



INFORMATION PAPER

HIGH-LEVEL CONFERENCE ON AVIATION SECURITY (HLCAS)

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**Agenda Item 7: The Role of the Machine Readable Travel Document (MRTD) Programme,
Advance Passenger Information (API) and Passenger Name Record (PNR)**

**IMPLEMENTATION OF THE MRTD PROGRAMME:
TRAVEL DOCUMENT SECURITY AND PASSPORT QUALITY TEST**

(Presented by the Republic of Korea)

1. INTRODUCTION

1.1 According to Article 3.10 of Annex 9 to the Convention on International Civil Aviation, Contracting States shall begin issuing only Machine Readable Passports (MRPs) in accordance with the specifications of ICAO Doc 9303, Part 1, no later than 1 April 2010. Since 1994, the Republic of Korea (ROK) has only been issuing MRPs in accordance with ICAO Doc 9303. In order to improve document security, Korean passports with a digitally printed photograph replaced those with stick-in photographs in 2005, and the Electronic Passport (e-Passport) was introduced in 25 August 2008. Although non-electronic passports and travel certificates with stick-in or digitized photographs can be issued in case of emergency on an exceptional basis, all valid travel documents, electronic or non-electronic, issued after 1994 are ICAO-compliant MRTDs.

1.2 In addition, the 37th Assembly Declaration on Aviation Security urges Member States to promote enhanced document security, to join the ICAO Public Key Directory (PKD), and to report stolen and lost passports to the INTERPOL Stolen and Lost Travel Documents (SLTD) Database on a regular basis. The Republic of Korea has been a member of the ICAO PKD since 2008. Both preventive and mitigation measures are taken to SLTD to prevent the unlawful use of such documents.

2. TRAVEL DOCUMENT SECURITY

2.1 Security Feature: Supplement to Doc 9303 Appendix E-Updated Security Standards for Machine Readable Travel Documents provides advice on strengthening document security of MRTDs made in accordance with the specifications set out in Doc 9303. The recommendations cover the security of the materials used in the document's construction, and the security printing techniques to be employed. In accordance with the above mentioned Security Standards, Korean passports employ anti-counterfeiting security features such as microprinting, holographic diffractive effect, steganography, watermark, solvent sensitive ink, and UV fluorescent security fibers.

2.2 Security Policy

2.3 Facility Security: Article 3.8 of Annex 9 to the Convention on International Civil Aviation states that Contracting States shall establish controls on the creation and issuance of travel documents. In addition, the ICAO Guide for Assessing Security of Handling and Issuance of Travel Documents provides specific security measures needed to be taken while handling and issuing travel documents. The Ministry of Foreign Affairs and Trade (MOFAT), which is the Travel Document Issuing Authority (TDIA) of the ROK, fully conforms to the above mentioned regulations by enacting the Security Guidelines for the Issuance of Passports, and by signing the Contract for the Production and Supply of e-Passports with KOMSCO (KOMSCO, Korea Minting and Security Printing & ID Card Operating Cooperation, is a public enterprise designated by the Ministry as the exclusive manufacturer of Korean passports). Based on the Guidelines and Contract, appropriate security measures are taken thoroughly in the process of producing, storing, delivering, and issuing Korean passports.

2.3.1 Security Measures on Stolen and Lost Travel Documents (SLTD): Based on the ICAO Guide for Assessing Security of Handling and Issuance of Travel Documents, the Korean Government takes both preventive and mitigation measures to SLTD to prevent the use of such travel documents for acts of unlawful interference against civil aviation. For preventive measures, the Korean Government informs and encourages the public to take appropriate action when their travel documents become stolen or lost. In addition, for applicants who lost their travel documents often in recent years, the validity of replaced travel documents is limited to five or two years. For mitigation measures, as soon as stolen and lost travel documents are reported, the documents immediately become void and relevant data of SLTD are reported to national and international (INTERPOL) databases every midnight (Korean Standard Time).

2.4 Security Mechanism: Passive Authentication (PA), a mandatory security mechanism included in ICAO Doc 9303 Part 1 Volume 2, is used in Korean e-Passports to protect the electronic chip and its data from counterfeiting and falsification. The Basic Access Control (BAC) mechanism and Extended Access Control-Chip Authentication (EAC-CA) mechanism are also incorporated into Korean e-Passports to prevent eavesdropping, skimming and unauthorized access to the biometrics in the chip. In addition, the Republic of Korea has been a member state of the ICAO PKD since June 2008.

