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**Postmortem Impression Submission Strategy for
Comprehensive Searches of Essential Automated
Fingerprint Identification System (AFIS) Databases**



Postmortem Impression Submission Strategy for Comprehensive Searches of Essential Automated Fingerprint Identification System (AFIS) Databases

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Foreword

Friction ridge analysis (to include fingerprints, palm prints, and footprints) is a reliable, rapid, and cost-effective means to identify unknown deceased individuals [1]. The use of postmortem impressions to rapidly identify decedents centers on the use of Automated Fingerprint Identification System (AFIS) technology. It is essential that law enforcement agencies as well as the medicolegal community understand current fingerprint technology and leverage resources to ensure postmortem impressions are appropriately searched through AFIS fingerprint databases for identification purposes. In this revision, the necessary state regulations governing the accessibility of automated fingerprint databases is discussed and the path forward to successful access is outlined. Establishing these connections is imperative for the success of automated searching of postmortem fingerprints.

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This document was revised, prepared, and finalized as a standard by the Mass Fatality Management and Disaster Victim Identification Consensus Body of the AAFS Standards Board. The draft of this standard was developed by the Medicolegal Death Investigation Disaster Victim Identification Subcommittee of the Organization of Scientific Area Committees (OSAC) for Forensic Science. It was originally conceived by the Scientific Working Group on Disaster Victim Identification (SWGDIV).

Questions, comments, and suggestions for the improvement of this document can be sent to AAFS-ASB Secretariat, asb@aafs.org or 401 N 21st Street, Colorado Springs, CO 80904.

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Keywords: *forensic identification, postmortem identification, automated fingerprint identification system (AFIS), postmortem fingerprint, postmortem impression, disaster victim identification, fingerprint submission strategy, mass fatality, friction ridge*

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1 Postmortem Impression Submission Strategy for Comprehensive Searches of 2 Essential Automated Fingerprint Identification System (AFIS) Databases

3 **1 Scope**

4 This standard provides the proper pathways, image requirements, and resources for searching the
5 totality of available antemortem fingerprint databases. It outlines the process which will ensure a
6 complete and proper search of previously obtained fingerprints. By following these proposed best
7 practices, the medicolegal authority's submission will exhaust all possible searches and have the
8 best chance of victim identification through AFIS searches.

9 **2 Normative References**

10 There are no normative reference documents. Annex C, Bibliography, contains informative
11 references.

12 **3 Terms and Definitions**

13 For purposes of this document, the following definitions apply.

14 **3.1**

15 **Automated Fingerprint Identification System**

16 **AFIS**

17 Biometric computer system that allows forensic examiners to encode, digitize, and search
18 recovered fingerprint impressions against fingerprint record databases for identification purposes.

19 **3.2**

20 **friction ridge analysis**

21 The examination of impressions from fingers, palms or soles, for identification purposes.

22 **3.3**

23 **Next Generation Identification**

24 **NGI**

25 A biometric repository managed and operated by the Federal Bureau of Investigation (FBI)
26 Criminal Justice Information Services Division (CJIS) that enhances identification services by
27 providing an incremental replacement of the former system, the Integrated Automated Fingerprint
28 Identification System (IAFIS).

29 **3.4**

30 **Automated Biometric Identification System**

31 **IDENT**

32 The Automated Biometric Identification System (IDENT) is the central Department of Homeland
33 Security (DHS)-wide system for storage and processing of biometric and associated biographic
34 information for national security; law enforcement; immigration and border management;
35 intelligence; background investigations for national security positions and certain positions of
36 public trust.

37 **3.5**

38 **antemortem (AM) records**

39 Friction ridge impressions collected from live subjects, and can come from any part of friction ridge

40 skin. Friction ridge skin is present on the palmar and plantar surfaces of the hands and feet and can
41 all be used for personal identification purposes.

42 **3.6**

43 **postmortem (PM) records**

44 Friction ridge impressions collected from deceased subjects used for identification matters. D

45 **3.7**

46 **10-print searches**

47 A 10-print search is conducted on a fingerprint record which is often a reproduction of all ten
48 fingers. This can be performed by a computer, in a “lights out” setting if the quality of the record is
49 high enough.

