

**Agenda Item 1: Review of the Implementation Programme of RNAV routes****Proposal for Amendment to the CAR/SAM ANP Vol. I**

1.1 The meeting took note of the RNAV routes Implementation Programme in Brazil that, excepting publication dates and validation, most of the proposals were already contemplated in the proposal for amendment to the CAR/SAM Air Navigation Plan (ANP) Vol. I, presented by the Secretariat, for which the following conclusions was formulated:

**Conclusion AP/ATM/6/1 RNAV routes approved in the AP/ATM/5 meeting**

That, the States and International Organizations that originate the Proposal for Amendment NO. SAM 03/1-ATM publish the corresponding AIP Supplement on 18 March 2004 with effective date 10 June 2004 to:

- a) Implement routes **UM 654, UM 548, UM 402, UM 544, UM 400, UM 671, UM 788, UM 540, UM 792 and UM 415;**
- b) Realign routes **UL 301, UL 310, UN 741, UN 857, UN 873, UN 866;** and
- c) Cancel routes **UA 311, UA 318, UA 302, UA 425, UA 304, UA 300 and UA 301.**

1.2 Considering IATA's requirement, Argentina, Brazil, Chile and Paraguay agreed to advance the implementation of route **UM 799**; in this regard, the meeting formulated the following conclusion:

**Conclusion AP/ATM/6/2 Implementation of RNAV Route UM 799**

That,

- a) Argentina, Brazil, Chile and Paraguay publish the corresponding AIP Supplement on 25 December 2003 with effective date 19 February 2004 for the implementation of RNAV Route **UM 799**, included in the Proposal for Amendment Serial No. SAM 03/1-ATM; and
- b) IATA carries out the necessary coordinations with the Database Providers in order to guarantee that the aircraft that will use route **UM 799** have the updated database, not later than 19 February 2004.

1.3 In respect of the implementation, realignment and cancellation of routes, which do not involve Brazil and that are also contemplated in the proposal for amendment to the CAR/SAM ANP Vol. I, presented by the Secretariat, the meeting formulated the following conclusions:

**Conclusion AP/ATM/6/3 RNAV routes UM 419; UM 529; A 573; UA 573 and UB 677**

Considering that routes **UM 419; A 573, UA 573; UB 677 and UM 529** are included in the Proposal for Amendment Serial No. SAM 03/1-ATM:

- a) Panama and COCESNA make the coordinations in order to publish the corresponding AIP Supplement on 25 December 2003 with effective date 18 March 2004 for the implementation of RNAV Route **UM 419**;
- b) Bolivia and Peru publish the corresponding AIP Supplement on 25 December 2003 with effective date 18 March 2004 for the realignment of routes **A 573, UA 573** and **UB 677**;
- c) Argentina and Chile publish the corresponding AIP Supplement on 18 March 2004 with effective date 10 June 2004 for the implementation of RNAV Route **UM 529**.

**Conclusion AP/ATM/6/4****Route UM 525**

United States, Colombia, Curacao, Panama and Dominican Republic agree:

- a) to publish the corresponding AIP Supplement on 19 February 2004 with effective date 18 March 2004 to implement RNAV Route **UM 525**, already included in the Proposal for Amendment Serial N° SAM 03/1-ATM; and
- c) amend, as indicated below, the coordinates of the following reporting points:

**BITIX** 10<sup>0</sup> 34' 14''N 077<sup>0</sup> 25' 00''W  
**SELAN** 13<sup>0</sup> 51' 51''N 073<sup>0</sup> 19' 55''W

**Modifications proposed to the ATS Routes Network in the Brazilian airspace**

1.4 Additionally, Brazil proposed other modifications to the Regional Routes Network, which were analyzed by the meeting, formulating the following conclusion:

**Conclusion AP/ATM/6/5****Cancellation and realignment of ATS Routes in the Brazilian airspace**

That,

- a) the ICAO SAM Regional Office initiates the process of amendment of the CAR/SAM ANP Basic Vol. in order to:

Realign routes:

- i. **UL 201** in the NDB MTU/VOR CPN segment by the **NDB MTU/VOR PSN** segment;
- ii. **UL 795** in the NDB AAQ /VOR BAG segment by the **VOR BAG/VOR PSN** segment;
- iii. **UA 312** in the VOR PCX/VOR BRS/VOR STM segment by the **VOR PCX/VOR FRM/VOR STM** segment;
- iv. **UB 680** in the VOR CNF/JOBIM/VOR PAI segment by the **VOR CNF/VOR BHZ/VOR PAI** segment.

Cancel the following routes along their whole extension:

- v. **UB 691;**
- vi. **UL 320;**
- vii. **UB 602;** and
- viii. **UG 741**

Cancel the following route segments:

- ix. **VOR PCX/VOR BRS** of route **UL 304;**
- x. **VOR REC/VOR PCX** of route **UA 314;**
- xi. **VOR SVD/VOR CNF/VOR CPN** of route **UB 678;**
- xii. **VOR REC/VOR URP** of route **UB 695;**
- xiii. **VOR MRC/NDB BRU** of route **UB 694;**
- xiv. **VOR FLZ/VOR BRS** of route **UB 688;**
- xv. **VOR POR/VOR BCO** of route **UA 308;**
- xvi. **VOR PCX/VOR ATF** of route **UA 315;**
- xvii. **VOR SCB/VOR POR** of route **UA 309;**
- xviii. **VOR LET/VOR PAI** of route **UA 565;**

- b) Brazil, in respect of all the routes described in a), and Colombia in respect of route UA 565, publish the corresponding AIP Supplement on 18 March 2004 with effective date 10 June 2004.

#### **New RNAV Routes proposed**

1.5 The meeting took note of the proposals for new RNAV routes and formulated the following decisions and conclusions:

#### **Decision AP/ATM/6/6**

#### **SAM/WG Feasibility Study for the Implementation of the new RNAV Routes proposed**

That,

- a) The ICAO SAM Regional Office initiates the process of amendment to the CAR/SAM ANP Basic Vol. Of the following RNAV routes:
  - i. **VOR VAS/VOR JUJ/VOR LOA/VOR IQQ** and deletion of Route **UR 560;**
  - ii. **VOR VAS/TIKLA;**
  - iii. **VOR VAS/VOR VIR** and deletion of the **VOR VAS/NDB MCL/VOR VIR** segment of route **UA 321;** and
  - iv. **VOR/VAS/VOR CBA.**
- b) Argentina, Bolivia, Paraguay and Chile provide the corresponding information so that the ICAO SAM Regional Office could start the process of amendment; and

- c) The SAM WG reviews the feasibility of the implementation of RNAV routes indicated in a).

**Conclusion AP/ATM/6/7****RNAV Route Asuncion/Ezeiza**

That, Argentina and Paraguay review the feasibility of the implementation of RNAV route Asuncion/Ezeiza and the cancellation of the routes or route segments that overlap or are very close to their trajectory, and present their results in the AP/ATM/7 meeting.

**Conclusion AP/ATM/6/8****RNAV Route Asuncion/Montevideo**

That, Argentina, Paraguay and Uruguay review the feasibility of the implementation of RNAV route Asuncion/Montevideo and the cancellation of the routes segment that overlap or are very close to their trajectory, and present their results in the AP/ATM/7 meeting.

**Route segment SAO GABRIEL VOR-DME and ELORZA NDB**

- 1.5.1 Brazil, Colombia and Venezuela decided to discuss this matter in a Multilateral Meeting.

**Modification of the transference point of route UA 319 between the Baranquilla and Curacao FIRs**

- 1.5.2 Colombia and Curacao decided to discuss this matter in a Bilateral Meeting.

**Reactivation of Route UL 471 Warning Areas NOTAM activated****Areas of special use NOTAM activated**

- 1.6 The United States advised the meeting of the changes to the activation of the Warning Areas (W) in the Havana FIR affecting the implementation of route UL 471. The U.S. Navy, user of W174D and W465C, has agreed to activate both Warning Areas by NOTAM. Miami ARTCC will act as the coordinating facility to issue the corresponding international NOTAMs. In view of which, the meeting formulated the following conclusion:

**Conclusion AP/ATM/6/9****Reactivation of Route UL 471**

That,

- a) COCESNA coordinated the publication of the NOTAM reactivating Route UL 471;
- b) Cuba publishes the AIP Supplement implementing the **PABEL/TADPO** segment of route UL 471; and
- c) The respective NOTAM and AIP Supplement be published on 25 December 2003 with effective date 19 February 2004.

### **Coded North Atlantic/Caribbean Routes**

1.7 The United States proposed a programme whereby route segments from the North Atlantic tracks to destination airports in the Caribbean region could be coded for easy verbal coordination. These coded routes, labelled NAC 1 to NAC 14, are contained in **Appendix A** to this part of the report. Their purpose is to permit ATC to issue extensive routes to pilots using the label, rather than stating each segment, significantly reducing controller and pilot workload and ATC loop errors.

1.8 Pilots will readback the label, and enter the information into their flight management systems. ATC will also coordinate the routes with subsequent facilities using the label, e.g. NAC 3.

1.9 States involved agreed to coordinate on a bilateral or multilateral level to fully develop the programme. Once agreed, the procedures will be incorporated into inter-facility Letters of Agreement, will be published in appropriate State documentation and the International Flight Information Manual. This issue was supported by the meeting and the following conclusion was approved:

#### **Conclusion AP/ATM/6/10**

#### **Coded North Atlantic/Caribbean Routes**

That States coordinate implementation of the Coded North Atlantic/Caribbean Routes shown in **Appendix A** to this part of the report and publish the information in their inter-facility Letters of Agreement, appropriate State documentation and the International Flight Information Manual.

#### **Amendment to the Letter of Operational Agreement (LOA) between Curacao ACC and San Juan CERAP – Route UL 337**

1.10 Curacao and United States agreed that it was not necessary to coordinate the activation of the air traffic in the route UL 337 in the San Juan FIR; for which the following conclusion was agreed:

#### **Conclusion AP/ATM/6/11**

#### **Amendment to the Letter of Operational Agreement (LOA) between Curacao ACC and San Juan CERAP – Route UL 337**

That, Curacao and United States amend the Letter of Operational Agreement (LOA) between Curacao ACC and San Juan CERAP according to the following text:

*“Coordination is not required for activate air traffic on route UL 337 in the San Juan FIR.”*

#### **FAA Presentation on RNAV Routes in the United States airspace**

1.11 The FAA delegation made an interesting presentation on RNAV Routes in the United States airspace and the impact in the RNAV Routes Implementation Programme in the CAR/SAM Regions, expressing the effort of that administration to overcome the difficulties affecting this process, which was appreciated by the Meeting. Such presentation is included in **Appendix B** to this part of the report.

## Appendix A

### Routes Proposed in the North Atlantic/Caribbean (NAC)

<u>NAC#</u>	<u>DSTN</u>	<u>ROUTE</u>
1	MYNN	MTHOL A705 MILLE A637 ALUTE ZQA
2	MIA	MTHOL A705 MILLE A637 ALUTE FOWEE FOWEE STAR
2a	FLL	MTHOL A705 MILLE A637 ALUTE CAREY DEKAL DEKAL STAR
3	PBI	R514/A699 SUMRS A699 NUCAR WALIK DIRECT
4	MUHA	MTHOL A705 MILLE A637 ALUTE ZQA R628 TANIA
	MUVR	MTHOL A705 MILLE A637 ALUTE ZQA R628 TANIA
5	MUGM	LETON DIRECT BYGON
6	MMMX	MTHOL A705 MILLE A637 ALUTE ZQA CANOA B646 ROBIN UR522 PAZ UJ102 PCA
7	MMUN	MTHOL A705 MILLE A637 ALUTE ZQA CANOA B646 VINKA B879 GUN
	MMCZ	MTHOL A705 MILLE A637 ALUTE ZQA CANOA B646 VINKA B879 GUN
8	MBGT	LUNNI B891 WATRS
9	MUHG	LUNNI B891 WATRS GTK ZIN
	MUHA	LUNNI B891 WATRS GTK ZIN
	MUVR	LUNNI B891 WATRS GTK ZIN
	MUGM	LUNNI B891 WATRS GTK ZIN
10	MDPP	LUNNI B891 POKEG
	MDSB	LUNNI B891 POKEG
12	MDLR	GRANN A523/G432 THANK A319 BETIR
13	MTPP	LUNNI B891 WATRS BOTES
14	MKJP	LUNNI B891 ETBOD G633 BENET
	MKJS	LUNNI B891 ETBOD G633 BENET

**Apéndice B al Informe sobre el  
Asunto 1**

**Appendix B to the Report on  
Agenda Item 1**

# Federal Aviation Administration



## RNAV ROUTES

# *Miami Center's T-Route Initiative*

LOCAL CONDITIONS  
CREATE THE NEED

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- STATUS OF NAVAIDS IN THE AREA
- INCREASE IN TRAFFIC
- NAVAID MAINTENANCE CONCERNS
- REPEATED GTK RADAR OUTAGES
- DELAYS

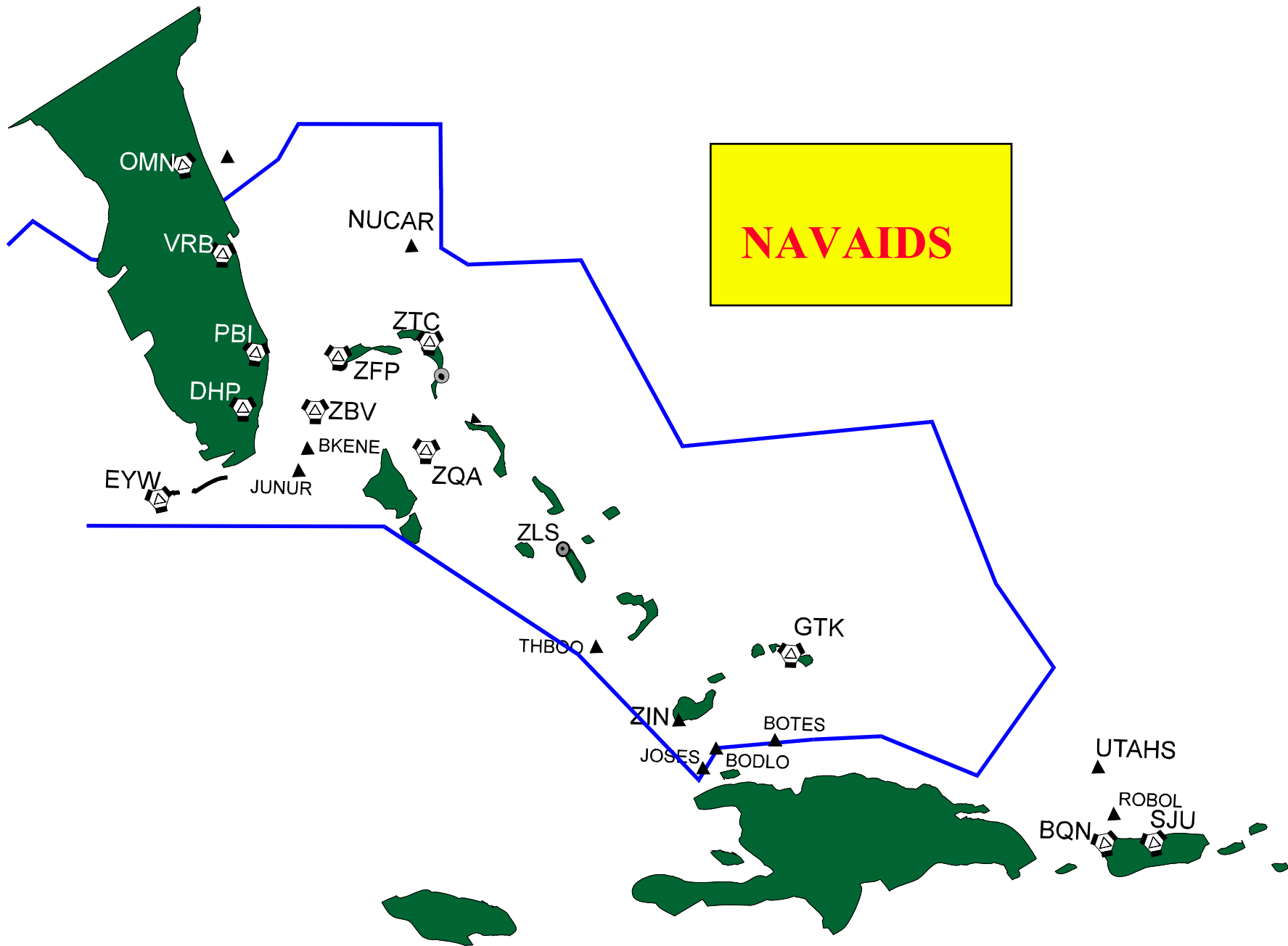
# *“T- Routes”*

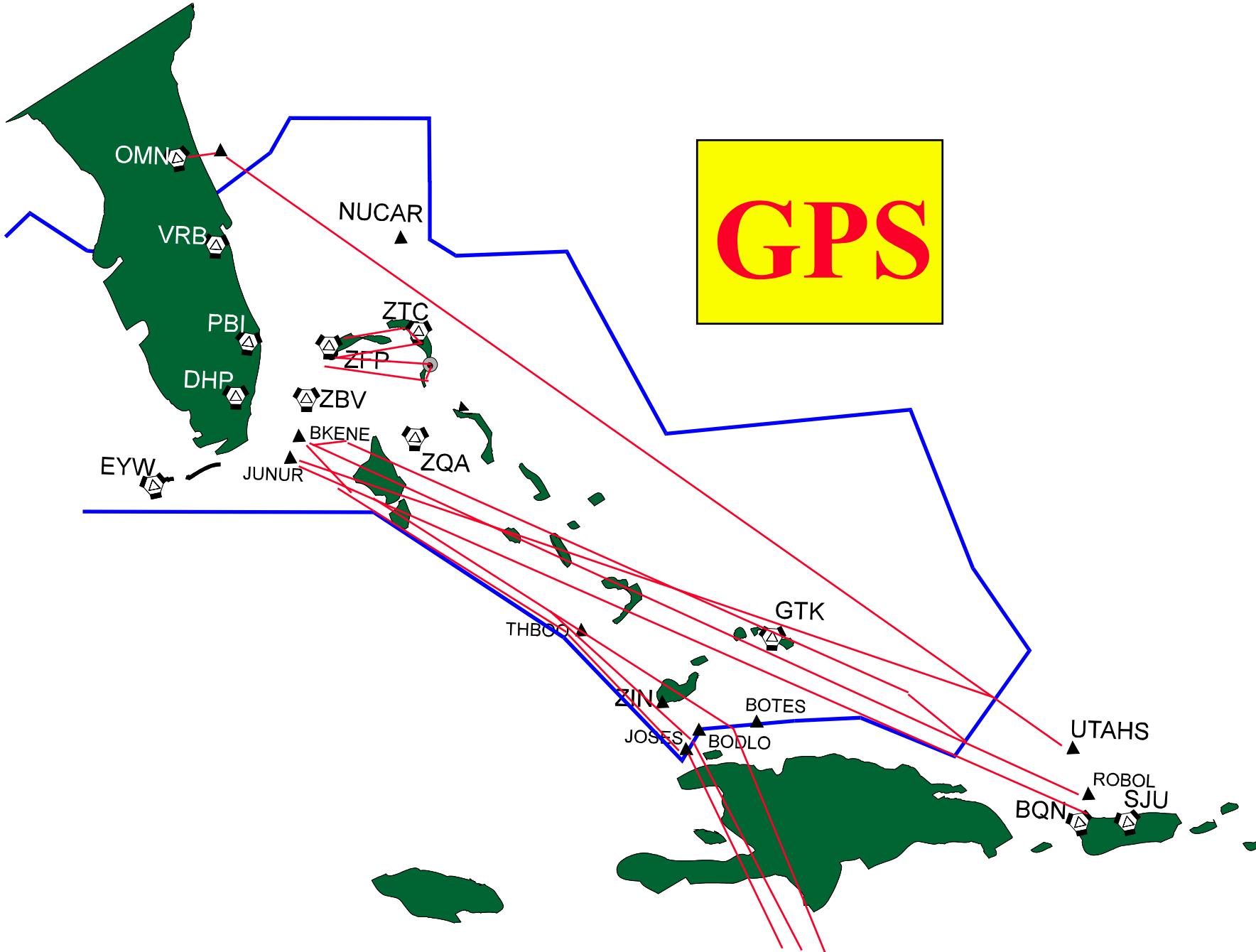


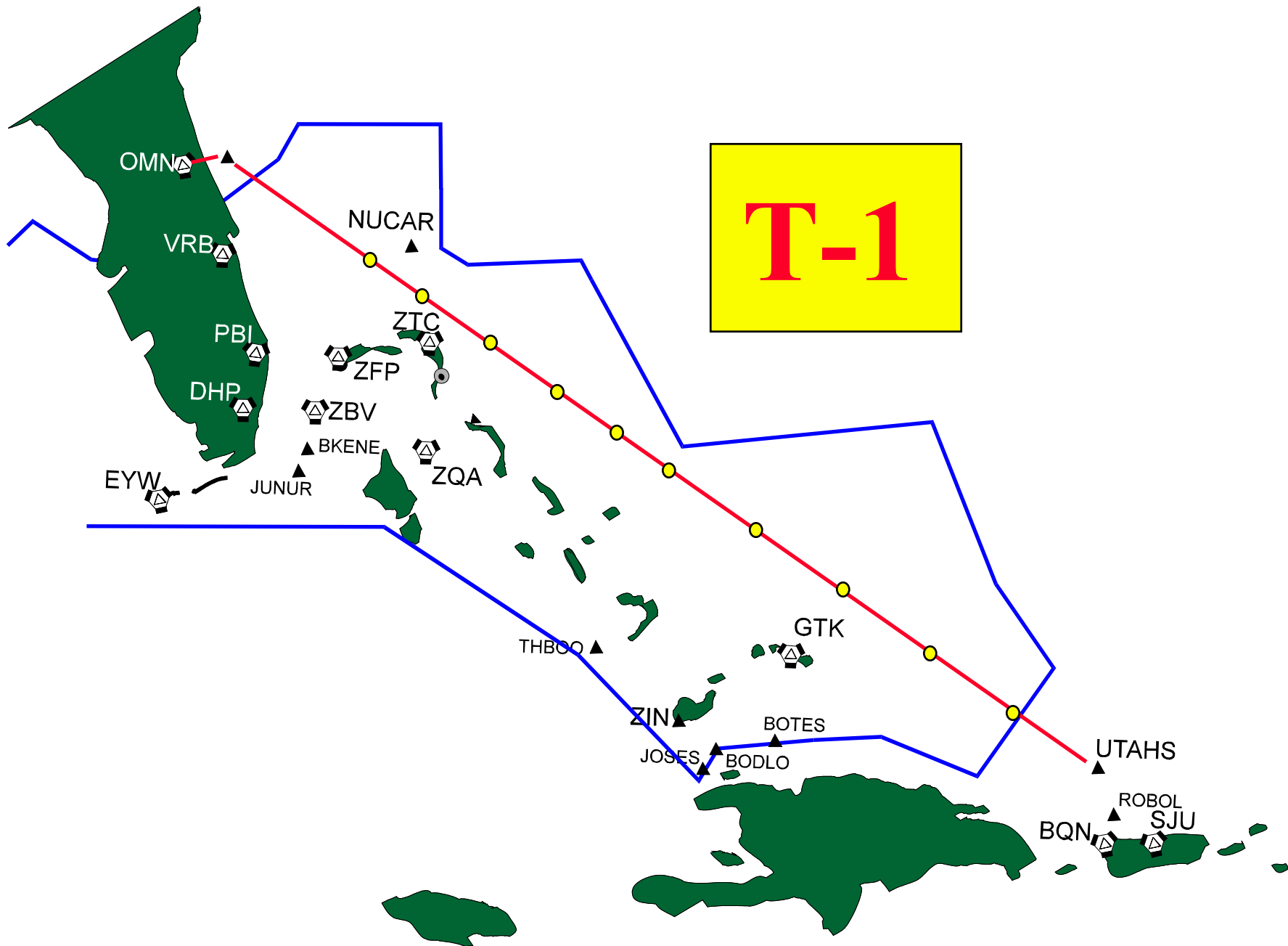
## BACKGROUND

The Miami Center T-Route initiative took many years to develop. All concerned parties, (including ICAO) tested the concept, ensured the safety and reliability of the routes, and took extraordinary measures to ensure the proposed routes complimented the traffic flows in use.

The T-Routes filled a need where conventional navigational methods could not, they did not simply provide for direct routings from the U.S. to the Caribbean.

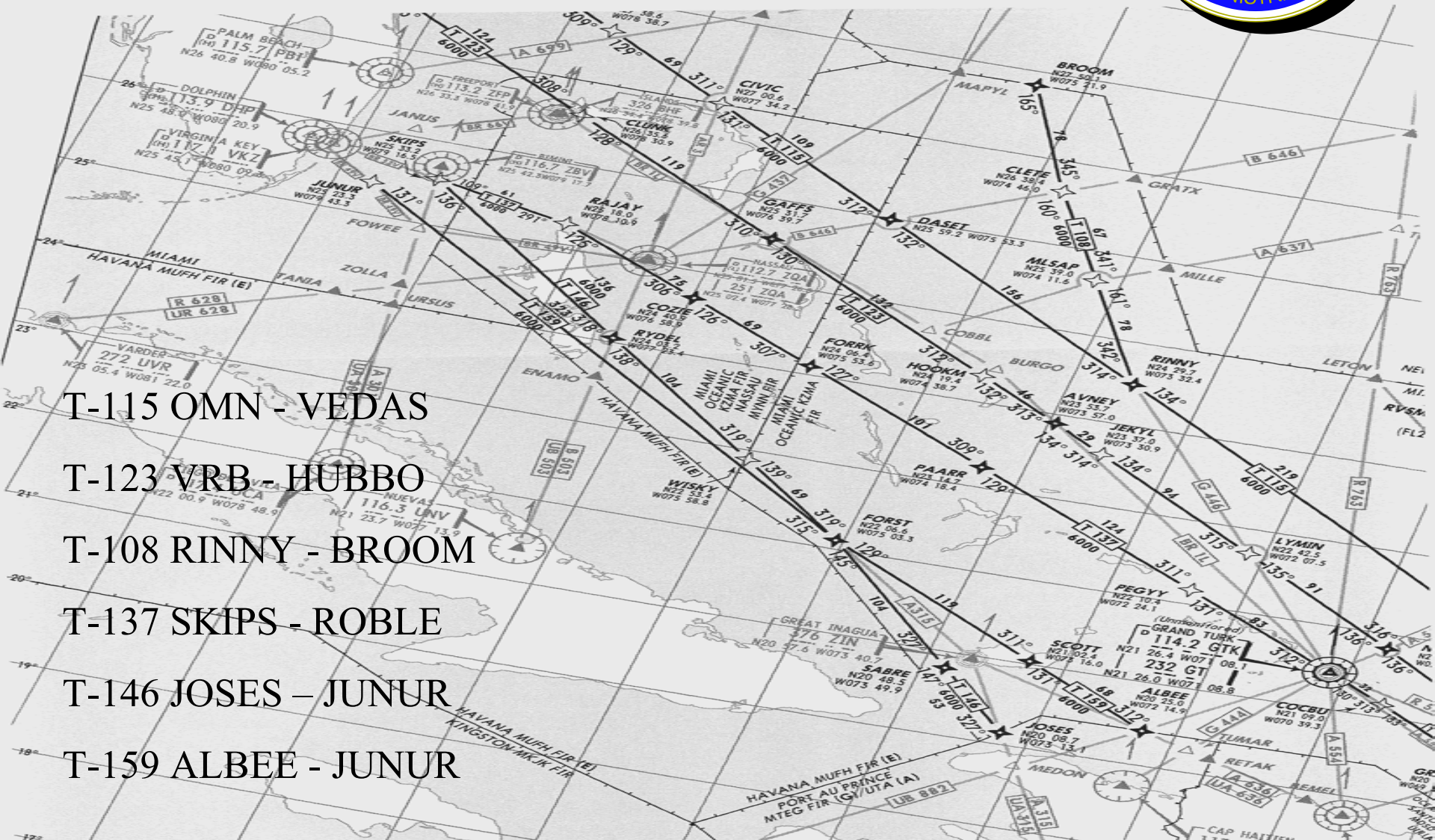






**T-1**

# “T-Routes”



T-115 OMN - VEDAS

T-123 VRB - HUBBO

T-108 RINNY - BROOM

T-137 SKIPS - ROBLE

T-146 JOSES - JUNUR

T-159 ALBEE - JUNUR

# *“Q- Routes”*

## BACKGROUND

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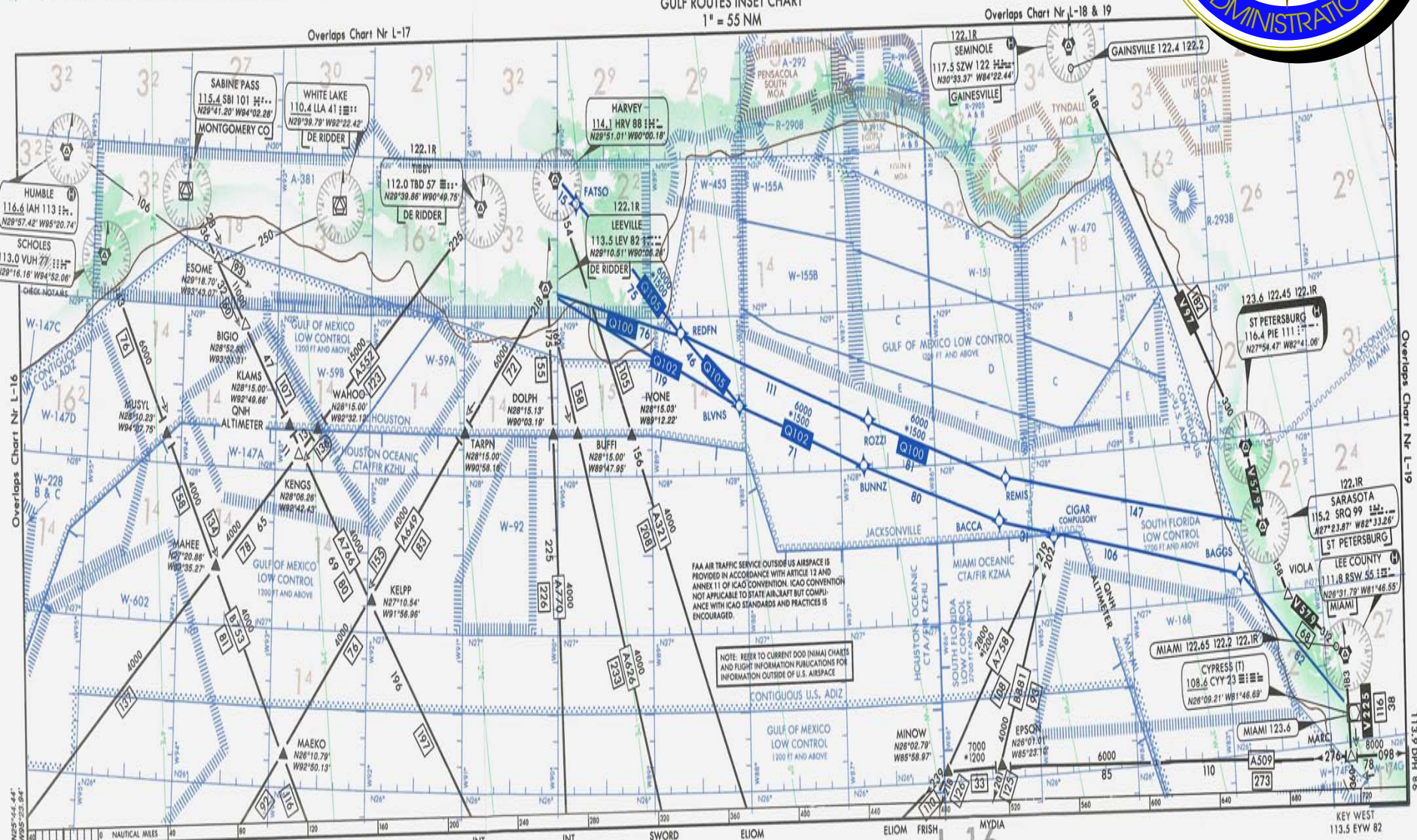
Q-Route development involved a different process due to the number of internal FAA organizations impacted. All concerned parties first discussed and then tested the concept, ensured the safety and reliability of the routes, and took extraordinary measures to ensure the proposed parallel routes enhanced the flow of traffic through very congested airspace.

The Q-Routes filled a need for additional routes where conventional navigational methods could not, they did not simply provide for direct routings from one side of the Gulf of Mexico to the other.

# "Q-Routes"



GULF ROUTES INSET CHART  
1" = 55 NM



# *Requests for New RNAV Routes*

## *QUESTIONS?*



- PROCESS USED TO CREATE ROUTES
- INTERNATIONAL COORDINATION
- TRANSITION THROUGH\INTO FIR'S
- AIRCRAFT EQUIPAGE

# *Requests for New RNAV Routes* *QUESTIONS?*

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- RESOLUTION OF AVIONICS ISSUES
- RULEMAKING (U.S & ICAO)
- DEVELOPMENT OF NON/VOR DME SIDS AND STARS
- CONNECTIVITY
- USE IN NON RADAR

# Federal Aviation Administration



## GREPECAS RNAV ROUTE PROPOSALS

UL780 – Santiago Chile – Miami

UL795 – Sao Paulo/Rio – Miami

UL776 - Sao Paulo/Rio – Barbados – Antigua – New York/Washington D.C.

UL793 – Buenos Aires – Caracas - New York/Washington D.C.

