FPL

JUN 15 1998

L-98-152

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Re: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
Response to Request for Information
Regarding the Impact of a Commercial Airport
at Homestead Air Force Base Site on Safety
at Turkey Point Units 3 and 4

On December 9, 1997, the Friends of the Everglades sent a letter to the NRC questioning whether the proposed conversion of the Homestead Air Force Base to a commercial airport represented a risk to the Turkey Point Nuclear plant. The NRC has subsequently issued a request for information regarding the Air Base conversion to Florida Power and Light Co. (FPL), with a response requested within 60 days.

The enclosed response provides our best estimate of risk related to the operation of a commercial airport at the Homestead Air Force Base site. This risk estimate is based on data currently available to us regarding proposed number of operations, flight paths, and proposed flight mix (i.e., military versus commercial versus general aviation) for single runway operation in the year 2014. Our communications with the Homestead Air Force Base Conversion Agency and with the Federal Aviation Administration indicate that the number of operations, flight paths, and mix of operations is currently under review as part of development of a Supplemental Environmental Impact Statement (SEIS). Miami-Dade County officials have indicated that, due to an order limiting growth at the proposed Homestead Regional Airport issued by the State of Florida, aircraft activity will be limited to approximately 50 operations per day through the year 2005.

Accordingly, the information presented here is subject to change based on the development of new information in the SEIS. When this information becomes available to us, we will reevaluate this issue and inform you of any changes. When the proposed disposition of the Homestead Air Force Base is finalized, we will update our Final Safety Analysis Report, as appropriate, to reflect these changes.

FPL also agrees that the commercialization of the base would have an impact on the offsite emergency preparedness program. Evacuations and the effects of the growth in the Emergency Planning Zone are aspects of emergency preparedness that must be addressed jointly by FPL, the State of Florida, and Dade County. We continue to communicate with local and state authorities on this matter in order to ensure that the issues coming from the commercialization of the base are identified, that the offsite emergency preparedness program to address these issues is appropriately revised, and to ensure the Federal Emergency Management

A001

Enclosure 1

Agency is in concurrence with the revisions to the program. We will continue to meet with the appropriate local and state authorities to ensure that these issues are addressed in a timely manner.

Should there be any questions on this request, please contact us.

Very truly yours,

R. J. Hovey
Vice President
Turkey Point Plant

OIH

Attachment

cc: Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, Turkey Point

RISK ASSESSMENT OF THE TURKEY POINT UNITS 3 AND 4 NUCLEAR POWER PLANT FROM AIRCRAFT OPERATIONS AT THE MIAMI-DADE COUNTY HOMESTEAD REGIONAL AIRPORT

1. Scope

In response to the NRC letter dated 14 April 1998, entitled "Request for Information Regarding the Impact of a Commercial Airport at the Homestead Air Force Base on Safety at Turkey Point Units 3 and 4," this risk assessment has been prepared. This assessment provides a scoping estimate of the risk of aircraft operations to facilities at Turkey Point Units 3 and 4 based on a site specific model and conservative assumptions.

2. Applicability

This risk assessment estimates the risks with potential radiological consequences from aircraft crashes to those critical structures at Turkey Point Units 3 and 4 associated with aircraft operations at the Miami-Dade County Homestead Regional Airport.

This risk assessment does not address aircraft related hazards from the Turkey Point On-site Heliport or other airports in the vicinity of Turkey Point such as the Kendall-Tamiami Executive Airport and the Miami International Airport or other airports outside a 30-mile radius from Turkey Point Units 3 and 4. Furthermore, Terminal Radar Approach Control air traffic, medium altitude, and high altitude operations in the regional area of the Turkey Point Nuclear Facility are not addressed, since potential aircraft accidents impacting Turkey Point Units 3 and 4 from these aircraft operations provide negligible contributions to the total risk.

The Turkey Point Units 3 and 4 structures that contain safety systems which may be damaged by an aircraft crash were evaluated as part of this assessment. These structures include the containment buildings, auxiliary building, emergency diesel generator buildings, spent fuel buildings, intake structure, control building, and turbine building.

3. Description of Miami-Dade County Homestead Regional Airport and Projected Aircraft Operations

A detailed description of the projected aircraft classification by types, past and projected annual aircraft operations, and percentage distributions of these operations assumed for the proposed Miami-Dade County Homestead Regional Airport was extracted from the Final Environmental Impact Statement (FEIS, Reference 5). Aircraft operations data provided for the year 1994 (Military operations) were used to assess the current risk associated with Homestead Air Force Base. Projected aircraft operations for the year 2014 from the FEIS were used to assess the risk of future operation of the proposed Miami-Dade County Homestead Regional Airport, and include both military and civilian

flight operations. The aircraft operations projected for 2014 are higher than the current aircraft operations at the existing Homestead Air Force Base.

4. Methodology for Performing Risk Assessments of the Turkey Point Nuclear Plant Units 3 & 4 from Potential Aircraft Crash Accidents (Reference 2)

The DOE methodology for assessing the risk of aircraft crashes to nuclear plants is based upon estimating the annual crash frequency "f" for the affected structures as follows

$$f = N * P * A * F \qquad (1)$$

where

f = annual frequency of aircraft crashes to designated structures
N = annual flight operations at the Miami-Dade County Homestead Regional Airport by aircraft category and flight phase
P = in flight crash rate per mile for aircraft by aircraft category and flight phase,
A = effective facility (structure) area in square miles by aircraft category and flight phase,
F = crash probability density over area A by aircraft category and flight phase.

The area presented by a facility to an aircraft during an accident sequence represents a proportionality with the aircraft crash location conditional probability. Normally, the area presented by a facility consists of a fly-in area, A_f, and a skid-in area, A_s. These represent the probability that a given category of aircraft will fly directly into the facility, and the probability that an aircraft will hit the ground first, then skid into the facility, respectively. The total effective area A_t, for each aircraft category, is given by

$$A_t = A_f + A_s$$

For a rectangular facility of length L, width W, and height H, the fly-in area, for each aircraft category, is (from Reference 2):

$$A_f = (WS + R) * H * \cot \phi + (2 * L * WS) / R + (L * W) \qquad (2)$$

The skid area, for each aircraft category, is (from Reference 2):

$$A_s = (WS + R) * S$$

where

WS = aircraft wingspan, for each category aircraft,
L = facility length,
W = facility width,
R = diagonal dimension of the facility = $(L^2 + W^2)^{1/2}$,

H = facility height,
cot ϕ = mean cotangent of each category aircraft at impact angle ϕ,
S = mean skid length for each category aircraft.

For each of the critical structures analyzed, the aircraft impact probability is then multiplied by conditional core damage probability, and conditional containment failure probability to obtain the probability of exceeding 10 CFR Part 100 exposure. Probabilistic Safety Assessment insights are used to develop an upperbound of the conditional core damage probability and conditional containment failure probability. It is conservatively assumed that if containment fails, the radiological consequences would exceed 10 CFR Part 100 exposure guidelines.

5. Results

FPL has performed a scoping estimate of the aircraft impact frequency (number/year), the conditional core damage probability, the conditional containment failure probability, and the 10 CFR Part 100 exposure exceedance frequency for the critical structures of the Turkey Point Units 3 and 4. The risk of exceeding 10 CFR Part 100 exposure guidelines associated with aircraft operations in 1994 (current risk of military operations) has been conservatively calculated to be 4.91E-7/year. The expected rate of occurrence of potential exposures in the year 2014 in excess of the 10 CFR Part 100 guidelines has been conservatively calculated to be 8.11E-7/year, which is less than 1.0E-6/year. The NRC's Standard Review Plan (SRP) states at Section 2.2.3 (Reference 6) that:

> "The probability of occurrence of the initiating events leading to potential consequences in excess of 10 CFR Part 100 exposure guidelines should be estimated using assumptions that are as representative of the specific site as is practicable. In addition, because of the low probabilities of the events under consideration, data are often not available to permit accurate calculation of probabilities. Accordingly, the expected rate of occurrence of potential exposures in excess of 10 CFR Part 100 guidelines of approximately 10^{-6} per year is acceptable if, when combined with reasonable qualitative arguments, the realistic probability can be shown to be lower."

The following reasonable qualitative factors not directly addressed in the risk estimates are provided below to show that the realistic probability of exceeding 10 CFR Part 100 guidelines will be lower than 8.11E-7/year.:

1. Because of Turkey Point's distance from the Homestead Regional Airport, local flight operations in the local air traffic pattern around the Homestead Regional Airport should not approach the plant. This may reduce the risk estimates by a factor of 2.

2. Shielding by adjacent structures or heavy machinery, and barriers such as the canal and the fossil units are not fully credited. This may reduce the risk estimates by 20%.

3. The conditional core damage probability and conditional containment failure probability are not based on more detailed assessment of structural capability or all available equipment. For example, Sandia National Laboratory tests have indicated that the containment structures do not experience perforation damage. In addition, the steel liner is effective in preventing concrete from scabbing. This may reduce the risk to varying degrees for different structures but is not readily quantifiable.

6. Conclusions

Based on the results of a conservative study, the expected rate of occurrence of aircraft accidents leading to potential exposures in excess of the 10 CFR Part 100 guidelines is 8.11E-7/year for the year 2014. Qualitative factors that will lower the estimated probability of the aircraft risk exist in the study, which would be acceptable in accordance with SRP Section 2.2.3.

7. References

1. Kimura, C. Y. and R.E. Glaser, "Estimate of Aircraft Crash Hit Frequencies on the Facilities at the Lawrence Livermore National Laboratory (LLNL) Site 200", UCRL-ID-127761 Rev 0, Lawrence Livermore National Laboratory, Livermore, CA, July 3, 1997.

2. "Accident Analysis for Aircraft Crash into Hazardous Facilities", DOE Standard DOE-STD-3014-96, U.S. Department of Energy, Washington, DC, October 1996.

3. Sanzo, D., R. Bolig, and D. Stack, "ACRAM Modeling Technical Support Document", LA-UR-96-2460/TSA-11-95-R112, Los Alamos National Laboratory, Los Alamos, NM, September 1996.

4. Kimura, C.Y., Ronald E. Glaser, Richard W. Mensing, Tom Lin, Timothy A. Haley, Andrew B. Barto, and Martin A. Stutzke, "ACRAM Data Development Technical Support Document", UCRL-ID-124837, Lawrence Livermore National Laboratory, Livermore, CA, August 1996.

5. Final Environmental Impact Statement, "Disposal and Reuse of Homestead Airforce Base, Florida," February 1994, Department of the Air Force.

6. NUREG-0800, Rev. 2, NRC Standard Review Plan, Section 2.2.3, "Evaluation of Potential Accidents."

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

August 05, 1998

Mr. Thomas Plunkett
President - Nuclear Division
Florida Power and Light Company
P. O. Box 14000
Juno Beach, Florida 33408-0420

SUBJECT: TURKEY POINT UNITS 3 AND 4 - IMPACT OF THE CONVERSION OF THE HOMESTEAD AIR FORCE BASE ON SAFETY AT TURKEY POINT PLANT (TAC NOS. MA0848 AND MA0849)

Dear Mr. Plunkett:

By letter dated June 15, 1998, Florida Power and Light Company responded to the NRC staff's request for additional information (RAI) of April 14, 1998. The request was related to the potential of converting the Homestead Air Force Base (HAFB) to a commercial airport, and the impact of this conversion on Turkey Point Units 3 and 4.

Your response provided your estimate of risk related to the potential conversion of the HAFB to a commercial airport. This risk estimate was based on available data regarding the proposed number of operations, flight paths, and proposed flight mix. In addition, your response addressed the actions you will take regarding the offsite emergency preparedness program as a result of the potential commercialization of the base. Many of the attributes associated with the prospective regional airport are currently under review as part of the development of a draft Supplemental Environmental Impact Statement (SEIS). Accordingly, the information that you provided is subject to change based on development of the draft SEIS. You also stated that when the proposed disposition of the HAFB is finalized, you will update the Final Safety Analysis Report (FSAR), as appropriate, to reflect these changes.

Based on the currently available information, we believe that the spectrum of potential projects resulting from the conversion is still under examination and development. Therefore, we appreciate your updating the information provided in your June 15, 1998, submittal as the issues become more defined but before the FSAR is updated.

We appreciate your response to our RAI. If you have any questions regarding this matter, please contact me at (301) 415-1496.

Sincerely,

Kahtan N. Jabbour

Kahtan N. Jabbour, Senior Project Manager
Project Directorate II-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-250 and 50-251

cc: See next page

Enclosure 2

Mr. T. F. Plunkett
Florida Power and Light Company

TURKEY POINT PLANT

cc:
M. S. Ross, Attorney
Florida Power & Light Company
P.O. Box 14000
Juno Beach, FL 33408-0420

John T. Butler, Esquire
Steel, Hector and Davis
4000 Southeast Financial Center
Miami, Florida 33131-2398

Mr. Robert J. Hovey, Site
Vice President
Turkey Point Nuclear Plant
Florida Power and Light Company
9760 SW. 344th Street
Florida City, FL 33035

County Manager
Metropolitan Dade County
111 NW 1 Street, 29th Floor
Miami, Florida 33128

Senior Resident Inspector
Turkey Point Nuclear Generating
Station
U.S. Nuclear Regulatory Commission
P.O. Box 1448
Homestead, Florida 33090

Mr. William A. Passetti, Chief
Department of Health
Bureau of Radiation Control
2020 Capital Circle, SE, Bin #C21
Tallahassee, Florida 32399-1741

Mr. Joe Myers, Director
Division of Emergency Preparedness
Department of Community Affairs
2740 Centerview Drive
Tallahassee, Florida 32399-2100

Regional Administrator, Region II
U.S. Nuclear Regulatory Commission
61 Forsyth Street, SW., Suite 23T85
Atlanta, GA 30303-3415

Attorney General
Department of Legal Affairs
The Capitol
Tallahassee, Florida 32304

Plant Manager
Turkey Point Nuclear Plant
Florida Power and Light Company
9760 SW. 344th Street
Florida City, FL 33035

Mr. Gary E. Hollinger
Licensing Manager
Turkey Point Nuclear Plant
9760 SW. 344th Street
Florida City, FL 33035

Mr. Leonard D. Wert
U.S. Nuclear Regulatory Commission
61 Forsyth Street, SW., Suite 23T85
Atlanta, GA 30303-3415

Mr. John Gianfrancesco
Manager, Administrative Support and
Special Projects
Florida Power & Light Company
P. O. Box 14000
Juno Beach, Florida 33408-0420

Mr. Rajiv S. Kundalkar
Vice President - Nuclear Engineering
Florida Power & Light Company
P. O. Box 14000
Juno Beach, Florida 33408-0420

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L-99-251

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Gentlemen:

Re: Turkey Point Units 3 & 4
Docket Nos. 50-250 and 50-251
Response to Request for Information
Regarding the Impact of a Commercial Airport
at Homestead Air Force Base Site on Safety
at Turkey Point Units 3 and 4

On August 23, 1999, the Air Force notified the NRC that a Supplemental Environmental Impact Statement was being prepared for the Homestead Air Force Base conversion project to (a) reflect updated air traffic information associated with a "Maximum Use One Runway" (MUOR) projection, (b) reflect alternate flight track configurations currently under consideration for noise abatement, and (c) evaluate the environmental impact associated with the optional use of the facility as a commercial spaceport. The NRC subsequently issued a request to Florida Power & Light (FPL) to assess the impact of the proposed changes on the previously submitted risk assessment documented by FPL letter L-98-152 dated June 15, 1998, and to inform the NRC of any changes within 60 days.

