



ICAO

*International Civil Aviation Organization***Eighth Meeting of Aeronautical Communication Service
Implementation Co-ordination Group of APANPIRG
(ACSICG/8)***Video Tele-Conference, 21 – 23 June 2021***Agenda Item 7:** Next meeting date and any other business**CRV POST IMPLEMENTATION ISSUES IN BHUTAN**

(Presented by Secretariat)

SUMMARY

This paper summarizes the issues faced by Bhutan related to CRV post implementation due to non-utilizing the services due to non-readiness of peer's states and the action taken by CRV OG for its resolution.

1. INTRODUCTION

1.1 During the CRV OG/8 meeting, under the Agenda Item 5: *CRV operational performance report*, Bhutan put forward to the meeting with some problems being faced by them related to CRV post implementation.

1.2 Bhutan has entered into contract for CRV with PCCWG in *December 2020*. Bhutan is not able to utilize the CRV since the peer States with Bhutan (*India and Thailand*) are in process to join CRV while Bhutan has to pay recurring charges every month to PCCWG. Bhutan requested the ICAO APAC Regional Office and CRV OG:

- 1) To help in negotiating with PCCWG to waive or reduce recurring charge till the peer States (*India and Thailand*) are ready.
- 2) To explore the alternate solutions such as connection through Hong Kong, China or any other States hosting BBIS, which have joined CRV, in order to utilize CRV for AMHS traffic for the intended purpose.

1.3 Bhutan shared Basic Information on existing AMHS System in Bhutan which is provided in **Appendix A**. After the CRV/OG8 meeting, as the follow up action, the ICAO Secretariat established an ad-hoc group to discuss a way out for Bhutan to use its CRV service to some extent temporarily.

2. DISCUSSION

2.1. ICAO Secretariat initiated Ad-hoc group discussion on all possible temporary solutions. The first meeting of Ad-hoc group was done on *27th May 2021*. The meeting resulted into two alternate solutions.

2.2. First solution was to have a negotiation initiated by Bhutan with PCCWG by providing reference to WP/13 and IP/11 of CRV OG/8 presented by Fiji, which proposed a potential solution to

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downgrade the CRV Package. PCCWG has provided the support to Fiji by downgrading CRV Package B opted by Fiji to Package D during COVID-19 outbreak in the year 2020. It was proposed that Bhutan may request PCCWG to downgrade the *Package C* opted by Bhutan to *Package D*, which may reduce recurring cost for Bhutan significantly. It was decided that if this option will not work, the Ad-hoc group will work to explore the alternate solutions such as connection through Hong Kong, China or any other States hosting BBIS, which have joined CRV. In this case, Ad-hoc group proposed that Bhutan may formally request support from capable States directly, or through ICAO APAC RO by State Letter.

2.3. Bhutan also informed that Bhutan plans to keep the other leased lines circuits for a while. So until guarantee that the CRV is proofed to be very stable and reliable, Bhutan will keep the leased lines circuit as a backup. Therefore, Bhutan will continue to pay charges for leases lines as well as for CRV.

2.4. Bhutan informed to ICAO APAC office by email dated 7th June 2021 that PCCWG has not agreed to downgrade CRV Package C to Package D and requested ICAO APAC RO support to explore second solution proposed by Ad-hoc group.

2.5. ICAO Secretariat put forward the proposal to deal with the Bhutan issue by applying second solution suggested by Ad-hoc group in phased approach outlined as technical feasibility study, risk/impact analysis and coordination for implementation in appropriate course.

2.6. Fiji suggested that *Airways New Zealand* can act like a **BBIS** for Bhutan instead of *Thailand & India*. For the outgoing link from Bhutan, it will be simple that the Bhutan will send the messages to New Zealand, and can directly distribute to Australia then to Singapore to where they want to go. The other countries who ever send messages to Bhutan need to change their routing table, and send the message to New Zealand first, *so there are lots of changes need to be done*. In this stage, the ICAO may need to send the State Letter to the impacted countries and go through the routing table again which is never done before.

2.7. It was proposed by ICAO Secretariat and supported by FAA, USA that the New Zealand may acts as a gateway between Bhutan and the existing AMHS services. In such case, there may be only **Six Countries** who need to change the routing table: *Bhutan, India, Thailand, Singapore, Australia, and New Zealand*. Please refer Basic Information on existing AMHS System in Bhutan which is provided in **Appendix A**.