UL674 – Caracas/Curacao/Aruba – Houston/Dallas

UL337 – Port of Spain – Santo Domingo – Miami

UL471 – San Salvador – Miami

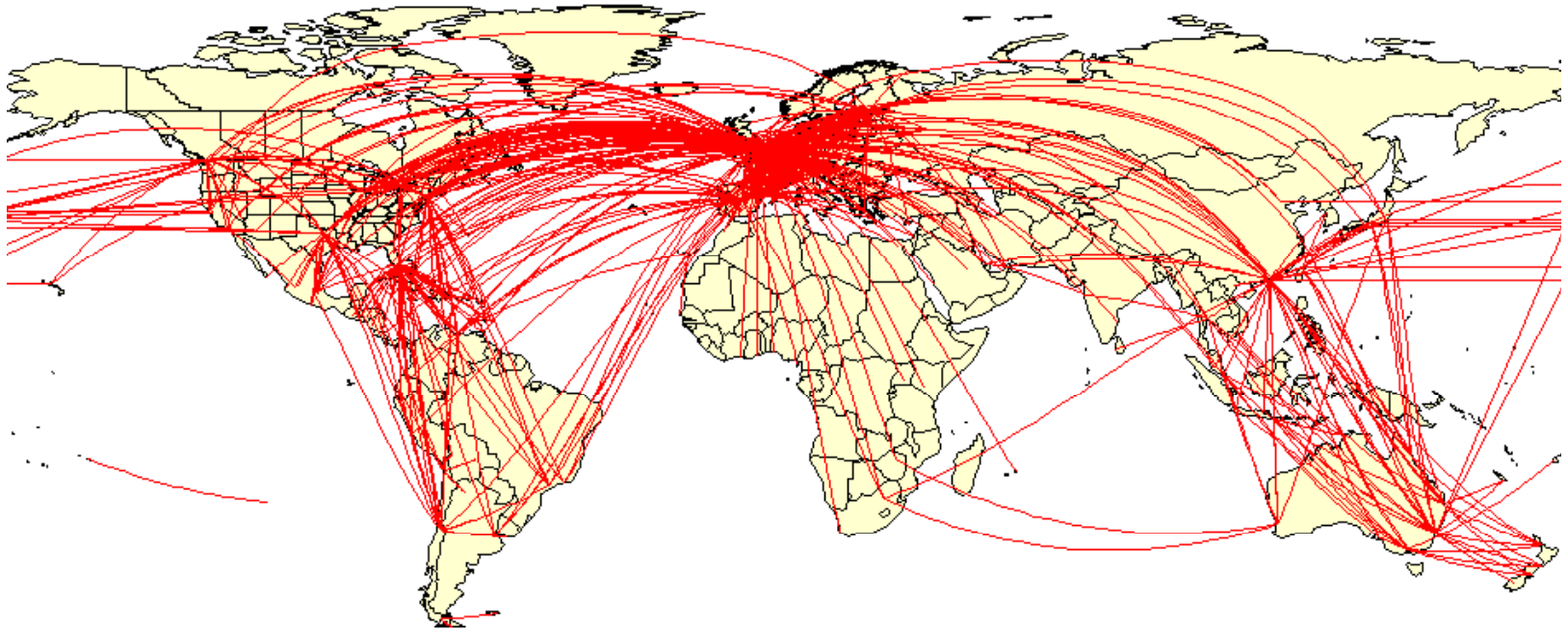
UL670 – Bogota – Kingston – New York

UL655 - Sao Paulo/Rio – San Jose – Los Angeles

UL403 - San Jose – Miami

UL417 – Buenos Aires – Barranquilla - Miami

# Managing System Integrity



**Together, we manage a global, complex, and fast moving NETWORK of people, aircraft, equipment, facilities, and airspace.**

# *RNAV Routes*



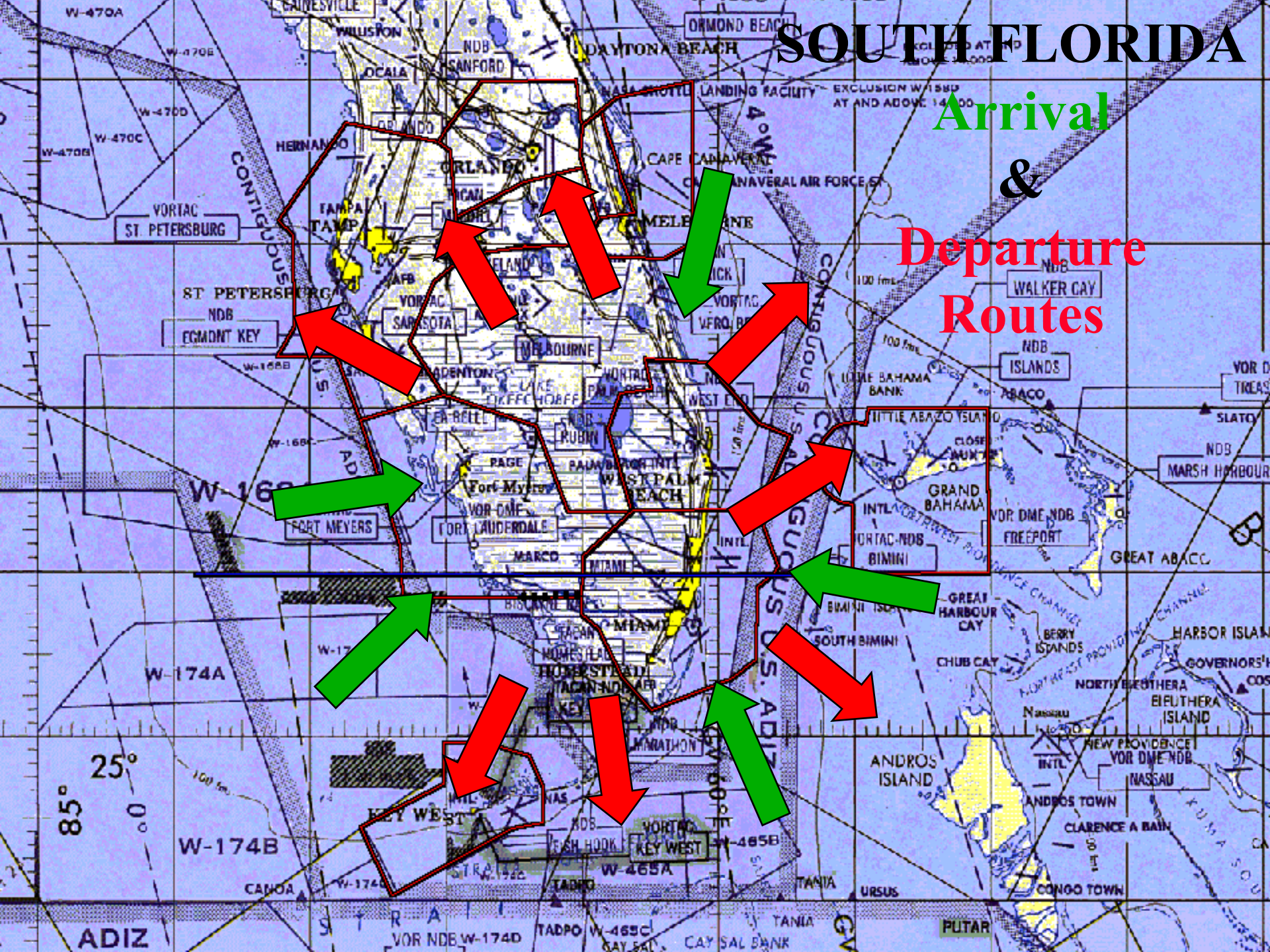
RNAV Routes must conform with the existing traffic flow that is established or exists within the FIR of any & all states they pass through.

# SOUTH FLORIDA

Arrival

&

Departure  
Routes



# ***RNAV Routes***

## ***Preferred Arrival & Departure Routings***

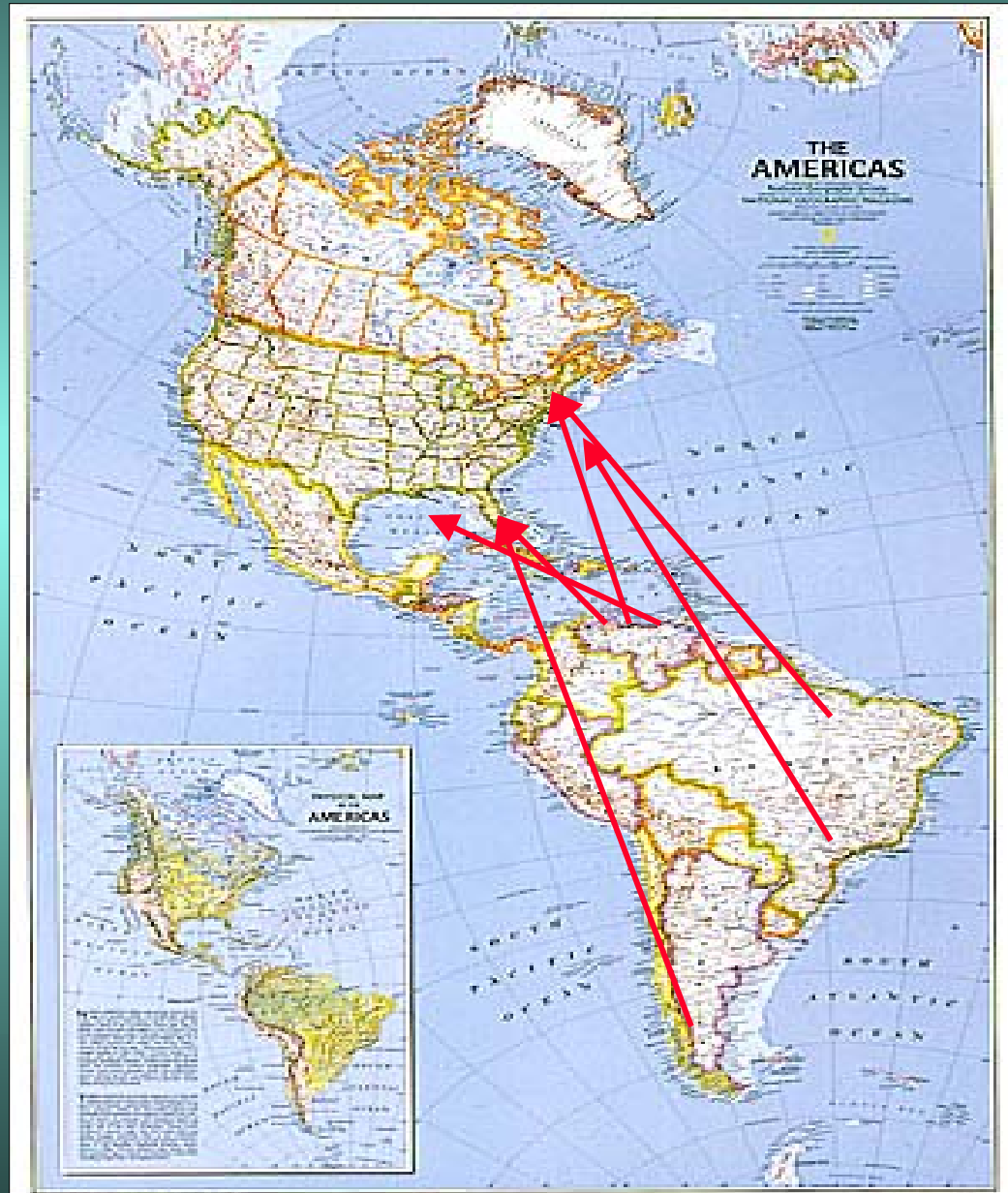


The U.S. Flight Data processor will **automatically** amend filed flight plans to conform to the **“preferred”** arrival or departure routing in use!

Controllers issue these routes routinely.

Requests for **“direct”** routings are approved on a **“traffic permitting”** basis!

# *RNAV Routes*



# ***RNAV Routes***

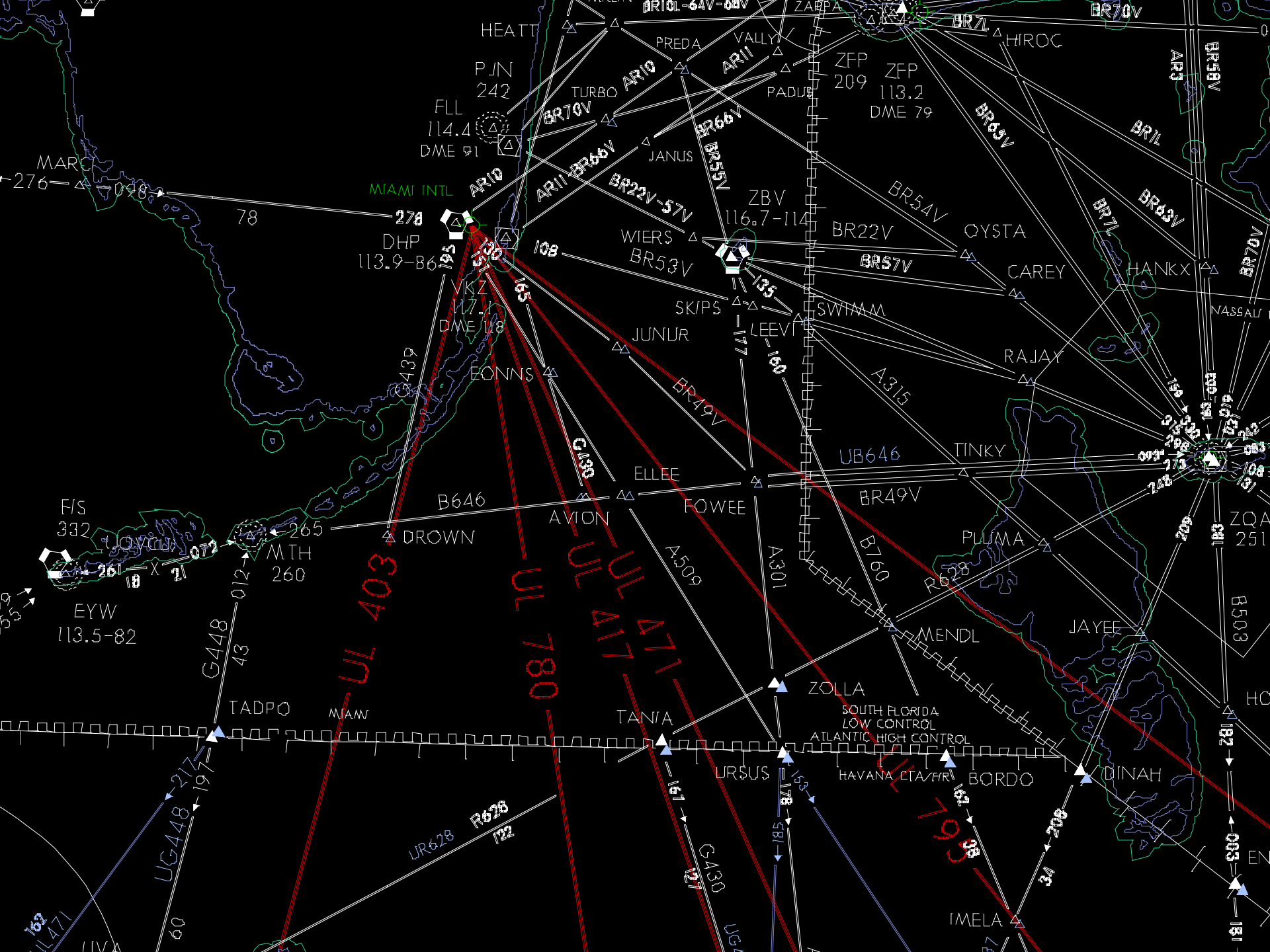


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Although direct routes may appear desirable, establishing them may conflict with the existing route structure in the region.

Routes that end at the DHP VOR for aircraft arriving in Miami are impossible to create as they ignore the most basic tenets of air traffic control.

Miami and Havana share a busy common border and the addition of crossing points between the FIR's cannot be taken lightly .

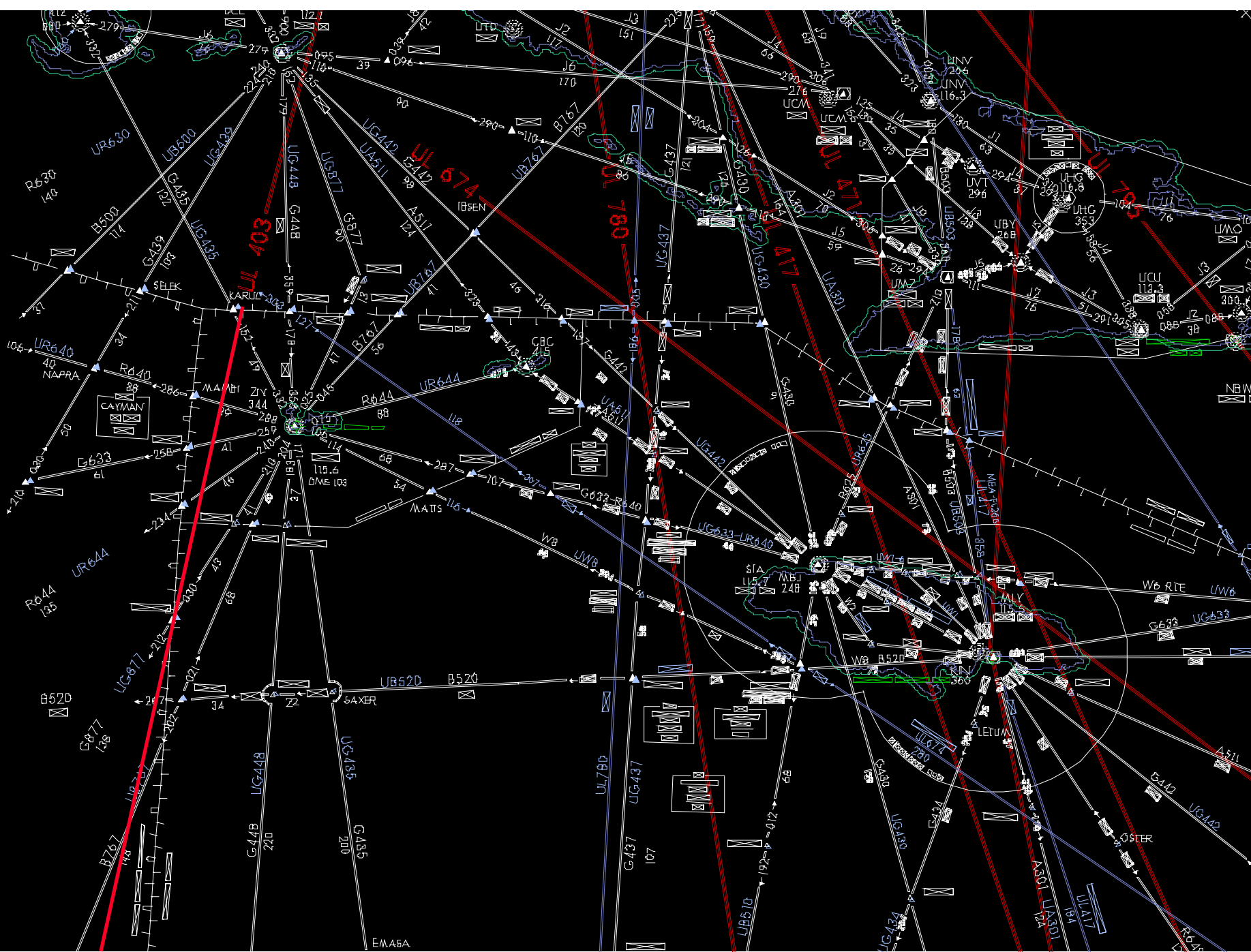


# ***RNAV Routes***



We should not approve route additions without a thorough study of the existing and proposed traffic flows and the identification of the routes they would replace.

Any proposal for new more direct routes should also state the old routes that would be deleted because they are being replaced by the more efficient routes.



# *RNAV Routes*



The proposed inbound route to Miami closely parallels UL 337. There would be little benefit in establishing this new airway just a few miles from an existing airway.

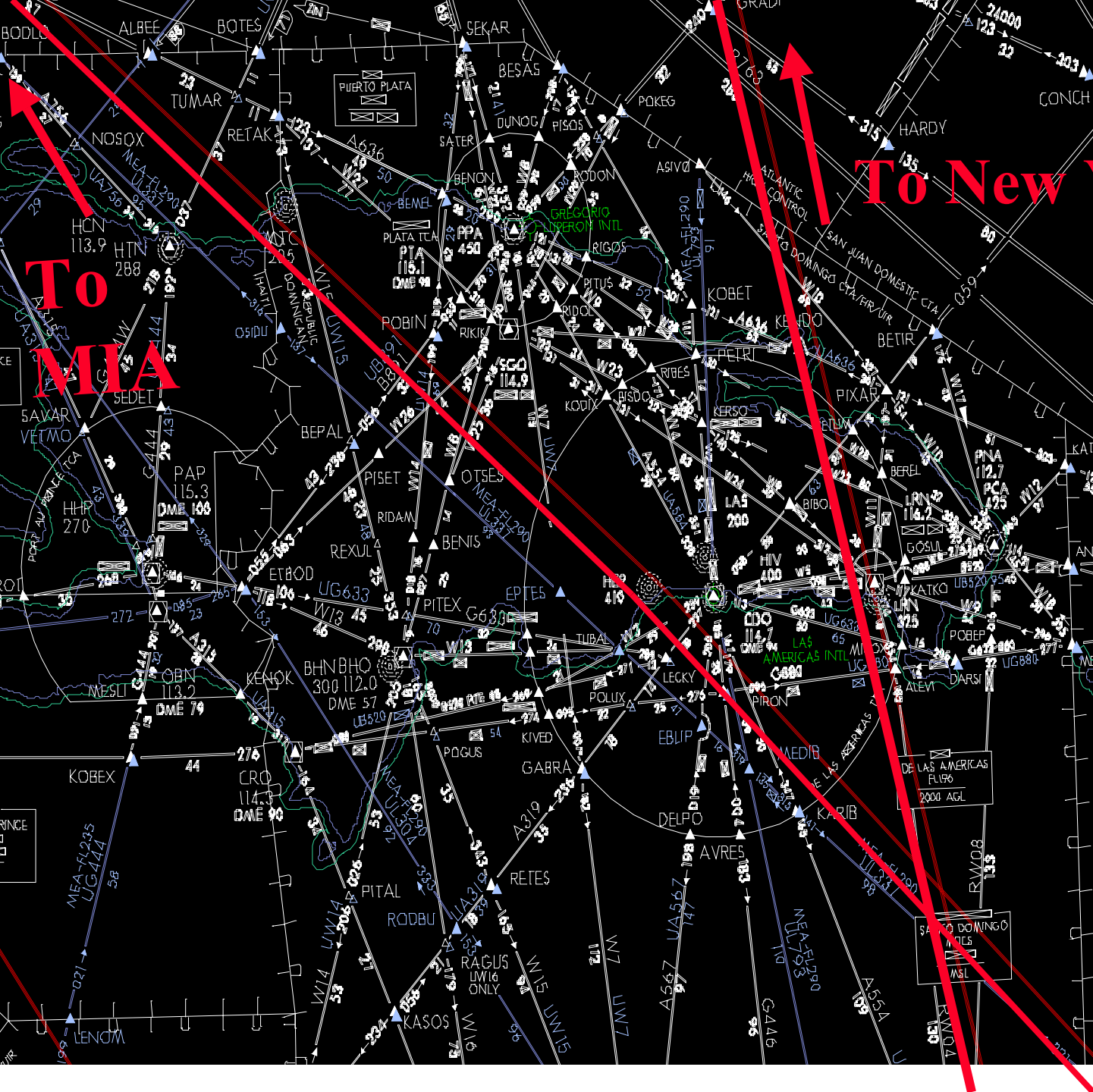
The proposed airway to New York crosses a major congestion point in Miami's airspace as soon as it enters U.S. airspace from MDSD.

This would have an unacceptable impact on a high density traffic area resulting in delays.



**To**  
**MIA**

**To New York**

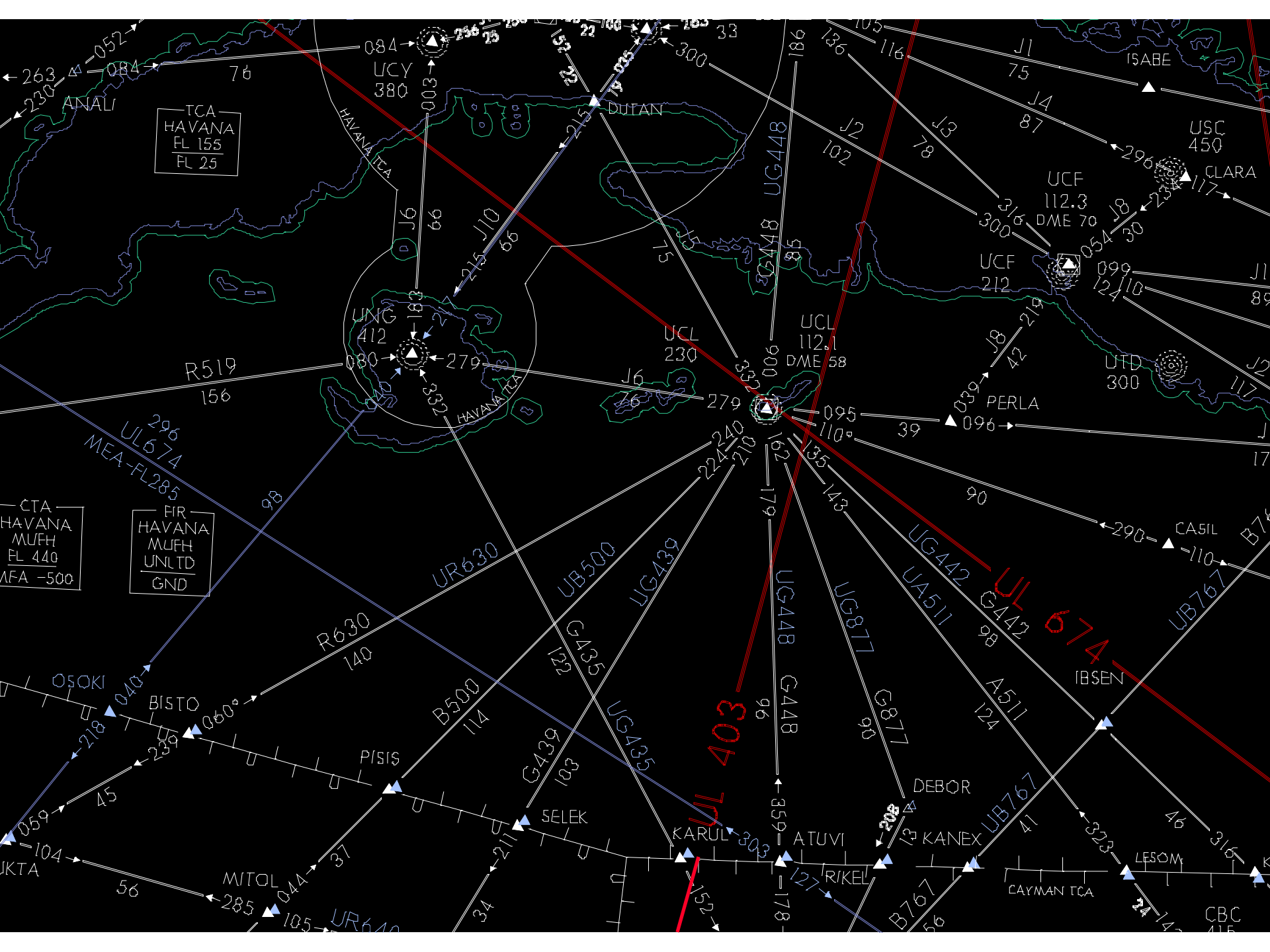


# ***RNAV Routes***



The next slide depicts proposed routes (UL403 & 674) over or near UCL in the Havana FIR.

Continued direct, both routes enter U.S. airspace in conflict with established traffic flow.



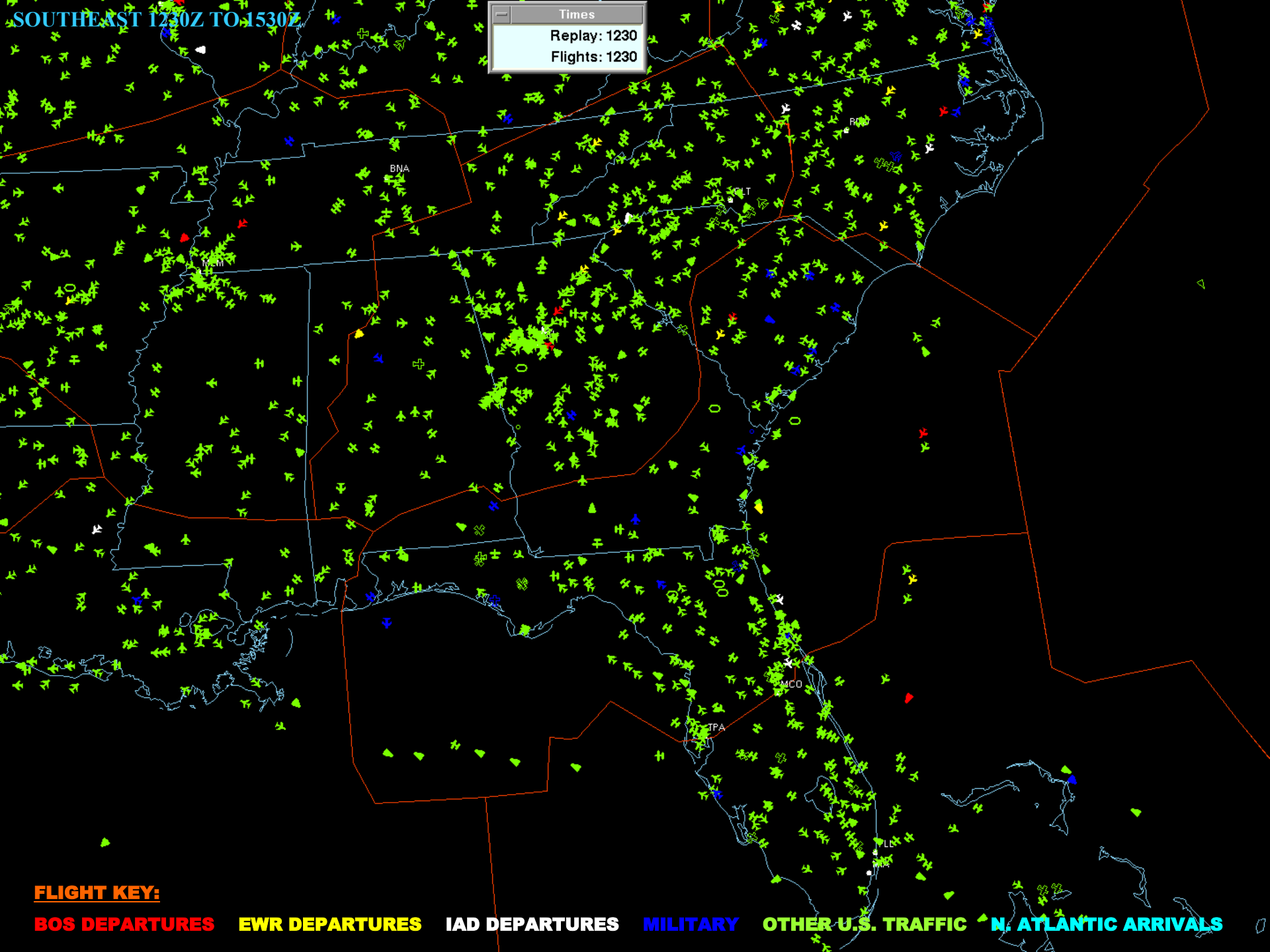
# *RNAV Routes*



Example of traffic flow  
Southeast U.S

SOUTHEAST 1230Z TO 1530Z

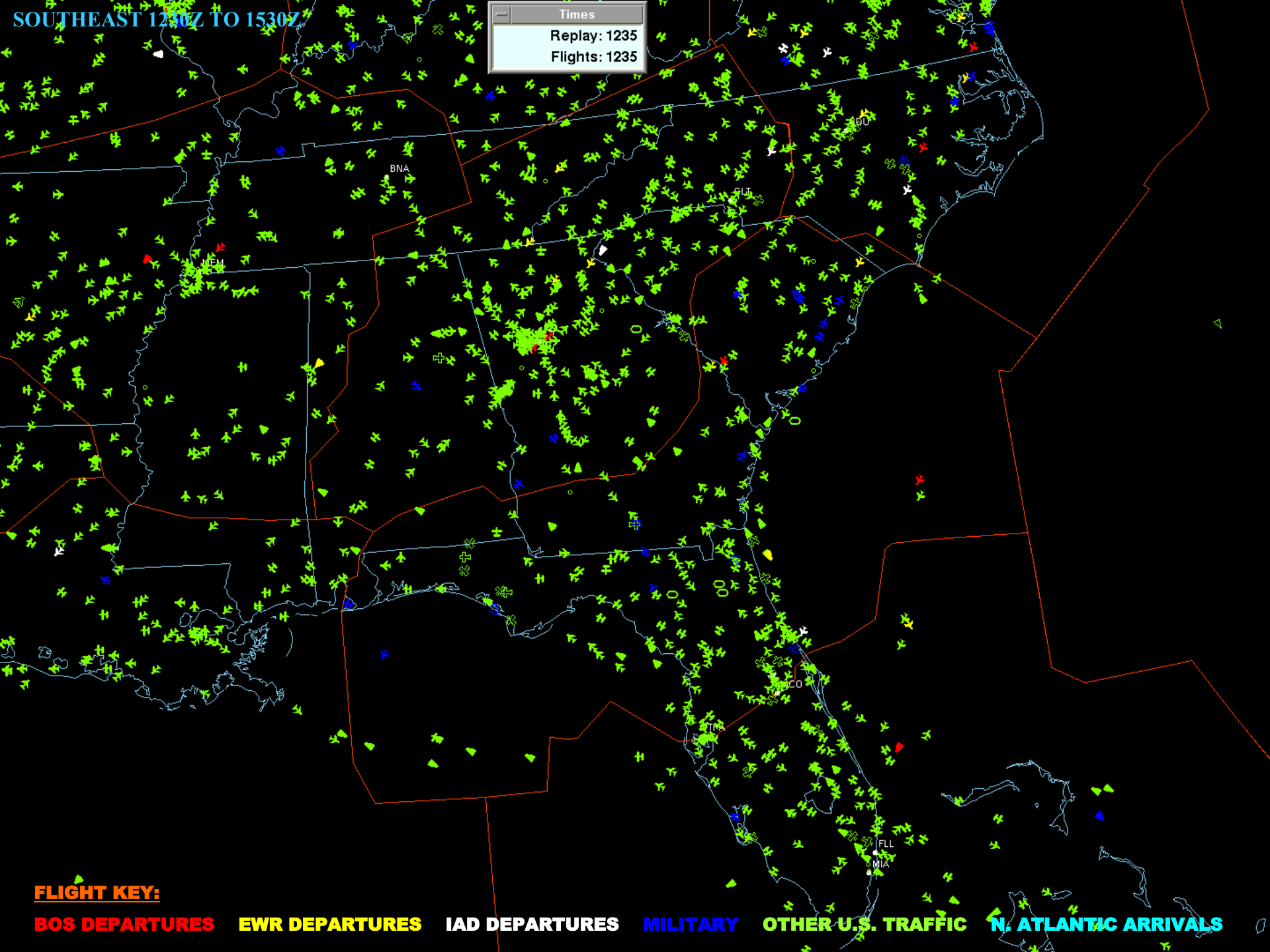
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Replay: 1230  
Flights: 1230



