International Civil Aviation Organization

WORKING PAPER

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English Only

TECHNICAL ADVISORY GROUP ON MACHINE READABLE TRAVEL DOCUMENTS (TAG/MRTD)

TWENTY-FIRST MEETING

Montréal, 10 to 12 October 2012

Agenda Item 3: Activities of the ICBWG

Doc. 9303 COMPLIANCE PROGRAMME

(Presented by the Implementation and Capacity Building Working Group (ICBWG))

1. INTRODUCTION

1.1 The concept of a Doc. 9303 Compliance Programme was first submitted for consideration at TAG 20. TAG asked ICBWG to undertake further development work on the paper and resubmit for TAG 21.

1.2 For thirty-five years ICAO has been developing standards for the issuance of MRTDs. Doc 9303 is comprehensive, and details specifications to increase security, improve facilitation, and to ensure global interoperability. Currently, however, no avenue exists through which States can confirm that their travel document conforms in every respect to Doc. 9303 specifications.

1.3 Substantial effort and progress has been made in the development of testing methodologies and standards for travel documents. In particular, the quality of technical testing and standards developed for eMRTD is clear. However, some aspects of travel documents are currently without agreed test standards, and therefore rely on subjective assessment. For example, there is no standardised method for testing compliance of the visual zone in a travel document, or assessing whether recommended elements such as security features are applied in a logical and effective manner.

1.4 States are investing a significant amount of time and money into the development of travel documents for their citizens. They want assurance that their efforts are not undermined by poor quality design or implementation, and that the ultimate outcome of their projects will be the issuance of a valid internationally accepted travel document.

1.5 In recent years, States and their respective vendors are showing an increasing interest in receiving an official confirmation of travel document compliance, issued by an unbiased, knowledgeable and internationally recognized organisation. States are interpreting and applying increasingly complex standards, and the risk of producing non-compliant documents is therefore likely to grow. These States are looking to ICAO – the recognised international authority on travel documents – to demonstrate leadership in this area by providing a means through which they can gain assurance (and validation) of full compliance.

1.6 This paper raises the need for a complete set of testing standards, which would in turn enable a complete assessment and validation travel document compliance (whether MRTDs or eMRTDs).

1.7 The paper also outlines an interim approach to assessing full compliance, to cover the gaps in testing standards until full test specifications covering all aspects of Doc 9303 are developed, tested and standardised. The interim scheme, at least in the short term, would require close involvement from ICAO and its working groups to undertake part of the compliance assessment (e.g. visual zone). Once a full suite of test standards is developed, it is envisaged that ICAO compliance assessments could be undertaken entirely by independent authorities.

1.8 The paper provides a high-level outline of how an MRTD and eMRTD compliance process might work, as well as a general description of the roles and responsibilities of the parties involved. At this point the proposed scheme does not cover other types of travel documents (e.g. Emergency Passports, cards).

2. OUTCOMES

2.1 Issuing Authorities can independently test their compliance of both MRTDs and eMRTDs against ICAO standards and best practices.

2.2 Vendors will ensure they supply Doc 9303 compliant travel documents to Issuing Authorities.

3. CURRENT STATUS

3.1 Objectives

3.1.1 ICAO will:

a) Facilitate a process that allows Issuing Authorities to access resources and expertise to assess their travel document compliance against an ICAO standard. Provide a high level of confidence to the Issuing State that the document under test conforms to the ICAO Doc 9303 standard, both in terms of the physical specifications (including durability) and when appropriate the electronic specifications.

b) Develop a voluntary, fee based programme, owned and managed by ICAO, that will provide assistance to those Issuing Authorities who wish to validate their compliance against the ICAO standard, taking advantage of existing MRTD and eMRTD services offered by test authorities and individual experts, under the condition that these services are endorsed by ICBWG. A status of partial compliance would be given where durability testing was not conducted. Durability testing will be optional.

c) Establish and maintain a list of accredited ISO and ICAO testing authorities by geographic region and endorsed by the State issuing the documents.

3.2 **Examples of Compliance Scenarios** (see Appendix A)

3.2.1 The following are scenarios where ICAO, ICBWG and other Stakeholders could assist with the coordination and management of a scheme enabling testing authorities and vendors to ensure compliance with ICAO Doc 9303 specifications:

a) An Issuing Authority has an existing MRTD or eMRTD and wants to check for compliance. The applicant submits a small number of travel documents for evaluation. ICAO acknowledges receipt of the request and forwards the request to ICBWG to action. ICBWG assigns the State request to an Expert to check the Travel Documents against Doc 9303 for visual and optical compliance and provides results for review. A compliance report will be produced with a recommendation whether to provide the Issuing Authority with a Compliance Certificate.

b) An Issuing Authority has an existing MRTD or eMRTD and wants to check for compliance. The applicant submits a larger number of travel documents for evaluation. ICAO acknowledges receipt of the request and forwards the request to ICBWG to action. ICBWG assigns the Issuing Authority's request to an expert who checks the travel documents against Doc 9303 for visual optical and electronic compliance and provides results for review. A compliance report will be produced with a recommendation on whether to provide the Issuing Authority with a compliance certificate.

c) An Issuing Authority proposes to tender for the production of travel documents, and as part of the tender process requires the vendors to provide and pay for compliance as part of the contract. Vendors would provide proof and a reference that they have delivered certified travel Documents to other Issuing Authorities previously. ICAO would acknowledge receipt and validate the reference. The vendor will have an obligation to have a travel document tested and certified as a precondition to the final test and approval of supply. ICBWG would assign experts who would test and provide results for review. Based on the results of the test and review, ICAO would issue the compliance confirmation if applicable. Note that a limited conformance could be done on preproduction samples; but that any compliance evaluation would be limited to the extent the samples were tested. If the Issuing Authority requires durability testing to be included, recognised accredited testing authorities would need to be engaged to undertake the appropriate durability tests.

d) A partner State or Organisation could seek assistance in aiding a third party Issuing Authority in improving its Travel Documents, by providing assessment of their present documents, as well as assistance in procuring MRTDs or eMRTDs of improved quality.

e) Other scenarios could be developed which could profit by the use and incorporation of the compliance tool and coordination of the process. Appendix D defines participants and processes.

