International Civil Aviation Organization

FOURTEENTH MEETING OF THE COMMUNICATIONS/NAVIGATION/SURVEILLANCE AND METEOROLOGY SUB-GROUP OF APANPIRG (CNS/MET SG/14)

Jakarta, Indonesia, 19 – 22 July 2010

Agenda Item 5: Navigation

NINTH EDITION OF CATALOGUE OF FLIGHT INSPECTION UNITS – ASIA AND PACIFIC REGIONS

(Presented by the Secretariat)

SUMMARY

This paper presents the information of Ninth Edition of Flight Calibration Catalogue for Asia and Pacific Regions. As per Annex 10 Volume 1 Standards, States are required to carry out the flight calibration of their Navigation Aids at the specified intervals. States have been urged to have the Flight Calibration Units of their own and in case they do not have it, then the States can either have it jointly with other State(s) or utilize the services of other State(s) or Agencies for carrying out the flight calibration of their navigation facilities. ICAO Asia/Pacific Office issued the Ninth Edition of Catalogue of Flight Calibration Units in the Asia and Pacific Regions to facilitate those States, which do not have the Flight Calibration Units of their own and are desirous of utilizing the services of some other State in meeting ICAO requirement of periodical calibration of their Navigation Facilities.

The meeting is invited to note the information contained in the Catalogue.

This paper relates to:

Strategic Objectives:
A. Safety – Enhance global civil aviation safety
D. Efficiency – Enhance the efficiency of aviation operations

Global Plan Initiatives:
GPI – 5 RNAV and RNP (Performance Based Navigation)
GPI – 9 Situational Awareness
GPI – 21 Navigation

1. Introduction

1.1 Standard 2.7.1 Annex 10 Volume 1 requires that the Radio Navigation Aids of the types covered by the specifications given in Chapter 3 of the Annex (which include ILS, VOR, DME etc.) and available for use by aircraft engaged in international air navigation shall be the subject of periodic ground and flight tests. Guidance on ground and flight testing of ICAO Standard facilities

included in Chapter 3, Annex 10 Volume 1 is given in Attachment C to Annex 10 Volume I and in the Manual of Testing of Radio Navigation Aids (Doc 8071).

1.2 Appendix Q of Resolution A36-13 adopted by 36th session of ICAO Assembly (September 2007) states that 'pending the possible availability of greatly improved ground testing facilities, radio navigation aids shall be checked through regular flight testing. States are also urged to establish their own flight test units, establish joint units with other States or conclude agreements to have flight test performed on their behalf with States or agencies that have suitable facilities.

1.3 A Seminar on the Testing of Navigation and Surveillance Facilities and Validation of Flight Procedures held in August 2009 reviewed the Eighth Edition of Flight Calibration Catalogue for Asia and Pacific Regions which was published by the ICAO Asia/Pacific Regional Office in July 2007. The administration which participated in the Seminar provided updates to the Catalogue.

1.4 The Twentieth meeting of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/20) held in September 2009 through its conclusion 20/49 (b) also urged States to update the information in the Flight Inspection Catalogue and encouraged ICAO to publish the new edition of the Catalogue by end of October 2009. The Updated *Catalogue of Flight Inspection Units Asia and Pacific Regions* was published in October 2009 as the Ninth Edition which is available on the following ICAO website:
http://www.bangkok.icao.int/edocs/cns/cfiu_ver9.pdf

1.5 A copy of the Catalogue is also provided in the **Attachment** XX to this Paper. The meeting is invited to note that the Catalogue is a live document and is updated periodically based on the information received from States from time to time. The 10th Edition of the Catalogue is likely to be published in 2011.

2. Discussion

2.1 It is essential that the radio navigation aids are flight checked at prescribed intervals to meet the requirements of ICAO SARPs and to ensure continued performance of the navigation facilities within the prescribed limits.

2.2 The Ninth Edition of Flight Calibration Catalogue for Asia and Pacific Regions was published by the ICAO Asia/Pacific Regional Office through its letter T 8/5.3:AP0133/09 (CNS) dated 28 September 2009 and the States were informed.

2.3 The Catalogue contains information on the Flight Inspection Units currently operating in the Asia and Pacific Region. The purpose of this Catalogue is to disseminate information to the States in the ASIA/PAC region, which do not have Flight Inspection Units of their own and are interested in making use of available facilities in the region in order to comply with the provisions of Annex 10 related to conducting periodic flight calibration of radio navigation aids.

2.4 In addition, it can sometime happen that a particular State has a flight calibration unit of its own but does not have the facility to calibrate a particular facility because of inadequacy of the calibration facilities it has. This Catalogue provides information about the flight calibration facilities available with other States in the region and thus can help the Sate in coordinating the calibration facility from some other States.

2.5 The Catalogue also provides the rates charged by different States for undertaking calibration jobs. The States, which want to hire the flight calibration facilities from other States can work out the most economic option and can also estimate the expenditure in advance.

