



*International Civil Aviation Organization*

**The Third Meeting of the South Asia/Indian Ocean ATM Coordination Group (SAIOACG/3) and the Twentieth Meeting of the South East Asian ATM Coordination Group (SEACG/20)**

Bangkok, Thailand, 18 – 22 February 2013

---

**Agenda Item 5: ATS Route Development**

**ATS ROUTE ESTABLISHMENT PROPOSAL**

(Presented by Brunei Darussalam)

**SUMMARY**

This paper presents a proposal for a shorter, more efficient route between Brunei and Hong Kong.

The proposal includes:

- Extending airway R223 northwards from Brunei VOR to position LAXOR on airway M772.
- Changing the Activation of Restricted Airspace WBR519 in the Kota Kinabalu FIR from ‘22:30 – 15:30 UTC daily’ to ‘Activated by NOTAM’.
- Lifting the restriction of airway M772 “available only for flights departing from Jakarta to Hong Kong or destinations beyond Hong Kong” so that flights originating from airports other than Jakarta can use it.

This paper relates to –

**Strategic Objectives:**

- A: *Safety – Enhance global civil aviation safety*
- C: *Environmental Protection and Sustainable Development of Air Transport – Foster harmonized and economically viable development of international civil aviation that does not unduly harm the environment*

**Global Plan Initiatives:**

- GPI-1 Flexible use of airspace
- GPI-6 Air traffic flow management
- GPI-7 Dynamic and flexible ATS route management

**1. INTRODUCTION**

1.1 At present, aircraft flying from Brunei to Hong Kong had to fly along airway M754 then airway A583 before flying a STAR arrival into Hong Kong. The Department of Civil Aviation, Brunei Darussalam proposes a different routing that would reduce the distance to fly, aircraft fuel burn, flight time and the carbon emissions emitted. Additionally, congestion on M754 and A583 would be relieved and the flexible use of airspace concept utilized to improve en-route airspace efficiency and enhance inter-regional harmonization. The proposal is supported by the Civil Aviation Authority of Singapore and the Department of Civil Aviation, Malaysia.

## 2. DISCUSSION

### The Present Situation

2.1 At present, aircraft flying between Brunei and Hong Kong are required to route along airway M754 from the Brunei VOR (BRU) to position AKOTA in the Philippines FIR before joining airway A583. This routing has a ground distance of 1,152NM. Data provided by IATA reports that 1,507 aircraft per month use this routing.

2.2 Communication between aircraft and ATC is primarily via VHF radio, however between position MAVRA and SABNO, VHF communication with Manila is not possible and HF is used as required. Aircraft operating on this route cross a total of 10 airways. The airways crossed were: W422, W441, M758, Y446, M767, N884, M765, L628, L625, and N892.

### Proposed Routing

2.3 Airway M772 joins the Jakarta VOR (DKI) to position DULOP in the Hong Kong FIR. The routing of M772 is north easterly until north of Brunei, then northerly direct to DULOP and Hong Kong.

2.4 To the south of Brunei is airway R223. Airway R223 currently routes from position ELANG northwards to the Brunei VOR (BRU). It is proposed that airway R223 be extended northwards to join airway M772 at position LAXOR. Aircraft flying from Brunei to Hong Kong would then be able to route BRU to LAXOR on airway R223, then LAXOR to DULOP on airway M772 and then fly a STAR arrival into Hong Kong.

2.5 Just as the existing route crosses 10 airways, the proposed route also crosses 10 airways.

### Advantages Gained

#### *Operational Savings*

2.6 The proposed route has a distance of 1,079NM which is 73NM less than the existing route. Approximate savings achieved as a result of operating on the proposed route would include:

- for an Airbus A 320 size aircraft: 300 Kg trip fuel and 5 minutes flight time saved; and
- for a Boeing B 777 size aircraft: 1,500 Kg trip fuel and 9 minutes flight time saved.

#### *Environmental Savings*

2.7 Because of the reduced trip fuel burned on the proposed route, reductions in carbon emissions will be achieved. For an Airbus A 320 size aircraft, a reduction in carbon emissions of approximately 0.9 tonnes was predicted. For a Boeing 777 size aircraft, a reduction in carbon emissions of approximately 4.9 tonnes was predicted.

