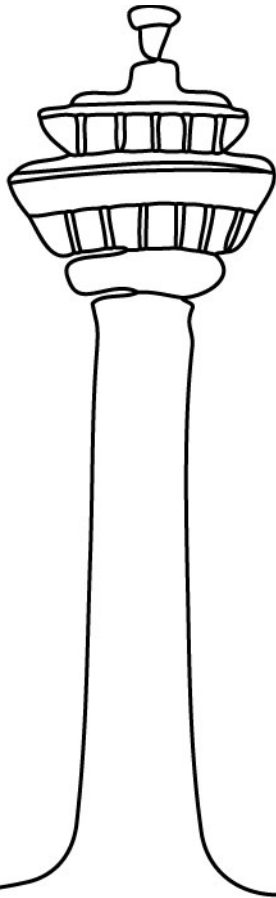


ICAO Surveillance Seminar for NAM/CAR/SAM Regions

Regional ADS-B Service Model



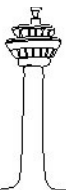
Akhil Sharma
Director, ATC AIRCOM Services

Straightforward aircraft operations

SITA

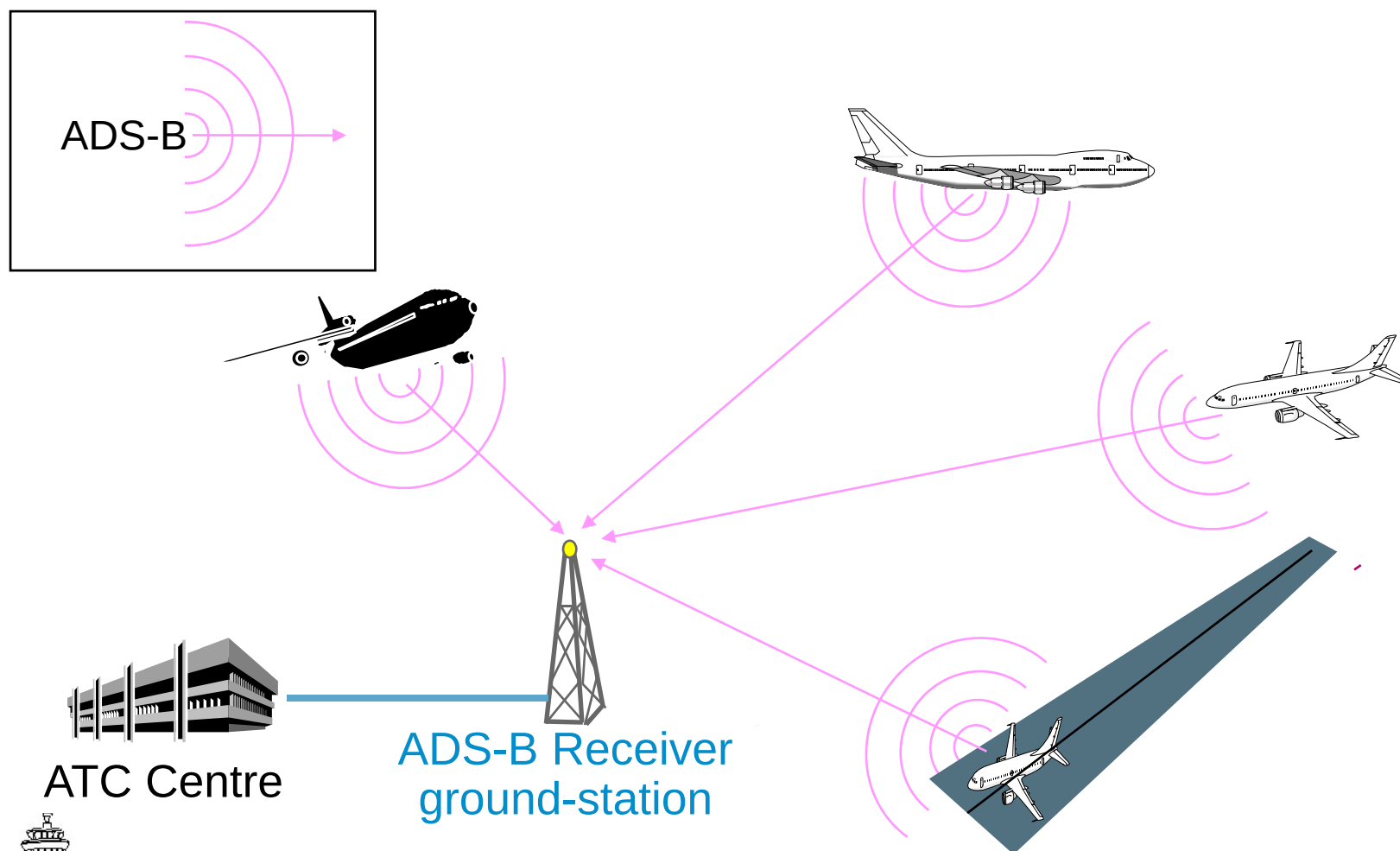
Overview

- ADS-B Concept
- Australian ADS-B Implementation
- SITA/Airservices Australia Regional Service Model
- Trials in CAR/SAM ?
- Conclusions



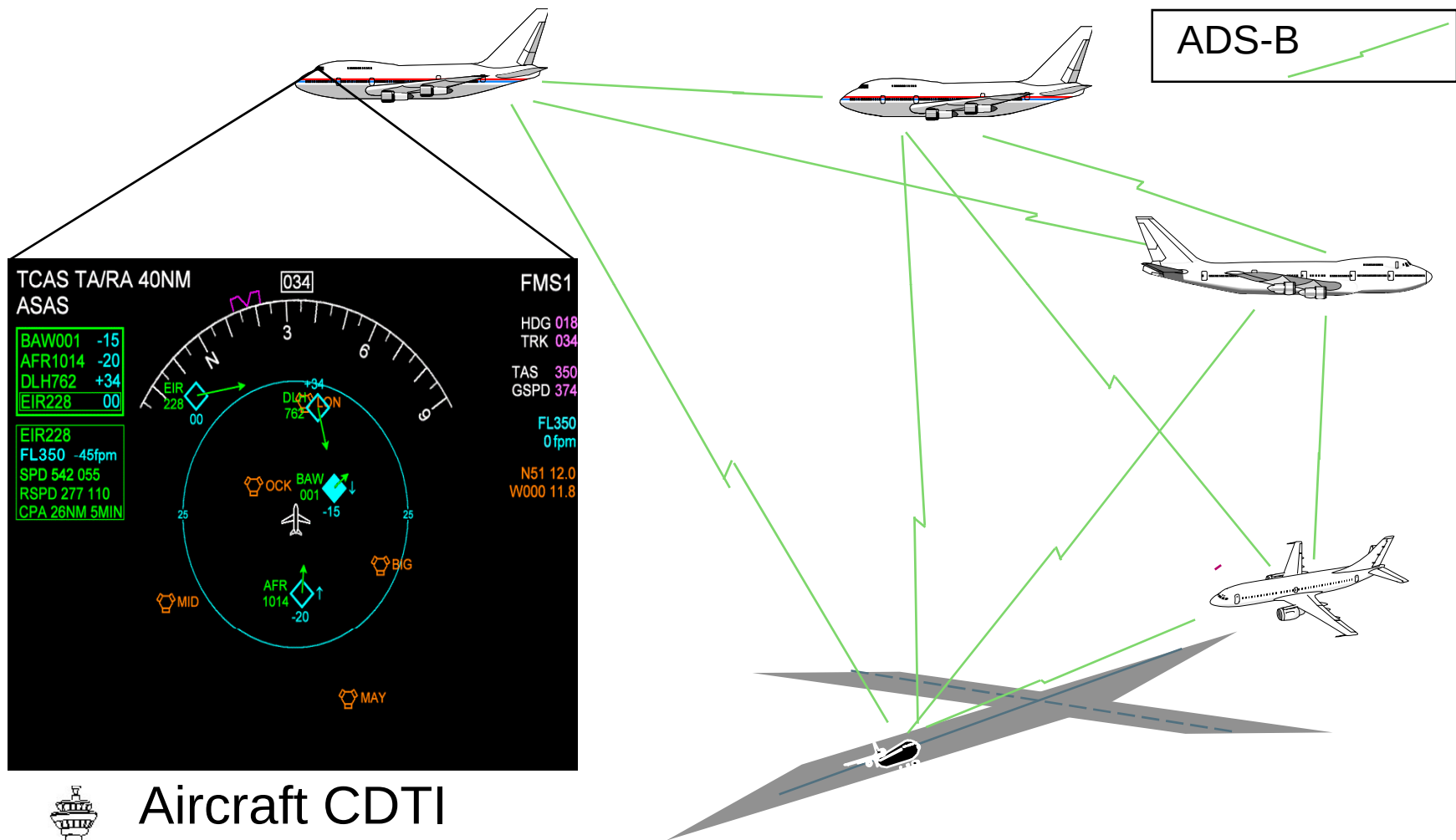
Application of ADS-B

Ground Surveillance Applications



Application of ADS-B

Airborne Surveillance Applications



ADS-B versus Radar

ADS-B ground stations are simple and economical

ADS-B

Less than \$0.5 M / site

Enroute RADAR

~ \$5M existing site

- Significantly more for Greenfield sites



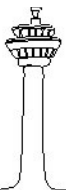
Cost Comparison

+ Maintenance
Power
Site space
Building
Road
Environmental
Rotating machinery

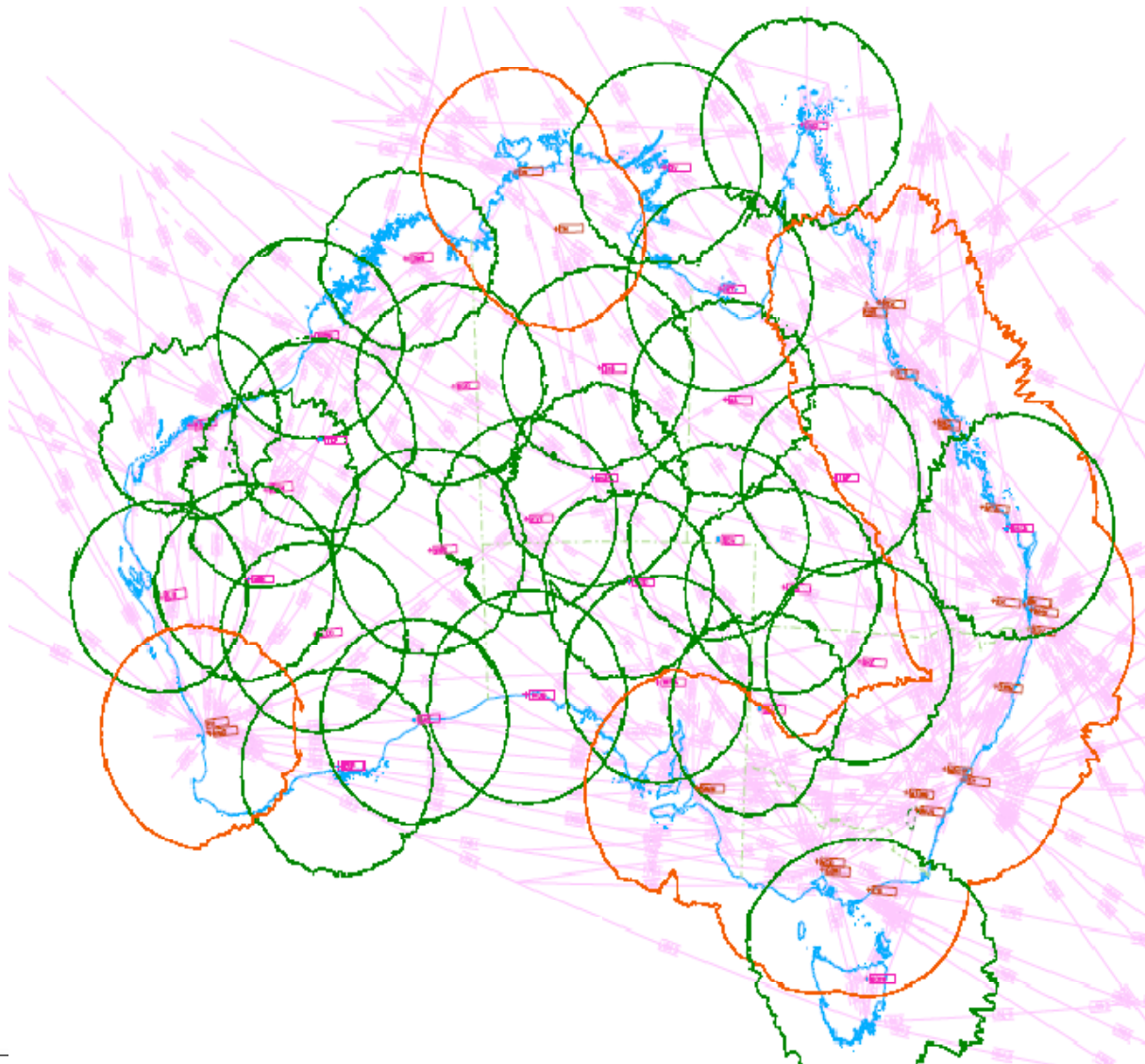


Why ADS-B Surveillance in Australia ?