3.3 Roles and Responsibilities

3.3.1 The Doc 9303 Compliance Program has a reasonable level of complexity. This means that a range of stakeholders will be required to ensure its success. The role of each stakeholder group is outlined below.

ICAO Administrator	ICAO provides the legal framework for the programme. The ICAO Secretariat manages all administrative tasks within the programme, and is responsible for: a) promotion of the programme; b) administration of the application process, including cash management and book keeping; c) legal management; d) coordination with the ICBWG; e) administration of the issuance of a compliance confirmation; f) maintaining a list of government accredited Testing Authorities; and g) management of relationships with Member Issuing Authorities.
ICBWG – Support	The ICBWG – represented by the Chairperson – supports the programme, and is responsible for: a) developing assessment tools and identify for NTWG what test methodologies need to be developed; b) maintaining a list of experts to undertake the testing of the Travel Document component of the assessments; c) recommending test authorities and experts; d) verifying whether the test report provided by the selected test authority formally complies with defined quality standards; and e) arranging for Travel Document assessment and reporting.
Test laboratory – Test Authority	Test laboratories may be both government and commercial bodies with proven expertise and experience in testing MRTDs and eMRTDs. It is expected that ICAO accreditation for test authorities will be based purely on Member Issuing Authorities' advice. Test laboratories issue test reports showing the degree of Doc 9303 compliance in a detailed manner, and test authorities take liability for any results. A single test laboratory is responsible for tests required by an applicant, such as physical security elements of a booklet or electrical and logical testing of a radio frequency chip. Where available, a test laboratory executes the tests based on ICAO test standards. In other cases, such as Doc 9303 Volume 1 testing, a panel of experts evaluate the Travel Document under review. Test laboratories may subcontract to individual experts.
Individual Experts	Where ICAO tests standards or others are not applicable (i.e. internationally agreed standards are not available), testing should be based on the extensive experience of a test expert. Where appropriate, these experts are paid out of the ICAO fee.

3.4 **Accreditation Scenario** (see Appendix B)

3.4.1 The following describes the process and the stakeholders involved required to enable Issuing Authorities and vendors to apply and achieve ICAO certification:

a) ICAO will publish a fee structure for its Compliance Programme. A Testing Authority/Vendor seeks to be accredited with an ICAO Compliance Certificate. The Testing Authority makes requests to ICAO via their State Government who sends a letter to ICAO endorsing the requesting Testing Authority/Vendor. ICAO will acknowledge the letter and endorsement. ICAO will respond with a quotation for the compliance programme and invoice accordingly. ICAO will ascertain if the Testing Authority/Vendor is ISO compliant for ISO/IEC 17025 - General requirements for the Competence of Testing and Calibration. If the Testing Authority/Vendor complies with ISO/IEC 17025 or can prove that they are able to run the specific tests required and has the ability to perform the required test functions, ICAO will update the Testing Authority/Vendor in their in-house register. ICAO will advise the state of accredited Testing Authorities before any work is undertaken. If the Testing Authority/Vendor fails to comply and is unable to perform the required test functions to the level required, ICAO will communicate with the Testing Authority/Vendor advising them that their compliance request at this time will not be granted. Appendix E details a physical checklist developed by ICBWG.

3.5 **Checklist for Machine Readability**

3.5.1 Acknowledgement must be made to the work completed and the testing regime in place to enable testing of eMRTDs. However currently there is no complete testing standard nor is there a provision for independent assurance of compliance and best practices for every aspect of Doc 9303. See Appendix C.

3.6 **Constraints**

a) Testing of Travel Documents is limited to the attributes of the travel document submitted for compliance. Comments will NOT be made on issues which are not an integral component of DOC 9303.

b) Peripheral equipment for passport production will NOT be subject to compliance programme testing.

c) An interim panel will be agreed by the Chair NTWG, Chair ICBWG and Chief of Aviation Security. The experts will be made up from both government and non-government representatives. This group will be chaired by a government representative. When full test specifications covering all aspects of Doc 9303 are standardised, the role of the panel including experts will become redundant. Private sector members can expect payment for their services; public sector members would not receive any payments.

4. ACTION BY THE TAG/MRTD

4.1 The TAG/MRTD is invited to:

a) Endorse the guidelines proposed for MRTD and eMRTD compliance;

b) Direct the ICBWG to develop an operational plan for commencing this programme in sufficient detail, and to conduct beta tests with cooperating Member Issuing Authorities or Organizations; and

c) Approve that the ICBWG continue to undertake ad hoc assessments while the proposed compliance programme is being developed.

