INTERPOL

Guidelines concerning Fingerprint Transmission

INTERPOL   OS/FTD/IDFP

2012

GUIDELINES FOR FINGERPRINTS TRANSMISSION

Purpose of this guideline

- This document has been prepared to assist member countries improve the quality and quantity of fingerprint records submitted to INTERPOL AFIS service for search and storage.

- Finger marks can be collected at a crime scene and have the potential to link a series of crimes together, or to place a suspect at the scene.

- Fingerprints play an equally important role in identifying victims following a disaster such as a cyclone, earthquake, bombing or other attack.

- The quantity and quality of information stored in the INTERPOL AFIS depends on its member countries.

- If Member Countries send low quality fingerprint requests then the searches will not be accurate and in some cases not possible and if small quantities are send the searches will be often negative due to a lack of information in the AFIS.

In resume increased quality and an increased data will result in more HITS.

Mark BRANCHFLOWER

Head of Fingerprint Unit
Identification Branch
OIPC INTERPOL

1. TRANSMISSION OF NIST FILES TO INTERPOL

- In 1997 INTERPOL created a standard for the electronic exchange of fingerprint files for AFIS; this standard was agreed by all member countries and is now accepted by the fingerprint world as the standard for fingerprint exchange.

- At the beginning of 2005 INTERPOL decided to make available for notices the fingerprints in this format, this means that all member countries connected to I-24/7 now have the possibility to download these files in NIST format through eASF. These files can only be opened by using a NIST viewer. INTERPOL is currently making this available via the National Security Officers in all member countries.

- The NCBs are actively encouraged to forward these NIST files to their national AFIS services for search and storage.

- Sending fingerprints in a NIST format has many advantages – fingerprints should be inserted directly to the AFIS system, the files are smaller in size, contain more information in better quality and thus simplify the biometric data exchange between participating parties.

- INTERPOL Gateway project allows member countries to access remotely the INTERPOL central AFIS (Automated Fingerprint Identification System) and run searches of fingerprints and latent prints against all data stored in AFIS database at IPSG in Lyon. In this case the fingerprints must be in NIST format.
  The system will initially supports 1,000 transactions per day, with automatic NO-HIT answer in 10 minutes.
  in case of a HIT the result will be validated by two fingerprint examiners at IPSG.

- In addition to supplying NIST records we have the possibility to insert NIST files in our database and again we encourage countries to send us NIST files rather than JPEG if they are able to do so.

- The parameters for creating the NIST file required are available on the fingerprint web page of the INTERPOL web site. Prior to submitting NIST files for the first time we would be grateful if a test set could be forwarded for prior testing.

- In 2011, we made 1,800 identifications as a result of increased data sharing and comparison by member countries.

1. TRANSMISSION OF NIST FILES TO INTERPOL

In 2013 INTERPOL will make available to all member countries that require a software which will enable them to scan a paper fingerprint form or convert a JPG file into a NIST format – Morpho EVA.

2. WHAT TO SEND

- INTERPOL maintains a database of fingerprint files from member countries; currently this AFIS database contains more than 161,000 fingerprint forms and more than 6,000 crime scene marks.

- The information comes from all member countries and contains very interesting data which can be made available to other member countries respecting the INTERPOL rules on co-operation via I-24/7 network.

2.1 It is **recommended** that member countries forward to INTERPOL fingerprints of person **suspected or convicted of crimes who is not a national of the country in question.**
In this case the **fingerprints are searched and stored in INTERPOL AFIS** database, if the member country which is the owner of fingerprint data does not decide for search only - this should be clearly stated in the message.

2.2 Search of fingerprints of **asylum seekers or person crossing the borders** should also be done, in this case the fingerprints of the person are **only searched and not stored in the INTERPOL AFIS database**.

3. TRANSMISSION OF FINGERPRINT IN JPEG FORMAT (if not possible in NIST format).

3.1 The fingerprints send to IPSG in JPEG format have to meet some parameters as listed in INTERPOL Circular letter ICPO-INTERPOL N° 2004/1096/OS/FTD/IDFP/MB/IR dated 24/09/2004.

3.2 Among them the most important is that the source document should be an original document of a good quality or:

3.2.1 A very good reproduction of the original

3.2.1 Text mode rather than photo mode

3.2.2 Not be enlarged or reduced before scanning

3.2.3 Scanned in a 1 to 1 ratio

3.2.4 Scanned at 500 DPI using JPEG compression 8 Bits per pixel (grayscale)

3.2.5 Visible scale attached or being a part of fingerprint form

3.3 Please note, that fingerprints sent in JPEG format cannot be searched using INTERPOL AFIS Gateway, fastest way of fingerprint transmission and comparison in INTERPOL AFIS database.

