

# **AIR DEFENCE EXERCISE (ADEX) MALAYSIA'S EXPERIENCE**



**Department of Civil Aviation Malaysia & Royal Malaysian Air Force**

# INTRODUCTION

- The Five Power Defence Arrangement (FPDA) is a defence relationship established by a series of bilateral agreements between the **United Kingdom, Australia, New Zealand, Malaysia** and **Singapore** (all members of the Commonwealth) signed in 1971
- The member nations agreed to consult on what steps to take in the event of any external threat to Malaysia or Singapore
- In peacetime, the parties exercise their forces together and undertake other training activities

# INTRODUCTION

- **The most visible element of the FPDA is the Headquarters Integrated Area Defence System (HQIADS)**
- **ADEX BERSAMA SHIELD and BERSAMA LIMA are annual field training exercises hosted by HQIADS on the Malaysian peninsula and the South China Sea**
- **It is a tactical exercise focused on providing quality training in integrated air defence, air operations and maritime operations**
- **HQIADS is also the coordinating authority for the exercise airspace**

# ADEX AIRSPACE CHARACTERISTICS

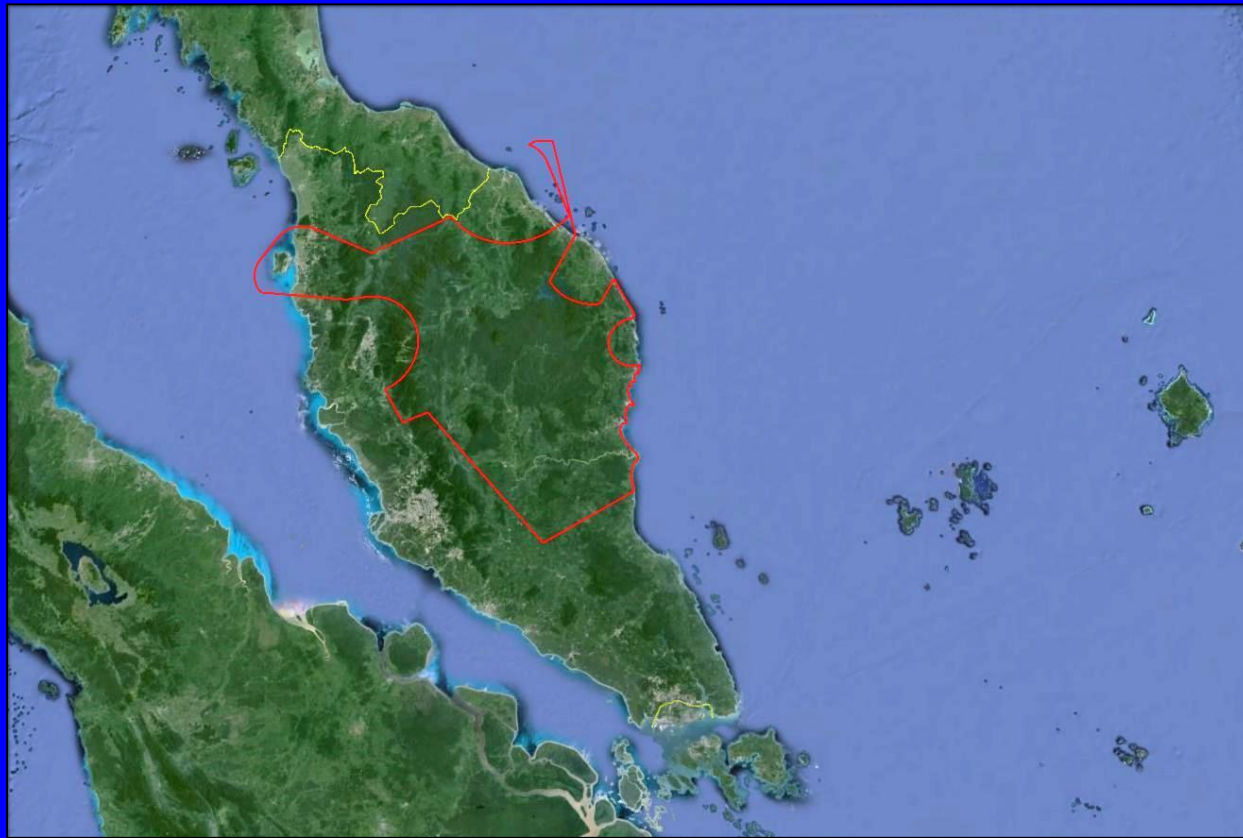
- ADEX airspace will be closed for specified periods (up to 2 weeks) to civil and non-exercise military aircraft
- ADEX airspace is split into:
  - 4 main areas (A to D)
  - a Low Flying Area (LFA)
  - specific Air Corridors
  - 2 permanent Restricted Areas (WMR102B & WMR109) Naval Firing Area (NFA)/Air-to-Air Engagement Area (AAEA)
  - \*\*The exercise airspace reservation had not been reviewed in many years.

# **ADEX AIRSPACE CHARACTERISTICS**

- **ADEX airspace will be active during the specified intense aerial activity period.**
- **Thereafter, all ADEX airspace is released back to civil ATC when not required by military exercise traffic except Area B, the Naval Firing Area (NFA)/Air-to-Air Engagement Area (AAEA) and the permanent Restricted Areas**
- **Area B and the Naval Firing Area (NFA)/Air-to-Air Engagement Area (AAEA) will be released separately according to planned exercise activity**