FPL has completed the assessment of the impact of the proposed changes and determined that the overall risk to Turkey Point from an aircraft accident decreases from the previously estimated 8.11E-7/yr to 3.63E-7/yr based on the new projections and MUOR conditions. A comparison of the original airport conversion plan flight projections with the latest Federal Aviation Administration (FAA) flight projections indicates that the total number of flight operations has remained relatively constant between the two forecasts. The original data (Table 1) forecasted a maximum of 246,700 flight operations in the year 2014, while the current projection (Table 2) forecasts 231,274 flight operations under MUOR conditions. The projected mix of flight operations at the airport, however, has changed in the latest FAA submittal. As indicated in the attached tables, the revised flight data includes a decrease in projected military air traffic and a corresponding increase in civilian air traffic. This change in the projected mix of flight operations at the airport does impact the risk assessment previously transmitted to you in support of the Final Environmental Impact Statement. As revealed in the previous analysis, the risk of an aircraft impact at Turkey Point is dominated by military air traffic. This dominance is due in part to the fact that the probability of an accident per flight operation is much higher for military aircraft than for commercial or general aviation aircraft.

Enclosure 3

This is due to the higher percentage of high-risk activities associated with military flights, e.g., training, high-speed maneuvering. The dominance is also due to the fact that the probability of an aircraft accident occurring in the immediate vicinity of the airport is much higher for military aircraft than for commercial or general aviation aircraft. That is, most commercial or general aviation flights leave the airport area after takeoff. When landing, they are most often arriving from places a considerable distance from the airport. While the same can be said for some military air traffic, a high percentage of the military flights consist of training exercises near the airport, leading to a higher probability that if an accident does occur, it will be in the vicinity of the home airport.

The latest FAA flight projections indicate that the decrease in large military aircraft traffic is seven-fold. For small military aircraft, the decrease is 28.1%. Despite the fact that the amount of commercial jumbo jet operations (Class A air carriers) in the latest forecast is over three times that of the original forecast, the overall risk to Turkey Point from an aircraft accident decreases from 8.11E-7/yr to 3.63E-7/yr under MUOR conditions as a consequence of the predicted decrease in military air traffic. This represents a 55% reduction in the frequency of aircraft accidents at the site having the potential to generate exposures in excess of 10 CFR 100 limits. It is also well below 1E-6/yr significance threshold specified in Section 2.2.3 of NUREG 0800.

The following reasonable qualitative factors not directly addressed in the risk estimate are provided below to show that the realistic probability of exceeding 10 CFR 100 guidelines due to an aircraft impact will be lower than the revised risk estimate of 3.63E-7/yr for Turkey Point.

1. Shielding by adjacent structures or heavy machinery, and barriers such as the canal and the fossil units are not fully credited. This may reduce the risk by 20%.

2. The conditional core damage probability and conditional containment failure probability are not based on more detailed assessment of structural capability or all available equipment. For example, Sandia National Laboratory tests have indicated that the containment structures do not experience perforation damage. In addition, the steel liner is effective in preventing concrete from scabbing. This may reduce the risk to varying degrees for different structures but is not readily quantifiable.

The structures at Turkey Point considered to be critical structures for the purpose of the risk assessment were the containment buildings, turbine building, control building, auxiliary building, spent fuel buildings, emergency diesel generator buildings, intake structure, and the fossil unit chimneys.

With respect to the spaceport option, FPL did not perform a specific analysis to quantify the effects of potential launch vehicle failures at the base due to the limited number of flight operations projected for such a facility. The potential impact of a spaceport at the Homestead Air Force Base location would be bounded by the impact associated with a commercial airport.

As indicated in our previous correspondence on this subject, FPL continues to communicate with local and state authorities on this matter in order to ensure that the issues coming from the commercialization of the base are identified, that the offsite emergency preparedness program to address these issues is appropriately revised, and to ensure the Federal Emergency Management Agency is in concurrence with the revisions to the program.

Once the proposed disposition of the Homestead Air Force Base is finalized, FPL will update our Final Safety Analysis Report, as appropriate, to reflect these changes.

Should there be any questions on this submittal, please contact us.

Very truly yours,

D.E. Jernigan
for R.J. Hovey

R. J. Hovey
Vice President
Turkey Point Plant

OH/MG

cc: Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, Turkey Point Plant
Florida Department of Health and Rehabilitative Services

Table 1
Original Homestead Airport Traffic Forecast
from Earlier Analysis

Aircraft Classes	Projected Annual Aircraft Operations			
	1994	1999	2004	2014
CLASS A (Air carriers) (MD-11,DC-10,B-767,B-737,F-100, MD-80,CL600,DHC8)	0	520	33870	45890
(Large military Aircraft) (C-130,C-141,P-3)	10388	10388	10388	10388
Subtotals	10388	10908	44258	56278
CLASS B (Small high-performance) (F-15, F-16)	18230	18230	18230	18230
(General aviation jet) (Learjet, Citation)	3850	3850	5750	5650
Subtotals	22080	22080	23980	23880
CLASS C (Air taxi)	0	0	0	0
(GA Turboprop) (Metroliner, Cessna 206, Nomad)	1316	1316	1316	1316
(GA multi-engine) (Piper 31)	608	34408	40208	44308
(GA single engine)	0	82000	99900	110400
(Helicopters) (UH-60, H-3)	5118	9918	10418	10518
Subtotals	7042	127642	151842	166542
Grand Totals	39510	160630	220080	246700

L-99-251
Page 5 of 5

Table 2
Updated Homestead Airport Traffic Forecast
For MUOR projection

Aircraft Class	Projected Annual Aircraft Operations				
	1997	2000	2005	2015	MUOR*
CLASS A (Air carriers) (MD-11,DC-10,B-767,B-737,F-100, MD-80,CL600,DHC8)	0	0	8700	74140	154679
(Large military Aircraft) (C-130,C-141,P-3)	1624	1624	1624	1624	1624
Subtotals	1624	1624	10324	75764	156303
CLASS B (Small high-performance) (F-15, F-16)	13100	13100	13100	13100	13100
(General aviation jet) (Learjet, Citation)	900	2990	3450	4510	4510
Subtotals	14000	16090	16550	17610	17610
CLASS C (Air taxi)	0	0	0	0	0
(GA Turboprop) (Metroliner, Cessna 206, Nomad)	900	900	1940	900	900
(GA multi-engine) (Piper 31)	900	11330	13000	17160	21900
(GA single engine)	0	26304	27993	33821	29000
(Helicopters) (UH-60, H-3)	2400	4410	4890	5480	5561
Subtotals	4200	42944	47823	57361	57361
Grand Totals	19824	60658	74697	150735	231274

*MUOR = Maximum Use, One Runway

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

September 16, 1999

Mr. Thomas F. Plunkett
President - Nuclear Division
Florida Power and Light Company
P.O. Box 14000
Juno Beach, Florida 33408-0420

SUBJECT: REQUEST TO ASSESS THE POTENTIAL RISK OF THE PROPOSED CIVIL AIRCRAFT OPERATIONS AT HOMESTEAD AIR FORCE BASE ON THE TURKEY POINT PLANT, UNITS 3 AND 4 (TAC NOS. MA6249 AND MA6250)

Dear Mr. Plunkett:

The U.S. Department of the Air Force has provided the enclosed information to support the assessment of the potential risk to Turkey Point Units 3 and 4 associated with the proposed civil aircraft operations at the Homestead Air Force Base. It is our understanding that the Air Force provided you the same information.

The Department of the Air Force and the Federal Aviation Administration (FAA) are in the process of preparing a draft Supplemental Environmental Impact Statement (SEIS) to address the environmental impact of the proposal to develop a regional civil airport at the base, which would also continue to support military and government operations. The draft SEIS will also examine an alternative involving development of a commercial spaceport at the base.

It appears that the original design basis for Turkey Point did not consider the operation of a commerical airport in close proximity to Turkey Point Units 3 and 4. In Title 10, Code of Federal Regulations (10 CFR) Subpart 100.10, the U.S. Nuclear Regulatory Commission (NRC) specifies, among other things, factors to be considered when evaluating sites for nuclear reactor facilities. It states that the reactors are expected to have an extremely low probability for accidents that could result in the release of significant quantities of radioactive fission products, and that, should an accident occur, the reactor facility should ensure a low risk of public exposure. The staff interpretation of the regulation is described in NUREG-0800, NRC Standard Review Plan (SRP) 2.2.3. In the case of aircraft hazards, SRP 3.5.1.6 outlines an approach acceptable to the NRC staff.

The modification of the Homestead Air Force Base Site to accommodate a commercial airport, in addition to its use for military and government operations, has the potential to increase aircraft hazards above the risks that are currently projected and could have an impact on the offsite emergency planning. Hence, you are requested to assess the impact of the proposed changes and update the Turkey Point Units 3 and 4 Final Safety Analysis Report and other related documents when the proposal becomes more defined.

This request has been discussed with Olga Hanek of your staff. A target date for your response has been agreed upon to be 60 days from your receipt of this letter. Should a situation occur that prevents you from meeting the target date, please contact me at (301) 415-1496.

Sincerely,

Kahtan N. Jabbour

Kahtan N. Jabbour, Senior Project Manager, Section 2
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-250 and 50-251

Enclosure: U.S. Air Force Information

cc w/encl: See next page

Mr. T. F. Plunkett
Florida Power and Light Company

TURKEY POINT PLANT

cc:
M. S. Ross, Attorney
Florida Power & Light Company
P.O. Box 14000
Juno Beach, FL 33408-0420

Mr. Robert J. Hovey, Site
Vice President
Turkey Point Nuclear Plant
Florida Power and Light Company
9760 SW. 344th Street
Florida City, FL 33035

County Manager
Miami-Dade County
111 NW 1 Street, 29th Floor
Miami, Florida 33128

Senior Resident Inspector
Turkey Point Nuclear Plant
U.S. Nuclear Regulatory Commission
9762 SW. 344th Street
Florida City, Florida 33035

Homestead, Florida 33090

Mr. William A. Passetti, Chief
Department of Health
Bureau of Radiation Control
2020 Capital Circle, SE, Bin #C21
Tallahassee, Florida 32399-1741

Mr. Joe Myers, Director
Division of Emergency Preparedness
Department of Community Affairs
2740 Centerview Drive
Tallahassee, Florida 32399-2100

Attorney General
Department of Legal Affairs
The Capitol
Tallahassee, Florida 32304

Plant Manager
Turkey Point Nuclear Plant
Florida Power and Light Company
9760 SW. 344th Street
Florida City, FL 33035

Mr. Steve Franzone
Licensing Manager
Turkey Point Nuclear Plant
9760 SW. 344th Street
Florida City, FL 33035

Mr. John Gianfrancesco
Manager, Administrative Support
and Special Projects
P.O. Box 14000
Juno Beach, FL 33408-0420

Mr. Rajiv S. Kundalkar
Vice President - Nuclear Engineering
Florida Power & Light Company
P.O. Box 14000
Juno Beach, FL 33408-0420

DEPARTMENT OF THE AIR FORCE
WASHINGTON, DC

Office of the General Counsel

August 23, 1999

Douglas J. Heady
SAF/GCN
1740 Air Force Pentagon
Washington D.C. 20330-1740

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington D.C. 20555

Re: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
Homestead Air Force Base Property Disposal

On behalf of the Air Force and the Federal Aviation Administration (FAA), I am forwarding the enclosed information to support the assessment of the potential risks associated with proposed civil aircraft operations at former Homestead Air Force Base to Florida Power and Light Company's Turkey Point Nuclear Reactor Facility Units 3 and 4.

The Air Force and FAA are in the process of preparing a Supplemental Environmental Impact Statement (SEIS) to address the environmental impacts of Miami-Dade County's proposal to develop a regional civil airport at the former base, which would also continue to support military and government operations. If the airport became successful quickly and grew vigorously, then by the year 2015 there might be as many as 14,670 people on site, and perhaps as many as 20,440 by the time the airport was fully developed some time thereafter. The SEIS will also examine an alternative involving development of a commercial spaceport at the former base. An initial draft of the SEIS is currently undergoing internal review by the lead and cooperating federal agencies.

Although the SEIS is still undergoing review and revision, we expect the projected aircraft operations to remain relatively stable. The proposed flight paths also represent FAA's thoughts on the most efficient way to integrate Homestead air traffic into the regional routing structure. Therefore, we feel this would be a good time to initiate the analysis to update the Safety Analysis Report for the Turkey Point units. We understand that some of the enclosed information will need to be provided to appropriate staff at Florida Power and Light Company in order for them to effectively and efficiently complete the risk analysis.

The enclosed package also includes three alternative flight track configurations that are under consideration for potential noise abatement.

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Enclosure

We hope these data are helpful and satisfy your requirements. If you have any questions, or require additional information, please feel free to call me at (703) 693-7314 or Ms. Robin Brandin, SAIC, at (505) 842-7933.

Sincerely,

Douglas J. Heady
Associate General Counsel
(Installations & Environment)

Proposed Aviation Operations at and in the Vicinity of Former Homestead Air Force Base

Science Applications International Corporation (SAIC) is preparing a Supplemental Environmental Impact Statement (SEIS) on behalf of the Air Force and the Federal Aviation Administration (FAA) to address reuse of portions of former Homestead Air Force Base (AFB) as a civil airport (designated Homestead Regional Airport, or HST). The proposed airport would be operated by the Miami-Dade County Aviation Department and support existing Air Force, Air National Guard, and U.S. Customs aviation operations, as well as new commercial, cargo, maintenance, and general aviation operations.

A subcontractor to SAIC, Landrum and Brown, has been working with FAA and Miami-Dade County to identify flight tracks and forecast civil aviation operations for analysis in the SEIS. The results of their studies, summarized here, provide information that can be used to assess any increased risk associated with the Turkey Point Nuclear Reactor Facility. The data included in this summary provide information on types of aircraft and estimated number of operations by aircraft and flight track.

SAIC plans to summarize the results of safety analyses performed and approved by Florida Power and Light Company and the Nuclear Regulatory Commission (NRC), and the information herein is intended to facilitate this analysis. SAIC's understanding is that, according to NRC's Standard Review Plan (NUREG-0800), Paragraph 3.5.1.6 (Aircraft Hazards), Subparagraphs II 1 (a) through (c), risk from aircraft accidents is considered to be sufficiently low to require no further analysis if three conditions are met. These are:

- The plant-to-airport distance (D) is between 5 and 10 statute miles and the projected annual number of operations is less than $500*D^2$, or the distance is greater than 10 statute miles and the projected number of operations is less than $1000*D^2$.
- The plant is at least 5 statute miles from the edge of military training routes, including low-level training routes, except for those associated with a usage greater than 1000 flights per year, or where activities (such as practice bombing) may create an unusual stress situation.
- The plant is at least 2 statute miles beyond the nearest edge of a federal airway, holding pattern, or approach pattern.