2.6 States were invited to inform ICAO Regional Office about errors or omissions in the Catalogue, which may have been overlooked. The States operating Flight Inspection Units were requested to forward such details, if any, along with the updated information on contact point, telephone number, facsimile number and e-mail address to the ICAO Regional Office so that the Catalogue could be updated from time to time.

3. Action required by the Meeting

3.1 The meeting **is** invited to note the information provided in the catalogue about the flight calibration facilities available in the Region.

3.2 States/Administrations are advised to consider using the services of the States having Flight Calibration Facilities and having spare capacity, for the calibration of their navigation aids, in case they do not have Flight Calibration Facilities of their own.

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INTERNATIONAL CIVIL AVIATION ORGANIZATION
ASIA AND PACIFIC OFFICE

CATALOGUE OF FLIGHT INSPECTION UNITS ASIA AND PACIFIC REGIONS

Ninth Edition – October 2009

FOREWORD

The Catalogue of Flight Inspection Units contains information on Units that are currently operating in the ASIA/PAC region. The purpose of this catalogue is to disseminate information to States which do not have their own Flight Inspection Units and are interested in making use of units that have capacity available to conduct flight tests of their radio navigation aids.

TABLE OF CONTENTS

PAGE

1. Country and address: **AUSTRALIA**

Flight Inspection Services Control Manager Communications & Navigation
GPO Box 367
Canberra ACT 2601
Australia
Tel: +66 (2) 6268 4464
Fax: +66 (2) 6268 4099
E-mail: graham.jackson@airservices.gov.au

Or

General Manager
AeroPearl Pty Ltd
P.O. Box 884
Hamilton Central Post Office
Queensland 4007
Australia
Tel: +61 (7) 3860 0606
Fax: +61 (7) 3216 3164
E-mail: email@aeropearl.com

2. Type(s) and number of flight testing aircraft available, associated charges and conditions:

Type of Aircraft & Aircraft Available		**Flight Time Charges per hour**		**Other co-ordinations**
		Positioning flights	**Check Flights (US$/hr.)**	
Beech 350	1	Airservices Australia is prepared to negotiate charge rates having regard for the particular logistical circumstances and the terms of any request.		
King Air 200	1			

3. Flight testing capability and estimated flight time:

Radio Navigation Aids	**Flight Check Capability**	**Estimated flight check time**		**Type of flight check system**
		Routine	**Commissioning**	
VOR	x	45 min.	6 hr.	Fully automatic
DME	x	In conjunction with azimuth aid		”
ILS CAT I	x	1.5 hr.	12 hr.	”
ILS CAT II	x	1.5 hr.	12 hr.	”
ILS CAT III	x	1.5 hr.	12 hr.	”
PAR	x	as req.	1.00 hr.	”
SAR	x	”	5.30 hr.	”
SRE	x	”	7.20	”
NDB/LOC	x	”	1.0 hr.	”
Marker Beacon	x	Minimal		”
VASIS	x	.20 hr.	1.30 hr.	”
GBAS	x	0.5 hr.	4.0 hr.	”
RNAV/Procedure	x	as req.	as req.	”

4. Language used by flight testing team: English

5. Estimated annual flight time available to assist other Administrations for testing radio navigation aids**:** Currently 100 hours but could be increased subject to firm commitments from prospective customers.

6. Advance notice: 3 months

7. Other information:

   7.1 Flight test results are recorded in chart form with some data stored on dis. Reports available immediately.

   7.2 Flight test equipment contains independent spectrum analyzer for in-field checks of testing system, if required.

1. Country and address: **PEOPLE'S REPUBLIC OF CHINA**

Flight Inspection Center of CAAC
No. 23, Tianzhu Road, Area A
Tianzhu Airport Industry Zone
Shunyi District
People's Republic of China

Contact: Ms. Zhao Hong
Tel: +86 (10) 6454 3497
Fax: +86 (10) 6454 3453
E-mail: zhaoh@chinacfi.net
lisa-fic@sohu.com
Website: www.chinacfi.net

2. Type(s) and number of flight testing aircraft available, associated charges and conditions:

Type of Aircraft & Aircraft Available		Flight Time Charges per hour		Other co-ordinations
		Positioning flights	Check Flights (US$/hr.)	
King Air B300	3	Negotiable	Negotiable	Negotiable
Citation VI	1			
Citation X	1			
Citation XLS	5			
Citation S	3			
Gulf-Stream VI	1			

3. Flight testing capability and estimated flight time:

Radio Navigation Aids	Flight Check Capability	Estimated flight check time		Type of flight check system
		Routine	Commissioning	
VOR	x	3-4 hr.	4-5 hr.	Automatic
DME	x	Note 1	Note 1	”
MLS				”
ILS CAT I	x	4-5 hr.	5-6 hr.	”
ILS CAT II	x	4-5 hr.	5-6 hr.	”
ILS CAT III	x	4-5 hr.	5-6 hr.	”
PAR	x			”
SSR	x	Note 2	Note 2	”
SRE	x	”	”	”
NDB/LOC	x	1-2 hr.	2-3 hr.	”
Marker Beacon	x	Note 3	Note 3	”
PAPI	x	0.5-1 hr.	1-2 hr.	”
VASIS	x	0.5-1 hr.	1-2 hr.	”
Radio Frequency Interference RFI	x			”

Note 1: The estimated flight check time of the DME is included in the time of the VOR or other Facility which DME support.
Note 2: The estimated flight check time of the SSR or SRE is depended on the requirement of user.
Note 3: The estimated flight check time of the Marker Beacon is included in the time of the ILS.

