APPENDICES

APPENDIX A

Agency and Public Involvement

RS&H

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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.

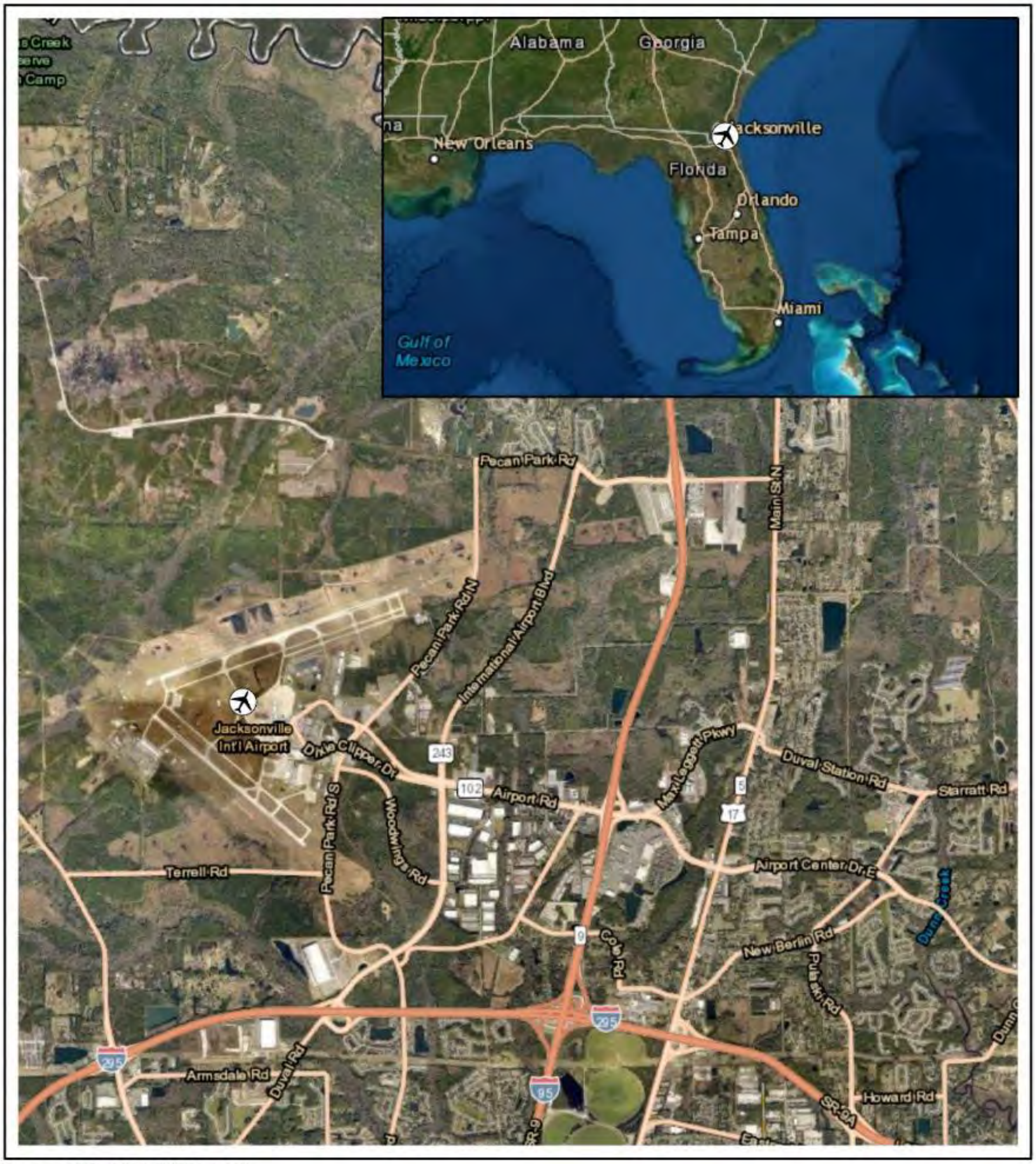
On behalf of the Authority, we would like to thank you for your interest in this project and look forward to working with you as we prepare the EA. If you have any questions or need additional information regarding the Proposed Project or EA, please do not hesitate to contact me at (904) 256-2469.

Sincerely,

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.

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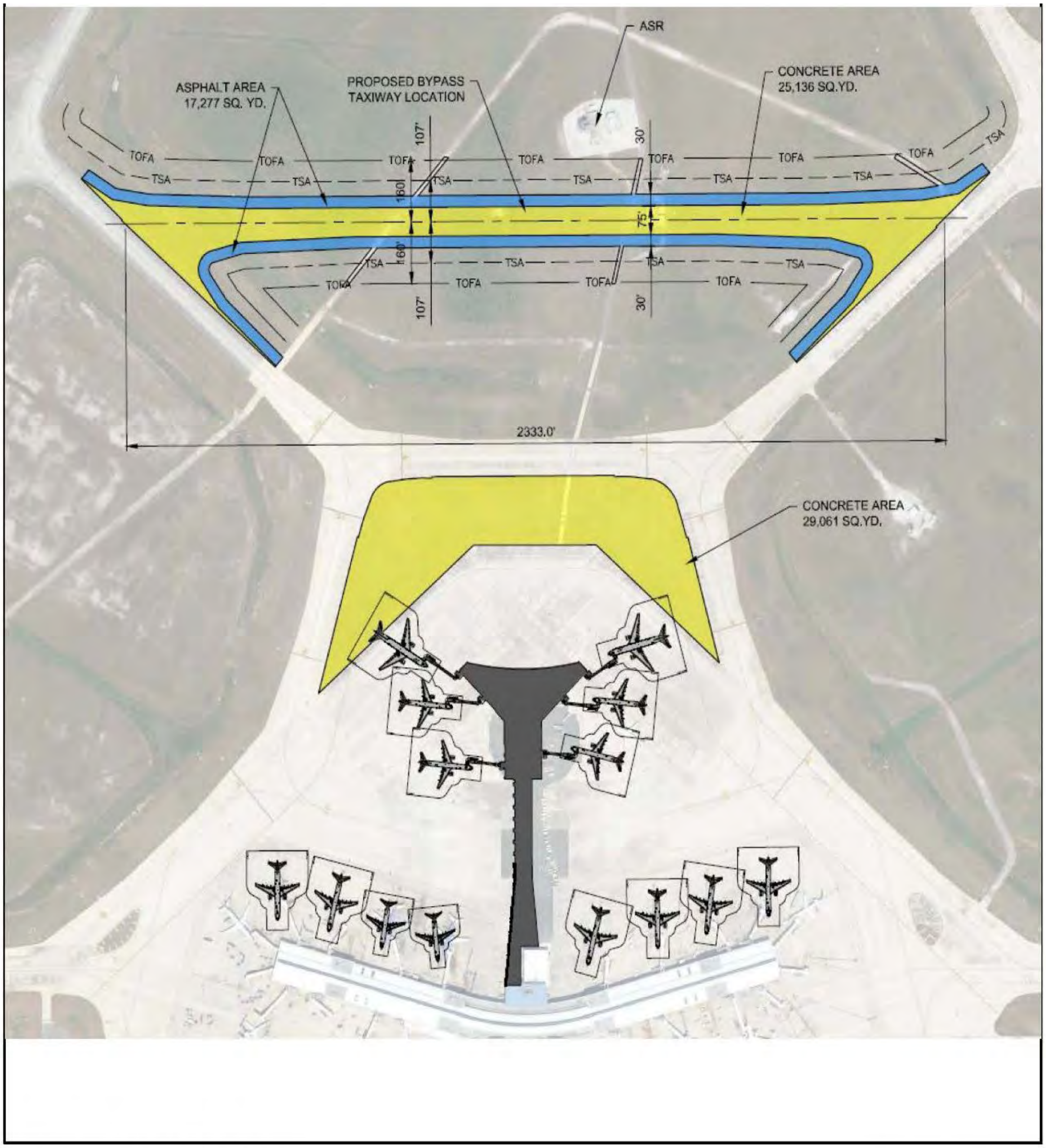
Legend

Airport Location

RS&H

Figure 1
Airport Location



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

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RS&H

Figure 2
Proposed Project

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

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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:

<u>Air Permitting</u>
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.

<u>Environmental Resource Permitting and Stormwater Permitting</u>
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.

<u>Groundwater</u>
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.

<u>Non-road Emission Sources</u>

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.

<u>On-road Emission Sources</u>

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.

<u>Fugitive Emissions</u>

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

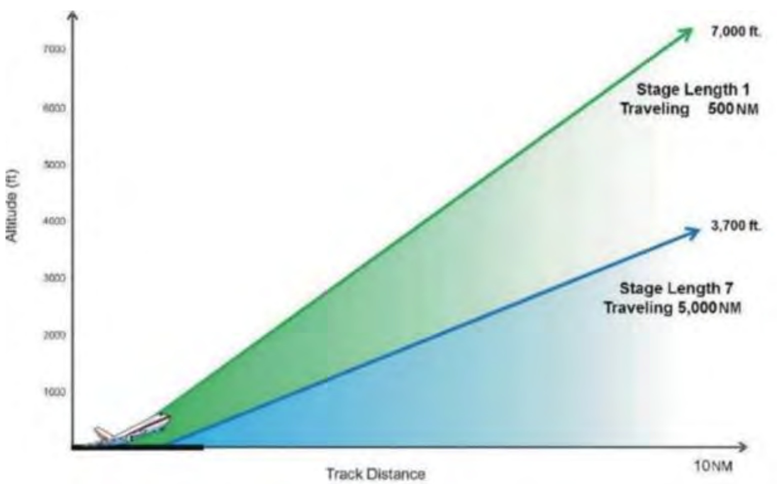
Aircraft Type (s)	AEDT Aircraft	Annual Operations	Average Annual Day		
			Day	Night	Total
Boeing 757-300	757300	160	0.44	0.00	0.44
Boeing 737-400	737400	103	0.27	0.01	0.28
Boeing 737-300	737300	97	0.25	0.01	0.27
Boeing 747-400	747400	45	0.08	0.04	0.12
Challenger 300/600	CL600	18	0.05	0.00	0.05
King Air/Super 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***.

[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	2 501-1000nm	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.

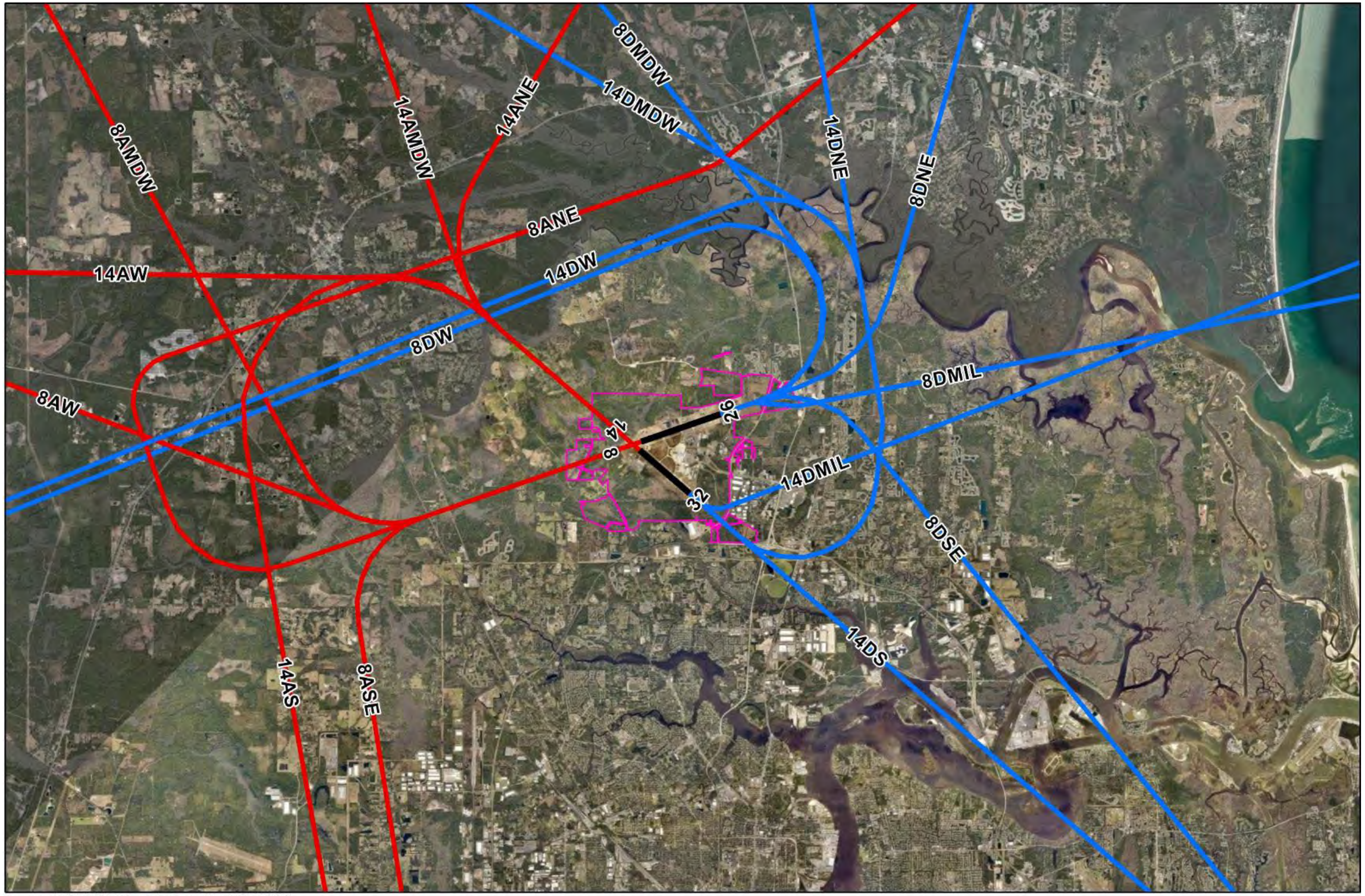
C.1.3.2 2026 Noise Exposure

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



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

Legend
- Runway
- Arrival Flight Tracks East Flow
- Departure Flight Tracks East Flow
- Airport Property Boundary

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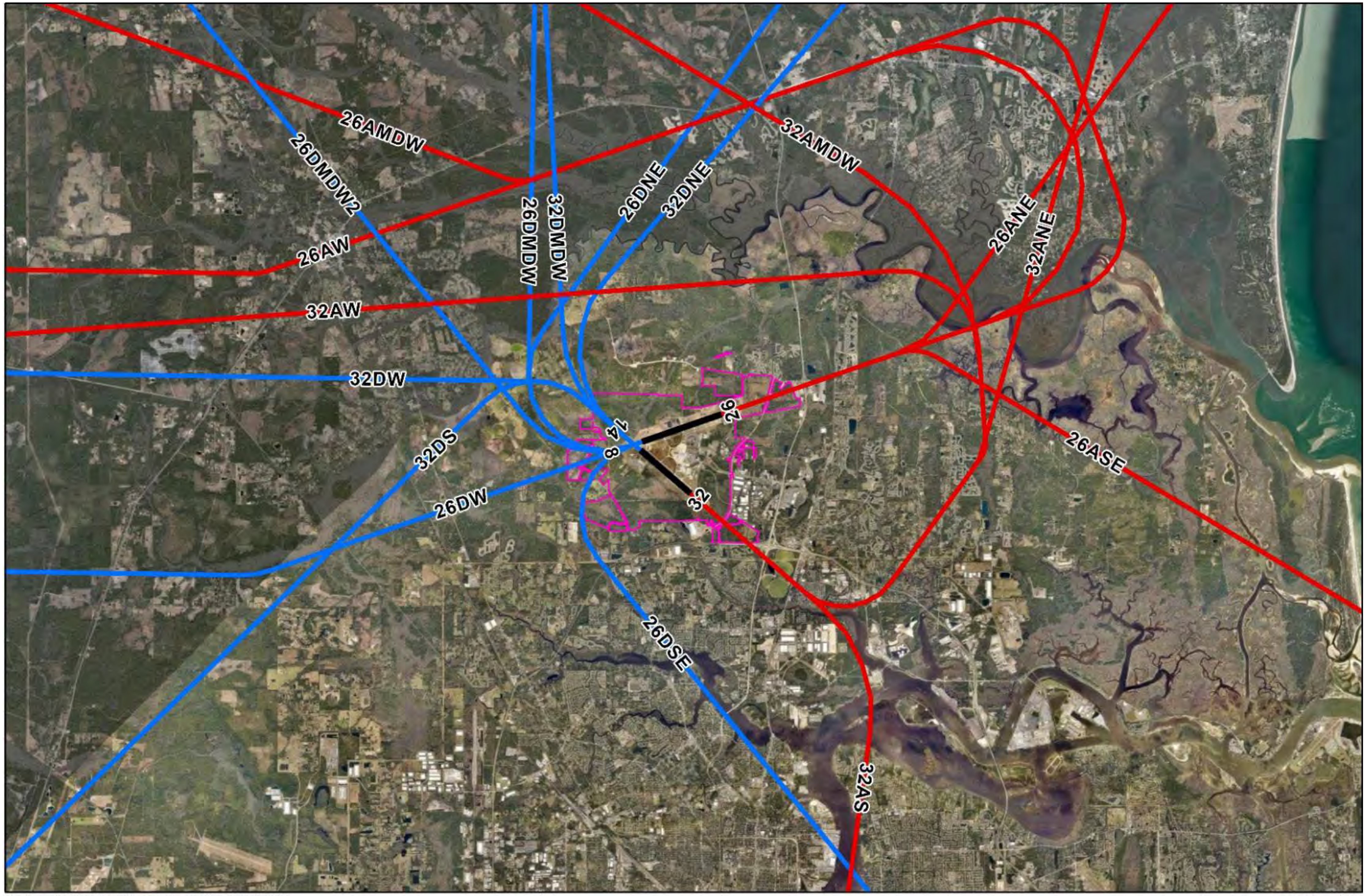
FIGURE C-3: MODELED FLIGHT TRACKS – WEST FLOW



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

Legend
- Runway
- Arrival Flight Tracks West Flow
- Departure Flight Tracks West Flow
- Airport Property Boundary

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FIGURE C-4: 2022 DNL CONTOURS

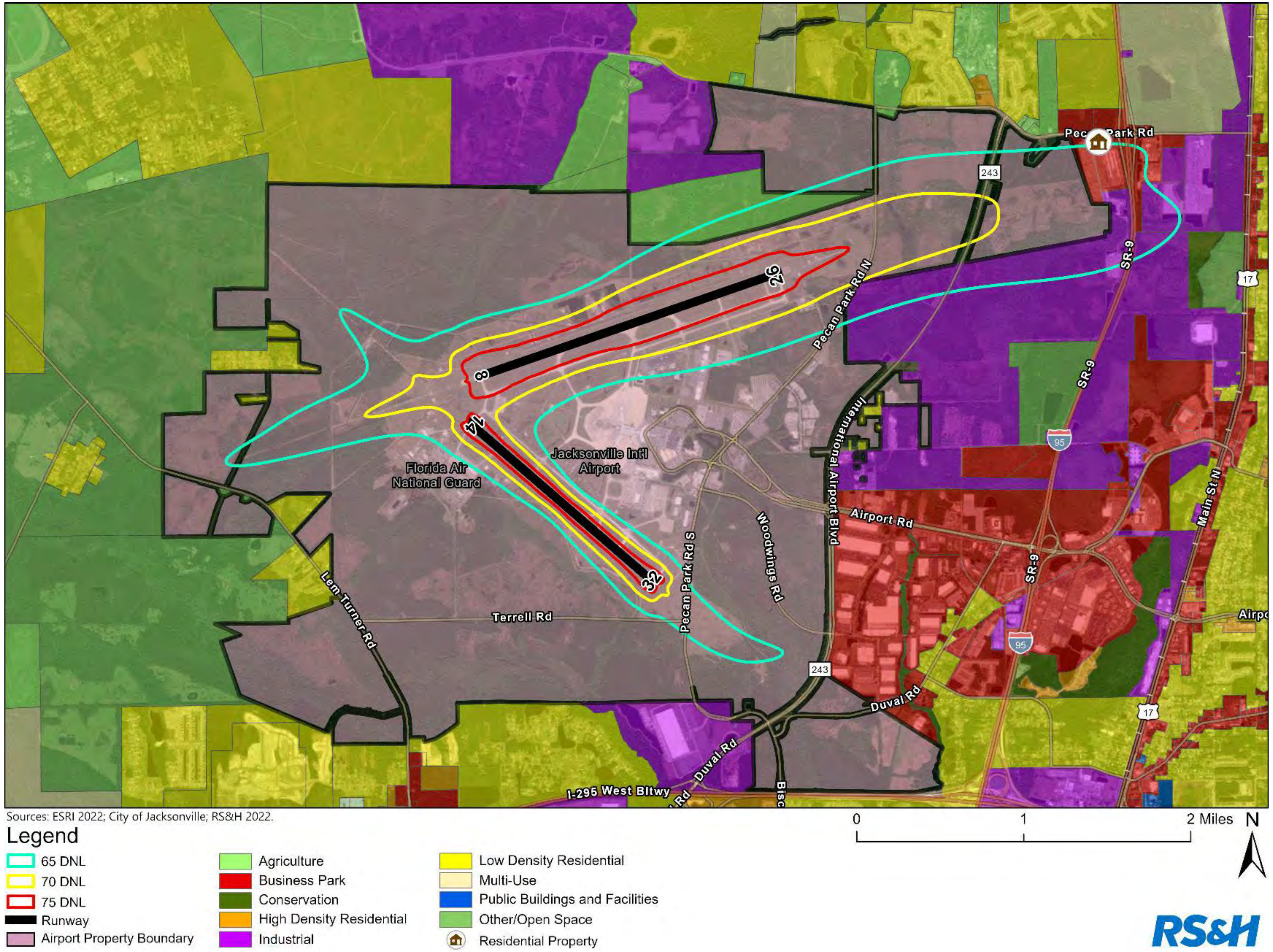


TABLE C-7: 2026 NO ACTION ALTERNATIVE AIRCRAFT OPERATIONS AND FLEET MIX

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

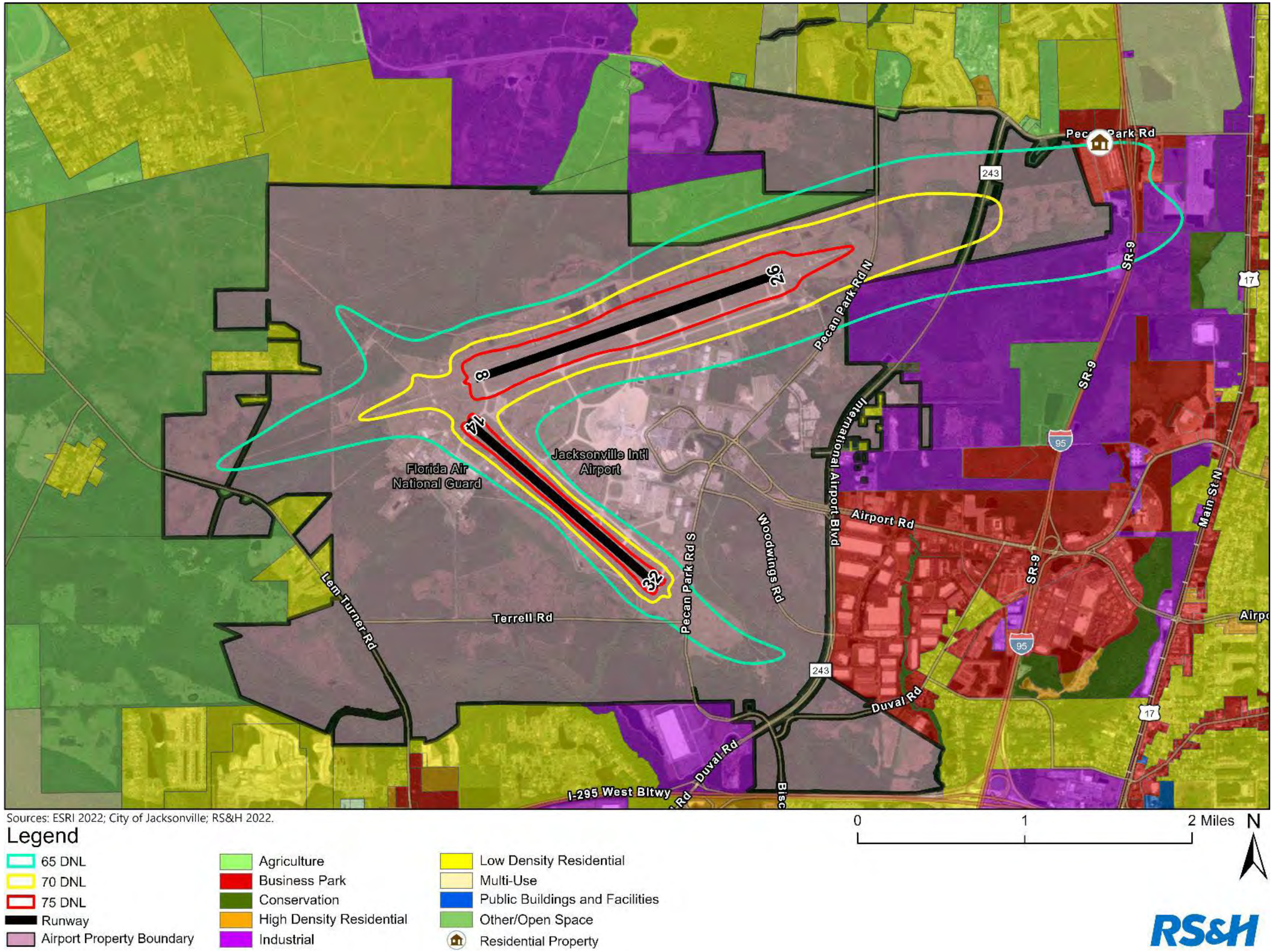
Source: RS&H, 2023

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



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

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FIGURE C-6: 2026 PROPOSED PROJECT DNL CONTOURS

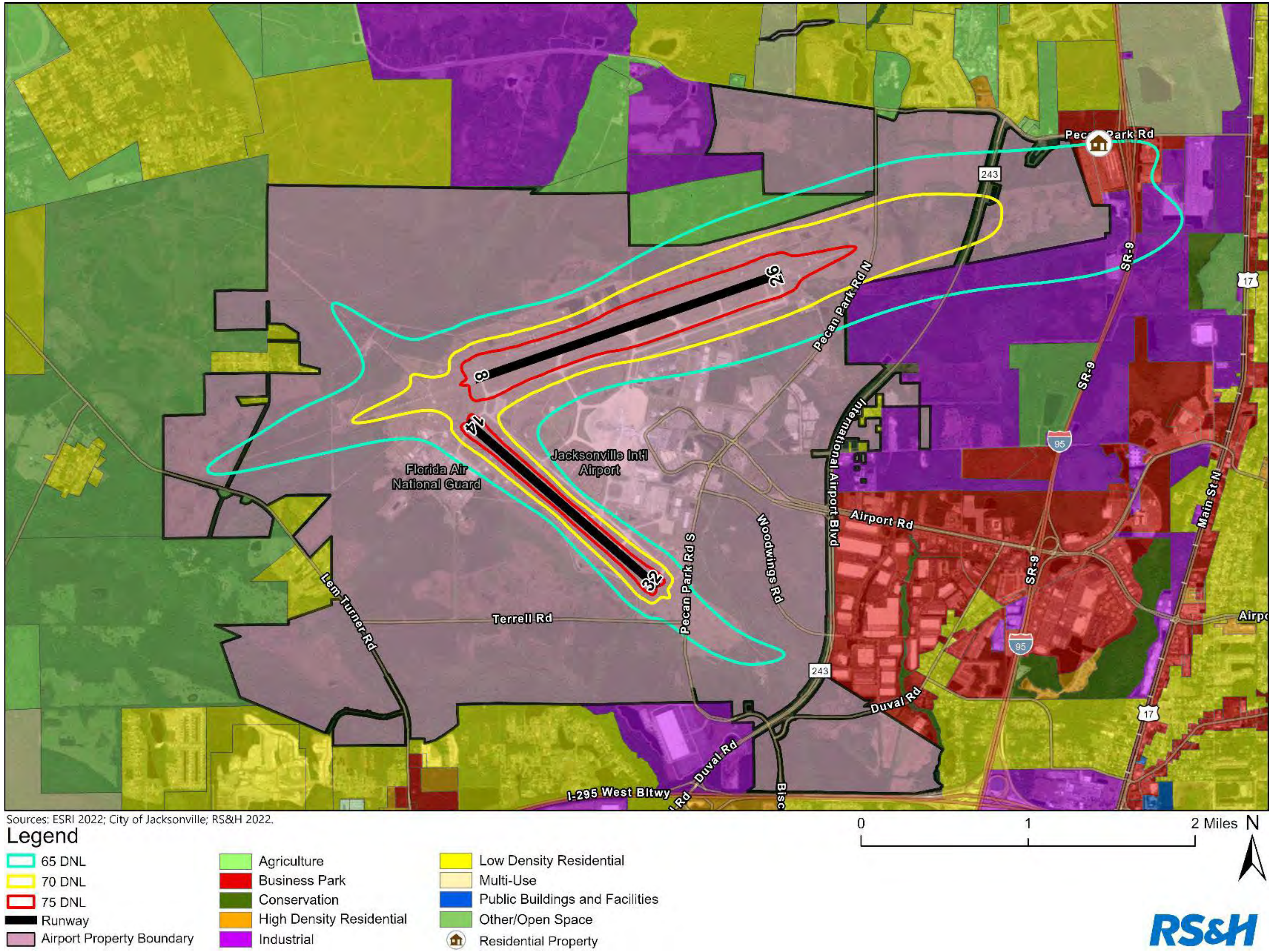

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TABLE C-10: 2031 NO ACTION ALTERNATIVE AIRCRAFT OPERATIONS AND FLEET MIX

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

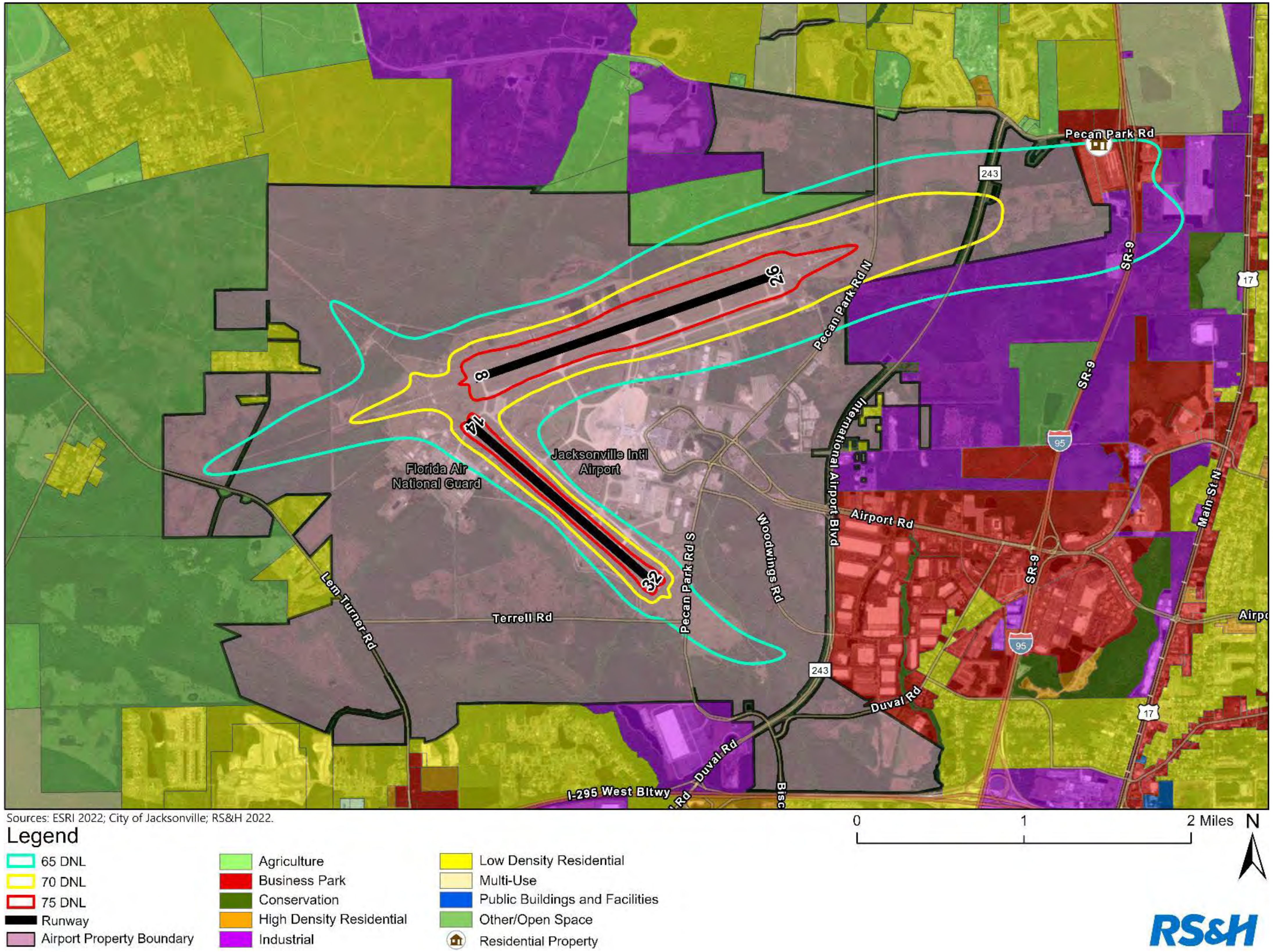

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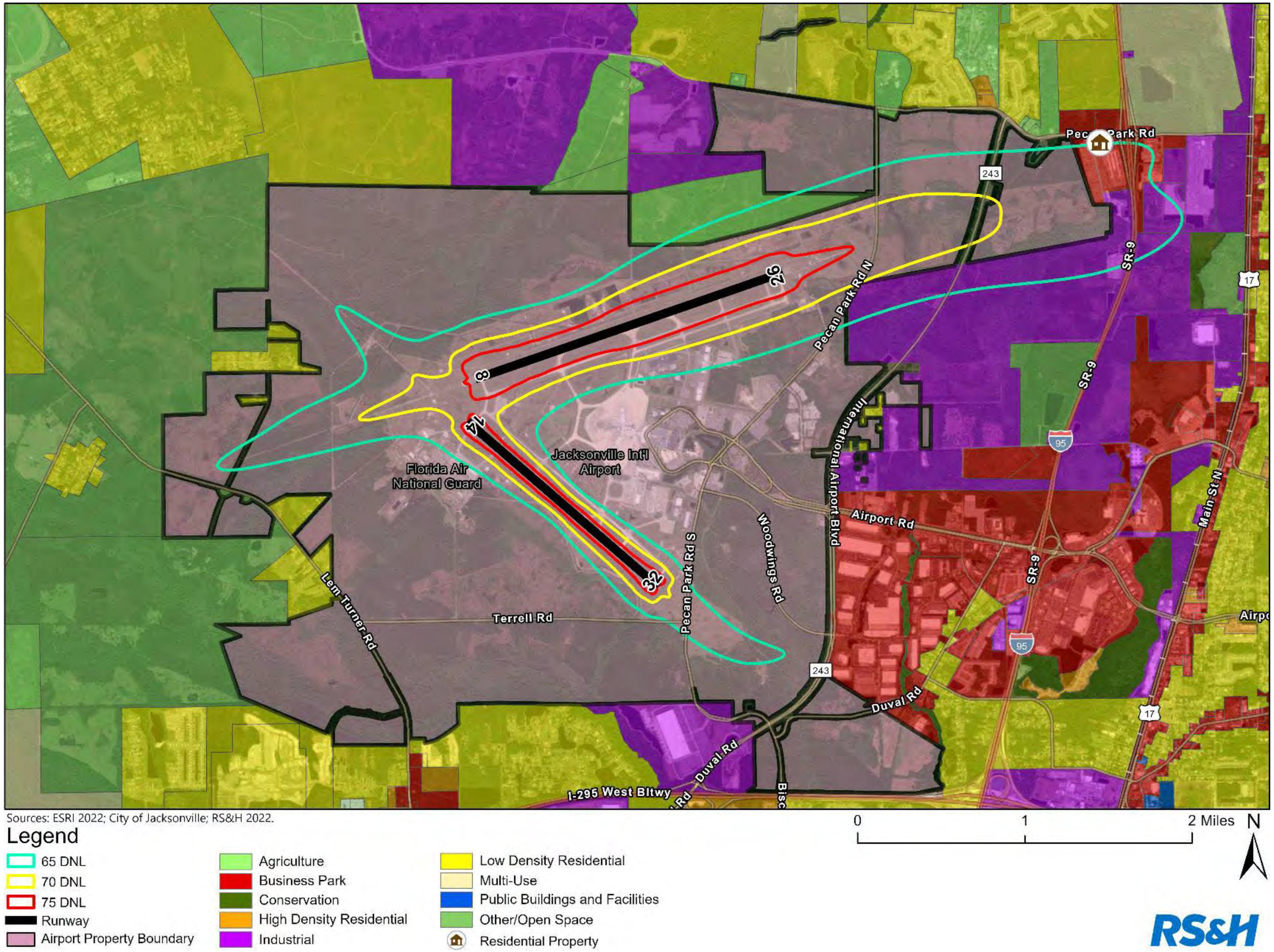
FIGURE C-8: 2031 PROPOSED ACTION DNL CONTOURS



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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

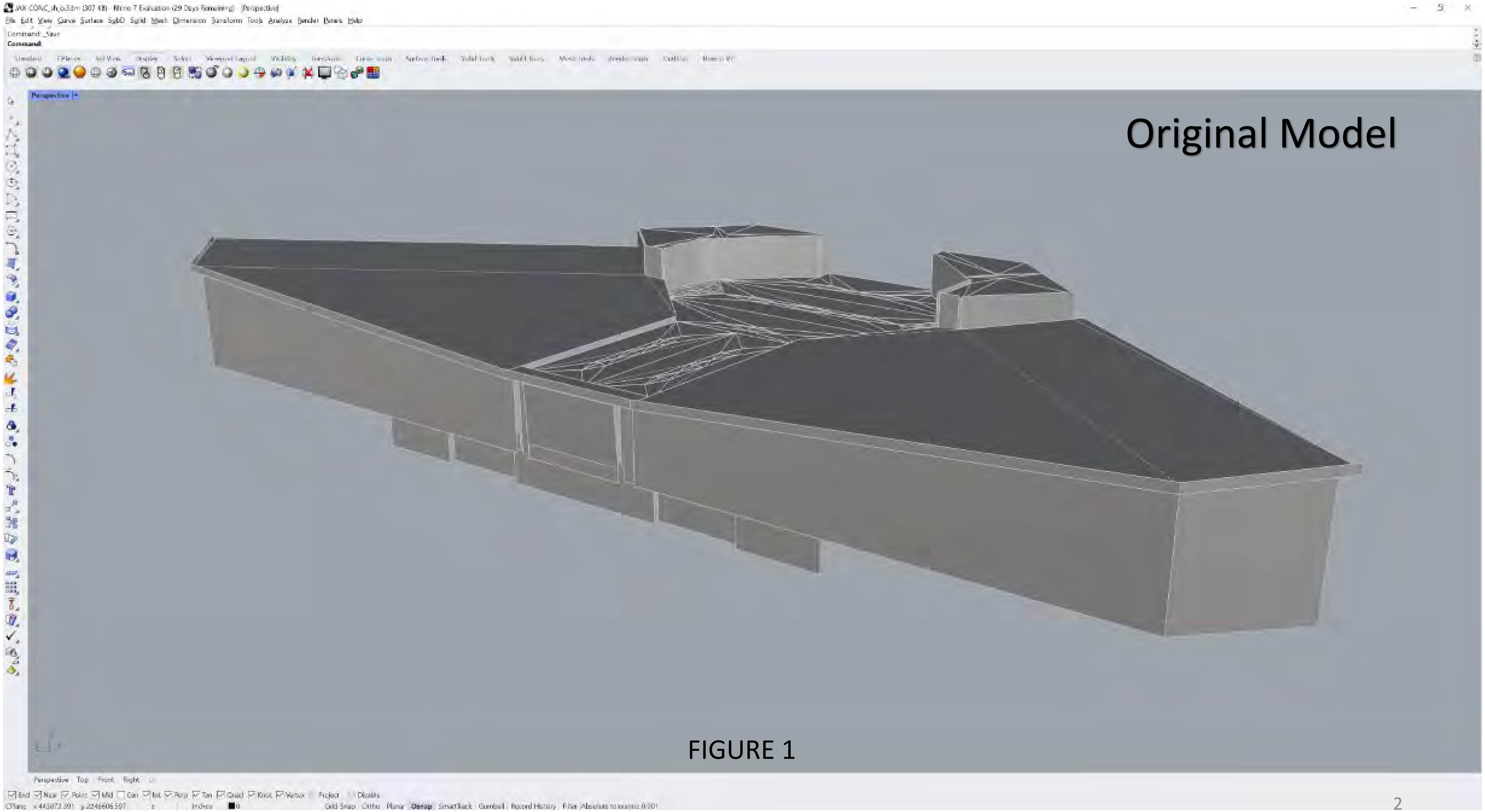


FIGURE 1

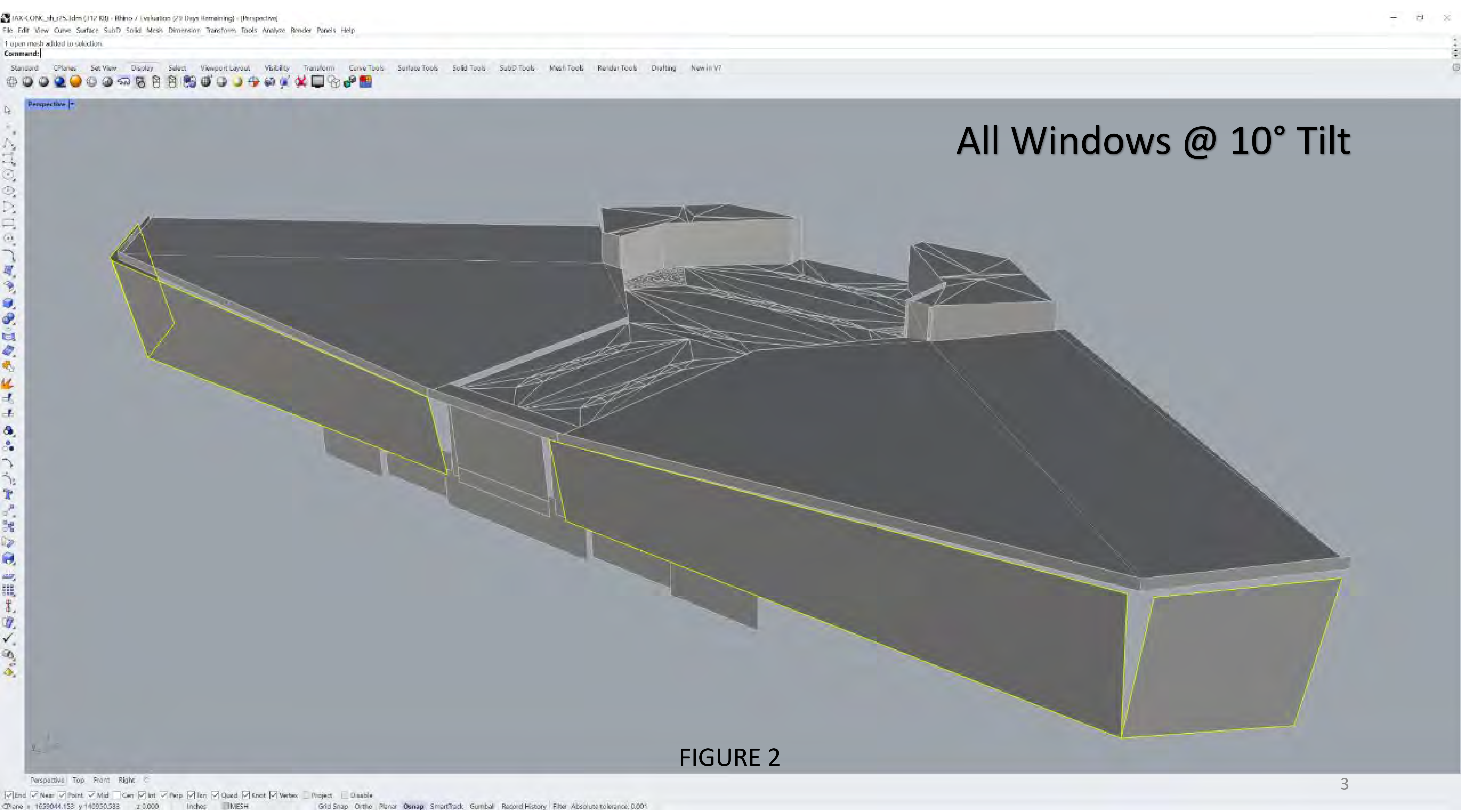


FIGURE 2

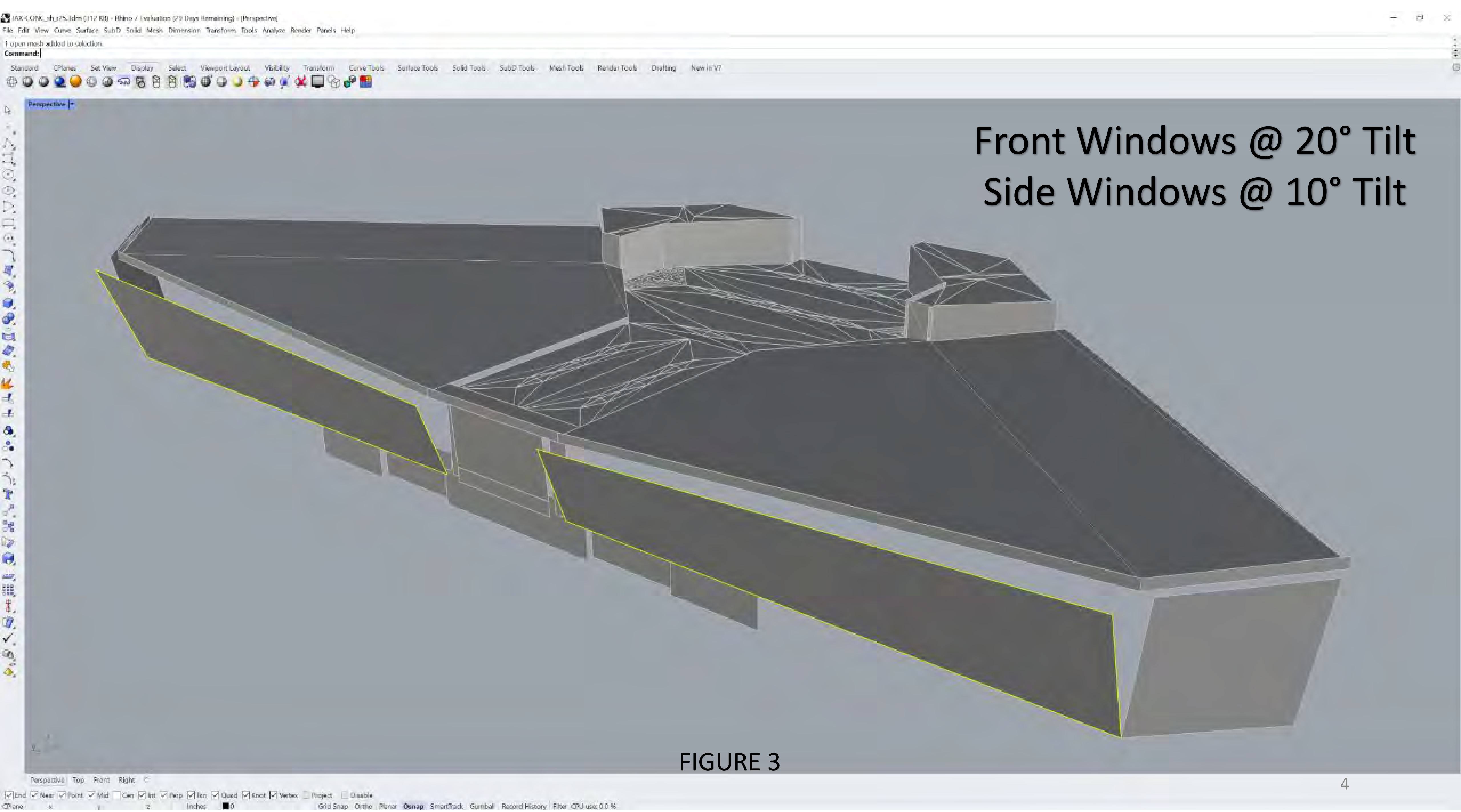


FIGURE 3

Original Model *.facet
(Emerald Viewer)