**FLIGHT KEY:**

**BOS DEPARTURES**   **EWR DEPARTURES**   **IAD DEPARTURES**   **MILITARY**   **OTHER U.S. TRAFFIC**   **N. ATLANTIC ARRIVALS**

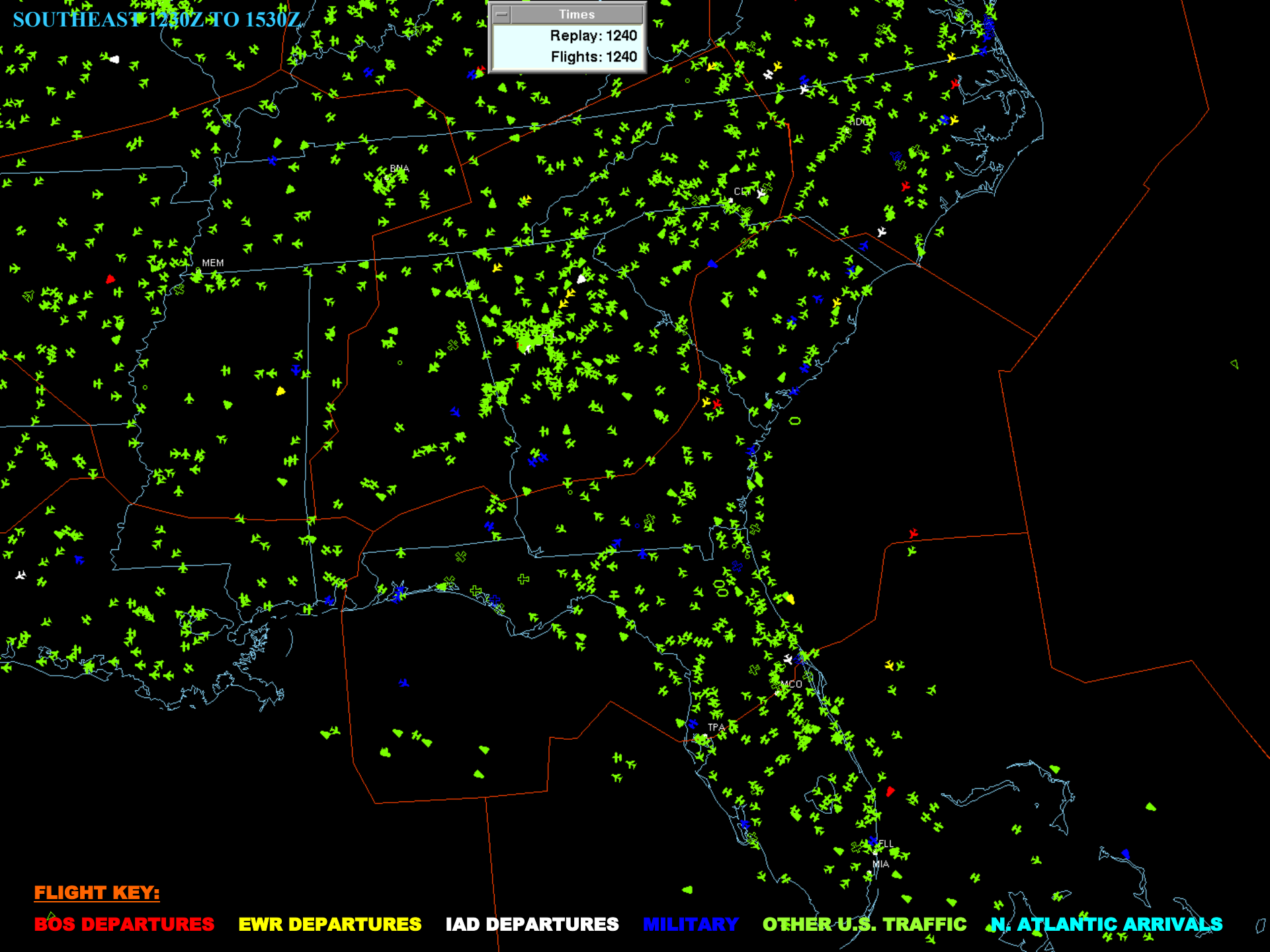
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**FLIGHT KEY:**

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- EWR DEPARTURES**
- IAD DEPARTURES**
- MILITARY**
- OTHER U.S. TRAFFIC**
- N. ATLANTIC ARRIVALS**

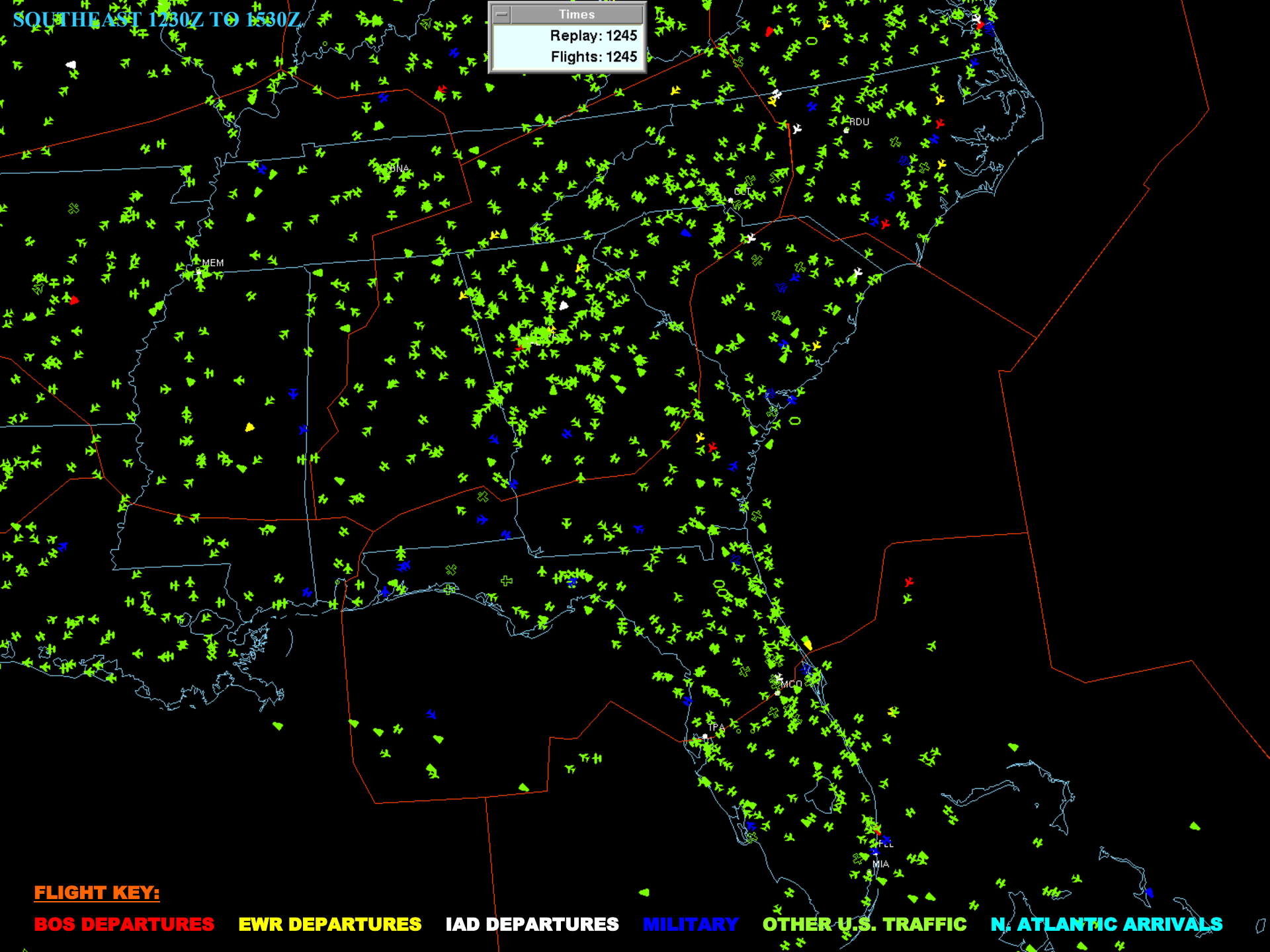
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Flights: 1240



**FLIGHT KEY:**

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- EWR DEPARTURES**
- IAD DEPARTURES**
- MILITARY**
- OTHER U.S. TRAFFIC**
- N. ATLANTIC ARRIVALS**

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Flights: 1245

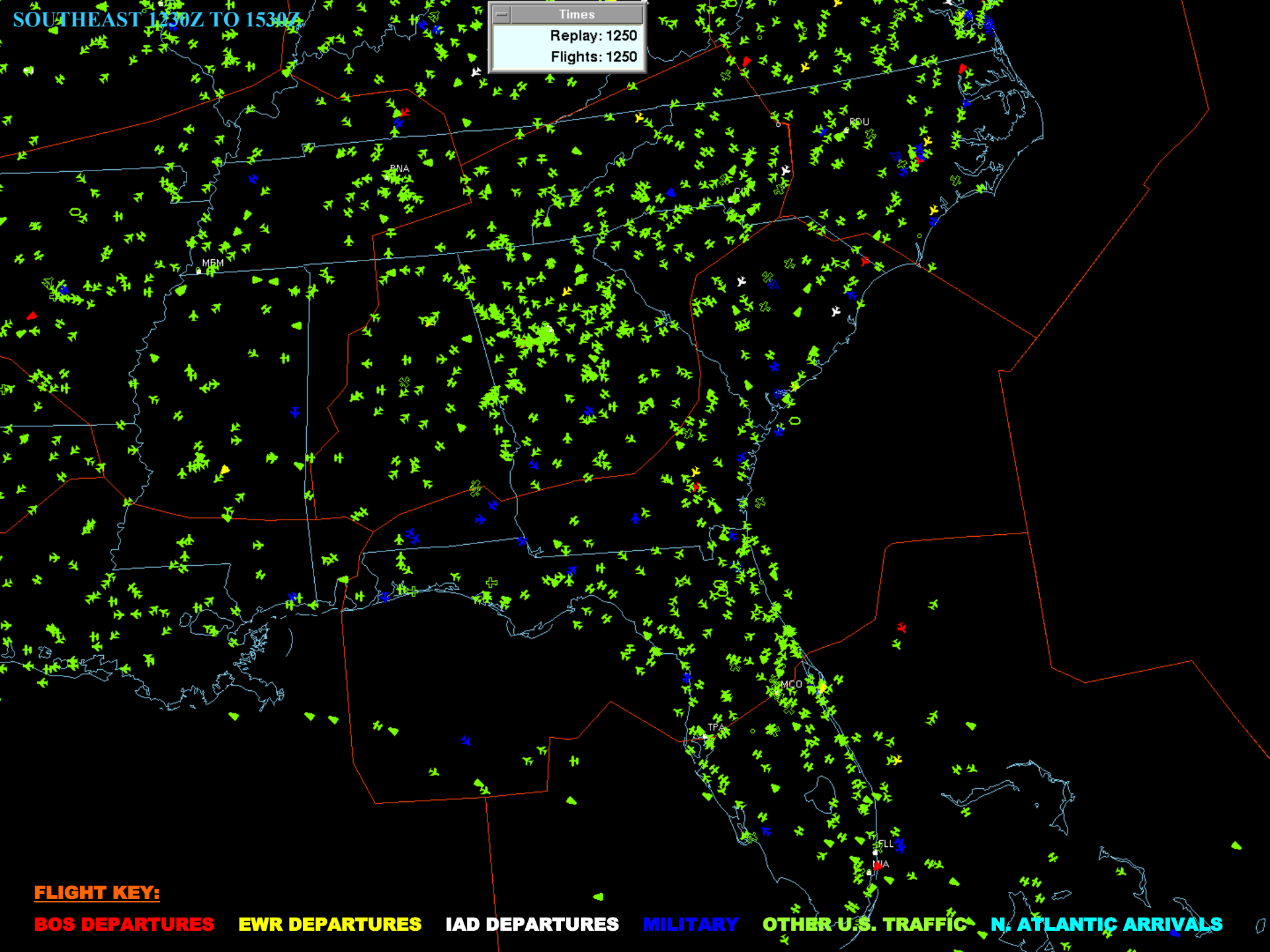


**FLIGHT KEY:**

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- EWR DEPARTURES**
- IAD DEPARTURES**
- MILITARY**
- OTHER U.S. TRAFFIC**
- N. ATLANTIC ARRIVALS**

SOUTHEAST 1230Z TO 1530Z

Times  
Replay: 1250  
Flights: 1250

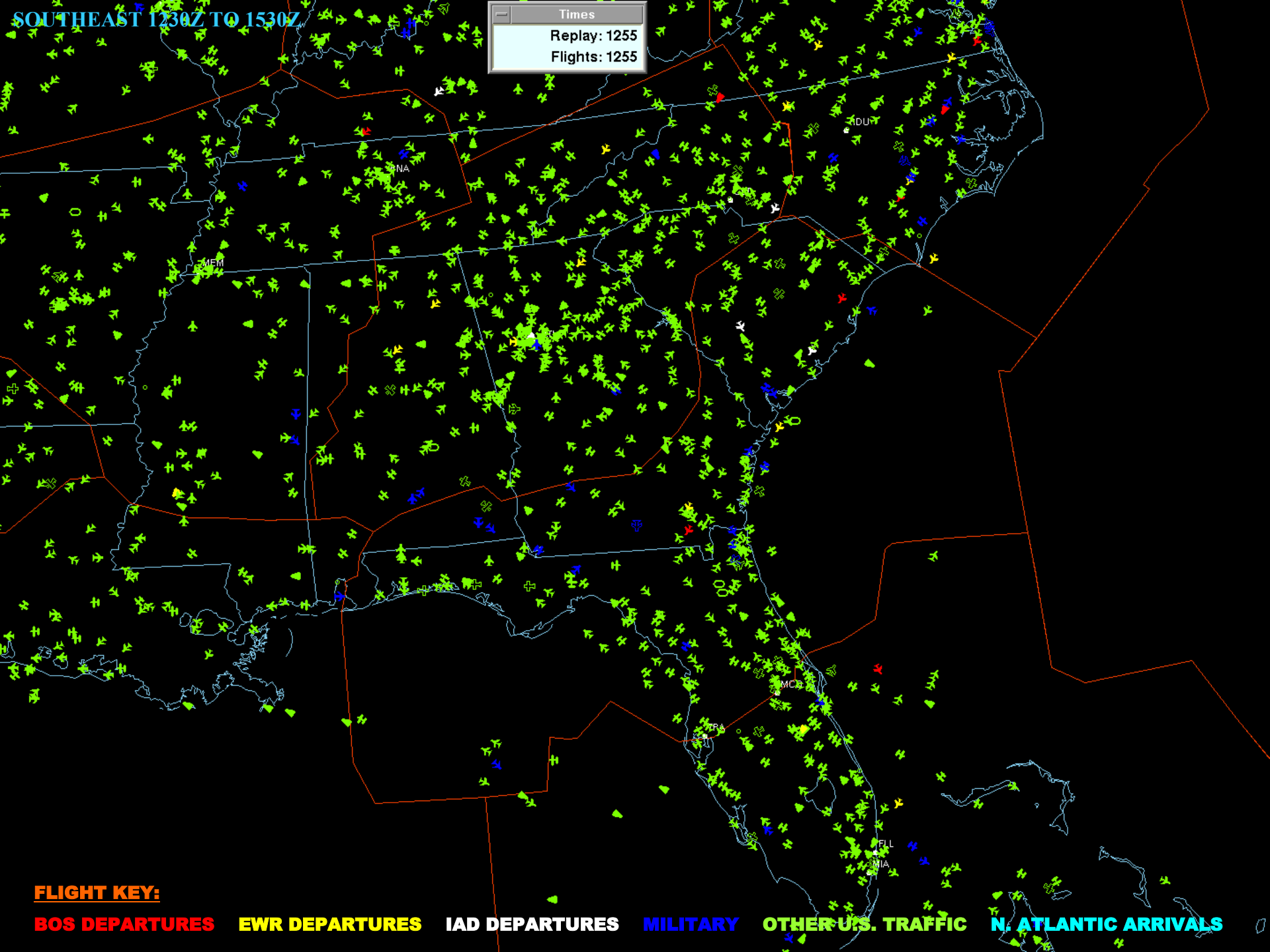


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- MILITARY**
- OTHER U.S. TRAFFIC**
- N. ATLANTIC ARRIVALS**

SOUTHEAST 1230Z TO 1530Z

Times  
Replay: 1255  
Flights: 1255

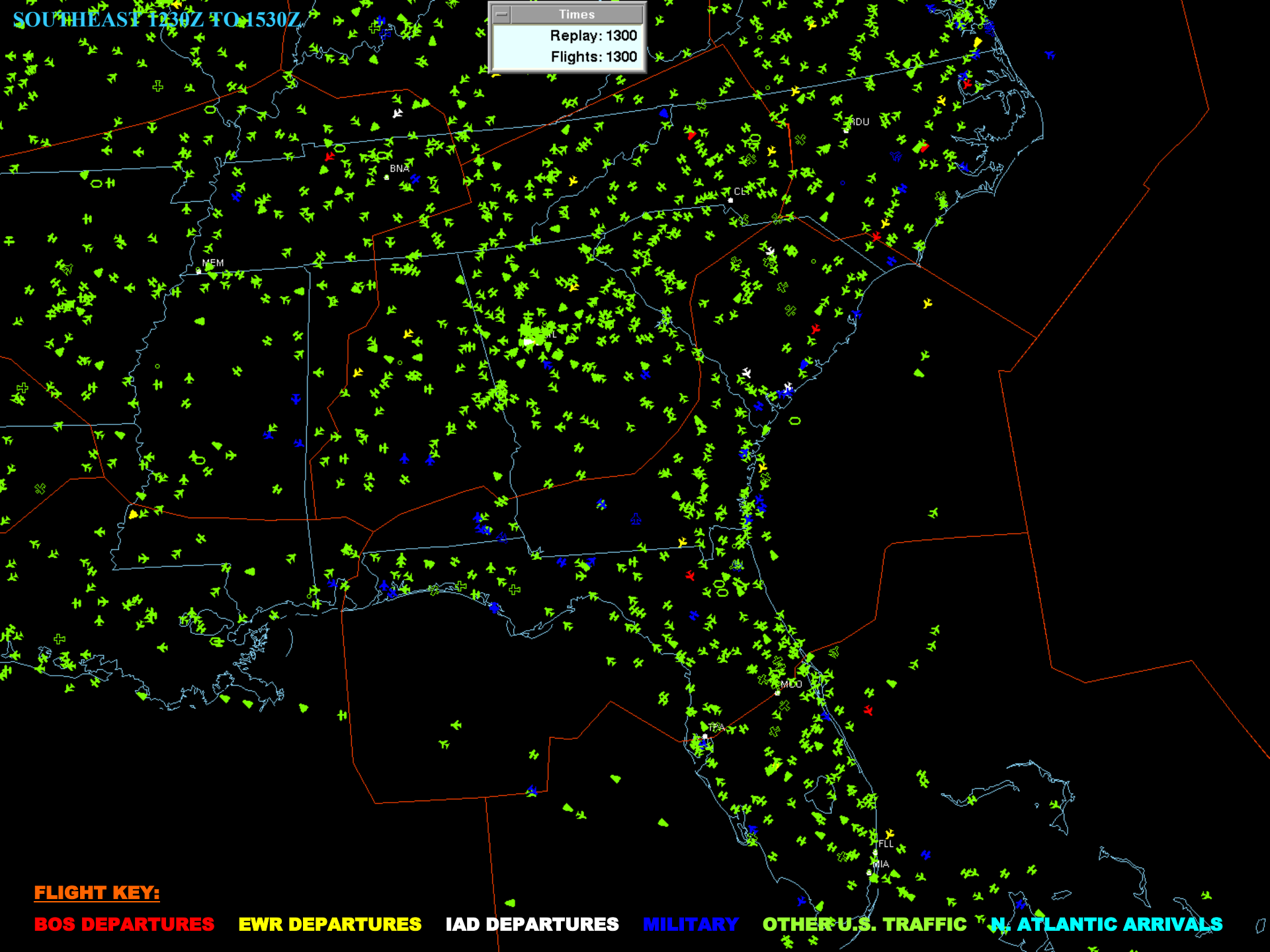


**FLIGHT KEY:**

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- EWR DEPARTURES**
- IAD DEPARTURES**
- MILITARY**
- OTHER U.S. TRAFFIC**
- N. ATLANTIC ARRIVALS**

# SOUTHEAST 1230Z TO 1530Z

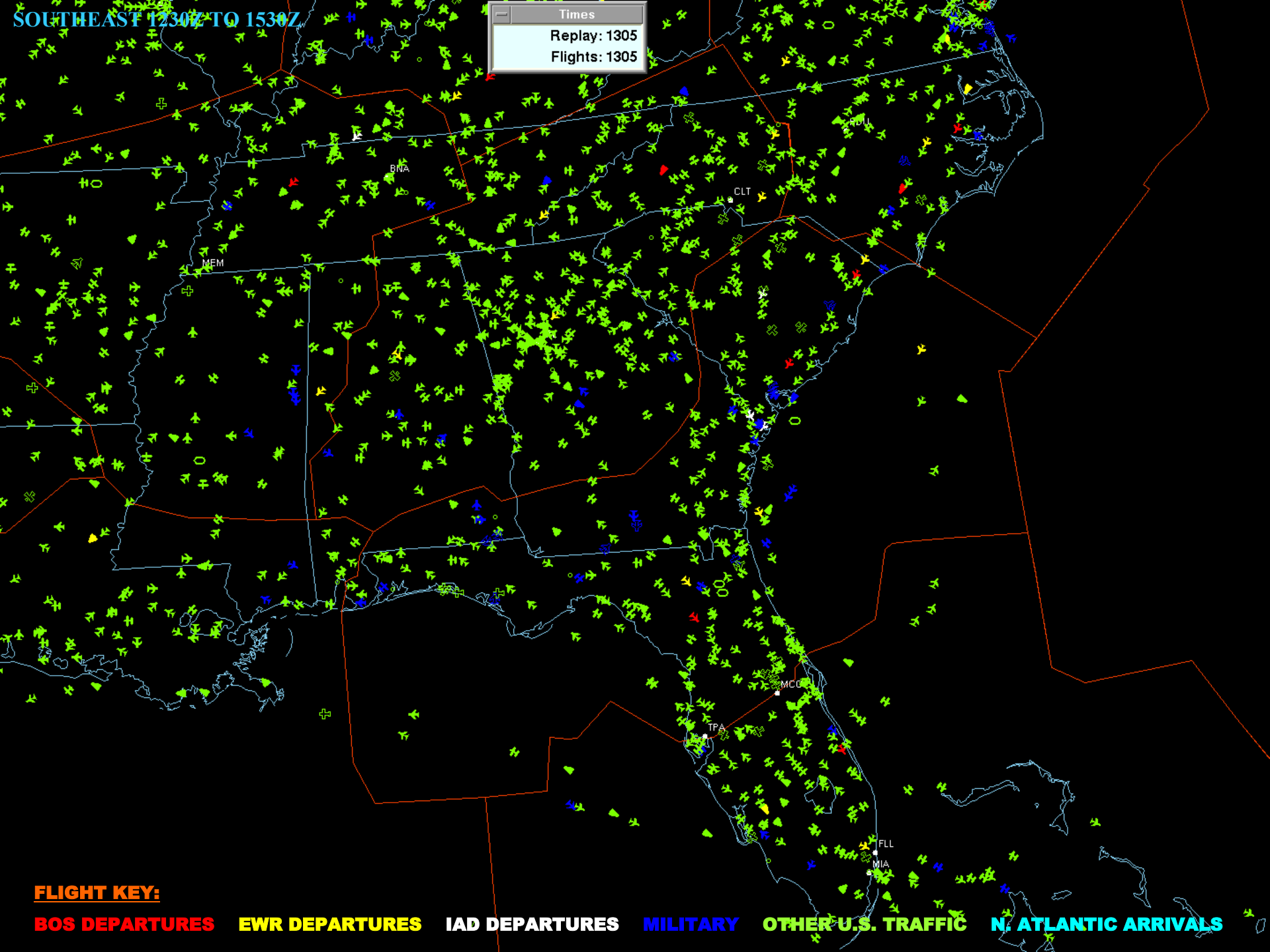
Times  
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Flights: 1300



## **FLIGHT KEY:**

**BOS DEPARTURES**   **EWR DEPARTURES**   **IAD DEPARTURES**   **MILITARY**   **OTHER U.S. TRAFFIC**   **N. ATLANTIC ARRIVALS**

Times  
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Flights: 1305

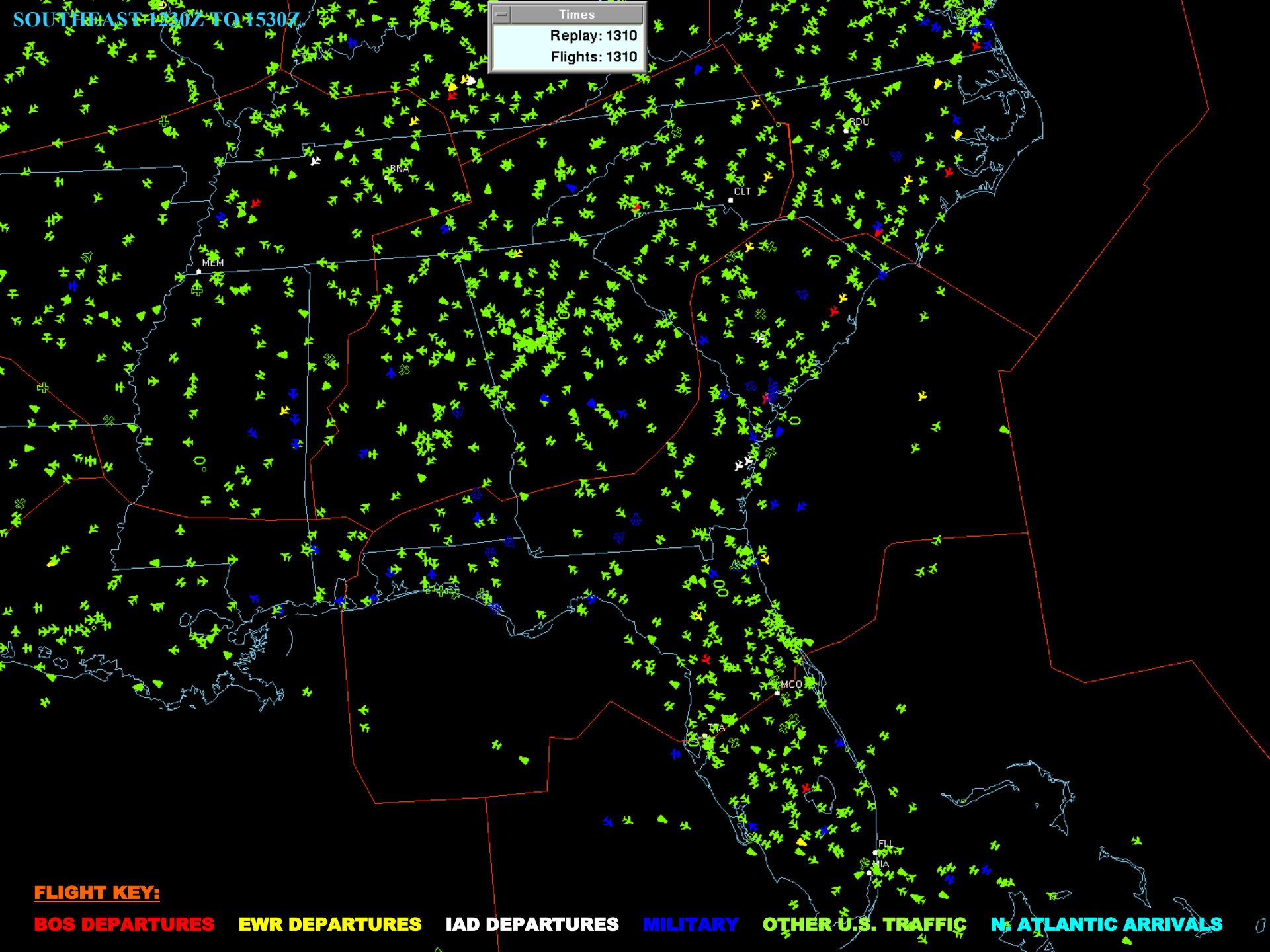


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- EWR DEPARTURES**
- IAD DEPARTURES**
- MILITARY**
- OTHER U.S. TRAFFIC**
- N. ATLANTIC ARRIVALS**

SOUTHEAST 1230Z TO 1530Z

Times  
Replay: 1310  
Flights: 1310



**FLIGHT KEY:**

- BOS DEPARTURES**
- EWR DEPARTURES**
- IAD DEPARTURES**
- MILITARY**
- OTHER U.S. TRAFFIC**
- N. ATLANTIC ARRIVALS**

# *RNAV Routes*

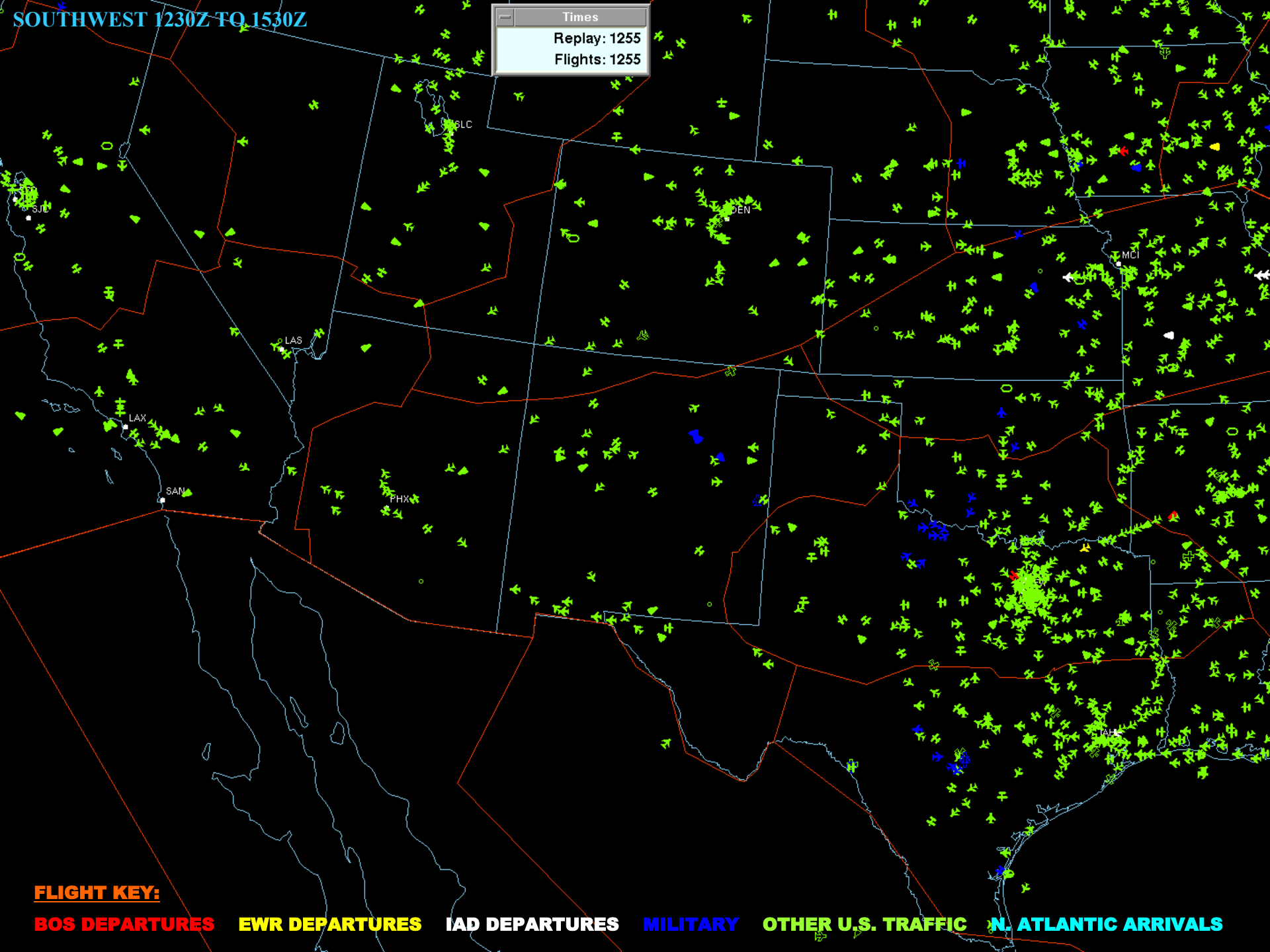


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Example of traffic flow

Southwest U.S

Times  
Replay: 1255  
Flights: 1255

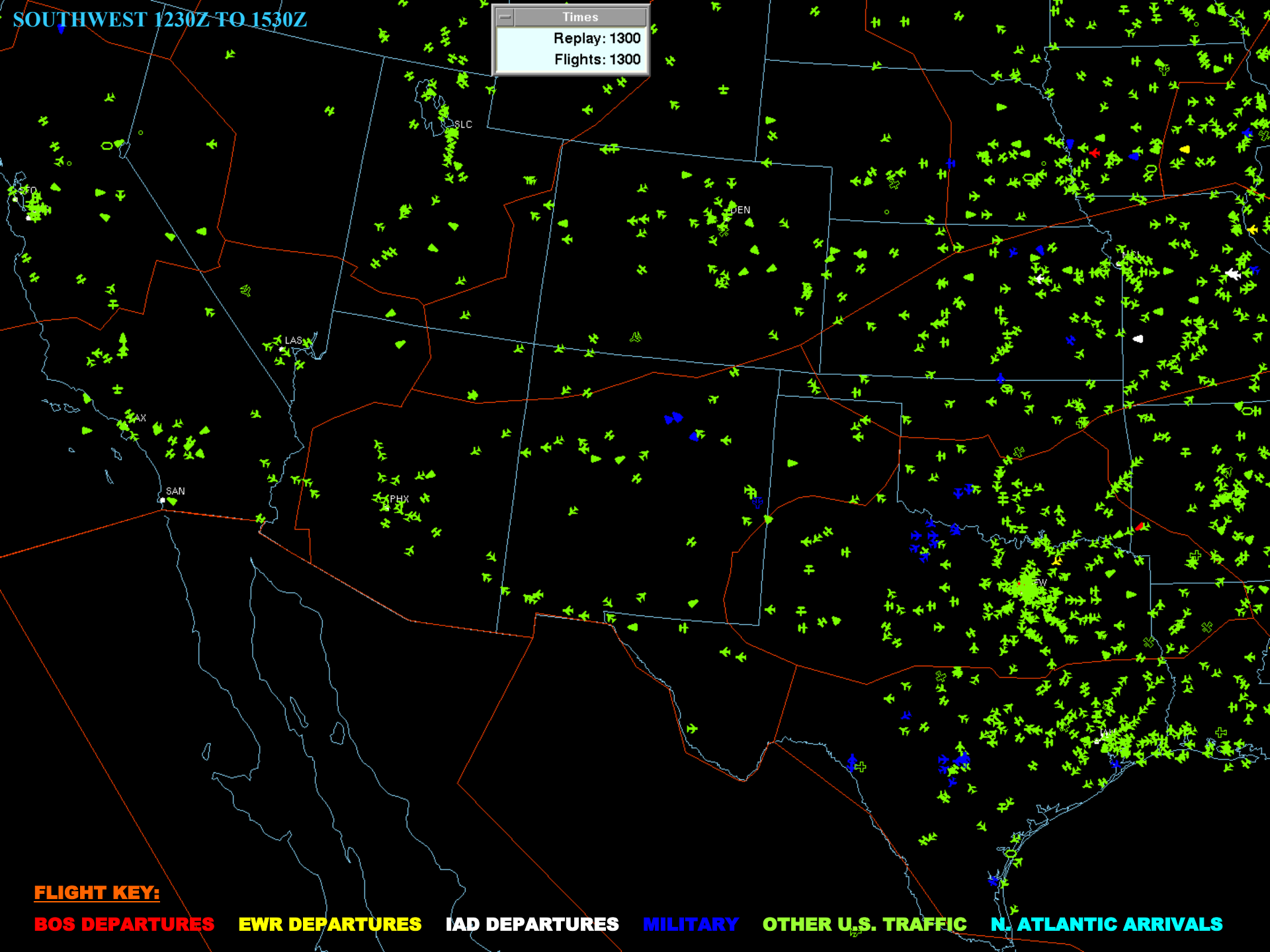


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- EWR DEPARTURES**
- IAD DEPARTURES**
- MILITARY**
- OTHER U.S. TRAFFIC**
- N. ATLANTIC ARRIVALS**

