



 Civil Aviation Department
Hong Kong, China

SIP AIDC – IP/11
12/10/10

Implementation of AIDC operations in Hong Kong, China

AIDC Seminar

Bangkok
12-13 October 2010

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Background

- Hong Kong has four adjacent FIRs, with high air traffic movements growth rate
- Looking for solutions to reduce ATC controllers workload and disruption by verbal communications, by using AIDC
- Interoperability tests and successive fine tuning the operational procedures have been conducted
- AIDC service between Hong Kong and Sanya was successfully launched on 8 February 2007, with no coordination error recorded
- Strategic AIDC trial to gain hand-on experience on controller's adaptation to new HMI environments including Electronics Flight Progress Strips



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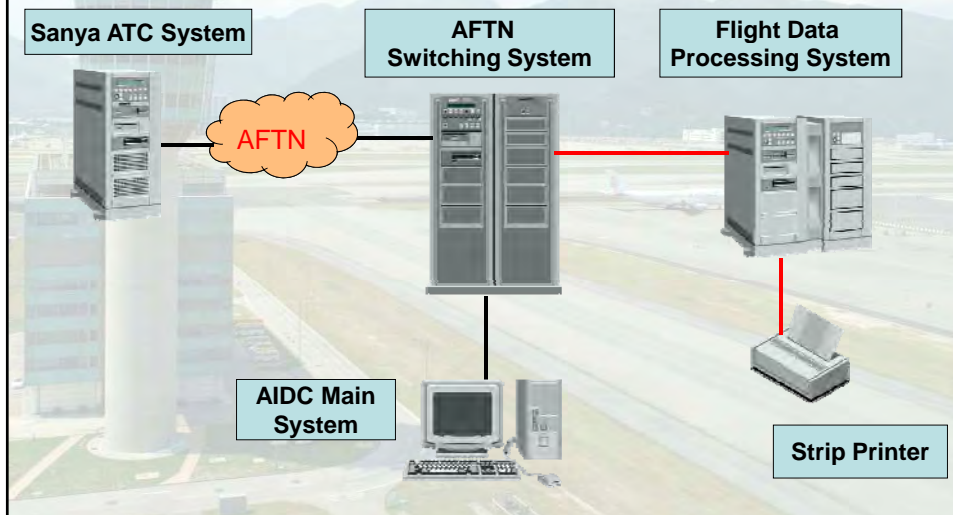
History

- Hong Kong commenced AIDC study in 2000
- First AIDC implementation based on a single server standalone system in 2001
- Technical trial with Guangzhou FIR in 2002
- Technical trial with Sanya FIR in 2005 (ICD version 2.0)
- Operational trials with Sanya FIR from 2006
- Operation use with Sanya FIR from 8 February 2007



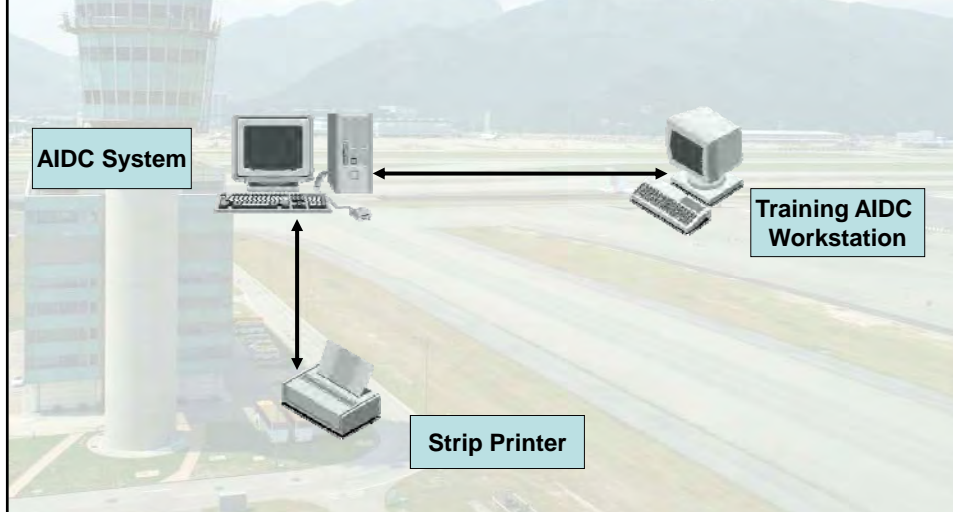
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System Configuration



