

Forensic Examination and Evaluation of Recent Indian Passport

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ABSTRACT

The current development of digital reproduction techniques resulted potential for fraud mean. There is definitely need of high-grade security features in the form of optically variable features or other equivalent measures for safeguards against copying and scanning. There is no single universal solution to secure a security document. A combination of overt and covert techniques is required. Any solution will have to be adapted to specifications, needs and take into consideration as per the needed level of protection measured against the cost. Hence, these security measures incorporated will delimit the fraud. Although Ministry of External Affairs, India launched three new security features such as LSI, Bar code, Double Lamination in Indian Passport but still it requires more security features as mentioned by International Civil Aviation Organization. The present research is focused to examine recently adopted features in Indian Passport as well as to evaluate this in terms of security features adopted by other countries as per ICAO. It is not usually possible to incorporate many of the security components described in the paper but some of the additional security properties should be incorporated for enhancing the security level of the passports.

Keywords: *Passport, Travel Document, Letter Screen Image, Bar code, Double Lamination, Optical Character Recognition.*

1. INTRODUCTION

International Civil Aviation Organization (ICAO) started work on machine readable travel documents in 1968 with the establishment, by the Air Transport Committee of the Council, of a Panel on Passport Cards. This Panel was charged with developing recommendations for a standardized passport book or card that would be machine readable, in the interest of accelerating the clearance of passengers through passport controls. The Panel produced a number of recommendations, including the adoption of Optical Character Recognition (OCR) as the machine reading technology of choice due to its maturity, cost-effectiveness and reliability.

"Passport" includes a passport which having been issued by or under the authority of the Government of a

foreign country satisfies the conditions prescribed under the Passport (Entry into India) Act, 1920 in respect of the 34 of 1920 class of passports to which it belongs whereas "Travel document" includes a travel document which having been issued by or under the authority of the Government of a foreign country satisfies the conditions prescribed. Whoever (a) contravenes the provisions of section 3; or (b) knowingly furnishes any false information or suppresses any material information; or (c) fails to produce for inspection his passport or travel document; or (d) knowingly uses a passport or travel document issued to another person; or (e) knowingly allows another person to use a passport or travel document issued to him, shall be punishable with imprisonment for a term which may extend to [2 years or with fine which may extend to 5000/- Rs.] or with both. -**The Passports Act, 1967.**

Types of Indian Passports- The following types/classes of passports may be issued: -

I. Regular/Ordinary/Tourist Passport- Issued for ordinary travel, such as vacations and business trips (36 or 60 pages). It is a "Type P" passport, where P stands for Personal and the cover of this passport is of deep blue/black.

Types Of Indian Passports



Regular Indian Passport



Official Indian Passport



Diplomatic Indian Passport

Fig 1: Types of Indian Passport

II. Official/Service/Special Passport- Issued to individuals representing the Indian government on official business. It is a "Type S" passport, where S stands for Service and the cover of this passport is of white.

III. Diplomatic Passport- Issued to Indian diplomats, top ranking government officials and diplomatic couriers. It is a "Type D" passport, where D stands for Diplomatic and the cover of this passport is of maroon.

Passports shall be designed with safeguards against fraudulent attack. Methods of fraudulent attack can be classified as follows:

◆ **Counterfeit-**

According to Sec. 28 of Indian Penal Code (IPC) "A person is said to 'counterfeit' who causes one thing to resemble another thing, intending by means of that resemblance to practice deception, or knowing it to be likely that deception will thereby be practiced."

◆ **Fraudulent alteration-**

According to Sec. 25 of Indian Penal Code (IPC) "A person is said to do a thing fraudulently if he does that thing with intent to defraud but not otherwise."

The alteration in a genuine passport to enable it to be used for travel by an unauthorized person or to an unauthorized destination. The biographical details of the genuine holder, particularly the portrait, form the prime target for such alteration.

◆ **Impostors-**

'Impostor' is defined as someone representing himself to be some other person. Security features should be incorporated to facilitate the visual and/or automated detection of fraudulent use of the passport by an impostor.

Each security documents including passports consist of visible (overt) features and invisible (covert) features. An overt technique involves easily identifiable features and generally represent as 'secured'. However, an overt security feature is also identifiable to criminals who may then develop a passable, fraudulent replication of the visible element. Their major weakness, however, is the visibility that enables their simple eradication. A covert technique must first be identified in order to be subverted. Employee indiscretion could provide such information to criminals. Covert techniques are exploding nowadays due to the ubiquity of high-quality office digital printers. In addition with that some features are under semi visible (Semi-covert) category that can be examined by using simple instruments.