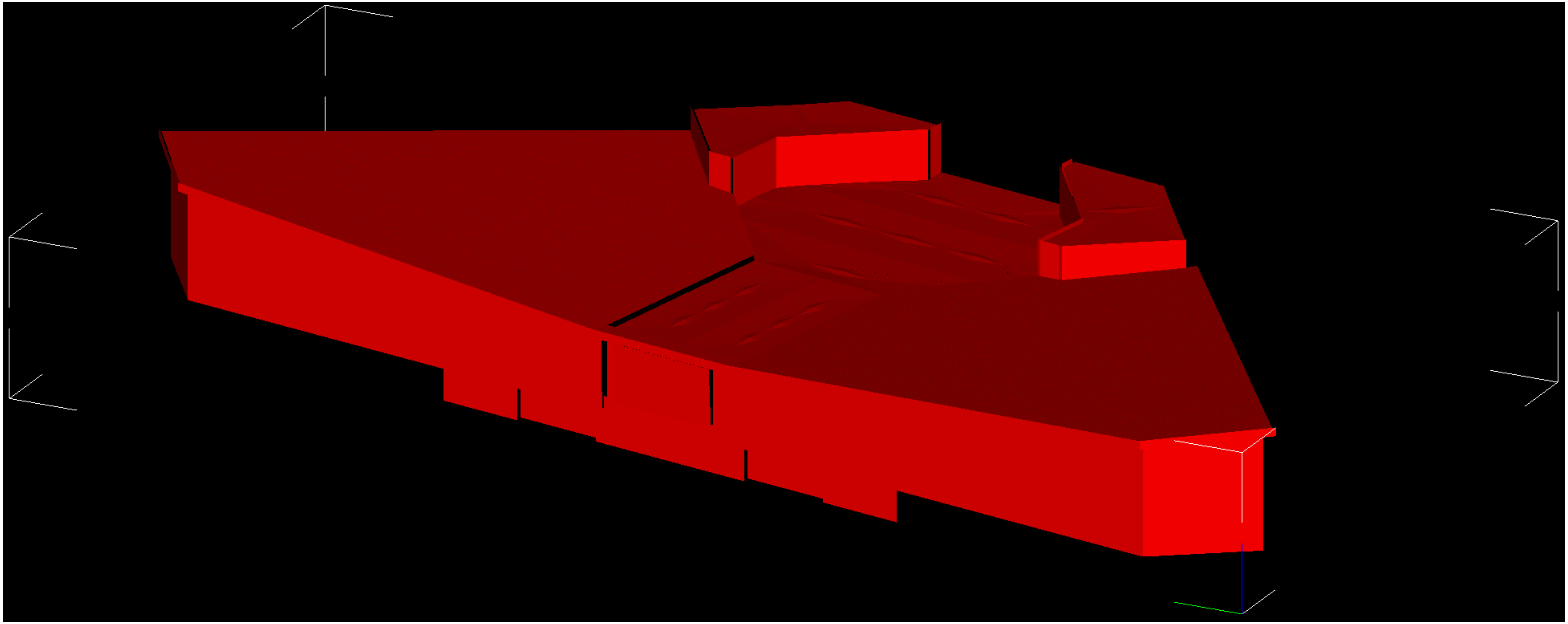


FIGURE 4

10° Tilt Model *.facet (Emerald Viewer)

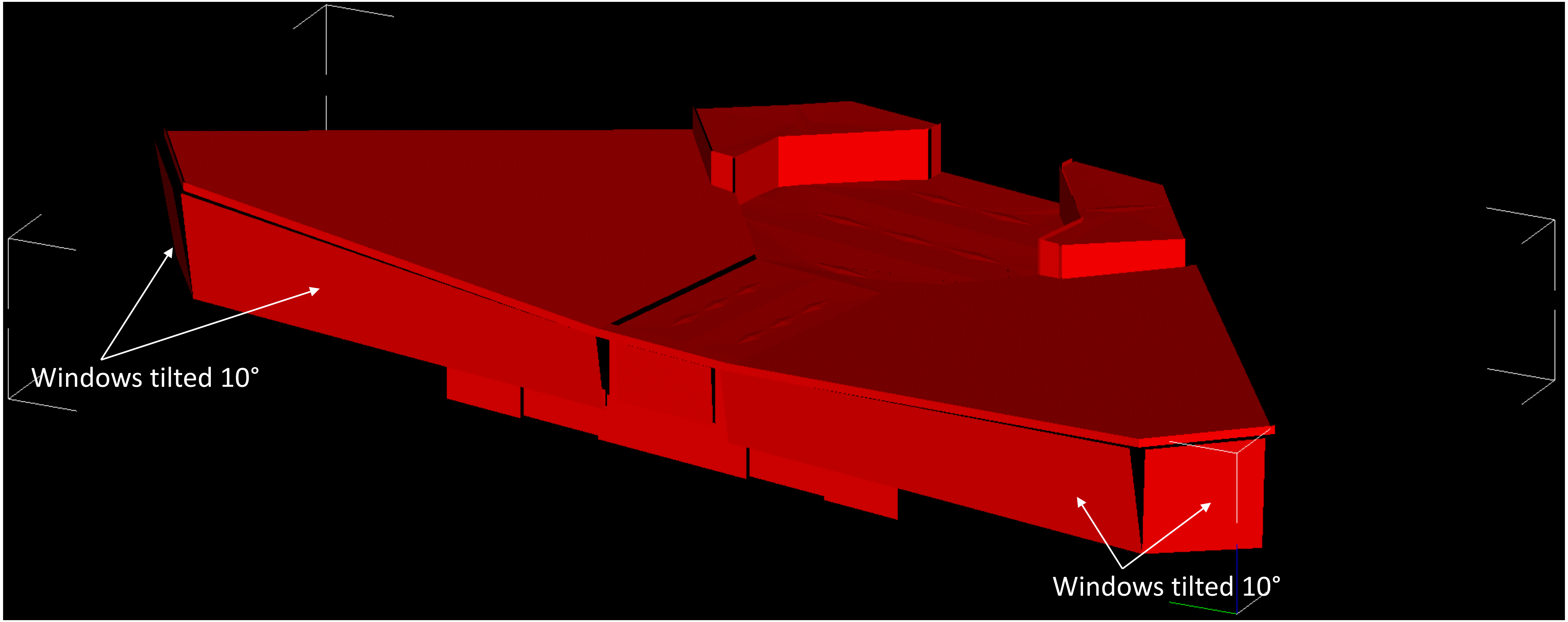


FIGURE 5

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

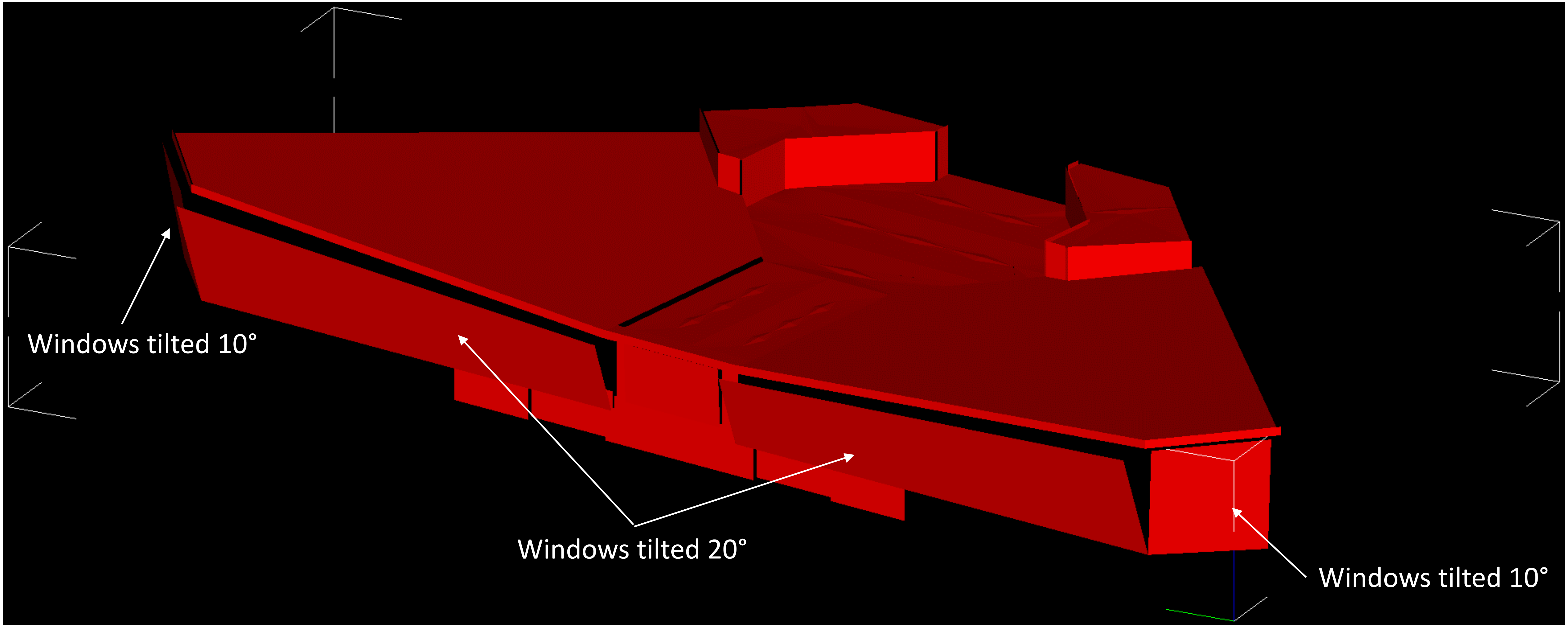
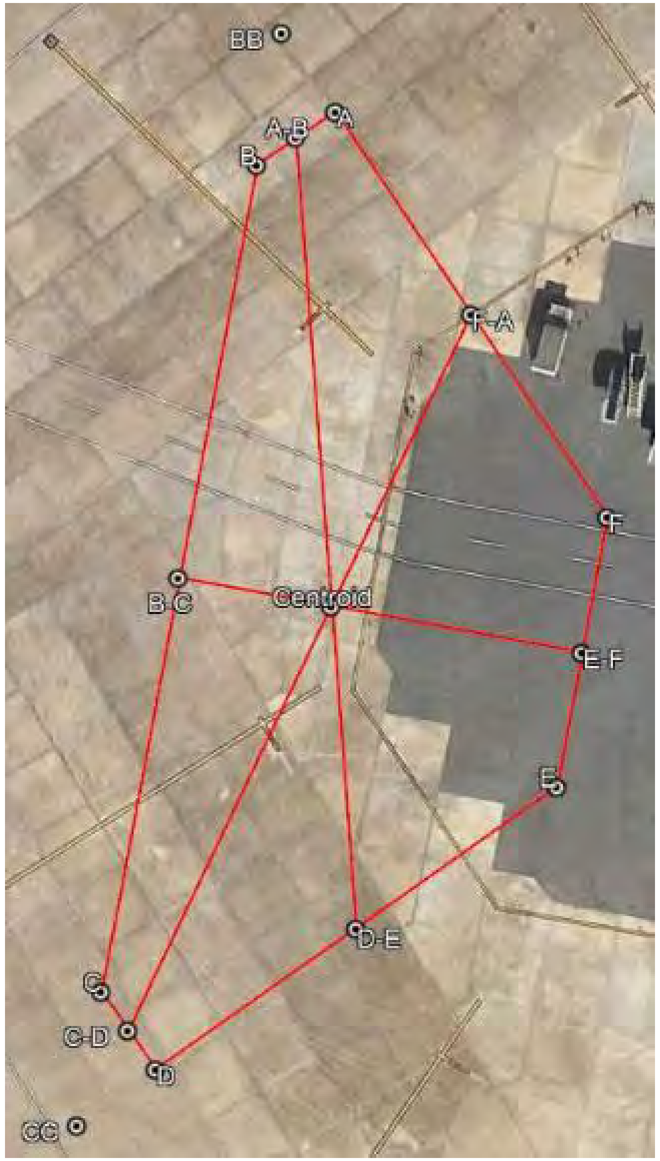


FIGURE 6



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

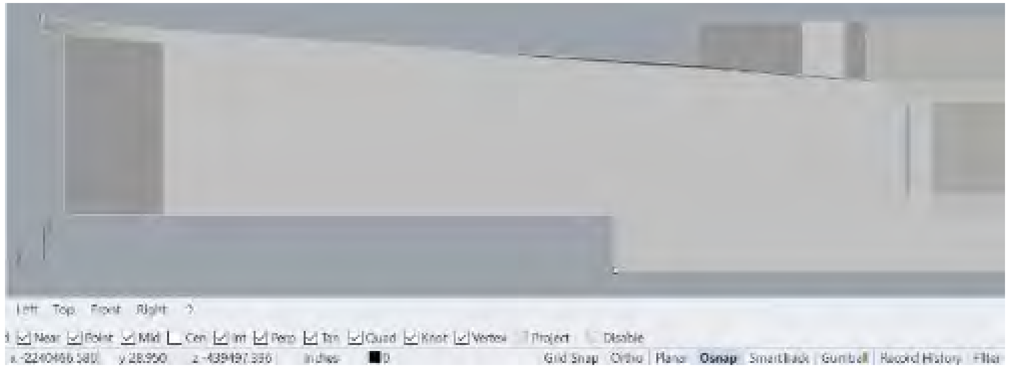
LAT = 30 29 31.83000 North
LON = 81 41 18.47000 West

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) ...
```

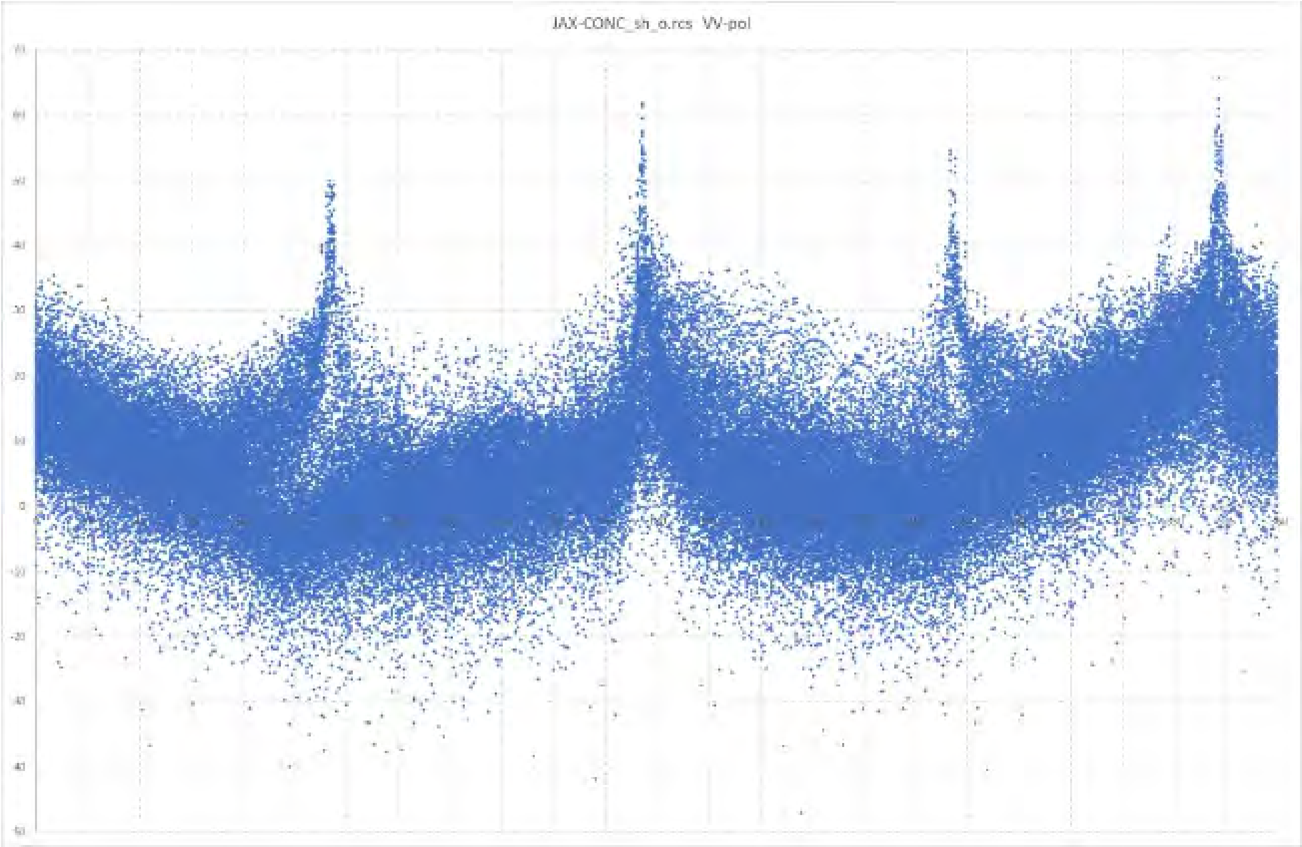
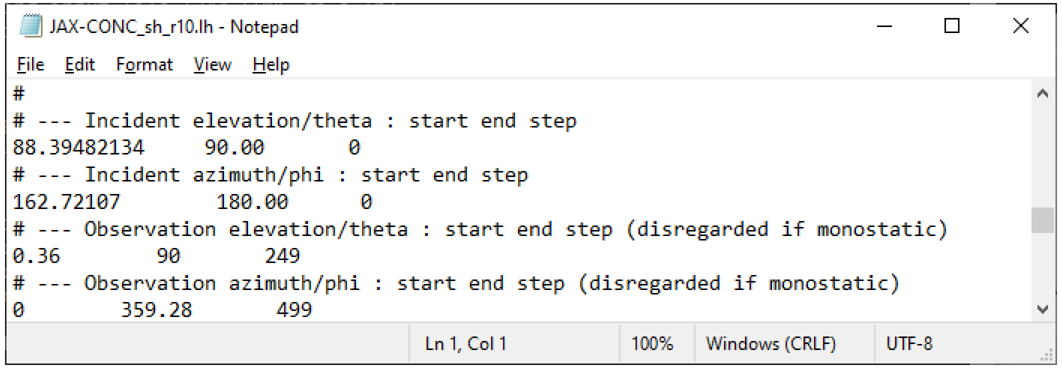


FIGURE 11

10° Tilt Model *.facet (Lucernhammer RCS)

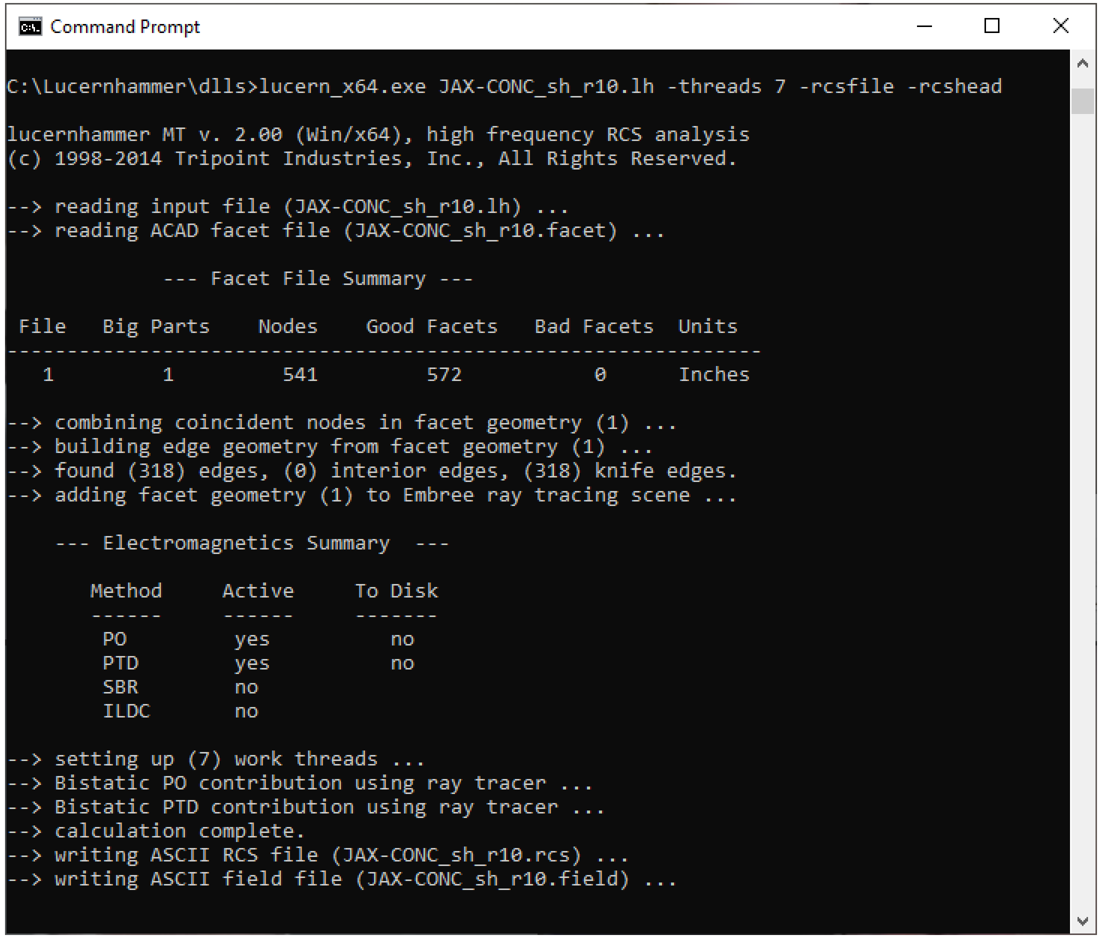


JAX-CONC_sh_r10.lh - Notepad

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) ...
```