50 **3.8**

51 **latent print searches**

52 A latent print search can be utilized for searching unknown deceased records when multiple fingers
53 are not printable or present, and/or the quality of the recording is poor. A latent print search can
54 often be more time consuming and require additional expertise.

55 NOTE Due to the lower quality and quantity of information often found with PM fingerprints, the analysis of
56 each impression by a latent print examiner along with the marking of the specific minutiae for AFIS searches
57 can yield better results.

58 **4 Recommendations for Searching Records**

59 **4.1 General**

60 Current AFIS databases used by law enforcement agencies tasked with forensic identification exist
61 at local, state, and federal levels of government. A single comprehensive and searchable database of
62 AM fingerprint records collected in the United States or abroad does not exist. Due to data sharing
63 agreements, civil rights, privacy concerns associated with personally identifiable information (PII),
64 and system interoperability difficulties, AM records contained within various AFIS databases are
65 not congruent.

66 The individual or organization submitting PM impressions for fingerprint analysis should ensure
67 that local, state, and federal AFIS databases are appropriately searched for identification purposes.
68 The effective use of AFIS technology in searching PM of impressions against AM records can result
69 in a significant increase in the identification of decedents, allowing the medicolegal community to
70 expedite regular casework, solve cold cases, and efficiently identify human remains in mass fatality
71 incidents (MFI)^[5].

72 **4.2 Preliminary Information**

73 Before examining the remains, fingerprint examiners should familiarize themselves about the
74 incident to help understand the condition of the prints being submitted. This information may
75 consist of the following. (e.g., found under rubble, recovered from water, remains removal
76 facilitated by implements, or machinery, etc.).

77 — Geographic location and circumstances surrounding the recovery of the remains – where and
78 how the remains were recovered.

79 — Circumstances surrounding the death (e.g., natural versus accidental versus man-made event).

80 — Details regarding any identifying documents or personal effects found on the remains and if
81 these items have been removed from the remains prior to arrival of the remains at the morgue.

82 By gathering information about the circumstances of death and recovery, the examiner gains
83 awareness of the possibility of contaminated remains. Examiners should consult with the
84 medicolegal authority about the safety of handling remains.

85 Investigators should also attempt to locate AM records elsewhere, such as decedent's residence,
86 place of employment, etc.

87 **4.3 Fingerprint Recovery Process**

88 **4.3.1** Examination quality PM fingerprint records should be recorded from human remains using
89 PM fingerprint recovery techniques. See ANSI/ASB Best Practice Recommendation 094, First
90 Edition 2022: Postmortem Fingerprint Recovery: Guidance and Best Practices for Disaster Victim
91 Identification.

92 **4.3.2** Remains should be thoroughly examined as soon as possible, before ongoing decomposition
93 deteriorates the friction ridge skin and limits the ability to recover quality PM impressions.

94 **4.3.2.1** Practitioners must only handle human remains deemed safe for standard precautions and
95 wear appropriate PPE unless trained and qualified for higher levels of PPE.

96 **4.3.2.2** Trained fingerprint examiners^a should be utilized for the recovery of examination quality
97 PM impressions from the deceased and for the subsequent search/submission of recovered
98 fingerprint records through appropriate AFIS databases.

99 **4.4 Submission of Postmortem Impressions for Automated Searching**

100 **4.4.1** Once examination-quality PM fingerprint impressions are recorded, the submitting agency
101 should utilize Annex B, Fingerprint Submission Template – AFIS Database Search (or fields and
102 information contained within the template) to send PM impressions to law enforcement or
103 appropriate authorities for AFIS database searches. If a fingerprint record is submitted directly
104 through an established electronic portal, it shall conform to the ANSI/NIST-ITL standard and the
105 relevant application profile, such as the FBI's EBTS file format.

106 **4.4.2** A PM submission should request an automated 10-print search as well as a latent print
107 search. The submitting agency shall ensure that this has taken place.

108 **4.4.3** Images uploaded or emailed directly to CJIS Special Processing Center (SPC) or DHS's
109 Biometric Support Center (BSC) shall meet the requirements of submission to that agency. While
110 facsimiles are accepted by some agencies, the low-quality transmission can degrade an image
111 enough that it may not be identified through an AFIS search. Unless it is urgent, if a flatbed scanner

^a The term *trained fingerprint examiners* indicates that individuals recording or approving the fingerprint records must be able to discern the fingerprints' value for comparison purposes as a quality measure. This term does not encompass/include the training recommended for PM fingerprint recovery techniques.