2.8. The *Airways New Zealand* volunteered to act as a **BBIS** and started the conversation internally regarding what Airways can assist. At this stage, the following technical requirements have been suggested:

- a. 2x tunnels from Bhutan to New Zealand. One to Auckland and one to Christchurch;
- b. An LA setup on our DEV platform to test;
- c. Because New Zealand does not have an AMHS route direct to Bhutan and would need to router via Australia and Singapore/Thailand/India. The reverse would also apply.
- d. Once the DEV connection works, implement a PROD LA for Bhutan.

2.9. As for the concerns about the cost implication and the manpower cost for a temporary solution in order to help use the implemented CRV in Bhutan ASAP, it was informed that there is no fee or recurring charge for the extra tunnels to Bhutan from PCCWG and the turnaround time is 3 days for the configuration.

2.10. In conclusion, it's technically feasible without significant cost, but need high commitment and teamwork to support. The concerned parties should conduct risk/impact analysis to identify risks due to configuration change, switch over, interruption to operations, etc. and analyze the impact on traffic load over the current routine structure. If there is no technical difficulties in connect Bhutan with New

Zealand through AMHS, the next step would focus on implementation for trial and temporary use. The expected routing configuration change for the affected parties should be coordinated during the AIRAC cycle.

2.11. The ICAO Secretariat reminded that such extent of discussion on the AFTN Routing Table change on temporary basis has never happened before. It indicates the commitment of CRV OG and ACSICG as well as the commitment of Member States to handle the complexity of the challenging Situations. Furthermore, as the proposed alternate option required modifications into the AFTN Routing Table, the ACSICG should be a better platform to address it. The current AFTN Routing table published by ICAO APAC Office is provided in **Appendix B.**, and a chart in **Appendix C.** The AFTN Routing Table can also be accessed by the link: https://applications.icao.int/aftn_routing/aftn_routing.html.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper; and
- b) discuss relevant matter as appropriate

Basic Information on existing AMHS System in Bhutan

1. AMHS System- Aerothai Smart AMHS
2. Number of messages exchanged on AMHS system in one day/month
 - Number of messages exchanged on AMHS system in one day- 709
 - Number of messages exchanged on AMHS system Per Month -21,271
3. AMHS connection requirements- TCP/IP and P1
4. AMHS system provider and support- Aeronautical Radio of Thailand Ltd. (AEROTHAI)
5. AMHS route
 - C=XX A=ICAO P=India (Main route)
 - C=XX A=ICAO P=Thailand (Alternate route)
6. Main city pairs for flights (Scheduled)
 - Kolkata (VECC)
 - Guwahati (VEGT)
 - Delhi (VIDP)
 - Bagdogra (VEBD)
 - Mumbai (VABB)
 - Bangkok (VTBS)
 - Singapore (WSSS)
 - Kathmandu (VNKT)
 - Dhaka (VGHS)
 - Gaya (VEGY)
7. Repatriation flights/Overfly

Chennai (VOMM), Dubai(OBDB), Bahrain(OBBI), Chandigarh(VICG), Amritsar(VIAR), Bangalore(VOBL), Kuwait(OKBK), Karachi(OPKC), Abu Dhabi (OMAA), Colombo(VCBI), Vietnam (VVTS), Malaysia (WMKK), Myanmar (VYYY)

AFTN CIRCUITS - ASIA/PAC ROUTING DIRECTORY

Terminal 1	Terminal II	ATSMHS or AFTN	Over CRV (Y/N)
Apia/Faleolo	Christchurch	AMHS/UA	
Bangkok	Beijing	AMHS	
	Mumbai	AMHS	
	Dhaka	AMHS	
	Ho-Chi-Minh	AFTN	
	Hong Kong	AMHS	
	Kuala Lumpur	AFTN	
	Phnom Penh	AMHS	
	Rome	AFTN	
	Yangon	AMHS	
	Singapore	AMHS	
	Vientiane	AMHS	
	Paro	AMHS	
Beijing	Bangkok	AMHS	
	Fukuoka	AFTN	
	Guangzhou	AFTN	
	Hong Kong	AMHS	
	Karachi	AFTN	
	Khavarosk	AFTN	
	Kathmandu	AFTN	
	Mumbai	AMHS	
	Pyongyang	AFTN	
	Seoul	AMHS	
	Ulaan Baatar	AFTN	
	Yangon	AFTN	
Brisbane	Christchurch	AMHS	
	Timor Leste		
	Jakarta	AFTN	
	Johannesburg	AFTN	
	Honiara		
	Nadi	AMHS	
	Nauru		
	Port Moresby		
	Port Vila		
	USA	AMHS	
Brunei	Kuala Lumpur		
	Singapore	AFTN	
Chennai	Mumbai	AFTN	
	Kolkata	AFTN	
	Kuala Lumpur	AFTN	
Christchurch	Apia/Faleolo	AMHS/UA	
	Niue	AMHS/UA	