# ADEX AIRSPACE STRUCTURE

## KUALA LUMPUR FIR



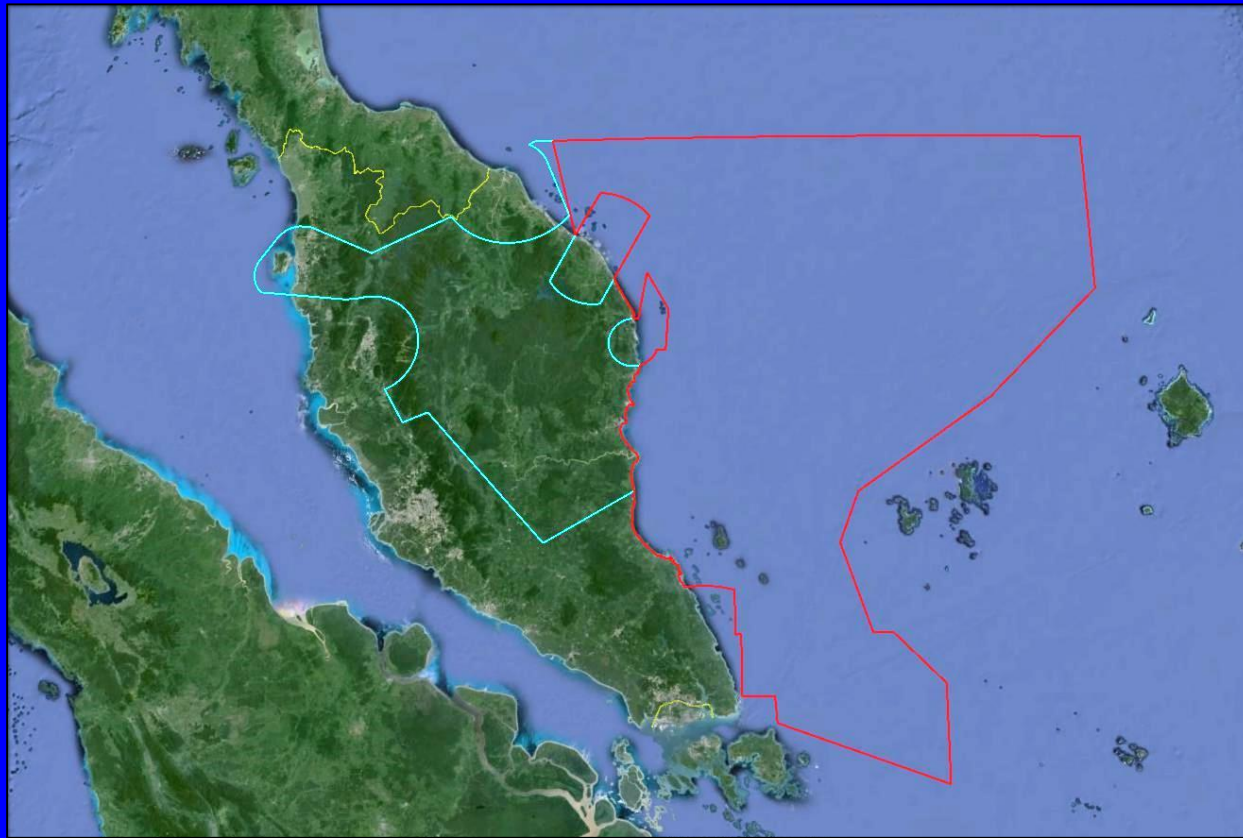
**Area A**

**Vertical Limit: 5,000FT – 12,000FT**

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# ADEX AIRSPACE STRUCTURE

## KUALA LUMPUR FIR

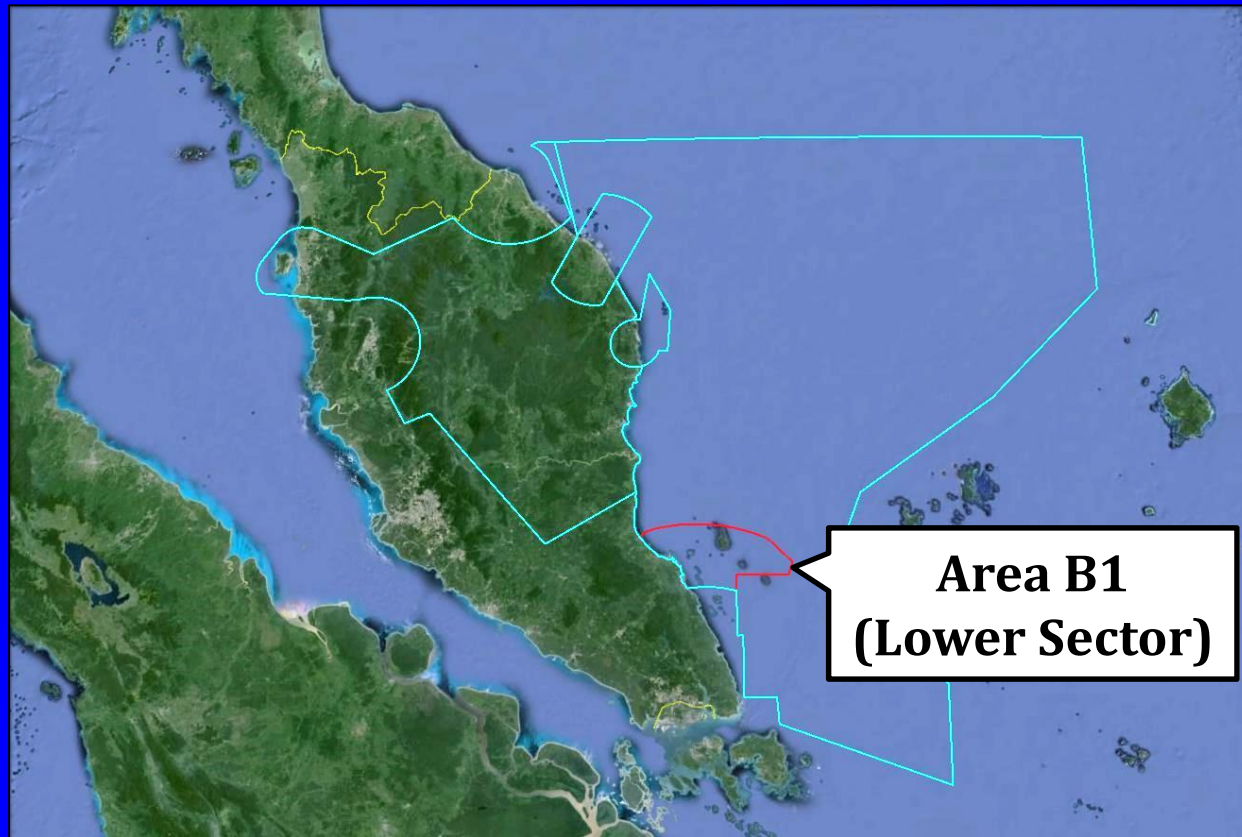


**Area B**

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# ADEX AIRSPACE STRUCTURE

## KUALA LUMPUR FIR

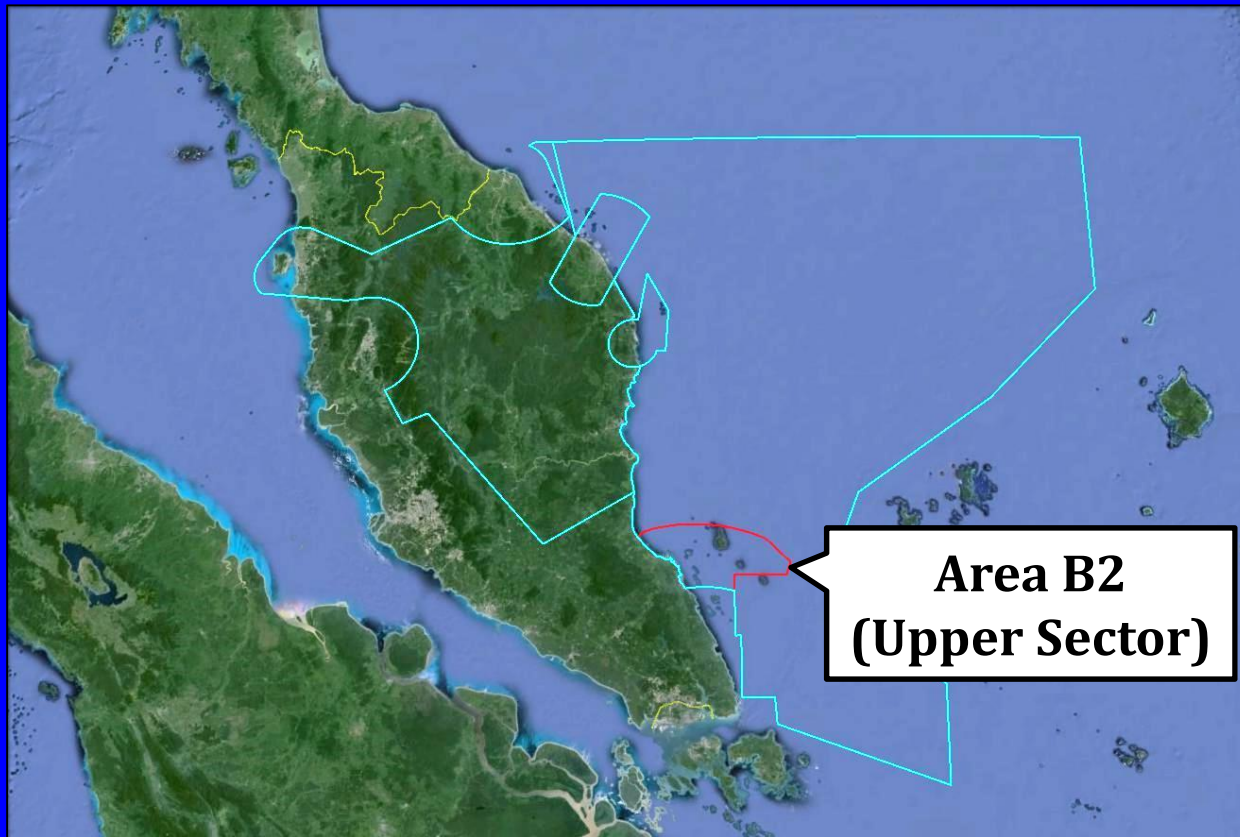


**Area B (Sector 1)**  
**Vertical Limit: SFC – FL140**

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# ADEX AIRSPACE STRUCTURE