The second condition is not at issue; there are no existing military training routes in close proximity to the Turkey Point facility and no plans for changes. The information generated for the proposed regional airport at HST indicates that the first and third conditions will not be met. Former Homestead AFB lies between 5 and 10 miles from the Turkey Point facility, and the airport could potentially support a maximum of 231,000 annual operations. The airport is forecast to have as many as 150,000 annual operations by 2015.

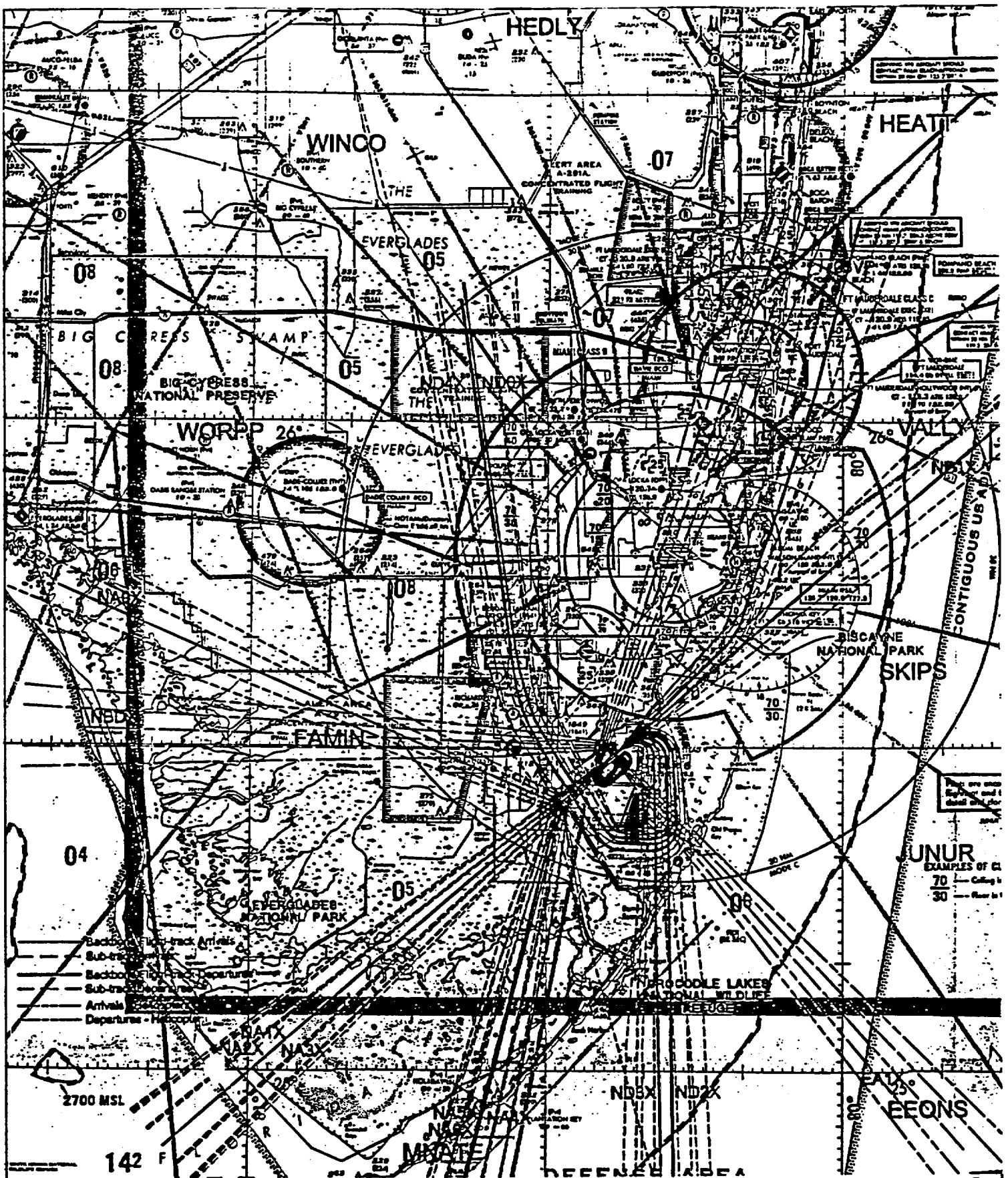
The SEIS is also examining an alternative to the proposed regional airport which would involve developing a commercial spaceport at former Homestead AFB. Very little is currently known

about how spacecraft would operate from the spaceport. The analysis in the SEIS will be based on two proposals received during the scoping process. One proposal, from Kelly Space and Technology, Inc., would involve a manned Astroliner towed into an aerial launch position by a Boeing 474. The two vehicles would return to base separately. The second, proposed by Space Access LLC, involves a new, unmanned vehicle still under development (aerospacecraft, or ASC). The ASC would launch one to two smaller vehicles, the reusable spacecraft (RSC) and the reusable orbital-transfer craft (ROC), also unmanned. They would be launched inside the ASC but return to base individually.

No flight tracks have been identified for these operations, but the current assumption is that they would depart on a relatively straight path to the northeast from Runway 5. Space Access has indicated that they also expect most of the arrivals to come from the northeast, landing to the southwest on Runway 23. For purposes of analysis, a maximum of three missions per week has been estimated, which would involve 9–10 operations (estimated total of 480 operations per year). The military and government operations would also continue.

To assist in performing a safety analysis for the Turkey Point plant, the following exhibits are attached:

- Seven maps showing military/government flight tracks (east flow, west flow, and local patterns) and proposed civil flight tracks (east flow arrivals, east flow departures, west flow arrivals, and west flow departures).
- Twelve maps depicting three possible alternative sets of flight tracks (Alternatives 1 through 3). These alternatives are under consideration for potential noise attenuation. They may or may not be used in lieu of the proposed flight tracks.
- A description of altitude restrictions that would apply to departures and approaches at HST.
- A summary table of forecast annual aircraft operations at HST.
- Detailed tables of average daily operations by flight track (designated by fix) for each aircraft type forecast to use HST. These numbers need to be multiplied by 365 to obtain annual estimates.
- Tables showing annual military/government operations at Homestead ARS.
- A table showing projected annual space launch operations for the commercial spaceport alternative. Note that these must be added to military/government operations to obtain total projected operations.



NOTES: MIA Airspace routes were developed from actual MIA RADAR Data from 5/31/98 - 6/7/98
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Landrum&Brown

HST EAST FLOW FUTURE PROPOSED ITINERANT MILITARY / GOVERNMENT BACKBONE & DISPERSED FLIGHT TRACKS

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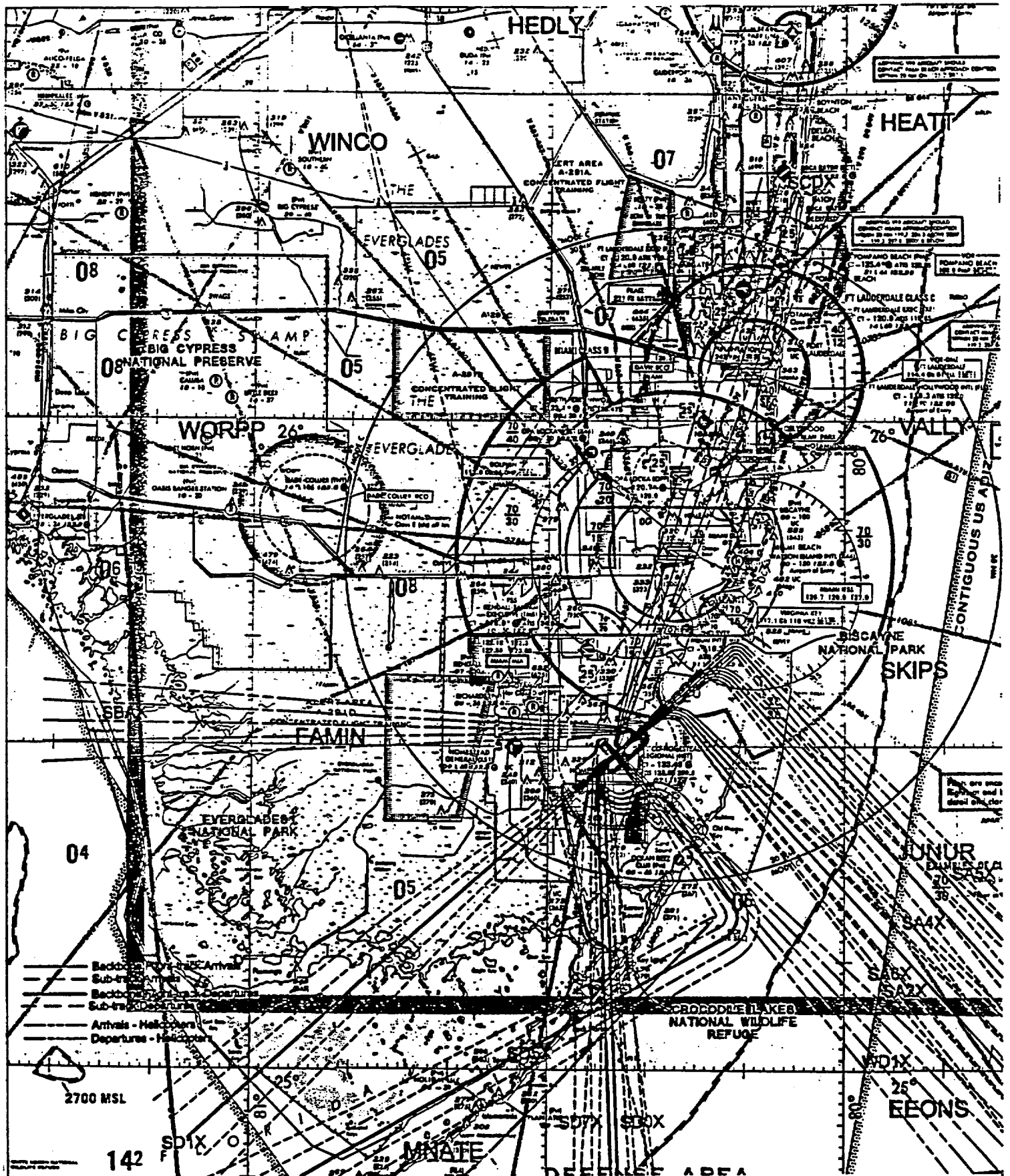

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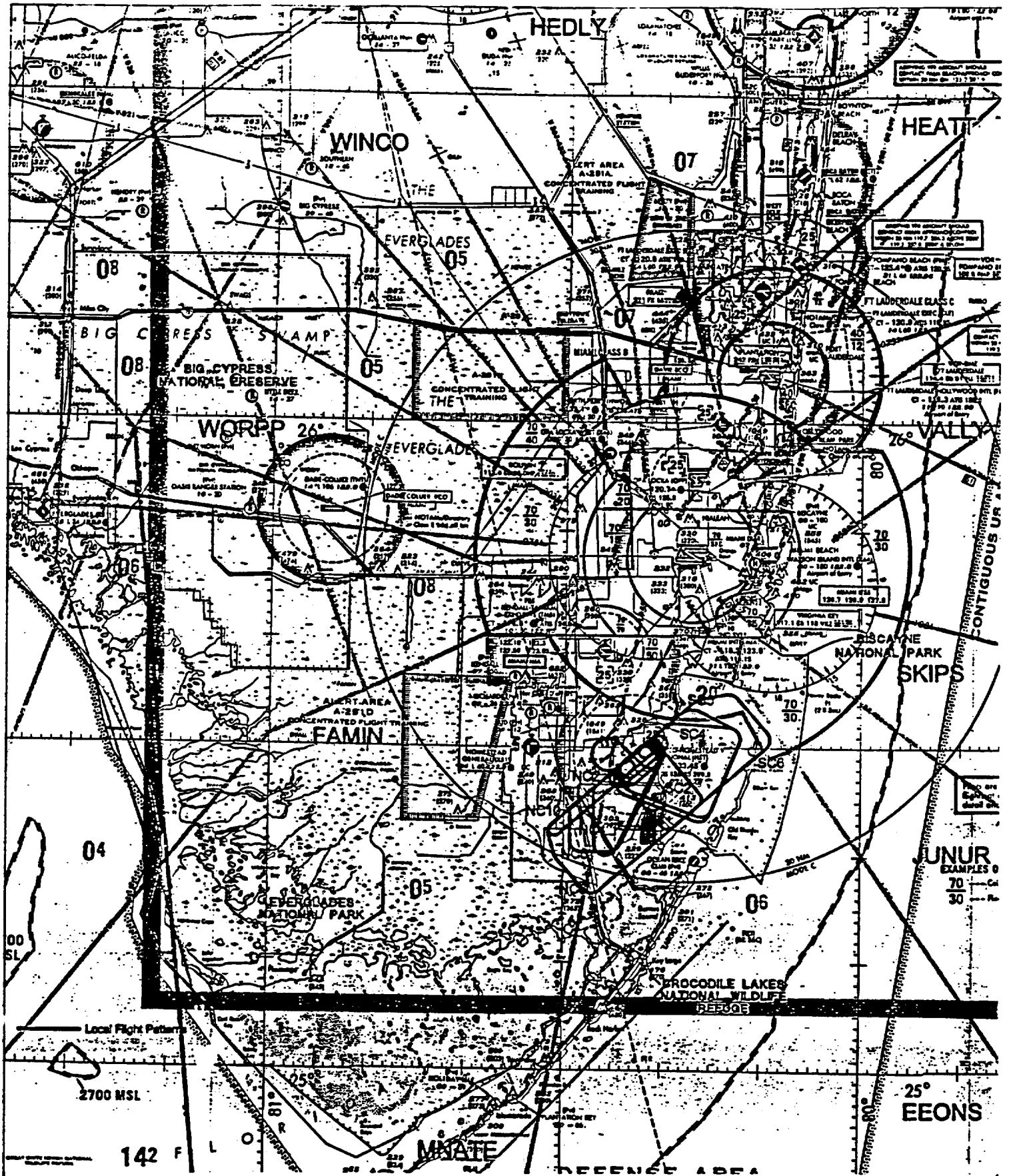
0 12 24
GRAPHIC SCALE IN NAUTICAL MILES

