0 NM Range
50 to 500 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_304.rcs
Bypass Taxiway “W”
Station 304+00 (Point 10)
N30° 29’ 26.22”, W81° 41’ 32.93”
Ground Elevation 24.09’ MSL
Centroid Elevation 66.33’ MSL
(+42.24’ AGL)

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 110

RSS BSAT Analysis:
1.0 NM Range
500 to 4000 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_304.rcs
Bypass Taxiway “W”
Station 304+00 (Point 10)
N30° 29’ 26.22”, W81° 41’ 32.93”
Ground Elevation 24.09’ MSL
Centroid Elevation 66.33’ MSL
(+42.24’ AGL)

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 111

RSS BSAT Analysis:
1.0 NM Range
50 to 4000 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_313.rcs
Bypass Taxiway "W"
Station 313+00 (Point 19)
N30° 29' 34.99", W81° 41' 31.10"
Ground Elevation 27.10' MSL
Centroid Elevation 69.34' MSL
(+42.24' AGL)

TOWER RAISE
+ 10 FEET

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 102.3 FT
Beacon Height AGL: 73.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 112

RSS BSAT Analysis:
1.0 NM Range
50 to 4000 FT MSL

Boeing 767 400ER Tail Only
TW-W_767_TO_313.rcs
Bypass Taxiway “W”
Station 313+00 (Point 19)
N30° 29’ 34.99”, W81° 41’ 31.10”
Ground Elevation 27.10’ MSL
Centroid Elevation 69.34’ MSL
(+42.24’ AGL)

TOWER RAISE
+ 20 FEET

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 112.3 FT
Beacon Height AGL: 83.6 FT

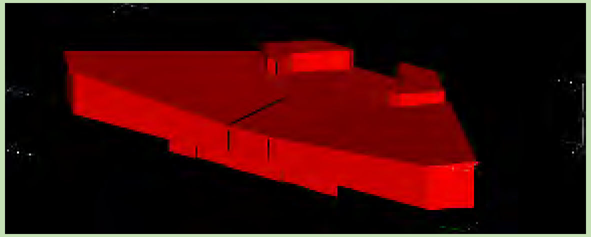
LEGEND

- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 113

RSS BSAT Analysis: 40 NM Range 50 to 4K FT MSL



JAX-CONC_sh_o.rcs
Terminal B Expansion
Building Only
ORIGINAL – NO TILT

TOWER RAISE
+ 20 FEET

FIGURE 114

Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 112.3 FT
Beacon Height AGL: 83.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

Federal Aviation Administration

RTR SITING STUDY

PROJECT: Siting Study to Relocate RTRs
Jacksonville International Airport (JAX)
Jacksonville, FL

VERSION: DRAFT

TO: Timothy Arch
ESA Lead Planner, Planning and Requirements Group

\

FROM: Marcos A Osorio Rodriguez, AJW2E13C
Electronics Engineer
(for AJWE13C Comm. Engineering – Atlanta)

DATE: November 14, 2023

1 EXECUTIVE SUMMARY

This Remote Transmitter Receiver (RTR) Siting Study was conducted to support the future development of Jacksonville International Airport. This study examines the viability of relocating the legacy Remote Transmitter Receiver (RTR) site (JAX RTR-F) and the communications services it provides to the FAA's Air Traffic Control System. The scope of the airfield communications coverage study involves relocating the legacy RTR to a new location.

It is the recommendation of FAA Engineering Services and Spectrum Engineering Group to relocate the legacy JAX RTR services to Candidate Site 1 close to the windsock as shown in Figure 1-1. The Candidate Site 1 location provides a clear line of sight to both ends of the runways and all the way to the hold short point/area. This site offers easy access for local SSC technicians for maintenance. Additionally, lowering the antenna heights to 32 feet from 45 feet would increase the ground coverage and improve the overall communication coverage for Air Traffic.

The approximate coordinates of the facility would be 30°29'36.90"N, 81°41'46.47"W. The required leased space will be approximately (220 ft x 220 ft) one acre of land. There will be minimum of (one) 32 ft consolidated platform or (three) 32 ft towers and a 12'x36' precast shelter constructed at this location.

Figure 1-1: Existing RTR-F & Recommended RTR Sites (Candidate Sites 1 and 2)

2 BACKGROUND

2.1 *Airport Aeronautical Information*

Airport Identifier:	JAX
Airport Status:	Operational
Elevation:	29.6 FT
Location:	9 miles N of JACKSONVILLE, FL
Ownership:	Publicly owned
Owner:	Jacksonville Aviation Authority
Chief Executive Officer:	Mark D. VanLoh, CEO
Airport Physical Address:	14201 Pecan Park Road Jacksonville, FL 32218
Control Tower:	Yes
Sectional chart:	Jacksonville
Boundary ARTCC:	ZJX – Jacksonville ARTCC
NOTAMs Facility:	JAX (Jacksonville Int'l)