## KUALA LUMPUR FIR



**Area B (Sector 2)**  
**Vertical Limit: FL330 – FL460**

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# ADEX AIRSPACE STRUCTURE

## KUALA LUMPUR FIR



**Area B (Sector 3)**  
**Vertical Limit: SFC – FL230**

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# ADEX AIRSPACE STRUCTURE

## KUALA LUMPUR FIR

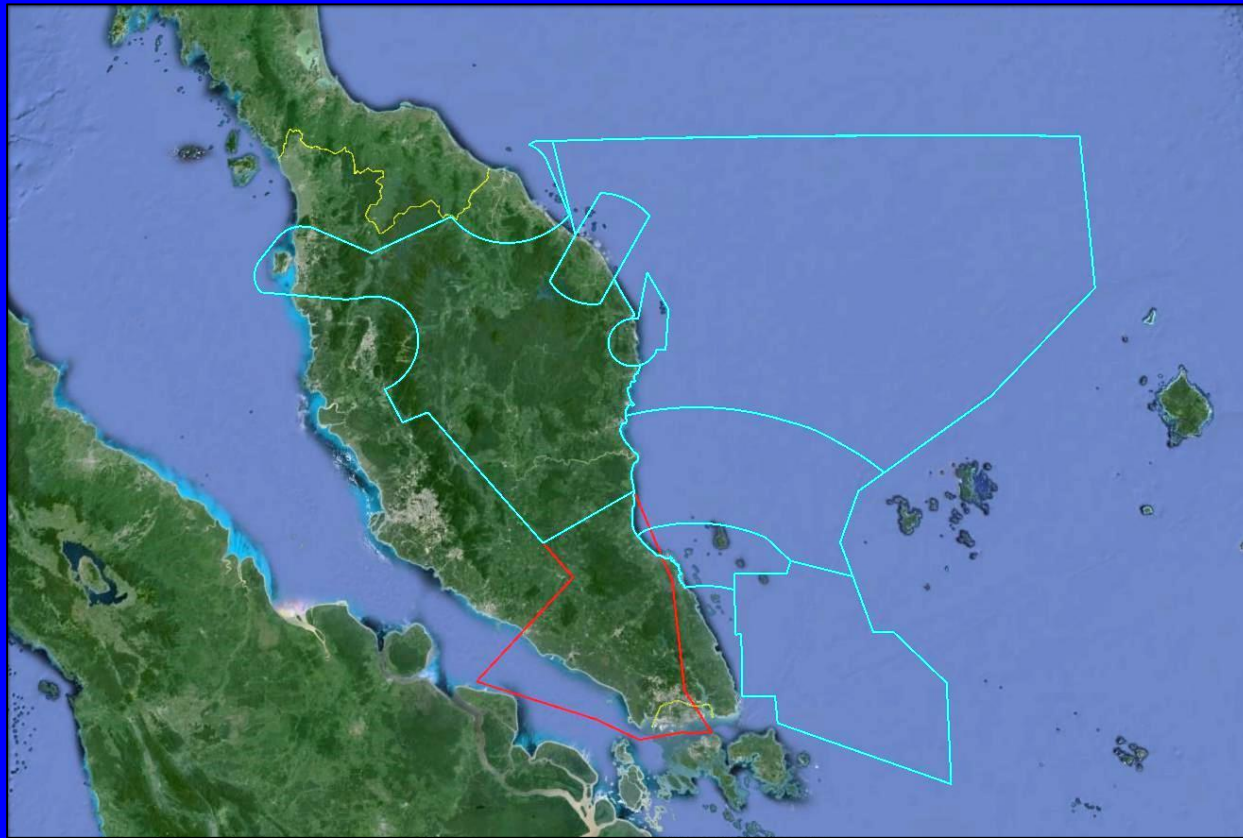


**Area B (Sector 4)**  
**Vertical Limit: SFC – FL250**

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# ADEX AIRSPACE STRUCTURE

## KUALA LUMPUR FIR



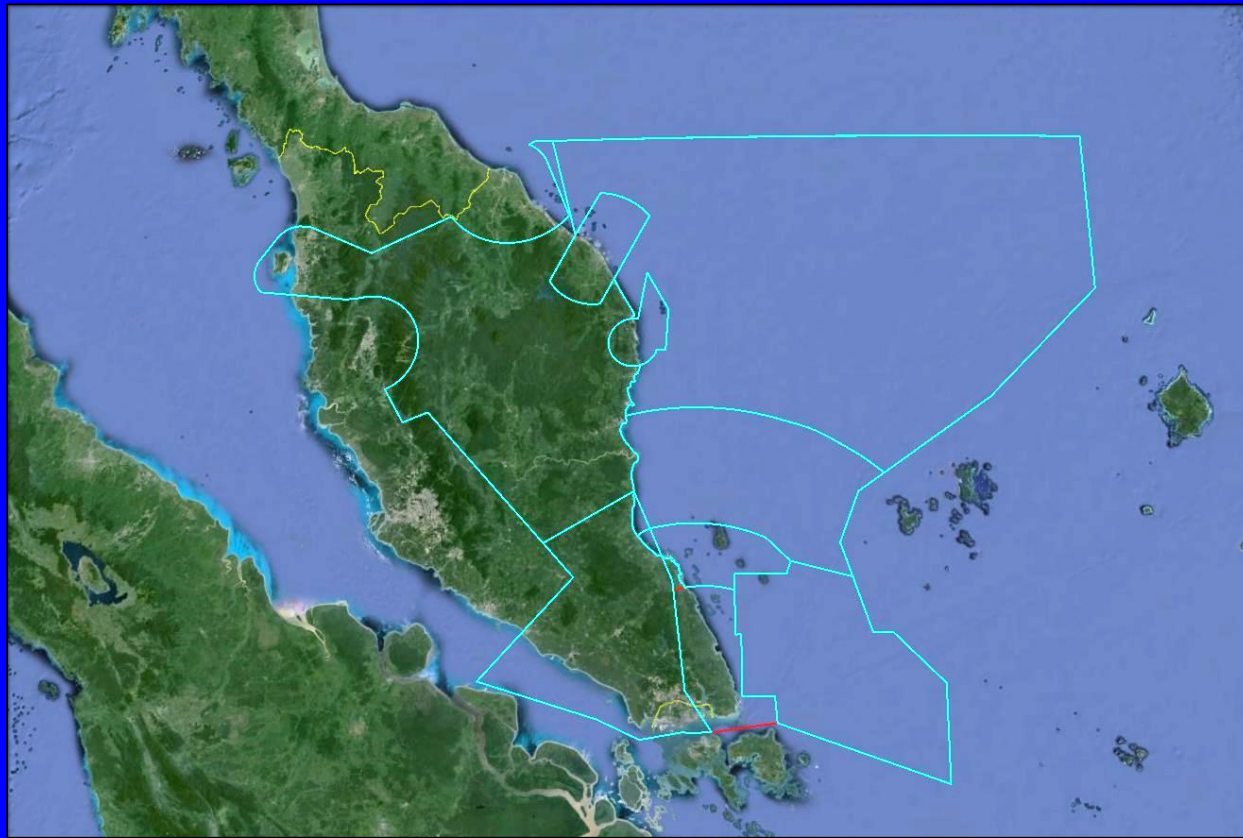