#### *Reduced Airways Congestion*

2.8 Data provided by IATA is that currently, 1,507 aircraft per month use the existing route (M754 / A583) while 205 aircraft per month use the proposed airway (M772). By allowing flights currently using the exiting route to use the proposed route, congestion on the existing route will be reduced. This will make it more likely that aircraft using the existing route will be able to operate at their optimum Flight Levels and subsequently achieve savings in trip fuel and flight time as well as reducing their carbon emissions.

---

*Intentions Fulfilled*

2.9 ICAO Asia Pacific document “Report of the Special ATS Coordination Meeting on the Hong Kong, China and Jakarta ATS Routes” Manila, Philippines 11 -13 August 2004 states that it was always the intention to make airway M772 available to all users. After 8 years airway M772 is still restricted to flight originating in Jakarta and terminating in Hong Kong or beyond. A review of the restrictions was due to occur in 2005 but it never eventuated. By allowing flights originating from airports other than Jakarta to use airway M772, ICAO will be fulfilling its stated intention.

*Problems Identified*

2.10 The Department of Civil Aviation, Brunei Darussalam has visited some of the government agencies of the countries affected by these proposals. Through discussions with these agencies several problems have been identified. These include:

- Transiting Restricted Airspace WBR 519. The extension of airway R223 will pass through restricted airspace in the Kinabalu FIR. The Restricted airspace is WBR 519. The vertical extent of WBR 519 is from sea level to 40,000ft altitude. WBR 519 is active from 22:30 – 15:30 UTC every day (6:30 am to 11:30 pm everyday)
- Use of Airway M772 restricted. Airway M772 was created on 20 January 2005 with the caveat that the airway was only for use by aircraft flying northbound from Jakarta to Hong Kong and destinations beyond. This caveat currently prevents aircraft from Brunei or any other departure airport using airway M772.
- Communications on airway M772. Discussions with the Civil Aviation Authority of The Philippines indicate that communication difficulties sometimes occur between aircraft using M772 and Manila ATC. VHF voice communication is used at position LAXOR, but thereafter communications is via HF. Manila report that there have been situations when aircraft using airway M772 have requested deviations to the west to avoid weather. If the deviation to the west is very large it may take the aircraft into either the Vietnam (Ho Chi Minh) and Sanya FIRs. Manila advise that coordination between the adjoining FIRs and the aircraft (using HF) in the time frame required can be difficult.

*Solutions Proposed*

2.11 Working with the government agencies, solutions to the problems have been identified as follows:

- Transiting Restricted Airspace WBR 519. By employing the ‘Flexible Use of Airspace’ concept, the Malaysian Department of Civil Aviation is arranging to change the status of WBR 519. The hours when the Restricted Area is active will be changed from 22:30 – 15:30 UTC every day to activated by NOTAM. When the Restricted Area is activated, flights from Brunei will go via the existing route via airways M754 and A583. When the Restricted Area is deactivated, flights from Brunei will use the proposed new route.
- Use of Airway M772 restricted. With reference to the ICAO Asia Pacific Office Document titled “Report of the Special ATS Coordination Meeting on the Hong Kong, China and Jakarta ATS Routes” Manila, Philippines 11 -13 August 2004 Paragraph 2.8 states:

*The meeting agreed that restricting operations on M772 and L644 to one-way traffic and to Hong Kong/Jakarta flights and beyond (for flights routing via Hong Kong and Jakarta) should be necessary only as long as it took to evaluate operational safety and efficiency. However, in the longer term, subject to the considerations above, it was hoped that the route would be made available to all operators as there were number of flights from other destinations that would want to use this route.*

2.12 Paragraph 2.16 states:

*In regard to (f), the meeting agreed that a 3 month post implementation review meeting would not be scheduled as it was considered unlikely that matters would arise that could not be resolved between the States concerned under established coordination arrangements. In any case, the SEACG/12 meeting, which would be held during the first half of 2005, would review the route operation. States agreed to coordinate any follow-up matters and would call for a special coordination meeting if circumstances warranted it.*

2.13 An examination of the SEACG/12 minutes indicated that the issue was not raised in 2005 and has not been raised since then. So far, the time period provided to ‘evaluate operational safety and efficiency’ has been in excess of seven years. If there had been any operational safety and efficiency issues during this time they would have been raised and the airways reviewed. There is no record of any issues being raised during this time period.