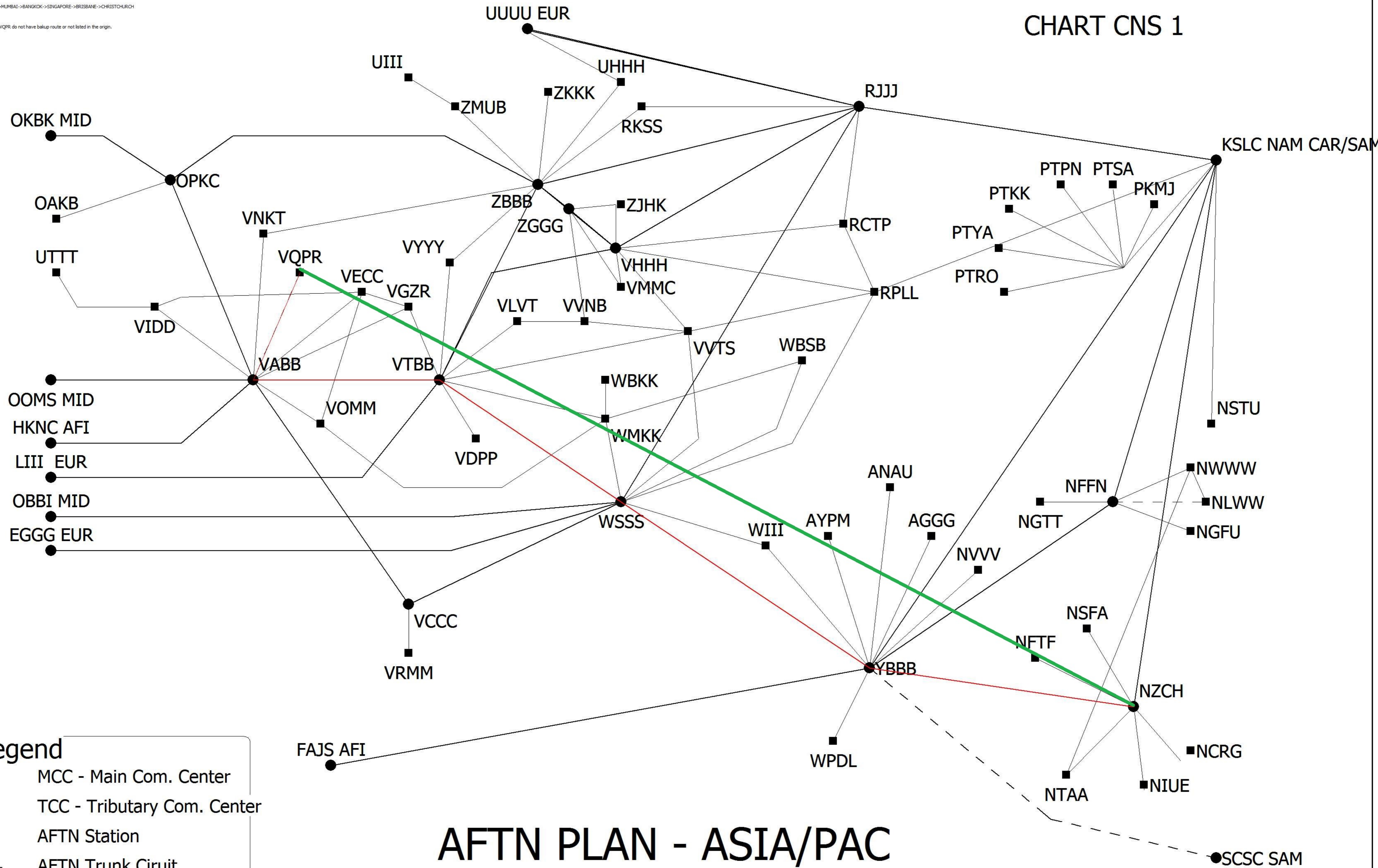
Terminal 1	Terminal II	ATSMHS or AFTN	Over CRV (Y/N)
	Rarotonga	AMHS/UA	
	Brisbane	AMHS	
	Papeete/Tahiti	AFTN	
	Tonga/Fua' Amotu	AMHS/UA	
	USA	AMHS	
Chuuk	USA	AMHS/UA	
Colombo	Mumbai	AMHS	
	Male	AFTN	
	Singapore	AFTN	
Delhi	Mumbai	AFTN	
	Kolkata	AFTN	
Dhaka	Bangkok	AMHS	
Fukuoka	Beijing	AFTN	
	Hong Kong	AFTN	
	Moscow	AFTN	
	Seoul	AFTN	
	Singapore	AFTN	
	Taipei	AFTN	
	USA	AMHS	
Guangzhou	Beijing	AFTN	
	Hong Kong	AFTN	
	Macau	AFTN	
	Haikou	AFTN	
	Hanoi	AFTN	
Hanoi	Ho-Chi-Minh	AFTN	
	Vientiane	AFTN	
	Guangzhou	AFTN	
Haikou	Guangzhou	AFTN	
	Hong Kong	AFTN	
Ho-Chi-Minh	Bangkok	AFTN	
	Hanoi	AFTN	
	Hong Kong	AFTN	
	Singapore	AFTN	
Hong Kong	Bangkok	AMHS	
	Beijing	AMHS	
	Guangzhou	AFTN	
	Ho-Chi-Minh	AFTN	
	Macau	AMHS	
	Manila	AFTN	
	Haikou	AFTN	
	Taipei	AFTN	
	Fukuoka	AFTN	

