Department of Justice
Federal Bureau of Investigation

CRIMINAL JUSTICE INFORMATION SERVICES (CJIS)

ELECTRONIC BIOMETRIC TRANSMISSION SPECIFICATION (EBTS)

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CHANGE HISTORY
2005 - 2007

Version/ Revision	Description of Change	QA Approval	Date
EBTS V8.0	Changed Title of Document from EFTS V7.1 (for all previous changes to the EFTS, see Change History of EFTS V7.1)		June 14, 2007
EBTS V8.0	CHANGE HISTORY ..... Appendix A – Transaction Priorities ..... • *Revised to provide up to nine Priorities (values of PRY) in accordance with the revised ANSI/NIST-ITL 1-2006* ..... • *Revised to include new TOTs* ..... • *Added footnotes for TPRS and RPIS TOTs* ..... Appendix B – Descriptor and Field Edit Specifications for Type-1 Logical Records ..... Appendix C - Descriptor and Field Edit Specifications for Type-2 Logical Records ..... TABLE OF CONTENTS ..... LIST OF TABLES..... LIST OF FIGURES ..... LIST OF APPENDICES ..... PREFACE..... How To Use This Document ..... SECTION 1 INTRODUCTION ..... 1.1 Background..... 1.2 Contents of Specification..... 1.2.1 File format ..... 1.3 Change Control..... 1.4 Tagged Fields ..... 1.4.1 Interpretation of Tags ..... 1.4.2 Use of Separator Characters ..... 1.5 Error Handling..... 1.6 Identifying Previous Transactions ..... 1.7 Data Storage in the IAFIS Database..... 1.8 Guidance on ORI and CRI Usage..... SECTION 2 SCOPE..... SECTION 3 DESCRIPTION OF OPERATIONAL CONCEPTS..... 3.1 Electronic Fingerprint Identification Submissions ..... 3.1.1 Type of Transaction Definitions..... 3.1.1.1 Criminal Ten-Print Submission (Answer Required) (CAR)..... 3.1.1.2 Criminal Ten-Print Submission (No		

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	• *Added field Universal Control Number (2. 081 UCN) for CPR and IRQ transactions to identify either criminal or civil records*
	• *Added description for Custody or Supervisory Start Date (2.054 SSD)*
	• *Added field Name of Designated Repository (2.098 NDR) for Ten-print Criminal and Latent Searches, and Image Requests*
	  o *Added Table of NDR Values*
	  o *Added NDR values for RISC, Canada RTID, DHS US-VISIT and DOD ABIS*
	• *Added field Employee Identification Number (2.049 EID) for Special Latent Cognizant File transactions*
	• *Added field Rap Back Request (2.052 RBR) for Ten-print transactions*
	• *Added field Rap Back Record Owner (2.2015 RBRO) for Tenprint transactions*
	• *Added description for field State Arrest Number (2.099 SAN)*
	• *Added description for field Special Population Cognizant File Record Number (2.093 SPCN)*
	• *Added field edit specifications for CCN, CSF, EID, IIR, NAM1, NAM2, NAM3, NAM4, NAM5, NDR, NIR, PTY, RBR, RBRO,RFR, RPR, SAN, SDOB, SNAM, UCN, and SPCN to Table C-1*
	• *Added fields NAME1(2.2001 NAM1), NAME2 (2.2002 NAM2), NAME3 (2.2003 NAM3), NAME4 (2. 2004 NAM4) and NAME5 (2. 2005 NAM5) to handle long names up to 50 characters each for multi-name cultures*
	• *Modified CAN (2.064) to contain the subfields UCN and NAM (deleted FNU)*
	• *Added description for field Request Features Record (2.095 RFR) to accompany images requested with IRQ*
	• *Added description for field Request Photo Record (2.096 RPR) in conjunction with RPIS transactions*
	• *Expanded description of SRF (2.059)*
	• *Added Cascaded Search Flag (2. 2006*		

	CSF) for SPC File records that are to be subjected to cascaded searches from Criminal (CR) or Civil (CI) Searches or Both (BO) • *Revised description for Reason Fingerprinted (2.037 RFP) to provide optional entries with approval of FBI* • *Added description for field Submitted Date of Birth (2. 2007 SDOB)* • *Added description for field Submitted Name (2. 2008 SNAM)* • *Added description for field Photo Type (2.2009 PTY)* • *Added description for field Number of Images Requested (2.2010 NIR)* • *Added description for field Rap Back Verification Status (2.2011 RBVS)* • *Added description for field Iris Images Requested (2.2012 IIR)* • *Added description for field Disposition Maintenance Indicator (2.2013 DMI)* • *Added description for field Rap Back Eligibility (2.2014 RBE)* Appendix D – Logical Record Layouts for Type-Two (Ten-print) • *Capitalized all instances of the use of the acronym ASCII* • *In Table D-1, added AOL as a subfield to ASL* • *In Table D-1, added CPL as a subfield to CSL* • *In Table D-1, added fields CCN, NDR, RBR, RBRO and SAN* • *In Table D-2, added fields RBRO and UCN* • *In Table D-3, added columns for new TOTs, including CPDR, CPNU, DSPE, DSPR, FNDR, IIE, IIER, NNDR, PPE, PPR, RPIS, RPSR, RBAV, RBE, RBVR, RBFD, RBDR, and RBHN* • *Divided Table D-3 into two parts (Parts 1 of 2 and 2 of 2) to accommodate the additional TOTs* • *Corrected CAN to CNA* • *Deleted duplicate Table D-1 following*		

	Reference Notes • *In Table D-3, added new field NDR for CAR, CNA, CPDR, CPNU, TPIS, and TPFS transactions* • *Added new fields RBR, RBRO for ten-print transactions requiring Rap Back services* • *Added new fields CCN, NDR, RBR, RBRO, NAM1, NAM2, NAM3, NAM4, NAM5, and SAN for CAR, CNA, and SRE transactions* • *Added new field Universal Control Number (2.081 UCN) for TOTs returning other than FBI number* • *Added new field RPR for RPIS transactions* Appendix E – Summary Fields for Latent Transactions • *Added new field NDR for LFIS, LFFS transactions* • *Added column for new TOT LSIR* • *Added Note 11 regarding SRF contents for LSIR transactions* • *Added new field SPCN for SPLA, SPCD, and SPCM transactions* • *Added new field CSF for SLCA, SLCM transactions* Appendix F – IAFIS Image Quality Specifications • *Changed reference to Figure F-1 from 2-1* • *Removed sentence referencing external documents (unnecessary)* Appendix G – **Reserved for future use** • *Deleted previous contents* Appendix H – Descriptors and Field Edit Specifications for Type-7 Logical Records Appendix I – Logical Record Layout for Type-2 (Image) Records • *Added Universal Control Number (2.081 UCN) to IRQ, IRR, ISR and ERRI Transactions as an optional field* • *Added AFIS Segment Control Number (2.086 SCNA) to IRQ, IRR, and ERRI Transactions as an optional field* • *Added Request Features Record (2.095 RFR) to IRQ Transactions* • *Added Name of Designated Repository*		

	(2.098 NDR) to IRQ, IRR and ERRI transactions as an optional field • *Changed the name of Table I-6 to FIELD LIST FOR IMAGE RESPONSE **SUMMARY** (ISR) TRANSACTION instead of IMAGE SUBMISSION RESPONSE (which is FISR).* • *Added Request Features Record (2.095 RFR) to IRQ transaction* Appendix J – Descriptions and Field Edit Specifications for Type-9 Logical Records • *Updated field values and codes for Impression Type (Field 9.003) to include additional impression types* • *Deleted paragraph pertaining to field 9.010 MIN (Number of Minutiae) as it is not used (see field 9.015 NMN)* Appendix K - Descriptors and Field Edit Specifications for Type-10 Logical Records and Logical Record Field Lists for Type-2 (Photo) Records • *Included all Type-10 information from Revised ANSI/IST-ITL 1-2006* • *Tables K-1 and K-2 – changed title to reflect Subject Photo Request (i.e., not only criminal subject)* • *Changed FBI to a conditional field (i.e., mandatory only if the photo requested is for a criminal record)* • *Added field Universal Control Number (2. 081 UCN) to TOT CPR as a conditional field (i.e., mandatory if the photo requested is for other than a criminal record), Name of Designated Repository (2.098 NDR) as a mandatory field* Appendix L – Summary Tables • *Changed Ten-print Submissions to Fingerprint Identification Submissions* • *Changed Remote Ten-print Searches to Fingerprint Investigative Searches* • *Changed Special Latent Cognizant Files to Special Population Cognizant Files* • *Added Iris Services* • *Set minimum number of fingers for a*		

	TPIS/TPFS AFIS search to 2 • *Added provision for Type-14 records for Ten-print Submissions in addition to Type-4 records* • *Added Employee Identification Number (2.049 EID), Name of Designated Repository (2.098 NDR), Universal Control Number (2. 081 UCN), Court Case Number (2.094 CCN), Name-One (2.2001 NAM1), Name-two (22002 NAM2), Name-three (2.2003 NAM3), Name-four (2.2004 NAM4), Name-five (2.2005 NAM5), Rap Back Request (2.052 RBR), Rap Back Record Owner (2.2015 RBRO),Request Features Record (2.095 RFR), Request Photo Record (2.095 RPR), State Arrest Number (2.099 SAN), Cascaded Search Flag (2.2006 CSF), Submitted Date of Birth (2.2007 SDOB), Submitted Name (2.2008 SNAM), Photo Type (2.2009 PTY), Number of Images Requested (2.2010 NIR), Rap Back Verification Status (2.2011 (RBVS), Iris Images Requested (2.2012 IIR), Disposition Maintenance Indicator (2.2013 DMI), and Rap Back Eligibility (2.2014 RBE) to the lists of EFTS elements in Table L-1* • *Added field elements for Type13, 14, 15, 16, 17, and 99 records to table L-1, L-2* • *Table L-3 – Added new TOTs as reflected above, including TPRS (existing TOT) and RPIS* • *Table L-3 – Changed maximum number of Type-10 records accompanying ten-print submissions to unlimited* • *Added indicators of acceptance of Type-13, Type-14 Type-15 and Type-17 records* • *Added Type-99 CBEFF records to Criminal and Civil Submission TOTs* • *Deleted the word Criminal from Subject Photo Services* • *Table L-4 – Added Rapid Print Image Response (RPSR), added new TOTs to the Request TOTs column for Ten-Print Responses, added Special Latent Cognizant File Transactions, added Palmprint*		

	Enrollment Transaction, added Iris image enrollment transaction, added Rap Back Services transactions • *Added Type-10 photo record to RPSR response transaction* • *Added Type-7 Image, Type-15 Palmprint, and Type-9 Features records to IRR transactions* Appendix M – Transaction Error Messages • *Added the new error messages to Tables M-1 and M-2* • *Added Table header for Table M-2* • *Added new error message, A0016 - Requested Photo Not Available, for RPIS transactions requesting photo with positive response* Appendix N – Civil Background Checks Using Flat Impressions Descriptors and Field Edit Specifications for Type-14 Logical Records • *Revised text for Field 14.003 to refer to the appropriate Table in the ANSI/NIST Standard – Table 11* • *Removed previous Table N-2* • *Renumbered Table N-3 to Table N-2* Appendix AC – Acronyms and Abbreviations • *Added Criminal Fingerprint Card Direct Route (CPDR)* • *Added Criminal Fingerprint Card Processing Non-Urgent (CPNU)* • *Added CJIS State Authority (CSA)* • *Added Electronic Disposition Reporting (DSPE)* • *Added Disposition Response (DSPR)* • *Added Freedom of Information Departmental Order (FIDO)* • *Added Federal No-Charge Direct Route (FDNR)* • *Added Iris Image Enrollment (IIE)* • *Added Iris Image Enrollment Response (IIER)* • *Added NAME-ONE (NAM1)* • *Added NAME-TWO (NAM2)*		

	• *Added NAME-THREE (NAM3)* • *Added NAME-FOUR (NAM4)* • *Added NAME-FIVE (NAM5)* • *Added Non-Federal No-Charge Direct Route (NNDR)* • *Added Palmprint Enrollment Request (PPE)* • *Added Palmprint Enrollment Response (PPR)* • *Added Rap Back Hit Notification (RBHN)* • *Added Rap Back Flag Delete Request (RBFD)* • *Added Rap Back Maintenance Request (RBM)* • *Added Rap Back Verification Request (RBV)* • *Added Request Features Record (RFR)* • *Added Rapid Print Image Search (RPIS)* • *Added Rapid Print Image Search Response (RPSR)* • *Added Request Photo Record (RPR)* • *Added Special Latent Cognizant Files (SLC)* • *Added Special Latent Cognizant File Add (SLCA)* • *Added Special Latent Cognizant File Delete (SLCD)* • *Added Special Latent Cognizant File Modify (SLM)* • *Added Special Latent Cognizant Number (SLCN)* • *Added Ten-Print Rap Sheet Response(TPRR)* • *Added Universal Control Number (UCN)*		
EBTS V8.001	• *Changed text in the Miscellaneous Applicant Civil (MAP) section, field 3.1.1.11 to read "These no-charge submissions are for non-federal law enforcement and criminal justice employment." replacing, "These no-charge submissions are for non-criminal justice employment."* • *Section 3 Description of Operational Concepts: the word criminal was removed from the Photo Services subsection*		October 24, 2007

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PREFACE

How To Use This Document

The appendices of this document contain all the information needed regarding a particular type of electronic transaction when communicating with the FBI. Definitions for transaction types can be found in Section 3. Appendix A briefly presents priorities for each transaction type. Appendix B is the field list for Type-1 records. Appendix C contains the definitions of fields used for the Type-2 records. Type-2 field lists can be found in Appendix D for ten-print transactions and in Appendix E for Latent searches and submissions. Appendix F gives IAFIS Image Quality Specifications for fingerprint scanners, both for traditional rolled prints and "Identification Flats," and printers, and gives Fast Track Certification procedures. Appendix G is currently Reserved for Future Use. Appendix H presents the Type-7 logical record field list, including descriptors and edit specifications. Appendix I presents Type-2 record layouts for image retrieval and maintenance transactions. Appendix J gives the Type-9 logical record field list, including descriptors and edit specifications. Appendix K details the Type-10 logical record field list and the Type-2 (Photo) transaction field lists. Appendix K also gives considerable detail concerning photos and Type-2 descriptor information for Scars, Marks, and Tattoos. Appendix L provides a complete cross-reference of elements and their tag numbers and lists logical record requirements for each EBTS transaction type. Appendix M contains error message details. Appendix N provides definition descriptors and field edits of Type-14 records for Civil Background Checks using flat impressions.

For example, to obtain information for sending a Criminal Ten-Print Submission, (Answer Required) (CAR), refer to Section 3 for CAR definition, Appendix B for Type-1 logical record field list, Appendix D for the Type-2 CAR transaction field list, and Appendix C for field definitions.

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SECTION 1 INTRODUCTION

1.1 Background

For nearly 100 years, fingerprint cards have been accepted as the standard means for recording and storing fingerprint identification data. Over that period, the content, format, and quality of fingerprint cards have been revised and refined. Fingerprint cards have evolved into an accepted international standard for the exchange of fingerprint, identification, and arrest data between criminal and non-criminal justice agencies.

Historically fingerprint cards were physically transported and processed; therefore, substantial delays were recognized in the identification cycle. The IAFIS was developed to support the paperless submission of fingerprint information. This improved the speed and accuracy of the fingerprint identification process and eliminated the need for contributing agencies to create and transport paper fingerprint cards to the FBI.

In support of the development of the IAFIS and in accordance with the recommendations of the National Crime Information Center (NCIC) Advisory Policy Board (APB) (currently known as the CJIS APB) Identification Services Subcommittee, the FBI has developed a standard for electronically encoding and transmitting fingerprint image, identification, and arrest data. ANSI/NIST-ITL was established in conjunction with the National Institute of Standards and Technology (NIST) and the fingerprint identification community. This specification is the American National Standards Institute (ANSI) standard titled the "Data Format for the Interchange of Fingerprint, Facial, and Other Biometric Information" (ANSI/NIST-ITL 1-2007).

The original intent of the ANSI standard was to define the content, format, and units of measurement for the exchange of information that may be used in the fingerprint identification of a subject. The ANSI standard was intended for use in the interchange between criminal justice administrations or organizations that use an Automated Fingerprint Identification System (AFIS) and to provide a common interface for other AFIS and related systems worldwide. Later revisions to this standard have added information regarding additional biometric modes of identification, such as palm, facial, and iris recognition.

While the aforementioned ANSI standard provides the guidelines for the exchange of biometric information between various federal, state, local, tribal, and international systems, the FBI's Electronic Biometric Transmission Specification (EBTS) defines requirements that agencies must adhere to when electronically communicating with the FBI's IAFIS. The FBI EBTS and its future revisions will inherit the basic requirements for logical records set forth in the ANSI standard. However, the FBI-specific requirements for the ANSI/NIST implementation of logical records Type-2, Type-7, Type-9, Type-10, Type-13, Type-14, Type-15 and other record types are contained in the EBTS.

The FBI CJIS Division is moving toward a system that will contain a complete biometric and biographic profile of the subject records in its databases. It is also the FBI's intent to move toward a capability that will facilitate multi-modal biometric searching of its databases. Though fingerprints will continue to be the FBI's primary mode of identification for the near future, the

FBI EBTS document describes the technical specifications for the submission of the additional biometric modalities to provide this future multi-modal biometric search capability.

The scope of the EBTS has been expanded over previous versions to include additional biometric modalities (*e.g.*, palmprint, facial, and iris) in recognition of the rapidly developing biometric identification industry. The most recent update of the ANSI/NIST-ITL 1-2000 standard (ANSI/NIST-ITL 1-2007) includes new record types to facilitate data sharing for new biometric modalities. The FBI EBTS will integrate biometric data in accordance with the ANSI/NIST standard. Additionally, a logical record Type-99 was created to contain and exchange biometric data that is not supported by other ANSI/NIST-ITL logical record types (e.g., voice records), thus providing a basic level of interoperability and harmonization with the ANSI INCITS (International Committee for Information Technology Standards) biometric image interchange formats. This is accomplished by using a basic record structure that is conformant with INCITS 398-2005, the Common Biometric Exchange Formats Framework (CBEFF) and a biometric data block specification registered with the International Biometrics Industry Association (IBIA).

The Type-99 logical record type was created for "exotic" biometric data types and should not be used for existing ANSI/NIST data types. IAFIS will provide identification services for many of these evolving biometric modalities at some time in the future.

1.2 Contents of Specification

While the ANSI standard referenced in Section 1.1 will allow all AFISs and related systems to communicate, the purpose of this document is to specify certain requirements to which agencies must adhere to communicate electronically with the FBI's IAFIS. IAFIS has three segments: (1) Identification, Tasking, and Networking (ITN/FBI), (2) Automated Fingerprint Identification System (AFIS/FBI), and (3) the Interstate Identification Index (III/FBI). III/FBI electronic communications do not include fingerprints, and the requirements are contained in appropriate NCIC manuals. This specification covers the remainder of the IAFIS electronic transmissions involving fingerprints, palmprints, photographs, iris, and other types of biometric data. The basic requirements for logical records Type-1, Type-2, Type-4, Type-7, Type-9, Type-10, Type-13, Type-14, Type-15, Type-17, and Type-99 set forth in the ANSI standard are also applicable to transmissions to the FBI. However, the FBI-specific requirements for the contents and format of logical records Type-2, Type-7, Type-9, Type-10, Type-13, Type-14, Type-15, and Type-17, as well as for any special requirements for the other record types, are contained in this specification.

1.2.1 File format

A file shall contain one or more logical records pertaining to a single subject. The data in the Type-1 record shall always be recorded in variable-length fields using the 7-bit American National Standard Code for Information Interchange (ASCII) as described in ANSI X3.4-1986 and Annex A. For purposes of compatibility, the eighth (leftmost) bit shall contain a value of zero.

The text or character data in the Type-2, Type-9, and tagged-field records will normally be recorded using the 7-bit ASCII code in variable-length fields with specified upper limits on the size of the fields. For data interchange between non-English-speaking agencies, character sets other than 7-bit ASCII may be used in textual fields contained in the Type-2, Type-9, and tagged-field records. UTF-8 is the preferred method of storing textual data that cannot be represented as 7-bit ASCII. This method supports international character sets for all user-defined fields in all record types. By definition, UTF-8 and other international character exchange methods are not applicable to record Type-1 and Types 3-8.

The first field in all tagged-field records shall be labeled as field "1" and contain the length in bytes of the record. The second field shall be labeled as field "2" and contain the image designation character. The remaining textual fields may occur in any order and contain the information as described for that particular numbered field. For tagged-field image records Type-10 through Type-99, the last and concluding field shall have a tagged ASCII field number identifier "999" followed by the image data.

For the binary image Type-3, Type-4, Type-5, Type-6, and Type-8 logical records, the content and order of the recorded fields are specified by this standard. With the exception of the first two fields, the remaining fields of the Type-7 logical image record are all user-defined. All fields and data in these record types shall be recorded as binary information.

1.3 Change Control

The Electronic Biometric Transmission Specification (EBTS) defines the interface between IAFIS and the states', tribes', international, and other federal organizations' (OFO) systems. Any changes to the data fields or formats within the EBTS must honor previously published protocols to ensure that the states' and OFO's systems are not adversely affected. Since IAFIS and the states'/OFO's systems were developed independently, a process has been established that provides for coordinated enhancements within the various systems while maintaining reliable interoperability. This process is based on the tagged field structure defined in the 2000 ANSI standard and a few "business rules." The rules simply state that field definitions cannot change over time or from system to system. If a change is needed, a new field is defined and assigned a new tag number. The new field cannot be made mandatory for established functionality, but merely *enhances* functionality for those systems wishing to incorporate the new definition. With this process in place, every system on the network has the opportunity to enhance its own system on its own schedule, yet no system is ever forced to make a change in order to maintain current functionality.

1.4 Tagged Fields

1.4.1 Interpretation of Tags

In the construction and interpretation of the logical record, the tag number should not be taken as having a fixed number of digits. For example, in this version of the standard, Type-2 logical record field tags are always shown as having three decimals between the decimal point and colon (2.NNN:data...). However, in future versions, Type-2 field tag numbers may be

expanded to four or more digits (2.NNNN:data...). To accommodate such possibilities, the field numbers should be parsed as all digits between the period and colon.

In the construction and interpretation of the logical record, there is no requirement that the tagged fields be present within the logical record in any given order, with the exception of the Length (LEN) and Image Designation Character (IDC), which must be in the first and second position in the record, respectively. Thus, for example, a state Ident bureau could add the State Identification Number (SID) to the end of a Type-2 record created at the booking station. (This is less restrictive than the ANSI standard's language.) However, for those record types conveying image data (*e.g.*, 13.999: DAT), the data field will always be the last field in the string.

1.4.2 Use of Separator Characters

Separator characters may best be understood by considering them necessary for what follows them, not what precedes them. Thus, when a tagged field includes subfields[1] (*e.g.*, the ASL field contains subfields DOO and AOL), and another subfield is still to follow, the following one must be separated from the one preceding it by the *unit separator* character. If what is to follow is a repetition of a field or group of subfields, a *record separator* must separate the preceding field or group of subfields from the repetition to follow. If what is to follow is a new field, then the *group separator* character is used. If the record is complete after the previous field, the *file separator* is used.

Per NIST, successive separator characters now **may** be used with no intervening blank or other character when a subfield is missing. In Type-2 records, IAFIS recognizes the following sequences as meaning that a subfield is missing: <US><US>, <US><RS>, <US><GS>, and <US><FS>. These are needed to obviate the need for IAFIS to validate each subfield in a grouped field to see whether it contains valid data or is merely a blank. This will keep invalid data out of IAFIS databases.

1.5 Error Handling

Error processing takes on two primary forms within IAFIS. These are front-end error detection and internal process error detection and correction. The front-end process examines every incoming transaction from a security and mandatory data perspective. Potential security violations are rejected and transferred immediately to a system administrator. Transactions lacking mandatory data, or that are incomplete in referenced content, are rejected. All mandatory data and all optional data fields are edit checked for length and type of data included. Optional data failing this validation check are ignored. Mandatory data that fail this validation check are passed to a QC service provider for resolution. If the service provider can correct the data, the transaction will be forwarded for further processing. If the service provider cannot

[1] The EBTS' use of the term ***subfield*** is synonymous with the term ***information item*** found in the ANSI standard.

resolve the issue, the transaction can either be rejected or sent forward for attempted resolution later in the process.

Secondary edit checks are performed any time an IAFIS segment attempts to utilize incoming data to perform a search or update a database. Any such action will check the field according to length and type as well as content. Some data values are content-sensitive. That is, they can only be examined with respect to the databases against which they are to be applied. Errors in submissions detected at that time will generally be forwarded to a logic error resolution service provider. At that point, appropriate actions can be taken to correct the discrepancy, and an internal resubmission of the transaction can take place. Alternatively, if the service provider cannot resolve the issue, the transaction can be rejected.

In the interpretation of the logical record, tags that are not defined for the requested transaction are to be ignored; their inclusion is not to be considered an error. This rule makes it possible to use a single transmission format, for example, to control both intrastate and interstate transmissions.

Fields should not be transmitted when there is no value present (*e.g.*, ... 2.033:<GS> ...). However, receipt of such an empty field, if the field is not mandatory, should not result in rejection of the record or issuance of an error message. Rejection will occur, however, when missing or incorrect data would frustrate processing of the transaction. The following list illustrates these types of errors.

- A mandatory field is missing in a submitted recordset (*e.g.*, NAM is missing in T2CAR) and would result in immediate rejection;
- The format of a mandatory field is incorrect (*e.g.*, an alpha character is discovered in the SOC field) and would result in an attempt to correct the data;
- The range of data of a mandatory field is incorrect (*e.g.*, a DOB of 18871332 was submitted—century, month, and day are all out of range) and would result in an attempt to correct the data;
- Incorrect data are discovered that cannot be corrected by a service provider and without which the transaction processing cannot proceed will result in the transaction being rejected.

Appendix M lists the current set of error messages that are pertinent to the EBTS user (*i.e.*, IAFIS internal errors are not listed).

1.6 Identifying Previous Transactions

The user may wish to refer to previous transactions for the purpose of follow-up or resubmission. The pertinent information is contained in two Type-1 fields, **1.09 Transaction Control Number (TCN)** and **1.10 Transaction Control Reference (TCR)** (See Appendix B).

Upon submitting a transaction to the FBI, the submitter places his control number in the TCN field in the Type-1 record. For submissions not requiring reference to a prior transaction, the TCR field is omitted. When the FBI has completed processing the transaction and generates

the response, it places the submitter's control number (the received TCN) into the TCR field of the response as a reference number the submitter can use to mate the response with the original submission. The FBI also places its own internal identifier for that transaction (the ICN, or IAFIS Control Number, a 20-character alphanumeric field) in the TCN field of the response.

The TCN in the response can be used by the submitter should he have to reopen the transaction for any purpose. For example, if the FBI rejected the first submission of a user-fee transaction (which the submitter is entitled to resubmit one time free of charge if the rejection was due to poor quality fingerprint images), the user would place this number in the TCR field of the resubmitted transaction to enable the FBI to verify the user's authorization to resubmit at no-charge.

1.7 Data Storage in the IAFIS Database

Data that are submitted in IAFIS transactions may or may not be stored in the IAFIS database. Data that are not stored are considered to be user-defined. It is carried in transactions as an aid to the submitter in interpreting or routing the FBI's response to the submission and is returned verbatim to the user. Data that are stored in IAFIS are always converted to uppercase prior to storage. Therefore, if these data are returned as part of the response to a subsequent submission (or an III inquiry), it may differ (in *case* only) from the originally submitted data.

1.8 Guidance on ORI and CRI Usage

The following description offers some guidance for the use of the CRI field to provide appropriate authorization to perform file maintenance within IAFIS. We develop this scenario by examining how an electronic submission might be formed by a contributor and passed to IAFIS for evaluation. This is intended as an example since there are many other requirements that might influence the final design. Ultimately, the contributors manage the use of the CRI field.

Assume a print is obtained by a local agency, passed to a county agency for processing, and subsequently to the CJIS State Authority (CSA) for transmission to the FBI. In such a case, the transmission of ORIs and CRIs <u>might</u> appear as follows:

```
                                          STATE_CSA
                    COUNTY_AGENCY         | ORI  |
LOCAL               | ORI  |------------->| CRI2 |
| ORI  |------------->| CRI1 |------------->| CRI1 |
```

When generated at the local level, no CRI need exist since this ORI is the originator. On receipt by the county agency and subsequent transmission to the state CSA, the original ORI is entered as the first instance of the CRI and the county ORI replaces the local ORI in the ORI field. On receipt by the state CSA and for subsequent retransmission to the FBI, the local ORI is retained as CRI1, the county ORI is entered as CRI2, and the ORI of the state CSA is entered in the ORI

field. The transaction is then forwarded to the FBI via the CJIS WAN or the Internet. CRI1, the local ORI, is then used as the authority for action and thus retains 'ownership' of the transaction. Then, only CRI1 can modify, cancel, confirm, or delete a latent transaction. In the response, the transaction is sent to the ORI from which it was sent, and it is the responsibility of the state CSA to route it properly to the county agency identified in CRI2. The county agency, in turn, would route the response to the local agency as appropriate.

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SECTION 2 SCOPE

This document specifies the file and record content, format, and data codes necessary for the exchange of fingerprint, palmprint, facial, and iris information between federal, state, and local users and the FBI. It provides a description of all requests and responses associated with electronic fingerprint and other identification services. These services include the following:

1. Ten-Print Services
2. Latent Services
3. Special Population Services
4. Image Services
5. Palmprint Services
6. Photo Services
7. Facial Recognition Services
8. Iris Services
9. Rap Back Services
10. Other Biometric Services

Ten-print services can be accessed through electronic ten-print submissions and searches. Electronic submissions involve processing and evaluation judgments by FBI personnel. Searches are transactions that interface with automated equipment without human intervention by FBI personnel. Ten-print services also include requests to update current fingerprint images. Latent services are composed of electronic latent submissions handled by FBI latent examiners and automatic searches of the FBI databases. Finally, image requests are used to solicit fingerprint and other types of images stored by the FBI. All transactions and messages are compliant with the ANSI standard for exchange of fingerprint, facial, scars/marks/tattoos, and other biometric information.

The scope of the EBTS has been expanded over previous versions to include additional biometric modes of identification (*e.g.*, facial and iris recognition) in recognition of the rapidly developing biometric identification industry. The most recent update to the ANSI/NIST-ITL 1-2007 standard includes new record types to provide for the sharing of data for these new biometric modalities. The FBI will accept biometric data for these new types of records in accordance with the ANSI/NIST standard. IAFIS will provide identification services for these biometric identification modalities in the near future.

Section 3 gives a description of the types of transactions in the electronic environment. It also establishes error messages, specific compression algorithms for the exchange of fingerprint image information, and image quality assurance methods. Appendix A establishes the priorities of incoming transactions. Appendix B includes field edit specifications and a sample field list for the Type-1 record. Appendix C contains the descriptors and field edit specifications for the Type-2 records. Appendix D summarizes ten-print transactions, listing in more detail the Criminal Ten-Print Answer Required (CAR) and Search Results, Electronic (SRE) transactions.

Appendix E summarizes Type-2 records for latent transactions. Appendix F provides the image quality specifications for IAFIS equipment. Appendix G is reserved for future use.

Appendix H is the field edit specifications and a sample field list for Type-7 records. Appendix I includes Type-2 record samples of each image type of transaction. Appendix J includes field edit specifications and a sample field list for the Type-9 record.

Appendix K includes field edit specifications and sample field lists for the Type-2 (photo) and the Type-10 records, which are defined in the ANSI/NIST-ITL 1-2007 Data Format for the Interchange of Fingerprint, Facial, & Scar Mark & Tattoo (SMT) Information. The ANSI/NIST-ITL 1-2007 defines a standard for transmitting mug shots. Appendix L provides cross-references, both by name and by ID, for all elements, Type-1 through Type-10, and also provides a summary of recordset requirements for submission and response TOTs. Appendix M is a listing of error messages that might be received in response to a submission. Appendix N provides definition descriptors and field edits of Type-14 records for civil background checks using flat impressions.

Appendix AC is a listing of acronyms and abbreviations used in this document.

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SECTION 3 DESCRIPTION OF OPERATIONAL CONCEPTS

The FBI will process the following types of transactions from the service areas listed below in its electronic environment:

Ten-Print Services
- Electronic Fingerprint Identification Submissions
- Fingerprint Investigative Searches
- Electronic Disposition Submissions

Latent Services
- Electronic Latent Submissions
- Latent Searches
- Latent Image Maintenance Requests
- Best Practices for the Exchange of Latent Identification Services

Special Population Services
- Special Population Cognizant Files

Image Services
- Requests for Images
- Electronic Requests to Upgrade Fingerprint Images
- Requests for Fingerprint Features Records to Accompany Images

Palmprint Services
- Palmprint Enrollment Request
- Palmprint Search Request (Future Capability)
- Palmprint Search Response (Future Capability)

Photo Services
- Subject Photo Request
- Subject Photo Delete Request
- Subject Photo Response
- Subject Photo Delete Response

Facial Recognition Services
- Facial Recognition Search Request (Future Capability)
- Facial Recognition Search Response (Future Capability)

Iris Services
- Iris Search Request (Future Capability)
- Iris Search Response (Future Capability)
- Iris Image Enrollment Request
- Iris Image Enrollment Request Response

Rap Back Services

- Rap Back Enrollment Request
- Rap Back Record Hit Notification
- Rap Back Delete Flag Request
- Rap Back Verification Request

Other Biometric Services

- CBEFF Type-99 records

Details of the individual types of transaction are provided in the paragraphs below.

3.1 Electronic Fingerprint Identification Submissions

Electronic fingerprint identification submissions will originate from live-scan booking terminals or card scanners at either the federal, state, or local level. Local submissions may be processed by a local AFIS and electronically transmitted to a state identification bureau for processing. If an identification is made at the state level, an Ident response will be transmitted back to the local agency and, if it is a criterion offense, it is to be forwarded to the FBI. The processing flow for a civil electronic fingerprint identification submission is similar to the criminal submission flow, except that, in the event of state-level Ident response, the submission may still be forwarded to the FBI for processing under federal and/or state statutory authority.

Figure 1 Electronic Fingerprint Identification Submissions

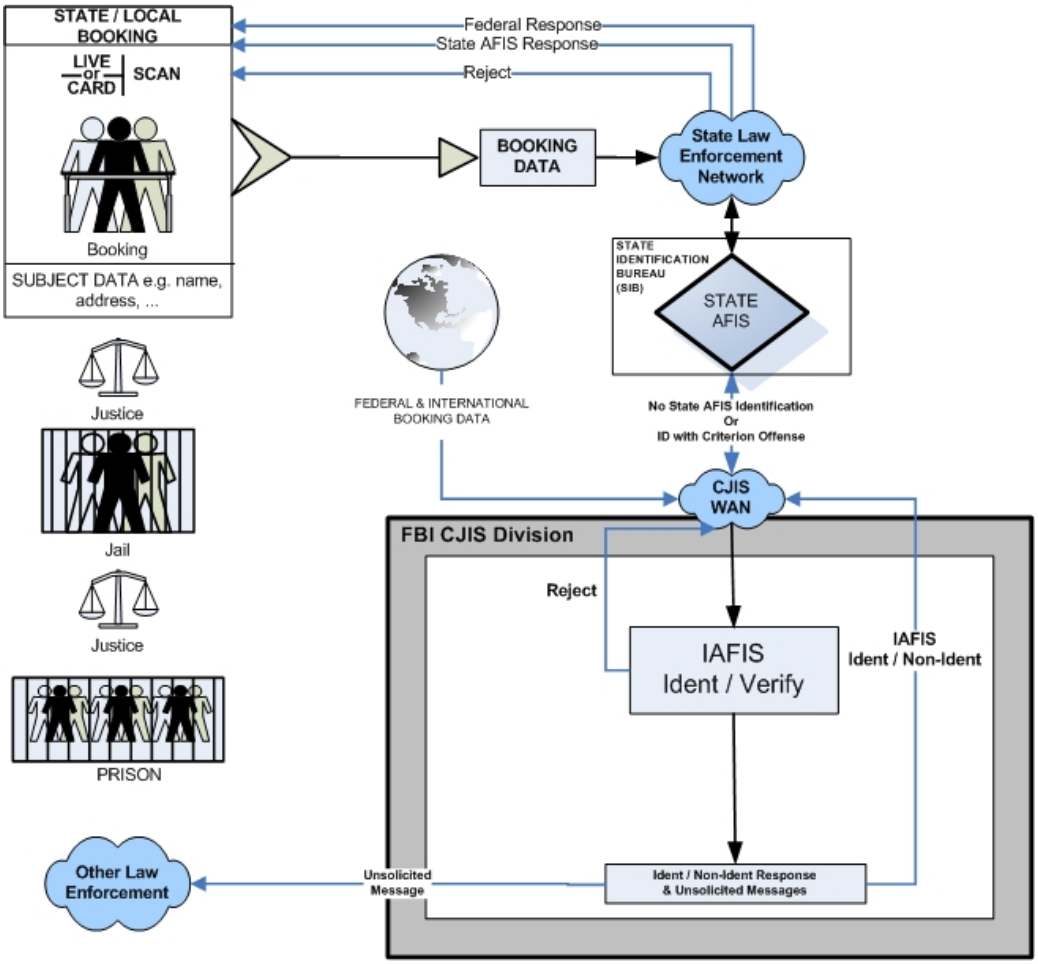


Figure 1 Electronic Fingerprint Identification Submissions

If no identification is made, the data will be forwarded via the CJIS WAN to the FBI for processing by IAFIS. Transmitted data will be automatically edited, and a search will be conducted of the FBI's fingerprint files utilizing the III segment's subject search and the AFIS segment's features search capabilities. The identification of fingerprint images of any viable file candidates will be verified by at least one FBI fingerprint examiner. Electronic responses[2] from IAFIS to the contributor will be electronically routed via the CJIS WAN through the State Identification Bureau (the ORI). Subsequent routing to the arresting agency is made by the State Ident Bureau using the CRI. Additional copies are routed by the State Ident Bureau using the SCO or other related information (see Appendices B and C for detailed ORI, SCO, and CRI definitions). Responses to submissions or searches by OFOs, tribal, or international agencies will be transmitted directly to the submitting agencies.

Electronic criminal transactions will have a nominal 15-minute turnaround within IAFIS. Exceptional cases, upon agreement with the FBI, will be provided rapid responses ranging from 10 seconds to 10 minutes. Civil transactions, and card-based transactions, once received, will receive processing dependent upon the priority of the types of transaction, ranging from 15 minutes to days. The turnaround times, by type of transaction, are specified in Appendix A.

There are several types of electronic fingerprint identification submissions that will be accepted by the FBI. The particular type of submission is identified in the Type of Transaction (TOT) field in the Type-1 record that is used with each transaction. The following are the TOTs for ten-print submissions:

TOT	TRANSACTION
CAR	Criminal Ten-Print Submission (Answer Required)
CNA	Criminal Ten-Print Submission (No Answer Necessary)
CPDR	Criminal Fingerprint Card Direct Route
CPNU	Criminal Fingerprint Card Processing Non-Urgent
DSPE	Electronic Disposition Reporting
FANC	Federal Applicant (No Charge)
FAUF	Federal Applicant User Fee
FNDR	Federal No Charge Direct Route
FVR	Fingerprint Verification Report
NNDR	Non-Federal No Charge Direct Route
NFAP	Non-Federal Advanced Payment
NFUE	Non-Federal User-fee Expedite
NFUF	Non-Federal Applicant User Fee
MAP	Miscellaneous Applicant Civil
DEK	Known Deceased

[2] Established procedures for sending unsolicited messages to State Identification Bureaus in response to fingerprint cards from Interstate Identification Index (III) participating states will not be affected.

DEU	Unknown Deceased
MPR	Missing Person
AMN	Amnesia Victim

The FBI's responses to electronic submissions will provide search results or indicate an error via the following TOTs:

TOT	RESPONSE TRANSACTION
SRE	Submission Results – Electronic
DSPR	Disposition Response
ERRT	Ten-Print Transaction Error

3.1.1 Type of Transaction Definitions

3.1.1.1 Criminal Ten-Print Submission (Answer Required) (CAR)

This transaction is a criminal arrest fingerprint submission for which the requester desires that a response be returned. It contains ten rolled and four plain impressions of all ten fingers, as well as information relative to an arrest or to custody or supervisory status. Optionally, these transactions may include palmprint and iris images, an unlimited number of photos of the subject, and any other major case print information. The biographical data and fingerprint images are used to determine potential candidates with criminal records at the FBI. This TOT is also used for an inquiry on a criminal suspect or informant, in which case arrest, custody, or supervisory data may or may not be present (Retention Code set to "N"). Requirements for the use of the Arrest Segment Literal (ASL) and Court Segment Literal (CSL) fields in these cases are discussed in Appendix C. The fingerprint images of those candidates are then compared with those in the submission and an identification or non-identification decision is determined. The criminal records are updated (if the Retention Code is set to "Y"), the photos are added to the file, and a response is returned to the contributor. The response will always contain the Ident/Non-Ident decision and will contain the electronic rap sheet if requested. Table D-1 gives the logical record layout for the CAR TOT.

For criminal submissions requesting a simultaneous search of other repositories, such as Canada's Real-Time ID System or Department of Homeland Security (DHS) IDENT, submitters will enter the appropriate values for the desired destination in the Name of Designated Repository (2.098 NDR) field in the Type-2 record.

3.1.1.2 Criminal Ten-Print Submission (No Answer Necessary) (CNA)

This transaction is a criminal arrest fingerprint submission for which the requester desires that no response be transmitted back. Otherwise, it is identical to the CAR request described above, containing ten rolled and four plain impressions, arrest, custody or supervisory status data, optional palmprint and iris images, an unlimited number of photos of the subject, and any other major case print information. Processing is also identical except that no response is returned. However, a communication protocol acknowledgment will be returned to the

contributor to confirm receipt of the transaction. The Retention Code for this transaction must be set to "Y." The CNA TOT is summarized in Table D-3. Edit specifications for the fields it uses may be found in Table C-1.

3.1.1.3 Criminal Fingerprint Card Direct Route (CPDR)

This transaction is a criminal arrest fingerprint submission that will be directly routed to a CJIS internal log application for processing. The submission contains ten rolled and four plain impressions, arrest data, optional palmprint and iris images, an unlimited number of photos of the subject (optional), and any other major case print information. It is identical to the CAR request described above with the inclusion of a mandatory TSR field. IAFIS will ensure the required EBTS fields and a Type of Search Requested (TSR) of "C" are present; otherwise, the submission will be rejected. If the TSR of "C" is present and the TOT is other than CPDR, NNDR, or FNDR, the submission will be rejected. The CPDR TOT is summarized in Table D3.

For criminal submissions requesting a simultaneous search of other repositories, such as Canada's Real-Time ID System or DHS IDENT, submitters will enter the appropriate values for the desired destination in the Name of Designated Repository (2.098 NDR) field in the Type-2 record.

Note: CPDR is a limited-use TOT that requires coordination with FBI prior to use.

3.1.1.4 Criminal Fingerprint Card Processing Non-Urgent (CPNU)

This transaction is a criminal arrest fingerprint submission that will differ from urgent criminal transactions in response time and in online (response) notifications. The submission contains ten rolled and four plain impressions, arrest data, optional palmprint and iris images, an unlimited number of photos of the subject, and any other major case print information. Processing is identical to the CAR request described above except, instead of receiving a 15-minute response, the response due time is set to 30 days to prevent prioritization ahead of the urgent criminal or civil submissions. Internal FBI CPNU submissions may contain the TSR of "H," which will allow the online responses triggered due to the positive identification against a Want or Sex Offender Registry (SOR) entry to be suppressed. Currently, CPNU submissions from external contributors do not have the option to use a TSR of "H"; however, the use of CPNU for criminal submissions not requiring an immediate response is available. The CPNU TOT is summarized in Table D3.

For criminal submissions requesting a simultaneous search of other repositories, such as Canada's Real-Time ID System or DHS IDENT, submitters will enter the appropriate values for the desired destination in the Name of Designated Repository (2.098 NDR) field in the Type-2 record.

3.1.1.5 Federal Applicant (No Charge) (FANC)

This transaction pertains to an individual who is fingerprinted in connection with applying for criminal justice employment with the federal government. The submission contains either ten rolled and four plain impressions or three identification flat impressions, biographic descriptor data, optional palmprint and iris images, an unlimited number of photos of the subject, and any other major case print information. The palmprint and iris images and the photos are allowed only if the retention field (2.005 RET) is set to "Y." When this TOT is used, there is no charge assessed to the contributor. Federal agencies that are considered "User Fee" contributors must not use this TOT, but use "FAUF" instead (see description below). The FANC TOT is summarized in Table D-3. Edit specifications for the fields it uses may be found in Table C-1.

3.1.1.6 Federal Applicant User Fee (FAUF)

These submissions come from: (1) any of the branches of the U. S. military in connection with individuals enlisting or being considered for Officers' Candidate School; and (2) federal agencies in connection with employment, security updates, or contract personnel. The submission contains either ten rolled and four plain impressions or three identification flat impressions (see Appendix N), biographic descriptor data, optional palmprint and iris images, an unlimited number of photos of the subject, and any other major case print information. The palmprint and iris images and the photos are allowed only if the retention field (2.005 RET) is set to "Y." The FAUF TOT is summarized in Table D-3. Edit specifications for the fields it uses may be found in Table C-1. See also Section 1.6 for a discussion of the use of TCN and TCR in no-charge resubmission of user-fee submissions that the FBI has rejected. Such resubmissions are allowed only when the fingerprint image quality of the original submission was unacceptable.

3.1.1.7 Federal No Charge Direct Route (FNDR)

This transaction is an applicant fingerprint card submission from a federal agency that will be directly routed to a CJIS internal log application for processing. The submission contains either ten rolled and four plain impressions or three identification flat impressions, biographic descriptor data, optional palmprint and iris images, an unlimited number of photos of the subject, and any other major case print information. The palmprint and iris images and the photos are allowed only if the retention field (2.005 RET) is set to "Y." The FDNR is similar to the FANC transaction with the addition of a mandatory TSR field. IAFIS will ensure the required EBTS fields and a TSR of "C" are present; otherwise the submission will be rejected. If the TSR of "C" is present and the TOT is other than CPDR, NNDR, or FNDR, the submission will be rejected. The FNDR TOT is summarized in Table D-3.

Note: FNDR is a limited-use TOT that requires coordination with FBI prior to use.

3.1.1.8 Non-Federal No Charge Direct Route (NNDR)

This transaction is an applicant fingerprint card submission from a non-federal agency that will be directly routed to a CJIS internal log application for processing. The submission contains either ten rolled and four plain impressions or three identification flat impressions, biographic descriptor data, optional palmprint and iris images, an unlimited number of photos of the subject, and any other major case print information. The palmprint and iris images and the

photos are allowed only if the retention field (2.005 RET) is set to "Y." The NNDR is similar to the FANC transaction with the addition of a mandatory TSR field. IAFIS will ensure the required EBTS fields and a TSR of "C" are present; otherwise the submission will be rejected. If the TSR of "C" is present and the TOT is other than NNDR, FNDR, or CPDR, the submission will be rejected. The NNDR TOT is summarized in Table D-3.

Note: NNDR is a limited-use TOT that requires coordination with FBI prior to use.

3.1.1.9 Non-Federal Advanced Payment (NFAP)

These submissions are for non-criminal justice purposes in which the contributor is charged a fee in advance. The submission contains either ten rolled and four plain impressions or three identification flat impressions. Examples of the types of contributors for this TOT are federal citizenship and immigration services (such as training candidate check programs). The purpose for submitting such requests is to ascertain whether individuals who have applied for training through the contributor organizations have any past criminal histories. The NFAP TOT is summarized in Table D-3. Edit specifications for the fields NFAP uses may be found in Table C-1. See also Section 1.6 for a discussion of the use of TCN and TCR in no-charge resubmission of user-fee submissions that the FBI has rejected. Such resubmissions are allowed only when the fingerprint image quality of the original submission was unacceptable.

Note: NFAP is a limited-use TOT that requires coordination with FBI prior to use.

3.1.1.10 Non-Federal Applicant User Fee (NFUF)

These submissions are for non-criminal justice purposes in which the contributor is charged a fee. The submission contains either ten rolled and four plain impressions or three identification flat impressions, biographic descriptor data, optional palmprint and iris images, an unlimited number of photos of the subject, and any other major case print information. The palmprint and iris images and the photos are allowed only if the retention field (2.005 RET) is set to "Y." Examples of the types of contributors of this type of transaction are federal and state banking institutions and regulatory agencies (such as stock exchanges, bankers' associations, securities dealers, Nuclear Regulatory Commission, Securities and Exchange Commission, racing or gaming control boards, etc.). Their purpose for submitting such requests is to ascertain whether individuals who have applied for training through the contributor organizations have any past criminal histories. The NFUF TOT is summarized in Table D-3. Edit specifications for the fields it uses may be found in Table C-1. See also Section 1.6 for a discussion of the use of TCN and TCR in no-charge resubmission of user-fee submissions that the FBI has rejected. Such resubmissions are allowed only when the fingerprint image quality of the original submission was unacceptable.

3.1.1.11 Miscellaneous Applicant Civil (MAP)

These no-charge submissions are for non-federal law enforcement and criminal justice employment. The submission contains either ten rolled and four plain impressions or three identification flat impressions, biographic descriptor data, optional palmprint and iris images, an unlimited number of photos of the subject, and any other major case print information. The palmprint and iris images and the photos are allowed only if the retention field (2.005 RET) is set to "Y." The MAP TOT is summarized in Table D-3. Edit specifications for the fields it uses may be found in Table C-1.

3.1.1.12 Known Deceased (DEK)

These transactions are submitted for a deceased individual whose identity is known to the contributor. The submission contains either ten rolled and four plain impressions or three identification flat impressions, and optionally an unlimited number of photos of the subject. If the fingerprints are determined to be identical to those of a subject in the FBI's criminal files, the subject's FBI record will be marked as deceased. The ICO field in this submission must be filled with the text "DECEASED." The DEK TOT is summarized in Table D-3. Edit specifications for the fields it uses may be found in Table C-1.

3.1.1.13 Unknown Deceased (DEU)

This transaction is submitted with fingerprints taken from an individual who was deceased at that time but whose identity was not known to the contributor. The submission contains either ten rolled and four plain impressions or three identification flat impressions, and optionally an unlimited number of photos of the subject. If the fingerprints are determined to be identical to those of a subject in the FBI's criminal files, the subject's FBI record will be marked as deceased and the contributor will be notified of the results. Should no identification to a subject on file be effected, the subject will be added to the criminal file in order to be identified with missing persons reports. A search of the Civil File will be conducted following the Criminal File search if a "Y" is placed in the CSR field. The DEU TOT is summarized in Table D-3. Edit specifications for the fields it uses may be found in Table C-1.

3.1.1.14 Missing Person (MPR)

These non-criminal submissions pertain to persons reported as missing. The submission contains either ten rolled and four plain impressions or three identification flat impressions and optionally an unlimited number of photos of the subject. Their submission causes a search of the FBI files and may result in the placement of a "stop" in FBI automated files to create the possibility of a future fingerprint submission (of any type) hitting against the original set of fingerprints and establishing the person's whereabouts. These subjects are added to the Criminal File. The Action to be Taken (ACN) field of the response will indicate if a "stop" has been established. The ICO field in this submission must be filled with the text "MISSING PERSON." A search of the Civil File will be conducted following the Criminal File search if a "Y" is placed in the CSR field. The MPR TOT is summarized in Table D-3. Edit specifications for the fields it uses may be found in Table C-1.

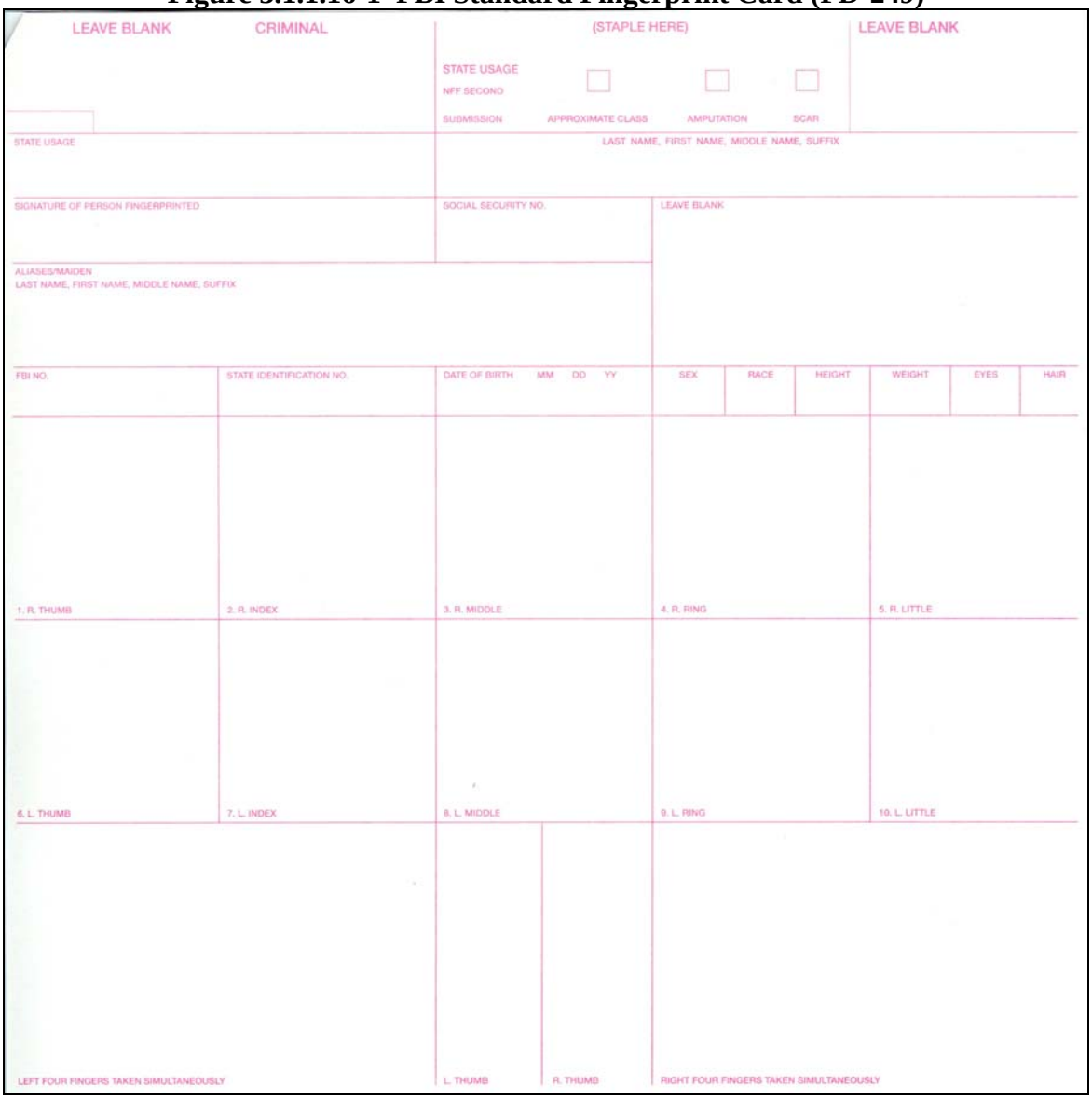
3.1.1.15 Amnesia Victim (AMN)

These non-criminal submissions pertain to persons known to have amnesia who are unaware of their own identity. The submission contains either ten rolled and four plain impressions or three identification flat impressions, and optionally an unlimited number of photos of the subject. The submission causes a search of the FBI files and may result in the placement of a "stop" in FBI automated files to create the possibility of a future fingerprint submission (of any type) hitting against the original set of fingerprints and establishing the person's identity. These subjects are added to the Criminal File. The ACN field of the response will indicate if a "stop" has been established. The ICO field in this submission must be filled with the text "AMNESIA VICTIM." A search of the Civil File will be conducted following the Criminal File search if a "Y" is placed in the CSR field. The AMN TOT is summarized in Table D-3. Edit specifications for the fields it uses may be found in Table C-1.

3.1.1.16 Major Case Print Collection in Conjunction with Ten-Print Submissions

Ten-print submissions that also include FBI-approved palmprint and supplemental finger/palmprint cards are referred to as Major Case Print Collections (to be differentiated from Major Case Print Submissions in connection to latent case investigations). Best practices for a Major Case Print Collection are defined as one FBI Standard Fingerprint Card, two FBI Standard Palmprint Cards, and two FBI Standard Supplemental Finger/Palmprint Cards, for a total of five cards per subject. ANSI/NIST-ITL 1-2007 provides the finger position codes and maximum image sizes. The FGP field of the Type-14 image record shall contain "19" from Table 12 finger position code & maximum image dimensions, indicating Major Case Prints. The FBI Standard Ten-print Card, FD-249, is represented below (reverse not shown).

Figure 3.1.1.16-1 FBI Standard Fingerprint Card (FD-249)



The FBI Standard Palmprint Card, FD-884 is represented below.

Figure 3.1.1.16-2 FBI Standard Palmprint Card (FD-884) Front

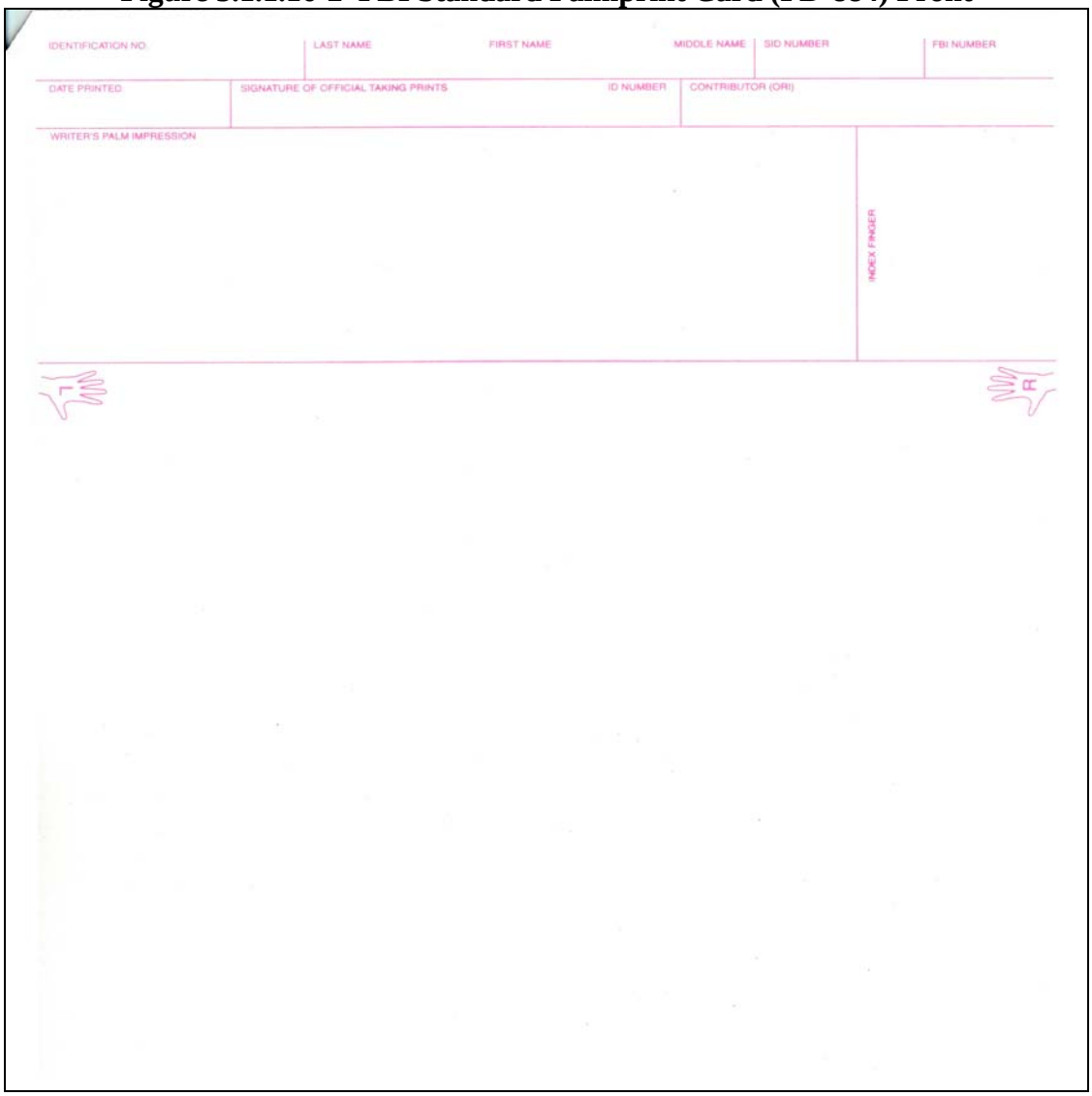
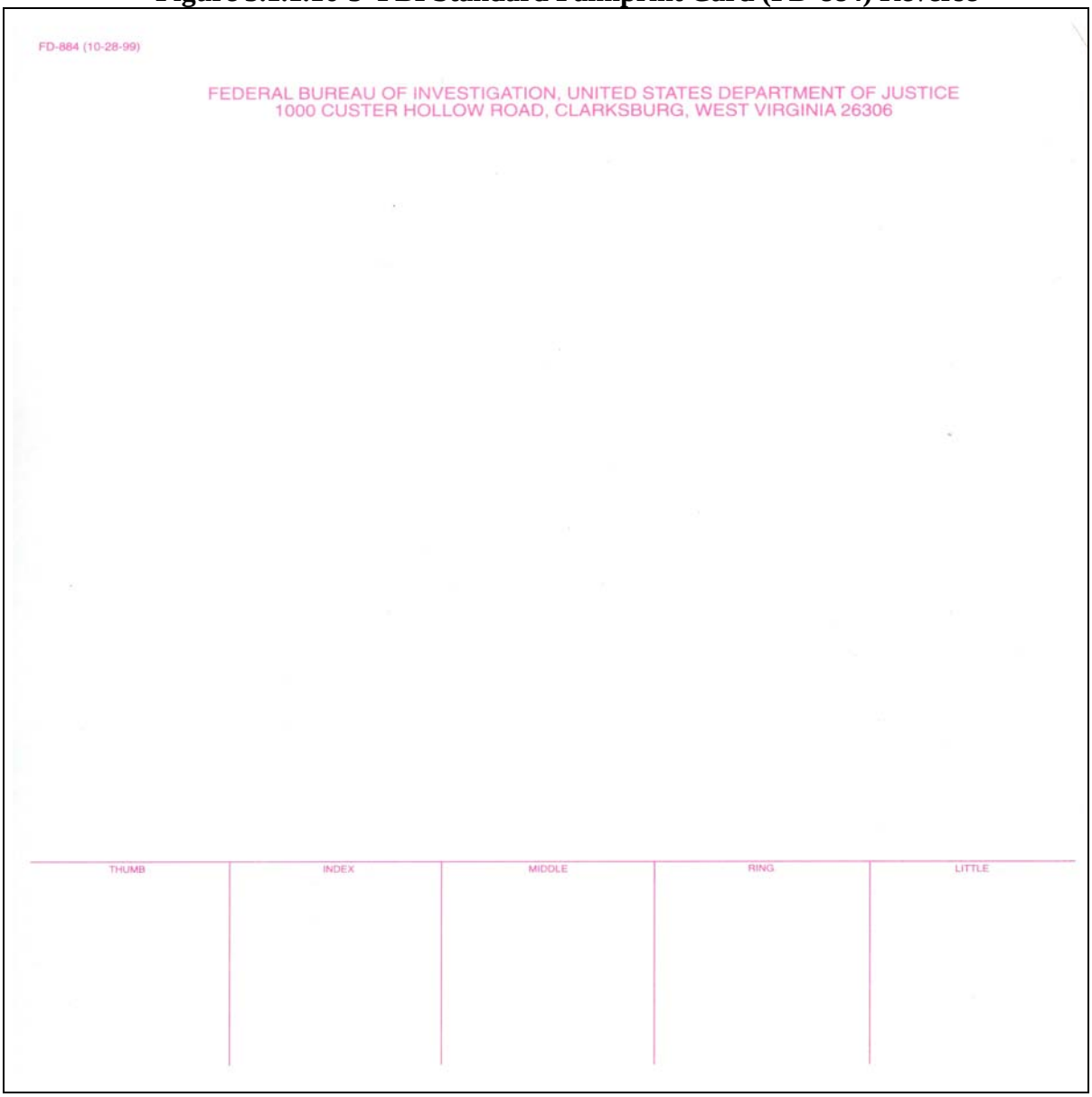


Figure 3.1.1.16-3 FBI Standard Palmprint Card (FD-884) Reverse



The newly defined FBI Standard Supplemental Finger/Palmprint Cards, FD-884A, will contain additional areas of friction ridge capture, including joint prints (distal, medial, and proximal), rolled finger tips, and rolled thenar area for each hand as shown in the images below.