2.14 It is therefore the position of DCA Brunei that operational safety and efficiency on airway M772 has been proven satisfactory and that the route should be opened up to all operators, as originally planned.

2.15 Communications on airway M772. It is acknowledged that there is no current system available that will completely satisfy the concerns regarding communications in the central South China Sea area over which airway M772 passes. Mitigating measures however are proposed. These mitigations include:

- At position LAXOR, while the aircraft is still in VHF range of Manila Radio, estimates of times over reporting points on M772 that lie in the area where HF communications are used, be passed to Manila Radio.
- The Flight Level Allocation Scheme (FLAS) for the South China Sea region has been developed such that aircraft operating on airway M772 will cruise at either FL 300 or FL380. These two levels have not been allocated to any other airway that M772 crosses. Consequently, if communication with an aircraft on M772 is temporarily lost, vertical separation from aircraft on crossing airway is maintained

### **3. ACTION BY THE MEETING**

3.1 The meeting is invited to:

- a) note the information contained in this paper; and
- b) discuss the establishment of the proposed route.

.....

### **ATTACHMENTS**

**Appendix A:** Current route for aircraft between Brunei and Hong Kong.

**Appendix B:** Proposed route for aircraft between Brunei and Hong Kong.

**Appendix C:** Map showing Airway R 223 originating at ELANG and terminating at Brunei VOR. The airway could be extended from Brunei VOR to LAXOR.

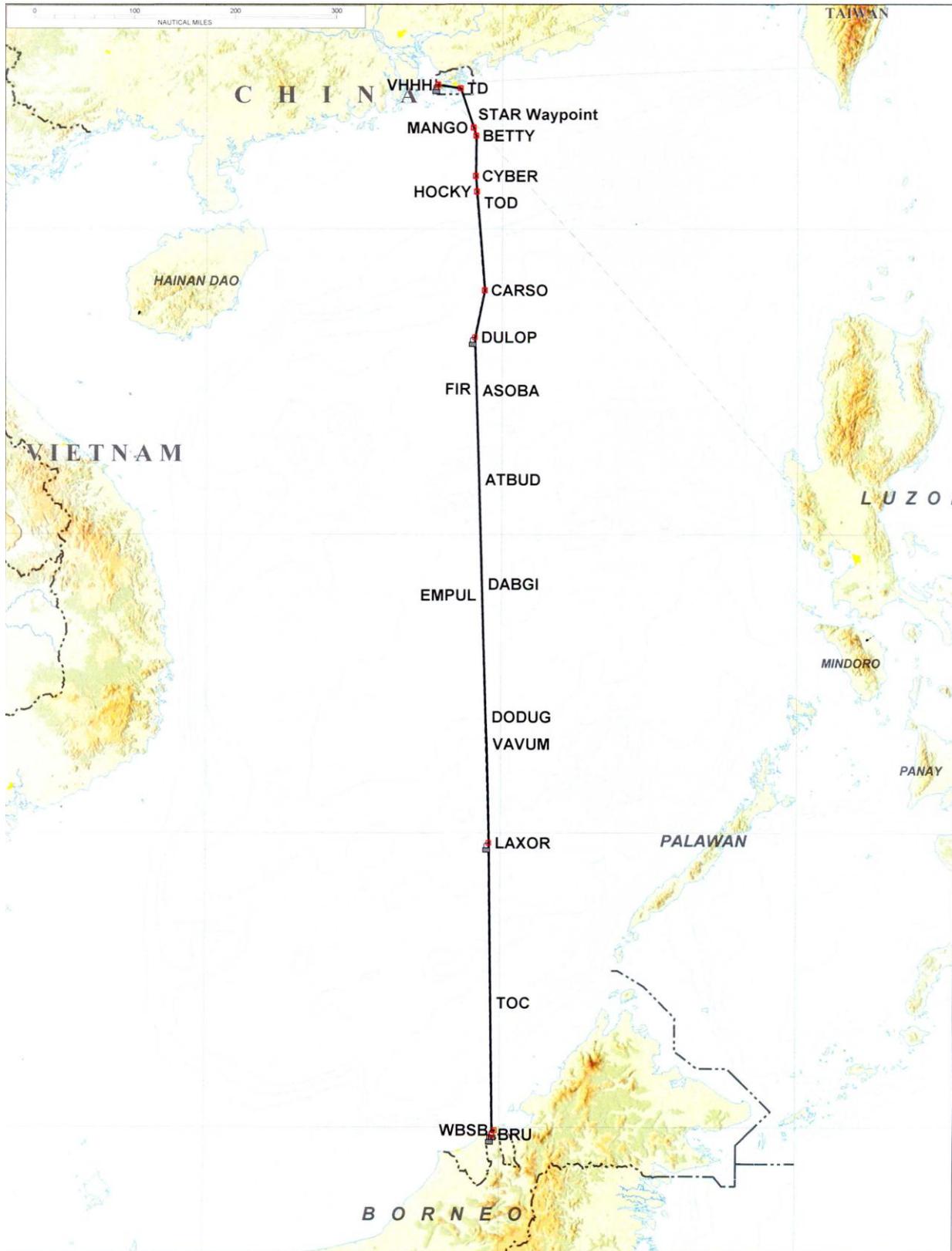
**Appendix D:** Map showing where the proposed route would transit Restricted Airspace WB(R) 519.