3.4 Sending fingerprints in JPEG format has disadvantages when compared to NIST format:

- comparison cannot be automated (via AFIS Gateway)
- needs more manual work to be processed
- is more time consuming
- more problems with quality of the image
- high quality images (correct size and resolution) in JPEG format are often big files which makes it impossible for NCB to send more fingerprint images in one message.

4. TRANSMISSION OF FINGERPRINT CRIME SCENE MARKS

4.1. In order to be able to provide correct insertion and comparison of fingerprint marks, few requirements have to be followed:

4.1.1. Crime scene marks should be in JPEG or NIST format.

4.1.2. Photographed in 1:1

4.1.3. A hard copy digital image must be of a minimum of 500 DPI (1000 DPI if possible).

* Resolution: This indicates the number of dots or pixels per inch (*dpi*). Lower resolution than 500 dpi does not allow the extraction algorithms in AFIS to locate the minutiae in fingerprint patterns-therefore it is necessary to set up correctly the scanner when scanning the fingerprints for insertion to AFIS.

4.1.4. The image must be free from pixilation when observed using a standard fingerprint glass.

4.1.5. A scale in inch or centimeter must be visible in the image and must be on the same plane of focus as the Crime Scene Mark being photographed

4.1.6. One entire unit must be visible within the image (e. g. 1 inch or 1 centimeter – must be clear which system was used)

4.1.7. Generally images should be grayscale at 8 bits, but colored images at minimum of 24 bits are acceptable.

4.1.8. The un-retouched negatives must be retained.

4.1.9. In case some improvements of image have been done, this information must appear in the message, e.g. inversion, mirror image, etc.

4.2 INTERPOL highly recommends to send the fingerprint crime scene marks in NIST format from the same reasons as mentioned in paragraph **3.4** of this Guidelines.

* Special document on submission of fingerprint crime scene marks to IPSG has been adopted and is available at IPSG Fingerprint Unit.

4. CONCLUSION

We hope this short paper will assist you in your daily duties and we look forward to being able to assist you in this issue of improving the transmission of fingerprint files. If your fingerprint services need information regarding the exchange of NIST files, JPEG files or fingerprint crime scene marks then please ask them to contact us.

We look forward to receiving more good quality fingerprint forms and in return giving you more positive information concerning your fingerprint transmissions.

5. CONTACT

Fingerprint Unit

Identification Branch
OIPC INTERPOL
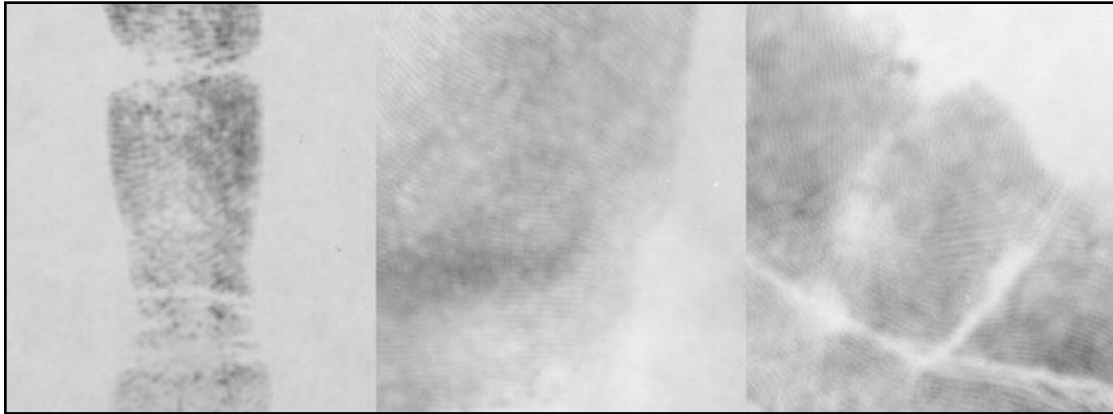200 Quai Charles de Gaulle
69006 Lyon France

Tel (33) 4 72 44 71 94
Fax (33) 4 72 44 76 45
E mail os-ftd-idfp@gs.igcs.int

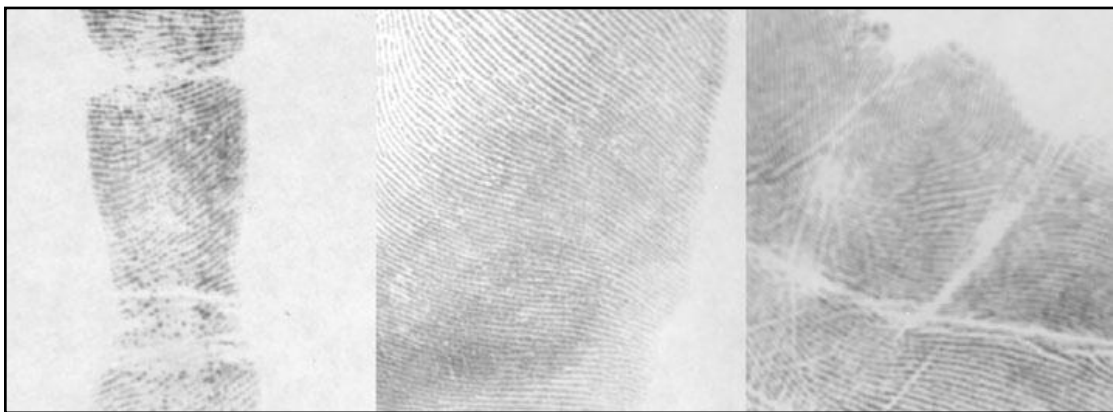Attachments : Appendix I.
Appendix II.