112 or digital camera is unavailable, the cards should be submitted as originals to the respective
113 agencies.

114 **4.4.4** All bold/italicized fields in the submission template in Annex B should be populated by the
115 submitting agency. All [bracketed] items are specific to each case being submitted for fingerprint
116 analysis.

117 **4.4.5** Any possible known demographic information regarding the decedent or fingerprint
118 recording anomalies^b shall be included in the additional information section of the template.

119 **4.4.6** The completed submission template shall be copied/pasted into an agency's secure email
120 service/format.

121 **4.4.7** Recovered PM impressions should be attached as a digital image and shall be scanned at a
122 minimum resolution of 500ppi.

123 **4.4.8** The image shall also be saved in a lossless format (i.e., JPEG2000 or TIFF). If poor quality
124 fingerprints were received, the submitting agency may be contacted by the recipient to rescan
125 prints at a resolution of 1000ppi.

126 **4.4.9** The submission template and recovered PM impressions may also be mailed as a hard copy
127 to the appropriate authorities if electronic submission attempts fail or prove burdensome in
128 accordance with the procedures and requirements of the receiving agency. If a card is deemed to be
129 bio-hazardous, ensure the agency can receive it and it is marked appropriately with universal bio-
130 hazard labeling.

131 **4.5 Automated Searching of Postmortem Impressions**

132 **4.5.1** Emerging technologies allow for medical examiners and coroners to capture postmortem
133 fingerprints using mobile capture devices and other electronic fingerprint capture devices without
134 the direct involvement of law enforcement. Medicolegal authorities qualify to obtain a limited FBI
135 Originating Agency Identification (ORI) number ending in "Z" allowing postmortem fingerprint
136 submission for the purpose of identifying unknown deceased.

137 **4.5.2** The FBI has a designated State Identification Bureau's (SIB) for each state and territory,
138 which approves/assigns the ORI for each agency. Likewise, all direct (through capture software)
139 electronic fingerprint submissions shall be routed through the SIB to be sent to the FBI.

140 **4.5.3** Currently, the majority of states in the U.S. do not have legislation specifically permitting the
141 automated electronic submission of fingerprints from a medicolegal authority through the SIB to
142 the FBI. This is not intentionally prohibitive, rather a problem that has come about with the
143 introduction of new technology that is not sufficiently defined in state legislation governing
144 database access.

145 **4.5.3.1** The medicolegal authority that is considering this technology shall understand their
146 applicable state regulations governing the accessibility of automated fingerprint databases by their
147 agency.

^b PM changes, missing or damaged digits, special reconditioning techniques, case circumstances, etc.

148 **4.5.3.2** The medicolegal authority should consult with their SIB to determine how to best update
149 or introduce the legislation in a manner that will permit access, if necessary.

150 **4.5.3.3** In addition to legislative permissions, all policies shall be honored for both the SIB and
151 FBI CJIS to achieve compliance and electronic access.

152 **4.5.4** In addition to legislative and policy requirements, mobile capture devices vary considerably
153 in technological aspects such as operating systems and transfer gateways. End users (medicolegal
154 authorities) should consider leveraging IT resources to ensure that full automation is achieved.

155 **4.5.5** Recorded PM impressions should be submitted for AFIS database searches in the following
156 order:

157 — local,

158 — state,

159 — federal,

160 — international (if remains are believed to have international nexus).

161 **4.5.6** The submitting agency shall ensure that all of these steps are accomplished in their entirety.

162 a) local authorities should have the capability of electronically submitting the PM impressions to
163 their local and state AFIS fingerprint databases if not, the PM impressions should be forwarded
164 to local and state authorities separately by the submitting agency.