Source: https://nfdc.faa.gov/nfdcApps/services/ajv5/airportDisplay.jsp?airportId=JAX
Effective: 11/02/2023 - 11/30/2023

2.2 *Airport Operational Statistics*

Aircraft operations: avg. 273/day *

Commercial:	63%
Transient General Aviation:	15%
Air Taxi:	14%
Military:	4%
Local General Aviation:	4%

* for 12-month period ending 28 February 2023, Source: http://www.airnav.com/

2.3 *Airport Sectional Chart*

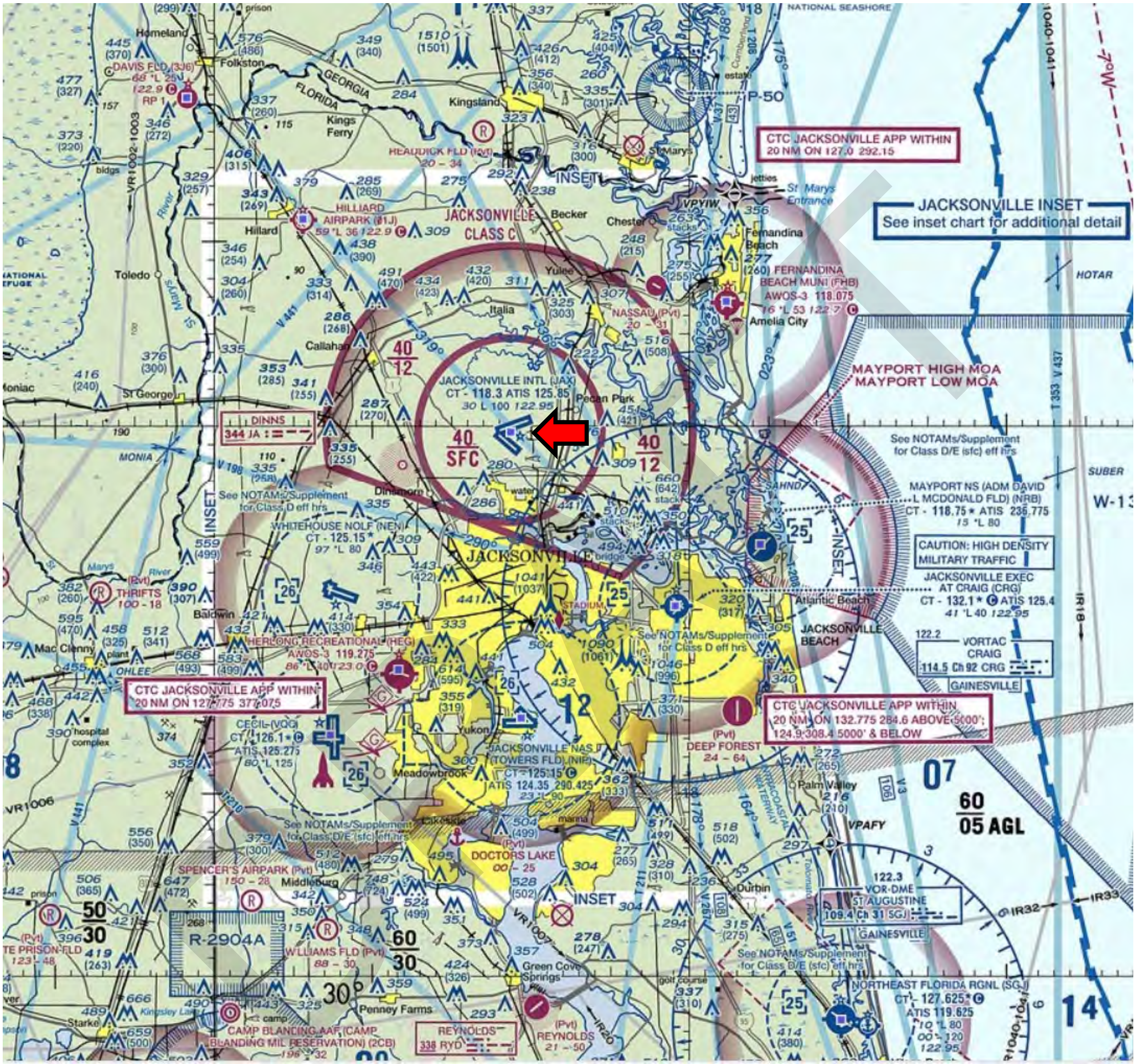


Figure 2-1: VFR Terminal Chart Source: https://aeronav.faa.gov **(Jacksonville – Effective 30 Nov 2023)**

