

ELEVENTH AIR NAVIGATION CONFERENCE

Montreal, 22 September to 3 October 2003

Agenda Item 4: Capacity-enhancement measures

4.2 Regional measures

:

ACHIEVEMENTS OF APANPIRG IN ENHANCING AIRSPACE CAPACITY IN THE ASIA/PACIFIC REGION

(Presented by Singapore)

SUMMARY

APANPIRG has been instrumental in driving airspace capacity enhancement initiatives in the Asia/Pacific Region. RVSM was introduced over the revised South China Sea route structure in November 2001 and would be extended to the Bay of Bengal in November 2003. The Revised Route Structure — Asia to Europe via the Middle East, South-of-the-Himalayas (EMARSSH) was implemented in November 2002 over the Bay of Bengal. These initiatives have brought about substantial benefits to both ATS providers and users in the region. Singapore as member and current Chairman of APANPIRG is pleased to share these achievements with the conference.

Action by the conference is in paragraph 3.

1. INTRODUCTION

1.1 The Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) has successfully implemented two significant capacity-enhancing initiatives in the Asia/Pacific Region recently. Reduced vertical separation minimum (RVSM) was introduced over the revised South China Sea route structure in November 2001 while the Revised Route Structure — Asia to Europe via the Middle East, South-of-the-Himalayas (EMARSSH) was implemented in November 2002 over the Bay of Bengal. These initiatives have brought about substantial benefits to both air traffic services (ATS) providers and users in the region. Singapore, as member and current Chairman of APANPIRG, would like to highlight the achievements of these regional capacity enhancement initiatives.

2. REDUCED VERTICAL SEPARATION MINIMUM (RVSM)

2.1 In 1998, APANPIRG established an ICAO RVSM Task Force to implement RVSM within the Asia/Pacific Region.

Western Pacific/South China Sea Implementation

2.2 The ICAO RVSM Task Force, led by the United States, commenced planning for RVSM implementation in the Western Pacific/South China Sea area in April 2000 at its 6th Meeting held in Singapore. Comprising specialists from States in the region and international organizations such as International Air Transport Association (IATA), International Federation of Air Line Pilots' Associations (IFALPA) and International Federation of Air Traffic Controllers' Associations (IFATCA), the Task Force developed the operational plan which spanned across twelve flight information regions (FIRs) and one area of responsibility (AOR).

2.3 The Task Force fine-tuned the operational plan over the next five meetings held in Hong Kong, Bangkok, Kuala Lumpur, Denpasar and Singapore. The key elements that were necessary to support RVSM operations were also put in place. These included flight-planning requirements, assignment of RVSM levels, air traffic control (ATC) coordination, in-flight contingencies and procedures for the suspension of RVSM operations. In addition, to ensure that height-keeping accuracy would meet the safety requirements of RVSM, a minimum performance specification for aircraft altimetry systems was adopted. All aircraft intending to operate in RVSM airspace had to be RVSM-approved. Aircraft that were not RVSM-approved could transit the airspace only under special circumstances and subject to the approval of ATS providers.

2.4 On 16 January 2002, the operational plan for RVSM implementation was finalized in Singapore. China, Malaysia, the Philippines, Singapore, Thailand, the United States of America and Viet Nam signed the Supplementary Letters of Agreement (SLOAs) to facilitate the introduction of RVSM. Cambodia signed the Letters of Agreement with the States concerned in February 2002. These SLOAs underlined the States' unanimous commitment to improve the management of air traffic in the region.

2.5 RVSM was introduced in the Western Pacific and South China Sea area in two phases. On 21 February 2002, Cambodia, China, Malaysia, the Philippines, Singapore, Thailand and Viet Nam successfully implemented RVSM in their respective FIRs. The States concerned agreed to apply RVSM from FL 310 to FL 410, to allow operators that had not obtained RVSM approval to continue to operate below FL 300 in the area. The transition was smooth. Some minor non-compliance of flight planning requirements and the occasional misunderstanding of level assignments on some routes were rectified by the end of the first week of RVSM operations, thanks to cooperation and quick action among States and airlines concerned.

2.6 In the second phase on 31 October 2002, RVSM was implemented in the Hong Kong, Lao PDR, Indonesia (Jakarta and Ujung Pandang) and Viet Nam (Ha Noi) FIRs and the rest of the oceanic airspace of the Sanya AOR. Also under the second phase of implementation, all States in the Western Pacific and South China Sea area extended the application of RVSM from FL 290 to FL 410. Indonesia introduced

RVSM in the Jakarta and Ujung Pandang FIRs from FL 350 to FL 390. Again, the transition was achieved smoothly with no major glitches encountered.