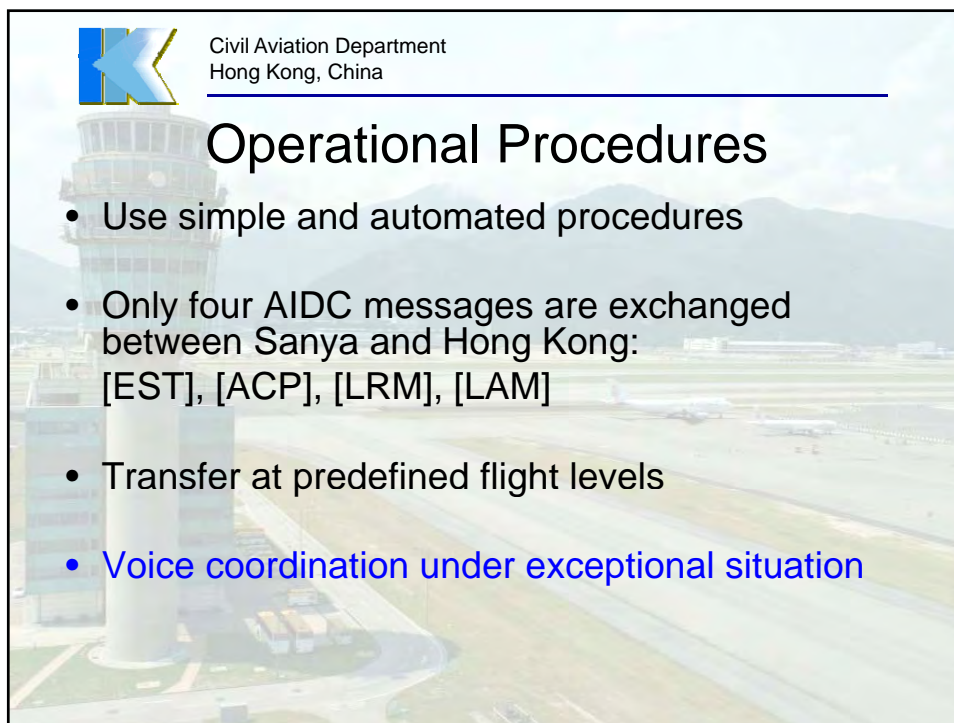
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AIDC Training System





- **Main, Development and Training systems**
- **ICAO Messages**
 - According to ICAO-4444
- **AIDC messages**
 - AIDC (ATC Inter-facility Data Communications) messages according to **ICAO Asia Pacific Regional ICD 2.0**



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Operational Procedures

- Use simple and automated procedures
- Only four AIDC messages are exchanged between Sanya and Hong Kong:
[EST], [ACP], [LRM], [LAM]
- Transfer at predefined flight levels
- **Voice coordination under exceptional situation**

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AIDC North+South+West+West(SYA)+Marine

FLIGHT	MODE	CLASS	TYPE	STATUS	OPERATOR	DEP	ARR	OTHER
SIERB	F350	A530	M		HDA821	ZBAA	VHHH	
								RMDS: A1595 3:47N
EPKAL	F350	B773	H		CPA721	VHHH	VTRK	
0812								NM483 A5328 SANDV VS EPDS L642
EPKAL	F350	B744	H		MAS73	VHHH	WMKK	
0805								NM488 A5364 SANDV VS EPDS L642
SIKOU	F258	A330	M		HDA660	VHHH	ZBZY	
0753								NM489 A5391 ATTOL VS SIKOU QZ21
IKELA	F350	B773	H		JAZ727	RUBB	VTBD	
								NM490 A3284 GRS KAPU DCT IDGSI P901
IKELA	F350	B772	H		SIA973	RUBB	VTBD	
								NM491 A3282 GRS KAPU DCT IDGSI P901
TAMOT	F354	A330	M		PAL369	ZBAA	RPLL	
								NM492 A4131 8:30 CH DCT GRUPA DCT NOMAN

WSPRNG
0804: No problem reply from ZBAA ATC - EST 0804A
0805: NO operation reply from ZBAA ATC - EST 0805A
0808: NO operation reply from ZBAA ATC - EST 0808A