2.4 *Airport Diagram*

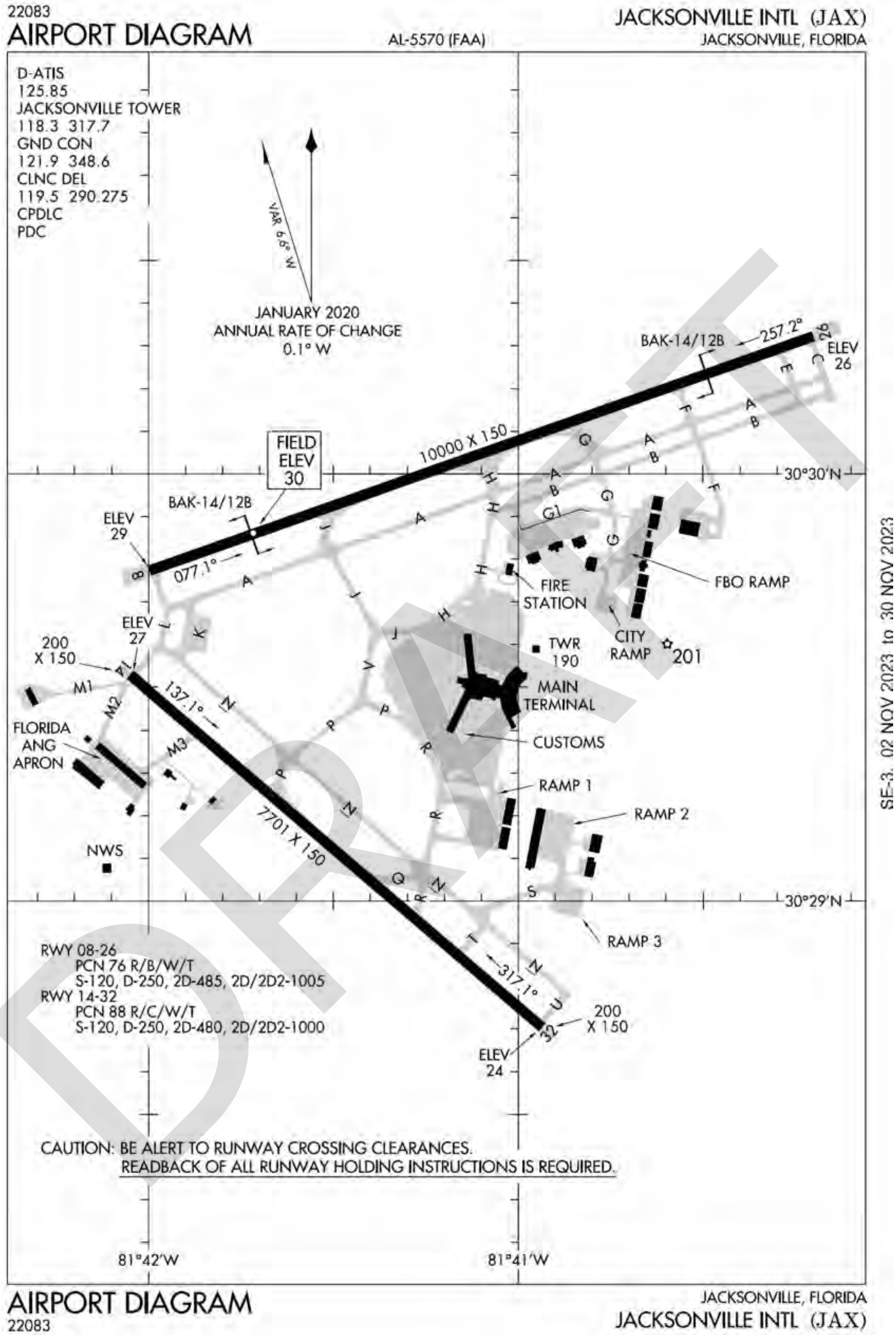


Figure 2-2: Airport Diagram – Jacksonville Int'l Airport
Source: https://nfdc.faa.gov/ Effective Nov 02, 2023

3 COMMUNICATIONS COVERAGE REQUIREMENTS

3.1 *Existing Frequency Transmitting Authorizations*

The existing licensed Frequency Transmitting Authorizations (FTA) and Terminal Service Volume data for the Jacksonville International Airport have been provided by ESA Spectrum Engineering. The requirement for each frequency is shown below in Table 3-1.