Terminal I	Terminal II	ATSMHS or AFTN	Over CRV (Y/N)
Honiara	Brisbane	AMHS/UA	
Jakarta	Brisbane Singapore	AFTN AMHS	
Karachi	Beijing Mumbai Kabul Kuwait Tehran*	AFTN AMHS AFTN AMHS	
* Not listed in the ANP AFTN Planning Table			
Kathmandu	Beijing Mumbai	AFTN AMHS	
Kolkata	Mumbai Delhi Chennai	AFTN AFTN AFTN	
Koro	USA	AMHS/UA	
Kosrae	USA	AMHS/UA	
Kuala Lumpur	Bangkok Brunei Singapore Chennai	AFTN AFTN AFTN	
Macau	Guangzhou Hong Kong	AFTN AMHS	
Majuro	USA	AMHS/UA	
Male	Colombo	AFTN	
Manila	Hong Kong Ho Chi Minh Singapore Taipei	AFTN AFTN AFTN AFTN	
Mumbai	Bangkok Dhaka Kolkata Colombo Delhi Karachi Kathmandu Chennai Muscat/Seeb Nairobi	AMHS AMHS AFTN AMHS AFTN AMHS AMHS AFTN AFTN (No connection) AFTN	

Terminal 1	Terminal II	ATSMHS or AFTN	Over CRV (Y/N)
	Paro	AMHS	
	Singapore	AMHS	
Nadi	Brisbane	AMHS	
	Funafuti		
	Noumea	AMHS	
	Tarawa	AMHS/UA	
	USA	AMHS	
	Wallis Is.		
Nauru	Brisbane	AMHS/UA	
Niue	Christchurch	AMHS/UA	
Noumea	Nadi	AMHS	
Pago Pago	USA	AMHS/UA	
Papeete/Tahiti	Christchurch	AFTN	
Paro	Mumbai	AMHS	
	Bangkok	AMHS	
Phnom Penh	Bangkok	AMHS	
	Ho Chi Minh	AMHS	
Pohnpei	USA	AMHS/UA	
Port Moresby	Brisbane	AFTN	
Port Vila	Brisbane	AMHS/UA	
Pyongyang	Beijing	AFTN	
Rarotonga	Christchurch	AFTN	
Seoul	Beijing	AMHS	
	Fukuoka	AFTN	
Singapore	Bangkok	AMHS	
	Bahrain	AFTN	
	Brisbane	AMHS	
	Brunei	AFTN	
	Colombo	AFTN	
	Ho-Chi-Minh	AFTN	
	Jakarta	AMHS	
	Kuala Lumpur	AFTN	
	London	AMHS	
	Manila	AFTN	
	Mumbai	AMHS	
	Fukuoka	AFTN	

Terminal I	Terminal II	ATSMHS or AFTN	Over CRV (Y/N)
Taipei	Hong Kong	AFTN	
	Manila	AFTN	
	Fukuoka	AFTN	
Tarawa	Nadi	AMHS/UA	
Timor Leste	Brisbane	AMHS	
Tonga/Fua'Amotu	Christchurch	AMHS/UA	
Ulaan Baatar	Beijing	AFTN	
Vientiane	Bangkok	AMHS	
	Hanoi	AFTN	
Wallist Is.	Nadi	(planning)	
Yangon	Bangkok	AMHS	
	Beijing	AFTN	
Yap	USA	AMHS/UA	

CHART CNS 1



Legend

- MCC - Main Com. Center
- TCC - Tributary Com. Center
- AFTN Station
- AFTN Trunk Circuit
- AFTN Circuit
- - - Non_implemented Circuit

AFTN PLAN - ASIA/PAC

VQPR-NZCH