Figure 3.1.1.16-4 FBI Standard Supplemental Finger/Palmprint Card (FD-884A) Front

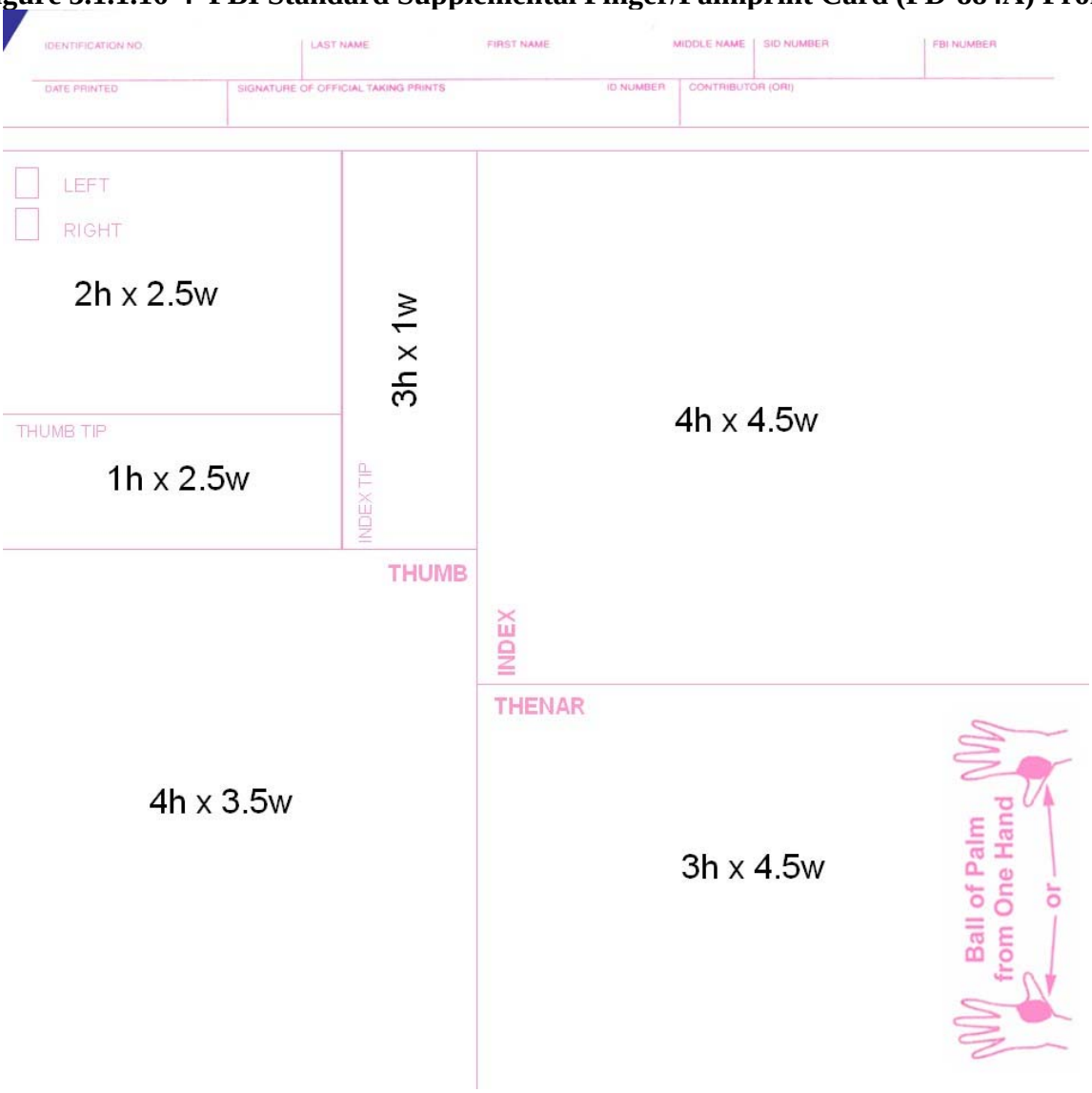
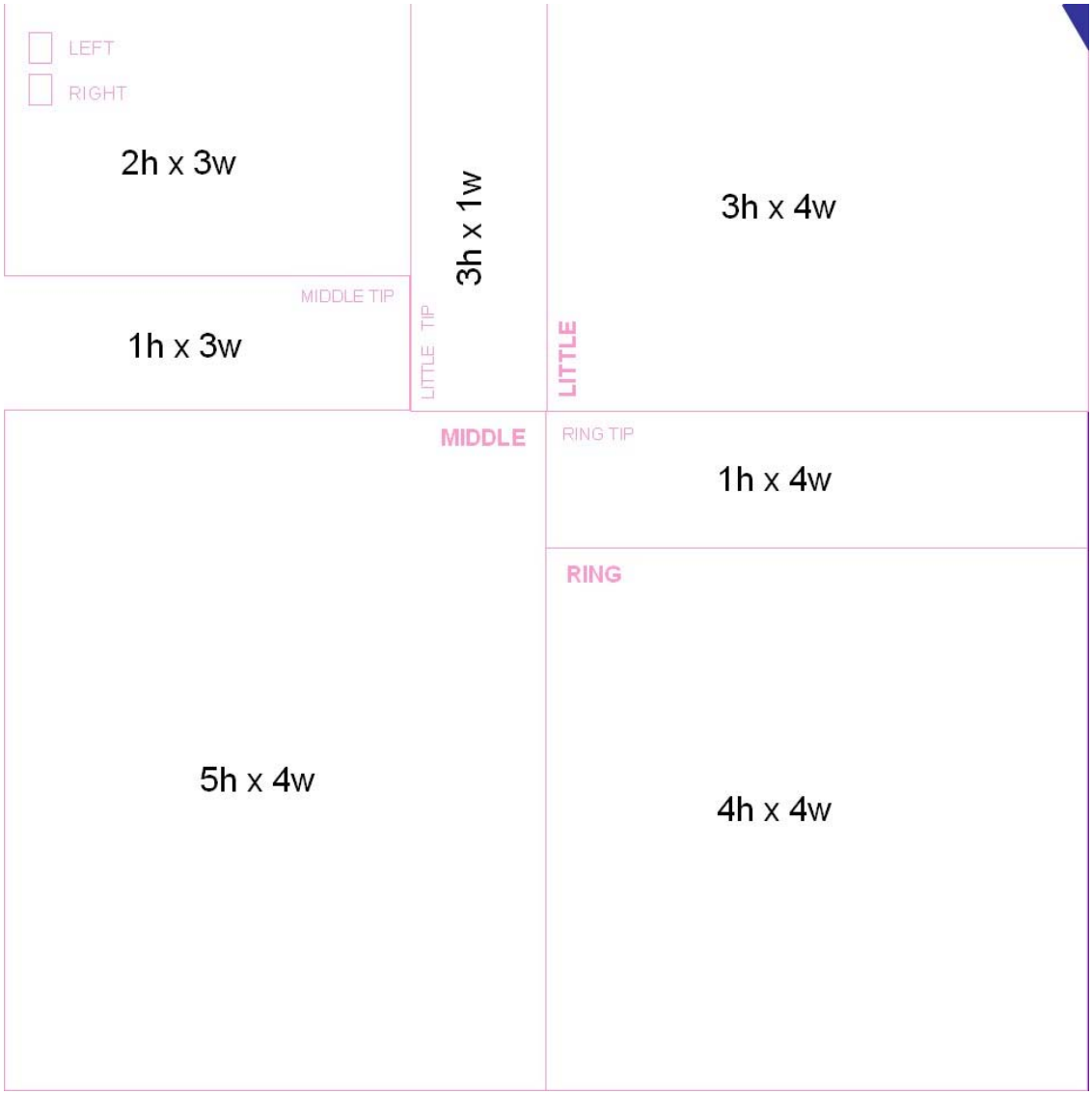


Figure 3.1.1.16-5 FBI Standard Supplemental Finger/Palmprint Card (FD-884A) Reverse



The table below lists the Major Case Print Codes to be used in the Type-13 and -14 records.

Major Case Print Codes

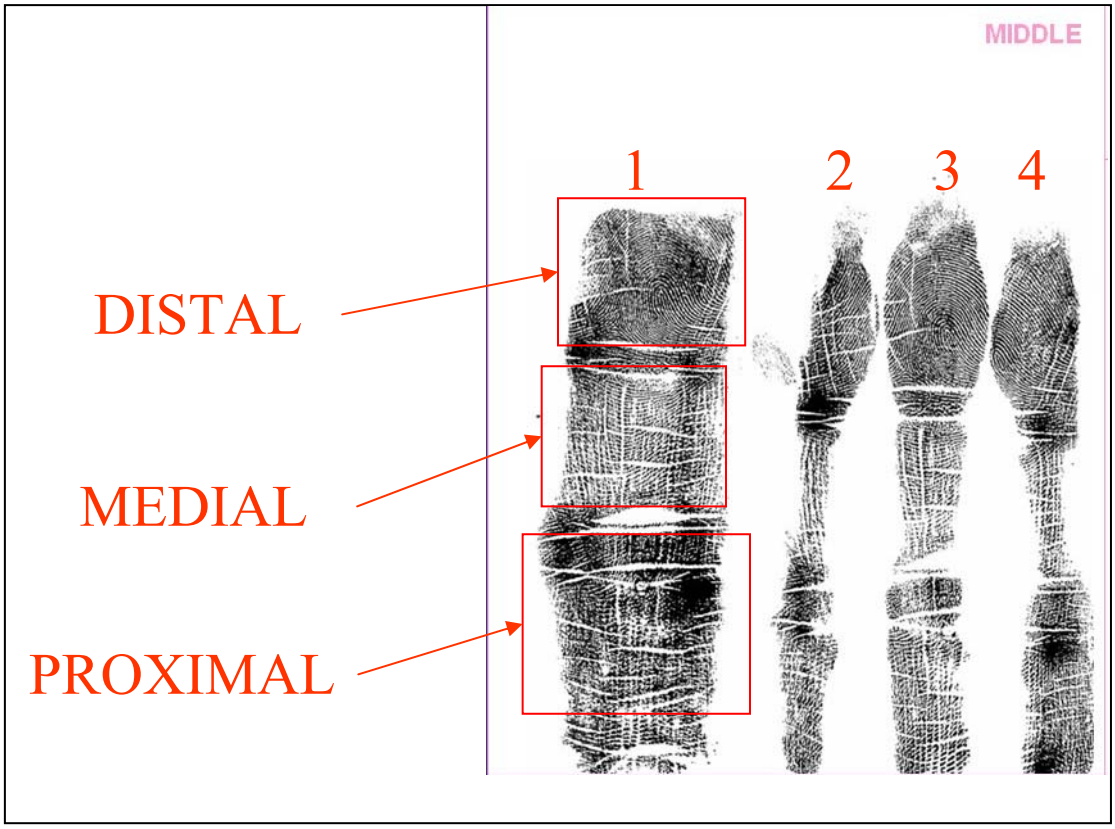
Type of Major Case Print Image	Image Code
Entire Joint Image	**EJI**
Rolled Tip	**TIP**
Full Finger View	**FV*x* *x* = {1,2,3,4}**
Proximal, Distal, or Medial Segment	**PRX, DST, MED**

The types of Major Case Print images are further defined as:

- Joint Prints (later broken down into distal, medial, and proximal)
  - *Rolled Joint Print: a single recording of the friction ridge skin on the distal, medial (except thumbs), and proximal areas of each finger. This type of impression is taken in one motion, similar to the taking of a rolled fingerprint impression.*
- Rolled Tips
  - *A single recording of the friction ridge skin on the tip of the end joint of a finger. This type of impression is taken by placing the end joint of the finger on one side and rolling the finger across the tip such that the fingernail is in constant contact (or near constant contact) with the sheet of paper until the other side of the finger is reached.*
- Rolled Thenar
  - *The large cushion of the palm located at the base of the thumb opposite of the Writer's Palm or Hypothenar.*

The rolled joint segments are labeled in the image below, where image 1 is the rolled middle finger, 2 and 4 are the pressed sides of the middle finger, and 3 is the pressed surface of the middle finger.

Figure 3.1.1.16-6 Distal, Medial and Proximal Joints



The image records of the entire joint image (EJI) are contained in Type-14 records. Offsets to the locations of image segments containing the full finger view, proximal, distal, or medial areas are included with the image records further defined in the Type-14 record field specifications.

3.1.1.17 Electronic Disposition Reporting (DSPE)

This transaction gives the requester an electronic option to submit dispositional information. The Court Segment Literal (CSL) or dispositional data may be obtained from the arresting agency, the court system, the penal system, or any other local, state or federal entity that may render final adjudication in a criminal case. The DSPE may be used to submit from one (1) to forty (40) CSL transactions per date of arrest (DOA). The following fields are mandatory: LEN, IDC, RET, DMI, DOA, ORI, CRI, COL and CSL. The DSPE request may include optional fields of: ATN, CCN, SAN, SCO, FBI, SID, OCA, SOC, MNU, NAM, AKA, POB, CTZ, DOB, SEX, RAC, SMT, HGT, WGT, EYE, HAI, ASL, SSD, SLE, ICO, IMA, UCN, AMP, and fingerprint images. If fingerprint images are included in the request, a comparison will be done to determine positive identification. Any disposition submission verified by fingerprints, any disposition submission that establishes a new FBI record, or any disposition submission where submission data match the existing FBI record will be disseminable in responses from the FBI. An electronic response will be sent to the requester. Edit specifications for the fields it uses may be found in Table C-1. The DSPE TOT is summarized in Table D-3.

3.1.1.18 Non-Federal User-fee Expedite (NFUE)

These non-federal civil applicant submissions are fee-based, high-priority fingerprint transactions that require an expedited search and response. The submission contains either ten rolled and four plain impressions or three identification flat impressions (see Appendix N), biographic descriptor data, optional palm print and iris images, an unlimited number of photos of the subject, and any other major case print information. The palm print and iris images and the photos are allowed only if the retention field (2.005 RET) is set to "Y." The NFUE TOT is summarized in Table D-3. Edit specifications for the fields it uses may be found in Table C-1. See also Section 1.6 for a discussion of the use of TCN and TCR in no-charge resubmission of user-fee submissions that the FBI has rejected. Such resubmissions are allowed only when the fingerprint image quality of the original submission was unacceptable.

3.1.1.19 Submission Results – Electronic (SRE)

This transaction is returned by the FBI in response to ten-print submissions. The response will always contain the Ident/Non-Ident decision and will contain the electronic rap sheet if requested. Table 3-1 describes which NAM, FBI number, and SID are returned in the SRE for Criminal, Civil and Humanitarian submissions, and for Non-Ident and Ident results. A non-matching NAME is returned in the electronic rap sheet (ERS) if one was requested. The following fields, which are not stored in IAFIS, are always returned exactly as submitted: ATN, SCO, EAD, OCP, RES, and TAA. A single electronic response will be sent to the contributor through the state identification bureau via the CJIS WAN. In the case that circumstances delay processing an EBTS request, the requestor will receive a preliminary electronic response coded as a Non-Ident with an ERS. The ERS will contain a report explaining results are not available

due to a delay. When the FBI completes processing, it will print a Non-Ident or Ident response report and mail it to the requestor. Table D-2 gives the logical record layout for the SRE TOT. Edit specifications for the fields it uses may be found in Table C-1.

For criminal submissions denoting Canada's RTID System as a search destination, the submitter will receive two SRE transactions. The first will contain the results of the IAFIS search. The second will contain the results of the Canada RTID search. The TCR field in the Type-1 header record of the second response will contain the TCN value from the Type-1 header record of the first response to enable correlation of the two responses. The Type-2 record of the second SRE will also contain the unique identifier and biographic data of a subject in the RTID repository if there is a hit.

Criminal submissions may also be cascaded to other external databases such as DoD ABIS, DHS IDENT/US-VISIT, etc., via use of multiple values of the Type-2 record field NDR (see Appendix C description). Responses returned within the specified response times for the IAFIS transactions will be combined into a single response. Responses that would result in a delay will be returned in a separate response similar to a submission searching the Canada system.

Table 3-1. Values of NAM, UCN and SID Returned in the SRE

Type of Submission	Result	Value of Returned Field			Special Exceptions
		Name	UCN	SID	
Criminal, No UCN Submitted	Non-Ident Return	NAM Submitted	None	SID Submitted	
Criminal, No UCN Submitted	Non-Ident Retain	NAM Submitted	Master UCN	SID Submitted	
Criminal, No UCN Submitted	Ident Return	Master NAM	None	Master SID	
Criminal, No UCN Submitted	Ident Retain	Master NAM	Master UCN	Master SID	
Criminal, UCN Submitted	Non-Ident Return	NAM Submitted	None	Submitted SID	STD in RAP SHEET
Criminal, UCN Submitted	Non-Ident Retain	NAM Submitted	Master UCN	Submitted SID	STD in RAP SHEET
Criminal, UCN Submitted	Ident Return	Master NAM	Master UCN	Master SID	STD in RAP SHEET
Criminal, UCN Submitted	Ident Retain	Master NAM	Master UCN	Master SID	STD in RAP SHEET
Civil, No UCN Submitted	Non-Ident Return	NAM Submitted	None	None	
Civil, No UCN Submitted	Non-Ident Retain	NAM Submitted	CRN	None	
Civil, No UCN Submitted	Ident Return	Master NAM	Master UCN	Master SID	
Civil, No UCN Submitted	Ident Retain	Master NAM	Master UCN	Master SID	
Civil, UCN Submitted	Non-Ident Return	NAM Submitted	None	None	STD in RAP SHEET
Civil, UCN Submitted	Non-Ident Retain	NAM Submitted	CRN	None	STD in RAP SHEET
Civil, UCN Submitted	Ident Return	Master NAM	Master UCN	Master SID	STD in RAP SHEET
Civil, UCN Submitted	Ident Retain	Master NAM	Master UCN	Master SID	STD in RAP SHEET
Humanitarian, No UCN Submitted	Non-Ident	NAM Submitted	Master UCN	None	
Humanitarian, No UCN Submitted	Ident	Master NAM	Master UCN	None	
Humanitarian, UCN Submitted	Non-Ident	NAM Submitted	Master UCN	None	STD in RAP SHEET
Humanitarian, UCN Submitted	Ident	Master NAM	Master UCN	None	STD in RAP SHEET

Under certain circumstances, the SRE will contain Special Table Data (STD). For example, this would be included in a Non-Ident Report (NIDR) if a Universal Control Number (UCN) was submitted. It would be included in an Ident Report (IDRR) if a submitted UCN did not match the UCN in the Master File for subject. It would be included in an IDRR or NIDR, as appropriate, if the Master File UCN was marked expunged, deleted, or consolidated.

3.1.1.20 Disposition Response (DSPR)

This transaction is returned by the FBI in response to dispositional type related submissions (DSPE). The response will be based on whether the transaction is processed as submitted. The DSPR will contain an IAFIS identifying number (TCN) from the submission, the submitted biographical data, and response information. The response information may be "Record Updated" if the record is successfully updated with the submitted CSL, "Manual Processing Required" if subsequent analysis of the submitted CSL is necessary, or "Rejected"

and the reason for rejection listed. The response information will be contained in the Action to be Taken field (2.071 ACN). Rejections will be via the ERRT TOT (see below).

3.1.1.21 Fingerprint Verification Report (FVR)

This transaction is used to verify the identity of a subject against a known Universal Control Number (UCN) in the FBI CJIS files. Submission will include a quoted UCN and may include from two to ten fingerprint images, either flat or rolled. If the quoted UCN is not found, an error message (ERRT) will be returned saying "Quoted UCN not found." If the UCN is found but not idented, a Non-Ident Response will be returned. If the submitted images are idented against the quoted UCN, an Ident Response will be returned including a current RAP sheet. The FVR TOT is summarized in Table D-3.

3.1.1.22 Ten Print Transaction Error (ERRT)

This transaction is returned by the FBI to indicate a transaction error. It includes a message field (MSG) indicating the type of error detected. Error responses are described in Section 3.8. The ERRT TOT is summarized in Table D-3. Edit specifications for the fields it uses may be found in Table C-1. Currently defined error messages are detailed in Appendix M.

3.1.2 Requirements for Logical Record Types

Submissions: The types and quantities of logical records required in an electronic ten-print submission are as follows:

X 1 Type-1 Header Record
X 1 Type-2 Record

Nominally either,

X For criminal justice purposes (*e.g.*, CAR, CNA, CPDR, CPNU, and optionally DSPE)

X 14 Type-4 or Type-14 records as follows:
- 10 Rolled Impressions
- 4 Sets of Plain Impressions

X 0-20 Type-14 Major Case Print images

X 0-8 Type-15 Palmprint Records

X 0-unlimited Type-10 Records containing photos

X 0-2 Type-17 Iris image records

X 0-N Type-99 CBEFF records

Or

X For non-criminal justice purposes (*e.g.*, FAUF, FANC, FNDR, NFUF, NFAP, NNDR, MAP) and with FBI coordination and authorization,
Either,
X 14 Type-4 or Type-14 records as follows
- 10 Rolled Impressions
- 4 Sets of Plain Impressions

Or,
X 3 Type-14 records (refer to Appendix N) as follows:
- 2 Plain Simultaneous Four Finger Impressions
- 1 Plain Left and Right Thumb Impression

Or, for FVR,

X 2-10 Type-4 or Type-14 flat or rolled fingerprint images

And,

X 0-12 Type-14 Major Case Print images

X 0-8 Type-15 Palmprint Records may be submitted with FAUF, FANC, FDNR, NFUF, NNDR, and MAP transactions if the retention field (2.005 RET) is set to "Y"

X 0-unlimited Type-10 Records containing photos may be submitted with AMN, DEK, DEU, MPR, FANC, FAUF, FNDR, MAP, NFAP, NFUF, and NNDR transactions if the retention field (2.005 RET) is set to "Y"

X 0-2 Type-17 Iris image records may be submitted with FAUF, FANC, FDNR, NFUF, NNDR, and MAP transactions if the retention field (2.005 RET) is set to "Y"

X 0-N Type-99 CBEFF records

(See Appendix C write-up of the AMP field for how to handle submissions with fewer than 10 printable fingers.)

Responses: In response to an electronic ten-print submission, the following logical records will be returned:

X 1 Type-1 Header Record
X 1 Type-2 Record
X 0-1 Type-10 Photo record containing the most recent mug shot

3.2 Investigative Fingerprint Searches

To conduct an investigative ten-print search of the FBI's database, the sending agency will electronically transmit fingerprint images and classification information as required by the AFIS/FBI (*i.e.*, the AMP, when needed) or user-extracted fingerprint characteristics. Fingerprint characteristics include classification, fingerprint features, and any other derived data required by AFIS/FBI. If the originator is a local agency, the request will go through their state identification bureau. The subsequent FBI search will be conducted automatically with no additional manual editing or processing. If candidates are identified, no identification decision is made by the FBI. Instead, up to 25 candidates' FBI numbers are returned to the transmitting agency along with fingerprint images from the highest scoring candidate. The user can request specific finger images, up to all 14 fingerprint images, via the Fingerprint Number(s) Requested (FNR) field. This process differs from electronic ten-print submission processing in that there is no manual intervention on the part of the FBI.

The sender must designate the TOT in the Type-1 record to specify the type of search request. The following list of TOTs is applicable to ten-print searches transmitted to the FBI:

TOT	Transaction
TPIS	Ten-Print Fingerprint Image Searches
TPFS	Ten-Print Fingerprint Features Searches
TPRS	Ten-Print Rap Sheet Request
RPIS	Rapid Print Image Search

A hierarchical approach to ten-print searches must be adhered to (*i.e.*, for TPIS and TPFS). Searches submitted by local agencies must be processed by the local AFIS (if available) and electronically transmitted to a state AFIS (if available) before submitting a search to the FBI. If an identification decision is made at any of the previous levels, the Ident response will be transmitted to the originating agency and there will be no further processing of the request at a higher level.

The processing flow for ten-print searches (TPIS/TPFS) is shown in Figure 2, "Investigative Fingerprint Searches."

All electronic transactions between the FBI and the originating state agency will be routed via the CJIS WAN or the Internet. State and local agencies must handle the continuance of these transactions among themselves through the state network. For OFOs, tribal, or international agencies, routing of search and response will be via their connection to the CJIS WAN or the Internet.

The following are the potential responses to ten-print fingerprint searches:

TOT	RESPONSE TRANSACTION
SRT	Search Result – Ten-print
ERRT	Ten-Print Transaction Error
TPRR	Ten-print Rap Sheet Response
RPSR	Rapid Print Image Search Response

The Search Result Ten-Print (SRT) response will include a candidate list and the fingerprint images of the highest scoring candidate who potentially matches the submitted fingerprints. Retrieval of the additional images is accomplished through separate image retrieval requests. The Ten-print Rap Sheet Response will contain candidates and their criminal history, but no fingerprint images. The Rapid Print Image Search Response will return an SRF value corresponding to the match results of the ten-print search (*i.e.*, red, yellow, or green). Similar to the Ten-print Rap Sheet Response, the Rapid Print Image Search Response will return criminal history (and the most recent full frontal photo if requested and on file) for a red or yellow response. Additionally, further information describing the SRF value will be provided to the contributor in the Action to be Taken (ACN) field of the response. No fingerprint images will be returned for either the Ten-print Rap Sheet Response or the Rapid Print Image Search Response.

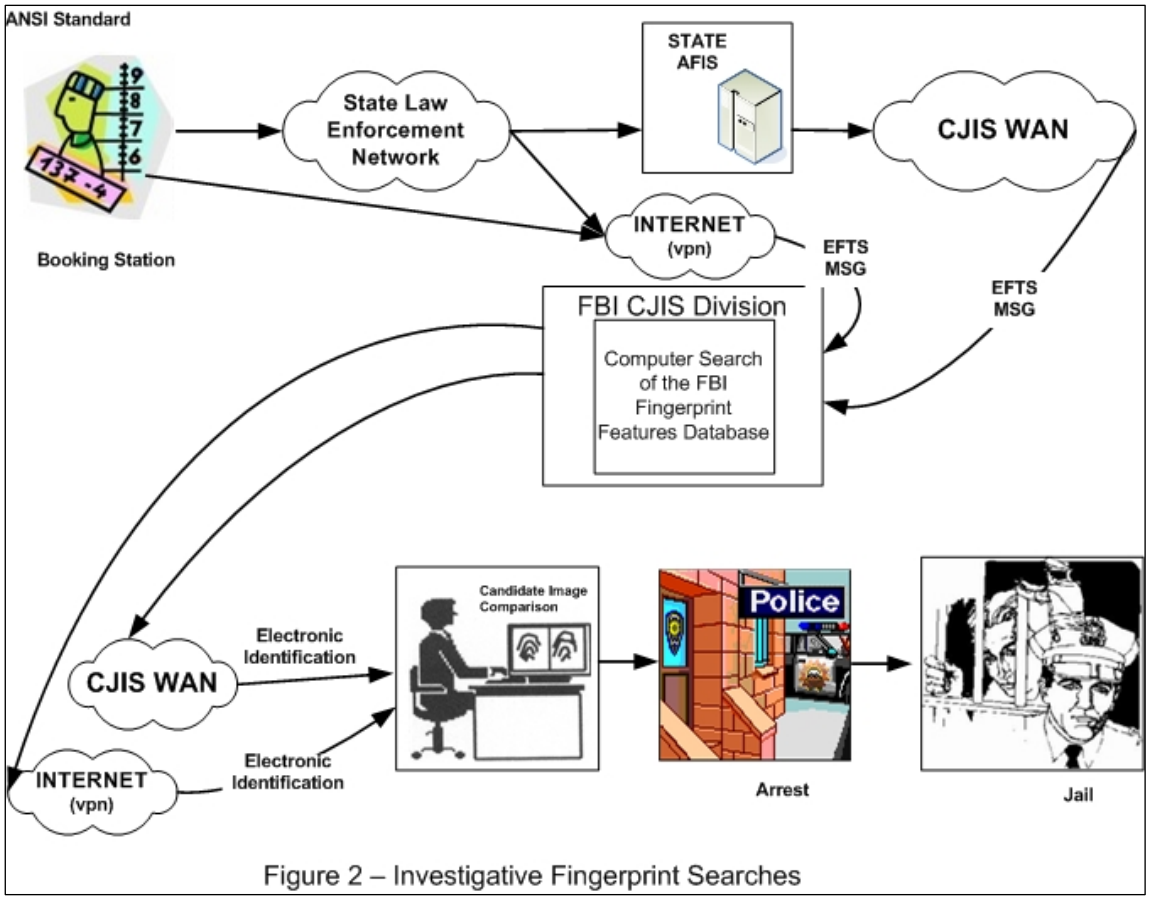


Figure 2 – Investigative Fingerprint Searches

3.2.1 Type of Transaction Definitions

3.2.1.1 Ten-Print Fingerprint Image Searches (TPIS)

The ten-print fingerprint images are transmitted along with any required fingerprint classification information and descriptors by the originator. The PAT field is to be included for every amputated or unprintable finger. The fingerprint characteristics will be automatically extracted from the image at the FBI with no human intervention. There will be no manual editing of fingerprint characteristics. The search process of the criminal fingerprint files is conducted and the results transmitted to the originator. The response consists of the match report including the identification of matching candidates and the corresponding fingerprint images of the candidate with the highest score. Images for the remaining candidates may be retrieved through separate image retrieval requests. The TPIS TOT is summarized in Table D-3. Edit specifications for the fields it uses may be found in Table C-1.

3.2.1.2 Ten-Print Fingerprint Features Search (TPFS)

The fingerprint characteristics, including classification, are extracted and transmitted by the originator along with search criteria. The search process uses this information to generate the candidate list. The response is similar to those for TPIS transactions. The TPFS TOT is summarized in Table D-3. Edit specifications for the fields it uses may be found in Table C-1.

Note: The fingerprint characteristics referred to here are the native-mode fingerprint characteristics of the FBI's AFIS; *i.e.*, the fingerprint characteristics' data transmitted will be in a format used or accepted by AFIS/FBI. The originating agency must have the capability to extract and encode fingerprint characteristics data in the FBI native mode in order to use this TOT.

3.2.1.3 Search Results – Ten-Print (SRT)

This transaction is returned by the FBI in response to a TPIS or TPFS request. It includes a candidate list composed of the names and FBI numbers of up to 25 subjects selected by AFIS/FBI as potential matches to the fingerprint images or features that were submitted. The fingerprint image(s) of the first candidate on the candidate list will also be included. The fingerprint images in the response may be specified by finger position in the search request. The SRT TOT is summarized in Table D-3. Edit specifications for the fields it uses may be found in Table C-1.

3.2.1.4 Ten-Print Transaction Error (ERRT)

This transaction is returned by the FBI to indicate a transaction error. It includes a message field (MSG) indicating the type of error detected. Error responses are described in Section 3.8. The ERRT TOT is summarized in Table D-3. Edit specifications for the fields it uses may be found in Table C-1.

3.2.1.5 Ten-Print Rap Sheet Searches (TPRS) and Response (TPRR)

The ten-print fingerprint images are transmitted along with any required fingerprint classification information and descriptors by the originator. The PAT field is to be included for every amputated or unprintable finger. The fingerprint characteristics will be automatically extracted from the images at the FBI with no human intervention. There will be no manual editing of fingerprint characteristics. The search process of the criminal fingerprint files is conducted and the results transmitted to the originator. The response consists of rap sheets for up to the top twenty candidates. Images are not returned as part of this process. The TPRS TOT is summarized in Table D-3. Edit specifications for the fields it uses may be found in Table C-1.

Note: TPRS is a limited-use TOT that requires coordination with FBI prior to use.

3.2.1.6 Rapid Print Image Search (RPIS) and Response (RPSR)

This transaction is provided by the FBI to enable rapid fingerprint searches implemented as part of the FBI's Repository for Individuals of Special Concern (RISC). RISC provides the capability to perform a rapid fingerprint search (with from two to ten rolled or flat fingerprint images) against a special file containing the most wanted individuals, including, among others, identified terrorists, wanted aliens, or other international subjects identified as a threat to the United States. Rapid Print Image Search (RPIS) transactions will provide a 10-second or less response to searches from authorized agencies; the response transaction (RPSR) consists of a red/yellow/green-light indicator corresponding to the match results against IAFIS ten-print repositories. Red indicates a hit has been made against an identified threat subject. Green indicates there was no hit. Yellow indicates a need for further investigation. As stated in paragraph 3.2, for a red or yellow light response, a criminal history will be returned for any candidates (similar to TPRR), as well as the most recent full frontal photo if requested, on file and disseminable. Additionally, further information describing the SRF value will be provided to the contributor in the Action to be Taken (ACN) field of the response. The RPIS TOT is summarized in Table D-3. Edit specifications for the fields used may be found in Table C-1.

Note: RPIS is a limited-use TOT that requires coordination with FBI prior to use.

3.2.2 Requirements for Logical Record Types

<u>Input</u>: The types and quantities of logical records required to submit a fingerprint investigative search are as follows:

X 1 Type-1 Header Record
X 1 Type-2 Record
X 1-10 Type-4 or Type-14 Fingerprint Image Records or Type-9 Fingerprint Features Records containing rolled impressions or features

Response: In response to a fingerprint investigative search request, the following logical records will be returned:

X 1 Type-1 Header Record
X 1 Type-2 Record
X 0-14 Type-4 or Type-14 Fingerprint Image Records containing the requested fingerprint images of the first candidate (SRT only)
X 0-1 Type-10 record containing the most recent full frontal photo of the number one candidate if requested, on file and disseminable (RPSR only)

The remaining candidates' fingerprints may be retrieved via a request for fingerprint image transaction (see IRQ in paragraph 3.6.1.1).

3.3 Electronic Submission of Latent Prints

Electronic latent print submissions to the FBI will originate from the agency having legal jurisdiction of the case, federal, state, or local. These submissions, as differentiated from latent searches (see Section 3.4), are strictly for the purpose of submitting crime scene information to the FBI for processing in support of law enforcement investigations. The crime scene evidence will be processed and the desired latent prints will be electronically captured. The term "latent prints" includes fingerprints, palm prints, toe prints, and footprints. Investigation of latent cases may also generate ten-prints used for comparison purposes (*e.g.*, suspect, victim, or other personnel with authorized access to the crime scene). The sender must designate the TOT in the Type-1 record to specify which process is to be followed. The following TOTs are applicable to electronic latent print submissions to the FBI:

TOT	TRANSACTION
LFS	Latent Fingerprint Image(s) Submission
CFS	Comparison Fingerprint Image(s) Submission
MCS	Major Case Image(s) Submission
ELR	Evaluation Latent Fingerprint Submission Request

The processing flow for electronic latent transactions is illustrated in Figure 3, "Electronic Latent Submission."

The following are the responses to electronic latent submissions:

TOT	RESPONSE TRANSACTION
LSR	Latent Submission Results
NAR	Notification of Action Response
ERRL	Latent Transaction Error

The FBI's response to a latent fingerprint image submission (*i.e.*, LFS) contains a TOT of "LSR" (denoting "Latent Submission – Results") in the Type-1 Record. It includes the identification of a subject with matching fingerprints or a non-identification decision. If the response to an LFS transaction is a non-identification, the latent case may be stored in the Unsolved Latent File. If there is an error in the submittal, an ERRL response will be returned. Search results will be returned as e-mail attachments to the address derived from the search e-mail using SMTP processing. The return address must be on the CJIS WAN or the LEO VPN.

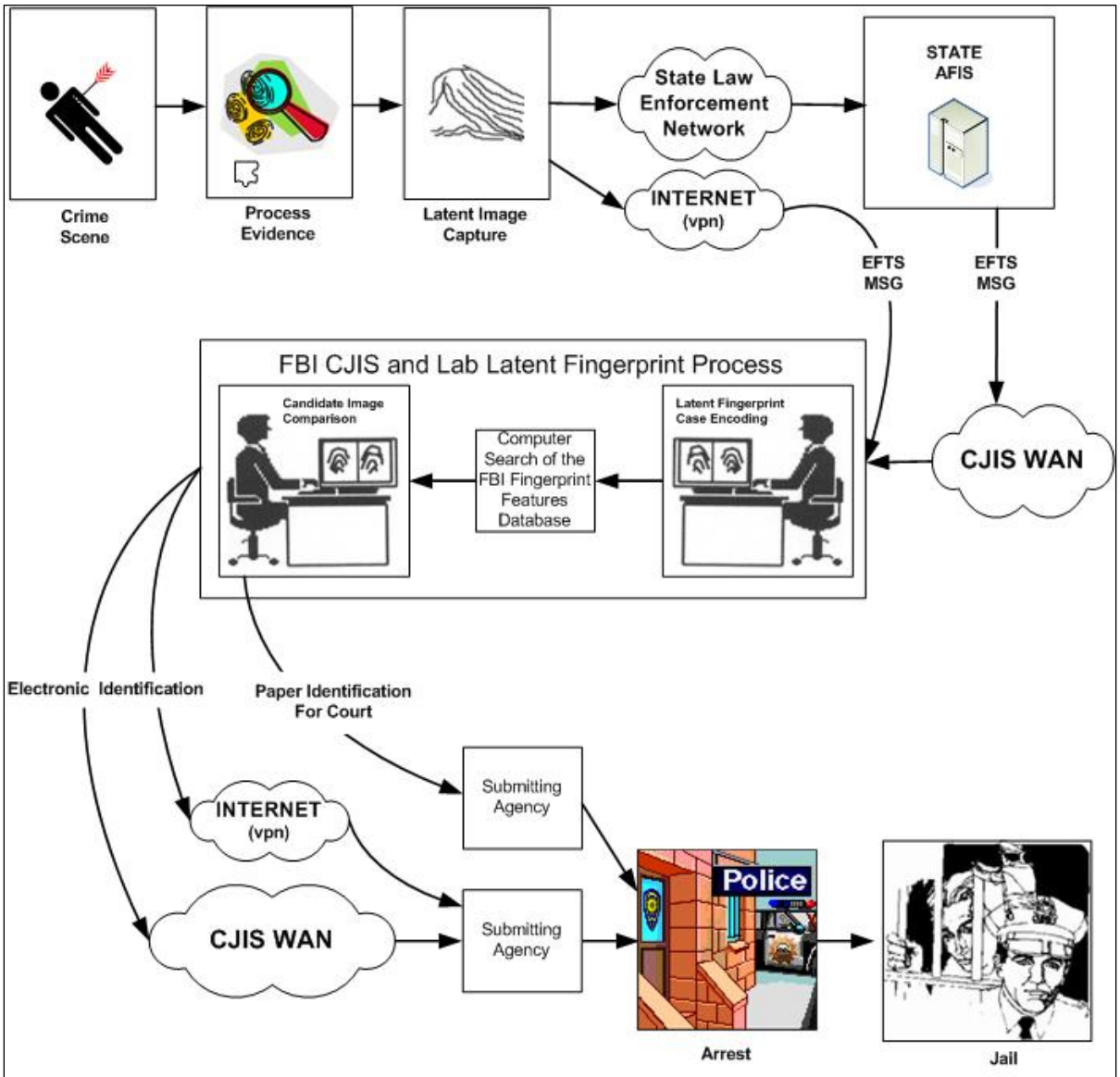


Figure 3 – Electronic Latent Submission

The responses to ELR submissions contain a TOT of "NAR" (denoting "Notification of Action Response"). It defines the action taken based on the analysis of the submitted latent images. For an ELR submission, the NAR may indicate that a latent case will be established.

There will be no IAFIS responses other than communication protocol acknowledgments for the transaction types CFS and MCS. However, a latent report may be generated and provided to the contributor.

Note: This report is not an automated report and will **not** be transmitted electronically through IAFIS.

3.3.1 Type of Transaction Definitions

3.3.1.1 Latent Fingerprint Image(s) Submission (LFS)

A Latent Fingerprint Image Submission is intended solely for the purpose of executing an AFIS search, and is to be used by state, local, or other federal agencies not able to extract IAFIS-compatible minutiae. The latent fingerprint images are transmitted along with the search criteria by the originator. Latent fingerprint specialists will perform comparisons of the search latent fingerprint image(s) against the candidate(s) selected and make the Ident/non-Ident decision(s). The Ident/non-Ident decision(s) will be transmitted as a response (*i.e.*, LSR), including the name and FBI number of the identified subject. The LSR will include the full set of 14 ten-print images if an identification has been made. The latent search image(s) will be stored in the Unsolved Latent File if requested in the submission by the originator. The LFS TOT is summarized in Table E-1. Edit specifications for the fields it uses may be found in Table C-1.

3.3.1.2 Comparison Fingerprint Image(s) Submission (CFS) (For use by FBI only)

This TOT provides for the transmission of ten-print fingerprint images or other known prints from individual(s) who could have caused the latent impressions associated with a case. The CFS is intended solely for internal FBI use. The comparison prints may consist of the following:

1. Suspect known prints
2. Victim known prints
3. Known prints from individuals being compared for purposes of elimination
4. Other individuals involved in the case

The submittal may include all the fingerprints normally enclosed in a ten-print submittal plus optional additional prints (*e.g.*, palm prints), if applicable. The known print images will be stored and accessible to the fingerprint specialist for comparison and analysis. Elimination prints for several individuals must be sent as individual submittals for each. No electronic response other than communication protocol acknowledgment of receipt is returned for this TOT. The CFS TOT is summarized in Table E-1. Edit specifications for the fields it uses may be found in Table C-1.

3.3.1.3 Major Case Image(s) Submission (MCS) (For use by FBI only)

This TOT provides for the submittal of fingerprints normally enclosed in a ten-print submittal plus additional images of the extreme tips, sides, and lower joints of the fingers, and surface and extreme sides of palms for possible use in comparisons for a case. The MCS is intended solely for internal FBI use in conjunction with a Latent Print Unit investigation. The submitted prints will be added to the Major Case Image File. In addition, the ten-prints may be searched against the criminal fingerprint databases and, providing that all required data are submitted, it may be used to establish a new record in the criminal subject databases or to update existing records on the subject. No electronic response other than communication protocol acknowledgment of receipt is returned for this TOT. The MCS TOT is summarized in Table E-1. Edit specifications for the fields it uses may be found in Table C-1.

3.3.1.4 Evaluation Latent Fingerprint Submission Request (ELR) (For use by FBI only)

This is a transaction to be used solely for FBI purposes, including FBI field office consultations with the LFPS examiners. The contents of the submission are similar to a latent submission (*i.e.*, LFS). The transaction will result in a reply (*e.g.*, NAR) indicating the action to be taken. The action could be the establishment of a latent case, a request for additional information, or an evaluation of the case feasibility and recommendations for further actions. The ELR TOT is summarized in Table E-1. Edit specifications for the fields it uses may be found in Table C-1.

3.3.1.5 Latent Submission Results (LSR)

This transaction is in response to a latent fingerprint submission (LFS transactions). It includes a Search Results Findings (SRF) field indicating an identification or non-identification decision and, if the LFS results in an identification, it returns a name, FBI number, and full set of 14 ten-print images of the identified subject. The LSR TOT is summarized in Table E-1. Edit specifications for the fields it uses may be found in Table C-1.

3.3.1.6 Notification of Action Response (NAR)

This transaction will be in response to an evaluation request (ELR transaction). The response may include a message field (MSG) indicating the results of the evaluation or recommendations for further actions included in the Action to be Taken (ACN) field. The NAR TOT is summarized in Table E-1. Edit specifications for the fields it uses may be found in Table C-1.

3.3.1.7 Reserved

3.3.1.8 Latent Transaction Error (ERRL)

This transaction is returned by the FBI in response to a transaction that contained errors such as search exceeding the penetration threshold, missing or inadequate quality fingerprints, missing mandatory information, or invalid contents. The MSG field shall include additional information on the causes for the rejection. Error responses are described in Section 3.8. The ERRL TOT is summarized in Table E-1. Edit specifications for the fields it uses may be found in Table C-1.

3.3.2 Requirements for Logical Record Types

Submission: The types and quantities of logical records required in electronic latent submissions and requests are as follows:

- X 1 Type-1 Header Record
- X 1 Type-2 Record
- X 1-14 Type-4 or Type-13 Fingerprint Image Records. (1-10 records for latent submissions, 14 records for comparison ten-print fingerprint submissions, or an optional set of 14 images for major case submissions), or
- X 1 or more Type-7 records containing miscellaneous (*e.g.*, palmprints as part of a CFS or MCS) or high resolution (greater than 500 dpi) latent images. The LFS and ELR submissions are limited to 10 Type-7 or Type-13 records. The MCS may have more than 10.

Response: In response to a latent submission (LFS), the following logical records will be returned (in the LSR):

- X 1 Type-1 Header Record
- X 1 Type-2 Record
- X 0-14 Type-4 or Type-14 Fingerprint Image Records containing the ten-print fingerprint images corresponding to the finger of positions of the submitted latent images (optional for LSR responses at the discretion of the originator).

3.4 Latent Fingerprint Searches

An IAFIS user may transmit one or more latent fingerprint images or corresponding features sets assumed to be from the same subject to be searched against the FBI's Ten-Print Criminal Features Master File (a Latent Cognizant search). This latent fingerprint search request will originate from the agency having legal jurisdiction of the case, either federal, state, or local. The crime scene evidence will be processed and the desired latent fingerprints will be electronically captured. To conduct a latent fingerprint search, the originating agency will electronically transmit latent fingerprint images and/or FBI native-mode fingerprint features. These images or features may be stored in the Unsolved Latent File (ULF) through use of the ULF flag, which is included in the search request. If the ULF flag is set to "yes," the submitted fingerprint image(s) and/or features will be added to the ULF (the default setting of the ULF flag is "no"). The biographic descriptor data contained in the Type-2 records, T2LFFS and T2LFIS, are used as search parameters to narrow the search penetration so that the penetration threshold is not exceeded. The same descriptors may be submitted in a separate Latent Penetration Query prior to initiating the search to determine the penetration.

IAFIS will accept latent searches as attachments to e-mails where the file name of the attachment may correspond to information associated with the owner of the search and case information. The IAFIS front-end (EFCON) will perform the necessary conversion within IAFIS to facilitate successful completion of the search transaction (*e.g.*, TEH1234.LFFS) and will then ensure that any response (*e.g.*, SRL, ERRL) carries the filename corresponding to the search transaction (*e.g.*, TEH1234.SRL). This implementation is designed to facilitate association of the response transaction with the original search (previous methodology returned all responses with a filename of EBTS.SRL, making it difficult to differentiate one response from another).

For latent searches requesting a simultaneous search of other repositories, such as Canada's RTID System or DHS IDENT, submitters will enter the appropriate values for the desired destination in the Name of Designated Repository (2.098 NDR) field in the Type-2 record.

The latent fingerprint search process differs from the electronic latent submissions in that there will be no human intervention on the part of the FBI. The sender must designate the TOT to specify which process is to be followed. The following list of TOTs is applicable to latent fingerprint searches transmitted to the FBI:

TOT	TRANSACTION
LFIS	Latent Fingerprint Image(s) Searches
LFFS	Latent Fingerprint Features Searches
LPNQ	Latent Penetration Query
LSIR	Latent Search IDENT Response

A hierarchical approach to AFIS searches must be adhered to. Transactions generated by local agencies must be processed by the local AFIS (if available) and electronically transmitted to a state AFIS (if available) before submitting a search to the FBI. If an identification decision is made as a result of processing at any of the previous levels, there will be no further processing of the request at a higher level.

In addition to the search-related transactions, a latent candidate comparison response is also provided. The FBI CJIS Division has a requirement to collect statistics regarding system performance to ensure IAFIS is performing at its peak accuracy. The Latent Search Ident Response (LSIR) is the transaction by which users will inform IAFIS of the results of their latent search results comparisons of candidates in the SRL response. These results will fall into the categories of Ident (I), Non-Ident (N), or Pending (P). The LSIR transaction is sent to IAFIS immediately upon completion of the comparison process when authorized by the user.

All electronic transactions between the FBI and the originating agency will be routed via the CJIS WAN or the Internet.

The following are the potential responses to latent fingerprint transactions:

TOT	RESPONSE TRANSACTION
SRL	Search Result – Latent
LPNR	Latent Penetration Response
ULM	Unsolved Latent Match Response
ERRL	Latent Transaction Error

The response to a valid latent search transaction will contain a TOT of "SRL" (denoting "Search Results – Latent") in the Type-1 record. It will also include the (up to NCR) fingerprint image(s) of the finger(s) that potentially matches the latent fingerprint. If the latent search includes more than one finger, the image corresponding to the highest matched score for each candidate will be returned. The search parameters must limit the search to no more than 30 percent of the population of the file being searched. A Latent Penetration Query may be sent to determine the percentage of repository penetration prior to initiation of a search. The results will be returned in a Latent Penetration Response. Any search request for the latent cognizant repository that does not include sufficient search parameters to limit the search to 30 percent will result in a Latent Transaction Error (ERRL) response. The response will include the (two digit) percentage of the repository penetration determined from the submitted parameters in the Status/Error Message (MSG) field of the Type-2 record. Detection of errors will also cause a Latent Transaction Error (ERRL) response.

The ULM may be a delayed response to an LFFS or LFIS (Appendix L, Table L-4). If a ten-print submission made after an LFFS or LFIS that has added a latent fingerprint image to the Unsolved Latent File matches that latent print, a ULM will be sent to the latent print contributor.

The processing flow for latent fingerprint image transactions is illustrated in Figure 4, "Investigative Latent Searches."

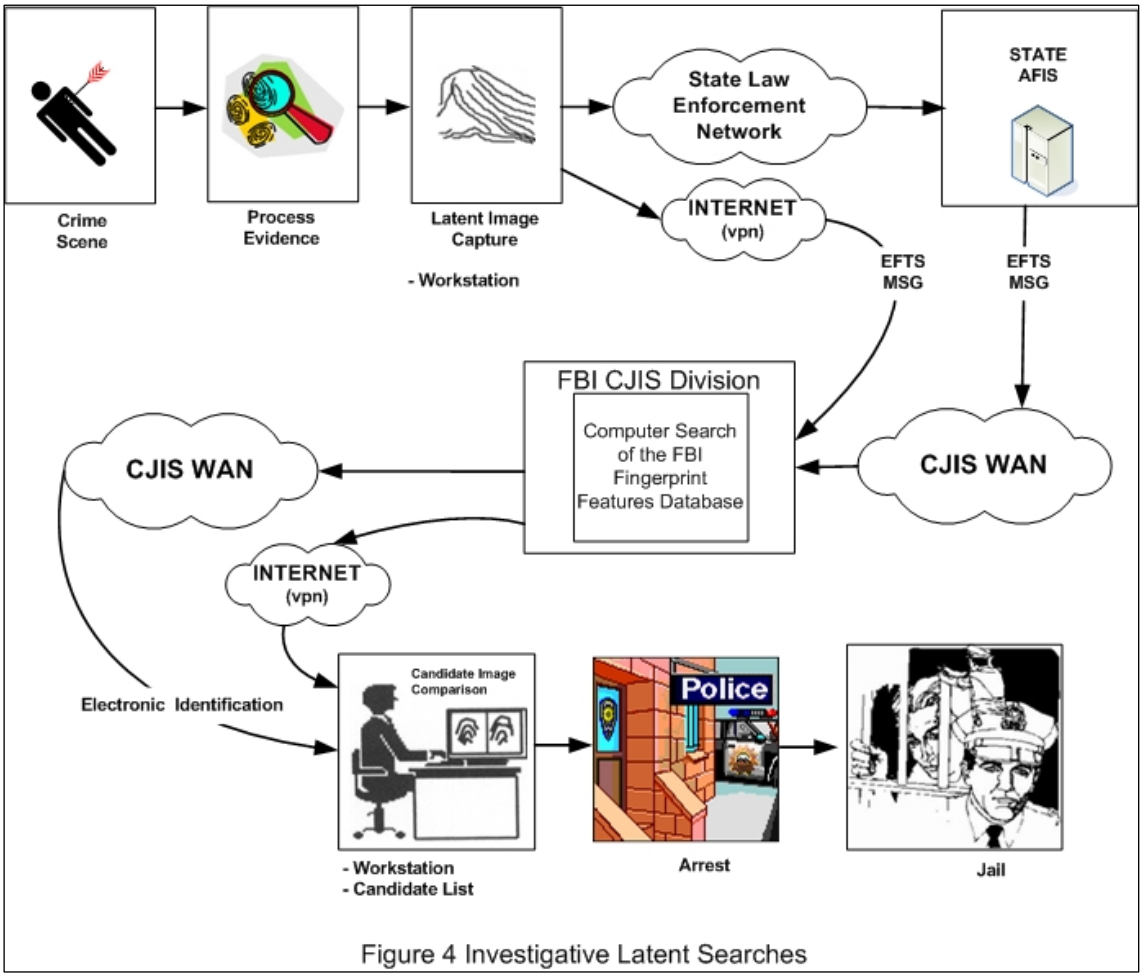


Figure 4 Investigative Latent Searches

3.4.1 Type of Transaction Definitions

3.4.1.1 Latent Fingerprint Image(s) Search (LFIS)

The latent fingerprint image(s) are transmitted along with the search criteria by the originator. The fingerprint features will be automatically extracted from the images with no human intervention. There will be no manual editing of fingerprint characteristics. IAFIS will conduct a search of the Latent Cognizant repository and will transmit the results to the originator. In the event that images are of insufficient quality for AFIS/FBI to be able to extract features and perform a search, IAFIS will respond with a Latent Transaction Error message.

Multiple fingerprint images may be searched if the submitter believes the images are from a single subject. Multiple images must be accompanied by a finger position for each image. Only this set of finger numbers will be searched.

If, in submitting a single latent image, the finger position of the image is unknown, the submitter may use the PAT (2.034) and FGP (2.074) fields as follows to indicate that the position is unknown while allowing speculation on the finger position: (1) set the Finger Number subfield of PAT to “00” to indicate UNKNOWN while supplying the Pattern Classification Code

as usual; (2) in conjunction, submit one or more instances of the FGP field containing the finger position guesses; and (3), in the FGP field of the Type-7 record, send a binary "0." If many finger guesses for a single finger search are provided, the PAT/RCD1/RCD2 fields should be entered only for the first finger guess and will be automatically duplicated by IAFIS for all other finger guesses. The FGP field in the Type-13 record shall contain one or more of the possible finger or palm positions that may match the latent image. The decimal code number corresponding to the known or most probable finger position shall be taken from Table 12 or the most probable palm position from Table 34 and entered as a one- or two-character ASCII subfield. Additional finger and/or palm positions may be referenced by entering the alternate position codes as subfields separated by the "RS" separator character. The code "0" for "Unknown Finger" shall be used to reference every finger position from one through ten. The code "20" for "Unknown Palm" shall be used to reference every listed palmprint position. Code "19" shall be used to reference major case prints for latent print impression areas.

Latent fingerprints submitted for searches may be added to the Unsolved Latent File as discussed in Paragraph 3.3.1.1. One or two Type-2 records may be submitted in the search message. IAFIS will automatically use the descriptive data in the first Type-2 record for the search. If originators desire to store descriptive data with the unsolved latent that are different from those provided for the purpose of limiting the search penetration of the Latent Cognizant repository, they may include a second Type-2 record. In either case, the first Type-2 received with the ULF flag set to "Y" will be used to add descriptors to the Unsolved Latent File.

The LFIS TOT is summarized in Table E-1. Edit specifications for the fields it uses may be found in Table C-1.

3.4.1.2 Latent Fingerprint Features Search (LFFS)

The latent fingerprint features are extracted and transmitted along with the search criteria by the originator. The search process of the Latent Cognizant repository will be conducted and the results transmitted to the originator as described for the LFIS transaction. The fingerprint features referred to here are the native-mode fingerprint features of the FBI's AFIS; *i.e.*, the fingerprint features information transmitted will be in a format used or accepted by AFIS/FBI.

Originators may add the latent features from a features search message and, if desired, the latent fingerprint images corresponding to those features to the Unsolved Latent File as described in Paragraph 3.4.1.1. Multiple-finger searches and searches where the finger position is not known are to be treated in the same manner as the LFIS.

The originating agency must have the capability to extract and encode fingerprint features in the FBI native-mode to use this TOT. The LFFS TOT is summarized in Table E-1. Edit specifications for the fields it uses may be found in Table C-1.

3.4.1.3 Search Results – Latent (SRL)

This transaction is returned by the FBI in response to a latent search request. It will include a candidate list composed of names and FBI numbers of each candidate and the corresponding fingerprint image(s) of the number of candidates specified in the NCR field of the search message. Up to 99 candidates, their match scores, and the finger positions of the images on file that matched may be included in the response. In addition, if the search included an indication that the latent image should be stored in the Unsolved Latent File, the SRL will return the AFIS Segment Control Number (SCNA) of the stored latent image. The SRL TOT is summarized in Table E-1. Edit specifications for the fields it uses may be found in Table C-1.

3.4.1.4 Unsolved Latent Match Response (ULM)

This transaction is issued by IAFIS when a newly submitted criminal, civil, or latent fingerprint search matches an unsolved latent case previously submitted by a state, local, federal, international, or tribal agency. This transaction is an unsolicited response to the sponsor of the unsolved latent fingerprint, not to the submitter of the criminal, civil, or latent search images. The response will include the FBI number (if criminal transaction), name, personal identifiers, and fingerprint images of the subject or case and contact information (*e.g.*, CIN/CIX, ATN) in the case of a latent search image that was matched with the unsolved latent fingerprint and the images of the unsolved latent fingerprint. Up to 10 images can be returned in this transaction when a ten-print record hits against multiple latents in the ULF stored by a multi-finger search. The "owner" of the unsolved latent case is responsible for conducting the comparison. The ULM TOT is summarized in Table E-1. Edit specifications for the fields it uses may be found in Table C-1.

3.4.1.5 Latent Penetration Query (LPNQ)

The Latent Penetration Query allows the user to receive a percentage of the Latent Cognizant repository that will be accessed by a latent fingerprint search. The query contains the search parameters that will be defined in either the LFIS or LFFS search request except for the Type-4 or -7 image or Type-9 features records. This will allow setting the search parameters to ensure that the maximum penetration allowed is not exceeded. Penetration tables developed by AFIS/FBI may be used as an aid to help the user determine expected penetration. This transaction applies only to a single finger even if the original transaction included multiple fingers. The LPNQ TOT is summarized in Table E-1. Edit specifications for the fields it uses may be found in Table C-1.

3.4.1.6 Latent Penetration Query Response (LPNR)

The response to a penetration query will contain the estimated size for the repository search based on the transaction-defined characteristics. The response will indicate the percent penetration to allow further refinement of the search criteria. The LPNR TOT is summarized in Table E-1. Edit specifications for the fields it uses may be found in Table C-1.

3.4.1.7 Latent Search Ident Response (LSIR)

This transaction provides an indication to the FBI's IAFIS of the comparison results from latent candidates contained in an SRL response message. The comparison results are classified as Ident (I), Non-Ident (N), or Pending (P). In addition, information will be provided to indicate the transaction number of the original search and response, as well as which candidate from the SRL matched the search image, if any. Edit specifications for the fields contained in the LSIR may be found in Table C-1, while the LSIR transaction is summarized in Table E-2. SRF for LSIR transactions will contain "IDENT," "Non-IDENT," or "PENDING."

3.4.1.8 Transaction Error (ERRL)

This transaction is returned by the FBI to indicate a transaction error. It includes a message field (MSG) in dictating the type of error detected. Error responses are described in Section 3.8. The ERRL TOT is summarized in Table E-1. Edit specifications for the fields it uses may be found in Table C-1.

3.4.2 Requirements for Logical Record Types

Requests: The types and quantities of logical records required to submit a latent search request are as follows:

- X 1 Type-1 Header Record
- X 1-2 Type-2 Record
- X 1-10 Type-4, Type-7, Type-13, or Type-9 Record each containing the image of a latent fingerprint or the native-mode characteristics of a latent fingerprint. (Type-4, Type-7, and Type-13 records may not be combined in any single search message. However, Type-4, Type-7, or Type-13 records may accompany Type-9 records in a features search message.)

Note: The Latent Penetration Query (LPNQ) and Latent Search IDENT Response (LSIR) do not require the Type-4, Type-7, Type-13, or Type-9 submission.