4. Language used by flight testing team: Chinese and English

5. Estimated annual flight time available to assist other Administrations for testing radio navigation aids**:** 600 hr.

6. Advance notice: Base on the agreement

7. Other information: Procedure flight check is provided.

8. Citation X and Gulf-Stream VI can only be used for Radar or flight procedure inspection.

1. Country and address: **INDIA**

Airports Authority of India
Executive Director (FIU & RCDU)
Flight Inspection Unit
Safdajung Airport
New Delhi 110003
India
Tel: +91 (11) 2461 1077
Fax: +91 (11) 2461 9701
E-mail: ed_rcdu_fiu@aai.aero

2. Type(s) and number of flight testing aircraft available, associated charges and conditions:

Type of Aircraft & Aircraft Available		**Flight Time Charges per hour**		**Other co-ordinations**
		Positioning flights	**Check Flights (US$/hr.)**	
King Air B-350	1	On Demand	On Demand	
DO-228	2	On Demand	On Demand	

3. Flight testing capability and estimated flight time:

Radio Navigation Aids	**Flight Check Capability**	**Estimated flight check time ***		**Type of flight check system**
		Routine	**Commissioning**	
VOR	x	2.00 hr.	8.00 hr.	Fully automatic
DME	x	Along with VOR/ILS	Along with VOR/ILS	”
ILS CAT I	x	2.00 hr.	8 hr.	”
ILS CAT II	x	2.30 hr.	8 hr.	”
ILS CAT III	x	3.00 hr.	10 hr.	”
PAR				”
SSR	x	4.00 hr.	8.00 hr.	”
SRE	x	3.00 hr.	8.00 hr.	”
NDB/LOC	x	Along with VOR	Along with VOR	”
PAPI	x	30 min.	1.00 hr.	”
VASIS	x	0.45 (2 Bars) 1.30 (3 Bars)	1 (2 Bars) 2 (3 Bars)	”

* Timings shown above are approximate. The time period may vary depending upon the health of the equipment under inspection and the efficiency of the ground maintenance engineers of Nav Aids.

4. Language used by flight testing team: English

5. Estimated annual flight time available to assist other Administrations for testing radio navigation aids: Always available

6. Advance notice: 15 days

7. Other information:

7.1 All three aircrafts are fitted with recently acquired state-of-the-art Fully Automatic Flight Inspection System (AD AFIS-200) supplied by M/s AERODATA, Germany.

7.2 The Reference Position fixing system is PDGPS and independent fully automatic Laser Tracker based.

7.3 Flight Inspection Unit, India is an ISO 9001:2000 certified.

7.4 We have in the past rendered flight check assistance to Sri Lanka, Myanmar, Cambodia and Nepal.

7.5 The prices can be obtained by contacting Executive Director.

7.6 Under UNDP Project RAS/86/153, flight inspection services of Navaids have been rendered to Bangladesh, Lao PDR, Republic of Maldives, Nepal and Socialist Republic of Viet Nam since 1988.

1. Country and address: **INDONESIA**

Directorate General of Civil Aviation
Ministry of Transportation
5th Floor, Karya Building
Jl. Medan Merdeka Barat No. 8
Jakarta 10110
Indonesia
Tel: +62 (21) 3507672, 3505137, 3505133
Fax: +62 (21) 350 6662

2. Type(s) and number of flight testing aircraft available, and associated charges and conditions:

Type of Aircraft & Aircraft Available		**Flight Time Charges per hour**		**Other co-ordinations**
		Positioning flights	**Check Flights (US$/hr.)**	
Turboprop King Air A100	2			
Turboprop King Air B200C	1			
Learjet LR 31A	2			
Turboprop TBM 700	2			

3. Flight testing capability and estimated flight time:

Radio Navigation Aids	**Flight Check Capability**	**Estimated flight check time**		**Type of flight check system**
		Routine	**Commissioning**	
VOR	x	8-15 hr.	8-15 hr.	
DME	x	8-15 hr.	8-15 hr.	
MLS				
ILS CAT I	x	10-25 hr.	10-25 hr.	
ILS CAT II	x	10-25 hr.	10-25 hr.	
PAR	x			
SSR/PSR	x	10-25 hr.	10-25 hr.	
SRE	x	10-25 hr.	10-25 hr.	
NDB/LOC	x	2-3 hr.	2-3 hr.	
Marker Beacon	x	2-3 hr.	2-3 hr.	
PAPI	x	2-3 hr.	2-3 hr.	
VASIS	x	2-3 hr.	2-3 hr.	