Frequency Transmitting Authority

Line	FREQUENCY	FAC. TYPE	MAX. POWER	CLASS	TYPE OF SERVICE	IDENT
1	118.3000 MHz	RTR	10.00W	FAC	LOCAL CTRL	JAXG - JAXH
2	119.0000 MHz	RTR	10.00W	FAC	APCH CTRL	JAXG - JAXH
3	119.5000 MHz	RTR	2.50W	FLU	CLNC DLVY	JAXG - JAXH
4	119.8500 MHz	RTR	10.00W	FAC	APCH CTRL	JAXG - JAXH
5	120.7500 MHz	RTR	10.00W	FAC	APCH CTRL	JAXG - JAXH
6	121.5000 MHz	RTR	10.00W	FA	EMERG COM	JAXG - JAXH
7	121.9000 MHz	RTR	2.50W	FLU	GRND CTRL	JAXG - JAXH
8	124.4000 MHz	RTR	10.00W	FAC	APCH CTRL	JAXG - JAXH
9	124.9000 MHz	RTR	10.00W	FAC	APCH CTRL	JAXG - JAXH
10	125.8500 MHz	RTR	10.00W	FAB	ATIS	JAXH
11	127.0000 MHz	RTR	10.00W	FAC	APCH CTRL	JAXG - JAXH
12	127.7750 MHz	RTR	10.00W	FAC	DEP CTRL	JAXG - JAXH
13	132.7750 MHz	RTR	10.00W	FAC	APCH CTRL	JAXG - JAXH
14	243.0000 MHz	RTR	10.00W	FA	EMERG COM	JAXG
15	269.9000 MHz	RTR	10.00W	FAC	APCH CTRL	JAXG - JAXH
16	284.6000 MHz	RTR	10.00W	FAC	APCH CTRL	JAXG - JAXH
17	288.3500 MHz	RTR	10.00W	FAC	APCH CTRL	JAXG - JAXH
18	290.2750 MHz	RTR	2.50W	FLU	CLNC DLVY	JAXG - JAXH
19	292.1500 MHz	RTR	10.00W	FAC	DEP CTRL	JAXG - JAXH
20	308.4000 MHz	RTR	10.00W	FAC	DEP CTRL	JAXG - JAXH
21	316.0750 MHz	RTR	10.00W	FAC	APCH CTRL	JAXG - JAXH
22	317.7000 MHz	RTR	10.00W	FAC	LOCAL CTRL	JAXG - JAXH
23	348.6000 MHz	RTR	2.50W	FLU	GRND CTRL	JAXG - JAXH
24	377.0750 MHz	RTR	10.00W	FAC	APCH CTRL	JAXG - JAXH

Table 3-1: WebFTA

3.2 *Ground Based Critical Communications Locations*

Stakeholder input from the Communications Engineering Services, Spectrum Engineering, Jacksonville System Service Center (SSC), Jacksonville Air Traffic (AT), the airport authority and the FAA Office of Runway Safety identified **seventeen (17) locations** where ground communications are critical on the airport. Map 3-1 below reflects the general location of these data points on the airport.

Data Point #1: (30° 30' 16.65" N, 81° 40' 11.46" W)
Location: Taxiway C @ Runway 8/26
This location was identified critical because … Taxiway that transitions to active runaway with hold short markings.

Data Point #2: 30° 30' 10.04" N, 81° 40' 33.11" W
Location: Taxiway F @ Runway 8/26
This location was identified critical because … Taxiway that transitions to active runaway with hold short markings.

Data Point #3: 30° 30' 04.78" N, 81° 40' 49.07" W
Location: Taxiway G @ Runway 8/26
This location was identified critical because … Taxiway that transitions to active runaway with hold short markings.

Data Point #4: 30° 29' 59.64" N, 81° 41' 04.66" W
Location: Taxiway H @ Runway 8/26
This location was identified critical because … Taxiway that transitions to active runaway with hold short markings.

Data Point #5: 30° 29' 52.60" N, 81° 40' 59.04" W
Location: Taxiway G1 @ Runway General Aviation Ramp
This location was identified critical because … Taxiway that transitions from non-movement area to movement area.

Data Point #6: 30° 29' 46.45" N, 81° 41' 03.87" W
Location: Taxiway H @ Terminal Ramp
This location was identified critical because … Taxiway that transitions from non-movement area to movement area.

Data Point #7: 30° 29' 37.61" N, 81° 41' 23.12" W
Location: Taxiway J @ Terminal Ramp
This location was identified critical because … Taxiway that transitions from non-movement area to movement area.

Data Point #8: 30° 29' 28.16" N, 81° 41' 25.27" W
Location: Taxiway P @ Terminal Ramp
This location was identified critical because … Taxiway that transitions from non-movement area to movement area.

Data Point #9: 30° 29' 51.77" N, 81° 41' 31.17" W
Location: Taxiway J @ Runway 8/26
This location was identified critical because … Taxiway that transitions to active runaway with hold short markings.

Data Point #10: 30° 29' 43.98" N, 81° 41' 58.24" W
Location: Taxiway L @ Runway 8/26
This location was identified critical because … Taxiway that transitions to active runaway with hold short markings.

Data Point #11: 30° 29 '33.67" N, 81° 42' 00.53" W
Location: Taxiway L @ Runway 14/32
This location was identified critical because ... Taxiway that transitions to active runaway with hold short markings.

Data Point #12: 30° 29' 29.31" N, 81° 42' 04.32" W
Location: Taxiway M2 @ Runway 14/32
This location was identified critical because ... Taxiway that transitions to active runaway with hold short markings.

Data Point #13: 30° 29' 21.63" N, 81° 41' 55.31" W
Location: Taxiway M3 @ Runway 14/32
This location was identified critical because ... Taxiway that transitions to active runaway with hold short markings.