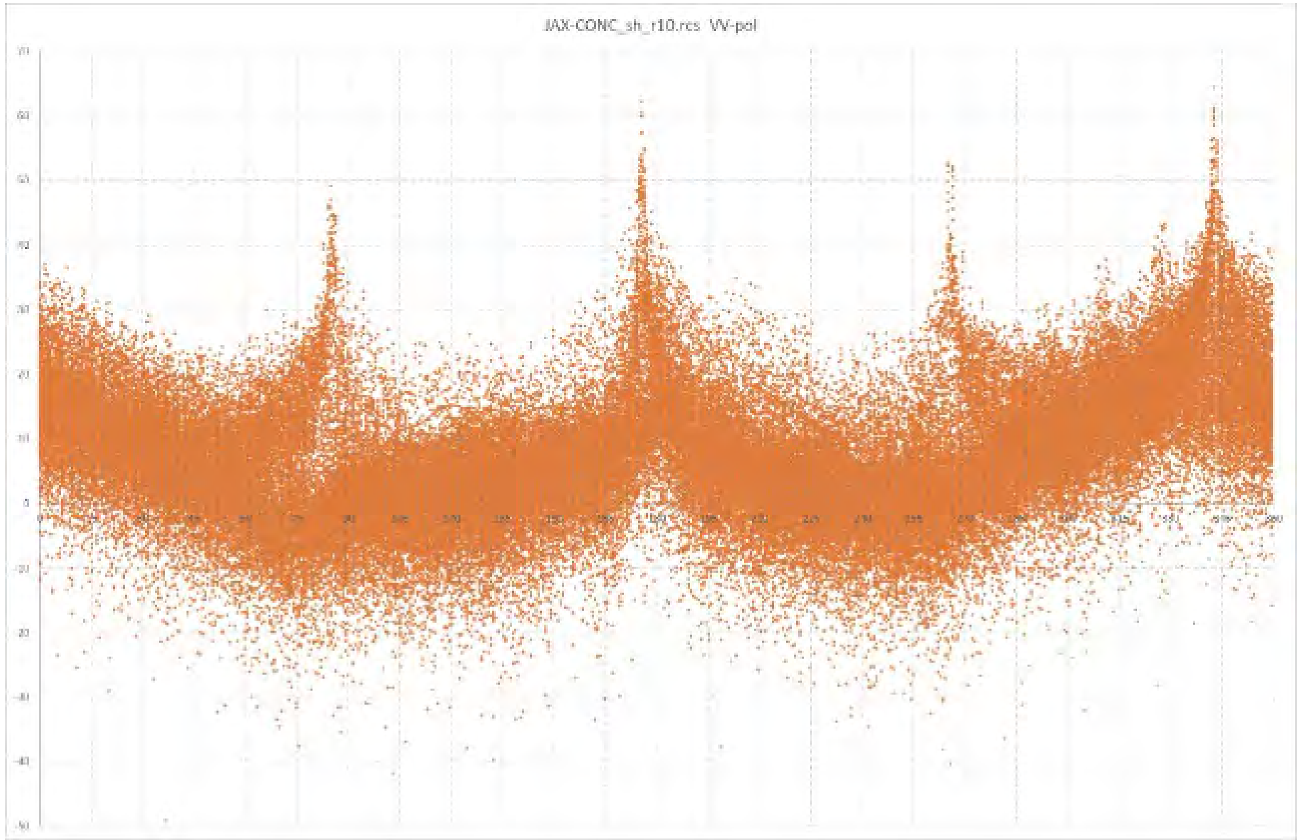


FIGURE 12

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) ...
```

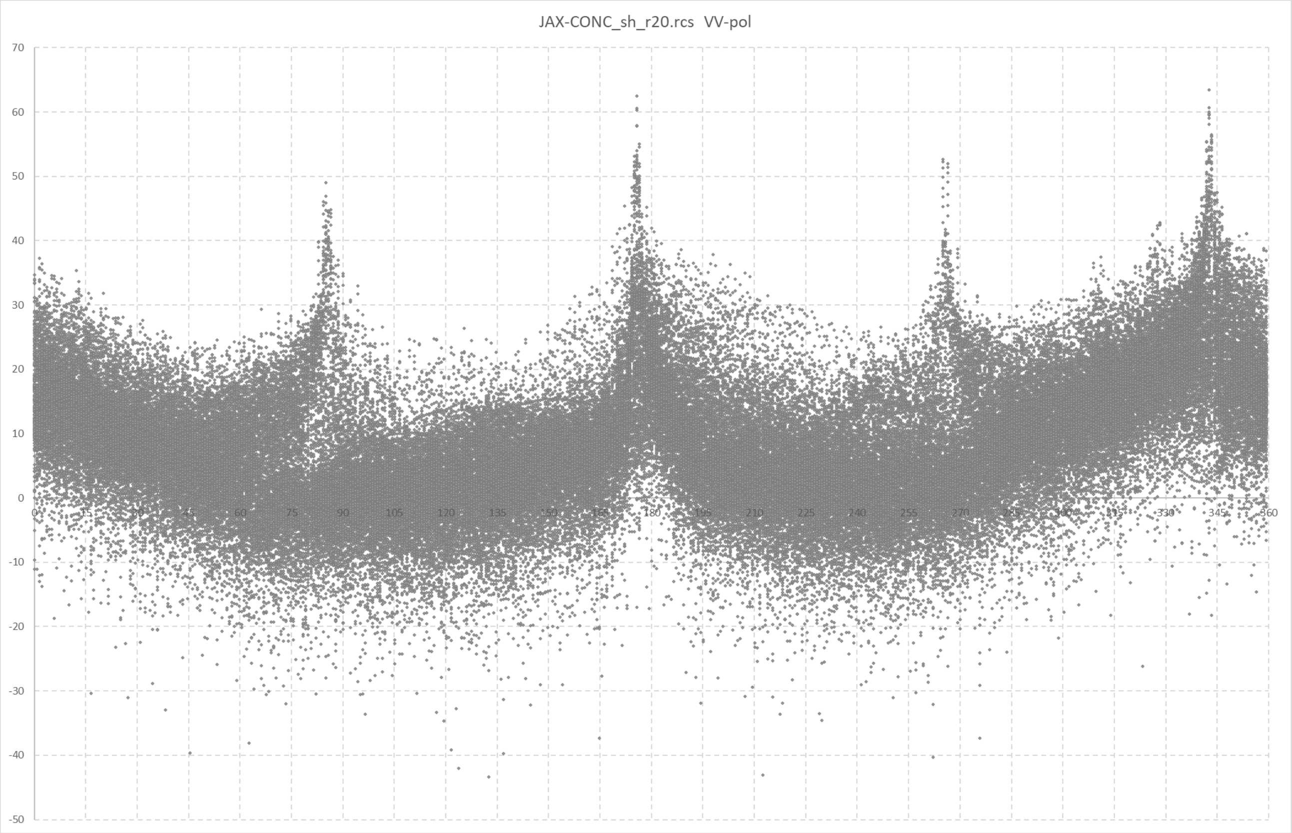
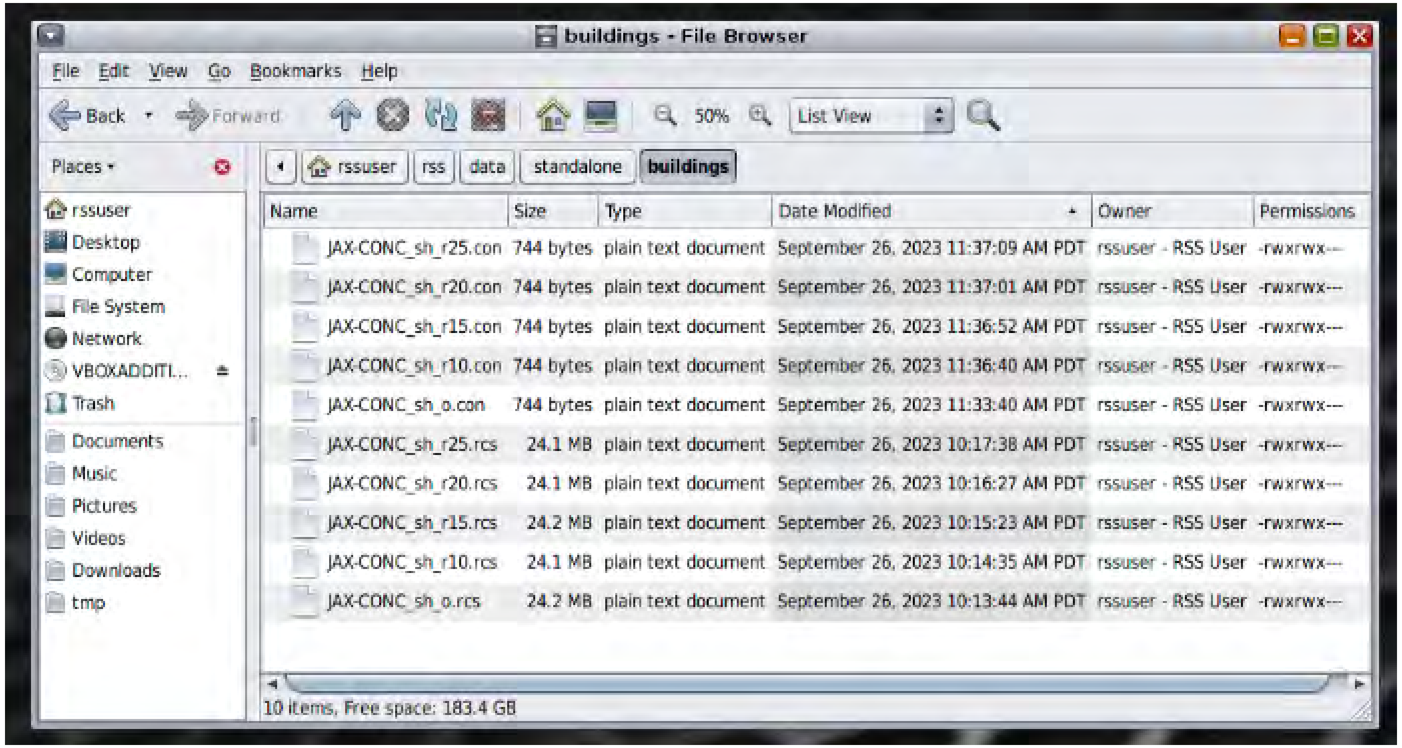


FIGURE 13

RSS BSAT Analysis – Initialization:
Save the *.field files as *.rcs files and Create *.con files



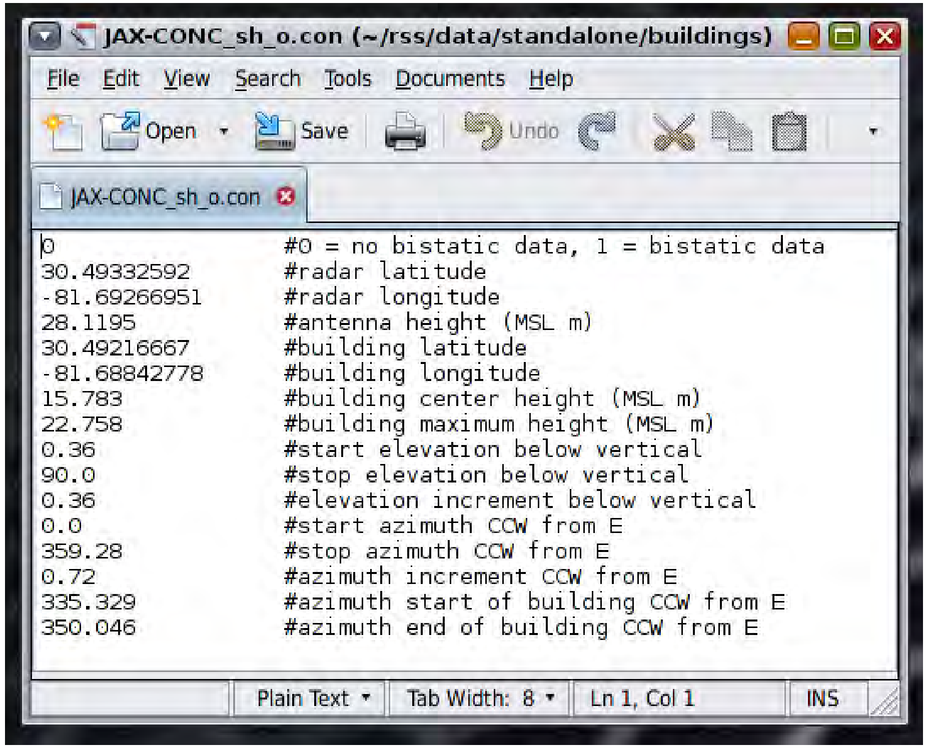


FIGURE 14

RSS BSAT Analysis – Initialization: Edit the Cultural Database (if Needed)

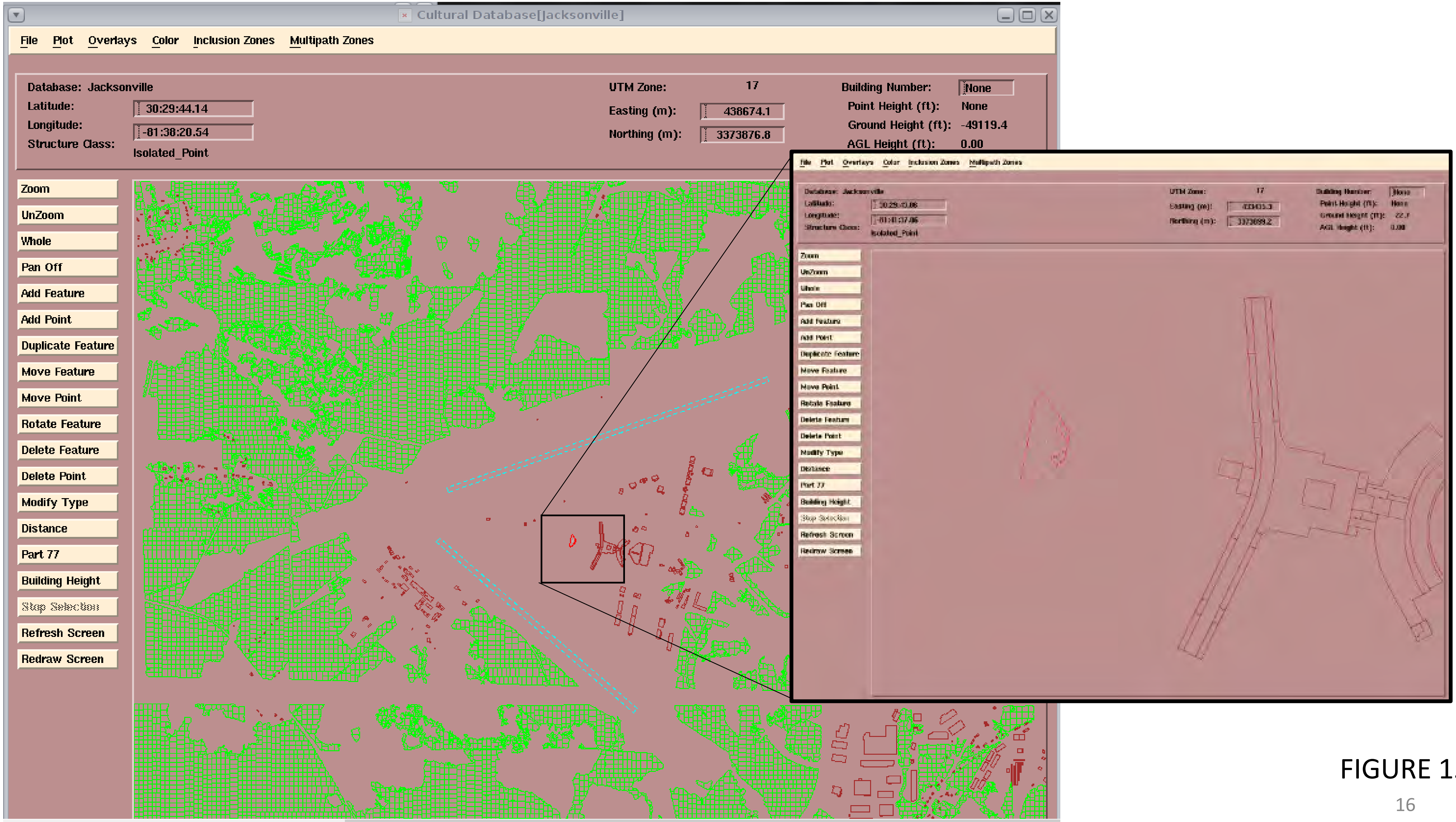
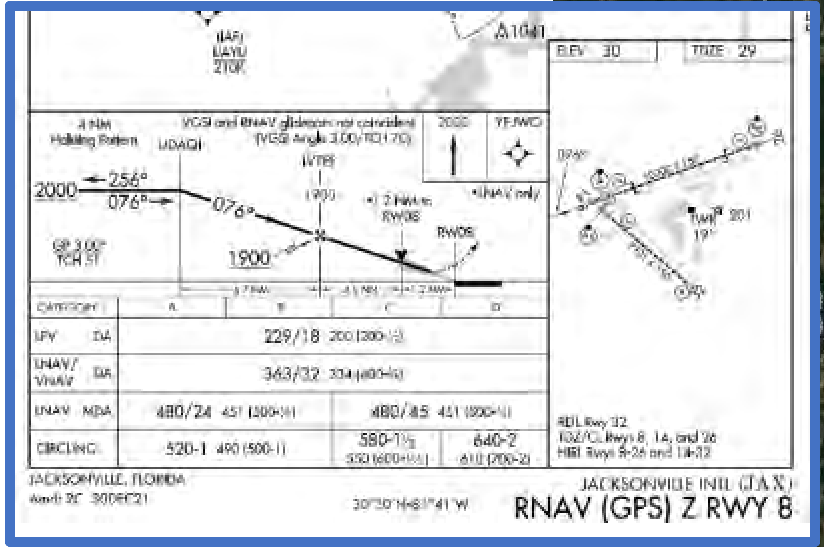


FIGURE 15

RSS BSAT Analysis – Initialization: Generate Point Fix File, Approaches



Source: AIRNAV.COM

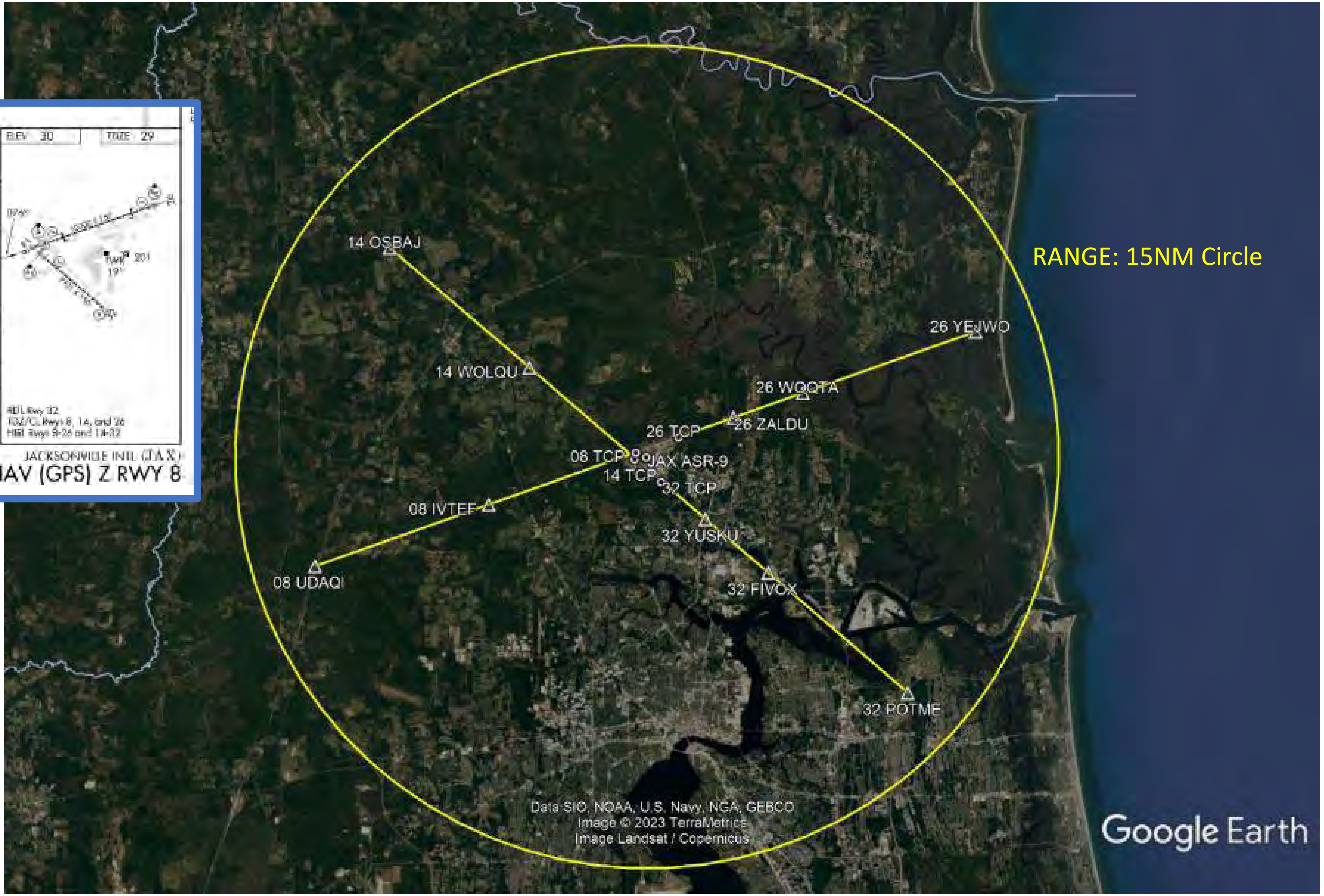
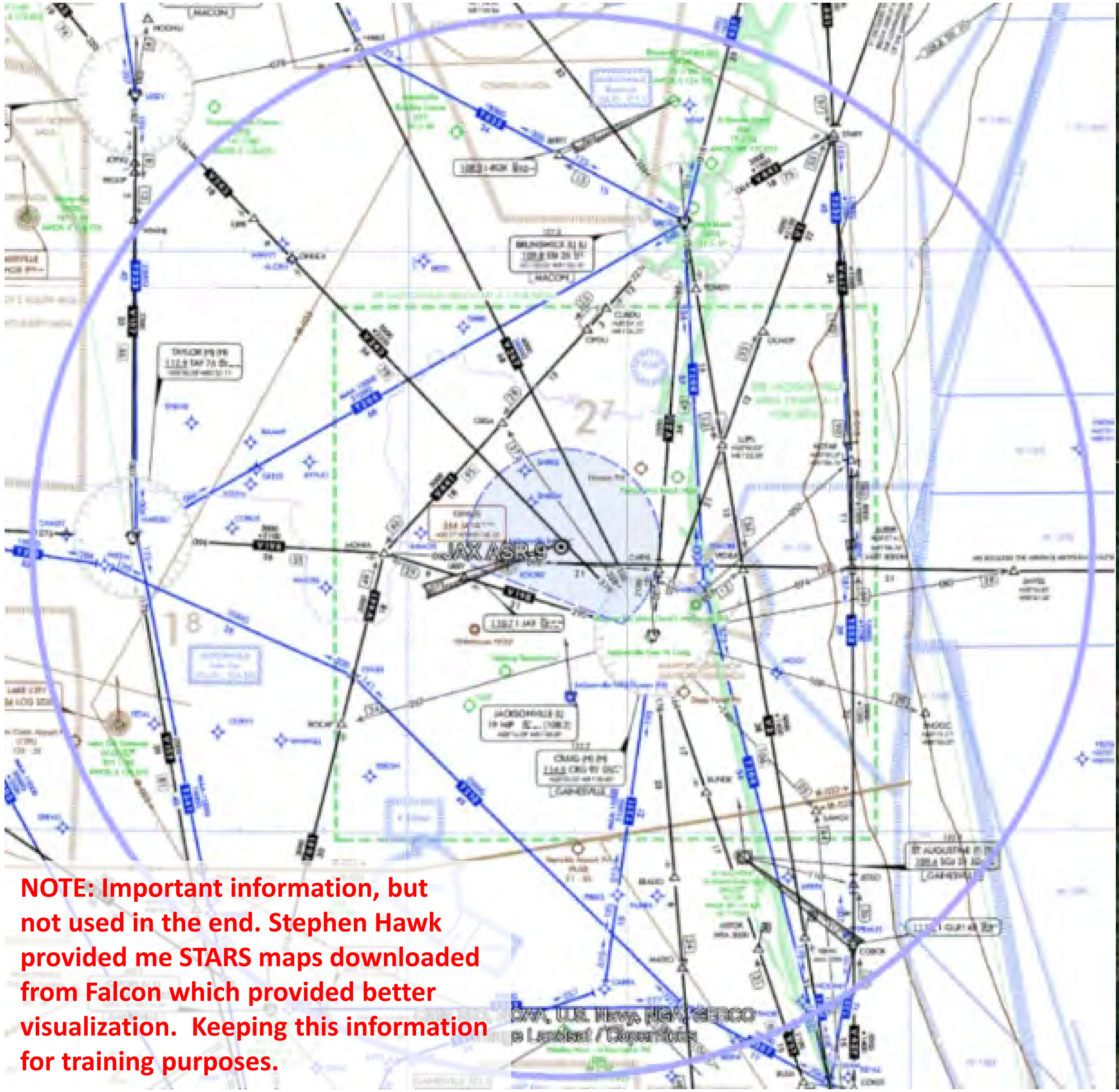
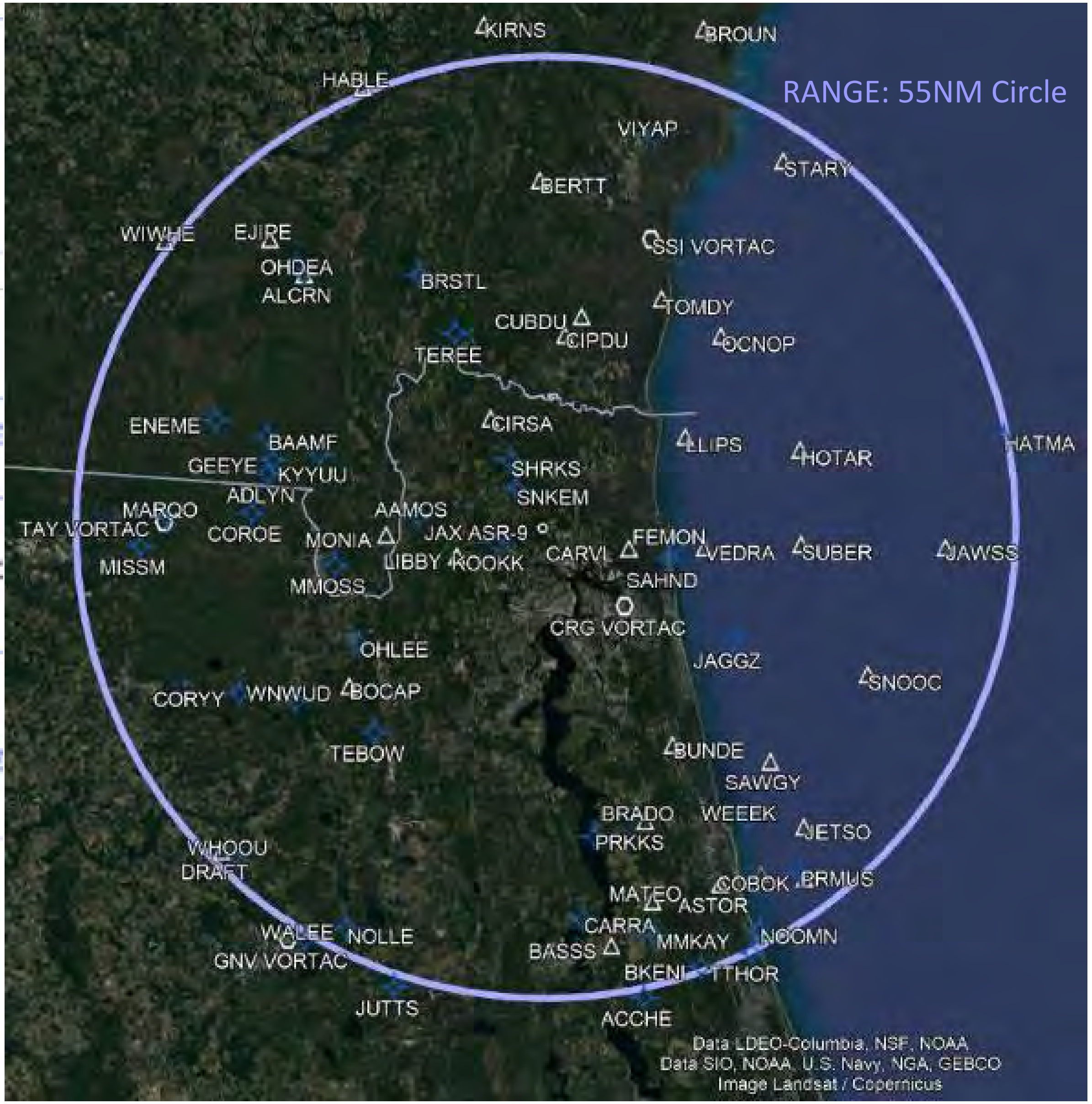


FIGURE 16

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

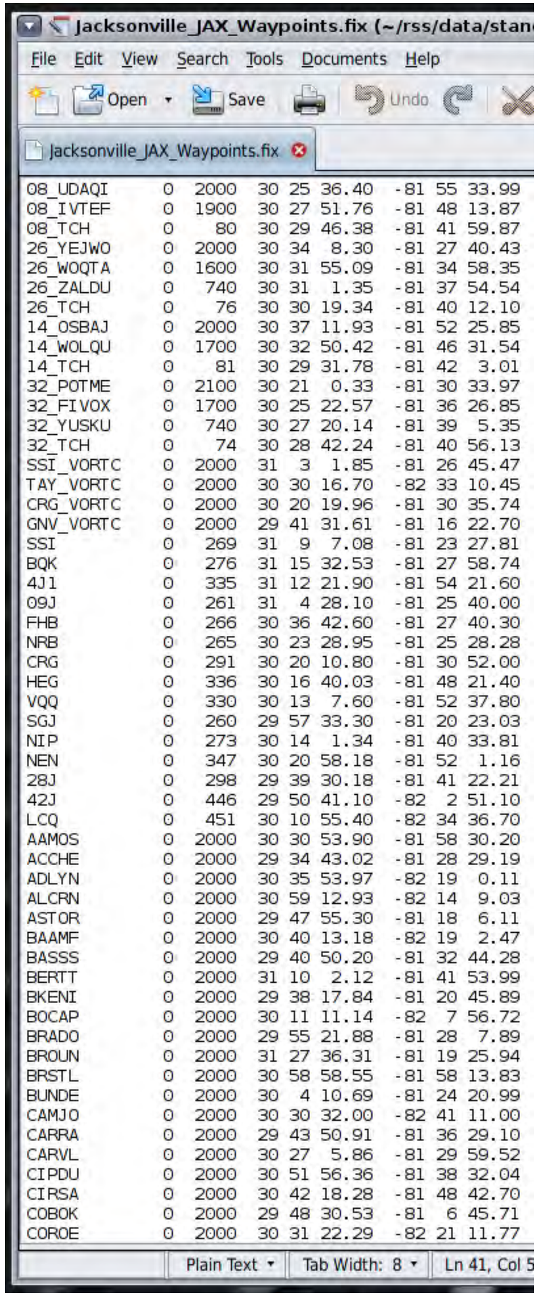




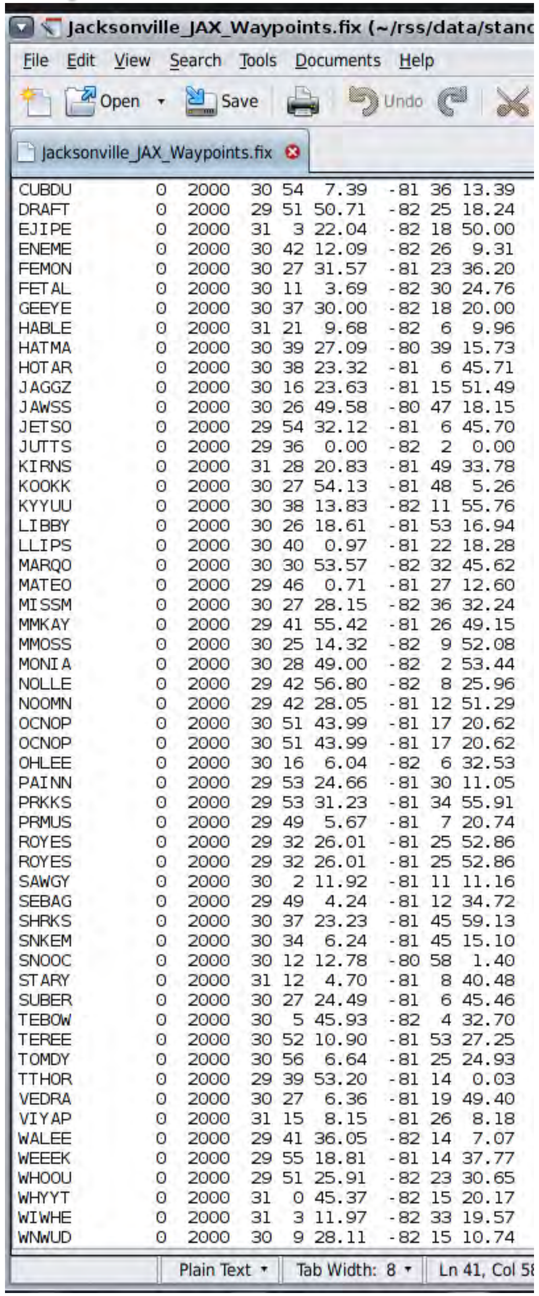
NOTE: Important information, but not used in the end. Stephen Hawk provided me STARS maps downloaded from Falcon which provided better visualization. Keeping this information for training purposes.

FIGURE 17

RSS BSAT Analysis – Initialization: Generate Point Fix File for RSS




```
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
```




```
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
```

```
0123456789012345678901234567890123456789012345678901234567890123456
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

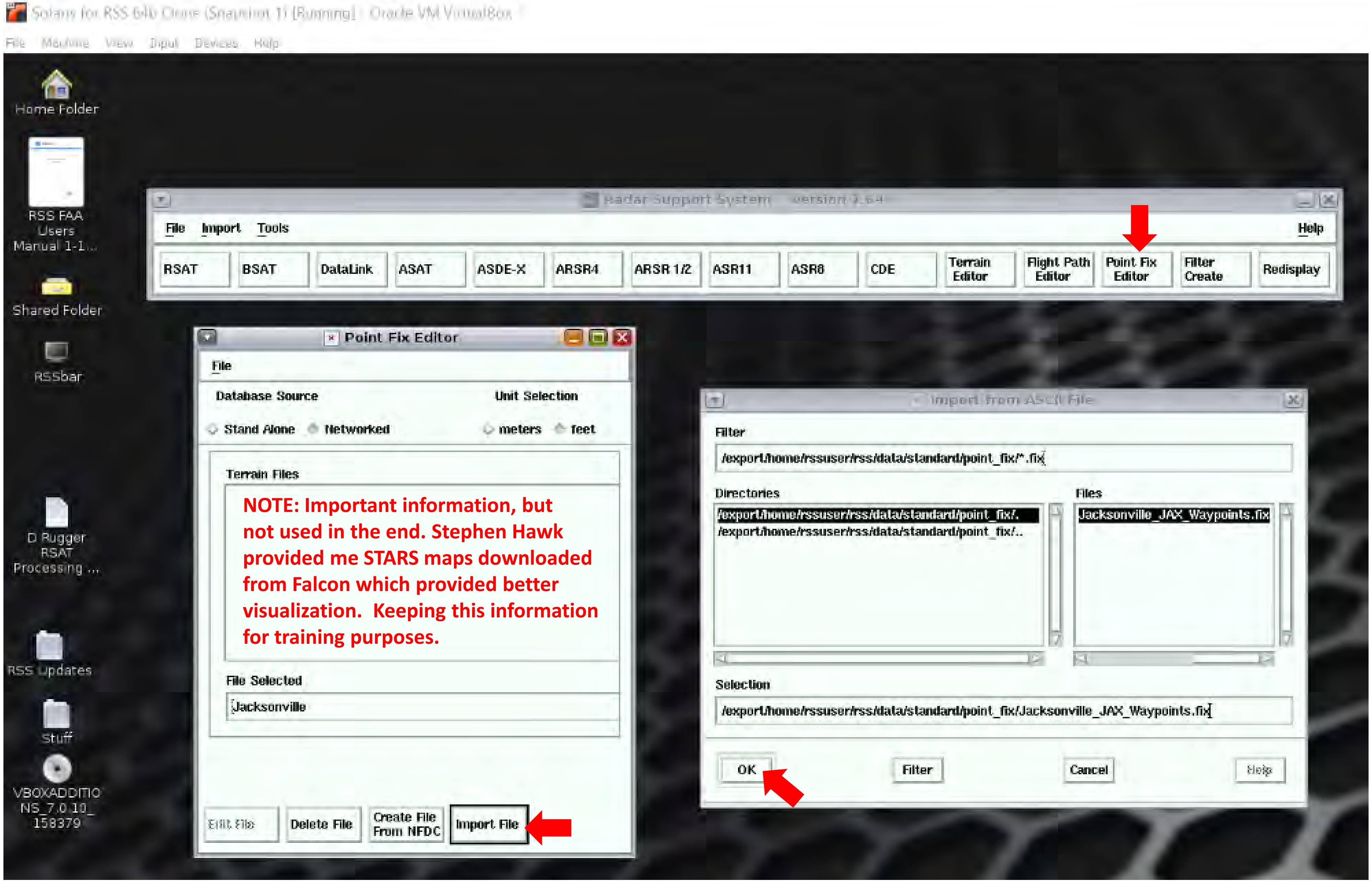


FIGURE 19

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	-0.036	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	-0.053	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	30:20:19.96	-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]	[illegible]	NO
20	BQK	31:15:32.53	-81:27:58.74	47.27	14.25	-0.010	-0.260	275.	[illegible]	[illegible]	[illegible]
21	4J1	31:12:21.90	-81:54:21.60	44.04	345.58	-0.097	-0.224	335.	[illegible]	[illegible]	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.	[illegible]	[illegible]	NO
28	SGJ	29:57:33.30	-81:20:23.03	36.83	150.06	-0.050	-0.188	260.	[illegible]	[illegible]	[illegible]
29	NIP	30:14:01.34	-81:40:33.81	15.55	176.82	-0.022	0.012	273.	[illegible]	[illegible]	[illegible]
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.	66.	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 :

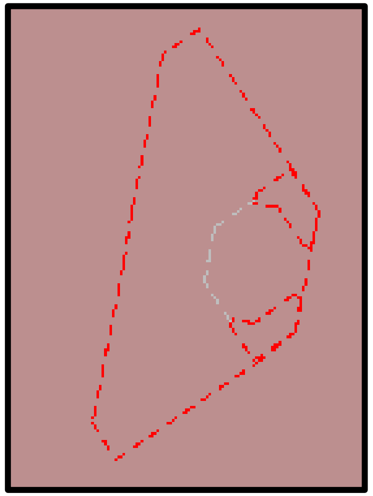
NO.	NAME	LATITUDE (DEG MIN SEC)	LONGITUDE (DEG MIN SEC)	RNG (nmi)	AZ (DEG-TRUE)	SCREEN ANGLE (DEG)	TARGET ANGLE (DEG)	REQ ALT (FT MSL)	ADJ ALT (FT MSL)	SCREEN ALT (FT MSL)	VISIBLE
55	CORYY	30:10:15.89	-82:22:46.33	40.52	241.77	-0.052	0.190	2000.	1642.	962.	YES
56	CUBDU	30:54:07.39	-81:36:13.39	24.88	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	31:28:20.83	-81:49:33.78	58.98	353.34	-0.084	-0.065	2000.	1478.	1883.	MARG
71	[illegible]	30:27:54.13	-81:48:05.26	5.89	253.32	-0.077	3.015	2000.	1948.	67.	YES
72	[illegible]	30:38:13.83	-82:11:55.76	27.58	288.31	-0.079	0.479	2000.	1756.	367.	YES
73	LIBBY	30:26:18.61	-81:53:16.94	10.65	252.10	0.023	1.622	2000.	1906.	193.	YES
74	[illegible]	30:40:00.97	-81:22:18.28	19.59	57.90	-0.027	0.794	2000.	1827.	292.	YES
75	MARGO	30:30:53.57	-82:32:45.62	44.22	271.89	-0.057	0.129	2000.	1609.	1126.	YES
76	[illegible]	29:46:00.71	-81:27:12.60	45.20	163.97	-0.014	0.114	2000.	1600.	1306.	YES
77	MISSM	30:27:28.15	-82:36:32.24	47.53	267.67	-0.064	0.081	2000.	1580.	1270.	YES
78	[illegible]	29:41:55.42	-81:26:49.15	49.22	164.89	-0.049	0.057	2000.	1565.	1450.	YES
79	MMOSS	30:25:14.32	-82:09:52.08	24.84	260.04	-0.053	0.568	2000.	1780.	364.	YES
80	[illegible]	30:28:49.00	-82:02:53.44	18.44	267.66	-0.064	0.860	2000.	1837.	193.	YES
81	[illegible]	29:42:56.80	-82:08:25.96	52.02	206.72	0.163	0.020	2000.	1540.	2789.	NO
82	NOOMN	29:42:28.05	-81:12:51.29	53.17	151.98	-0.042	0.005	2000.	1530.	1739.	MARG
83	OCNOP	30:51:43.99	-81:17:20.62	30.38	43.30	-0.007	0.401	2000.	1731.	684.	YES
84	OCNOP	30:51:43.99	-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	33.60	-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	223.86	-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

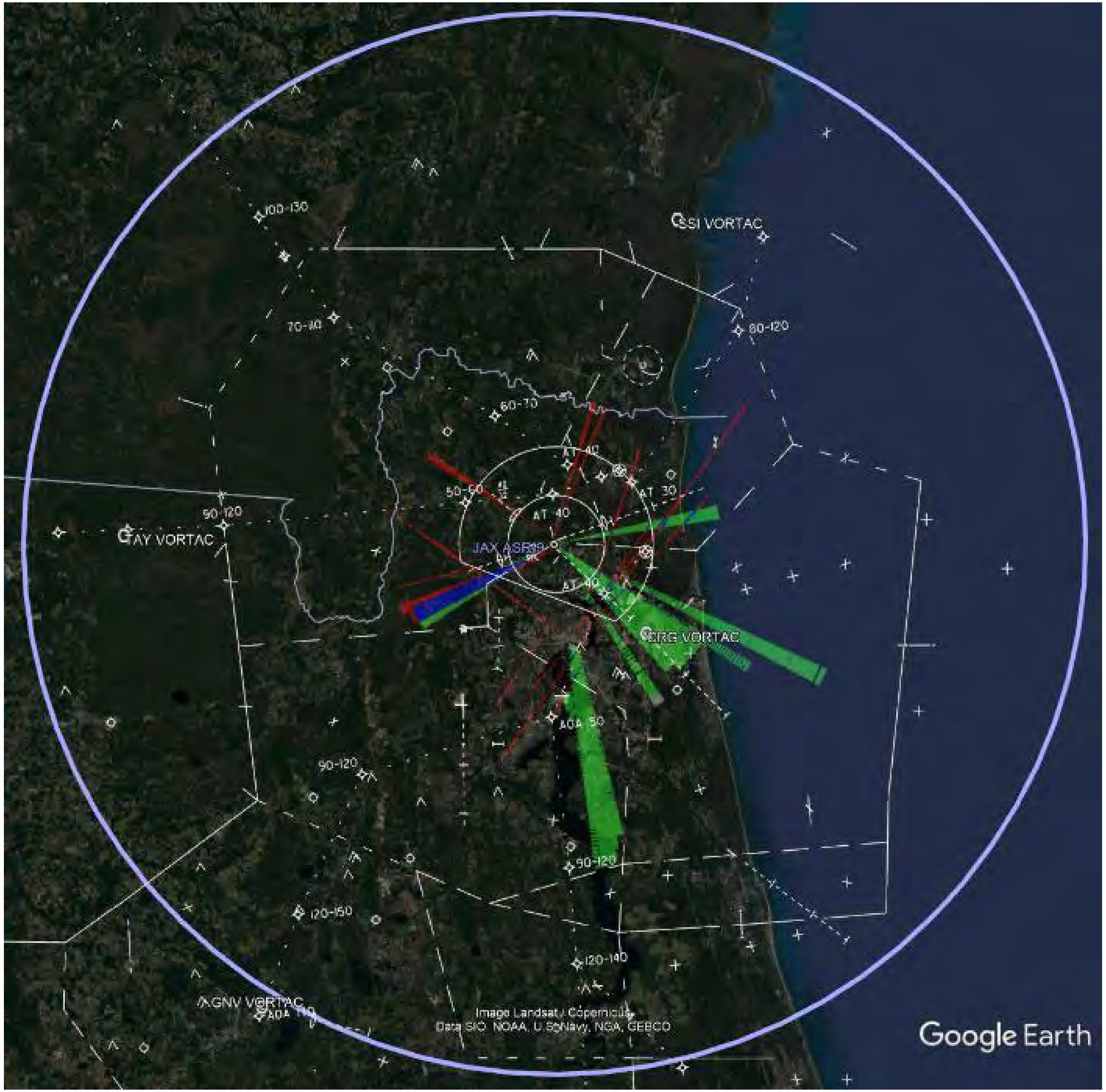
RSS BSAT Analysis
Range Azimuth False Target Plots

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

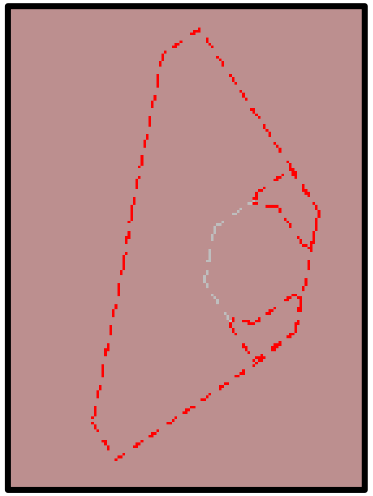
INTERROGATOR PARAMETERS

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)

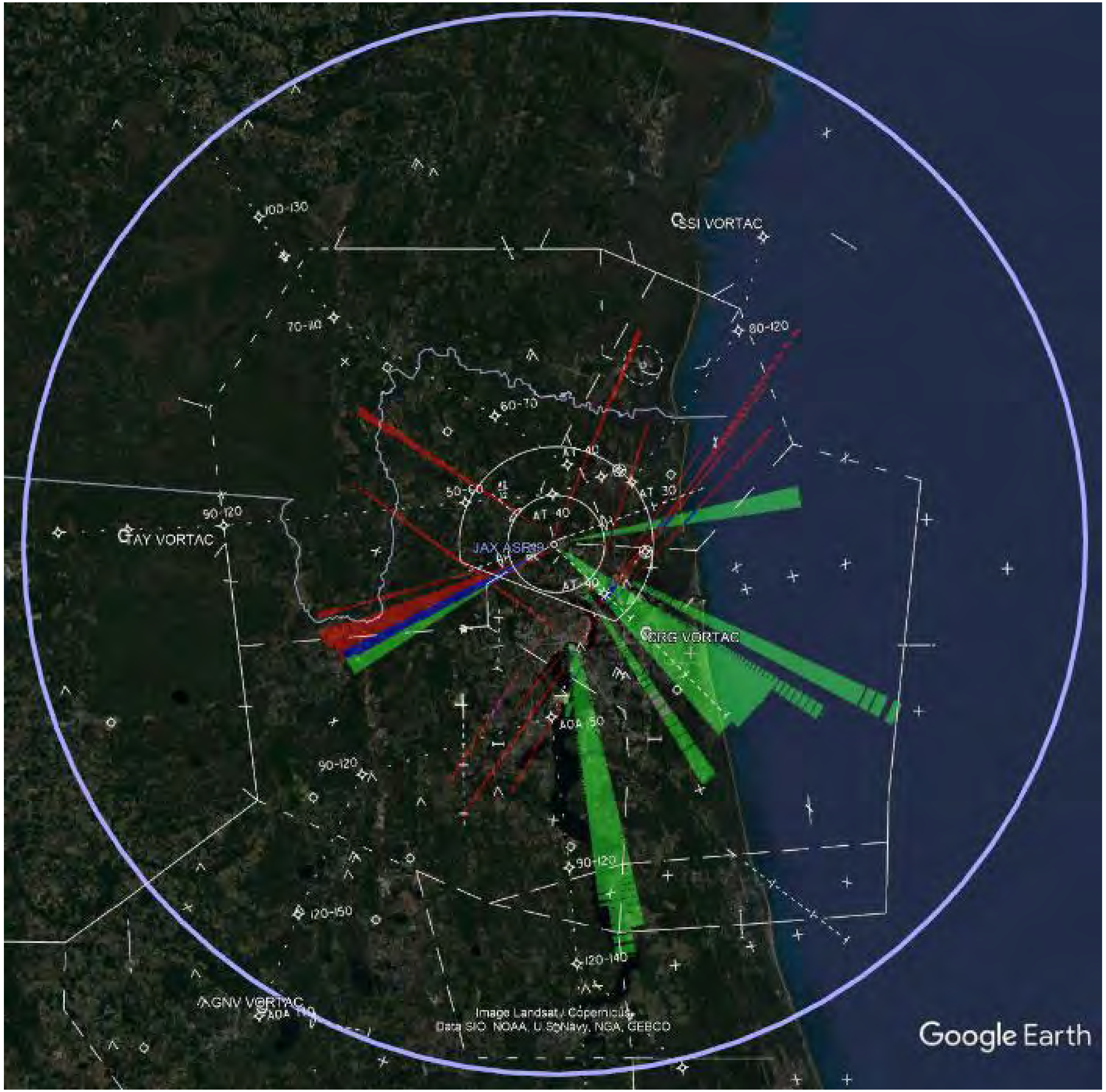
TRANSPONDER PARAMETERS

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

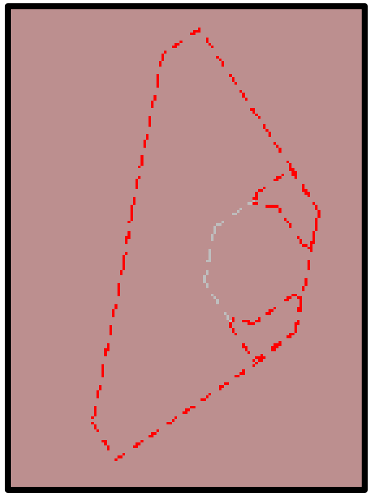
LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

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)

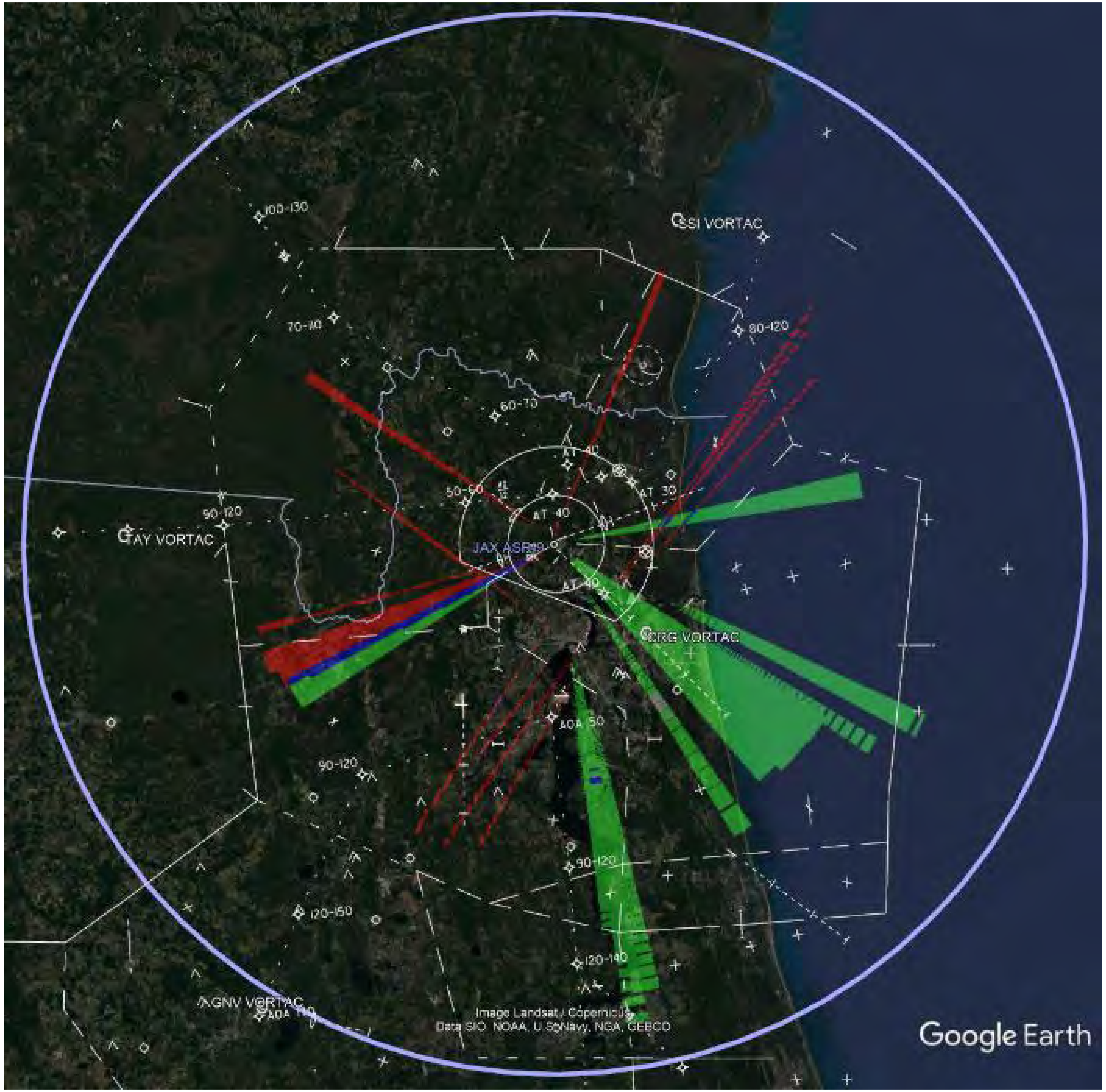
FIGURE 22

RSS BSAT Analysis: 60 NM Range 500 to 750 FT MSL



No RCS/CDE Only

FIGURE 23

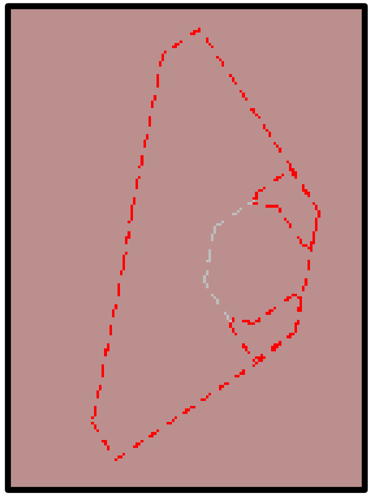


Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

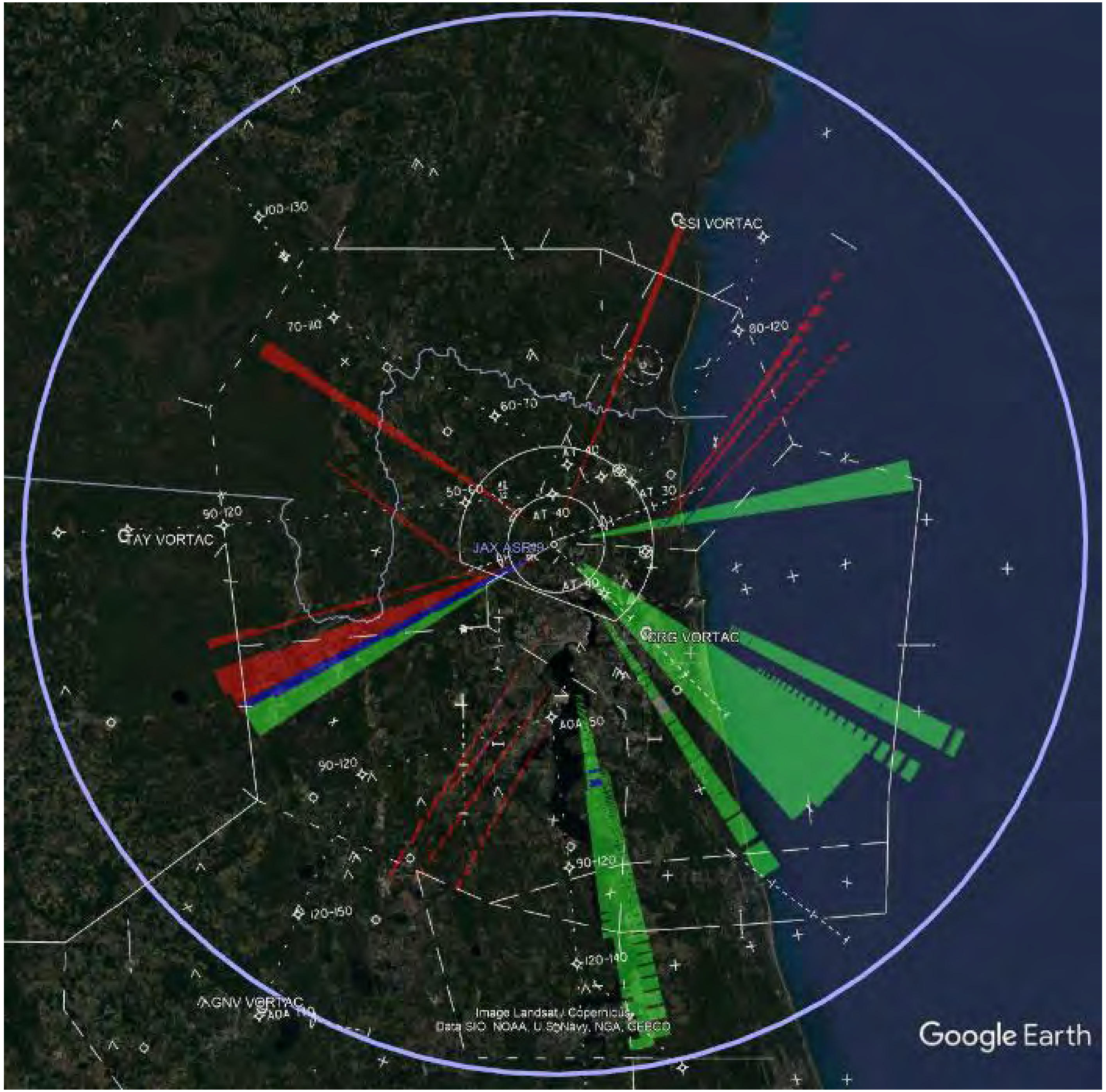
LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

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

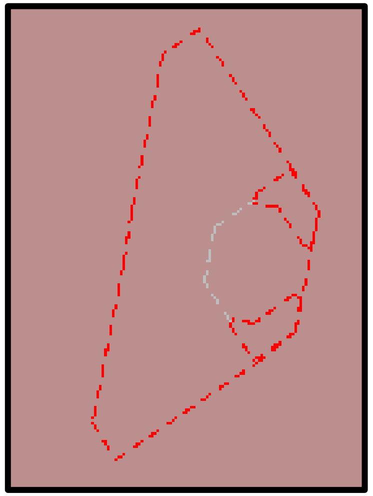
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)