Response: In response to a latent search, the following logical records will be returned:

- X 1 Type-1 Header Record
- X 1 Type-2 Record
- X 0-NCR Type-4 or Type-14 Fingerprint Image Records where NCR is the maximum number of candidate images the user has specified in the search message (see Appendix C regarding the NCR field - 2.079). The actual number of images returned may be fewer than NCR if fewer candidates resulted in the search. For example, if the user submits three fingers to be searched against the repository, specifying an NCR of 7 and only five candidates are returned, the user will receive five images: the top-scoring finger from each candidate. The image of the top-scoring latent match score fingers will be returned.

The remaining candidates' fingerprints may be retrieved via a request for fingerprint image transaction (*i.e.*, IRQ).

For the Latent Penetration Query Response, the penetration data will be in the Type-2 record. There is no response from the FBI to an LSIR transaction.

For the Unsolved Latent Match (ULM),

X 1 Type-1 header record
X 1 Type-2 record
X 1-10 Type-4 or Type-14 record (containing the image(s) of the candidate's finger that matched the latent print) and 0-10 Type-4, Type-7, or Type-13 records (containing the latent image from the Unsolved Latent File, if it exists in IAFIS).

3.5 Latent File Maintenance Requests

An IAFIS user will transmit file maintenance messages to specify transactions related to the unsolved latent file; specifically, an Unsolved Latent Record Delete Request (ULD) or an Unsolved Latent Add Confirm Request (ULAC). The processing flow for electronic requests to delete unsolved latent fingerprint records is illustrated in Figure 5, "Electronic Requests to Delete Unsolved Latent Fingerprint Records."

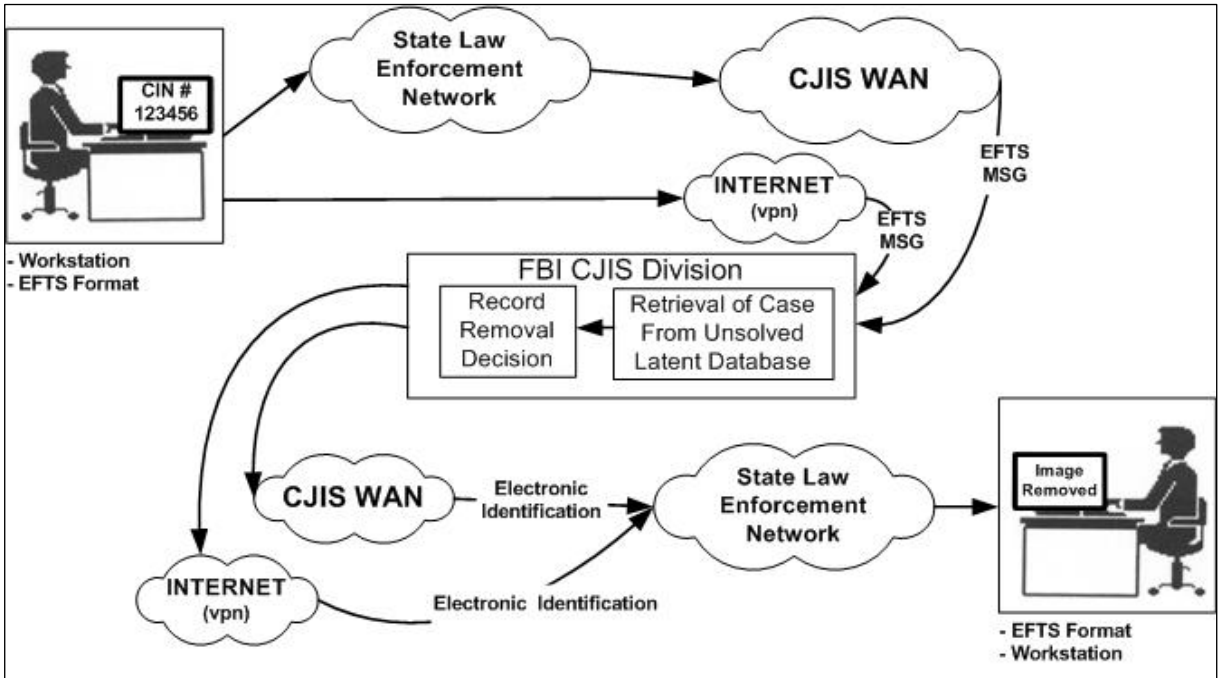


Figure 5 - Electronic Requests to Delete Unsolved Latent Fingerprint Records

The following TOTs are latent file maintenance transactions transmitted to the FBI:

TOT	TRANSACTION
ULD	Unsolved Latent Record Delete Request
ULAC	Unsolved Latent Add Confirm Request

The FBI's responses to latent maintenance transactions are as follows:

TOT	RESPONSE TRANSACTION
ULAR	Unsolved Latent Add Confirm Response
ULDR	Unsolved Latent Delete Response
UULD	Unsolicited Unsolved Latent Delete
ERRL	Latent Transaction Error

3.5.1 Type of Transaction Definitions

3.5.1.1 Unsolved Latent Record Delete Request (ULD)

This TOT is used to request that unsolved latent file records be removed from the FBI's Unsolved Latent files. If a set of unsolved latent images were added from a multi-finger latent search, the ULD applies to the entire set of images added. The ULD TOT is summarized in Table E-2. Edit specifications for the fields it uses may be found in Table C-1.

3.5.1.2 Unsolved Latent Add Confirm Request (ULAC)

This TOT is used to request that unsolved latent file records be semi-permanently added (since the ULF is a FIFO) to the FBI's Unsolved Latent files. This TOT must be received within 14 days of receipt of the IAFIS response to an LFIS or LFFS transaction. If a set of unsolved latent images were added from a multi-finger latent search, the ULAC applies to the entire set of images added. The ULAC TOT is summarized in Table E-2. Edit specifications for the fields it uses may be found in Table C-1.

3.5.1.3 Unsolved Latent Add Confirm Response (ULAR)

This transaction is used to provide confirmation that an unsolved latent file record has been permanently added to the FBI's Unsolved Latent files. The ULAR TOT is summarized in Table E-2. Edit specifications for the fields it uses may be found in Table C-1.

3.5.1.4 Unsolved Latent Delete Response (ULDR)

This transaction is used to indicate that a record has been deleted from the FBI's Unsolved Latent files in response to a ULD message. The ULDR TOT is summarized in Table E-2. Edit specifications for the fields it uses may be found in Table C-1.

3.5.1.5 Unsolicited Unsolved Latent Delete (UULD)

This transaction is used to indicate that a record has been deleted from the FBI's Unsolved Latent files because the FBI did not receive an Unsolved Latent Add Confirm Request (ULAC) transaction for that record within the 14 days allowed or because the Unsolved Latent File (ULF) (or a particular subfile of the ULF) contained the maximum number of allowable records when an attempt was made to add a record and the record deleted was the oldest record in the file/subfile. If a set of unsolved latent images were added from a multi-finger latent search, the UULD applies to the entire set of images added. The UULD TOT is summarized in Table E-2. Edit specifications for the fields it uses may be found in Table C-1.

3.5.1.6 Reserved

3.5.1.7 Latent Transaction Error (ERRL)

This transaction is returned by the FBI to indicate a transaction error. It includes a message field (MSG) indicating the type of error detected. Error responses are described in Section 3.8. The ERRL TOT is summarized in Table E-1. Edit specifications for the fields it uses may be found in Table C-1.

3.5.2 Requirements for Logical Record Types

Request: The types and quantities of logical records required to submit an electronic request to perform maintenance in the Unsolved Latent Fingerprint file records are as follows:

X 1 Type-1 header record
X 1 Type-2 record.

Response: The response to an electronic request to perform maintenance in the Unsolved Latent Fingerprint file records will include the following logical records:

X 1 Type-1 header record
X 1 Type-2 record.

3.6 Requests For Images

Image services include a transaction for requesting images on file at the FBI and to request updates of existing images (see Table 3-3 Maximum Sizes for Fingerprint).

To initiate a request for image(s) from the FBI's database, the sending agency electronically transmits the unique record identifier of the subject (*i.e.*, FBI number or other identifier, such as Universal Control Number (UCN)). Images that reside in the FBI's Unsolved Latent File may also be requested by providing the AFIS Segment Control Number (SCNA) of the latent record. This request will be routed to the FBI, processed, and returned to the requester through the CJIS WAN or the Internet. If the requester is a local agency, the request and response will be interfaced with the CJIS WAN through the state law enforcement network or the Internet. There will be no manual intervention on the part of the FBI.

Requests for a set of images will be submitted to the FBI under the IRQ TOT (denoting Image Request) in the Type-1 record. The FBI's response will contain an IRR TOT (denoting Image Request Response) in the Type-1 record. The processing flow for image requests is illustrated in Figure 6, "Image Request."

After completing the image retrievals and responses of a multiple-set request, the FBI will respond with a Fingerprint Image Response Summary listing all requested FBI numbers and their response status. The FBI's response will contain an ISR TOT in the Type-1 record.

The following TOTs are applicable for requests for fingerprint images:

TOT	TRANSACTION
IRQ	Image Request

The FBI's response to requests for images is as follows:

TOT	RESPONSE TRANSACTION
IRR	Image Request Response
ISR	Image Response Summary
ERRI	Image Transaction Error

3.6.1 Type of Transaction Definitions

3.6.1.1 Image Request (IRQ)

This transaction enables users to retrieve images from the FBI databases so a comparison can be made by the requester at user facilities. The requester identifies the FBI number(s) (for criminal records), civil record number(s), or other subject identifier (*e.g.*, Universal Control Number (UCN)) of the subject(s) whose biometric images are being requested. Up to 1,000 subjects' records may be requested per transaction. Specific fingerprint images or the complete set may be requested, as well as other biometrics (such as palmprints) that may be associated with that record. The transaction will be processed, and requester-selected fingerprint images, as well as other biometric images, on file at the FBI will be transmitted in the response. Each subject record identifier number in the request will be addressed in a separate Image Request Response (IRR). If the request contains any errors, an Image Error Response (ERRI) will be returned, including the reason for the return in a message field (MSG). Errors associated with individual record identifier numbers, such as an image set not being on file, will be reported in the Fingerprint Image Response Summary (ISR). The remaining valid subject identifier numbers will result in individual IRR responses. The Logical Record Layout for the IRQ TOT is given in Table I-1.

Image request transactions may indicate requests for images other than criminal ten-print fingerprints by including the appropriate value in the Name of Designated Repository (NDR) Field (see NDR 2.098 description in Appendix C) in the Type-2 record.

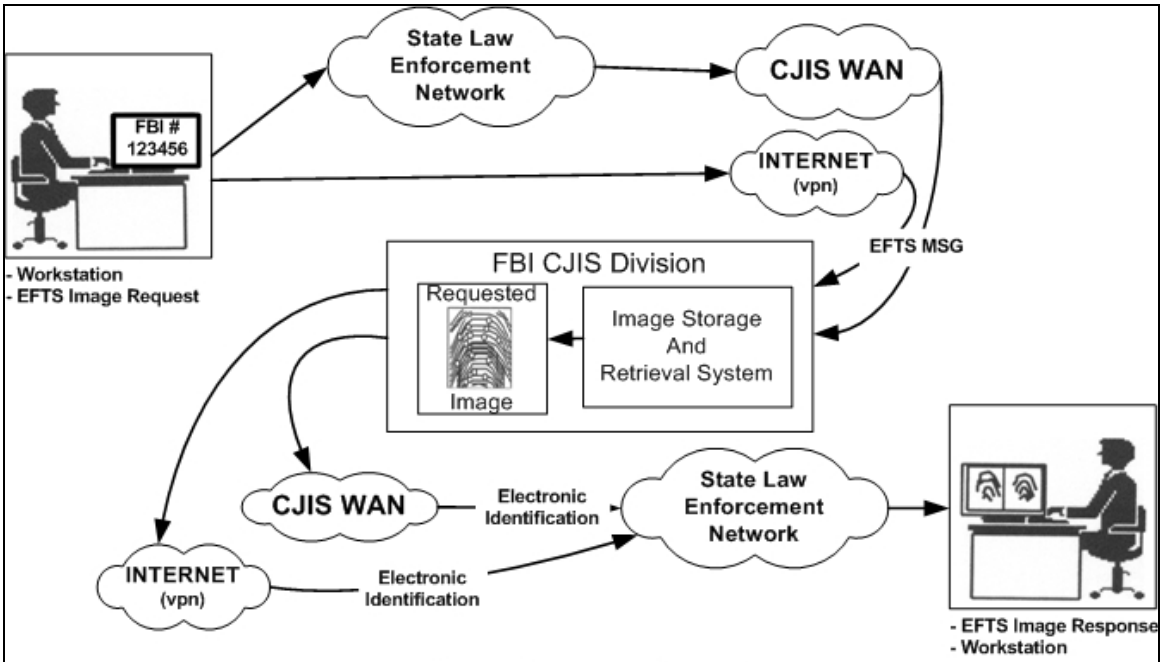


Figure 6 – Image Request

For any IRQ, the submitter of the transaction may indicate the desire for IAFIS to return the Type-9 features records associated with the returned images. The Type-9 features records may be used for comparison purposes by overlaying the features on the image records. For IRQ transactions requesting multiple sets of images, the request to return features records must apply equally to all identified sets of images. Otherwise, individual IRQ transactions must be submitted.

3.6.1.2 Reserved

3.6.1.3 Image Request Response (IRR)

This transaction is returned by the FBI to provide requested images on file at the FBI to the requester. Each subject record identifier number in the request having images available causes a separate response. The response will include the subject record identifier number and the requested Type-4 or Type-14 fingerprint images. The specified fingerprint images will be transmitted in the response. If requested, the Type-9 features records will be included as well. The Logical Record Layout for the IRR TOT is given in Table I-2.

3.6.1.4 Image Response Summary (ISR)

This transaction is returned by the FBI to summarize the results of the image request processing. Each subject record identifier number in the original request (*e.g.*, UCN or FNU) is listed, along with its related process status. Status may be image request success, invalid subject record identifier number, or requested image(s) not on file. The Logical Record Layout for the ISR TOT is given in Table I-6.

The current IAFIS implementation will drop from the list any candidate for which there is no image, and will not generate any external error condition, although there is an internal indicator that there may be an out-of-sync condition. The response process is not interrupted, and there is currently no other indication of such a problem in the messaging. The only external indication that an out-of-sync condition exists is that the list of returned images differs from the request.

3.6.1.5 Image Transaction Error (ERRI)

This transaction is returned by the FBI to indicate a transaction error. It includes a message field (MSG) indicating the type of error detected. Error responses are described in Section 3.8. The Logical Record Layout for the ERRI TOT is given in Table I-3.

3.6.2 Requirements for Logical Record Types

Request: The types and quantities of logical records required to submit an image request are as follows:

X 1 Type-1 header record
X 1 Type-2 record.

Response: The response to an image request will include the following logical records:

X 1 Type-2
X 0-14 Type-4 or Type-14 fingerprint image records in the IRR transaction only
X 0-14 Type-9 features records corresponding to the requested images
X 0-8 Type-15 palmprint images
X 0-2 Type-17 iris images
X 0-1 Type-7 or Type-13 latent images.

3.7 Electronic Requests To Upgrade Fingerprint Images

Fingerprint image update transactions are to be used particularly by states participating in the National Fingerprint File (NFF) when they obtain fingerprints from subjects already on file that are of substantially better quality or include different characteristics than the existing ones, *e.g.*, a new scar. The new fingerprints are submitted to the FBI for evaluation and inclusion in the FBI files.

Fingerprint Image Submissions (FIS) will use an FIS TOT. All 14 fingerprint images must be accounted for in the update request to verify identification and finger sequence. The FBI will determine whether to update the master fingerprint images. The processing flow for electronic requests to upgrade fingerprint images is illustrated in Figure 7, "Electronic Requests to Upgrade Fingerprint Images."

The FBI's responses to fingerprint image submissions will provide upgrade results or indicate an error as follows:

TOT	TRANSACTION
FIS	Fingerprint Image Submission

TOT	RESPONSE TRANSACTION
FISR	Fingerprint Image Submission Response
ERRI	Image Transaction Error

3.7.1 Type of Transaction Definitions

3.7.1.1 Fingerprint Image Submission (FIS)

This transaction is used to submit electronic fingerprint images that are candidates for upgrading the FBI fingerprint image files. It is intended primarily for use by NFF states when it is determined that a second or subsequent arrest provides fingerprints of significantly better quality than those previously submitted to the FBI, or when it is determined there are new fingerprint characteristics such as scars or amputations. The transaction submits the new fingerprints to the FBI for evaluation and possible inclusion in the FBI files. All 14 fingerprints, rolled and plain, must be accounted for to verify the identification and confirm fingerprint positions. The Logical Record Layout for the FIS TOT is given in Table I-4.

3.7.1.2 Fingerprint Image Submission Response (FISR)

This transaction is returned by the FBI to acknowledge a valid fingerprint image submission and specify which finger image(s) were updated. The Logical Record Layout for the FISR TOT is given in Table I-5.

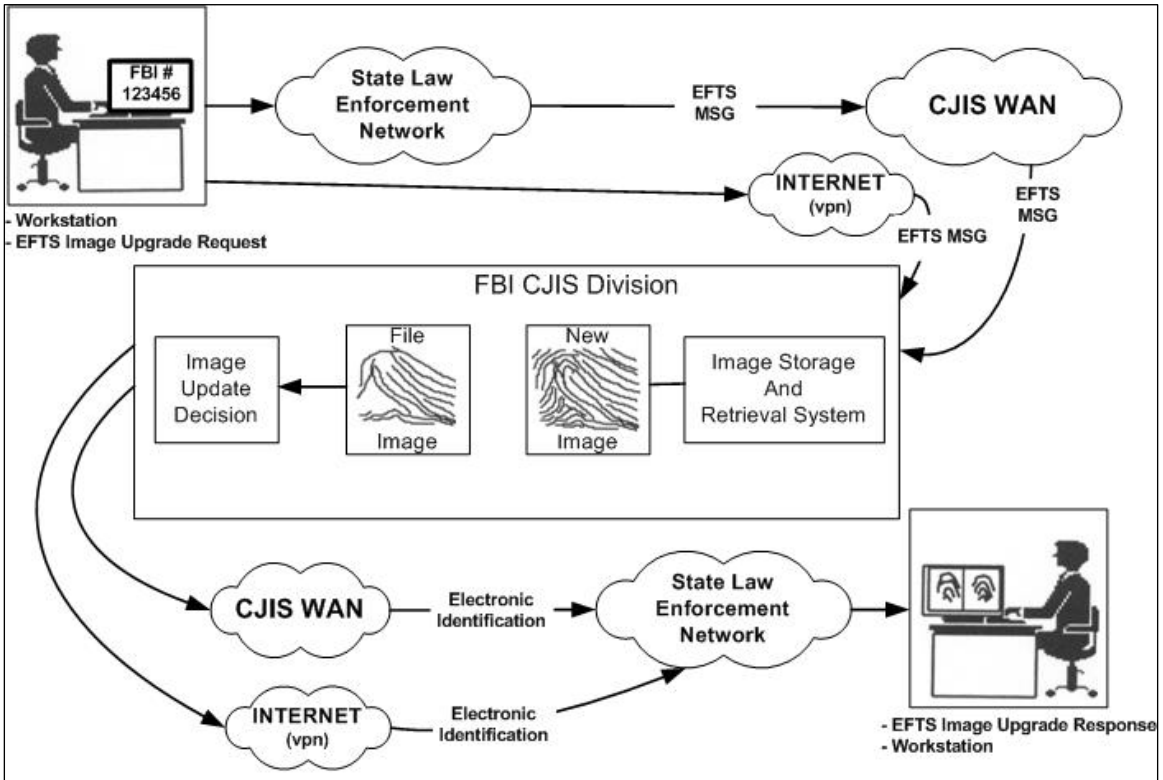


Figure 7 - Electronic Requests to Upgrade Fingerprint Images

3.7.1.3 Image Transaction Error (ERRI)

This transaction is returned by the FBI to indicate a transaction error. It includes a message field (MSG) indicating the type of error detected. Error responses are described in Section 3.8. The Logical Record Layout for the ERRI (images) TOT is given in Table I-3.

3.7.2 Requirements for Logical Record Types

Submission: The types and quantities of logical records required to submit an electronic request to update fingerprint images are as follows:

X 1 Type-1 header record
X 1 Type-2 record
X 14 Type-4 or Type-14 fingerprint image records.

Response: The response to an electronic request to update fingerprint images will include the following logical records:

X 1 Type-1 header record
X 1 Type-2 record.

3.8 Error Message Format

When a transmission is rejected because a data field(s) does not pass internal editing criteria, an error response will be transmitted back to the submitting agency. Each reason for rejection will be detailed in the status/message (MSG) field. Up to 11 errors for a transaction can be recorded in the MSG field. MSG will contain an error description relating to the specific discrepancy identified. If the error is related to a field that contains invalid data, the field tag and first 30 characters of the data in the invalid field will be returned.

Errors in incoming transactions can be derived from many sources. IAFIS error handling capabilities will be an evolutionary product. In its initial version, IAFIS will recognize and deal with several hundred identified error conditions. Future versions of IAFIS will develop improved capabilities that support off-nominal or error conditions.

IAFIS will validate all incoming data prior to its use within the system. That is, all received and parsable fields will undergo an appropriate edit check. If any mandatory data are missing the transaction will be rejected. If any mandatory data are included but in error, then an attempt will be made to correct the values manually. If any optional data are in error, the data will be ignored.

The error response will be included in the ERRT, ERRA, ERRI, or ERRL transaction as appropriate. The following is a non-inclusive list of the types of error messages:

X Mandatory field missing
X Invalid field for transaction
X Field discrepancy
X Field out of range
X Request not on file
X Fingerprints do not allow extraction of characteristics
X Non-standard native-mode fingerprint characteristics

The following are four unique types of error responses:

X Ten-print Error Response (ERRT)
X Latent Error Response (ERRL)
X Image Error Response (ERRI)
X Administrative Error Response (ERRA)

Appendix M contains further details on contents of the MSG field for error conditions.

3.9 Other Special Requirements for Communicating With IAFIS

3.9.1 Electronic Fingerprint Images

Electronic fingerprint images must be captured and transmitted to the FBI in accordance with the standard for the electronic interchange of fingerprint information, "ANSI/NIST-ITL 1-2007, American National Standard For Information Systems – Data Format for the Interchange of Fingerprint, Facial, & Scar Mark & Tattoo (SMT) Information," dated April 20, 2007.

3.9.2 Fingerprint Image Compression/Decompression Algorithm

IAFIS-IC-0010(V3), IAFIS Wavelet Scalar Quantization (WSQ) Grayscale Fingerprint Image Compression Specification, dated December 19, 1997, provides the definitions, requirements, and guidelines for specifying the FBI's WSQ compression algorithm. The document specifies the class of encoders required, decoder process, and coded representations for compressed image data. Latent images are not compressed.

The specification provides an informative overview of the elements of the algorithm. Refer to it for details.

ISO International Standard 10918-1, Information Technology – Digital Compression and Coding of Continuous Tone Still Images Part 1: Requirements and Guidelines, commonly known as the JPEG (The Joint Photographic Experts Group) algorithm, has been requested for use by the UK Home Office in submitting fingerprint images to IAFIS.

The FBI is responsible for maintaining a registry of approved compression algorithms and assigning a value to each. This value is to be used in the Type-4 or Type-14 Logical Record so the receiving agency can use the appropriate decompression algorithm to decode the image data. The Grayscale compression algorithm (CGA) field is a mandatory one-byte binary field used to specify the compression algorithm used (if any). A binary zero denotes no compression. The following table indicates the acceptable values for this field. The FBI expects Type-4, Type-14, and ten-print images, as well as Type-15 palmprint images, to be compressed with compression algorithm type 1 (WSQ) with a nominal compression ratio of 15-to-1 and Type-10 photo images to be compressed with compression algorithm type 2 (JPEG). The table will be updated when new algorithms are approved by the FBI.

Table 3-2 Compression Algorithm Values

Compression Algorithm	Binary Value	ASCII Code
None used (Uncompressed)	0	NONE
Wavelet Scalar Quantization (WSQ) FBI Revision 2.0	1	WSQ
JPEG ISO/IEC 10918 (Lossy)	2	JPEGB
JPEG ISO/IEC 10918 (Lossless)	3	JPEGL
JPEG 2K ISO/IEC 15444-1 (Lossy)	4	JP2
JPEG 2K ISO/IEC 15444-1 (Lossless)	5	JP2L
Portable Network Graphics	6	PNG

3.9.3 Fingerprint Image Quality Specifications

The IAFIS Image Quality Specifications are provided in Appendix F.

3.9.4 Fingerprint Image Size Requirements

The scanned fingerprint image sizes shown in the following table are consistent with standard fingerprint cards. To accommodate live-scan equipment, where the platen size can exceed these measurements, IAFIS will accept images larger than these. However, when oversize images are returned to a contributor, it is the receiver's responsibility to manage the display of these oversize images.

Table 3-3 Maximum Sizes for Fingerprint

Fingerprint	Width pixels (inches)	Height pixels (inches)
Rolled Impression Fingers 1-10 (@ 500 ppi)	800 (1.6)	750 (1.5)
Rolled Impression Fingers 1-10 (@ 1,000 ppi)	1,600 (1.6)	1,500 (1.5)
Plain Thumb Impression (@ 500 ppi)	500 (1.0)	1,500 (3.0)
Plain Thumb Impression (@ 1,000 ppi)	1,000 (1.0)	3,000 (3.0)
4 Finger Plain Impressions (@ 500 ppi)	1,600 (3.2)	1,500 (3.0)
4 Finger Plain Impressions (@ 1,000 ppi)	3,200 (3.2)	3,000 (3.0)

3.10 Electronic Subject Photo Services

Electronic photo services include a transaction for requesting criminal or civil photo sets on file at the FBI and a transaction to delete photo sets. The file from which the photos are being requested is indicated by providing the appropriate value in the Name of Designated Repository (NDR) field in the Type-2 record.

To initiate a request for a photo set from the FBI's database, the sending agency electronically transmits the universal control number (which can be an FBI number or other unique record identifier) and optionally a DOA (for criminal records) of the subject. This request will be routed by way of the CJIS WAN or the Internet to the FBI, processed, and returned to the requester via the same path. If the requester is a local agency, the request and response will be interfaced with the CJIS WAN through the state law enforcement network or the Internet. There will be no manual intervention on the part of the FBI.

Requests for a photo set will be submitted to the FBI under the CPR TOT (denoting Criminal or Civil Subject Photo Request) in the Type-1 record. The FBI's response will contain a PRR TOT (denoting "Photo Request Response") in the Type-1 record.

Requests for the deletion of Criminal or Civil Subject Photo Sets are initiated through the CJIS WAN or the Internet and returned through the same path. The request will be submitted to the FBI under the CPD TOT (denoting Criminal or Civil Subject Photo Image Delete Request) in the Type-1 record. The FBI's response will contain a PDR TOT in the Type-1 record.

The following TOTs are applicable for request for Criminal or Civil Subject Photo Images:

TOT	TRANSACTION
CPR	Subject Photo Request
CPD	Subject Photo Delete Request

The FBI's response to requests for Criminal Subject Photo set images are as follows:

TOT	RESPONSE TRANSACTION
PRR	Photo Request Response
PDR	Photo Delete Response

3.10.1 Type of Transaction Definitions

3.10.1.1 Subject Photo Request (CPR)

This CPR TOT enables users to retrieve a criminal or civil photo set from the FBI repository. Each set of photos comprises photos of a subject posed from different views and/or Scars/Marks/Tattoos. Each photo set for a criminal record (identified by an FBI number) is linked to the subject by the date of arrest (DOA). Photo sets for civil subjects are linked to the subject record identifier and are stored by the Date Printed; the most recent frontal photo will be returned in the request. The transaction will be processed, and the requester-selected photo set on file at the FBI will be transmitted in the response. If the request contains any errors, the response code (REC) will be set to "N." This response (PRR) will be returned, including the reason for the rejection in a response explanation field (EXP). Table K-1 is the Logical Record Layout for the CPR TOT.

3.10.1.2 Subject Photo Delete Request (CPD)

This TOT of "CPD" transaction enables users to delete a specific photo set associated with a DOA. Only owners of that photo set may delete it. The requester specifies the FBI number of the subject and the DOA, or a subject record identifier. If the request contains any errors, the response code (REC) will be set to "N". This response (PDR) will be returned including the reason for the rejection in a Response Explanation field (EXP). Table K-2 is the Logical Record Layout for the CPD TOT.

3.10.1.3 Photo Responses

There are responses for each of the requests. The PRR TOT is a response for a retrieve request and the PDR TOT is the response for the delete request. The two responses are handled in the same way. The transaction is returned by the FBI to indicate the condition of each request. There are two fields in this Type-2 record that give the condition of the request. If the request contains any errors that cannot be parsed: IAFIS will return an FBI=0000000; CRI=xxxxxxxxx; REC="N"; and a Response Explanation field, EXP= the translated message code of the first detected error. Tables K-3 and K-4 are the Logical Record Layouts for the PRR and PDR TOTs.

3.10.2 Requirements for Logical Record Types

3.10.2.1 Photo Request

Request: The types and quantities of logical records required to submit a subject photo request are as follows:

X 1 Type-1 header record
X 1 Type-2 record. If the DOA is not supplied, the photo set with the latest "Date photo taken" will be sent.

Response: The response to a subject photo request will include the following logical records:

X 1 Type-1 header record
X 1 Type-2 (TOT=PRR) record
X 1-10 Type-10 image records.

3.10.2.2 Photo Delete Request

Request: The types and quantities of logical records required to submit a subject photo delete request are as follows:

X 1 Type-1 header record
X 1 Type-2 record.

Response: The response to a subject photo delete request will include the following logical records:

X 1 Type-1 header record
X 1 Type-2 (TOT=PDR) record.

3.11 Latent Administrative Queries, Requests and Responses

Two types of administrative requests can be solicited by the users to improve the efficiency of their latent operations. They include the Latent Repository Statistics Query (LRSQ) and the Latent Search Status and Modification Query (LSMQ). LRSQ provides the users with the statistical representation of the FBI Criminal Master File used to estimate latent cognizant repository search penetration. The LSMQ will allow users to determine the status of one fingerprint search or multiple searches previously submitted by the requester's organization. The LSMQ also allows the user to adjust priorities, search order for performing the searches, or cancel previously submitted search requests.

The following TOTs are included in the Latent Administrative Queries:

TOT	TRANSACTION
LRSQ	Latent Repository Statistics Query
LSMQ	Latent Search Status and Modification Query

The following are the responses to the above transactions:

TOT	RESPONSE TRANSACTION
LRSR	Latent Repository Statistics Response
LSMR	Latent Search Status and Modification Response
ERRA	Administrative Error Response

3.11.1 Type of Transaction Definitions

3.11.1.1 Latent Repository Statistics Query (LRSQ)

The LRSQ requests the current statistics used to estimate the penetration of the Latent Cognizant Repository by a latent search based on the various input characteristics. This query will provide the users the data required to update the statistical representation used to estimate the repository penetration of a latent search without having to use the Latent Penetration Query defined in Section 3.4.1.6. The LRSQ TOT is summarized in Table E-2. Edit specifications for the fields it uses may be found in Table C-1.

3.11.1.2 Latent Search Status and Modification Query (LSMQ)

The LSMQ requests the status of one or multiple previously submitted latent fingerprint searches, requests the priority or order of searches be changed, or requests searches be canceled. Reprioritization cannot be requested in the same message as either reordering or cancellation of searches and should be requested if needed before reordering or cancellation. If the same message is used to both reorder and cancel searches, the entire reorder operation will be performed first, followed by the canceling operation. Therefore, if the canceled search date/time stamp is desired to be retained and exchanged with another search, the canceled search must be listed with the reordered searches as well as in the field listing searches to be canceled. To determine the current status of searches, the user will submit the case number(s) and extension(s) of the fingerprint search(es). The IAFIS response will include the AFIS segment process control number (SCNA) of the referenced search(es) and the estimated time(s) to complete the search(es). The LSMQ TOT is summarized in Table E-2. Edit specifications for the fields it uses may be found in Table C-1.

For LSMQ information on multiple searches, the requester can define the depth of the query to be at the state level (defined as “S” in Field 2.004 (Query Depth of Detail (QDD)) in Table E-27); it will include all ORIs, all associated case numbers, and all associated case extension numbers. The request can also be at the ORI level (defined as “O”) including all case numbers and associated extensions for a particular ORI or at the case level (defined as “C”)

including the case number and all associated extensions. The response will include the segment control numbers and estimated times to complete for all requested submittals. This transaction can also be used to change the priority of previously submitted searches (see definition of PRI in Appendix C). This request will list the segment control numbers of the searches (determined by previous status query) and their new priorities. In addition, the LSMQ provides the capability to change the order in which the requested searches are processed. A modified rank order of these searches is submitted by including the SCNA of each search in the order in which they are to be searched. AFIS/FBI will reorganize its queue for the requester for all searches that have not been completed or not currently being processed (*i.e.*, only those searches still pending). Finally, the LSMQ provides the capability to cancel a previously submitted search request by including in the Cancel Fingerprint Search field the SCNA of any search to be canceled.

3.11.1.3 Latent Repository Statistics Response (LRSR)

LRSR to the LRSQ will provide the users the data required to update the statistical representation used to estimate the repository penetration of a latent search. The LRSR TOT is summarized in Table E-2. Edit specifications for the fields it uses may be found in Table C-1.

3.11.1.4 Latent Search Status and Modification Response (LSMR)

The LSMR will provide the users with the list of previously submitted searches ranked in order for processing and their associated priorities in response to the request. A search already in progress will not be preempted. The LSMR will include the AFIS segment control number(s) (SCNA) of the referenced search(es) and the estimated time to complete the search(es). The LSMR will also provide notification that IAFIS has processed the cancellations. The SCNA of each search canceled will be returned in the CFS field. The LSMR TOT is summarized in Table E-2. Edit specifications for the fields it uses may be found in Table C-1.

3.11.1.5 Administrative Transaction Error (ERRA)

This transaction is returned by the FBI to indicate a transaction error. It includes a message field (MSG) indicating the type of error detected. Error responses are described in Section 3.8. The ERRA (Administrative) TOT is summarized in Table E-2. Edit specifications for the fields it uses may be found in Table C-1.

3.11.2 Requirements for Logical Record Types

Request: The types and quantities of logical records required to submit a latent administrative query are as follows:

X 1 Type-1 header record
X 1 Type-2 record.

Response: The response to a latent administrative query will include the following logical records:

X 1 Type-1 header record
X 1 Type-2 record

3.12 Special Population Cognizant Files

A service provided to Other Federal Organizations (OFOs) or other agencies with special needs by agreement with the FBI is that of creation and maintenance of small ten-print repositories (or less if ten-prints not available) suitable for searching by either ten-prints or latent images known as Special Population Cognizant (SPC) files. In the past, these files existed for FBI purposes, mainly to be the subject of latent fingerprint searches. To provide the framework for multimodal biometric searches in the future, these files are now referred to as Special Population Cognizant Files, which reflects the nature of the subjects they contain.

Future capabilities will include submission of photos enabling facial recognition searches. These SPC files can be specific to a particular case or subject set (*e.g.*, gang- or terrorist-related) or generic agency files consisting of employee records. Additionally, these files can be either temporary (*i.e.*, for the duration of the case only) or permanent. The number of files per agency and maximum size of each file are subject to coordination with the FBI, the default being one file per agency with a maximum size of 100,000 records.

While ownership of SPC files is restricted to federal organizations, access (searching) to these files can be granted to other than federal agencies in emergency situations. Coordination with the FBI CJIS Division and the federal owner of the SPC file are required.

Submitting searches against the SPC files is accomplished by means of the fingerprint investigative (TPIS, TPFS) or latent (LFIS, LFFS) search TOTs by indicating the destination SPC file in the NDR field. Searches from ORIs not authorized access to the SPC files will be rejected.

The following Types of Transactions (TOTs) are included in the Special Population Cognizant File function descriptions:

TOT	TRANSACTION
SPCA	Special Population Cognizant File Record Add
SPCD	Special Population Cognizant File Record Delete
SPCM	Special Population Cognizant File Modify

The following are the responses to the above transactions:

TOT	IAFIS RESPONSE TRANSACTION
SPCAC	Special Population Cognizant File Add Confirm
SPCDC	Special Population Cognizant File Delete Confirm
SPCMC	Special Population Cognizant File Modify Confirm

3.12.1 Special Population Cognizant File Creation

Creation by OFOs or other agencies of their SPC files is a manual process accomplished through coordination with the FBI. Information such as the agency ORI, SPC file coordinator, employee identification number (EID) for anyone granted search, add, delete, or modify privileges, and which privileges are to be granted, must be provided in advance of file creation. Upon creation, the agency will be notified of the SPC file number corresponding to that file. The file number will be used to populate the Name of Designated Repository (NDR) field when performing searching or maintenance transactions against that file. These transactions are described below.

3.12.2 Type of Transaction Definitions

3.12.2.1 Special Population Cognizant File Record Add (SPCA)

This transaction (SPCA) allows SPC file owners to populate their files by submitting ten-print records. These records can be added to the SPC file in one of two ways: 1) ten-print fingerprint records, including subject biographic descriptor information, may be submitted to be added to the file; or 2) an FBI number or other FBI-associated subject record identifier may be provided in the Type-2 record, and the associated images on file with the FBI will be added to the destination SPC file. The response to this add transaction will be an SPC Add Confirm (SPCAC) response containing an SPC file record identifier (SPCN). Additionally, the TCR in the Type-1 header will contain the TCN of the original transaction. The SPCA and SPCAC TOTs are summarized in Table E-2. Edit specifications for the fields used may be found in Table C-1.

SPC file owners may, through use of a special flag field (Cascaded Search Flag – CSF), indicate that certain records of interest be subjected to cascaded searches from the Criminal and Civil Files. In addition to the normal response to the submitter of the search record, an additional response transaction will be sent to the owner of the SPC for candidate image comparison if the search record hits a flagged record in the SPC file.

3.12.2.2 Special Population Cognizant File Record Delete (SPCD)

This transaction (SPCD) allows SPC file owners to delete records from their existing SPC file. The EID in the Type-2 record must contain the identification of an employee with privileges to delete records. If the EID is not authorized to delete records, the transaction will be rejected. The record to be deleted will be identified with the SPCN of the designated record. Up to 100 SPCNs may be contained in a single delete transaction. The response to this delete transaction will be an SPC Delete Confirm (SPCDC) response. The response will contain any record identifiers that could not be deleted (*e.g.*, record does not exist in this file). The SPCD and SPCDC TOTs are summarized in Table E-2. Edit specifications for the fields used may be found in Table C-1.

3.12.2.3 Special Population Cognizant File Record Modify (SPCM)

In the case an existing SPC file record needs to be modified (*e.g.*, better fingerprint images are available or additional sets of images need to be appended), this transaction (SPCM) allows SPC file owners to submit a set of ten-print images to replace the existing images or append new sets of images. Each set of images will be identified by the date captured. The record to be updated will be identified by means of the SPCN. Additional biographic descriptor data may be submitted in consonance with the ten-print images (*e.g.*, AMP or other descriptors). The response to this modify transaction will be an SLC Modify Confirm (SPCMC) response indicating successful modification of the record. A reject will occur if the SPCN does not match an existing record in that SPC file. The SPCM and SPCMC TOTs are summarized in Table E-2. Edit specifications for the fields used may be found in Table C-1.

3.12.3 Requirements for Logical Record Types

Request: The types and quantities of logical records required to submit a Special Population Cognizant File transaction are as follows:

X 1 Type-1 header record
X 1 Type-2 record
X 0-10 Type-4 or Type-14 fingerprint images (for SPCA and SPCM TOTs)
X 0-unlimited Type-10 photo records (for SPCA and SPCM TOTs)
X 0-8 Type-15 palmprint records (for SPCA and SPCM TOTs)
X 0-2 Type-17 iris image records (for SPCA and SPCM TOTs).

Response: The response to a Special Population Cognizant File transaction will include the following logical records:

X 1 Type-1 header record
X 1 Type-2 record.

3.13 Palmprint Services

In addition to the FBI accepting palmprints in conjunction with Major Case Print Collections (see Section 3.1.1.17), IAFIS also will accept legacy palmprint cards for previously enrolled ten-print submissions unassociated with a particular arrest cycle at the time of their submission. Palmprint enrollment may be performed at any time, but each transaction must be for a single subject. To ensure that the palmprint records are associated with the proper ten-print record in IAFIS, the concurrent submission of a ten-print card is mandatory. The functionality provided at this time includes only the storage of palmprint images. In the future, a search capability against the palmprint database will also be provided. The specific criteria for palmprint enrollment are detailed in the following paragraphs.

3.13.1 Type of Transaction Definitions

3.13.1.1 Palmprint Enrollment (PPE) and Response (PPR)

The FBI will allow law enforcement agencies to enroll palmprints associated with previously enrolled ten-print records. To provide complete assurance that the palmprints are being associated with the proper records, in addition to providing the FBI number of the existing record, submissions must also be accompanied by electronic ten-print fingerprint images for verification. Only one record may be updated with palmprints by each transaction. Palmprint images may be submitted for additional records by submitting additional transactions. The response to this enrollment transaction will be a Palmprint Enrollment Request Response (PPR). Edit specifications for the fields contained in the PPE can be found in Table C-1, while the PPE and PPR transactions are summarized in Table D-3.

3.13.2 Requirements for Logical Record Types

Request: The types and quantities of logical records required to submit a Palmprint Enrollment Request transaction are as follows:

X 1 Type-1 header record
X 1 Type-2 record
X 0-10 Type-4 or Type-14 fingerprint images (less than ten only for amputations/ bandaged/unable to print)
X 1-8 Type-15 palmprint records.

Response: The response to a Palmprint Enrollment Request transaction will include the following logical records:

X 1 Type-1 header record
X 1 Type-2 record

3.14 Facial Recognition Services (Reserved for future use)

3.15 Iris Services

The IAFIS Iris Services will, for the near term, allow authorized users to enroll iris images for subjects of interest, whether in conjunction with a criminal arrest or in relation to a terrorist investigation. Iris images not submitted with a normal ten-print transaction may be submitted for enrollment via a separately provided transaction (see 3.15.1 below). Searches against the IAFIS iris image database will be provided by the FBI at some time in the near future.

3.15.1 Type of Transaction Definitions

3.15.1.1 Iris Image Enrollment (IIE) and Response (IIER)

As stated above, iris images may be submitted separately from a normal ten-print transaction by using the Iris Image Enrollment (IIE) request. To provide complete assurance that

the iris images are being enrolled with the proper record, in addition to providing the FBI number of the existing record, submissions must also be accompanied by electronic ten-print fingerprint images for verification. The iris images will be stored in an IAFIS database for future searching capability. IAFIS will respond with an Iris Image Enrollment Response (IIER) transaction to show successful receipt and storage of the iris images. Edit specifications for the fields contained in the IIE may be found in Table C-1, while the IIE and IIER transactions are summarized in Table D-3.

If the IIE transaction matches no FBI number given in the Type-2 record, an error response (ERRT) will be returned to the user (see Table D-3).

3.15.2 Requirements for Logical Record Types

Request: The types and quantities of logical records required to submit an Iris Image Enrollment Request transaction are as follows:

X 1 Type-1 header record
X 1 Type-2 record
X 1-10 Type-4 or Type-14 fingerprint images
X 1-2 Type-17 iris image records.

Response: The response to an Iris Image Enrollment Request transaction will include the following logical records:

X 1 Type-1 header record
X 1 Type-2 record.

3.16 Rap Back Services

This service will allow authorized users the ability to enroll an individual and subscribe to "Rap Back" so the authorized agency will receive notification of any subsequent criminal activity involving that individual. If not legally prohibited, this service will also allow authorized users the ability to receive notification when subsequent civil cycles are added to an individual's record. The "Rap Back" service will include subscription registration and maintenance (*i.e.*, registering and unregistering), status checking, criminal activity detection, response generation, transmission/routing, and billing.

3.16.1 Rap Back Services Requests

Requests for Rap Back services will be facilitated through use of the optional Rap Back Request (2.052 RBR) field in the Type-2 record for criminal and civil submissions regarding subjects the submitting agency desires the FBI to retain and monitor. Prior coordination with FBI is required for use of this field. When the RBR field is included in the transaction, the value in the retention field (2.005 RET) must also be "Y." If RET is populated with "N," the transaction will be rejected via the ERRT transaction. The RBR field values will be as follows: "1" requests monitoring for criminal activity; "2" requests monitoring for civil activity; and "3" requests monitoring for both criminal and civil activity. Requesting agencies may list additional

ORIs to receive hit notifications by listing the ORIs in the Rap Back Record Owner (RBRO) field.

3.16.2 Type of Transaction Definitions

3.16.2.1 Rap Back Hit Notification (RBHN)

In the event that an arrest record or a civil submission (if requested) matches that of a subject with an active Rap Back monitoring flag, a Rap Back Hit Notification (RBHN) will be sent to all ORIs listed as Rap Back Record owners of record in the Rap Back Record Owner (RBRO) field. The RBHN TOT is summarized in Table D-3. Edit specifications for the fields used may be found in Table C-1.

3.16.2.2 Rap Back Flag Delete Request (RBFD)

Agencies may request that a Rap Back flag for a subject be deleted, resulting in a discontinuation of Rap Back monitoring, by submitting a Rap Back Flag Delete (RBFD) request. The Subject Record Identifier is a mandatory field. The response to an RBFD request will be a Rap Back Delete Response (RBDR) transaction. Failed requests (*e.g.*, Subject Record Identifier does not exist) will be handled via the ERRT transaction. The RBFD and RBDR TOTs are summarized in Table D-3. Edit specifications for the fields used may be found in Table C-1.

3.16.2.3 Rap Back Verification Request (RBV)

The Rap Back status of every subject for which monitoring has been requested will be validated on an annual basis. The FBI will send a Rap Back Verification Request (RBV) to the submitting agency (or agencies) of record for each Rap Back subject (as indicated by ORI in the RBRO field). Each submitting agency will return a Rap Back Verification Response (RBVR) for each subject. A negative response will result in the deletion of the Rap Back monitoring flag and transmission of an RBDR transaction by the FBI. Rap Back subscription will also be deleted if NO RESPONSE (see description of field 2.480 Rap Back Verification Status in Appendix C) is received within a specified period of time, *e.g.*, grace period of 30 days, of the RBV being sent to the contributor (subscriber). IAFIS considers deletion as the default action. The RBV and RBVR TOTs are summarized in Table D-3. Edit specifications for the fields used may be found in Table C-1.

3.16.2.4 Rap Back Maintenance Request (RBM) and Response (RBMR)

It is acknowledged that agencies desiring notification of a Rap Back hit (for either criminal or civil purposes) may change subsequent to original request for Rap Back monitoring. Therefore, this transaction provides the capability to change (*i.e.*, add, delete, or replace) the ORIs to be notified of a positive hit. The Rap Back Maintenance Request (RBM) will be used to provide a revised Rap Back Record Owner (RBRO) field that will replace the previous ownership of record for a particular subject in the database (the default value of RBRO will be recorded as the value in the CRI field if not otherwise indicated in the original Rap Back Request). The response to the RBM transaction will be a Rap Back Maintenance Response (RBMR). Failed requests (*e.g.*, Subject Record Identifier does not exist) will be handled via the

ERRT transaction. The RBM and RBMR TOTs are summarized in Table D-3. Edit specifications for the fields used may be found in Table C-1.

3.16.2.5 Rap Back Record Enrollment (RBRE)

For existing criminal records with fingerprints on file with the FBI, agencies may request Rap Back services be provided without resubmitting fingerprints by providing a valid FBI number (although fingerprint images may be submitted with the request). The Rap Back record owner will be the originating agency ORI unless otherwise specified in the RBRO field. The response to the RBRE transaction will be a Rap Back Maintenance Response (RBMR). If the quoted FBI number is not found, an ERRT transaction will be returned. The RBRE TOT is summarized in Table D-3. Edit specifications for the fields used may be found in Table C-1.

3.16.2.6 Rap Back Eligibility Request (RBE) and Response (RBER)

Prior to a Rap Back Record Owner receiving any hit notification, whether from a civil or criminal transaction, the FBI requires verification that the owner is still eligible to receive Rap Back Hit Notification (*e.g.*, the subject is still employed by that organization). This verification will be accomplished via a Rap Back Eligibility Request (RBE). Once a satisfactory response in the form of a Rap Back Eligibility Response (RBER) is received by the FBI, the RBHN will be sent. If a satisfactory response is not received, the hit notification will not be forthcoming. The RBE and RBER TOTs are summarized in Table D-3. Edit specifications for the fields used may be found in Table C-1.

3.16.3 Requirements for Logical Record Types

Request: The types and quantities of logical records required to submit a Rap Back Request transaction are as follows:

X 1 Type-1 header record
X 1 Type-2 record.

Response: The response to a Rap Back Request transaction will include the following logical records:

X 1 Type-1 header record
X 1 Type-2 record.

3.17 Other Biometric Services

The FBI, in consonance with the 2007 revision of the ANSI/NIST-ITL 1-2000 standard, will provide the users of its databases the capability to submit biometric data for which there is not yet an identified ANSI/NIST record type specifically designated. The revised standard defines the Type-99 record as the Common Biometric Exchange File Format (CBEFF).

The Type-99 tagged-field logical record shall contain and be used to exchange biometric data that are not supported by other ANSI/NIST-ITL logical records. These data are exchanged in a format that conforms to INCITS 398-2005, the Common Biometric Exchange File Format.

The CBEFF-conformant Biometric Information Record (BIR) used by the Type-99 logical record includes a common header and a Biometric Data Block (BDB). Two mandatory fields in the CBEFF header are Format Owner and Format Type. The Format Owner field denotes the vendor, standards body, working group, or industry consortium that has defined the format of the biometric data (the data contained in the BDB). A CBEFF requirement is that format owners register with the IBIA for an assigned identifier of the format owner. The values used in the Format Type field are assigned by the format owner and represent a specific BDB format as specified by the format owner. This may be a non-standard, unpublished data format or a data format that has been standardized by an industry group, consortium, or standards body. It is the combined CBEFF Format Owner/Format Type value that uniquely identifies the BDB format.

The Type-99 logical record provides the CBEFF fields necessary for users to send, receive, and interpret biometric data in any registered BDB format (with the exception of biometric data that are exchanged using the other logical records in this standard). The format of the data in the BDB field is identified by the field's BDB Format Owner and BDB Format Type as described by the CBEFF standard.

ANSI/NIST-ITL 1-2007 describes the data contained in each of the fields for the Type-99 logical record. Within a Type-99 logical record, entries shall be provided in numbered fields. It is required that the first two fields of the record are ordered, and the field containing the CBEFF-formatted binary data shall be the last physical field in the record. For each field of the Type-99 record, the table below lists the "condition code" as being mandatory "M" or optional "O," the field number, the field name, character type, field size, and occurrence limits. Based on a three-digit field number, the maximum byte count size for the field is given in the last column. As more digits are used for the field number, the maximum byte count will also increase. The two entries in the "field size per occurrence" include all character separators used in the field. The "maximum byte count" includes the field number, the information, and all the character separators including the GS character. The record layout of the Type-99 record is shown below.

Type-99 CBEFF biometric data record layout

Ident	Cond Code	Field Number	Field Name	Char Type	Field size per occurrence min	max	Occur count min	max	Max byte count
LEN	M	99.001	LOGICAL RECORD LENGTH	N	4	8	1	1	15
IDC	M	99.002	IMAGE DESIGNATION CHARACTER	N	2	5	1	1	12
RSV	-	99.003	RESERVED FOR FUTURE INCLUSION	--	--	--	--	--	--
SRC	M	99.004	SOURCE AGENCY / ORI	AN	10	36	1	1	43
TCD	M	99.005	BIOMETRIC CAPTURE DATE	N	9	9	1	1	16
RSV	-	99.006 99.099	RESERVED FOR FUTURE INCLUSION	--	--	--	--	--	--
HDV	M	99.100	CBEFF HEADER VERSION	N	5	5	1	1	12
BTY	M	99.101	BIOMETRIC TYPE	N	9	9	1	1	16
BDQ	O	99.102	BIOMETRIC DATA QUALITY	ANS	9	36	0	1	43
BFO	M	99.103	BDB FORMAT OWNER	AN	5	5	1	1	12
BFT	M	99.104	BDB FORMAT TYPE	AN	5	5	1	1	12
RSV	-	99.105 99.199	RESERVED FOR FUTURE INCLUSION	--	--	--	--	--	--
UDF	O	99.200 99.998	USER-DEFINED FIELDS	--	--	--	--	--	--
BDB	M	99.999	BIOMETRIC DATA	B	2	--	1	1	--

APPENDIX A

TRANSACTION PRIORITIES

Incoming electronic transactions to IAFIS must have a means to identify the required priority. The ANSI standard establishes nine priority levels in the Transaction Priority (PRY) field of the Type-1 record. The EBTS will use this field to identify the relative processing priority of incoming transactions (Level 1 is the highest priority). The assignment of priorities will be as follows:

Table A-1. Priorities

Level 1 – Rapid	**Level 2 – Urgent Criminal**	**Level 3 – High Civil[9]**	**Level 4 – Routine Criminal**	**Level 5 – Secondary Criminal**	**Level 6 – Routine Civil[3]**	**Level 7 – Non-Urgent[9]**	**Level 8 – Extended[9]**	**Level 9 – Delayed Non-Urgent**
10-second avg response	2-minute avg response	15-minute avg response	15-minute avg response	2-hour avg response	24-hour avg response	Next business day	5 business days	30-day avg response
RPIS [8]	TPIS	NFUE	CAR	FIS [2]	IRQ [5]	CPD	NFAP	CPNU
	TPFS	NFAP	CNA	IRQ [5]	NFAP	CPR	FANC	
	TPRS [7]	FANC	AMN	CFS [4]	FANC	IRQ [6]	FAUF	
		FAUF	DEK	ELR [4]	FAUF	IIE	NFUF	
		NFUF	DEU	LFIS [4]	NFUF	FNDR	MAP	
		MAP	MPR	LFFS [4]	MAP	NNDR		
		NFUE	CPDR	LFS [4]	RBRE	DSPE		
				LPNQ		RBFD		
				LRSQ		RBM		
				LSMQ		PPE		
				MCS [4]		FVR		
				SPCA		FANC		
				SPCD		FAUF		
				SPCM		NFUF		
				ULAC		MAP		
				ULD				

1 Reserved.

2 Ten-print fingerprint data files shall be updated within two hours of the update decision.

3 Default value for Civil transactions will be set to Level 6 – Routine if not specified by the originator.

4 Latent submission responses and latent search responses shall be transmitted within one day after initiation of search on IAFIS. Latent responses (*i.e.*, LSR, NAR, ULM) for electronic submissions and responses (*i.e.*, SLR) will be transmitted for the latent searches shown above.

5 The response time for retrieval of 100 or fewer fingerprint images shall not exceed one day. The response is transmitted in individual messages.

6 The response time for retrieval of 101 to 1,000 fingerprint image sets may exceed 24 hours. The response is transmitted in individual messages.

7. For limited use. The response time shall be two minutes or less from time of receipt by IAFIS for 90 percent and three minutes for 100 percent.

8. Response time for RPIS transactions shall not exceed an average of ten seconds (measured from the time received at the CJIS WAN or the Internet to the time sent back through the CJIS WAN or the Internet).*

9. The Priority for Civil TOTs will be set by the submission originator. Use of Priority 3 High Civil must be requested and approved by the FBI.

*The RPIS transactions are the only submissions initially received by IAFIS RISC.

Reassignment of priorities may be made based on workload conditions and special processing requests. Reassignment has no effect if IAFIS is not busy. An example of a valid reassignment would be a Criminal Ten-Print Submission (No Answer Necessary) transaction that is normally a 15-minute turnaround but can be reassigned (or submitted at higher priority) to Level 2 because the contributor is not affected. Additionally, urgent Level 4s may be received, in which case they are reassigned to Level 2 for such cases as certain AMN or special unknown deceased.

APPENDIX B

DESCRIPTORS AND FIELD EDIT SPECIFICATIONS FOR TYPE-1 LOGICAL RECORDS

The following paragraphs describe the data contained in fields for the Type-1 logical record. Each field shall begin with the number of the record type, followed by a period, followed by the appropriate field number, followed by a colon. Multiple information items within a field or subfield shall be separated by the US separator; multiple subfields shall be separated by the RS separator; and information fields shall be separated by the GS separator. Immediately following the last information field in the Type-1 logical record, an FS separator character shall be used to separate it from the next logical record. The information in this appendix has been taken directly from the ANSI Standard, *Data Format for the Interchange of Fingerprint, Facial & Scar Mark & Tattoo (SMT) Information (ANSI/NIST-ITL 1-2007)*. Any information that is underlined is the FBI-specific requirements.

<u>CNT</u> 1.003 – File content. This **mandatory** field shall list each of the logical records in the logical file by record type. It also specifies the order in which the remaining logical records shall appear in the logical file. It shall consist of one or more subfields. Each subfield shall contain two information items describing a single logical record found in the current logical file. The subfields shall be entered in the same order in which the logical records shall be transmitted. When more than one subfield is used, the RS separator character shall be entered between the subfields. With the addition of the Type-10 record, the first information item of each subfield may now be a one- or two-digit integer (giving the logical record type). The remaining edit specifications pertaining to CNT are unchanged.

The first subfield shall relate to this Type-1 transaction record. The first information item within this subfield shall be the single character indicating that this is a Type-1 record consisting of header information (the numeral "1" selected from the ANSI Standard Table 1).

The second information item of this subfield shall be the sum of the Type-2 plus Type-3 plus Type-4 plus Type-5 plus Type-6 plus Type-7 plus Type-8 plus Type-9 plus Type-10 plus Type-13 plus Type-14 plus Type-15 plus Type-17 plus Type-99 records contained in this logical file. This number is also equal to the count of the remaining subfields of Field 1.03. The US separator character shall be entered between the first and second information items.

The remaining subfields of Field 1.03 pertaining to Type-2, Type-3, Type-4, Type-5, Type-6, Type-7, Type-8, Type-9, Type-10, Type-13, Type-14, Type-17, and Type-99 records contained in the file shall each be composed of two information items. The first information item shall be one or two characters chosen from the ANSI Standard Table 1, which states the record type. The second information item shall be the IDC associated with the logical record pertaining to that subfield. The IDC shall be a positive integer equal to or greater than zero. The US character shall be used to separate the two information items. (Only Type-1, Type-2, Type-4, Type-7, Type-9, Type-10, Type-13, Type-14, Type-15, Type-16 Type-17, and Type-99 records will be accepted by the FBI.)

DAI 1.007 – Destination Agency Identifier. This **mandatory** field shall contain the identifier of the administration or organization designated to receive the transmission. The size and data content of this field shall be defined by the user and be in accordance with the receiving agency. This field shall be a nine-byte alphanumeric field.

DCS 1.015 – Directory of Character Sets. This optional field is a directory or list of character sets other than 7-bit ASCII that may appear within this transaction. This field shall contain one or more subfields, each with three information items. The first information item is the three-character identifier for the character set index number that references an associated character set throughout the transaction file. The second information item shall be the common name for the character set associated with that index number. The optional third information item is the specific version of the character set used. In the case of the use of UTF-8, the third optional information item can be used to hold the specific version of the character set used with UTF-8 so that the display terminal can be switched to the correct font family. **Table 9** lists the reserved named character sets and their associated three-character index numbers. The US character shall separate the first information item from the second and the second from the third. The RS separator character shall be used between the subfields.

Directory of Character Sets

Character Set Index	Character Set Name	Description
000	ASCII	7-bit English (Default)
001	ASCII	8-bit Latin
002	UNICODE	16-bit
003	UTF-8	8-bit
004-127	----------	Reserved for ANSI/NIST future use
128-999	----------	User-defined character sets

DOM 1.013 – Domain Name. This optional field identifies the domain name for the user-defined Type-2 logical record implementation. If present, the domain name may only appear once within a transaction. It shall consist of one or two information items. The first information item will uniquely identify the agency, entity, or implementation used for formatting the tagged fields in the Type-2 record. An optional second information item will contain the unique version of the particular implementation. The default value for the field shall be the North American Domain implementation and shall appear as "1.013:NORAM{US}{GS}".

DAT 1.005 – Date. This **mandatory** field shall contain the date that the transaction was initiated. The date shall appear as an eight-digit number in the format YYYYMMDD. The YYYY characters shall represent the year of the transaction; the MM characters shall be the tens and units values of the month; and the DD characters shall be the day in the month. For example, 19920601 represents June 1, 1992. The date of submission shall not exceed the current date except when the submission originates from an international contributor located in a time zone that is earlier than the Eastern Time Zone. This date field shall contain the local date for the region submitting the request. Edit checks on the IAFIS will accept the local date as valid up to one day forward (24 hours) to accommodate the variance between international time zones.

GMT 1.014 – Greenwich Mean Time. This optional field provides a mechanism for expressing the date and time in terms of universal Greenwich Mean Time (GMT) units. If used, the GMT field contains the universal date that will be in addition to the local date contained in Field 1.005 (DAT). Use of the GMT field eliminates local time inconsistencies encountered when a transaction and its response are transmitted between two places separated by several time zones. The GMT provides a universal date and 24-hour clock time independent of time zones. It is represented as "YYYYMMDDHHMMSSZ," a 15-character string that concludes with a "Z." The "CCYY" characters shall represent the year of the transaction, the "MM" characters shall be the tens and units values of the month, and the "DD" characters shall be the day of the month; the "HH" characters represent the hour, the "MM" the minute, and the "SS" represents the seconds. The complete date shall not exceed the current date.

LEN 1.001 – Logical Record Length. This **mandatory** ASCII field shall contain the total count of the number of bytes in this Type-1 logical record. Field 1.01 shall begin with "1.01:" followed by the length of the record including every character of every field contained in the record and the information separators. The number of characters added to the record by the LEN field itself shall be included in calculating the value of LEN.

NSR 1.011 – Native Scanning Resolution. This **mandatory** field shall specify the nominal scanning resolution of the AFIS or other image capture device supported by the originator of the transmission. This field permits the recipient of this transaction to send respond data at a transmitting resolution tailored to the NSR (if it is able to do so) or to the minimum scanning resolution. This field shall contain five bytes specifying the native scanning resolution in pixels per millimeter. The resolution shall be expressed as two numeric characters followed by a decimal point and two more numeric characters (*e.g.*, 20.00). This field is needed because the interchange of fingerprint information between systems of the same manufacturer may, in some instances, be more efficiently done at a transmitting resolution equal to the native scanning resolution of the system rather than at the minimum scanning resolution specified in this standard. This field applies only to fingerprint image data. For those logical files that contain only Type-10 image records, this field shall be set to "00.00."