Data Point #14: 30° 29' 17.44" N, 81° 41' 38.67" W
Location: Taxiway P @ Runway 14/26
This location was identified critical because ... Taxiway that transitions to active runaway with hold short markings.

Data Point #15: 30° 29' 03.77" N, 81° 41' 15.15" W
Location: Taxiway Q/R @ Runway 14/26
This location was identified critical because ... Taxiway that transitions to active runaway with hold short markings.

Data Point #16: 30° 28' 54.37" N, 81° 41' 07.51" W
Location: Taxiway T @ Runway 14/32
This location was identified critical because ... Taxiway that transitions to active runaway with hold short markings.

Data Point #17: 30° 28' 44.69" N, 81° 40' 54.39" W
Location: Taxiway U @ Runway 14/32
This location was identified critical because ... Taxiway that transitions to active runaway with hold short markings.

Map 3-1: ALP Ground Based Critical Communications Data Points

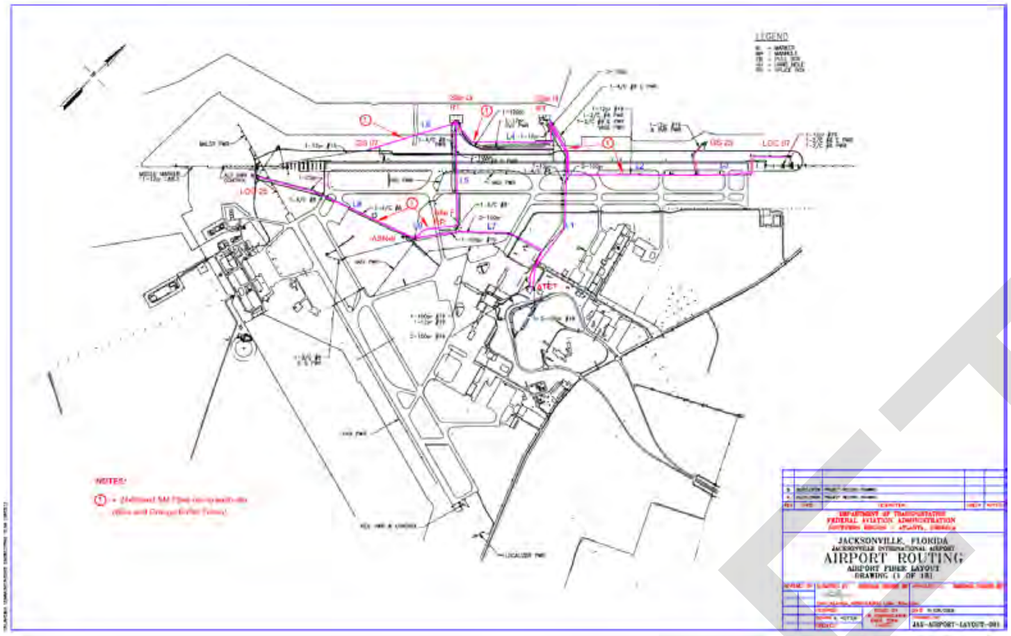
3.3 *Existing Communications Issues*

JAX Air Traffic reports they have problems with the following frequencies:

Line	FREQUENCY	FAC. TYPE	MAX. POWER	CLASS	TYPE OF SERVICE	IDENT
1	118.3000 MHz	RTR	10.00W	FAC	LOCAL CTRL	JAXG - JAXH
3	119.5000 MHz	RTR	2.50W	FLU	CLNC DLVY	JAXG - JAXH
7	121.9000 MHz	RTR	2.50W	FLU	GRND CTRL	JAXG - JAXH
18	290.2750 MHz	RTR	2.50W	FLU	CLNC DLVY	JAXG - JAXH
22	317.7000 MHz	RTR	10.00W	FAC	LOCAL CTRL	JAXG - JAXH
23	348.6000 MHz	RTR	2.50W	FLU	GRND CTRL	JAXG - JAXH

4 FOTS

4.1 Map



4.2 Needed Fiber DUCTs

- The FAA will need a new fiber duct section installed from the 25 LOC to the 07 GS shelter. A new 24-strand single mode fiber cable will need to be pulled in to the new ductbank section and terminated in new patch panels on each end.
- Two new ductbank sections will need to be installed from the new receiver site location to intersect and splice on to the existing fiber cable that goes from the ASR-9 to the 25 LOC.

5 INFRASTRUCTURE ASSESSMENTS AND CONSIDERATIONS

The siting process for potential communications sites evaluates many infrastructure factors in determining a viable communications facility. Listed below are the most common factors used to ascertain each communications site's favorable and unfavorable characteristics. The locations considered are generally located close to the center of the service volume. The locations considered have good Line of Sight (LOS) for the boundaries of the service volume boundaries. Candidate Sites will be ranked based upon the general criteria in Section 4 below that are taken from FAA Order 6580.6. Weighting factors will be assigned to the criteria to create a numerical ranking system (0-100 with 100 being highest) to determine the best, acceptable, and unacceptable candidate sites. Table 1-1 reflects the weighted matrix for Candidate Sites.