SOUTHWEST 1230Z TO 1530Z

Times  
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Flights: 1300

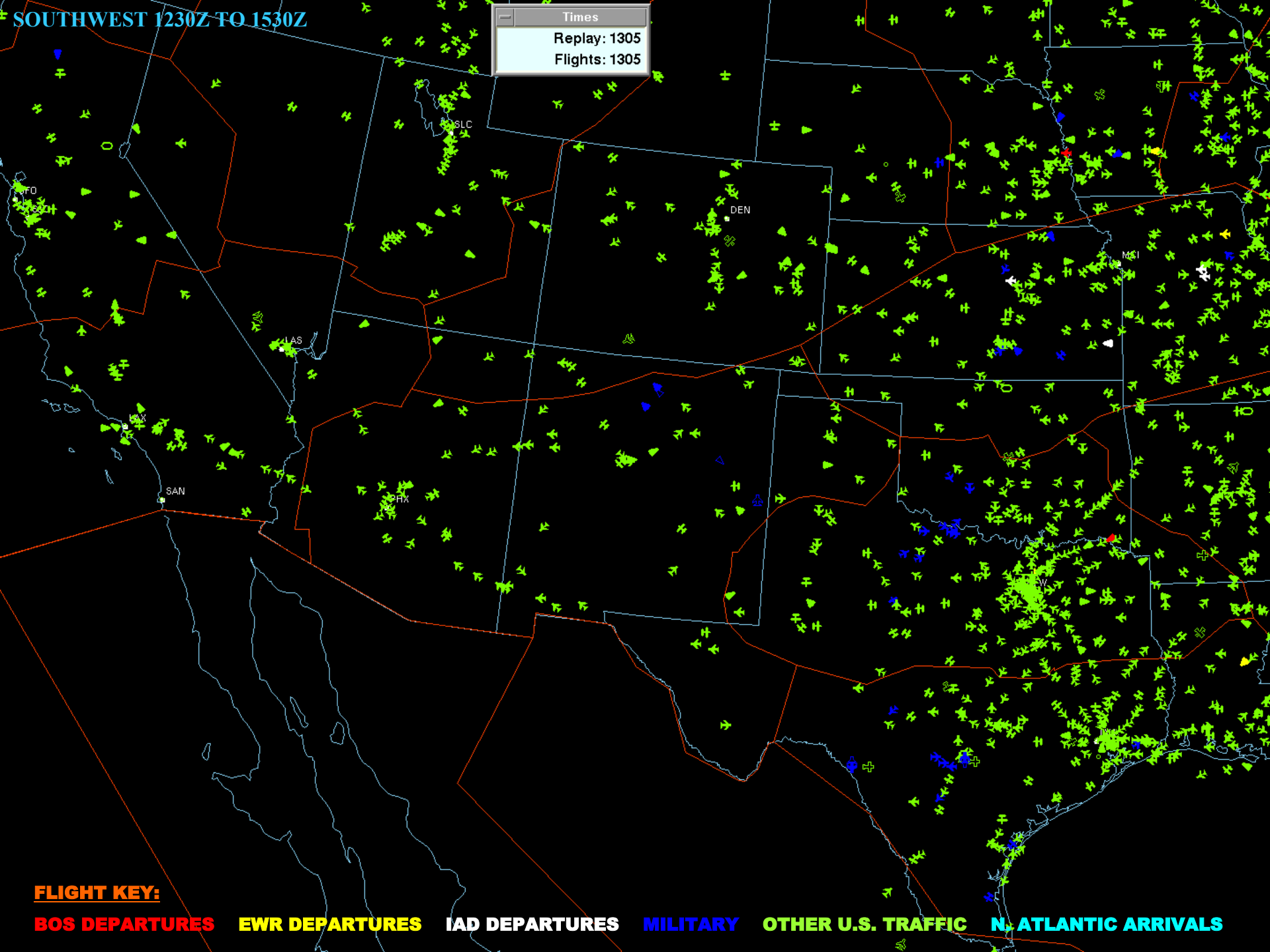


**FLIGHT KEY:**

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- EWR DEPARTURES**
- IAD DEPARTURES**
- MILITARY**
- OTHER U.S. TRAFFIC**
- N. ATLANTIC ARRIVALS**

SOUTHWEST 1230Z TO 1530Z

Times  
Replay: 1305  
Flights: 1305

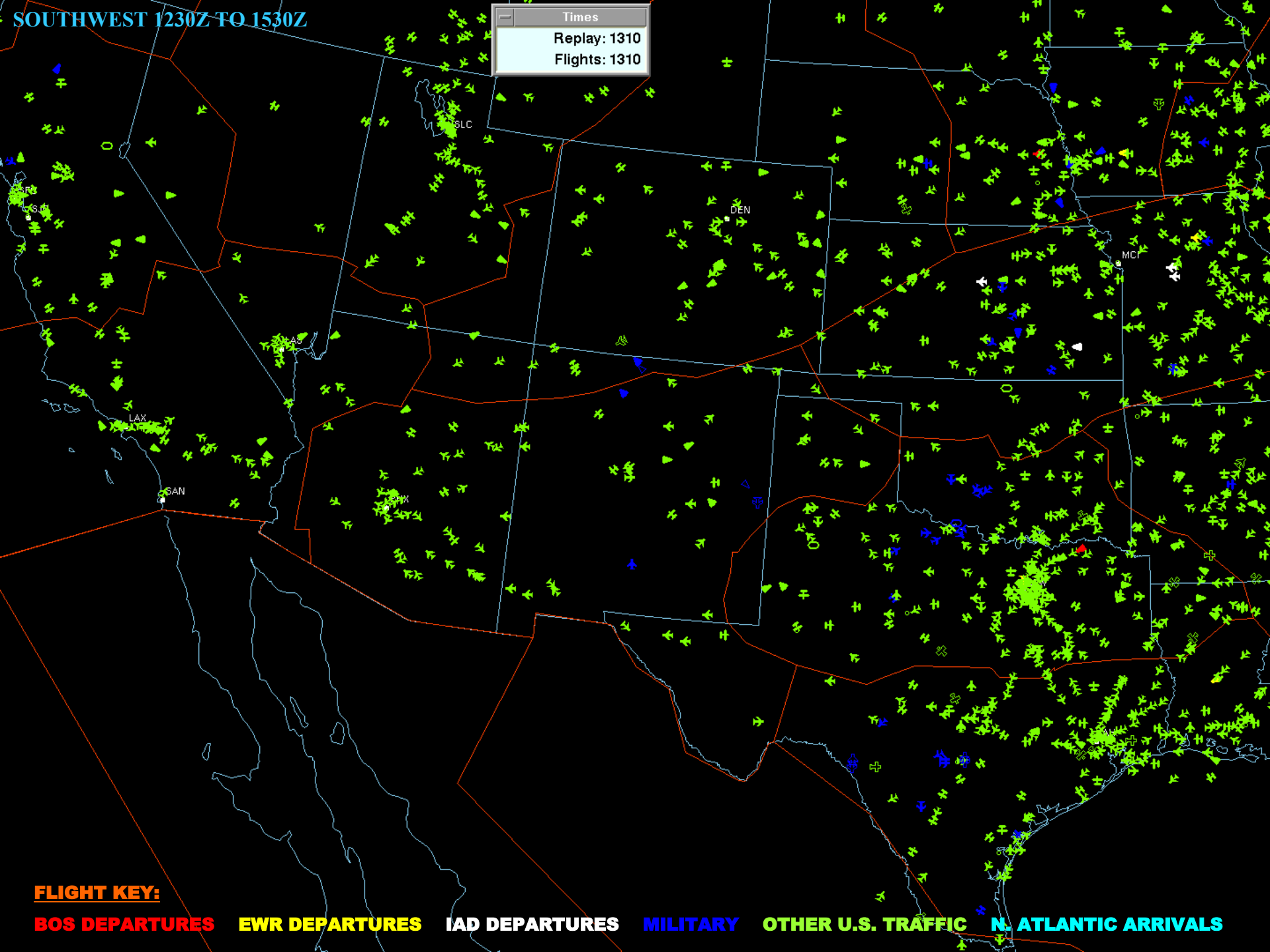


**FLIGHT KEY:**

- BOS DEPARTURES**
- EWR DEPARTURES**
- IAD DEPARTURES**
- MILITARY**
- OTHER U.S. TRAFFIC**
- N. ATLANTIC ARRIVALS**

SOUTHWEST 1230Z TO 1530Z

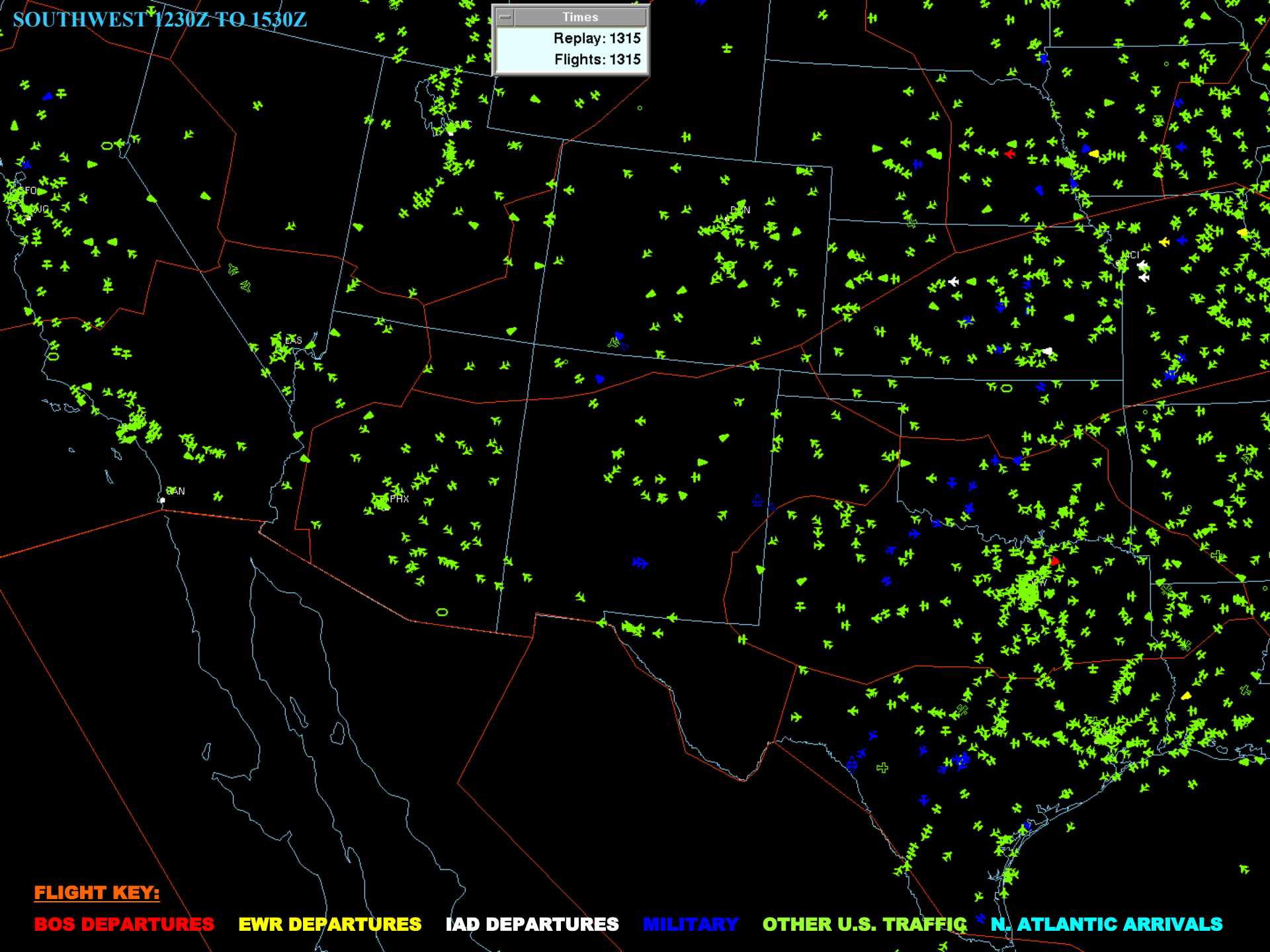
Times  
Replay: 1310  
Flights: 1310



**FLIGHT KEY:**

**BOS DEPARTURES**   **EWR DEPARTURES**   **IAD DEPARTURES**   **MILITARY**   **OTHER U.S. TRAFFIC**   **N. ATLANTIC ARRIVALS**

Times  
Replay: 1315  
Flights: 1315

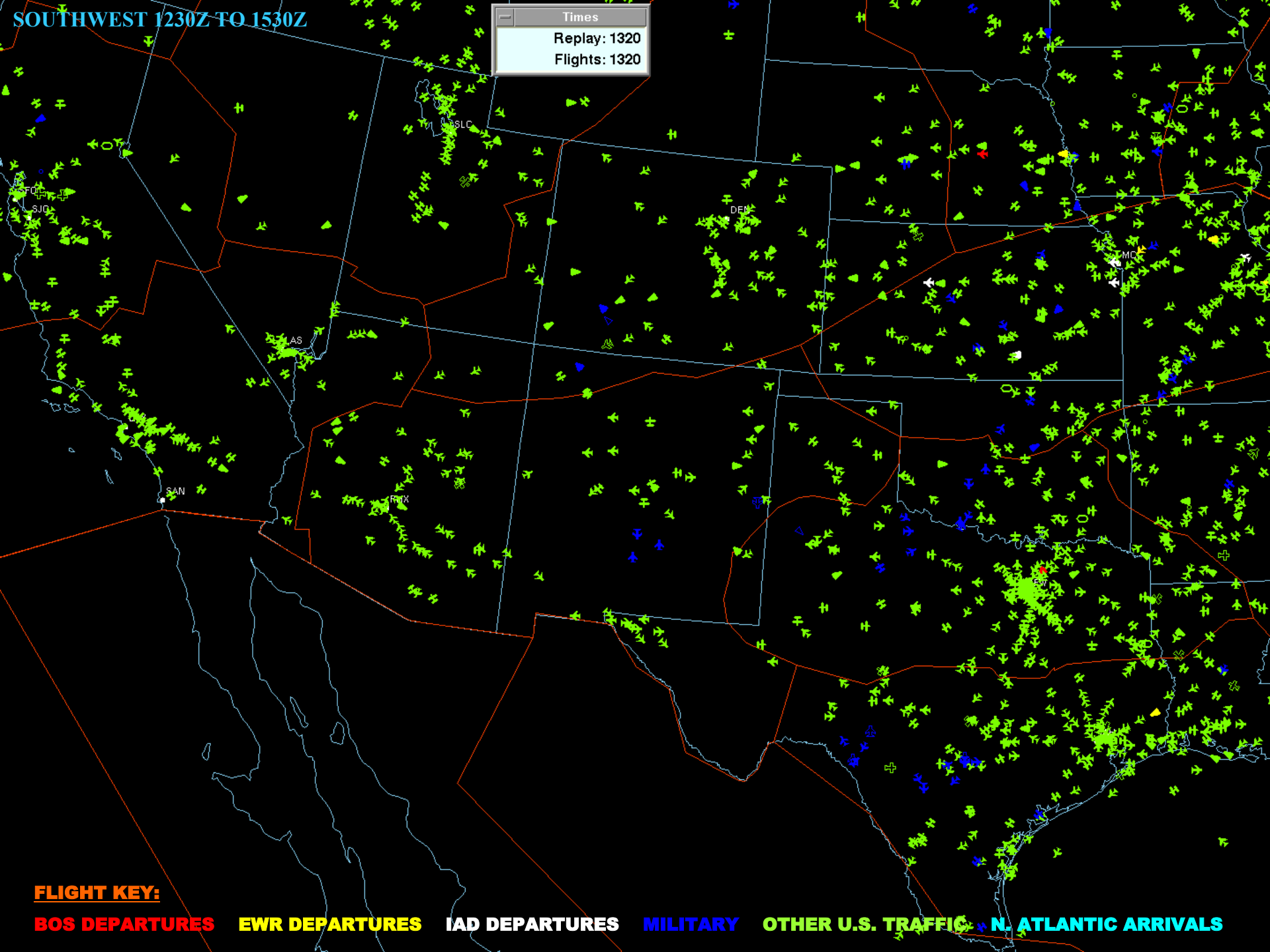


**FLIGHT KEY:**

**BOS DEPARTURES**   **EWR DEPARTURES**   **IAD DEPARTURES**   **MILITARY**   **OTHER U.S. TRAFFIC**   **N. ATLANTIC ARRIVALS**