4. Language used by flight testing team: Indonesian (flight check)
English (flight inspection report)

5. Estimated annual flight time available to assist other Administrations for testing radio navigation aids: None

6. Advance notice: N/A

7. Other information: N/A Estimated flight check time only for good condition of facility.

1. Country and address: **JAPAN**

Ministry of Land, Infrastructure and Transport Japan
Civil Aviation Bureau
Air Traffic Service Department
2-1-3 Kasumigaseki
Chiyoda-ku, Japan
Japan 100-8918
Tel: +81 (3) 5253 8753
Fax: +81 (3) 5253 1664

2. Type(s) and number of flight testing aircraft available, associated charges and conditions:

Type of Aircraft & Aircraft Available		**Flight Time Charges per hour**		**Other co-ordinations**
		Positioning flights	**Check Flights (US$/hr.)**	
SAAB200	2	JY 419,300 (US$ 4,193)	JY 419,300 US$ 4,193)	
DHC-8-315	1	JY 631,600 (US$ 6,316)	JY 631, 600 (US$ 6,316)	
G-IV	2	JY 521,500 (US$ 5,215)	JY 521,500 (US$ 5215)	
BD-700	2	JY 857,600 (US$ 8,576)	JY 857,600 (US$ 8,576)	

Currently the flight time charge to assist other Administration is not established.

3. Flight testing capability and estimated flight time:

Radio Navigation Aids	**Flight Check Capability**	**Estimated flight check time**		**Type of flight check system**
		Routine	**Commissioning**	
VOR/TACAN	x	2.5 hr.	13.5-22.5 hr.	Automatic
DME	x	Combined with VOR		
ILS CAT I	x	3.0 hr.	30-40 hr.	Automatic
ILS CAT II, III	x	3.0 hr.	45-55 hr.	”
PAR	x	1.5 hr.	2.0 hr.	”
SRE (ASR)	x	3.5 hr.	20-30 hr.	”
NDB/LLC	x	2.0 hr.	10-20 hr.	”
Marker Beacon	x	#	#	”
PAPI	x	1.5 hr.	2.0 hr.	Manual

 # The estimated flight check time of the Marker Beacon is included in the time of ILS.

4. Language used by flight testing team: Japanese

5. Estimated annual flight time available to assist other Administrations for testing radio navigation aids**:** negotiable

6. Advance notice: 4 months

7. Other information: Contact person is Chief Flight Inspector, Yuji Osato
oosato-y2gd@mlit.go.jp

1. Country and address: **MALAYSIA**

Captain Abdul Rahman bin Ali
Director, Flight Calibration Unit
Department of Civil Aviation Malaysia
Level B1, 2 & 3, Block D5, Parcel D
Federal Government Administrative Centre
62618 Putrajaya, Malaysia
Tel: +603 8871 4000
Fax: +603 8871 4331
E-mail: bhgkp@streamyx.com

2. Type(s) and number of flight testing aircraft available, associated charges and conditions:

Type of Aircraft & Aircraft Available		Flight Time Charges per hour		Other co-ordinations
		Positioning flights	Check Flights (US$/hr.)	
Learjet 60	2	3,500	3,500	Request "aircraft landing and parking charges" to be exempted by local Airport Authority.

3. Flight testing capability and estimated flight time:

Radio Navigation Aids	Flight Check Capability	Estimated flight check time		Type of flight check system
		Routine	Commissioning	
VOR	x	1 hr.	5 hr.	
DME	x	0.5 hr.	1 hr.	
MLS				
ILS CAT I	x	1 hr.	7 hr.	
ILS CAT II	x	1 hr.	7 hr.	
ILS CAT III	x	1 hr.	7 hr.	
PAR	x	0.5 hr.	1 hr.	
SSR	x	1 hr.	4 hr.	
SRE	x	1 hr.	4 hr.	
NDB/LOC	x	0.5 hr.	1 hr.	
Marker Beacon	x	0.1 hr.	0.2 hr.	
PAPI	x	0.5 hr.	2 hr.	
VASIS				

4. Language used by flight testing team: English

5. Estimated annual flight time available to assist other administrations for testing radio navigation aids: 200 hours.

6. Advance notice: One month

7. Other information: Flight calibration agreement with DCA Brunei since 1986.

1. Country and address: **MONGOLIA**

Flight Inspection Unit
CAA of Mongolia
CAA Buyant-Ukhaa Airport
Ulaanbaatar – 34
Mongolia
Tel: +976 (11) 282 043
Fax: +976 (11) 379 981
E-mail: ganbaatar.g@mcaa.gov.mn g_enebish@mcaa.gov.mn

2. Type(s) and number of flight testing aircraft available, associated charges and conditions:

Type of Aircraft & Aircraft Available	Flight Time Charges per hour		Other co-ordinations
	Positioning flights	Check Flights (US$/hr.)	
	Rates dependent on location, cost effective deployment		Flight check kits are totally portable, and can be accommodated in a local aircraft for special work if required.