TRANSPONDER PARAMETERS

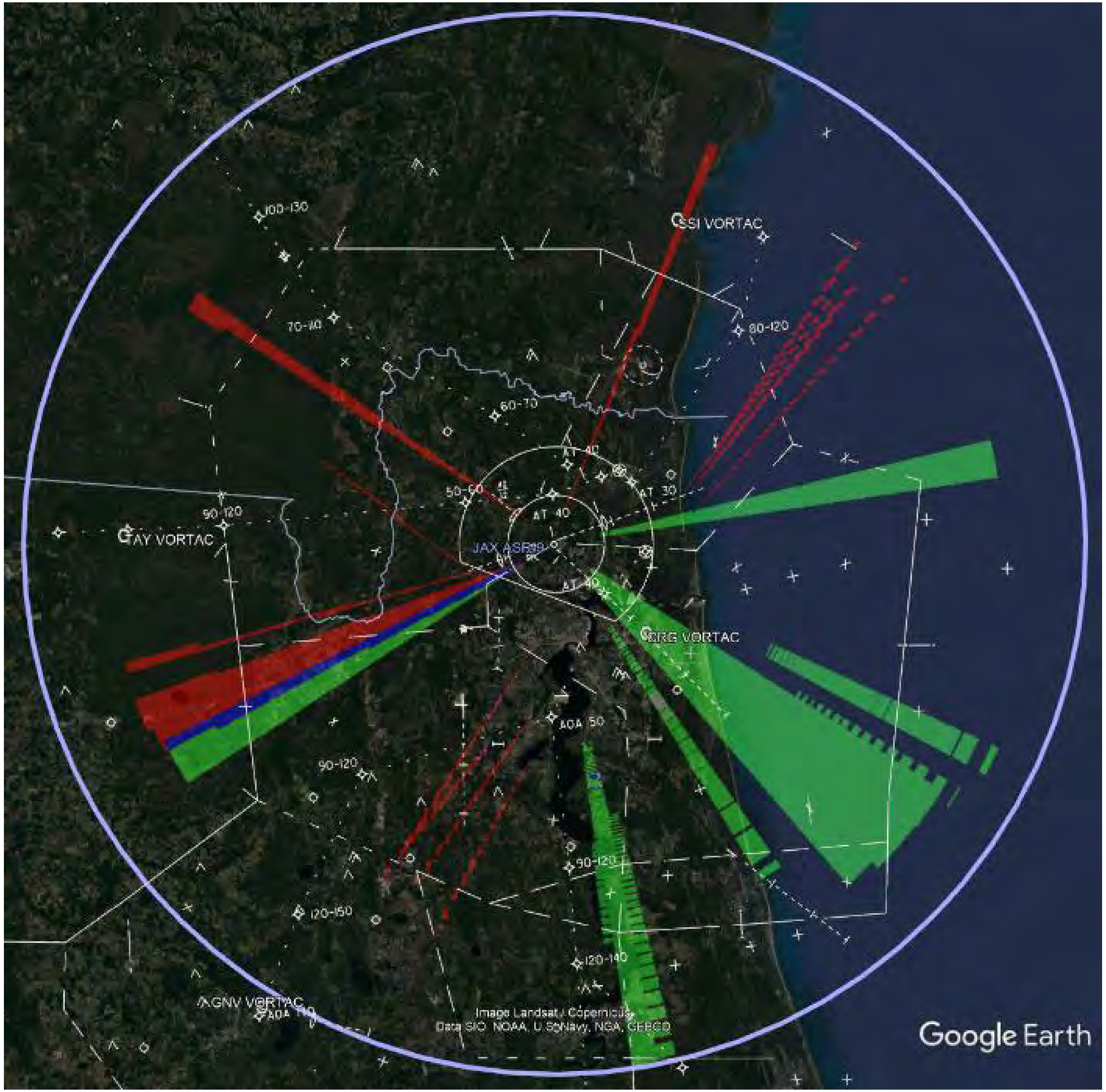
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

FIGURE 24

RSS BSAT Analysis: 60 NM Range 1K to 1500 FT MSL



No RCS/CDE Only



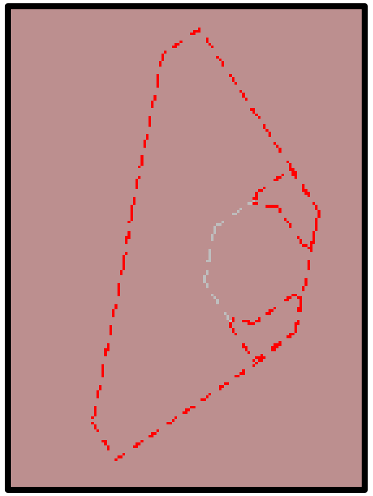
Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

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)

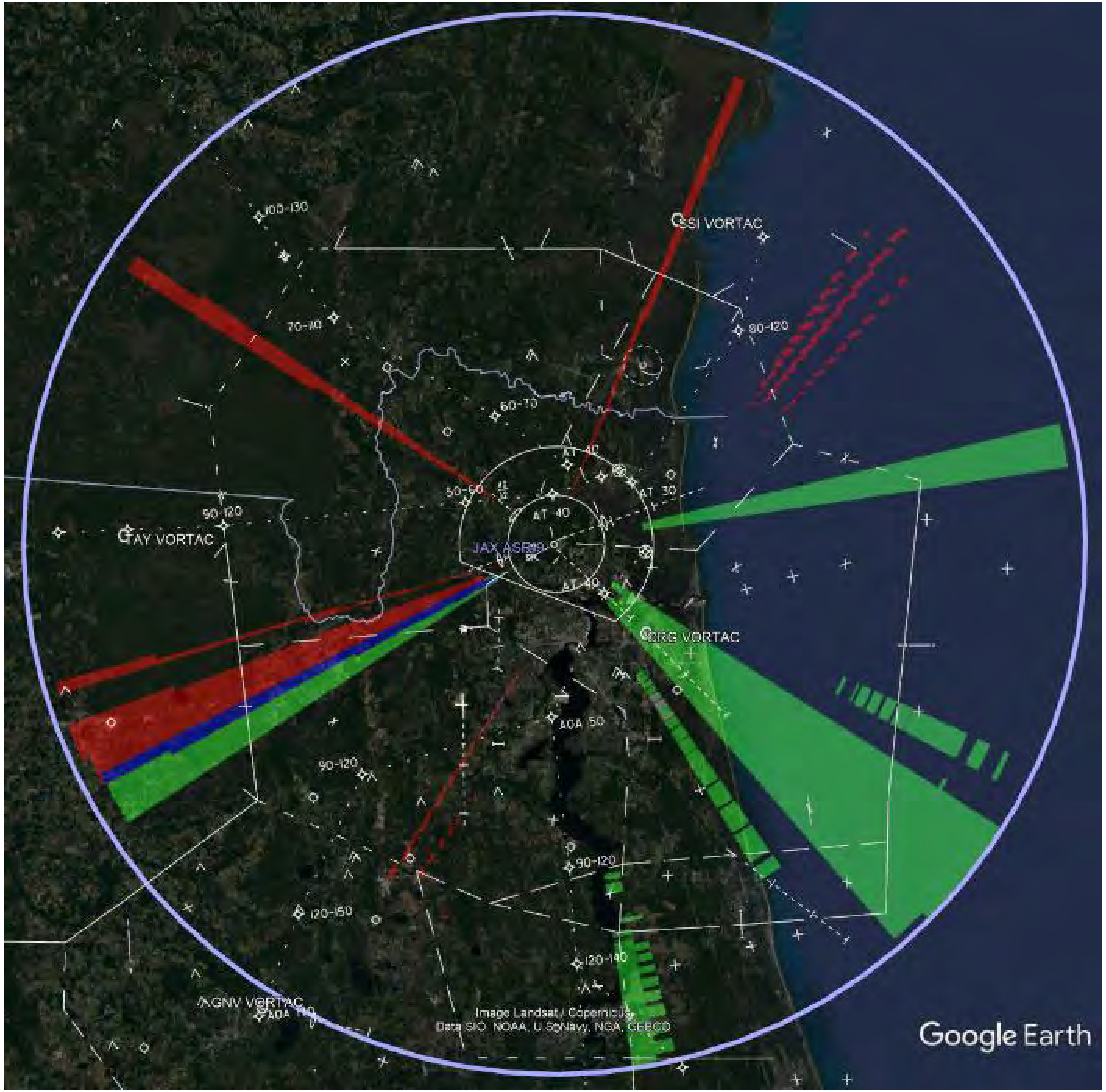
FIGURE 25

RSS BSAT Analysis:
60 NM Range
1500 to 2K FT MSL



No RCS/CDE Only

FIGURE 26



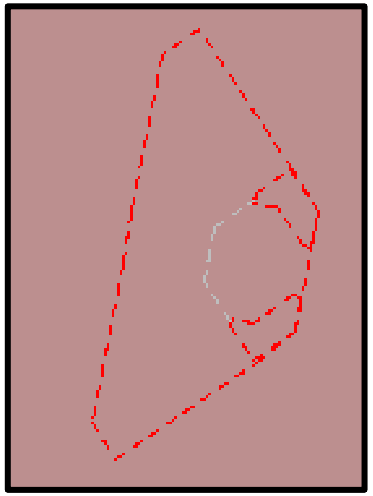
Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

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

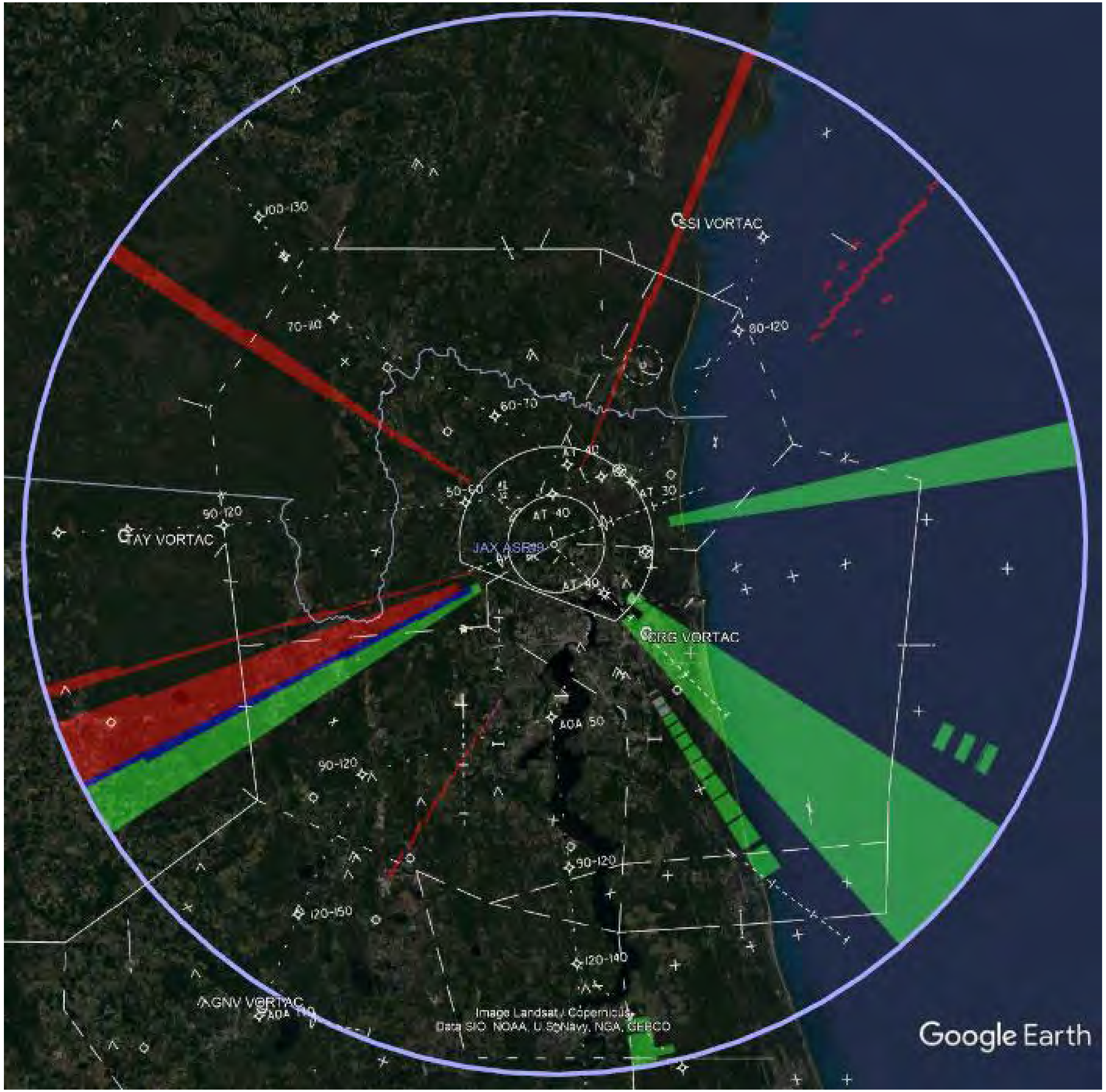


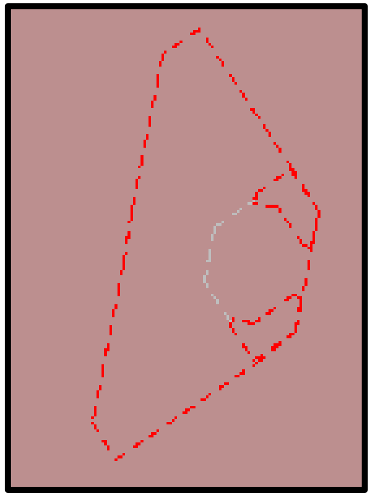
FIGURE 27

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

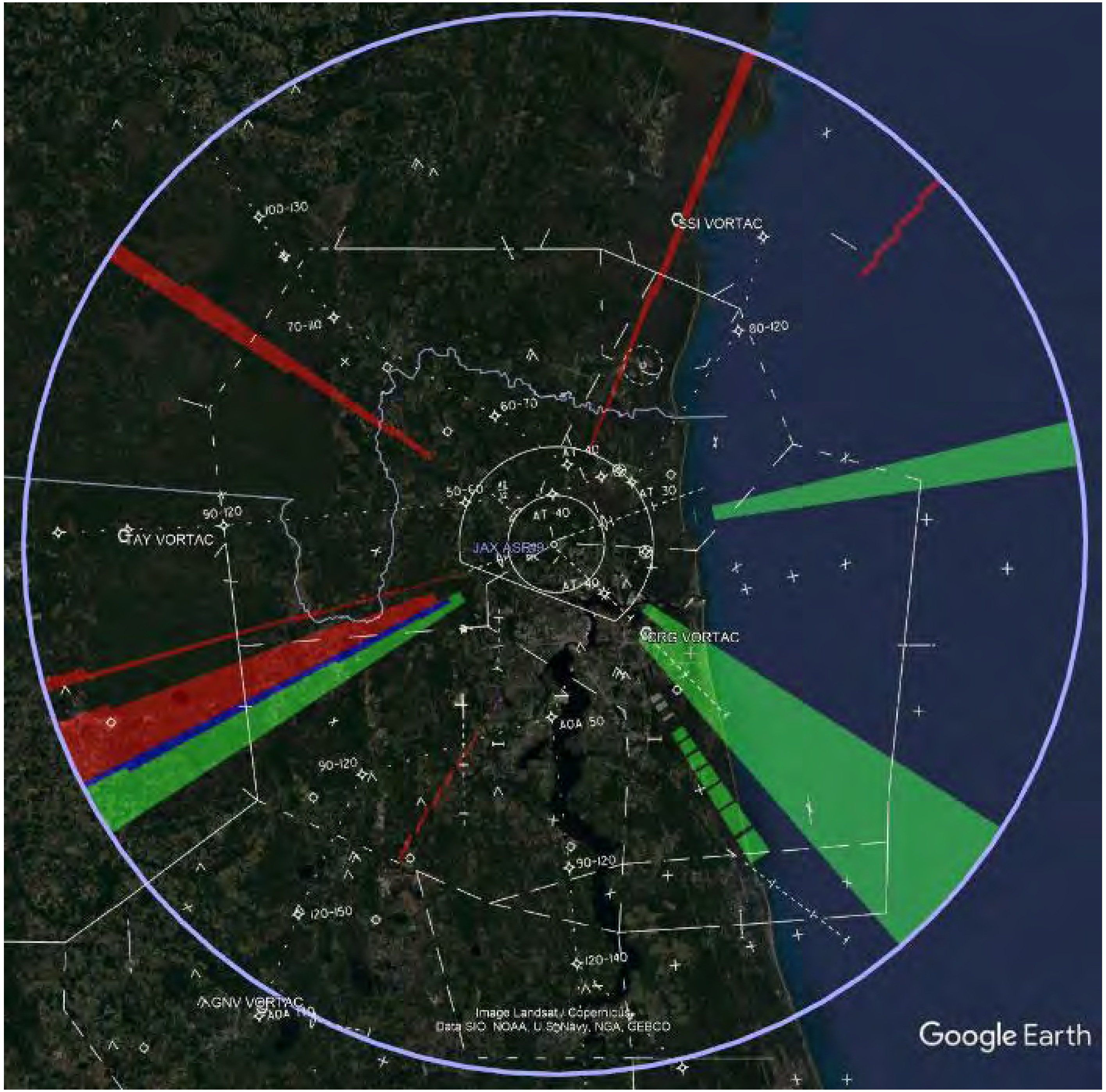
LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

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: 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

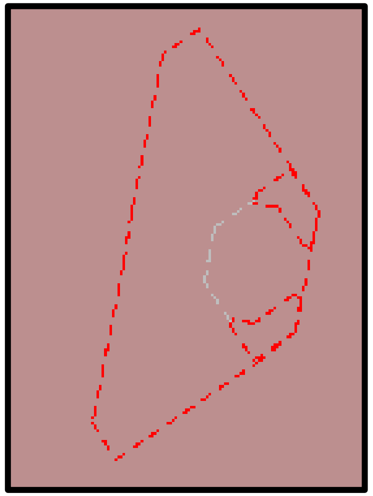
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	36.0 (dB)
STC Range Step	1.0 (nmi)

TRANSPONDER PARAMETERS

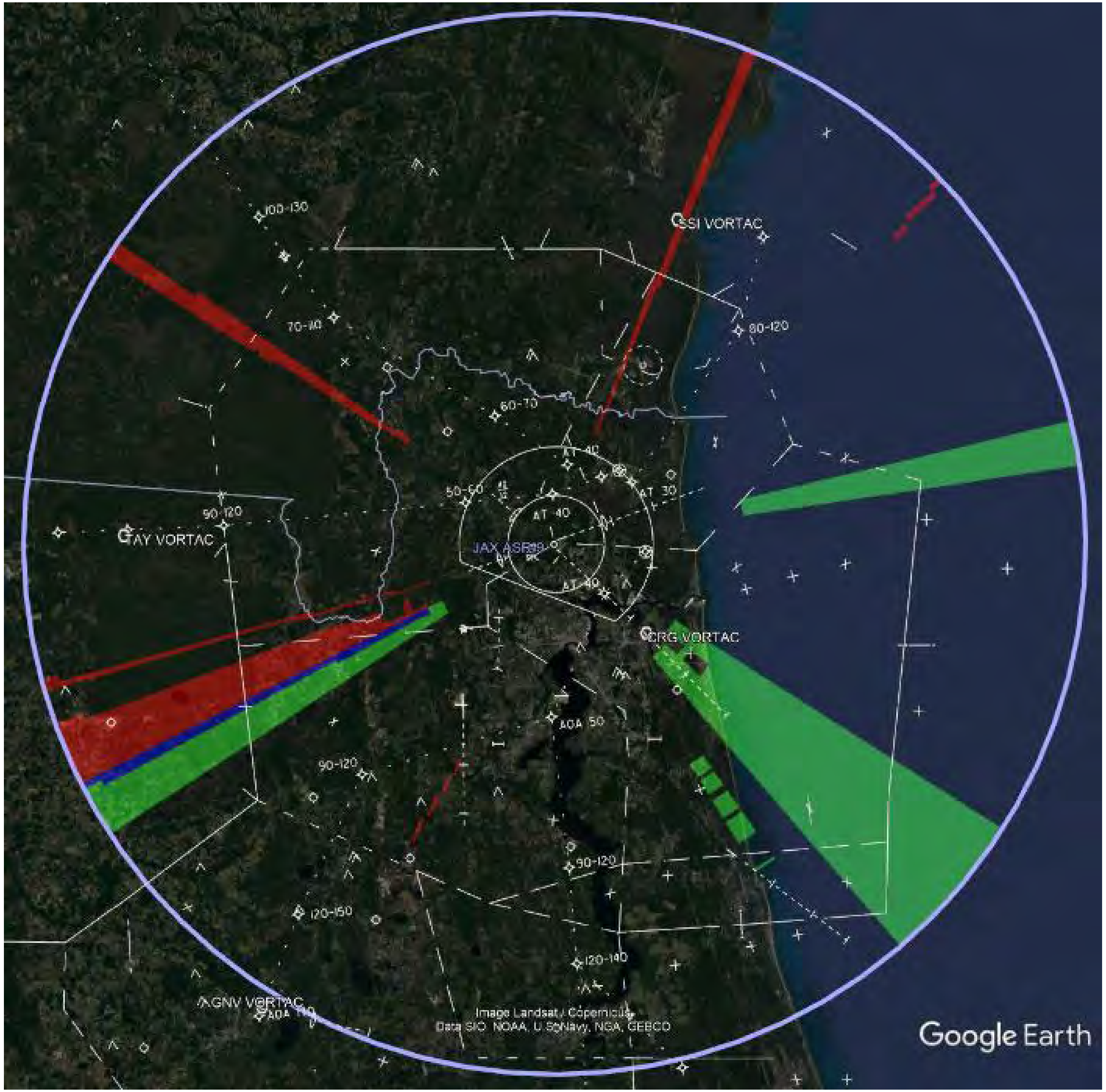
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

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

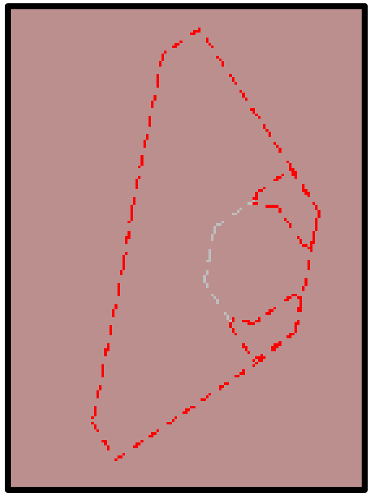
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
STC Exponent	2.0
STC Depth	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)

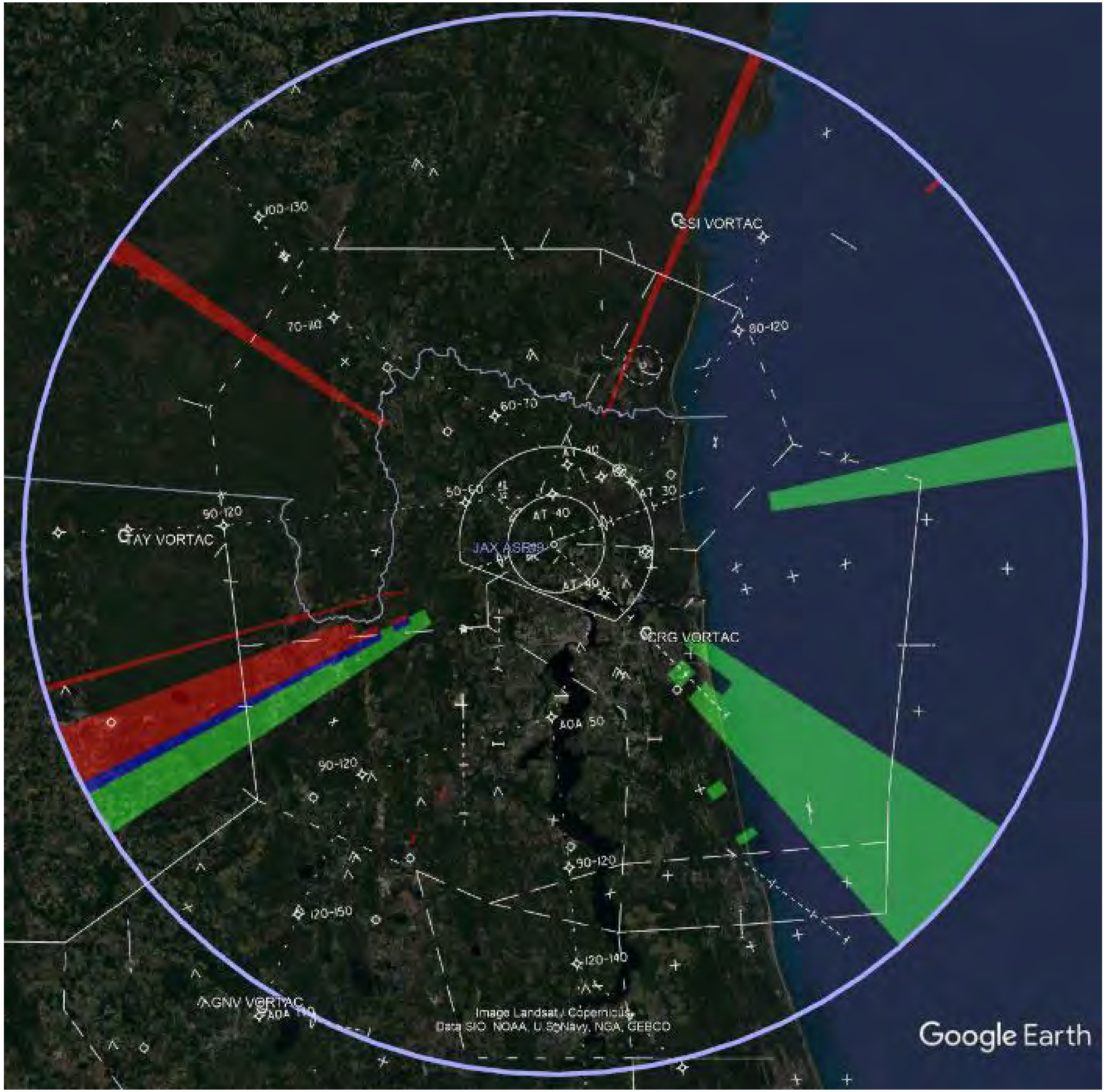
FIGURE 29

RSS BSAT Analysis: 60 NM Range 3500 to 4K FT MSL



No RCS/CDE Only

FIGURE 30

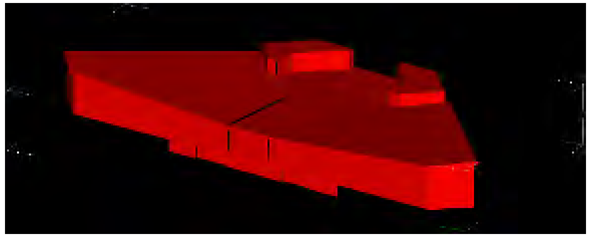


Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

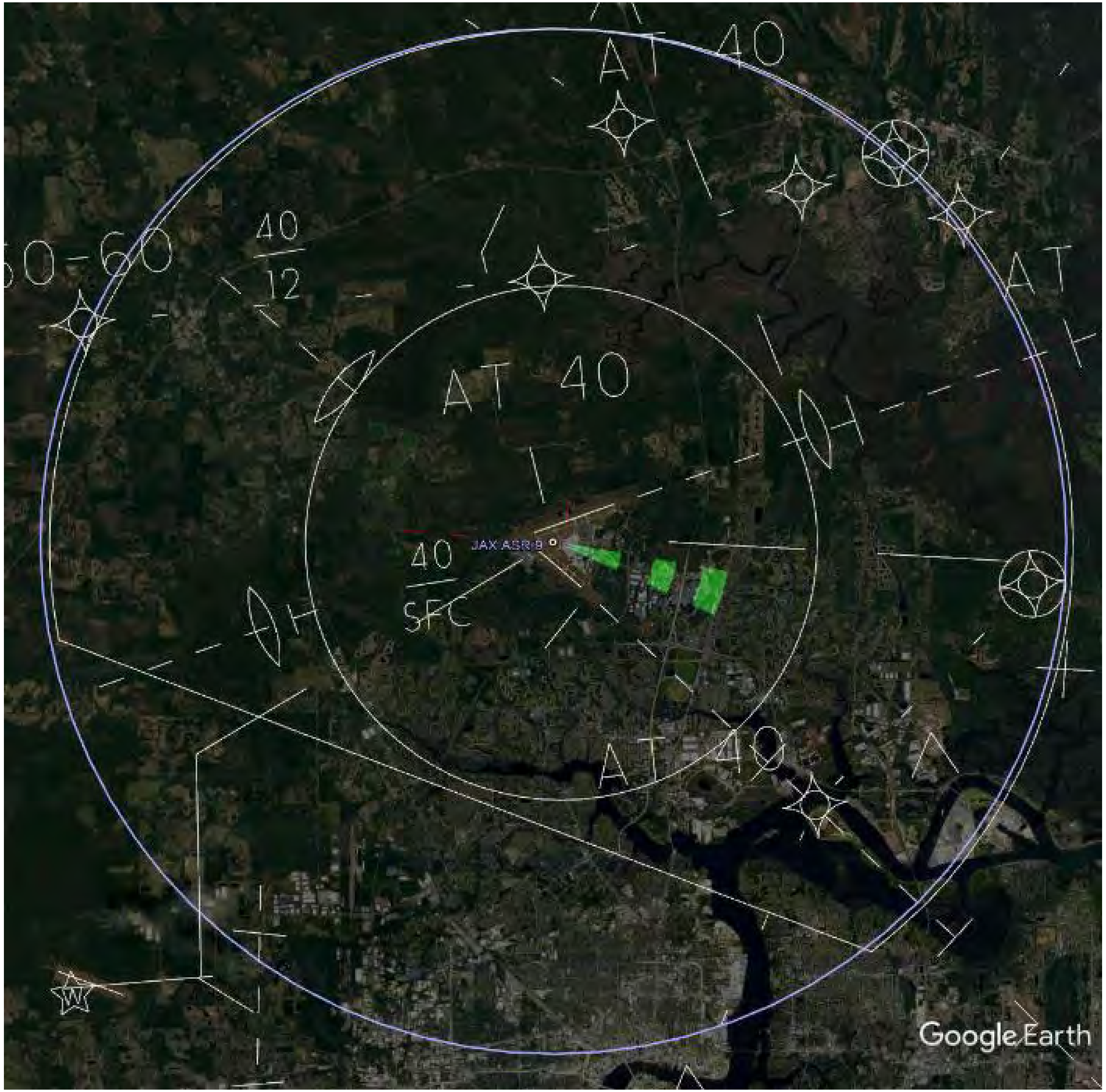
LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

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	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: 10 NM Range 50 to 250 FT MSL



JAX-CONC_sh_o.rcs
Terminal B Expansion
Building Only
ORIGINAL – NO TILT



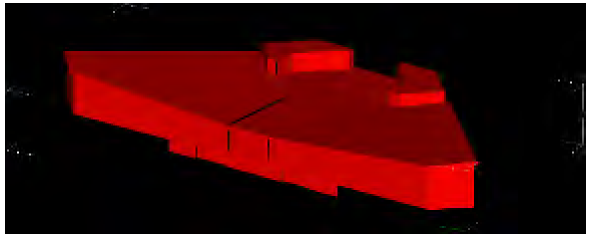
Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

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)

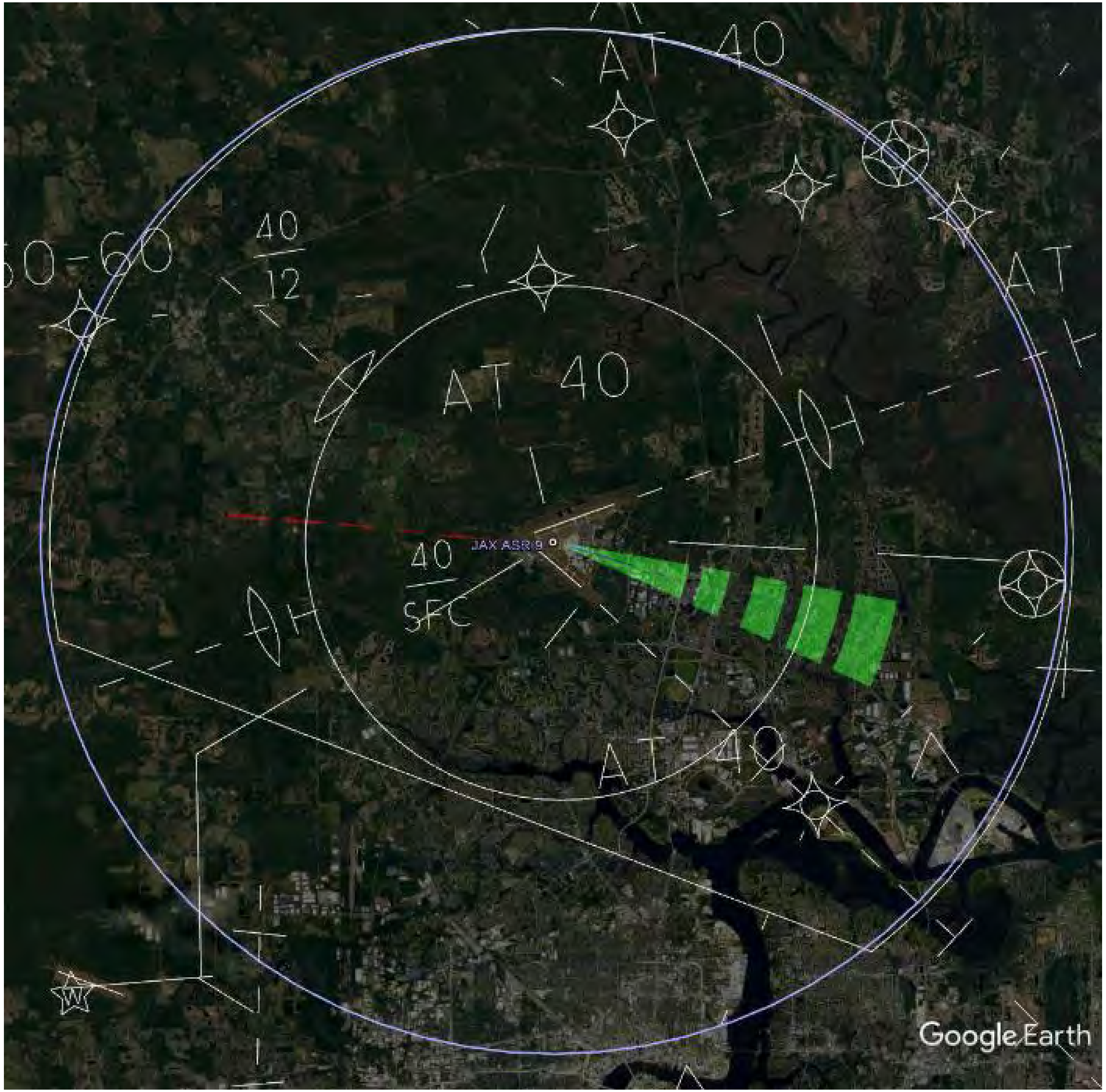
FIGURE 31

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

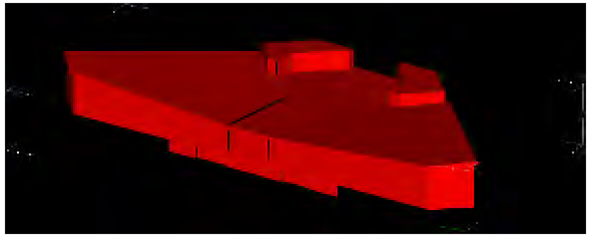


Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

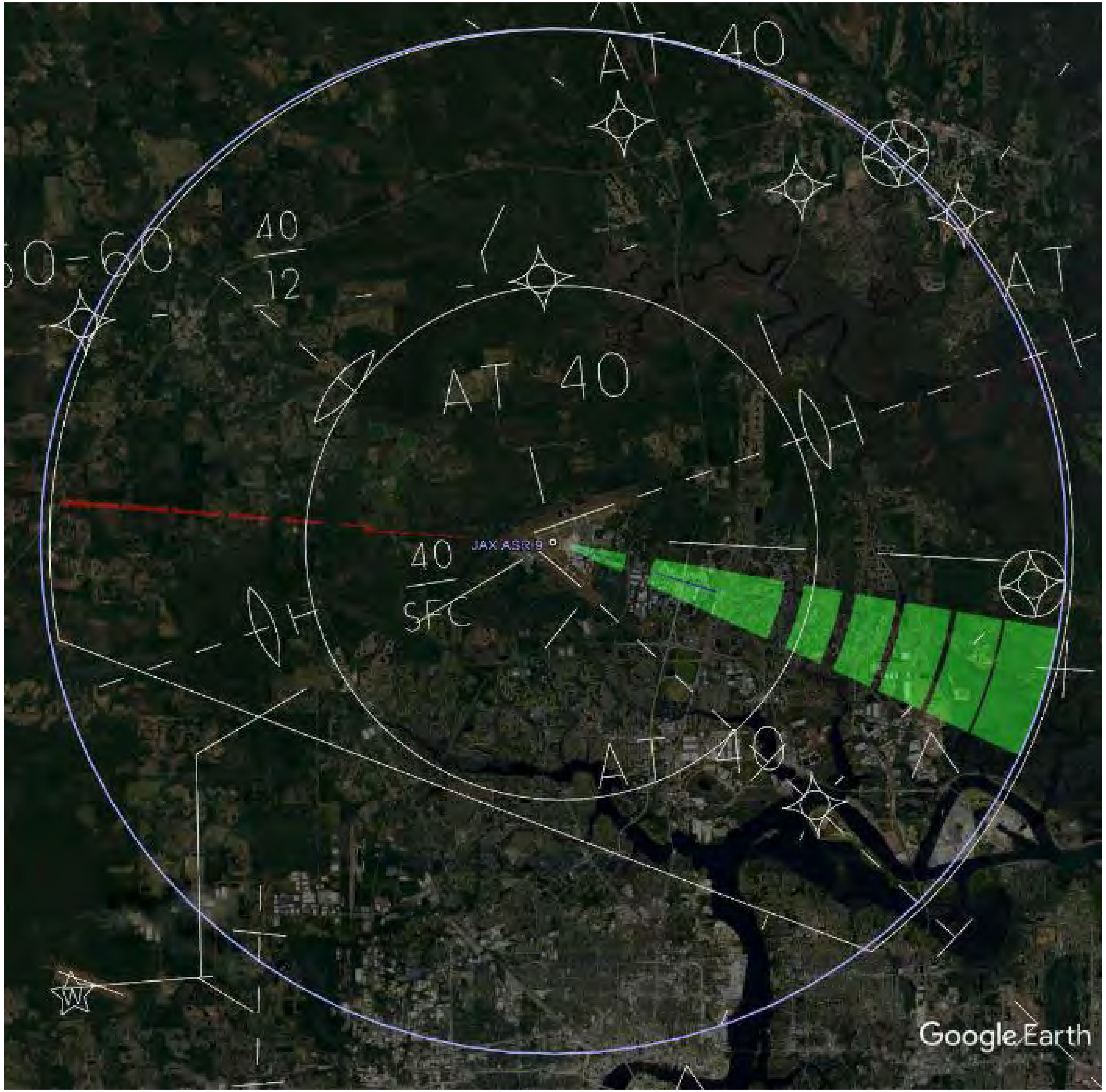
LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

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



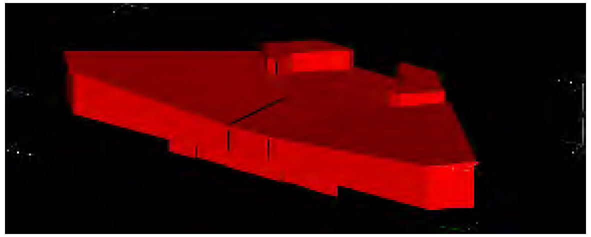
Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

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)

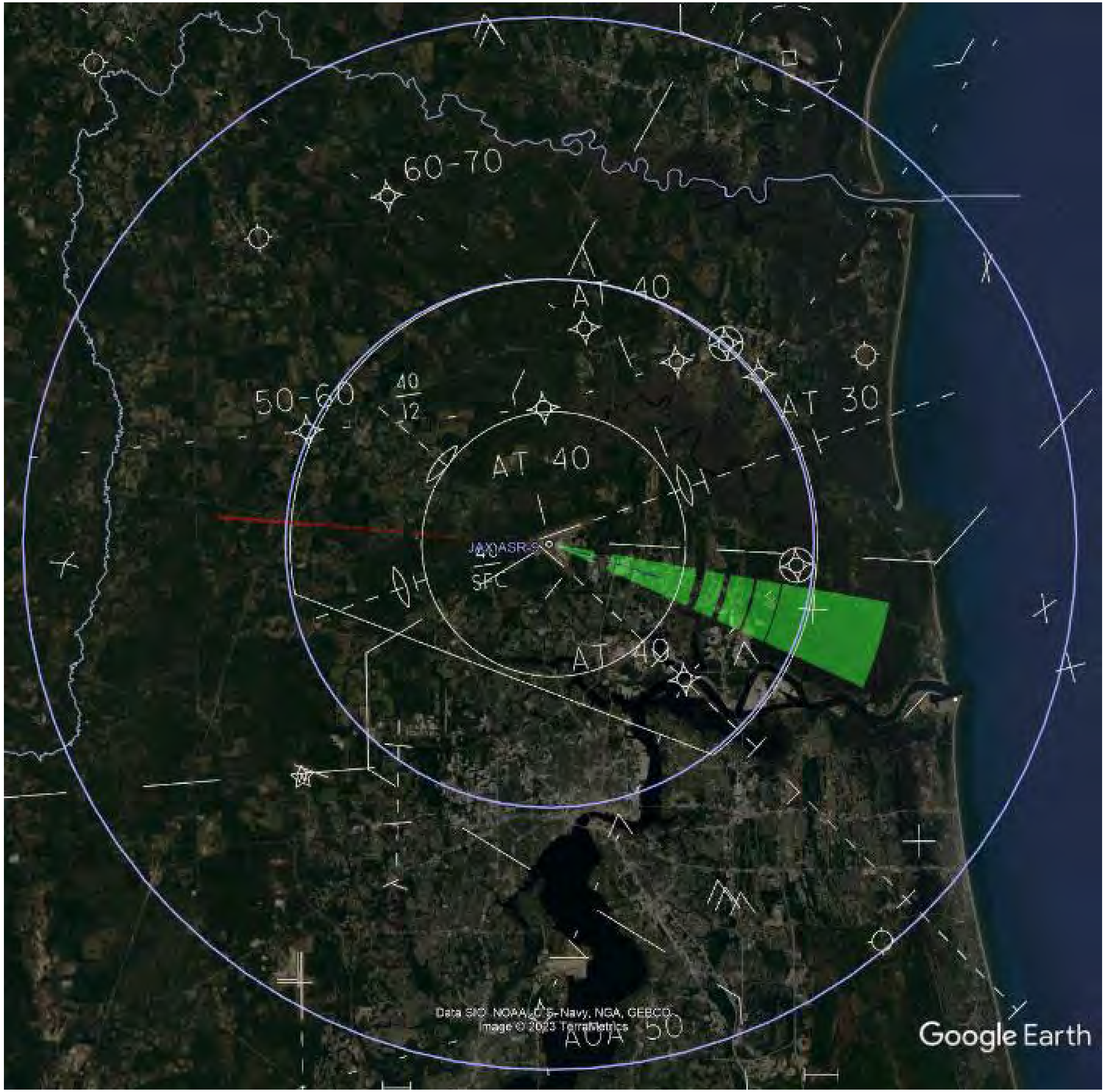
FIGURE 33

RSS BSAT Analysis: 20 NM Range 750 to 1K FT MSL



JAX-CONC_sh_o.rcs
Terminal B Expansion
Building Only
ORIGINAL – NO TILT

FIGURE 34

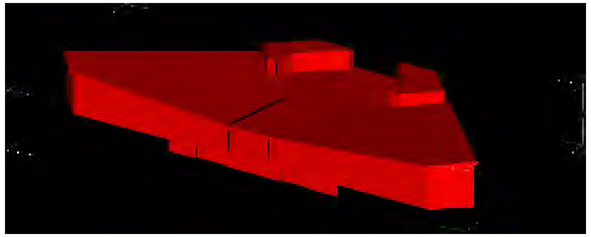


Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

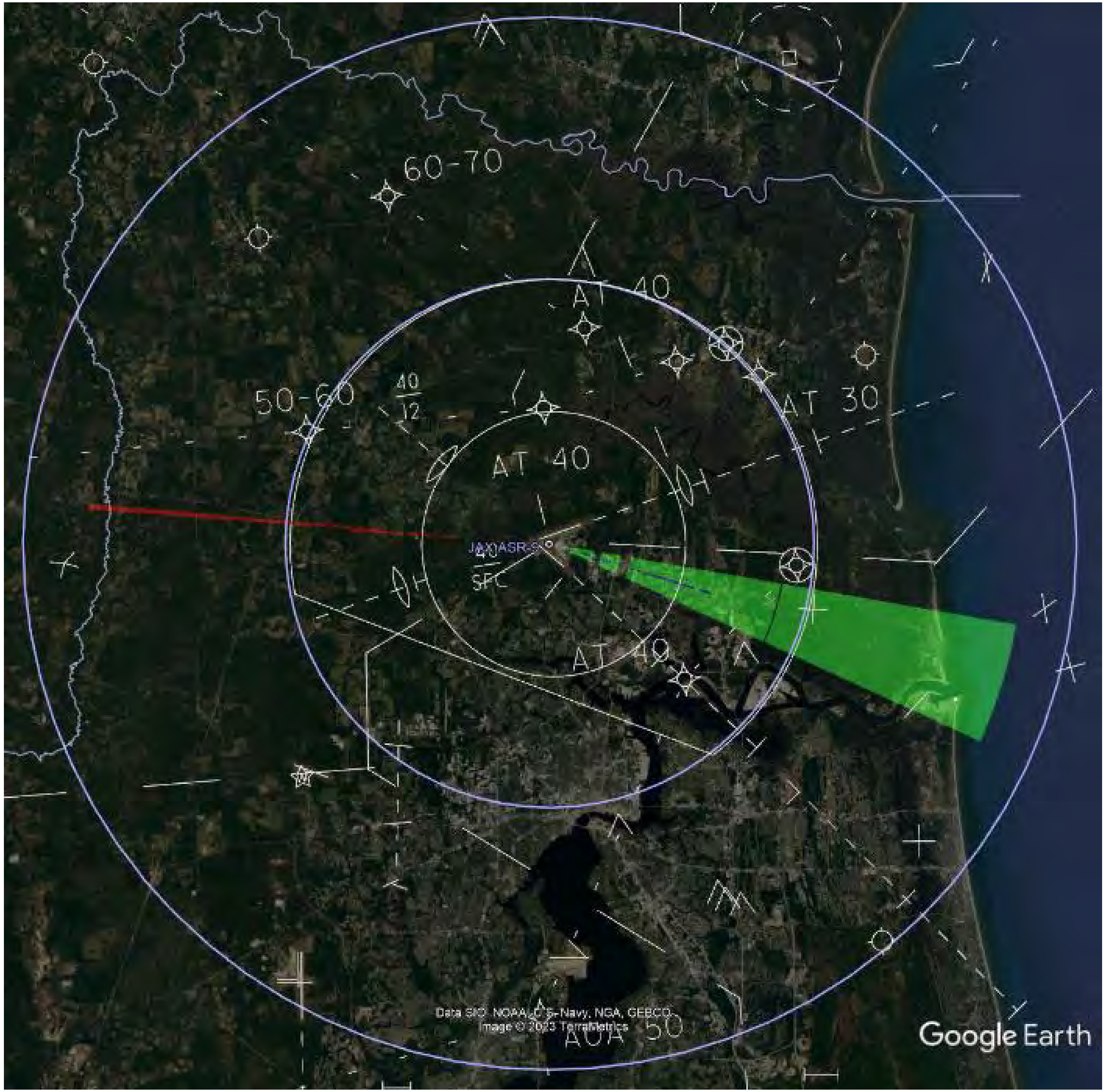
INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
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: 20 NM Range 1K to 1500 FT MSL