SOUTHWEST 1230Z TO 1530Z

Times  
Replay: 1320  
Flights: 1320

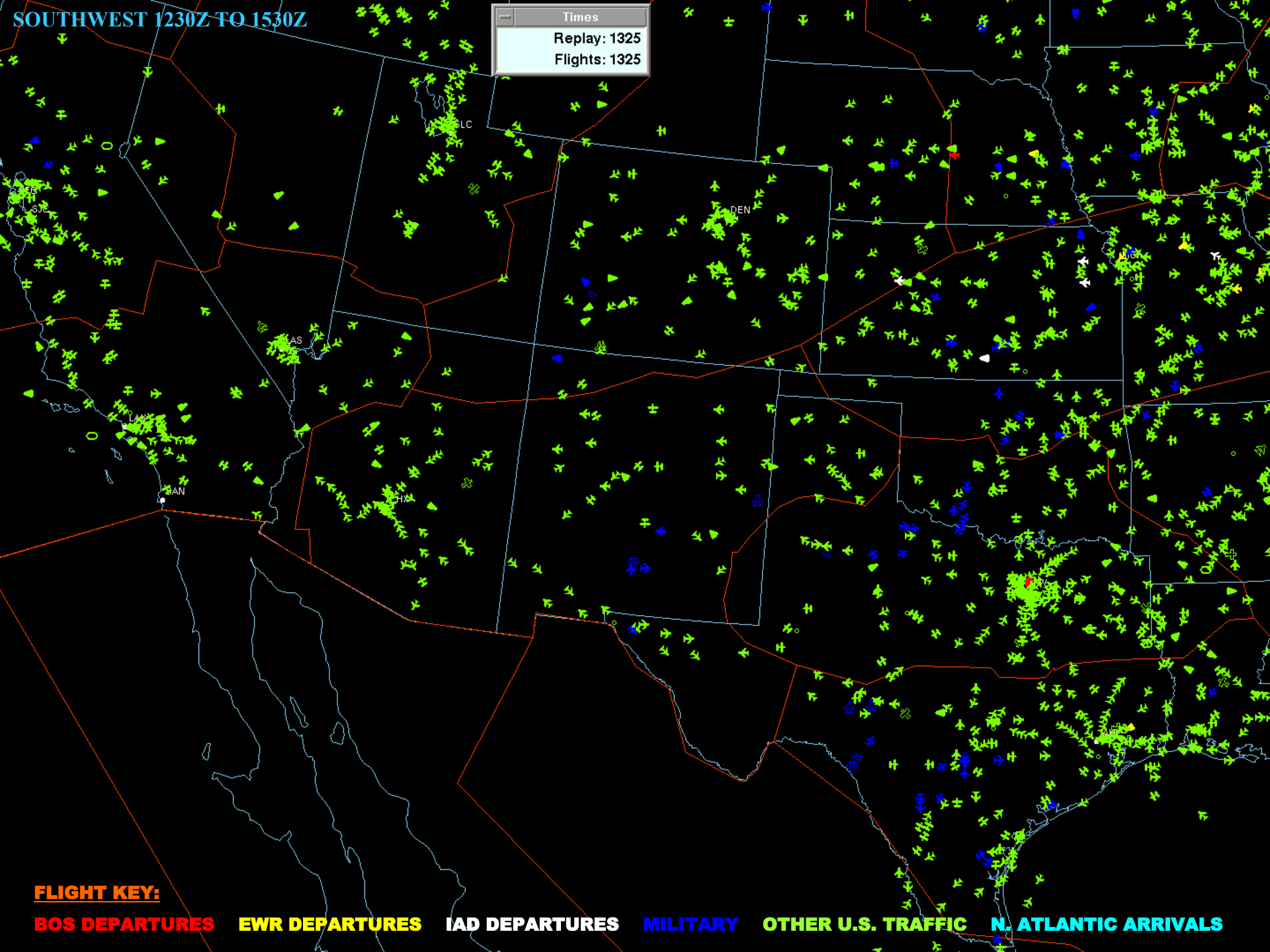


**FLIGHT KEY:**

**BOS DEPARTURES** **EWR DEPARTURES** **IAD DEPARTURES** **MILITARY** **OTHER U.S. TRAFFIC** **N-ATLANTIC ARRIVALS**

SOUTHWEST 1230Z TO 1530Z

Times  
Replay: 1325  
Flights: 1325



**FLIGHT KEY:**

**BOS DEPARTURES**

**EWR DEPARTURES**

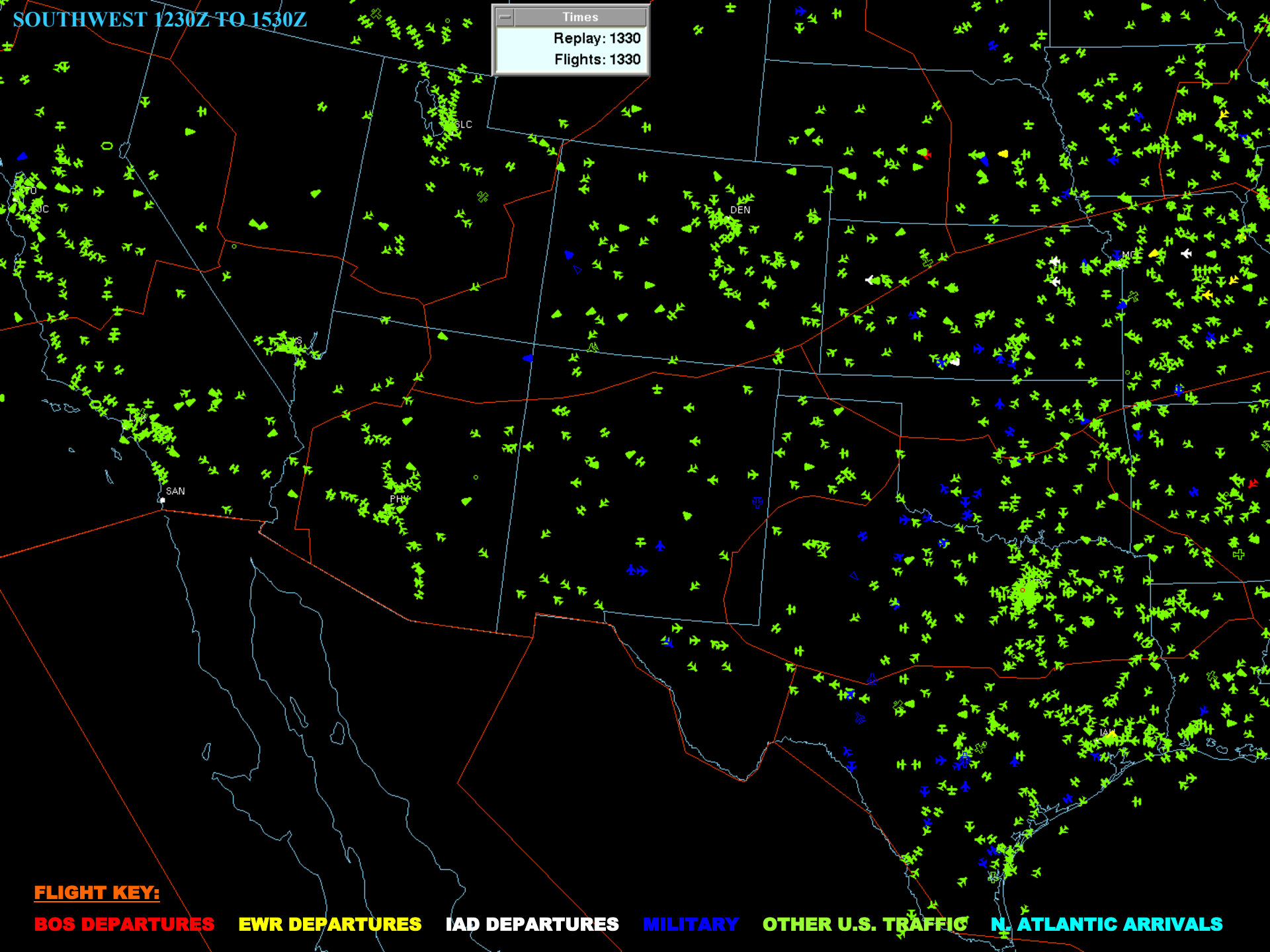
**IAD DEPARTURES**

**MILITARY**

**OTHER U.S. TRAFFIC**

**N. ATLANTIC ARRIVALS**

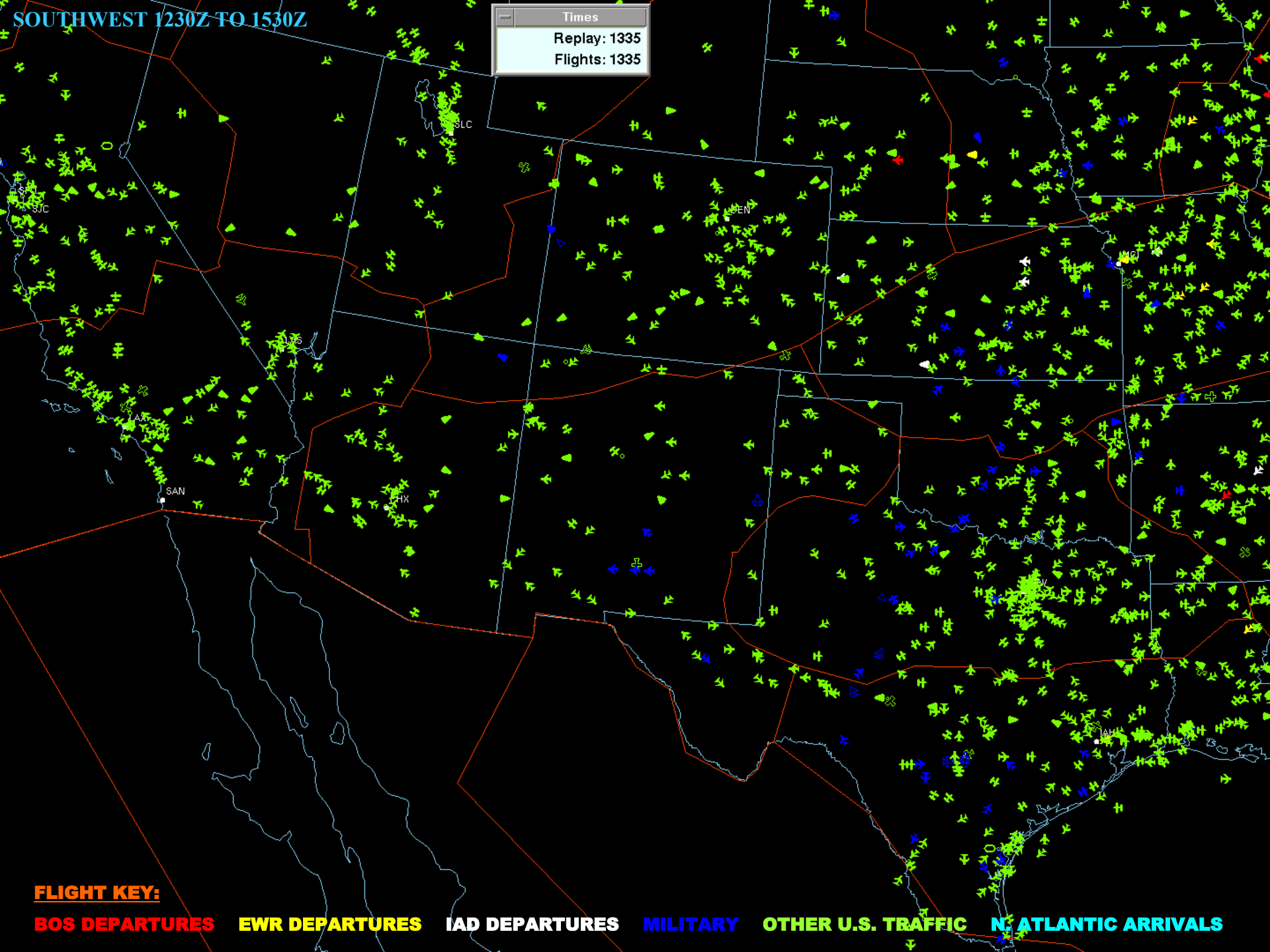
Times  
Replay: 1330  
Flights: 1330



**FLIGHT KEY:**

- BOS DEPARTURES**
- EWR DEPARTURES**
- IAD DEPARTURES**
- MILITARY**
- OTHER U.S. TRAFFIC**
- N. ATLANTIC ARRIVALS**

Times  
Replay: 1335  
Flights: 1335

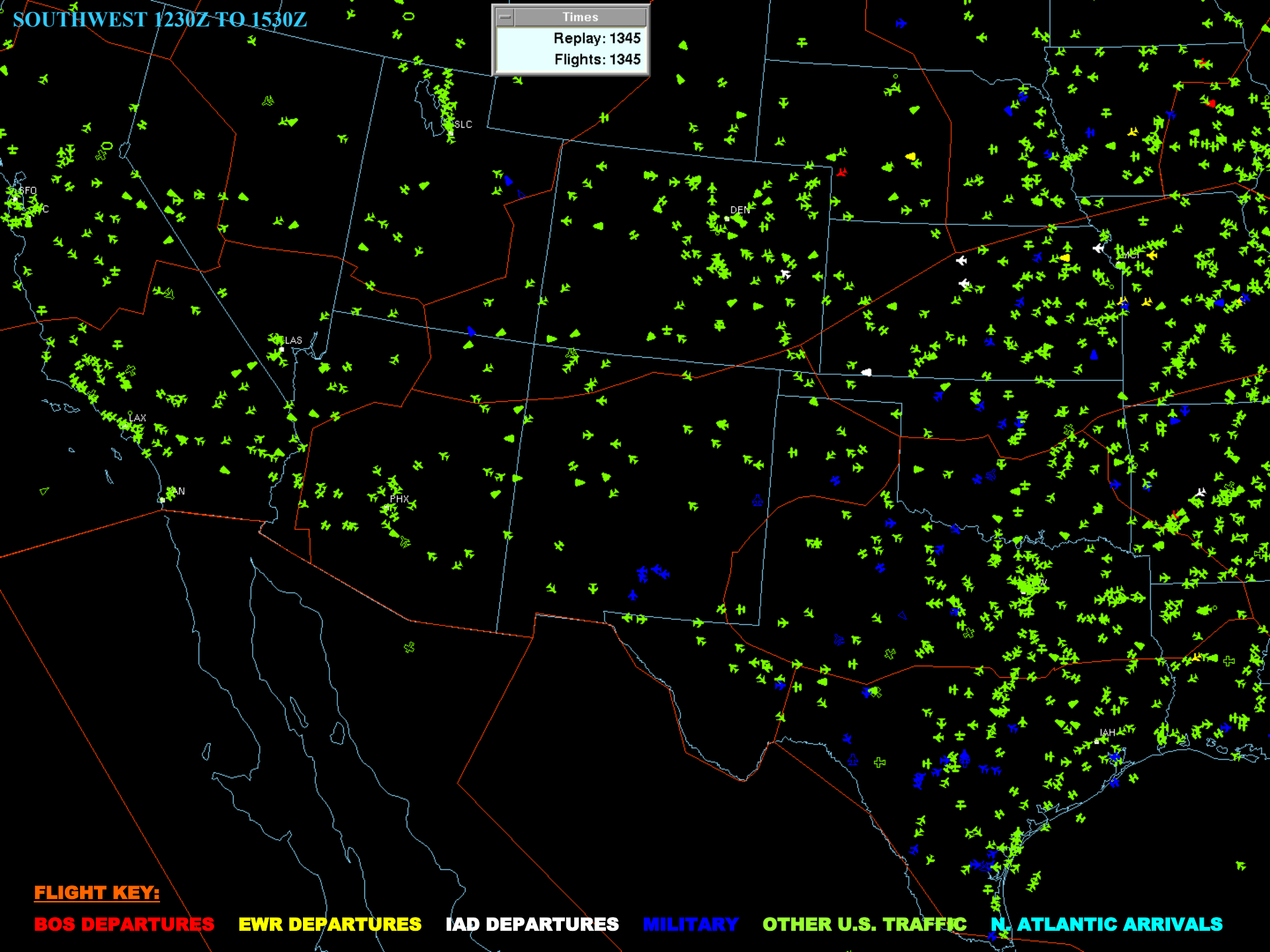


**FLIGHT KEY:**

- BOS DEPARTURES**
- EWR DEPARTURES**
- IAD DEPARTURES**
- MILITARY**
- OTHER U.S. TRAFFIC**
- N. ATLANTIC ARRIVALS**

SOUTHWEST 1230Z TO 1530Z

Times  
Replay: 1345  
Flights: 1345

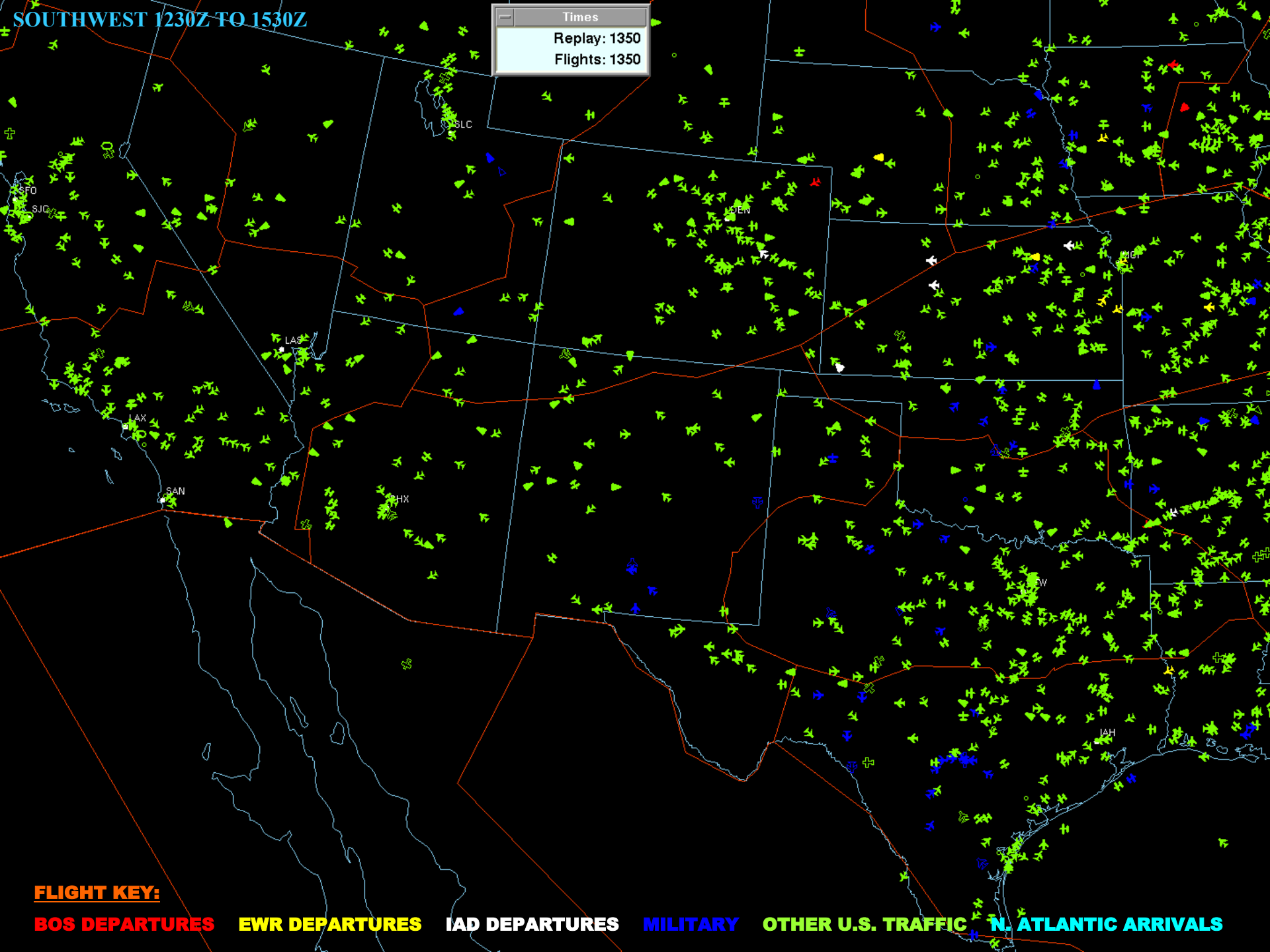


**FLIGHT KEY:**

- BOS DEPARTURES**
- EWR DEPARTURES**
- IAD DEPARTURES**
- MILITARY**
- OTHER U.S. TRAFFIC**
- N. ATLANTIC ARRIVALS**

SOUTHWEST 1230Z TO 1530Z

Times  
Replay: 1350  
Flights: 1350

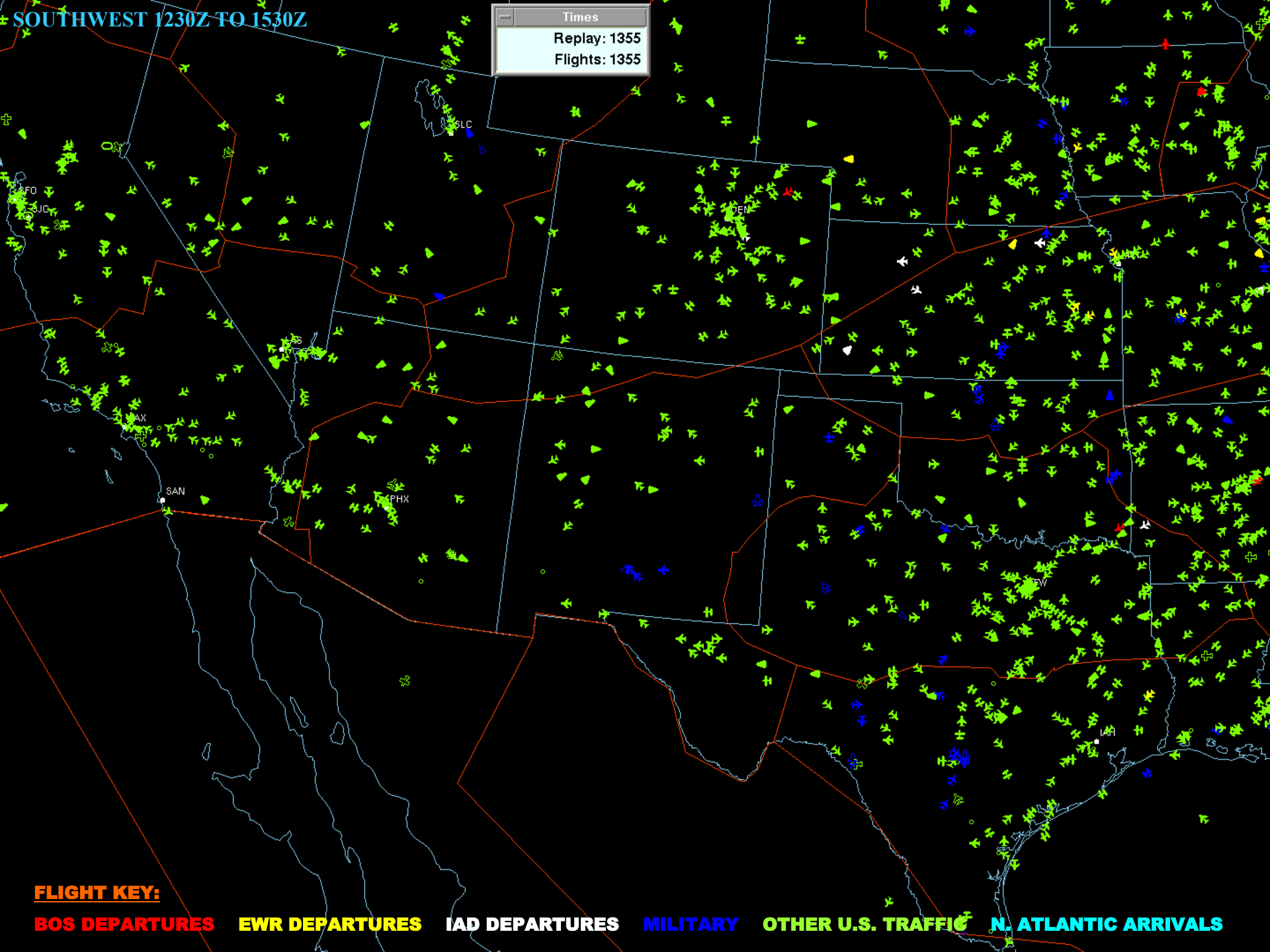


**FLIGHT KEY:**

- BOS DEPARTURES**
- EWR DEPARTURES**
- IAD DEPARTURES**
- MILITARY**
- OTHER U.S. TRAFFIC**
- N. ATLANTIC ARRIVALS**

SOUTHWEST 1230Z TO 1530Z

Times  
Replay: 1355  
Flights: 1355



**FLIGHT KEY:**

- BOS DEPARTURES**
- EWR DEPARTURES**
- IAD DEPARTURES**
- MILITARY**
- OTHER U.S. TRAFFIC**
- N. ATLANTIC ARRIVALS**

# *RNAV Routes*



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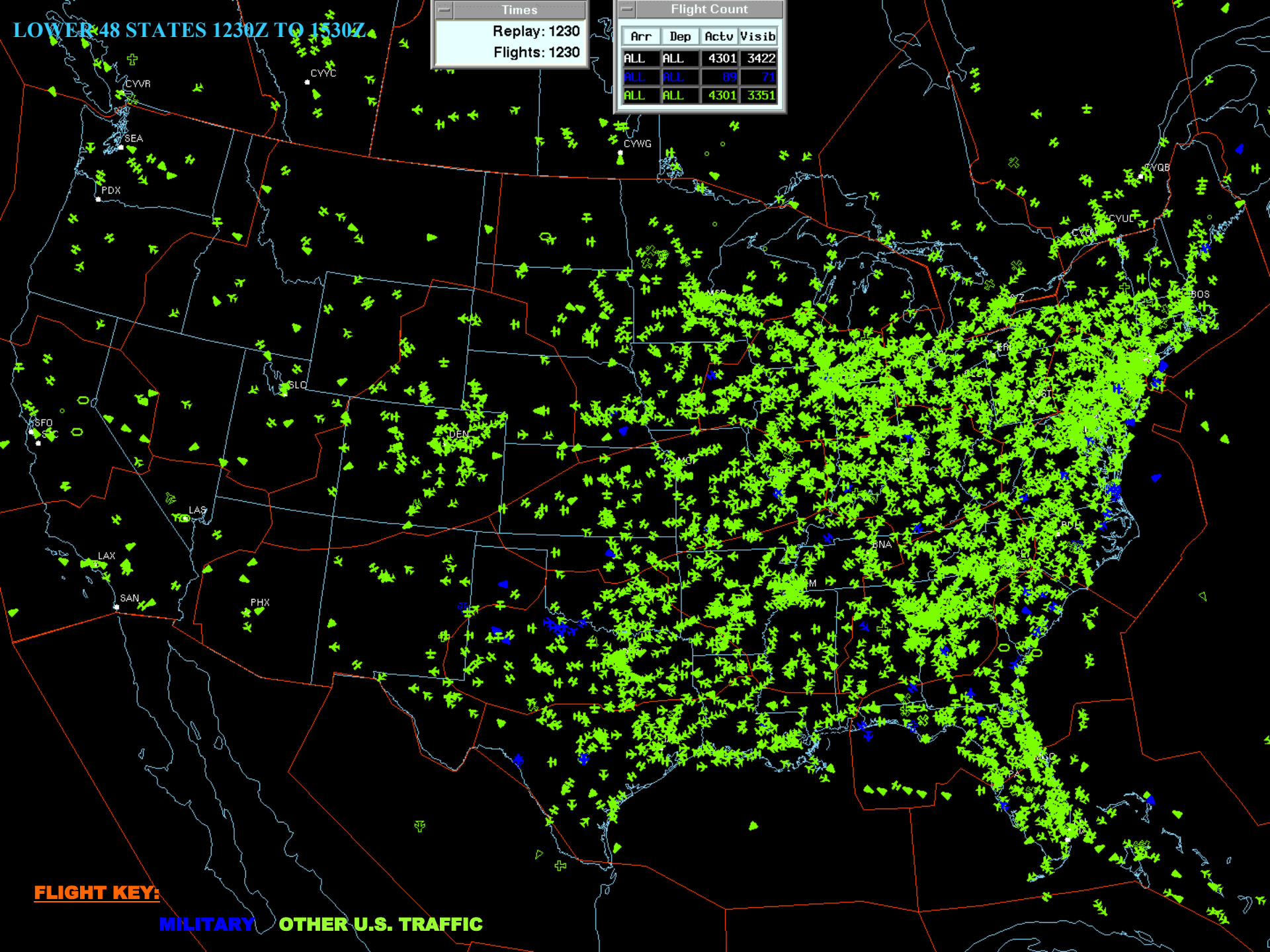
Example of traffic flows

U.S.A.

# LOWER 48 STATES 1230Z TO 1530Z

Times  
Replay: 1230  
Flights: 1230

Flight Count			
Arr	Dep	Actv	Visib
ALL	ALL	4301	3422
ALL	ALL	89	71
ALL	ALL	4301	3351



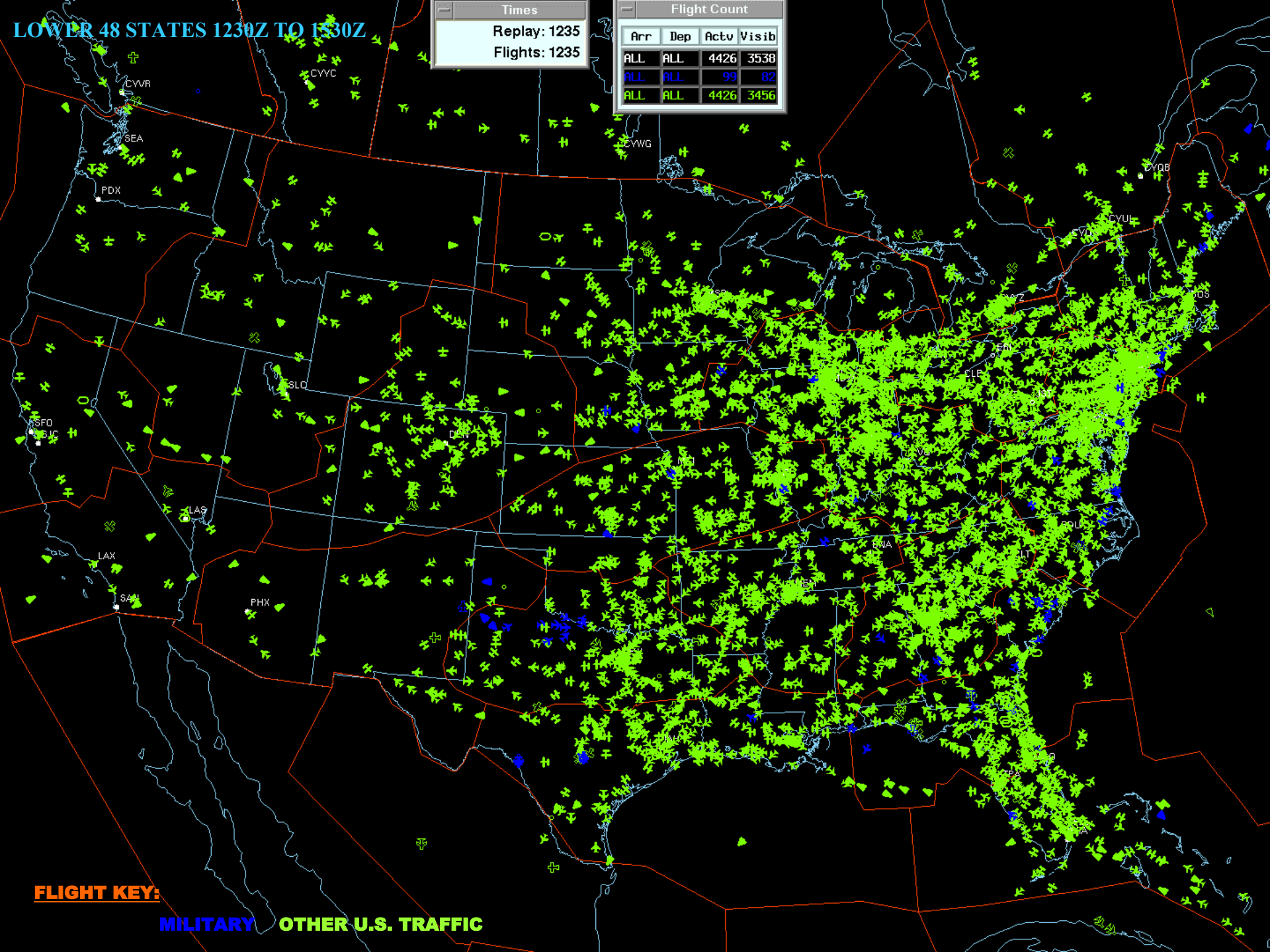
## FLIGHT KEY:

MILITARY OTHER U.S. TRAFFIC

# LOWER 48 STATES 1230Z TO 1530Z

Times  
Replay: 1235  
Flights: 1235

Flight Count			
Arr	Dep	Actv	Visib
ALL	ALL	4426	3538
ALL	ALL	99	82
ALL	ALL	4426	3456



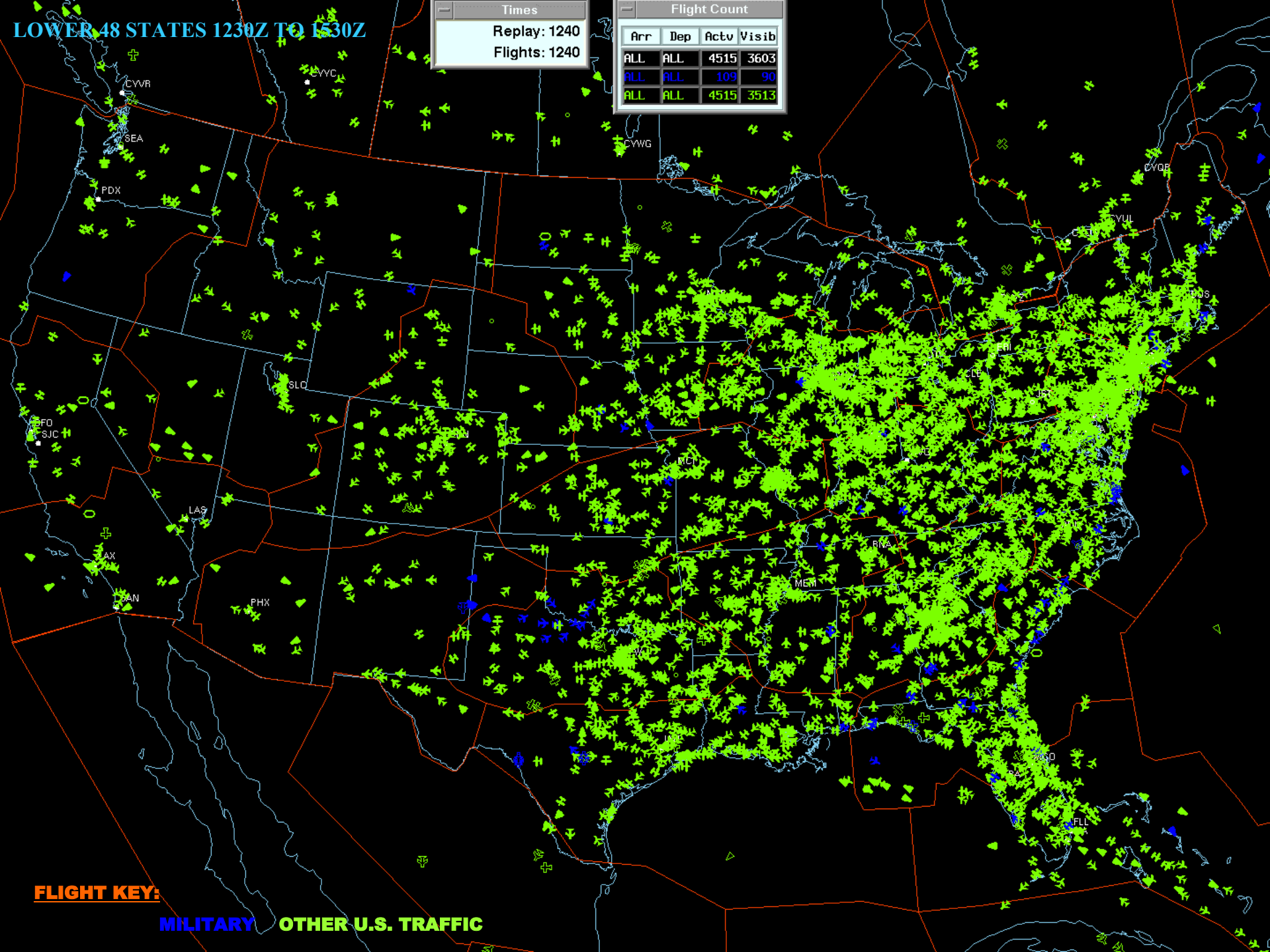
## FLIGHT KEY:

MILITARY OTHER U.S. TRAFFIC

**LOWER 48 STATES 1230Z TO 1530Z**

Times  
Replay: 1240  
Flights: 1240

Flight Count			
Arr	Dep	Actv	Visib
ALL	ALL	4515	3603
ALL	ALL	109	90
ALL	ALL	4515	3513



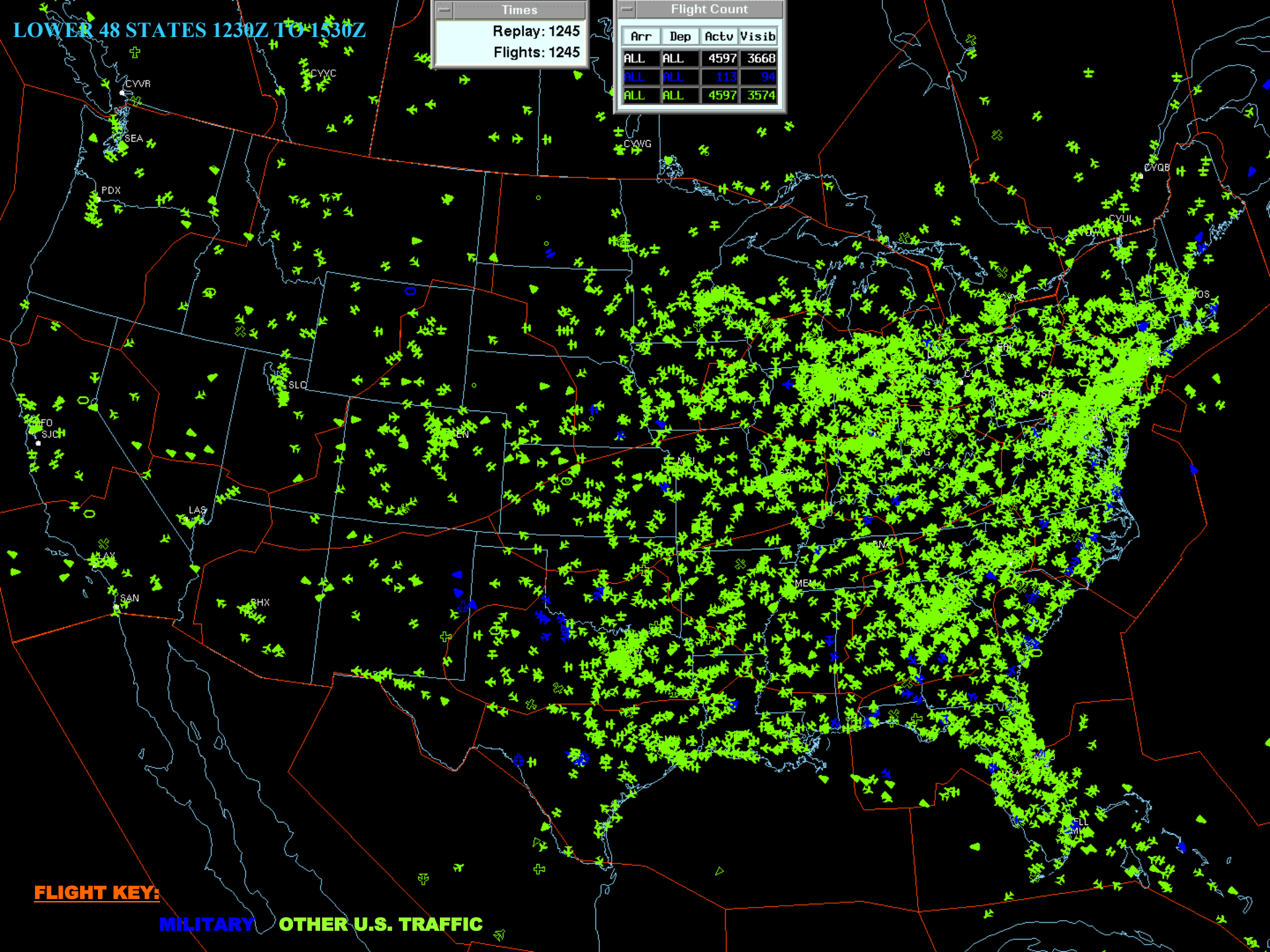
**FLIGHT KEY:**

**MILITARY** **OTHER U.S. TRAFFIC**

# LOWER 48 STATES 1230Z TO 1530Z

Times  
Replay: 1245  
Flights: 1245

Flight Count			
Arr	Dep	Actv	Visib
ALL	ALL	4597	3668
ALL	ALL	113	94
ALL	ALL	4597	3574



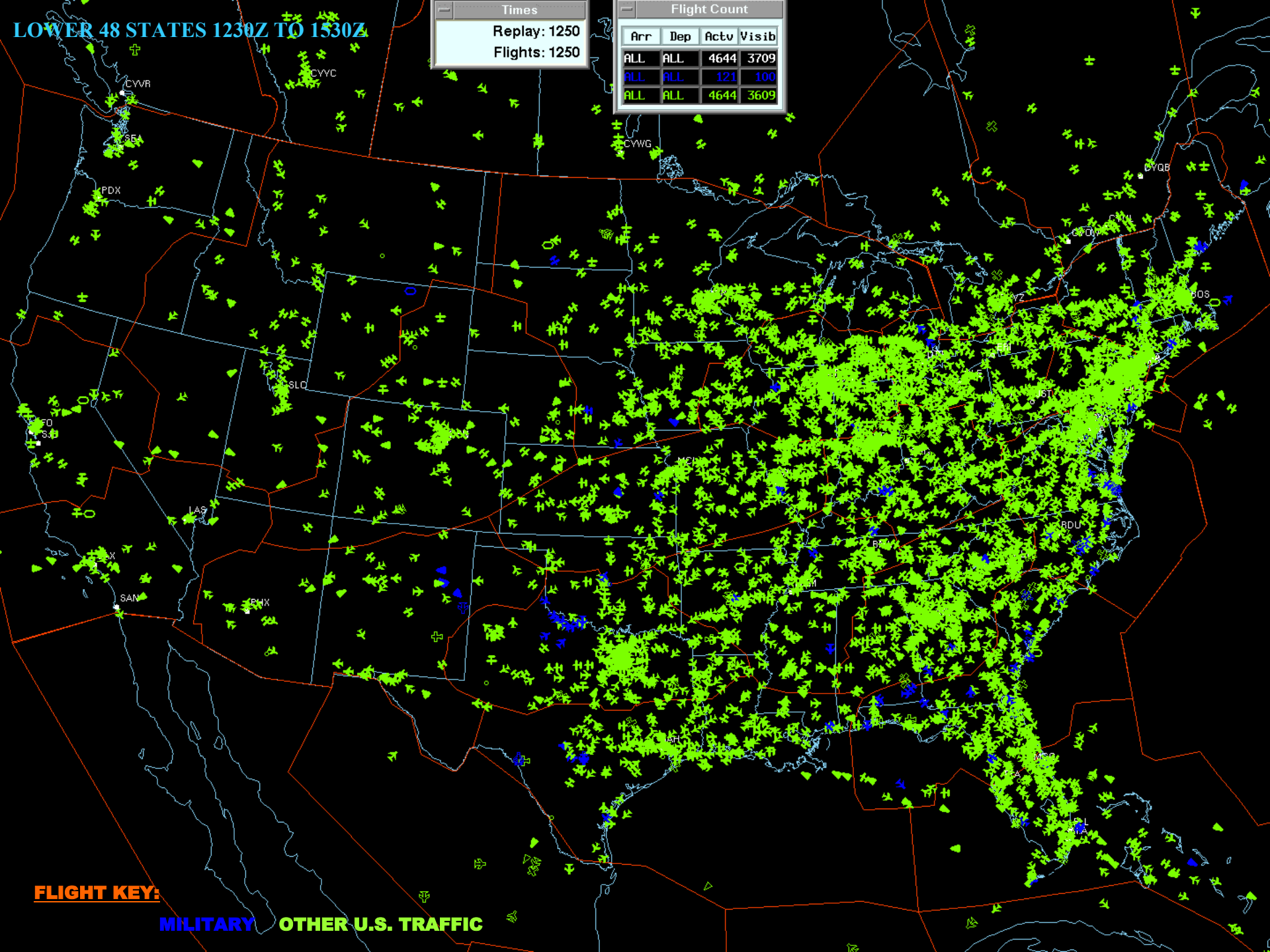
**FLIGHT KEY:**

MILITARY OTHER U.S. TRAFFIC

# LOWER 48 STATES 1230Z TO 1530Z

Times  
Replay: 1250  
Flights: 1250

Flight Count			
Arr	Dep	Actv	Visib
ALL	ALL	4644	3709
ALL	ALL	121	100
ALL	ALL	4644	3609



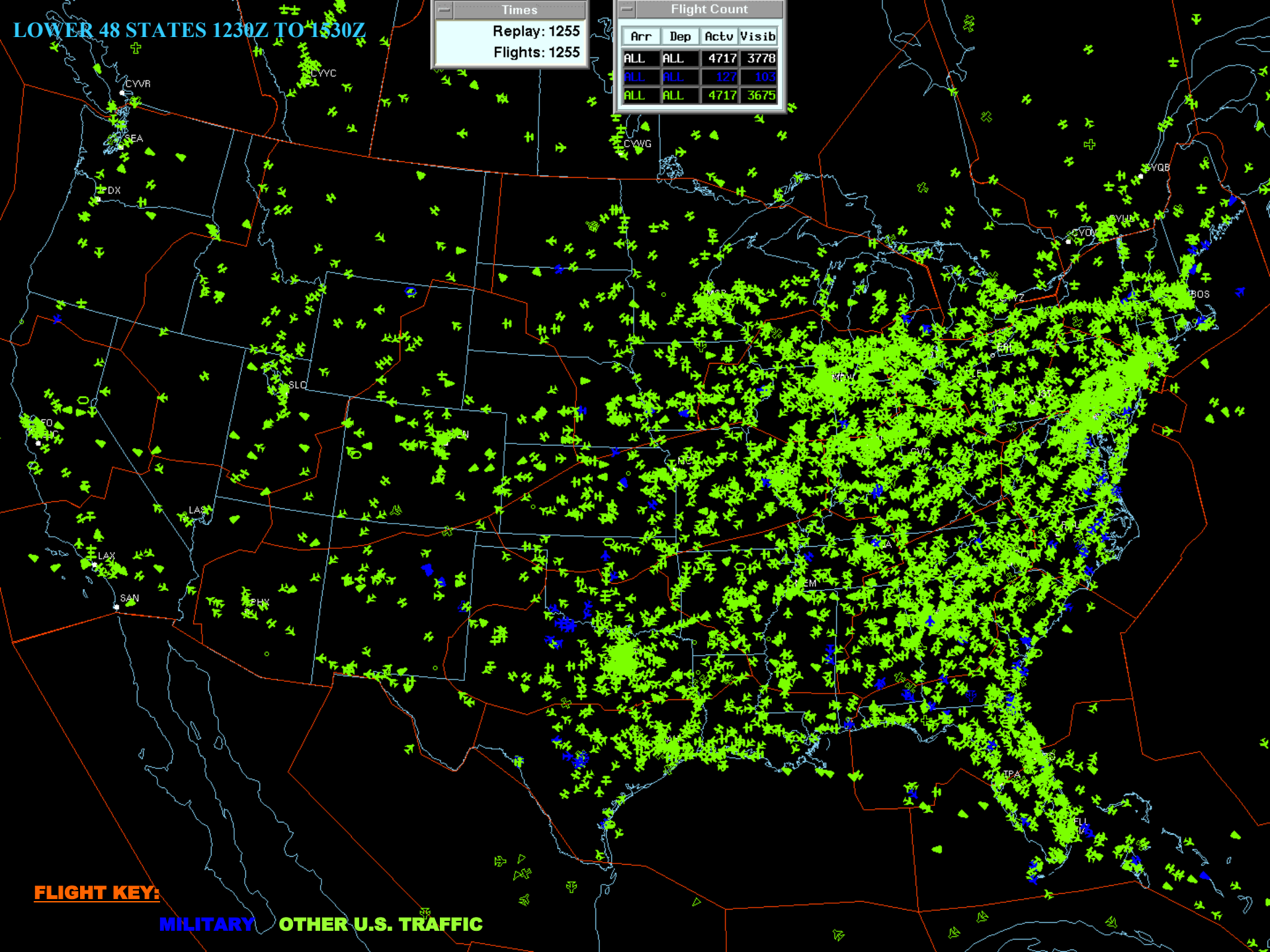
## FLIGHT KEY:

MILITARY OTHER U.S. TRAFFIC

# LOWER 48 STATES 1230Z TO 1530Z

Times  
Replay: 1255  
Flights: 1255

Flight Count			
Arr	Dep	Actv	Visib
ALL	ALL	4717	3778
ALL	ALL	127	103
ALL	ALL	4717	3675



## FLIGHT KEY:

MILITARY OTHER U.S. TRAFFIC

# *RNAV Routes*

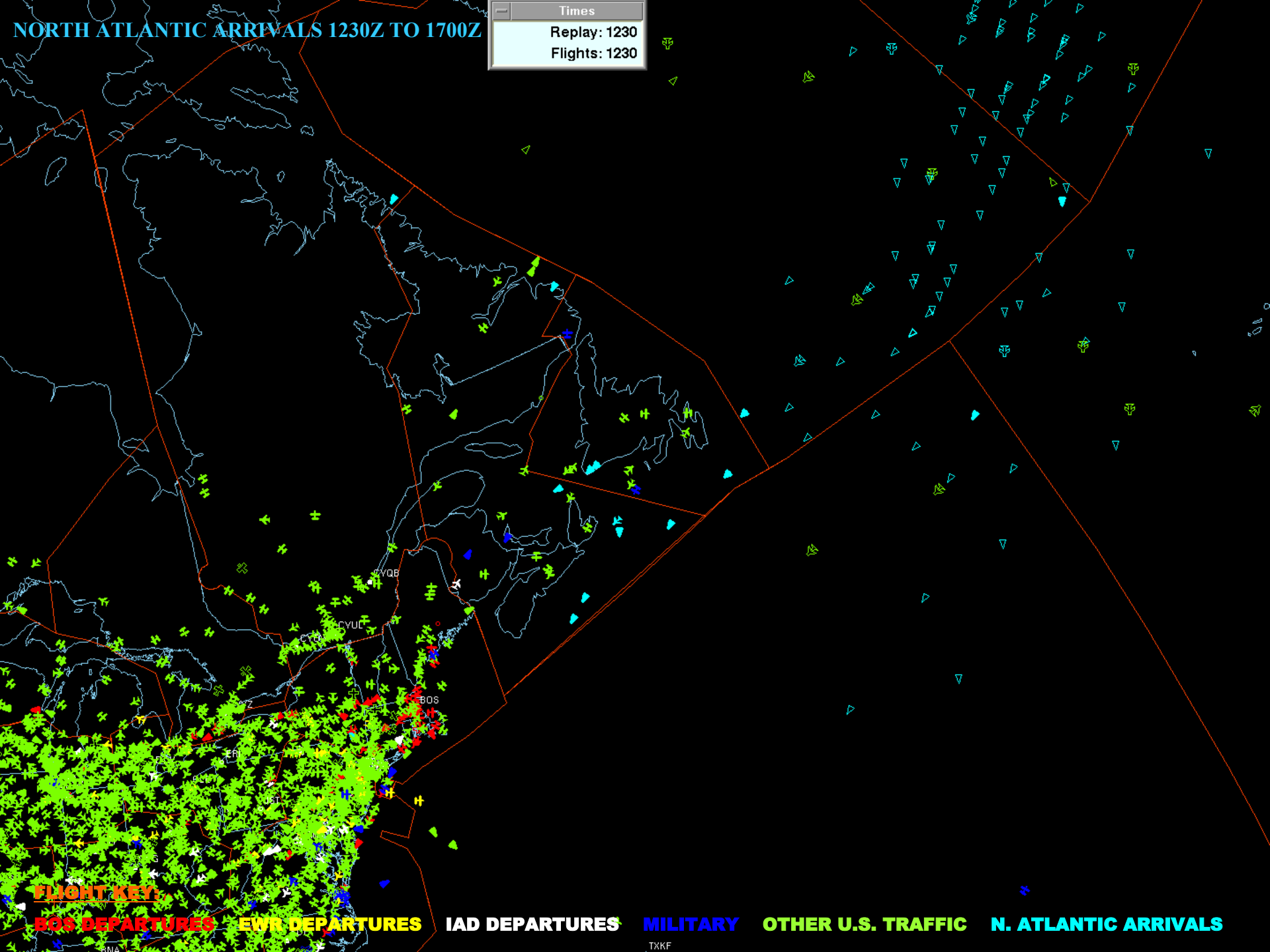


Example of traffic flows

Europe to U.S.A.