**Area C**

**Vertical Limit: 5,000FT – FL290**

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# ADEX AIRSPACE STRUCTURE

## KUALA LUMPUR FIR



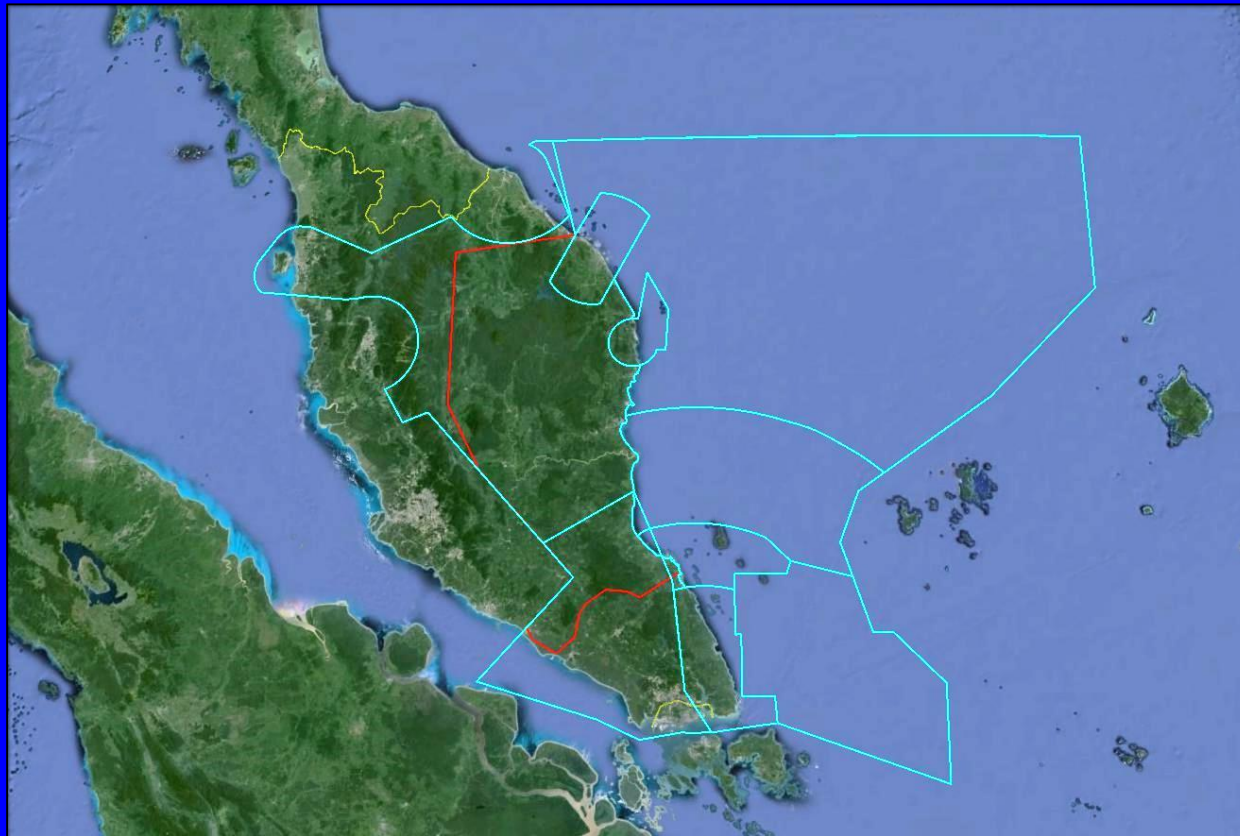
**Area D**

**Vertical Limit: SFC – FL190**

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# ADEX AIRSPACE STRUCTURE

## KUALA LUMPUR FIR

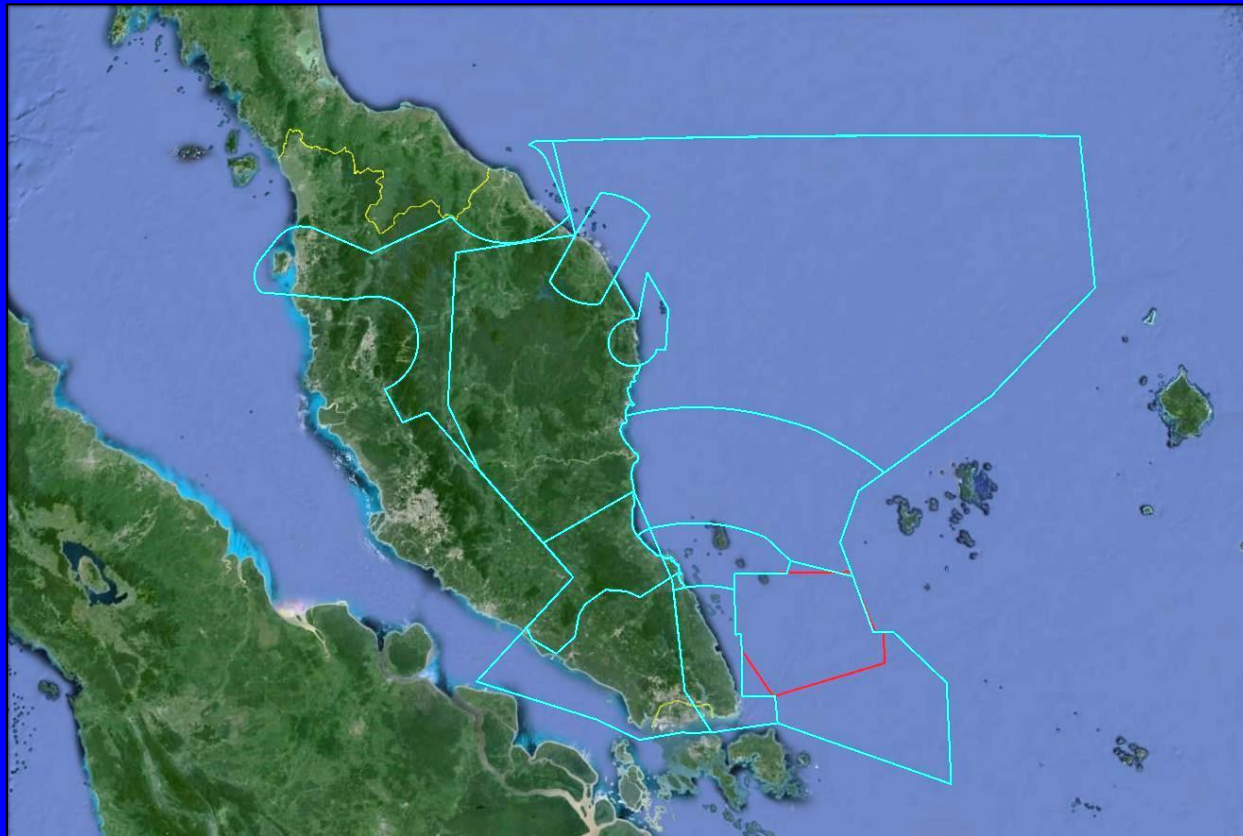


**Low Flying Area**  
**Vertical Limit: 250FT - 12,000FT**

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# ADEX AIRSPACE STRUCTURE

## KUALA LUMPUR FIR



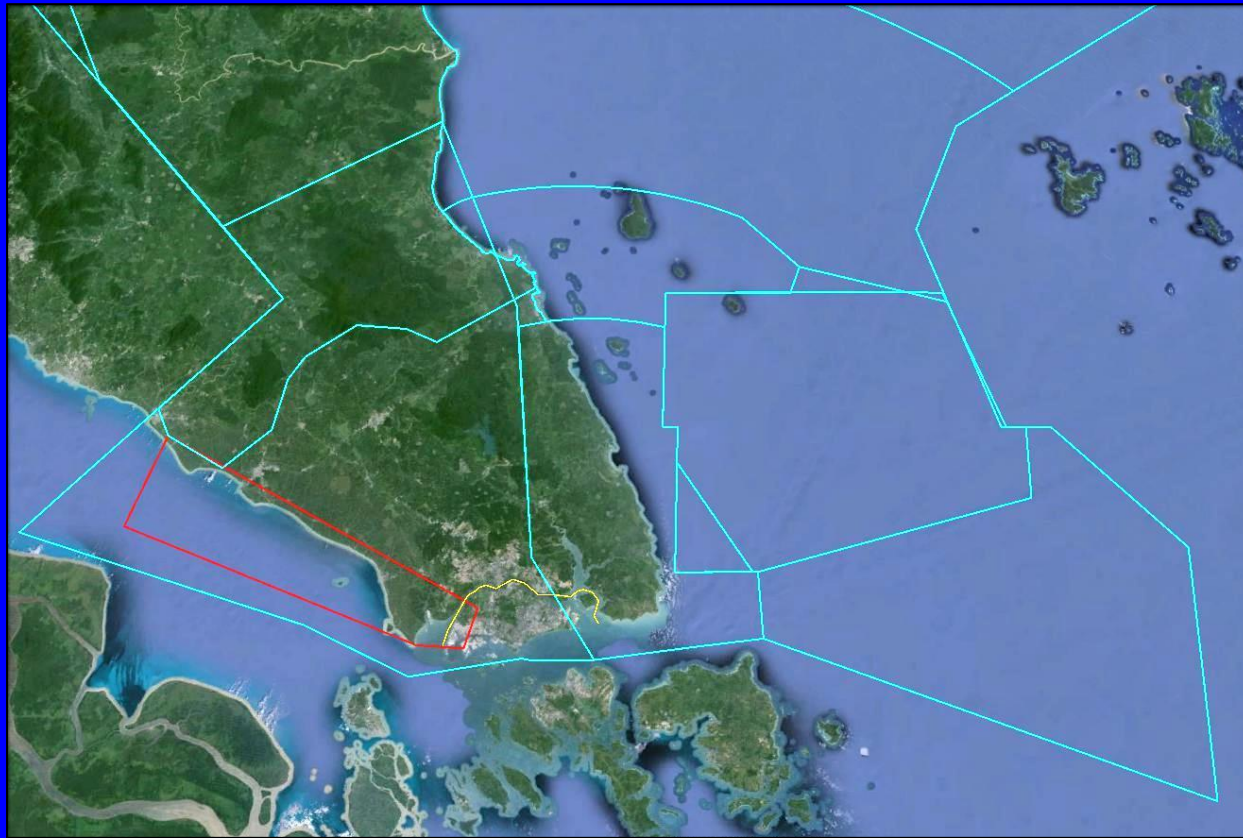
**Naval Firing Area (NFA)/Air-to-Air Engagement Area (AAEA)**