Landrum&Brown

HST WEST FLOW FUTURE PROPOSED ITINERANT MILITARY / GOVERNMENT BACKBONE & DISPERSED FLIGHT TRACKS

FileName: P:\Hst\Gis\CAD\000-wflow_MIL.dwg Date: 07/27/99 © 08:10:47



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Landrum&Brown

HST EXISTING & FUTURE LOCAL FLIGHT PATTERN TRACKS

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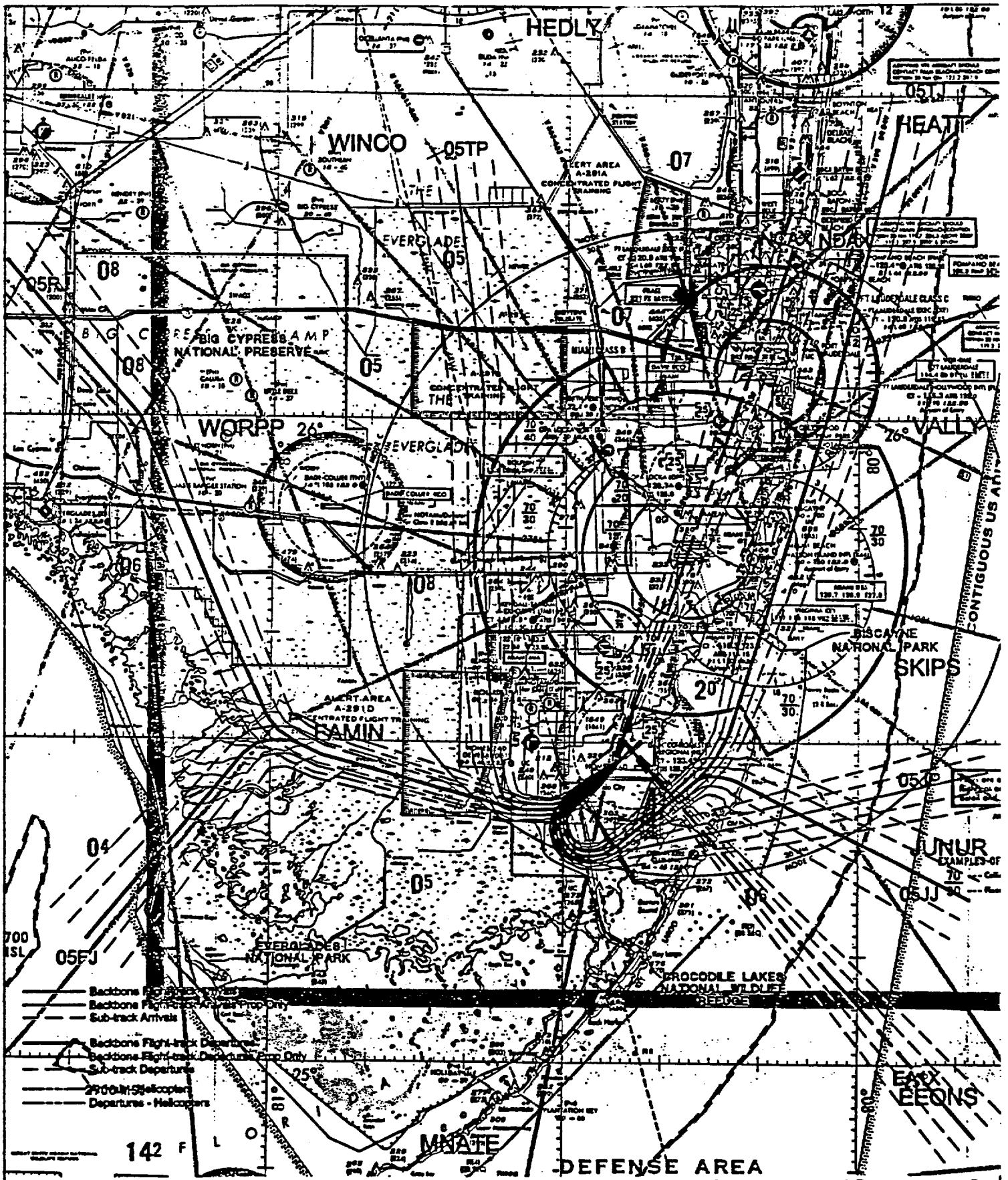

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0 12 24
GRAPHIC SCALE IN NAUTICAL MILES

Landrum&Brown

HST EAST FLOW – ARRIVALS
FUTURE PROPOSED CIVIL ITINERANT BACKBONE & DISPERSED TRACKS

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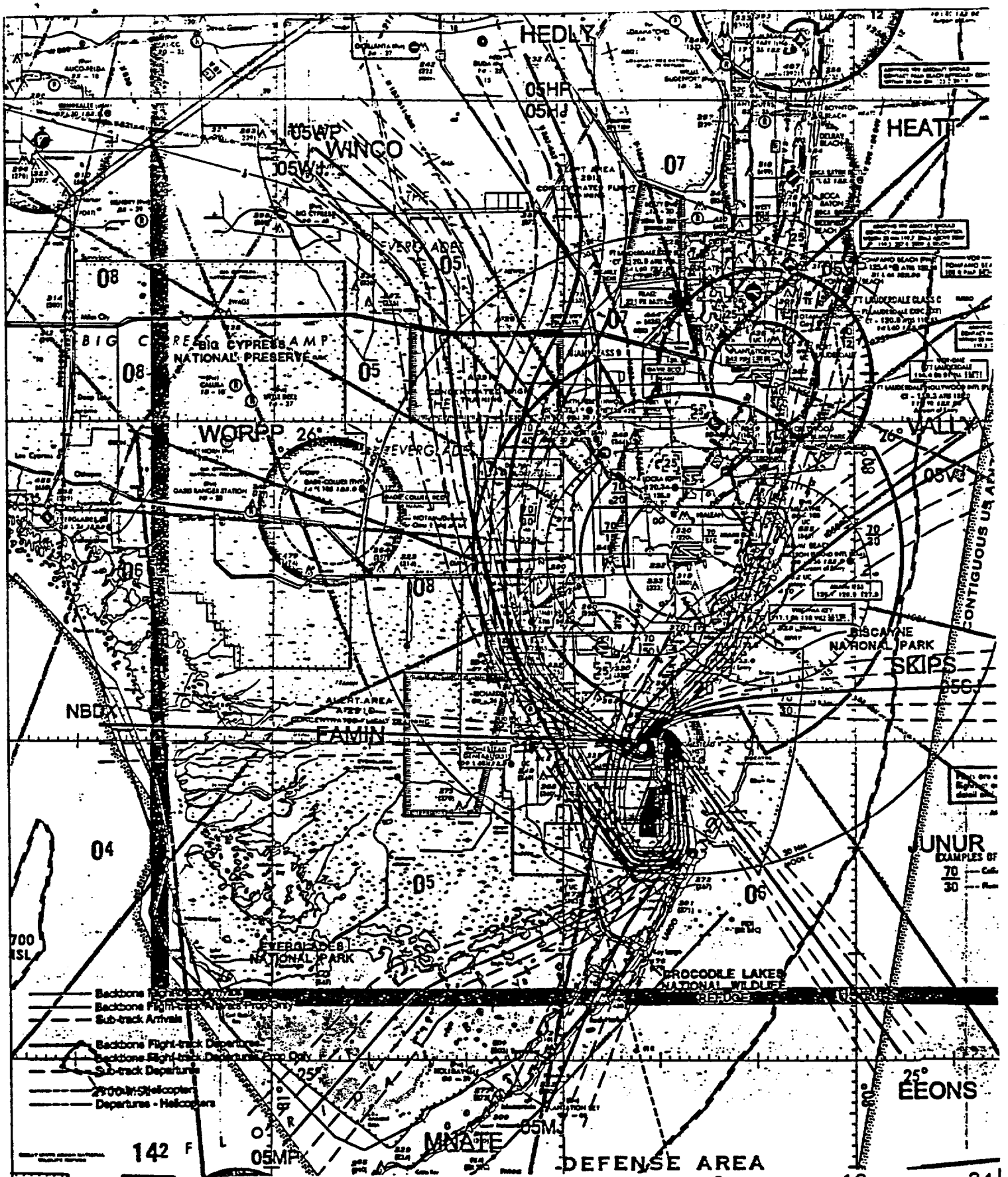

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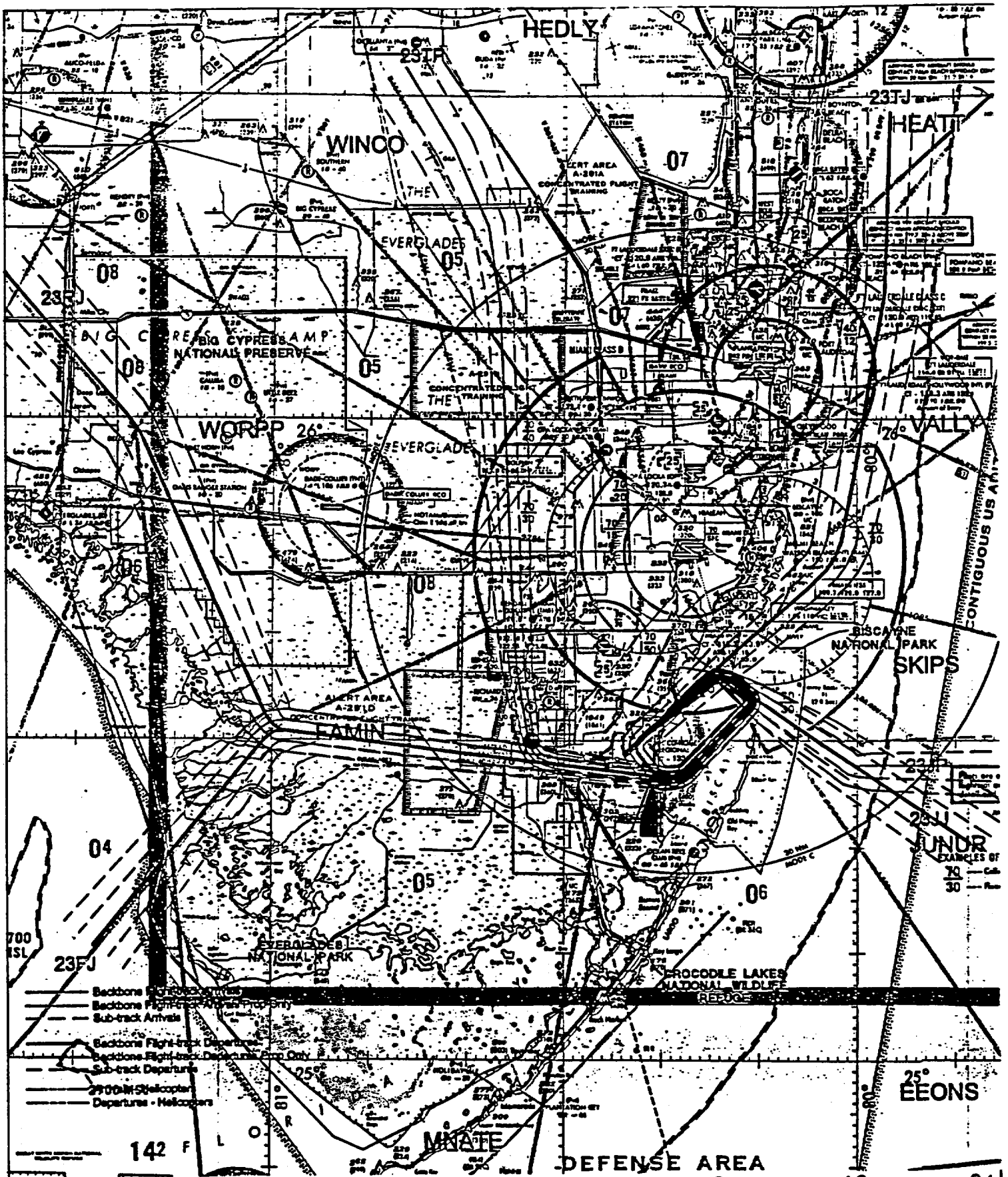
LandrumBrown

HST EAST FLOW – DEPARTURES
FUTURE PROPOSED CIVIL ITINERANT
BACKBONE & DISPERSED TRACKS

FileName: P:\Hst\Gis\CAD\HST-EXHIBITS\HST-WPROJ-TRKS.DWG Date: 07/27/99 @ 11:50:56



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Landrum&Brown

HST WEST FLOW – ARRIVALS
FUTURE PROPOSED CIVIL ITINERANT BACKBONE & DISPERSED TRACKS

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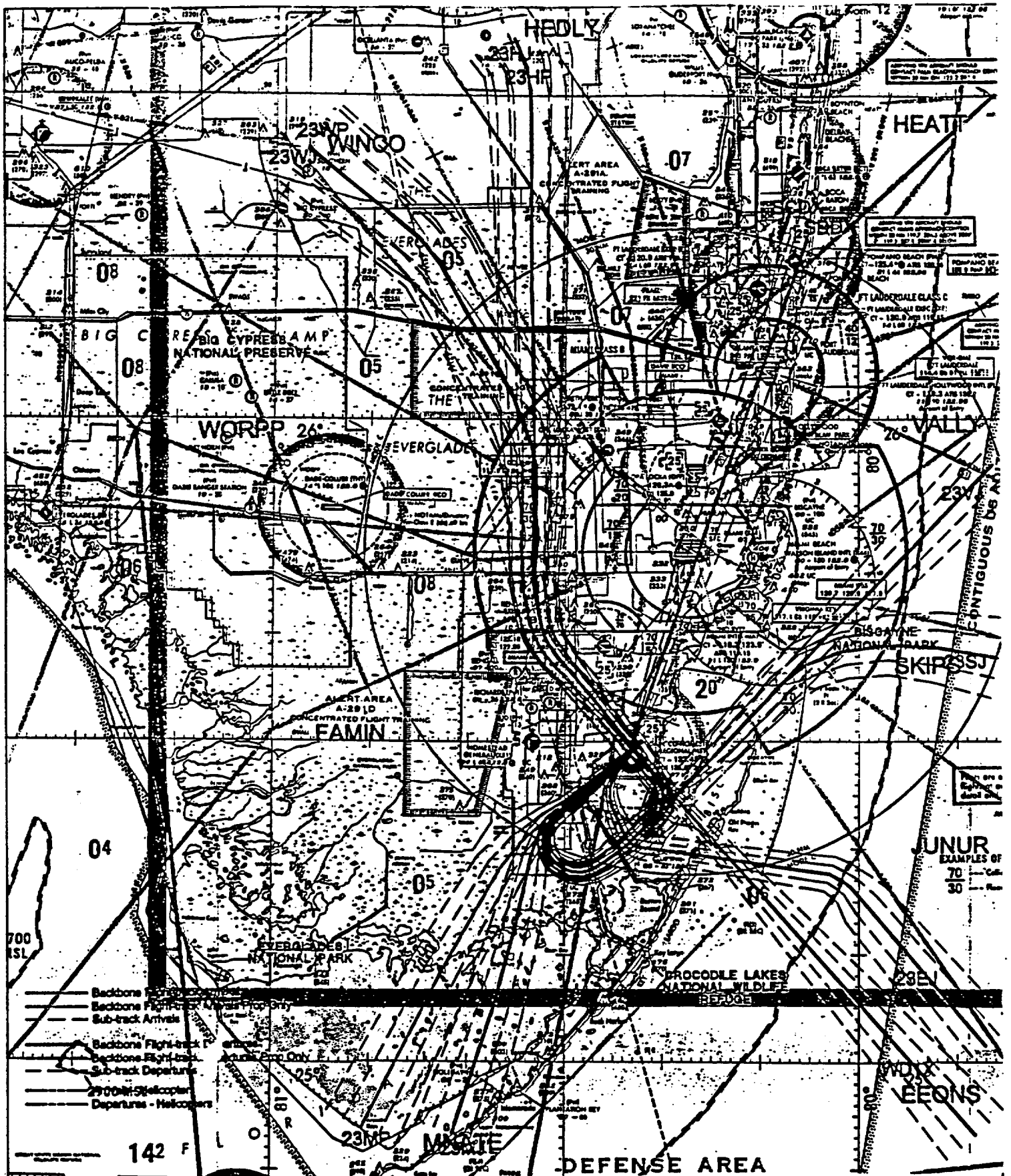