3. Flight testing capability and estimated flight time:

Radio Navigation Aids	Flight Check Capability	Estimated flight check time		Type of flight check system
		Routine	Commissioning	
VOR	x	4 hr.	8 hr.	Automatic/ Semi-Automatic
DME	x	Combined with VOR or ILS		”
ILS CAT I	x	6 hr.	12 hr.	”
ILS CAT II	X	6 hr.	12 hr.	”
NDB/LOC	x	0.75/per RW Y approach		”
Marker Beacon	x	Minimal with ILS	Minimal with ILS	”
PAPI	x	2 hr.	3 hr.	”
GPS/NPA	x	0.5 Runway		”

4. Language used by flight testing team: English

5. Advanced notice: Base on the agreement

6. Other information:

6.1 Deployable flight inspection system able to be installed in most light aircraft with only minor modifications.

6.2 Flight check can be exempted by certified staff for the lowest price.

6.3 Estimated flight time indicated approximately.

1. Country and address: **MYANMAR**

Lt. Col. Khin Maung Myint
Director (Flight Check Division)
Department of Civil Aviation
Yangon International Airport
P.C. 11201, Mingaladon, Yangon
Myanmar
Tel: +95 (1) 667 800, 665 637
Fax: +95 (1) 665 124
E-mail: dca.myanmar@mptmail.net.mm

2. Type(s) and number of flight testing aircraft available, associated charges and conditions:

Type of Aircraft & Aircraft Available		Flight Time Charges per hour		Other co-ordinations
		Positioning flights	Check Flights (US$/hr.)	
PII 227	1	N/A	N/A	

3. Flight testing capability and estimated flight time:

Radio Navigation Aids	Flight Check Capability	Estimated flight check time		Type of flight check system
		Routine	Commissioning	
VOR	x	7 hr.	15 hr.	PFIS
DME	x	2 hr.	5 hr.	”
MLS				”
ILS CAT I	x	12 hr.	30 hr.	”
ILS CAT II	x	15 hr.	30 hr.	”
ILS CAT III	-	-	-	”
PAR	x	5 hr.	15 hr.	”
SSR	x	5 hr.	15 hr.	”
NDB/LOC	x	3 hr.	5 hr.	”
Marker Beacon	x	1 hr.	2 hr.	”
PAPI	x	2 hr.	5 hr.	”
VASIS		2 hr.	5 hr.	”

4. Language used by flight testing team: Burmese and English

5. Estimated annual flight time available to assist other administrations for testing radio navigation aids: None

6. Advance notice: N/A

7. Other information: N/A

1. Country and address**:** **NEW ZEALAND**

Manager Flight Inspection
Airways Corporation of New Zealand Ltd.
c/o Control Tower
Hawkes Bay Airport
Napier
New Zealand
Tel: +64 (6) 834 0785
Fax: +64 (6) 835 7583
E-mail: mel.king@airways.co.nz

2. Type(s) and number of flight testing aircraft available, associated charges and conditions:

Type of Aircraft & Aircraft Available	**Flight Time Charges per hour**		**Other co-ordinations**
	Positioning flights	**Check Flights (US$/hr.)**	
F 406 RC690B J31	Airways Corporation will provide a quote in response to any request.		Note: The Airways flight inspection kit has a multi-unit configuration enabling its accommodation and operation in a variety of fixed wing and rotary wing aircraft cabin sizes.

3. Flight testing capability and estimated flight time:

Radio Navigation Aids	**Flight Check Capability**	**Estimated flight check time**		**Type of flight check system**
		Routine	**Commissioning**	
VOR	x	1.5 hr. [CVOR] 1.2 hr. [DVOR]	Dependent upon number of routes	GPS or RTK DGPS referenced
DME	x	In conjunction with associated aid	Dependent upon number of routes	GPS or RTK DGPS referenced
ILS Cat I	x	3 hr.	11 hr.	RTK DGPS referenced
ILS Cat II and III	x	3 hr.	11 hr.	RTK DGPS referenced
PAR	x	0.5 hr. per Runway	Dependent upon number of adjustments needed	RTK DGPS referenced

Radio Navigation Aids	Flight Check Capability	Estimated flight check time		Type of flight check system
		Routine	Commissioning	
SSR	x	Dependent upon nature and extent of checks required.	Dependent upon nature and extent of checks required.	Aircraft transponder GPS position logged
PSR	x	Dependent upon nature and extent of checks required.	Dependent upon nature and extent of checks required.	Aircraft as target GPS position logged
NDB	x	0.75 hr. per Runway approach	Dependent upon number of routes	Aircraft ADF-GPS position logged
Marker Beacon	x	In conjunction with associated aid.	0.5 hr. per Runway	RTK DGPS referenced
GPS NPA	x	-	0.5 hr. per Runway	RTK DGPS referenced
VASIS/PAPI	x	0.75 hr. per Runway	1.5 hr. per Runway	RTK DGPS referenced
Aerodrome Lighting	x	Dependent upon extent of checks required.	Dependent upon extent of checks required.	Pilot Visual assessment
Instrument flight procedures	x	Dependent upon nature of procedure.	Dependent upon nature of procedure.	Pilot assessed – GPS position logged
MLS	-	-	-	Not available