JAX-CONC_sh_o.rcs
Terminal B Expansion
Building Only
ORIGINAL – NO TILT

FIGURE 35

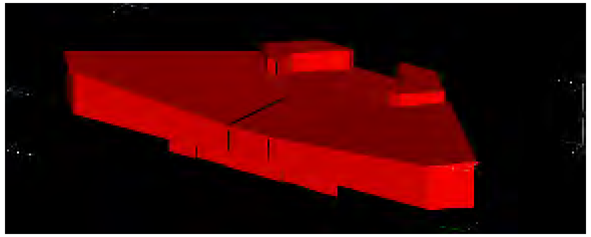


Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

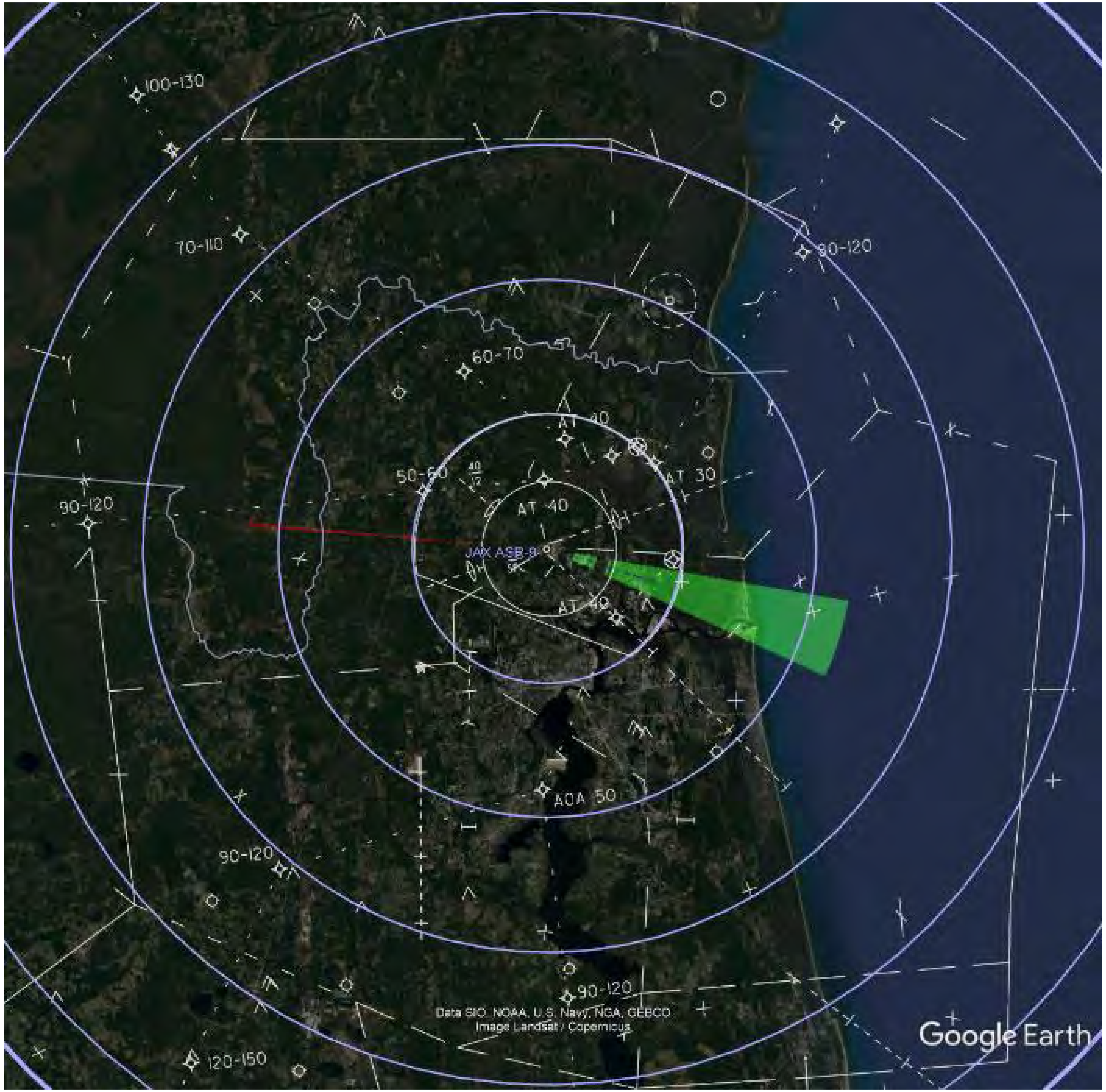
INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
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



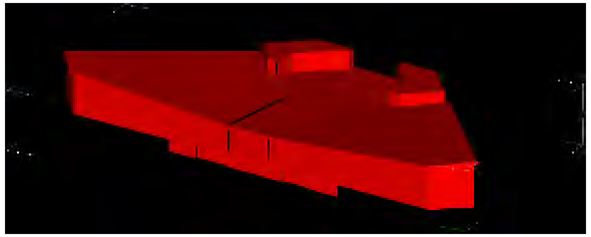
Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

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)

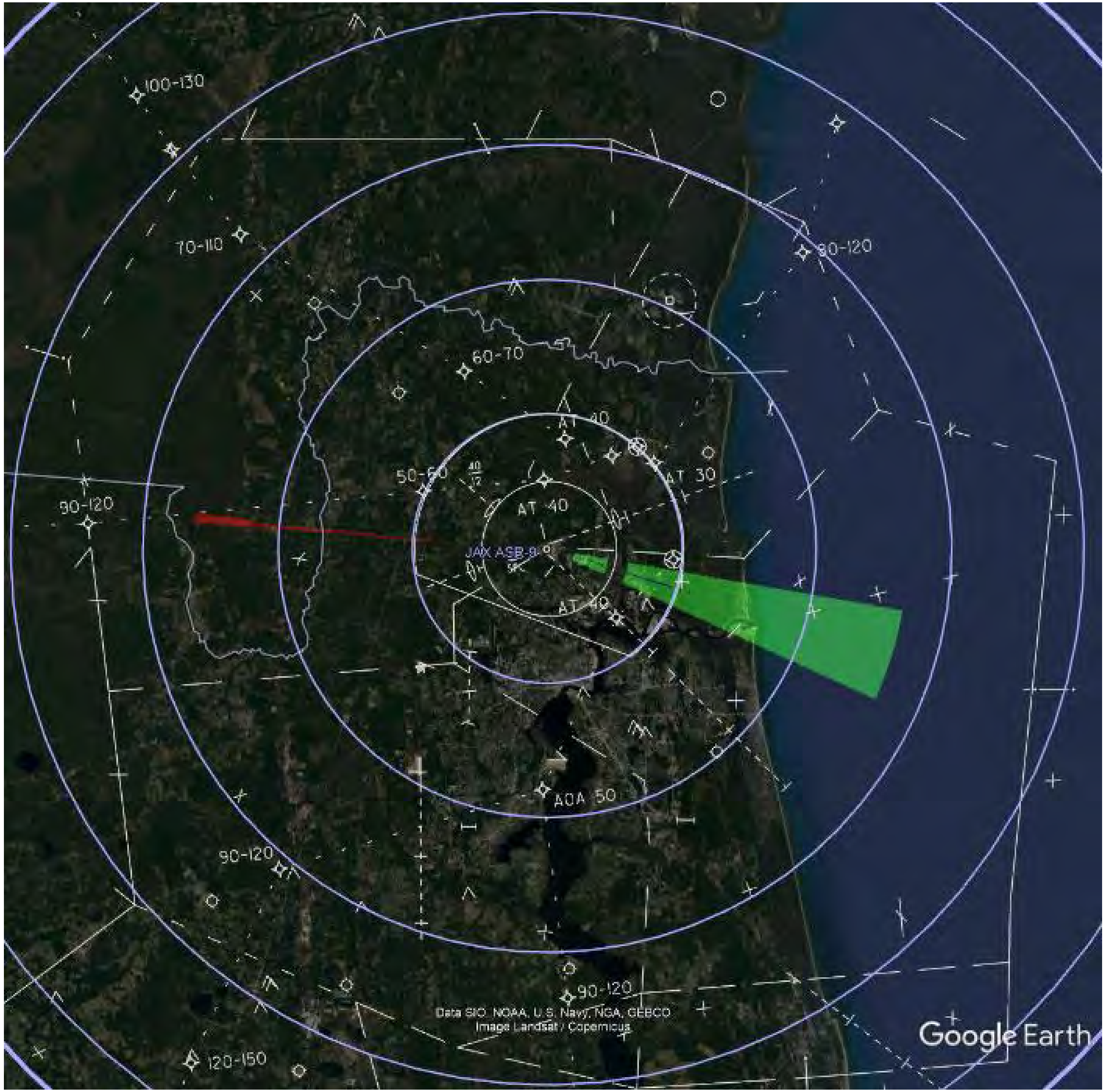
TRANSPONDER PARAMETERS	
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

RSS BSAT Analysis: 40 NM Range 2K to 2500 FT MSL



JAX-CONC_sh_o.rcs
Terminal B Expansion
Building Only
ORIGINAL – NO TILT

FIGURE 37

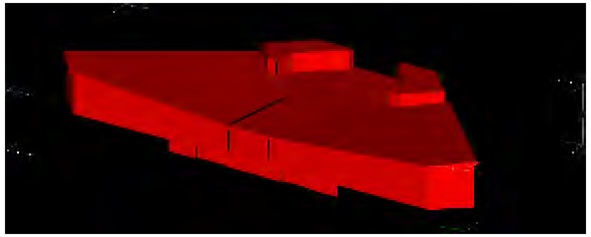


Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

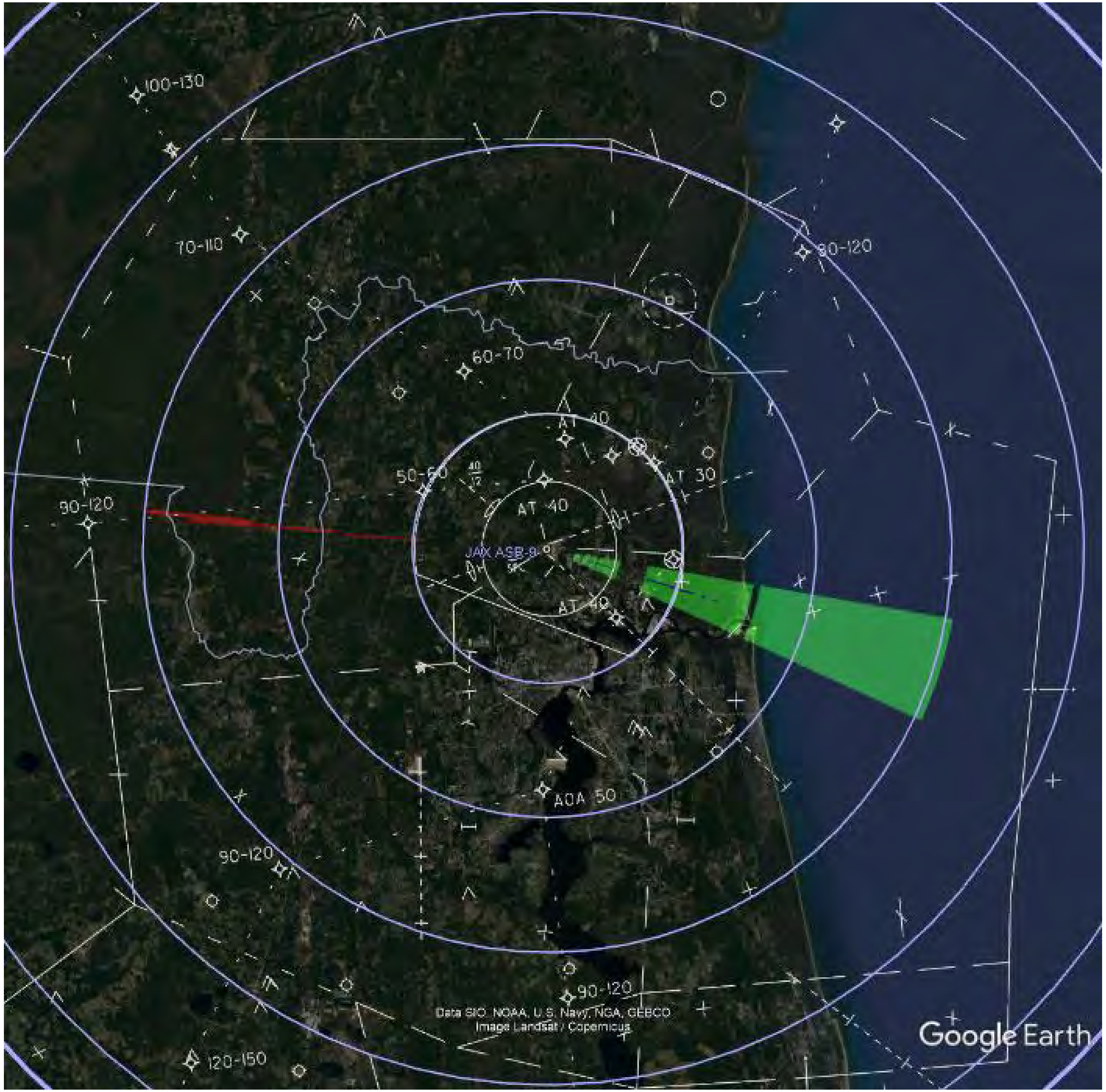
INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
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 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

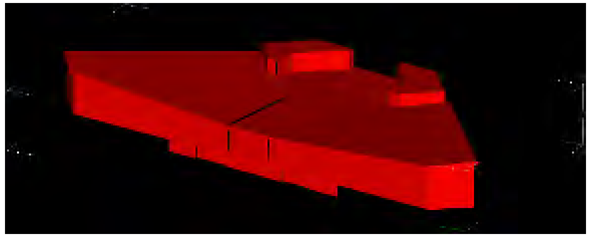
INTERROGATOR PARAMETERS

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

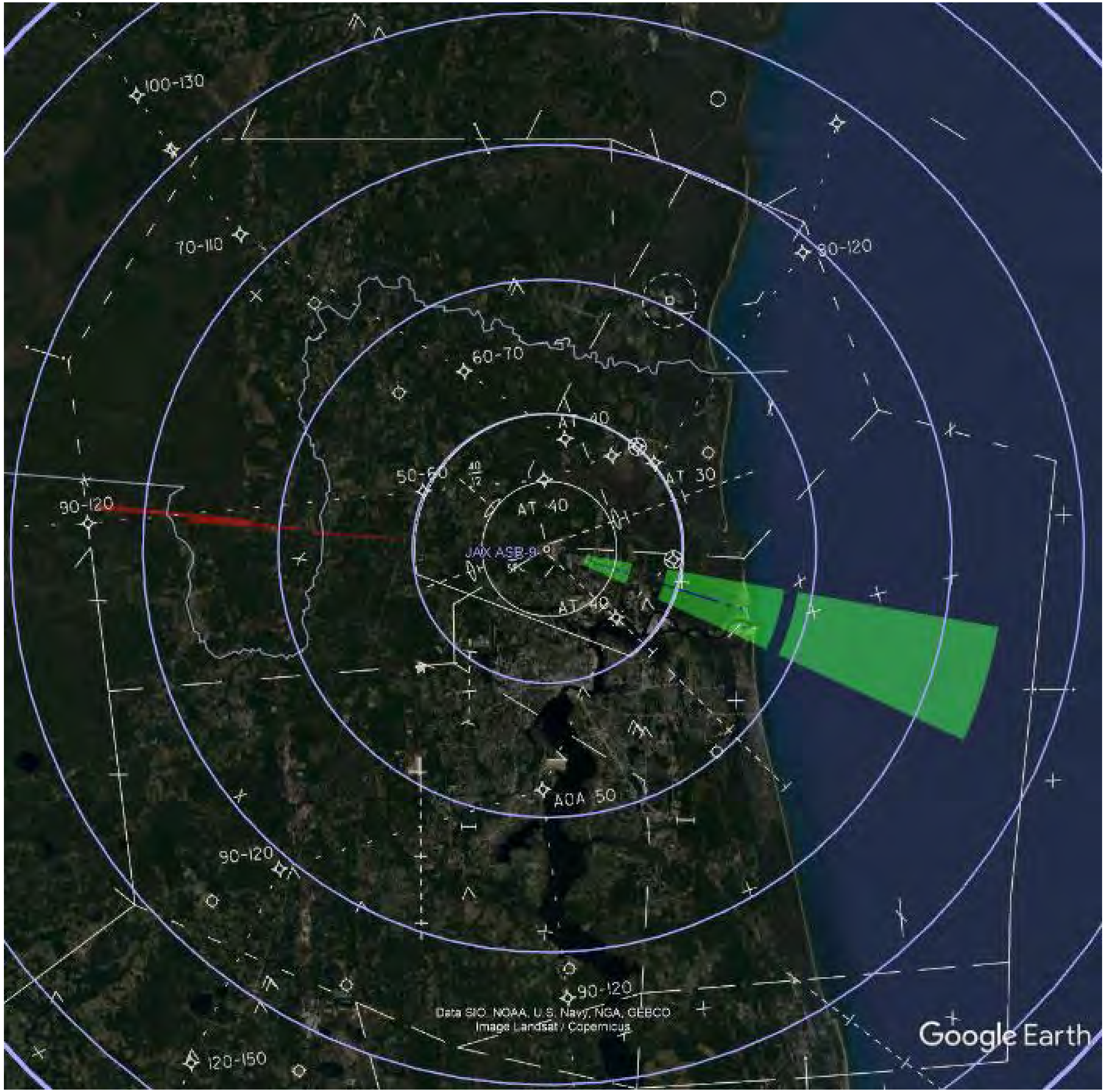
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

RSS BSAT Analysis: 40 NM Range 3K to 3500 FT MSL



JAX-CONC_sh_o.rcs
Terminal B Expansion
Building Only
ORIGINAL – NO TILT

FIGURE 39



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

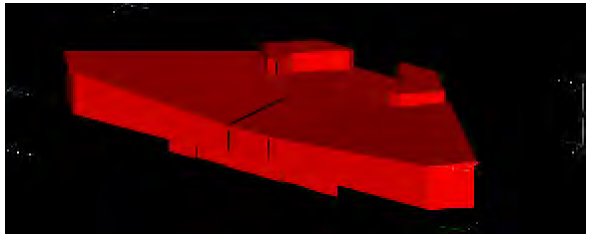
INTERROGATOR PARAMETERS

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

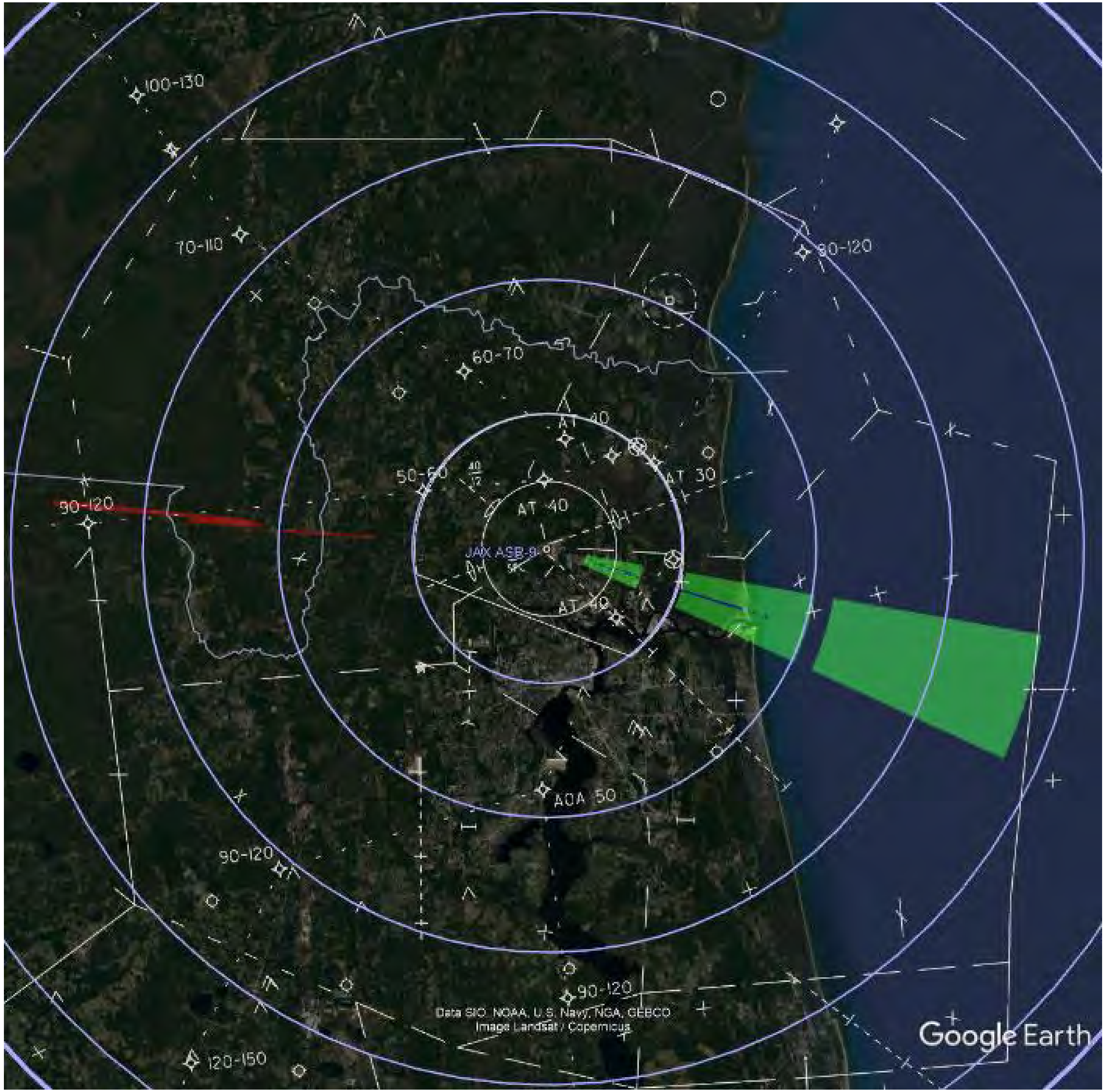
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

RSS BSAT Analysis: 40 NM Range 3500 to 4K FT MSL



JAX-CONC_sh_o.rcs
Terminal B Expansion
Building Only
ORIGINAL – NO TILT

FIGURE 40

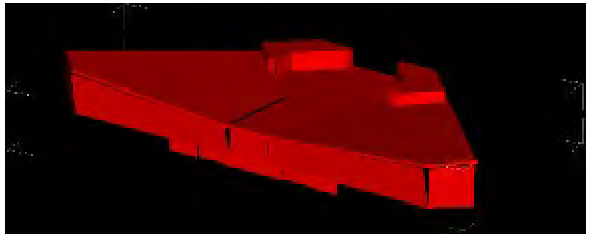


Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

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)

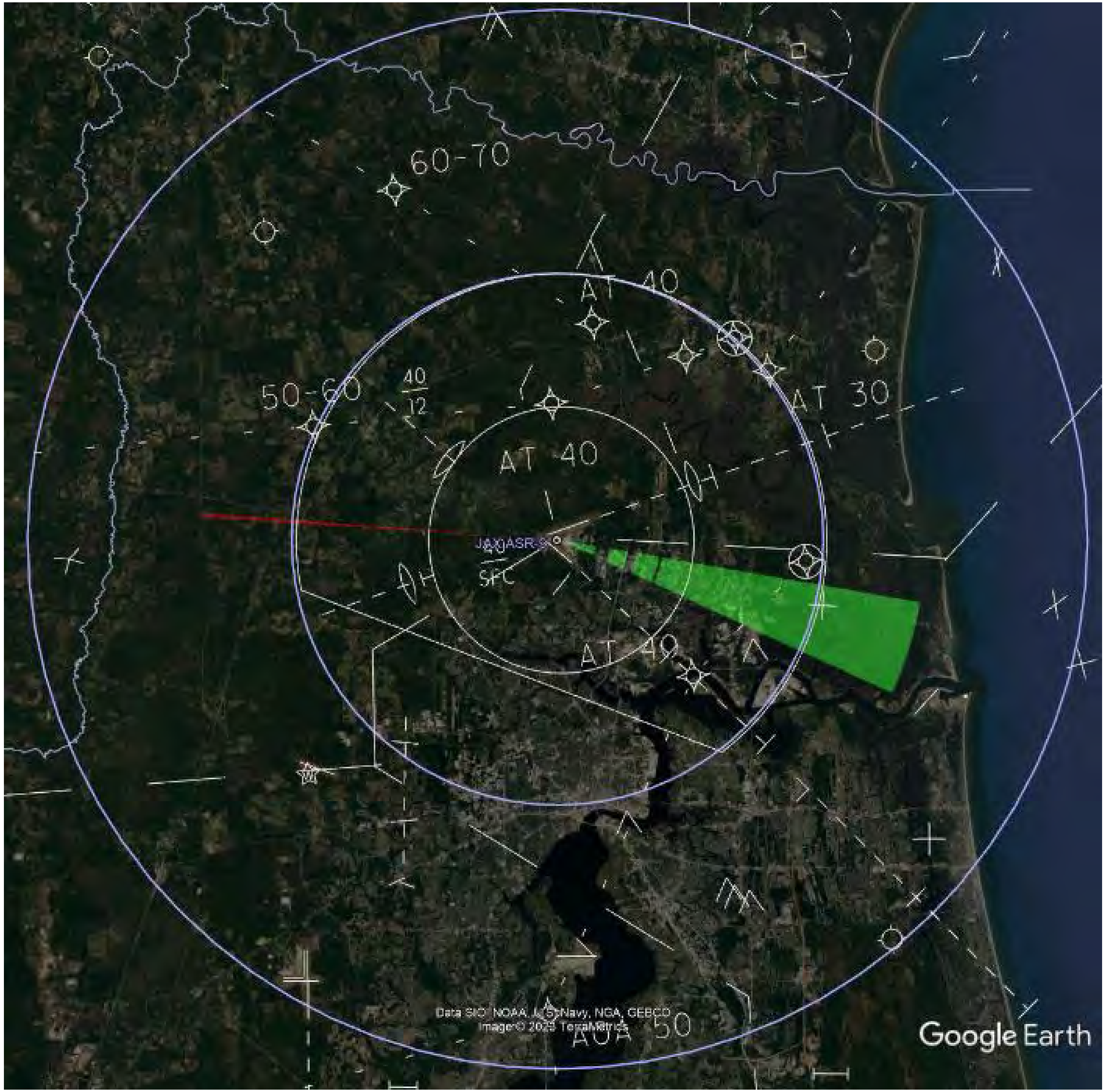
RSS BSAT Analysis: 20 NM Range 50 to 250 FT MSL



JAX-CONC_sh_r10.rcs
Terminal B Expansion
Building Only

Front & Side
Windows Tilted 10°

FIGURE 41



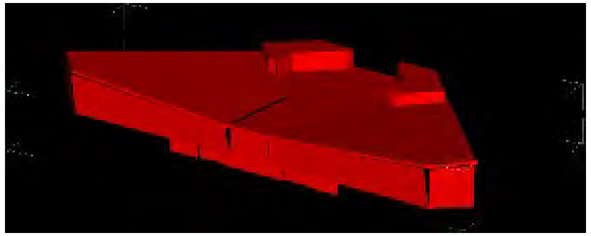
Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND

- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

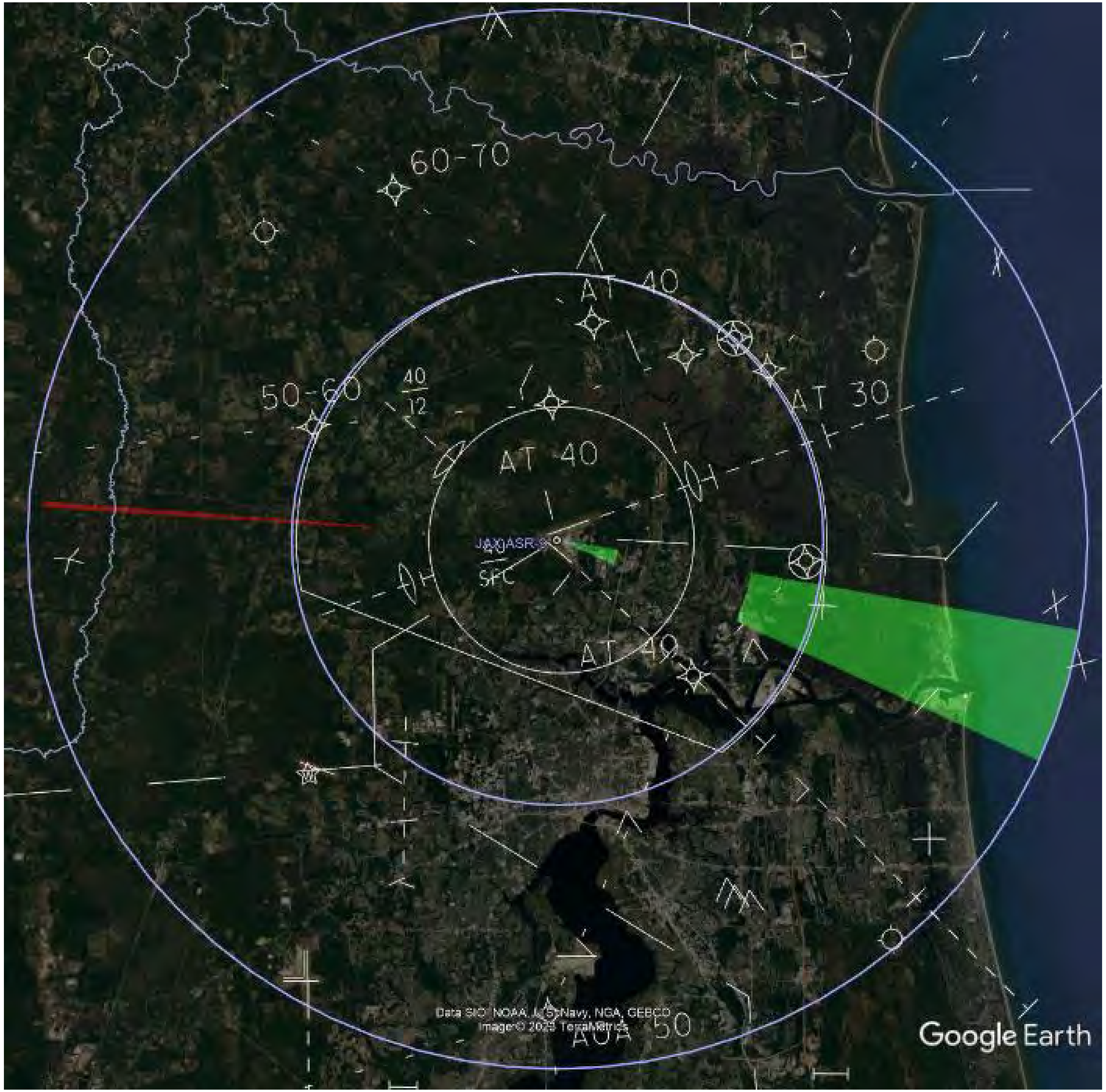
INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
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°



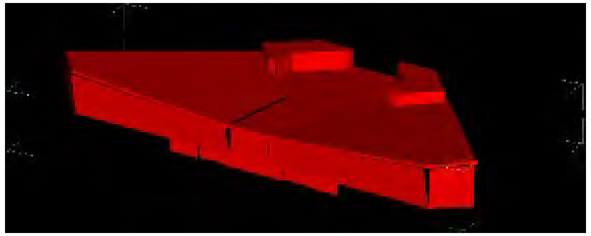
Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

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 42

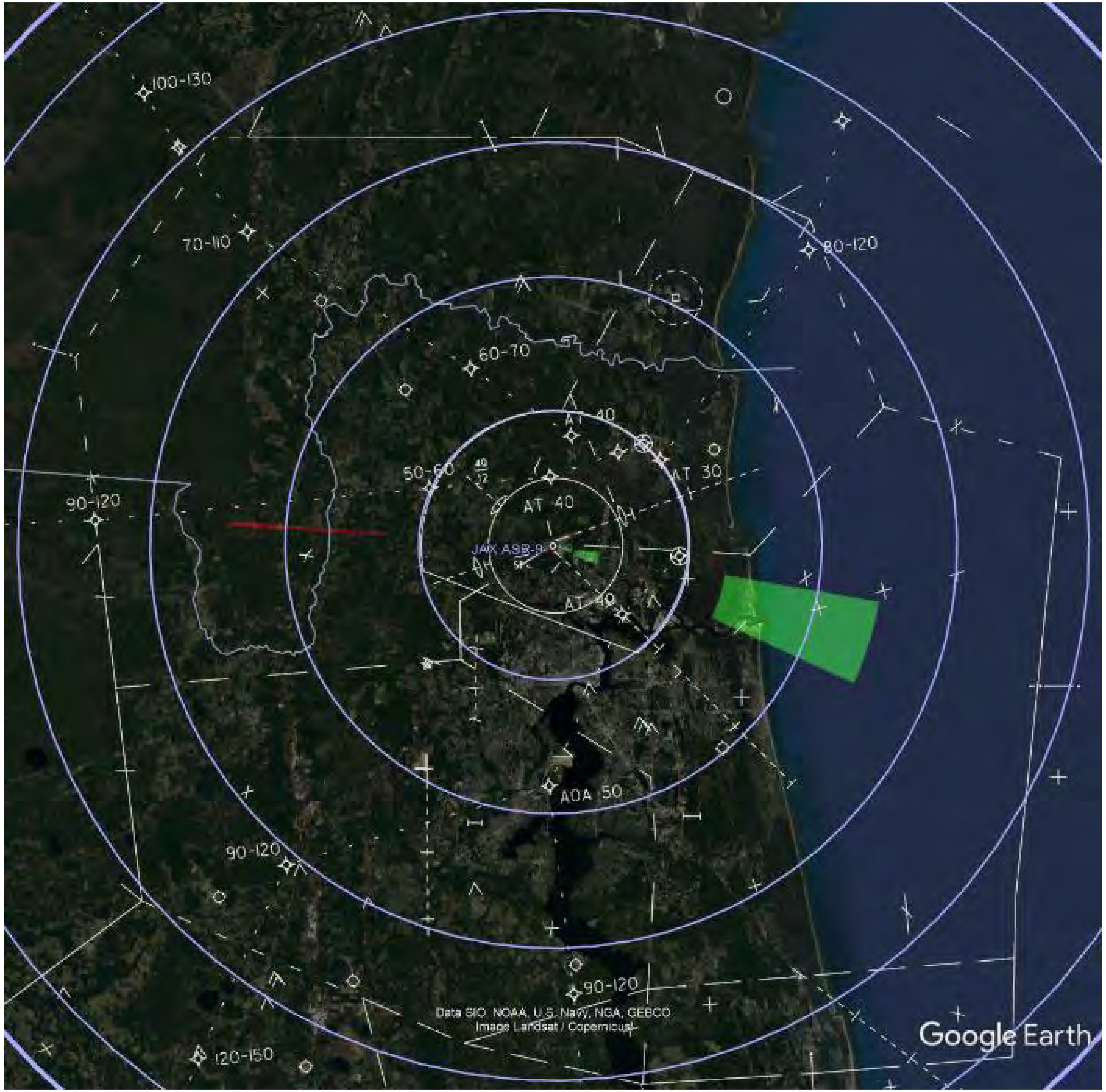
RSS BSAT Analysis: 40 NM Range 500 to 750 FT MSL



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

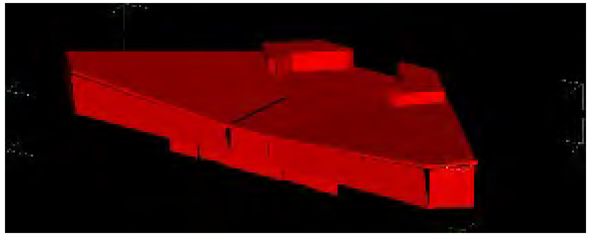
INTERROGATOR PARAMETERS

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

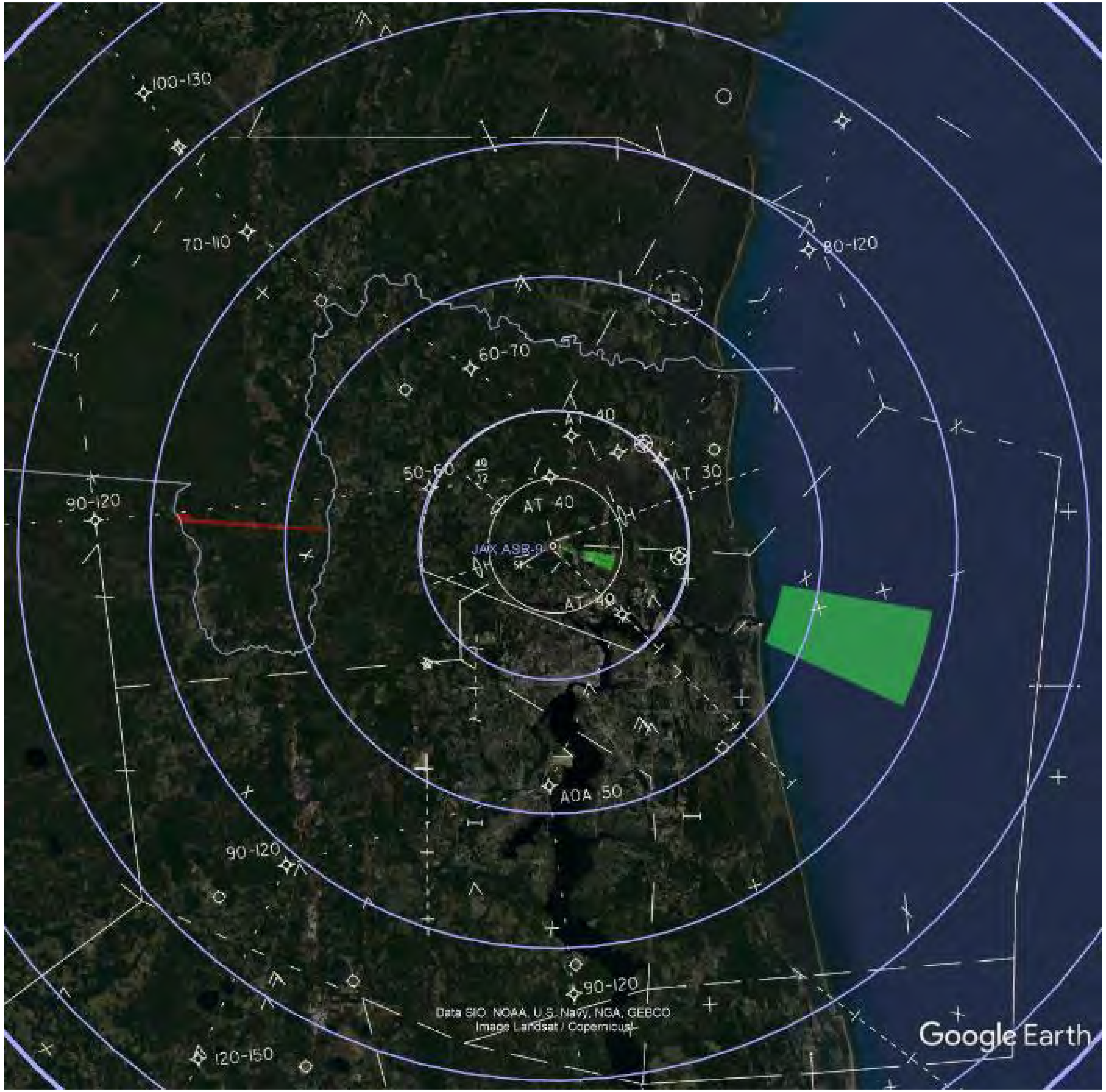
Peak Transmit Power	250.0 (W)
Receiver Bandwidth	15.0 (MHz)
Minimum Trigger Level	-69.0 (dBm)
Reply Pulse Width	0.45 (usec)
Receiver Loss	4.0 (dB)
Receiver Noise Figure	7.9 (dB)

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°



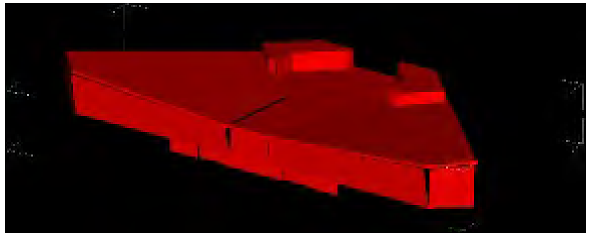
Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

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	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)