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FUTURE PROPOSED CIVIL ITINERANT BACKBONE & DISPERSED TRACKS

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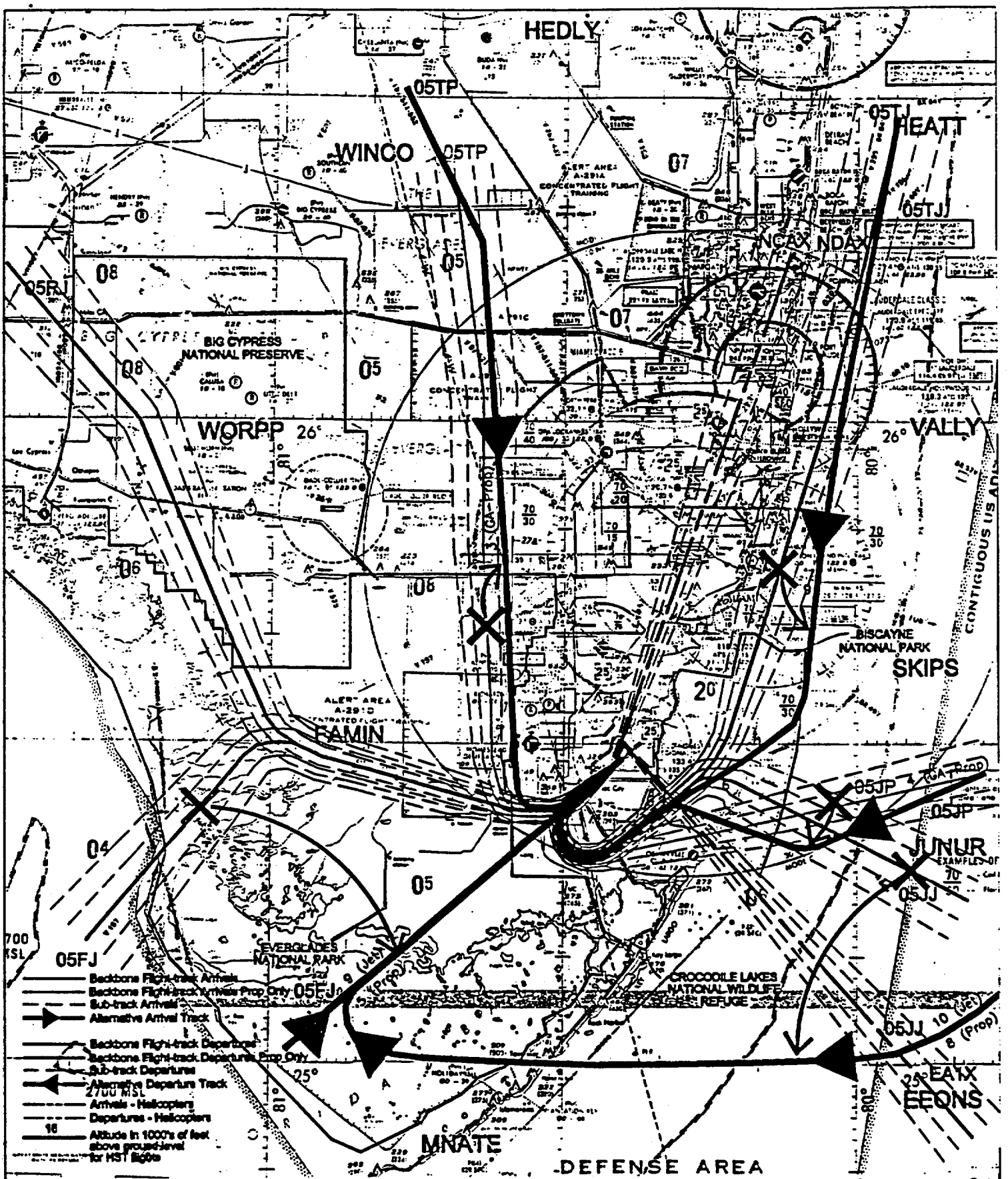

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LandrumBrown

HST EAST FLOW – ARRIVALS FLIGHT TRACKS ALTERNATIVE 1

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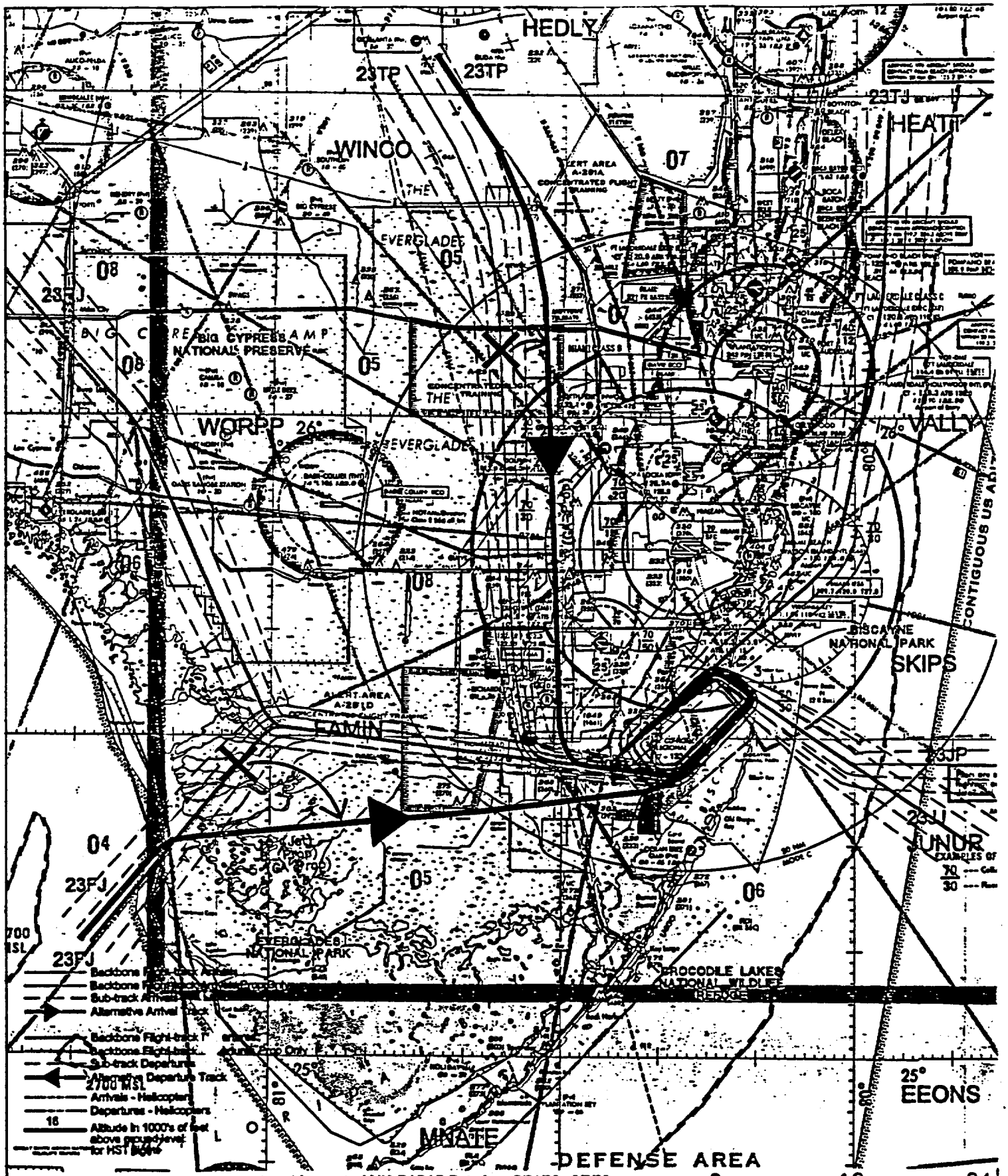

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GRAPHIC SCALE IN NAUTICAL MILES

Landrum&Brown

HST WEST FLOW - ARRIVALS
FLIGHT TRACKS ALTERNATIVE 1

FileName: P:\Hst\Gis\CAD\HST-EXHIBITS\HST-ALT1-TRKS.DWG Date: 07/26/99 @ 16:41:57

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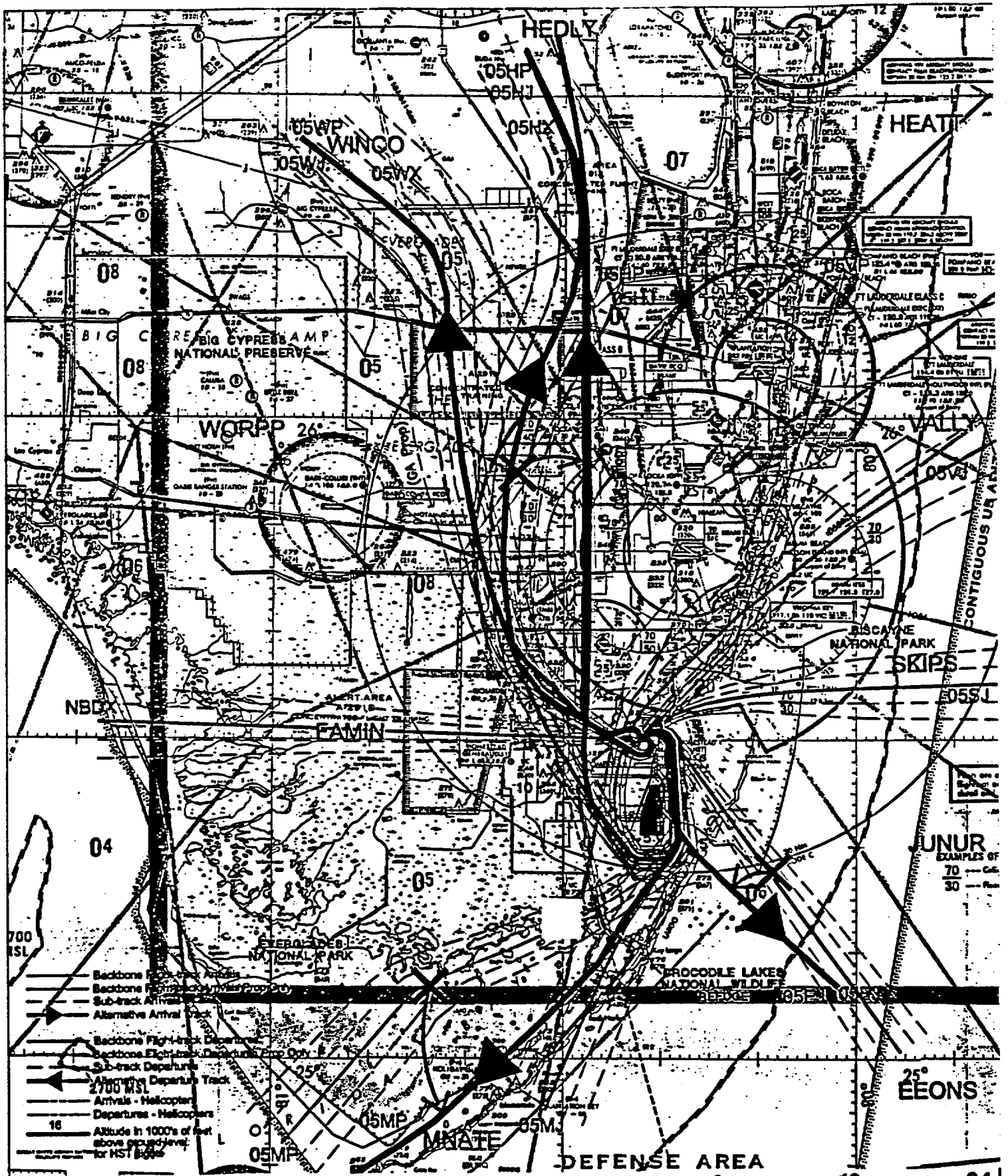

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HST EAST FLOW - DEPARTURES FLIGHT TRACKS ALTERNATIVE 1

FileName: P:\Hst\Gis\CAD\HST-EXHIBITS\HST-ALT1-TRKS.DWG Date: 07/26/99 @ 16:41:57

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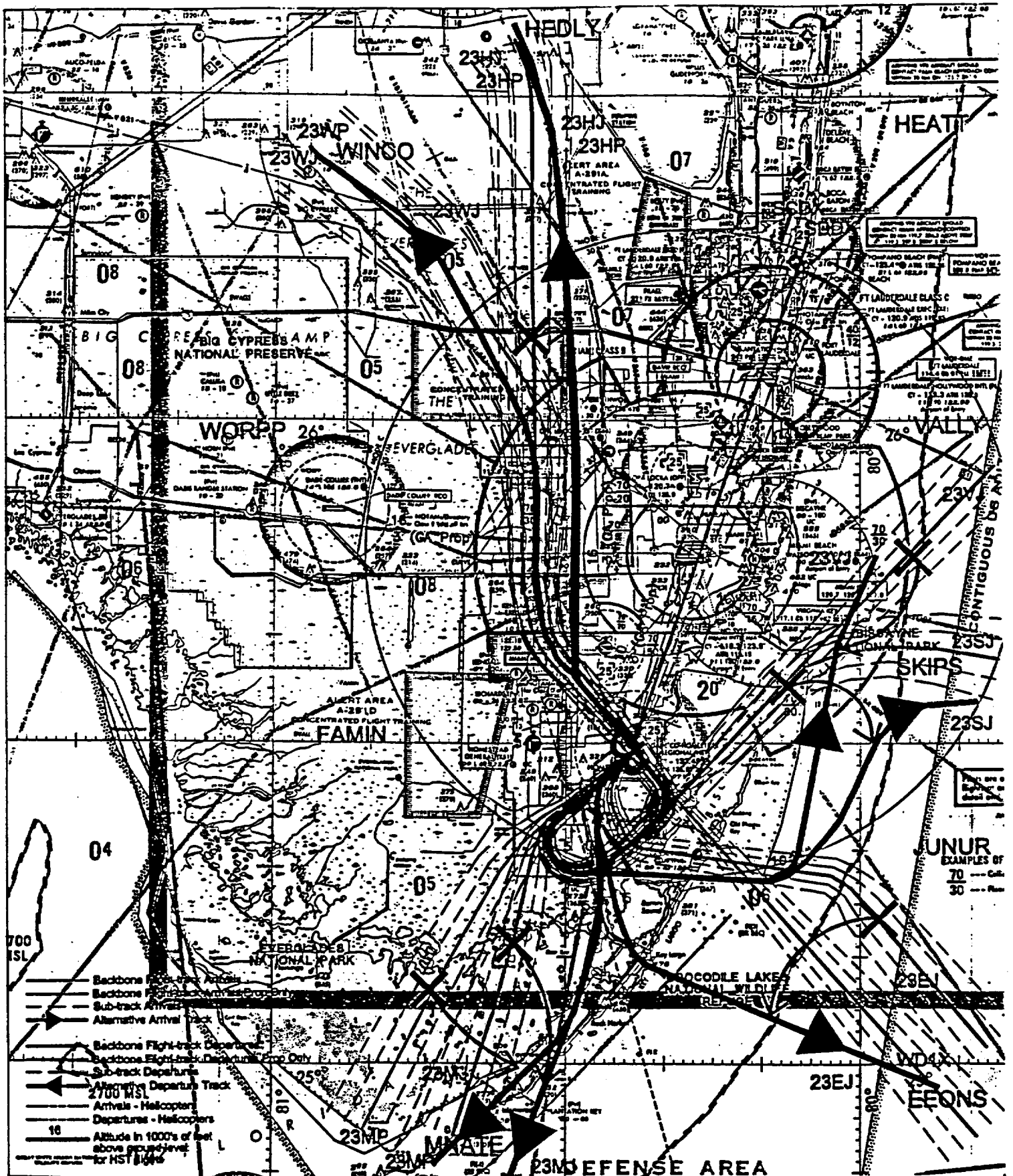