**Attachment 1:** Draft BANP amendment

**Appendix A: Current Route for Aircraft between Brunei and Hong Kong**



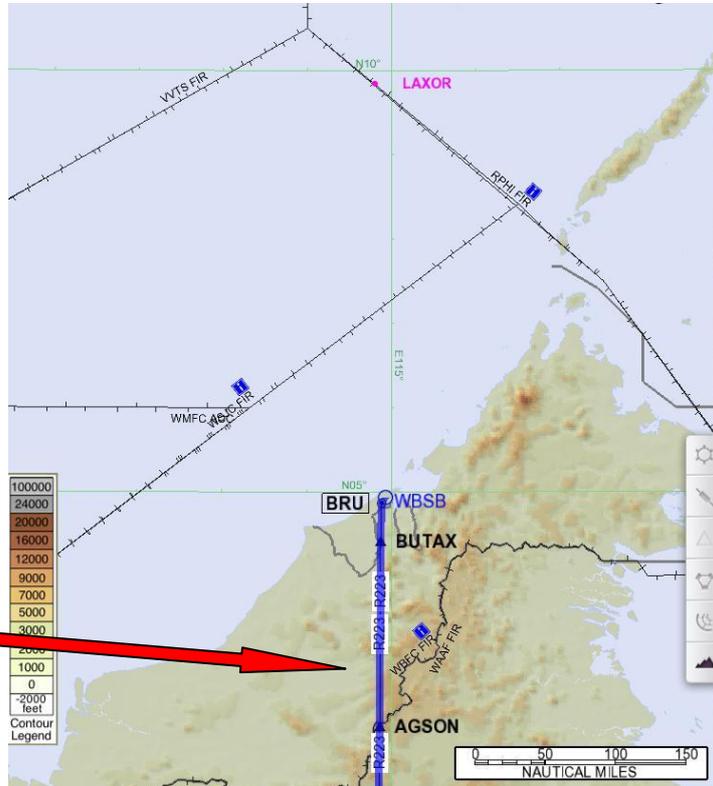
**Appendix B: Proposed Route for Aircraft between Brunei and Hong Kong**



**Appendix C: Map showing Airway R 223 Originating at ELANG and Terminating at Brunei VOR (BRU) (The Airway Could be Extended from Brunei VOR to LAXOR).**