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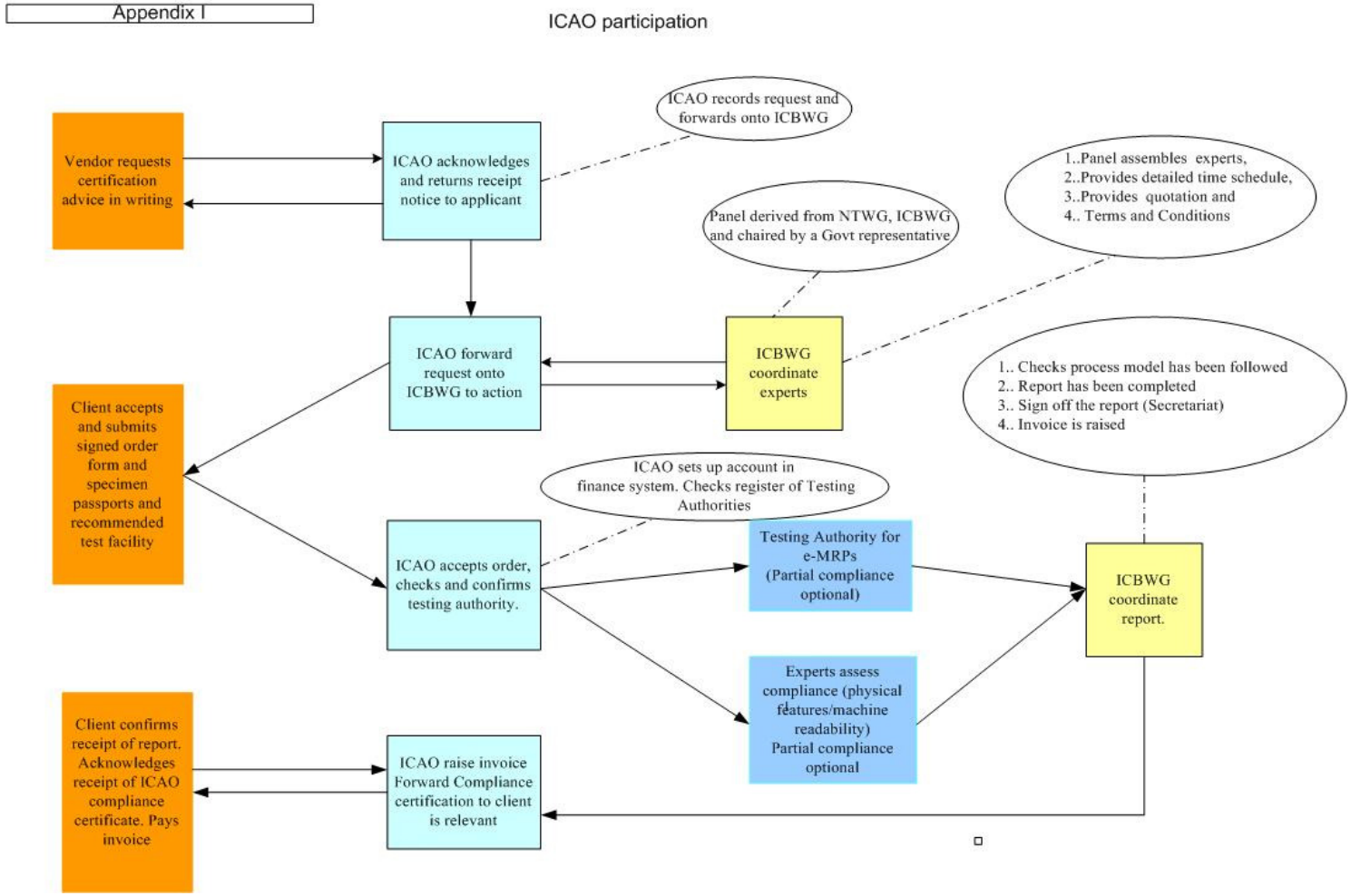
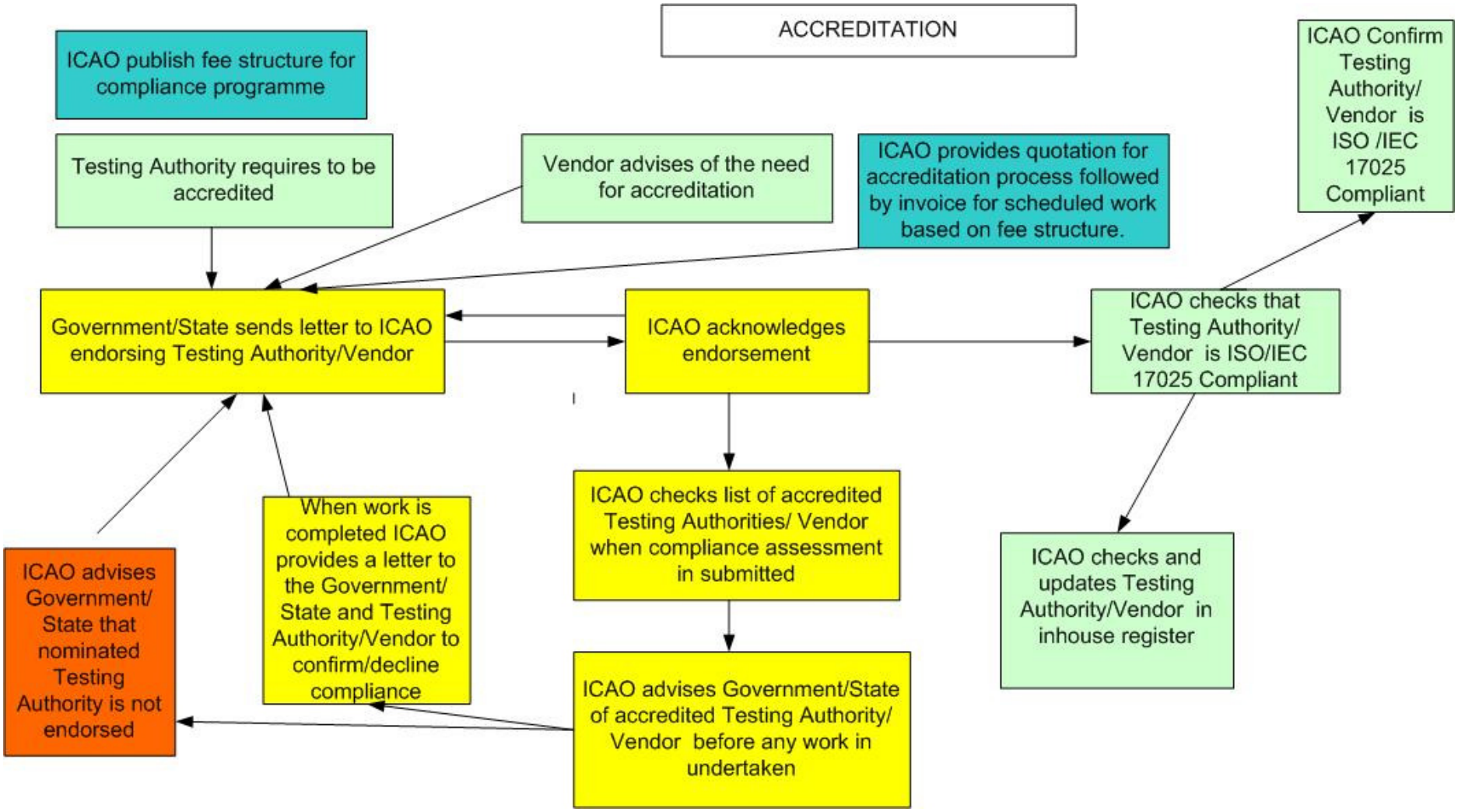
APPENDIX A