3. PASSPORT QUALITY TEST

3.1 KOMSCO, a public enterprise designated as the exclusive manufacturer of Korean passports, regularly conducts a passport quality test and reports the test results to MOFAT twice a month. Based on international standards including ICAO regulations, KOMSCO randomly selects blank and personalized passport booklet samples, and evaluates their appearance, colour, size, shape, and anti-counterfeiting features.

3.2 The Ministry of Foreign Affairs and Trade conducts an inspection of KOMSCO on matters such as quality control by dispatching inspectors on a monthly basis. The inspectors visually inspect randomly chosen blank passport booklets on the shape, colour, size, security features, conditions of the inner pages and data page, and test the electronic chip's communication ability. In addition, inspectors randomly re-check the quality of personalized passports.

3.3 Since MOFAT designated the Korea Testing Certification (KTC) as the passport quality testing agency of the Republic of Korea in August 2008, KTC has been regularly conducting a Conformity Test, Durability Test, and Ageing Test on randomly selected Korean e-Passport samples. The

main purpose of the tests is to verify correct behaviours of the electronic chip, inlay, machine readable zone, and e-cover even if the e-Passports are exposed to extreme conditions.

3.3.1 Conformity Test: The purpose of this test is to check the analogue and digital communication performances (Layer 1-4) and logical standards (Layer 6-7) of the chip. It is conducted twice a month based on the test standards stated in the ICAO Technical Report on RF Protocol and Application Test Standard for E-Passport.

3.3.2 Durability Test: This quarterly-conducted test checks whether the e-Passports are durable enough to overcome various environmental changes and stimuli. In total, 27 types of shocks are applied to the e-cover, machine readable zone and electronic chip. Specific test items include those labelled in the ICAO Technical Report on Durability of Machine Readable Passports, and the Humidity Test, Laundry Test, and Design Element Test which have been developed by KTC.

3.3.3 Ageing Test: This test checks whether the e-Passport can be used normally for maximum 10 years. Based on the test standards established by KTC, the Ageing Test has been conducted quarterly since November 2011. After applying 11 types of stimuli in two cycles to the test samples, KTC analyzes the behaviour of the electronic chip and changes of resonance frequency.

3.3.4 As specified in the attached table, KTC has established stricter evaluation criteria for the Operating Field Strength Test and Communication Stability Test (Layer 1-2) than those of ICAO. In addition, new test items such as the Reader Interoperability Test, Chip Reading Speed Test, and Data Size Test were added to the Conformity Test. Meanwhile, for the Durability Test, KTC strengthened the evaluation criteria for the Stamping, Pen Stress, Peel Strength, Back Pocket and Chemical Resistance tests, and added new test items such as the Design Element Checking Test, Laundry Test, Water Resistance Test and Humidity Test. For a detailed comparison between the ICAO standards and KTC evaluation criteria, please refer to the attached table.

4. CONCLUSION

4.1 Conducting a passport quality test periodically is a vital element to guaranteeing the security and quality of Korean e-Passports. Therefore, Member States issuing or planning to issue electronic passports are invited to note the information contained in this paper.

4.2 The Republic of Korea is willing to share its knowledge and experience on enhancing the security and quality of travel documents. For further information on Korean travel document security and the passport quality test, please contact the Ministry of Foreign Affairs and Trade of the Republic of Korea.

APPENDIX

COMPARISON BETWEEN ICAO STANDARDS AND KTC EVALUATION CRITERIA

		Test List	ICAO Criteria	KTC Criteria
Durability Test	New	Size	-	Width and length, chip thickness, booklet thickness, etc.
		Water Resistance		Submerge 24 hours, dry for 24 hours
		Design Element		Check cover design
		Laundry		Wash pants with e-cover in the pockets
		Humidity		Expose to high/low humidity
	Strengthened	Stamping	N=1	N=5 100 times of direct impact on chip location
		Pen Stress	N=1	N=5 100 times of direct impact on chip location
		Peel Strength	Higher than 0.5N/cm for chip sheet	Higher than 3N/cm for chip sheet
		Back Pocket	N=10	N=50
		Chemical Resistance	Submerge 1 minute	Submerge 5 minutes
Conformity Test	Strengthened	Operating Field	7 spots	13 spots
		Communication Stability	3 spots	13 spots
	New	Reader Interoperability	-	Read chip with 7 different types of RF modules
		Chip Reading Speed		For reference only
		Data Size		For reference only
Ageing Test	New	1. Test Start: check chip operation and resonance frequency 2. Cycle 1: TEST SET 1, SET 2 3. Cycle 2: Repeat Cycle 1 4. Test End		