- Surveillance where there is none today
- Cost compared to Radar
- Performance
- Benefits to Airlines
 - Safety
 - Increased operational efficiency
- Underpins new operational concepts
 - Reduced separation
 - Flexible routes



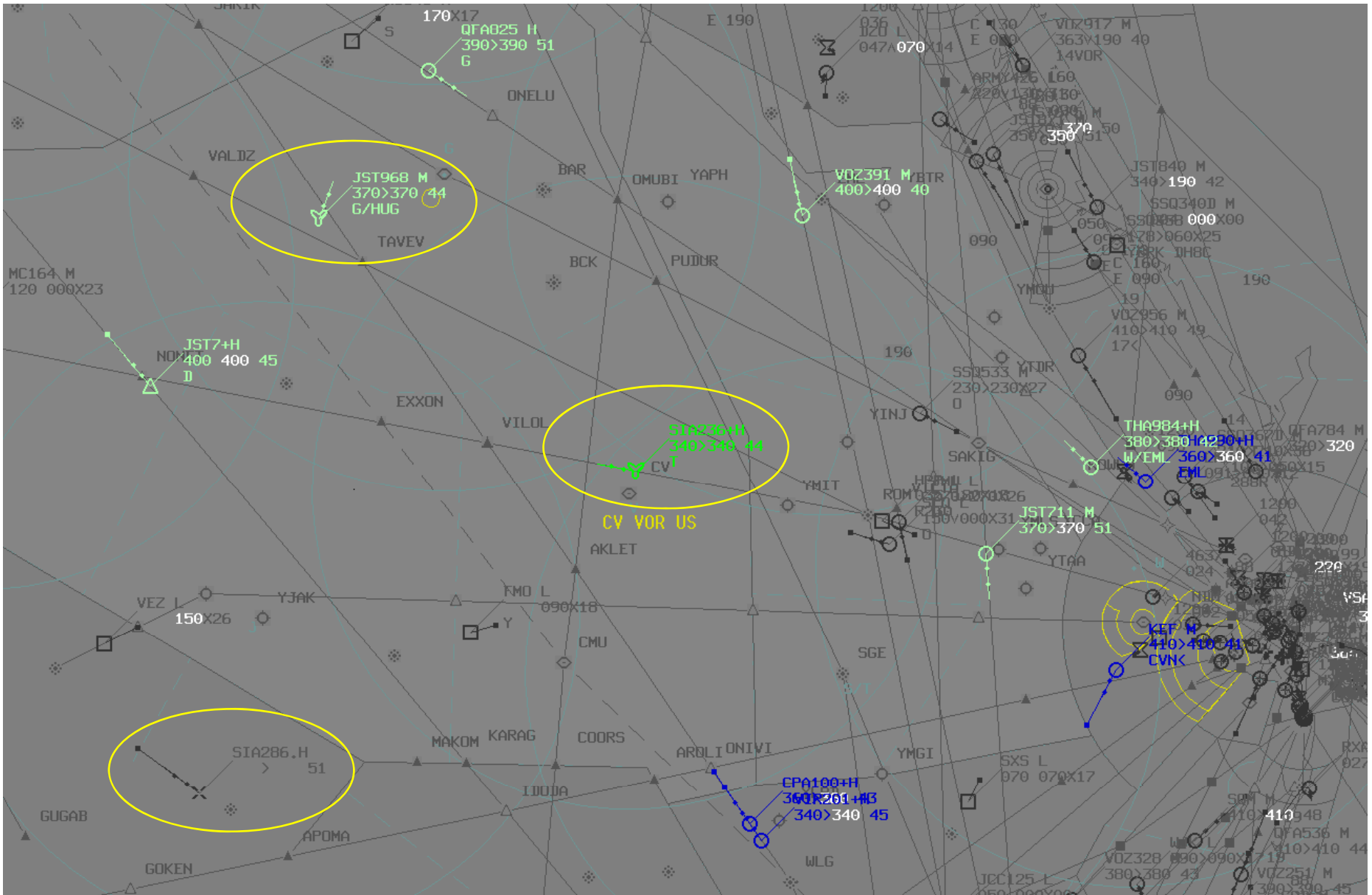
The Upper Airspace Project

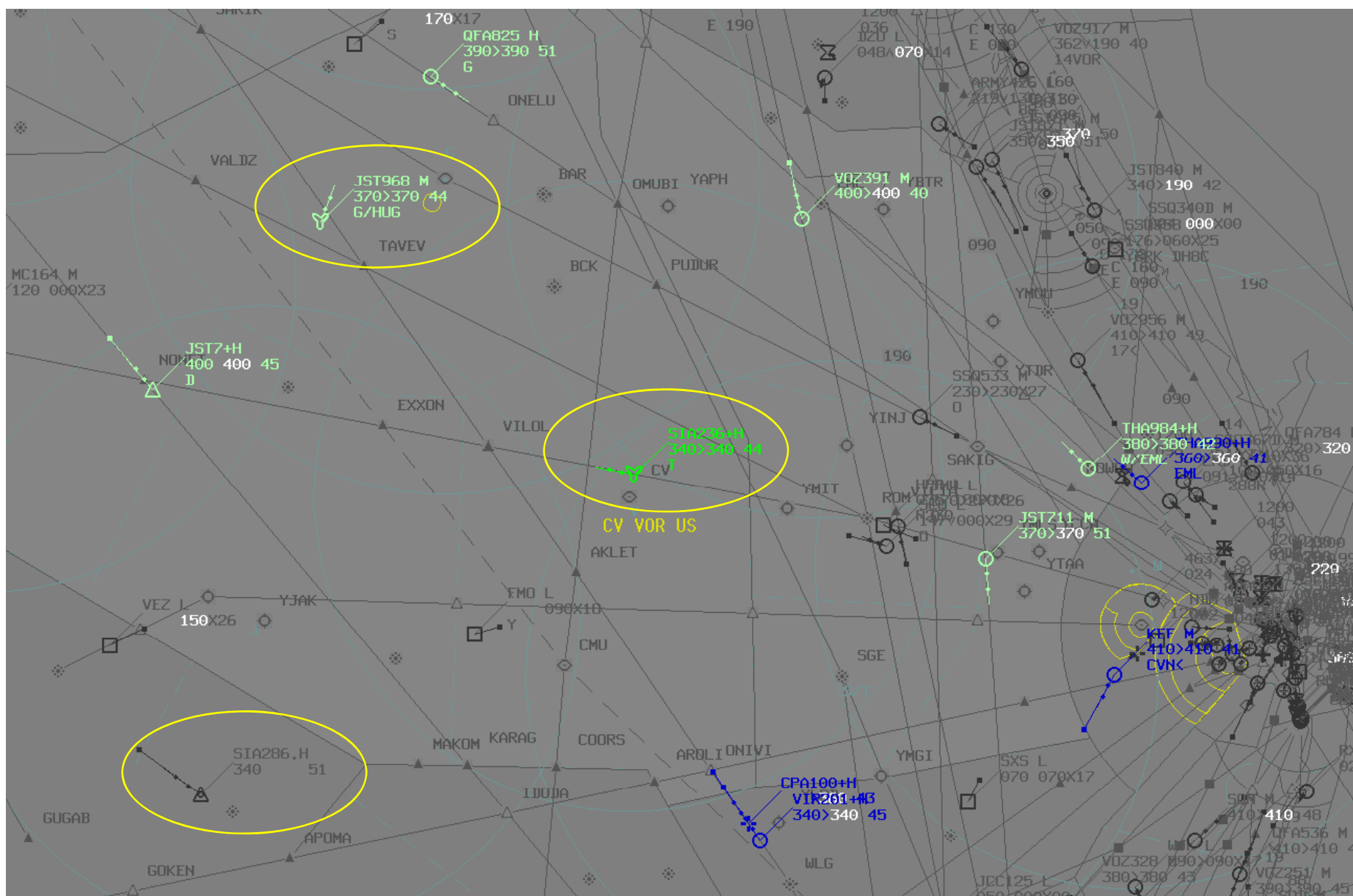


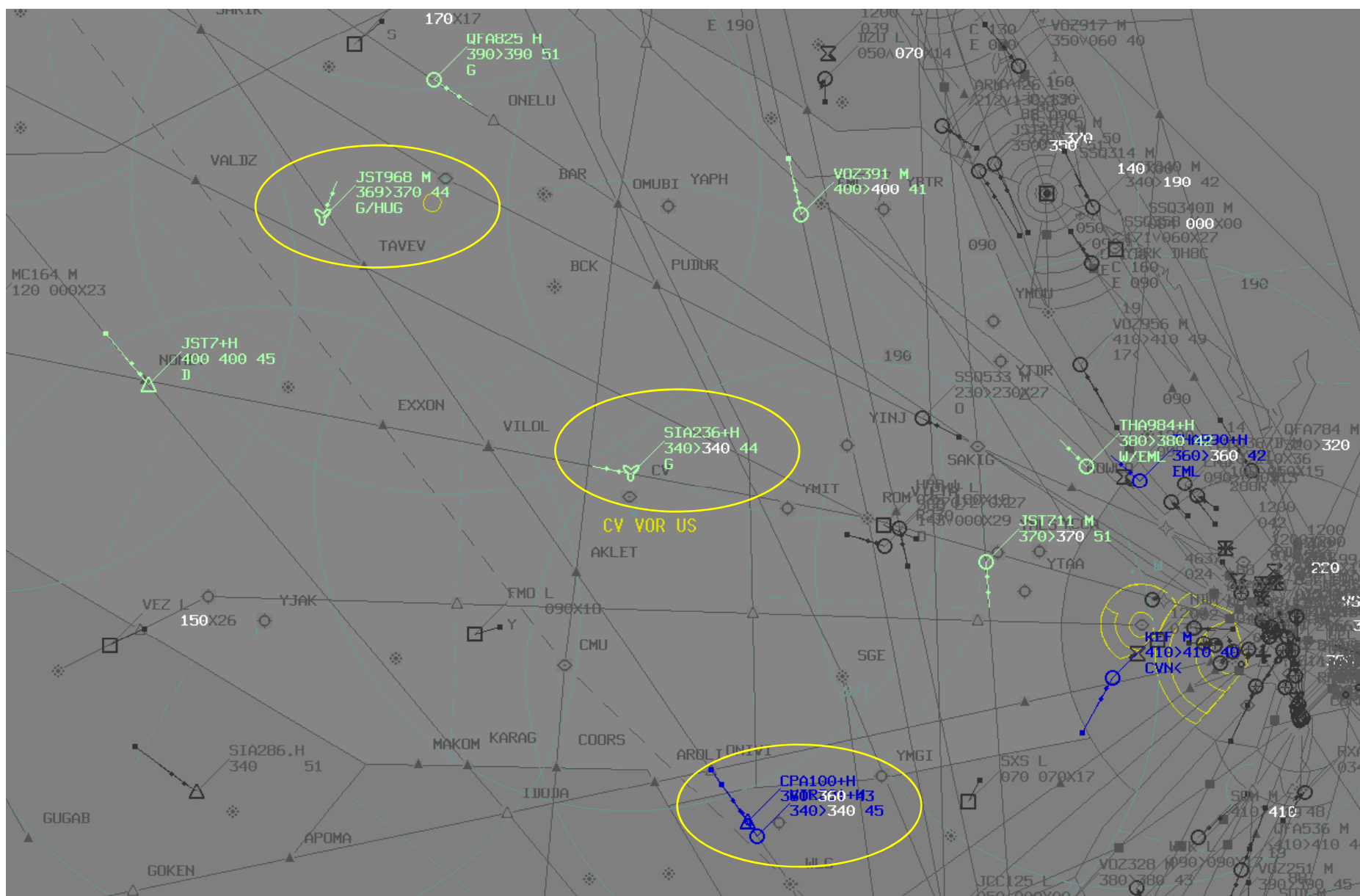
GROUND STATIONS ARE
BEING INSTALLED

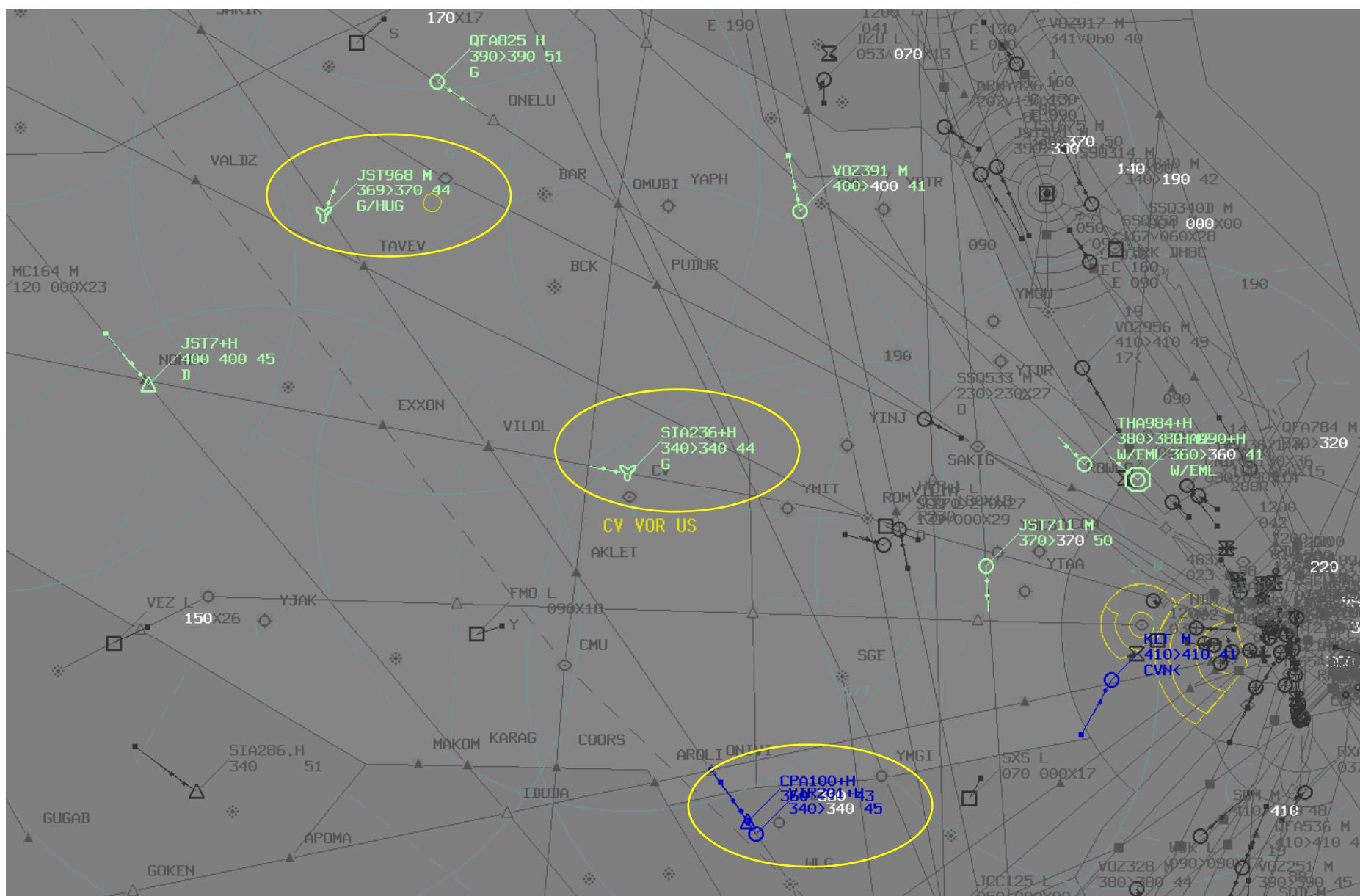
ADS-B Coverage
at 30,000 feet

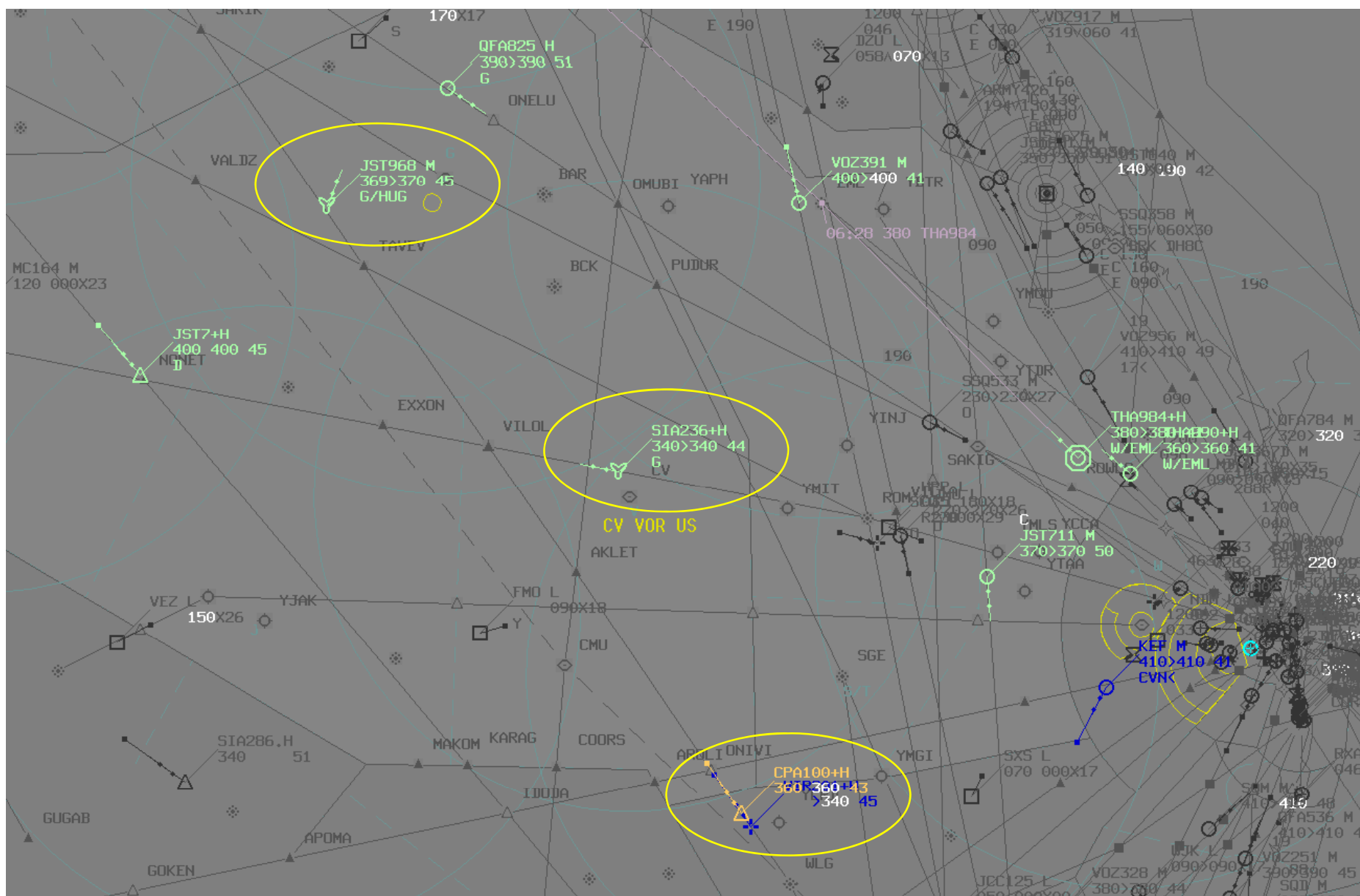
Outback Group – ADS-B

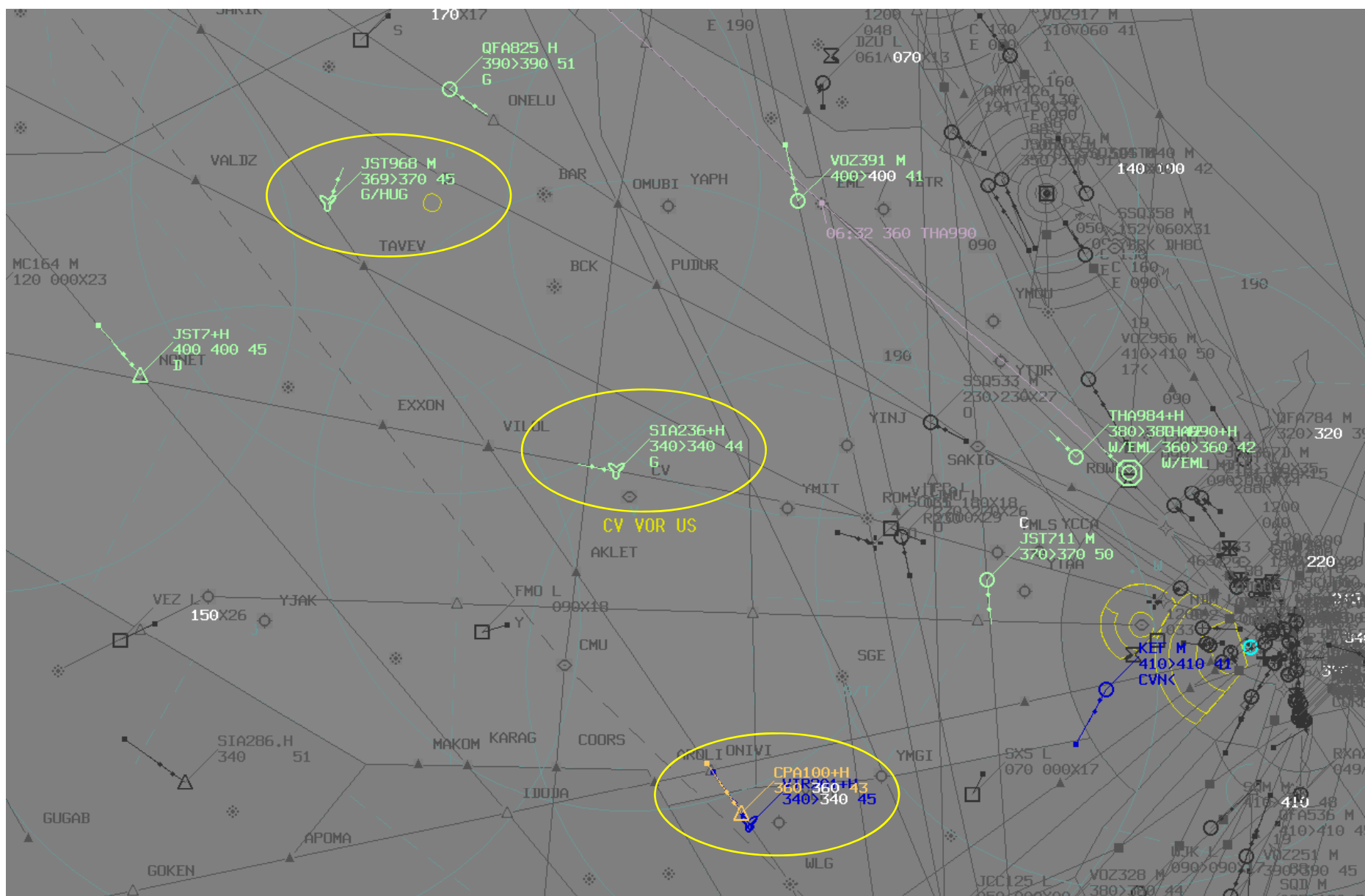


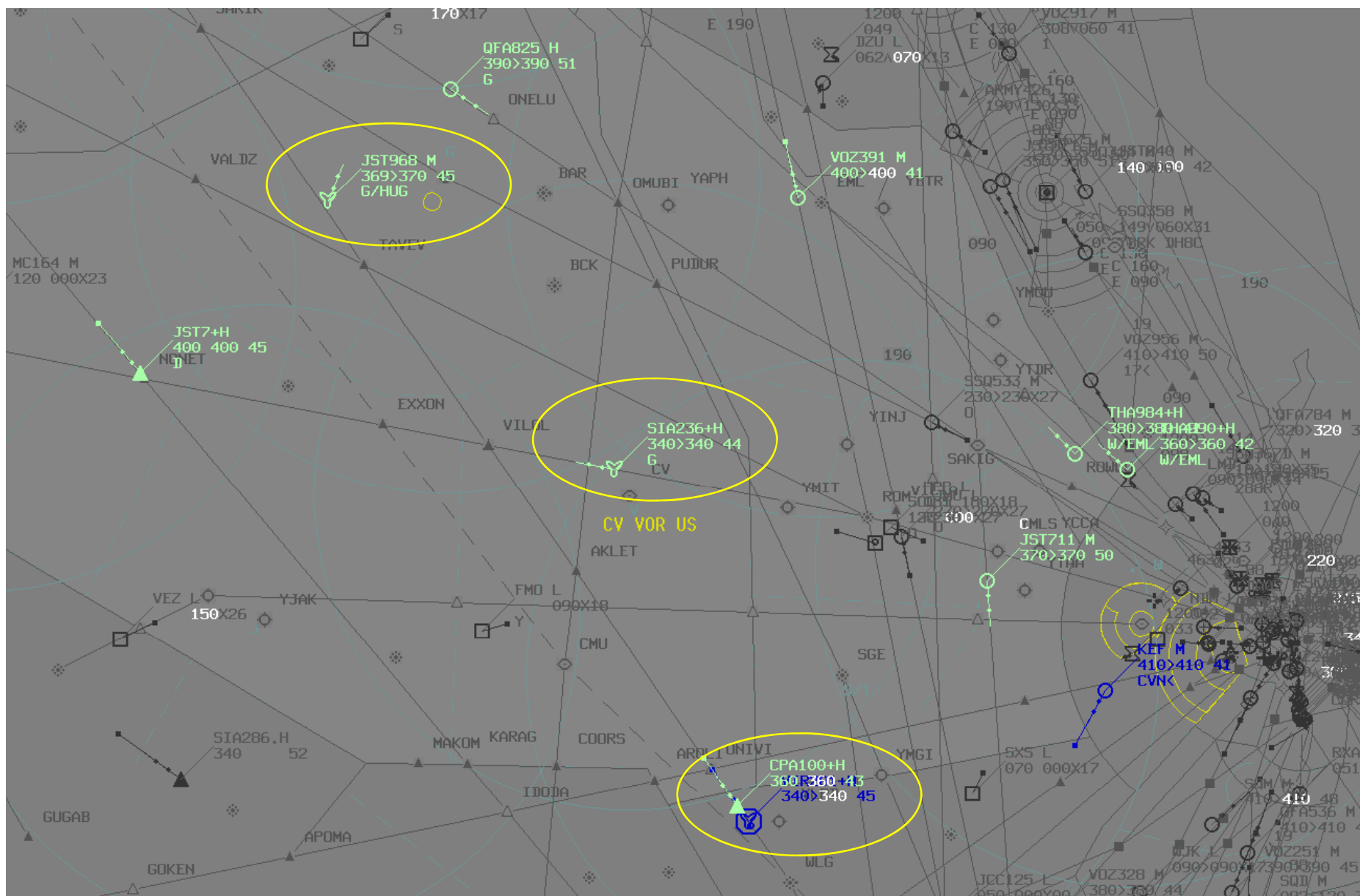


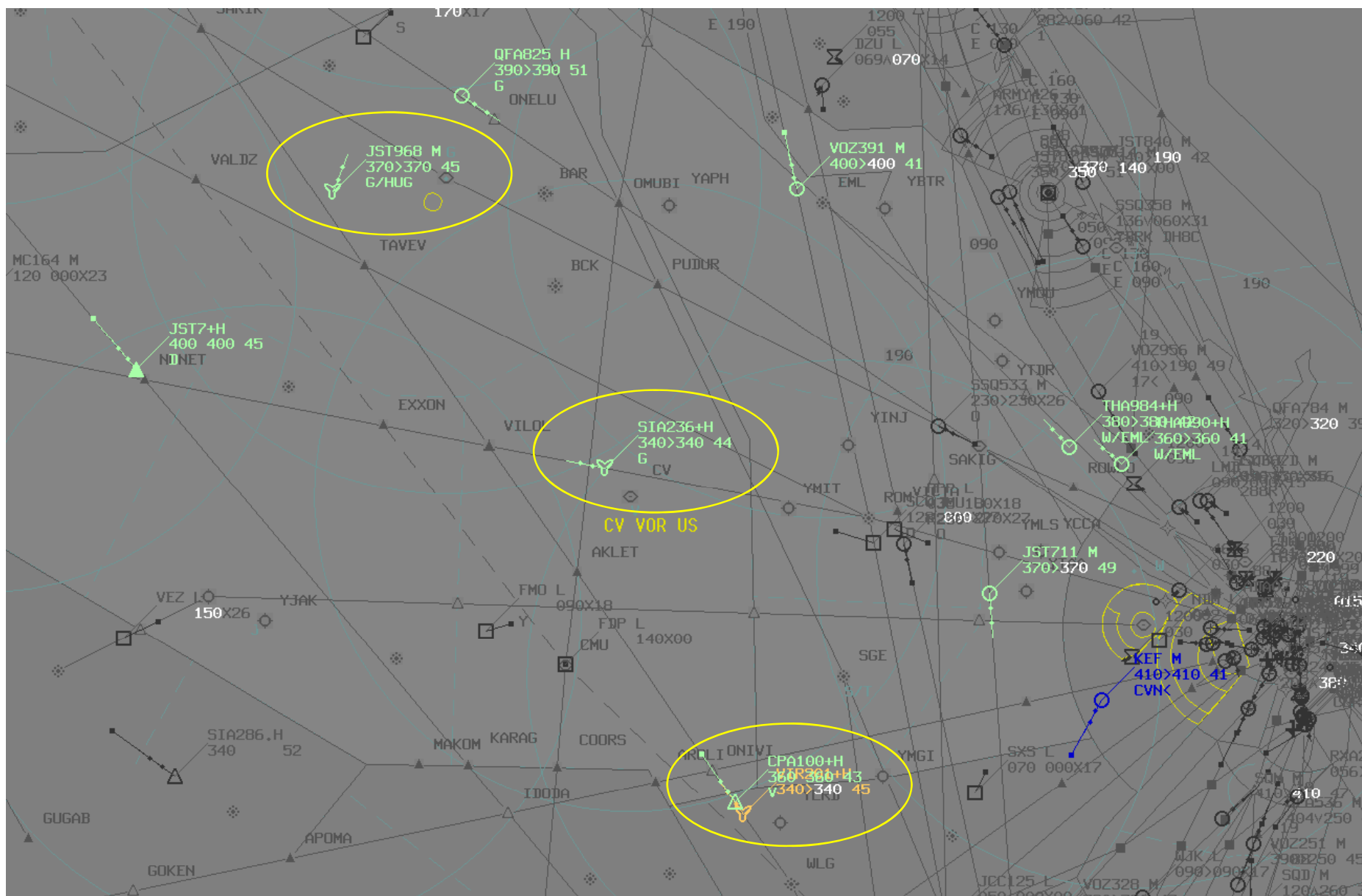


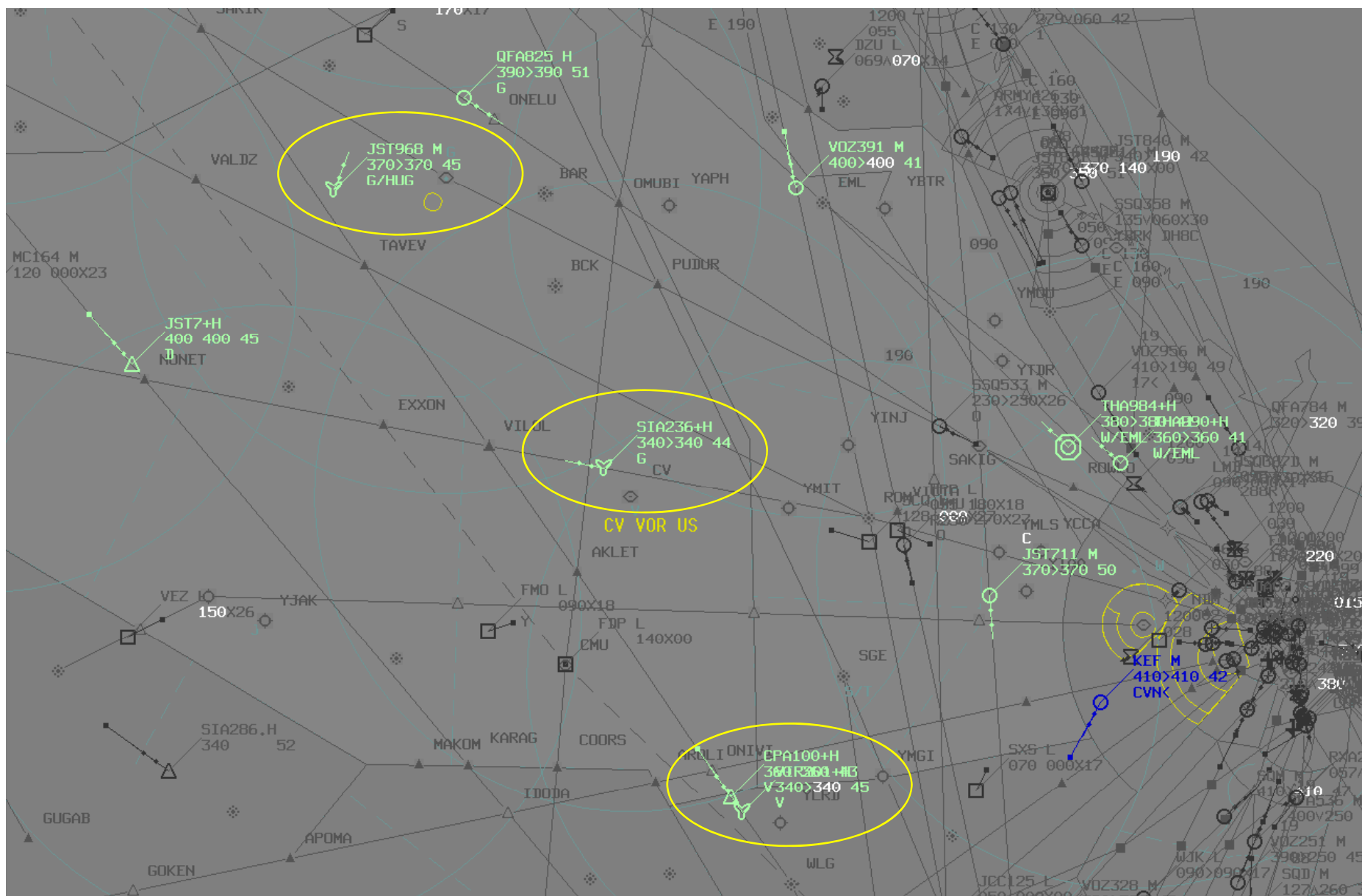


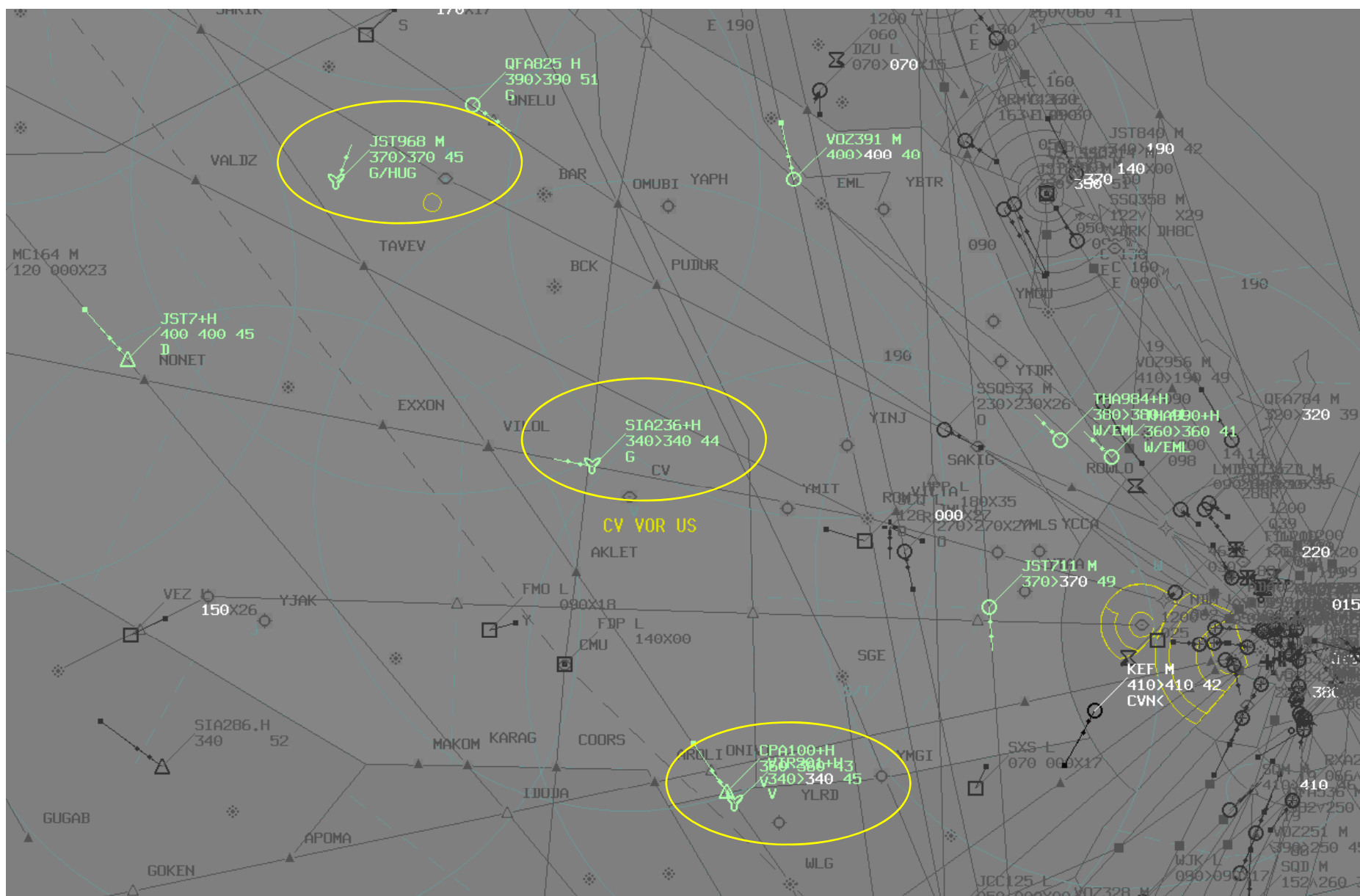


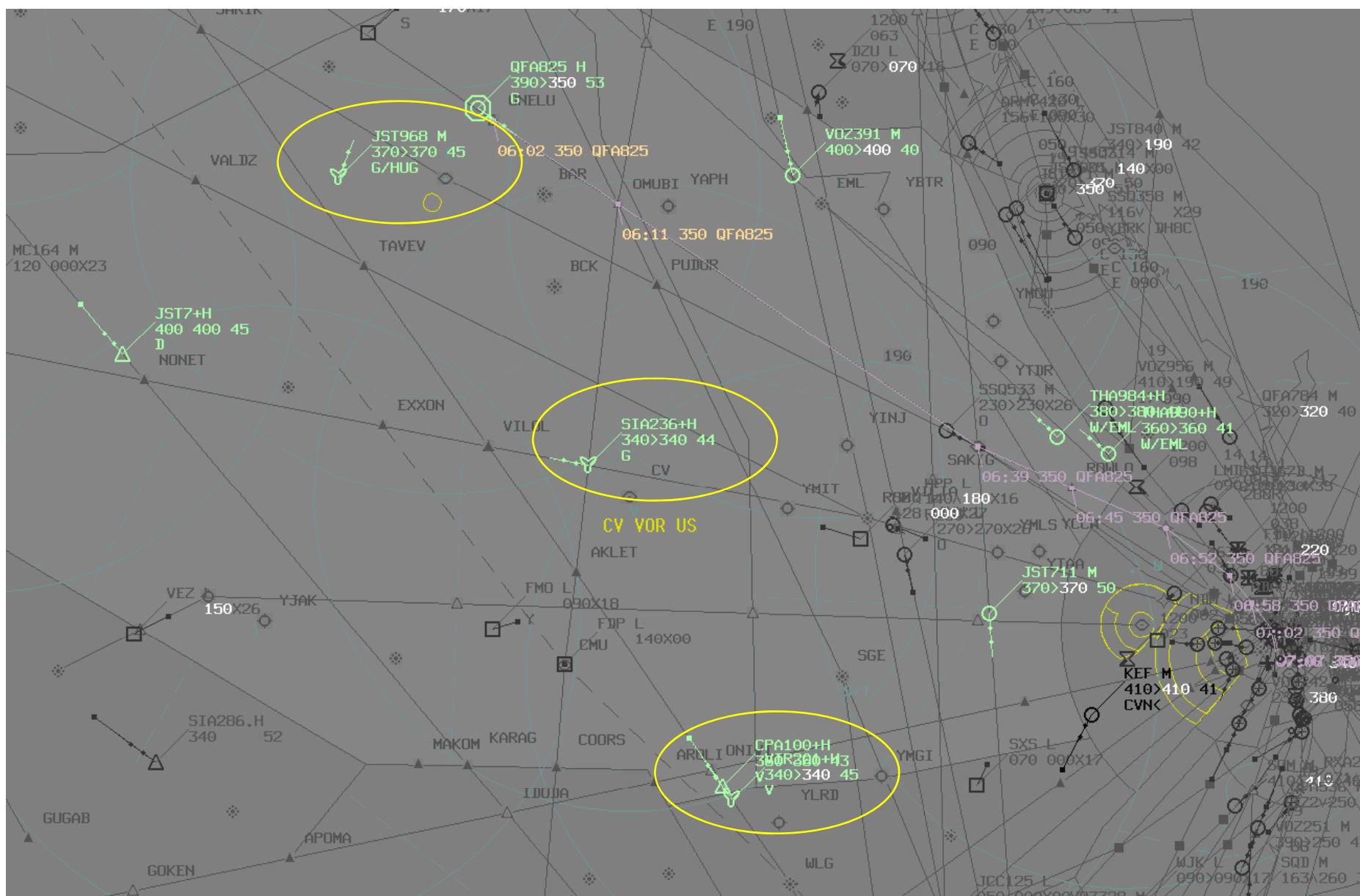


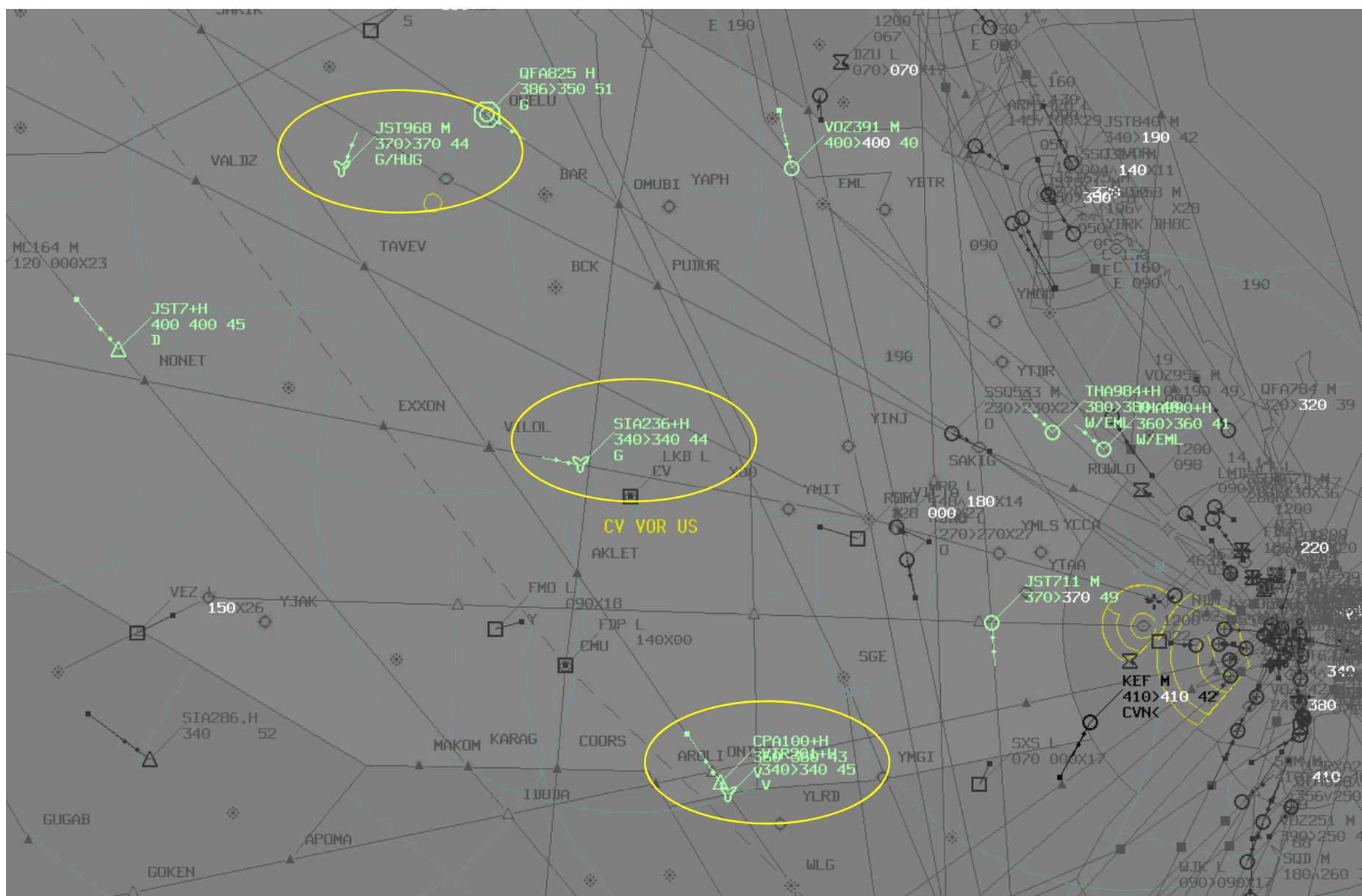


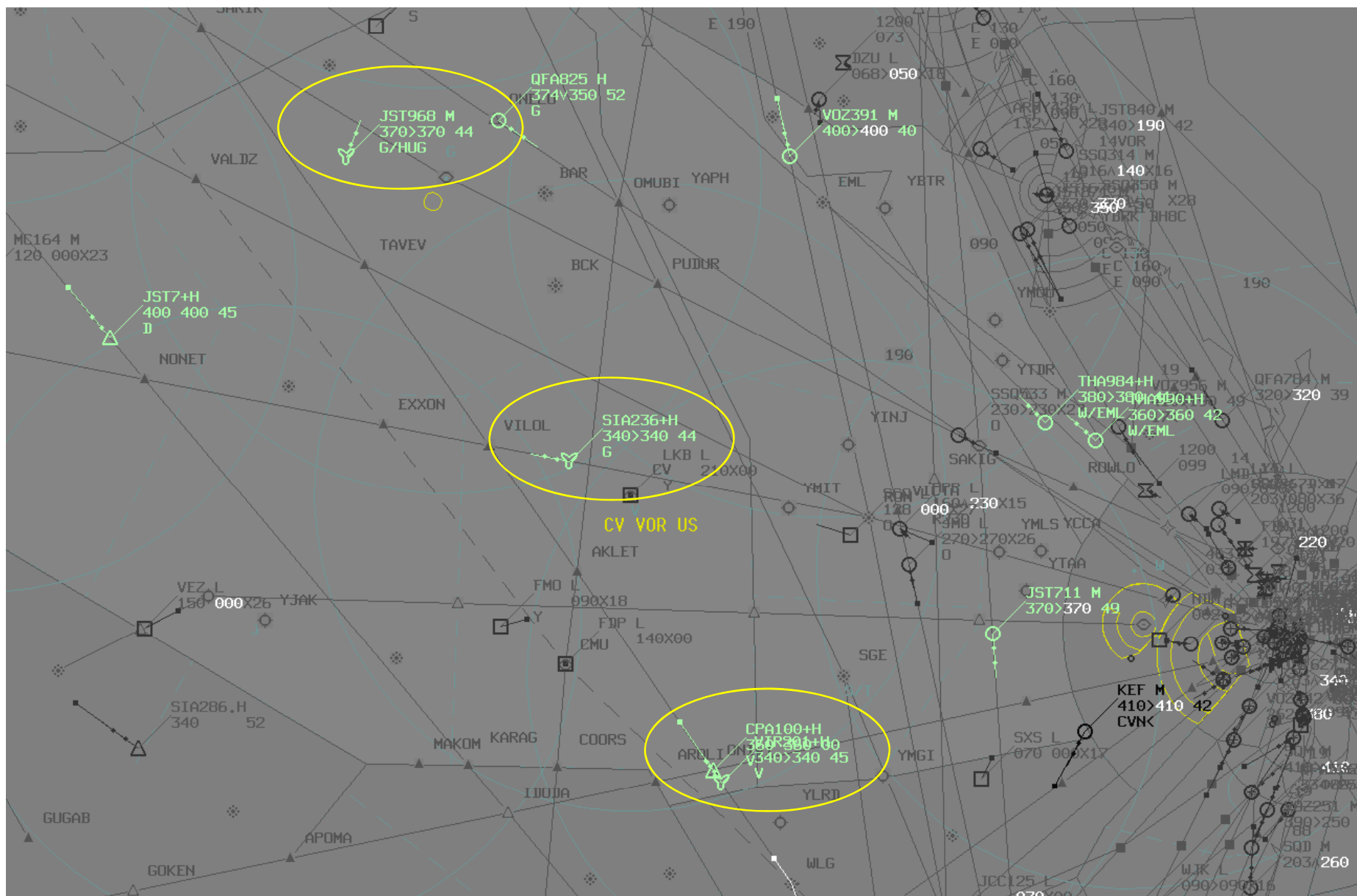


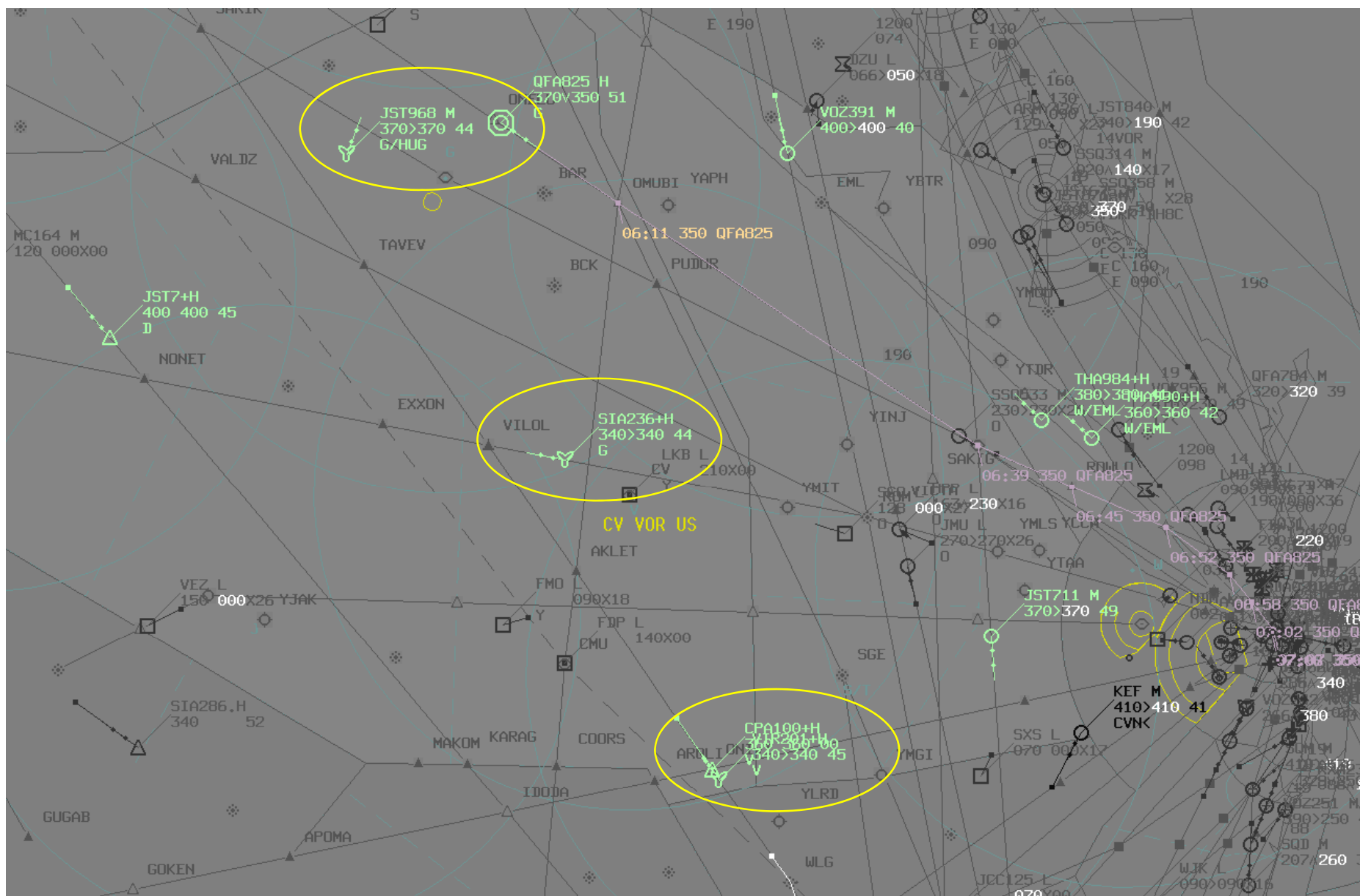


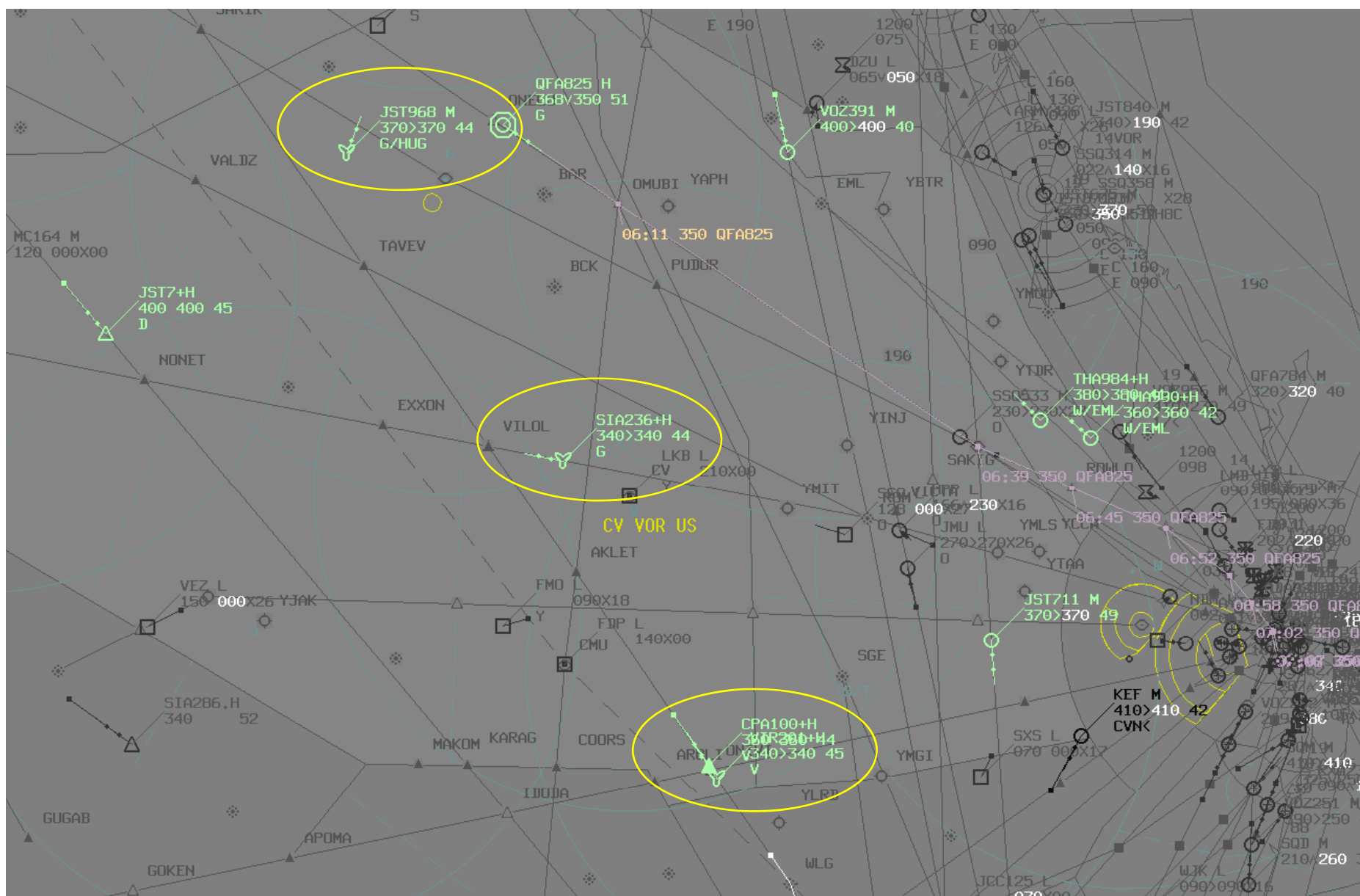


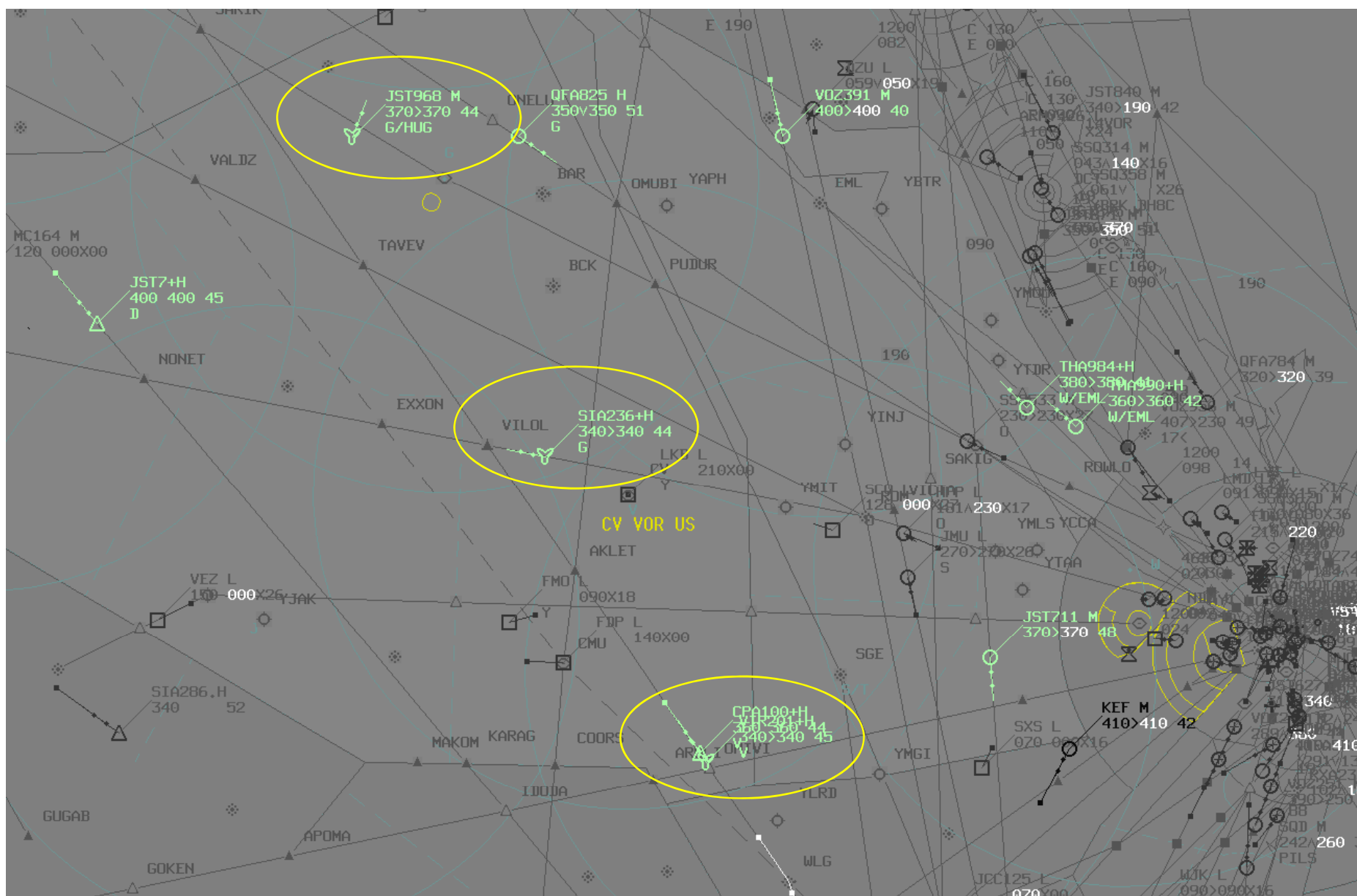


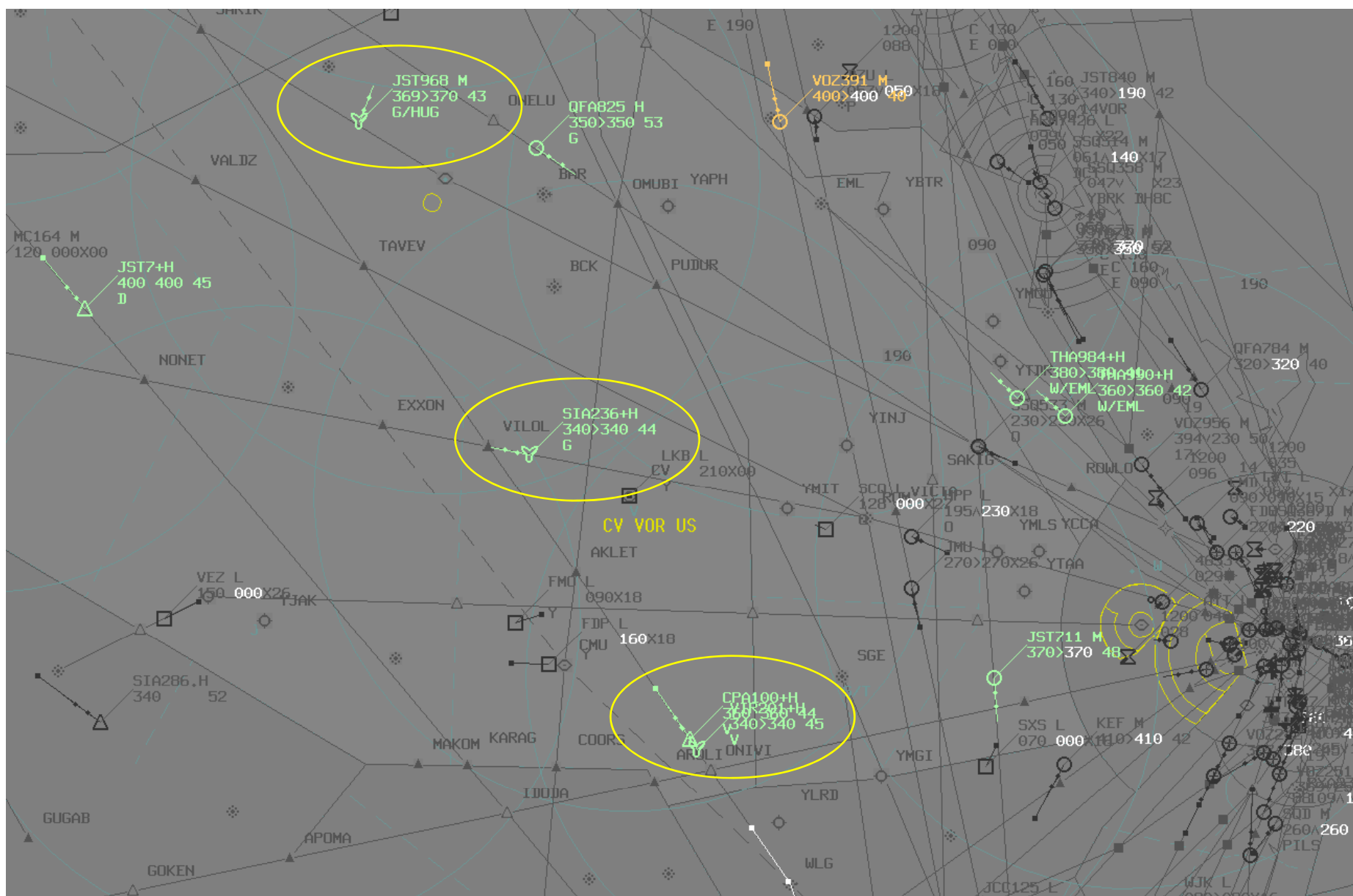


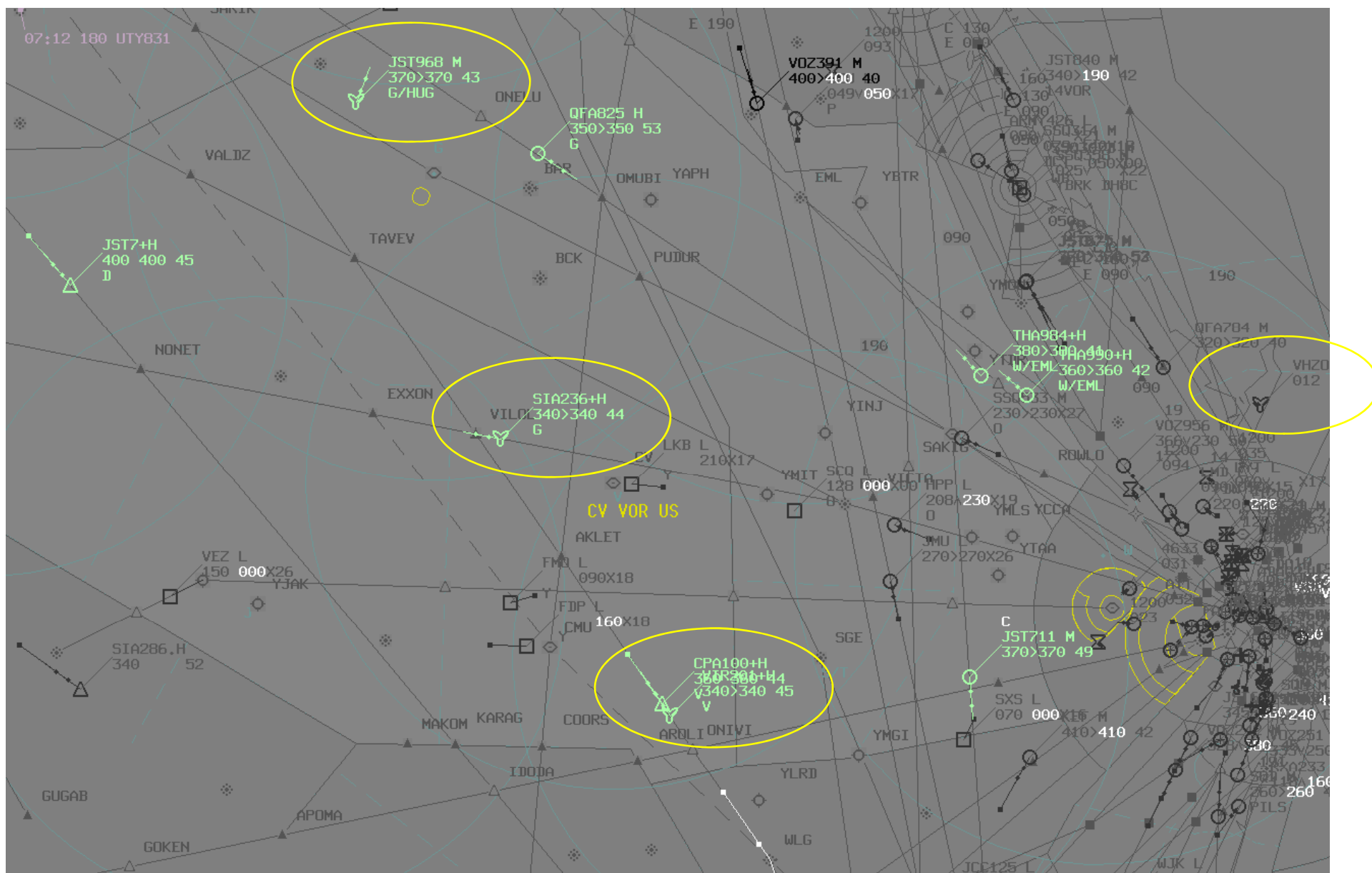


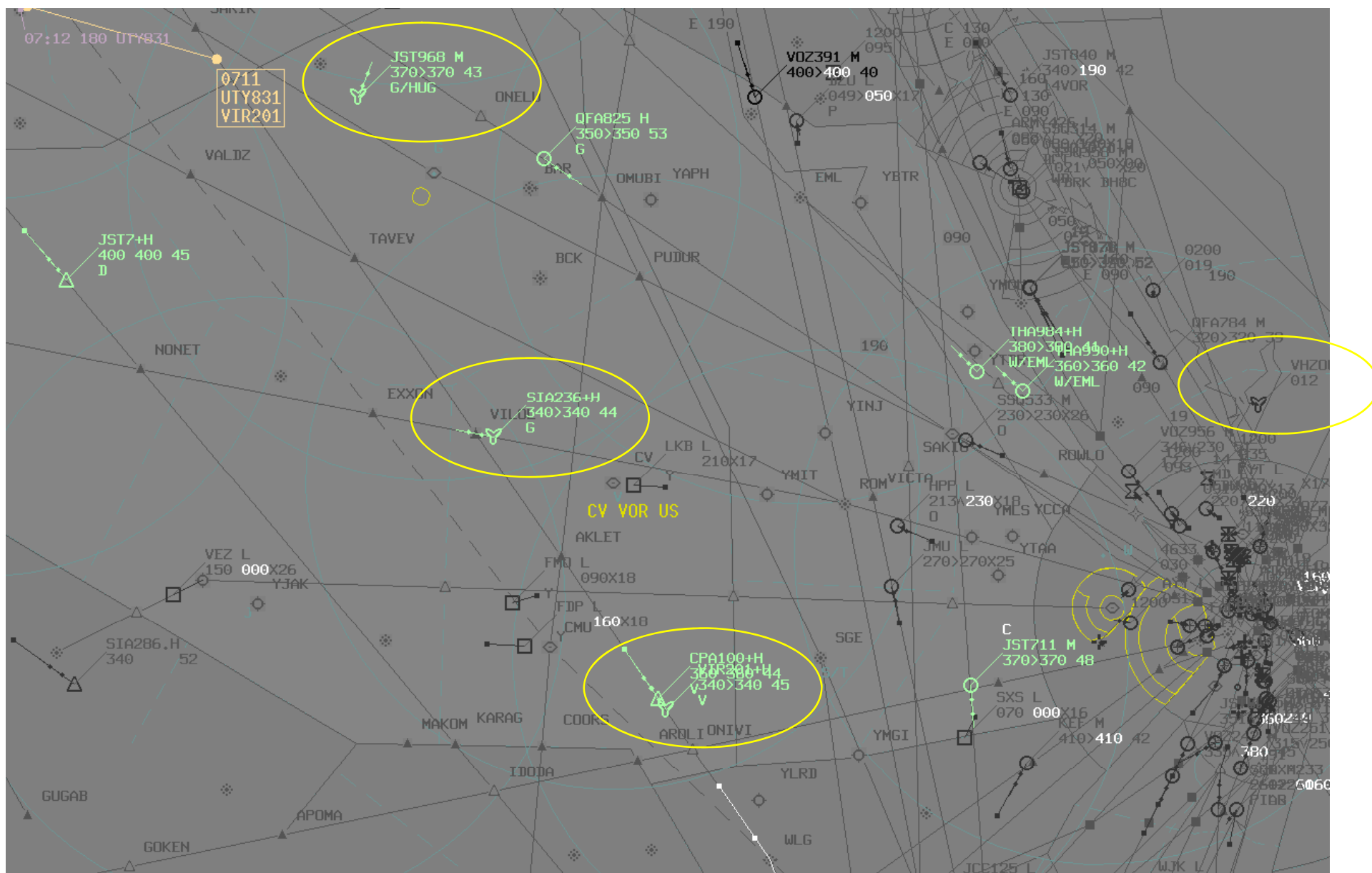






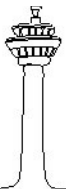






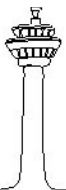
Regional ADS-B Service Provision Model - Concept