Appendix I
ICAO participation
Vendor requests certification advice in writing
ICAO acknowledges and returns receipt notice to applicant
ICAO records request and forwards onto ICBWG
Panel derived from NTWG, ICBWG and chaired by a Govt representative
1..Panel assembles experts,
2..Provides detailed time schedule,
3..Provides quotation and
4.. Terms and Conditions
ICAO forward request onto ICBWG to action
ICBWG coordinate experts
1.. Checks process model has been followed
2.. Report has been completed
3.. Sign off the report (Secretariat)
4.. Invoice is raised
Client accepts and submits signed order form and specimen passports and recommended test facility
ICAO sets up account in finance system. Checks register of Testing Authorities
ICAO accepts order, checks and confirms testing authority.
Testing Authority for e-MRPs (Partial compliance optional)
ICBWG coordinate report.
Experts assess compliance (physical features/machine readability) Partial compliance optional
Client confirms receipt of report. Acknowledges receipt of ICAO compliance certificate. Pays invoice
ICAO raise invoice Forward Compliance certification to client is relevant

APPENDIX B


ACCREDITATION
ICAO publish fee structure for compliance programme
Testing Authority requires to be accredited
Vendor advises of the need for accreditation
ICAO provides quotation for accreditation process followed by invoice for scheduled work based on fee structure.
ICAO Confirm Testing Authority/ Vendor is ISO /IEC 17025 Compliant
Government/State sends letter to ICAO endorsing Testing Authority/Vendor
ICAO acknowledges endorsement
ICAO checks that Testing Authority/ Vendor is ISO/IEC 17025 Compliant
When work is completed ICAO provides a letter to the Government/ State and Testing Authority/Vendor to confirm/decline compliance
ICAO checks list of accredited Testing Authorities/ Vendor when compliance assessment in submitted
ICAO checks and updates Testing Authority/Vendor in inhouse register
ICAO advises Government/ State that nominated Testing Authority is not endorsed
ICAO advises Government/State of accredited Testing Authority/ Vendor before any work in undertaken

APPENDIX C

The following checks should be made of the Travel Documents to check its visual characteristics. Doc. 9303 is currently being reviewed. Citations and references to Doc. 9303 have not been included.

Quality of Print

The print shall be legible visually and shall be black (B425 through B680 as defined in ISO 1831)
The print shall also absorb in the B900 band (ie near infrared)
No voids in print
Distinct edges of characters – crisp printing
Line spacing within the Effective Reading Zone
Lines are not skewed

Background Print in ERZ

No background printing that is Infra-Red
No other information eg signatures barcodes etc are printed in IR active
No paper embedded threads fibres etc, holograms, laminates or inks that affect readability of MRZ

Integrity of Print

MRZ and data page are on penultimate page of Passport or on inside cover
Data in correct zones
Correct number of characters on MRZ Line (44 characters)
"P" as first character, MRZ row 1 character 1. Second character optional or "<"
Correct three letter codes used in both MRZ lines
Correct check digits on passport number, date of birth, date of expiry, optional data if any, and composite check digit

Transcription of Data from VIZ to MRZ

Name uses separators correctly. Use "<" between name elements and "<<" to separate primary and secondary name and no use of "<<<"
No titles
No punctuation marks
No national characters in MRZ
VIZ national characters are correctly transliterated
Passport number same as in the VIZ
Dates accurately portrayed in MRZ

VIZ Related

Portrait correct location, dimension aspect 70-80% of frame height
Missing or incorrect mandatory VIZ information/data
No data introduced into MRZ that is not in the VIZ or may be derived from VIZ data eg check digits

APPENDIX D

Definitions of Participants and Processes

Compliance	The extent to which the document conforms to the data placement and content in both the visual information zone (VIZ) and the machine readable zone (MRZ)
Confirmation	The process of providing a document that describes the MRTD, the level of examination of the MRTD, and its compliance with Doc 9303 Standards, together with the names of the Applicant, the examining Expert, and the Compliance Authority, and the purpose for which the evaluation was performed.
Expert	The individual or testing organisation who performs the conformance testing
Applicant	The issuing State or Authority, or Vendor who requests the MRTD Conformance testing
Reviewer	The individual who checks the work of the expert, ensuring validity of the work
Administrator	The ICAO Secretariat, under whose aegis this process operates

APPENDIX E

Physical Checklist

ICAO ICBWG

v2.0

Date: February 2nd, 2010

NOTE TO THE USER:
The matrix is cross referenced to ICAO 9303 Part 1, Volume 1 (6th Edition). The terms 'shall' and 'must' are interpreted as mandatory elements, unless otherwise categoried as 'basic'. In select cases, 9303 identifies physical security features as 'basic' and 'additional', rather than 'mandatory' and 'optional'. These specific references are identifed in the subheadings for each document type. The terms 'should' and 'may' are interpreted as recommended, or optional. Grey out areas denote sections where there are no stated recommendations, or they are not applicable to the document(s) being examined. The focus of this matrix is directed primarily on the passport, and does not cover the issuance process, facilities, or other discretional elements which the state may incorporate, such as machine assisted authentication features.

The evaluation matrix is based exclusively on the specimens provided for the evaluation, and the personalized elements as shown on the data page. There are a multitude of special cases permissible under 9303. Unless specimens are presented which represent unique cases (e.g. truncated names, etc.), it will not be possible to validate all variations produced by the state. It should also be noted that this evaluation requires highly specialized knowledge of both 9303 and ISO standards; specialized equipment is required to conducted the full scope of the examination.