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FLIGHT TRACKS ALTERNATIVE 1

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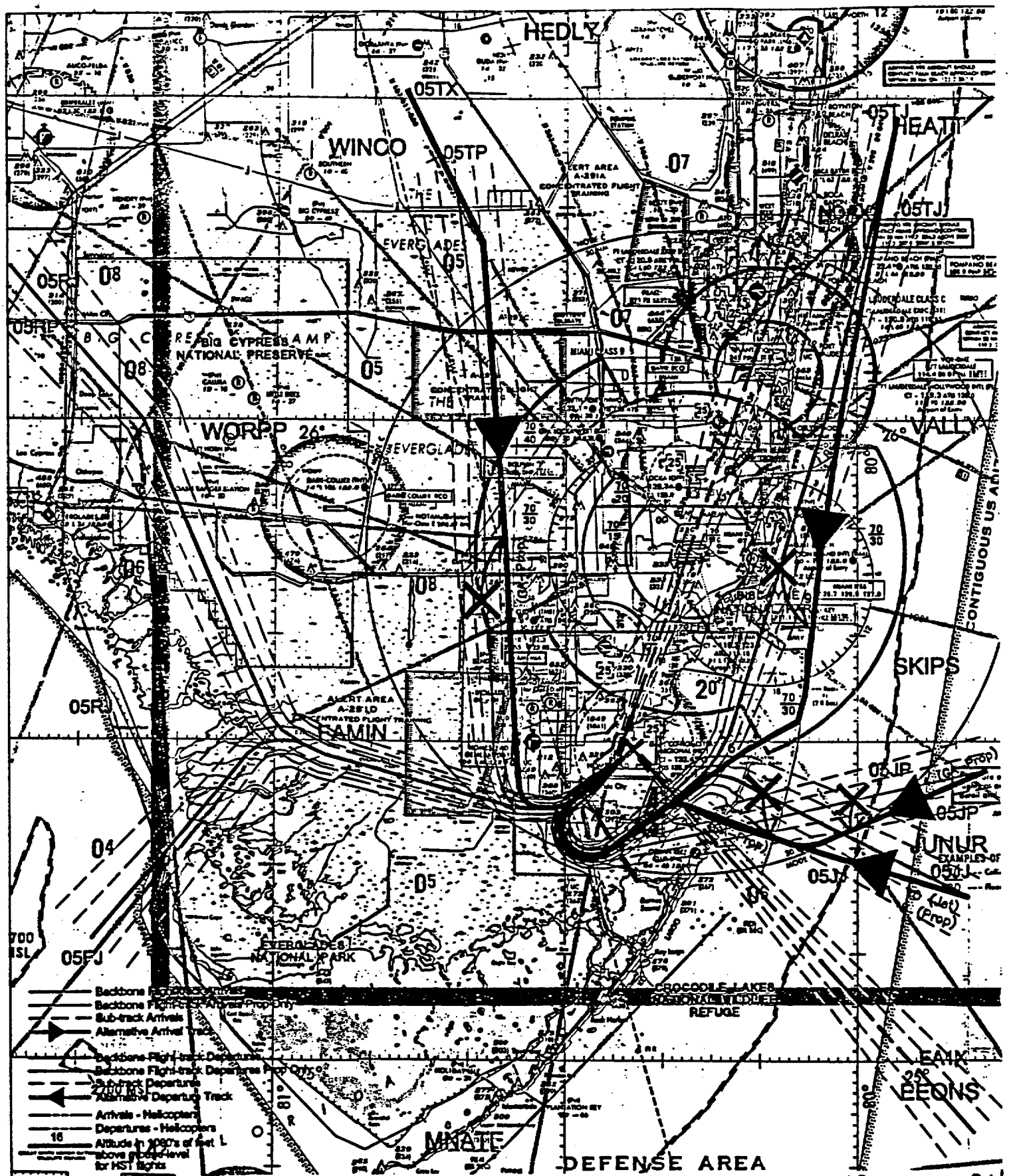

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0 12 24
GRAPHIC SCALE IN NAUTICAL MILES

LandrumBrown

HST EAST FLOW – ARRIVALS FLIGHT TRACKS ALTERNATIVE 2

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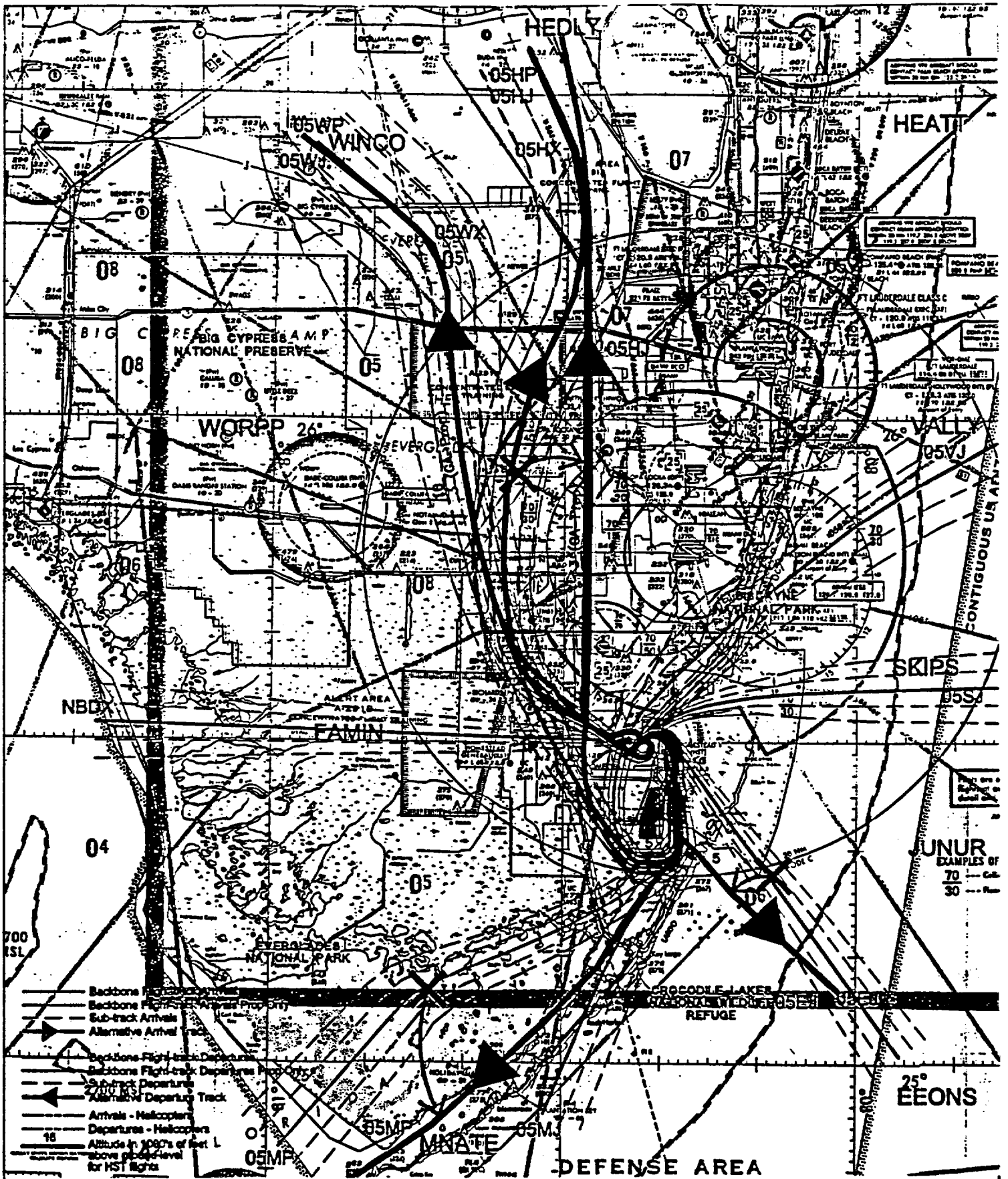

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	LandrumBrown	HST EAST FLOW – DEPARTURES FLIGHT TRACKS ALTERNATIVE 2

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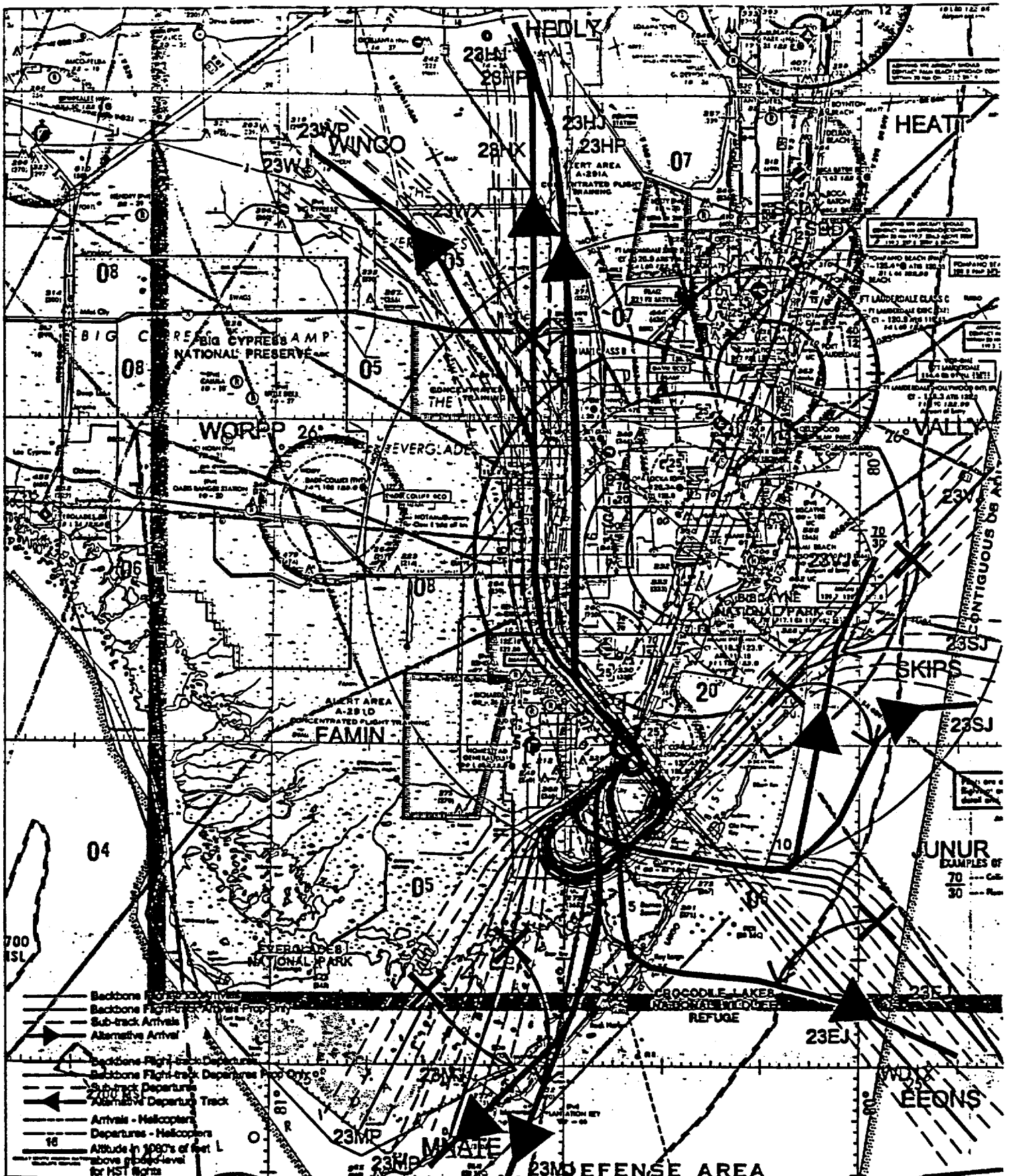