- Air Navigation Service Providers have traditionally acquired, owned, operated and maintained their own CNS infrastructure
- With the advances and complexity of CNS technology should we be looking at new ways to implement the next generation system ?
- Regional CNS Service Provision model is based on the concept of a “service provider” delivering CNS services across State boundaries using a common CNS infrastructure
- The airlines created SITA to provide global communications services based on a shared infrastructure
- FANS 1/A services have been delivered in this basis for over 10 years
- So is ADS-B service provision any different ?



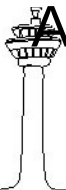
Regional ADS-B Service Provision Model - Objectives

- **Optimise deployment**
 - **Reduce redundancy & therefore costs**
- **Uniform deployment across region**
 - **Avoid fragmentation and associated costs**
- **Facilitate cross FIR data sharing**
 - **In many regions surveillance data is not exchanged between States – potential for compromises in safety**
- **Reduce Air Navigation Service Provider capital expenditure**
- **Ensures delivery of capability**
 - **Avoids issue of suppliers providing boxes of equipment**
- **All of the above ensure early benefits to our customers – the airlines and ultimately the flying public**



SITA-Airservices Australia Alliance

- **January 2006** – “ADS-B Alliance” established in with the primary objective of promoting, developing and offering a “**Managed ADS-B Service**”
- In recognition of the following key points:
 - 11th Air Navigation Conference endorsement of ADS-B
 - Forecast increased in ADS-B “out” equipped aircraft numbers increasing
 - APANPIRG decision to introduce ADS-B in the region from January 2006
- ADS-B Alliance provides Air Navigation Service Providers with viable an option to contract an “**ADS-B service provider**” for their airspace
- US FAA has decided to contract a service provider to deliver ADS-B services “NAS Wide ADS-B Acquisition”



SITA-Airservices Australia Alliance

Jane Airport Review, April 06

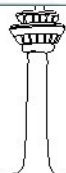
Asia adds ADS-B surveillance

SITA has teamed with Australian navigation service provider Airservices to provide ADS-B surveillance in the Asia Pacific.

The team in March, with Indonesian authorities (DIT), to implement dependent surveillance (ADS-B) in the airspace. Air five Thales A on strategic islands Christmas Island on the Indonesian sharing data on flight information Melbourne actively. Some Australia's to through this 30-40 per cent ADS-B equipment, Airservices craft delivery equipment, a once avionics systems, virtually be equipped. "The joint of a year's plan Russell, Airservice. "Our elsewhere in Indonesian p cost-effective