165 b) local authorities may also have the capability of electronically submitting the PM impressions to
166 the FBI. If not, the PM impressions should be electronically submitted (emailed or uploaded, not
167 faxed) or manually submitted to the FBI CJIS SPC for search through the NGI fingerprint database.
168 Searches through FBI will cascade to DHS for a lights-out search of IDENT. This will minimize the
169 number of separate searches required for an end-user. CJIS contact information:

170 FBI CJIS Division
171 Special Processing Center
172 1000 Custer Hollow Road
173 24/7 Voice Number: (304) 625-5584
174 24/7 Fax Number: (304) 625-5587
175 Email: spc@leo.gov

176 NOTE The original submitting agency is only allowed to submit the postmortem impressions to the CJIS SPC
177 if they have a valid ORI Number assigned by the FBI per 28 *CFR*, § 20.3. Medical Examiner/Coroner agencies
178 may request an ORI number (9 character identifier) from the FBI CJIS Division by contacting their State
179 Identification Bureau (SIB) at [https://www.fbi.gov/services/cjis/identity-history-summary-checks/state-
180 identification-bureau-listing](https://www.fbi.gov/services/cjis/identity-history-summary-checks/state-identification-bureau-listing).

181 c) If no match is made in the NGI database or lights-out search of IDENT, the PM impressions should
182 be electronically (emailed or uploaded, not faxed) submitted to the DHS Biometric Support
183 Center for search through the DHS Automated Biometric Identification System (IDENT) AFIS
184 fingerprint database. A field request cover sheet shall be filled out separately for each request.

185 This request sheet can be requested from DHS by emailing their general inbox. DHS contact
186 information:

187 DHS
188 Biometric Support Center – West
189 24/7 Voice Number: (858) 609-2609
190 24/7 Fax: (858) 609-2600
191 Email: Bscwest-general@obim.dhs.gov

192 — If no matches are made on the federal level, it may be valuable to have local or state law
193 enforcement reach out to neighboring states for assistance in searching the recovered PM
194 impressions through neighboring local/state AFIS fingerprint databases.

195 d) If no matches are made on the local, state, or federal level, it may be valuable to reach out to the
196 International Criminal Police Organization (INTERPOL) for search through the AFIS fingerprint
197 databases of member countries (if remains are believed to have international nexus). INTERPOL
198 information provided below:

199 INTERPOL
200 NCB Washington
201 U.S. Department of Justice
202 Washington, DC 20530-0001
203 Voice Number: (202) 616-9000
204 Fax Number: (202) 616-8400
205 Email: ncb.washington@us.igcs.int

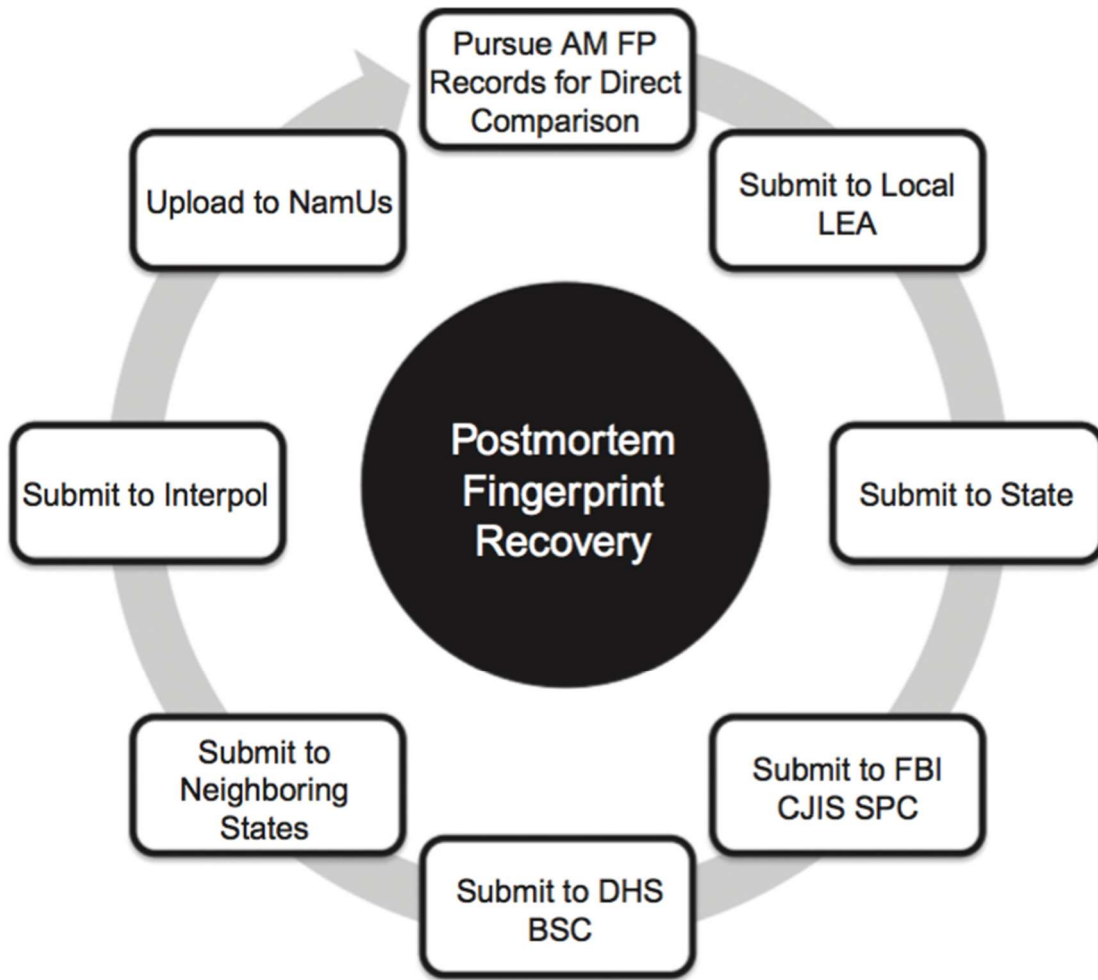
206
207 e) In the event of no matches at any of the aforementioned local, state, federal, or international
208 levels, it may be valuable to upload the unidentified PM fingerprint records to the National
209 Missing and Unidentified Persons System (NamUs). This allows other resources to be utilized for
210 the assistance of identification. Each region of the U.S. has a Regional Program Specialist (RPS)
211 that coordinates all cases for that region. Contact NamUs for the appropriate RPS for the location
212 of the case using the below link and referencing the “Case Assistance” tab.