4. Language used by flight testing team: English

5. Estimated annual flight time available to assist other Administrations for testing Navaids: Spare capacity available.

6. Advance notice: One off specials 30 days. Ongoing programme, 3 months.

1. Country and address: **NEW ZEALAND**

Radio Aerospace Limited
Level 7, 14 Hartham Place
P.O. Box 50243
Porirua City 5240
New Zealand
Tel: +64 (4) 237 1244
Fax: +64 (4) 237 1267
E-mail: richardt@radaero.com
URL : http://www.radaero.com

2. Type(s) and number of flight testing aircraft available, associated charges and conditions:

Type of Aircraft & Aircraft Available		**Flight Time Charges per hour**		**Other co-ordinations**
		Positioning flights	**Check Flights (US$/hr.)**	
Dicemond 212	Malaysia	Radiola is pleased to asses each project requirement to ensure a cost effective flight inspection solution is provided.		
Piper Scereca	Malaio i Tanzania			
Piper Aztec	Casibean			
C90	New Zealand			
Sceneca	New Zealand			
C172	Fiji			
Partanavia	Fiji			
B200	Darwin (Australia)			
AN24	Mongolia			
AN 24/26	UAE			
Commander C90	UAE			

3. Flight testing capability and estimated flight time:

Radio Navigation Aids	**Flight Check Capability**	**Estimated flight check time**		**Type of flight check system**
		Routine	**Commissioning**	
VOR	x	1.5 hr.	2.5 hr.	Full Automatic
DME	x	With azimuth aid or on request	"	"
ILS CAT I	x	3.0 hr.	8.0 hr.	"
ILS CAT II	x	3.0 hr.	8.0 hr.	"
ILS CAT III	x	4.0 hr.	12.0 hr.	
PAR	x	1.0 hr.	1.0 hr.	"

Radio Navigation Aids	Flight Check Capability	Estimated flight check time		Type of flight check system
		Routine	Commissioning	
SSR	x	2.0 hr.	4.0 hr.	Calibrated transponder
SRE (ASR)	x	2.0 hr.	6.0 hr.	”
NDB/LOC	x	2.0 hr.	4.0 hr.	Automatic plot and ships instruments
Marker Beacon	x	With ILS	With ILS	”
PAPI/VASIS	x	1.0 hr.	2.0 hr.	”
Aerodrome lighting	x	1.0 hr.	1.0 hr.	Visual
TACAN	x	1.5 hr.	2.5 hr.	”
RNAV GPS	x	1.5 hr.	1.5 hr.	Automatic Plot
Instrument flight procedures	x	1.5 hr.	1.5 hr.	Automatic Plot
MLS	-	-	-	NA

4. Language used by flight testing team: English

5. Advance notice: Short response time dependent on customer requirements

6. Other information:

6.1 All fight times are subject to variation depending on technical and airspace design considerations.

6.2 Deployable flight inspection system able to be installed in most light aircraft with only minor modifications.

6.3 Military and war zone flight inspection

6.4 Government and Military security clearance

Approvals (some but not all listed)

- New Zealand Civil Aviation Authority
- Approved supplier of flight inspection services to ICAO
- Civil Aviation Authority of Fiji
- British overseas territories under CAR 173
- Many others

1. Country and address: **PAKISTAN**

Flight Inspection Unit
Headquarters Civil Aviation Authority
Jinnah International Airport
Terminal-1, Karachi
Pakistan
Tel: + 92 (21) 9924-2762; 9924-2763
Fax: + 92 (21) 3460-4301
E-mail: k.masood@caapakistan.com.pk
URL: www.caapakistan.com.pk

2. Type(s) and number of flight testing aircraft available and associated changed and conditions:

Type of Aircraft & Aircraft Available		**Flight Time Charges per hour**		**Other co-ordinations**
		Positioning flights	**Check Flights (US$/hr.)**	
Beech Super King 200	03	2,500.-	3,500.-	i) Charges for positioning will be form Jinnah Int'l Airport Karachi ii) Terms & Conditions will be finalized with mutual agreement. All local taxes, landing, parking, Handling, Navigational & Housing charges will be borne by the contracting State/Agencies or as negotiated. iii) Charges are negotiable subject to flight requirement and volume of tasks in hand. iv) Special charges will be levied under extra ordinary conditions.