5.1 *Communications Coverage*

Communications coverage is the dominate parameter effecting the siting criteria score since it is the overriding Air Traffic requirement to establish an effective communications site. Different FAA communications facilities have different constraints for communications on the ground, lower altitude, and upper altitude communications coverage so the communications score will consider these variables when assigning this parameter's score. Elements to consider in the communications cover score are ground coverage on the AOA, terminal procedures such as Instrument Approach Procedures (IAPs) and Standard Terminal Arrival Procedures (STARs). Spectrum considerations such as pre-existing Radio Frequency Interference (RFI) sources nearby or whether the frequencies cause predicted RFI that cannot be mitigated by external filters or antenna separation. Terrain profiles and obstruction analysis will be performed by using FAA's iRCAS software. Undesirable Fresnel Zone influences to vertical antenna lobing will effect this parameter's score. Acceptable signal coverage within the required coverage area is a minimum signal level of -87 dBm. Strong signal coverage within the required coverage area is a minimum signal level of -82 dBm.

5.2 *Power*

The power requirements for a FAA communications facility are defined in FAA Order 6950.2. A RTR facility has a Power Source "Code D". A Power Source "Code D" facility provides standby power immediately (without interruption) upon failure of the primary power source with a minimum sustained operation of four hours.
Power Source "Code D" denotes a commercial power source with D.C. Battery. An UPS is not included in this category. An engine generator can be considered in special circumstances as the standby power source such as coastal areas that may be impacted by hurricanes but must be approved through the FAA's National Change Proposal (NCP) process. Desired facilities would be locations that are located near existing utility services.

5.3 *Communications Diversity*

The communications diversity for a FAA communications facility is determined by FAA Order 6000.36. This requirement provides guidance for routing field cable and fiber optics from the RTR to the control facility. Physical separation of outside dual communications routes or cable loop systems (leased and FAA) require a minimum of 25 ft separation. The routing of the path should be engineered such that a failure or cut at one geographical location will not cause the loss of both communications paths. Sites should be somewhat near existing roads, power, telco and other connectivity services. Sites that do not have nearby services will be vastly more expensive to establish.

5.4 *Airfield Safety*

The FAA strives to provide the safest, most efficient aerospace system in the world. One factor that can contribute to runway incursions is airport configuration. When undertaking capital development projects on airfields, the FAA emphasizes locating communications facilities in areas where FAA technicians are not required to cross active runways, taxiways or ramp areas. This effort includes mitigating issues identified by the Office of Runway Safety as "Hot Spots" where a history or potential risk of collision or runway incursions exists.

5.5 *Physical Security*

Physical Security for a FAA communications facility is dictated by FAA Order 1600.69. These requirements include security fences and setbacks.

5.6 *Environmental/Legal Considerations*

An Environmental Due Diligence Audit (EDDA) is required to ensure existing environmental cleanup issues and the presence of any hazardous waste or hazardous materials are defined. Any protections that may be impacted by the construction and maintenance of the new facility will be further reviewed prior to final selection of the new communications site. These protections include plants, animals, insects, migration routes and nesting or breeding grounds. Significant additional costs may be required to mitigate these potential environmental/legal considerations.

5.7 *Real Estate Acquisition*

The use of existing FAA facilities (collocation) is usually preferred over the establishment of non-FAA or new leased facilities. If no suitable existing FAA facilities can be determined, locations where no-cost lease agreements locations are considered. Sources for no-cost lease agreements are other government agencies and airports who receive Airport Improvement Program funding from the Airport Improvement Act under Assurance 28. Purchasing property would only be considered if a suitable number of candidate sites could not be found that met FAA communications requirements.

5.8 *FAA Maintainability*

The candidate FAA communications facilities are evaluated on how accessible they are for the technicians maintaining the facility. Considerations for maintainability include unique badging/security demands, crossing runways/taxiways, hazardous terrain and narrow/inaccessible routes for transporting/resupplying equipment and materials to the facility. Modifications required to conform to OSHA regulations are another important design issue to ensure FAA maintainability.

5.9 *Airport Layout Plans*

The ALP has been reviewed to understand the airport's framework for long range planning, preparation for future growth and to address airport design deficiencies. The FAA will make every effort to ensure prospective communications facilities minimize the impact to the airport's present and future airport planning initiatives.

6 PRELIMINARY COMMUNICATIONS SITES

Stakeholders aided in identifying existing FAA facilities (collocation) and new facilities as potential communications sites. No effort was taken to analyze these locations during the “brainstorming” session to identify parcels of land.

Note: The parcels of land were identified with a letter of the alphabet and this designation should not be confused the letter designation assigned to the actual candidate sites selected for testing.