LEGEND

√	Present (or confirmed)	
X	Not present or deviation (for mandatory and basic)	
N/P	Not present (for optional and additional)	
N/A	Not applicable	

N/T	Not tested
OBS	Observation

			MANDATORY (BASIC)				OPTIONAL (ADDITIONAL)			
			Diplomatic	Official	Ordinary	Travel	Diplomatic	Official	Ordinary	Travel
5.1		**SUBSTRATE MATERIALS**	BASIC				ADDITIONAL			
	5.1.1	**Paper forming the pages of the travel document (Basic Features)**								
		UV Dull Paper or substrate with a controlled response to UV								
		Water Mark comprising two or more grey levels								
		Chemical Sensitizers in paper, at least for the biographical data page								
		Paper with appropriate absorbency and roughness								
		Additional Features								
		Watermark in register with printed design								
		Invisible Fluorescence Fibres/Planchettes								
		Visible Fibres/Planchettes								
		Security Thread/Window for the substrate								
	5.1.2	**Paper or other substrate in the form of a label used as the biographical data page of a travel document**								
		UV Dull Paper								
		Chemical Sensitizers in the paper								
		Invisible Fluorescence Fibres/Planchettes								
		Visible Fibres/Planchettes Adhesive to prevents the label from being removed without causing visible damage								
		Additional Features								
		Security Thread with additional security feature								

			BASIC	ADDITIONAL
5.1.3		**Security aspects of paper forming the inside cover of a passport book**		
		Chemical Sensitizers (if used as as a datapage)		
5.1.4		Plastic substrates		
5.2		**SECURITY PRINTING**		
5.2.1		**Background and text printing (Basic Features)**		
		Two-colour Guilloche security background design print		
		Rainbow printing		
		Anti-scan pattern		
		Micro printed text		
		Different print design of data page than VISA pages		
		Background and text printing (Additional Features)		
		Single or multi-color Intaglio		
		Latent Intaglio printing		
		Duplex security pattern		
		Relief (3-D) design feature		
		Front-to-back (see-through) registered feature		
		Deliberate error incorporated within microprint		
		Different background on each visa page		
		Tactile feature		
5.2.2		**Inks (Basic features)**		
		UV fluorescent ink		
		Reactive inks		
		Inks (Additional Features)		
		Inks with optically variable properties		
		Metallic Ink		
		Penetrating numbering ink		
		Metameric ink		
		Infrared transparent ink		

		Thermochromic ink		
		Photochromic ink		
		Infrared fluorescent ink		
		Phosphorescent ink		
		Tagged ink		
	5.2.3	**Numbering**		
		Unique document number should appear on all inside pages; (Printed/Perforated)		
		Unique document number shall be printed or perforated.		
		Data page label: UV fluorescent numbering ink		
		Number on Card		
	5.2.4	**Special security measures for use with non-laminated biographical data pages**		
	5.2.4	**Special security measures for use with plastic cards**		
5.3		**PROTECTION AGAINST COPYING**	BASIC	ADDITIONAL
	5.3.1	**Need for anticopy protection**		
		Optically variable feature		
	5.3.2	**Anticopy protection methods**		
		Optically variable feature technology		
		Optically variable components in layered structure		
		Label/no overlay: optically variable feature with intaglio or other security print		
		Plastic datapage: optically variable feature		
5.4		**PERSONALIZATION TECHNIQUE**		
	5.4.1	**Document Personalization**		
	5.4.2	**Protection against alteration**		
	5.4.3	**Choice of Document System**		

5.4.4

Protection against photo substitution and alteration of data on the biographical data page of a passport book, travel card or visa

Imaging the portrait and all biographical data by integration into the basic materials

Security background - Guilloche overlapping over the portrait

Heat-sealed laminated/overlay

Additional Features

Optically variable feature

Digital signature incorporated in the document

Embedded steganographic image incorporated in the document

Secondary portrait

Duplicate information in a machine readable form in one of the optional data capacity expansion technologies

Machine verifiable biometric features

5.5 ADDITIONAL SECURITY MEASURES FOR PASSPORT BOOKS

5.5.1 **Position of the biographical data page**

5.5.2 **Whole-page substitution**

5.5.3 **Biographical data whole-page substitution (Basic Features)**

Thread sewing with back-sewn lock stitch or an alternative binding technique with equivalent resistance to unpicking

Different security background printing of data-page than visa pages

Additional Features

Multi-color and/or fluorescent sewing threads

Programmable thread-sewing pattern

Link data page to the passport book by the passport number

5.5.4 **Visa page whole-page substitution (Basic Features)**

Thread sewing with back-sewn lock stitch or an alternative binding technique with equivalent resistance to unpicking

Additional Features

Passport serial number on every visa page

Collation marks printed on the fore-edge of every visa pages

	5.5.5	**Deletion of stamps and removal of labels from passports, including the removal of data from the observations page**							
		Reactive ink							
		Chemical sensitizers in the paper							
		High-tack, non-peel able adhesives							
		Permanent, non-fading inks							
		Additional Features							
		Over-lamination/Overlays on stamps and labels							
		Visa page with appropriate absorbency and surface characteristics							
		Frangible substrate for labels							
5.6		**QUALITY CONTROL**	OUT OF SCOPE						
5.7		**SECURITY CONTROL OF PRODUCTION AND PRODUCT**							
	5.7.1	Protection against theft and abuse of genuine document blanks or document components	OUT OF SCOPE						
II. MACHINE-ASSISTED DOCUMENT SECURITY VERIFICATION (INFORMATIVE APPENDIX 2 TO SELECTION III)			OUT OF SCOPE						
III. THE PREVENTION OF FRAUD ASSOCIATED WITH THE ISSUANCE PROCESS (INFORMATIVE APPENDIX 3 TO SELECTION III)			OUT OF SCOPE						
IV. TECHNICAL SPECIFICATIONS FOR MACHINE READABLE PASSPORTS									
Section 1		**SCOPE**							
Section 2		**PHYSICAL CHARACTERISTICS**							
	2.1	Deformation							
	2.2	Toxicity							
	2.3	Resistance to chemicals other than chemical sensitivity due to security reasons							
	2.4	Temperature stability							
	2.5	Humidity							
	2.6	Light							