**Vertical Limit: SFC – FL550**

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# ADEX AIRSPACE STRUCTURE

## KUALA LUMPUR FIR

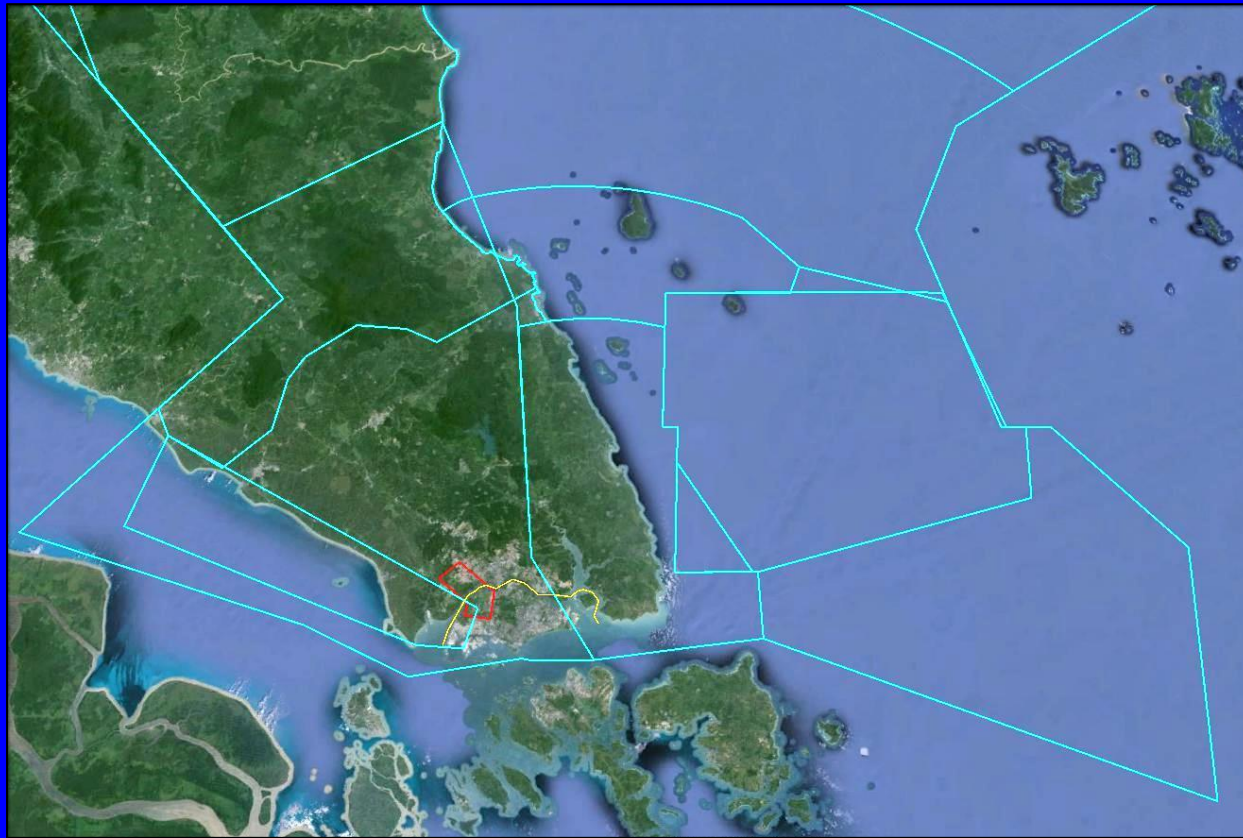


**Coastal Corridor West (CCW)**  
**Vertical Limit: 250FT – 5,000FT**

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# ADEX AIRSPACE STRUCTURE

## KUALA LUMPUR FIR



**Tengah Scramble Corridor (TSC)**  
**Vertical Limit: SFC – 5,000FT**

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# ADEX AIRSPACE STRUCTURE

## KUALA LUMPUR FIR

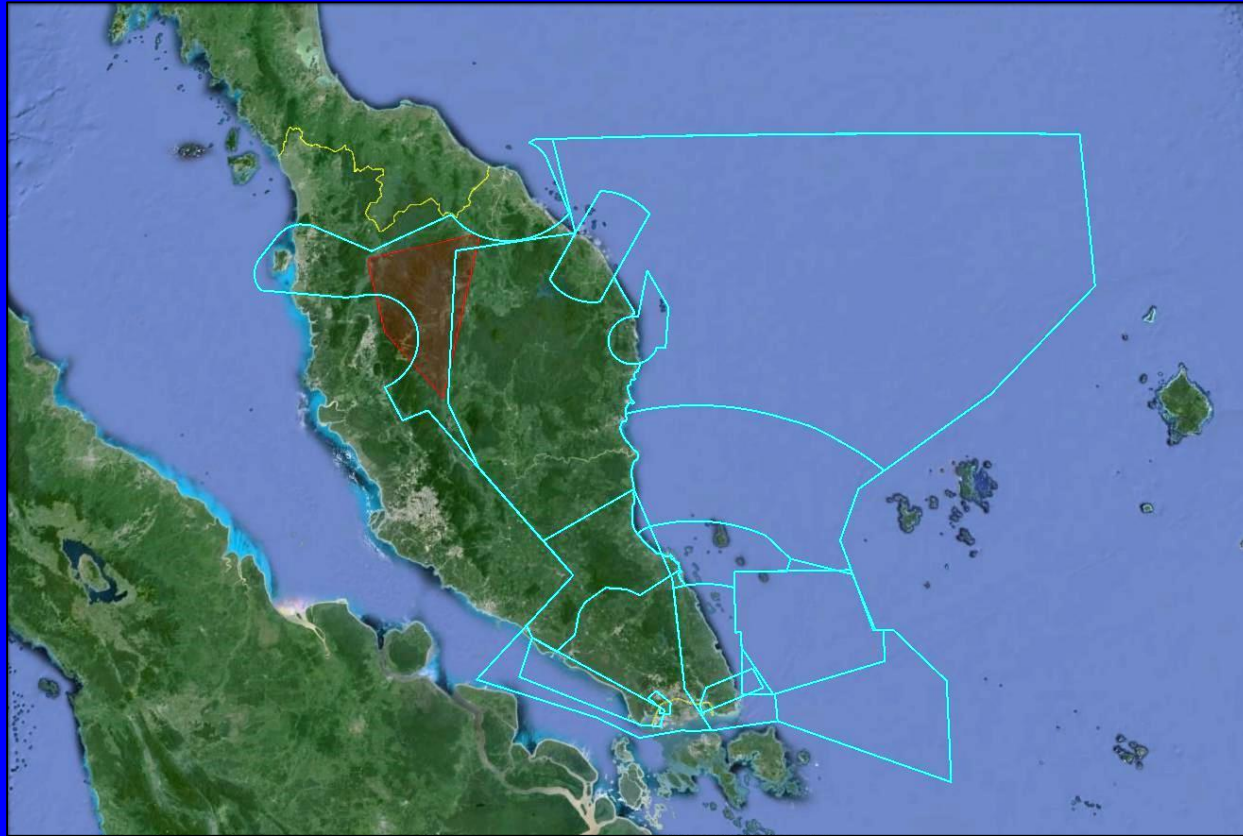


**Coastal Corridor East (CCE)**  
**Vertical Limit: SFC – 5,000FT**

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# ADEX AIRSPACE STRUCTURE

## KUALA LUMPUR FIR



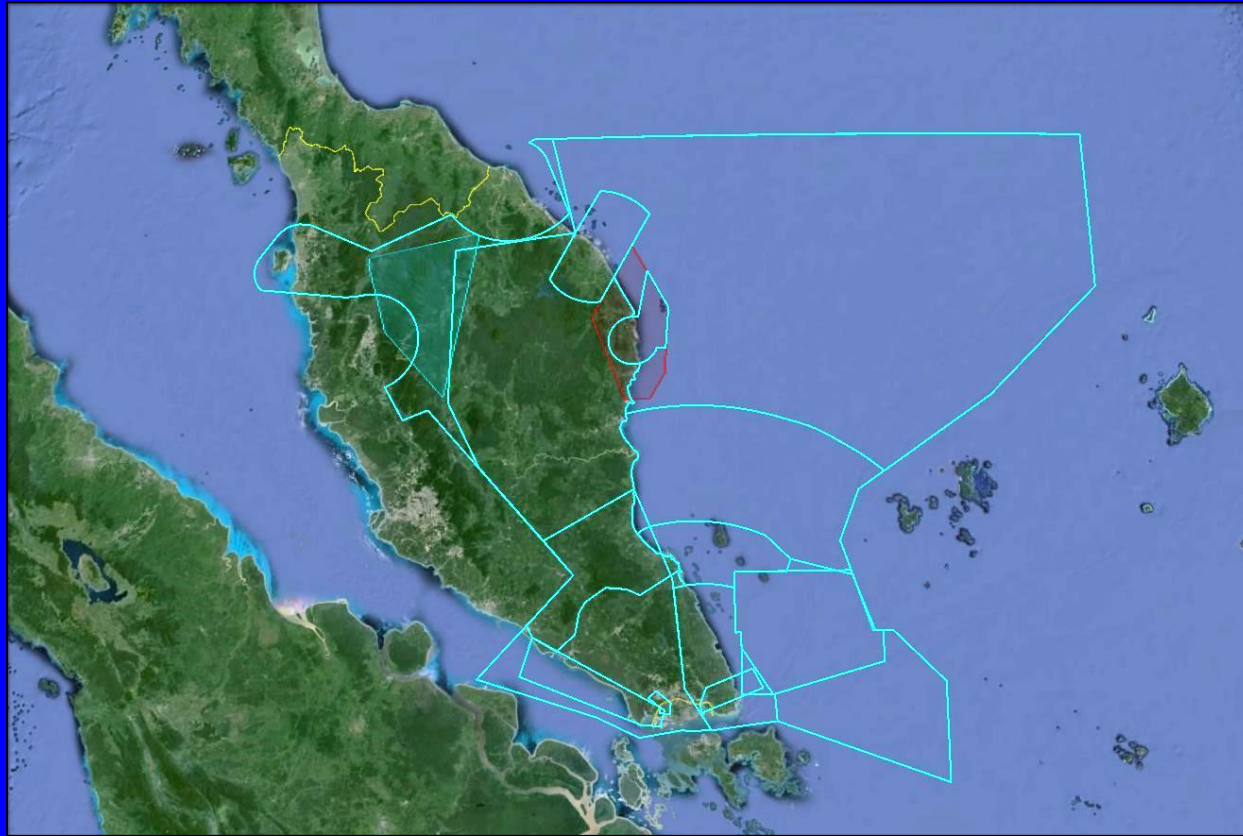
**WMR109**

**Vertical Limit: 8,000FT – FL500**

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# ADEX AIRSPACE STRUCTURE

## KUALA LUMPUR FIR



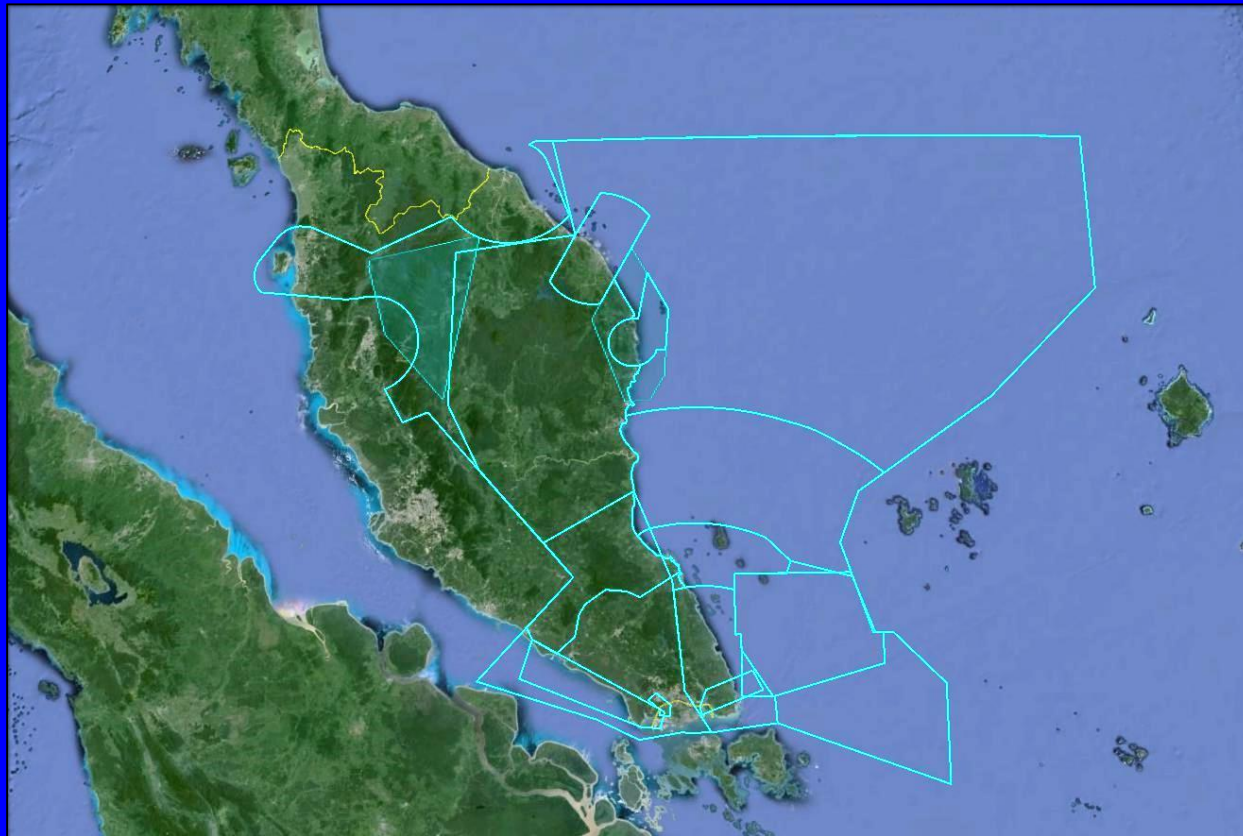
**WMR102B**

**Vertical Limit: SFC – FL370**

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# ADEX AIRSPACE STRUCTURE

KUALA LUMPUR FIR

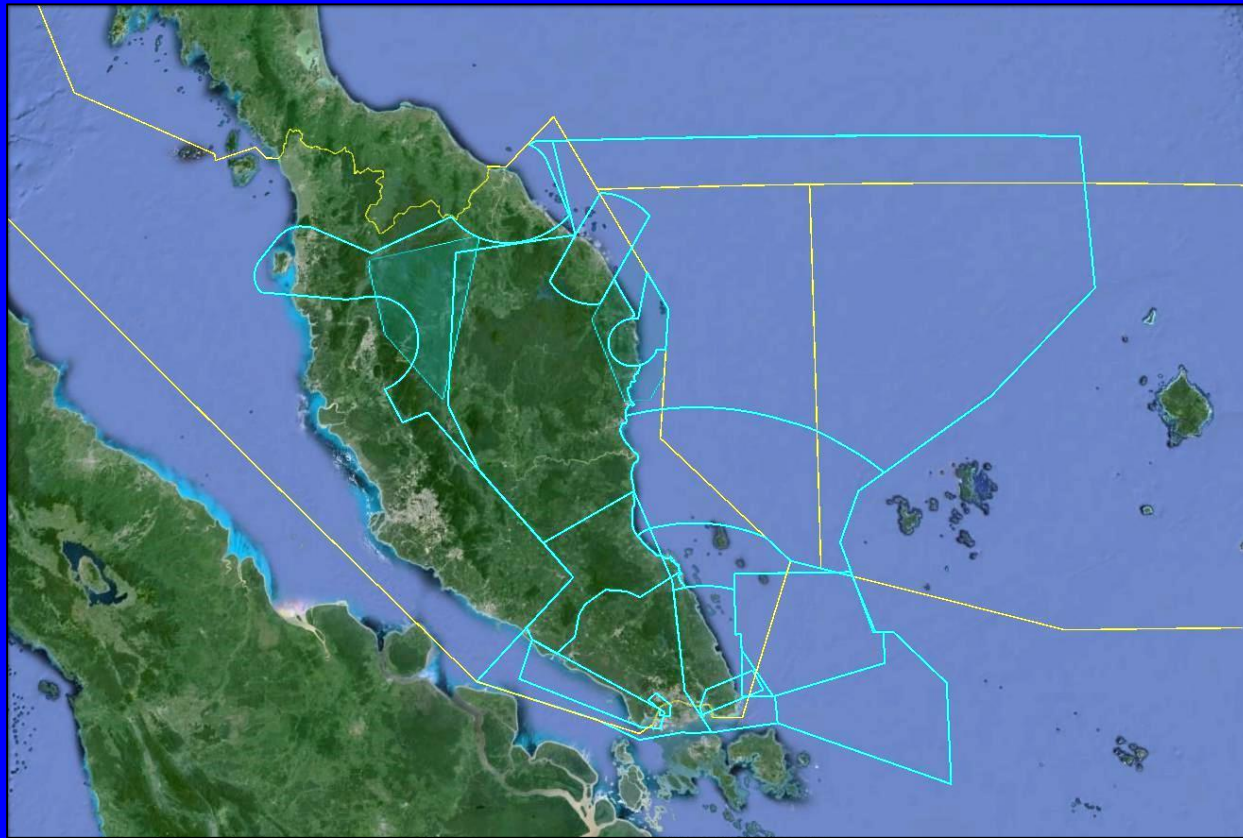


**ADEX Airspace Structure**

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# **ADEX AIRSPACE STRUCTURE**

## **KUALA LUMPUR FIR**

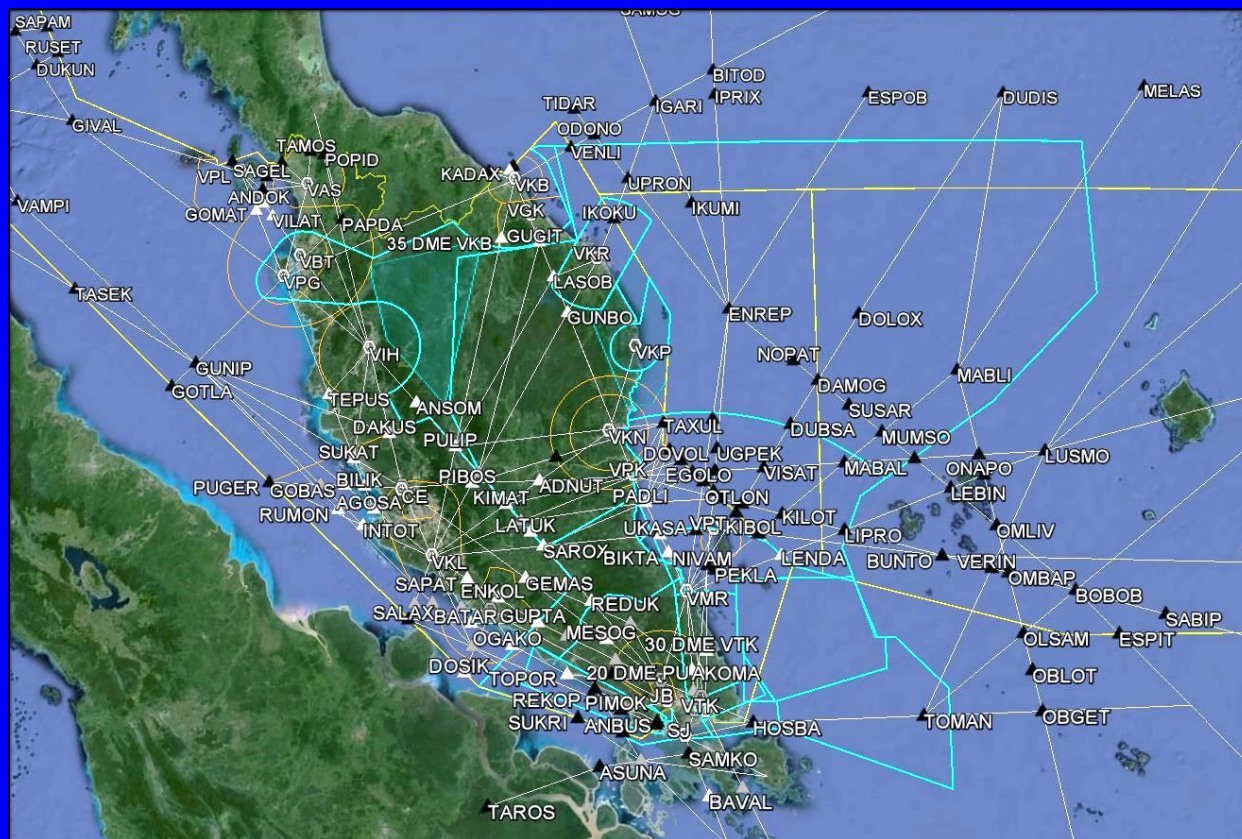


**ADEX Airspace Structure within Kuala Lumpur FIR**

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# ADEX AIRSPACE STRUCTURE

## KUALA LUMPUR FIR



**ADEX and Civil Airspace Structure within  
Kuala Lumpur FIR**

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# CIVIL/MILITARY COORDINATION

- Stakeholders:
  - DCA Malaysia
  - Civil Aviation Authority of Singapore
  - Ministry of Defence Malaysia
  - Ministry of Defence Singapore
  - HQIADS