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EPKAL - MAS73 - EST

Msg Type: EST

ACID: MAS73 SSR: A 5314

TNR Point: EPKAL TNR Level: F350

TNR Time: 0659

Offset / Weather Dev: MACH

DEP: VHHH ARR: WMKK

OK Cancel

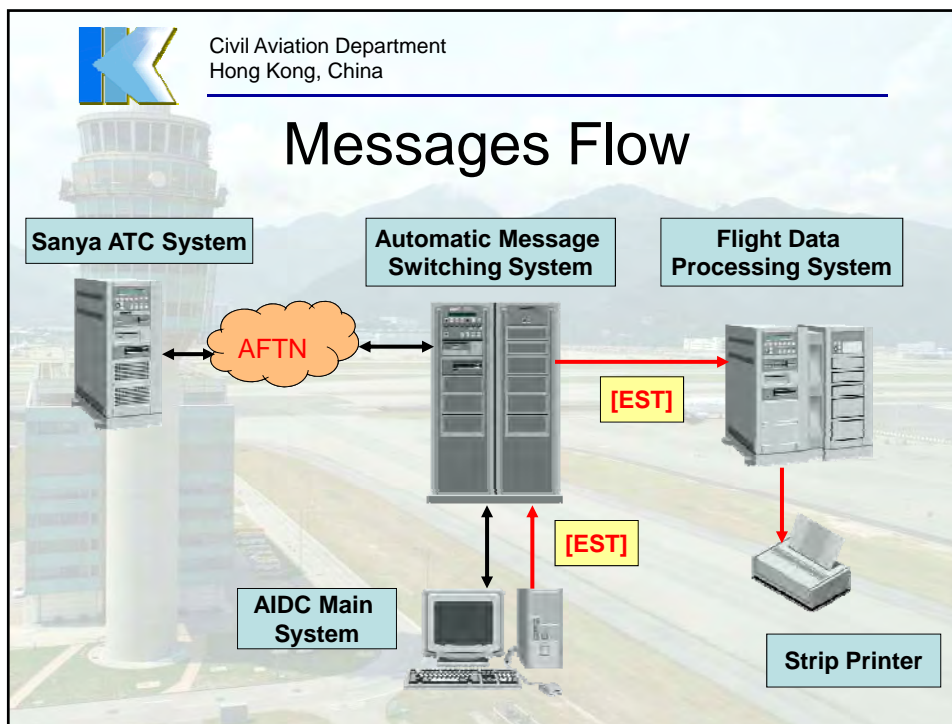
SIERA - HDA901 - ACP

Msg Type: ACP

ACID: HDA901 SSR: A 3007

DEP: ZBAA ARR: VHHH

OK Cancel



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Experience Sharing

- **Common Boundary Agreement** with simple operational procedures is required to improve productivity
- **Fallback to Voice coordination** for all exceptional situations
- Using the AIDC, the controller can respond to inbound transfer coordination at appropriate and convenient times
- The controller would no longer be disrupted by telephone calls for normal inbound transfer coordination
- Transfer coordination information can be referenced at any time on AIDC system that improves operational efficiency



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Experience Sharing

- Reduced gross navigation errors and large height deviations under controller-to-controller voice coordination
- No transfer coordination error recorded since 2007
- Hong Kong AIDC implementation provides gradual evolution from paper-based to electronic flight strip operation
- Use of a standard error-checking algorithm such as CRC-CCITT (XMODEM) will help eliminating interoperability issues
- System commissioning should include alternate AFTN circuits, to avoid possible message truncation by the relaying AFTN message switching systems

Asia/Pacific Regional ICD for AIDC

13

2.1.5 **Time Stamp.** The time stamp is expressed as 12 digits in year, month, day, hours, minutes, and seconds (YYMMDDHHMMSS). The high precision (seconds) of the time stamp will support computation of transmission delays. This data item is conveyed as option 4 of the ODF.

2.1.6 **Cyclic Redundancy Check (CRC).** The CRC is a four digit hexadecimal number that is used to ensure end-to-end message integrity. The CRC employed is the CRC-CCITT. The CRC is computed over the message text, from the beginning left parenthesis to the closing right parenthesis, inclusive. Non printable characters such as line feeds and carriage returns shall be excluded from the CRC calculation. This data item is conveyed as option 5 of the ODF.

2.2 Timers

2.2.1 In order to guarantee the uniqueness of the message/data identification number, and yet allow for the efficient reuse of the numbers in the pool, two timers are required for each message/data unit requiring confirmation: accountability and reuse.