NTR 1.012 – Nominal Transmitting Resolution. This **mandatory** field shall specify the nominal transmitting resolution for the image or images being transmitted. This field shall contain five bytes specifying the transmitting resolution in pixels per millimeter. The resolution shall be expressed as two numeric characters followed by a decimal point and two more numeric characters (*e.g.*, 20.00). The transmitting resolution shall be within the range specified by the transmitting resolution requirement. This field applies only to fingerprint image data. For those logical files that contain only Type-10 image records, this field shall be set to "00.00."

ORI 1.008 – Originating Agency Identifier. This **mandatory** field shall contain the identifier of the administration or organization originating the transaction. The size and data content of this field shall be defined by the user and be in accordance with criteria specified by the receiving agency. For EBTS purposes, this field shall be a nine-byte alphanumeric field. The first two characters shall be a valid POB code, and the entire ORI shall validate to an NCIC-authorized ORI. **Note:** In a submission to the FBI, the submitting agency (usually the CJIS

State Authority (CSA)) is the **ORI** and the FBI is the **DAI**, while the FBI's response to the submission will show the FBI as the **ORI** and the submitting agency as the **DAI**. (See also Appendix C for the definition of **CRI**.)

PRY 1.006 – Transaction Priority. When this optional field is used, it shall contain a single information character to designate the urgency with which a response is desired. The values shall range from 1 to 9, with "1" denoting the highest priority. The default value shall be "9" if no value is indicated. (See Appendix A for interpretation of the various priority values.)

TCN 1.009 – Transaction Control Number. This **mandatory** field shall contain the Transaction Control Number as assigned by the originating agency. A unique control identifier shall be assigned to each transaction. For any transaction that requires a response, the respondent shall refer to this identifier in communicating with the originating agency. This field shall be a 10- to 40-byte alphanumeric-special (ANS) field.

TCR 1.010 – Transaction Control Reference. This field shall be used in responses only to refer to the Transaction Control Number of a previous transaction involving an inquiry or other action that required a response. This field is **mandatory** for such responses. This field shall be a 10- to 40-byte alphanumeric-special (ANS) field.

TOT 1.004 – Type of Transaction. This **mandatory** field shall contain an identifier, designating the type of transaction and subsequent processing that this logical file should be given.

VER 1.002 – Version Number. This **mandatory** four-byte ASCII field shall be used to specify the version number of the ANSI Standard for Information Systems, ANSI/NIST-ITL 1-2007, *Data Format for the Interchange of Fingerprint, Facial, & Scar Mark & Tattoo (SMT) Information*, implemented by the software or system creating the file. The format of this field shall consist of four numeric characters. The first two characters shall specify the major version number. The last two characters shall be used to specify the minor revision number. The initial revision number for a version shall be "00." The original 1986 standard would be considered the first version or "0100." The entry in this field for this 1993 approved standard shall be "0200." With the addition of the Type-10 logical record by the Addendum to the ANSI Standard, *Data Format for the Interchange of Fingerprint, Facial, & SMT Information (ANSI/NIST-ITL 1a-1997)*, the entry in this field shall be "0201." For transactions compliant with the ANSI/NIST-ITL 1-2007, the version shall be "0300."

Table B-1. Field List for Type-1 (Transaction) Logical Records

Identifier	Condition	Field No.	Field Name	Character Type	Field Size per Occurrence		Occurrences		Max. Bytes Including Character Separators & Field No.	Example Data	Special Characters Allowed
					Min.	Max.	Min.	Max.			
LEN	M	1.001	LOGICAL RECORD LENGTH	N	2	3	1	1	9	1.01:230<GS>	
VER	M	1.002	VERSION	N	4	4	1	1	10	1.02:0200<GS>	
CNT	M	1.003	FILE CONTENT	N	9	48	1	1	54	1.03:1<US>15<RS>2<US>00<RS>4<US>01<RS>4<US>02<RS>4<US>03<RS>4<US>04<RS>4<US>05<RS>4<US>06<RS>4<US>07<RS>4<US>08<RS>4<US>09<RS>4<US>10<RS>4<US>11<RS>4<US>12<RS>4<US>13<RS>4<US>14<GS>	
TOT	M	1.004	TYPE OF TRANSACTION	A	3	5	1	1	11	1.04:CART<GS>	
DAT	M	1.005	DATE	N	8	8	1	1	14	1.04:CART<GS>	
PRY	O	1.006	TRANSACTION PRIORITY	N	1	1	0	1	7	1.06:1<GS>	
DAI	M	1.007	DESTINATION AGENCY	AN	9	9	1	1	15	1.07:DCFBIWA6Z<GS>	
ORI	M	1.008	ORIGTINATING AGENCY IDENTIFIER	AN	9	9	1	1	15	1.08:NY0303000<GS>	
TCN	M	1.009	TRANSACTION CONTROL NUMBER	ANS	10	40	1	1	46	1.09:1234567890<GS>	Any printable 7-bit ASCII character is allowed.
TCR	O	1.010	TRANSACTION CONTROL REFERENCE	ANS	10	40	0	1	46	1.10:1234567890<GS>	Any printable 7-bit ASCII character is allowed.
NSR	M	1.011	NATIVE SCANNING RESOLUTION	NS	5	5	1	1	11	1.11:20.00<GS>	Period allowed.
NTR	M	1.012	NOMINAL TRANSMITTING RESOLUTION	NS	5	5	1	1	11	1.12:20.00<GS>	Period allowed.
DOM	O	1.013	DOMAIN NAME	AN	*	*	1	1	*	1.013:NORAM<GS>	
GMT	O	1.014	GREENWICH MEAN TIME	AN	15	15	1	1	22	1.014:20061025132400Z<GS>	
DCS	O	1.015	DIRECTORY OF CHARACTER SETS	AN	*	*	1	*	*	1.015:UTF-8<FS>	

* No limits defined. Under the Condition column: O = optional; M = mandatory; C = conditional; see notes. Under the character type column: A = alpha; B = binary; N = numeric; S = special characters.

APPENDIX C

DESCRIPTORS AND FIELD EDIT SPECIFICATIONS FOR TYPE-2 LOGICAL RECORDS

1.0 User-Defined Data

Some Type-2 elements have their origins as contributor-supplied data. User-defined data is that subset of contributor-supplied data that will not be stored in any IAFIS files for later search or retrieval purposes. User-defined data will not be validated (with several exceptions), and therefore may in general consist of any printable 7-bit ASCII character: *i.e.*, *free text*. This includes the ASCII (decimal) codes 07 (BEL) through 13 (CR) and 32 (SP) through 127 (DEL), inclusive. Separator characters are not part of the printable character set.

The following list gives those Type-2 elements that the FBI treats as being user-defined: ATN, SCO, OCA, SID, OCP, EAD, RES, CRI, IMA, and TAA. In this list, SID and CRI may not always be free-text. In criminal transactions, these fields must contain valid formats, as specified further in this appendix. Occasional other restrictions are specified as required in this data dictionary. If the contributor supplies data in any of these fields in a submission or search, those data will be returned in the corresponding response.

The RAP, RET, REC, TAA, and ULF are flag fields taking values positive = "Y" and negative = "N." The negative value should not, in general, be submitted unless otherwise described in a specific definition.

1.2 Date Fields

Date fields are in accordance with that requirement. In general, the format for date fields is the following:

A date is shown as an 8-digit numeric field of the format CCYYMMDD, where:
CC (Century) must be 19 or 20
YY (Year) must be 00 to 99
MM (Month) must be 01 to 12
DD (Day) must be 01 to the limit defined by the month and year (*e.g.*, DD may be 29 for MM = 02 in leap years).

For example 19921201 represents December 1, 1992.

Since dates find a variety of uses in EBTS transactions, each use may have specific format restrictions or special edits. For specific format restrictions or special edits, see the individual date field entries in this appendix.

2.0 Data Dictionary

<u>ACN</u> 2.071 – Action to be Taken. This field is used to include text answers to submission requests to indicate that a latent case will be established or to indicate recommendations for further actions in either latent or ten-print responses. In response to Rapid Print Image Searches (RPIS), additional information will be provided regarding red or yellow values in the SRF field. This field will also be used to indicate action taken by the FBI in response to electronic document (*e.g.*, disposition) submissions. Commas, hyphens, ampersands, slashes, number signs, and blanks are all allowed as special characters.

<u>AGR</u> 2.023 - Age Range. An estimated age range may be entered using a pair of two-digit numbers. The first two digits shall represent the minimum age, and the second two the maximum age. There shall be no separator character used between the ages.

<u>AKA</u> 2.019 – Aliases. This 3-to-30 alpha-numeric special (ANS) field contains alias names of the subject. Up to ten aliases may be provided, separated from one another by the RS character. AKA may contain a comma, hyphen, or blank as special characters. The format shall be the surname followed by a comma (,), followed by the given name(s) separated by a space. The following restrictions and exceptions to the general format apply:

1. Minimum length is three bytes in the following sequence: alpha or ampersand, comma, alpha.
2. A comma must be followed by a minimum of one alpha character.
3. A blank before or after comma is invalid.
4. A hyphen in first and last position of any name segment is invalid.
5. Two consecutive blanks or hyphens between characters are invalid.

<u>AMP</u> 2.084 – Amputated or Bandaged. This grouped field contains information about amputated or bandaged fingerprints in an EBTS submission. It is composed of two subfields, Finger Position (FGP), and Amputated Or Bandaged Code (AMPCD). The two-character finger position code is followed by the US separator and the amputated or bandaged code. Multiple fingers shall be separated by the RS separator. This field is to be used any time there are fewer than ten printable fingers in a ten-print submission. A partially scarred finger should be printed. If the forwarding agency is not sure of the reason a finger's image is missing (for example, when the arresting agency did not specify a reason in its submission to the State Ident Bureau), the UP code should be used.

Two characters represent each finger number as follows:

<u>Finger Position</u>	<u>FGP</u>
Right thumb	01
Right index	02
Right middle	03
Right ring	04
Right little	05

Left thumb	06
Left index	07
Left middle	08
Left ring	09
Left little	10

The following is a list of allowable indicators for the AMPCD:

Descriptor	AMPCD
Amputation	XX
Unable to print (e.g., bandaged)	UP

The following example indicates that the third finger is amputated and that the ninth finger print was unavailable or not submitted.

2.084:03$^{U}_{S}$XX$^{R}_{S}$09$^{U}_{S}$UP$^{G}_{S}$

<u>ASL</u> 2.047 – Arrest Segment Literal. This field is made up of the Date of Offense (DOO) and the Arrest Offense Literal (AOL). The AOL is a free text description of an offense charged on an arrest. The first character of the AOL text must not be blank. Each AOL should have a corresponding date (DOO) if available. The DOO shall appear as an eight-digit number as specified in Section 1.2 of this appendix. The DOO shall not exceed the current date except when the submission originates from an international contributor located in a time zone earlier than the Eastern Time Zone. This date field shall contain the local date for the region submitting the request. Edit checks on the IAFIS will accept the local date as valid up to 24 hours to accommodate the variance between international time zones. Up to 40 occurrences of the ASL are allowed. Each occurrence of the ASL shall be separated by the $^{R}_{S}$ separator character. The DOO shall be separated from the AOL by the $^{U}_{S}$ separator character. A DOO is prohibited without a corresponding AOL offense. If a DOO is not present, a $^{U}_{S}$ character separator shall still be used.

The following is an example of more than one occurrence of the AOL field using DOO:

2.047:19940915$^{U}_{S}$DUI$^{R}_{S}$19940920$^{U}_{S}$POSSESSION OF FIREARMS$^{G}_{S}$

<u>ATN</u> 2.006 – "Attention" Indicator. This alphanumeric-special field shall contain a designation of the individual to whose attention a response is to be directed. Periods shall not be used (*e.g.*, Det. J. Q. Public shall be entered as DET J Q PUBLIC). The value of ATN returned to the submitter is the value submitted.

<u>CAN</u> 2.064 - Candidate List. This grouped field shall contain a candidate list. It is composed of two subfields—Universal Control Number (UCN) and Name (NAM)—separated by a $^{U}_{S}$ separator and will be provided for each candidate in the list. Commas, hyphens, and blanks are allowed in the NAM subfield as specified in the NCIC Code Manual. Each UCN and NAM set shall be separated from the next by the $^{R}_{S}$ separator character.

Note: The UCN can contain an FBI number (FNU) if appropriate for that record.

CCN 2.094 – Court Case Number. This is a unique number assigned by the state or federal court system to identify a specific court event occurrence in a subject criminal history record. The CCN is an optional element that may assist in matching the submitted disposition data to the correct court cycle. If present in the submission, this field should be returned in the response. Any printable 7-bit ASCII character with the exception of a period (.) is acceptable. Embedded blanks are not permitted. A CCN must not begin with a blank.

CFS 2.077 – Cancel Fingerprint Search. This field will contain the information required to cancel a latent fingerprint search previously submitted to IAFIS. This field will contain unique identifier numbers (AFIS/FBI uses the AFIS Segment Process Control Number) for all searches to be canceled. The response to this request will contain the same information for all searches that were canceled. Only searches that are still pending will be canceled (searches completed or in-progress may not be canceled).

CIN 2.010 – Contributor Case Identifier Number. This grouped free-text field is a 48-byte (maximum) alphanumeric-special assigned by the contributor to uniquely identify a latent case. It consists of a literal subfield Contributor Case Prefix (CIN_PRE) of up to 24 characters (*e.g.*, "Incident #," "Laboratory Number," "Investigation No."), followed by the US separator and the Contributor Case Identifier subfield (**CIN_ID**) of up to 24 characters.

CIX 2.011 – Contributor Case Identifier Extension. This field is a two-byte to four-byte numeric supplement to the Case Identifier Number that allows multiple searches to be associated with the same case. The CIX shall be used only in conjunction with the CIN.

CRI 2.073 – Controlling Agency Identifier. In Criminal and Civil transactions, the first instance of this field shall contain the originating agency identifier (ORI) of the organization controlling the transaction when that organization is different than the one submitting the transaction (*e.g.*, the CJIS State Authority, or CSA). When the controlling agency has the same ORI as the CSA, both the ORI and CRI fields shall be submitted with the same identifier. In criminal transactions, the CRI will usually refer to the booking station that has submitted the subject's fingerprint card or photo to be transmitted through the CSA to the FBI. For Civil submissions, this field may be user-defined in accordance with predefined parameters and must be validated through the field specification edits and the format of an NCIC-authorized ORI. The FBI uses the first instance of CRI in any transaction that would modify criminal records as the authority to do so. If, in a Civil transaction, there is a criminal Ident against the subject and the first instance of the submitted CRI is not an authorized ORI, the ORI of the State Ident Bureau that submitted the transaction will be used in its stead. The second and third instances of CRI, when sent, are treated as user-defined fields. (See also Appendix B for definitions of ORI and DAI.) The CRI returned is otherwise the same as was submitted unless the submitting agency has used a deleted or retired CRI, in which case its replacement will be used. For EBTS purposes, this field shall be a nine-byte alphanumeric field. The first two characters shall be a valid alpha-character POB code, which represents the state or country in which the agency is located, and the entire CRI shall validate to an NCIC-authorized ORI. For federal agencies, the

first two characters should coincide with its respective headquarters or office ORI. If an agency is submitting for an entity outside of its respective state, the channeling agency need only ensure that submitted CRIs represent valid ORIs that have been added to the IAFIS Computerized Contributor Address file.

CRN 2.085 – Civil Record Number. A unique identifier assigned to each Civil Subject Record.

CSF 2.2006 – Cascaded Search Flag. This two-digit alpha field is used to flag a Special Population Cognizant (SPC) File record of interest that is to be subjected to cascaded searches from the Criminal File (CR), the Civil File (CI), or Both (BO). In the event a cascaded search record hits a flagged record, a separate response will be sent to the owner (ORI) of the SPC File for candidate image comparison.

CSL 2.051 – Court Segment Literal. The CSL field is made up of the Court Disposition Date (CDD), the Court Offense Literal (COL), and the Other Court Sentence Provision Literal (CPL). The CDD is the date a court count was disposed of by the court. The CDD shall appear as an eight-digit number as specified in Section 1.2 of this appendix. The CDD shall not exceed the current date except when the submission originates from an international contributor located in a time zone earlier than the Eastern Time Zone. This date field shall contain the local date for the region submitting the request. Edit checks on the IAFIS will accept the local date as valid up to 24 hours forward to accommodate the variance between international time zones.

The COL contains free text description of an offense charged in a court count. The first character of the COL must not be a blank. The CPL contains free-text information on sentence provisions. Up to 40 occurrences of the CSL are allowed. Each occurrence of the CSL shall be separated by the $^{R}_{S}$ separator character. A CDD (if available), followed by a COL, followed by a CPL, each separated by a $^{U}_{S}$ separator character must be present for each occurrence of the CSL field. If the CDD is not available, a $^{U}_{S}$ separator character alone shall be used immediately after the field tag or preceding $^{R}_{S}$ separator character. The COL and CPL are always mandatory. When a provision (CPL) is included, then the date the provision was made (CDD) may optionally be given.

The following is an example of the CSL with multiple occurrences:

2.051:19940930$^{U}_{S}$DUI$^{U}_{S}$5 DAYS JAIL, PAY COURT COSTS$^{R}_{S}$19940930$^{U}_{S}$POSSESSION OF FIREARMS$^{U}_{S}$10 DAYS JAIL, PAY COURT COSTS, 50^{G}_{S}$

The following is an example of the CSL when the first of two CDDs was not available:

2.051:$^{U}_{S}$DUI$^{U}_{S}$5 DAYS JAIL, PAY COURT COSTS$^{R}_{S}$19940930$^{U}_{S}$POSSESSION OF FIREARMS$^{U}_{S}$10 DAYS JAIL, PAY COURT COSTS, 50^{G}_{S}$

When submitting a custody ten-print, use this field for custody information. In the event that there is no arrest information available when submitting a custody ten-print, the COL and CDD must be copied to the corresponding AOL and DOO fields of the Arrest Segment Literal (ASL), which is mandatory in all criminal ten-print submissions.

CSR 2.048 – Civil Search Requested Indicator. This field shall contain a "Y" if a search of the Civil File is desired at the completion of the Criminal File search.

CST 2.061 – Case Title. This field identifies the Latent Case. It will include information concerning the case, and it must include the offense type.

CTZ 2.021 – Country of Citizenship. This field contains the name of the country of which the subject is a citizen. Entry must be a valid country code from Code Table POB in Part IV of the NCIC State and Country Data Code Table.

DMI 2.2013 – Disposition Maintenance Indicator. An indicator set by the IAFIS user that depicts a set of values that specify the type of maintenance the III segment of IAFIS should perform on a subject criminal history record when disposition data requests are received.

DMI Codes

External Code	Flag	Literal	Description
Blank	NULL	Blank	Default to add disposition data (A) from incoming request to a specified DOA.
A	ADD	Add	Add disposition data from incoming request to a specified DOA.
D	APP	Append	Append disposition data from an incoming request to existing disposition data on a specified DOA.
R	RPL	Replace	Replace existing disposition data for a specified DOA with disposition date from incoming request.
X	DEL	Delete	Delete existing disposition data for specified DOA.

DOA 2.045 – Date of Arrest. This field contains the date of arrest. The date shall appear as an eight-digit number in the same format as specified in Section 1.2 of this appendix. DOA shall not exceed date of submission except when the submission originates from an international contributor located in a time zone earlier than the Eastern Time Zone. This date field shall contain the local date for the region submitting the request. Edit checks on the IAFIS will accept the local date as valid up to 24 hours forward to accommodate the variance between international time zones.

DOB 2.022 – Date of Birth. This field contains the date of birth. It is entered as an eight-digit number in the same format as specified in Section 1.2 of this appendix. If DOB is completely

unknown, enter as 00000000. Partial DOBs are not allowed. DOB shall not exceed date of submission after time zone adjustment.

DOS 2.046 – Date of Arrest – Suffix. This field contains a code representing the sequence of the subject's arrests within a given date. The code also indicates the type of fingerprint card on which the Date of Arrest was contained. This field is for internal use within the FBI only.

DPR 2.038 – Date Printed. This field contains the date that the subject was fingerprinted. The format shall be the same as that specified in Section 1.2 of this appendix. DPR shall not exceed date of submission except when the submission originates from an international contributor located in a time zone earlier than the Eastern Time Zone. This date field shall contain the local date for the region submitting the request. Edit checks on the IAFIS will accept the local date as valid up to 24 hours forward to accommodate the variance between international time zones.

EAD 2.039- Employer and Address. The name and address of the subject's primary employer may be entered into this free-text field. The EAD returned in a response is the same as the one submitted.

EID 2.049 – Employee Identification Number. This field contains the employee identification number (*e.g.*, user ID) for federal agency employees granted privileges relating to Special Population Cognizant (SPC) File searching or maintenance. Maintenance privileges include adding records, updating records, deleting record, or appending additional sets of fingerprint images to an existing SPC record.

ERS 2.075 – Electronic Rap Sheet. This field shall contain the electronic rap sheet. The electronic rap sheet is an electronic copy of the Identification Record Report (IDRR) or the Non-Identification Response (NIDR) as are done today. The electronic rap sheet shall consist of lines with a maximum of 74 characters per line (text of 72 plus two line control characters).

ETC 2.069 – Estimated Time to Complete. The estimated time to complete a search or multiple searches for a Latent Search Status and Modification Query may be entered into this field. This one-to-four-byte field will contain the estimated search completion time in minutes up to five days.

EXP 2.080 – Response Explanation. This field is free-form text to elaborate on the Response Code field.

EYE 2.031 – Color Eyes. For this field, the three-letter code from the following table is used to indicate the subject's color of eyes.

Eye Color	Code
Black	BLK
Blue	BLU
Brown	BRO
Gray	GRY

Green	GRN
Hazel	HAZ
Maroon	MAR
Multicolored	MUL
Pink	PNK
Unknown	XXX

FBI 2.014 – FBI Number. This field contains the subject's FBI number if known. A valid FBI number shall be no more than nine alphanumeric characters. The FBI number returned in a response is dependent upon the search results (see Section 3.6).

FFN 2.003 – FBI File Number. This is a 10-byte numeric representing the FBI Investigative File Number. This is not the FBI Number specified by the mnemonic "FBI." Since it is used for FBI LFPS record keeping purposes, it is imperative that the user transmit this number if it is known.

FGP 2.074 – Finger Position. This field is used for latent submissions and searches and contains the fingerprint position code of the latent print(s) submitted. The following table is the finger position and code table:

Finger Position	Code
Unknown or "ALL"	00
Right thumb	01
Right index	02
Right middle	03
Right ring	04
Right little	05
Left thumb	06
Left index	07
Left middle	08
Left ring	09
Left little	10

If more than one finger is submitted, then the codes will be separated by the RS character separator. For latent searches, if multiple fingerprint images are included in one search, finger position is mandatory for all images. If finger position is unknown, the search may contain only a single image, and the field FGP will be omitted or may contain multiple guesses at the correct finger position in the FGP field. In this case, the PAT field must contain "00" in its Finger Number subfield to indicate that the actual position is unknown (see also PAT entry).

FIU 2.072 – Fingerprint Image(s) Updated. This alphanumeric field contains the finger positions that were updated in the FBI's Fingerprint Image Master File as a result of an electronic request to update fingerprint images. The finger numbers for which image information is requested are selected from Table 6, "Finger Position Code," in Section 10 of ANSI NIST-ITL 1-2007. Up to 13 individual finger numbers may be listed, separated from one

another by the $^{U}_{S}$ separator. If images of all 14 fingers were updated, the single character "A" is shown instead of individual finger numbers. If no images were updated, an "N" will be returned.

<u>FNR</u> 2.057 – Finger Number(s) Requested. This numeric field is used in transactions involving a request for fingerprint image information. The finger numbers for which image information is requested are selected from Table 12, "Finger Position Code," in Section 11 of ANSI NIST-ITL 1-2007. Up to 13 individual finger image numbers may be listed, separated from one another by the $^{R}_{S}$ separator. If all 14 ten-print images are desired, 00 is shown instead of individual finger numbers. For transactions that allow only the ten rolled fingerprint images, when all ten images are desired, list each one separately, as $01^{R}_{S}\ 02^{R}_{S}\ \ldots\ ^{R}_{S}10^{G}_{S}$.

<u>FPC</u> 2.033 – NCIC Fingerprint Classification. If available, the NCIC fingerprint classification will be returned in the FBI's responses to latent submissions.

The NCIC FPC is composed of 20 characters. Two characters represent each finger as follows:

Positions	Finger
1 and 2	Right thumb
3 and 4	Right index
5 and 6	Right middle
7 and 8	Right ring
9 and 10	Right little
11 and 12	Left thumb
13 and 14	Left index
15 and 16	Left middle
17 and 18	Left ring
19 and 20	Left little

The following codes apply:

Pattern Type	Pattern Subgroup	NCIC FPC Code
Arch	Plain Arch	AA
	Tented Arch	TT
Loop	Radial Loop	Two numeric characters. Determine actual ridge count and add fifty (50). For example, if the ridge count of a radial loop is 16, add 50 to 16 for a sum of 66. Enter this sum (66) in the appropriate finger position of the FPC field.
Loop	Ulnar Loop	Two numeric characters indicating actual ridge count (less than 50). For example, a ridge count of 14, enter as 14; a ridge count of 9, enter as 09.
Whorl*	Plain Whorl	

Inner	PI
Meeting	PM
Outer	PO
Central Pocket Loop Whorl	
Inner	CI
Meeting	CM
Outer	CO
Double Loop Whorl	
Inner	DI
Meeting	DM
Outer	DO
Accidental Whorl	
Inner	XI
Meeting	XM
Outer	XO
Missing/Amputated Finger**	XX
Scarred/Mutilated Pattern***	SR
Approximate Fingerprint Class****	AC
Unclassifiable****	UC

The NCIC FPC for a set of fingerprints made up of all ulnar loops might read:

2.033:12101116141109111713$^{G}_{S}$

A combination of loops and whorls with an amputated right index finger might read:

2.033:12XX11CO14115906Cl13$^{G}_{S}$

* Prior to adoption of the above method for coding whorl patterns, this pattern was divided into inner, meeting, and outer subgroups only with codes II, MM, and OO, respectively. Some older records in the file may show the codes II, MM, and OO.

** Code XX is used in instances of missing and totally/partly amputated fingers where conditions make it impossible to accurately classify an impression according to the above instructions for NCIC FPC. It is recognized that under the Henry System, if a finger is missing or amputated, it is given a classification identical to the opposite finger; however, <u>this must not be done</u> in the NCIC FPC because the location of finger or fingers missing/amputated is not indicated.

*** Code SR is used in instances in which the fingerprint cannot be accurately classified because of complete scarring or mutilation and a classifiable print cannot be obtained. As in the case of missing and amputated fingers, the procedure for assigning the classification of the opposite finger, as is done under the Henry System, <u>should not be used</u> for the NCIC FPC.

**** Codes UC and AC still exist for some legacy records in the Criminal History file.

Refer to the NCIC Code Manual, 4-28, for the FPC Field for Unidentified Persons.

GEO 2.044 – Geographic Area of Search. This field indicates the geographic area to be searched. Entry may be any valid code from Code Table POB in Part VI of the NCIC State and Country Data Code Table. Each GEO shall be separated from the next by the RS separator character. If inclusion of all 50 states is desired, this field shall remain blank.

HAI 2.032 – Hair Color. In this field, the three-letter code from the following table is used to indicate the subject's color of hair.

Hair Color	Code
Bald	BAL
Black	BLK
Blond or Strawberry	BLN
Brown	BRO
Gray or Partially Gray	GRY
Red or Auburn	RED
Sandy	SDY
White	WHI
Unknown	XXX
Blue	BLU
Green	GRN
Orange	ONG
Pink	PNK
Purple	PLE

HGT 2.027 – Height. This field contains the subject's height as a three-character value. If reported in feet and inches, the first (leftmost) digit is used to show feet while the two rightmost digits are used to show the inches between 00 and 11. If reported in inches, then the leftmost character is "N" followed by two digits. If height is unknown, 000 is entered. The allowable range is 400 to 711. Heights outside this range will be clamped at these limits.

HTR 2.028 – Height Range. If a range of height is given, it shall be expressed as two three-character values formatted as described for mnemonic HGT, indicating the shortest and tallest heights of the subject. There shall be no separator character used between the heights. The allowable range is 400 to 711. Heights outside this range will be clamped at these limits.

ICO 2.056 – Identification Comments. Additional miscellaneous identification remarks providing the reason for caution may be entered in this free-text field. The first character may not be a blank.

IDC 2.002 – Image Designation Character. This mandatory field shall be used to identify the user-defined text information contained in this record. The IDC contained in this field shall be the IDC of the Type-2 logical record as found in the file content field of the Type-1 record.

IIR 2.2012 – Iris Images Requested. This optional field shall be used to request iris images in an Image Request (IRQ) transaction. The values of this one-byte numeric field will be either 0 (both eyes), 1 (left eye), or 2 right eye). If not present in the transaction, no iris images will be returned.

IMA 2.067 – Image Capture Equipment. This free-text field is used to log the make, model, and serial number of the equipment used to acquire images. It is a grouped field composed of three subfields: the Make (MAK), Model (MODL), and Serial Number (SERNO) of the acquisition device separated by the US separator character.

IMT 2.062 – Image Type. This field identifies the type of image (*e.g.*, palmprints, toe prints) included in an electronic submittal. The following is a list of IMT values to be used in an electronic latent submittal to identify the Type-7 or Type-13 record(s) present:

Fingerprint	1
Lower Joint	2
Palmprint	3
Toe Print	4
Foot Print	5

LCN 2.012 – FBI Latent Case Number. This field is an 11-byte alphanumeric/special assigned by the FBI LFPS and used for recordkeeping purposes. Although the field is optional, it is imperative that the user transmits this number if it is known.

LCX 2.013 – Latent Case Number Extension. Defines extensions assigned by the FBI for each submission related to a Latent Case Number. The LCX shall be a four-digit extension starting with "0001" for the first submission and incrementing by one for each subsequent submission. The LCX shall be used only in conjunction with LCN.

LEN 2.001 – Logical Record Length. This field contains the length of the logical record specifying the total number of bytes, including every character of every field contained in the record. The number of characters added to the record by the LEN field itself shall be included in calculating the value of LEN.

MIL 2.042 – Military Code. A one-letter code from the following table shall be entered in this field to indicate which branch of the United States Military submitted the enlistment transaction.

Military Branch	Code
Army	A
Air Force	F
Navy	N
Marines	M
Coast Guard	G

MNU 2.017 – Miscellaneous Identification Number. If there are any miscellaneous identification numbers, they shall be entered in this field. The format of the data shall be a two-letter identifying code, followed by a hyphen (-), followed by the number itself. The following table lists the acceptable two-letter identifying codes. If "AF" or "AS" is entered, all characters following the hyphen must be numeric. Interspersed blanks are invalid. Types of numbers not listed in the following table (such as driver's license) shall not be entered. Only U.S. passport numbers shall be entered; foreign numbers shall be ignored. The size of the MNU is limited to 15 characters and as many as four miscellaneous numbers may be included in this field. Each MNU shall be separated from the next by the RS separator character.

Identifying Agency	Code
Air Force Serial Number	AF
Non-Immigrant Admission Number	AN
Alien Registration Number	AR
Air National Guard Serial Number, Army Serial Number, National Guard Serial Number	AS
Bureau Fugitive Index Number	BF
Canadian Social Insurance Number	CI
U. S. Coast Guard Serial Number	CG
Identification Order Number	IO
Marine Corps Serial Number	MC
Mariner's Document or Identification Number	MD
RCMP Identification or Fingerprint Section Number	MP
National Agency Case Number	NA
Navy Serial Number	NS
Originating Agency Police or Identification Number	OA
Personal Identification Number (State Issued Only)	PI
Passport Number (U.S. Only)	PP
Port Security Card Number	PS
Selective Service Number	SS
Veterans Administration Claim Number	VA

MSC 2.089 – Match Score. This field defines the match score of a fingerprint from AFIS for a candidate list response.

MSG 2.060 – Status/Error Message. This free-text field will contain reason, status, or error messages that are generated as a result of the processing of a transaction and will be sent back to the submitter. For example, an Unsolicited Unsolved Latent Delete transaction will contain the reason for the deletion of a record. Each message will be separated by the RS separator character.

NAM 2.018 – Name. This alpha-special field contains the name(s) of the subject. The format shall be the surname followed by a comma (,) followed by the given name(s), which are separated by a space. Part IV of the NCIC Code Manual describes in greater detail the manner in which each name is to be entered. Hyphens, commas, and blanks are allowed as special characters. Numerals are not allowed. Special values of NAM to be entered in cases where the subject's name is not known are:

Condition	Name Field Value
Amnesia Victim	"UNKNOWN AMNESIA, XX"
Unknown Deceased	"UNKNOWN DECEASED, XX"
Name Not Available (Other)	"DOE, JOHN" or "DOE, JANE"

NAM1 2.2001 – Name-One. This alpha-special character field is the first of five name fields specifically to facilitate the communication of long names in excess of the number of characters provided for by other name field definitions. These long name fields provide the ability to identify subjects cross-culturally by simply passing as many names as are required to identify a subject in the order that subject's name appears. NAM1 could represent a given name (*e.g.*, Brian) or an only name used in a single name culture (*e.g.*, Mohammed). The maximum length of the NAM1 field is 50 characters.

NAM2 2.2002 – Name-Two. This alpha-special character field is the second of five name fields (see NAM1) specifically to facilitate the communication of long names in excess of the number of characters provided for by other name field definitions. This field could be the middle name for a culture using three names (*e.g.*, David) or the second of a string of four or five names. The maximum length of the NAM2 field is 50 characters.

NAM3 2.2003 – Name-Three. This alpha-special character field is the third of five name fields (see NAM1) specifically to facilitate the communication of long names in excess of the number of characters provided for by other name field definitions. This field could be the last name (or surname) for a culture using three names (*e.g.*, Smith) or the third of a string of four or five names, possibly to indicate tribal, village, or parentage information. The maximum length of the NAM3 field is 50 characters.

NAM4 2.2004 – Name-Four. This alpha-special character field is the fourth of five name fields (see NAM1) specifically to facilitate the communication of long names in excess of the number of characters provided for by other name field definitions. This field could be the fourth name for a culture using four or five names (*e.g.*, a tribal or village name, such as "al Tikriti," or from Tikrit, or to indicate parentage, such as "ben Reuben," or son of Reuben) or the fourth of a string of four or five names. The maximum length of the NAM4 field is 50 characters.

NAM5 2.2005 – Name-Five. This alpha-special character field is the fifth of five name fields (see NAM1) specifically to facilitate the communication of long names in excess of the number of characters provided for by other name field definitions. This field could be the fifth name for a culture using five names (*e.g.*, a tribal or village name, such as "al Tikriti," as in from Tikrit, or to indicate parentage, such as "ben Reuben," as in son of Reuben) or the fifth of a string of five names. The maximum length of the NAM5 field is 50 characters.

NCR 2.079 – Number of Candidates' Images Returned. This field contains the maximum number of candidates (images) the submitter desires to receive in response to a latent image or features search. If the field is left blank, only images for the highest-scoring candidate will be returned. The maximum value of NCR is currently 20.

NDR 2.098 – Name of Designated Repository. This field contains the numerical designation of the repository(ies) to be searched. Repository numbers are assigned by the FBI CJIS Division. Multiple entries in this field will indicate a desire to search more than one repository, including Canada's RTID and authorized DHS records. Multiple entries will be separated by the <RS> separator. The following values are acceptable for NDR.

Table of NDR Values	
NDR Value	File Name
1	Criminal Master File Records
2	Civil Records
3	Unsolved Latent File
4	Major Case File Records
5	Latent Image File Records
6	Repository for Individuals of Special Concern (RISC)
7	Canada Real Time Identification (RTID)
8	DoD Automated Biometric Identification System (ABIS)
9	DHS IDENT/US-VISIT
10-100	Reserved for Future Use
101-125	FBI Special Population Cognizant Files
126-135	Other Federal Organization Special Population Cognizant Files

NIR 2.2010 – Number of Images Requested. This optional field is used in conjunction with a Subject Photo Request (TOT = CPR) to indicate if more than one photo is being requested (*e.g.*, for tattoos) (see Appendix K). The default value if not provided will be "1."

NOT 2.088 – Note Field. This free-text field is used to provide additional information regarding electronic latent submissions. For latent search IDENT results feedback (LSIR), the NOT field will be used to indicate the candidate from the SRL that matched the search image. For ULM transactions, the NOT field will provide information related to latent search images that are

candidates for comparison with the unsolved latent (*e.g.*, case-related identifiers or point of contact information).

OCA 2.009 – Originating Agency Case Number. This field contains the one-to-twenty-character Originating Agency Case Identifier (OCA) assigned by the originating agency. This alphanumeric-special (ANS) field may contain any printable 7-bit ASCII character with the exception of the period (.). The OCA must not begin with a blank.

OCP 2.040 – Occupation. This free-text field contains the subject's occupation. The OCP returned in a response is the same as the one submitted.

OFC 2.053 – Offense Category. This field shall contain a "1" for a crime categorized as personal, a "2" for a crime categorized as property, and a "3" for a crime categorized as both.

PAT 2.034 – Pattern Level Classifications. This grouped field contains information about the finger(s) pattern types. It is composed of two subfields, Finger Position (FGP), and Pattern Classification Code (PATCL), displayed as the two-character finger position code followed by the US separator and the primary pattern type code as chosen from the following table. Up to two reference pattern classifications per finger are also allowed, thereby making the total number of pattern classes allowable per finger equal to three. If multiple pattern types are used for reference for the same finger, they shall be separated from each other by the US separator. Multiple fingers shall be separated by the RS separator. If submitting a Latent Fingerprint whose actual finger position is unknown, the PAT and FGP (2.074) fields are used in conjunction as follows to supply guesses for which finger position the latent print might be: place a "00" in the FGP subfield of PAT to indicate the actual position is unknown; place the actual pattern in the PATCL subfield; place one or more finger number guesses in the FGP field (2.074).

Two characters represent each finger as follows:

Finger Position	Code
Right thumb	01
Right index	02
Right middle	03
Right ring	04
Right little	05
Left thumb	06
Left index	07
Left middle	08
Left ring	09
Left little	10

The following is a list of acceptable IAFIS pattern level fingerprint classifications.

Pattern	Code

Arch, Type Not Designated	AU
Whorl, Type Not Designated	WU
Right Slant Loop	RS
Left Slant Loop	LS
Complete Scar	SR
Amputation	XX
Unable to print (e.g. bandaged)	UP
Unable to Classify	UC

The following is an example of the Pattern Level Classification field with only one pattern per finger.

2.034:01$^{U}_{S}$WU$^{R}_{S}$02$^{U}_{S}$LS$^{R}_{S}$03$^{U}_{S}$LS$^{R}_{S}$04$^{U}_{S}$LS$^{R}_{S}$05$^{U}_{S}$LS$^{R}_{S}$06$^{U}_{S}$RS$^{R}_{S}$07$^{U}_{S}$RS$^{R}_{S}$08$^{U}_{S}$LS$^{R}_{S}$09$^{U}_{S}$RS$^{R}_{S}$10$^{U}_{S}$RS$^{G}_{S}$

The following is an example of the Pattern Level Classification field with extra pattern references for some of the fingers.

2.034:01$^{U}_{S}$RS$^{U}_{S}$WU$^{U}_{S}$AU$^{R}_{S}$02$^{U}_{S}$RS$^{U}_{S}$AU$^{U}_{S}$WU$^{R}_{S}$03$^{U}_{S}$WU$^{R}_{S}$04$^{U}_{S}$RS$^{R}_{S}$05$^{U}_{S}$WU$^{R}_{S}$06$^{U}_{S}$LS$^{R}_{S}$
07$^{U}_{S}$WU$^{R}_{S}$08$^{U}_{S}$AU$^{R}_{S}$09$^{U}_{S}$AU$^{R}_{S}$10$^{U}_{S}$WU$^{U}_{S}$AU$^{G}_{S}$

<u>PEN</u> 2.078 – Penetration Query Response. This field provides a response to the penetration query that includes a set of search parameters for a new search. The response will be an estimated size, in percentage, of the repository that will be searched given the input parameters.

<u>PHT</u> 2.036 – "Photo Available" Indicator. If a photograph of the subject is available, this field shall contain a "Y"; otherwise, the field shall be omitted.

<u>POB</u> 2.020 – Place of Birth. The subject's place of birth shall be entered in this field. Indicate in this POB field the state (Mexico or United States), territorial possession, province (Canada), or country of birth. The appropriate two-letter abbreviation shall be used as listed in Part IV of the NCIC State and Country Data Code Table. The criteria listed below shall also be considered when assigning POB.

If the following condition exists:	Enter Code
POB stated as state AND country and applicable code not contained in Code Table; OR city can be ascertained as not being located in the United States; OR foreign POB and applicable code not contained in Code Table	YY
POB stated as only city AND city can be ascertained as being located in the United States	US
POB is Mexico or any Mexican state or province not in Code Table	MM

POB is "Mexico, Mexico"	MX
POB is unknown	XX

PPA 2.035 – "Palmprints Available" Indicator. If palmprints are available, this field shall contain a "Y"; otherwise, the field shall be omitted.

PRI 2.076 – Priority. This field shall indicate the priority of a latent search (from 1 to 3, with 1 being the highest priority). The priority levels will generally correspond to the following crime types in descending order of priority.

1. Homicide, rape, and special circumstances
2. Kidnap, assault, and robbery
3. Arson, drugs, personal crimes, and property crimes

Federal agencies will determine their own priority schemes. No additional validation of priorities will be provided. IAFIS will not interrupt searches in progress upon receipt of higher priority searches.

PTD 2.063 – Person Type Designator. This field is used in the submittal of comparison fingerprints, and it indicates that the fingerprints belong to a victim, suspect, individual with legitimate access to the object, or other individuals involved in the latent case. The following codes will be used.

Code	Designation
S	Suspect
V	Victim
E	Elimination
O	Other

PTY 2.2009 – Photo Type. This optional field is used in conjunction with a subject photo request (TOT = CPR) (see Appendix K) to define the type of photo being requested (*i.e.*, face, scar, mark, tattoo). The values of PTY correspond to the Type-10 field IMT (10.003). If not provided, the default value will be "FACE," and the most recent mugshot will be returned.

QDD 2.004 – Query Depth of Detail. This field is used to define the scope of the Latent Queue Management Query. The defined levels can be at the state level (S), at the ORI level (O), or at the Case level (C).

RAC 2.025 – Race. This field is used to indicate the race of the subject. Use the predominant race code from the following table:

If Subject Is	Enter Code
Chinese, Japanese, Filipino, Korean, Polynesian, Indian,	

Indonesian, Asian Indian, Samoan, or any other Pacific Islander	A
A person having origins in any of the black racial groups of Africa	B
American Indian, Eskimo, or Alaskan native, or a person having origins in any of the 48 contiguous states of the United States or Alaska who maintains cultural identification through tribal affiliation or community recognition	I
Middle Eastern	M
Of indeterminable race	U
Caucasian, Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, Regardless of race	W

RAP 2.070 – Request for Electronic Rap Sheet. The purpose of this field is to allow the contributors to optionally request an electronic rap sheet of the suspect. That rap sheet will be an IDRR if an Ident was made and an NIDR if the submission resulted in a Non-Ident. A "Y" indicates that a rap sheet is desired, and an omitted field or an "N" indicates that no electronic rap sheet should be returned with the response.

RBE 2.2014 – Rap Back Eligibility. This mandatory one-character alpha field is used to convey whether the Rap Back owner of record is still eligible to receive Rap Back information (*e.g.*, is the Rap Back subject still employed by the subscriber?). The value "Y" is used to indicate continued eligibility.

RBR 2.052 – Rap Back Request. This optional field in criminal and civil background submissions is used to request that the FBI retain and monitor the submitted subject information for criminal activity. Presence of this field indicates the desire of the submitting agency for FBI retention, monitoring, and reporting of this subject's record. The RBR field values will be as follows: "1" requests monitoring for criminal activity; "2" requests monitoring for civil activity; "3" requests monitoring for both criminal and civil activity. If a submission satisfying the requested monitoring criteria matches the subject's record, the agency that requested the Rap Back service will receive a Rap Back Hit Notification.

RBRO 2.2015 – Rap Back Record Owner. This field is used to indicate the owner of a Rap Back subject record is to receive the Rap Back Hit Notification in the event of a criminal or civil hit. The default value for this field will be the ORI number provided in the CRI field of the original ten-print submission. A total of three (3) ORIs may be provided in this field.

<u>RBVS</u> 2.2011 – Rap Back Verification Status. This mandatory field is used in the response to a Rap Back Verification Request to indicate whether continued monitoring is desired for the subject record. This field is to be populated with either a "Y" for continued monitoring or "N" to discontinue monitoring. If left blank, a default of "N" will be used.

<u>RCD1</u> 2.091 – Ridge Core Delta One for Subpattern Classification. This grouped field contains information about the finger(s) ridge counts and is used for Native Mode searches in conjunction with the Pattern Level Classification (PAT - 2.034). It is comprised of two subfields, Finger Position (**FGP**), and Ridge Count Number 1 (**RCN1**). The two-character finger position code as specified for the related Pattern Level Classification (PAT) is followed by the $^{U}_{S}$ separator and at least one RCN1. Each pattern classification PATCL specified in the tagged field 2.034 must be accompanied by two ridge count indicators, one in RCD1 (2.091) and one in RCD2 (2.092) as described in the table provided with RCD2. If multiple RCN1s are used for reference to the same finger, then they shall be separated from each other by the $^{U}_{S}$ separator. Multiple fingers, if provided, shall be separated by the $^{R}_{S}$ separator.

<u>RCD2</u> 2.092 - Ridge Core Delta Two for Subpattern Classification. This grouped field contains information about the finger(s) ridge counts and is used for Native Mode searches in conjunction with the Pattern Level Classification (PAT 2.034). It is composed of two subfields, Finger Position (FGP), and Ridge Count Number 2 (RCN2). The two-character finger position code as specified for the related Pattern Level Classification (PAT) is followed by the $^{U}_{S}$ separator and at least one RCN2. Each pattern classification PATCL specified in the tagged field 2.034 must be accompanied by two ridge count indicators, one in RCD1 and one in RCD2 as described in the following table. If multiple RCN2s are used for reference to the same finger, they shall be separated from each other by the $^{U}_{S}$ separator. Multiple fingers, if provided, shall be separated by the $^{R}_{S}$ separator.

The Ridge Count Number (RCN1 and RCN2) represents the number of ridges between the core and the delta. For right and left slant loops, this count identifies the ridges crossed on a line between the core and the delta. For whorls, both the RCN1 and the RCN2 values have meaning. Permissible values are 1 to 30 for actual ridge counts and 30 if there are more than 30 ridges. The count of 31 indicates an unknown number of ridges, and 0 indicates that the ridge count is not applicable.

The following is a list of acceptable IAFIS pattern level fingerprint classifications and the allowable ridge count ranges for each.

Pattern	Code	RCN1	RCN2
Arch, Type Not Designated	AU	0	0
Whorl, Type Not Designated	WU	1-31	1-31
Right Slant Loop	RS	1-31	0
Left Slant Loop	LS	1-31	0
Complete Scar	SR	0	0
Amputation	XX	0	0
Unable to print (*e.g.*, bandaged)	UP	0	0
Unable to Classify	UC	0	0

The following example shows the relationship between the Pattern Level Classification (2.034), Ridge Core Delta 1 (2.091) and Ridge Core Delta 2 (2.092) fields where only the primary classification for each finger is given. In this case, one PATCL, one RCN1, and one RCN2 are associated with each finger. Spaces are shown for clarity only.

2.034:01	U S	WU	R S	02	U S	LS	R S	03	U S	AU	R S	04	U S	XX	...	R S	10	U S	WU	G S
2.091:01	U S	9	R S	02	U S	4	R S	03	U S	0	R S	04	U S	0	...	R S	10	U S	14	G S
2.092:01	U S	7	R S	02	U S	0	R S	03	U S	0	R S	04	U S	0	...	R S	10	U S	21	G S

The following example of the Pattern Classification (2.034) field includes two reference classifications for finger 01, only a primary classification for finger 07, and one reference classification for finger 09. Each PATCL in 2.034 requires a corresponding RCN1 and RCN2 in fields 2.091 and 2.092. Spaces are shown for clarity only.

2.034:01	U S	RS	U S	WU	U S	AU	R S	07	U S	XX	R S	09	U S	AU	U S	LS	G S			
2.091:01	U S	9	U S	9	U S	0	R S	07	U S	0	R S	09	U S	0	U S	8	G S			
2.092:01	U S	0	U S	11	U S	0	R S	07	U S	0	R S	09	U S	0	U S	0	G S			

<u>REC</u> 2.082 – Response Code. A one-byte alpha field with allowable values of "Y" or "N." This field is used in the PDR and PRR transactions to indicate the status of the corresponding request. If the request contains any errors, the response code (REC) will be set to "N." Otherwise it will be set to "Y."

<u>RES</u> 2.041 – Residence of Person Fingerprinted. The subject's residential address may be entered in this field as free text, including printable special characters and formatting characters (CR, LF, TAB). The RES returned in a response is the same as the one submitted.

<u>RET</u> 2.005 – Retention Code. This is an alpha field indicating whether the arrest information submitted as a part of a transaction (either electronic or hard copy) is to be retained as a permanent part of the FBI's Criminal Master File. Submit a "Y" for yes or an "N" for no. For Civil submissions, RET is used to indicate whether the civil submission is to be retained in the civil files. In the case where a Criminal Ident was made against the Criminal File in a Civil Submission (irrespective of the value of RET), under some conditions the record is retained as a Civil Cycle in that Criminal record.

RFP 2.037 – Reason Fingerprinted. This alphanumeric-special field is used to indicate the purpose of a civil or applicant fingerprint card submission. Commas, blanks, dashes, hyphens, and slashes are all allowed as special characters. The submitting agency should indicate the specific statutory authority authorizing the fingerprint submission in this field. For MAP submissions, agencies must indicate "Criminal Justice Employment" or "Law Enforcement" in this field or the submission will be rejected.

Option: Agencies may choose to use standard terms in this field related to the purpose of the fingerprint submission instead of the specific statutory authority. The standard reasons are:

- Firearms
- Volunteer
- Criminal Justice Employment
- Child Care/School Employee
- Other Employment and Licensing

Agencies must contact the FBI to use this option.

RFR 2.095 – Request Features Record. This one-character alpha field is used to indicate a user's desire to have IAFIS return a Type-9 features record associated with an image requested via an IRQ transaction. The features record can then be overlayed on the image for comparison purposes. A features record will be returned if the RFR value equals "Y." A features record will not be returned if the field is omitted (its use is optional) or if the value of RFR equals "N."

RPR 2.096 – Request Photo Record. This one-character alpha field is used to indicate a user's desire to have IAFIS return a Type-10 photo record if one is on file and disseminable. This field is used in conjunction with a Rapid Image Search transaction (RPIS).

RSR 2.065 – Repository Statistics Response. This field contains a file generated by the AFIS that provides the detailed statistics that can be used to estimate the level of penetration of the repository given a set of search parameters defined in the search request. This field is in the form of a large ASCII file that can contain up to 32,000 bytes of alphanumeric-special (ANS) data. The file has three fields containing: (1) a parameter name, (2) a parameter value; and (3) the fraction of the file having that value of the parameter. The fields are TAB delimited. NEWLINE characters separate records. A period character is used as a decimal point in the Fraction field. As an example, the record EYE<TAB>BLUE<TAB>0.321<NEWLINE> indicates that the parameter EYE having the value BLU occurs in 32.1% of the subjects on file.

SAN 2.099 – State Arrest Number. Unique arrest number assigned by the state to a criminal subject. The SAN is an optional element that may assist in matching the submitted disposition data to the correct court cycle. If present in the submission, this field should be returned in the response. Any printable 7-bit ASCII character with the exception of a period (.) is acceptable. Embedded blanks are not permitted. SAN must not begin with a blank.

SCNA 2.086 – AFIS Segment Control Number. This field contains a number used by AFIS/FBI to allow tracking of or reference to specific transactions. It is used, for example, to indicate the index number for individual records in the IAFIS Unsolved Latent File in the

response to a Latent Search. It is also used to refer to transactions that contained searches for the purpose of status queries, modifications, or cancellations.

SCO 2.007 – Send Copy To. The purpose of this 9-to-19-character alphanumeric-special (ANS) field is to indicate that additional electronic responses need to be forwarded to agencies other than the contributor by the state identification bureau. The first nine characters shall be alphanumeric and shall contain the NCIC-assigned Originating Agency Identifier (ORI) for an agency who is to receive a copy of the response. At the option of the transmitting agency, the ORI may be expanded to a size of 19 characters, with 10 characters of alphanumeric-special (ANS) data appended to the end to assist in proper routing of the responses. However, no <US> or <RS> separator may be used between the ORI and routing extension (use any printable ASCII special character (*e.g.*, a slash) as a separator). Upon receiving an electronic response, the state identification bureau will forward a copy of the electronic response to each agency listed in the "SEND COPY TO" block.

SDOB 2.2007 – Submitted Date of Birth. A date of birth as provided in a submission that is determined to be different than the date of birth in the record of the identified subject.

SEX 2.024 – Sex. This field is used to report the gender of the subject. The entry is a single character selected from the following table.

If Following Condition Exists	Enter Code
Subject's gender reported as female	F
Occupation or charge indicated "Male Impersonator"	G
Subject's gender reported as male	M
Occupation or charge indicated "Female Impersonator" or transvestite	N
Male name, no gender given	Y
Female name, no gender given	Z
Unknown gender	X

SID 2.015 – State Identification Number. This field contains any known state identification number. The format is the standard two-character abbreviation of the state name followed by the number. Embedded blanks are not permitted. SIDs from New York, Oregon, or Pennsylvania may contain a hyphen in the last position. The SID returned in a response is dependent upon the search results (see Section 3.6).

SMT 2.026 – Scars, Marks and Tattoos. For each scar, mark, or tattoo present on the subject, the appropriate NCIC code shall be used in this information item. Blanks are allowed as special characters.

SNAM 2.2008 – Submitted Name. A name as provided in a submission that is determined to be different than the name of record of an identified subject.

SOC 2.016 – Social Security Account Number. This field contains the subject's Social Security number if known. This number shall be entered as nine consecutive digits with no embedded punctuation characters. No foreign social security numbers shall be used.

SPCN 2.093 – Special Population Cognizant File Number. This field contains the identification number for a record in a Special Population Cognizant File.

SRF 2.059 – Search Results Findings. This field is used in responses to submissions and contains a single character. An "I" shall be used to indicate that an identification has been made, and an "N" shall be used to indicate that no identification has been made. For latent comparison results feedback, in addition to "I" or "N," a pending comparison result will be indicated with a "P." For RPIS TOT, the SRF field will contain the following: "R" for red, "Y" for yellow, or "G" for green.

SSD 2.054 – Custody or Supervisory Status Start Date. This field contains the start date for the subject's indicated custody or supervisory status. The date shall appear as an eight-digit number in the same format as specified in Section 1.2 of this appendix. The SSD may not be less than DOA. The SSD shall not exceed the current date except when the submission originates from an international contributor located in a time zone earlier than the Eastern Time Zone. This date field shall contain the local date for the region submitting the request. Edit checks on the IAFIS will accept the local date as valid up to 24 hours forward to accommodate the variance between international time zones. If custody data are submitted, all custody fields (SSD, OCA, and SLE) must be present.

TAA 2.087 – Treat as Adult. A one-byte optional field to indicate whether a juvenile is to be processed as an adult. A "Y" indicates yes; an omitted field indicates no. The TAA returned in a response is the same as the one submitted.

TSR 2.043 – Type of Search Requested. A one-byte code shall be entered in this field from the following table to indicate the type of record being submitted. The field is applicable to the FAUF, NFUF, CPDR, FNDR, NNDR, and CPNU transactions as follows.

Type of Record	Code	Applicable TOT
Pre-commission candidate record with fingerprints	P	FAUF/NFUF
Civil submission in support of the National Child Protection Act of 1993	V	NFUF*
Confidential Screening	C	CPDR, FNDR, NNDR
Suppress/Modify Unsolicited Want/SOR Notification (Non-Urgent Criminal)	H	CPNU

* When submitting fingerprints using a TSR of V, the contributing agency should specify either the VCA/NCPA or a state statute in the RFP field. To be charged at the volunteer rate, the word "volunteer" must appear with or without the statute.

UCN 2.081 – Universal Control Number. This conditional alphanumeric text field is used to identify the record with which the photo(s) or images being requested is (are) associated, to identify candidates in a candidate list, or otherwise identify individual subject records. If the record requested is other than a criminal record (*i.e.*, civil record), this field is mandatory. Can be used with CPR and IRQ transactions to identify either criminal or civil records.

ULF 2.083 – Unsolved Latent File. This one-character alpha field is used to designate whether a latent image or features record in a search should be added to the Unsolved Latent File. Submit a "Y" for yes. If negative, omit the field.

WGT 2.029 – Weight. In this field, the subject's weight in pounds is entered. If weight is unknown, 000 is entered. All weights in excess of 499 pounds will be set to 499 lbs.

WTR 2.030 – Weight Range. If a range of weight is given, it shall be expressed as two three-digit numbers indicating the minimum and maximum weights (in pounds) of the subject. There shall be no separator character used between the weights. WTR must be in the range 050 to 499 lbs. (however, there is no minimum range limit for missing persons or unknown persons).

Table C-1. Field Edit Specifications for Type-2 Elements

Identifier	Field No.	Field Name	Character Type	Field Size Min.	Field Size Max.	Example	Special Characters
ACN	2.071	ACTION TO BE TAKEN	ANS	0	300	2.071:IF NON-IDENT, SUBMIT TO UNSOLVED LATENT FILE<GS>	Commas, hyphens, ampersands, slashes, number signs, and blanks are all allowed as special characters.
AGR	2.023	AGE RANGE	N	4	4	2.023:1619<GS>	
AKA	2.019	ALIASES	ANS	3	30	2.019:JONES, TONY<RS>JONES, A P<GS>	Hyphens, commas, and blanks are all allowed as special characters.
AMP	2.084	AMPUTATED OR BANDAGED FINGER POSITION (FGP) AMPUTATED OR BANDAGED CODE (AMPCD)	SET N A	 2 2	 2 2	2.084:03<US>XX<RS>09<US>UP<GS>	
ASL	2.047	ARREST SEGMENT LITERAL DATE OF OFFENSE (DOO) ARREST OFFENSE LITERAL (AOL)	SET N ANS	 8 1	 8 100	2.047:DUI<RS>19940920<US>POSSESSION OF FIREARMS<GS>	Any printable 7-bit ASCII character is allowed. Any printable 7-bit ASCII character is allowed.
ATN	2.006	"ATTENTION" INDICATOR	ANS	3	30	2.006:SA J Q DOE,RM 11867<GS>	Any printable 7-bit ASCII character with the exception of the period is allowed.
CAN	2.064	CANDIDATE LIST UNIVERSAL CONTROL NUMBER (UCN) NAME (NAM)	SET AN AS	 9 3	 9 30	2.064:273849CA2<US>BROWN,JOHN D<RS>83625NY<US>COLLINS,TERRYG<GS>	Commas, hyphens, and blanks are all allowed as special characters.
CCN	2.094	COURT CASE NUMBER	ANS	0	20	2.094:NY123456789<GS>	Any printable 7-bit ASCII character except period is allowed. Embedded blanks are not allowed. CCN must not begin with blank.

Under the Character Type column: A = alpha, B = binary, N = numeric, S = special characters.

Table C-1. Field Edit Specifications for Type-2 Elements

Identifier	Field No.	Field Name	Character Type	Field Size Min.	Field Size Max.	Example	Special Characters
CFS	2.077	CANCEL FP SEARCH	N	1	10	2.077:3124<GS>	
CIN	2.010	CONTRIBUTOR CASE IDENTIFIER NUMBER CONTRIBUTOR CASE PREFIX (CIN_PRE) CONTRIBUTOR CASE ID (CIN_ID)	SET ANS ANS	 1 1	 24 24	2.010:INCIDENT NUMBER<US>1963BRT715<GS>	Any printable 7-bit ASCII character is allowed.
CIX	2.011	CONTRIBUTOR CASE IDENTIFIER EXTENSION	N	2	4	2.011:23<GS>	
CRI	2.073	CONTROLLING AGENCY IDENTIFIER	ANS	1	9	2.073:NY0303000<GS>	
CRN	2.085	CIVIL RECORD NUMBER	AN	9	9	2.085:V12345678<GS>	
CSL	2.051	COURT SEGMENT LITERAL COURT DISPOSITION DATE (CDD) COURT OFFENSE LITERAL (COL) OTHER COURT SENTENCE PROVISION LITERAL (CPL)	SET N ANS ANS	 8 1 1	 8 300 300	2.051:19940930<US>DUI<US>5 DAYS JAIL, PAY COURT COSTS<RS>19940930<US>POSSESSION OF FIREARMS<US>10 DAYS JAIL, PAY COURT COSTS, $50<GS>	Any printable 7-bit ASCII character is allowed. Any printable 7-bit ASCII character is allowed. Any printable 7-bit ASCII character is allowed.
CSF	2.2006	CASCADED SEARCH FLAG	A	2	2	2.2006:CR<GS>	
CSR	2.048	CIVIL SEARCH REQUESTED INDICATOR	A	1	1	2.048:Y<GS>	
CST	2.061	CASE TITLE	ANS	1	50	2.061:ARMED ROBBERY FIRST COUNTY<GS>	Any printable 7-bit ASCII character is allowed.
CTZ	2.021	COUNTRY OF CITIZENSHIP	A	2	2	2.021:US<GS>	
DOA	2.045	DATE OF ARREST	N	8	8	2.045:19950324<GS>	
DOB	2.022	DATE OF BIRTH	N	8	8	2.022:19770825<GS>	
DOS	2.046	DATE OF ARREST – SUFFIX	A	1	1	2.046:L<GS>	
DPR	2.038	DATE PRINTED	N	8	8	2.038:19950324<GS>	
EAD	2.039	EMPLOYER AND ADDRESS	ANS	1	120	2.039:ACE CONSTRUCTION COMPANY,327 MAPLE AVE, BUFFALO,NY<GS>	Any printable 7-bit ASCII character is allowed.

Under the Character Type column: A = alpha, B = binary, N = numeric, S = special characters.