- All stakeholders are members of the Standing Committee to the Aviation Consultative Committee (SC/ACC) Meeting, a bilateral meeting between Malaysia and Singapore that comprehensively address interrelated air traffic management issues as well as to review pertinent procedures and operational matter undertaken by both States. This SC/ACC meets 4 times a year, and the next meeting will be **270<sup>th</sup> Edition!!!**

# **CIVIL/MILITARY COORDINATION**

- **In 2012, the SC/ACC Meeting agreed that it is timely for all stakeholders concerned to discuss and review the ADEX airspace structure so as to fulfil the needs of civil as well as the military operation**
- **The ADEX Coordination Meeting was established as a side meeting to the SC/ACC Meeting, to review the ADEX airspace structure holistically and identify areas where improvements to coordination procedures should be implemented, in order to create a win-win situation for both civil and military operations**
- **The negotiations were completed after 6 meetings over a period of 18 months**

# **CIVIL/MILITARY COORDINATION**

- **Historic ADEX airspace structure (military perspective):**
  - based on out-dated aircraft capabilities
  - block booking of large areas, size allows training for all participants using full weapon system and unlimited tactics
  - over the sea at FL190 and below only
  - focussed on support of maritime exercise
  - very restrictive for current operational aircraft

# **CIVIL/MILITARY COORDINATION**

- **Historic ADEX airspace structure (civil perspective):**
  - **ADEX airspace closed few ATS routes**
  - **considerable disruption to international flow**
  - **considerable disruption to KLIA arrivals/departures**
  - **reduces weather re-route options**
  - **maximum benefit to exercise participants although severe restrictions to other users**