213 NamUs
214 National Institute of Justice
215 <https://namus.nij.ojp.gov/contact>
216

217 See Figure 1 for a visual representation of the postmortem submission strategy to be followed for
218 all unidentified deceased cases involving friction ridge impression submission.

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Figure 1—Postmortem Fingerprint Submission Strategy c



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^c Postmortem Fingerprint Submission Strategy. Reprinted from *Postmortem Fingerprinting and Unidentified Human Remains* (p. 93) by Mulawka M. H. and L. Miller, 2014, New York, NY: Routledge. Copyright 2014 by Taylor & Francis. Reprinted with permission ^[2].

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Annex A
(informative)

Fingerprint Submission Template – AFIS Database Search [2,5]

The ***Your Agency Name*** has recovered human remains and is requesting AFIS fingerprint database searches for identification purposes. Please review the information presented in Table B.1.

Unidentified Deceased Fingerprint Submission	
To:	<i>Agency Name</i> <i>Email Address</i> <i>Phone Number</i> <i>Fax Number</i>
From:	<i>Your Agency Name</i> <i>Email Address</i> <i>Phone Number</i> <i>Fax Number</i>
ORI:	Agency ORI
Date:	<i>[mm/dd/yyyy][hh:mm]</i> hours EST
Submission Type:	Unidentified Deceased
Re:	<i>Your Agency Name</i> Case <i>[Case#]</i>
Pages:	<i>[#]</i> total (<i>[#]</i> image(s), 1 email)
Comments:	<p>Please attempt to identify the submitted postmortem impressions recovered from human remains discovered in <i>[location]</i> on <i>[DOD mm/dd/yyyy]</i>. Please perform a ten-print search of all available AFIS databases (local, state, federal, etc.) and perform a latent-print search in the event of negative ten-print search results. In advance, thank you for your assistance in this matter.</p> <p>Please provide fingerprint search results along with database search information (local, state, federal, etc.) to <i>Fax Number</i> or <i>Email Address</i>. If an identification is effected, please forward the antemortem fingerprint record and any other available information about the individual, including criminal history.</p>

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Table B.1—Fingerprint Submission Template

Additional Information: Note important information such as possible demographic information for the decedent or recording anomalies such as the submitted prints are from the dermal layer of skin.

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Annex C
(informative)

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^e Available from: <http://www.fbi.gov>



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