3. Flight Testing capability and estimated flight time:

Radio Navigation Aids	**Flight Check Capability**	**Estimated flight check time**		**Type of flight check system**
		Routine	**Commissioning**	
VOR/DME	x	2.0 hr.	6.0 hr.	Fully Automatic Flight Inspection Systems of Aerodata Germany having capabilities upto CAT-III ILS using GPS, DGPS, RTK based calibration systems. Calibration & Flight Inspection carried out as per ICAO Annex 8071 & Annex 10 and FAA 82001. * Hours for Inspection of SSR/SRE will vary according to ATC requirements. ** Flying hours as per requirement.
TACAN/DME	x	1.0-2.0 hr.	4.0 hr.	
ILS CAT I	x	3.5 hr.	10.0-12.0hr.	
ILS CAT II	x	4.5 hr.	12.0-15.0 hr.	
ILS CAT III	x	4.5 hr.	12.0-15.0 hr.	
PAR	x	3.0 hr.	6.0 hr.	
SAR *	x	4.0 hr.	8.0-10.0 hr.	
NDB/LOC	x	1.5 hr.	3.0 hr.	
Marker Beacon	x	1.5 hr.	2.0-3.0 hr.	
PAPI	x	1.5 hr.	2.0-3.0 hr.	
VASI	x	1.5 hr.	2.0-3.0 hr.	
GPS Procedures/RNAV/ LAAS/WASS	x	1.5 hr.	2.0-3.0 hr.	
VHF/UHF Communication	x	-	-	
Instrument Flight Procedure (IFP) **	x	-	-	

4. Language used by flight testing team: English

5. Estimated annual flight time available to assist other Administrations for testing radio navigation aids is approximately 300-400 hrs.

6. Advance notice: One month.

7. Other information: PCAA has provided the flight check and calibration services to Bahrain, UAE (Civil & Military Bases), Kuwait, Muscat, Maldives, Bangladesh, Nepal and Sri Lanka etc. for routine / commissioning inspections.

8. Long-term flight inspection and calibration services are offered at special rate, subject to contract agreement.

1. Country and address: **THE PHILIPPINES**

Joseph M. Intal
Acting Chief Flight Inspector
Flight Inspection and Calibration Group
Civil Aviation Authority of the Philippines
1300 NAIA Road, Pasay City
Metro Manila
The Philippines
Tel : +63 (2) 852 3013
Fax: +63 (3) 852 3013

2. Type(s) and number of flight testing aircraft available, associated charges and conditions:

Type of Aircraft & Aircraft Available		**Flight Time Charges per hour**		**Other co-ordinations**
		Positioning flights	**Check Flights (US$/hr.)**	
SKA-B200	1	Negotiable	Negotiable	Negotiable
Cessna 206B	2	Negotiable	Negotiable	Negotiable

3. Flight testing capability and estimated flight time:

Radio Navigation Aids	**Flight Check Capability**	**Estimated flight check time**		**Type of flight check system**
		Routine	**Commissioning**	
VOR	x	2 hr.	6 hr.	Manual
DME	x	1 hr.	2 hr.	”
MLS				”
ILS CAT I	x	4 hr.	12 hr.	”
ILS CAT II				
ILS CAT III				
PSR	x	4 hr.	8 hr.	Manual
SSR	x	4 hr.	12 hr.	”
SRE	x	4 hr.	12 hr.	”
NDB/LOC	x	1 hr.	1	”
MARKER BEACON	x	1 hr.	1	”
PAPI	x	1 hr.	2	”
VASI	x	1 hr.	2	”

4. Language used by flight testing team: English

5. Estimated annual flight time available to assist other Administrations for testing radio navigation aids: 100H

6. Advance notice: N/A

7. Other information: Flight Check Aircraft (Cessna 206B) also used to ferry equipment and personnel to different airports/facilities during flight checks. SKA-B200 FIS programmed for upgrading to AFIS by 2010 to support full automatic flight inspection procedures.

1. Country and address: **REPUBLIC OF KOREA**

Flight Inspection Center
Ministry of Land, Transport and Maritime Affairs
Gimpo international airport 244-2 Okoc-dong, Gangseo-gu
Seoul 157-260 , Republic of Korea
Tel: +82 (2) 2660 2162, 2166
Fax: +82 (2) 2662 0881
E-mail: kimhwalove@mltm.go.kr or kimhwalove@korea.kr

2. Type(s) and number of flight testing aircraft available, associated charges and conditions:

Type of Aircraft & Aircraft Available		**Flight Time Charges per hour**		**Other co-ordinations**
		Positioning flights	**Check Flights (US$/hr.)**	
Challenger CL601-3R	1	2,787 $	2,787 $	

3. Flight testing capability and estimated flight time:

Radio Navigation Aids	**Flight Check Capability**	**Estimated flight check time**		**Type of flight check system**
		Routine	**Commissioning**	
VOR	x	1 hr.	12 hr.	Fully auto
DME	x	Combined with VOR or ILS		”
TACAN	x	1 hr.	12 hr.	
ILS CAT I	x	5 hr.	20 hr.	Semi-auto or Fully auto
ILS CAT II	x	5 hr.	20 hr.	”
ILS CAT III	x	5 hr.	20 hr.	”
PAR	x	3 hr.	15 hr.	”
SSR	x	2 hr.	10 hr.	”
SRE	x	2 hr.	15 hr.	”
NDB/LOC	x	1 hr.	5 hr.	”
Marker Beacon	x	##.	##.	”
PAPI	X	0.5 hr.	3 hr.	Semi-auto
AIRPORT LIGHTS	x	0.5 hr.	3 hr.	”