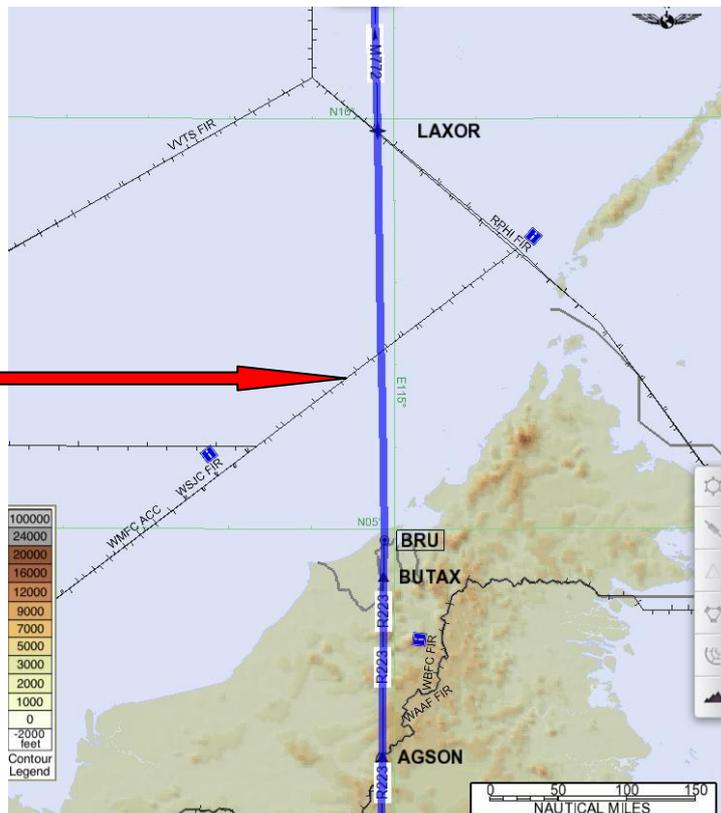
**Airway R 223 originates in Kalimantan and routes northwards.**