■ Francesco Violante, SITA INC chief executive, shakes hands with Greg Russell, Airservices chief executive, on the alliance formed between the two companies to roll out ADS-B services in the Asia-Pacific region and announced at ATC Maastricht 2006.



Aviation Week & Space Technology, 13th Mar 06

ADS-B's Global Advance

U.S., Europe, Australia and Indonesia are moving ahead with these satellite-based traffic surveillance systems

DAVID HUGHES/WASHINGTON, BRUSSELS and MAASTRICHT, NETHERLANDS

The upcoming ADS-B demonstration in Indonesia includes a new business model that may prove interesting to other nations as this type of technology begins to make greater inroads in Asia, North America and Europe.

Airservices International Broadcast is announcing its G

The five ground stations are located in Australia and New Zealand.

controls ground is required ground-to begin in 2009 in a 10-mile radius around the data link.

better to head its way. The program is headed into Australia—40,000 operated in 2007 and 35,000 in 2008.

many international transporters have installed Mode-S transponders because this equipment will soon be required in Europe, where many of these same aircraft operate. Thus, about 30% of the

Indonesian ADS-B 12-Month Demonstration Using Five Ground Stations

SITA, the communications and data link cooperative owned by the airlines, and Airservices Australia want to bear the capital costs of installing and running the ADS-B ground networks in Asia, and then charge the local ATC authorities a service fee. The two partners believe this model would allow many governments to begin using ADS-B sooner than if they had to buy the equipment first.



ADS-B is a satellite-based traffic surveillance system that provides more accurate and reliable information than current Mode-S transponders. It is being used in a 12-month demonstration in Indonesia, which will be the first of its kind in the Asia-Pacific region. The demonstration will involve five ground stations and 100 aircraft. The program is being led by SITA and Airservices Australia, with funding from the Indonesian government. The demonstration is expected to be completed by the end of 2007.

SITA

AVIATION WEEK & SPACE TECHNOLOGY/MARCH 13, 2006 57

ICAO Air Navigation Commission Briefing



SITA-Airservices Australia ADS-B Alliance - March 2007

ICAO Surveillance Seminar for NAM/CAR/SAM – T & T | June 2007 | 31 | ©SITA