	2.7	Choice of materials remain at the discretion of the issuing state, no materials shall adversely affect any other component in the MRP								
Section 3		**CONSTRUCTION AND DIMENSIONS OF THE MRP AND MRP DATA PAGE**								
	3	Eight pages or above								
Section 4										
4.1	4.1	MRP data page nominal dimensions (88.0mm +/- 0.75mm x 125.0mm +/- 0.75mm)								
4.2	4.2	MRP data page edge tolerances (Inner: 87.25mm x 124.25mm, Outer: 88.75 x 125.75)								
4.3	4.3	MRP data page margins (2.0 mm along each outer edge)								
4.4		**MRP data page thickness**								
	4.4.1	Minimum thickness (No minimum thickness specified)								
	4.4.2	Maximum thickness (0.90mm)								
	4.4.3	Thickness of the MRZ shall not vary by more than 0.10mm								
4.5	4.5	MRP dimension (Due to binding purpose 88.0mm dimension may be increased)								
Section V		**GENERAL LAYOUT OF THE MRP DATA PAGE**								
5.1	5.1	Inner data page in close proximity to an end leaf or part of the cover					√	√	√	√
5.2		**MRP DATA PAGE**								
	5.2	Zone I (Mandatory header)								
	5.2	Zone II (Mandatory and optional personal data elements)								
	5.2	Zone III (Mandatory and optional document data elements)								
	5.2	Zone IV (Mandatory holder's signature or usual mark (original or reproduction))								
	5.2	Zone V (Mandatory identification feature)								
	5.2	Zone VI (Optional data element)								
	5.2	Zone VII (Mandatory machine readable zone (MRZ))								
5.3	5.3	Location of zones and standard sequence for data elements								
5.4	5.4	Zone IV - Location of holder's signature or usual mark								
5.5	5.5	Zone V - Position of holder's portrait (2.0mm from the left; if affixed photograph is used the dimension has to be 6.0mm)								

Section VI		CONTENT AND USE OF ZONES
6.1		**Mandatory zones**
	6.1.1	Position of element 01 and 02 of Zone 1 - On data page if not on an adjacent or earlier page
	6.1.2	Zone IV - Present either on the data page or on a adjacent page and contains signature or usual mark
	6.1.2	Zone V - Include a personal identification features such as portrait, Zone II and IV may overlay Zone V shouldn't hinder any data
	6.1.3	Data elements appears as defined in Appendix 1
	6.1.4	MRZ data elements shall be shown as defined in 9.6 and 9.7
6.2	6.2	Optional data zone - Zone VI
6.3		***Dimensional flexibility of zones I to V***
	6.3.1	Zone I to V shall be bounded by straight lines and not recommended to be printed to MRP data page
	6.3.2	Presence of window/unprintable border and reduction of available area within the zone
	6.3.3	Zone I - Dimension (Horizontal dimension of up to 125.0mm +/-0.75mm, vertical dimension not greater than 17.9mm)
	6.3.4	Zone V - Located such that its left edge is coincident with the left edge of the MRP data page
	6.3.5	Zone V may move vertically along left edge and overlay a portion of Zone I
	6.3.6	The upper boundary of Zone II shall be coincident with the lower boundary of Zone I
	6.3.7	Zone II may extend up to 125.0mm +/- 0.75mm. In this event Zone II shall overlay a portion of Zone V
	6.3.8	The lower boundary of Zone II may be positioned at the discretion of the issuing state or organization
	6.3.9	Zone III should start at the right vertical boundary of Zone V
	6.3.10	Zone IV shall be at the bottom of the VIZ on the front of the MRP data page
	6.3.11	Zone IV may also overlay Zone V
	6.3.12	Barcode can be placed above the MRZ to the right of the Zone V. The size of it shouldn't prevent the inclusion of data in Zone II and III.
	6.3.13	The fingerprint image of the MRP holder can be placed in the Zone II
	6.4	Dimension and boundaries of Zone VII (MRZ) are fixed. 23.2mm from the bottom edge of the MRP
6.4		

Section VII			DISPLAYED IDENTIFICATION FEATURE(S) OF THE HOLDER					
7.1	7.1		Displayed portrait					
	7.1.1		Pose - Full-face frontal pose with both eyes visible (captured perpendicular to an imaginary plane formed parallel to the front of the face)					
	7.1.2		Depth of field - The full-face frontal pose shall be in focus from the crown to the chin and from the nose to the ears					
	7.1.3		Orientation - The crown shall be nearest the top edge of the MRP					
	7.1.4		Face size - Crown-to-chin portion has to be 70-80% of the Zone V, maintaining the aspect ratio between the crown-to-chin and ear-to-ear					
	7.1.5		Centering - Full-face frontal pose shall be centered within Zone 5					
	7.1.6		**Capturing the full-face frontal pose of the holder**					
		7.1.6.1	Lighting - Adequate and uniform illumination shall be used to capture the full-face frontal pose					
		7.1.6.2	A uniform light-colored background shall be used to provide a contrast to the face and hair					
		7.1.6.3	Quality of Captured portrait (Resolution of 6-8lines/mm)					
	7.1.7		Color - Portrait shall be black and white or a true-color representation of the holder					
	7.1.8		Facial Ornaments - A facial ornament should appear only if it is permanently worn					
	7.1.9		**Digitally printed reproduction**					
		7.1.9.1	Digital reproduction quality - Accurate recognizable representation of the document holder/Comparable image quality in digital reproduction					
		7.1.9.2	Border - It shall not be used to outline a digitally printed reproduction					
		7.1.9.3	Coexistence with final preparation treatments) of the MRP and shall not interfere with proper viewing of the displayed portrait and vice versa (security printing)					
	7.1.10		Coexistence with final preparation treatments) of the MRP and shall not interfere with proper viewing of the displayed portrait and vice versa					
	7.1.11		Portraits of babies - upright position if possible/capture the portrait with the baby lying on light-colored blanket/baby seat + light background					
7.2			**Displayed signature or usual mark**					
	7.2.1		Orientation - it shall be displayed with it's a-dimension parallel to the reference edge of the MRP					
	7.2.2		Size - Signature/Usual mark shall be of such dimensions that it Is discernible by the human eye and the aspect ratio of the original.					