**It terminates at the Brunei VOR (BRU).**

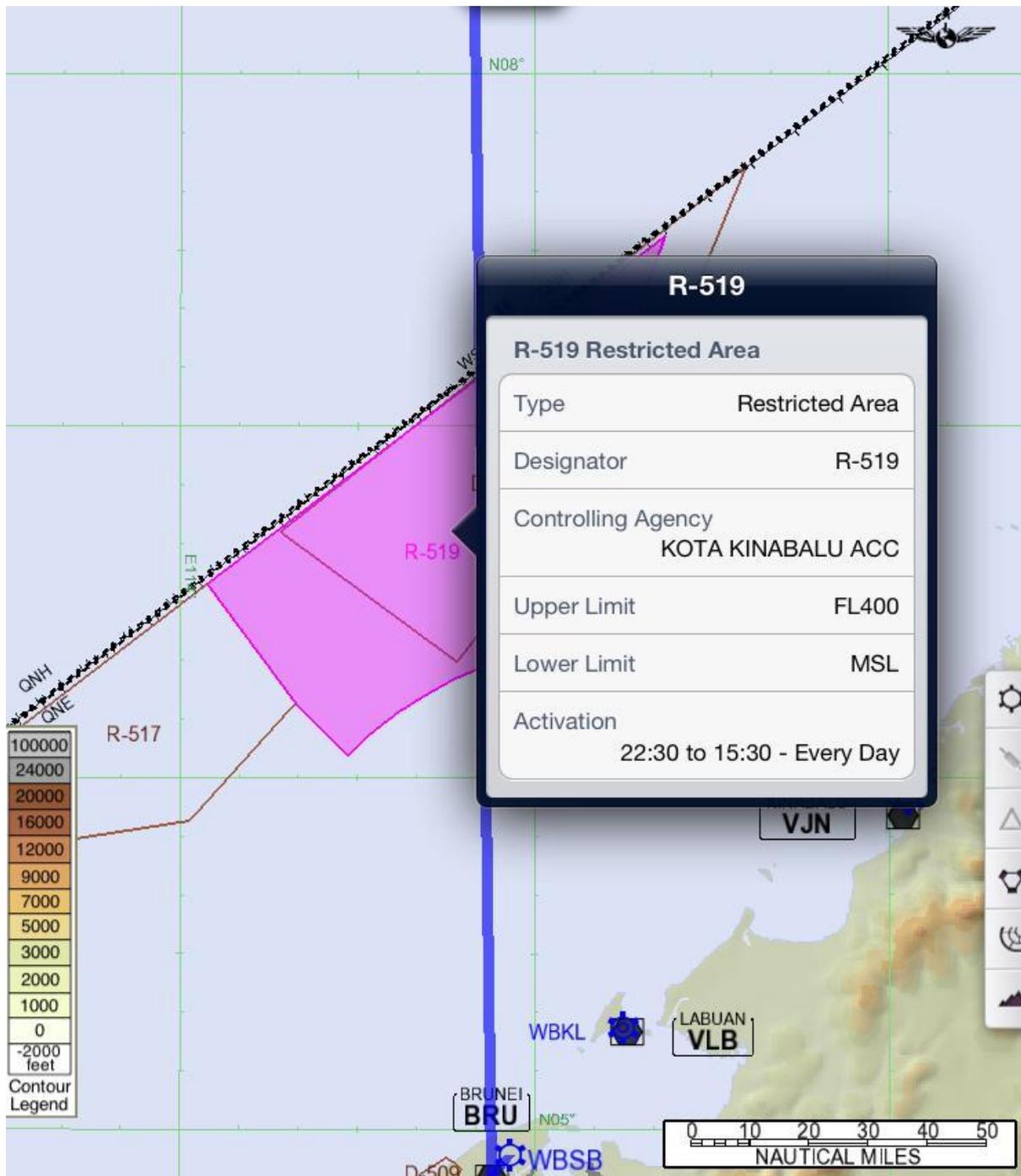


**Airway R 223 could be extended northwards to terminate at position LAXOR.**

**At LAXOR, Airway R223 would connect with Airway M 772.**



**Appendix D: Map showing where the proposed route would transit Restricted Airspace  
WB(R) 519.**



**PROPOSAL FOR AMENDMENT OF THE  
ASIA/PACIFIC BASIC AIR NAVIGATION PLAN  
(Doc 9673)**

(Serial No.: APAC 13/X – ATS)

a) **Plan:**

Doc 9673

b) **Proposed by:**

(Brunei Darusalam)

c) **Proposed amendment:**

*Editorial Note:* Amendments are arranged to show deleted text using ~~text to be deleted~~, and added text with grey shading (text to be inserted)

*Amend* requirement for ATS routes as follows:

d) **Date when proposal received:**

xxxxxx

e) **Proposers reason for amendment:**

To provide a more efficient routing for flights between Brunei and Hong Kong. The route is more direct and is shorter by ..... Projected savings in fuel and carbon emissions per flight are .....kgs, and .....kgs respectively.

This route has been coordinated with Malaysia and Singapore, and both have agreed. Further, this was also consulted at the SEACGG/20 meeting. Adjacent FIRs/States, i.e., Hong Kong, Vietnam and Philippines have also agreed to the establishment of the route.

**Note:** Where the route affects adjacent FIRs, the proposer should provide information on the consultation, and agreement reached.

f) **Proposed implementation date of the amendment:**

Upon approval by the Council.

g) **Action by the Regional Office:**

The proposal is circulated to the following States.

(i) xxxx, (ii) xxxx, (iii) xxxx, (iv) xxxxxxxx,

*Note:* The list should include the States or organisations affected by the route change. The proposal for amendment may also be circulated to some interested states, for information.

h) **Secretariat's comments:**

1. The proposed route was consulted at the SEACGG/20 meeting held in the ICAO Regional Office in Bangkok. The new route passes through the Kota Kinabalu and Singapore FIRs before joining an existing route in Manila FIR and Hong Kong.
2. The proposed route will save flights from Brunei to Hong Kong **XX kgs** of fuel, and reduce carbon emissions **by XX** kgs per flight.

— END —