SITA

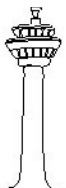
Complementary Strengths



- **ADS-B operational expertise**
- **Procedure Development**
- **Controller Training**
- **Safety Case development**
- **Certification experience**
- **ATM Upgrades**



- **Neutral status entity**
- **Experience in delivery, monitoring and delivery of global/regional services**
- **Regional data telecommunications capability**
- **Existing VHF data link sites throughout the region**
- **Existing relationships with all potential ANSPs and Airlines**
- **24/7 help desk, customer support, billing & reporting system**

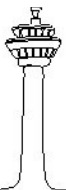


ADS-B Managed Service Tiers – What is it?

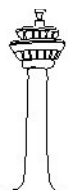
- **Tier 1 Service** : Enabling 5NM Aircraft Separation
 - Allow vectoring of aircraft
 - Separation of aircraft from terrain
 - Provision of safety nets alerting

- **Tier 2 Service** : Situational Awareness and Safety
 - Provide situational awareness to air traffic controller
 - Provision of safety nets alerting

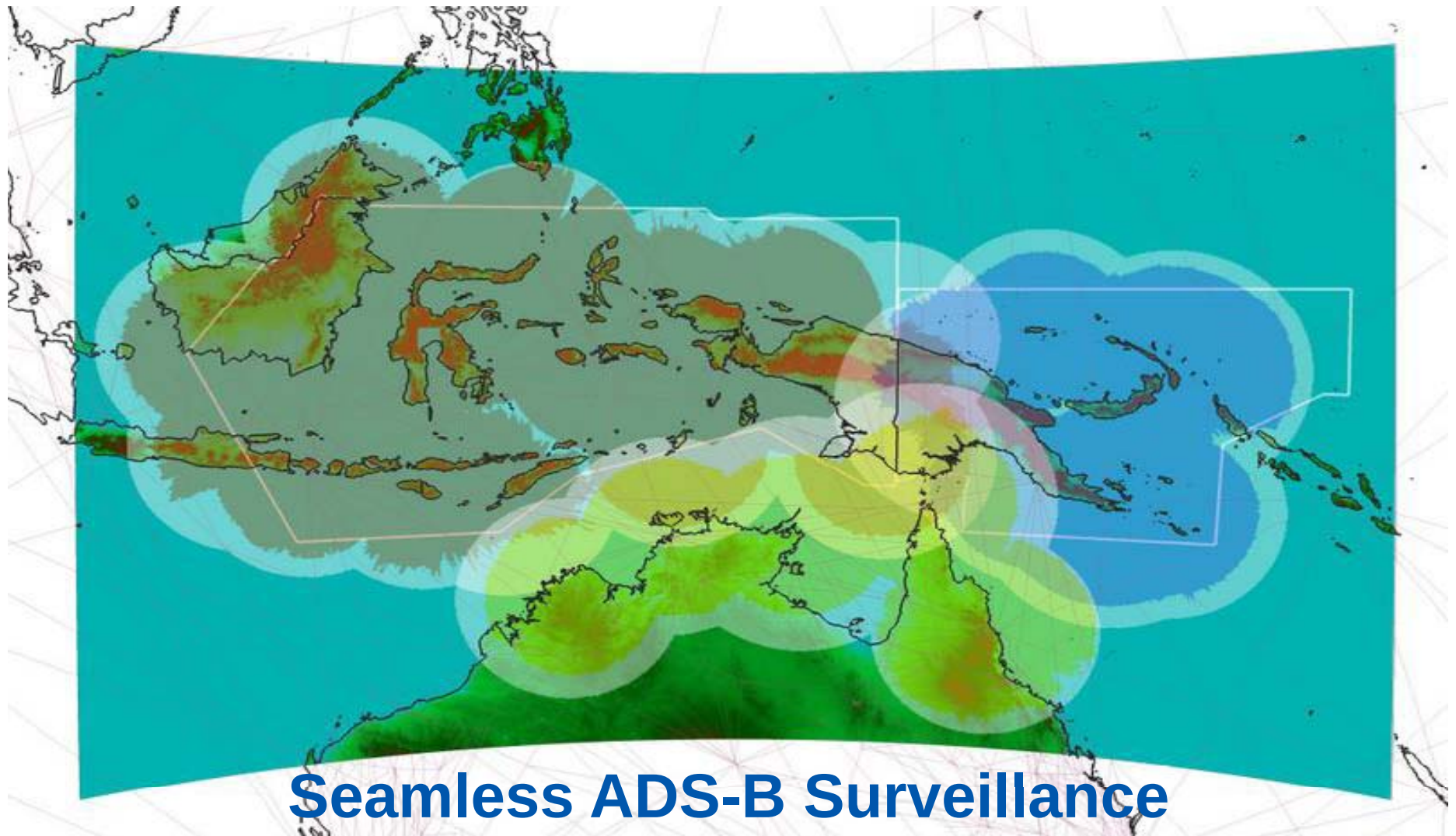
- **Tier 3 Service** : Position Reporting
 - Provide aircraft operators with access to ADS-B service to facilitate enhancement of their flight operations
 - Will not affect flight safety