	7.2.3	Scaling for reproduction using digital printing - Aspect ratio shall be maintained.									
	7.2.4	Cropping for reproduction using digital printing - Issuing state should take steps to eliminate/minimize cropping									
	7.2.5	Color - The signature/usual mark shall be displayed in a color that affords a definite contrast to the background									
	7.2.6	Borders shall not be permitted or used to outline the displayed signature or usual mark									
7.3		**Displayed single-digit fingerprint**									
	7.3.1	Orientation - Width of the fingerprint shall be parallel to the edge. (Appendix 5)									
	7.3.2	Size - Displayed single-digit fingerprint shall be a one-to-one replication of original									
	7.3.3	Scaling for reproduction using digital printing - scaling shall not be permitted									
	7.3.4	Cropping for reproduction using digital printing - Issuing state should take steps to eliminate or minimize cropping									
	7.3.5	Color - Shall be displayed in a color that affords a definite contrast to the background									
	7.3.6	Borders - shall not be permitted									

SECTION VIII **VISUAL INSPECTION ZONE (VIZ) - ZONE I THROUGH VI)**

8.1		VIZ consists of zones containing mandatory and optional data fields									
8.2		Entered data in the VIZ									
	8.2.1	Typeface and type size -Type face is at the discretion of the issuing state. Recommended 10char/inch, Maximum of 15char/inch, readable with normal sight									
	8.2.2	Use of upper-case characters is recommended/ Appropriate mixture of cases may be used in the prefix									
	8.2.3	Diacritic marks maybe used with either case characters, at the option of the issuing state									
8.3		Languages and characters (A-Z, 1-0), Zone I/II/III with national language needs transliteration. Recommended using non-Latin alphabets in optional fields.									
8.4		Fields - Caption are necessary for mandatory fields									
	8.4.1	Unused fields - Caption shall not appear on the unused field									
	8.4.2	Printing Spacing - Not except 15 char/inch. Preferred 10char/inch, if there are enough space, density can be reduced for good legibility									
8.5		If any optional field or data element is not used, the data may be spread more evenly in the visual zone of the MRP data page									

8.6

		Data element directory
	1	Issuing State or Organization (in full) - Variable # of Char and the font type being selected at the discretion of the issuing state/organization
	2	Document - Variable # of char and the word “passport” shall be in the national language plus either English, French or Spanish.
	3	Document code - Maximum char of 2. Capital letter “P” to designate an MRP + one additional letter (at the discretion of the issuing state)
	4	Issuing state (in code) - Three-letter code
	5	Passport Number - As given by the issuing state/organization
6/7		Name - It shall be divided into two parts. Primary identifier (surname, maiden name, married name, family name), secondary identifier (Given game, initials)
	6	**Primary Identifier** - Variable # of char, In case the holder name cannot be shown in full, the most important components) shall be inserted
	7	**Secondary Identifier** - Shall be inserted in full, up to the maximum dimensions of the field frame.
	8	Nationality - Nationality of the holder as recorded by the issuing state, in the languages) of the state of issue
	9	Date of Birth - Holder date of birth as recorded by the issuing state. For unknown dates see 15.1.7 of section IV
	10	Personal number - Optional personal identification number given to holder by issuing state
	11	Sex - Specified by use of the single initial commonly used in the language of the state. If english/french or Spanish necessary use F/M/X
	12	Place of Birth - Optionally used for city and state of the holder’s place. Translation to English/French or Spanish should be given.
	13	Optional personal data elements - Personal identification number or fingerprint. The fingerprint should be presented as a 1:1 representation of the original.
	14	Date of issue - Issued date of the MRP
	15	Authority or issuing office - Field may be used to indicate the Issuing authority and its location. A translation should be given for international community.
	16	Date of expiry - Date of expiry of the MRP
	17	Optional document data elements - Optional data elements relating to the document
	18	Holder’s signature or usual mark - Signature of the holder or usual mark of holder
	19	Identification feature - This field shall contain a portrait of the holder. Not larger than 45mm x 35mm and smaller than 32mm x 26mm
	20	Optional data elements - Additional optional data elements at the discretion of the issuing state

Mandatory Machine Readable Zone (MRZ) - Zone VII

Section IX **Purpose of the MRZ**

9.1		**What is MRZ?**					
	9.1.1	Provides essential data elements in a standardized format that can be used by all receiving Issuing Authorities regardless of their national script or customs					
	9.1.2	MRZ formatted in such a way as to be readable by machines. It is a different representation of data than is found in the VIZ.					
9.2		**Properties of the MRZ**					
	9.2.1	Data in the MRZ must be visually and machine readable.					
	9.2.2	OCR-B typeface is specified for MRZ.					
9.3		**Constraints of the MRZ**					
	9.3.1	The characters allowed in the MRZ are a common set which can be used by all Issuing Authorities					
	9.3.2	Diacritical marks are not permitted in the MRZ. Use of these marks would confuse machine-reading equipment					
	9.3.3	Number of character position available for data in the MRZ is limited.					
	9.3.4	Names in the MRZ may not appear in the same form as in the VIZ. In the VIZ, non-Latin and national characters may be in used.					
9.4		**Transliteration of national characters in names in the MRZ**					
	9.4.1	Names in the MRZ are represented differently from those in the VIZ. National characters must be transliterated using only allowed OCR character set.					
9.5		**Data position/data elements/ check digits/ print specifications/ print position in the MRZ**					
	9.5.1	Data position					
	9.5.2	Check digits					
	9.5.3	Print specifications					
	9.5.4	Data elements					
	9.5.5	The three-letter codes (Issuing state/organization)					

	9.5.6	Print position (6.0mm +/- 1mm). Reference centre lines for OCR lines.

9.6 **Data structure of the upper machine readable line**

Char. Pos'n	
1-2	Document code - First character shall be "P" to designate an MRP. Second letter may be used to designate a particular MRP
3-5	Issuing state/Organization - Three letter code to designate the issuing state/organization.
6-44	Name - Consists of primary and secondary identifier which shall be separated by two "<<". Components within primary or secondary identifiers shall be separated by "<".
	Punctuation in the name - Representation of punction is not permitted in MRZ
	Apostrophes in the name - Identifiers separated by apostrophes in the VIZ shall be combined and no filler character shall be inserted.
	Hyphens in the name - it shall be converted to the filler character
	Commas - It shall be omitted in the MRZ
	Name prefixes and suffixes - Shall not be included in the MRZ except as permitted by section IV 12.7
	Filler - Primary and secondary identifiers and required separator do not exceed 39 char. MRZ can have up to 44 char. Unused character position can be filled
	Truncation of the name - When identifiers and separators exceeds maximum number of characters, they shall be truncated.