Hence, detection of security features can be at any or all of the following three levels of inspection:

- Level 1- Cursory examination for rapid inspection at the point of usage (easily identifiable visual or tactile features); It includes Overt features that represent the first line of document examination undertaken by a trained employee using sight and/or touch.
- Level 2- Examination by trained inspectors with simple equipment and it includes Semi-covert features that represent the second line of document examination. A trained employee using simple equipment such as a magnifying glass, ultra-violet light etc.
- Level 3- Inspection by forensic specialists. To maintain document security and integrity, periodic reviews and any resulting revisions of document design should be conducted. It covers Covert features that represent the third line of document inspection. A specialist may be required to conduct a detailed in-depth examination of a document using special equipment and knowledge.

Threats to the Security Documents-

The following threats, listed in no particular order of importance, are identified ways in which the document, its issuance and use may be fraudulently attacked:

- counterfeiting a complete travel document;
- photo substitution; deletion/alteration of data in the visual or machine readable zone of the MRP data page;
- construction of a fraudulent document, or parts thereof, using materials from legitimate documents;
- removal and substitution of entire page(s) or visas;
- deletion of entries on visa pages and the observations page;
- theft of genuine document blanks;
- impostors (assumed identity; altered appearance); and
- tampering with the contactless IC (where present) either physically or electronically.

The purpose of this research is to better acquaint the document examiner as well as to a layman with the various types of security features and their forensic examination. This research is carried out by using various scientific instruments i.e. Video Spectral Comparator (VSC), Twin Video Comparator (TVC), Stereo microscope, Ultraviolet Lamp, Magnifying glasses, Scanner and Computer etc.

2. SECURITY FEATURES OF RECENT INDIAN PASSPORTS

2.1 BIODATA PAGE- It contains the personalized details of the bearer of the passport and appearing in form of text in the visual and machine readable zones. Apparently, the personal data page has been shifted from an inside page (penultimate page) to just next page, while data on last page is shifted to just previous. The signature and seal of passport issuing authority has been shifted from page 1 to the overleaf of front cover page.



Fig 2: Inner side of recent Indian Passport



Fig 3: Front part of biodata page

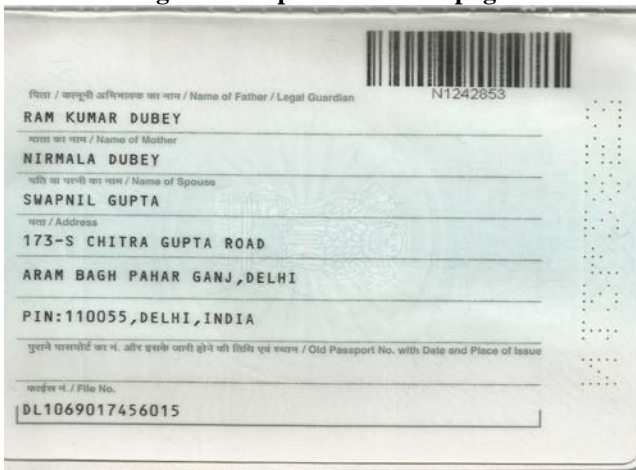


Fig 4: Back part of biodata page

2.2 LETTER SCREEN IMAGE (LSI): It is used as a synonym to Ghost Image. It is basically a second representation of the holder's portrait on the passport, reduced in contrast, saturation and size. LSI is appearing as ghost images of the applicant. Ghost images are slightly different from holograms although similar in principle.

The Ministry of External Affairs launched a new series of passport booklets in April 2013 with the letter screen image (LSI) of the holders. In LSI passport booklets, the personal data such as name, address, date of birth, file number etc. of the applicant are embedded in tiny fonts, which form the ghost/shadow image of the holder. The LSI passport is now being issued by all passport issuing authorities in India and abroad.

None of the data will be visible to the naked eye, but can be seen with a magnifying glass and can't be forged. After filing the necessary information of the applicant that includes name, date of birth, address and after affixing the scanned photograph, the ghost image of the photograph, along with the applicant's information will be printed in dots on the booklet by using the LSI machine at the regional passport office. LSI is printed in sky blue colour and their fonts form a spiral form instead of linear form.

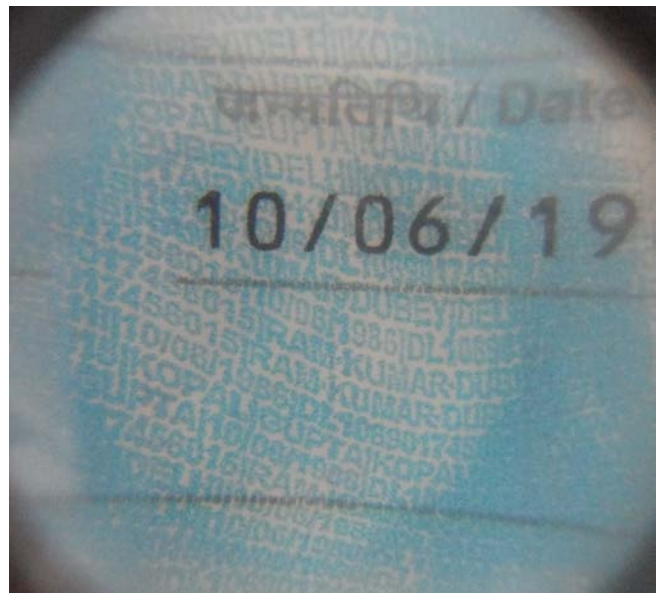


Fig 5: Letter Screen Image present on front biodata page

2.3 BARCODE: It is a means of storing data as a pattern of lines or dots. Indian passport contains lines in the bar code. It is used for coding alphanumeric characters. It encodes all 128 characters of ASCII. Basically, Bar code present in the Indian passport is made generated by the Passport Number of the individual concern.