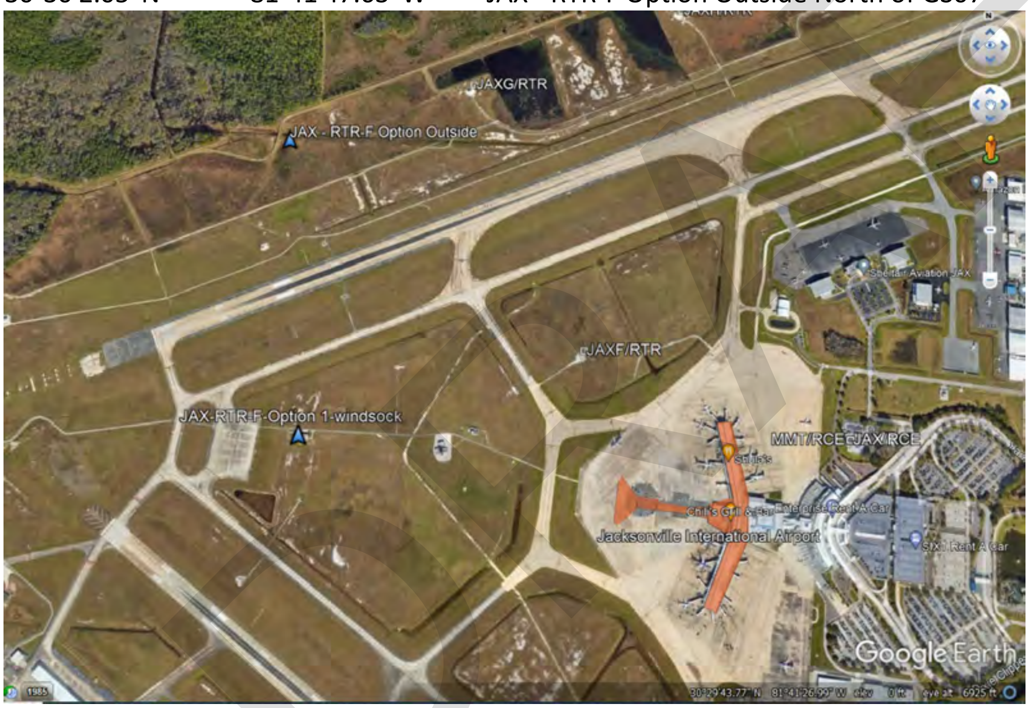
6.1 *Existing FAA Facilities*

Other than the evaluation of raising the towers from 35 FT to 70 FT on the existing RTR-F Site, no existing FAA facilities exist at the airport were identified as preliminary sites large enough to support the space and power requirements for an RTR site.

6.2 *Other Facilities*

Preliminary locations were identified on the airport in FAA’s stakeholder brainstorming session:

30°30'2.05"N 81°41'47.63"W JAX - RTR-F Option Outside North of GS07



Map 6-1: Potential RTR sites identified by Stakeholders

7 ANALYSIS

Using the FAA siting criteria listed in Section 3 of this study, two locations and the option of raising the existing site from 35 FT to 70 FT were brainstormed in Section 6 were identified as potential candidate RTR sites. The two selected preliminary locations as potential candidate sites were:

Candidate Site 1 Close to Winsock: 30°29'36.90"N, 81°41'46.47"W
Candidate Site 2 Option Outside North of GS07: 30°30'2.05"N, 81°41'47.63"W

These two candidate sites were analyzed for their performance by the Spectrum department using signal modeling software IRCAS.

The FAA recommends one (1) 32 ft Platform or three (3) 32 ft antenna towers on one acre of land (220 ft x 220 ft) for the Candidate Site 1 option for maximum service volume coverage yet remains outside the FAR Part 77 runway surfaces.

8 RECOMMENDATIONS

It is the recommendation of FAA Engineering Services to relocate the legacy JAX RTR services to Candidate Site 1 Close to the Windsock as shown in Figure 1-1. The Candidate Site 1 Close to the Windsock location provides the best ground-based communications coverage (as a receiver site relocated to JAX RTR) for the entire airfield covering 100% of the measured test points on the movement area.

The approximate coordinates of the facility would be 39°02'30.0"N /84°38'25.3"W. The required leased space will be approximately (220 ft x 220 ft) one acre of land. There will be minimum one (1) 32 ft Platform or three (3) 32 ft antenna towers on one acre of land (220 ft x 220 ft) for the Candidate Site 1 (or similar consolidated platform design) and a 12'x36' precast shelter constructed at this location. New site will require DC BUS backup power.