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Appendix I.

Quality of fingerprint image
1. Clarity

A. Only general ridge flow is visible – **WRONG** QUALITY OF IMAGE

B. First and second level details are visible - **WRONG** QUALITY OF IMAGE

**C.** First, second and third level details are visible – **GOOD** QUALITY OF IMAGE *

    * Images from: The Fingerprint Sourcebook, by Scientific Working Group on Friction Ridge Analysis, Study
      and Technology (SWGFAST), et al., August 2011,
      Chapter 9: Examination methodology, by John V. Vanderkolk

Appendix II.

Quality of fingerprint image
2. Resolution and size of fingerprint image

2.1 Wrong DPI – 96 DPI and image reduced in size; see the width and height of the image in Image → Resize option in Menu of Image Viewer

Picture a)
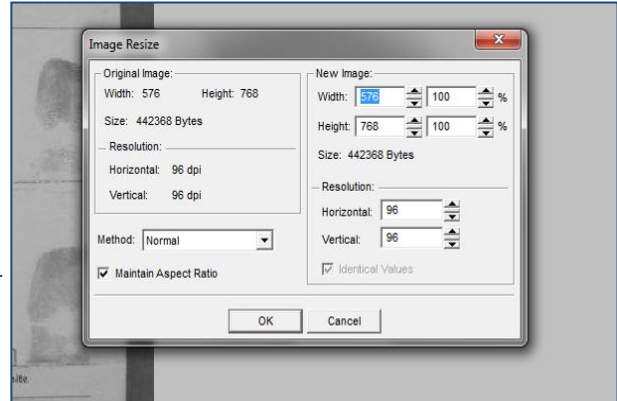
2.2 Wrong image transmission – photography of fingerprint form taken by camera
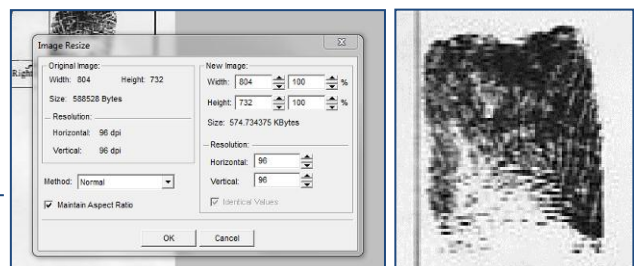
Picture b) and c)

2.3 DPI correct (500 DPI) but image reduced in size – 240 x 235 (W x H). Visible pixilation of image

Picture d) and e)
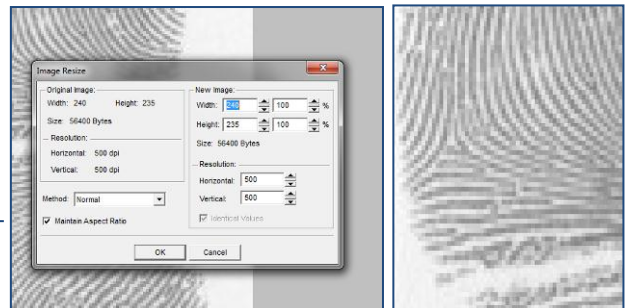
2.4 Wrong DPI (96 DPI) and image reduced in size – 804 x 732 (W x H)

Picture f) and g)

Appendix III.

3. Good quality fingerprint image

3.1 Resolution : 500 DPI
3.2 Dimensions : 4135 x 5849 (W x H)
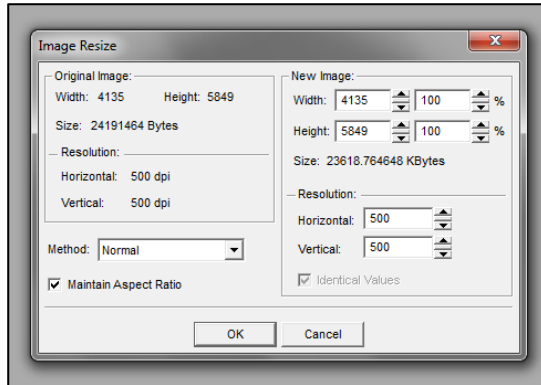
3.3 All details necessary for fingerprint examination clearly visible

3.4 Proper fingerprint form
    - scale visible
    - all information available
    - correct position of fingers