: The estimated flight check time of Marker Beacon is included in that of ILS

4. Language used by flight testing team: Korean or English

5. Estimated annual flight time available to assist other administrations for testing radio navigation aids: 20H or negotiable

6. Advance notice: 3 months

1. Country and address: **THAILAND**

Business Systems Bureau
Aeronautical Radio of Thailand Limited
102 Ngamduplee
Tungmahamek
Bangkok 10120
G.P.O. Box 535
Bangkok 10120
Tel: +66 (2) 285 9666
Fax : +66 (2) 285 9350
E-mail: bs@aerothai.co.th

2. Type(s) and number of flight testing aircraft available, associated charges and conditions:

Type of Aircraft & Aircraft Available		**Flight Time Charges per hour**		**Other co-ordinations**
		Positioning flights	**Check Flights (US$/hr.)**	
King Air 200/B200	4	Negotiable	Negotiable	Negotiable

3. Flight testing capability and estimated flight time:

Radio Navigation Aids	**Flight Check Capability**	**Estimated flight check time**		**Type of flight check system**
		Routine	**Commissioning**	
VOR	x	3 hr.	10 hr.	Automatic/ Manual as applicable
DME	x	Combined with VOR or ILS		
ILS CAT I/II/III	x	5 hr.	10 hr.	
SSR	x	8 hr.	12 hr.	
SSE (ASR)	x	4 hr.	10 hr.	
NDB/LOC	x	2 hr.	4 hr.	
Marker Beacon	x	Combined with ILS		
PAPI	x	2-4 hr.	4 hr.	
RNAV/RNP SID/STAR	x	Depended on number of leg (s) and way point (s)		
RNAV (GNSS) APCH w/Baro-VNAV	x			

4. Language used by flight testing team: Thai or English

5. Estimated annual flight time available to assist other Administrations for testing radio navigation aids: 110 Hrs

6. Advance notice: 60 days

7. Other information:

7.1 Two of King Air B200's are equipped with Aerodata Automatic Flight Inspection System (AFIS).

7.2 AFIS is DGPS capable, subject to availability of DGPS coordinates (WGS-84).

7.3 Flight inspection procedures are based on ICAO recommendations, while personnel are equally familiar with FAA standards also, with AFIS capable to both standards and recommendations. It is strongly recommended that the detailed procedures be confirmed prior to contract signing and fight inspection mission.

7.4 Other related services available are flight inspection consulting, including PBN package service (Feasibility Study and Project Planning/Analysis of GNSS Performance/Human Capacity Development/WGS-84 Survey/Instrument Flight Procedure decide/RAIM predication and NOTAM service/Flight Validation of PBN and GNSS procedures/GNSS Signal Monitoring and Archival).

1. Country and address: **UNITED STATES OF AMERICA**

Principal Staff Officer
Interagency Group on International Aviation
Office of International Aviation, API-10-Policy
Federal Aviation Administration
Department of Transportation
800 Independence Avenue, S.W.
Washington, D.C. 20591
USA
Tel: +1 (202) 385 8099
Fax: +1 (202) 267 5032

2. Type(s) and number of flight testing aircraft available, associated charges and conditions:

Type of Aircraft & Aircraft Available		**Flight Time Charges per hour**		**Other co-ordinations**
		Positioning flights	**Check Flights (US$/hr.)**	
CL 601-3R, CL 604 (Challenger)	4	4,228	4,228	
BE-300 (Beech King Air)	18	1,939	1,939	
Lear 60	6	3,344	3,344	

3. Flight testing capability and estimated flight time:

Radio Navigation Aids	**Flight Check Capability**	**Estimated flight check time**		**Type of flight check system**
		Routine	**Commissioning**	
VOR	x	Varies by type of aircraft, type of ground equipment, i.e. single or dual equipment and en-route time		Automatic
DME	x			”
ILS CAT I	x			”
ILS CAT II	x			”
ILS CAT III	x			”
MLS	x			”
GPS-NPA	x			”
PAR	x			Manual
SSR	x			”
SRE/ASR	x			”
NDB/LOC/DF	x			”
Marker Beacon	x			Automatic
LORAN	x			”
AIRPORT LIGHTS	x			Manual
TAC	x			Automatic
VTAC	x			Manual
Procedures (PROC)	x			”
Communications (COM)	x			Manual
Radio Frequency Interference RFI	x			Manual
SBAS & RNP	x			Automatic

Radio Navigation Aids	Flight Check Capability	Estimated flight check time		Type of flight check system
		Routine	Commissioning	
GBAS *	x			Automatic
ADS-B *	x			Manual

* Current capability exists operating the aircraft in experimental, not for international operations. Expect full certification in FY2010.

4. Language used by flight testing team: English

5. Estimated annual flight time available to assist other Administrations for testing radio navigation aids: As established by Memorandum of Agreements through the Office of International Aviation (AIA): 3,000 flight hours.

6. Advance notice: 30 days

7. Positioning flight hour rate is the same as check flight rate unless en-route time is shared with other member countries.

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