# OUTCOME

- **Effective civil/military coordination bring about the restructuring of the ADEX airspace**
- **Closes fewer airways**
  - **reroute enable better international traffic flow**
  - **significantly less disruption to KLIA arrivals/departure**
  - **more weather re-route option**
  - **size allows training for all participants but restricts weapon system capabilities and tactics**
- **Realistic and relevant training can still be achieved with significantly less restrictions to other users**

# OUTCOME

- **Readiness of relevant parties to actively contribute to the ADEX Coordination Meeting and work closely together to ensure different requirements of the stakeholders are being fairly considered. This led to:**
  - **Revision of ADEX activation period**
  - **Revision of the upper limit of Area B**
  - **Revision of the upper limit of Area C**
  - **New KL TMA requirements**
- **Accommodated both parties requirements in order to ensure the freedom of movement of the exercise aircraft as well as the safety and efficiency of civil flight operations**

# REVISE ADEX ACTIVATION PERIOD

- **Prior to ADEX Coordination Meeting:**
  - airspace was blocked for entire duration of the ADEX
- **Example: ADEX BERSAMA SHIELD 2012**
  - *Exercise BERSAMA SHIELD 12 (BS12) will take place within the Kuala Lumpur and Singapore FIRs from 260001UTC April to 031100UTC May 2012*
  - *Exercise airspace will be closed to civil and non-exercise military aircraft during this period*
- **Release of effected airspace to civil ATC based on opportunity basis (returned when not required, normally late in the evening)**

# REVISE ADEX ACTIVATION PERIOD

- ADEX Coordination Meeting resulted in:
  - two 3 hour windows per day for ADEX activation period
- Example: ADEX BERSAMA LIMA 2014
  - *Exercise BERSAMA LIMA 14 (BL14) will take place within the Kuala Lumpur and Singapore FIRs from 120001UTC to 201100UTC October 2014*
  - *All exercise airspace will be active during the Air Defence Exercise (ADEX) intense aerial activity which is limited to two 3-hour windows from 0100UTC to 0400UTC and 0530UTC to 0830UTC daily for the period of 12 to 20 October 2014*

# **REVISE ADEX ACTIVATION PERIOD**

- **The ADEX windows were notified well in advance through AIP Supplements to enable civil operators to plan routes , fuels or adjust schedules**
- **Early notification of cancelation if weather forecast is poor**

# REVISE UPPER LIMIT OF AREA B



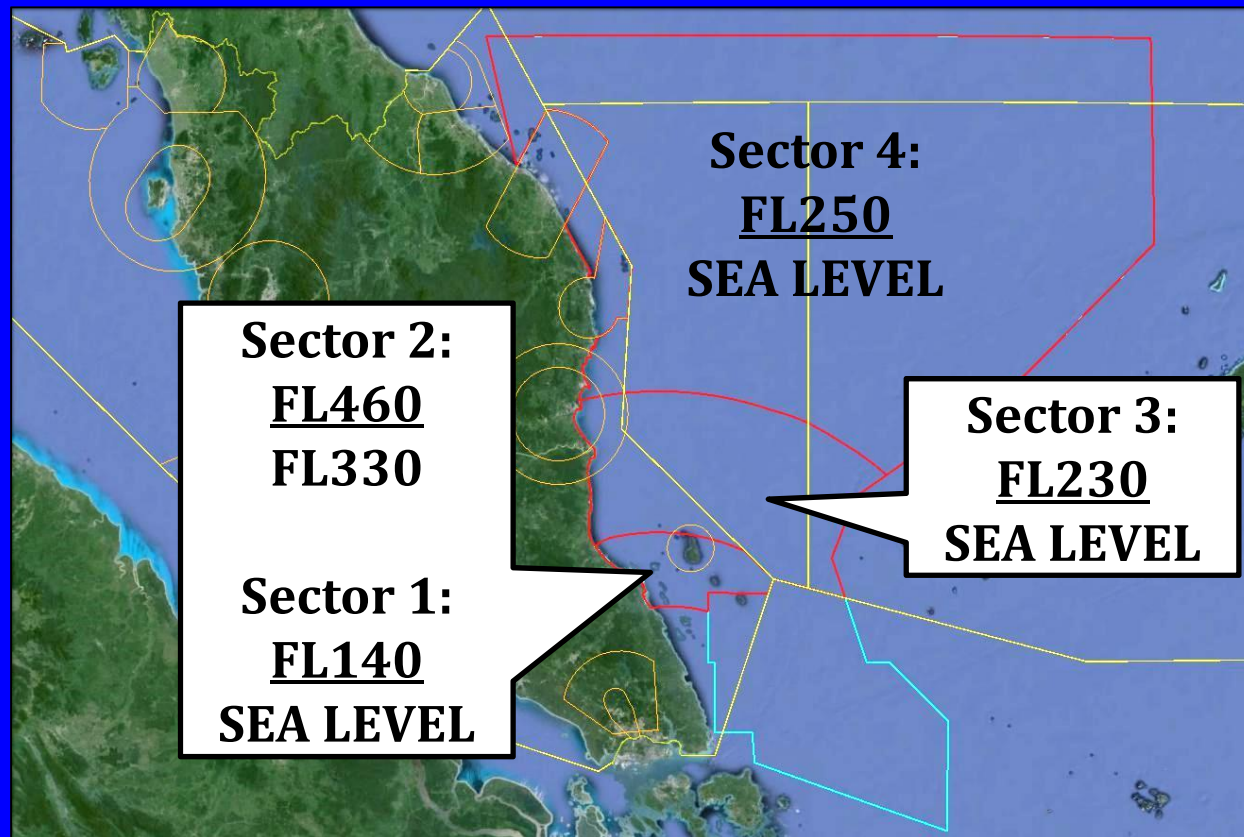
**Prior to ADEX Coordination Meeting:  
vertical limit of Area B is from SEA LEVEL – FL190**

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# REVISE UPPER LIMIT OF AREA B

- **The ADEX Coordination Meeting resulted in :**
  - **vertical limit of Area B increased according to ADEX requirements**
  - **sectors established to accommodate traffic flow in/out of Singapore Changi Airport**

# REVISE UPPER LIMIT OF AREA B



# **REVISE UPPER LIMIT OF AREA C**

- **Prior to ADEX Coordination Meeting:**
  - **unidirectional westbound airway A457 (VJR to VKL) was not available FL300 and below**
  - **Conditional ATS Route W543 was established in Kuala Lumpur FIR to enhance Air Traffic Management**

# REVISE UPPER LIMIT OF AREA C



# REVISE UPPER LIMIT OF AREA C

- **ADEX Coordination Meeting resulted in :**
  - **ADEX airspace structure was reviewed in order to allow civil air traffic to transit through effected airspace**
  - **airway A457 available in accordance with arrival trajectory into KLIA**