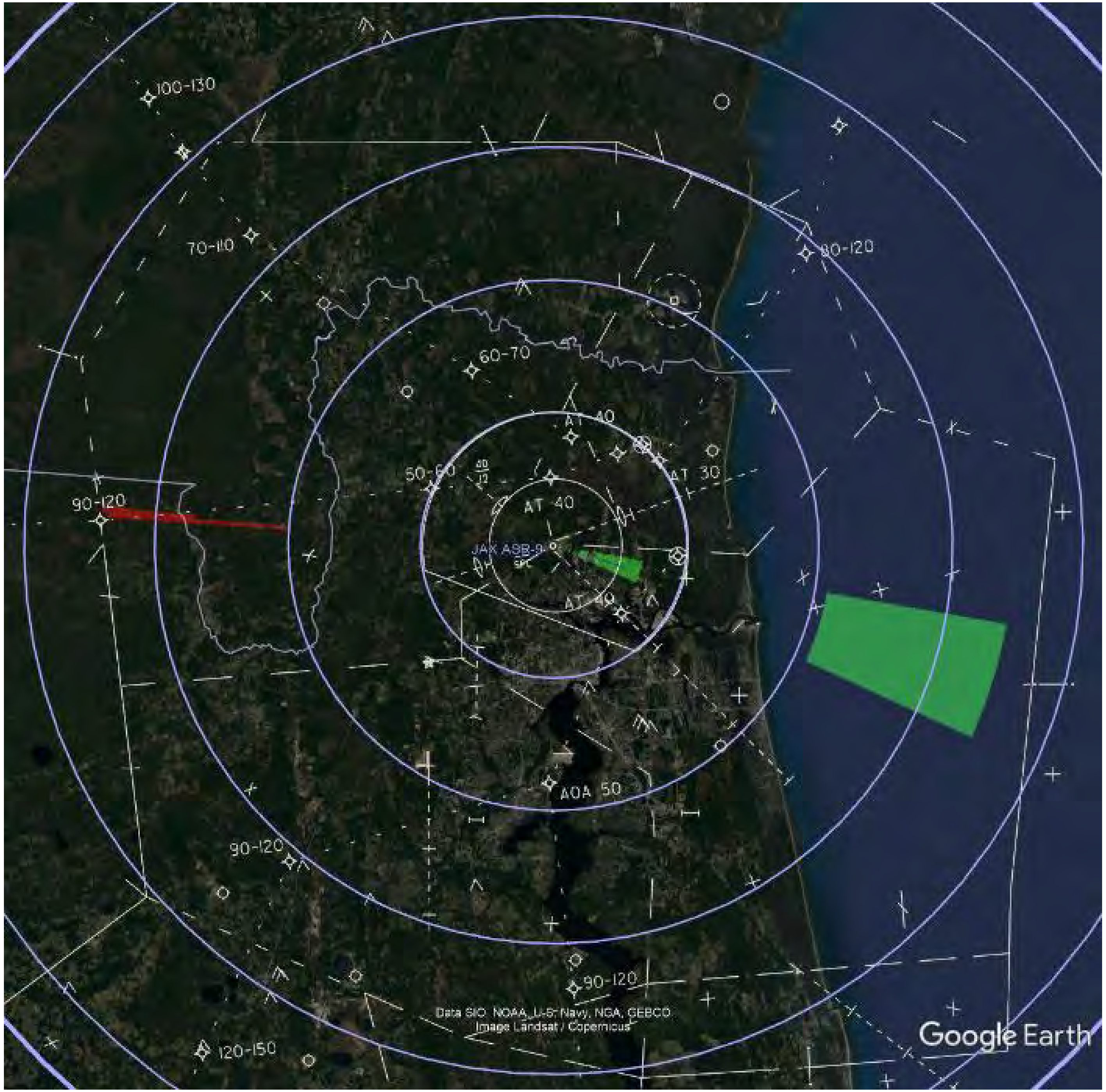
FIGURE 44

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°



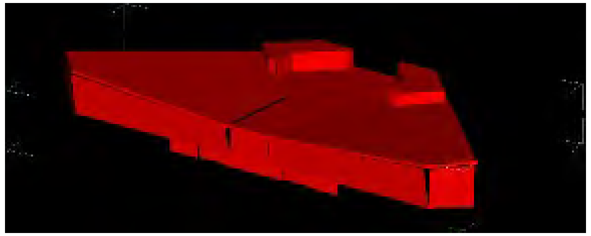
Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

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 45

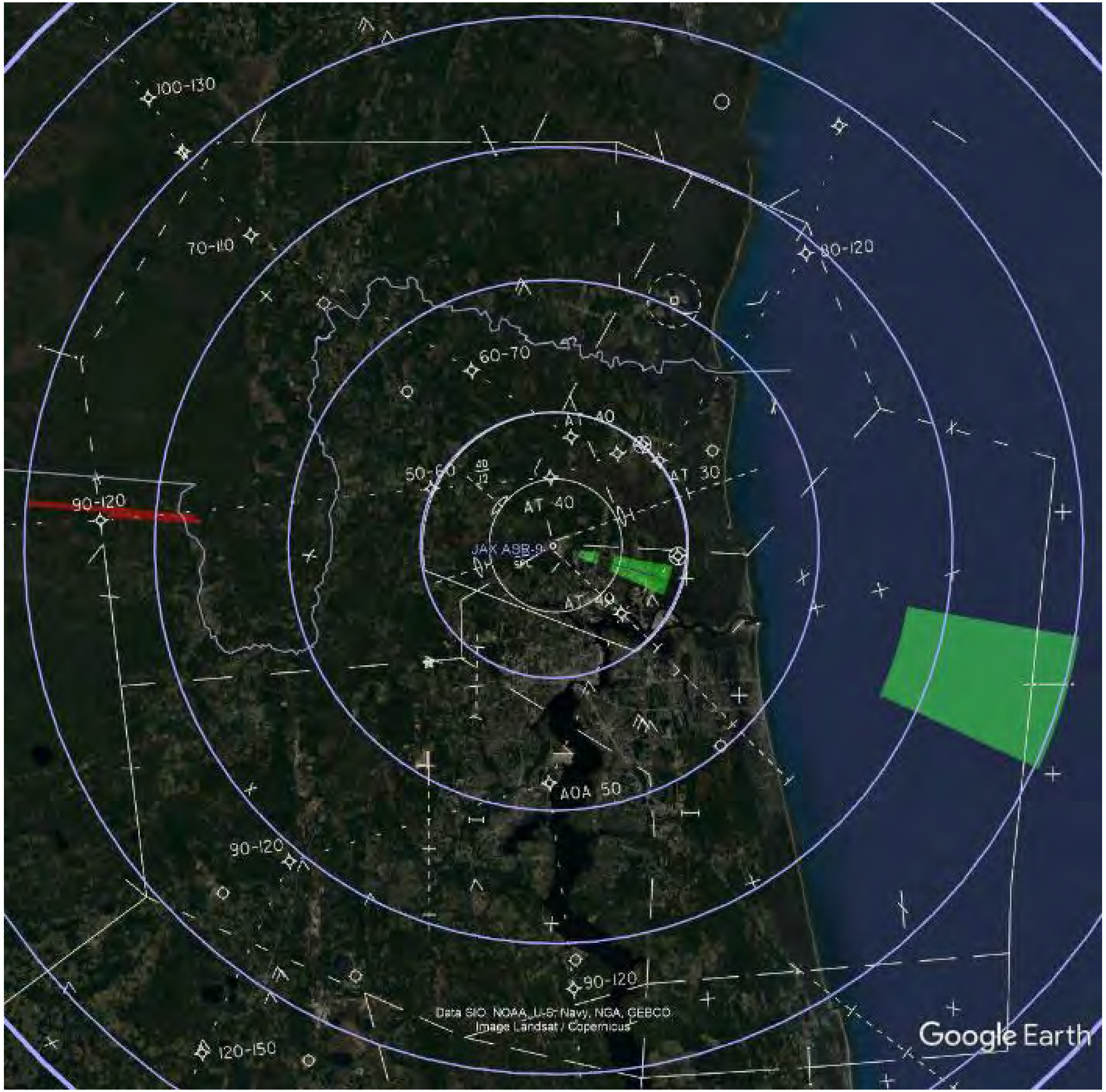
RSS BSAT Analysis: 40 NM Range 1500 to 2K FT MSL



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

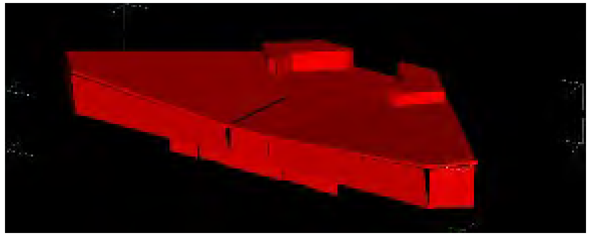
INTERROGATOR PARAMETERS

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)

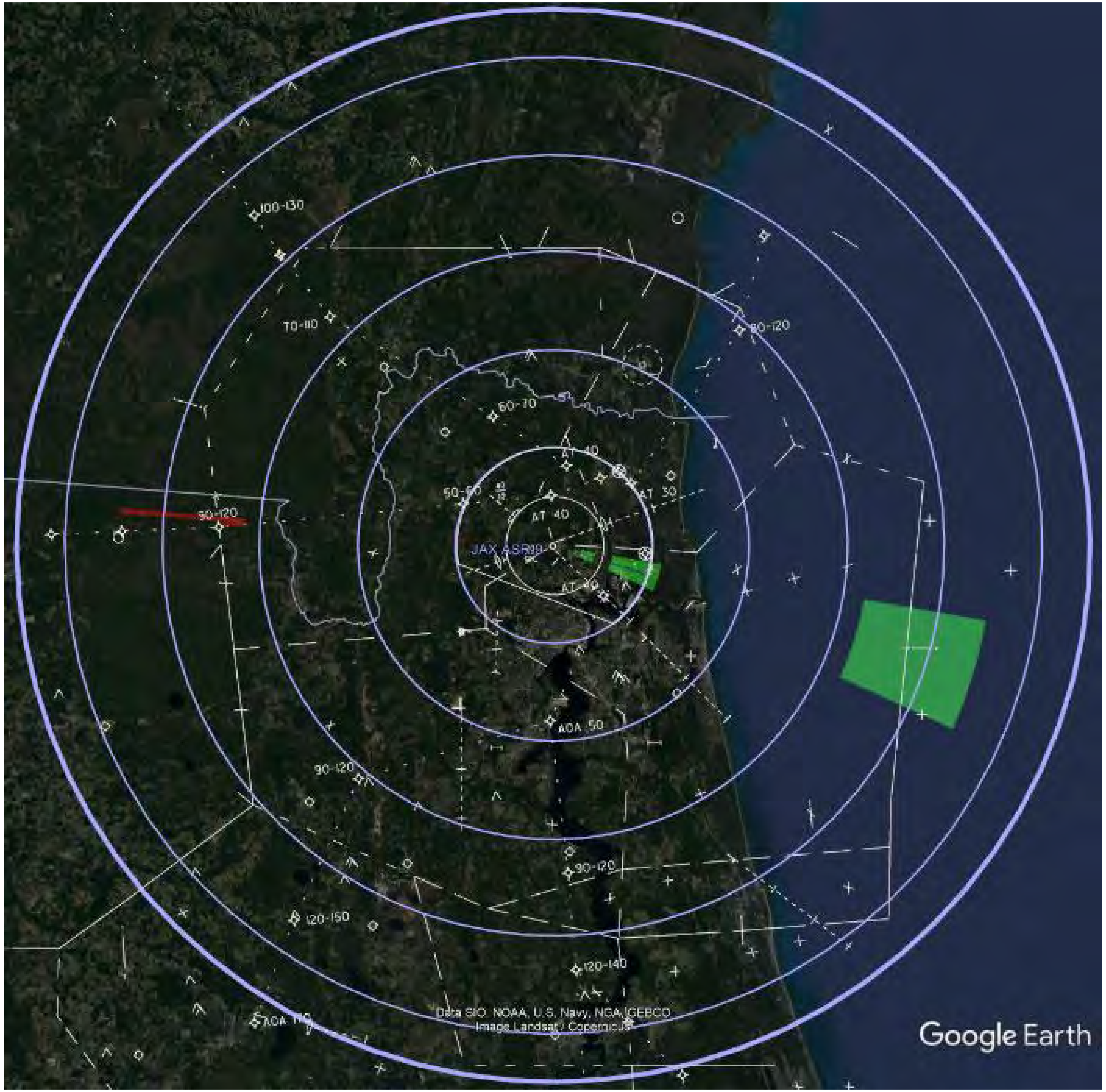
RSS BSAT Analysis: 60 NM Range 2K to 2500 FT MSL



JAX-CONC_sh_r10.rcs
Terminal B Expansion
Building Only

Front & Side
Windows Tilted 10°

FIGURE 47

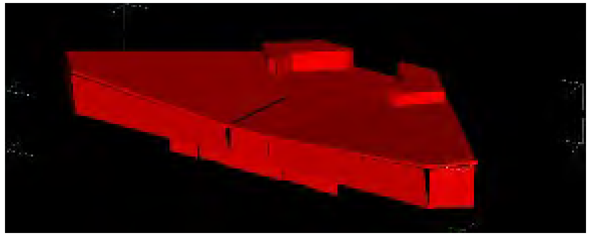


Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

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)

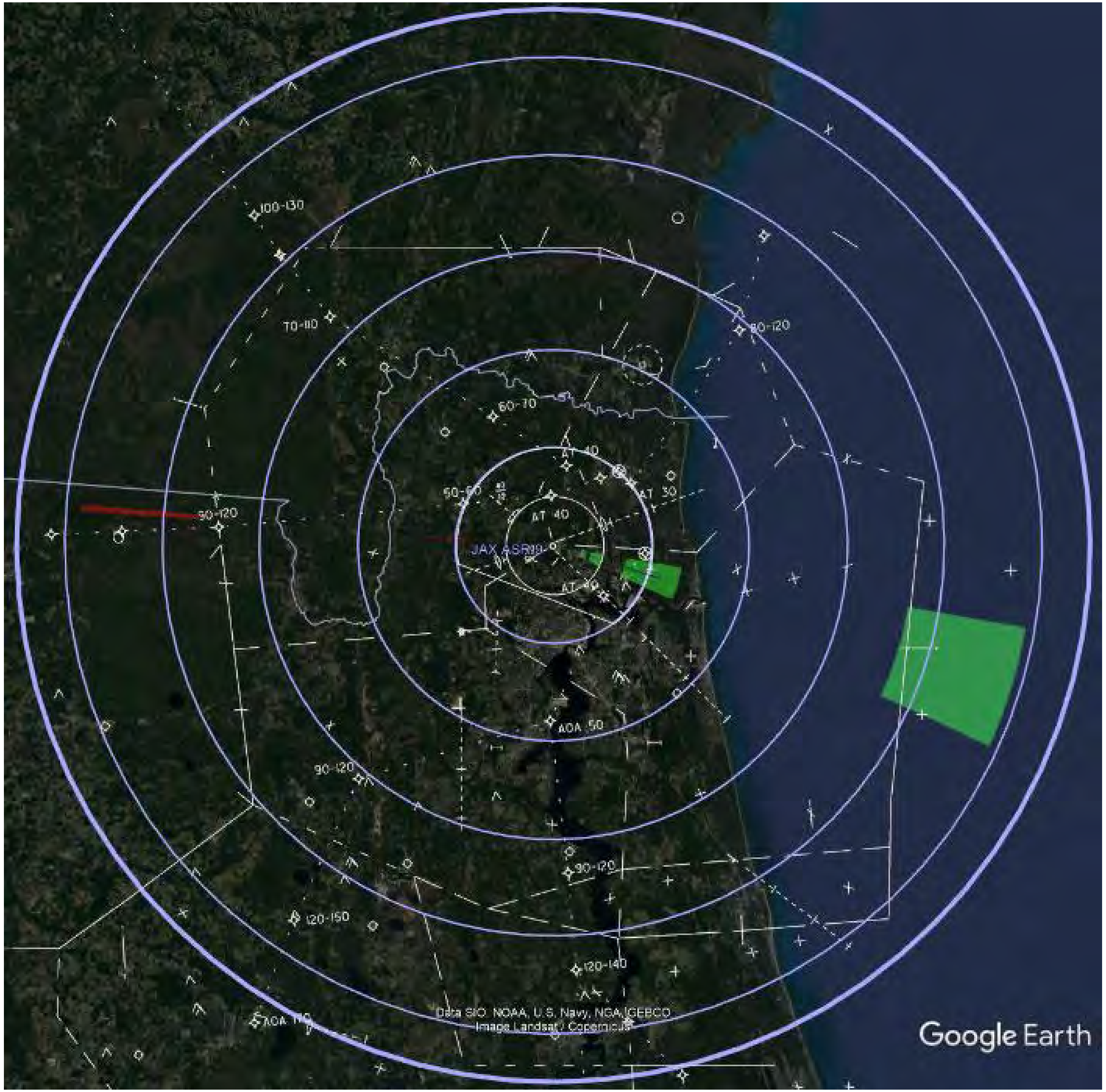
RSS BSAT Analysis: 60 NM Range 2500 to 3K FT MSL



JAX-CONC_sh_r10.rcs
Terminal B Expansion
Building Only

Front & Side
Windows Tilted 10°

FIGURE 48

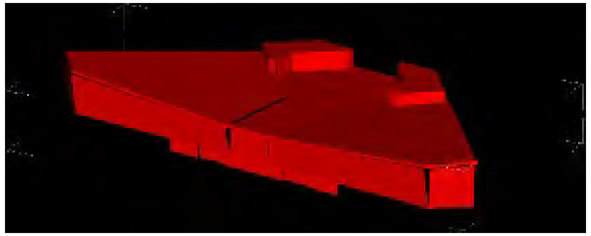


Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

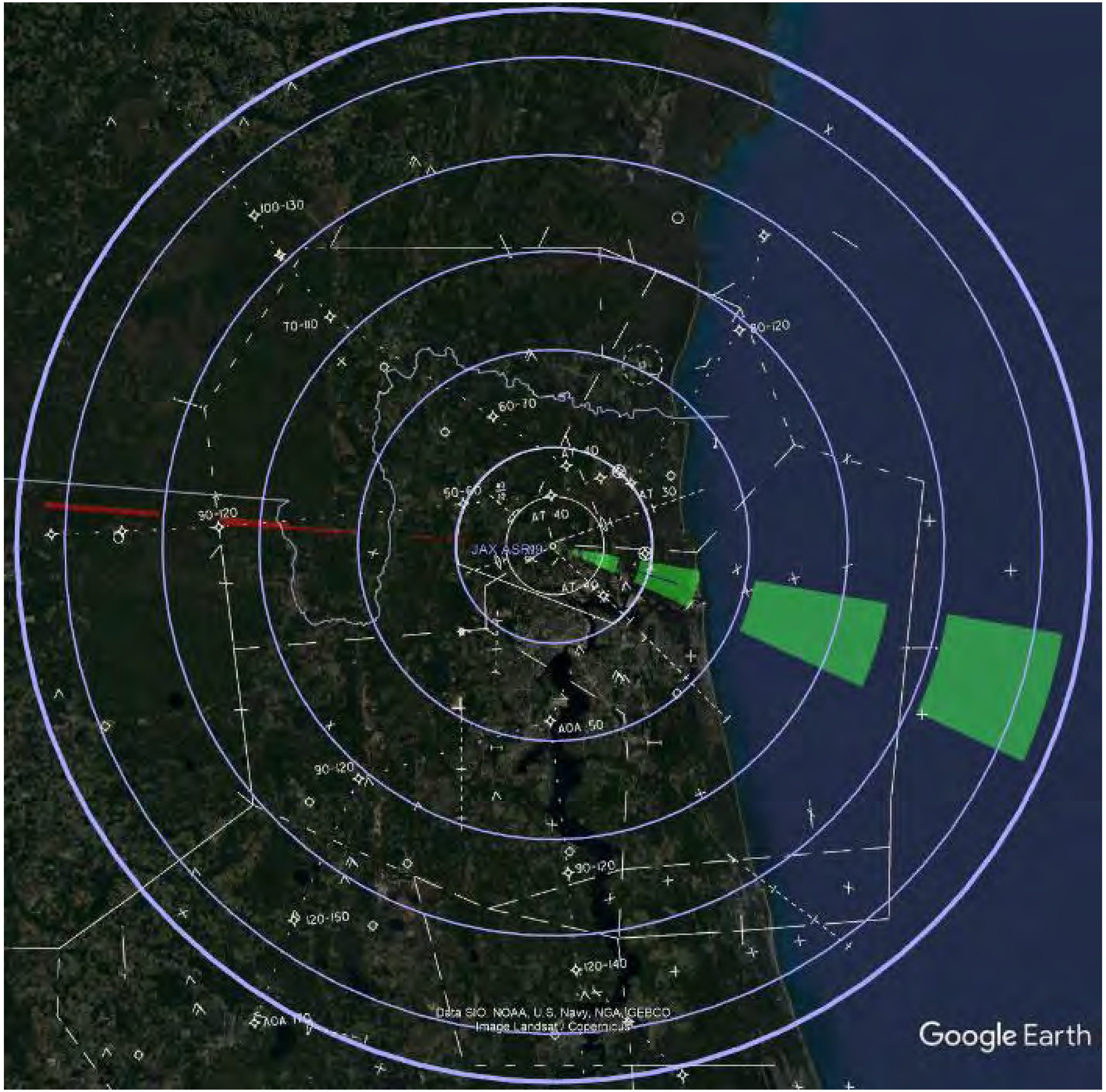
INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
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 3K to 3500 FT MSL



JAX-CONC_sh_r10.rcs
Terminal B Expansion
Building Only

Front & Side Windows Tilted 10°



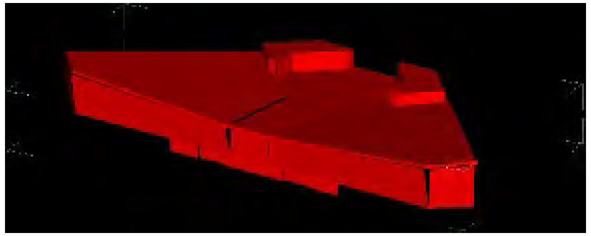
Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

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)

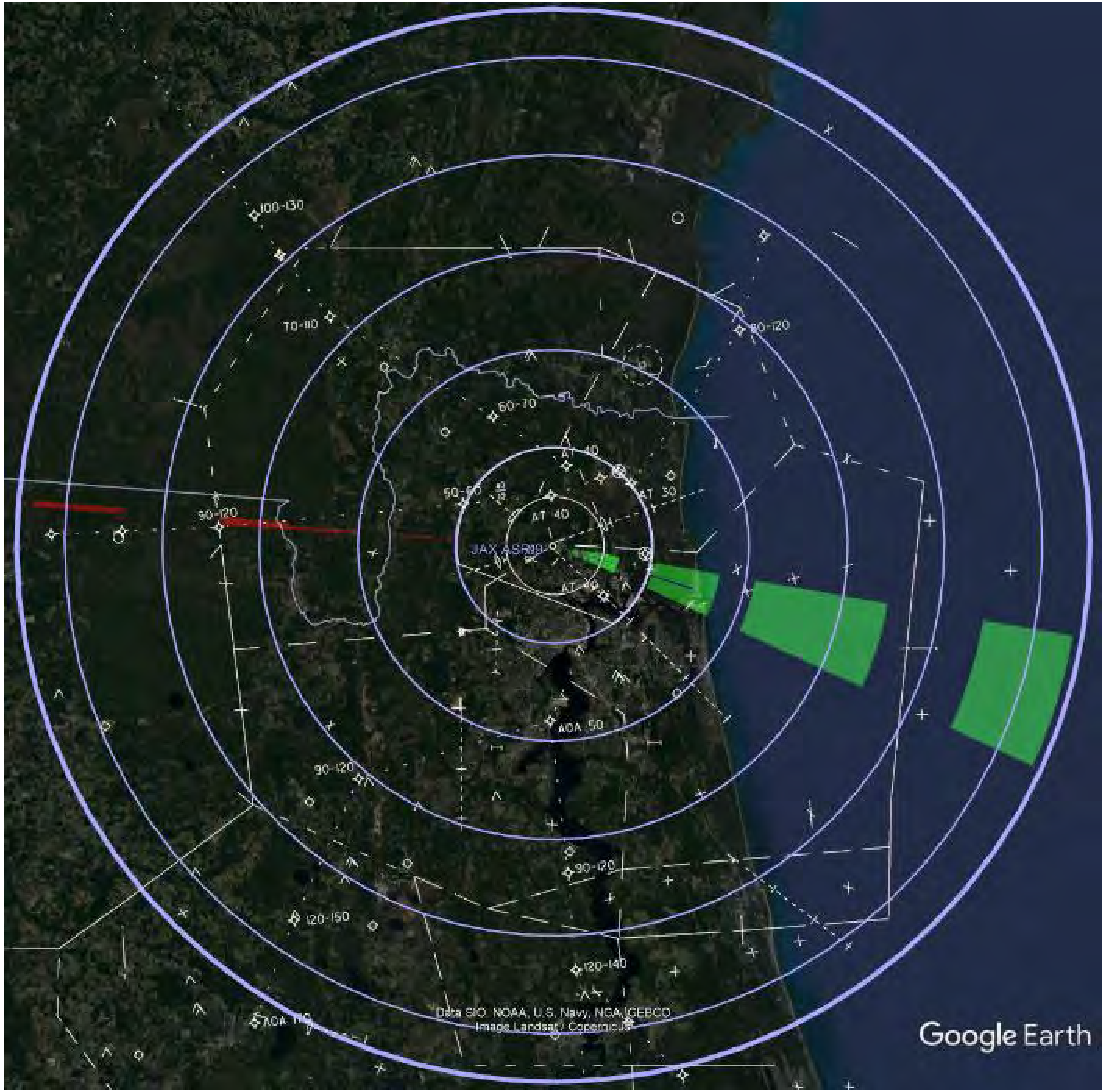
FIGURE 49

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°



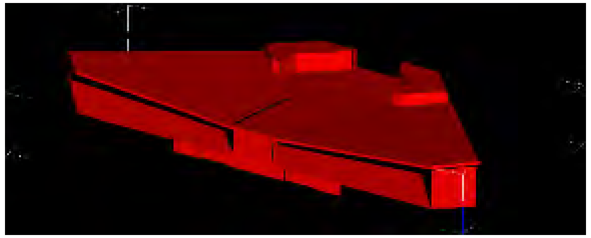
Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

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 50

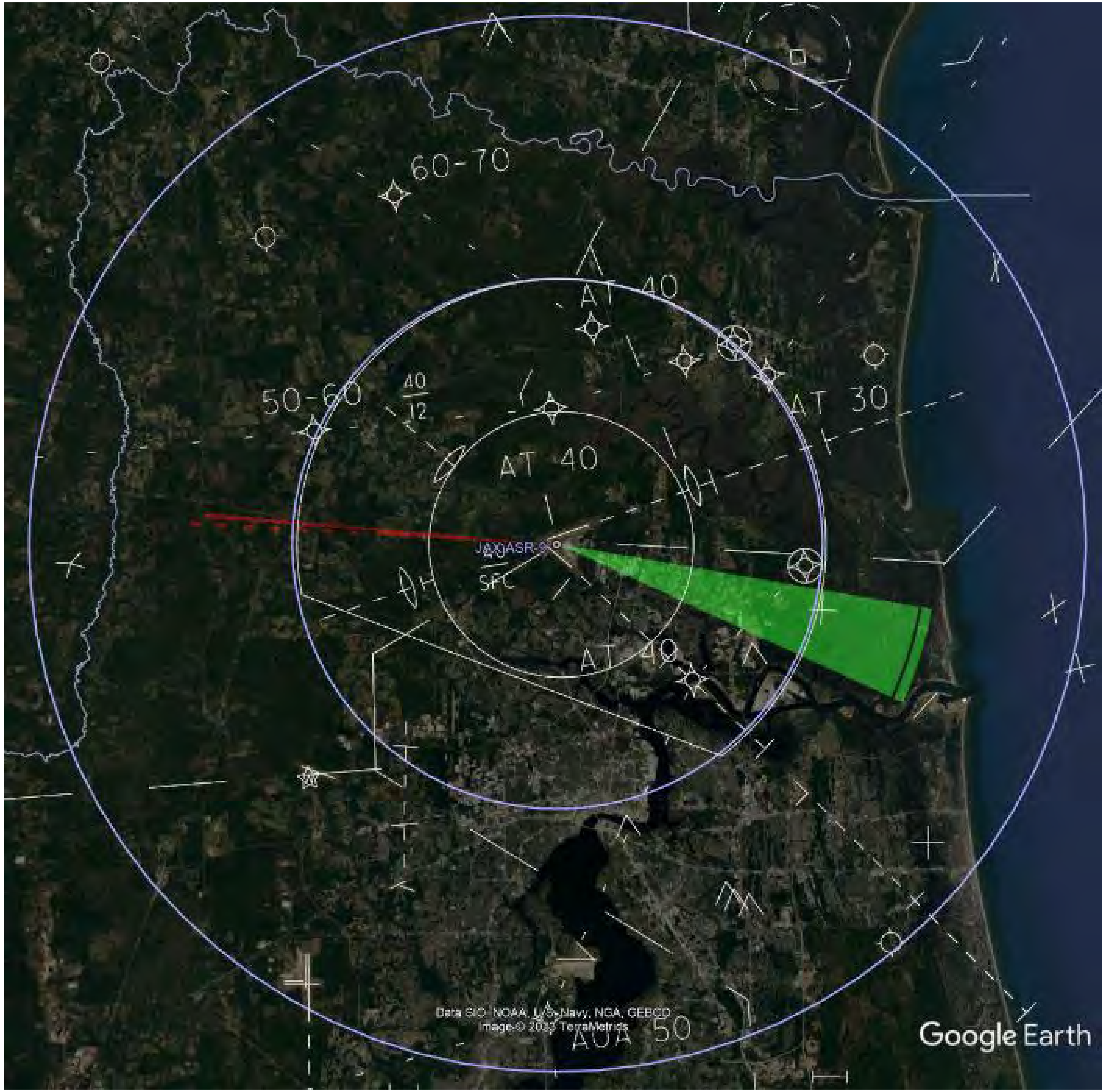
RSS BSAT Analysis: 20 NM Range 50 to 250 FT MSL



JAX-CONC_sh_r20.rcs
Terminal B Expansion
Building Only

Side Windows Tilted 10°
Front Windows Tilted 20°

FIGURE 51

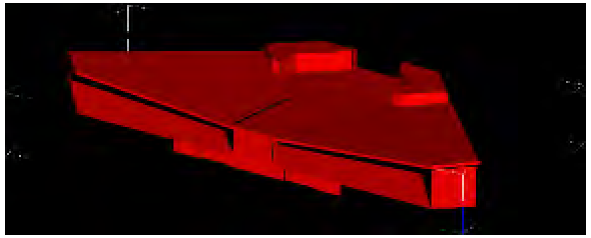


Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

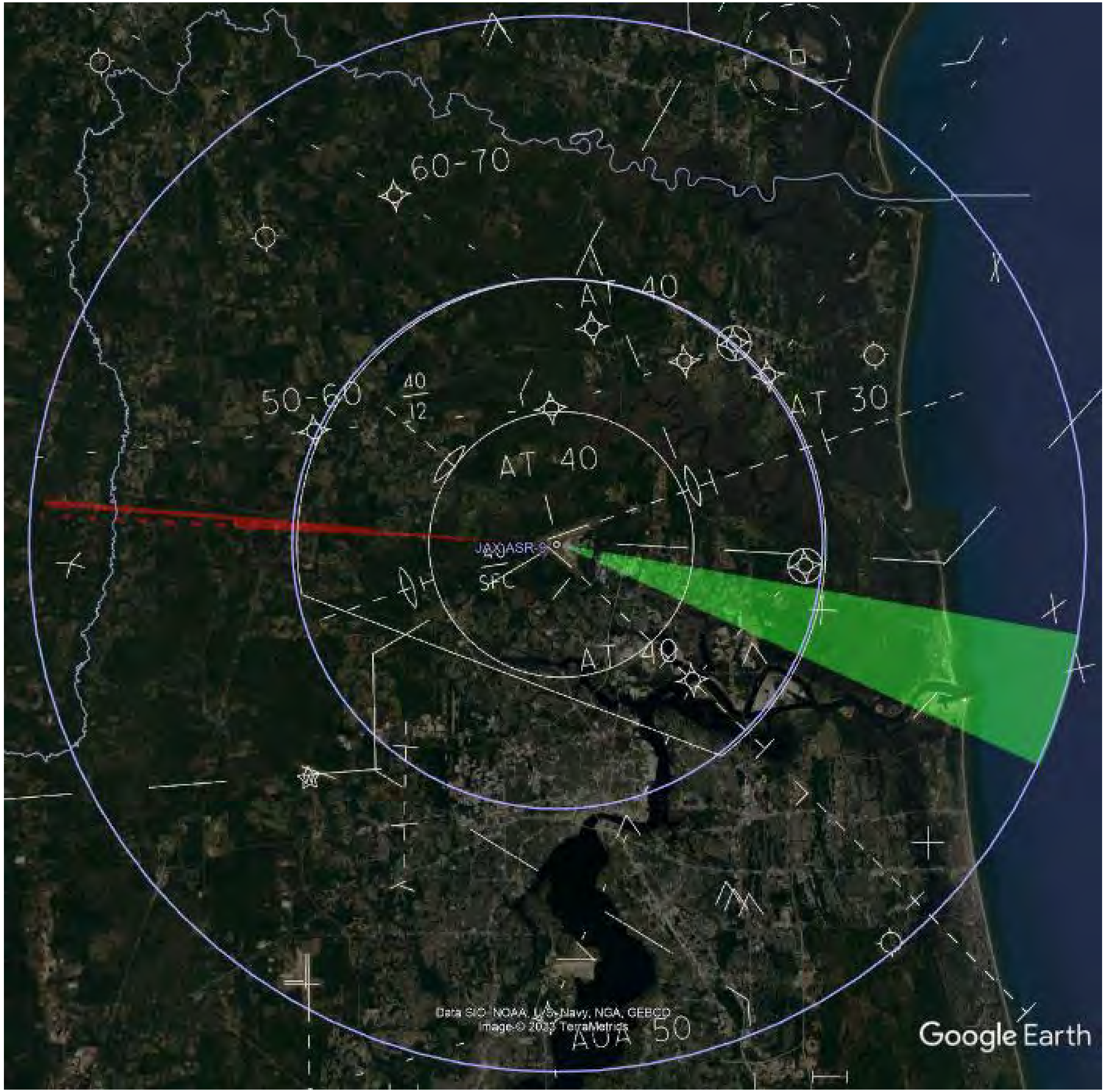
INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
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°



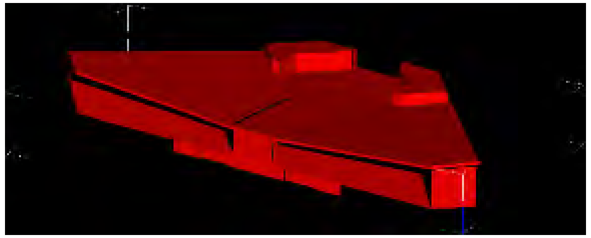
Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

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 52

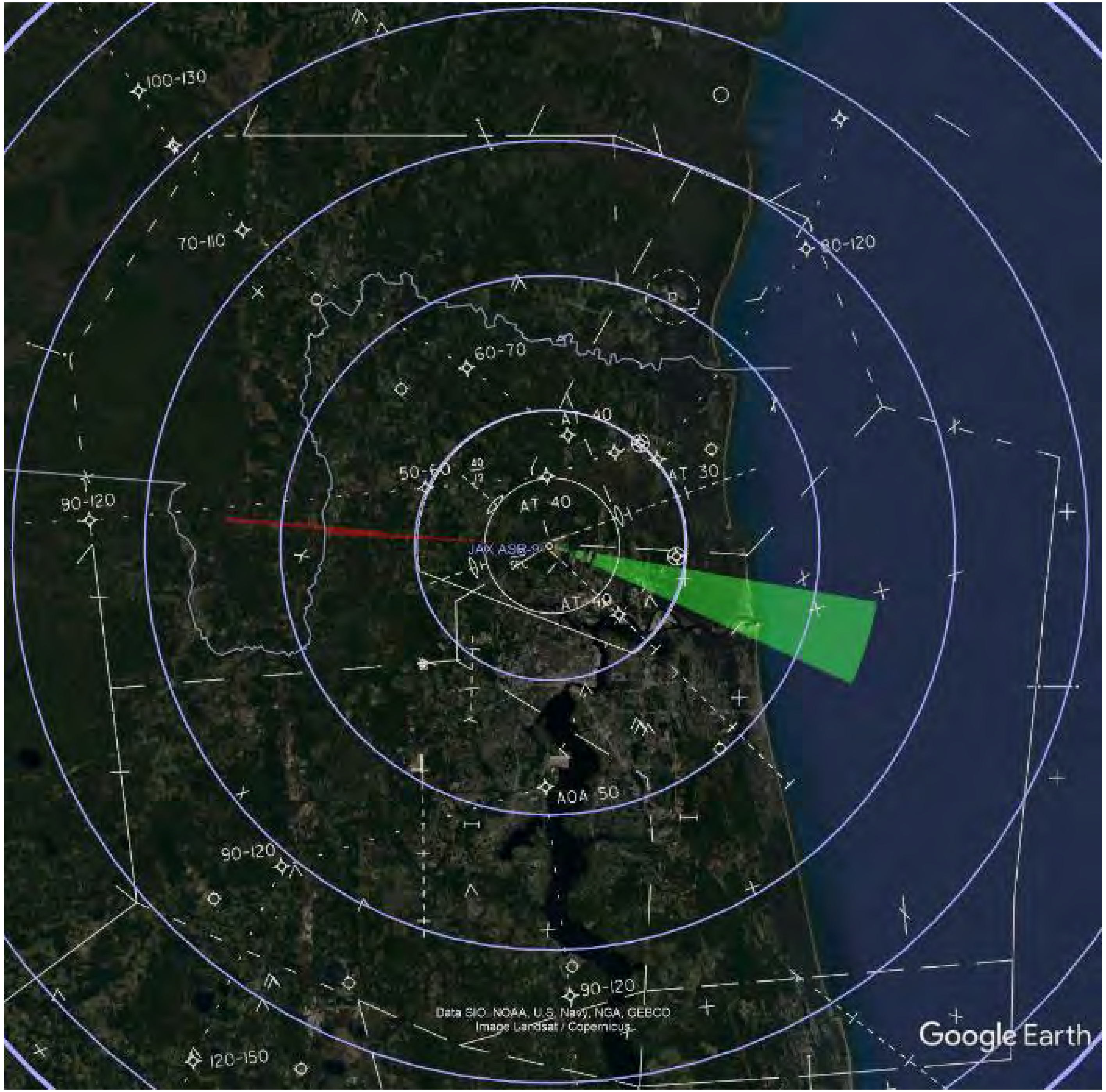
RSS BSAT Analysis: 40 NM Range 500 to 750 FT MSL



JAX-CONC_sh_r20.rcs
Terminal B Expansion
Building Only

Side Windows Tilted 10°
Front Windows Tilted 20°

FIGURE 53

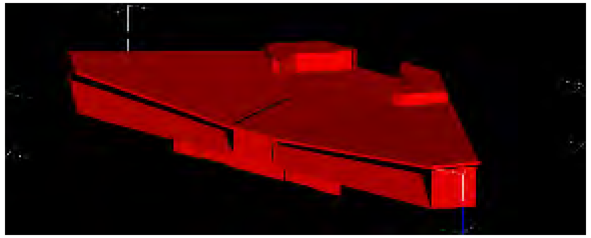


Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

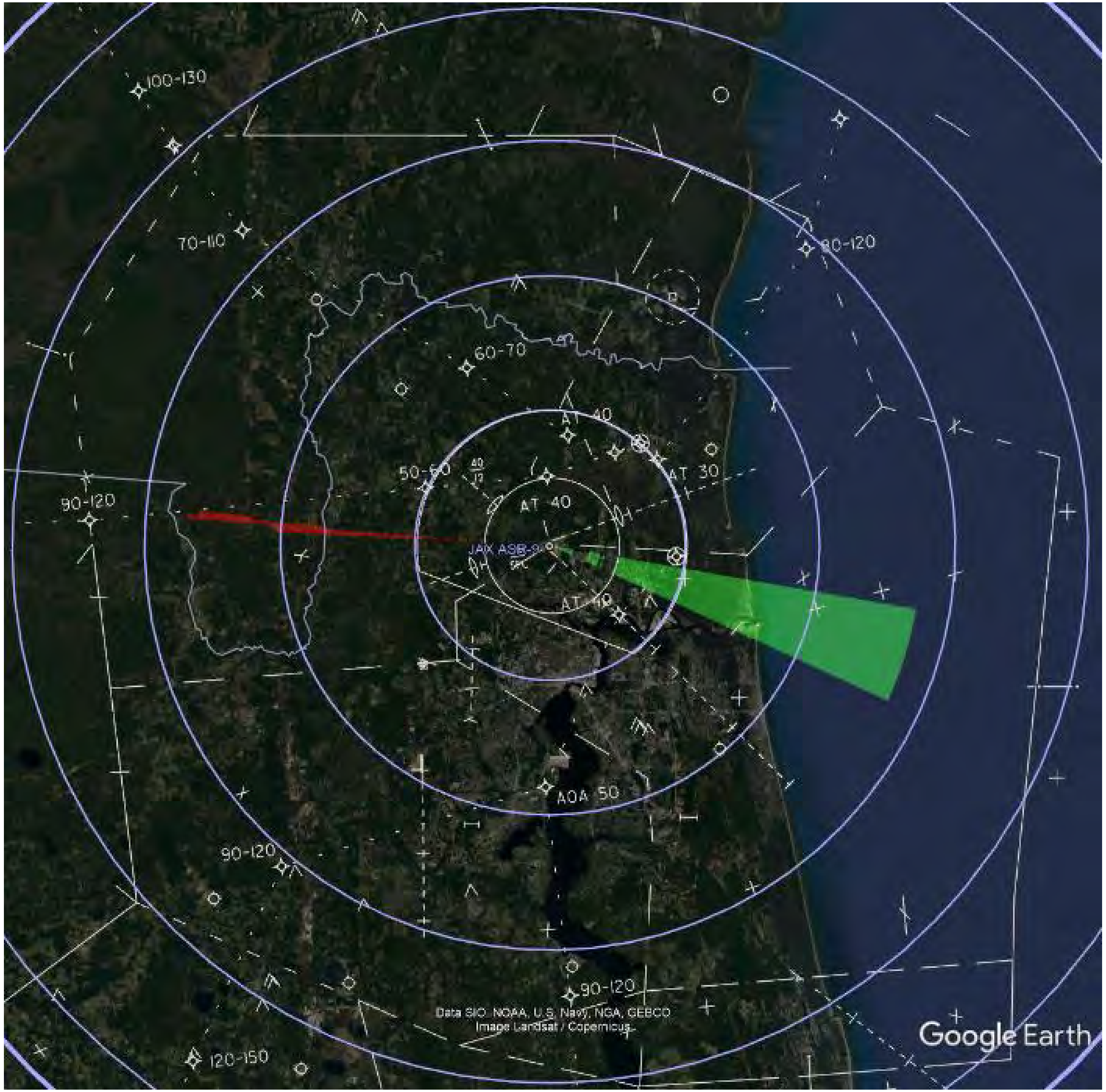
INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
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_r20.rcs
Terminal B Expansion
Building Only