Table C-1. Field Edit Specifications for Type-2 Elements

Identifier	Field No.	Field Name	Character Type	Field Size Min.	Field Size Max.	Example	Special Characters
EID	2.049	EMPLOYEE IDENTIFICATION NUMBER	AN	1	10	2.049:USSS123456<GS>	
ERS	2.075	ELECTRONIC RAP SHEET	ANS	4	200,000	2.075:<rap sheet example here><GS>	Any printable 7-bit ASCII character is allowed.
ETC	2.069	ESTIMATED TIME TO COMPLETE	N	1	4	2.069:6270<GS>	
EXP	2.080	RESPONSE EXPLANATION	ANS	1	50	2.080:PHOTO NOT FOUND FOR SPECIFIED DOA DOS<GS>	Any printable 7-bit ASCII character is allowed.
EYE	2.031	COLOR EYES	A	3	3	2.031:BLU<GS>	
FBI	2.014	FBI NUMBER	AN	1	9	2.014:62760NY12<GS>	
FFN	2.003	FBI FILE NUMBER	N	10	10	2.003:2537597861<GS>	
FGP	2.074	FINGER POSITION	N	2	2	2.074:01<RS>02<RS>03<RS>04<RS>05<RS>06<RS>07<RS>08<RS>09<RS>10<GS>	
FIU	2.072	FINGERPRINT IMAGE(S) UPDATED	AN	1	2	2.072:01<RS>02<RS>05<RS>07<RS>08<RS>11<RS>13<GS>	
FNR	2.057	FINGER NUMBER(S) REQUESTED	N	2	2	2.057:01<RS>06<RS>10<GS>	
FPC	2.033	NCIC FINGERPRINT CLASSIFICATION	AN	20	20	2.033:AAXXP158PMXM62POTTDI<GS>	
GEO	2.044	GEOGRAPHICAL AREA OF SEARCH	A	2	2	2.044:MD<GS>	
HAI	2.032	HAIR COLOR	A	3	3	2.032:BRO<GS>	
HGT	2.027	HEIGHT	AN	3	3	2.027:601<GS>	
HTR	2.028	HEIGHT RANGE	AN	6	6	2.028:508603<GS>	
ICO	2.056	IDENTIFICATION COMENTS	ANS	1	50	2.056:ARMED AND DANGEROUS<GS>	Any printable 7-bit ASCII character is allowed.
IDC	2.002	IMAGE DESIGNATION CHARACTER	N	2	2	2.002:00<GS>	
IIR	2.2012	IRIS IMAGE REQUESTED	N	1	1	2.2012:0<GS>	
IMA	2.067	IMAGE CAPTURE EQUIPMENT ORIGINATING FINGERPRINT READING SYSTEM MAKE (MAK) ORIGINATING	SET ANS ANS	 1 1	 25 25	2.067:DBI<US>1134<US>12345<GS>	Any printable 7-bit ASCII character is allowed. Any printable 7-bit ASCII character is allowed. Any printable 7-bit ASCII character is

		FINGERPRINT READING SYSTEM MODEL (MODL)					allowed.

Under the Character Type column: A = alpha; B = binary; N = numeric; S = special characters.

Table C-1. Field Edit Specifications for Type-2 Elements

Identifier	Field No.	Field Name	Character Type	Field Size Min.	Field Size Max.	Example	Special Characters
		ORIGINATING FINGERPRINT SYSTEM SERIAL NUMBER (SERNO)	ANS	1	50		Any printable 7-bit ASCII character is allowed.
IMT	2.062	IMAGE TYPE (IF TYPE-7 IMAGES)	N	1	2	2.062:1<RS>2<RS>3<RS>4<RS>5<GS>	
LCN	2.012	FBI LATENT CASE NUMBER	ANS	11	11	2.012:MX-12345678<GS>	First two characters may be AN followed by a hyphen. Remaining characters are AN.
LCX	2.013	FBI LATENT CASE EXTENSION	N	4	4	2.013:0001<GS>	
LEN	2.001	LOGICAL RECORD LENGTH	N	2	7	2.001:909<GS>	
MIL	2.042	MILITARY CODE	A	1	1	2.042:M<GS>	
MNU	2.017	MISCELLANEOUS IDENTIFICATION NUMBER	ANS	4	15	2.017:PP-1234567890P<GS>	A hyphen is allowed as a special chacter.
MSC	2.089	MATCHSCORE	N	1	6	2.089:1200<GS>	
MSG	2.060	STATUS/ERROR MESSAGE	ANS	1	300	2.060:MATCH MADE AGAINST SUBJECTS FINGERPRINTS ON 05/01/94. PLEASE NOTIFY SUBMITTING STATE IF MATCH RESULTS<GS>	Any printable 7-bit ASCII character is allowed.
NAM	2.018	NAME	AS	3	30	2.018:JONES, ANTHONY P<GS>	Commas, hyphens, and blanks are all allowed as special characters.
NAM1	2.2001	NAME-ONE	AS	1	50	2.2001:BRIAN<GS>	Any 7-bit non-Ctrl character
NAM2	2.2002	NAME-TWO	AS	1	50	2.2002:DAVID<GS>	Any 7-bit non-Ctrl character
NAM3	2.2003	NAME-THREE	AS	1	50	2.2003:SMITH<GS>	Any 7-bit non-Ctrl character
NAM4	2.2004	NAME-FOUR	AS	1	50	2.2004:MAHFOUZ<GS>	Any 7-bit non-Ctrl character
NAM5	2.2005	NAME-FIVE	AS	1	50	2.2005:al ARABI<GS>	Any 7-bit non-Ctrl character
NCR	2.079	NUMBER OF CANDIDATES IMAGES	N	1	2	2.079:10<GS>	

		RETURNED					
NDR	2.098	NAME OF DESIGNATED REPOSITORY	N	1	3	2.098:1<GS>	
NOT	2.088	NOTE FIELD	ANS	1	1,000	2.088:NOTE<GS>	Any printable 7-bit ASCII character is allowed.

Under the Character Type column: A = alpha; B = binary; N = numeric; S = special characters.

Table C-1. Field Edit Specifications for Type-2 Elements

Identifier	Field No.	Field Name	Character Type	Field Size Min.	Field Size Max.	Example	Special Characters
OCA	2.009	ORIGINATING AGENCY CASE NUMBER	ANS	1	20	2.009:Q880312465<GS>	Any printable 7-bit ASCII character with the exception of the period is allowed.
OCP	2.040	OCCUPATION	ANS	1	50	2.040:PLUMBER<GS>	Any printable 7-bit ASCII character is allowed.
OFC	2.053	OFFENSE CATEGORY	N	1	1	2.053:1<GS>	
PAT	2.034	PATTERN LEVEL CLASSIFICATION FINGER POSITION (FGP) PATTERN CLASSIFICATION CODE (PATCL)	SET N A	 2 2	 2 2	2.034:01<US>WU<RS>02<US>LS<RS>03<US>LS<RS>04<US>LS<RS>05<US>LS<RS>06<US>RS<RS>07<US>RS<RS>08<US>LS<RS>09<US>RS<RS>10<US>RS<GS>	
PEN	2.078	PENETRATION QUERY RESPONSE	N	2	2	2.078:10<GS>	
PHT	2.036	"PHOTO AVAILABLE" INDICATOR	A	1	1	2.036:Y<GS>	
POB	2.020	PLACE OF BIRTH	A	2	2	2.020:VA<GS>	
PPA	2.035	"PALM PRINTS AVAILABLE" INDICATOR	A	1	1	2.035:Y<GS>	
PRI	2.076	PRIORITY	N	1	1	2.076:1<GS>	
PTD	2.063	PERSON TYPE DESIGNATOR	A	1	1	2.063:S<GS>	
QDD	2.004	QUERY DEPTH OF DETAIL	A	1	1	2.004:O<GS>	
RAC	2.025	RACE	A	1	1	2.025:W<GS>	
RAP	2.070	REQUEST FOR ELECTRONIC RAP SHEET	A	1	1	2.070:Y<GS>	
RBE	2.2014	RAP BACK ELIGIBILITY	A	1	1	2.2014:Y<GS>	
RBR	2.052	REQUEST FOR RAP BACK SERVICE	N	1	1	2.052:1<GS>	
RBRO	2.2015	RAP BACK RECORD OWNER	ANS	1	9	2.2015:NY0303000<GS>	
RBVS	2.2011	RAP BACK VERIFICATION STATUS	A	1	1	2.2011:Y<GS>	

Under the Character Type column: A = alpha; B = binary; N = numeric; S = special characters.

Table C-1. Field Edit Specifications for Type-2 Elements

Identifier	Field No.	Field Name	Character Type	Field Size Min.	Field Size Max.	Example	Special Characters
RCD1	2.091	RIDGE CORE DELTA ONE FOR SUBPATTERN CLASSIFICATION FINGER POSITION (FGP) RIDGE COUNT NUMBER 1 (RCN1)	SET N N	 2 1	 2 2	2.091:01<US>13<RS>02<US>6<RS>03<US>11<RS>04<US>10<RS>05<US>11<RS>06<US>11<RS>07<US>12<RS>08<US>10<RS>09<US>13<RS>10<US>11<GS>	
RCD2	2.092	RIDGE CORE DELTA TWO FOR SUBPATTERN CLASSIFICATION FINGER POSITION (FGP) RIDGE COUNT NUMBER 1 (RCN1)	SET N N	 2 1	 2 2	2.092:01<US>10<RS>02<US>0<RS>03<US>0<RS>04<US>0<RS>05<US>0<RS>06<US>0<RS>07<US>0<RS>08<US>0<RS>09<US>0<RS>10<US>0<GS>	
REC	2.082	RESPONSE CODE	A	1	1	2.082:Y<GS>	
RES	2.041	RESIDENCE OF PERSON FINGERPRINTED	ANS	1	120	2.041:5021 OAK LEAF DRIVE, BUFFALO NY, USA, 19970925<GS>	Any printable 7-bit ASCII character is allowed.
RET	2.005	RETENTION CODE	A	1	1	2.005:Y<GS>	
RFP	2.037	REASON FINGERPRINTED	ANS	1	75	2.037:CONSIDERING FOR EMPLOYMENT<GS>	Commas, blanks, dashes, hyphens, and slashes are allowed as special characters.
RFR	2.095	REQUEST FEATURES RECORD	A	1	1	2.095:Y<GS>	
RPR	2.096	REQUEST PHOTO RECORD	A	1	1	2.096:Y<GS>	
RSR	2.065	REPOSITORY STATISTICS RESPONSE	ANS	1	32,000	2.065:(ASCII TEXT DATA)<GS>	Period (as decimal point), tab (as field delimiter), new line (as record separator)
SAN	2.099	STATE ARREST NUMBER	ANS	0	20	2.099:NY123456789<GS>	Any printable 7-bit ASCII character is allowed except period(.). Embedded blanks not permitted. Must not begin with blank.
SCNA	2.086	AFIS SEGMENT CONTROL NUMBER	N	1	10	2.086:3124<GS>	

SCO	2.007	SEND COPY TO	ANS	9	19	2.007:NY030025P<GS>	Any printable 7-bit ASCII character is allowed.

Under the Character Type column: A = alpha; B = binary; N = numeric; S = special characters.

Table C-1. Field Edit Specifications for Type-2 Elements

Identifier	Field No.	Field Name	Character Type	Field Size Min.	Max	Example	Special Characters
SDOB	2.2007	SUBMITTED DATE OF BIRTH	N	8	8	2.2007:10470123<GS>	
SEX	2.024	SEX	A	1	1	2.024:M<GS>	
SID	2.015	STATE IDENTIFICATION NUMBER	ANS	3	10	2.015:NY12345678<GS>	NY, OR, and PA may use a hyphen in the last position.
SMT	2.026	SCARS, MARKS, AND TATTOOS	AS	3	10	2.026:MISS L TOE<RS>TAT RF ARM<GS>	Blanks are allowed as special characters.
SNAM	2.2008	SUBMITTED NAME	AS	3	30	2.2008:JONES, ANTHONY P<GS>	Commas, hyphens, and blanks are allowed as special characters.
SLE	2.055	CUSTODY OR SUPERVISORY STATUS LITERAL	ANS	1	300	2.055:RELEASED BY COURT ORDER,19940930<GS>	Any printable 7-bit character is allowed. First character must not be blank.
SOC	2.016	SOCIAL SECURITY ACCOUNT NUMBER	N	9	9	2.016:220565855<GS>	
SPCN	2.093	SPECIAL POPULATION COGNIZANT FILE NUMBER	AN	9	9	2.093:SLC1031234<GS>	
SRF	2.059	SEARCH RESULTS FINDINGS	A	1	1	2.059:N<GS>	
SSD	2.054	CUSTODY OR SUPERVISORY STATUS – START DATE	N	8	8	2.054:19940930<GS>	
TAA	2.087	TREAT AS ADULT	A	1	1	2.087:Y<GS>	
TSR	2.043	TYPE OF SEARCH REQUESTED	A	1	1	2.043:P<GS>	
UCN	2.081	UNIVERSAL CONTROL NUMBER	AN	9	9	2.081:410530890<GS>	
ULF	2.083	UNSOLVED LATENT FILE	A	1	1	2.083:Y<GS>	
WGT	2.029	WEIGHT	N	3	3	2.029:182<GS>	
WTR	2.030	WEIGHT RANGE	N	6	6	2.030:175190<GS>	

Under the Character Type column: A = alpha; B = binary; N = numeric; S = special characters.

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APPENDIX D

LOGICAL RECORD LAYOUTS FOR TYPE-2 (TEN-PRINT)

1.0 Introduction

Appendix D presents logical record layouts for ten-print transactions. The CAR and SRE transactions are presented in detail by Tables D-1 and D-2, respectively. Table D-3 is a summary representation of all ten-print transactions. Notes for Tables D-1 through D-3 are given in Table D-4. For detailed specifications of individual fields of these recordsets, see Appendix C.

2.0 Interpretation of Table D-3

Table D-3 summarizes what formerly required 15 tables in Appendix D. The column headers at the top of the page select a particular transaction. The row headers in the left margin give the tag number and ID for each field. The cell at the intersection of any given row and column gives summary information about the use of that field (row) in that transaction (column). If that cell is blank, the field is not used in that record. Otherwise, the number at the right in the cell gives the maximum number of occurrences of that field for that record. If the cell is shaded, then the field's inclusion is optional for that record; unshaded cells indicate mandatory inclusion. In all cases, the minimum number of occurrences for a mandatory field is one, and zero for an optional field. Finally, the superscript in the upper left-hand corner of the cell is a reference to any note (see Appendix D Reference Notes following Table D-3) pertaining to the use of that field in the record.

Note**:** The remarks about the interpretation of Table D-3 also apply to Tables E-1 and E-2.

Table D-1. Field List for Ten-Print, Answer-Required (CAR) Transaction

Identifier	Condition	Field No.	Field Name	Character Type	Field Size Per Occurrence		Occurrences		Max. No. of Bytes Including Character Separators and Field Number	Example Data	Special Characters Allowed
					Min.	Max.	Min.	Max.			
LEN	M	2.001	LOGICAL RECORD LENGTH	N	2	7	1	1	14	2.001:909<GS>	
IDC	M	2.002	IMAGE DESIGNATION CHARACTER	N	2	2	1	1	9	2.002:00<GS>	
RET	M	2.005	RETENTION CODE	A	1	1	1	1	8	2.005:Y<GS>	
ATN	O	2.006	"ATTENTION" INDICATOR	ANS	3	30	0	1	37	2.006:SA J Q DOE,RM11867<GS>	Any printable 7-bit ASCII character except the period is allowed.
SCO	O	2.007	SEND COPY TO	ANS	9	19	0	9	186	2.007:NY030025P<GS>	Any printable 7-bit ASCII character is allowed.
OCA	O	2.009	ORIGINATING AGENCY CASE NUMBER	ANS	1	20	0	1	27	2.009:Q880312465<GS>	Any printable 7-bit ASCII character except the period is allowed.
FBI	O [5]	2.014	FBI NUMBER	AN	1	9	0	5	56	2.014:62760NY12<GS>	
SID	O [6]	2.015	STATE IDENTIFICATION NUMBER	ANS	3	10	0	1	17	2.015:NY12345678<GS>	NY, OR, and PA may use a hyphen in the last position.
SOC	O	2.016	SOCIAL SECURITY ACCOUNT NUMBER	N	9	9	0	4	46	2.016:220565855<GS>	
MNU	O	2.017	MISCELLANEOUS IDENTIFICATION NUMBER	ANS	4	15	0	4	70	2.017:PP-1234567890P<GS>	A hyphen is allowed as a special character.
NAM	M	2.018	NAME	AS	3	30	1	1	37	2.018:JONES, ANTHONY P<GS>	Commas, hyphens, and blanks are allowed as special characters.
AKA	O	2.019	ALIASES	ANS	3	30	0	10	316	2.019:JONES, TONY<RS>JONES, A P<GS>	Hyphens, commas, and blanks are allowed as special characters.
POB	M	2.020	PLACE OF BIRTH	A	2	2	1	1	9	2.020:VA<GS>	

Under the condition column: O = optional; M = mandatory; C = conditional, see notes.
Under the character type column: A = alpha; B = binary; N = numeric; S = special characters.

Table D-1. Field List for Ten-Print, Answers-Required (CAR) Transaction

Identifier	Condition	Field No.	Field Name	Character Type	Field Size Per Occurrence		Occurrences		Max. No. of Bytes Including Character Separators and Field Number	Example Data	Special Characters Allowed
					Min.	Max.	Min.	Max.			
CTZ	O	2.021	COUNTRY OF CITIZENSHIP	A	2	2	0	1	9	2.021:US<GS>	
DOB	M	2.022	DATE OF BIRTH	N	8	8	1	5	51	2.022:19770825<GS>	
SEX	M	2.024	SEX	A	1	1	1	1	8	2.024:M<GS>	
RAC	M	2.025	RACE	A	1	1	1	1	8	2.025:W<GS>	
SMT	O	2.026	SCARS, MARKS, AND TATTOOS	AS	3	10	0	10	116	2.026:MISS L TOE<RS>TAT RF ARM<GS>	Blanks are allowed as special characters.
HGT	M	2.027	HEIGHT	AN	3	3	1	1	10	2.027:601<GS>	
WGT	M	2.029	WEIGHT	N	3	3	1	1	10	2.029:182<GS>	
EYE	M	2.031	COLOR EYES	A	3	3	1	1	10	2.031:BLU<GS>	
HAI	M	2.032	HAIR COLOR	A	3	3	1	1	10	2.032:BRO<GS>	
PPA	O	2.035	“PALM PRINTS AVAILABLE” INDICATOR	A	1	1	0	1	8	2.035:Y<GS>	
PHT	O	2.036	“PHOTO AVAILABLE” INDICATOR	A	1	1	0	1	8	2.036:Y<GS>	
EAD	O	2.039	EMPLOYER AND ADDRESS	ANS	1	120	0	1	127	2.039:ACE CONSTRUCTION COMPANY,327 MAPLE AVE, BUFFALO,NY<GS>	Any printable 7-bit ASCII character is allowed.
OCP	O	2.040	OCCUPATION	ANS	1	50	0	1	57	2.040:PLUMBER<GS>	Any printable 7-bit ASCII character is allowed.
RES	O	2.041	RESIDENCE OF PERSON FINGERPRINTED	ANS	1	120	0	1	127	2.041:5021 OAK LEAF DRIVE, BUFFALO,NY<GS>	Any printable 7-bit ASCII character is allowed.
DOA	M	2.045	DATE OF ARREST	N	8	8	1	1	15	2.045:19950324<GS>	

Under the condition column: O = optional; M = mandatory; C = conditional, see notes.
Under the character type column: A = alpha; B = binary; N = numeric; S = special characters.

Table D-1. Field List for Ten-Print, Answer-Required (CAR) Transaction

Identifier	Condition	Field No.	Field Name	Character Type	Field Size Per Occurrence		Occurrences		Max. No. of Bytes Including Character Separators and Field Number	Example Data	Special Characters Allowed
					Min.	Max.	Min.	Max.			
ASL	M [2]	2.047	ARREST SEGMENT LITERAL				1	40	12,406	2.047:19940915<US>DUI<RS>19940920<US>POSSESSION OF FIREARMS<GS>	Any printable 7-bit ASCII character is allowed.
	O		DATE OF OFFENSE (DOO)	N	8	8	0	1			
	M		ARREST OFFENSE LITERAL (AOL)	ANS	1	300	1	1			
CSL	O	2.051	COURT SEGMENT LITERAL				0	40	24,446	2.051:19940930<US>DUI<US>5 DAYS JAIL, PAY COURT COSTS<RS>	Any printable 7-bit ASCII character is allowed.
	O		COURT DISPOSITION	N	8	8	0	1		19940930<US>10 DAYS JAIL, PAY COURT COSTS, $50<GS>	
	M		COURT OFFENSE OTHER	ANS	1	300	1	1			
	M		COURT SENTENCE PROVISION LITERAL (CPL)	ANS	1	300	0	1			
RBR	O	2.052	REQUEST RAP BACK SERVICE	N	1	1	0	1	8	2.052:1<GS>	
SSD	O	2.054	CUSTODY OR SUPERVISORY STATUS – START DATE	N	8	8	0	1	15	2.054:19940930<GS>	
SLE	O [9]	2.055	CUSTODY OR SUPERVISORY STATUS	ANS	1	300	0	1	307	2.055:RELEASED BY COURT LITERAL ORDER, 19940930<GS>	Any printable 7-bit ASCII character is allowed. First character must not be blank.
ICO	O	2.056	IDENTIFICATION COMMENTS	ANS	1	50	0	1	57	2.056:ARMED AND DANGEROUS<GS>	Any printable 7-bit ASCII character is allowed.

RBRO	O	2.2015	RAP BACK RECORD OWNER	ANS	1	9	0	3	35	2.2015:NY0303000<GS>	

Under the condition column: O = optional; M = mandatory; C = conditional, see notes.
Under the character type column: A = alpha; B = binary; N = numeric; S = special characters.

Table D-1. Field List for Ten-Print, Answer-Required (CAR) Transaction

Identifier	Condition	Field No.	Field Name	Character Type	Field Size Per Occurrence		Occurrences		Max. No. of Bytes Including Character Separators and Field Number	Example Data	Special Characters Allowed
					Min.	Max.	Min.	Max.			
IMA	O	2.067	IMAGE CAPTURE EQUIPMENT				0	1	9	2.067:DBI<US>1134<US>12345<GS>	Any printable 7-bit ASCII character is allowed.
	M		ORIGINATING FINGERPRINT READING SYSTEM MAKE (MAK)	ANS	1	25	1	1			
	M		ORIGINATING FINGERPRINT READING SYSTEM MODEL (MODL)	ANS	1	25	1	1			
RAP	O	2.070	REQUEST FOR ELECTRONIC RAP SHEET	A	1	1	0	1	8	2.070:Y<GS>	
CRI	M	2.073	CONTROLLING AGENCY IDENTIFIER	ANS	1	9	1	3	36	2.073:NY0303000<GS>	
AMP	C [7]	2.084	AMPUTATED OR BANDAGED				0	9	60	2.084:03<US>XX<RS>09<US>UP<GS>	
	M		FINGER POSITION (FGP)	N	2	2	1	1			
	M		AMPUTATED OR BANDAGED CODE (AMPCD)	A	2	2	1	1			
TAA	O	2.087	TREAT AS ADULT	A	1	1	0	1	8	2.087:Y<GS>	
CCN	O	2.094	COURT CASE NUMBER	ANS	1	20	0	1	27	2.094:NY123456789<GS>	
NDR	O	2.098	NAME OF DESIGNATED REPOSITORY	N	1	3	0	4	22	2.XXX:1<RS>2<GS>	
SAN	O	2.099	STATE ARREST NUMBER	ANS	1	20	0	2	27	2.099:NY123456789<GS>	

Under the Condition column: O = optional; M = mandatory; C = conditional, see notes.
Under the Character Type column: A = alpha; B = binary; N = numeric; S = special characters.

Table D-1. Field List for Ten-Print, Answer-Required (CAR) Transaction

Identifier	Condition	Field No.	Field Name	Character Type	Field Size Per Occurrence		Occurrences		Max. No. of Bytes Including Character Separators and Field Number	Example Data	Special Characters Allowed
					Min.	Max.	Min.	Max.			
NAM1	O	2.2001	NAME-ONE	ANS	1	50	1	1	57	2.2001:AVERYLONGNAME<GS>	
NAM2	O	2.2002	NAME-TWO	ANS	1	50	1	1	57	2.2002:AVERYLONGNAME<GS>	
NAM3	O	2.2003	NAME-THREE	ANS	1	50	1	1	57	2.2003:AVERYLONGNAME<GS>	
NAM4	O	2.2004	NAME-FOUR	ANS	1	50	1	1	57	2.2004:AVERYLONGNAME<GS>	
NAM5	O	2.2005	NAME-FIVE	ANS	1	50	1	1	57	2.2005:AVERYLONGNAME<GS>	

Under the Condition column: O = optional; M = mandatory; C = conditional, see notes.
Under the Character Type column: A = alpha; B = binary; N = numeric; S = special characters.

Table D-2. Field List for Ten-Print Response, Electronic (SRE) Transaction

Identifier	Condition	Field No.	Field Name	Character Type	Field Size Per Occurrence		Occurrences		Max. No. of Bytes Including Character Separators and Field Number	Example Data	Special Characters Allowed
					Min.	Max.	Min.	Max.			
LEN	M	2.001	LOGICAL RECORD LENGTH	N	2	7	1	1	14	2.001:141<GS>	
IDC	M	2.002	IMAGE DESIGNATION CHARACTER	N	2	2	1	1	9	2.002:00<GS>	
ATN	O	2.006	"ATTENTION" INDICATOR	ANS	3	30	0	1	37	2.006:SA J A DOE,RM11867<GS>	Any printable 7-bit ASCII character except the period is allowed.
SCO	O	2.007	SEND COPY TO	ANS	9	19	0	9	186	2.007:NY030025P<GS>	Any printable 7-bit ASCII character is allowed.
OCA	O	2.009	ORIGINATING AGENCY CASE NUMBER	ANS	1	20	0	1	27	2.009:Q880312465<GS>	Any printable 7-bit ASCII character except the period is allowed.
FBI	O [8]	2.014	FBI NUMBER	AN	1	9	0	1	16	2.014:62760NY12<GS>	
SID	C	2.015	STATE IDENTIFICATION NUMBER	ANS	3	10	0	1	17	2.015:NY12345678<GS>	NY, OR, and PA may use a hyphen in the last position.
NAM	M	2.018	NAME	AS	3	30	1	1	37	2.018:JONES, ANTHONY P<GS>	Commas, hyphens, and blanks are allowed as special characters.
EAD	O	2.039	EMPLOYER AND ADDRESS	ANS	1	120	0	1	127	2.039:ACE CONSTRUCTION COMPANY,327 MAPLE AVE, BUFFALO,NY<GS>	Any printable 7-bit ASCII character is allowed.
OCP	O	2.040	OCCUPATION	ANS	1	50	0	1	57	2.040:PLUMBER<GS>	Any printable 7-bit ASCII character is allowed.
RES	O	2.041	RESIDENCE OF PERSON FINGERPRINTED	ANS	1	120	0	1	127	2.041:5021 OAK LEAF DRIVE, BUFFALO,NY<GS>	Any printable 7-bit ASCII character is allowed.
RBRO	O	2.2015	RAP BACK RECORD OWNER	ANS	1	9	0	3	35	2.2015:NY0303000<G	

										S>	
SRF	M	2.059	SEARCH RESULTS FINDINGS	A	1	1	1	1	8	2.059:N<GS>	

Under the Condition column: O = optional; M = mandatory; C = conditional, see notes.
Under the Character Type column: A = alpha; B = binary; N = numeric; S = special characters.

Table D-2. Field List for Ten-Print Response, Electronic (SRE) Transaction

Identifier	Condition	Field No.	Field Name	Character Type	Field Size Per Occurrence		Occurrences		Max. No. of Bytes Incl. Character Separators & Field No.	Example Data	Special Characters Allowed
					Min.	Max.	Min.	Max.			
ACN	O	2.071	ACTION TO BE TAKEN	ANS	0	300	0	1	307	2.071:RESUBMIT IF IMAGE OF HIGHER QUALITY OBTAINED<GS>	Commas, hyphens, ampersands, slashes, number signs, and blanks are allowed as special characters.
CRI	M	2.073	CONTROLLING AGENCY IDENTIFIER	ANS	1	9	1	3	36	2.073:NY0303000<GS>	
ERS	O	2.075	ELECTRONIC RAP SHEET	ANS	4	200,000	0	1	200,007	2.075:<rap sheet here><GS>	Any printable 7-bit ASCII character is allowed.
UCN	O	2.081	UNIVERSAL CONTROL NUMBER	AN	9	9	0	1	16	2.081:410539026<GS>	
CRN	O [8]	2.085	CIVIL RECORD NUMBER	AN	9	9	0	1	16	2.085:V12345678<GS>	
TAA	O	2.087	TREAT AS ADULT NUMBER	A	1	1	0	1	8	2.087:Y<FS>	
CCN	O	2.094	COURT CASE NUMBER	ANS	1	20	0	1	27	2.278:NY123456789<GS>	
NDR	O	2.098	NAME OF DESIGNATED REPOSITORY	N	1	3	1	10	37	2.098:1<US>7<GS>	
SAN	O	2.099	STATE ARREST NUMBER	ANS	1	20	0	1	27	2.099:NY123456789<GS>	
NAM1	O	2.2001	NAME-ONE	ANS	1	50	1	1	57	2.2001:AVERYLONG NAME<GS>	
NAM2	O	2.2002	NAME-TWO	ANS	1	50	1	1	57	2.2002:AVERYLONG NAME<GS>	
NAM3	O	2.2003	NAME-THREE	ANS	1	50	1	1	57	2.2003:AVERYLONG NAME<GS>	
NAM4	O	2.2004	NAME-FOUR	ANS	1	50	1	1	57	2.2004:AVERYLONG NAME<GS>	
NAM5	O	2.2005	NAME0FIVE	ANS	1	50	1	1	57	2.2005:AVERYLONG	

										NAME<GS>	
SDOB	O	2.2007	SUBMITTED DATE OF BIRTH	N	8	8	1	1	15	2.42007:19470123<GS>	
SNAM	O	2.2008	SUBMITTED NAME	AS	3	30	1	1	37	2.2008:JONES, ANTHONY P<GS>	Commas, hyphens, and blanks are allowed as special characters.

Under the Condition column: O = optional; M = mandatory; C = conditional, see notes.
Under the Character Type column: A = alpha; B = binary; N = numeric; S = special characters.

Table D-3. Summary Field Lists for Biometric Transactions

Part 1 of 3 (Maximum Occurrences of Each Element for Each Logical Record Type)

Tag Elem	AMN	CAR	CNA	CPDR	CPNU	DEK	DEU	DSPE	DSPR	ERRT	FANC	FAUF	FNDR	FVR	IIE	IIER
2.001 LEN	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1
2.002 IDC	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1
2.005 RET	1	1	[1] 1	1	1	1	1	1			1	1	1		1	1
2.006 ATN	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1
2.007 SCO	9	9		9	9	9	9	9	9	9	9	9	9		9	9
2.009 OCA	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2.014 FBI		[5] 5	[5] 5	[5] 5	[5] 5	5		1	1	5	5	5	5		5	5
2.015 SID	[6] 1	[6] 1	[6] 1	[6] 1	[6] 1	1	[6] 1	1	1	1	[6] 1	[6] 1				
2.016 SOC		4	4	4	4	4		1	1		4	4	4	4	4	4
2.017 MNU	4	4	4	4	4	4	4	4	4	4	[3] 4	[3] 4	[3] 4	4	[3] 4	[3] 4
2.018 NAM	[4] 1	1	1	1	1	1	[4] 1	1	1		1	1	1	1	1	1
2.019 AKA		10	10	10	10	10		10	10		10	10	10	10	10	10
2.020 POB		1	1	1	1	1					1	1	1		1	1
2.021 CTZ	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1
2.022 DOB	[4] 5	5	5	5	5	5	[4] 5	1	1		5	5	5		5	5
2.024 SEX	1	1	1	1	1	1	1	1	1		1	1	1		1	1
2.025 RAC	1	1	1	1	1	1	1	1	1		1	1	1		1	1
2.026 SMT	10	10	10	10	10	10	10	10	10		10	10	10		10	10

Note: Shaded cells represent optional elements.
Unshaded cells represent mandatory elements.
Blank cells indicate the element is not used.

Table D-3. Summary Field Lists for Biometric Transactions

Part 1 of 3 (Maximum Occurrences of Each Element for Each Logical Record Type)

Tag Elem	AMN	CAR	CNA	CPDR	CPNU	DEK	DEU	DSPE	DSPR	ERRT	FANC	FAUF	FNDR	FVR	IIE	IIER
2.027 HGT	1	1	1	1	1	1	1	1	1		1	1	1		1	1
2.029 WGT	1	1	1	1	1	1	1	1	1		1	1	1		1	1
2.031 EYE	1	1	1	1	1	1	1	1	1		1	1	1		1	1
2.032 HAI	1	1	1	1	1	1	1	1	1		1	1	1		1	1
2.034 PAT																
2.035 PPA		1	1	1	1											
2.036 PHT		1	1	1	1											
2.037 RFP											1	1	1			
2.038 DPR	1					1	1				1	1	1			
2.039 EAD		1	1	1	1	1					1	1	1		1	1
2.040 OCP		1	1	1	1						1	1	1		1	1
2.041 RES	1	1	1	1	1	1	1				1	1	1		1	1
2.042 MIL											1	1	1		1	1
2.043 TSR				1	1							1	1			
2.045 DOA		1	1	1	1			1							1	1
2.047 ASL		2 40	2 40	2 40	2 40											
2.048 CSR	1						1									
2.051 CSL		40	40	40	40			40								

Note: Shaded cells represent optional elements.
Unshaded cells represent mandatory elements.
Blank cells indicate the element is not used.

Table D-3. Summary Field Lists for Biometric Transactions

Part 1 of 3 (Maximum Occurrences of Each Element for Each Logical Record Type)

Tag Elem	AMN	CAR	CNA	CPDR	CPNU	DEK	DEU	DSPE	DSPR	ERRT	FANC	FAUF	FNDR	FVR	IIE	IIER
2.052 RBR		1		1	1						1	1	1			
2.054 SSD		1	1	1	1			1								
2.055 SLE		[9] 1	[9] 1	[9] 1	[9] 1			1								
2.056 ICO	1	1	1	1	1	1	1	1								
2.057 FNR																
2.059 SRF																
2.060 MSG										11						
2.064 CAN																
2.067 IMA	1	1	1	1	1	1	1	1			1	1	1			
2.070 RAP	1	1		1	1	1	1				1	1	1	1		
2.071ACN																
2.073 CRI	3	3	3	3	3	3	3	3		3	3	3	3			
2.075 ERS																
2.081 UCN		1	1	1	1			1	1		1	1	1	1	1	1
2.084 AMP	[7] 9	[7] 9	[7] 9	[7] 9	[7] 9	[7] 9	[7] 9	[7] 9			[7] 9	[7] 9	[7] 9		[7] 9	[7] 9
2.085 CRN																
2.087 TAA		1	1	1	1											
2.091 RCD1																
2.092 RCD2																
2.094 CCN		1	1					1	1							

Note: Shaded cells represent optional elements. Unshaded cells represent mandatory elements. Blank cells indicate the element is not used.

Table D-3. Summary Field Lists for Biometric Transactions

Part 1 of 3 (Maximum Occurrences of Each Element for Each Logical Record Type)

Tag Elem	AMN	CAR	CNA	CPDR	CPNU	DEK	DEU	DSPE	DSPR	ERRT	FANC	FAUF	FNDR	FVR	IIE	IIER
2.098 NDR		4	4	4	4											
2.099 SAN		1	1					1	1							
2.2001 NAM1		1	1					1	1	1				1	1	1
2. 2002 NAM2		1	1					1	1	1				1	1	1
2. 2003 NAM3		1	1					1	1	1				1	1	1
2. 2004 NAM4		1	1					1	1	1				1	1	1
2. 2005 NAM5		1	1					1	1	1				1	1	1
2. 2006 CSF																
2. 2007 SDOB																
2. 2008 SNAM																
2.2011 RBVS																
2.2013 DMI								1	1							
2.2014 RBE																
2.2015 RBRO		3		3	3						3	3	3			

Note: Shaded cells represent optional elements.
Unshaded cells represent mandatory elements.
Blank cells indicate the element is not used.

Table D-3. Summary Field Lists for Biometric Transactions

Part 2 of 3 (Maximum Occurrences of Each Element for Each Logical Record Type)

Tag Elem	MAP	MPR	NFAP	NFUE	NFUF	NNDR	PPE	PPR	RBE	RBER	RBV	RBVR	RBFD	RBHN	RBDR	RBM	RBMR	RBRE	RPIS
2.001 LEN	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2.002 IDC	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2.005 RET	1	1	1	1	1	1	1	1											
2.006 ATN	1	1	1	1	1	1	1	1	1	1	1			1	1	1	1	1	1
2.007 SCO	9	9	9	9	9	9	9	9											
2.009 OCA	1	1	1	1	1	1	1	1	1	1	1								1
2.014 FBI	5		5	5	5	5	5	1	1	1	1	1	1	1	1	1	1	1	
2.015 SID	1		1		1		1	1	1	1	1	1	1	1	1	1	1	1	
2.016 SOC	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
2.017 MNU	4	4	4	4	4	3 4	4	4	4	4	4	4	4	4	4	4	4	4	
2.018 NAM	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
2.019 AKA	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	
2.020 POB	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
2.021 CTZ	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
2.022 DOB	5	5	5	5	5	5	1	1	1	1	1	1	1	1	1	1	1	1	
2.024 SEX	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
2.025 RAC	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
2.026 SMT	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	

Note: Shaded cells represent optional elements.

Unshaded cells represent mandatory elements.
Blank cells indicate the element is not used.

Table D-3. Summary Field Lists for Biometric Transactions

Part 2 of 3 (Maximum Occurrences of Each Element for Each Logical Record Type)

Tag Elem	MAP	MPR	NFAP	NFUE	NFUF	NNDR	PPE	PPR	RBE	RBER	RBV	RBVR	RBFD	RBHN	RBDR	RBM	RBMR	RBRE	RPIS
2.027 HGT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
2.029 WGT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
2.031 EYE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
2.032 HAI	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
2.034 PAT																			
2.035 PPA																			
2.036 PHT																			
2.037 RFP	1		1	1	1	1	1	1											
2.038 DPR	1	1	1	1	1	1	1	1			1								
2.039 EAD	1	1	1	1	1	1	1	1	1	1	1								
2.040 OCP	1	1	1	1	1	1	1	1	1	1	1								
2.041 RES	1	1	1	1	1	1	1	1	1	1	1								
2.042 MIL						1	1												
2.043 TSR			1	1	1	1													
2.045 DOA							1							1					
2.047 ASL							1							1					
2.048 CSR		1					1							1					

2.051 CSL							1							1					

Note: Shaded cells represent optional elements. Unshaded cells represent mandatory elements. Blank cells indicate the element is not used.

Table D-3. Summary Field Lists for Biometric Transactions

Part 2 of 3 (Maximum Occurrences of Each Element for Each Logical Record Type)

Tag Elem	MAP	MPR	NFAP	NFUE	NFUF	NNDR	PPE	PPR	RBE	RBER	RBV	RBVR	RBFD	RBHN	RBDR	RBM	RBMR	RBRE	RPIS
2.052 RBR	1		1	1	1	1												1	
2.054 SSD																			
2.055 SLE																			
2.056 ICO		1																	
2.057 FNR																			
2.2015 RBRO	3		3	3	3	3			3	3	3	3	3	3	3	3	3	3	
2.059 SRF																			
2.060 MSG																			
2.064 CAN																			
2.067 IMA	1	1	1	1	1	1													
2.070 RAP	1	1	1	1	1	1													
2.071ACN																	1		
2.073 CRI	3	3	3	3	3	1	3	3	3	3	3	3	3	3	3	3	3	3	1
2.075 ERS																			
2.081 UCN									1	1	1	1	1	1	1	1	1	1	
2.084 AMP	7 9	9	7 9	7 9	7 9	7 9	7 9	7 9	7 9	7 9	7 9	7 9	7 9	7 9	7 9	7 9	7 9	7 9	
2.085 CRN																			
2.087 TAA																			
2.091 RCD1																			
2.092 RCD2																			

2.098 NDR																			

Note: Shaded cells represent optional elements. Unshaded cells represent mandatory elements. Blank cells indicate the element is not used.

Table D-3. Summary Field Lists for Biometric Transactions

Part 2 of 3 (Maximum Occurrences of Each Element for Each Logical Record Type)

Tag Elem	MAP	MPR	NFAP	NFUE	NFUF	NNDR	PPE	PPR	RBE	RBER	RBV	RBVR	RBFD	RBHN	RBDR	RBM	RBMR	RBRE	RPIS
2.099 SAN																			
2.094 CCN																			
2.096 RPR																			1
2.2001 NAM1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2. 2002 NAM2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2. 2003 NAM3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2. 2004 NAM4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2. 2005 NAM5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2. 2006 CSF																			
2. 2007 SDOB																			
2. 2008 SNAM																			
2.2011 RBVS												1							
2.2013 DMI																			
2,2014 RBE										1									

Note: Shaded cells represent optional elements. Unshaded cells represent mandatory elements. Blank cells indicate the element is not used.

Table D-3. Summary Field Lists for Biometric Transactions

Part 3 of 3 (Maximum Occurrences of Each Element for Each Logical Record Type)

Tag Elem	RPSR	SRE	SRT	TPFS	TPIS	TPRS								
2.001 LEN	1	1	1	1	1	1								
2.002 IDC	1	1	1	1	1	1								
2.005 RET														
2.006 ATN	1	1	1	1	1	1								
2.007 SCO		9	9	9	9	9								
2.009 OCA		1	1	1	1	1								
2.014 FBI		[8] 1												
2.015 SID	1	1												
2.016 SOC														
2.017 MNU														
2.018 NAM		1												
2.019 AKA														
2.020 POB														
2.021 CTZ														
2.022 DOB														
2.024 SEX				1	1	1								
2.025 RAC														
2.026 SMT														

Tag Elem	RPSR	SRE	SRT	TPFS	TPIS	TPRS								
2.027 HGT														
2.029 WGT														

Note: Shaded cells represent optional elements. Unshaded cells represent mandatory elements. Blank cells indicate the element is not used.

Table D-3. Summary Field Lists for Biometric Transactions

Part 3 of 3 (Maximum Occurrences of Each Element for Each Logical Record Type)

Tag Elem	RPISR	SRE	SRT	TPFS	TPIS	TPRS				
2.031 EYE										
2.032 HAI										
2.034 PAT				1	7 1	7 1				
2.035 PPA										
2.036 PHT										
2.037 RFP										
2.038 DPR										
2.039 EAD			1	1	1	1				
2.040 OCP			1	1	1	1				
2.041 RES			1	1	1	1				
2.042 MIL		1								
2.043 TSR		1								
2.045 DOA		1								
2.047 ASL										
2.048 CSR										
2.051 CSL										

Note: Shaded cells represent optional elements. Unshaded cells represent mandatory elements. Blank cells indicate the element is not used.

Table D-3. Summary Field Lists for Biometric Transactions

Part 3 of 3 (Maximum Occurrences of Each Element for Each Logical Record Type)

Tag Elem	RPSR	SRE	SRT	TPFS	TPIS	TPRS				
2.052 RBR										
2.054 SSD										
2.055 SLE										
2.056 ICO										
2.057 FNR				13	13	13				
2.2015 RBRO										
2.059 SRF	1	1								
2.060 MSG			1							
2.064 CAN			25							
2.067 IMA										
2.070 RAP										
2.071 ACN		1								
2.073 CRI	3	3	3	3	3	3				
2.075 ERS										
2.081 UCN		1								
2.084 AMP		2 9								
2.085 CRN		8 1								
2.087 TAA		1								
2.091 RCD1				1	1	1				
2.092 RCD2				1	1	1				
2.098 NDR				1	1					

Note: Shaded cells represent optional elements. Unshaded cells represent mandatory elements. Blank cells indicate the element is not used.

Table D-3. Summary Field Lists for Biometric Transactions
Part 3 of 3 (Maximum Occurrences of Each Element for Each Logical Record Type)

Tag Elem	RPSR	SRE	SRT	TPFS	TPIS	TPRS					
2.099 SAN		1									
2.094 CCN		1									
2.096 RPR											
2.2001 NAM1	1	1	1	1	1	1					
2. 2002 NAM2	1	1	1	1	1	1					
2. 2003 NAM3	1	1	1	1	1	1					
2. 2004 NAM4	1	1	1	1	1	1					
2. 2005 NAM5	1	1	1	1	1	1					
2. 2006 CSF											
2. 2007 SDOB			1	1	1	1					
2. 2008 SNAM			1	1	1	1					
2.2011 RBVS											
2.2013 DMI											
2.2014 RBE											

Note: Shaded cells represent optional elements. Unshaded cells represent mandatory elements. Blank cells indicate the element is not used.

APPENDIX D REFERENCE NOTES

1. For this transaction, this field must contain a "Y."
2. The DOO portion of this field is optional, but should be provided if known.
3. This field is mandatory for applicant submissions from DIS and OPM.
4. It is obviously not expected that full Name and Date of Birth of Unknown Deceased and Amnesia victims will be known. These fields, however, must be submitted with formatted information.
5. FBI number must be present if known for inquiry prints.
6. Field is mandatory if fingerprint submission is from an NFF State.
7. This field is mandatory if any finger is either amputated or a rolled impression was not made.
8. Either an FBI number or a Civil Record Number (CRN) may be returned, but not both, depending upon transaction results. No number (neither FBI nor CRN) is returned when none is assigned (*e.g.*, Non-Ident with RET = "N"). FBI number will be returned for any submission resulting in an Ident against the Criminal File or when a Non-Ident results in an add to the Criminal File. CRN will be returned when a submission results in an Ident against a subject in the Civil file only.
9. CSL and ASL must be included where submission includes SLE.

APPENDIX E

Table E-1. Summary Field Lists for Latent Transactions (Part 1 of 2)

(Maximum Occurrences of Each Field for Each Logical Record Type)

Tag	Elem	LFS	CFS	MCS	ELR	LSR	NAR	ERRL	LFIS	LFFS	LPNQ	SRL	LPNR	ULM	ULD	ULAC	ULAR
2.001	LEN	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2.002	IDC	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2.003	FFN	1	[1] 1	[1] 1	[1] 1	1	[1] 1	1									
2.004	QDD																
2.005	RET		1	1													
2.006	ATN	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2.007	SCO	9	9	9	9	9	9	9	9	9		9			9	9	
2.010	CIN	5	5	5	5	5	5	5	1	1	1	1	1	1	1	1	1
2.011	CIX	5	5	5	5	5	5	5	1	1	1	1	1	1	1	1	1
2.012	LCN	1	1	1	1	1	1	1	[7] 1	[7] 1		[7] 1		1	1	1	1
2.013	LCX	1	1	1	1	1	1	1	[7] 1	[7] 1		[7] 1		1	1	1	1
2.014	FBI		1	1		[5] 1								1			
2.015	SID		1	1		[5] 5											
2.016	SOC		4	4		[6] 4											
2.017	MNU	4	4	4	4	[6] 4	4	4									
2.018	NAM		1	1		[5] 1								1			
2.019	AKA		10	10		[6] 10								10			
2.020	POB	1	1	1		[5] 1			1	1	1			1			
2.021	CTZ		1	1		[6] 1								1			
2.022	DOB		5	5		[6] 5								5			
2.023	AGR	1							1	1	1						
2.024	SEX	1	1	1		[6] 1			1	1	1			1			

2.025	RAC	1	1	1		[6] 1			1	1	1			1			
2.026	SMT	10	10	10		[6] 10			10	10	10			10			
2.027	HGT		1	1		[6] 1								1			
2.028	HTR	1							1	1	1						
2.029	WGT		1	1		[6] 1								1			
2.030	WTR	1							1	1	1						
2.031	EYE	1	1	1		[6] 1			1	1	1			1			
2.032	HAI	1	1	1		[6] 1			1	1	1			1			
2.033	FPC					1											
2.034	PAT	1	1	1		[6] 1			1	1	1						
2.035	PPA		1			1								1			
2.036	PHT		1	1		1								1			
2.037	RFP			1													
2.038	DPR		1	1	1	1								1			
2.039	EAD		1	1													
2.040	OCP		1	1													
2.041	RES		1	1													
2.042	MIL		1	1	1												
2.044	GEO	5			5				5	5	5						
2.045	DOA		[4] 1	1	1												
2.046	DOS		1	1	1												
2.047	ASL	[3] 40	40	[3] 40	[3] 40												
2.049	EID								1	1	1						
2.051	CSL		[10] 40	[10] 40													
2.053	OFC	1	1	1	1												
2.054	SSD		1	1													
2.055	SLE		[10] 1	[10] 1													
2.056	ICO		[4] 1	1													

2.059	SRF					1											

Note: Shaded cells represent optional elements. Unshaded cells represent mandatory elements. Blank cells indicate the element is not used.

Table E-1. Summary Field Lists for Latent Transactions (Part 1 of 2)
(Maximum Occurrences of Each Field for Each Logical Record Type)

Tag	Elem	LFS	CFS	MCS	ELR	LSR	NAR	ERRL	LFIS	LFFS	LPNQ	SRL	LPNR	ULM	ULD	ULAC	ULAR
2.060	MSG					1	1	11						1			
2.061	CST	1	1	1	1	1	1	1									
2.062	IMT	10	10	10	10												
2.063	PTD	1	1														
2.064	CAN											99					
2.065	RSR																
2.067	IMA	1	1	1	1				1								
2.069	ETC																
2.070	RAP	1	1	1	1												
2.071	ACN					1	1										
2.073	CRI	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
2.074	FGP	[8] 10		1	[8] 10				[8] 10	[8] 10	10	99		[8] 10			
2.075	ERS				1												
2.076	PRI	1							1	1							
2.077	CFS																
2.078	PEN												1				
2.079	NCR								1	1		1					
2.083	ULF	1							1	1		1					
2.086	SCNA											1		1	1	1	1
2.088	NOT	1	1	1	1												
2.089	MSC											99					
2.091	RCD1								1	1	1						
2.092	RCD2								1	1	1						
2.098	NDR								4	4							
2.093	SLCN																

2.2006	CSF																

Note: Shaded cells represent optional elements. Unshaded cells represent mandatory elements. Blank cells indicate the element is not used.

Table E-2. Summary Field Lists for Latent Transactions (Part 2 of 2)
(Maximum Occurrences of Each Field for Each Logical Record Type)

Tag	Elem	ULDR	UULD	LRSQ	LSMQ	LRSR	LSMR	ERRA	LSIR	SPCA	SPCAC	SPCD	SPCDC	SPCM	SPCMC
2.001	LEN	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2.002	IDC	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2.003	FFN														
2.004	QDD				1		1								
2.005	RET														
2.006	ATN	1	1	1	1	1	1	1		1	1	1	1	1	1
2.007	SCO				9		9	9							
2.010	CIN	1	1		[9] 200		200		1						
2.011	CIX	1	1		[9] 200		200		1						
2.012	LCN	1	1												
2.013	LCX	1	1												
2.014	FBI									1	1	1	1	1	1
2.015	SID														
2.016	SOC									4	4	4	4	4	4
2.017	MNU									4	4	4	4	4	4
2.018	NAM									1	1	1	1	1	1
2.019	AKA									10	10	10	10	10	10
2.020	POB									1	1	1	1	1	1
2.021	CTZ									1	1	1	1	1	1
2.022	DOB									1	1	1	1	1	1
2.023	AGR														
2.024	SEX									1	1	1	1	1	1
2.025	RAC									1	1	1	1	1	1
2.026	SMT									10	10	10	10	10	10

2.027	HGT									1	1	1	1	1	1
2.028	HTR														
2.029	WGT									1	1	1	1	1	1
2.030	WTR														
2.031	EYE									1	1	1	1	1	1
2.032	HAI									1	1	1	1	1	1
2.033	FPC														
2.034	PAT														
2.035	PPA														
2.036	PHT														
2.037	RFP									1	1	1	1	1	1
2.038	DPR									1	1	1	1	1	1
2.039	EAD														
2.040	OCP														
2.041	RES														
2.042	MIL														
2.044	GEO														
2.045	DOA														
2.046	DOS														
2.047	ASL														
2.049	EID								1	1	1	1	1	1	1

Note: Shaded cells represent optional elements. Unshaded cells represent mandatory elements. Blank cells indicate the element is not used.

Table E-2. Summary Field Lists for Latent Transactions (Part 2 of 2)
(Maximum Occurrences of Each Field for Each Logical Record Type)

Tag	Elem	ULDR	UULD	LRSQ	LSMQ	LRSR	LSMR	ERRA	LSIR	SPCA	SPCAC	SPCD	SPCDC	SPCM	SPCMC
2.051	CSL														
2.053	OFC														
2.054	SSD														
2.055	SLE														
2.056	ICO														
2.059	SRF								[11] 1						
2.060	MSG		1					11							
2.061	CST														
2.062	IMT														
2.063	PTD														
2.064	CAN														
2.065	RSR					1									
2.067	IMA														
2.069	ETC						200								
2.070	RAP														
2.071	ACN														
2.073	CRI	3	3	3	3	3	3	3	3	3	3	3	3	3	3
2.074	FGP														
2.075	ERS														
2.076	PRI				200		200								
2.077	CFS				200		200								
2.078	PEN														
2.079	NCR														
2.083	ULF														

2.086	SCNA	1	1		[9]200		200								
2.088	NOT								1	1	1	1	1	1	1
2.089	MSC														
2.091	RCD1														
2.092	RCD2														
2.093	SPCN									1		1		1	
2.098	NDR									1		1		1	
2.2006	CSF									1				1	

Note: Shaded cells represent optional elements. Unshaded cells represent mandatory elements. Blank cells indicate the element is not used.

APPENDIX E REFERENCE NOTES

1. If the originator of this TOT is the FBI, then the field is mandatory.
2. The DOO portion of this field is optional, but should be provided if known.
3. The AOL field for this TOT is optional. If provided, the DOO portion of this field is optional, but should be provided if known.
4. Mandatory whenever comparison fingerprints are of a subject.
5. This field will be returned in the response if subject identification is made.
6. Field is optional unless Ident has been made and subject criminal history was requested in submission.
7. If known, mandatory to enter.
8. If more than one fingerprint image is submitted, this field is mandatory.
9. Either CIN/CIX or SCNA is mandatory if QDD = "C."
10. ASL must be included where submission includes CSL. CSL and ASL must be included where submission includes SLE.
11. SRF for LSIR transactions will contain "IDENT" (I),"Non-IDENT" (N), or "PENDING" (P).

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APPENDIX F

IAFIS IMAGE QUALITY SPECIFICATIONS

1.0 Scope and Purpose

These specifications apply to: (1) systems that scan and capture fingerprints[3] in digital, softcopy form, including hardcopy scanners such as ten-print card scanners, and live scan devices, altogether called "fingerprint scanners"; and (2) systems utilizing a printer to print digital fingerprint images to hardcopy called "fingerprint printers." These specifications provide criteria for ensuring the image quality of fingerprint scanners and printers that input fingerprint images to, or generate fingerprint images from within, the Integrated Automated Fingerprint Identification System (IAFIS).

Digital softcopy images obtained from fingerprint scanners must have sufficient quality to allow the following functions to be performed: (l) conclusive fingerprint comparisons (identification or non-identification decision), (2) fingerprint classification, (3) automatic feature detection, and (4) overall Automated Fingerprint Identification System (AFIS) search reliability. The fingerprint comparison process requires a high-fidelity image. Finer detail, such as pores and incipient ridges, are needed because they can play an important role in the comparison.

The fingerprint examiners in the IAFIS environment will depend upon softcopy-displayed images of scanned fingerprints to make comparisons, but will also need to accept and utilize hardcopy images in certain instances. For example, some contributors may print cards from live scan or card scan systems for submission to the FBI. These hardcopy prints will be obtained from printers that include printing algorithms optimized for fingerprints. The printer's principal function is to produce life-size prints of digital fingerprints that have met IAFIS format requirements and provide sufficient print quality to support fingerprint comparisons, *i.e.*, support identification or non-identification decisions.

The image quality requirements covered in the following Sections 2 and 3 for fingerprint scanners, Section 4 for fingerprint printers, and Section 5 for fast-track requirements have associated test procedures that are described in detail in [Test Procedures].

These test procedures will be used by the FBI principally for certification of fingerprint systems; they may also be used in acceptance testing and in performance capability demonstrations as an indication of capability to perform. Equipment shall be tested to meet the requirements in normal operating modes, *e.g.*, scanners shall not be tested at slower-than-normal operating speeds in an attempt to meet geometric accuracy specifications. A vendor may recommend alternate testing methods if the test procedures given in this appendix are not applicable or cannot be applied to the particular system under test.

[3] The term "fingerprint" in this appendix may also include palmprint, whole hand print, or a print from other parts of the human body.

2.0 Fingerprint Scanner

The fingerprint scanner must be capable of producing images that exhibit good geometric fidelity, sharpness, detail rendition, gray-level uniformity, and gray-scale dynamic range, with low noise characteristics. The images must be true representations of the input fingerprints without creating any significant artifacts, anomalies, false detail, or cosmetic image restoration effects.

The scanner's final output resolution in both sensor detector row and column directions shall be in the range: (R–0.01R) to (R+0.01R) and shall be gray-level quantized to eight bits per pixel (256 gray-levels). The magnitude of "R" is either 500 pixels per inch (ppi) or 1,000 ppi; a scanner may be certified at either one or both of these resolution levels. The scanner's true optical resolution shall be greater than or equal to R.

A scanner intended to scan standard 8.0 by 8.0 inch ten-print cards, *e.g.*, applicant fingerprint card type FD-258 or FD-249, shall be capable of capturing an area of at least 5.0 by 8.0 inches, which captures all 14 printblocks, either each printblock as a separate image or all printblocks together as a single image. Table F-1 gives the preferred capture sizes applicable to both card scan and live scan systems. Scanner capture dimensions should never be less than 90 percent of those given in Table F-1, with the exception that, when scanning fingerprint cards, the card form dimensions take precedence.

Table F-1. Preferred Capture Sizes

	Preferred Width (inches)	Preferred Height (inches)
roll finger	1.6*	1.5
plain thumb	1.0	2.0
plain 4-fingers (sequence check)	3.2	2.0
plain 4-fingers (identification flat)	3.2	3.0
full palm	5.5	8.0
half palm	5.5	5.5
writer's palm	1.75	5.0

* Live scanner must be capable of capturing at least 80% of full roll arc length, where full roll arc length is defined as arc length from nail edge to nail edge.

2.1 Linearity

Requirement:
When measuring a stepped series of uniform target reflectance patches (*e.g.*, step tablet) that substantially cover the scanner's gray range, the average value of each patch shall be within 7.65

gray-levels of a linear, least squares regression line fitted between target reflectance patch values (independent variable) and scanner output gray-levels (dependent variable).

Background:
All targets used in IQS compliance verification are expected to be scanned with the scanner operating in a linear input/output mode. Linearity enables valid comparisons of test measurements with requirements, *e.g.*, a system's spatial frequency response in terms of Modulation Transfer Function is, strictly speaking, a linear systems concept. Linearity also facilitates comparisons between different scanners through the "common ground" concept. In atypical cases, a small amount of smooth, monotonic nonlinearity may be acceptable for the test target scans, *i.e.*, when it is substantially impractical and unrepresentative of operational use, to force linearity on the scanner under test (*e.g.*, some live scan devices). Linearity is not a requirement for the operational or test fingerprint scans, which allows for processing flexibility to overcome inadequate tonal characteristics of fingerprint samples.

2.2 Geometric Accuracy

Requirement (across-bar):
When scanning a multiple, parallel bar target, in both vertical bar and horizontal bar orientations, the absolute value of the difference between the actual distance across parallel target bars and the corresponding distance measured in the image shall not exceed the following values for at least 99.0 percent of the tested cases in each printblock measurement area and in each of the two orthogonal directions.

For 500-ppi scanner:

$D \leq 0.0007$, for $0.00 < X \leq 0.07$

$D \leq 0.01X$, for $0.07 \leq X \leq 1.50$

for 1,000-ppi scanner:

$D \leq 0.0005$, for $0.00 < X \leq 0.07$

$D \leq 0.0071X$, for $0.07 \leq X \leq 1.5$

where:

$D = |Y-X|$
X = actual target distance
Y = measured image distance
D, X, Y are in inches.

Requirement (along-bar):
When scanning a multiple, parallel bar target, in both vertical bar and horizontal bar orientations, the maximum difference in the horizontal or vertical direction, respectively, between the locations of any two points within a 1.5-inch segment of a given bar image shall not exceed 0.016 inches for at least 99.0 percent of the tested cases in each printblock measurement area and in each of the two orthogonal directions.

Background:
In this Section 2.2, the phrase: *multiple, parallel bar target* refers to a Ronchi target, which consists of an equal-width bar and space square wave pattern at 1.0 cy/mm, with high contrast ratio and fine edge definition. This target is also used to verify compliance with the scanner resolution requirement given in Section 2.0 of this appendix.

Across-bar geometric accuracy is measured across the imaged Ronchi target bars that substantially cover the total image capture area. The 500-ppi requirement corresponds to a positional accuracy of ± 1.0 percent for distances between 0.07 and 1.5 inches and a constant ± 0.0007 inches (1/3 pixel) for distances less than or equal to 0.07 inches. The 1,000-ppi requirement corresponds to a positional accuracy of ± 0.71 percent for distances between 0.07 and 1.5 inches and a constant ± 0.0005 inches (1/2 pixel) for distances less than or equal to 0.07 inches.

This measurement procedure is also used to verify the ppi resolution requirement given in Section 2.0 of this appendix.

Along-bar geometric accuracy is measured along the length of an individual Ronchi target bar in the image. For a given horizontal bar, for example, the maximum difference between bar center locations (in vertical direction), determined from bar locations measured at multiple points along a 1.5" bar segment length, is compared to the maximum allowable difference requirement (analogously for vertical bar). This requirement is to ensure that pincushion or barrel distortion over the primary area of interest, *i.e.*, a single fingerprint, is not too large.

2.3 Spatial Frequency Response

Requirements:
The spatial frequency response shall be measured using a continuous tone sine wave target denoted as Modulation Transfer Function (MTF) measurement unless the scanner cannot obtain adequate tonal response from this target, in which case a bi-tonal bar target shall be used to measure the spatial frequency response, denoted as Contrast Transfer Function (CTF) measurement. When measuring the sine wave MTF, it shall meet or exceed the minimum modulation values given in Table 2-1 in both the detector row and detector column directions and over any region of the scanner's field of view. When measuring the bar CTF, it shall meet or exceed the minimum modulation values defined by equation 2-1 or equation 2-2 (whichever applies) in both the detector row and detector column directions and over any region of the scanner's field of view. CTF values computed from equations 2-1 and 2-2 for nominal test frequencies are given in Table 2-2.

None of the MTF or CTF modulation values measured at specification spatial frequencies shall exceed 1.05.

The output sine wave image or bar target image shall not exhibit any significant amount of aliasing.