# REVISE UPPER LIMIT OF AREA C



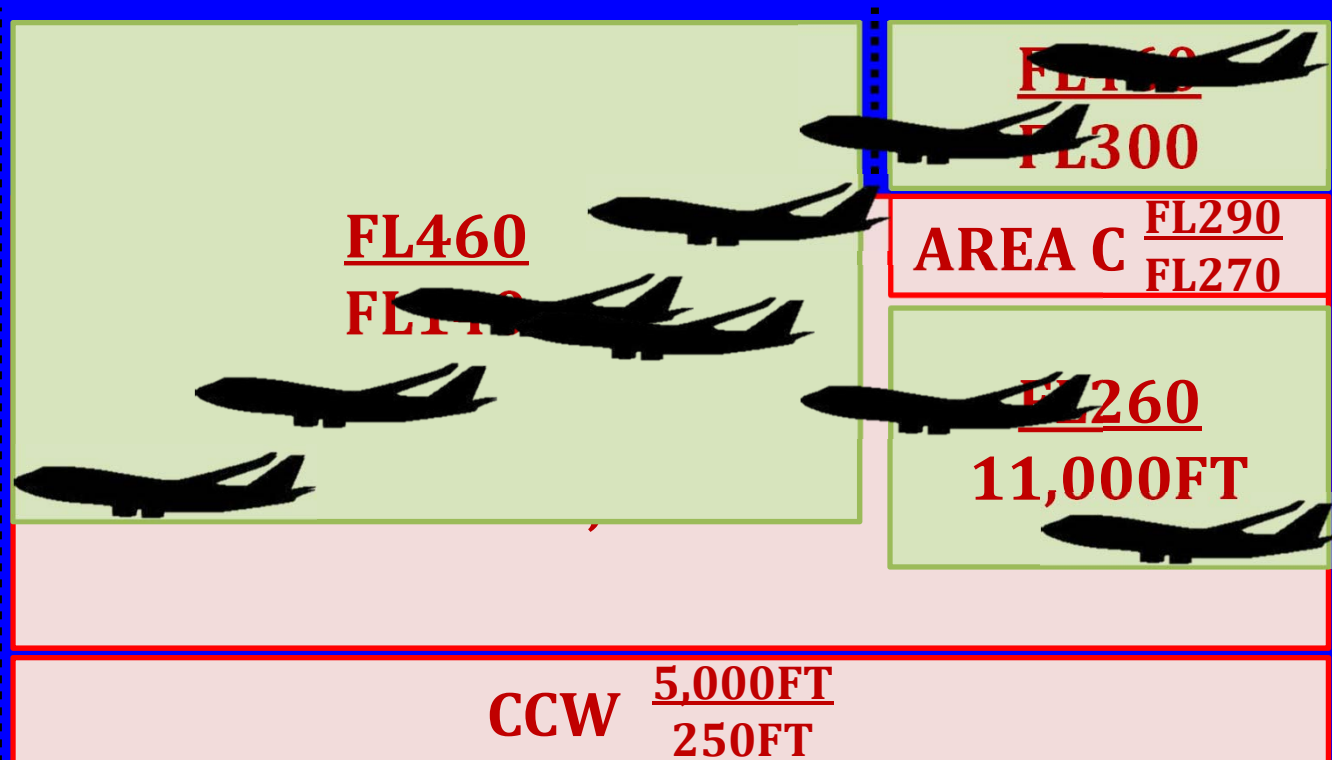
# CROSS SECTIONAL VIEW A457

## AFTER ADEX COORDINATION MEETING

KL TMA

25 DME VJB

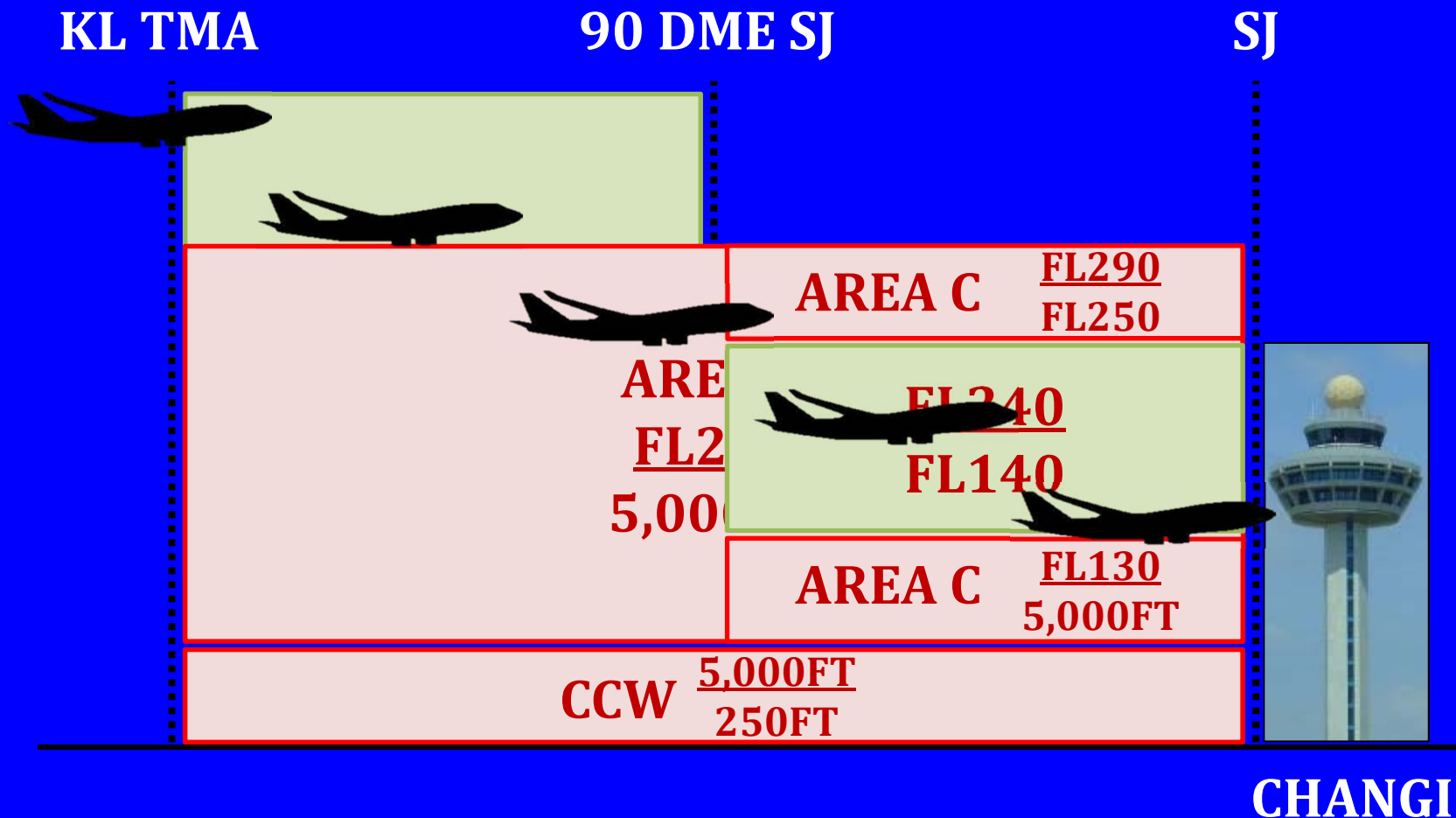
VJB



KLIA

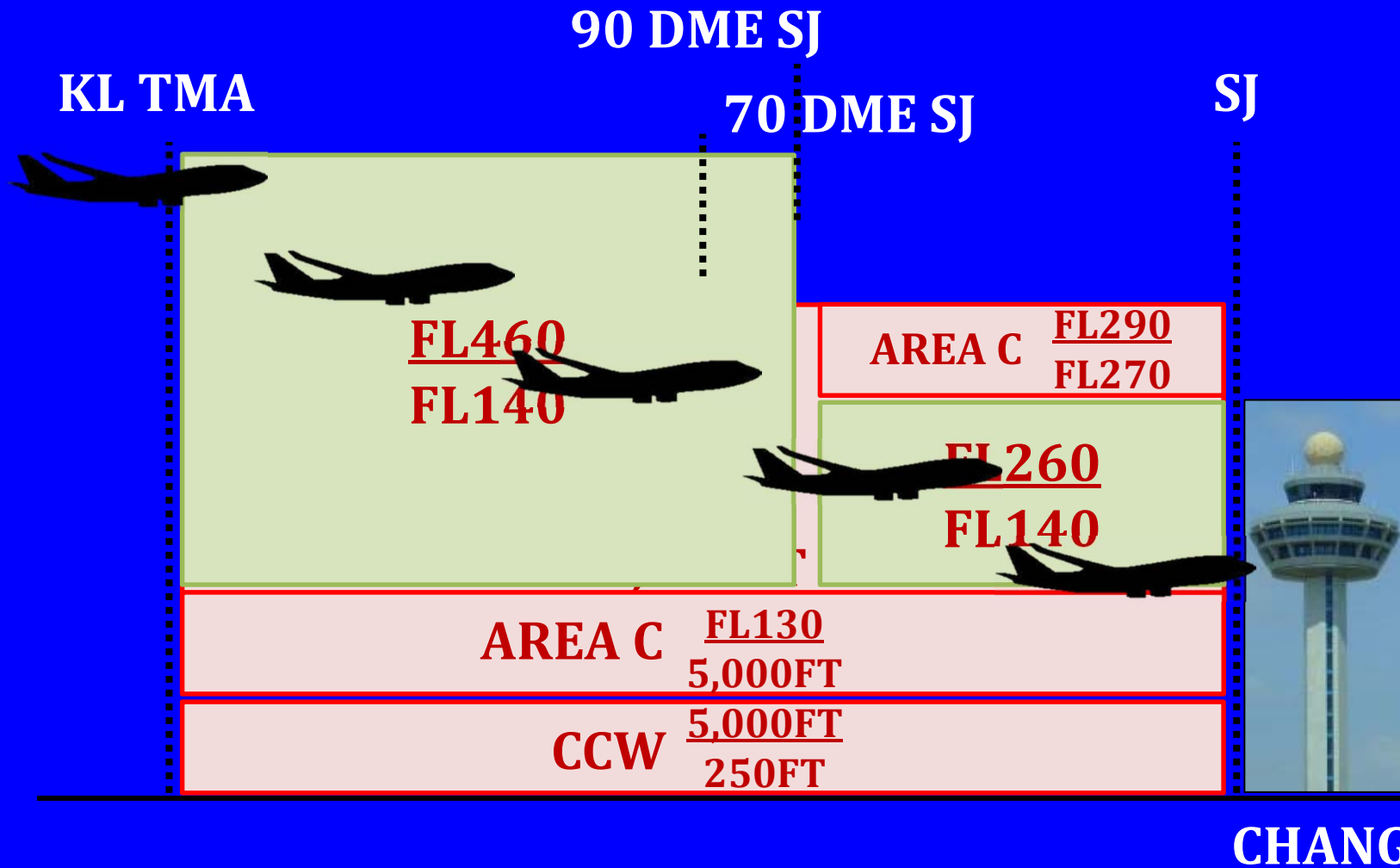
# CROSS SECTIONAL VIEW A464

## PRIOR TO ADEX COORDINATION MEETING



# CROSS SECTIONAL VIEW A464

## AFTER ADEX COORDINATION MEETING





# Lessons Learned

- You have to start somewhere!! SO start talking.
- Keep at it...and eventually something good will be achieved. It took us 18 months.
- Do a through analysis of each others requirements
- Find out how to accommodate as much of each others needs without compromises.
- It's a matter of give and take.
- Acknowledged the Military's need
- Then comes the fine art of negotiations.
- In our case, we managed to make significant changes to the reserved airspace without seriously impacting the Military Exercise

An aerial photograph of an airport terminal and control tower. The control tower is a tall, white, cylindrical structure with a glass-enclosed observation deck at the top. The terminal building is a large, modern structure with a curved facade and multiple levels. The foreground shows a landscaped area with trees, a winding path, and a small pond. The sky is blue with some clouds.

**Thank You**

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