Side Windows Tilted 10°
Front Windows Tilted 20°



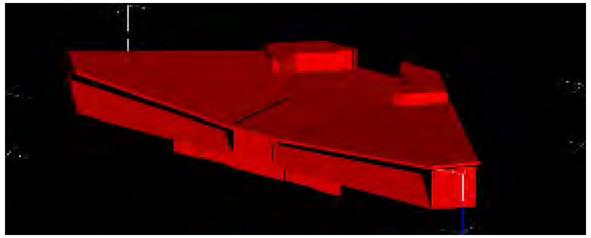
Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

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)

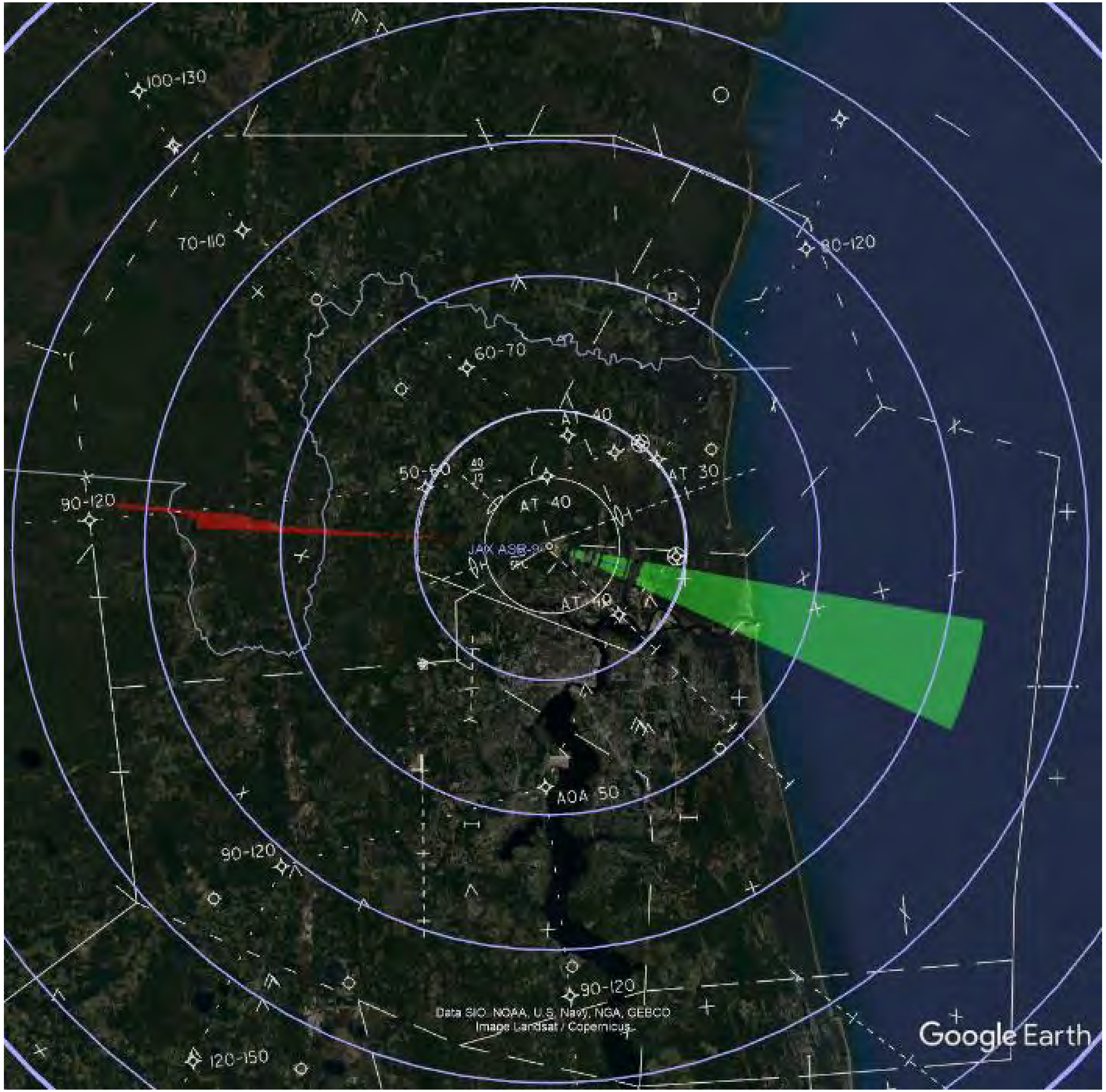
FIGURE 54

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°



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

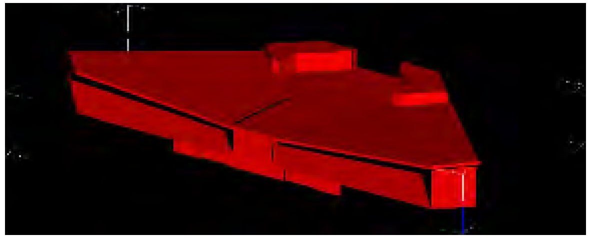
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
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 55

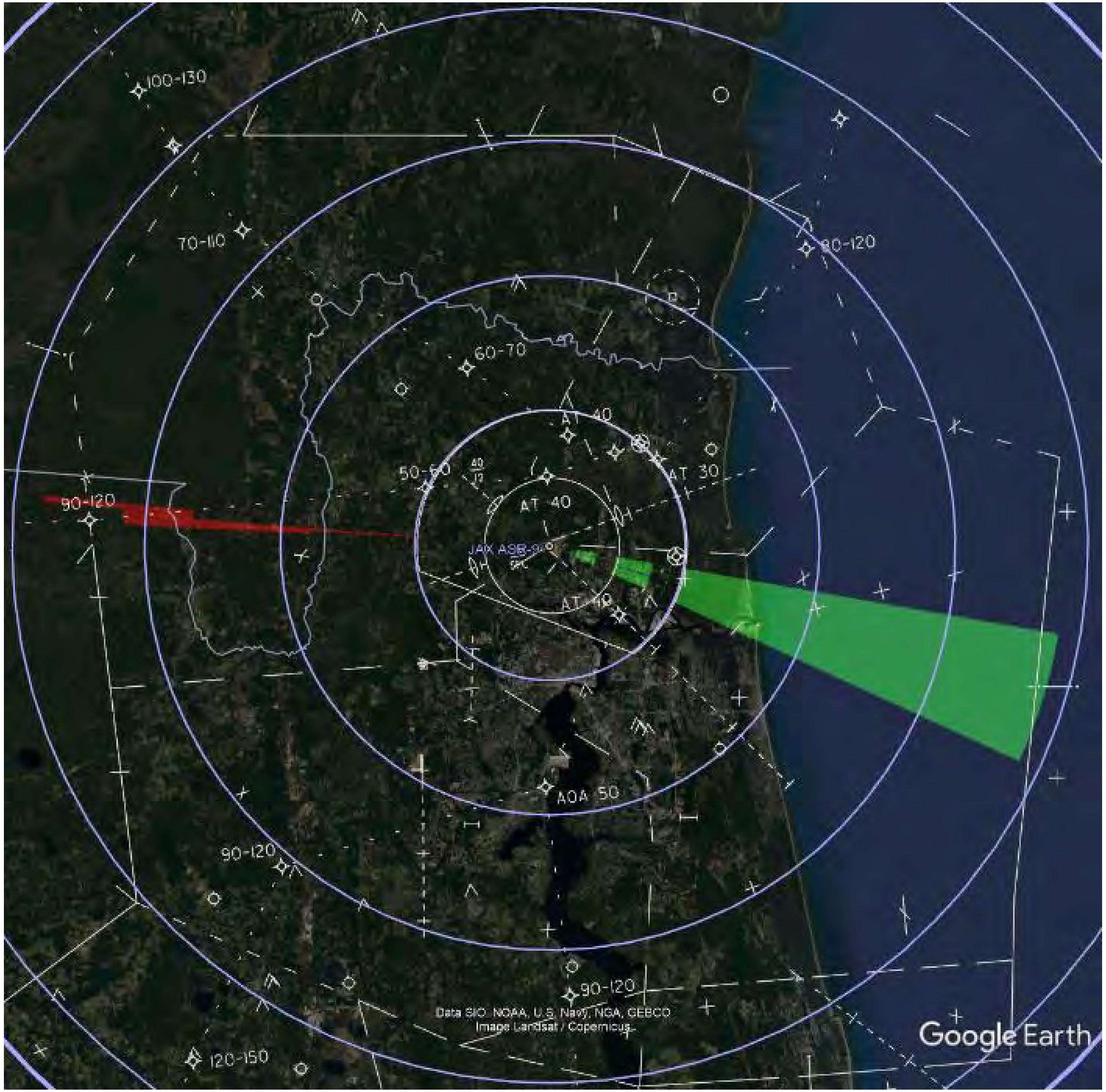
RSS BSAT Analysis: 40 NM Range 1500 to 2K FT MSL



JAX-CONC_sh_r20.rcs
Terminal B Expansion
Building Only

Side Windows Tilted 10°
Front Windows Tilted 20°

FIGURE 56

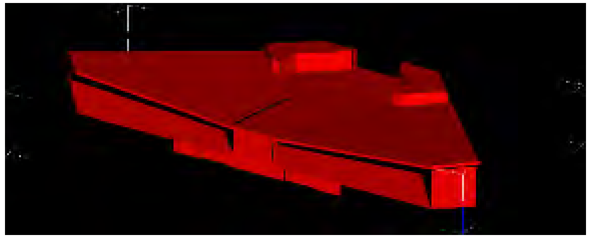


Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

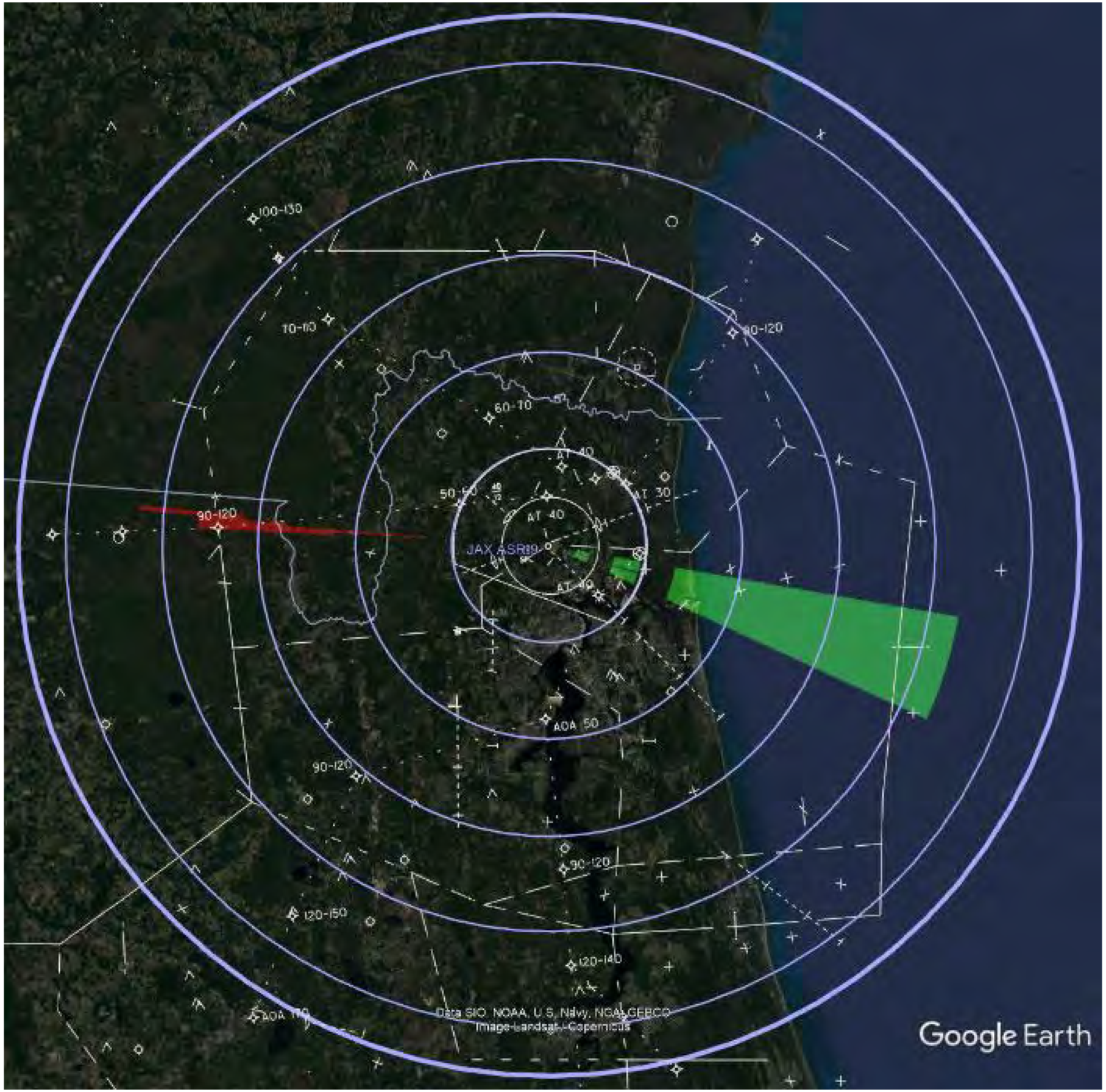
INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
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°



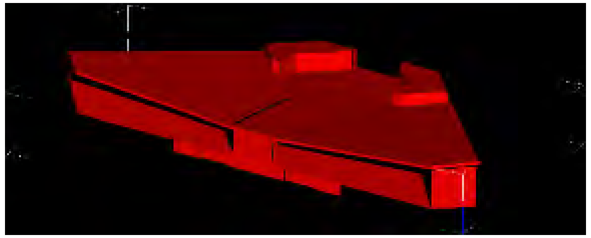
Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

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 57

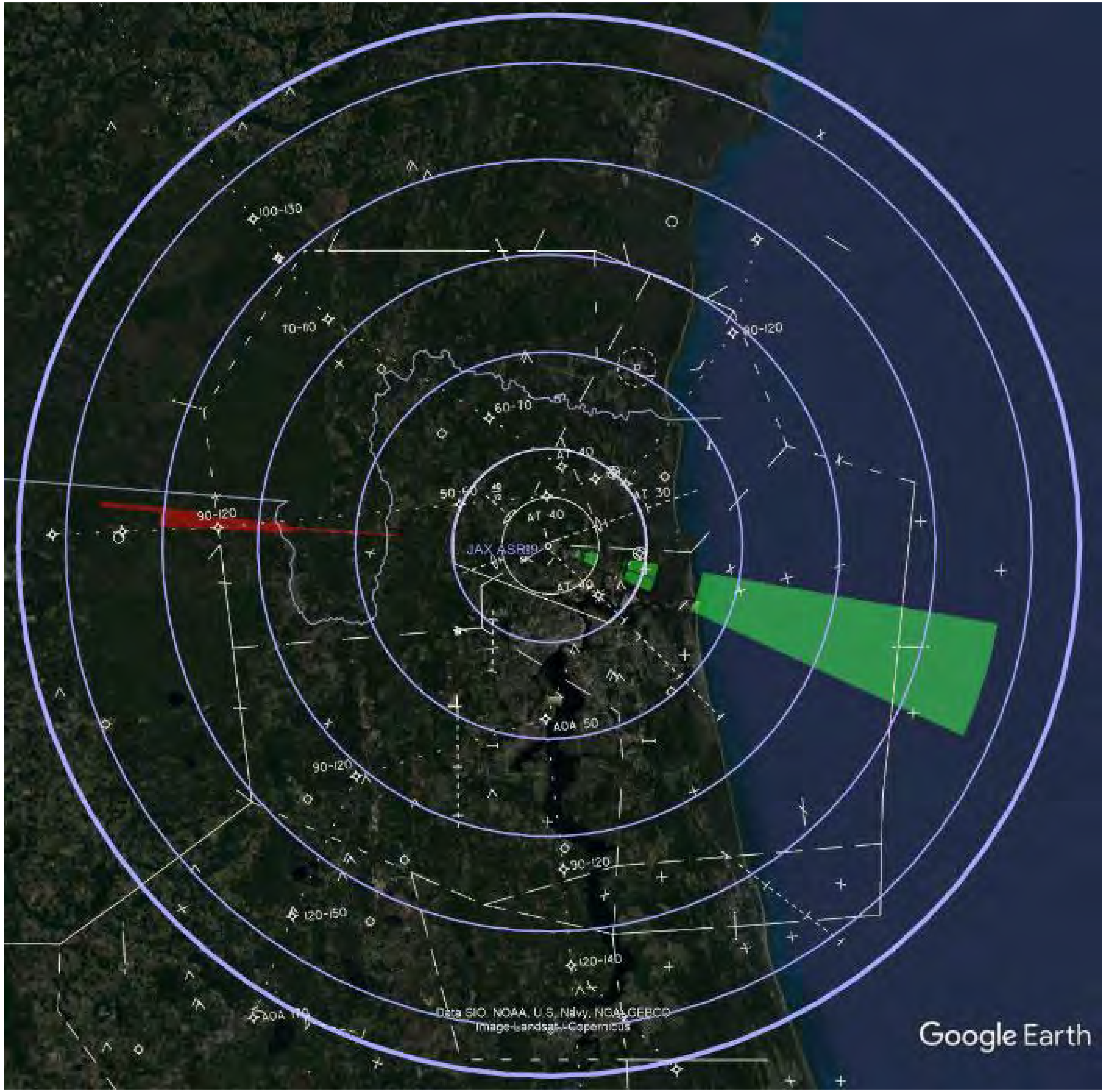
RSS BSAT Analysis: 60 NM Range 2500 to 3K FT MSL



JAX-CONC_sh_r20.rcs
Terminal B Expansion
Building Only

Side Windows Tilted 10°
Front Windows Tilted 20°

FIGURE 58

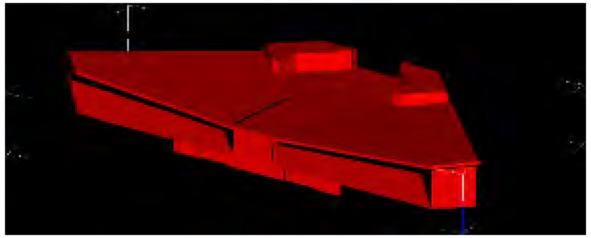


Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

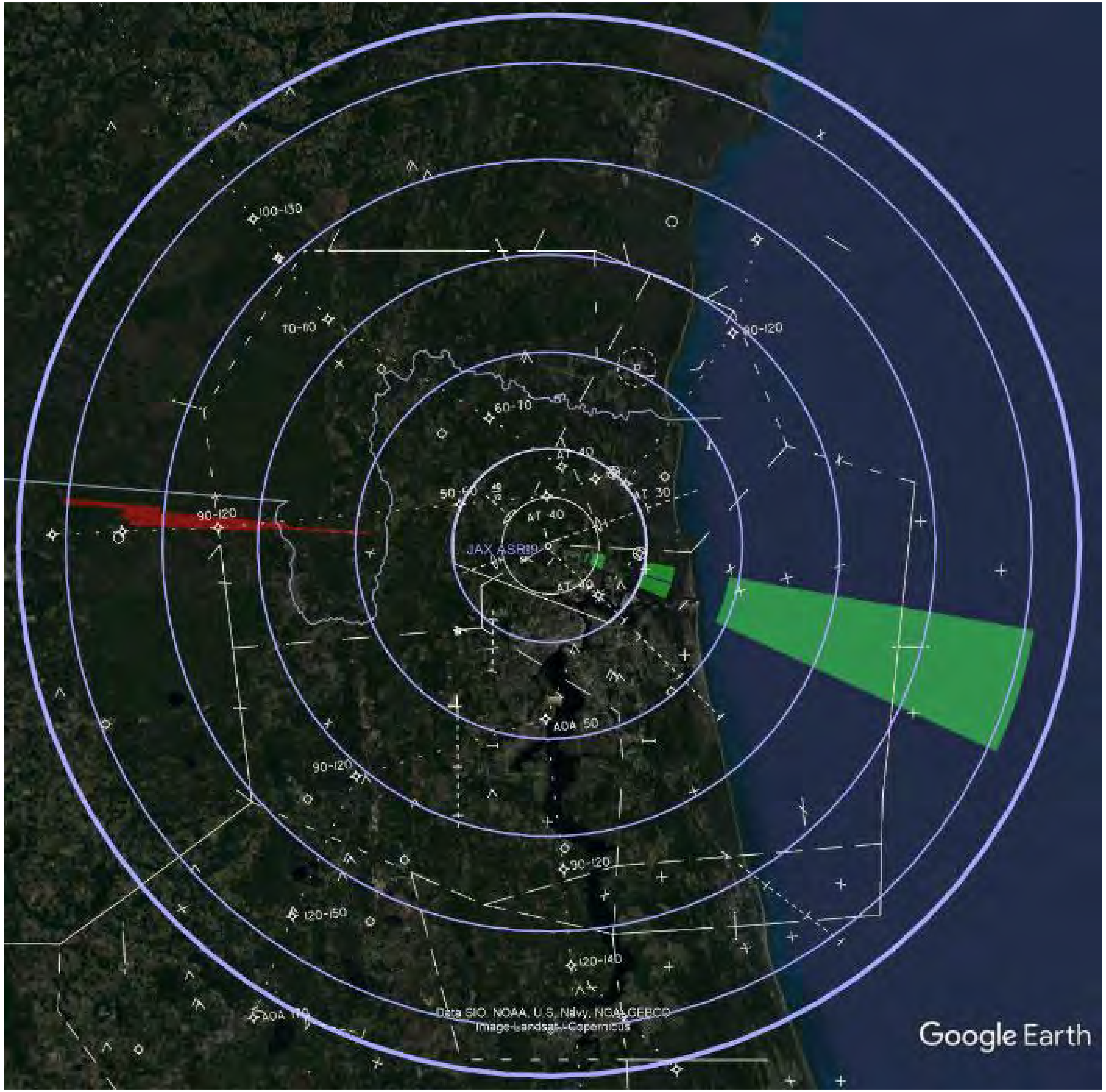
INTERROGATOR PARAMETERS	
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
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°



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

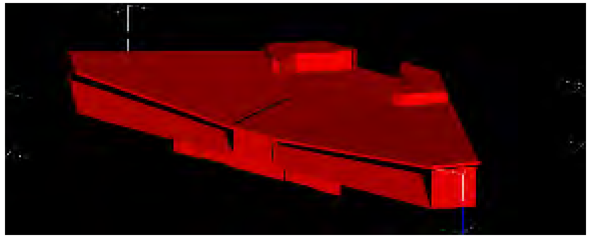
Peak Transmit Power	200.0 (W)
Receiver Bandwidth	9.0 (MHz)
Receiver System Loss	9.5 (dB)
Receiver Noise Figure	7.9 (dB)
Minimum Detectable Signal	-80.0 (dBm)
Elevation Pattern	ATCRBS_open_array
Elevation Tilt Angle	0.0 (deg)
Ant. Rotation Rate	12.5 (rpm)
Pulse Length	0.80 (usec)
Vertical Polarization	
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 59

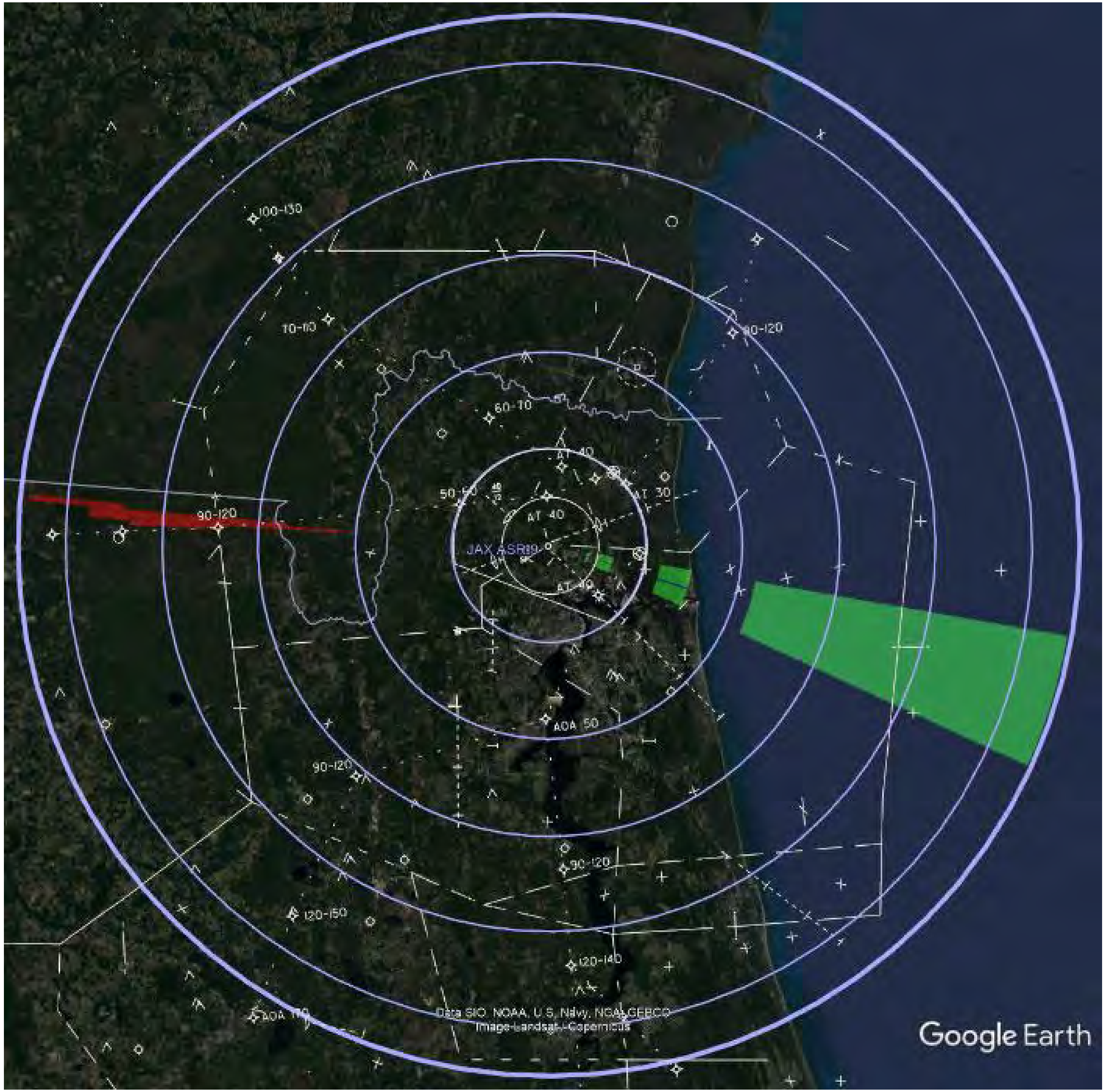
RSS BSAT Analysis: 60 NM Range 3500 to 4K FT MSL



JAX-CONC_sh_r20.rcs
Terminal B Expansion
Building Only

Side Windows Tilted 10°
Front Windows Tilted 20°

FIGURE 60



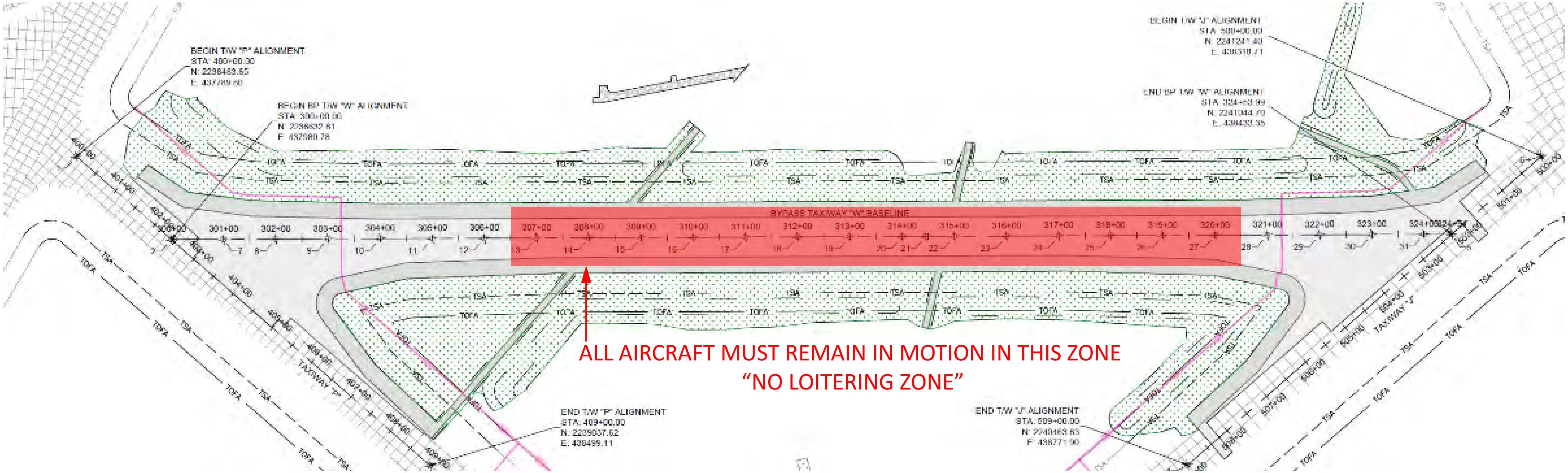
Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

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)

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	2238632.81	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' 24.28"	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	438109.88	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' 32.12"	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' 28.85"	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
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
767 400ER
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

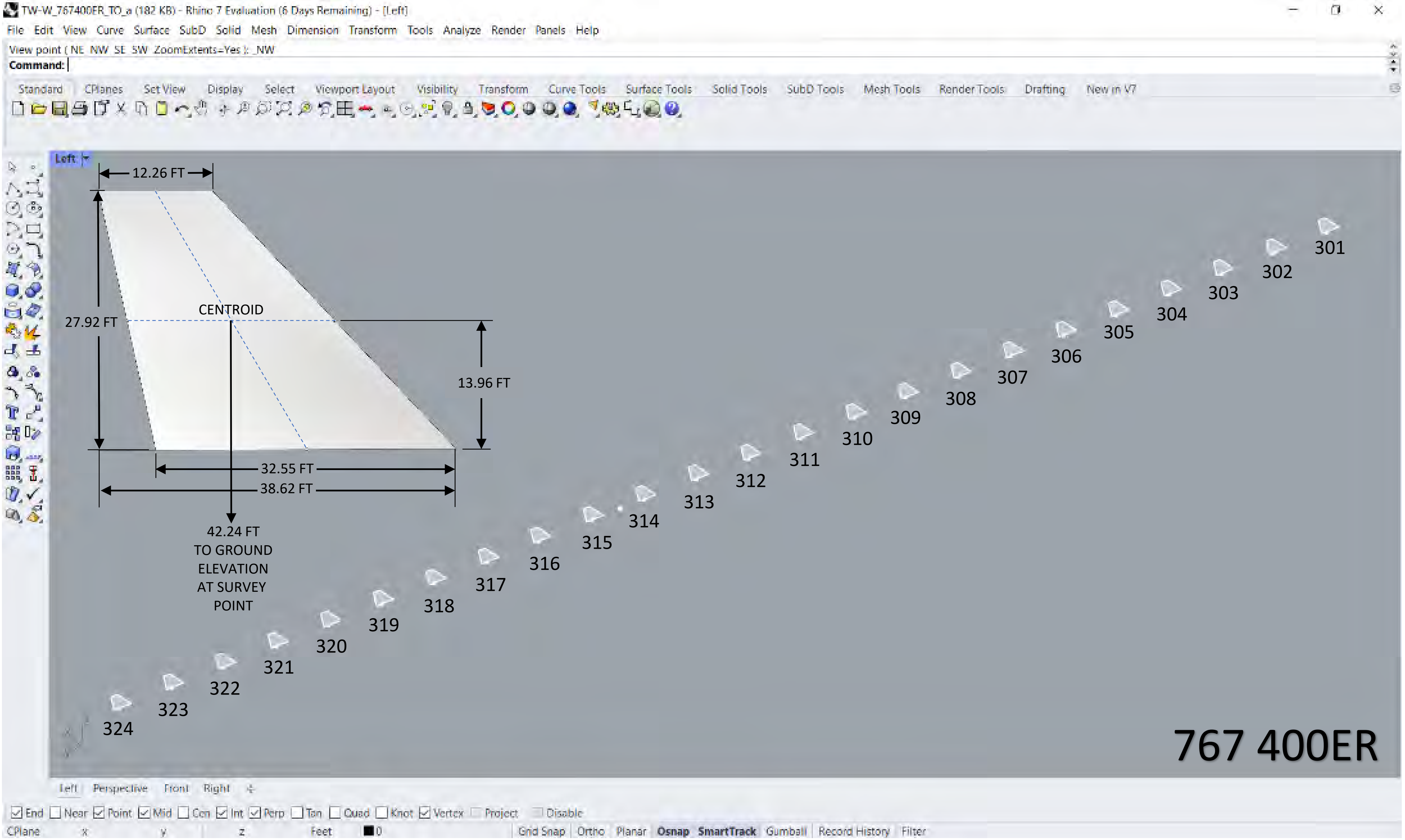

TW-W_767400ER_TO_a (182 KB) - Rhino 7 Evaluation (6 Days Remaining) - [Left]
File Edit View Curve Surface SubD Solid Mesh Dimension Transform Tools Analyze Render Panels Help
View point (NE NW SE SW ZoomExtents=Yes): _NW
Command:
Standard CPlanes Set View Display Select Viewport Layout Visibility Transform Curve Tools Surface Tools Solid Tools SubD Tools Mesh Tools Render Tools Drafting New in V7
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
Left Perspective Front Right
End Near Point Mid Cen Int Perp Tan Quad Knot Vertex Project Disable
CPlane x y z Feet 0 Grid Snap Ortho Planar Osnap SmartTrack Gumball Record History Filter

FIGURE 66

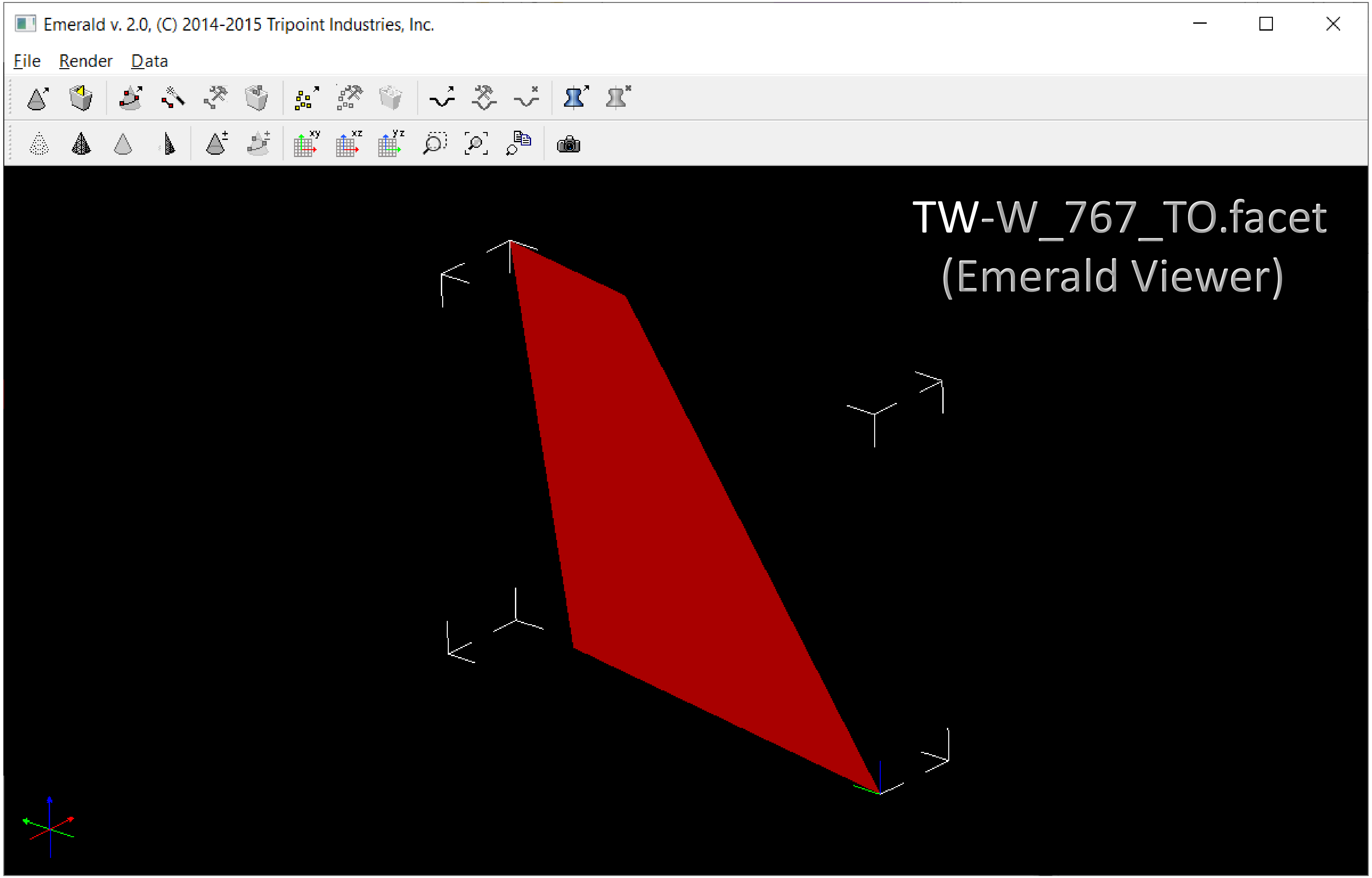

Emerald v. 2.0, (C) 2014-2015 Tripoint Industries, Inc.
File Render Data
TW-W_767_TO.facet
(Emerald Viewer)

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			

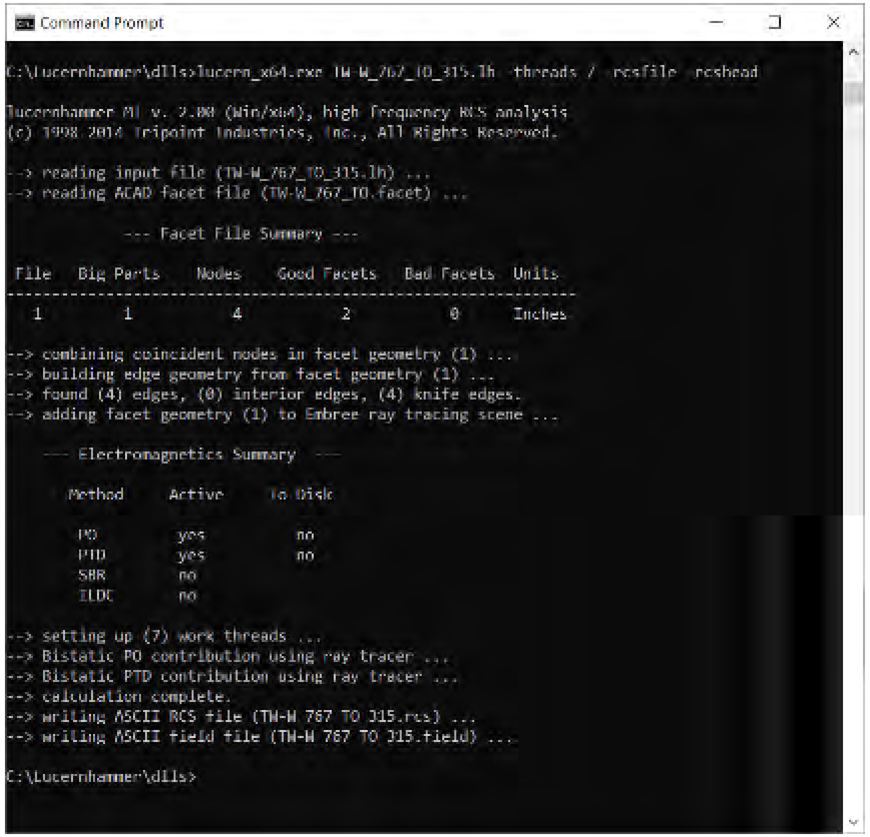
<u>RSS Context File Information (*.con)</u>

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)



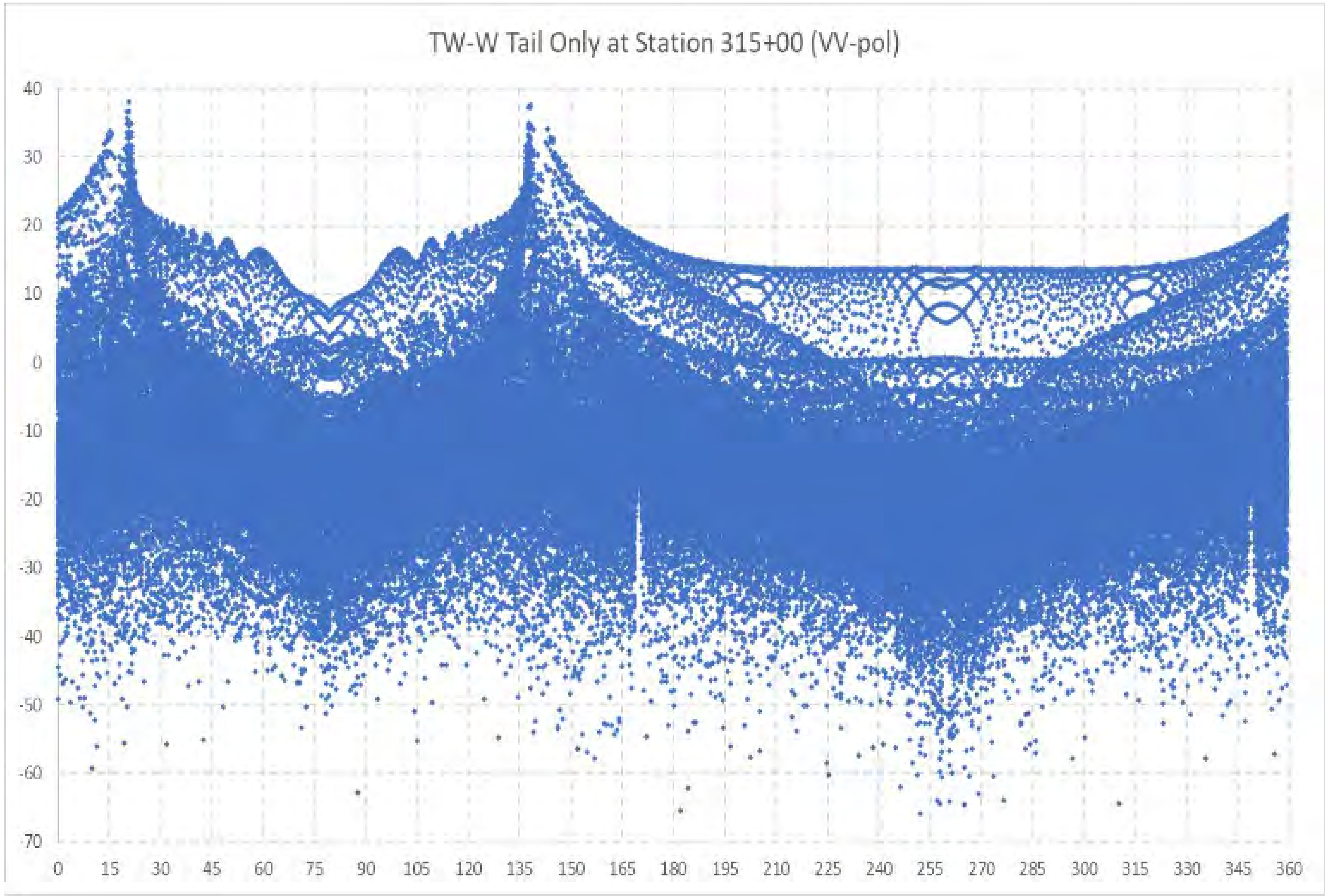


FIGURE 69

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)

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 71

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)

FIGURE 73

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_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)

FIGURE 75

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 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