# NORTH ATLANTIC ARRIVALS 1230Z TO 1700Z

Times  
Replay: 1230  
Flights: 1230



### FLIGHT KEY:

**BOS DEPARTURES**

**EWR DEPARTURES**

**IAD DEPARTURES**

**MILITARY**

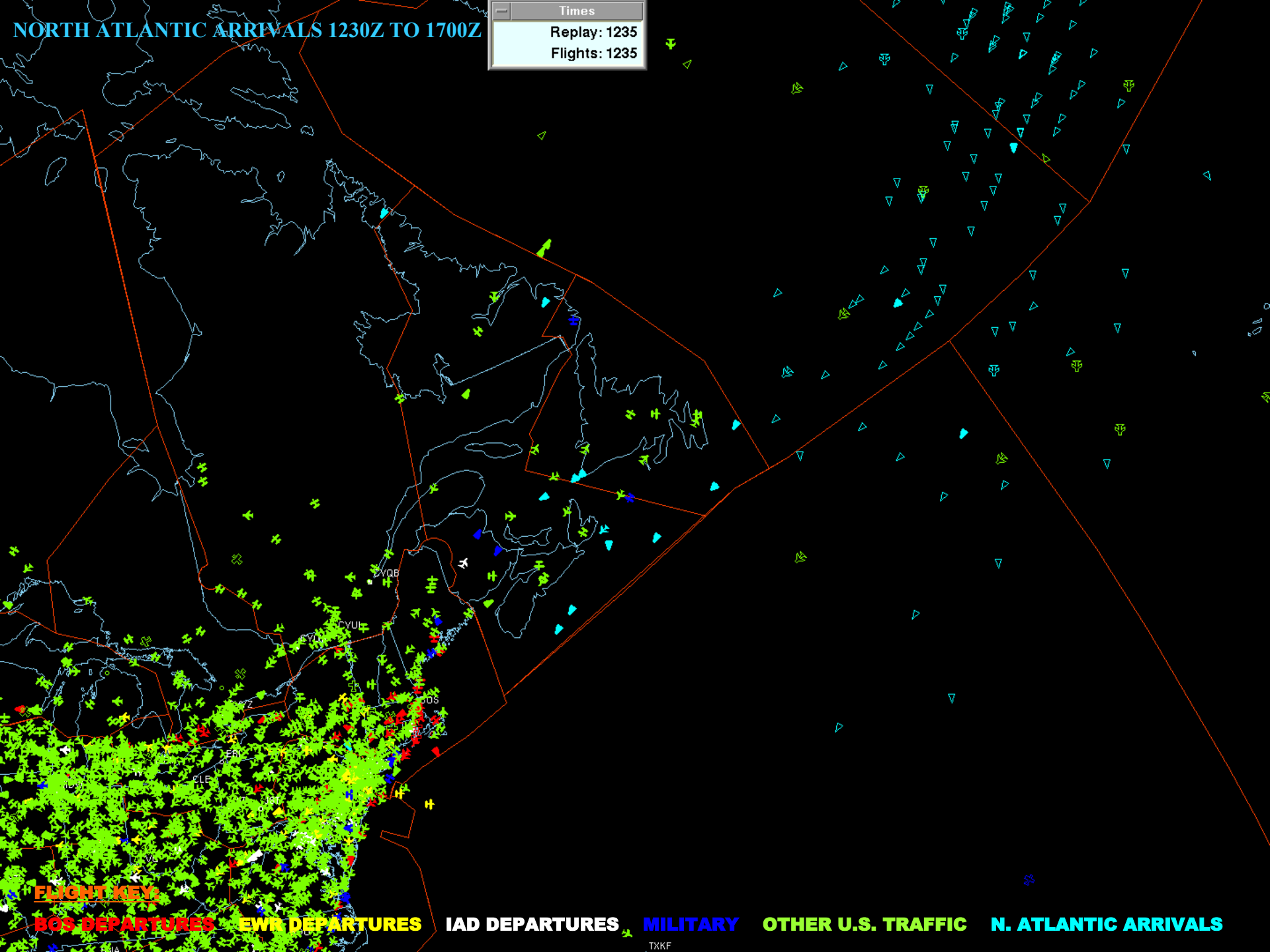
**OTHER U.S. TRAFFIC**

**N. ATLANTIC ARRIVALS**

TXKF

# NORTH ATLANTIC ARRIVALS 1230Z TO 1700Z

Times  
Replay: 1235  
Flights: 1235



## FLIGHT KEY

**RED** BOS DEPARTURES

**YELLOW** EWR DEPARTURES

**PURPLE** IAD DEPARTURES

**BLUE** MILITARY

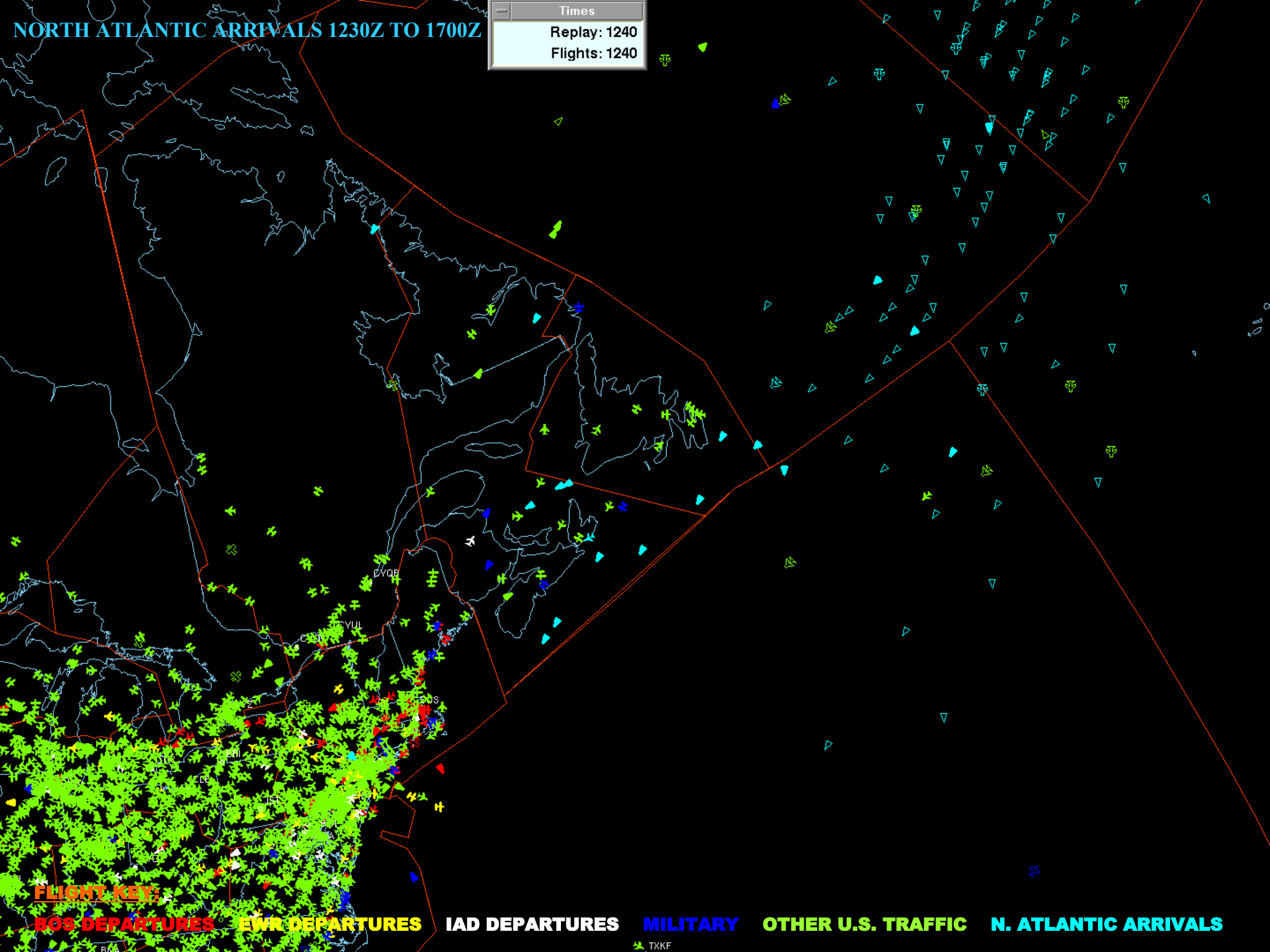
**CYAN** OTHER U.S. TRAFFIC

**GREEN** N. ATLANTIC ARRIVALS

TXKF

# NORTH ATLANTIC ARRIVALS 1230Z TO 1700Z

Times  
Replay: 1240  
Flights: 1240



## FLIGHT KEY:

**BOS DEPARTURES**

**EWR DEPARTURES**

**IAD DEPARTURES**

**MILITARY**

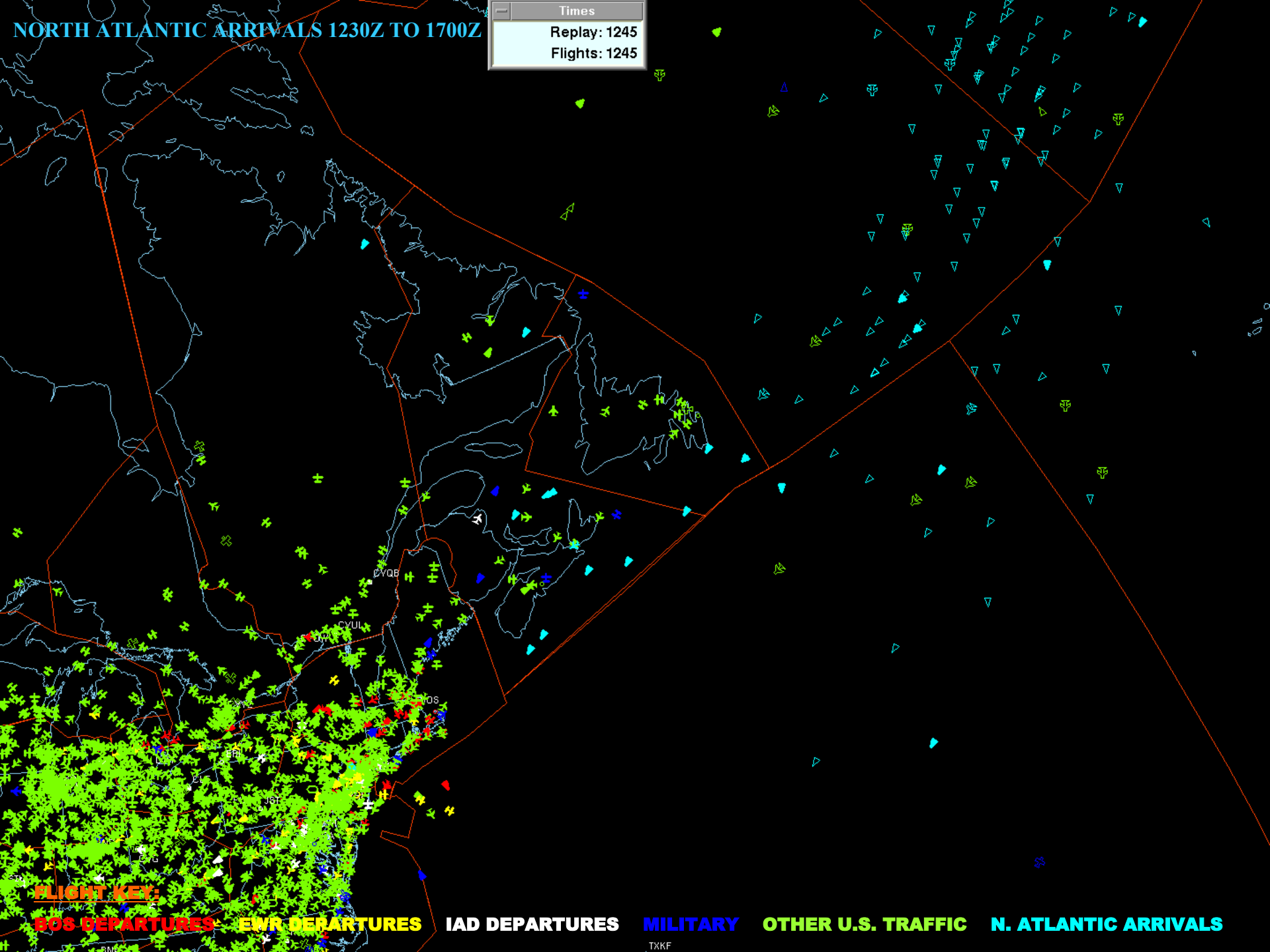
**OTHER U.S. TRAFFIC**

**N. ATLANTIC ARRIVALS**

TXKF

# NORTH ATLANTIC ARRIVALS 1230Z TO 1700Z

Times  
Replay: 1245  
Flights: 1245



## FLIGHT KEY:

**BOS DEPARTURES**

**EWR DEPARTURES**

**IAD DEPARTURES**

**MILITARY**

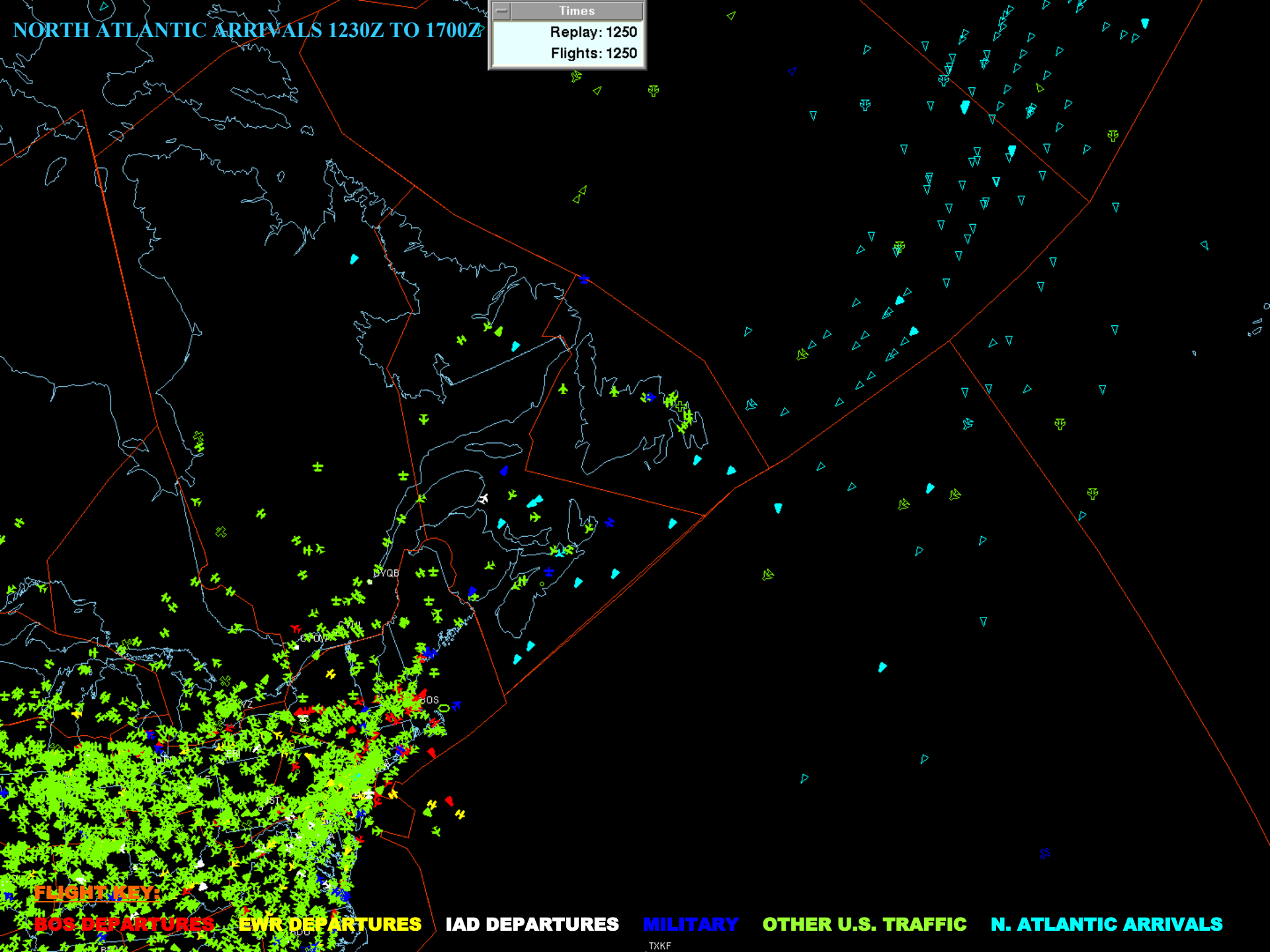
**OTHER U.S. TRAFFIC**

**N. ATLANTIC ARRIVALS**

TXKF

# NORTH ATLANTIC ARRIVALS 1230Z TO 1700Z

Times  
Replay: 1250  
Flights: 1250



## FLIGHT KEY:

**BOS DEPARTURES**

**EWR DEPARTURES**

**IAD DEPARTURES**

**MILITARY**

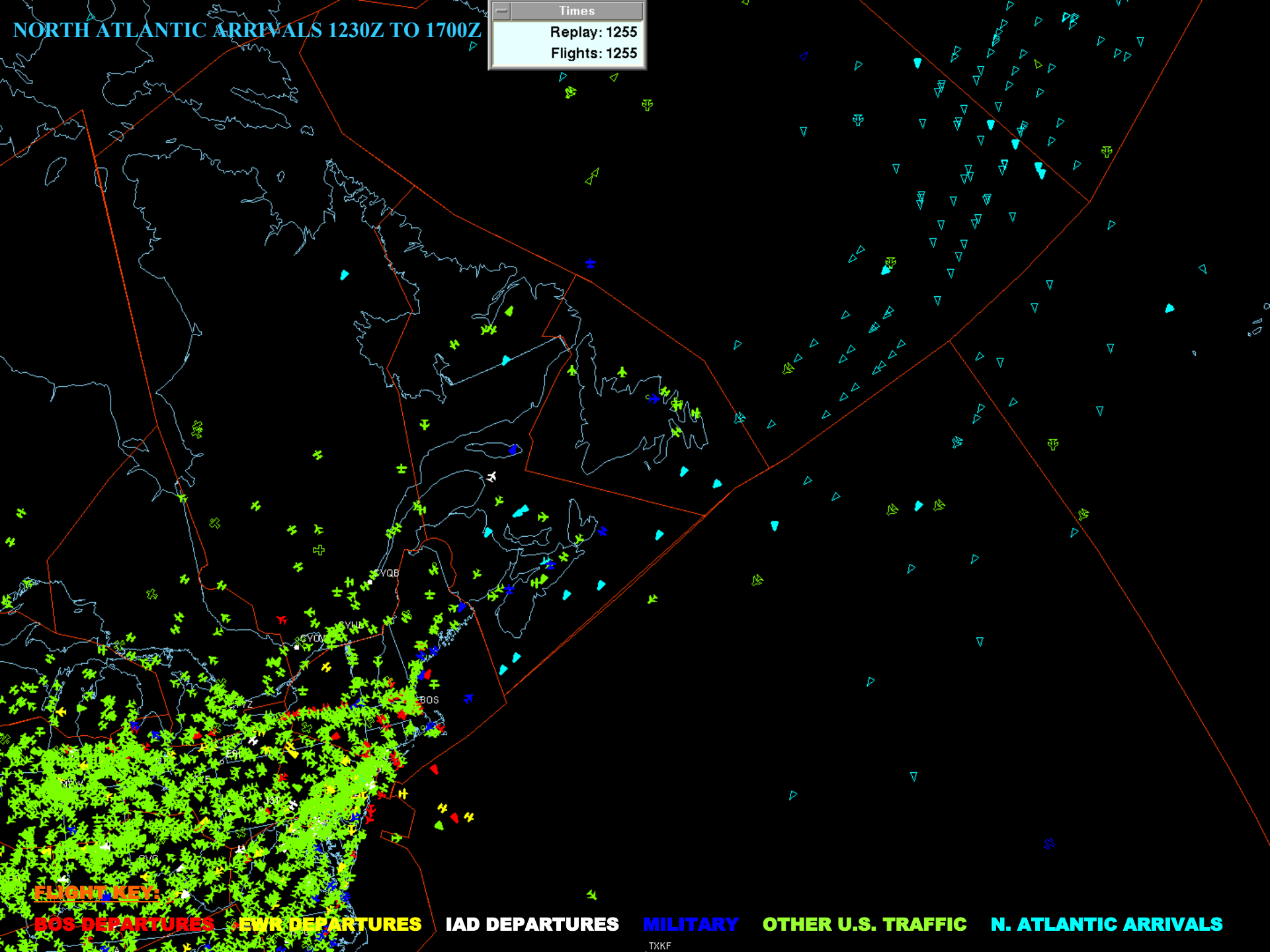
**OTHER U.S. TRAFFIC**

**N. ATLANTIC ARRIVALS**

TXKF

# NORTH ATLANTIC ARRIVALS 1230Z TO 1700Z

Times  
Replay: 1255  
Flights: 1255



**FLIGHT KEY:**

**BOS DEPARTURES**

**EWR DEPARTURES**

**IAD DEPARTURES**

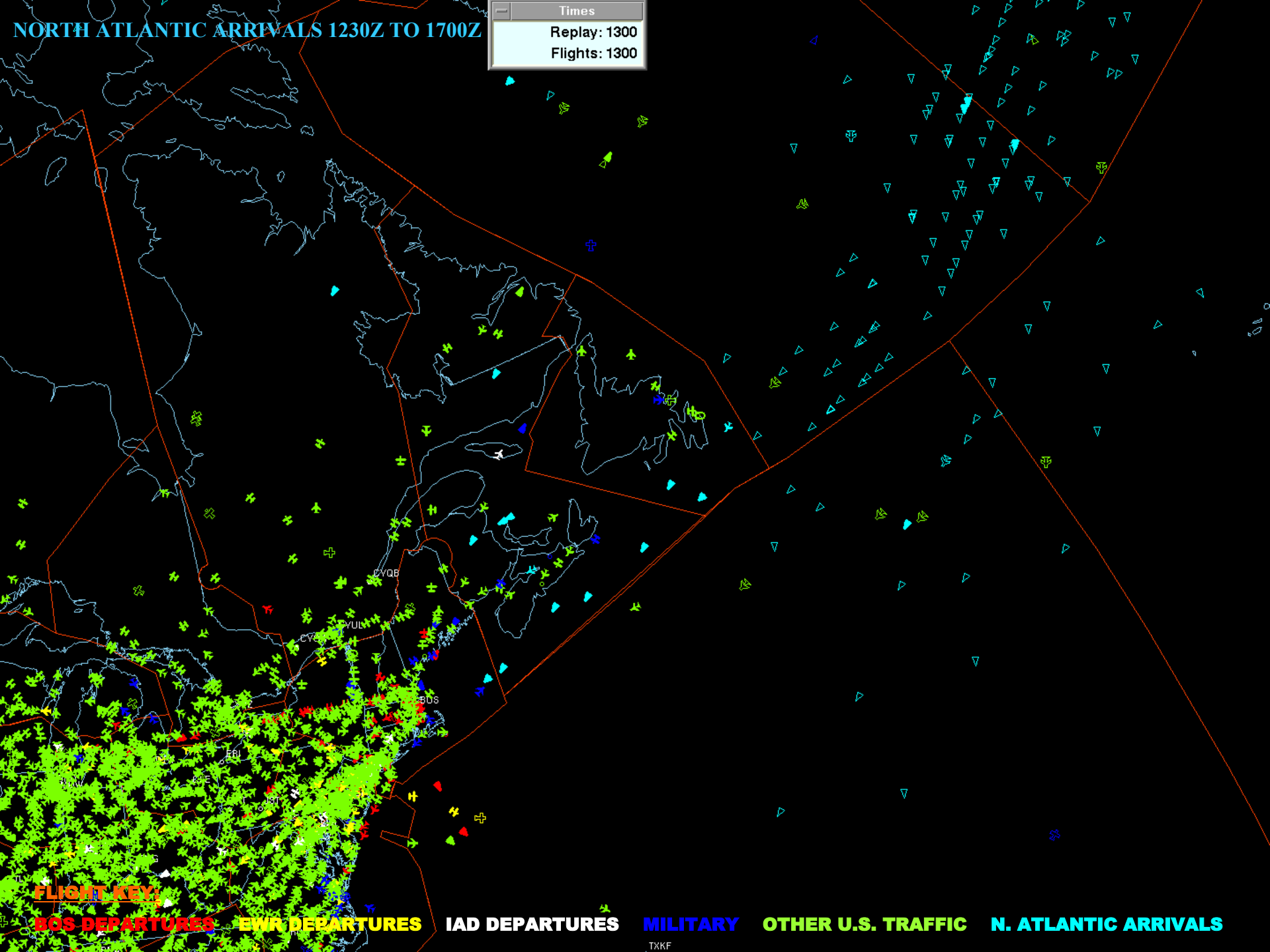
**MILITARY**

**OTHER U.S. TRAFFIC**

**N. ATLANTIC ARRIVALS**

# NORTH ATLANTIC ARRIVALS 1230Z TO 1700Z

Times  
Replay: 1300  
Flights: 1300



## FLIGHT KEY:

**BOS DEPARTURES**

**EWR DEPARTURES**

**IAD DEPARTURES**

**MILITARY**

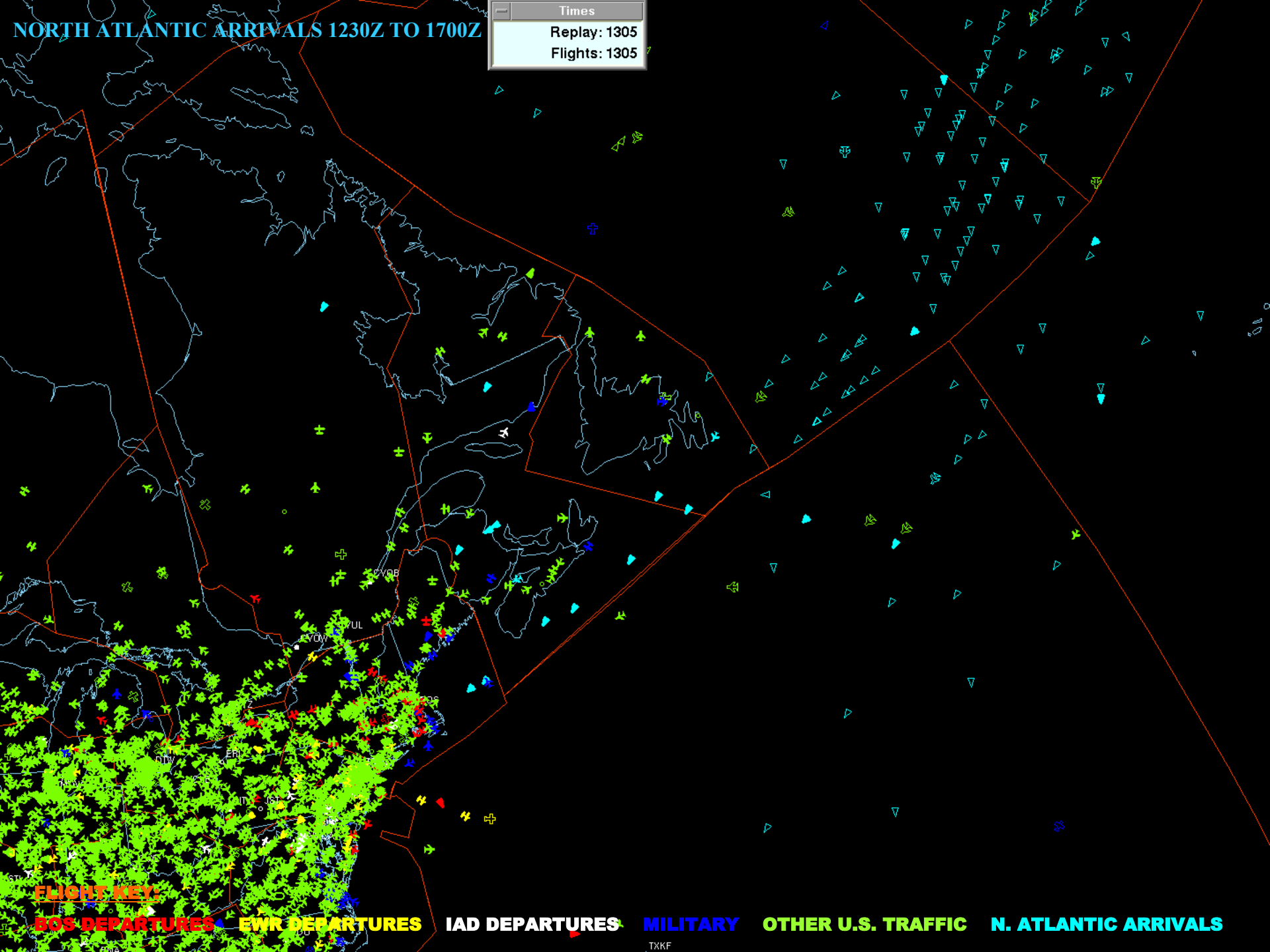
**OTHER U.S. TRAFFIC**

**N. ATLANTIC ARRIVALS**

TXKF

# NORTH ATLANTIC ARRIVALS 1230Z TO 1700Z

Times  
Replay: 1305  
Flights: 1305



## FLIGHT KEY:

**BOS DEPARTURES**

**EWR DEPARTURES**

**IAD DEPARTURES**

**MILITARY**

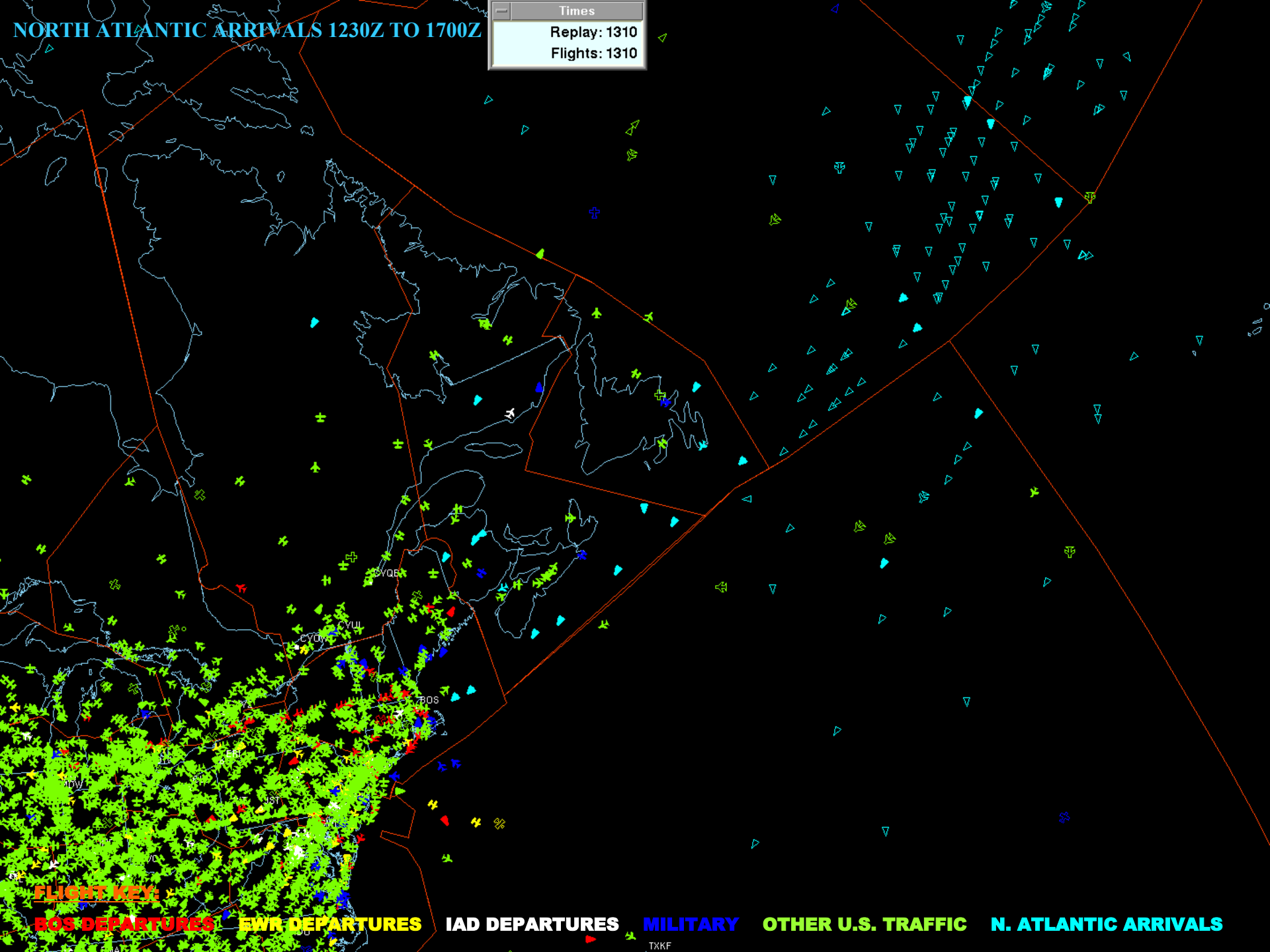
**OTHER U.S. TRAFFIC**

**N. ATLANTIC ARRIVALS**

TXKF

# NORTH ATLANTIC ARRIVALS 1230Z TO 1700Z

Times  
Replay: 1310  
Flights: 1310



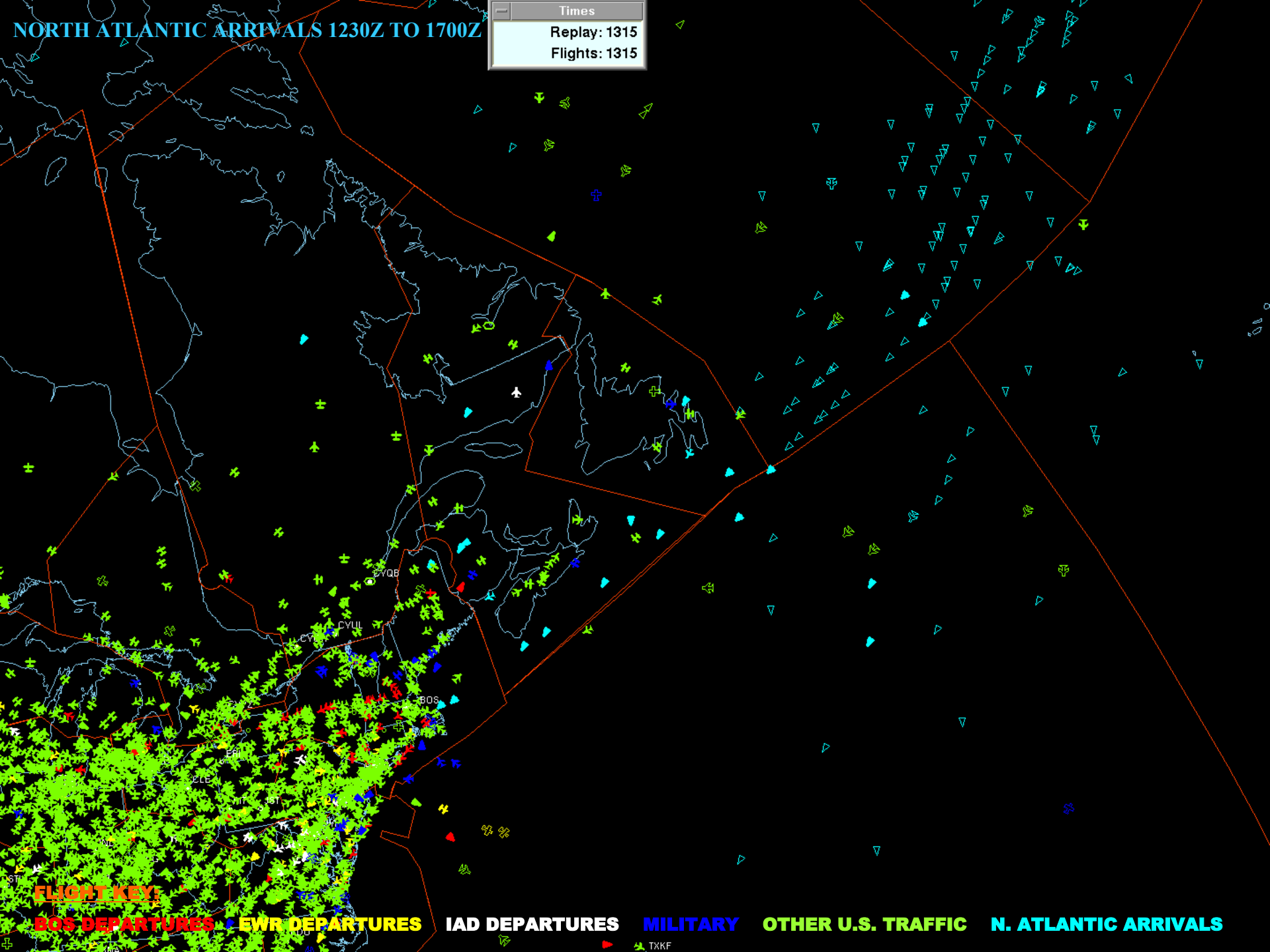
## FLIGHT KEY:

- BOS DEPARTURES**
- EWR DEPARTURES**
- IAD DEPARTURES**
- MILITARY**
- OTHER U.S. TRAFFIC**
- N. ATLANTIC ARRIVALS**

TXKF

# NORTH ATLANTIC ARRIVALS 1230Z TO 1700Z

Times  
Replay: 1315  
Flights: 1315



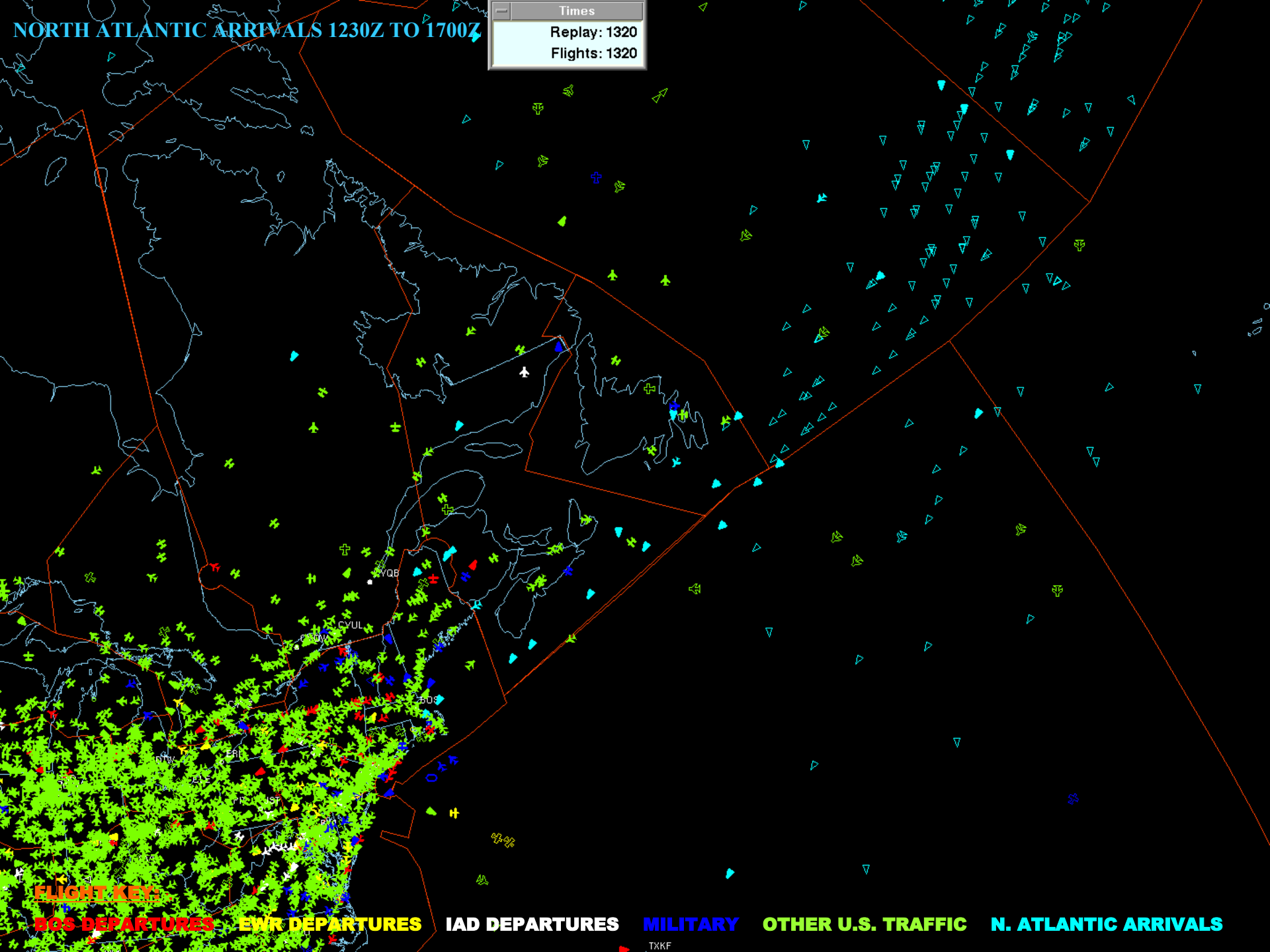
## FLIGHT KEY:

- ▲ BOS DEPARTURES
- ▲ EWR DEPARTURES
- ▲ IAD DEPARTURES
- ▲ MILITARY
- ▲ OTHER U.S. TRAFFIC
- ▲ N. ATLANTIC ARRIVALS

TXKF

# NORTH ATLANTIC ARRIVALS 1230Z TO 1700Z

Times  
Replay: 1320  
Flights: 1320



## FLIGHT KEY:

**BOS DEPARTURES**

**EWR DEPARTURES**

**IAD DEPARTURES**

**MILITARY**

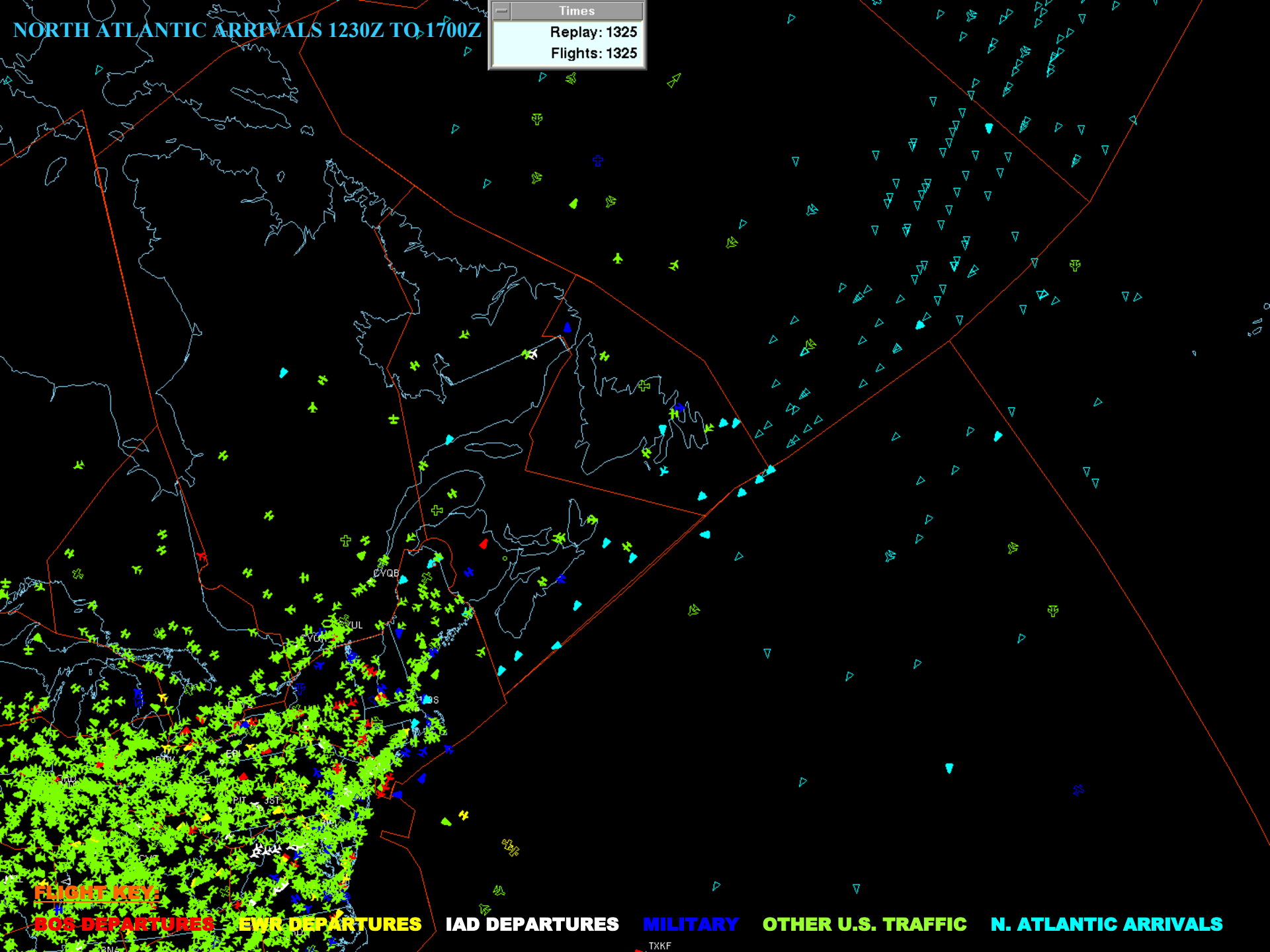
**OTHER U.S. TRAFFIC**

**N. ATLANTIC ARRIVALS**

TXKF

# NORTH ATLANTIC ARRIVALS 1230Z TO 1700Z

Times  
Replay: 1325  
Flights: 1325



## FLIGHT KEY:

**BOS DEPARTURES**

**EWR DEPARTURES**

**IAD DEPARTURES**

**MILITARY**

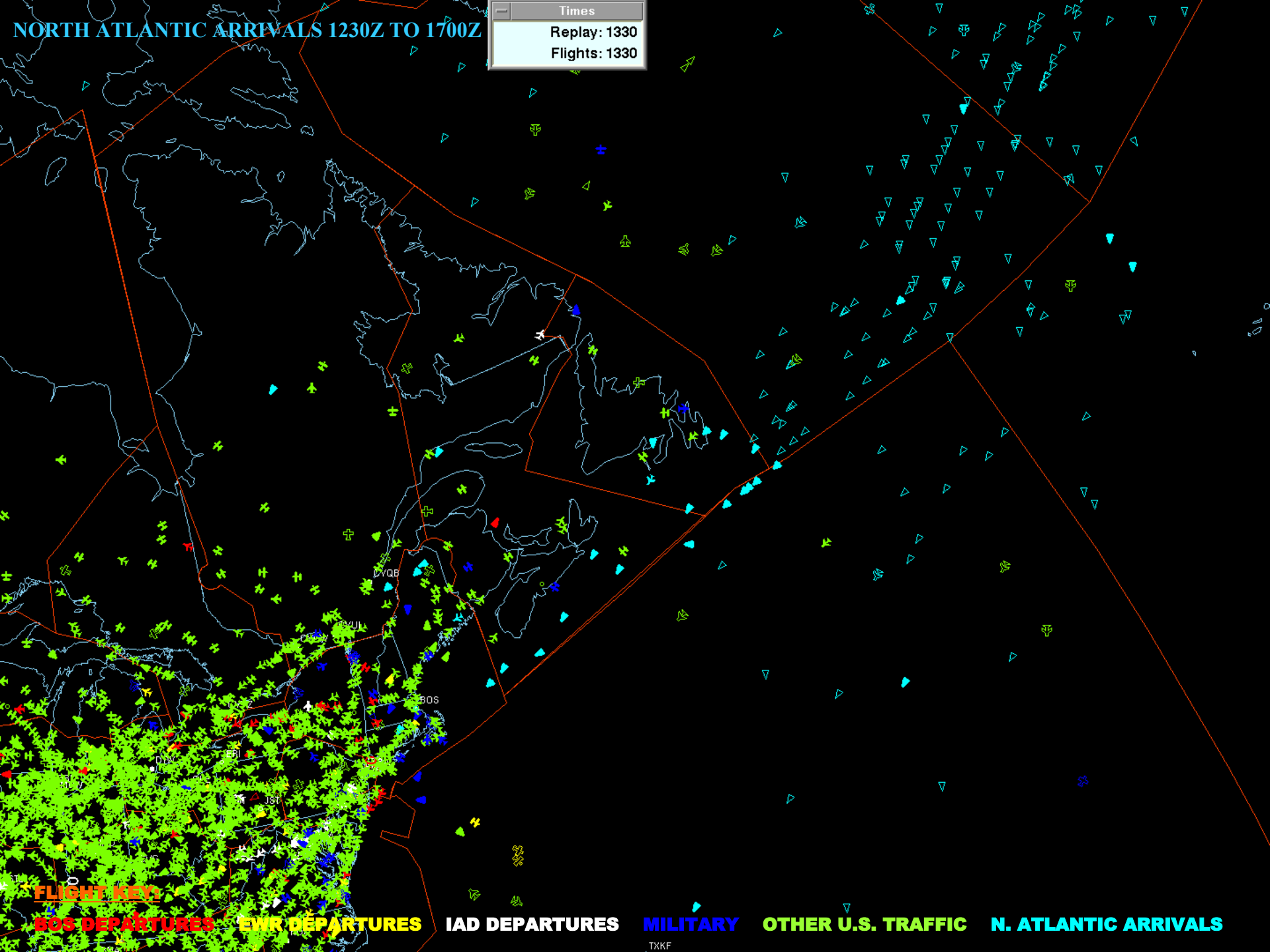
**OTHER U.S. TRAFFIC**

**N. ATLANTIC ARRIVALS**

TXKF

# NORTH ATLANTIC ARRIVALS 1230Z TO 1700Z

Times  
Replay: 1330  
Flights: 1330



## FLIGHT KEY:

**BOS DEPARTURES**

**EWR DEPARTURES**

**IAD DEPARTURES**

**MILITARY**

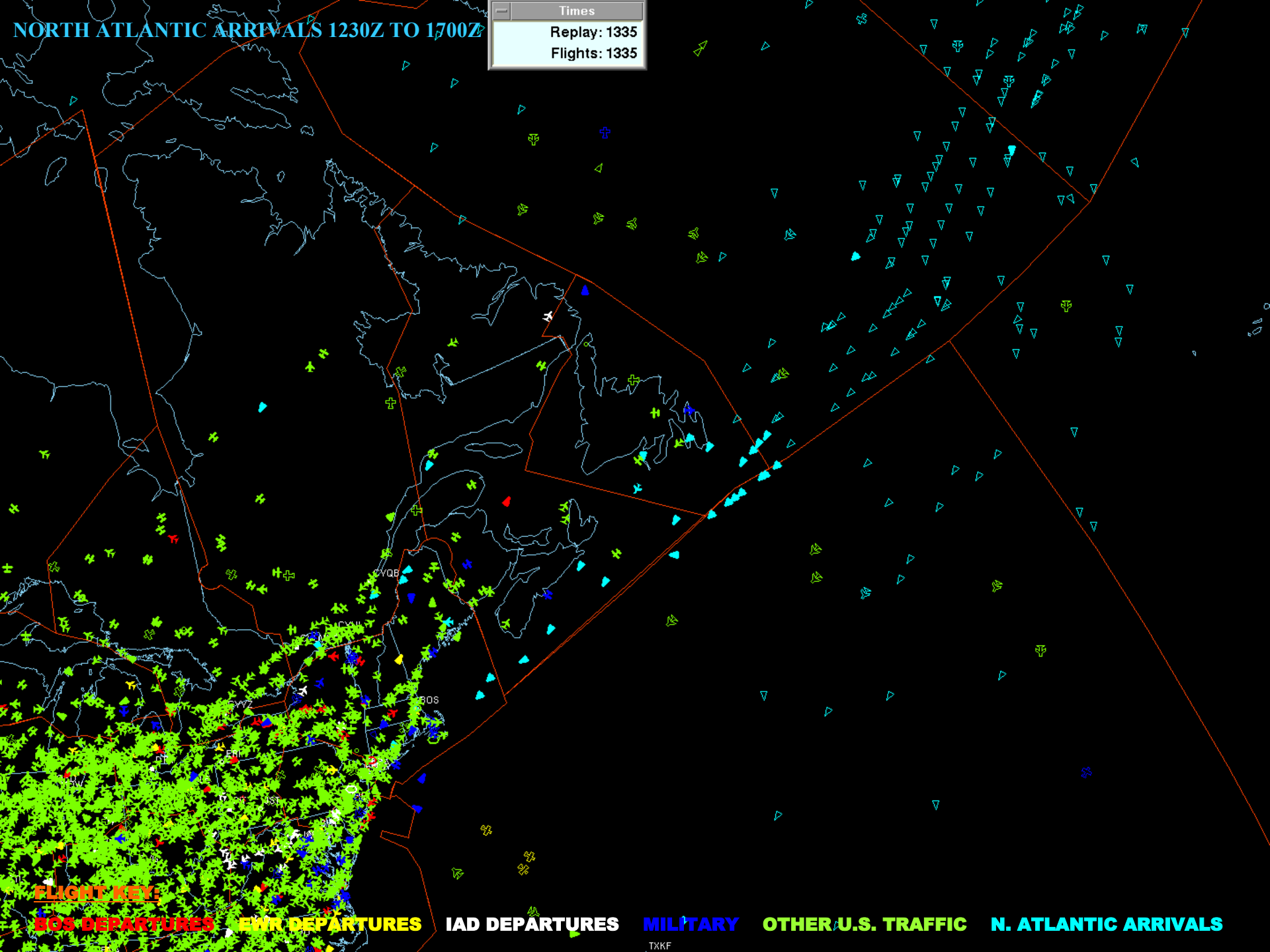
**OTHER U.S. TRAFFIC**

**N. ATLANTIC ARRIVALS**

TXXF

# NORTH ATLANTIC ARRIVALS 1230Z TO 1700Z

Times  
Replay: 1335  
Flights: 1335



## FLIGHT KEY:

**BOS DEPARTURES**

**EWR DEPARTURES**

**IAD DEPARTURES**

**MILITARY**

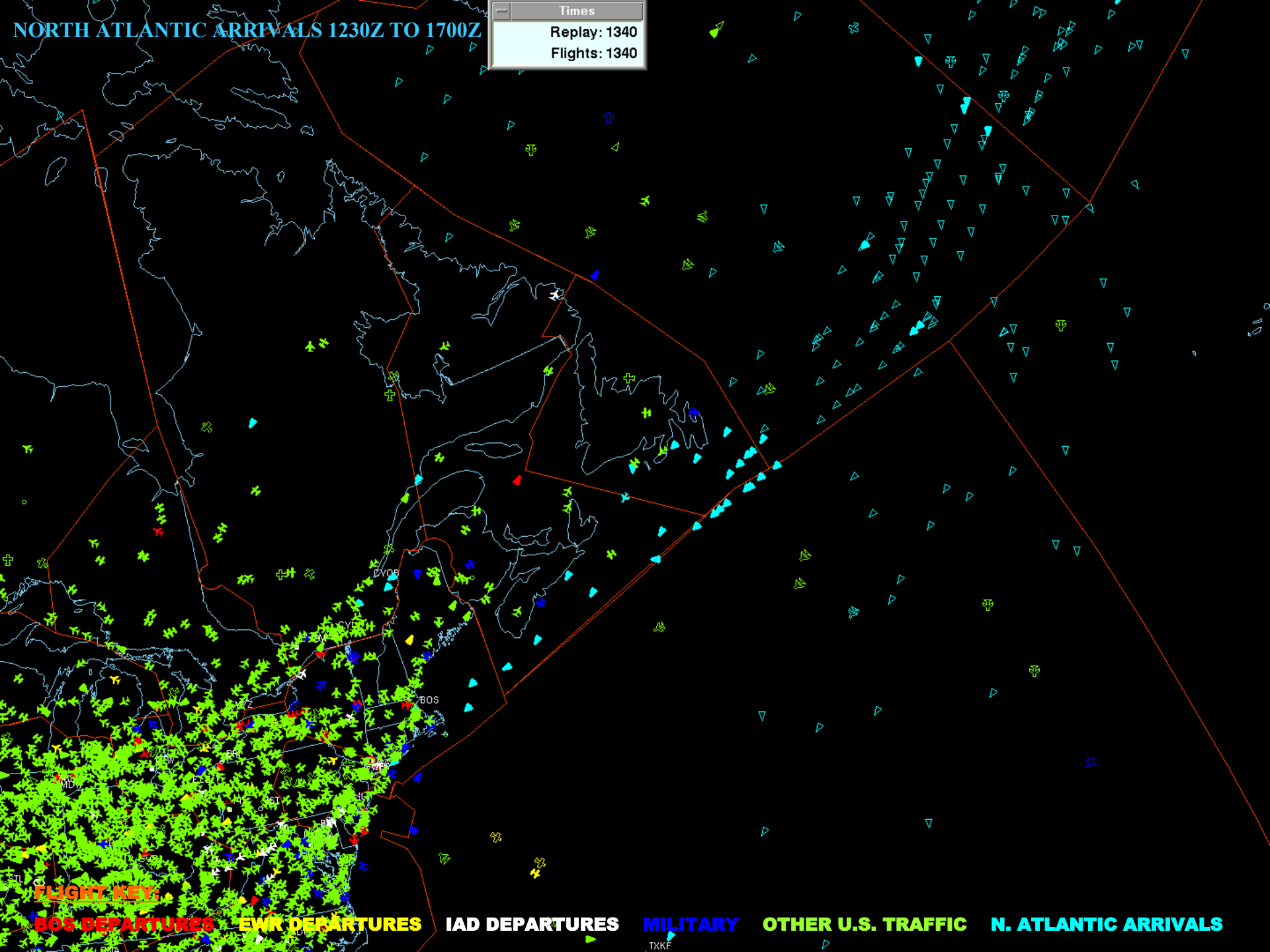
**OTHER U.S. TRAFFIC**

**N. ATLANTIC ARRIVALS**

TXKF

# NORTH ATLANTIC ARRIVALS 1230Z TO 1700Z

Times  
Replay: 1340  
Flights: 1340



## FLIGHT KEY:

**BOS DEPARTURES**

**EWR DEPARTURES**

**IAD DEPARTURES**

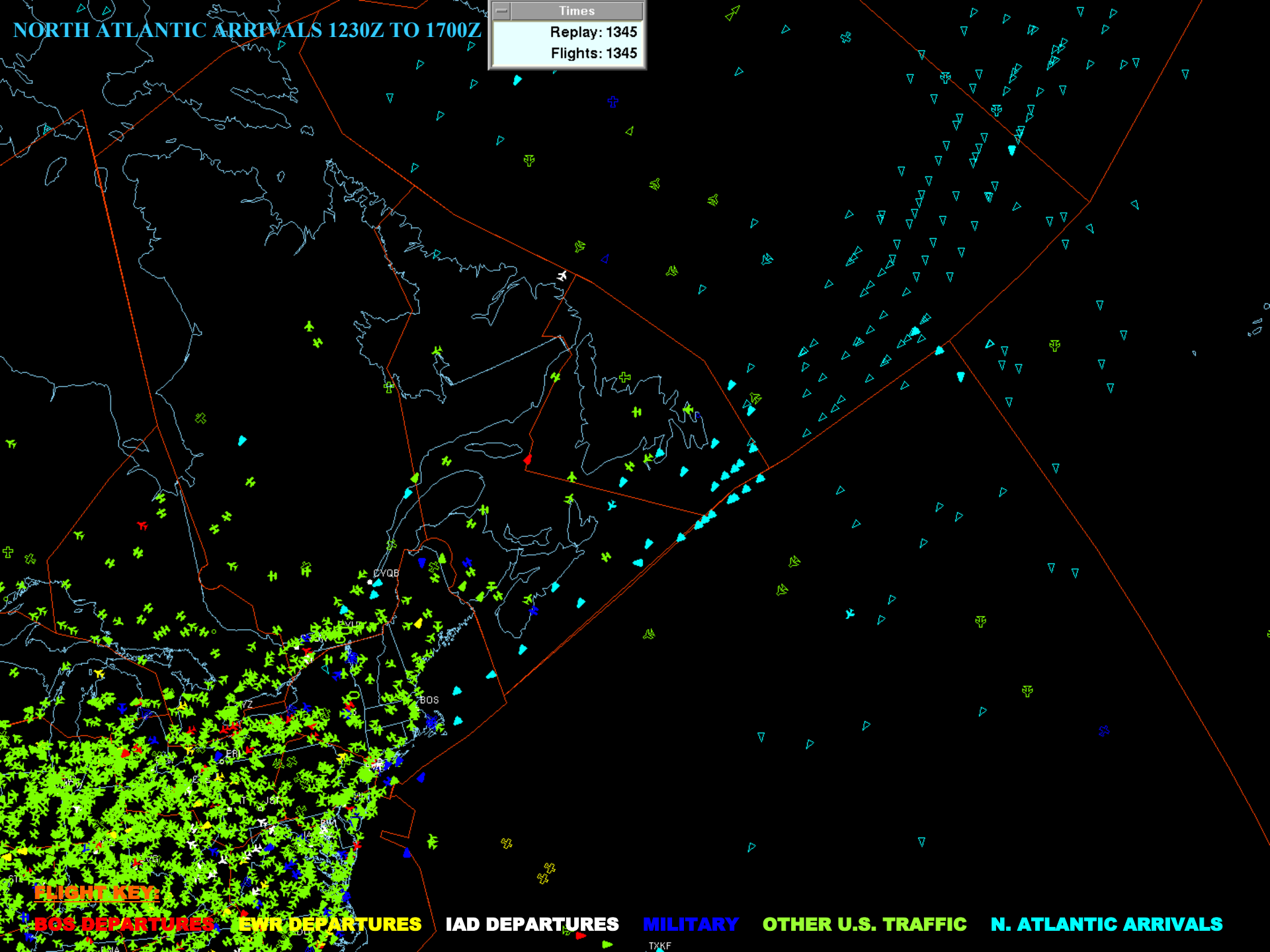
**MILITARY**

**OTHER U.S. TRAFFIC**

**N. ATLANTIC ARRIVALS**

# NORTH ATLANTIC ARRIVALS 1230Z TO 1700Z

Times  
Replay: 1345  
Flights: 1345



## FLIGHT KEY

**BOS DEPARTURES**

**EWR DEPARTURES**

**IAD DEPARTURES**

**MILITARY**

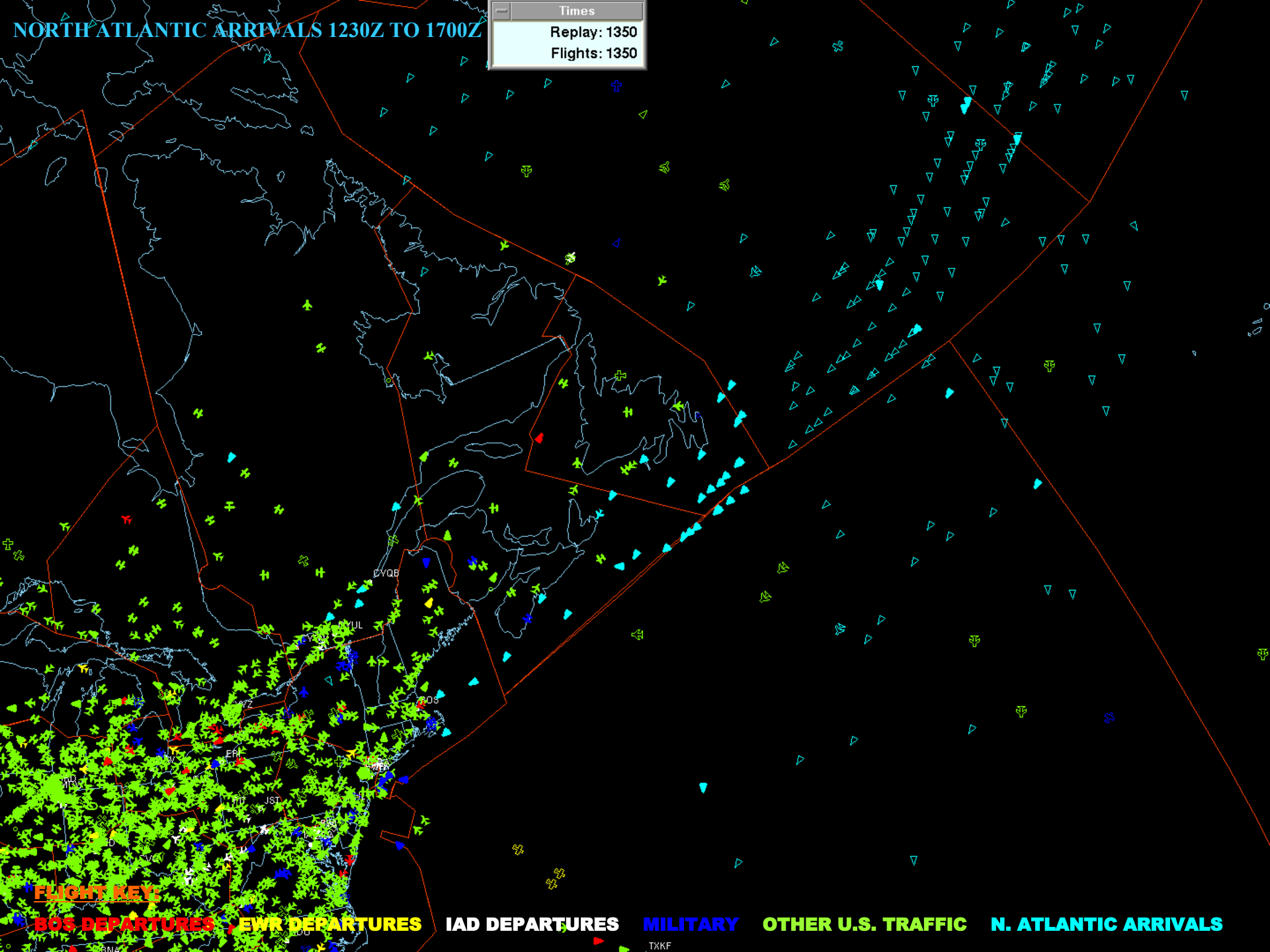
**OTHER U.S. TRAFFIC**

**N. ATLANTIC ARRIVALS**

TKKF

# NORTH ATLANTIC ARRIVALS 1230Z TO 1700Z

Times  
Replay: 1350  
Flights: 1350



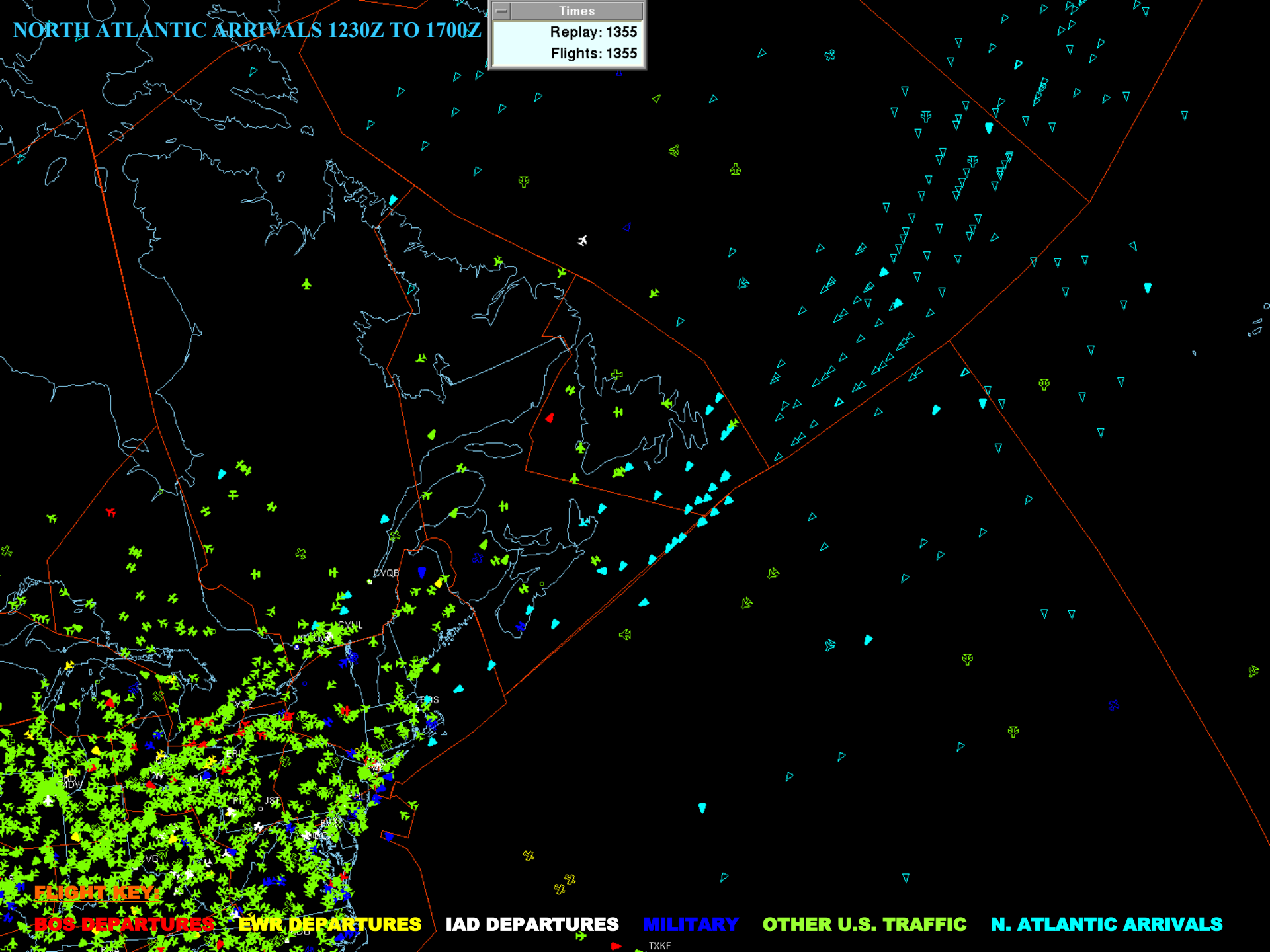
### FLIGHT KEY

- BOS DEPARTURES
- EWR DEPARTURES
- IAD DEPARTURES
- MILITARY
- OTHER U.S. TRAFFIC
- N. ATLANTIC ARRIVALS

TXKF

# NORTH ATLANTIC ARRIVALS 1230Z TO 1700Z

Times  
Replay: 1355  
Flights: 1355



## FLIGHT KEY:

**BOS DEPARTURES**

**EWR DEPARTURES**

**IAD DEPARTURES**

**MILITARY**

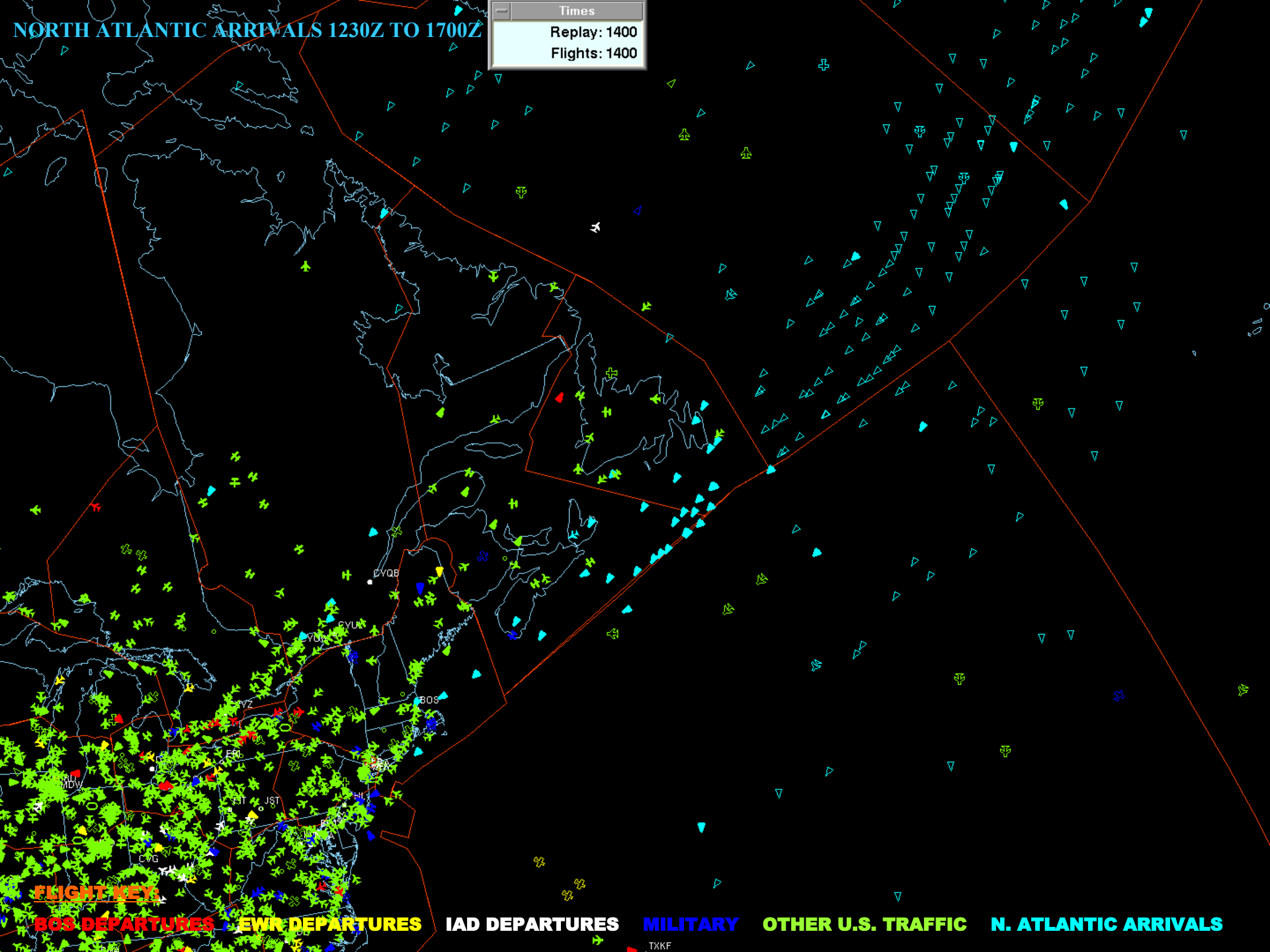
**OTHER U.S. TRAFFIC**

**N. ATLANTIC ARRIVALS**

TXXF

# NORTH ATLANTIC ARRIVALS 1230Z TO 1700Z

Times  
Replay: 1400  
Flights: 1400



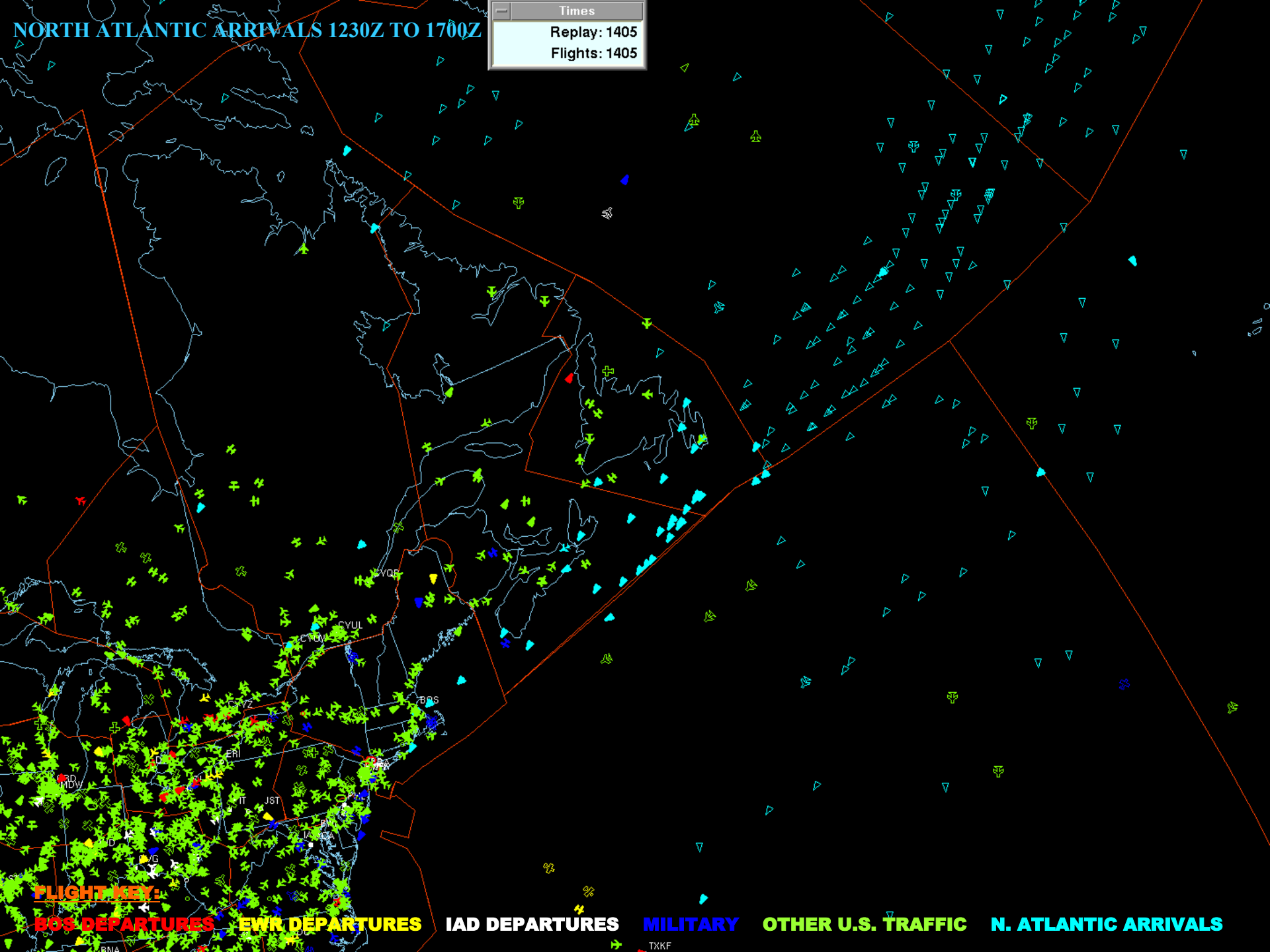
## FLIGHT KEY

- BOS DEPARTURES**
- EWR DEPARTURES**
- IAD DEPARTURES**
- MILITARY**
- OTHER U.S. TRAFFIC**
- N. ATLANTIC ARRIVALS**

TXKF

# NORTH ATLANTIC ARRIVALS 1230Z TO 1700Z

Times  
Replay: 1405  
Flights: 1405



## FLIGHT KEY:

**BOS DEPARTURES**

**EWR DEPARTURES**

**IAD DEPARTURES**

**MILITARY**

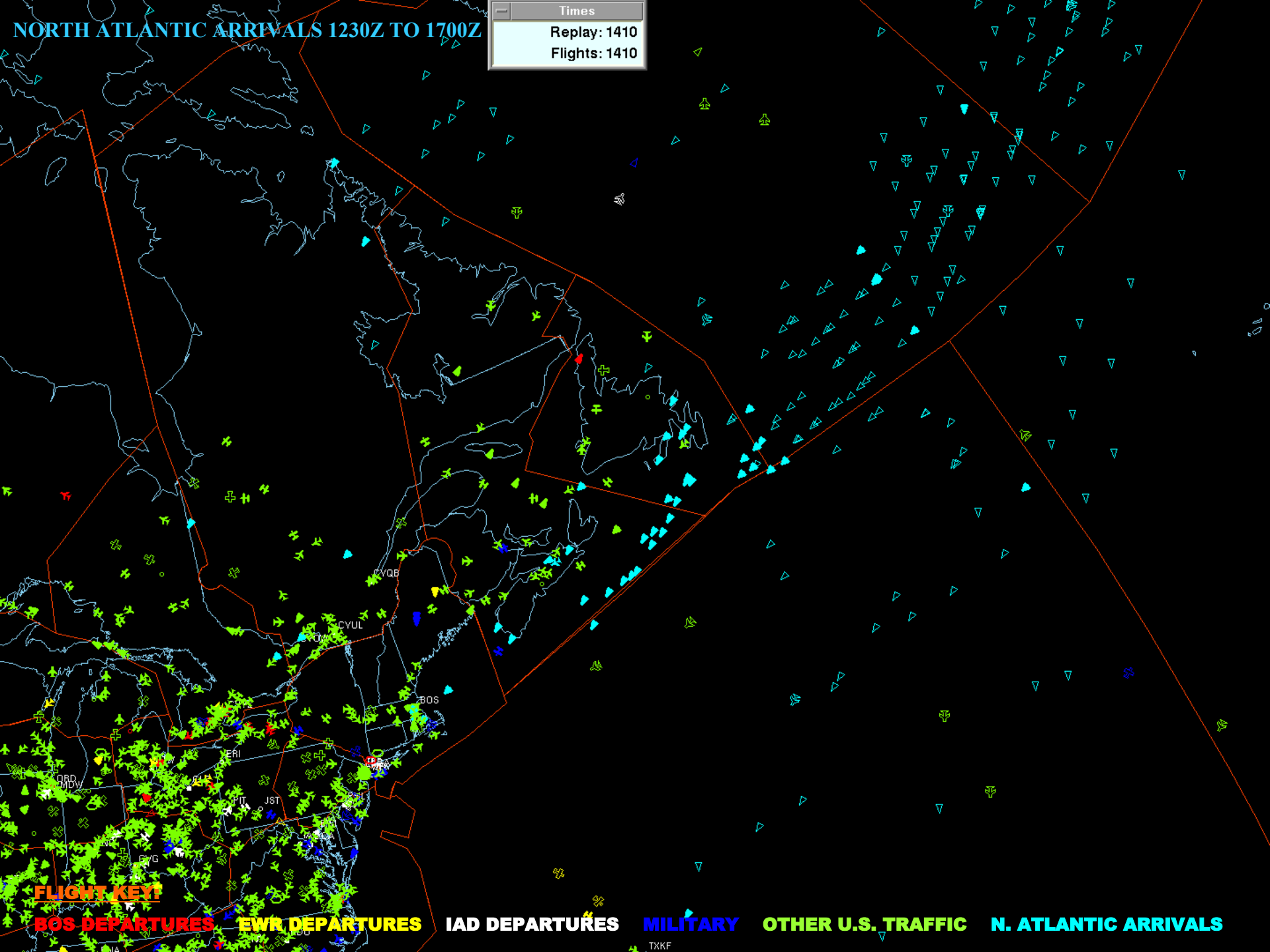
**OTHER U.S. TRAFFIC**

**N. ATLANTIC ARRIVALS**

TXKF

# NORTH ATLANTIC ARRIVALS 1230Z TO 1700Z

Times  
Replay: 1410  
Flights: 1410



## FLIGHT KEY!

**BOS DEPARTURES**

**EWR DEPARTURES**

**IAD DEPARTURES**

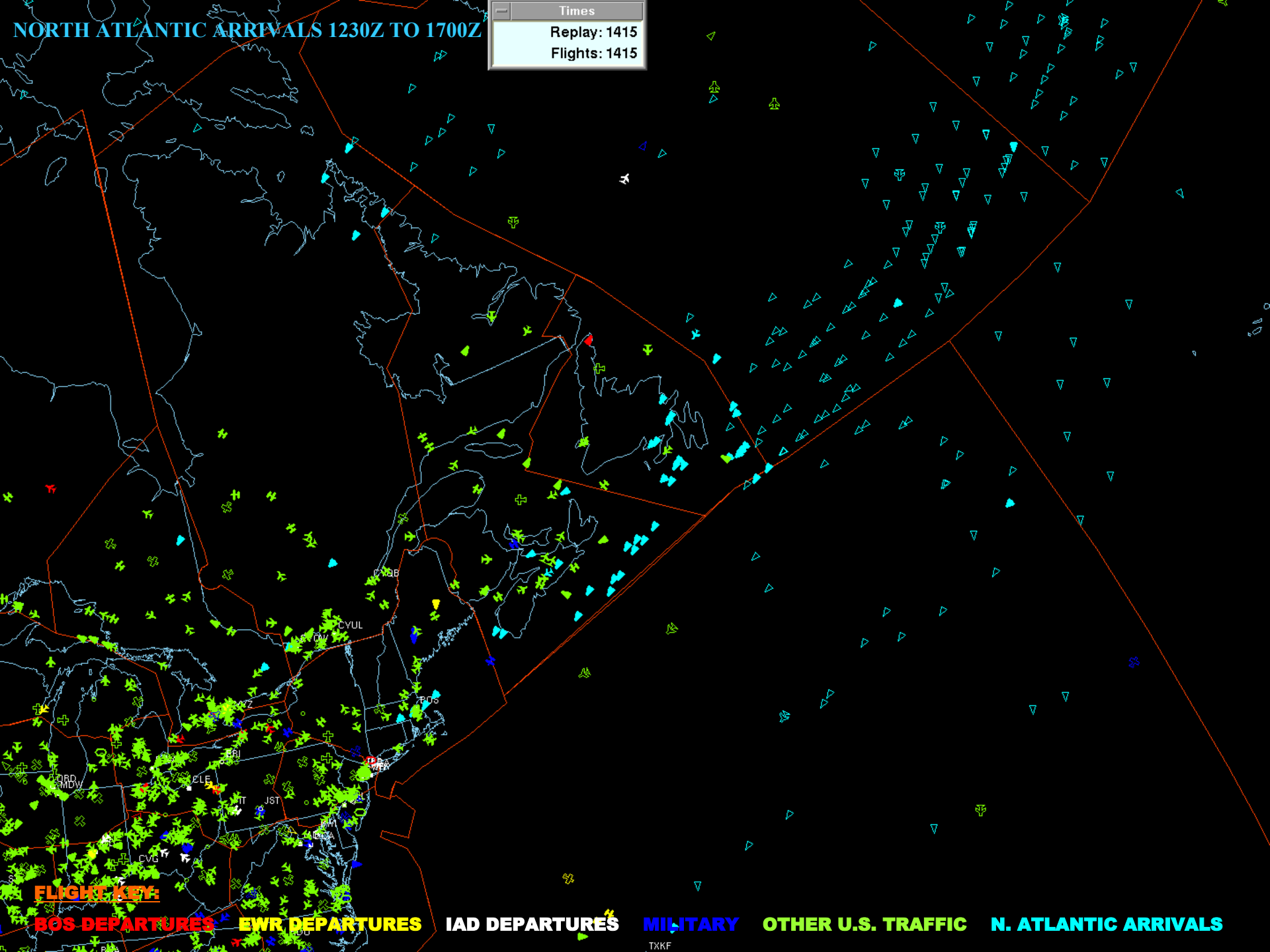
**MILITARY**

**OTHER U.S. TRAFFIC**

**N. ATLANTIC ARRIVALS**

# NORTH ATLANTIC ARRIVALS 1230Z TO 1700Z

Times  
Replay: 1415  
Flights: 1415



## FLIGHT KEY:

**BOS DEPARTURES**

**EWR DEPARTURES**

**IAD DEPARTURES**

**MILITARY**

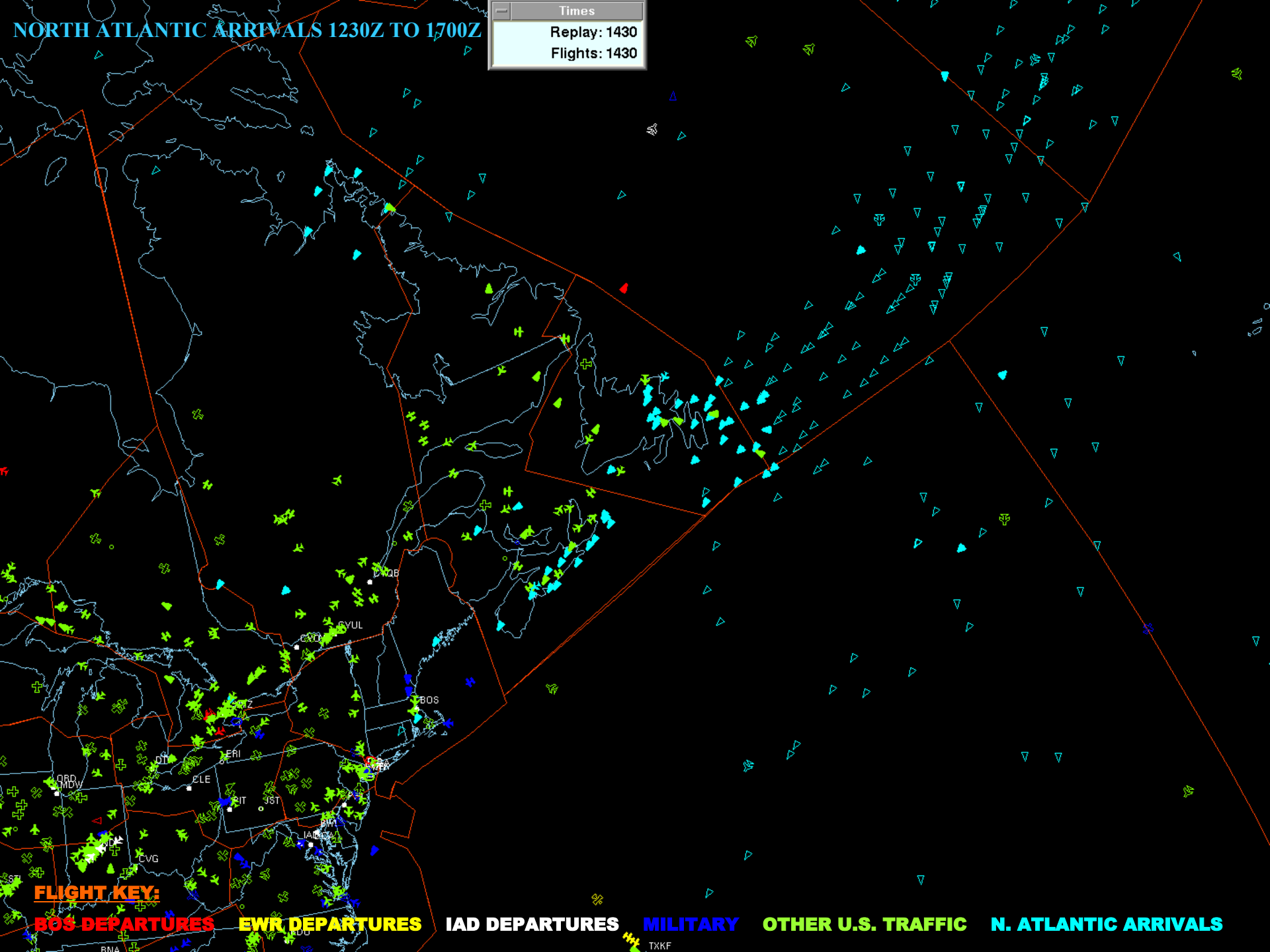
**OTHER U.S. TRAFFIC**

**N. ATLANTIC ARRIVALS**

TXKF

# NORTH ATLANTIC ARRIVALS 1230Z TO 1700Z

Times  
Replay: 1430  
Flights: 1430

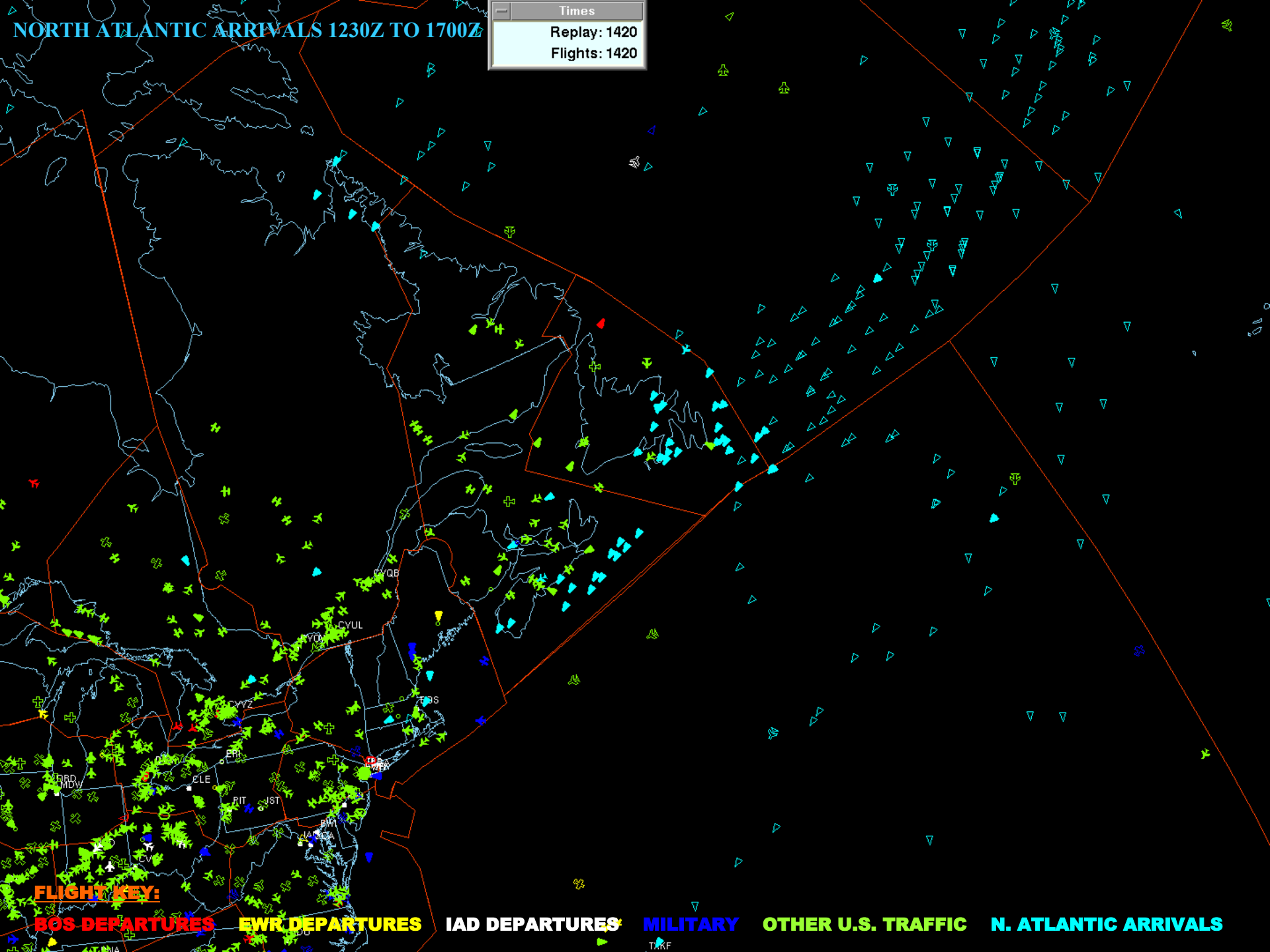


## FLIGHT KEY:

- BOS DEPARTURES**
- EWR DEPARTURES**
- IAD DEPARTURES**
- MILITARY**
- OTHER U.S. TRAFFIC**
- N. ATLANTIC ARRIVALS**

# NORTH ATLANTIC ARRIVALS 1230Z TO 1700Z

Times  
Replay: 1420  
Flights: 1420



## FLIGHT KEY:

**BOS DEPARTURES**

**EWR DEPARTURES**

**IAD DEPARTURES**

**MILITARY**

**OTHER U.S. TRAFFIC**

**N. ATLANTIC ARRIVALS**

# *RNAV Routes*



These examples illustrate the importance of comprehensive prior planning and collaboration so that all stakeholders understand the traffic flows, the proposed routes, and their compatibility with existing procedures in all the F.I.R.'s the route transitions.

# *RNAV Routes*



Each day the U.S. accommodates  
**VERY** busy and complex traffic.

Any change to our current structure  
must be carefully evaluated so that we  
preserve our ability to **SAFELY &**  
**EFFICIENTLY** provide ATC services  
to all our customers.

# *RNAV Routes*



---

The addition of a single airway into this delicate balance can have far reaching consequences. Safety is our number one priority. In order to maintain the highest standards of safety we need to take careful steps.

# *RNAV Routes*



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We must also look at any new route proposal and conduct a careful analysis of the impact of the new route will have on the efficiency of the existing infrastructure.

Will new routes reduce system capacity while increasing efficiency for some?

# *RNAV Routes*



---

This analysis would include as a minimum:

- a study of traffic type,
- density,
- airspace configuration,
- separation standards,
- and most importantly, simulations.

# *RNAV Routes*



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CLOSING

QUESTIONS

&

COMMENTS