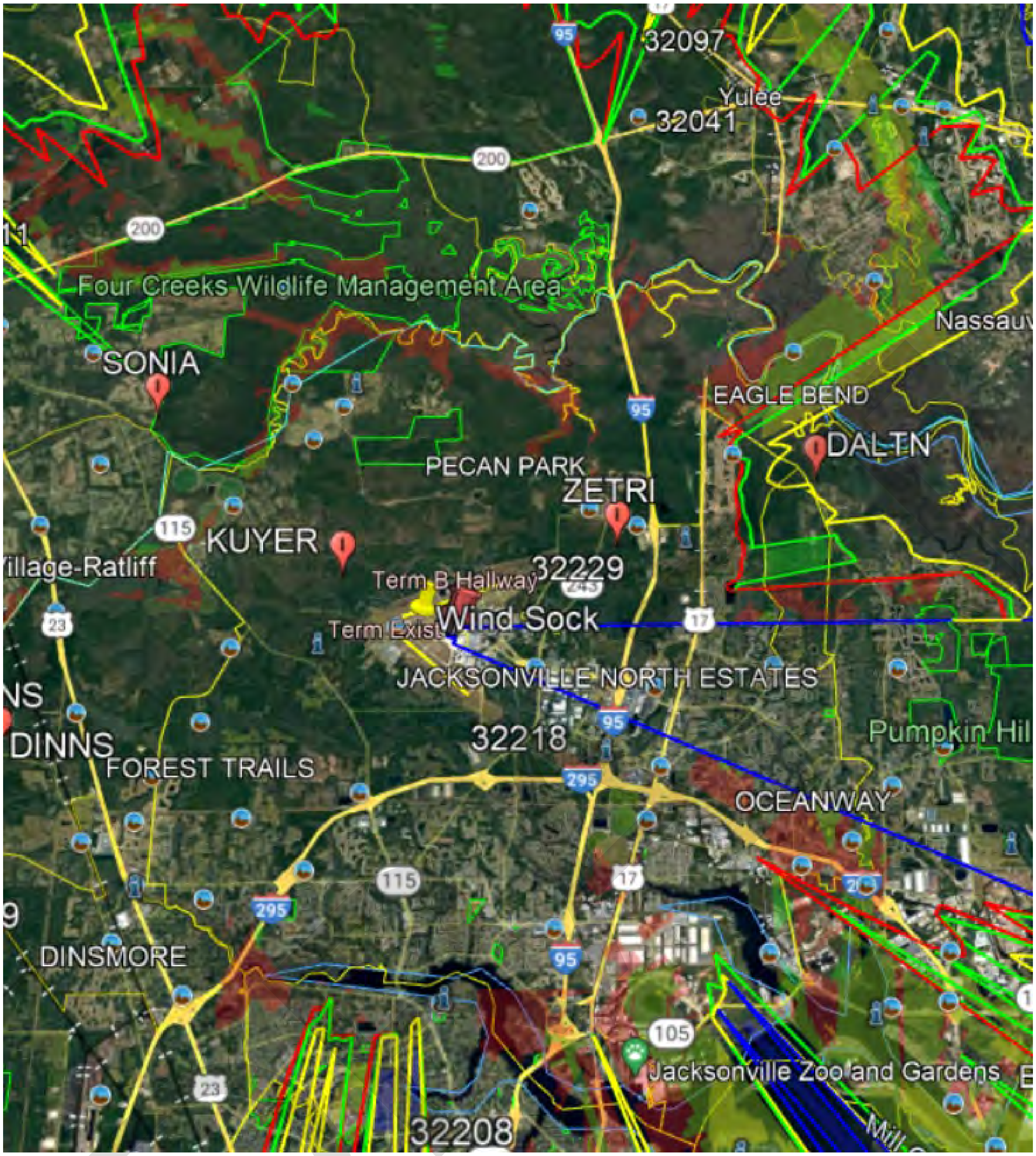
9 ATTACHMENTS

FAA approved applications iRCAS and Frequency Management Tools were used in the analysis in Section 6 above:

9.1 *Candidate Site 1*

The iRCAS model theoretical coverage in the Spectrum Engineering's FTA defined coverage area of Candidate Site 1 is shown in Figure 8-1

Map 6-1: Coverage Analysis from the Wind Sock with 32 FT antennas.



Map 6-2: IAP Overlay.

9.2 *Antenna Tower Configuration*

Antenna Tower height affects the performance of a communications channel in the vertical lobing of the antenna pattern. The modeling was performed using the Frequency Management Tool and iRCAS for the service volumes defined in Table 3-1. The overall height will be important in determining whether a particular antenna tower will meet FAA Part 77 obstruction requirements. The results of these calculations reveal an aircraft's minimum altitude at the maximum range within a defined service volume to achieve satisfactory (-87 dBm) communication, the minimum RF level found within the first null of the first and second vertical lobes of an antenna pattern for each defined service volume and the calculated RF level at the maximum altitude/range for each defined service volume. The candidate sites antenna height recommendations are as follows:

Candidate Site 1: 32 ft antenna towers (49.5 ft receiver height)
Candidate Site 2: 32 ft antenna towers (49.5 ft receiver height)