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 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)

FIGURE 78

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:
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	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 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)

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 85

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

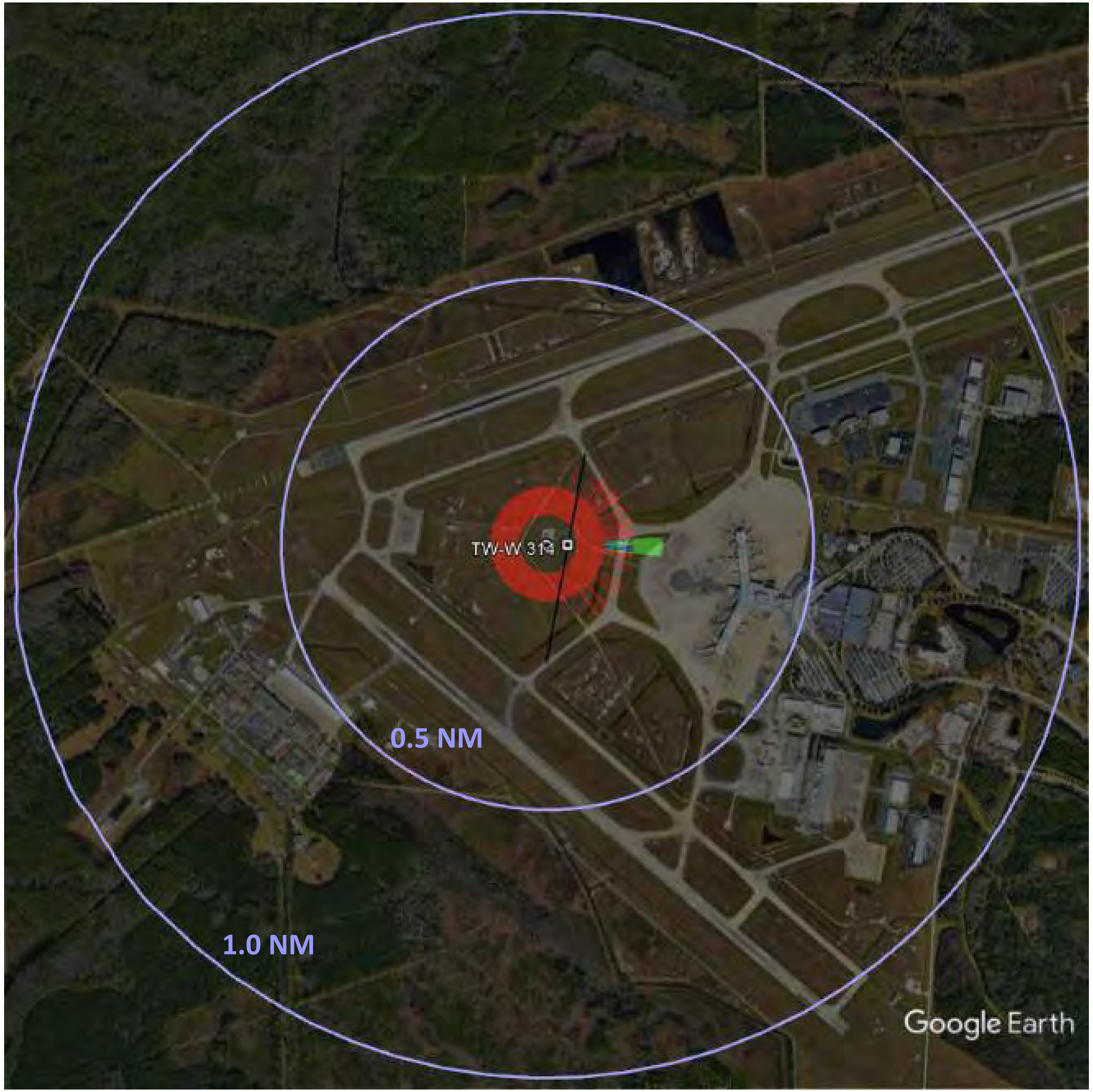
LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

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	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 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

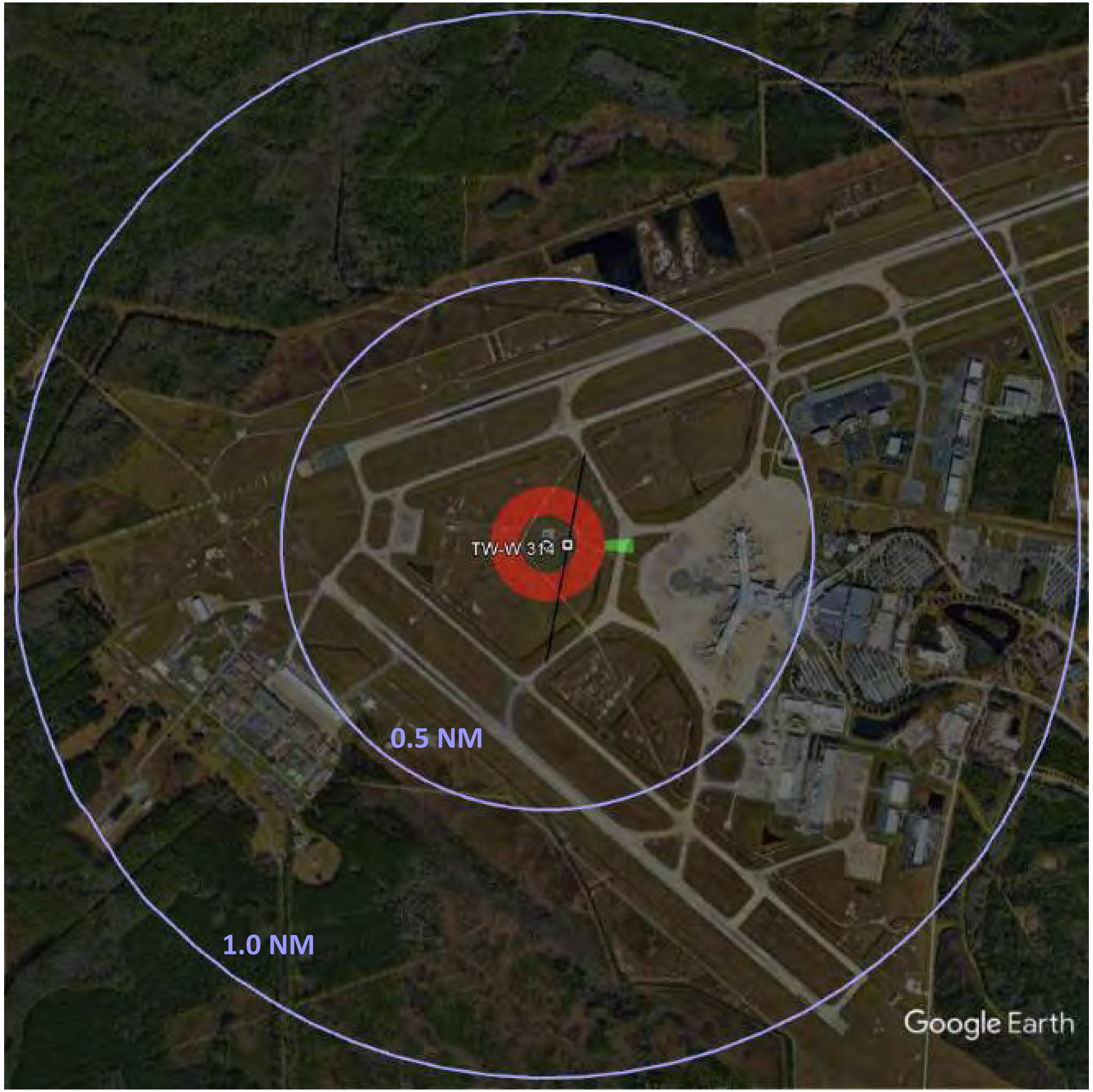
LEGEND
- Multiple
- Mode Change Return
- Mode Change Source
- Inline Return
- Inline Source
- False Target Return
- False Target Source

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

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 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)

FIGURE 89

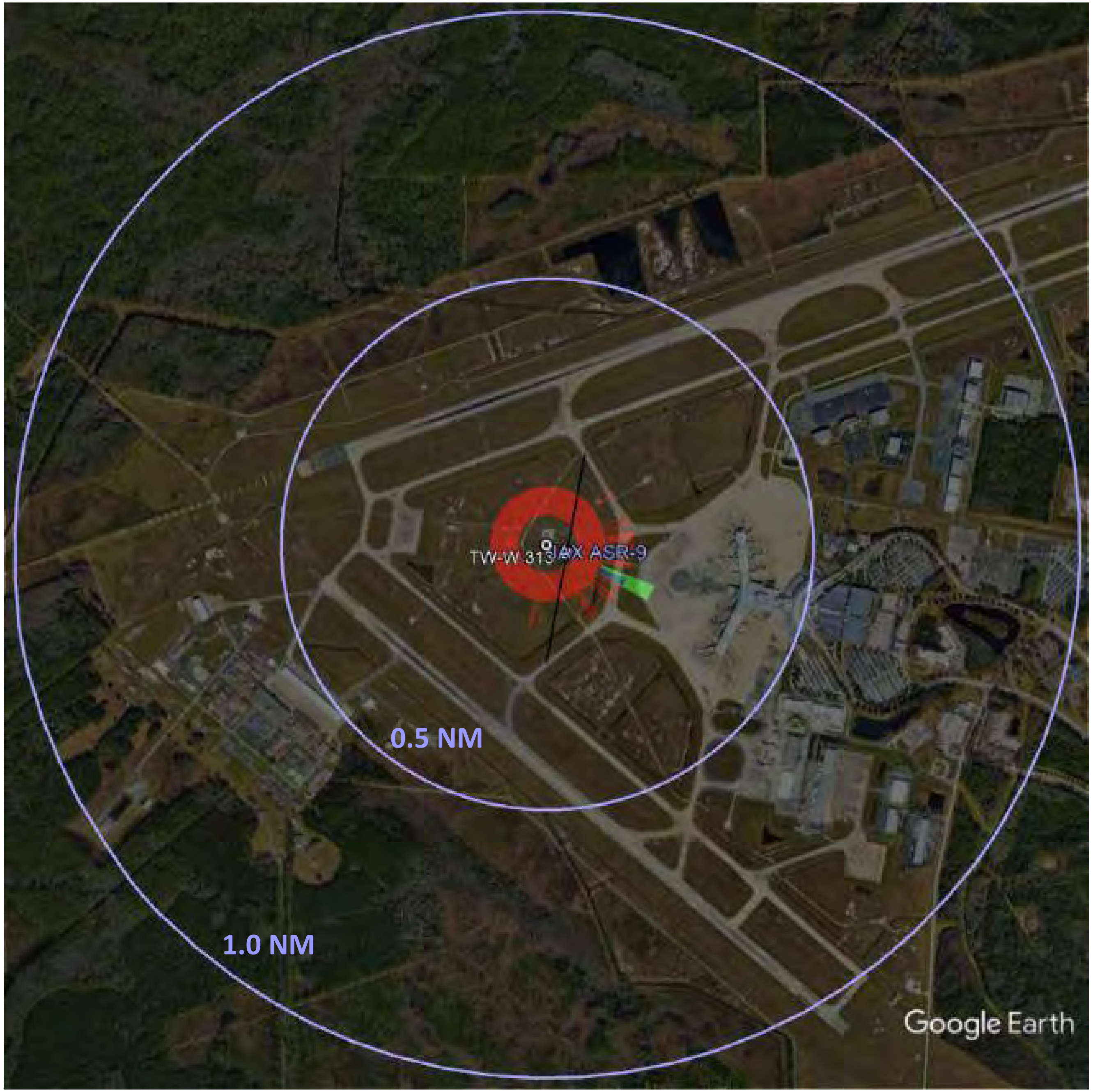
Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

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 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

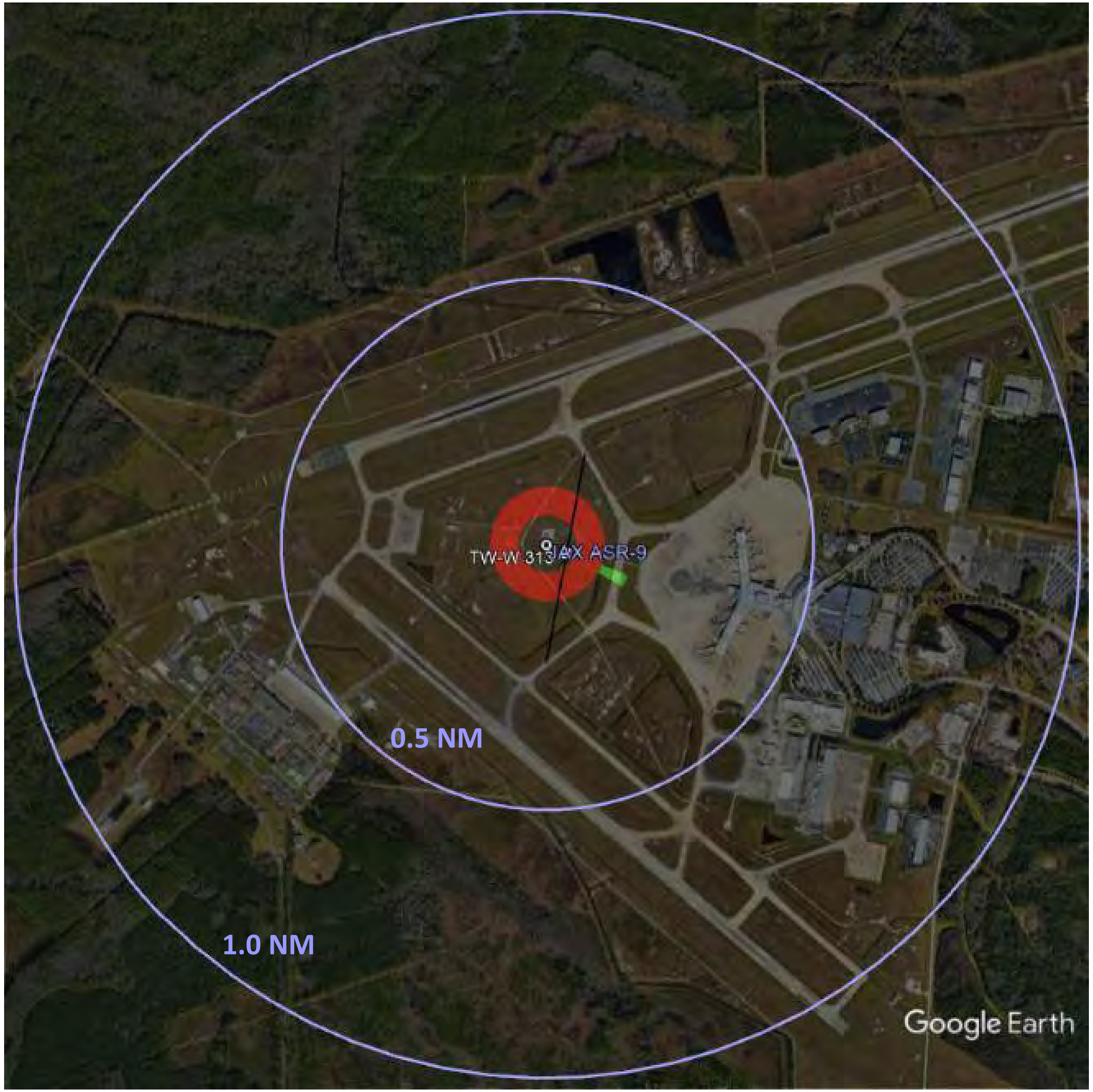
LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

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)



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 91

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)

FIGURE 93

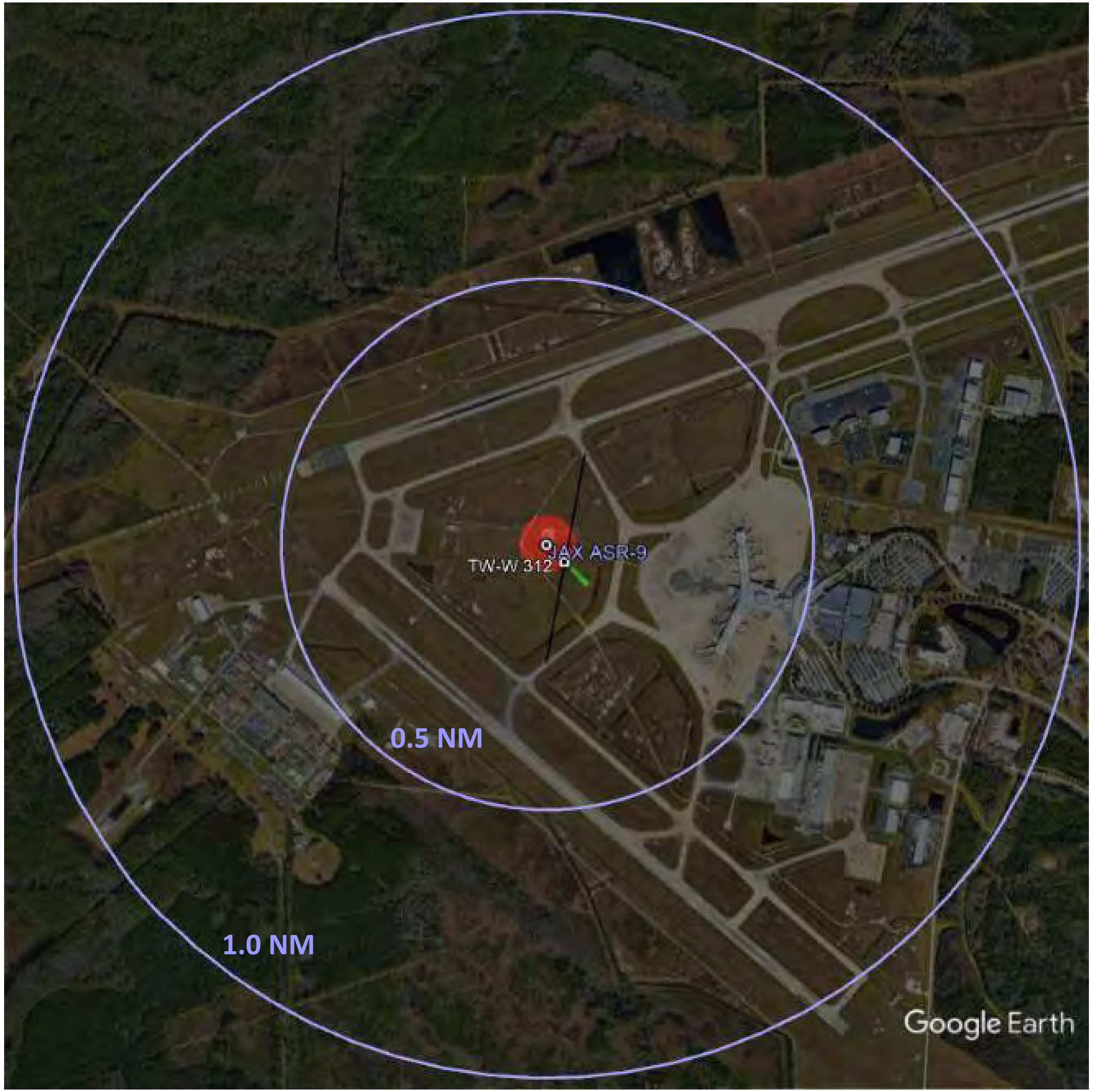
Position Name: JAX ASR9/Mode S
Latitude: 30:29:35.97
Longitude: -81:41:33.61
Beacon Height MSL: 92.3 FT
Beacon Height AGL: 63.6 FT

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
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)

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 95

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

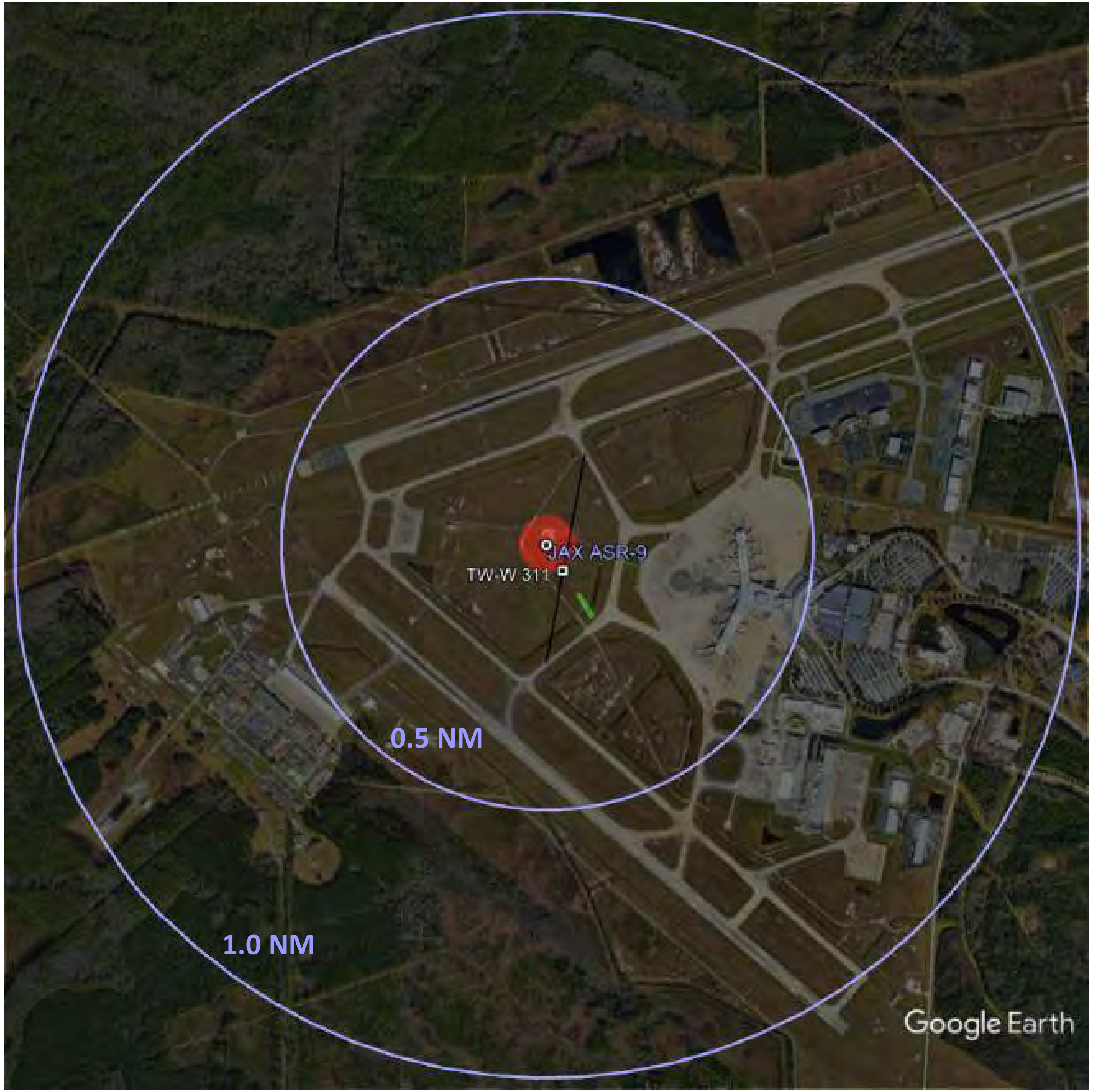
LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

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

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 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

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

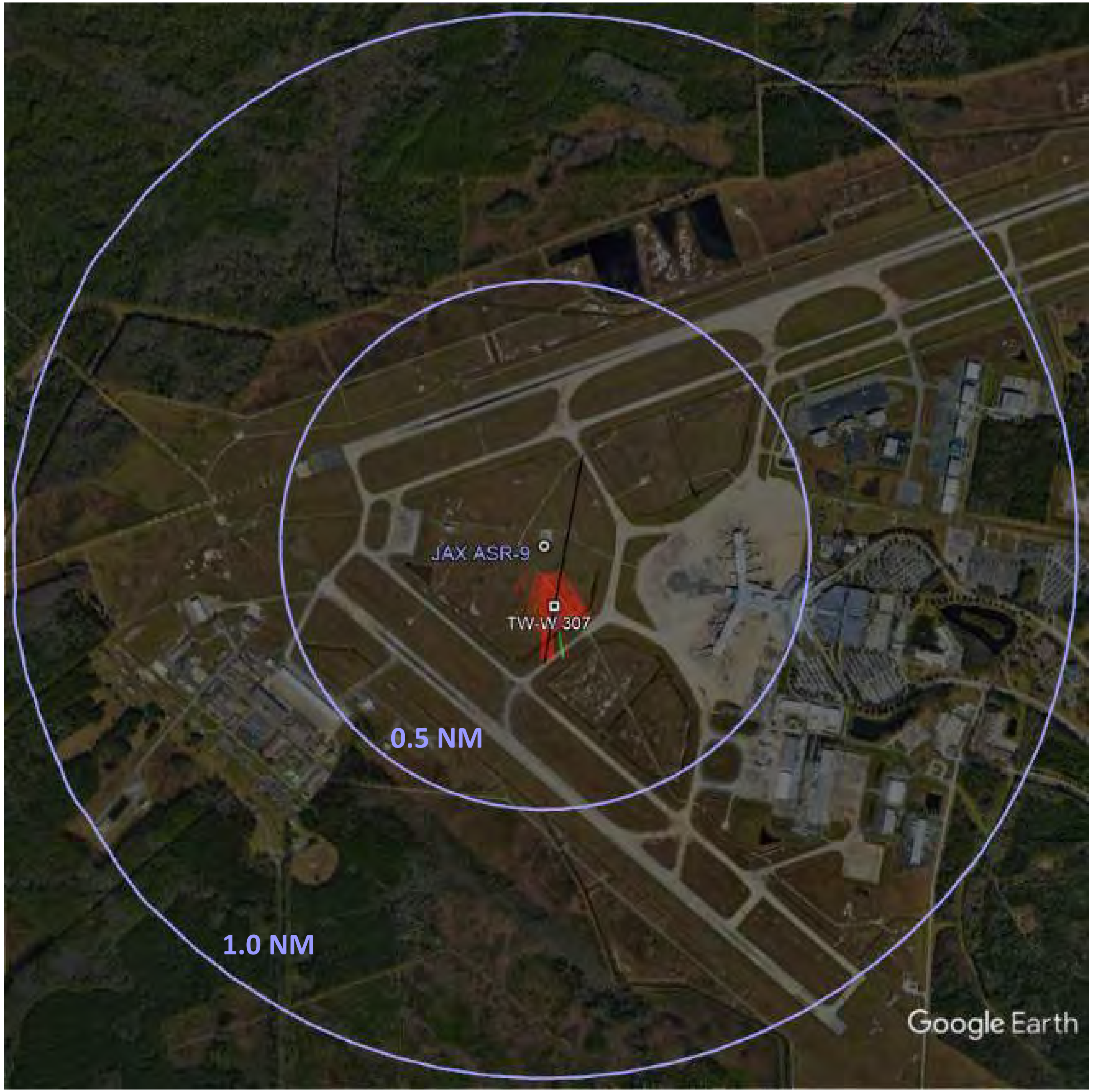
LEGEND
Multiple
Mode Change Return
Mode Change Source
Inline Return
Inline Source
False Target Return
False Target Source

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)



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 104

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

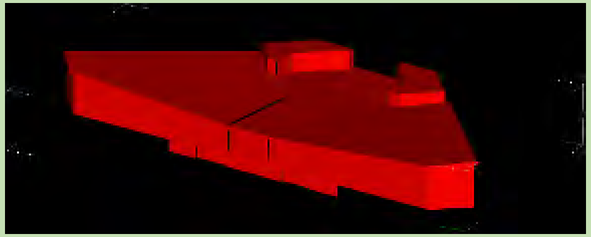
FIGURE 113

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)

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*

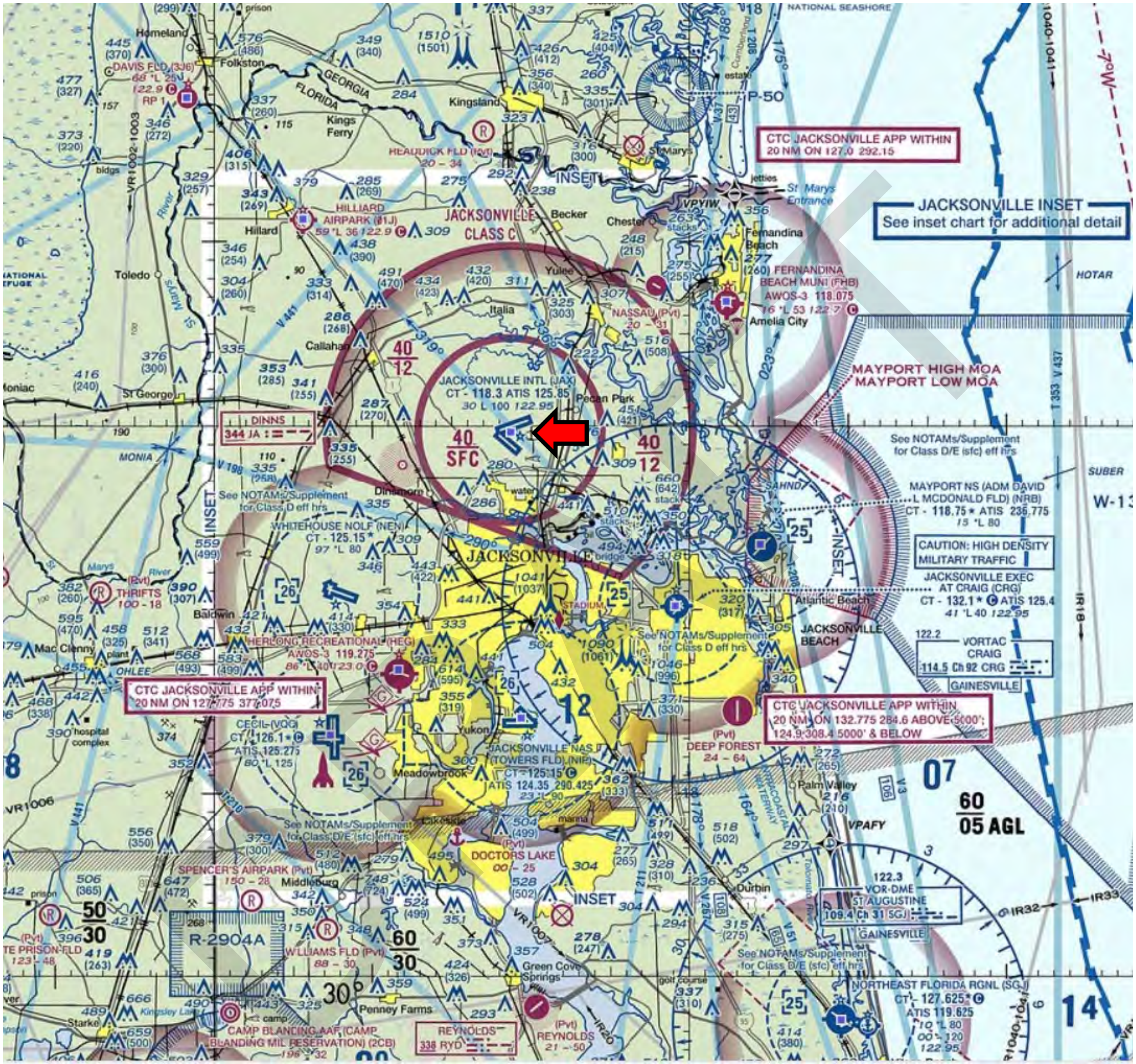


Figure 2-1: VFR Terminal Chart Source: https://aeronav.faa.gov (Jacksonville – Effective 30 Nov 2023)

2.4 *Airport Diagram*

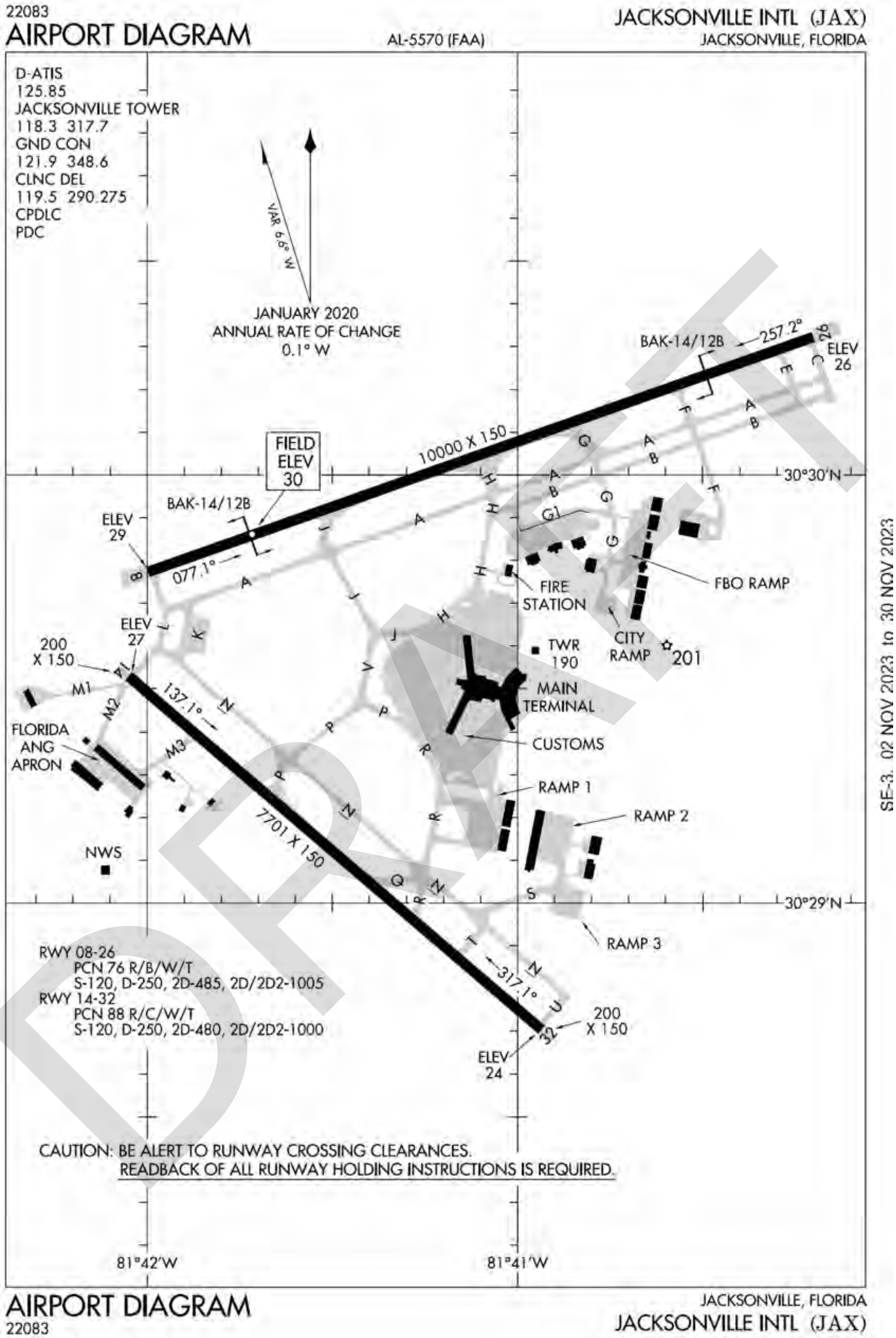


Figure 2-2: Airport Diagram – Jacksonville Int'l Airport
Source: https://nfdc.faa.gov/ Effective Nov 02, 2023

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

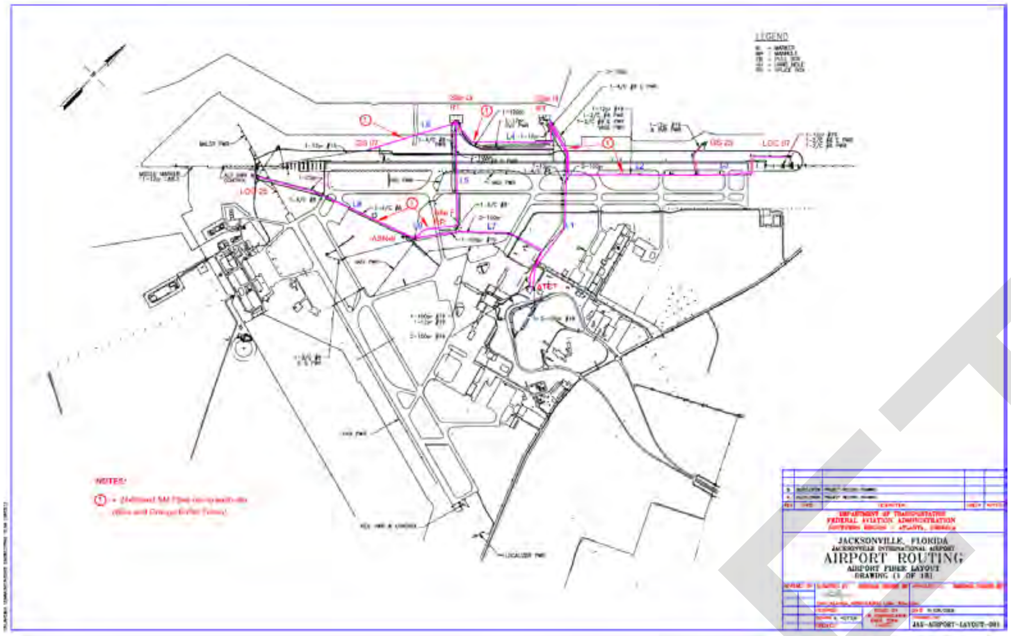
3.3 *Existing Communications Issues*

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.

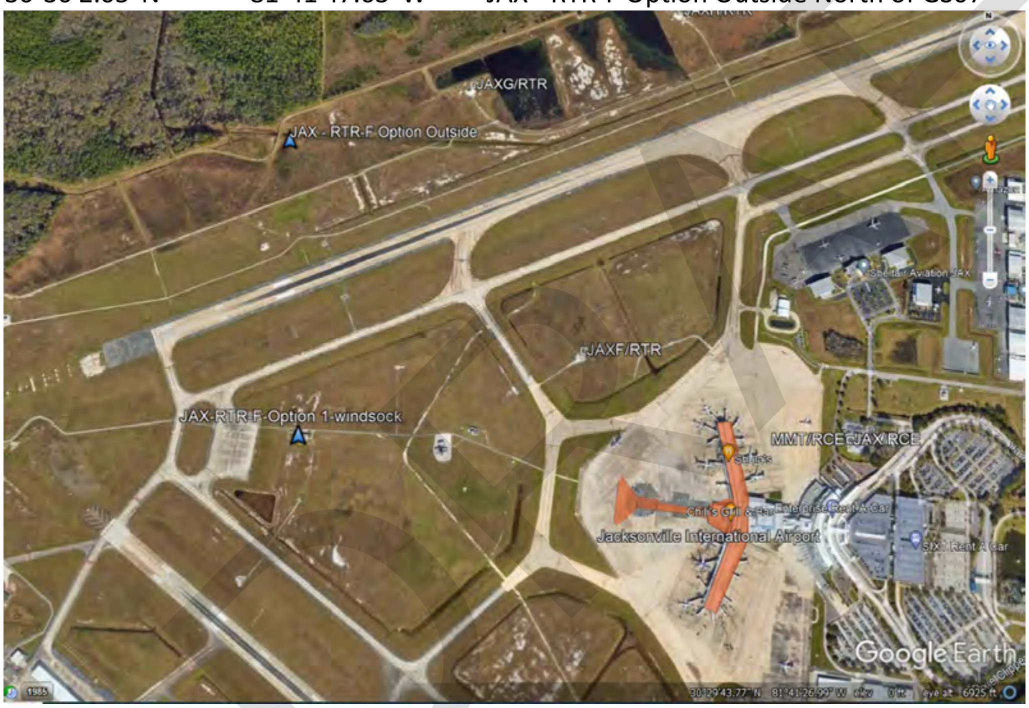
6.1 *Existing FAA Facilities*

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.

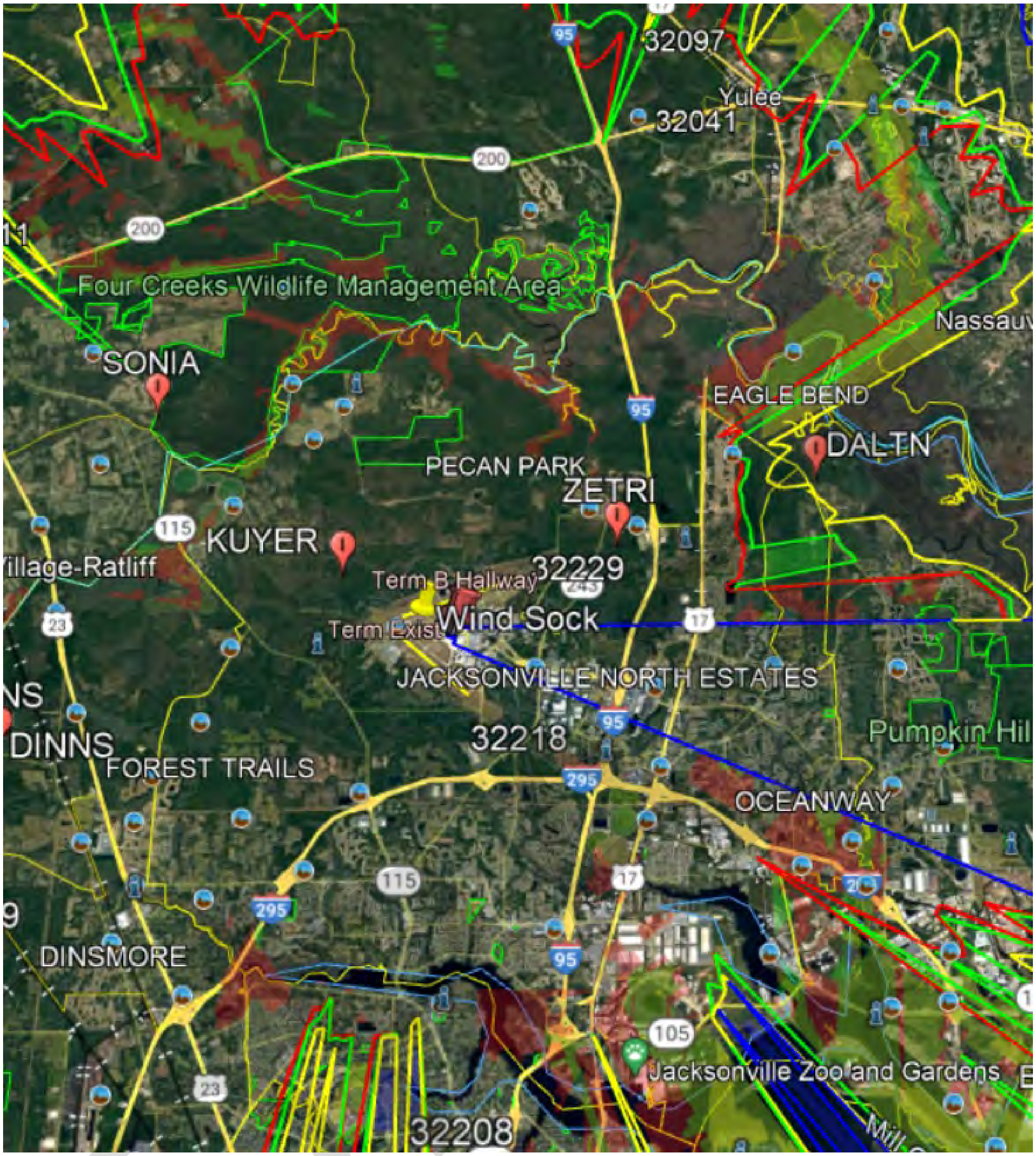
9 ATTACHMENTS

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)