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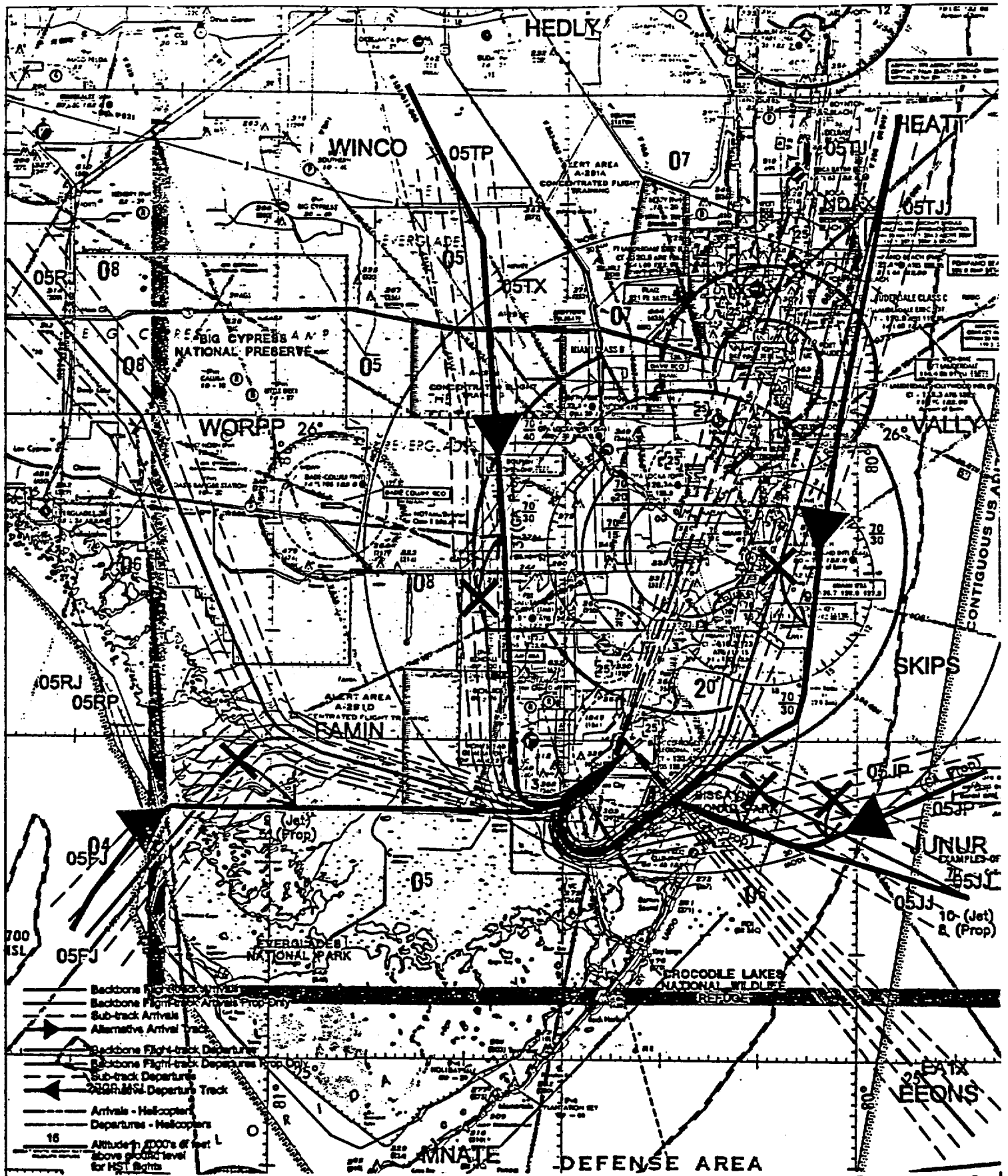

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LandrumBrown

HST EAST FLOW – ARRIVALS FLIGHT TRACKS ALTERNATIVE 3

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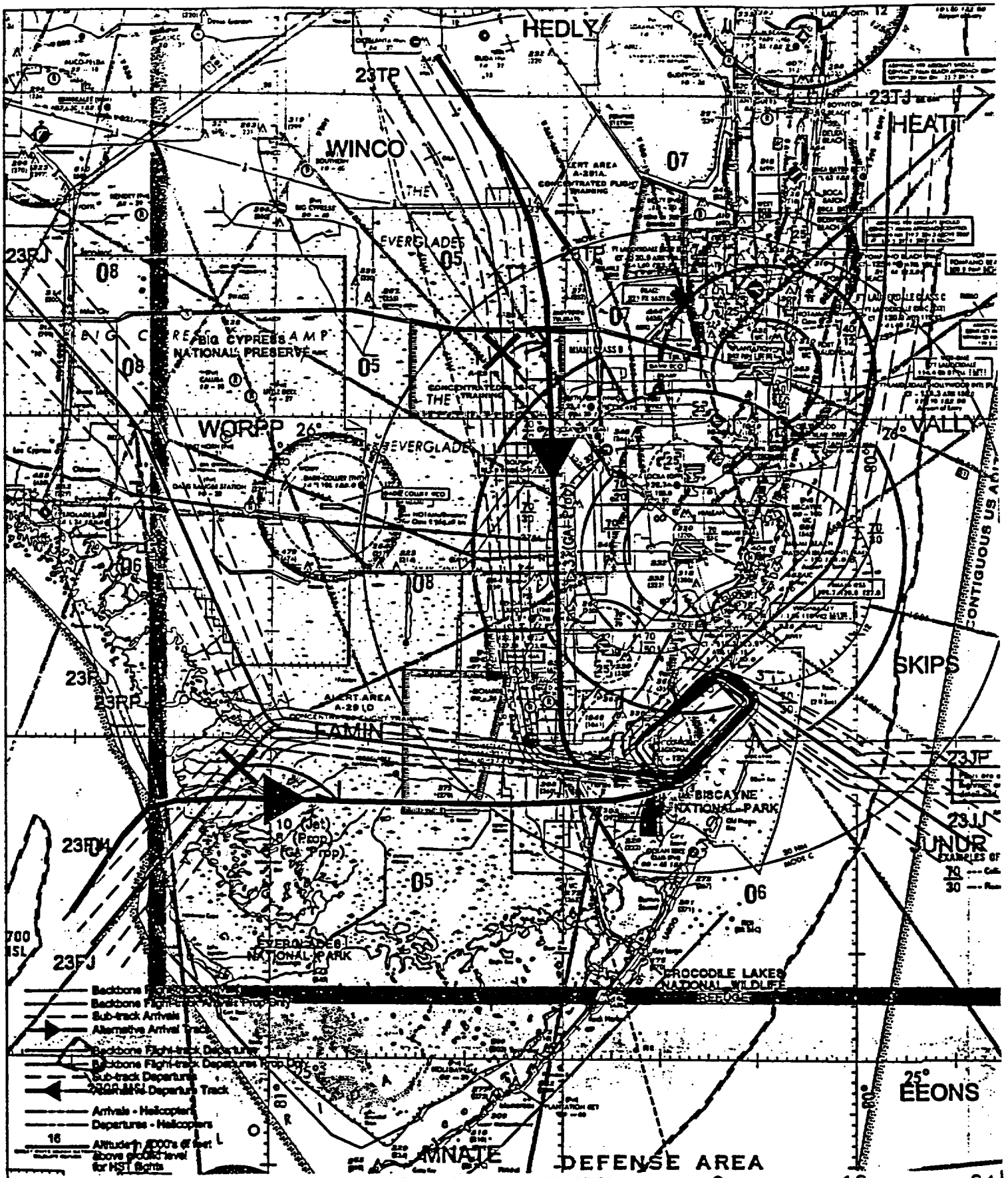

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GRAPHIC SCALE IN NAUTICAL MILES

Landrum&Brown

HST WEST FLOW - ARRIVALS FLIGHT TRACKS ALTERNATIVE 3

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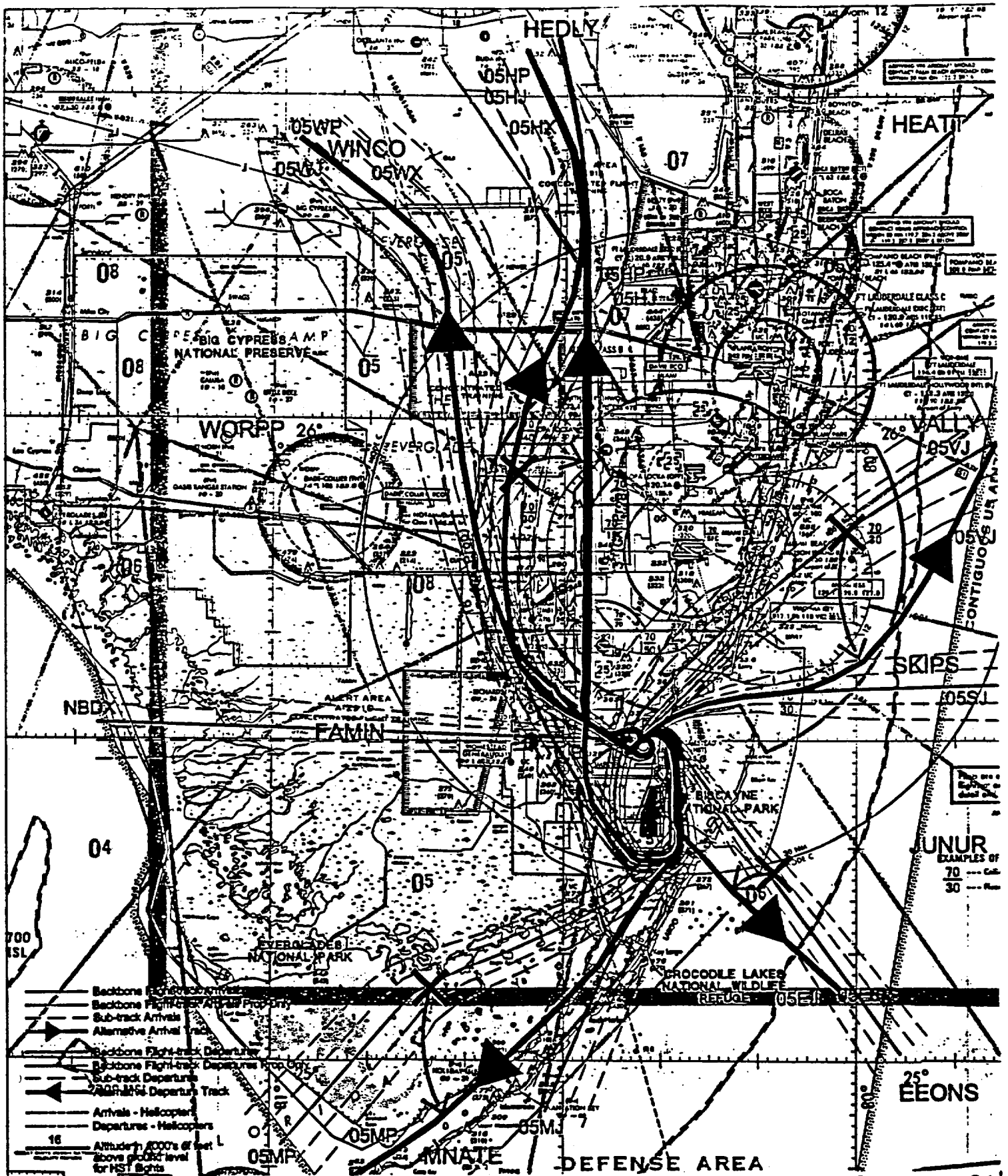

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	Landrum&Brown	HST EAST FLOW – DEPARTURES FLIGHT TRACKS ALTERNATIVE 3

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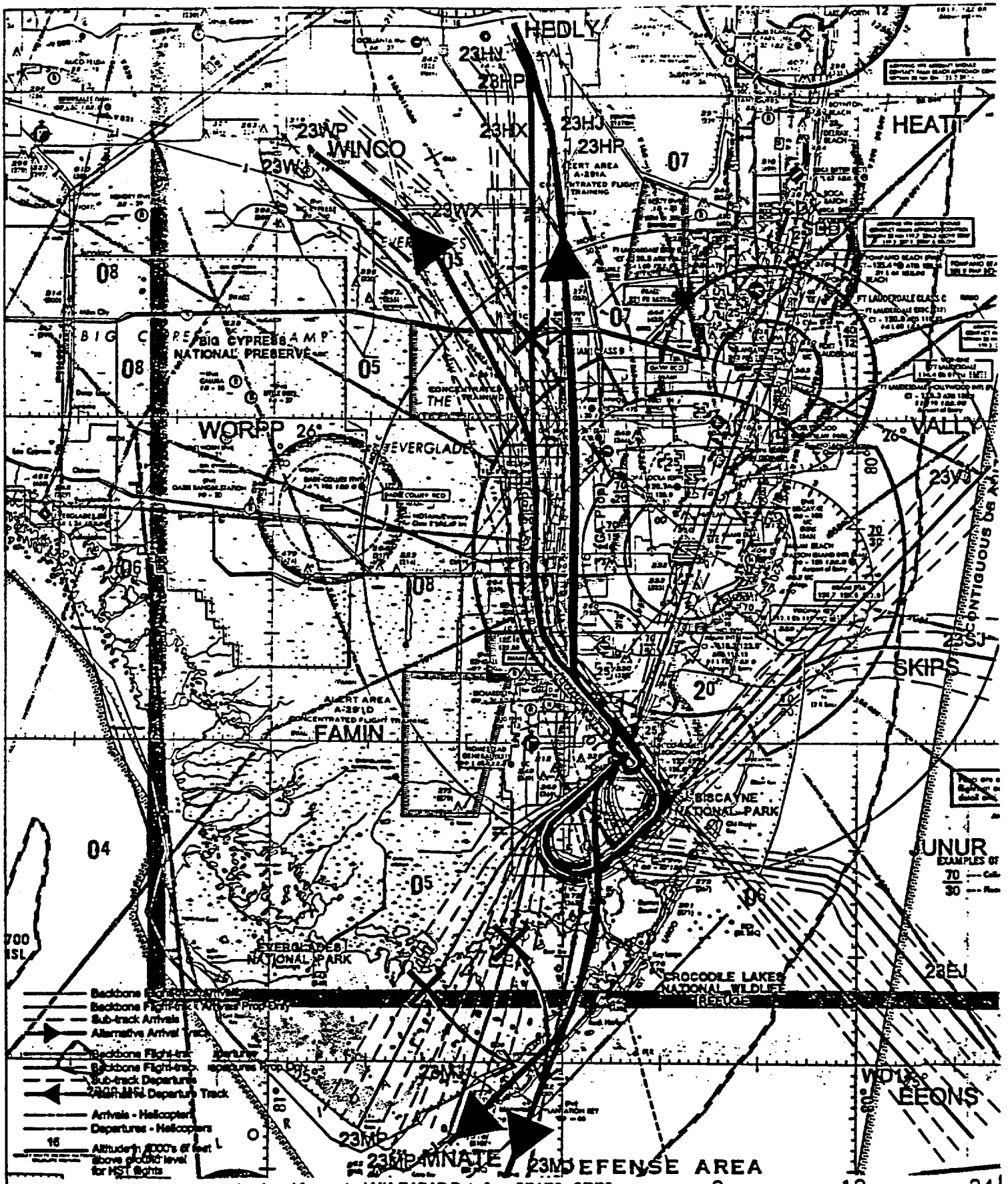

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FileName: P:\Hst\Gis\CAD\HST-EXHIBITS\HST-ALT3-TRKS.DWG Date: 07/27/99 @ 09:38:39

See Layer Manager: WF-D ALT3

HST Departure and Arrival Altitude Restrictions

In east flow, the following altitude restrictions would apply to departures:

- Jet and turboprop departures to WINCO and HEDLY will turn right and climb along the flight path until reaching an altitude of 5,000 feet MSL. They will maintain that altitude until crossing under the downwind approach from JUNUR and HEATT to Homestead. When clear of approach traffic, they may climb unrestricted to cross over the MIA approaches from FAMIN and WORPP at 10,000 feet MSL or more. This course overflys the western portion of Biscayne NP at 5,000 feet MSL.
- Jet and turboprop departures to VALLY will turn right and climb along the flight path until reaching an altitude of 5,000 feet MSL. They will maintain that altitude until crossing under the downwind approach from JUNUR and HEATT to Homestead. When clear of approach traffic, they may climb unrestricted to cross over the MIA approaches from JUNUR and HEATT at 10,000 feet MSL or more. This course overflys the western portion of Biscayne NP at 5,000 feet MSL.
- Jet and turboprop departures to SWIMM will turn right and climb along the flight path until reaching an altitude of 7,000 feet MSL. They will maintain that altitude until crossing under the JUNUR approach course to MIA. When clear of approach traffic, they may climb unrestricted. This course overflys the center of Biscayne NP at 7,000 feet MSL.
- Jet and turboprop departures to ELLEE and MNATE will turn right and climb along the flight path until reaching an altitude of 5,000 feet MSL. They will maintain that altitude until crossing under the downwind approach from JUNUR and HEATT to Homestead. When clear of approach traffic, they may climb unrestricted. This course overflys the western portion of Biscayne NP at 5,000 feet MSL.