Table F-2. MTF Requirement Using Sine Wave Target

Frequency (cy/mm)	Minimum Modulation for 500-ppi Scanner	Minimum Modulation for 1,000-ppi Scanner
1	0.905	0.925
2	0.797	0.856
3	0.694	0.791
4	0.598	0.732
5	0.513	0.677
6	0.437	0.626
7	0.371	0.579
8	0.312	0.536
9	0.255	0.495
10	0.200	0.458
12		0.392
14		0.336
16		0.287
18		0.246
20		0.210

Note: Testing at 7 and 9 cy/mm is not a requirement if these frequency patterns are absent from the sine wave target.

Table F-3. CTF Requirement Using Bar Target (Nominal Test Frequencies)

Frequency (cy/mm)	Minimum Modulation for 500-ppi Scanner	Minimum Modulation for 1,000-ppi Scanner
1.0	0.948	0.957
2.0	0.869	0.904
3.0	0.791	0.854
4.0	0.713	0.805
5.0	0.636	0.760
6.0	0.559	0.716
7.0	0.483	0.675
8.0	0.408	0.636
9.0	0.333	0.598
10.0	0.259	0.563
12.0		0.497
14.0		0.437
16.0		0.382
18.0		0.332
20.0		0.284

It is not required that the bar target contain the exact frequencies listed in Table 2-2; however, the target does need to cover the listed frequency range and contain bar patterns close to each of the listed frequencies. The following equations are used to obtain the specification CTF modulation values when using bar targets that contain frequencies not listed in Table 2-2.

500-ppi scanner, for f = 1.0 to 10.0 cy/mm:

$$CTF = 3.04105E-04 * f^2 - 7.99095E-02 * f + 1.02774 \qquad \text{(eq.2-1)}$$

1,000-ppi scanner, for f = 1.0 to 20.0 cy/mm:

$$CTF = -1.85487E-05 * f^3 + 1.41666E-03 * f^2 - 5.73701E-02 * f + 1.01341 \qquad \text{(eq.2-2)}$$

<u>Background</u>:
For MTF assessment, the single, representative sine wave modulation in each imaged sine wave frequency pattern is determined from the sample modulation values collected from within that pattern. The sample modulation values are computed from the maximum and minimum levels corresponding to the "peak" and adjacent "valley" in each sine wave period. For a sine wave image, these maximum and minimum levels represent the image gray-levels that have been locally averaged in a direction perpendicular to the sinusoidal variation and then mapped through a calibration curve into target reflectance space. Sample image modulation in target reflectance space is then defined as:

modulation = (maximum - minimum) / (maximum + minimum)

The calibration curve is the curve of best fit between the image gray-levels of the density patches in the sine wave target and the corresponding target reflectance values. [It is assumed that sine wave target modulations and target density patch values are supplied by the target manufacturer.] The scanner MTF at each frequency is then defined as:

MTF = peak image modulation / target modulation

For CTF assessment, the modulations are determined directly in image space, normalized by the image modulation at zero frequency, instead of using a calibration curve. The scanner CTF at each frequency is then defined as:

CTF = peak image modulation / (zero frequency image modulation)

The bar target must contain at least 10 parallel bars at each of the higher spatial frequencies (~50% Nyquist to Nyquist frequency), which helps to ensure capture of optimum scanner – target phasing and aids investigation of potential aliasing. The bar target must also contain a very low frequency component, *i.e.*, a large square, bar, or series of bars whose effective frequency is less than 2.5 percent of the scanner's final output resolution. This low frequency component is used in normalizing the CTF; it must have the same density (on the target) as the higher frequency target bars.

The upper limit of 1.05 modulation is to discourage image processing that produces excessive edge sharpening, which can add false detail to an image.

Aliasing on sine wave images or bar images may be investigated by quantitative analysis and from visual observation of the softcopy-displayed image.

2.4 Signal-to-Noise Ratio

Requirement:
The white signal-to-noise ratio and black signal-to-noise ratio shall each be greater than or equal to 125.0 in at least 97.0 percent of respective cases within each printblock measurement area.

Background:
The signal is defined as the difference between the average output gray-levels obtained from scans of a uniform low reflectance and a uniform high reflectance target, measuring the average values over independent 0.25 by 0.25 inch areas within each printblock area. The noise is defined as the standard deviation of the gray-levels in each of these quarter-inch measurement areas. Therefore, for each high reflectance, low reflectance image pair there are two SNR values, one using the high reflectance standard deviation and one using the low reflectance standard deviation. To obtain a true measure of the standard deviation, the scanner is set up such that the white average gray-level is several gray-levels below the system's highest obtainable gray-level and the black average gray-level is several gray-levels above the system's lowest obtainable gray-level.

2.5 Gray-Level Uniformity

Requirement – adjacent row, column uniformity:
At least 99.0 percent of the average gray-levels between every two adjacent quarter-inch-long rows and 99.0 percent between every two adjacent quarter-inch-long columns within each imaged printblock area shall not differ by more than 1.0 gray-levels when scanning a uniform low-reflectance target and shall not differ by more than 2.0 gray-levels when scanning a uniform high-reflectance target.

Requirement – pixel-to-pixel uniformity:
For at least 99.9 percent of all pixels within every independent 0.25 by 0.25 inch area located within each imaged printblock area, no individual pixel's gray-level shall vary from the average by more than 22.0 gray-levels when scanning a uniform high-reflectance target and shall not vary from the average by more than 8.0 gray-levels when scanning a uniform low-reflectance target.

Requirement – small area uniformity:

For every two independent 0.25 by 0.25 inch areas located within each imaged printblock area, the average gray-levels of the two areas shall not differ by more than 12.0 gray-levels when scanning a uniform high-reflectance target and shall not differ by more than 3.0 gray-levels when scanning a uniform low-reflectance target.

Background:
Measurements are made over multiple, independent test areas on a printblock-by-printblock basis. (For a live scanner, the entire capture area is normally considered a single printblock

area). To obtain a true measure of the standard deviation, the scanner is set up such that the white average gray-level is several gray-levels below the system's highest obtainable gray-level and the black average gray-level is several gray-levels above the system's lowest obtainable gray-level.

2.6 Fingerprint Image Quality

The scanner shall provide high quality fingerprint images; the quality will be assessed with respect to the following requirements.

Requirement – Fingerprint Gray Range:
At least 80.0 percent of the captured individual fingerprint images shall have a gray-scale dynamic range of at least 200 gray-levels, and at least 99.0 percent shall have a dynamic range of at least 128 gray-levels.

Background:
Card and live scan systems at a booking station have some control over dynamic range on a subject-by-subject or card-by-card basis, *e.g.*, by rolling an inked finger properly or by adjusting gain on a livescanner. However, with central site or file conversion systems where a variety of card types and image qualities are encountered in rapid succession, automated adaptive processing may be necessary. The eight-bits-per-pixel quantization of the gray-scale values for very low contrast fingerprints needs to more optimally represent the reduced gray-scale range of such fingerprints, but without significant saturation. The intent is to avoid excessively low contrast images without adding false detail.

Dynamic range is computed in terms of number of gray-levels present that have signal content, measuring within the fingerprint area and substantially excluding white background and card format lines, boxes, and text.

For card scanners, compliance with these dynamic range requirements will be verified using a statistically stratified sample set of fingerprint cards assembled by the FBI. The test fingerprint card set may include cards with difficult-to-handle properties, *e.g.*, tears, holes, staples, glued-on photos, or lamination, for testing card scanners that have automatic document feeder mechanisms. For live scanners, compliance will be verified with sets of livescans produced by the vendor.

Requirement – Fingerprint Artifacts and Anomalies:
Artifacts or anomalies detected on the fingerprint images that are due to the scanner or image processing shall not significantly adversely impact support to the functions of conclusive fingerprint comparisons (identification or non-identification decision), fingerprint classification, automatic feature detection, or overall Automated Fingerprint Identification System (AFIS) search reliability.

Background:
The fingerprint images will be examined to determine the presence of artifacts or anomalies that are due to the scanner or image processing; assessment may include measurements to quantify their degree of severity and significance. Image artifacts or anomalies such as the following non-inclusive list may be investigated.

- jitter noise effects
- sharp truncations in average gray-level between adjacent printblocks
- gaps in the gray-level histograms, *i.e.*, zero pixels in intermediate gray-levels, or clipping to less than 256 possible gray-levels
- imaging detector butt joints
- noise streaks
- card bleed-through
- gray-level saturation

Requirement – Fingerprint Sharpness & Detail Rendition:
The sharpness and detail rendition of the fingerprint images, due to the scanner or image processing, shall be high enough to support the fingerprint functions stated in Section 1, paragraph 2.

Background:
Fingerprint sharpness and detail rendition that is due to the scanner or image processing may be investigated by employing suitable, objective image quality metrics, as well as by visual observation of the softcopy-displayed image.

3.0 Identification Flats

Traditional fingerprint sets contain both rolled and plain fingerprint images. The rolled impressions support the search processing and identification functions and the plain impressions are used primarily for sequence verification. Fingerprinting systems designed for "Identification Flats" civilian background checks capture a single set of plain impressions. This single set of plain impressions must support finger sequence verification, search processing, and identification.

Image quality has historically been a challenge for civil background checks. Some programs require a large number of relatively low-volume capture sites, which makes training difficult. A key goal for identification flats scanners is to reduce the need for training so that inexperienced users consistently capture quality fingerprint images.

The identification flats scanner shall meet all of the requirements stated in Section 2 of this appendix as well as the following requirements.

Requirement – Capture Protocol:
The system shall provide a simple capture protocol.

Background:

A simple capture protocol supports the inexperienced user's ability to more consistently capture high quality fingerprints. Identification flats collection systems will be evaluated for their ability to produce a very small rate of failure to enroll in an operational setting. Systems with a minimum capture area of 3.2 inches (width) by 2.9 inches (height) that can capture four fingers simultaneously in an upright position will be considered in compliance with the simple capture protocol requirement. Other capture approaches will require specific testing and documentation.

Requirement – Verifiable Finger Sequence Data:
The method of capturing the fingers shall result in very low probability of error in the finger numbers.

Background:
The fingerprinting system's capture protocol will be evaluated for its ability to capture verifiable finger sequence data. Systems with a minimum capture area of 3.2 inches (width) by 2.9 inches (height) that capture four fingers simultaneously in an upright position will be considered in compliance with the finger sequence requirements. Other capture approaches will require specific testing and documentation.

4.0 Fingerprint Printer

Requirement:
The fingerprint printer, consisting of a printer and specialized print algorithm, must be capable of producing hardcopy images that exhibit good geometric fidelity, sharpness, detail rendition, gray-level uniformity, and gray-scale dynamic range characteristics, with low noise, no significant creation of false detail, and with the capability to support magnified viewing of the print without breakup of the virtual fingerprint image presented to the eye. This printer is expected to provide high throughput, good repeatability, good print permanency characteristics, and low cost per copy. A typical fingerprint printer is a gray-scale laser printer[4] with 1,200 black/white dots per inch resolution combined with a printing algorithm that typically includes image contrast and printer gamma/highlight/lowlight adjustments, image rescaling, and an error diffusion model with randomized dot dither printing applied to the rescaled image.

The print system's principal function is to produce life-size prints of digital fingerprints that have met IAFIS format requirements as specified in EBTS and ANSI/NIST and to provide sufficient print quality to support fingerprint comparisons, *i.e.*, support identification or non-identification decisions. The printer should also have the capability to print gray-scale mug shots and property/evidence photos (not necessarily using a fingerprint printing algorithm), as well as print black & white documents containing text and graphics, onto 8.5 x 11.0 inch paper.

[4] In this appendix, "laser printer" refers to a type of printer in which a laser beam "draws" an electrostatic image of an input signal onto a drum. Toner (typically dry powder) is then transferred to the charged areas of the drum, which then transfers the toner onto paper, where it is fused by heat, creating a black/white/gray image.

A required printer resolution is 500 ppi, which produces the required life-size print when the input digital fingerprint is 500 ppi or when a 1,000-ppi digital fingerprint is down-scaled to 500 ppi prior to printing. In both cases, all other 500-ppi printer requirements must also be met.

Background:
Verification of the specific performance requirements in Section 4 of this appendix is accomplished by evaluating the printer's output print of an FBI-designated test set of digitized fingerprints and FBI-designated digital test target. Requirements compliance verification is performed by a combination of visual assessments of the test prints (aided by visual instruments) and computer-aided assessments of scanned digital images of the test prints. With respect to those requirements that depend on assessments of print scans for compliance verification, the scan resolution is expected to be twice the required gray-scale print resolution, *e.g.*, a print with 500-ppi resolution is scanned at 1,000 ppi, and the scanner is expected to be setup in a calibrated linear input/output, grayscale reflectance capture mode.

4.1 Spatial Frequency Response

Requirement:
The printer shall provide sufficient spatial frequency response to support visually resolving the required printer resolution in orthogonal directions on the print.

Background:
Resolution verification is performed by printing high-contrast digital bar targets and visually inspecting the print under magnification. (When employing a laser printer with a fingerprint printing algorithm, it is recognized and accepted that the effective resolution may vary in complex image areas such as a fingerprint.)

The resolution limit is a single point on the spatial frequency response curve; the entire curve may be measured by scanning the print of an appropriate target, performing appropriate computer-aided assessment on the scan, and comparing results to a minimally acceptable spatial frequency response curve.

4.2 Gray-levels

Requirement:
At least 16 gray-levels shall be visually distinguishable on the print.

Background:
Visual observation of the print of a digital target containing a step tablet is used to verify the 16-gray-level requirement. A higher number of gray-levels is expected to be distinguishable by appropriate computer-aided assessment of the scanned image of the print.

4.3 Dynamic Range

Requirement:

The printer shall have the capability to print an input digital image gray range of at least 150, excluding print black saturation and print white saturation.

Background:
The print of a digital step tablet is scanned, each pixel's output gray-level value is converted to the corresponding print reflectance value, and the average print reflectance value within each step is computed. A plot of step average print reflectance versus input digital step tablet gray-level must result in a gray range of at least 150, excluding any saturation on the low end (print black reflectance) and high end (print white reflectance). (The scanner output gray-level to print reflectance conversion is established by generating the scanner's input/output curve using a calibrated step tablet.)

4.4 Geometric Accuracy and Print Scale

Requirement (across-bar):
When printing a digital bar target containing multiple, parallel bars, the absolute value of the difference between the measured distance across parallel bars on the print and the correct distance on the print shall not exceed the following values for at least 97 percent of the tested cases in each direction (vertical and horizontal).

$$D \leq 0.001, \qquad \text{for } 0.00 < X \leq 0.07$$

$$D \leq 0.015X, \qquad \text{for } 0.07 < X \leq 1.50$$

where:

$D = |Y-X|$
X = correct distance = digital target pixels / required print resolution
Y = measured distance on print
D, X, Y are in inches

Requirement (along-line):
Straight target lines printed parallel to or at a 45-degree angle to the paper or card edges shall be straight on the print with no significant waviness, bow, or "staircasing."

Background:
The across-bar requirement corresponds to a positional accuracy of ± 1.5 percent for distances greater than 0.07 inches and less than or equal to 1.5 inches and a constant ± 0.001 inches for distances less than or equal to 0.07 inches. With a 500 ppi-required print resolution, a digital bar target with a period of 18 pixels is used, which corresponds to a bar frequency of 500 / (25.4*18) cy/mm on the print, when printed life-size. The measured distance on the print can be obtained by scanning the print and applying computer-assisted assessment on the resulting digital image. The requirement takes into account the geometric errors inherent in a good quality scanner. For life-size printing, the print scale error is measured over a distance in the 0.07 to 1.50 inch range. Print scale error is equal to: (correct distance - measured distance) / correct distance. For life-size printing at 500 ppi, a 1.5 percent allowable error in distance, measured in inches, is equivalent to an allowable print ppi error equal to ± 7.5 ppi.

The along-line requirement can be assessed visually, aided, *e.g.*, by a straight-edge and magnifying lens.

4.5 Noise

Requirement:
For a required printer resolution of 500 ppi, the noise magnitude shall be less than 0.120 at each average print reflectance level when noise magnitude is defined as the standard deviation of print reflectance values within an area on the print corresponding to a constant gray-level on the input digital target. (Print reflectance is measured in fractional units: 0.0 to 1.0 range.)

Background:
A digital step tablet is printed, the print is scanned at 1000 ppi, each pixel's output gray-level value is converted to the corresponding print reflectance value, and the standard deviation of print reflectance values within each step is computed. The scanner output gray-level to print reflectance conversion is established by generating the scanner's input/output curve using a calibrated step tablet.

4.6 Print Polarity and Color

Requirement:
The printed fingerprints shall appear as dark gray-to-black ridges on a light gray-to-white background.

4.7 Print Permanence

Requirement:
The printed fingerprints shall not smear or smudge with normal handling.

4.8 Print Stability

Requirement:
Both the fingerprints and the card stock or paper on which they are printed shall retain their visually neutral (black, white, gray) color over time.

4.9 Hazardous Materials

Requirement:
The prints shall not produce any health hazard as a result of handling. They shall not produce any noxious, annoying, or unpleasant odors when accumulated in large numbers and handled in areas having limited ventilation.

Background:
Requirements 4.7 (print permanence), 4.8 (print stability), and 4.9 (hazardous materials) are met by standard laser printers.

4.10 Fingerprint Prints

4.10.1 Print Types Requirements

Requirement:
The printer shall have the capability to print a set of individual livescans or previously scanned, individual inked fingerprints, life-size and in their correct printblock locations, onto a standard ten-print fingerprint card (*e.g.*, fingerprint card type FD-258), or print onto blank 8.0 by 8.0 inch card stock, or print onto blank 8.5 x 11.0 inch plain paper. In the case of printing fingerprints onto blank card stock or blank paper, the printer shall also print the printblock boundary lines and labeling that normally appears on a standard ten-print card.

The printer shall have the capability to print a previously scanned ten-print card in its entirety and life-size onto blank 8.0 x 8.0 inch card stock or onto blank 8.5 by 11.0 inch plain paper.

The printer shall have the capability to print a single fingerprint magnified up to five times beyond life-size onto 8.5 by 11.0 inch plain paper.

When printing in ten-print card format onto ten-print card stock, blank card stock, or plain paper, the printer shall also have the capability to print labels, bar chart, step tablet, and finger condition codes, all on the same print with the fingerprints. Figure 4-1 illustrates the printing of this auxiliary information. Sections 4.10.2 through 4.10.5 of this appendix give the detailed requirements.

4.10.2 Labels

Requirement:
When printing fingerprints in ten-print card format, the printing process shall have the capability to print a character string of scanner information within the left four finger plain impression printblock and a character string of printer information within the right four finger plain impression printblock. Each character string shall be printed along the top inside edge of the respective printblock in a type font and size that is large enough for human readability without the aid of a magnifier and small enough so as not to unduly impinge on fingerprint structure.

The scanner information string shall include the scanner make, model number, and serial number, if available, and/or similar information on the scanner system. The printer information string shall include the printer make, model number, and serial number, if available, and shall include similar information on the fingerprint printing algorithm, if available, and shall include the date and time of printing.

The scanner and printer character strings shall be printed without a background, border, or any other type of added surround.

Background:

Information for the scanner string can typically be obtained from the EBTS Type-2 record field identified as "IMA 2.067 – Image Capture Equipment," which includes scanner system make, model number, and serial number.

A printer is certified as a combination of a specific brand/model printer and fingerprint printing algorithm; the latter may also have a name or version designation.

Character string printing: a solid background (*e.g.*, white) to the character string is unacceptable because it would unnecessarily obliterate some parts of fingerprints on some images. Individual characters with no background that overprint the fingerprint would obliterate a much smaller proportion of the fingerprint and are acceptable. Printing the character strings in an open space created by offsetting printblocks 6-10 from printblocks 11-14 is unacceptable because it changes the dimensions of the standard ten-print card format, and it cannot adequately accommodate fingerprints that stray across printblock boundaries.

Proper text size typically would correspond to a height of a numeral or upper case letter being in the range: 0.067 inches to 0.095 inches.

4.10.3 Bar Chart

Requirement:
When printing fingerprints in ten-print card format, the printing process shall have the capability to print a bar chart consisting of equally spaced horizontal black bars and vertical black bars printed at the required printer resolution.

The bar chart shall be positioned at the top edge within the right thumb plain impression printblock and shall have a maximum width of 0.8 inches and a maximum height of 0.125 inches. The bar chart shall contain at least 10 parallel bars in each direction, vertical and horizontal, with a bar length of at least 0.0625 inches (not necessarily the same number of bars, or same bar length, in the two directions).

An optional, uniform mid-grey-level patch may be included between the horizontal and vertical bar components.

The bar chart shall be printed without a background, border, or any other type of added surround.

Background:
For a 500-ppi printer requirement, the limiting frequency is 250 cycles per inch, which implies that 250 black bars per inch are printed**,** where the 0.002-inch width of an individual bar is equal to the width of the white space between two bars.

If a mid-gray patch between the vertical and horizontal bar patterns appears to have the same overall gray-level on the print as the two bar patterns, then this may indicate that the printer gamma/highlight/lowlight settings are optimum and/or that the printer toner supply was adequate for printing.

4.10.4 Step Tablet

Requirement:
When printing fingerprints in ten-print card format, the printing process shall have the capability to print a step tablet, consisting of two adjacent horizontal bands, each band having 16 gray-levels. The top band shall progressively darken from left to right and the bottom band shall progressively darken from right to left. The 16 digital input gray-levels corresponding to one band shall be identically the same as for the other band, and both bands shall substantially cover the total gray-level range. This step tablet shall be positioned at the top edge within the left thumb plain impression printblock and shall have a total width between 0.5 inches and 0.8 inches and a total height between 0.0625 inches and 0.125 inches.

The step tablet shall be printed without a background, border, or any other type of surround.

Background:
If the top band and bottom band appear "balanced" on the print, *i.e.*, the same mid-gray level appears in the middle of both the top and bottom bands, then this may indicate that the printer gamma/highlight/lowlight settings are optimum.

4.10.5 Finger Condition Codes

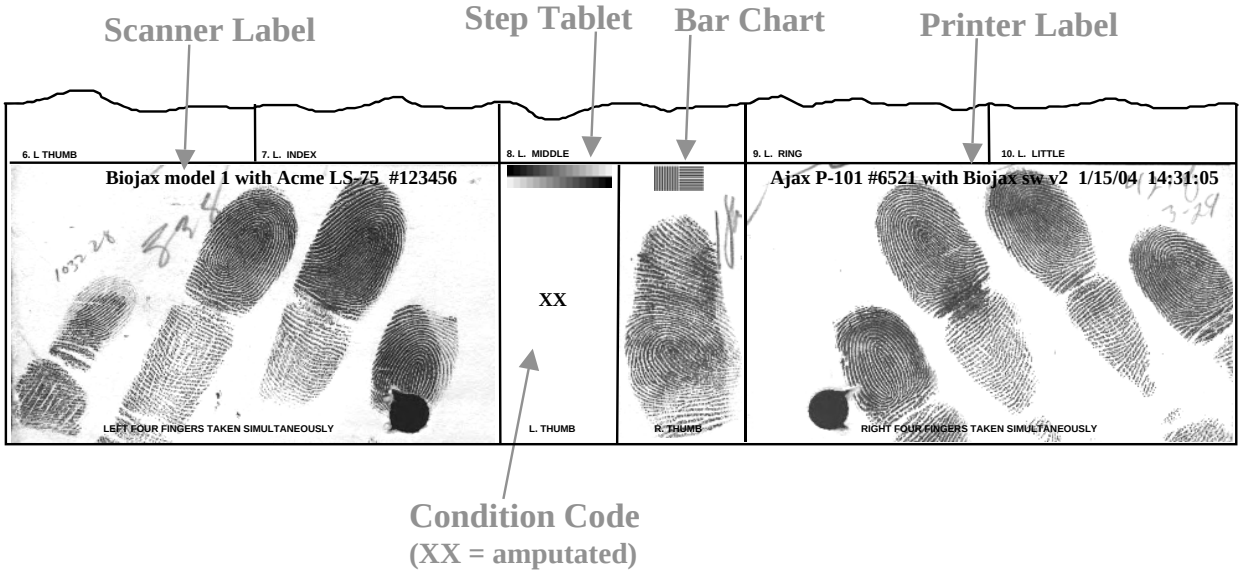
Requirement:
When printing fingerprints in ten-print card format, the printing process shall have the capability to notate the presence of an abnormal finger condition in the appropriate printed fingerprint block for those cases where the EBTS Type-2 record field identified as "AMP" (amputated or bandaged) is available and/or for those cases where similar information is available from other sources, such as a state system (possibly with other notation codes).

4.10.6 Fingerprint Quality

Requirement:
The printer shall produce sufficient print quality to allow usable viewing of life-size fingerprint prints under magnification to support fingerprint comparisons, *i.e.*, identification or non-identification decisions. The print image shall maintain its sharpness and detail rendition structure up to at least 4X magnification to the extent that ridges and ridge joints, bifurcations, and terminations that exist in the input digital image to the printer can be substantially discerned by the human observer on the output print without being "lost in the noise." In addition, the printing process shall not create significant false detail, *e.g.*, it shall not create ridges where none existed in the input digital image.

Background:
Assessment of the requirement is performed by visual inspection of the print augmented by appropriate quantitative analysis of the scanned print.

Figure 4-1. Auxiliary Information Printed in Ten-Print Card Format Print (Example Text)



5 Fast-Track Certification

First, to review, full certification testing is required when:

- An uncertified livescan device is presented together with suitable SW such that the combination prospectively meets all IQS requirements.

- A hardcopy scanner or printer (typically a COTS product) is presented together with suitable SW such that the combination prospectively meets all IQS requirements. (The specific SW may be sold separately from the COTS HW, but only the specific HW/SW combination is certified.)

- Substantive modifications are made to an already-certified device. For example, the sensor or optics are changed, the capture area is expanded, the signal processing is substantively changed, or a 500 ppi-certified device is extended for operation at 1000 ppi.

Fast track certification testing is sufficient when:

- A vendor adds "value" to an already certified device by, for example, integrating additional SW and/or HW and repackaging the combination to create a VAR label system. However, if there is a reasonable expectation that the added SW, HW, or repackaging will affect the image quality performance of the original certified device, then full certification testing would be required.

- A vendor makes relatively minor modifications to a previously certified device. For example, a membrane is added to (or deleted from) a certified livescanner, an automatic document feeder is added to a certified manual-feed cardscanner, or a 1000 ppi-certified scanner is operated at 500 ppi using the same optics, sensor, and illumination.

Table 5-1 presents the test data requirements for some common fast track certification scenarios; for test requirements for other scenarios, contact the FBI. In addition to the test data, the vendor seeking fast track certification must provide a written statement to the FBI (letter or e-mail) affirming that the previously certified fingerprint device has not been changed with respect to device functions, hardware, firmware, or software that could reasonably be expected to affect image quality performance.* Specific to a scanner, the optics and optical layout, sensor, illumination, image capture electronics, and signal processing have not been changed and the maximum capture area has not been increased.

* Except for inherent image quality changes in specific situations, *e.g.*, when recertifying a 1000 ppi scanner at 500 ppi.

Table F-5. Fast Track Certification Procedures (Common Scenarios)

Fast Track Certification	Type	Test Data to be Provided to FBI	Requirements Compliance
Livescanner	Vendor A incorporates vendor B's certified device into vendor A's value-added system. Vendor adds (or deletes) platen membrane to certified device.	Livescans from 5 subjects (10 rolls & 4 plains, each subject) Sinewave or bar target scans (target supplied by vendor) and livescans from 5 subjects (10 rolls & 4 plains, each subject)	Section 2.6 Sections 2.1, 2.3, 2.6
Cardscanner	Vendor A incorporates vendor B's certified device into vendor A's value-added system.	Ten 10-print card scans (cards supplied by FBI)	Section 2.6
Cardscanner with Automatic Document Feeder (ADF)	Vendor recertifies manual card scanner for use with ADF.	100 10-print card scans (cards supplied by FBI)	Section 2.6
Printer	Vendor A incorporates vendor B's certified device into vendor A's value-added system.	Print of printer test target (target supplied by FBI)	all subsections under Section 4.0 pertaining to digital test target
1000 ppi fingerprint scanner as 500 ppi fingerprint scanner	Vendor recertifies its own fingerprint scanner in alternate operating mode	Cardscanner: Sinewave target scans (target supplied by vendor) and ten 10-print card scans (cards supplied by FBI) Livescanner: Sinewave or bar target scans (target supplied by vendor) and livescans from 5 subjects (10 rolls & 4 plains, each subject)	Sections 2.1, 2.3, 2.6

No certification testing is necessary when:

- The original recipient of a certification wishes to change the model name and there are no other changes to the certified product.

- The original recipient of a certification wishes to repackage the device if there is a reasonable expectation that the repackaging will not affect the image quality performance of the device. All device HW/SW components that may affect image quality performance must remain the same as they were when originally certified. For example, repackaging a device into a ruggedized cabinet or repackaging a floor-standing device as a desktop device by separating out the host computer would not necessarily require further testing, but changing the optical path or optical train of elements to accommodate the repackaging would normally require retesting.

- A reseller of a certified device wishes to sell the device under its own label or under the original label. The certified device must remain intact, unmodified, and as a stand-alone product with no added HW/SW. If relabeled by reseller, the certification is only valid when that label does in fact contain the originally certified device, *i.e.*, no blanket certification for rebrands.

- An end user receives a certified device to be used "as is" without modification (an end-user does not need its own certification).

Definition of Terms:

HW – HardWare, which may include firmware

SW –SoftWare, which may include firmware

COTS – Commercial-Off-The-Shelf product

Vendor – generic term to include Original Equipment Manufacturer (OEM), reseller, Value-Added Reseller (VAR), product assembler, systems integrator, and similar.

Full IQS Certification – a complete set of test data covering all IQS requirements is submitted.

Fast Track IQS Certification - a partial set of test data covering defined IQS requirements is submitted.

APPENDIX F REFERENCES

[ANSI/NIST] – National Institute of Standards and Technology's *Data Format for the Interchange of Fingerprint, Facial, & Scar Mark & Tattoo (SMT) Information*, ANSI/NIST-ITL 1-2007, NIST Special Publication 500-245.

[EFTS] – Federal Bureau of Investigation's *Electronic Fingerprint Transmission Specification*, FBI-CJIS-RS-0010 (V7.1), dated May 5, 2005

[TestProcedures] – Federal Bureau of Investigation's Test Procedures for Verifying IAFIS Image Quality Requirements for Fingerprint Scanners and Printers, FBI-CJIS-TD-xxxx, dated xxx.

APPENDIX G

RESERVED

APPENDIX H

DESCRIPTORS AND FIELD EDIT SPECIFICATIONS FOR TYPE-7 LOGICAL RECORDS

FGP - Finger Position. This mandatory, fixed-length field shall occupy the 7th through 12th bytes of a Type-7 record. It shall contain possible finger positions beginning with the least-most byte of the field (byte seven of the record). The decimal code number for the known or most probable finger position shall be taken from Table 6 "Finger Position code & maximum size" of the standard "Data Format for the Interchange of Fingerprint, Facial & Scar Mark & Tattoo (SMT) Information," ANSI/NIST-ITL 1-2007. The number shall be entered as a binary number, right justified, and left zero filled within the eight-bit byte. Up to five additional finger positions may be referenced by entering the alternate finger positions in the remaining five bytes using the same format. If fewer than five finger position references are to be used, the unused bytes shall be filled with the binary equivalent of "255." The code "0" (for unknown finger) shall be used to reference every finger position from one through ten.

CGA – Grayscale Compression Algorithm. This mandatory, one-byte field shall occupy the 18th byte of a Type-7 record. It shall be used to specify the type of grayscale compression algorithm used (if any). A binary "0" denotes no compression. Otherwise, the content of this byte shall be a binary representation for the number allocated to the particular compression technique used by the interchange parties. The FBI maintains a registry relating these numbers to the compression algorithms.

HLL - Horizontal Line Length. This mandatory, two-byte field shall occupy the 14th and 15th bytes of the Type-7 record. It shall be used to specify the number of pixels contained on a single horizontal line of the transmitted image.

IDC – Image Designation Character. This mandatory, one-byte binary field shall be used to identify the image data contained in this record. The IDC contained in this field shall be a binary representation of the IDC found in the file content field of the Type-1 record.

IMG – Image Data. This binary field shall contain all of the high-resolution grayscale image data. Each pixel of the uncompressed image shall be quantized to eight bits (256 gray-levels) contained in a single byte. If compression is used, the pixel data shall be compressed in accordance with the compression technique specified in the CGA field. This completes the high-resolution image description for a single image.

IMP – Impression Type. This mandatory one-byte field shall occupy the sixth byte of a Type-7 record. The code selected from Table 11 "Finger impression type" in the ANSI/NIST standard referenced above describes the manner by which the fingerprint image information was obtained.

ISR – Image Scanning Resolution. This mandatory, one-byte field shall occupy the 13th byte of a Type-7 record. It shall contain a binary value of "0" if the minimum scanning resolution is used and a "1" if the native scanning resolution is used.

LEN – Logical Record Length. This mandatory, four-byte binary field shall contain the length of the logical record specifying the total number of bytes, including every byte of all the fields contained in the record.

VLL – Vertical Line Length. This mandatory, two-byte field shall occupy the 16th and 17th bytes of the Type-7 record. It shall be used to specify the number of horizontal lines contained in the transmitted image.

Table H-1. Field List for Type-7 (Miscellaneous Image) Logical Records

tifier	Condition	Field No.	Field Name	Character Type	Field Size Per Occurrence		Occurrences		Max. No. of Bytes Including Character Separators and Field Number	Example Data	Speci Charac Allow
					Min.	Max.	Min.	Max.			
	M		LOGICAL RECORD LENGTH	B	4	4	1	1	4		
	M		IMAGE DESIGNATION CHARACTER	B	1	1	1	1	1		
	M		IMPRESSION TYPE	B	1	1	1	1	1		
	M		FINGER POSITION	B	6	6	1	1	6		
	M		IMAGE SCANNING RESOLUTION	B	1	1	1	1	1		
	M		HORIZONTAL LINE LENGTH	B	2	2	1	1	2		
	M		VERTICAL LINE LENGTH	B	2	2	1	1	2		
	M		GRAYSCALE COMPRESSION ALGORITHM	B	1	1	1	1	1		
	M		IMAGE DATA	B	1	6,200,000	1	1	6,200,000		

er the Condition column: O = optional; M = mandatory; C = conditional, see notes.

er the Character Type column: A = alpha; B = binary; N = numeric; S = special characters.

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APPENDIX I

Table I-1. Field List for Image Request (IRQ) Transactions

Identifier	Condition	Field No.	Field Name	Character Type	Field Size Per Occurrence		Occurrences		Max. No. of Bytes Including Character Separators and Field Number	Example Data	Special Characters Allowed
					Min.	Max.	Min.	Max.			
LEN	M	2.001	LOGICL RECORD LENGTH	N	2	7	1	1	14	2.001:125<GS>	
IDC	M	2.002	IMAGE DESIGNATION CHARACTER	N	2	2	1	1	9	2.002:00<GS>	
ATN	M	2.006	"ATTENTION" INDICATOR	ANS	3	30	1	1	37	2.006:SA J Q DOE,RM11867<GS>	Any printable 7-bit ASCII character except the period is allowed.
SCO	O	2.007	SEND COPY TO	ANS	9	19	0	9	186	2.007:NY030025P<GS>	Any printable 7-bit ASCII character is allowed.
FBI	C	2.014	FBI NUMBER	AN	1	9	1	1,000	10,600	2.014:62760NY12<GS>	
FNR	M	2.057	FINGER NUMBER(S) REQUESTED	N	2	2	1	13	45	2.057:01<RS>02<RS>03<RS>04<RS>07<RS>09<RS>10<RS>12<RS>13<GS>	
CRI	O	2.073	CONTROLLING AGENCY IDENTIFIER	ANS	1	9	0	3	36	2.073:NY1234567<GS>	
SCNA	O	2.086	AFIS SEGMENT CONTROL NUMBER	N	1	10	0	1	18	2.086:1234<GS>	
NDR	O	2.098	NAME OF DESIGNATED REPOSITORY	N	1	3	0	1	11	2.098:1<GS>	
UCN	C	2.081	UNIVERSAL CONTROL NUMBER	AN	9	9	0	1	16	2.081:410357325<FS>	
RFR	O	2.095	REQUEST FEATURES RECORD	A	1	1	0	1	8	2.095:Y<FS>	
IIR	O	2.2012	IRIS IMAGE REQUESTED	N	1	1	0	1	8	2.2012:0<FS>	

Under the Condition column: O = optional; M = mandatory; C = conditional, see notes.
Under the Character Type column: A = alpha; B = binary; N = numeric; S = special characters.

Table I-2. Field List for Image Request Response (IRR) Transactions

Identifier	Condition	Field No.	Field Name	Character Type	Field Size Per Occurrence		Occurrences		Max. No. of Bytes Including Character Separators and Field Number	Example Data	Special Characters Allowed
					Min.	Max.	Min.	Max.			
LEN	M	2.001	LOGICAL RECORD LENGTH	N	2	7	1	1	14	2.001:909<GS>	
IDC	M	2.002	IMAGE DESIGNATION CHARACTER	N	2	2	1	1	9	2.002:00<GS>	
ATN	M	2.006	"ATTENTION" INDICATOR	ANS	3	30	1	1	37	2.006:SA J Q DOW,RM11867<GS>	Any printable 7-bit ASCII character except the period is allowed.
SCO	O	2.007	SEND COPY TO	ANS	9	19	0	9	186	2.007:NY030025P<GS>	Any printable 7-bit ASCII character is allowed.
FBI	C [1]	2.014	FBI NUMBER	AN	1	9	1	1	16	2.014:62760NY12<GS>	
SID	O [1]	2.015	STATE IDENTIFICATION NUMBER	ANS	3	10	0	1	17	2.015?NY12345678<GS>	NY, OR, and PA may use a hyphen in the last position.
NAM	M	2.018	NAME	AS	3	30	1	1	37	2.018:JONES, ANTHONY P<GS>	Commas, hyphens, and blanks are allowed as special characters.
PPA	O	2.035	"PALM PRINTS AVAILABLE" INDICATOR	A	1	1	0	1	8	2.035:Y<GS>	
PHT	O	2.036	"PHOTO AVAILABLE" INDICATOR	A	1	1	0	1	8	2.036:Y<GS>	
FNR	O	2.057	FINGER NUMBER(S) REQUESTED	N	2	2	0	13	45	2.057:01<RS>02<RS>03<RS>04<RS>07<RS>09<RS>10<RS>12<RS>13<GS>	
CRI	O	2.073	CONTROLLING AGENCY IDENTIFIER	ANS	1	9	0	3	36	2.073:NY1234567<GS>	

Under the Condition column: O = optional; M = mandatory; C = conditional, see notes.
Under the Character Type column: A = alpha; B = binary; N = numeric; S = special characters.

Table I-2. Field List for Image Request Response (IRR) Transactions

Identifier	Condition	Field No.	Field Name	Character Type	Field Size Per Occurrence		Occurrences		Max. No. of Bytes Including Character Separators and Field Number	Example Data	Special Characters Allowed
					Min.	Max.	Min.	Max.			
AMP	C	2.084	AMPUTATED OR BANDAGED				0	9	60	2.084:03<US>XX<RS> 09<US>UP<GS>	
	M		FINGER POSITION (FGP)	N	2	2	1	1			
	M		AMPUTATED OR BANDAGED CODE (AMPCD)	A	2	2	1	1			
SCNA	O	2.086	AFIS SEGMENT CONTROL NUMBER	N	1	10	0	1	18	2.086:1234<GS>	
NDR	O	2.098	NAME OF DESIGNATED REPOSITORY	N	1	3	0	1	11	2.098:1<GS>	
UCN	C	2.081	UNIVERSAL CONTROL NUMBER	AN	9	9	0	1	16	2.081:410537025<FS>	
IIR	O	2.2012	IRIS IMAGE REQUESTED	N	1	1	0	1	8	2.2012:0<FS>	

Under the Condition column: O = optional; M = mandatory; C = conditional, see notes.
Under the Character Type column: A = alpha; B = binary; N = numeric; S = special characters.

Table I-3. Field List for Image Error Response (ERRI) Transactions

Identifier	Condition	Field No.	Field Name	Character Type	Field Size Per Occurrence		Occurrences		Max. No. of Bytes Including Character Separators and Field Number	Example Data	Special Characters Allowed
					Min.	Max.	Min.	Max.			
LEN	M	2.001	LOGICAL RECORD LENGTH	N	2	7	1	1	14	2.001:<GS>	
IDC	M	2.002	IMAGE DESIGNATION CHARACTER	N	2	2	1	1	9	2.002:00<GS>	
ATN	M	2.006	"ATTENTION" INDICATOR	ANS	3	30	1	1	37	2.006:SA J Q DOE,RM11867<GS>	Any printable 7-bit ASCII character except the period is allowed.
SCO	O	2.007	SEND COPY TO	ANS	9	19	0	9	186	2.007:NY030025P<GS>	Any printable 7-bit ASCII character is allowed.
FBI	C [1]	2.014	FBI NUMBER	AN	1	9	0	1	16	2.014:62760NY12<GS>	
SID	O [1]	2.015	STATE IDENTIFICATION NUMBER	ANS	3	10	0	1	17	2.015:NY12345678<GS>	NY, OR, and PA may use a hyphen in the last position.
MSG	M	2.060	STATUS/ERROR MESSAGE	ANS	1	300	1	11	3,317	2.060:MATCH MADE AGAINST SUBJECTS FINGERPRINTS ON 05/01/94<GS>	Any printable 7-bit ASCII character is allowed.
CRI	O	2.073	CONTROLLING AGENCY IDENTIFIER	ANS	1	9	0	3	36	2.073:NY1234567<GS>	
SCNA	O	2.086	AFIS SEGMENT CONTROL NUMBER	N	1	10	0	1	18	2.086:1234<GS>	
NDR	O	2.098	NAME OF DESIGNATED REPOSITORY	N	1	3	0	1	11	2.098:1<GS>	
UCN	C	2.081	UNIVERSAL CONTROL NUMBER	AN	9	9	0	1	16	2.081:410357325<FS>	

Under the Condition column: O = optional; M = mandatory; C = conditional, see notes.

Under the Character Type column: A = alpha; B = binary; N = numeric; S = special characters.

Table I-4. Field List for Fingerprint Image Submission (FIS) Transactions

Identifier	Condition	Field No.	Field Name	Character Type	Field Size Per Occurrence		Occurrences		Max. No. of Bytes Including Character Separators and Field Number	Example Data	Special Characters Allowed
					Min.	Max.	Min.	Max.			
LEN	M	2.001	LOGICAL RECORD LENGTH	N	2	7	1	1	14	2.001:137<GS>	
IDC	M	2.002	IMAGE DESIGNATION CHARACTER	N	2	2	1	1	9	2.002:00<GS>	
ATN	M	2.006	"ATTENTION" INDICATOR	ANS	3	30	1	1	37	2.006:SA J Q DOE,RM11867<GS>	Any printable 7-bit ASCII character except the period is allowed.
SCO	O	2.007	SEND COPY TO	ANS	9	19	0	9	186	2.007:NY030025P<GS>	Any printable 7-bit ASCII character is allowed.
FBI	C [1]	2.014	FBI NUMBER	AN	1	9	1	1	16	2.014:62760NY12<GS>	
SID	O	2.015	STATE IDENTIFICATION NUMBER	ANS	3	10	0	1	17	2.015:NY12345678<GS>	NY, OR, and PA may use a hyphen in the last position.
NAM	O	2.018	NAME	AS	3	30	0	1	37	2.018:JONES, ANTHONY P<GS>	Commas, hyphens, and blanks are allowed as special characters.
PPA	O	2.035	"PALM PRINTS AVAILABLE" INDICATOR	A	1	1	0	1	8	2.035:Y<GS>	
DPR	M	2.038	DATE PRINTED	N	8	8	1	1	15	2.038:19950324<GS>	
CRI	O	2.073	CONTROLLING AGENCY IDENTIFIER	ANS	1	9	0	3	36	2.073:NY1234567<GS>	
AMP	C [2]	2.084	AMPUTATED OR BANDAGED				0	9	60	2.084:03<US>XX<RS>09<US>UP<FS>	
	M		FINGER POSITION (FGP)	N	2	2	1	1			
	M		AMPUTATED OR BANDAGED CODE (AMPCD)	A	2	2	1	1			
UCN	C	2.081	UNIVERSAL CONTROL NUMBER	AN	9	9	0	1	16	2.081:410357325<FS>	

Under the Condition column: O = optional; M = mandatory; C = conditional, see notes.
Under the Character Type column: A = alpha; B = binary; N = numeric; S = special characters.

Table I-5. Field List for Fingerprint Image Submission Response (FISR) Transactions

Identifier	Condition	Field No.	Field Name	Character Type	Field Size Per Occurrence		Occurrences		Max. No. of Bytes Including Character Separators and Field Number	Example Data	Special Characters Allowed
					Min.	Max.	Min.	Max.			
LEN	M	2.001	LOGICAL RECORD LENGTH	N	2	7	1	1	14	2.001:133<GS>	
IDC	M	2.002	IMAGE DESIGNATION CHARACTER	N	2	2	1	1	9	2.002:00<GS>	
ATN	M	2.006	"ATTENTION" INDICATOR	ANS	3	30	1	1	37	2.006:SA J Q DOE,RM11867<GS>	Any printable 7-bit ASCII character except the period is allowed.
SCO	O	2.007	SEND COPY TO	ANS	9	19	0	9	186	2.007:NY030025P<GS>	Any printable 7-bit ASCII character is allowed.
FBI	C [1]	2.014	FBI NUMBER	AN	1	9	1	1	16	2.014:62760NY12<GS>	
SID	O [1]	2.015	STATE IDENTIFICATION NUMBER	ANS	3	10	0	1	17	2.015:NY12345678<GS>	NY, OR, and PA may use a hyphen in the last position.
NAM	O	2.018	NAME	AS	3	30	0	1	37	2.018:JONES, ANTHONY P<GS>	Commas, hyphens, and blanks are allowed as special characters.
FIU	M	2.072	FINGERPRINT IMAGE(S) UPDATED	AN	1	2	1	13	45	2.072:01<US>02<US>05<US>07<US>08<US>11<US>13<US>	
CRI	M	2.073	CONTROLLING AGENCY IDENTIFIER	ANS	1	9	1	3	36	2.073:NY1234567<FS>	
UCN	C [1]	2.081	UNIVERSAL CONTROL NUMBER	AN	9	9	0	1	16	2.081:410357325<FS>	

Under the Condition column: O = optional; M = mandatory; C = conditional, see notes.

Under the Character Type column: A = alpha; B = binary; N = numeric; S = special characters.

Table I-6. Field List for Image Response Summary (ISR) Transactions

Identifier	Condition	Field No.	Field Name	Character Type	Field Size Per Occurrence Min.	Field Size Per Occurrence Max.	Occurrences Min.	Occurrences Max.	Max. No. of Bytes Including Character Separators and Field Number	Example Data	Special Characters Allowed
LEN	M	2.001	LOGICAL RECORD LENGTH	N	2	7	1	1	14	2.001:909<GS>	
IDC	M	2.002	IMAGE DESIGNATION CHARACTER	N	2	2	1	1	9	2.002:00<GS>	
ATN	M	2.006	"ATTENTION" INDICATOR	ANS	3	30	1	1	37	2.006:SA J Q DOE,RM11867<GS>	Any printable 7-bit ASCII character except the period is allowed.
SCO	O	2.007	SEND COPY TO	ANS	9	19	0	9	186	2.007:NY030025P<GS>	Any printable 7-bit ASCII character is allowed.
FBI	C [1]	2.014	FBI NUMBER	AN	1	9	1	1,000	10,006	2.014:62760NY12<GS>	
SID	O	2.015	STATE IDENTIFICATION NUMBER	ANS	3	10	0	1,000	11,006	2.015:<GS>	NY, OR, and PA may use a hyphen in the last position.
MSG	M	2.060	STATUS/ERROR MESSAGE	ANS	1	300	1	1,000	301,006	2.060:<GS>	Any printable 7-bit ASCII character is allowed.
CRI	O	2.073	CONTROLLING AGENCY IDENTIFIER	ANS	1	9	0	3	36	2.073:<FS>	
NDR	O	2.098	NAME OF DESIGNATED REPOSITORY	N	1	3	0	1	11	2.098:1<GS>	
UCN	C [1]	2.081	UNIVERSAL CONTROL NUMBER	AN	1	9	0	1,000	10,006	2.081:<FS>	

Under the Condition column: O = optional; M = mandatory; C = conditional, see notes.
Under the Character Type column: A = alpha; B = binary; N = numeric; S = special characters.

APPENDIX I REFERENCE NOTES

1. Either FBI number (FBI) or Universal Control Number (UCN) must be present in each transaction.

Note: An FBI number may be represented in the UCN field. For backward compatibility, FBI will continue to be populated for criminal records.

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APPENDIX J

DESCRIPTORS AND FIELD EDIT SPECIFICATIONS FOR TYPE-9 LOGICAL RECORDS

<u>AFV</u> 9.013 – AFIS Feature Vector. This field is a bit-packed field on the minutiae, the nearest neighbors, pattern class, and ridge counts. Its presence in the Type-9 record is allowed by including a "U" in the tagged field 9.004. It possesses sufficient features data to replace the rest of the Type-9 native mode record.

<u>APC</u> 9.017 – AFIS/FBI Pattern Classification. This field contains one to three subfields separated by the <RS> separator with each subfield composed of three information items separated by the <US> separator character. Each subfield reports a possible basic pattern class (APAT) and the ridge counts (RCN1, RCN2) defining its subpattern class. The AFIS/FBI automatic classifier recognizes only four basic pattern classes: arch (AU), left slant loop (LS), right slant loop (RS), and whorl (WU). It further subdivides the basic pattern classes of loops and whorls according to the count of ridges crossed or touched along a straight line joining the core(s) to the delta(s). The count is one more than the number of intervening ridges. For latents, the latent examiner is expected to make a best estimate as opposed to a range. AFIS/FBI treats all indicated pattern classes equally (*i.e.*, no significance given to the order of the possible classes provided). AFIS/FBI will apply a suitable tolerance to the specified ridge count for search space penetration.

The tagged field accommodates a primary pattern and up to two reference patterns in the one-to-three subfields. The first information item of a subfield contains the two-character symbol for the pattern being designated. The second and third information items contain the appropriate subpattern class ridge count between the core(s) and the delta(s). A zero (0) should be entered if a ridge count is not appropriate; a thirty-one (31) if it was appropriate but not counted or indeterminate. Both information fields are zero for an arch, the second information item in a subfield should be zero if the pattern for the subfield is a loop, and neither information item should be zero for a whorl. If a whorl is indicated in pattern classification, the second information item (RCN1) of a subfield contains the ridge count from the left delta to the downward opening core, and the third information item (RCN2) contains the ridge count from the right delta to the upward opening core. This implies that a central pocket whorl will have both a downward and an upward opening (directed) core generally aligned along the major axis of the innermost ellipse. If the automatic or manual classifier indicates all four basic patterns are possible, then the fingerprint should be designated as "fully referenced" by providing only one subfield with the first information item "UC"; the second and third information items should both be "31." If a particular fingerprint was not characterized for a ten-print native mode search request, no Type-9 logical record should be submitted for that finger position, and the classification code for the missing finger must be placed in the Type-2 pattern class field.

Description	First Information Item	Second Information Item	Third Information Item
Arch (type not designated)	AU	0	0
Left slant loop	LS	1 – 31	0
Right slant loop	RS	1 – 31	0
Whorl (type not designated)	WU	1 – 31	1 - 31
Complete scar	SR	0	0
Amputation	XX	0	0
Unable to classify	UC	0 or 31	0 or 31

CHQ 9.024 – Characterization Quality. This is a single information item field. Within AFIS/FBI, the principal quality parameter is the "Equivalent Number of Minutiae." The distribution of the parameter over thousands of fingerprints approximates a Gaussian distribution with a mean of about 50 and a standard deviation of about 12. The equivalent number of minutiae is calculated as the sum of the weighted normalized quality with the weighting being the number of qualified neighbors for the minutiae divided by the maximum number of neighbors (eight). The normalized minutiae quality ranges from unity (best) to zero (worst). A qualified neighbor would be another minutiae with a reliable separating ridge count (less than 14) and within a reliable distance (not more than 1/5 inch).

CLQ 9.025 – Classifier Quality. This is a single information item field of seven characters representing a positive real number between one (1.0000) and 99 (99.9999) indicating the quality or confidence of the automatic classification. The presence of the information item may reduce the AFIS/FBI processing load, but its absence will not degrade AFIS/FBI performance. A value of 1.0000 indicates best possible quality or confidence; increasing values indicate progressively worse quality or confidence. The information item format shall be XX.YYYY in which XX represents the integer portion and YYYY the fractional portion to four decimal places with a decimal point (period) between.

COF 9.019 – Coordinate Offsets. This field allows the recording of translation, rotation, and image cropping employed in the characterization process to allow the examiner or an analyst to overlay onto the original or intermediate image the features reported in this record. The field contains five eight-character information items each separated by the <US> separator. For AFIS/FBI, the units are in original image pixels and degrees using standard image processing coordinates; that is, (0,0) origin at the upper left, column index increasing from left to right, and row index increasing from top to bottom. The column and row coordinate indexes (XYP) shall be coded as a single eight-digit integer number composed of a four-digit column coordinate (X) connected to a four-digit row coordinate (Y) using a format of XXXXYYYY. A minus sign is permitted in the leftmost digit of a four-digit group. The first information item contains the offset to the upper left corner of a non-rotated sub-image used subsequently in image processing.

The second information item contains the coordinates of the center of rotation within the sub-image about which the sub-image is rotated. The third information item contains the clockwise rotation angle (THET) in ten-thousandths of a degree resolution (*e.g.*, 072.2342) including the decimal point. The fourth information item contains the coordinates of the center of rotation in the rotated sub-image after the sub-image has been translated to eliminate negative column and row indexes. The fifth information item contains the upper-left-corner column and row offsets to a cropped sub-image taken from the rotated image once adjusted to eliminate negative coordinate values. Unused information items may be empty, but the <US> separators must be included.

CRA 9.021 – Core(s) Attribute. This field is for cores that can be perceived in the fingerprint (both ten-print and latent). If there is no core perceived in the fingerprint image, the tagged field should be omitted. This field contains up to two subfields (one subfield for each core) separated by the <RS> separator. Each subfield contains three information items separated by the <US> separator representing the attributes of each core.

The first information item of a subfield contains the X and Y coordinate position of the core (XYM). The position shall be established either automatically or manually according to the definitions presented in The Science of Fingerprints. The X and Y values shall be coded as a single eight-digit integer number composed of the four-digit X coordinate (column) followed by the four-digit Y coordinate (row) using a format of XXXXYYYY. The X coordinate and Y coordinate are in units of 10 micrometers with the origin at the upper left. Core positions shall be in the same coordinate system as the minutiae. The second information item of a subfield is of three-digit size and contains the direction of the core in integer degrees (DID). The direction is that of the core opening through the center of curvature for the innermost recurve at maximum curvature. The direction angle is positive counterclockwise from the reference horizontal to the right. Direction angles shall be reported between "001" and "360" degrees only. The value "000" shall be reserved for "direction not provided" while "360" shall be equivalent to zero degrees. The third information item of a subfield is of four-digit size representing the radius of position uncertainty (PUM) in the manual or automatic placement of the core in integer units of 10 micrometers.

CRP 9.008 – Core Position. This eight-character field shall contain the X and Y coordinate position of the core. The X and Y values shall be coded as a single eight-digit integer number composed of the four-digit X coordinate followed by the four-digit Y coordinate using a format of XXXXYYYY.

DLA 9.022 – Delta(s) Attributes. This field is for deltas that can be perceived in the fingerprint for both AFIS/FBI latent and ten-print characterizations. If there is no delta perceived in the fingerprint image, the tagged field should be omitted. This field contains up to two subfields (one subfield for each delta) separated by the <RS> separator. Each subfield contains five information items separated by the <US> separator representing the attributes of each delta.

The first information item of a subfield consists of eight characters and contains the X and Y coordinate position (XYM) of the delta(s). The position shall be established either automatically or manually according to the definitions presented in The Science of Fingerprints. The X and Y values shall be coded as a single eight-digit integer number composed of the

four-digit X coordinate (column) followed by the four-digit Y coordinate (row) using a format of XXXXYYYY. The X coordinate and Y coordinate are in units of 10 micrometers with the origin at the upper left. Delta positions shall be in the same coordinate system as the minutiae. The next three information items of a subfield shall be of three-digit size each to contain the three directions of ridge flow (DID) outward from the delta in integer degrees. The second information item of a subfield is the direction of the ridge flow upward from the delta. The third information item of a subfield shall be the direction of ridge flow outward from the delta and to the left. The fourth information item shall be the direction of the ridge flow outward from the delta to the right. The direction angles are positive counterclockwise from the reference horizontal to the right. Direction angles shall be reported between "001" and "360" degrees only. The value "000" shall be reserved for "direction not provided" while "360" shall be equivalent to zero degrees. The fifth subfield of four-digit size represents the radius of position uncertainty (PUM) in the manual or automatic placement of the delta in integer units of 10 micrometers.

DLT 9.009 – Delta(s) Position. This eight-character field shall contain the X and Y positional coordinates of each delta that is present on the fingerprint. The X and Y values shall be recorded in the same manner as was the core position, CRP. Multiple occurrences of delta positions shall be separated by the RS separator.

FCP 9.016 – Fingerprint Characterization Process. This field of three information items identifies the characterization equipment and the amount of manual intervention employed in the characterization process. The three information items shall be separated by the <US> separator. The first information item shall contain the name of the organization (VEN) providing the automatic process software. The second information item shall be a vendor-supplied, alphanumeric character pair (VID) representing the model and/or version of the automatic process. The third information item (MET) shall be an ordered sequence of three characters selected from the following list indicating the degree of automation in the characterization process.

Description	Code
First (leftmost) character (classification):	
Automatic pattern classification without manual intervention	C
Manually initiated or verified pattern classification	N
Second (middle) character (minutiae generation):	
Minutiae automatically generated, no manual editing or verification	A
Minutiae automatically generated, examiner verified or edited	E

Description	Code
Minutiae manually generated by examiner	M
Third (rightmost) character (ridge count):	
Automatic, synthesized ridge count without manual verification	S
Automatic, actual ridge count without manual verification	T
Automatic ridge count any method, examiner edited or verified	V

FGN 9.014 – Finger Number. This AFIS/FBI two-byte field shall contain a character designating the finger position that produced the information in this Type 9 record. If the exact finger position cannot be determined, "00" shall be entered. Multiple codes are not permitted. Possible finger positions for single latent characterizations are specified in the accompanying Type-2 logical record. If multiple latents from the same person are transmitted, the particular finger position corresponding to the Type-9 record must be identified within the Type-9 record.

Allowable codes are taken from the ANSI standards, and are as follows.

Finger Position	Code
Unknown finger	00
Right thumb	01
Right index	02
Right middle	03
Right ring	04
Right little	05
Left thumb	06
Left index	07
Left middle	08
Left ring	09
Left little	10

FMT 9.004 – Minutiae Format. This one-byte field shall be used to indicate whether the remainder of the record adheres to the ANSI standard or is user-defined. This field shall contain an "S" to indicate the minutiae are formatted as specified by the standard or a "U" to indicate user-defined. If the minutiae record is formatted in user-defined terms, the remaining fields of the logical record may not be applicable.

FPC 9.007 – Finger Pattern Classification. This field shall contain the fingerprint pattern classification code and shall contain two information items. The first information item shall indicate the source of the specific pattern classification code. It may be one chosen from the ANSI standard "Data Format for the Interchange of Fingerprint, Facial, & Scar Mark & Tattoo (SMT) Information" Table 8, "Pattern Classification" (table shown below), or may be a user-

defined classification code. This item shall contain a "T" to indicate that the pattern classification code is from the ANSI standard table or a "U" to indicate a user-defined code. The second information item of this field shall contain the pattern classification code chosen from the ANSI standard or a specific user-defined code. Reference finger classes shall be separated by the RS character.

Description	Code
Plain arch	PA
Tented arch	TA
Radial loop	RL
Ulnar loop	UL
Plain whorl	PW
Central pocket loop	CP
Double loop	DL
Accidental whorl	AW
Whorl, type not designated	WN
Right slant loop	RS
Left slant loop	LS
Scar	SR
Amputation	XX
Unknown or unclassifiable	UN

IDC 9.002 – Image Designation Character. This two-byte field shall be used for the identification and location of the minutiae data. The IDC contained in this field shall match the IDC found in the file content field of the Type-1 record.

IMP 9.003 – Impression Type. This one-byte binary field describes the manner by which the fingerprint image information was obtained. The allowable codes, as defined by Table 11 of the ANSI/NIST-ITL 1-2007 standard, are as follows.

Description	Code
Live-scan plain	0
Live-scan rolled	1
Non-live-scan plain	2
Non-live-scan rolled	3
Latent impression	4
Latent photo	6
Latent lift	7
Live-scan vertical swipe	8
Live-scan optical contact plain	20

Live-scan optical contact rolled	21
Live-scan non-optical contact plain	22
Live-scan non-optical contact rolled	23
Live-scan optical contactless plain	24
Live-scan optical contactless rolled	25
Live-scan non-optical contactless plain	26
Live-scan non-optical contactless rolled	27
Live-scan non-optical contactless rolled	28
Other	29

LEN 9.001 – Logical Record Length. This ASCII field shall contain the length of the logical record specifying the total number of bytes, including every character of all the fields contained in the record. The number of characters added to the record by the LEN field itself shall be included in calculating the value of LEN.

MAT 9.023 – Minutiae and Ridge Count Data. This AFIS/FBI field shall contain all of the individual minutiae and ridge count data associated with the current fingerprint impression. It shall be composed of as many subfields as there are minutiae stated in the minutiae count in the tagged field 9.015, NMN. Each subfield shall be devoted to a single minutia and shall consist of multiple information items. Subfields shall be separated by the <RS> separator character. All information items within a subfield shall be separated by the <US> separator character. The minutiae shall be indexed from one to NMN and need not be ordered according to any particular attribute. The first two information items are required, and the others allow AFIS/FBI to achieve best possible candidate list performance. An information item may be omitted, but its separator character must remain, except all ridge count data must be present with special values designating missing or omitted data.

Index number (MDX): The first information item shall be the index number, which shall be initialized to one and incremented by one for each additional minutia in the fingerprint. This index number serves to identify each individual minutia.