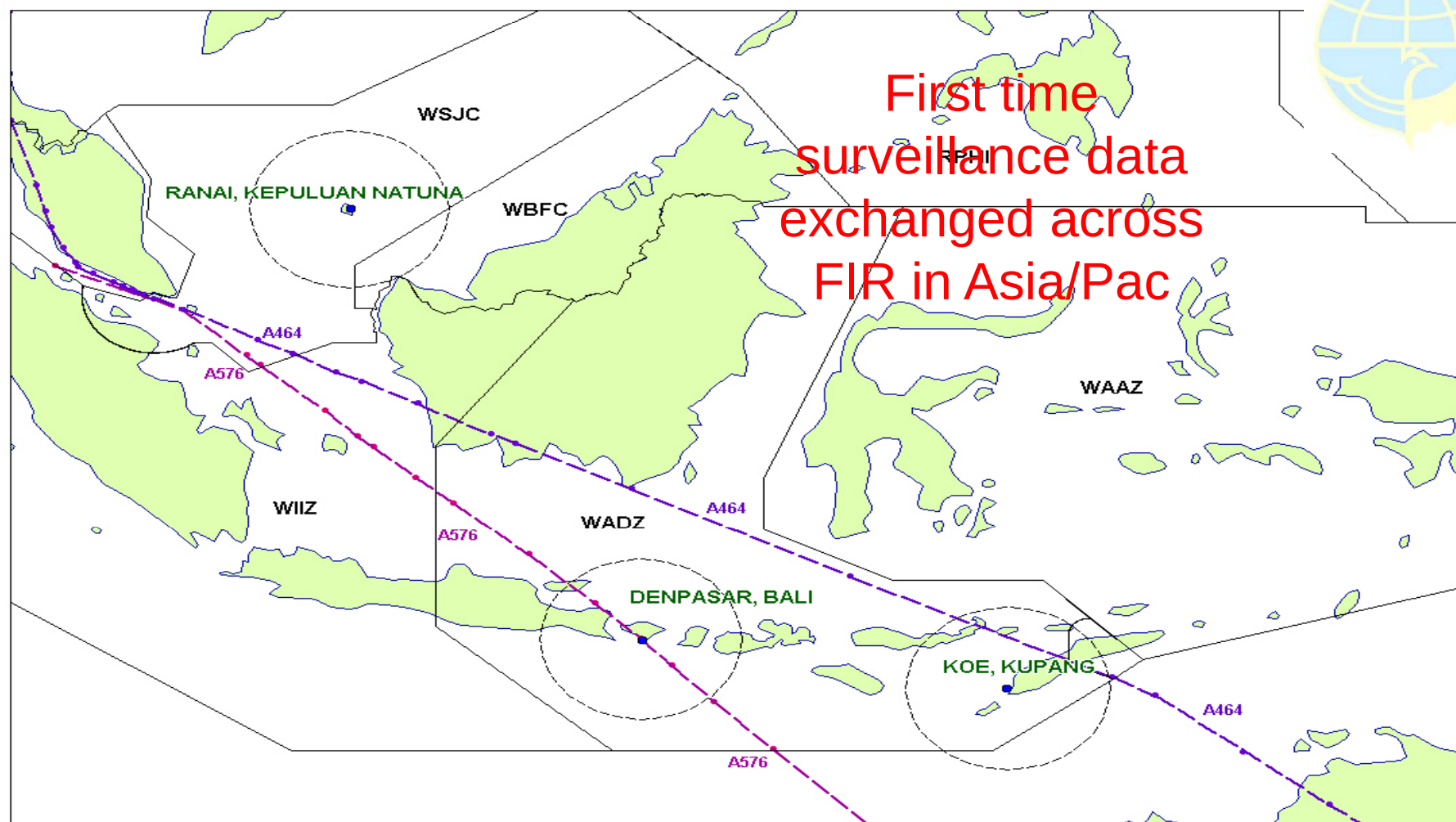
Cross FIR Data Sharing and Optimised Deployment



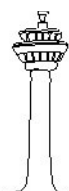
ASA and SITA Alliance – The Vision



Pilot Managed ADS-B Service Indonesia Trial



Trial launched by Director General DGCA Indonesia,
December 2006 – Completed end May 2007



Indonesian ADS-B Trial Sites



Bali Radar



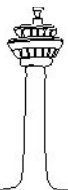
Natuna



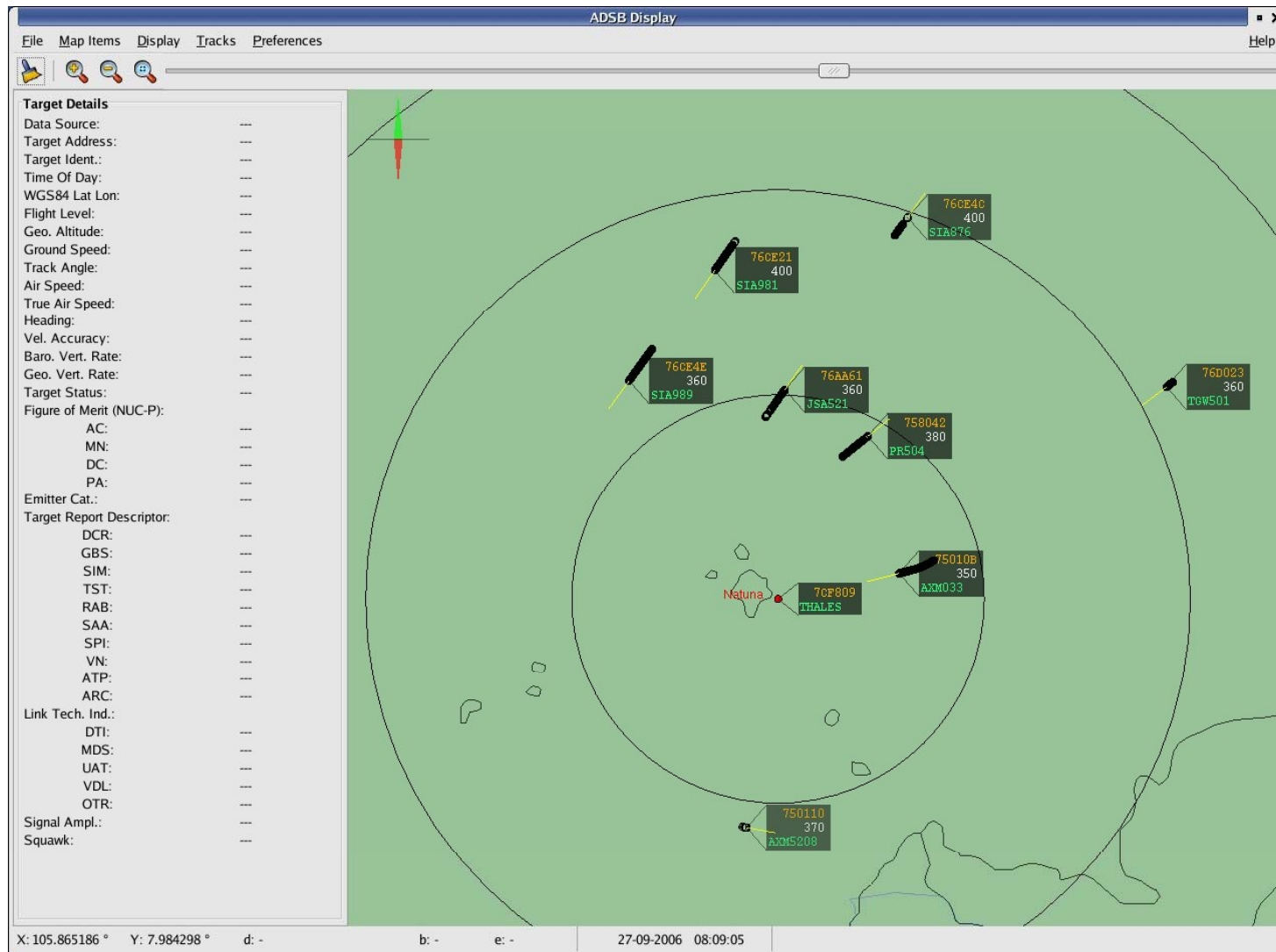
Regional ICAO HQ

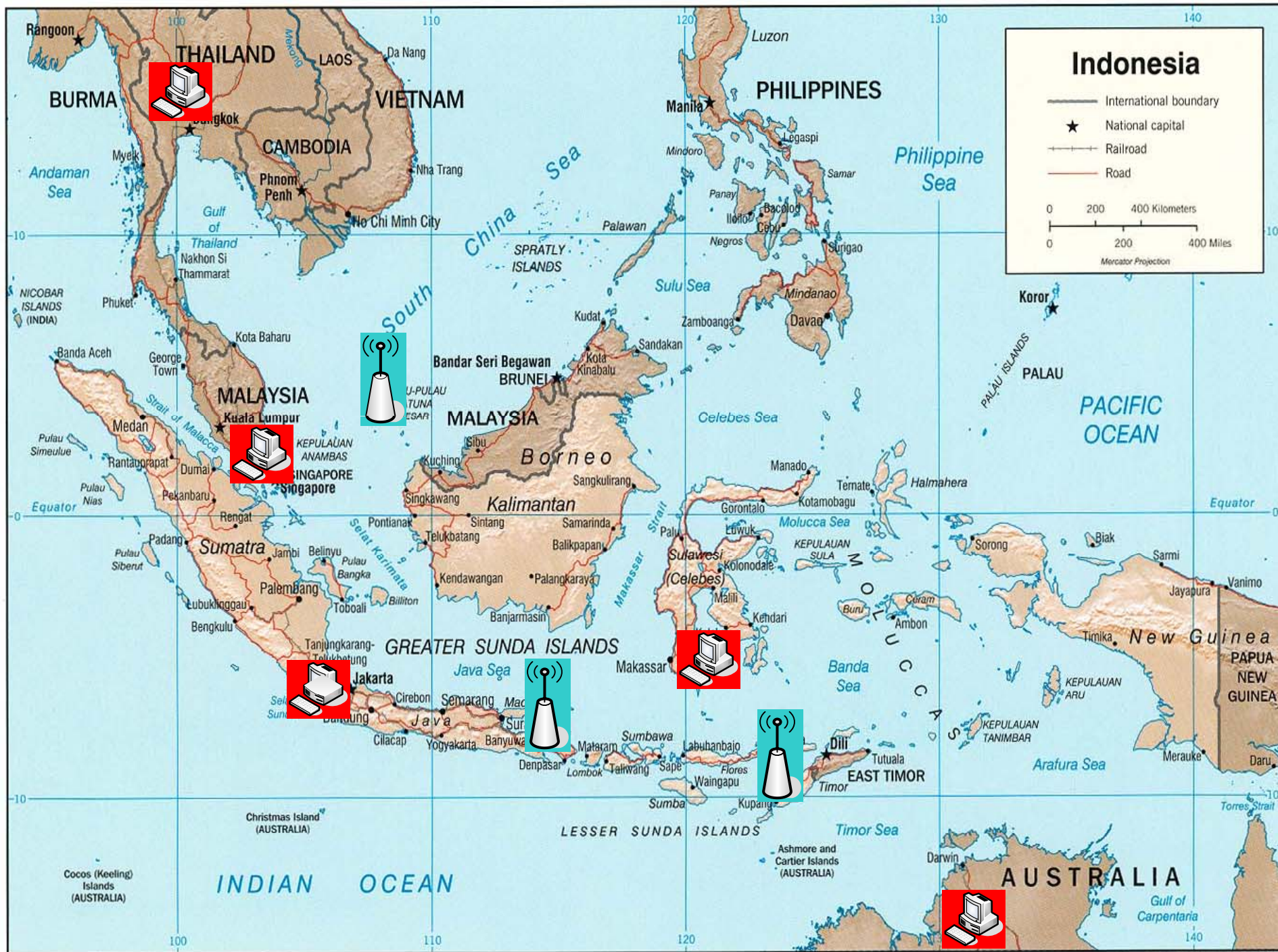


Kupang



Natuna Island





UK Trial - SITA integration of ADS-B Receiver

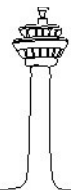
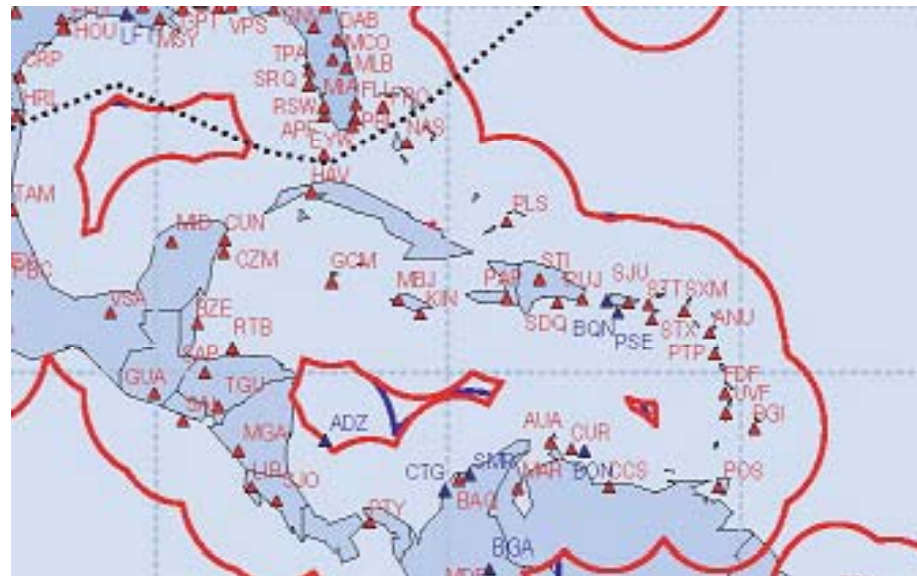


QinetiQ

Any similar context?

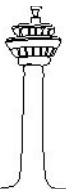


SITA VHF Data Link Sites



Conclusions

- Maximum benefits from ADS-B can only be realised when the service is available on a regional basis
- The SITA/Airservices Australia service model being promoted in Asia/Pacific is equally applicable to LATM/CAR
- SITA is willing to establish funded trials in LATAM/CAR to demonstrate the value of the regional service model



- Any questions?

www.sita.aero/ads-b

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Or

akhil.sharma@sit.aero