Fig 6: Bar code present on back biodata page

2.4 LAMINATED FILM- Laminated film is used for affixed to the biodata page of a passport booklet by the application of heat and pressure. It contains a clear material, which is having security features designed to protect the biodata page of the passport.

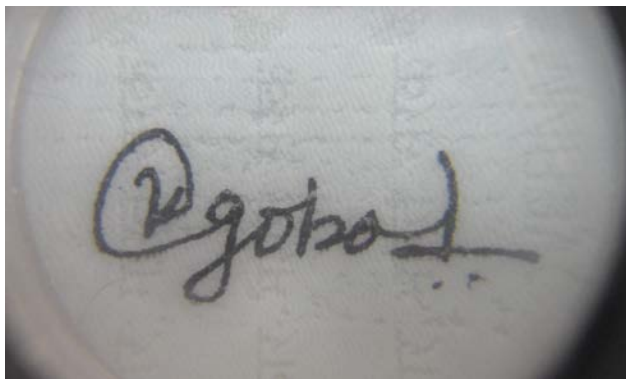


Fig 7: Lamination at Signature area

Previously, lamination was present in the overleaf of front and back of passport cover but obviously after shifting of position of biodata page it also shifted accordingly. Lamination is done by using HAUV [Heat Applied Ultra Violet] film and fused at 160 to 180 degree Celsius temperature. The key aim of any security laminate is data protection, securing and protecting it from fraudulent alteration.

Recent Passport is having ‘Double lamination’ means both the biodata pages (front & back) and their respective back sides also contain lamination. Provision of double lamination has been included on pages 1, 2, 35 and 36 (in case of 36 type booklet). It is a new security feature implemented in Indian Passport to enhance the overall quality of passports as well as to improve their security.

The printed text on the laminated sheet can be read as ‘GOVERNMENT OF INDIA (in English)’ and ‘BHARAT SARKAR (in Hindi)’ and viewed under normal light. Whereas it show in reddish colour (English text) and greenish colour (Hindi text) respectively under the Ultra

Violet Light. It means laminate contain visible and or invisible security printing.



Fig 8: HAUV film under UV Light

2.5 DICUTS- Dicuts are the type of horizontal and oblique lines and these are present in both front and back biodata page. In previous Passport ‘2 Special Dicuts’ are formed in front biodata page having shape of Ashoka Pillar (only outlined) but in the recent passport it has been eliminated.

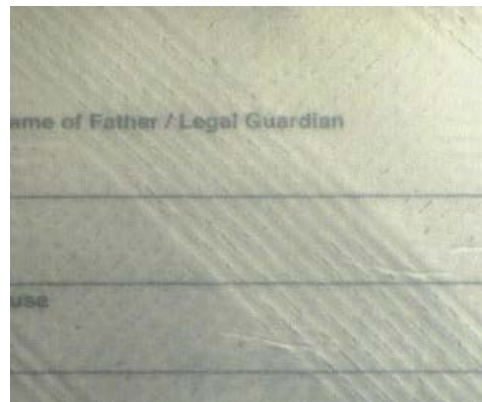


Fig 9: Dicuts of biodata page

2.6 OPTICAL CHARACTER RECOGNITION (OCR)- A significant proportion of passport contain a series of machine readable characters on two rows along the length of the front biodata page of the passport.

The font used for these characters is called Optical Character Recognition (OCR-B). OCR-B is a monospace

(c) Numbering

- the passport number should appear on all sheets of the document and on the biodata page of the document;
- the passport number shall be printed and it should ideally be in a special style of figures or typeface and be printed with an ink that fluoresces under ultraviolet light in addition to having a visible colour.

4. CONCLUSION

To provide protection against threats, a travel document requires a range of security features and techniques combined in an optimum way within the document. Although some features can offer protection against more than one type of threat but no single feature can offer protection against them all. Likewise, no security feature is 100% effective in eliminating any one category of threat. The best protection is obtained from a balanced set of features and techniques providing multiple integrated layers of security in the document that combine to deter or defeat fraudulent attack. This research will be helpful for immigration and border control as they have is to determine the authenticity of identity and security documents specially Indian passports as well as to the forensic scientists as they have a wider range of activities that varies depending on the requirements of each individual case and the mission or scope of services of the document examination unit. Although Indian Passport is amended over the time but still it needs more improvement as suggested in above said paper.

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