Bay of Bengal Implementation

2.7 Following the successful implementation of RVSM in the Western Pacific and South China Sea area, Singapore took over the chairmanship of the Task Force which commenced work on the extension of RVSM over the Bay of Bengal and Arabian Sea. This phase will be done in conjunction with the implementation of RVSM in the Middle East Region scheduled on 27 November 2003. The aim is to achieve seamless RVSM operations for traffic flows between Asia, the Middle East and Europe.

2.8 The progress made by States and airlines in the implementation process has been encouraging. The key elements for RVSM operations, which include the airworthiness and operational approval process, in-flight procedures, ATC procedures and associated contingency procedures, are being put in place. All preparations, including training of operational personnel, are expected to be completed soon to facilitate the introduction of RVSM in November 2003.

Benefits of RVSM

2.9 The introduction of RVSM in the Western Pacific and South China Sea area has made six additional flight levels available to suitably-equipped aircraft. The additional levels have allowed airlines to operate at or closer to their optimum vertical profiles. Coupled with a significant reduction in ground delays, this has translated to substantial fuel savings for airlines. Overall, the application of RVSM has increased airspace capacity, alleviated congestion on major ATS routes and improved the operational efficiency of air traffic services. The same benefits are expected when RVSM is implemented over the Bay of Bengal and Arabian Sea.

3. REVISED ROUTE STRUCTURE — ASIA TO EUROPE VIA THE MIDDLE EAST, SOUTH-OF-THE-HIMALAYAS (EMARSSH)

3.1 In 2000, APANPIRG established the EMARSSH Task Force to lead in the development of a revised route structure to cater for increases in international and domestic traffic operating between Asia and Europe.

3.2 To facilitate the work of the Task Force, APANPIRG appointed a Core Team led by ICAO. Members of the Core Team came from Australia, Hong Kong, India, Iran, Saudi Arabia, Singapore and IATA.

Principles used

3.3 The principles used in the development of the EMARSSH route structure were:

- a) existing aircraft capabilities and new CNS/ATM technology and procedures were used to develop an ATS route structure to reduce congestion and enhance safety;

- b) the EMARSSH trunk routes were developed primarily for international long-haul and medium-haul flights; and
- c) as much as possible the EMARSSH trunk routes were laterally separated, with minimal crossings that could result in choke points;

3.4 The EMARSSH route structure was designed to support required navigation performance (RNP) 10 operations as the majority of flights operating within the Asia/Pacific Region were able to meet the RNP 10 level of navigational accuracy or better. The immediate gain was that EMARSSH routes could be established 50 NM apart without affecting ATS operations on adjacent routes, thus increasing airspace capacity. This advantage was particularly significant over the Bay of Bengal where, prior to the implementation of EMARSSH, 100 NM lateral separation was the minimum required.

Implementation

3.5 EMARSSH was implemented in two phases. In the first phase, additional routes between Perth and Jakarta as well as between Auckland/Sydney/Melbourne and Surabaya were implemented in December 2001.

3.6 Over a series of eight meetings, the EMARSSH Task Force developed a set of parallel routes spaced at a minimum of 50 NM apart across the Bay of Bengal, India and Arabian Sea. In addition, the Task Force realigned some routes over the Saudi Peninsula and Egypt, and developed routes through the Tehran FIR to add to the capacity available in the Kabul FIR. All these routes were implemented in the second phase on 28 November 2002.

3.7 Implementation of the second phase was generally smooth, except for some teething problems. For example, some States needed more time to adapt to the new route structure and therefore imposed additional spacings on top of ICAO minimum separation standards. With the resolution of these problems, delays are now significantly less than pre-EMARSSH levels.

Benefits

3.8 The implementation of the EMARSSH route structure has resolved some of the previously identified choke points particularly those over the Bay of Bengal and created much needed capacity for flights between Asia and Middle East/Europe. Significantly, it has paved the way for the implementation of RVSM over the Bay of Bengal and Arabian Sea. Airlines too welcome the new route structure. However, it is recognized that delays to westbound flights can be further reduced if flights are spread out across the available routes over the Bay of Bengal, if one route is set aside for flights that agree to operate at a common Mach number (say M.84), and if airlines spread out their departure times. The Task Force, States concerned and airlines are working together to address these issues.

4. **ACTION BY THE CONFERENCE**

4.1 Through the close cooperation of ICAO, States concerned and international organizations such as IATA and IFALPA, APANPIRG has successfully implemented two significant capacity-enhancement initiatives within a relatively short time. The conference is invited to note these achievements of APANPIRG.

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