X, Y, and theta values (XYT): The X and Y coordinates are values ranging from zero upward, and the theta direction value, between 000 and 360, shall comprise the second required information item. These three values shall be coded and recorded as a single 11-digit integer number corresponding to the connected X, Y, and theta values, in that order. If the minutia is of Type D, the theta value shall be recorded as "000." The origin of the coordinate system shall be the upper left corner of the image with X increasing to the right and Y increasing downward.

The coordinate system units shall be units of 0.01mm (10 micrometers). The direction of an ending shall be into the ending ridge and the direction of a bifurcation shall be into the white space created by the dividing ridge. Angles shall be in integer degrees measured positive counterclockwise from a reference horizontal and to the right. The XY coordinates shall be applied after all rotation and translation of the image has been accomplished.

Quality measure (QMS): If present, the third information item is the minutiae quality measure. The two-digit values shall range from 0 to 63. The value zero shall indicate a manually encoded minutia. The value "1" shall indicate that no method of indicating a confidence level is available. Values between 2 and 63 shall indicate decreasing levels of confidence, with 2 denoting the greatest confidence.

Minutiae type designation (MNT): The fourth information item is the minutiae type designation. This shall be a single character chosen as follows.

Description	**Type**
Ridge ending	A
Ridge bifurcation	B
Ridge ending or bifurcation, no distinction provided	C
Type other than ending or bifurcation	D

Ridge count data (MRO): The fifth information item is the ridge count data for the nearest neighboring minutia of the indexed minutia. It shall be formatted as a series of eight sub-items, each consisting of a minutiae index number and a ridge count. This information shall be conveyed by combining the identity (MDX) of the neighboring minutia and the ridge count to that neighboring minutiae into a five digit number. For AFIS/FBI, the minutiae identification index (MDX) shall increase from 1 to 254. The ridge count values (one more than number of intervening ridges) shall range from 0 to 15; with 14 indicating a count greater than 13, and 15 indicating an indeterminate count. Up to eight neighboring minutiae can be recorded, each being the nearest neighbor in an angular sector of 45 degrees (octant) with the zero-th octant centered (+/- 22.5 degrees) and aligned with the direction of the minutiae and increasing in octant index in the counterclockwise direction. If a minutia does not have a neighbor in a particular octant, the value "25515" should be used for the sub-item.

Octant residuals (RSO): The last information item of eight ASCII characters indicates into which half of the octant each neighboring minutia lies. This subfield is beneficial for performance but not mandatory. The characters are ordered left to right according to the ascending octant index. The corresponding character shall be 1 if the neighboring minutia lies in the counterclockwise half of the octant. The corresponding character shall be 0 if the neighboring minutia lies in the clockwise half of the octant or if there is no neighboring minutiae in the octant.

MRC 9.012 – Minutiae and Ridge Count Data. This field shall contain all of the individual minutiae and ridge count data associated with the current fingerprint impression. It shall be composed of as many subfields as there are minutiae stated in the minutiae count in field, MIN.

Each subfield shall be devoted to a single minutia and shall consist of multiple information items. All information items shall be separated by the US separator character.

NMN 9.015 – Number of Minutiae. This AFIS/FBI field shall contain the count of the number of minutiae recorded for this fingerprint. For AFIS/FBI, the number should not exceed 254. If the number of minutiae provided in this field exceeds the number of minutiae the system can accommodate, the list will be truncated according to the reported minutiae quality. Minutiae below the proximal crease generally are not included.

OFR 9.005 – Originating Fingerprint Reading System. The originator's designation or name for the particular fingerprint reading system that generated the record shall be placed in the first information item of this field. The second information item of this field shall be a single character to indicate the method by which the minutiae data were read, encoded, and recorded. Allowable codes are listed in the table below. The third information item is an optional, two-character, user-generated subsystem designator that uniquely identifies the originator's equipment.

Description	Code
Data automatically read, encoded, and recorded, no human editing	A
Human editing was possible but unneeded	U
Data were automatically read but manually edited before encoding and recording	E
Data were manually read	M

ORN 9.020 – Orientation Uncertainty. The orientation uncertainty is a substantial contribution for AFIS/FBI latent characterizations and is not used for ten-print searches. This one-to-three-character field contains an estimate of the deviation in degrees of the latent image (after rotation and translation to support editing and characterization) relative to fingertip up. The entry shall be the absolute value of the angular deviation from "tip-up." The uncertainty would be zero if the impression were made with the extended finger aligned with the vertical of the displayed image. It is expected to be a human visual estimate of "the final image is aligned tip up within about X-degrees." If the examiner does not provide an estimate, the default value shall be 180.

RDG 9.011 – Minutiae Ridge Count Indicator. This single-character field shall be used to indicate the presence of minutiae ridge count information. A zero (0) in this field indicates that no ridge count information is available. A "1" indicates that ridge count information is available.

ROV 9.018 – Region of Value. This is a field of three to twenty subfields separated by the <RS> separator defining the vertices of a polygon that bounds the region of the image from which the characterization products have been extracted. Each eight-character subfield consists

of the combination of the row and column coordinates (XYM), with the first four digits representing the column and the second four digits representing the row in the XXXXYYYY structure. The vertices shall be identified in the same coordinate system as the minutiae, cores, and deltas in units of 10 micrometers and padded on the left with zeros as appropriate. The order of the vertices must be in their consecutive order around the perimeter of the polygon, either clockwise or counterclockwise. The polygon side defined by the last subfield and the first subfield shall complete the polygon. The polygon must be a simple, plane figure with no sides crossing and no interior holes.

Table J-1. Field List for Type-9 (Minutiae) Native-Mode Ten-Print Logical Record

Identifier	Condition	Field No.	Field Name	Character Type	Field Size Per Occurrence		Occurrences		Max. No. of Bytes Including Character Separators and Field Number	Example Data	Special Characters Allowed
					Min.	Max.	Min.	Max.			
LEN	M	9.001	LOGICAL RECORD LENGTH	N	2	5	1	1	12	9.001:3144<GS>	
IDC	M	9.002	IMAGE DESIGNATION CHARACTER	N	2	2	1	1	9	9.002:02<GS>	
IMP	M	9.003	IMPRESSION TYPE	B	1	1	1	1	8	9.003:00000010<GS>	
FMT	M	9.004	MINUTIAE FORMAT	A	1	1	1	1	8	9.004:U<GS>	
AFV	C [7]	9.013	AFIS FEATURE VECTOR	B	2,048	2,048	0	1	2,055	9.013:binary data<GS>	
FGN	M	9.014	FINGER NUMBER	N	2	2	1	1	9	9.014:04<GS>	
NMN	M [8]	9.015	NUMBER OF MINUTIAE	N	2	3	1	1	10	9.015:96<GS>	
FCP	M [8]	9.016	FINGERPRINT CHARACTERIZATION PROCESS				1	1	26	9.016:AFISFBI<US>R2 <US>CAV<GS>	
	M		EQUIPMENT (VEN)	A	3	12	1	1			
	M		VERSION IDENTIFIER (VID)	AN	2	2	1	1			
	M		METHOD (MET)	A	3	3	1	1			
APC	O	9.017	AFIS/FBI PATTERN CLASSIFICATION				0	3	33	9.017:LS<US>9<US>0 <RS>RS<US>13	
	M		PATTERN CLASSIFICATION (APAT)	A	2	2	1	1			
	C [1]		FIRST SUBPATTERN RIDGE COUNT (RCN1)	N	1	2	0	1			
	C [1]		SECOND SUBPATTERN RIDGE COUNT (RCN2)	N	1	2	0	1			

Under the Condition column: O = optional; M = mandatory; C = conditional, see notes.

Under the Character Type column: A = alpha; B = binary; N = numeric; S = special characters.

Table J-1. Field List for Type-9 (Minutiae) Native-Mode Ten-Print Logical Record

Identifier	Condition	Field No.	Field Name	Character Type	Field Size Per Occurrence		Occurrences		Max. No. of Bytes Including Character Separators and Field Number	Example Data	Special Characters Allowed
					Min.	Max.	Min.	Max.			
COF	O	0.019	COORDINATE OFFSETS				0	1	51	9.019:01230444<US>04650433<US>	
	M		OFFSET TO UL CORNER SUBIMAGE (XXXXYYYY) (XYP)	N	8	8	1	1			
	C [2]		CENTER OF ROTATION IN SUBIMAGE (XXXXYYYY) (XYP)	N	8	8	0	1			
	C [2]		ROTATION ANGLE CW DEGREES (III.FFFF) (THET)	N	8	8	0	1			
	C [2]		ROTATION CENTER IN ROTATED SUBIMAGE (XXXXYYYY) (XYP)	N	8	8	0	1			
	C [3]		OFFSET TO UL CORNER FINAL SUBIMAGE (XXXXYYYY) (XYP)	N	8	8	0	1			
CRA	O	9.021	CORE ATTRIBUTES				0	2	42	9.021:07612387<US>265<US>0175<RS>	
	C [4]		LOCATION (XXXXYYYY) (XYM)	N	8	8	0	1			
	C [4]		DIRECTION IN DEGREES (DDD) (DID)	N	3	3	0	1			
	C [4]		POSITION UNCERTAINTY (RRRR) (PUM)	N	4	4	0	1			

Under the Condition column: O = optional; M = mandatory; C = conditional, see notes.

Under the Character Type column: A = alpha; B = binary; N = numeric; S = special characters.

Table J-1. Field List for Type-9 (Minutiae) Native-Mode Ten-Print Logical Record

Identifier	Condition	Field No.	Field Name	Character Type	Field Size Per Occurrence		Occurrences		Max. No. of Bytes Including Character Separators and Field Number	Example Data	Special Characters Allowed
					Min.	Max.	Min.	Max.			
DLA	O	9.022	DELTA ATTRIBUTES				0	2	58	9.022:07612387<US>078<US>210<US>	
	C [5]		LOCATION (XXXXYYYY) (XYM)	N	8	8	0	1			
	C [5]		UPWARD FLOW DIRECTION (DDD) (DID)	N	3	3	0	1			
	C [5]		LEFTWARD FLOW DIRECTION (DDD) (DID)	N	3	3	0	1			
	C [5]		RIGHTWARD FLOW DIRECTION (DDD) (DID)	N	3	3	0	1			
	C [5]		POSITION UNCERTAINTY (RRRR) (PUM)	N	4	4	0	1			

Under the Condition column: O = optional; M = mandatory; C = conditional, see notes.

Under the Character Type column: A = alpha; B = binary; N = numeric; S = special characters.

Table J-1. Field List for Type-9 (Minutiae) Native-Mode Ten-Print Logical Record

Identifier	Condition	Field No.	Field Name	Character Type	Field Size Per Occurrence		Occurrences		Max. No. of Bytes Including Character Separators and Field Number	Example Data	Special Characters Allowed
					Min.	Max.	Min.	Max.			
MAT	M [8]	9.023	MINUTIAE AND RIDGE COUNT DATA				1	254	19,818	9.023:001<US>XXXXYYYY<US>QQ	
	M		MINUTIAE INDEX NUMBER (III) (MDX)	N	3	3	1	1			
	M		LOCATION DIRECTION (XXXXYYYY) (XYT)	N	11	11	1	1			
	M		QUALITY MEASURE (QMS)	N	2	2	1	1			
	M		MINUTIAE TYPE (MNT)	A	1	1	1	1			
	M		MINUTIAE INDEX AND RIDGE COUNT OCTANT 0 (NNNCC) (MRO)	N	5	5	1	1			
	M		MINUTIAE INDEX AND RIDGE COUNT OCTANT 1 (NNNCC) (MRO)	N	5	5	1	1			
	M		MINUTIAE INDEX AND RIDGE COUNT OCTANT 2 (NNNCC) (MRO)	N	5	5	1	1			
	M		MINUTIAE INDEX AND RIDGE COUNT OCTANT 3 (NNNCC) (MRO)	N	5	5	1	1			
	M		MINUTIAE INDEX AND RIDGE COUNT OCTANT 4 (NNNCC) (MRO)	N	5	5	1	1			

Under the Condition column: O = optional; M = mandatory; C = conditional, see notes.

Under the Character Type column: A = alpha; B = binary; N = numeric; S = special characters.

Table J-1. Field List for Type-9 (Minutiae) Native-Mode Ten-Print Logical Record

Identifier	Condition	Field No.	Field Name	Character Type	Field Size Per Occurrence		Occurrences		Max. No. of Bytes Including Character Separators and Field Number	Example Data	Special Characters Allowed
					Min.	Max.	Min.	Max.			
	M		MINUTIAE INDEX AND RIDGE COUNT OCTANT 5 (NNNCC) (MRO)	N	5	5	1	1			
	M		MINUTIAE INDEX AND RIDGE COUNT OCTANT 6 (NNNCC) (MRO)	N	5	5	1	1			
	M		MINUTIAE INDEX AND RIDGE COUNT OCTANT 7 (NNNCC) (MRO)	N	5	5	1	1			
	O		OCTANT RESIDUALS (RRRRRRRR) (RSO)	N	8	8	0	1			
CHQ	O	9.024	CHARACTERIZATION QUALITY	N	1	3	0	1	10	9.024:73<GS>	
CLQ	O	9.025	CLASSIFIER QUALITY	N	6	7	0	1	14	9.025:1.0525<GS>	

Under the Condition column: O = optional; M = mandatory; C = conditional, see notes.

Under the Character Type column: A = alpha; B = binary; N = numeric; S = special characters.

Table J-2. Field List for Type-9 (Minutiae) Native-Mode Latent Logical Record

Identifier	Condition	Field No.	Field Name	Character Type	Field Size Per Occurrence		Occurrences		Max. No. of Bytes Including Character Separators and Field Number	Example Data	Special Characters Allowed
					Min.	Max.	Min.	Max.			
LEN	M	9.001	LOGICAL RECORD LENGTH	N	2	5	1	1	12	9.001:3144<GS>	
IDC	M	9.002	IMAGE DESIGNATION CHARACTER	N	2	2	1	1	9	9.002:00<GS>	
IMP	M	9.003	IMPRESSION TYPE	B	1	1	1	1	8	9.003:00000010<GS>	
FMT	M	9.004	MINUTIAE FORMAT	A	1	1	1	1	8	9.004:U<GS>	
AFV	C [7]	9.013	AFIS FEATURE VECTOR	B	2,048	2,048	0	1	2,055	9.013:binary data<GS>	
FGN	C [6]	9.014	FINGER NUMBER	N	2	2	0	1	9	9.014:04<GS>	
NMN	M [8]	9.015	NUMBER OF MINUTIAE	N	2	3	1	1	10	9.015:17<GS>	
FCP	M [8]	9.016	FINGERPRINT CHARACTERIZATION PROCESS				1	1	26	9.016:AFISFBI<US>R2<US>CAV<GS>	
	M		EQUIPMENT (VEN)	A	3	12	1	1			
	M		VERSION IDENTIFIER (VID)	AN	2	2	1	1			
	M		METHOD (MET)	A	3	3	1	1			
APC	O	9.017	AFIS/FBI PATTERN CLASSIFICATION				0	3	33	9.017:LS<US>9<US>0<RS>RS<US>13	
	M		PATTERN CLASSIFICATION (APAT)	A	2	2	1	1			
	C [1]		FIRST SUBPATTERN RIDGE COUNT (RCN1)	N	1	2	0	1			
	C [1]		SECOND SUBPATTERN RIDGE COUNT (RCN2)	N	1	2	0	1			
ROV	O	9.018	REGION OF VALUE POLYGON				0	1	186	9.018:10160508<RS>24131016<RS>2032	
	M		VERTEX (XXXXYYYY) (XYM)	N	8	8	3	20			

Under the Condition column: O = optional; M = mandatory; C = conditional, see notes.

Under the Character Type column: A = alpha; B = binary; N = numeric; S = special characters.

Table J-2. Field List for Type-9 (Minutiae) Native-Mode Latent Logical Record

Identifier	Condition	Field No.	Field Name	Character Type	Field Size Per Occurrence		Occurrences		Max. No. of Bytes Including Character Separators and Field Number	Example Data	Special Characters Allowed
					Min.	Max.	Min.	Max.			
COF	O	9.019	COORDINATE OFFSETS				0	1	51	9.019:01230444<US>04650433<US>	
	M		OFFSET TO UL CORNER SUBIMAGE (XXXXYYYY) (XYP)	N	8	8	1	1			
	C [2]		CENTER OF ROTATION IN SUBIMAGE (XXXXYYYY) (XYP)	N	8	8	0	1			
	C [2]		ROTATION ANGLE CW DEGREES (III.FFFF) (THET)	N	8	8	0	1			
	C [2]		ROTATION CENTER IN ROTATED SUBIMAGE (XXXXYYYY) (XYP)	N	8	8	0	1			
	C [3]		OFFSET TO UL CORNER FINAL SUBIMAGE (XXXXYYYY) (XYP)	N	8	8	0	1			
ORN	M [8]	9.020	ORIENTATION UNCERTAINTY	N	1	3	1	1	10	9.020:25<GS>	
CRA	O	9.021	CORE ATTRIBUTES				0	2	42	9.021:07612387<US>265<US>0175<RS>	
	C [4]		LOCATION (XXXXYYYY) (XYM)	N	8	8	0	1			
	C [4]		DIRECTION IN DEGREES (DDD) (DID)	N	3	3	0	1			
	C [4]		POSITION UNCERTAINTY (RRRR) (PUM)	N	4	4	0	1			

Under the Condition column: O = optional; M = mandatory; C = conditional, see notes.
Under the Character Type column: A = alpha; B = binary; N = numeric; S = special characters.

Table J-2. Field List for Type-9 (Minutiae) Native-Mode Latent Logical Record

Identifier	Condition	Field No.	Field Name	Character Type	Field Size Per Occurrence		Occurrences		Max. No. of Bytes Including Character Separators and Field Number	Example Data	Special Characters Allowed
					Min.	Max.	Min.	Max.			
DLA	O	9.022	DELTA ATTRIBUTES				0	2	58	9.022:07612387<US>078<US>210<US>	
	C [5]		LOCATION (XXXXYYYY) (XYM)	N	8	8	0	1			
	C [5]		UPWARD FLOW DIRECTION (DDD) (DID)	N	3	3	0	1			
	C [5]		LEFTWARD FLOW DIRECTION (XXXXYYYY) (XYM)	N	3	3	0	1			
	C [5]		RIGHTWARD FLOW DIRECTION (DDD) (DID)	N	3	3	0	1			
	C [5]		POSITION UNCERTAINTY (RRR) (PUM)	N	4	4	0	1			

Under the Condition column: O = optional; M = mandatory; C = conditional, see notes.
Under the Character Type column: A = alpha; B = binary; N = numeric; S = special characters.

Table J-2. Field List for Type-9 (Minutiae) Native-Mode Latent Logical Record

Identifier	Condition	Field No.	Field Name	Character Type	Field Size Per Occurrence		Occurrences		Max. No. of Bytes Including Character Separators and Field Number	Example Data	Special Characters Allowed
					Min.	Max.	Min.	Max.			
MAT	M [8]	9.023	MINUTIAE AND RIDGE COUNT DATA				1	254	19,818	9.023:001<US>XXXXYYYY <US>QQ	
	M		MINUTIAE INDEX NUMBER (III) (MDX)	N	3	3	1	1			
	M		LOCATION DIRECTION (XXXXYYYY) (XYT)	N	11	11	1	1			
	M		QUALITY MEASURE (QMS)	N	2	2	1	1			
	M		MINUTIAE TYPE (MNT)	A	1	1	1	1			
	M		MINUTIAE INDEX AND RIDGE COUNT OCTANT 0 (NNNCC) (MRO)	N	5	5	1	1			
	M		MINUTIAE INDEX AND RIDGE COUNT OCTANT 1 (NNNCC) (MRO)	N	5	5	1	1			
	M		MINUTIAE INDEX AND RIDGE COUNT OCTANT 2 (NNNCC) (MRO)	N	5	5	1	1			
	M		MINUTIAE INDEX AND RIDGE COUNT OCTANT 3 (NNNCC) (MRO)	N	5	5	1	1			
	M		MINUTIAE INDEX AND RIDGE COUNT OCTANT 4 (NNNCC) (MRO)	N	5	5	1	1			

Under the Condition column: O = optional; M = mandatory; C = conditional, see notes.
Under the Character Type column: A = alpha; B = binary; N = numeric; S = special characters.

Table J-2. Field List for Type-9 (Minutiae) Native-Mode Latent Logical Record

Identifier	Condition	Field No.	Field Name	Character Type	Field Size Per Occurrence		Occurrences		Max. No. of Bytes Including Character Separators and Field Number	Example Data	Special Characters Allowed
					Min.	Max.	Min.	Max.			
	M		MINUTIAE INDEX AND RIDGE COUNT OCTANT 5 (NNNCC) (MRO)	N	5	5	1	1			
	M		MINUTIAE INDEX AND RIDGE COUNT OCTANT 6 (NNNCC) (MRO)	N	5	5	1	1			
	M		MINUTIAE INDEX AND RIDGE COUNT OCTANT 7 (NNNCC) (MRO)	N	5	5	1	1			
	O		OCTANT RESIDUALS (RRRRRRRR) (RSO)	N	8	8	0	1			

Under the Condition column: O = optional; M = mandatory; C = conditional, see notes.
Under the Character Type column: A = alpha; B = binary; N = numeric; S = special characters.

APPENDIX J REFERENCE NOTES

1. If tagged field 9.017 “APC” is present, at least one pattern classification must be provided. Up to two additional reference classes may be provided for a maximum of three total possible patterns.

2. If no rotation has been applied, the second, third, and fourth information item positions may be empty, but the intervening <US> separators must remain.

3. If no second sub-image is generated, the fifth information item position may be empty.

4. Maximum of two cores reported. If only one core, the first subfield shall be terminated with the <GS> separator instead of the <RS> separator, and the second subfield shall be deleted.

5. Maximum of two deltas reported. If only one delta, the first subfield shall be terminated with the <GS> separator instead of the <RS> separator, and the second subfield shall be deleted.

6. Mandatory only for multiple-finger latent search request to specify the finger characterized herein.

7. Tagged field 9.04=‘U’ indicates that a Native Mode AFIS/FBI format is being provided in this Type-9 record. If the AFV field (9.013) is not present, the following ANSI standard Type-9 record will be parsed for sufficient features information. The Type-9 in Table J-1 defines the ANSI standard logical record sequence for a native mode ten-print search request. “9.001:” + LEN + <GS> + “9.002:” + IDC + <GS> + “9.003:” + IMP + <GS> + “9.004:” + FMT + (<GS> + “9.013:” + AFV) + <GS> + “9.014:” + FGN + <GS> + “9.015:” + NMN + <GS> + “9.016:” + FCP + (<GS> + “9.017:” + APC) + (<GS> + “9.019:” + COF) + <GS> + “9.021:” + CRA + <GS> + “9.022:” + DLA + <GS> + “9.023:” + MAT + (<GS> + “9.024:” + CHQ) + (<GS> + “9.025:” + CLQ) + <FS>. The Type-9 in Table J-2 defines the ANSI standard logical record sequence for a remote native mode latent search request. “9.001:” + LEN + <GS> + “9.002:” + IDC + <GS> + “9.003:” + IMP + <GS> + “9.004:” + FMT + (<GS> + “9.013:” + AFV) + <GS> + “9.014:” + FGN + <GS> + “9.015:” + NMN + <GS> + “9.016:” + FCP + (<GS> + “9.017:” + APC) + (<GS> + “9.018:” + ROV) + (<GS> + “9.019:” + COF) + <GS> + “9.020:” + ORN + <GS> + “9.021:” + CRA + <GS> + “9.022:” + DLA + <GS> + “9.023:” + MAT + <FS>.

8. This field is optional if the feature vector, field 9.013, has been provided.

APPENDIX K

DESCRIPTORS AND FIELD EDIT SPECIFICATIONS FOR TYPE-10 LOGICAL RECORDS AND LOGICAL RECORD FIELD LISTS FOR TYPE-2 (PHOTO) RECORDS

Type-10 records shall contain facial and/or SMT image data and related ASCII information pertaining to the specific image contained in this record. It shall be used to exchange both grayscale and color image data in a compressed or uncompressed form. Appendix K provides the Type-2 record fields applicable to the photo and/or SMT Type-10 image record. For complete description of the Type-10 record fields, see ANSI/NIST-ITL 1-2007 contained in Attachment 1 to this document.

Table K-1. Field List for Subject Photo Request (CPR) Transactions

Identifier	Condition	Field No.	Field Name	Character Type	Field Size Per Occurrence		Occurrences		Max. No. of Bytes Including Character Separators and Field Number	Example Data	Special Characters Allowed
					Min.	Max.	Min.	Max.			
LEN	M	2.001	LOGICAL RECORD LENGTH	N	2	7	1	1	14	2.001:909<GS>	
IDC	M	2.002	IMAGE DESIGNATION CHARACTER	N	2	2	1	1	9	2.002:0200<GS>	
ATN	O	2.006	"ATTENTION" INDICATOR	ANS	3	30	0	1	37	2.006:SA J Q DOE,RM11867<GS>	Any printable 7-bit ASCII character except the period is allowed.
SCO	O	2.007	SEND COPY TO	ANS	9	19	0	9	186	2.007:NY030025P<GS>	Any printable 7-bit ASCII character is allowed.
FBI	C [5]	2.014	FBI NUMBER	AN	1	9	0	1	16	2.014:62760NY12<GS>	
DOA	O [1]	2.045	DATE OF ARREST	N	8	8	0	1	15	2.045:19950324<GS>	
DOS	O	2.046	DATE OF ARREST – SUFFIX	A	1	1	0	1	8	2.046:L<GS>	
CRI	M [2]	2.073	CONTROLLING AGENCY IDENTIFIER	ANS	1	9	1	3	36	2.073:NY1234567<GS>	
UCN	C [6]	2.081	UNIVERSAL CONTROL NUMBER	AN	1	9	0	1	16	2.081:407542132<GS>	
NDR	M	2.098	NAME OF DESIGNATED REPOSITORY	N	1	3	1	1	10	2.098:1<GS>	
PTY	O	2.2009	PHOTO TYPE	A	4	6	1	1	14	2.2009:FACE<GS>	
NIR	O	2.2010	NUMBER OF IMAGES REQUESTED	N	1	2	1	1	9	2.2010:99<GS>	

Under the Condition column: O = optional; M = mandatory; C = conditional, see notes.

Under the Character Type column: A = alpha; B = binary; N = numeric; S = special characters.

Table K-2. Field List for Subject Photo Delete Request (CPD) Transactions

Identifier	Condition	Field No.	Field Name	Character Type	Field Size Per Occurrence		Occurrences		Max. No. of Bytes Including Character Separators and Field Number	Example Data	Special Characters Allowed
					Min.	Max.	Min.	Max.			
LEN	M	2.001	LOGICAL RECORD LENGTH	N	2	7	1	1	14	2.001:909<GS>	
IDC	M	2.002	IMAGE DESIGNATION CHARACTER	N	2	2	1	1	9	2.002:0200<GS>	
ATN	O	2.006	"ATTENTION" INDICATOR	ANS	3	30	0	1	37	2.006:SA J Q DOE,RM11867<GS>	Any printable 7-bit ASCII character except the period is allowed.
SCO	O	2.007	SEND COPY TO	ANS	9	19	0	9	186	2.007:NY030025P<GS>	Any printable 7-bit ASCII character is allowed.
FBI	C [5]	2.014	FBI NUMBER	AN	1	9	1	1	16	2.014:62760NY12<GS>	Any printable 7-bit ASCII character is allowed.
DOA	M [4]	2.045	DATE OF ARREST	N	8	8	1	1	15	2.045:19950324<GS>	
DOS	M	2.046	DATE OF ARREST – SUFFIX	A	1	1	1	1	8	2.046:L<GS>	
CRI	M [2]	2.073	CONTROLLING AGENCY IDENTIFIER	ANS	1	9	1	3	36	2.073:NY1234567<FS>	
UCN	C [6]	2.081	UNIVERSAL CONTROL NUMBER	AN	1	9	0	1	16	2.081:407542132<GS>	

Under the Condition column: O = optional; M = mandatory; C = conditional, see notes.

Under the Character Type column: A = alpha; B = binary; N = numeric; S = special characters.

Table K-3. Field List for Subject Photo Request Response (PRR) Transactions

Identifier	Condition	Field No.	Field Name	Character Type	Field Size Per Occurrence		Occurrences		Max. No. of Bytes Including Character Separators and Field Number	Example Data	Special Characters Allowed
					Min.	Max.	Min.	Max.			
LEN	M	2.001	LOGICAL RECORD LENGTH	N	2	7	1	1	14	2.001:909<GS>	
IDC	M	2.002	IMAGE DESIGNATION CHARACTER	N	2	2	1	1	9	2.002:0200<GS>	
ATN	O	2.006	"ATTENTION" INDICATOR	ANS	3	30	0	1	37	2.006:SA J Q DOE,RM11867<GS>	Any printable 7-bit ASCII character except the period is allowed.
SCO	O	2.007	SEND COPY TO	ANS	9	19	0	9	186	2.007:NY030025P<GS>	Any printable 7-bit ASCII character is allowed.
FBI	C [5]	2.014	FBI NUMBER	AN	1	9	1	1	16	2.014:62760NY12<GS>	
DOA	O	2.045	DATE OF ARREST	N	8	8	0	1	15	2.045:19950324<GS>	
DOS	O	2.046	DATE OF ARREST – SUFFIX	A	1	1	0	1	8	2.046:L<GS>	
CRI	M	2.073	CONTROLLING AGENCY IDENTIFIER	ANS	1	9	1	3	36	2.073:NY1234567<GS>	
EXP	O	2.080	RESPONSE EXPLANATION	ANS	1	50	0	1	57	2.080:PHOTO NOT FOUND FOR SPECIFIED DOA DOS<GS>	Any printable 7-bit ASCII character is allowed.
UCN	C [6]	2.081	UNIVERSAL CONTROL NUMBER	AN	1	9	0	1	16	2.081:407542132<GS>	
REC	M [3]	2.082	RESPONSE CODE	A	1	1	1	1	8	2.082:Y<FS>	

Under the Condition column: O = optional; M = mandatory; C = conditional, see notes.

Under the Character Type column: A = alpha; B = binary; N = numeric; S = special characters.

Table K-4. Field List for Subject Photo Request Response (PRR) Transactions

Identifier	Condition	Field No.	Field Name	Character Type	Field Size Per Occurrence		Occurrences		Max. No. of Bytes Including Character Separators and Field Number	Example Data	Special Characters Allowed
					Min.	Max.	Min.	Max.			
LEN	M	2.001	LOGICAL RECORD LENGTH	N	2	7	1	1	14	2.001:909<GS>	
IDC	M	2.002	IMAGE DESIGNATION CHARACTER	N	2	2	1	1	9	2.002:0200<GS>	
ATN	O	2.006	"ATTENTION" INDICATOR	ANS	3	30	0	1	37	2.006:SA J Q DOE,RM11867<GS>	Any printable 7-bit ASCII character except the period is allowed.
SCO	O	2.007	SEND COPY TO	ANS	9	19	0	9	186	2.007:NY030025P<GS>	Any printable 7-bit ASCII character is allowed.
FBI	C [5]	2.014	FBI NUMBER	AN	1	9	1	1	16	2.014:62760NY12<GS>	
DOA	M	2.045	DATE OF ARREST	N	8	8	0	1	15	2.045:19950324<GS>	
DOS	O	2.046	DATE OF ARREST – SUFFIX	A	1	1	0	1	8	2.046:L<GS>	
CRI	M	2.073	CONTROLLING AGENCY IDENTIFIER	ANS	1	9	1	3	36	2.073?HY1234567<GS>	
EXP	O	2.080	RESPONSE EXPLANATION	ANS	1	50	0	1	57	2.080:PHOTO NOT FOUND FOR SPECIFIED DOA DOS<GS>	Any printable 7-bit ASCII character is allowed.
UCN	C [6]	2.081	UNIVERSAL CONTROL NUMBER	AN	1	9	0	1	16	2.081:407542132<GS>	
REC	M [3]	2.082	RESPONSE CODE	A	1	1	1	1	8	2.082:Y<FS>	

Under the Condition column: O = optional; M = mandatory; C = conditional, see notes.

Under the Character Type column: A = alpha; B = binary; N = numeric; S = special characters.

Table K-5. Field List for Type-10 (Subject Photo) Logical Records

Identifier	Condition	Field No.	Field Name	Character Type	Field Size Per Occurrence		Occurrences		Max. No. of Bytes Incl. Character Separators and Field Number	Example Data
					Min.	Max.	Min.	Max.		
LEN	M	10.001	LOGICAL RECORD LENGTH	N	3	7	1	1	15	10.001:909<GS>
IDC	M	10.002	IMAGE DESIGNATION CHARACTER	N	1	4	1	1	12	10.002:0200<GS>
IMT	M	10.003	IMAGE TYPE	A	4	6	1	1	14	10.003:FACE<GS>
SRC	M	10.004	SOURCE AGENCY/ORI	AN	9	43	1	1	51	10.004:NY0303000S<GS>
PHD	M	10.005	PHOTO DATE	N	8	8	1	1	16	10.005:19960201<GS>
HLL	M	10.006	HORIZONTAL LINE LENGTH	N	3	4	1	1	12	10.006:480<GS>
VLL	M	10.007	VERTICAL LINE LENGTH	N	3	4	1	1	12	10.007:600<GS>
SLC	M	10.008	SCALE UNITS	N	1	1	1	1	9	10.008:0<GS>
HPS	M	10.009	HORIZONTAL PIXEL SCALE	N	2	4	1	1	12	10.009:01<GS>
VPS	M	10.010	VERTICAL PIXEL SCALE	N	2	4	1	1	12	10.010:01<GS>
CGA	M	10.011	COMPRESSION ALGORITHM	A	4	6	1	1	14	10.011:JPEGB<GS>
CSP	M	10.012	COLOR SPACE	A	3	4	1	1	12	10.012:YCC<GS>
SAP [9]	C [8]	10.013	SUBJECT ACQUISITION PROFILE	N	2	4	1	1	11	10.013:11<GS>
SHPS [9]	O	10.016	SCAN HORIZONTAL PIXEL SCALE	N	2	5	0	1	12	10.016:<GS>
SVPS [9]	O	10.017	SCAN VERTICAL PIXEL SCALE	N	2	5	0	1	12	10.017:<GS>
POS	M	10.020	SUBJECT POSE	A	1	1	1	1	9	10.020:L<GS>
POA	O	10.021	POSE OFFSET ANGLE	N	1	4	0	1	12	10.021:45<GS>
PXS	O	10.022	PHOTO DESCRIPTION	A	3	20	0	9	196	10.022:GLASSES<GS>
PAS [9]	O	10.023	PHOTO ACQUISITION SOURCE	A	7	15	0	1	23	10.023:<GS>
SQS [9]	O	10.024	SUBJECT QUALITY SCORE	N	10	35	0	9	323	10.024:<GS>
SPA [9]	O	10.025	SUBJECT POSE ANGLES	N	9	23	0	1	31	10.025:<GS>
SXS [9]	O	10.026	SUBJECT FACIAL DESCRIPTION	A	6	21	0	50	1,058	10.026:<GS>
SEC [9]	O	10.027	SUBJECT EYE COLOR	A	4	4	0	1	12	10.027:<GS>
SHC [9]	O	10.028	SUBJECT HAIR COLOR	A	4	8	0	2	24	10.028:<GS>
SFP [9]	O	10.029	SUBJECT FEATURE POINTS	N	10	18	0	88	1,592	10.028:<GS>
DMM [9]	O	10.030	DEVICE MONITORING MODE	A	8	11	0	1	19	10.030:<GS>
SMT [9]	C [7]	10.040	NCIC DESIGNATION CODE	A	4	11	1	3	41	10.040:XXXXXX<GS>
SMS [9]	O	10.041	SCAR/MARK/TATTOO SIZE	N	4	6	0	1	14	10.041:20<US>40<GS>
SMD [9]	O	10.042	SMT DESCRIPTORS	AN	16	51	0	9	467	10.042:TATTOO<US>SYMBOL<US> GANG<US>MS13<GS>
COL [9]	O	10.043	COLORS PRESENT	A	4	21	0	9	197	10.043:BLACK<GS>
DAT	M	10.999	IMAGE DATA	B	2	5,000,000	1	1	5,000,008	10.999:image data<FS>

Under the Condition column: O = optional; M = mandatory; C = conditional, see notes.
Under the Character Type column: A = alpha; B = binary; N = numeric; S = special characters.

APPENDIX K REFERENCE NOTES

1. DOA must be present to obtain a specific set of photos, otherwise the latest set of photos will be sent.

2. CRI field required only for a photo delete request.

3. Response code will contain a value to indicate the condition of the request "Y" for successful, "N" for rejected.

4. DOA must be present to request a delete action.

5. FBI is mandatory in the Type-2 record if the photo requested is associated with a criminal record.

6. UCN is mandatory in the Type-2 record if the photo requested is associated with other than a criminal record (*e.g.*, civil record), but optionally may contain an FBI number.

7. SMT (NCIC Designation code) is mandatory if the image type is SMT. For SAP to be included, IMT (10.003) must contain "FACE."

8. Source: ANSI/NIST-ITL 1-2007.

APPENDIX L

SUMMARY TABLES

This appendix contains several tables that collect in one place summaries of information that otherwise is dispersed through the EBTS document. Tables L-1 and L-2 cross-reference all currently used EBTS elements from their Element IDs to their Tag Numbers. The cross-references appear in two ways. Table L-1 lists the fields in Element ID order. Table L-2 lists them in Tag Number order.

In several instances, Tag Numbers shown have alpha suffixes. These suffixes are given only to make the list complete (*i.e.*, to include subfields as well as simple elements in the list) and to aid in determination of what the parent field is in such cases. For example, the field tag 2.084A identifies this (FGP) as a subfield of AMP (2.084). *Under no circumstance is a subfield tag to be used in formatting any EBTS electronic message. Subfields do not have independent tags, either with or without an alpha suffix.*

Tables L-3 and L-4 list recordset requirements for each EBTS transaction type. Table L-3 lists the recordset requirements for each type of submission. Table L-4 lists recordset requirements for each response type. In instances where these requirements differ depending upon which submission the response is made for, several entries will be present. Note that the Type-4 and Type-14 requirements for ten-print submissions are stated to be 14. If less than 14 images are submitted, each missing image must be noted in the AMP field of the accompanying Type-2 record. The TPIS and TPFS indicate that N-10 Type-4/14 or Type-9 records, respectively, are to be submitted. N is the minimum number of fingers required by AFIS for a search, and N = 2 for IAFIS.

Table L-1. Complete Element Cross-Reference List by ID

Element ID	EBTS Tag Number	Element Name
ACN	2.071	ACTION TO BE TAKEN
AFM	14.024	ALTERNATE FINGERPRINT QUALITY METRIC
AFV	9.013	AFIS FEATURE VECTOR
AGR	2.023	AGE RANGE
AKA	2.019	ALIASES
AMP	2.084	AMPUTATED OR BANDAGED
AMPCD	2.084B	AMPUTATED OR BANDAGED CODE
AOL	2.047B	ARREST OFFENSE LITERAL
APAT	9.017A	PATTERN CLASSIFICATION
APC	9.017	AFIS/FBI PATTERN CLASSIFICATION
APM	15.024	ALTERNATE PALMPRINT QUALITY METRIC
ASL	2.047	ARREST SEGMENT LITERAL
ATN	2.006	“ATTENTION” INDICATOR
BCD	99.005	BIOMETRIC CAPTURE DATE
BDB	99.999	BIOMETRIC DATA BLOCK
BDQ	99.102	BIOMETRIC DATA QUALITY
BFO	99.103	BDB FORMAT OWNER
BFT	99.104	BDB FORMAT TYPE
BPX	13.012	BITS PER PIXEL
BPX	14.012	BITS PER PIXEL
BPX	15.012	BITS PER PIXEL
BPX	16.012	BITS PER PIXEL
BPX	17.012	BITS PER PIXEL
BTY	99.101	BIOMETRIC TYPE
CAN	2.064	CANDIDATE LIST
CCN	2.094	COURT CASE NUMBER
CDD	2.051A	COURT DISPOSITION DATE
CFS	2.077	CANCEL FP SEARCH
CGA	10.011	COMPRESSION ALGORITHM
CGA	13.011	COMPRESSION ALGORITHM
CGA	14.011	COMPRESSION ALGORITHM
CGA	15.011	COMPRESSION ALGORITHM
CGA	16.011	COMPRESSION ALGORITHM
CGA	17.011	COMPRESSION ALGORITHM
CHQ	9.024	CHARACTERIZATION QUALITY
CIN	2.010	CONTRIBUTOR CASE IDENTIFIER NUMBER
CIN_ID	2.010B	CONTRIBUTOR CASE ID
CIN_PRE	2.010A	CONTRIBUTOR CASE PREFIX
CIX	2.011	CONTRIBUTOR CASE IDENTIFIER EXTENSION
CLQ	9.025	CLASSIFIER QUALITY
CNT	1.03	FILE CONTENT
COF	9.019	COORDINATE OFFSETS
COL	2.051B	COURT OFFENSE LITERAL
COL	10.043	COLORS PRESENT
COM	13.020	COMMENT
COM	14.020	COMMENT
COM	15.020	COMMENT
COM	16.020	COMMENT
CPL	2.051C	OTHER COURT SENTENCE PROVISION LITERAL
CRA	9.021	CORE ATTRIBUTES
CRI	2.073	CONTROLLING AGENCY IDENTIFIER

Note: The alpha suffixes shown here on EBTS tags are only to identify subfields. They must never be used in message construction.

Table L-1. Complete Element Cross-Reference List by ID

Element ID	EBTS Tag Number	Element Name
CRN	2.085	CIVIL RECORD NUMBER
CRP	9.008	CORE POSITION
CSF	2.2006	CASCADED SEARCH FLAG
CSL	2.051	COURT SEGMENT LITERAL
CSP	10.012	COLOR SPACE
CSP	16.013	COLOR SPACE
CSP	17.013	COLOR SPACE
CSR	2.048	CIVIL SEARCH REQUESTED INDICATOR
CST	2.061	CASE TITLE
CTZ	2.021	COUNTRY OF CITIZENSHIP
DAI	1.07	DESTINATION AGENCY IDENTIFIER
DAT	1.05	DATE
DAT	10.999	IMAGE DATA
DAT	13.099	IMAGE DATA
DAT	14.099	IMAGE DATA
DAT	15.099	IMAGE DATA
DAT	16.099	IMAGE DATADID 9.021B DIRECTION IN DEGREES (DDD)
DID	9.022B	UPWARD FLOW DIRECTION (DDD)
DID	9.022C	LEFTWARD FLOW DIRECTION (DDD)
DID	9.022D	RIGHTWARD FLOW DIRECTION (DDD)
DLA	9.022	DELTA ATTRIBUTES
DLT	9.009	DELTA POSITION
DMI	2.XXX	DISPOSITION MAINTENANCE INDICATOR
DMM	10.030	DEVICE MONITORING MODE
DMM	14.030	DEVICE MONITORING MODE
DMM	15.030	DEVICE MONITORING MODE
DMM	16.030	DEVICE MONITORING MODE
DMM	17.030	DEVICE MONITORING MODE
DOA	2.045	DATE OF ARREST
DOB	2.022	DATE OF BIRTH
DOO	2.047A	DATE OF OFFENSE
DOS	2.046	DATE OF ARREST-SUFFIX
DPR	2.038	DATE PRINTED
DUI	17.017	DEVICE UNIQUE IDENTIFIER
EAD	2.039	EMPLOYER AND ADDRESS
ECL	17.020	EYE COLOR
EID	2.049	EMPLOYEE IDENTIFICATION NUMBER
ERS	2.075	ELECTRONIC RAP SHEET
ETC	2.069	ESTIMATED TIME TO COMPLETE
EXP	2.080	RESPONSE EXPLANATION
EYE	2.031	COLOR EYES
FBI	2.014	FBI NUMBER
FCP	9.016	FINGERPRINT CHARACTERIZATION PROCESS
FFN	2.003	FBI FILE NUMBER
FGN	9.014	FINGER NUMBER
FGP	2.034A	FINGER POSITION
FGP	2.074	FINGER POSITION
FGP	2.084A	FINGER POSITION
FGP	2.091A	FINGER POSITION
FGP	2.092A	FINGER POSITION
FGP	7.04	FINGER POSITION
FGP	9.006	FINGER POSITION

Note: The alpha suffixes shown here on EBTS tags are only to identify subfields. They must never be used in message construction.

TABLE L-1. COMPLETE ELEMENT CROSS-REFERENCE LIST BY ID

Element ID	EBTS Tag Number	Element Name
FGP	13.013	FINGER POSITION
FGP	14.013	FINGER POSITION
FID	17.003	FEATURE IDENTIFIER
FIU	2.072	FINGERPRINT IMAGE(S) UPDATED
FMT	9.004	MINUTIAE FORMAT
FNR	2.057	FINGER NUMBER(S) REQUESTED
FNU	2.064A	FBI NUMBER
FPC	2.033	NCIC FINGERPRINT CLASSIFICATION
FPC	9.007	FINGERPRINT PATTERN CLASSIFICATION
GCA	7.08	GRAYSCALE COMPRESSION ALGORITHM
GEO	2.044	GEOGRAPHICAL AREA OF SEARCH
GUI	17.018	GLOBAL UNIQUE IDENTIFIER
HAI	2.032	HAIR COLOR
HDV	99.100	CBEFF HEADER VERSION
HGT	2.027	HEIGHT
HLL	10.006	HORIZONTAL LINE LENGTH
HLL	7.06	HORIZONTAL LINE LENGTH
HLL	13.006	HORIZONTAL LINE LENGTH
HLL	14.006	HORIZONTAL LINE LENGTH
HLL	15.006	HORIZONTAL LINE LENGTH
HLL	16.006	HORIZONTAL LINE LENGTH
HLL	17.006	HORIZONTAL LINE LENGTH
HPS	10.009	HORIZONTAL PIXEL SCALE
HPS	13.009	HORIZONTAL PIXEL SCALE
HPS	14.009	HORIZONTAL PIXEL SCALE
HPS	15.009	HORIZONTAL PIXEL SCALE
HPS	16.009	HORIZONTAL PIXEL SCALE
HPS	17.009	HORIZONTAL PIXEL SCALE
HTR	2.028	HEIGHT RANGE
ICO	2.056	IDENTIFICATION COMMENTS
IDC	10.002	IMAGE DESIGNATION CHARACTER
IDC	2.002	IMAGE DESIGNATION CHARACTER
IDC	7.02	IMAGE DESIGNATION CHARACTER
IDC	9.002	IMAGE DESIGNATION CHARACTER
IDC	13.002	IMAGE DESIGNATION CHARACTER
IDC	14.002	IMAGE DESIGNATION CHARACTER
IDC	15.002	IMAGE DESIGNATION CHARACTER
IDC	16.002	IMAGE DESIGNATION CHARACTER
IDC	17.002	IMAGE DESIGNATION CHARACTER
IDC	99.002	IMAGE DESIGNATION CHARACTER
IID	17.099	IRIS IMAGE DATA
IIR	2.2012	IRIS IMAGES REQUESTED
IMA	2.067	IMAGE CAPTURE EQUIPMENT
IMG	7.99	IMAGE DATA
IMP	7.03	IMPRESSION TYPE
IMP	9.003	IMPRESSION TYPE
IMP	13.003	IMPRESSION TYPE
IMP	14.003	IMPRESSION TYPE
IMP	15.003	IMPRESSION TYPE
IMT	10.003	IMAGE TYPE

Note: The alpha suffixes shown here on EBTS tags are only to identify subfields. They must never be used in message construction.

Table L-1. Complete Element Cross-Reference List by ID

Element ID	EBTS Tag Number	Element Name
IMT	2.062	IMAGE TYPE (IF TYPE -7 IMAGES)
IPC	17.016	IMAGE PROPERTY CODE
IQM	14.022	IMAGE QUALITY METRIC
IQS	17.024	IMAGE QUALITY SCORE
IRD	17.005	IRIS CAPTURE DATE
ISR	7.05	IMAGE SCANNING RESOLUTION
LCD	13.005	LATENT CAPTURE DATE
LCN	2.012	FBI LATENT CASE NUMBER
LCX	2.013	FBI LATENT CASE EXTENSION
LEN	1.01	LOGICAL RECORD LENGTH
LEN	10.001	LOGICAL RECORD LENGTH
LEN	2.001	LOGICAL RECORD LENGTH
LEN	7.01	LOGICAL RECORD LENGTH
LEN	9.001	LOGICAL RECORD LENGTH
LEN	13.001	LOGICAL RECORD LENGTH
LEN	14.001	LOGICAL RECORD LENGTH
LEN	15.001	LOGICAL RECORD LENGTH
LEN	16.001	LOGICAL RECORD LENGTH
LEN	17.001	LOGICAL RECORD LENGTH
LEN	99.001	LOGICAL RECORD LENGTH
MAK	2.067A	ORIGINATING FINGERPRINT READING SYSTEM MAKE
MAT	9.023	MINUTIAE AND RIDGE COUNT DATA
MCL	13.014	MAJOR CASE LATENT
MCP	14.014	MAJOR CASE PRINT
MCOUNT	9.012E	RIDGE COUNT DATA
MCS	13.015	MAJOR CASE PRINT SEGMENT POSITION(S)
MCS	14.015	MAJOR CASE PRINT SEGMENT POSITION(S)
MDX	9.012A	INDEX NUMBER
MDX	9.023A	MINUTIAE INDEX NUMBER (III)
MET	9.016C	METHOD
MIL	2.042	MILITARY CODE
MMS	17.019	MAKE/MODEL/SERIAL NUMER
MNT	9.023D	MINUTIA TYPE
MNU	2.017	MISCELLANEOUS IDENTIFICATION NUMBER
MODL	2.067B	ORIGINATING FINGERPRINT READING SYSTEM MODEL
MQUAL	9.012C	QUALITY MEASURE
MRC	9.012	MINUTIAE AND RIDGE COUNT DATA
MRO	9.023E	MINUTIA INDEX AND RIDGE COUNT OCTANT 0 (NNNCC)
MRO	9.023F	MINUTIA INDEX AND RIDGE COUNT OCTANT 1 (NNNCC)
MRO	9.023G	MINUTIA INDEX AND RIDGE COUNT OCTANT 2 (NNNCC)
MRO	9.023H	MINUTIA INDEX AND RIDGE COUNT OCTANT 3 (NNNCC)
MRO	9.023I	MINUTIA INDEX AND RIDGE COUNT OCTANT 4 (NNNCC)
MRO	9.023J	MINUTIA INDEX AND RIDGE COUNT OCTANT 5 (NNNCC)
MRO	9.023K	MINUTIA INDEX AND RIDGE COUNT OCTANT 6 (NNNCC)
MRO	9.023L	MINUTIA INDEX AND RIDGE COUNT OCTANT 7 (NNNCC)
MSC	2.089	MATCH SCORE
MSG	2.060	STATUS/ERROR MESSAGE
MTD	9.012D	MINUTIAE TYPE DESIGNATION
MXYTHETA	9.012B	X, Y, THETA VALUES
NAM	2.018	NAME
NAM	2.064B	NAME

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Table L-1. Complete Element Cross-Reference List by ID

Element ID	EBTS Tag Number	Element Name
NAM1	2.2001	NAME-ONE
NAM2	2. 2002	NAME-TWO
NAM3	2. 2003	NAME-THREE
NAM4	2. 2004	NAME-FOUR
NAM5	2. 2005	NAME-FIVE
NCR	2.079	NUMBER OF CANDIDATE'S IMAGES RETURNED
NDR	2.098	NAME OF DESIGNATED REPOSITORY
NMN	9.015	NUMBER OF MINUTIAE
NIR	2.2010	NUMBER OF IMAGES REQUESTED
NOT	2.088	NOTE FIELD
NSR	1.11	NATIVE SCANNING RESOLUTION
NTR	1.12	NOMINAL TRANSMITTING RESOLUTION
OCA	2.009	ORIGINATING AGENCY CASE NUMBER
OCP	2.040	OCCUPATION
OFC	2.053	OFFENSE CATEGORY
OFR	9.005	ORIGINATING FINGERPRINT READING SYSTEM
OFR_METHOD	9.005B	ORIGINATING FINGERPRINT READER METHOD
OFR_NAME	9.005A	ORIGINATING FINGERPRINT READER NAME
OFR_SUBSYS	9.005C	ORIGINATING FINGERPRINT READER SUBSYS
ORI	1.08	ORIGINATING AGENCY IDENTIFIER
ORN	9.020	ORIENTATION UNCERTAINTY
PAT	2.034	PATTERN LEVEL CLASSIFICATIONS
PATCL	2.034B	PATTERN CLASSIFICATION CODE
PAX	10.023	PHOTO ACQUISITION SOURCE
PEN	2.078	PENETRATION QUERY RESPONSE
PCD	15.005	PALMPRINT CAPTURE DATE
PHD	10.005	PHOTO DATE
PHT	2.036	“PHOTO AVAILABLE” INDICATOR
PLP	15.013	PALMPRINT POSITION
POA	10.021	POSE OFFSET ANGLE
POB	2.020	PLACE OF BIRTH
POS	10.020	SUBJECT POSE
PPA	2.035	“PALM PRINTS AVAILABLE” INDICATOR
PRI	2.076	PRIORITY
PRY	1.06	TRANSACTION PRIORITY
PTD	2.063	PERSON TYPE DESIGNATOR
PTY	2.2009	PHOTO TYPE
PUM	9.021C	POSITION UNCERTAINTY (RRRR)
PUM	9.022E	POSITION UNCERTAINTY (RRRR)
PXS	10.022	PHOTO DESCRIPTION
QDD	2.004	QUERY DEPTH OF DETAIL
QMS	9.023C	QUALITY MEASURE
RAC	2.025	RACE
RAE	17.014	ROTATION ANGLE OF EYE
RAP	2.070	REQUEST FOR ELECTRONIC RAP SHEET
RAU	17.1015	ROTATION UNCERTAINTY
RBE	2.2014	RAP BACK ELIGIBILITY
RBR	2.052	RAP BACK REQUEST
RBRO	2.2015	RAP BACK RECORD OWNER
RBVS	2.2011	RAP BACK VERIFICATION STATUS
RCD1	2.091	RIDGE CORE DELTA ONE FOR SUBPATTERN
RCD2	2.092	RIDGE CORE DELTA TWO FOR SUBPATTERN
RCN1	2.091B	RIDGE COUNT NUMBER 1
RCN1	9.017B	FIRST SUBPATTERN RIDGE COUNT

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Table L-1. Complete Element Cross-Reference List by ID

Element ID	EBTS Tag Number	Element Name
RCN2	2.092B	RIDGE COUNT NUMBER 2
RCN2	9.017C	SECOND SUBPATTERN RIDGE COUNT
RDG	9.011	MINUTIAE RIDGE COUNT INDICATOR
REC	2.082	RESPONSE CODE
RES	2.041	RESIDENCE OF PERSON FINGERPRINTED
RET	2.005	RETENTION CODE
RFP	2.037	REASON FINGERPRINTED
RFR	2.095	REQUEST FEATURES RECORD
RPR	2.096	REQUEST PHOTO RECORD
ROV	9.018	REGION OF VALUE POLYGON
RSO	9.023M	OCTANT RESIDUALS (RRRRRRRR)
RSR	2.065	REPOSITORY STATISTICS RESPONSE
SAN	2.099	STATE ARREST NUMBER
SCNA	2.086	AFIS SEGMENT CONTROL NUMBER
SCO	2.007	SEND COPY TO
SDOB	2.2007	SUBMITTED DATE OF BIRTH
SEC	10.027	SUBJECT EYE COLOR
SEG	14.021	FINGERPRINT SEGMENT POSITION(S)
SERNO	2.067C	ORIGINATING FINGERPRINT READING SYSTEM SERIAL
SEX	2.024	SEX
SFP	10.029	SUBJECT FEATURE POINTS
SHC	10.028	SUBJECT HAIR COLOR
SHPS	13.016	SCAN HOR PIXEL SCALE
SHPS	14.016	SCAN HOR PIXEL SCALE
SHPS	15.016	SCAN HOR PIXEL SCALE
SHPS	16.016	SCAN HOR PIXEL SCALE
SID	2.015	STATE IDENTIFICATION NUMBER
SLC	10.008	SCALE UNITS
SLC	13.008	SCALE UNITS
SLC	14.008	SCALE UNITS
SLC	15.008	SCALE UNITS
SLC	16.008	SCALE UNITS
SLC	17.008	SCALE UNITS
SLE	2.055	CUSTODY OR SUPERVISORY STATUS LITERAL
SMD	10.042	SMT DESCRIPTORS
SMS	10.041	SCAR/MARK/TATTOO SIZE
SMT	2.026	SCARS, MARKS, AND TATTOOS
SMT	10.040	NCIC DESIGNATION CODE
SNAM	2. 2008	SUBMITTED NAME
SOC	2.016	SOCIAL SECURITY ACCOUNT NUMBER
SPA	10.025	SUBJECT POSE ANGLES
SPCN	2.093	SPECIAL POPULATION COGNIZANT FILE NUMBER
SQM	14.023	SEGMENTATION QUALITY METRIC
SQS	10.024	SUBJECT QUALITY SCORE
SRC	10.004	SOURCE AGENCY/ORI
SRC	13.004	SOURCE AGENCY/ORI
SRC	14.004	SOURCE AGENCY/ORI
SRC	15.004	SOURCE AGENCY/ORI
SRC	17.004	SOURCE AGENCY/ORI
SRC	99.004	SOURCE AGENCY/ORI
SRF	2.059	SEARCH RESULTS FINDINGS
SSD	2.054	CUSTODY OR SUPERVISORY STATUS - START DATE
SVPS	13.017	SCAN VERT PIXEL SCALE

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Table L-1. Complete Element Cross-Reference List by ID

Element ID	EBTS Tag Number	Element Name
SVPS	14.017	SCAN VERT PIXEL SCALE
SVPS	15.017	SCAN VERT PIXEL SCALE
SVPS	16.017	SCAN VERT PIXEL SCALE
SXS	10.026	SUBJECT FACIAL DESCRIPTION
TAA	2.087	TREAT AS ADULT
TCD	14.005	TENPRINT CAPTURE DATE
TCN	1.09	TRANSACTION CONTROL NUMBER
TCR	1.10	TRANSACTION CONTROL REFERENCE
THET	9.019C	ROTATION ANGLE CW DEGREES (III.FFFF)
TOT	1.04	TYPE OF TRANSACTION
TSR	2.043	TYPE OF SEARCH REQUESTED
UCN	2.081	UNIVERSAL CONTROL NUMBER
UDI	16.003	USER-DEFINED IMAGE
ULF	2.083	UNSOLVED LATENT FILE
UTD	16.005	USER-DEFINED TESTING DATE
VEN	9.016A	EQUIPMENT
VER	1.02	VERSION
VID	9.016B	VERSION IDENTIFIER
VLL	7.07	VERTICAL LINE LENGTH
VLL	10.007	VERTICAL LINE LENGTH
VLL	13.007	VERTICAL LINE LENGTH
VLL	14.007	VERTICAL LINE LENGTH
VLL	15.007	VERTICAL LINE LENGTHVLL16.007 VERTICAL LINE LENGTH
VLL	17.007	VERTICAL LINE LENGTH
VPS	10.010	VERTICAL PIXEL SCALE
VPS	13.010	VERTICAL PIXEL SCALE
VPS	14.010	VERTICAL PIXEL SCALE
VPS	15.010	VERTICAL PIXEL SCALE
VPS	16.010	VERTICAL PIXEL SCALE
VPS	17.010	VERTICAL PIXEL SCALE
WGT	2.029	WEIGHT
WTR	2.030	WEIGHT RANGE
XYM	9.018A	VERTEX (XXXXYYYY)
XYM	9.021A	LOCATION (XXXXYYYY)
XYM	9.022A	LOCATION (XXXXYYYY)
XYP	9.019A	OFFSET TO UL CORNER SUBIMAGE (XXXXYYYY)
XYP	9.019B	CENTER OF ROTATION IN SUBIMAGE(XXXXYYYY)
XYP	9.019D	ROTATION CENTER IN ROTATED SUBIMAGE (XXXXYYYY)
XYP	9.019E	OFFSET TO UL CORNER FINAL SUBIMAGE (XXXXYYYY)
XYT	9.023B	LOCATION DIRECTION (XXXXYYYY)

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Table L-2. Complete Element Cross-Reference List by Tag Number

EBTS Tag Number	Element ID	Element Name
1.001	LEN	LOGICAL RECORD LENGTH
1.02	VER	VERSION
1.03	CNT	FILE CONTENT
1.04	TOT	TYPE OF TRANSACTION
1.05	DAT	DATE
1.06	PRY	TRANSACTION PRIORITY
1.07	DAI	DESTINATION AGENCY IDENTIFIER
1.08	ORI	ORIGINATING AGENCY IDENTIFIER
1.09	TCN	TRANSACTION CONTROL NUMBER
1.010	TCR	TRANSACTION CONTROL REFERENCE
1.011	NSR	NATIVE SCANNING RESOLUTION
1.012	NTR	NOMINAL TRANSMITTING RESOLUTION
2.001	LEN	LOGICAL RECORD LENGTH
2.002	IDC	IMAGE DESIGNATION CHARACTER
2.003	FFN	FBI FILE NUMBER
2.004	QDD	QUERY DEPTH OF DETAIL
2.005	RET	RETENTION CODE
2.006	ATN	“ATTENTION” INDICATOR
2.007	SCO	SEND COPY TO
2.009	OCA	ORIGINATING AGENCY CASE NUMBER
2.010	CIN	CONTRIBUTOR CASE IDENTIFIER NUMBER
2.010A	CIN_PRE	CONTRIBUTOR CASE PREFIX
2.010B	CIN_ID	CONTRIBUTOR CASE ID
2.011	CIX	CONTRIBUTOR CASE IDENTIFIER EXTENSION
2.012	LCN	FBI LATENT CASE NUMBER
2.013	LCX	FBI LATENT CASE EXTENSION
2.014	FBI	FBI NUMBER
2.015	SID	STATE IDENTIFICATION NUMBER
2.016	SOC	SOCIAL SECURITY ACCOUNT NUMBER
2.017	MNU	MISCELLANEOUS IDENTIFICATION NUMBER
2.018	NAM	NAME
2.019	AKA	ALIASES
2.020	POB	PLACE OF BIRTH
2.021	CTZ	COUNTRY OF CITIZENSHIP
2.022	DOB	DATE OF BIRTH
2.023	AGR	AGE RANGE
2.024	SEX	SEX

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Table L-2. Complete Element Cross-Reference List by Tag Number