9.7 **Data Structure of the lower machine readable line**

Char.	
1 - 9	**Passport Number** - Given by the issuing state to identify the document. Special characters shall be replaced by the filler "<". Number shall be followed by "<" up to position 9.
10	**Check digit** for passport number
11-13	**Nationality** - Three-letter code
14-19	**Date of birth** - The structure is YYMMDD
20	**Check digit** for Date of birth
21	**Sex** - F = female/ M = Male
22-27	**Date of expiry** - Structure is YYMMDD

	28	**Check digit** for date of expiry							
	29-42	**Personal number/optional data** - Special characters including spaces shall be replaced by the "<". The number shall be followed by "<" up to position 42.							
	43	**Check digit** for personal number/optional data							
	44	**Composite check digit** - Over all check digit							
Section X		**Machine reading requirements and the effective reading zone**							
10	10	Effective reading zone - 17.0mm X 118.0mm							
	10.1	Security features will not interfere with MRZ in B900 range							
Section XI		**Visual Inspection Zone**							
	11.1	Primary identifier - Family name/ the main name/ the surname, and in some cases, the entire name.							
	11.2	Secondary Identifier - Forenames, family names, given names or any other secondary names. If single field used, separate both names with comma.							
	11.3	Prefixes and suffixes should not be included unless legally part of the name. Numeric characters has to be replaced with roman numerals.							
	11.4	National characters may be used in the VIZ. If not Latin-based, then a transliteration into Latin characters shall be provided.							
Section XII		**Machine Readable Zone (MRZ)**							
	12.1	To achieve global interoperability, the identifiers shall conform to requirements of the OCR-B character set and to the number of positions available							
	12.2	The name of the holder shall be printed using upper-case OCR-B characters							
	12.3	Primary Identifier followed by "<<" and secondary identifier using the Latin character transliteration (if applicable)							
	12.4	Filler can be used if the primary or secondary identifiers have more than one name component							
	12.5	Filler characters should be inserted immediately following the final secondary identifier though to the last char' position in the machine readable line							
	12.6	Name filed in the MRZ allows for maximum of 39 char' in the upper line. If the primary and secondary identifiers exceeds the limits truncation necessary							
	12.7	Prefixes and suffixes shall not be included except where they are legally part of the name							
	12.8	Numeric characters shall not be used in the name field							

12.9		Punctuation characters are not allowed in the MRZ.									
12.10		Transliteration of National Characters in Names in the MRZ									

Section XIII **Visual Inspection Zone (VIZ)**

13.1		Where the place of Issue or place of birth those does not use Latin Char', the name of the state or location shall appear in the same/also in Latin									
13.2		Place of Issue in Latin language where there is a more common internationally known version									
13.3		Three-letter codes can be used for place of birth									

Section XIV **Machine Readable Zone (MRZ)**

14.1		Three-letter code can be used for Issuing state/Organization and for Nationality									
14.2		Three-letter codes is mandatory in the MRZ and Field 04 in the VIZ and optional for holder's nationality in the VIZ.									

Section XV

15.1		Dates in the VIZ									
	15.1.1	Dates shall be shown in two-digit number (Dates from 1 to 9 shall be preceded by a zero).									
	15.1.2	The month maybe printed in the language of the issuing state using up to four character positions									
	15.1.3	Where the language of the issuing state is not Eng/Fre/Spa, the month shall be followed by "/"and the month in Eng/Fre/Spa/									
	15.1.4	The year will be normally be shown by the last two digits and be preceded by a blank space									
	15.1.5	Example, a date of 12 July 1942 on MRP issued in Italian with French translation - 12 LUG /JUIL 42									
	15.1.6	The month maybe printed in numerical form in the VIZ. The date would be written as "DD MM YY"									
	15.1.7	Unknown date of birth should be written as "XX XXX XX"									
15.2		Dates in the MRZ									
	15.2.1	Following the format similar to "YYMMDD"									
15.2.2		If all or part of the DOB is unknown, the relevant character position shall be completed with filler characters (<)									

Section XVI **Check Digits in the Machine Readable Zone**

16		16.1 INCLUSIVE. Passport number, Date of Birth, Date of expiry, Personal number, Composite Check Digit					
Section XVII		**Character Sets and Fonts**					
17.1		**Captions**					
	17.1.1	Caption shall be printed in a clear, linear type font in a size of 1.0mm to 1.8mm.					
	17.1.2	Caption shall be in the language of the issuing state. When such language uses the Latin alphabet, regular fond style should be used to print the caption.					
	17.1.3	If the language of the issuing state isn't Eng/Fre/Spa, the caption shall be followed by "/" and the equivalent of the caption in Eng/Fre/Spa + Italic style.					
	17.1.4	Entered data, Visual Inspection Zone (VIZ)					
	17.1.5	Entered data, Machine Readable Zone (MRZ)					
Section XVIII		**Characteristics of the Machine Readable Zone**					
18		MRP data page shall conform with ISO 1831					
18.1		Machine readable data shall be arranged from left to right in fixed-length field in two lines in order specified in the data structure.					
18.2		"<" can be used as filler to occupy all the character positions					
Section XIX		**Quality Specification of the machine Readable Zone**					
19.1		Substrate quality					
19.2		Substrate opacity					
19.3		Substrate gloss					
19.4		Fluorescence					
19.5		Alternative substrates					
19.6		Spectral band					
19.7		Print contrast signal (PCS)					
19.8		Character stroke width					
19.9		Contrast Variation ratio (CVR)					

19.10	Spots and extraneous marks						
19.11	Voids						
19.12	Line separation						
19.13	Line spacing						
19.14							
19.14.1	Skew of MRZ characters						
19.14.2	Skew of MRZ lines						

— END —