The following altitude restrictions would apply to east flow approaches:

- Jet and turboprop approaches from WORPP will cross the fix at 9,000 feet and 5,000 feet MSL, respectively, and maintain that altitude until reaching FAMIN. After passing FAMIN, they will descend and enter the final approach course at 3,000 feet MSL.
- Jet and turboprop approaches from FAMIN will cross the fix at 9,000 feet and 5,000 feet MSL, respectively, join WORPP traffic and descend to enter the final approach course at 3,000 feet MSL.
- Jet and turboprop approaches from HEATT the JUNUR approach to MIA at 9,000 feet MSL, then descend to intercept the downwind segment of the Homestead approach at 6,000 feet MSL. They will then descend to enter the final approach course at 3,000 feet MSL.
- Jet and turboprop approaches from JUNUR will cross the fix at 10,000 feet MSL and 8,000 feet MSL, respectively, and then descend to intercept the downwind approach at 6,000 feet MSL. They will then descend to enter the final approach course at 3,000 feet MSL.

When in west flow, the airspace restraints on climb and descent are slightly different than those of east flow. West flow altitude restrictions on departures are:

- Jet and turboprop departures to WINCO and HEDLY will climb unrestricted to cross over the airport at or above 10,000 feet MSL and cross the MIA approaches from WORPP and FAMIN at or above 16,000 feet MSL.
- Jet and turboprop departures to VALLY and SWIMM will climb unrestricted to pass abeam Homestead at 10,000 feet MSL and then climb unrestricted to 16,000 feet MSL and above.
- Jet and turboprop departures to ELLEE climb and maintain 5,000 feet MSL to pass under VALLY/SWIMM departures from Homestead and then climb unrestricted to 16,000 feet MSL and above.
- Jet and turboprop departures to MNATE climb unrestricted to 16,000 feet MSL and above.

West flow constraints on approach operations are:

- Jets, turboprop, and light general aviation prop aircraft will cross the WORPP fix at 10,000 feet MSL, 8,000 feet MSL, and 5,000 feet MSL, respectively, and maintain that altitude until reaching the FAMIN intersection. They will then descend/fly level to intercept the left downwind approach at 5,000 feet MSL and the final approach course at 3,000 feet MSL.
- Jets, turboprop, and light general aviation prop aircraft will cross the FAMIN fix at 10,000 feet MSL, 8,000 feet MSL, and 5,000 feet MSL, respectively, joining the inbound traffic from the WORPP fix. They will then descend/fly level to intercept the left downwind approach at 5,000 feet MSL and the final approach course at 3,000 feet MSL.
- Jet and turboprop approaches from HEATT will cross the JUNUR approaches to MIA at 10,000 feet MSL. They will then descend and fly over the top of Homestead Regional Airport at 9,000 feet MSL, then descend to intercept the downwind portion of the Homestead approach at 6,000 feet MSL. After intercepting the downwind approach, they will descend and intercept the final approach course at 3,000 feet MSL.
- Jet and turboprop approaches from JUNUR will cross the fix at 9,000 feet MSL and 6,000 feet MSL, respectively, and then intercept the left base approach at 3,000 feet MSL. They will then fly level to intercept the final approach course at 3,000 feet MSL.

Special departure and approach profiles were developed for each aircraft type projected to operate at Homestead in future years. The general rule for the development of these altitude-distance profiles was that an aircraft was assumed to climb or descend unrestricted until reaching the constraining altitude, at which point it would transition to a level flight segment until beyond the area of constraint. This generally results in a stair-step altitude-distance profile.

Homestead Regional Airport
Annual Aircraft Operations Forecast Summary

		Current (1997)	FORECAST 2000	FORECAST 2005	FORECAST 2015	Maximum Use One Runway
Commercial Passenger						
Long Term, Market Driven						
Latin America, Caribbean, International						
Turboprop	(Dash-8,ATR-42, SWM, SF3)	0	0	0	22,130	4,500
Regional Jet	(CRJ, EM4)	0	0	0	7,260	28,500
Narrowbody Jet	(B-737/500/300/900, A320)	0	0	0	4,460	17,500
Widebody Jet	(MD-11, B-767)	0	0	0	660	660
Domestic						
Turboprop	(Dash-8,ATR-42, SWM, SF3)	0	0	0	1,490	2,500
Regional Jet	(CRJ, EM4)	0	0	0	760	11,500
Narrowbody Jet	(B-737/500/300/900, A320)	0	0	0	1,410	13,500
B-757	(B-757)	0	0	0	380	4,000
Widebody Jet	(MD-11, B-767)	0	0	0	510	510
TOTAL Market Driven					39,060	83,170
Niche Market Service						
Latin America, Caribbean, International						
Turboprop	(Dash-8,ATR-42, SWM, SF3)	0	0	4,570	7,300	25,573
Domestic						
Narrowbody Jet	(B-737/500/300/900, A320, MD-80) 1/	0	0	3,040	4,860	17,500
TOTAL Niche Market				7,610	12,160	43,073
TOTAL COMMERCIAL				7,610	51,220	126,243
General Aviation						
Single engine	(C150, C172)		26,304	27,993	33,821	29,000
Multi Engine	(PA31)		10,430	12,100	16,260	21,000
Jet	(Lear, Citation)		2,090	2,550	3,610	3,610
Helicopter			2,010	2,490	3,080	3,161
TOTAL GA			40,834	45,133	56,771	56,771
Aircraft Maintenance						
Turboprop	(Dash-8,ATR-42, SWM, SF3)	0	0	330	620	430
Narrowbody Jet	(B-737 series, A-320, MD-80, B-727)	0	0	120	410	600
Widebody Jet	(MD-11, B-767)	0	0	120	440	440
TOTAL MAINTENANCE				570	1,470	1,470
Cargo						
Express Carrier						
Narrowbody Jet	(B-727, MD-80)	0	0	0	12,570	8,500
Heavy Jet	(B-757, B-767, MD-11)	0	0	0	6,280	10,500
Miscellaneous Cargo						
Turboprop	(Cessna Caravan, King Air)	0	0	1,040	0	
Narrowbody Jet	(B-727, MD-80)	0	0	520	2,600	7,966
TOTAL CARGO				1,560	21,450	26,966
Military/Government						
U.S. Air Force	F-16C	12,000	12,000	12,000	12,000	12,000
U.S. Air Force	F-15	1,100	1,100	1,100	1,100	1,100
Transient	C-141 (C-17 in 2015) 2/	104	104	104	104	104
Transient	C-5	20	20	20	20	20
Transient	P-3	1,500	1,500	1,500	1,500	1,500
Transient	H65	1,500	1,500	1,500	1,500	1,500
U.S. Customs	PA31	900	900	900	900	900
U.S. Customs	C206	900	900	900	900	900
U.S. Customs	H60	900	900	900	900	900
U.S. Customs	C550	900	900	900	900	900
TOTAL MILITARY		19,824	19,824	19,824	19,824	19,824
TOTAL OPERATIONS		19,824	60,658	74,697	150,735	231,274

Note: Representative aircraft are provided by category. Actual fleet will depend on the carriers operating at HST.
1/ MD-80 aircraft is assumed to operate in 2005 but not in 2015 under this category.
2/ C-141 is assumed to be replaced by the C-17 in 2015.
Prepared by Landrum & Brown, 1998.

Homestead Regional Airport SEIS
Civilian Arrival Operations by Flight Track
Average Daily Itinerant Traffic by Year
FAMIN Fix

	East Traffic Flow (Runway 5) Track 05FJ or 05FP								West Traffic Flow (Runway 23) Track 23FJ or 23FP							
	2000		2005		2015		Maximum		2000		2005		2015		Maximum	
Aircraft Types	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night
A320 (A320)	0.00	0.00	0.01	0.00	0.66	0.07	2.53	0.27	0.00	0.00	0.00	0.00	0.05	0.01	0.20	0.02
B-727 (727EM2)	0.00	0.00	0.05	0.01	1.56	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.01	0.00	0.00
B-737/300 (737300)	0.00	0.00	0.01	0.00	0.66	0.07	2.53	0.27	0.00	0.00	0.00	0.00	0.05	0.01	0.20	0.02
B-737-500 (737500)	0.00	0.00	0.01	0.00	0.66	0.07	2.53	0.27	0.00	0.00	0.00	0.00	0.05	0.01	0.20	0.02
B-757 (757RR)	0.00	0.00	0.00	0.00	0.64	0.07	1.08	0.12	0.00	0.00	0.00	0.00	0.04	0.00	0.07	0.01
B-767 (767300)	0.00	0.00	0.01	0.00	0.51	0.05	0.72	0.08	0.00	0.00	0.00	0.00	0.04	0.00	0.05	0.01
CRJ, EM4 (CL601)	0.00	0.00	0.00	0.00	3.10	0.33	12.18	1.31	0.00	0.00	0.00	0.00	0.25	0.03	0.97	0.10
Lear, Citation (LEAR35)	0.23	0.02	0.27	0.03	0.46	0.05	0.70	0.07	0.02	0.00	0.02	0.00	0.03	0.00	0.05	0.00
MD-11 (MD11GE)	0.00	0.00	0.01	0.00	0.51	0.05	0.72	0.08	0.00	0.00	0.00	0.00	0.04	0.00	0.05	0.01
MD-80 (MD82)	0.00	0.00	0.05	0.01	1.56	0.17	3.38	0.36	0.00	0.00	0.00	0.00	0.10	0.01	0.23	0.02
Subtotal Jets	0.23	0.02	0.43	0.05	10.32	1.11	26.37	2.83	0.02	0.00	0.03	0.00	0.76	0.08	2.03	0.22
ATR-42 (DHC830)	0.00	0.00	0.52	0.03	3.30	0.22	3.36	0.22	0.00	0.00	0.04	0.00	0.26	0.02	0.27	0.02
C150, C172 (COMSEP)	0.83	0.05	0.91	0.06	1.19	0.08	1.60	0.11	0.08	0.00	0.08	0.00	0.10	0.01	0.14	0.01
Cessna Caravan (CNA441)	0.00	0.00	0.11	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Dash 8 (DHC8)	0.00	0.00	0.52	0.03	3.30	0.22	3.36	0.22	0.00	0.00	0.04	0.00	0.26	0.02	0.27	0.02
King Air (DHC6)	0.00	0.00	0.11	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
PA31 (BEC58P)	0.32	0.02	0.39	0.03	0.57	0.04	1.16	0.08	0.03	0.00	0.04	0.00	0.05	0.00	0.10	0.01
Rotorcraft	0.07	0.00	0.08	0.01	0.11	0.01	0.18	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.02	0.00
SF3 (SF340)	0.00	0.00	0.52	0.03	3.30	0.22	3.36	0.22	0.00	0.00	0.04	0.00	0.26	0.02	0.27	0.02
SWM (DHC6)	0.00	0.00	0.52	0.03	3.30	0.22	3.36	0.22	0.00	0.00	0.04	0.00	0.26	0.02	0.27	0.02
Subtotal Props	1.21	0.08	3.71	0.25	15.07	1.00	16.38	1.08	0.11	0.01	0.30	0.02	1.21	0.08	1.34	0.09
Total Operations	1.44	0.10	4.14	0.29	25.39	2.10	42.76	3.92	0.13	0.01	0.33	0.02	1.97	0.16	3.36	0.31

Source: Landrum & Brown traffic distributions, based on Airport/Airspace Planning Data, Technical Memorandum, Sections 1 and 3.

Homestead Regional Airport SEIS
Military and Government Existing and Forecast Operations Distribution
Local Operations - Closed Pattern

	Airport Totals				Daily Closed Pattern in East Flow (Runway 5 Operations)						Daily Closed Pattern in West Flow (Runway 23 Operations)			
	Annual	Landing/Takeoff Cycles			NC2	NC4	NC5	NC6	NC7	NC10	SC2	SC4	SC5	SC6
Aircraft Types	Activity	24-hour	Day	Night	Day	Day	Day	Day	Day	Day	Day	Day	Day	Day
F-15	100	0.14	0.14	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00
F-16	4,800	6.58	6.58	0.00	3.09	0.53	0.46	0.99	1.05	0.00	0.26	0.07	0.07	0.07
P-3	500	0.68	0.68	0.00	0.32	0.00	0.00	0.32	0.00	0.00	0.03	0.00	0.00	0.03
H65	500	0.68	0.68	0.00	0.00	0.00	0.00	0.63	0.00	0.00	0.00	0.00	0.00	0.05
PA31	500	0.68	0.68	0.00	0.63	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00
C206	500	0.68	0.68	0.00	0.63	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00
H60	500	0.68	0.68	0.00	0.00	0.00	0.00	0.63	0.00	0.00	0.00	0.00	0.00	0.05
C550	500	0.68	0.68	0.00	0.63	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00
Total Operations	7,900	10.82	10.82	0.00	5.40	0.53	0.46	2.56	1.05	0.00	0.48	0.07	0.07	0.20

Homestead Regional Airport SEIS
Local General Aviation Forecast Operations Distribution
Local Operations - Closed Pattern

	Daily Closed Pattern in East Flow (Runway 5 Operations)								Daily Closed Pattern in West Flow (Runway 23 Operations)							
	2000		2005		2015		Maximum Use		2000		2005		2015		Maximum Use	
Aircraft Types	NC2	NC6	NC2	NC6	NC2	NC6	NC2	NC6	SC2	SC6	SC2	SC6	SC2	SC6	SC2	SC6
COMSEP (C150, C172)	15.99		16.21		17.55		2.41		1.02		1.03		1.12		0.15	
BEC58P (PA31)	6.49		7.06		8.48		1.75		0.41		0.45		0.64		0.11	
LEAR35 (Lear, Citation)		1.25		1.57		1.75		0.28		0.08		0.10		0.11		0.02
Rotorcraft	1.25		1.31		1.46		0.28		0.08		0.08		0.09		0.02	
Total Operations	23.73	1.25	24.58	1.57	27.49	1.75	4.43	0.28	1.51	0.08	1.57	0.10	1.75	0.11	0.28	0.02

Projected Annual Space Launch Operations
Homestead Regional Airport SEIS

Type of Space Access System	2000	2005	2015	Full Buildout
ASC, RSC, ROC	0	160	320	320
B-747, Astroliner	0	0	160	160
Total Space Launch	0	160	480	480