EBTS Tag Number	Element ID	Element Name
2.025	RAC	RACE
2.026	SMT	SCARS, MARKS, AND TATTOOS
2.027	HGT	HEIGHT
2.028	HTR	HEIGHT RANGE
2.029	WGT	WEIGHT
2.030	WTR	WEIGHT RANGE
2.031	EYE	COLOR EYES
2.032	HAI	HAIR COLOR
2.033	FPC	NCIC FINGERPRINT CLASSIFICATION
2.034	PAT	PATTERN LEVEL CLASSIFICATIONS
2.034A	FGP	FINGER NUMBER
2.034B	PATCL	PATTERN CLASSIFICATION CODE
2.035	PPA	“PALM PRINTS AVAILABLE” INDICATOR
2.036	PHT	“PHOTO AVAILABLE” INDICATOR
2.037	RFP	REASON FINGERPRINTED
2.038	DPR	DATE PRINTED
2.039	EAD	EMPLOYER AND ADDRESS
2.040	OCP	OCCUPATION
2.041	RES	RESIDENCE OF PERSON FINGERPRINTED
2.042	MIL	MILITARY CODE
2.043	TSR	TYPE OF SEARCH REQUESTED
2.044	GEO	GEOGRAPHICAL AREA OF SEARCH
2.045	DOA	DATE OF ARREST
2.046	DOS	DATE OF ARREST-SUFFIX
2.047	ASL	ARREST SEGMENT LITERAL
2.047A	DOO	DATE OF OFFENSE
2.047B	AOL	ARREST OFFENSE LITERAL
2.048	CSR	CIVIL SEARCH REQUESTED INDICATOR
2.049	EID	EMPLOYEE IDENTIFICATION NUMBER
2.051	CSL	COURT SEGMENT LITERAL
2.051A	CDD	COURT DISPOSITION DATE
2.051B	COL	COURT OFFENSE LITERAL
2.051C	CPL	OTHER COURT SENTENCE PROVISION LITERAL
2.052	RBR	RAP BACK REQUEST
2.053	OFC	OFFENSE CATEGORY
2.054	SSD	CUSTODY OR SUPERVISORY STATUS - START DATE
2.055	SLE	CUSTODY OR SUPERVISORY STATUS LITERAL
2.056	ICO	IDENTIFICATION COMMENTS
2.057	FNR	FINGER NUMBER(S) REQUESTED

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Table L-2. Complete Element Cross-Reference List by Tag Number

EBTS Tag Number	Element ID	Element Name
2.059	SRF	SEARCH RESULTS FINDINGS
2.060	MSG	STATUS/ERROR MESSAGE
2.061	CST	CASE TITLE
2.062	IMT	IMAGE TYPE (IF TYPE -7 IMAGES)
2.063	PTD	PERSON TYPE DESIGNATOR
2.064	CAN	CANDIDATE LIST
2.064A	FNU	FBI NUMBER
2.064B	NAM	NAME
2.065	RSR	REPOSITORY STATISTICS RESPONSE
2.067	IMA	IMAGE CAPTURE EQUIPMENT
2.067A	MAK	ORIGINATING FINGERPRINT READING SYSTEM MAKE
2.067B	MODL	ORIGINATING FINGERPRINT READING SYSTEM MODEL
2.067C	SERNO	ORIGINATING FINGERPRINT READING SYSTEM SERIAL
2.069	ETC	ESTIMATED TIME TO COMPLETE
2.070	RAP	REQUEST FOR ELECTRONIC RAP SHEET
2.071	ACN	ACTION TO BE TAKEN
2.072	FIU	FINGERPRINT IMAGE(S) UPDATED
2.073	CRI	CONTROLLING AGENCY IDENTIFIER
2.074	FGP	FINGER POSITION
2.075	ERS	ELECTRONIC RAP SHEET
2.076	PRI	PRIORITY
2.077	CFS	CANCEL FP SEARCH
2.078	PEN	PENETRATION QUERY RESPONSE
2.079	NCR	NUMBER OF CANDIDATE'S IMAGES RETURNED
2.080	EXP	RESPONSE EXPLANATION
2.081	UCN	UNIVERSAL CONTROL NUMBER
2.082	REC	RESPONSE CODE
2.083	ULF	UNSOLVED LATENT FILE
2.084	AMP	AMPUTATED OR BANDAGED
2.084A	FGP	FINGER NUMBER
2.084B	AMPCD	AMPUTATED OR BANDAGED CODE
2.085	CRN	CIVIL RECORD NUMBER
2.086	SCNA	AFIS SEGMENT CONTROL NUMBER
2.087	TAA	TREAT AS ADULT
2.088	NOT	NOTE FIELD
2.089	MSC	MATCH SCORE
2.091	RCD1	RIDGE CORE DELTA ONE FOR SUBPATTERN
2.091A	FGP	FINGER NUMBER

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Table L-2. Complete Element Cross-Reference List by Tag Number

EBTS Tag Number	Element ID	Element Name
2.091B	RCN1	RIDGE COUNT NUMBER 1
2.092	RCD2	RIDGE CORE DELTA TWO FOR SUBPATTERN
2.092A	FGP	FINGER NUMBER
2.092B	RCN2	RIDGE COUNT NUMBER 2
2.093	SPCN	SPECIAL POPULATION COGNIZANT FILE NUMBER
2.094	CCN	COURT CASE NUMBER
2.0095	RFR	REQUEST FEATURES RECORD
2.096	RPR	REQUEST PHOTO RECORD
2.098	NDR	NAME OF DESIGNATED REPOSITORY
2.099	SAN	STATE ARREST NUMBER
2.2001	NAM1	NAME-ONE
2.2002	NAM2	NAME-TWO
2.2003	NAM3	NAME-THREE
2.2004	NAM4	NAME-FOUR
2.2005	NAM5	NAME-FIVE
2.2006	CSF	CASCADED SEARCH FLAG
2.2007	SDOB	SUBMITTED DATE OF BIRTH
2.2008	SNAM	SUBMITTED NAME
2.2009	PTY	PHOTO TYPE
2.2010	NIR	NUMBER OF IMAGES REQUESTED
2.2011	RBVS	RAP BACK VERIFICATION STATUS
2.2012	IIR	IRIS IMAGES REQUESTED
2.2013	DMI	DISPOSITION MAINTENANCE INDICATOR
2.2014	RBE	RAP BACK ELIGIBILITY
2.2015	RBRO	RAP BACK RECORD OWNER
7.01	LEN	LOGICAL RECORD LENGTH
7.02	IDC	IMAGE DESIGNATION CHARACTER
7.03	IMP	IMPRESSION TYPE
7.04	FGP	FINGER POSITION
7.05	ISR	IMAGE SCANNING RESOLUTION
7.06	HLL	HORIZONTAL LINE LENGTH
7.07	VLL	VERTICAL LINE LENGTH
7.08	GCA	GRAYSCALE COMPRESSION ALGORITHM
7.99	IMG	IMAGE DATA
9.001	LEN	LOGICAL RECORD LENGTH
9.002	IDC	IMAGE DESIGNATION CHARACTER
9.003	IMP	IMPRESSION TYPE
9.004	FMT	MINUTIAE FORMAT
9.005	OFR	ORIGINATING FINGERPRINT READING SYSTEM
9.005A	OFR_NAME	ORIGINATING FINGERPRINT READER NAME
9.005B	OFR_METHOD	ORIGINATING FINGERPRINT READER METHOD
9.005C	OFR_SUBSYS	ORIGINATING FINGERPRINT READER SUBSYS
9.006	FGP	FINGER POSITION
9.007	FPC	FINGERPRINT PATTERN CLASSIFICATION
9.008	CRP	CORE POSITION
9.009	DLT	DELTA POSITION
9.011	RDG	MINUTIAE RIDGE COUNT INDICATOR

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Table L-2. Complete Element Cross-Reference List by Tag Number

EBTS Tag Number	Element ID	Element Name
9.012	MRC	MINUTIAE AND RIDGE COUNT DATA
9.012A	MDX	INDEX NUMBER
9.012B	MXYTHETA	X, Y, THETA VALUES
9.012C	MQUAL	QUALITY MEASURE
9.012D	MTD	MINUTIA TYPE DESIGNATION
9.012E	MCOUNT	RIDGE COUNT DATA
9.013	AFV	AFIS FEATURE VECTOR
9.014	FGN	FINGER NUMBER
9.015	NMN	NUMBER OF MINUTIAE
9.016	FCP	FINGERPRINT CHARACTERIZATION PROCESS
9.016A	VEN	EQUIPMENT
9.016B	VID	VERSION IDENTIFIER
9.016C	MET	METHOD
9.017	APC	AFIS/FBI PATTERN CLASSIFICATION
9.017A	APAT	PATTERN CLASSIFICATION
9.017B	RCN1	FIRST SUBPATTERN RIDGE COUNT
9.017C	RCN2	SECOND SUBPATTERN RIDGE COUNT
9.018	ROV	REGION OF VALUE POLYGON
9.018A	XYM	VERTEX (XXXXYYYY)
9.019	COF	COORDINATE OFFSETS
9.019A	XYP	OFFSET TO UL CORNER SUBIMAGE (XXXXYYYY)
9.019B	XYP	CENTER OF ROTATION IN SUBIMAGE(XXXXYYYY)
9.019C	THET	ROTATION ANGLE CW DEGREES (III.FFFF)
9.019D	XYP	ROTATION CENTER IN ROTATED SUBIMAGE (XXXXYYYY)
9.019E	XYP	OFFSET TO UL CORNER FINAL SUBIMAGE (XXXXYYYY)
9.020	ORN	ORIENTATION UNCERTAINTY
9.021	CRA	CORE ATTRIBUTES
9.021A	XYM	LOCATION (XXXXYYYY)
9.021B	DID	DIRECTION IN DEGREES (DDD)
9.021C	PUM	POSITION UNCERTAINTY (RRRR)
9.022	DLA	DELTA ATTRIBUTES
9.022A	XYM	LOCATION (XXXXYYYY)
9.022B	DID	UPWARD FLOW DIRECTION (DDD)
9.022C	DID	LEFTWARD FLOW DIRECTION (DDD)
9.022D	DID	RIGHTWARD FLOW DIRECTION (DDD)
9.022E	PUM	POSITION UNCERTAINTY (RRRR)
9.023	MAT	MINUTIAE AND RIDGE COUNT DATA
9.023A	MDX	MINUTIAE INDEX NUMBER (III)
9.023B	XYT	LOCATION DIRECTION (XXXXYYYY)
9.023C	QMS	QUALITY MEASURE
9.023D	MNT	MINUTIA TYPE
9.023E	MRO	MINUTIA INDEX AND RIDGE COUNT OCTANT 0 (NNNCC)
9.023F	MRO	MINUTIA INDEX AND RIDGE COUNT OCTANT 1 (NNNCC)
9.023G	MRO	MINUTIA INDEX AND RIDGE COUNT OCTANT 2 (NNNCC)
9.023H	MRO	MINUTIA INDEX AND RIDGE COUNT OCTANT 3 (NNNCC)
9.023I	MRO	MINUTIA INDEX AND RIDGE COUNT OCTANT 4 (NNNCC)
9.023J	MRO	MINUTIA INDEX AND RIDGE COUNT OCTANT 5 (NNNCC)

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Table L-2. Complete Element Cross-Reference List by Tag Number

EBTS Tag Number	Element ID	Element Name
9.023K	MRO	MINUTIA INDEX AND RIDGE COUNT OCTANT 6 (NNNCC)
9.023L	MRO	MINUTIA INDEX AND RIDGE COUNT OCTANT 7 (NNNCC)
9.023M	RSO	OCTANT RESIDUALS (RRRRRRRR)
9.024	CHQ	CHARACTERIZATION QUALITY
9.025	CLQ	CLASSIFIER QUALITY
10.001	LEN	LOGICAL RECORD LENGTH
10.002	IDC	IMAGE DESIGNATION CHARACTER
10.003	IMT	IMAGE TYPE
10.004	SRC	SOURCE AGENCY/ORI
10.005	PHD	PHOTO DATE
10.006	HLL	HORIZONTAL LINE LENGTH
10.007	VLL	VERTICAL LINE LENGTH
10.008	SLC	SCALE UNITS
10.009	HPS	HORIZONTAL PIXEL SCALE
10.010	VPS	VERTICAL PIXEL SCALE
10.011	CGA	COMPRESSION ALGORITHM
10.012	CSP	COLOR SPACE
10.020	POS	SUBJECT POSE
10.021	POA	POSE OFFSET ANGLE
10.022	PXS	PHOTO DESCRIPTION
10.023	PAS	PHOTO ACQUISITION SOURCE
10.024	SQS	SUBJECT QUALITY SCORE
10.025	SPA	SUBJECT POSE ANGLES
10.026	SXS	SUBJECT FACIAL DESCRIPTION
10.027	SEC	SUBJECT EYE COLOR
10.028	SHC	SUBJECT HAIR COLOR
10.029	SFP	SUBJECT FEATURE POINTS
10.030	DMM	DEVICE MONITORING MODE
10.040	SMT	NCIC DESIGNATION CODE
10.041	SMS	SCAR/MARK/TATTOO SIZE
10.042	SMD	SMT DESCRIPTORS
10.043	COL	COLORS PRESENT
10.999	DAT	IMAGE DATA

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Table L-2. Complete Element Cross-Reference List by Tag Number

EBTS Tag Number	Element ID	Element Name
13.001	LEN	LOGICAL RECORD LENGTH
13.002	IDC	IMAGE DESIGNATION CHARACTER
13.003	IMP	IMPRESSION TYPE
13.004	SRC	SOURCE AGENCY/ORI
13.005	LCD	LATENT CAPTURE DATE
13.006	HLL	HORIZONTAL LINE LENGTH
13.007	VLL	VERTICAL LINE LENGTH
13.008	SLC	SCALE UNITS
13.009	HPS	HORIZONTAL PIXEL SCALE
13.010	VPS	VERTICAL PIXEL SCALE
13.011	CGA	COMPRESSION ALGORITHM
13.012	BPX	BITS PER PIXEL
13.013	FGP	FINGER POSITION
13.014	MCL	MAJOR CASE LATENT
13.015	MCS	MAJOR CASE PRINT SEGMENT POSITION(S)
13.016	SHPS	SCAN HOR PIXEL SCALE
13.017	SVPS	SCAN VERT PIXEL SCALE
13.020	COM	COMMENT
13.099	DAT	IMAGE DATA

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Table L-2. Complete Element Cross-Reference List by Tag Number

EBTS Tag Number	Element ID	Element Name
14.001	LEN	LOGICAL RECORD LENGTH
14.002	IDC	IMAGE DESIGNATION CHARACTER
14.003	IMP	IMPRESSION TYPE
14.004	SRC	SOURCE AGENCY/ORI
14.005	LCD	TENPRINT CAPTURE DATE
14.006	HLL	HORIZONTAL LINE LENGTH
14.007	VLL	VERTICAL LINE LENGTH
14.008	SLC	SCALE UNITS
14.009	HPS	HORIZONTAL PIXEL SCALE
14.010	VPS	VERTICAL PIXEL SCALE
14.011	CGA	COMPRESSION ALGORITHM
14.012	BPX	BITS PER PIXEL
14.013	FGP	FINGER POSITION
14.014	MCL	MAJOR CASE PRINT
14.015	MCS	MAJOR CASE PRINT SEGMENT POSITION(S)
14.016	SHPS	SCAN HOR PIXEL SCALE
14.017	SVPS	SCAN VERT PIXEL SCALE
14.020	COM	COMMENT
14.021	SEG	FINGERPRINT SEGMENT POSITION(S)
14.022	IQM	IMAGE QUALLITY METRIC
14.023	SQM	SEGMENTATION QUALITY METRIC
14.024	AFM	ALTERNATE FINGERPRINT QUALITY METRIC
14.030	DMM	DEVICE MONITORING MODE
14.099	DAT	IMAGE DATA

NOTE: The alpha suffixes shown here on EBTS tags are only to identify subfields. They must never be used in message construction.

Table L-2. Complete Element Cross-Reference List by Tag Number

EBTS Tag Number	Element ID	Element Name
15.001	LEN	LOGICAL RECORD LENGTH
15.002	IDC	IMAGE DESIGNATION CHARACTER
15.003	IMP	IMPRESSION TYPE
15.004	SRC	SOURCE AGENCY/ORI
15.005	PCD	PALMPRINT CAPTURE DATE
15.006	HLL	HORIZONTAL LINE LENGTH
15.007	VLL	VERTICAL LINE LENGTH
15.008	SLC	SCALE UNITS
15.009	HPS	HORIZONTAL PIXEL SCALE
15.010	VPS	VERTICAL PIXEL SCALE
15.011	CGA	COMPRESSION ALGORITHM
15.012	BPX	BITS PER PIXEL
15.013	PLP	PALMPRINT POSITION
15.016	SHPS	SCAN HOR PIXEL SCALE
15.017	SVPS	SCAN VERT PIXEL SCALE
15.020	COM	COMMENT
15.024	APM	ALTERNATE PALMPRINT QUALITY METRIC
15.030	DMM	DEVICE MONITORING MODE
15.099	DAT	IMAGE DATA

NOTE: The alpha suffixes shown here on EBTS tags are only to identify subfields. They must never be used in message construction.

Table L-2. Complete Element Cross-Reference List by Tag Number

EBTS Tag Number	Element ID	Element Name
16.001	LEN	LOGICAL RECORD LENGTH
16.002	IDC	IMAGE DESIGNATION CHARACTER
16.003	UDI	USER-DEFINED IMAGE
16.004	SRC	SOURCE AGENCY/ORI
16.005	UTD	USER-DEFINED TESTING DATE
16.006	HLL	HORIZONTAL LINE LENGTH
16.007	VLL	VERTICAL LINE LENGTH
16.008	SLC	SCALE UNITS
16.009	HPS	HORIZONTAL PIXEL SCALE
16.010	VPS	VERTICAL PIXEL SCALE
16.011	CGA	COMPRESSION ALGORITHM
16.012	BPX	BITS PER PIXEL
16.013	CSP	COLOR SPACE
16.016	SHPS	SCAN HOR PIXEL SCALE
16.017	SVPS	SCAN VERT PIXEL SCALE
16.020	COM	COMMENT
16.030	DMM	DEVICE MONITORING MODE
16.099	DAT	IMAGE DATA

NOTE: The alpha suffixes shown here on EBTS tags are only to identify subfields. They must never be used in message construction.

Table L-2. Complete Element Cross-Reference List by Tag Number

EBTS Tag Number	Element ID	Element Name
17.001	LEN	LOGICAL RECORD LENGTH
17.002	IDC	IMAGE DESIGNATION CHARACTER
17.003	FID	FEATURE IDENTIFIER
17.004	SRC	SOURCE AGENCY/ORI
17.005	IRD	IRIS CAPTURE DATE
17.006	HLL	HORIZONTAL LINE LENGTH
17.007	VLL	VERTICAL LINE LENGTH
17.008	SLC	SCALE UNITS
17.009	HPS	HORIZONTAL PIXEL SCALE
17.010	VPS	VERTICAL PIXEL SCALE
17.011	CGA	COMPRESSION ALGORITHM
17.012	BPX	BITS PER PIXEL
17.013	CSP	COLOR SPACE
17.014	RAE	ROTATION ANGLE OF EYE
17.015	RAU	ROTATION UNCERTAINTY
17.016	IPC	IMAGE PROPERTY CODE
17.017	DUI	DEVICE UNIQUE IDENTIFIER
17.018	GUI	GLOBAL UNIQUE IDENTIFIER
17.019	MMS	MAKE/MODEL/SERIAL NUMBER
17.020	ECL	EYE COLOR
17.024	IQS	IMAGE QUALITY SCORE
17.030	DMM	DEVICE MONITORING MODE
17.099	IID	IRIS IMAGE DATA

NOTE: The alpha suffixes shown here on EBTS tags are only to identify subfields. They must never be used in message construction.

Table L-2. Complete Element Cross-Reference List by Tag Number

EBTS Tag Number	Element ID	Element Name
99.001	LEN	LOGICAL RECORD LENGTH
99.002	IDC	IMAGE DESIGNATION CHARACTER
99.003	RSV	RESERVED FOR FUTURE INCLUSION
99.004	SRC	SOURCE AGENCY/ORI
99.005	BCD	BIOMETRIC CAPTURE DATE
99.006-99.099	RSV	RESERVED FOR FUTURE INCLUSION
99.100	HDV	CBEFF HEADER VERSION
99.101	BTY	BIOMETRIC TYPE
99.102	BDQ	BIOMETRIC DATA QUALITY
99.103	BFO	BDB FORMAT OWNER
99.104	BFT	BIOMETRIC FORMAT TYPE
99.105-99.199	RSV	RESERVED FOR FUTURE INCLUSION -
99.999	BDB	BIOMETRIC DATA BLOCK

NOTE: The alpha suffixes shown here on EBTS tags are only to identify subfields. They must never be used in message construction.

Table L-3. Recordset Requirements Summary by Type of Transaction

Transaction	Ref	TOT	T1	T2	T4* /14	T7 /13	T9	T10	T15 /T17***	Normal Response	Delayed Response	Error Response
Fingerprint Identification Submissions	3.1.2											
CRIMINAL TEN-PRINT SUBMISSION - ANSWER REQUIRED	3.1.1.1	CAR	1	1	14-34	0	0	0-N**	8/2***	SRE	SRE, RBHN, ULM	ERRT
CRIMINAL TEN-PRINT SUBMISSION - NO ANSWER REQUIRED	3.1.1.2	CNA	1	1	14-34	0	0	0-N	8/2	None	ULM	ERRT
CRIMINAL FINGERPRINT CARD DIRECT ROUTE	3.1.1.3	CPDR	1	1	14-34	0	0	0-N	8/2	SRE	ULM	ERRT
CRIMINAL NON-URGENT FINGERPRINT CARD	3.1.1.4	CPNU	1	1	14-34	0	0	0-N	8/0	SRE	ULM	ERRT
ELECTRONIC DISPOSITION REPORTING	3.1.1.17	DSPE	1	1	0-34	0	0	0	0/0	DSPR		ERRT
FEDERAL APPLICANT - NO CHARGE	3.1.1.5	FANC	1	1	14-34	0	0	0	0/0	SRE		ERRT
FEDERAL APPLICANT - USER FEE	3.1.1.6	FAUF	1	1	14-34	0	0	0	8/2	SRE		ERRT
FEDERAL NO-CHARGE DIRECT ROUTE	3.1.1.7	FNDR	1	1	14-34	0	0	0	8/2	SRE		ERRT
NON-FEDERAL NO-CHARGE DIRECT ROUTE	3.1.1.8	NNDR	1	1	14-34	0	0	0	8/2	SRE		ERRT
NON-FEDERAL ADVANCED PAYMENT	3.1.1.9	NFAP	1	1	14-34	0	0	0	8/2	SRE		ERRT
NON-FEDERAL APPLICANT USER FEE	3.1.1.10	NFUF	1	1	14-34	0	0	0	8/2	SRE		ERRT
MISCELLANEOUS APPLICANT - CIVIL	3.1.1.11	MAP	1	1	14-34	0	0	0	8/2	SRE		ERRT
KNOWN DECEASED	3.1.1.12	DEK	1	1	14-34	0	0	0-N	8/0	SRE	ULM	ERRT
UNKNOWN DECEASED	3.1.1.13	DEU	1	1	14-34	0	0	0-N	8/0	SRE		ERRT
MISSING PERSON	3.1.1.14	MPR	1	1	14-34	0	0	0-N	0/0	SRE		ERRT
AMNESIA VICTIM	3.1.1.115	AMN	1	1	14-34	0	0	0-N	8/2	SRE		ERRT
NON-FEDERAL USER FEE EXPEDITE	3.1.1.18	NFUE	1	1	14-34	0	0	0-N	8/2	SRE		ERRT
FINGERPRINT VERIFICATION REPORT	3.1.1.21	FVR	1	1	10	0	0	0	0	SRE		ERRT
Fingerprint Investigative Searches	3.2.2											
TEN-PRINT FINGERPRINT IMAGE SEARCH	3.2.1.1	TPIS	1	1	2-10	0	0	0	0/0	SRT		ERRT
TEN-PRINT FINGERPRINT FEATURES SEARCH	3.2.1.2	TPFS	1	1	0	0	2-10	0	0/0	SRT		ERRT
TEN-PRINT RAPSHEET REQUEST	3.2.1.5	TPRR	1	1	14	0	0	0	0	TPRR		ERRT
RAPID PRINT IMAGE SEARCH	3.2.1.6	RPIS	1	1	2-10	0	0	0	0/0	RPSR		ERRT
Image Request and Upgrade	3.6.2, 3.7.2											
IMAGE REQUEST	3.6.1.1	IRQ	1	1	0	0	0	0	0/0	IRR		ERRI
FINGERPRINT IMAGE SUBMISSION	3.7.1.1	FIS	1	1	14	0	0	0	8	FISR		ERRI
~~Criminal~~ Subject Photo Services	3.10.2											
~~CRIMINAL~~ SUBJECT PHOTO REQUEST	3.10.1.1	CPR	1	1	0	0	0	0	0/0	PRR		PRR
~~CRIMINAL~~ SUBJECT PHOTO DELETE REQUEST	3.10.1.2	CPD	1	1	0	0	0	0	0/0	PDR		PDR
Latent Submissions	3.3.2											
LATENT FINGERPRINT IMAGE SUBMISSION	3.3.1.1	LFS	1	1	1-10	1-10	0	0	0/0	LSR		ERRL
COMPARISON FINGERPRINT IMAGE SUBMISSION	3.3.1.2	CFS	1	1	14	0	0	0	0/0	none		ERRL
MAJOR CASE IMAGE SUBMISSION	3.3.1.3	MCS	1	1	0 or 14	1-N	0	0	0/0	none		ERRL
EVALUATION LATENT FINGERPRINT IMAGE SUBMISSION	3.3.1.4	ELR	1	1	1-10	1-10	0	0	0/0	NAR		ERRL

* For ten-print submissions, the number of Type-4/14 images is nominally 14. When less than 14 are sent, the AMP field of the accompanying Type-2 must account for all missing images

** The number of photos accompanying a ten-print submission is unlimited.

*** Type-15 images apply for Palmprint Enrollment and Major Case Print Collections in conjunction with ten-print submissions. Type-17 images apply for Iris Image Enrollment.

Table L-3. Recordset Requirements Summary by Type of Transaction

Transaction	Ref	TOT	T1	T2	T4*/14	T7/13	T9	T10	T15 T17**	T99	Normal Response	Delayed Response	Error Response
Latent Fingerprint Searches	3.4.2												
LATENT FINGERPRINT IMAGE SEARCH	3.4.1.1	LFIS	1	1-2	1-10	0-10	0	0	0/0	N	SRL,ULM, UULD		ERRL
LATENT PENETRATION QUERY	3.4.1.5	LPNQ	1	1	0	0	0	0	0/0	N	LPNR		ERRL
Latent File Maintenance Requests	3.5.2												
UNSOLVED LATENT RECORD DELETE REQUEST	3.5.1.1	ULD	1	1	0	0	0	0	0	N	ULDR		ERRL
UNSOLVED LATENT ADD CONFIRM REQUEST	3.5.1.2	ULAC	1	1	0	0	0	0	0	N	ULAR		ERRL
Latent Administrative Transactions	3.11.2												
LATENT REPOSITORY STATISTICS QUERY	3.11.1.1	LSRQ	1	1	0	0	0	0	0	0	LRSR		ERRA
LATENT SEARCH STATUS AND MODIFICATIONS QUERY	3.11.1.2	LSMQ	1	1	0	0	0	0	0	0	LSMR		ERRA
Special Population Cognizant File	3.12												
SPECIAL POPULATION COGNIZANT FILE ADD	3.12.2.1	SPCA	1	1	14	0	0	N****	8/2	N	SPCAC		ERRL
SPECIAL POPULATION COGNIZANT FILE RECORD DELETE	3.12.2.2	SPCD	1	1	0	0	0	0	0	0	SPCDC		ERRL
SPECIAL POPULATION COGNIZANT FILE RECORD MODIFY	3.12.2.3	SPCM	1	1	14	0	0	N****	8/2	N	SPCMC		ERRL
Palmprint Services	3.13												
PALMPRINT ENROLLMENT REQUEST	3.13.2	PPE	1	1	14	0	0	0	8**	0	PPR		ERRT
Iris Services	3.15												
IRIS IMAGE ENROLLMENT	3.15.1.1	IIE	1	1	14	0	0	0	2***	0	IIER		ERRT
Rap Back Services	3.16												
RAP BACK HIT NOTIFICATION	3.16.2.1	RBHN	1	1	0	0	0	0	0	0	NA		
RAP BACK FLAG DELETE REQUEST	3.16.2.2	RBFD	1	1	0	0	0	0	0	0	RBDR		ERRT
RAP BACK VERIFICATION REQUEST	3.16.2.3	RBV	1	1	0	0	0	0	0	0	RBVR		NA
RAP BACK MAINTENANCE REQUEST	3.16.2.4	RBM	1	1	0	0	0	0	0	0	RBMR		ERRT
RAP BACK RECORD ENROLLMENT	3.16.2.5	RBRE	1	1	0	0	0	0	0	0	RBMR		ERRT
RAP BACK ELIGIBILITY REQUEST	3.16.2.6	RBE	1	1	0	0	0	0	0	0	RBER		NA

* For ten-print submissions, the number of Type-4/14 images is nominally 14. When less than 14 are sent, the AMP field of the accompanying Type-2 must account for all missing images.
** Type-15 images apply for Palmprint Enrollment and Major Case Print Collections in conjunction with ten-print submissions or Special Population Cognizant File additions and modifications.
*** Type-17 images apply for Iris Image Enrollment in conjunction with ten-print submissions or Special Population Cognizant File additions and modifications.
**** The number of photos accompanying SPC File transactions is unlimited.

Table L-4. Recordset Requirements Summary by Type of Response

Name of Transaction	Ref	Response Types: Normal	Delayed	Error	T1	T2	T4/14	T7/13	T9	T10	T15	Request TOTs
Fingerprint Identification Responses	3.1.2, 3.4.2											
SUBMISSION RESULTS - ELECTRONIC	3.1.1.19	SRE	SRE, RBHN		1	1	0	0	0	1	0	CAR CPNU, CPDR
SUBMISSION RESULTS - ELECTRONIC	3.1.1.19	SRE	SRE		1	1	0	0	0	0	0	FANC, FAUF, NFUF, MAP, NFAP, FNDR, NNDR
SUBMISSION RESULTS - ELECTRONIC	3.1.1.19	SRE	SRE		1	1	0	0	0	0	0	DEK, DEU, MPR, AMN, NFUE
UNSOLVED LATENT MATCH RESPONSE	3.4.1.4	ULM			1	1	1-10	0-10	0	0	0	CAR, CNA, DEK CPNU, CPDR
TEN-PRINT TRANSACTION ERROR	3.1.1.22	ERRT			1	1	0	0	0	0	0	all the above
DISPOSITION RESPONSE	3.1.1.20	DSPR		ERRT	1	1					0	DSPE
Fingerprint Investigative Search Responses	3.1.2, 3.2.2											
SEARCH RESULTS - TEN-PRINT	3.2.1.3	SRT			1	1	0-14	0	0	0	0	TPIS, TPFS
TEN-PRINT TRANSACTION ERROR	3.2.1.4	ERRT			1	1	0	0	0	0	0	TPIS, TPFS
TEN-PRINT RAPSHEET RESPONSE	3.2.1.5	TPRR		ERRT	1	1	0	0	0	0	0	TPRS
RAPID PRINT IMAGE SEARCH RESPONSE	3.2.1.6	RPSR		ERRT	1	1	0	0	0	1	0	RPIS
Image Services Responses	3.6.2, 3.7.2											
IMAGE REQUEST RESPONSE	3.6.1.3	IRR			1	1	0-14	1	1	0	N	IRQ
FINGERPRINT IMAGE SUBMISSION RESPONSE	3.7.1.2	FISR			1	1	0	0	0	0	0	FIS
IMAGE TRANSACTION ERROR	3.6.1.4	ERRI			1	1	0	0	0	0	0	IRQ, FIS
~~Criminal~~ Subject Photo Services	3.10.2											
PHOTO REQUEST RESPONSE	3.10.1.3	PRR	PRR		1	1	0	0	0	1-N	0	CPR
PHOTO DELETE RESPONSE	3.10.1.3	PDR	PDR		1	1	0	0	0	0	0	CPD
Latent Submission Responses	3.3.2, 3.4.2											
LATENT SUBMISSION RESULTS	3.3.1.5	LSR			1	1	0-14	0	0	0	0	LFS
NOTIFICATION OF ACTION RESPONSE	3.3.1.6	NAR			1	1	0	0	0	0	0	ELR
UNSOLVED LATENT MATCH RESPONSE	3.4.1.4	ULM			1	1	1-10	0-10	0	0	N	LFS
LATENT TRANSACTION ERROR	3.3.1.8	ERRL			1	1	0	0	0	0	0	LFS, CFS, MCS, ELR
Latent Fingerprint Search	3.4.2, 3.5.2											
SEARCH RESULTS - LATENT	3.4.1.3	SRL			1	1	0-NCR	0	0	0	0	LFIS, LFFS
LATENT PENETRATION RESPONSE	3.4.1.6	LPNR			1	1	0	0	0	0	0	LPNQ
UNSOLVED LATENT MATCH RESPONSE	3.4.1.4	ULM			1	1	1-10	0-10	0	0	N	LFIS, LFFS
UNSOLICITED UNSOLVED LATENT DELETE	3.5.1.5	UULD			1	1	0	0	0	0	0	LFIS, LFFS
LATENT TRANSACTION ERROR	3.4.1.7	ERRL			1	1	0	0	0	0	0	LFIS, LFFS, LPNQ
Latent File Maintenance Request	3.5.2											
UNSOLVED LATENT RECORD DELETE RESPONSE	3.5.1.4	ULDR			1	1	0	0	0	0	0	ULD
UNSOLVED LATENT ADD CONFIRM RESPONSE	3.5.1.3	ULAR			1	1	0	0	0	0	0	ULAC
UNSOLICITED UNSOLVED LATENT DELETE	3.5.1.5	UULD			1	1	0	0	0	0	0	ULAC
LATENT TRANSACTION ERROR	3.5.1.7	ERRL			1	1	0	0	0	0	0	ULD, ULAC
Latent Administrative Transactions	3.11.2											

LATENT REPOSITORY STATISTICS QUERY	3.11.1.3	LRSR			1	1	0	0	0	0	0	LRSQ
LATENT SEARCH STATUS AND MODIFICATIONS	3.11.1.4	LSMR			1	1	0	0	0	0	0	LSMQ
ADMINISTRATIVE TRANSACTION ERROR	3.11.1.5	ERRA	1		0	0	0	0	0		0	LRSQ, LSMQ
Special Population Cognizant File Transactions 3.12												
SPECIAL POPULATION COGNIZANT FILE RECORD ADD CONFIRM	3.12.2.1	SPCAC		ERRL	1	1	0	0	0	0	0	SPCA
SPECIAL POPULATION COGNIZANT FILE RECORD DELETE CONRFIRM	3.12.2.2	SPCDC		ERRL	1	1	0	0	0	0	0	SPCD
SPECIAL POPULATION COGNIZANT FILE RECORD MODIFY CONFIRM	3.12.2.3	SPCMC		ERRL	1	1	0	0	0	0	0	SPCM
Palmprint Services	3.13											
PALMPRINT ENROLLMENT REQUEST RESPONSE	3.13.2	PPR		ERRT	1	1	0	0	0	0	0	PPE
Iris Services	3.15											
IRIS IMAGE ENROLLMENT RESPONSE	3.15.1.1	IIER		ERRT	1	1	0	0	0	0	0	IIE
Rap Back Service Responses	3.16											
RAP BACK HIT NOTIFICATION	3.16.2.2	NA		NA								
RAP BACK FLAG DELETE REQUEST RESPONSE	3.16.2.3	RBDR		ERRT	1	1	0	0	0	0	0	RBFD
RAP BACK VERIFICATION RESPONSE	3.16.2.4	RBVR		ERRT	1	1	0	0	0	0	0	RBV
RAP BACK MAINTENANCE REQUEST RESPONSE	3.16.2.5	RBMR		ERRT	1	1	0	0	0	0	0	RBM
RAP BACK ELIGIBILITY REQUEST RESPONSE	3.16.2.6	RBER		NA	1	1	1	1	1	1	1	RBE

APPENDIX M

TRANSACTION ERROR MESSAGES

Table M-1. Transaction Error Messages

Code	Error Condition	MDD Error Description	Count	Insert#1	Insert#2	Insert#3
A0001	Unauthorized ULF delete	Requested deletion from ULF not authorized.	0			
A0002	Unauthorized Criminal History Access	Request suspended. Initiate a Print Screen and route document and printout to supervisor.	0			
A0003	Unauthorized SPF Modification	Request suspended. Route to supervisor. PRD review and authorization is required.	0			
A0004	Unauthorized EBTS Transaction	Requestor is not authorized for transaction type %1.	1	TOT of incoming message		
A0005	Unauthorized Criminal History Access	Requestor is not authorized to change existing record with FNU %1. Document specialist review and authorization is required.	1	FNU		
A0006	Unauthorized Processing or SPF Modification	Requestor is not authorized for requested action. Document specialist review and authorization is required.	0			
A0007	Unauthorized Criminal History Access	Requestor is not authorized to access existing record with FNU %1. Hits to Wants review and authorization is required.	1	FNU		
A0008	Unauthorized ULF Add Confirm	Requested ULF Add Confirm request not authorized.	1	SCNA		
A0009	Latent Search Queue Request Reject	This Latent Search Queue modification request is invalid.				
A0010	Hits to Want	IDRR or NIDR cannot be provided without proper authorization. Route to Answer Hits to Wants.	0			
A0011	An Unauthorized IDRR/NIDR Request SPF (5/6)	Request suspended. Route to Supervisor. PRD review and authorization is required.	0			

Code	Error Condition	MDD Error Description	Count	Insert#1	Insert#2	Insert#3
A0012	Unauthorized IDRR Request (DOD or SPF K)	Unauthorized Service Provider not (DOCSPEC) requests IDRR (A1040) for a subject with DOD in identification data or SPF=K.	0			
A0013	Unauthorized Criminal History Request (OFO)	An OFO User is authorized to use the Criminal History request only for an IDRR, either printed locally or displayed.	0			
A0014	Unauthorized CCA Update	Requestor is not authorized to update the CCA file.	0			
A0015	Unauthorized File Update	Requestor is not authorized to update the requested file.	0			
A0016	Requested Photo Not Available	Photo requested in conjunction with Image Request is not available for %1	1	UCN		
A0017	Quoted UCN Not Found	Quoted UCN 1% not found in database	1	UCN		
E0001	Required element missing	Mandatory IAFIS-generated element %1 was not supplied in message.	1	Element Name		
E0002	Element failed validation	Element %1, with value of [%2] contains invalid data.	2	Element Name	Element Value	
E0003	Element failed validation	Element %1, with value of [%2] contains invalid data. The data may not comply with the acceptable range of values.	2	Element Name	Element Value	
E0004	EBTS record parse error	EBTS logical record type %1 containing IDC of [%2] in message does not comply with message Contents or Length field values or the record is not parsable.	2	Logical Record Type	IDC value or the value -1 if the named logical record is missing or is a Type-1 record.	
E0005	EBTS field parse error	EBTS field %1 could not be parsed. Check use of separator characters and presence of all required subfields.	1	Field Tag		
E0006	Field relationship error	The value of element %1 is inconsistent with the value of element %2.	2	Element Name	Element Name	
E007	NFS File not available	NFS file %1 not available for transfer.	1	FILEHANDLE		
E008	NFS File Read Error	NFS file %1 produced a read error during file transfer. Check for proper format. %2 %3	1-3	FILEHANDLE	Free Text	Free Text

Code	Error Condition	MDD Error Description	Count	Insert#1	Insert#2	Insert#3
E009	NFS File ICN Error	NFS File ICN does not match the ICN provided in the request message.	0			
E0010	Too Few FNUs for FST	Only one, FNU %1, was supplied for Restore FNU File Synchronization with FST %2.	2	FNU	FST	
E0011	Too many FNUs for FST	More than one FNU was supplied for Restore FNU File Synchronization with FST %1.	1	FST		
E0012	Message Length Inconsistent	The length of the message is inconsistent with the sum of the lengths of the logical records contained within it.	0			
E0013	NFS File Write Error	NFS file %1 produced a write error during file transfer %2 %3.	1-3	FILEHANDLE	Free Text	Free Text
H0001	Required header element missing	Mandatory element %1 was not supplied in message header.	1	Element Name		
H0002	Header element failed validation	Header element %1, with value of [%2] contains invalid data.	2	Element Name	Element Value*	
H0003	Header element failed validation	Header element %1, with value of [%2], contains invalid data. The data may not comply with the acceptable range of values.	2	Element Name	Element Value	
L0001	SLC Repositories Full	SLC repositories is full; cannot add another subject.	0			
L0002	Subject does not exist in Criminal or Civil File	Subject with identifier %1 does not exist in repository.	1	UCN		
L0003	SLC Repository does not exist	Cannot perform requested action, SLC repository %1 does not exist. Inform Segment Administrator of possible SLC File Synchronization error.	1	NDR		
L0004	File image not available	The images for subject identifier %1 are not available from repository %2.	2	UCN	NDR	

Code	Error Condition	MDD Error Description	Count	Insert#1	Insert#2	Insert#3
L0005	High Penetration Search Rejected	Latent search penetration estimate of %1 percent exceeds the allowable limit of %2 percent.	2	Request Percent	Authorization Cap	
L0006	Invalid image type	The supplied image(s) could not be used for characterization of subject.	0			
L0007	Features not usable	The supplied features could not be used for requested search.	0			
L0008	Characteristics quality low	The quality of the characteristics is too low to be used.	0			
L0009	Image decompression error	Error occurred during decompression of the fingerprint images.	0			
L0010	Cannot search an empty SLC repository	A search request was made against SLC repository number %1 which currently contains no subjects. To differentiate from a search with no results, this error is being returned.	1	NDR		
L0011	Subject already exists, duplicates not allowed in Criminal or Civil Files	A request was made to add subject identifier %1 to Criminal or Civil File in which the subject already exists.	1	UCN		
L0012	ULF Delete Error	An error was encountered in processing the requested deletion from the Unsolved Latent File.	0			
L0013	General Logic Error	A general logic error was detected that is not currently defined. Optional error message: %1 %2 %3.	0-3	Free Text	Free Text	Free Text
L0014	ULF Delete Subject Missing	Cannot perform the ULF delete request for %1 because the subject is not present in the ULF.	1	SCNA		
L0015	Attempt to remove last arrest, court, or custody component	An attempt has been made to remove the last %1 from subject record %2.	2	Filed Name	FNU	
L0016	Latent Search Penetration Estimate	NOTICE ONLY, NOT AN ERROR – Latent search penetration estimate is %1. Your limit is currently %2.	2	Request Percentage	Authorization Cap	
L0017	Attempt to modify SCHF with improper TYS	Attempt to change the Criminal History File with an improper TYS of %1.	1	TYS		
L0018	Latent search queue full	The requested search exceeds the allocation for your organization	0			
Code	**Error Condition**	**MDD Error Description**	**Count**	**Insert#1**	**Insert#2**	**Insert#3**

L0019	Subject already exists, duplicate identifiers not allowed in SLC file	A request was made to add subject identifier %1 to SLC repository %2 in which the subject already exists. Subjects may NOT be duplicated within this repository.	2	UCN	NDR
L0020	Subject does not exist in SLC file	A request was made to delete or update subject identifier %1 to SLC repository %2. The subject does not exist in this repository.	2	UCN	NDR
L0021	Restorability Mismatch	FNU %1 with restorability code of RST %2 does not match that provided in message.	2	FNU	RST value of FNU
L0022	FNU Not Restorable	FNU %1 has not undergone a restorable action.	1	FNU	
L0023	SID required	NFF participants must provide a SID on a criminal retain ten-print submission.	0		
L0024	SID already exists for NFF submission	The SID provided in the criminal ten-print submission, %1, is already associated with the subject with FBI number %2 and could not be established for a new NFF subject.	2	SID	FNU
L0025	SID already exists	The SID provided in the criminal ten-print submission, %1, is already associated with the subject with FBI number %2 and could not be established for a new subject.	2	SID	FNU
L0026	PUR not allowed for subject	Purpose code not allowed for subject %1.	1	FNU	
L0027	SPCs not allowed	A manual record cannot be established with additional SPC codes.	0		

Code	Error Condition	MDD Error Description	Count	Insert#1	Insert#2	Insert#3
L0028	Exceeded ICO maximum length	Cannot add data because the maximum length of ICO field would be exceeded. There are only %1 characters remaining in the ICO field.	1	Number of unused bytes remaining in ICO field (ASCII representation).		
L0029	Invalid update of subject with AUD C	Cannot update subject record %1 because it contains an AUD=C.	1	FNU		
L0030	Invalid update of subject with AUD T	Cannot update subject record %1 because it contains an AUD=T	1	FNU		
L0031	Invalid update of subject record	Cannot update subject record %1 because of its AUD value.	1	FNU		
L0032	Duplicate DOA and DOS	Cannot update subject's record because DOA %1 and corresponding DOS already exist.	1	DOA	FNU	
L0033	Element Entry Limit Exceeded	Update of record would cause the maximum number of entries of the %1 field to be exceeded.	1	Field Name		
L0034	Existing identification comments	Cannot overwrite existing ICO.	0			
L0035	DOD prior to DOA	Date of arrest in submission is after date of death in subject's record.	0			
L0036	Conversion anomaly	Cannot add a conversion cycle for an NFF participating state.	0			
L0037	DOA not later than existing DOB	Date of arrest in submission is prior to existing date of birth in the subject's record.	0			
L0038	SID already exists from NFF state	Cannot establish new SID %1 for this subject because your state has already established SID %2 for this subject.	2	SID from submission	Existing SID	
L0039	Purpose Code Required	Purpose code is required to modify this record.	0			
L0040	No Matching DOA/DOS	There is no matching DOA/DOS in the subject's record.	0			
L0041	Cannot Update Due to Inactive Data	The subject's cycle cannot be updated due to inactive status.	0			
L0042	No Matching Court Data	Matching court data do not exist.	0			
L0043	No Corresponding Court Count	Cannot add supplemental court data - no corresponding count.	0			

Code	Error Condition	MDD Error Description	Count	Insert#1	Insert#2	Insert#3
L0044	No Update Of NFF Record	Cannot update NFF record.	0			
L0045	Data Already On File	Cannot update this cycle - data already exist in record.	0			
L0046	TPTP Notify Error	AFIS Search number %1 or candidate number %2 cannot be associated with previous search.	2	SCNA	UCN	
L0047	ULF Add Confirm Error	Cannot perform the ULF add confirm request for %1 because the subject is not present in the ULF.	1	SCNA		
L0048	Route to Wants	Route this document to the Wants group for processing.	0			
L0049	No Matching Data Found	No data found to match input value %1 with record value %2.	2	Name of field	field value	
		L0051 Cycle is not sealed. Cannot apply unseal request because cycle has not previously been sealed.	0			
L0050	Invalid Request for Segment Type	This maintenance request cannot be applied because of the SGT value contained in the record.	0			
L0051	Cycle is not sealed.	Cannot apply unseal request because cycle has not previously been sealed.	0			
L0052	Submitter is not Authorized to Update Record	Requestor is not authorized to perform the requested file maintenance	0			
L0053	Attempt to Consolidate AUD M Record	The request for consolidation has been made against a record %1 in the Manual File. Record must be converted.	1	FNU		
L0054	Reverse Consolidation Pointers	Reverse kept FNU (%1) and killed FNUs due to the III pointers contained in the respective records.	1	FNU		
L0055	Consolidation Subject Contains NFF State Pseudo Pointer	Consolidation attempt has been made against subject record containing a Pseudo Pointer for an NFF state for FNU %1.	1	FNU		

Code	Error Condition	MDD Error Description	Count	Insert#1	Insert#2	Insert#3
L0056	Reverse Consolidation Wants	Reverse kept FNU %1 and killed FNUs due to Wants contained in the respective records.	1	FNU		
L0057	Improper Finger Specified	Latent searches cannot process %1 possible finger positions for %2 supplied search fingers.	2	FGN_CNT	AFV_CNT	
L0058	UCN and NDR format incompatible	The designated repository (%1) does not correlate to the provided record format number (%2).	2	NDR	UCN	
L0059	Duplicate fingers	Ten finger information supplied for field %1 (%2) is incorrect.	2	Name of field	Field Value	
L0060	Death is already recorded for this subject	An indication that this subject is deceased is currently present in this record.	0			
L0061	Non-matching DOB	DOB on submission document does not match DOB in record.	0			
L0062	Reference Element Name Mismatch	The element %1 provided for reference in this maintenance request is not present in this record.	1	Name of Field		
L0063	Existing Data Condition	Data cannot be added to this field, %1, because data are already present.	1	Name of Field		
L0064	Duplicate Data Condition	An attempt to add or modify data that duplicates existing data in field %1.	1	Name of Field		
L0065	SID/ORI Mismatch	The SID in the maintenance request is not consistent with the ORI in the arrest.	0			
L0066	SID/Pointer Mismatch	The SID in the maintenance request does not match the state pointer in the MF-IDENTIFICATION-DATA set.	0			
L0067	Illegal Add to AUD N Record	An attempt has been made to add data to a deceased record.	0			
L0068	Illegal Add to Non-AUD N Record	An attempt has been made to post microform data to a record containing an AUD other than N.	0			
L0069	Invalid SPF Request	Existing SPF code precludes addition of this code.	0			
L0070	Illegal Sequence Count	A request has been made for a value in %1 that is not the next available after %2 in the sequence.	2	Filed Name	Current last value	

Code	Error Condition	MDD Error Description	Count	Insert#1	Insert#2	Insert#3
L0071	Illegal Delete Request for AUD W Record	A request has been made for deletion of data from a field other than ANA from an AUD W record.	0			
L0072	No Match for Data	Cannot match data in field %1 in this maintenance request with any data in field %2 the record.	2	Field Name	Field Name	
L0073	Cannot Delete SID	Cannot delete SID because record contains a matching state pointer.	0			
L0074	Illegal Request to Delete Primary Data	Cannot delete primary data while secondary data are still present.	0			
L0075	Illegal Request to Remove Custody Data	Attempt has been made to remove a custody segment while corresponding arrest data remain.	0			
L0076	Illegal SCH Modification Request	AN SCH Modification Request has attempted to perform a maintenance action against a record awaiting expungement.	0			
L0077	Invalid Modify Request Because of Code Value Set	Cannot modify field %1 because of the value of %2 code contained in record.	2	Field Name	Either AUD or SGT	
L0078	Field Value Mismatch	Cannot find match in the database for %1 containing value %2.	2	Field Name	Field Value	
L0079	Invalid SID	The SID %1 failed III edit check.	1	SID value		
L0080	Pointer/Data Mismatch	Cannot update data associated with active state pointer because of mismatch with %1 field.	1	Field Name		
L0081	Attempt to Modify Empty Field	A maintenance request has been made against empty field %1.	1	Field Name		
L0082	ORI Exists in CCA File	The ORI contained in the Add request already exists in the CCA File.	0			
L0083	ORI does not exist in CCA File	The ORI contained in the maintenance request does not exist in the CCA File.	0			
L0084	Alternate ORI does not exist in CCA File	The alternate ORI contained in the maintenance request does not exist in the CCA File.	0			
Code	**Error Condition**	**MDD Error Description**	**Count**	**Insert#1**	**Insert#2**	**Insert#3**

L0085	Alternate ORI cannot be deleted	Cannot delete alternate ORI because ONC is equal to “A.”	0			
L0086	CRS Data do not exist	The maintenance request references CRS Data that do not exist.	0			
L0087	CRS Data already exist	The maintenance request references CRS Data that do not exist.	0			
L0088	Attempt to Update AUD W Record	The maintenance request has attempted to add data to a deleted record.	0			
L0089	Year of Birth out of range	The year of birth in the maintenance request is not within 10 years of the DOB(s) contained in the subject.	0			
L0090	No Name Match	The name in the maintenance request does not match any name contained in the indicated subject.	0			
L0091	NIC Number Match	The maintenance request contains a NIC number already contained in the SCH.	0			
L0092	DOW Matches DOB	The DOW contained in the maintenance request matches a DOB in the subject record.	0			
L0093	Attempt to Delete Last Want	A request has been received to delete the last active Want from a record containing an AUD = “P.”	0			
L0094	AKA/ANA Error	A request has been made to delete or modify AKA with matching ANA present.	0			
L0095	ANF/Name Error	A request has been made to modify ANF without a matching AKA or MNM present.	0			
L0096	DOB Delete Error	A request has been made to delete the last DOB contained in the SCH record.	0			
L0097	DOB Modification Error	A request has been made to modify a DOB to “unknown” all zeroes with DOBs remaining in the SCH record.	0			
L0098	Arrest Segment Data Error	This maintenance request must include ACH, AON, and AOL.	0			
Code	**Error Condition**	**MDD Error Description**	**Count**	**Insert#1**	**Insert#2**	**Insert#3**
L0099	CBL/DCA Error	An attempt has been made to add a CBL	0			

		without a related DCA in either the request message or the SCH record.			
L0100	Court Segment Data Error	This maintenance request must include CCT, CON, COL, and CPL.	0		
L0101	Pointer/Date Mismatch	A request has been made to modify either %1 or %2 that would result in a DPE greater than the DDE.	2	DDE	DPE
L0102	Illegal AID Modification	Cannot change the ORI to a different type or different state.	0		
L0103	Photo SPF 'E' Error	A request has been made to either set or remove SPF of 'E' that would be inconsistent with the state of CRIMINAL-SUBJECT-PHOTO-DATA.	0		
L0104	TOW/AID Error	TOW and AID must be modified as a set.	0		
L0105	Insufficient CCA Data	Cannot add, modify, or delete an ORI.	0		
L0106	ORI/ZIP	The format of the field ZIP is not consistent with the country specified by ORI.	0		
L0107	Incomplete SCT	A request has been made that is missing a required element from set SCT.	0		
L0108	Invalid ONC Value	An attempt has been made to add an ORI to a record containing an ONC value other than "A" or "D."	0		
L0109	Poor Image Quality	The quality of the fingerprint images is too poor to permit processing.			
L0110	MRD Merge Failure	Ten-print submission failed to merge with MRD data.	0		
L0111	Image Sequence Error	Submitted ten-print finger images are out of sequence.			

Code	Error Condition	MDD Error Description	Count	Insert#1	Insert#2	Insert#3
L0112	No statutory authority	The agency indicated by the ORI or CRI in this submission is not authorized to request this service.				
L0113	Non-serious charge	This submission references an arrest charge representing a non-criterion offense.				
L0114	TOT/Submission Data Error with the Reason Fingerprinted.	The Type of Transaction is inconsistent				
L0115	Other QC Error					
L0116	Fingerprint Pattern Quality Error	Fingerprint pattern(s) not discernible				
L0117	Fingerprint Pattern Area Error	Insufficient pattern area(s) recorded for identification purposes				
L0118	ITN Image Quality/Sequence Error	Erroneous or incomplete fingerprint(s) on images: fingers or hands out of sequence, printed twice, missing, and no reason given.				
L0119	Charge listed needs literal translation	The charge listed in the submission requires that a literal translation be provided.				
L0120	Invalid update of subject with AUD N	Cannot update subject record %1 because AUD = N.	1	FNU		
L0121	Invalid update of subject with AUD M	Cannot update record %1 because this record is currently contained in the manual file. Record must be converted.	1	FNU		
L0122	No SLC Add	Unable to complete SLC Add for identifier %1 in repository %2 and user %3.	3	UCN	NDR	EID
L0123	No SLC Delete	Unable to complete SLC Delete for identifier %1 in repository %2 and user %3.	3	UCN	NDR	EID
L0124	Unacceptable Criteria	The submission does not meet latent acceptance criteria.				

Code	Error Condition	MDD Error Description	Count	Insert#1	Insert#2	Insert#3
L0125	Invalid ORI	This ORI, %1, is not present in the CCA file.	1	ORI value from Maintenance Request		
L0126	Invalid CRI	This CRI, %1, is not present in the CCA file.	1	CRI value from Maintenance Request		
L0127	Invalid SCT	This file maintenance request contained an SCT with an invalid ORI of %1.	1	ORI value from Maintenance Request		
L0128	Missing SRE	This file maintenance request must contain a value for SRE.	0			
L0129	Missing PUR code	Subject record contains sealed data – this request for an IDRR requires a PUR code.	0			
L0130	File Maintenance element error	This file maintenance request contains invalid data, %1, in the field %2.	2	Field value from Maintenance Request	Field	
L0131	Required element missing	Mandatory user-provided element %1 was not supplied in message.	1	Element Name		
L0132	STOT/NDR Discrepancy	The STOT, %1, for this request is not consistent with placing the images in the %2 file.	2	STOT value	Name of the target file (NDR)	
L0133	Fingerprint Image Submission Non-ident	The subject of this Fingerprint Image Submission contains FNU %1, which is not contained in the FBI Subject Criminal History files.	1	FNU		
L0134	Ad Hoc Subject Search String Syntax Error	The submitted search string text contains a syntax error. The attachment includes the portion of the string up to the error, shown here: %1	1	AHSPARMS		

Code	Error Condition	MDD Error Description	Count	Insert#1	Insert#2	Insert#3
L0135	Ad Hoc Subject Search Candidate Cap Exceeded	The number of candidates meeting the submitted search criteria exceeds the maximum allowed. Refine the criteria before resubmitting the search.				
L0136	Invalid Request for Subject Record	IDRR or NIDR cannot be provided for subject with non-blank AUD.	0			
L0137	Unable to Print Subject Record	Subject record cannot be printed due to restricted cycles.	0			
L0138	Unable to Print Subject Record	Subject record cannot be printed for the specified contributor due to restricted cycles.	0			
L0139	Extraneous Data	The file maintenance request contained data for %1 that is either not needed or not allowed in this context.	1	Field Name		
L0140	Invalid AUD Code Conversion Request	Active Want on file for this subject. Record cannot be converted from AUD P to AUD T.	1	FNU		
L0141	STOT/RET Discrepancy	Retention code must equal Y for an STOT of CNA.	0			
L0142	SLC Copy Failed	SLC Copy failed: %1 %2 %3.	0-3	Free Text	Free Text	Free Text
L0143	AFIS Storage Full for SLC Repository	SLC repository %1 is at max allotted storage capacity within AFIS; to add new subject, delete existing subject or contact the ITN Segment Administrator to allot more storage capacity.	1	NDR		
L0144	Field Relationship Error	The value of element %1 is inconsistent with the value of element %2.	2	Element Name	Element Name	

Code	Error Condition	MDD Error Description	Count	Insert#1	Insert#2	Insert#3
	L0145	Invalid Ad Hoc Search Criterion AHSPARMS (see Table II).	N/A – Error description provided in			
L0146	SLC File Not Offline	COPY ALL SLC failed. To copy an entire SLC file, the source and destination SLC files must be offline. Contact the AFIS Segment Administrator to take the files offline.	0			
L0147	Contributor has remote capability	The contributing state has remote capability.				
L0148	Poor Latent Image Quality	The image quality is not adequate for conducting an AFIS search.				
L0149	Bad Search Criteria	The descriptive search criteria are not adequate or are incomplete.				
L0150	Unassigned FBI Number	Subject %1 may be in the FBI manual files, but does not exist in the Subject Criminal History File.	1	FNU		
L0151	Photo Not Available	Photo Not Available	0			
L0152	Photo Action on Improper AUD Code	IAFIS cannot retrieve or delete the cited photo because the associated record is purged, expunged, not automated, deceased, or deleted.	0			
L0153	Photo Action on AUD C Record	IAFIS cannot retrieve or delete the cited photo with FBI %1 because it has been consolidated with FBI %2.	2	FNU	FNU	
R0001	Queue Full	A message queue is temporarily full.	0			
R0002	Undefined Segment Error	Internal segment error; retry message.	0			
R0003	Service Unavailable	The requested Tuxedo service %1 is not currently available.	1	SERV value		
S0001	Cannot match the response with a request	A response message type %1 indicating IAFIS transaction %2, with SCN2 = %3, could not be associated with its request.	3	MTY	ICN	SCN2
S0002	General segment error	A general segment error was detected that is not currently defined. Optional error message: %1 %2%3.	0-3	Free Text	Free Text	Free Text

Code	Error Condition	MDD Error Description	Count	Insert#1	Insert#2	Insert#3
S0003	Invalid Environment	The message environment does not match the current environment.	0			
S0004	Transaction in Progress	A repeated message was received for which the transaction has already been started.	0			
S0005	Ten-print Search Notification Error	An error occurred during the routing and reporting of AFIS ten-print search notification.	0			
S0006	Bitmap Generation Error	An error occurred during the generation or handling of the file comparison bitmap related to repository %1.	1	NDR		
S0007	Repository Statistics Error	The repository statistics file is corrupted or unavailable.	0			
S0008	AFV Checksum Error	The Checksum provided with the AFV is wrong. Check for encoding or transmission error.	0			
W0001	Authorized High Penetration Search Submitted	A high penetration search estimated at %1 percent is within the allowable limit of %2 and is being processed.	2	Request Percent	Authorization Cap	
W0002	Manual Arrest Records	The Criminal History of subject %1 is contained in the FBI manual files.	1	FNU		
W0003	Unassigned FBI Number	Subject %1 may be in the FBI manual files, but does not exist in the Criminal History Files.	1	FNU		
W0004	Existing Post-Consolidation Information in Record	The consolidated record with kept FBI number %1 that was restored to unconsolidated records had information entered since the consolidation.	1	FBK		
W0005	Route to Wants	Route the document to Wants.	0			
W0006	AUD T Subject	Requested service involves an AUD T subject. Route transaction to Special Stops for review prior to further action.	0			
W0007	Ident Status Warning	Response for this submission may be non-Ident because this SCH record contains non-disseminable data.	0			

Code Error Condition MDD Error Description Count Insert#1 Insert#2 Insert#3

W0008	Sealed Record Ident Status Warning	Response for this submission included an NFF subject and may be a non-Ident because the record is sealed.	0
W0009	Route to Dead Desk	The Subject Criminal History Record has been restored, however, the transaction requires further review. Route the hardcopy document to the Dead Desk.	0
W0010	Route to Wants and Dead Desk	The Subject Criminal History Record has been restored, however, the transaction requires further review. Route the hardcopy document to the Wants Unit and then to the Dead Desk.	0

Table M-2. Transaction Error Description Inserts

Table M-1 Error Code	Error Description	Error Description Inserts
L0134	The submitted search string text contains a syntax error. The portion of the string up to the point of error is shown here: %1.	Insert %1 is the expanded query string up to point of error.
L0135	The number of candidates meeting the submitted search criteria, %1, exceeds the maximum allowed, %2. Refine the criteria before resubmitting the search.	Insert %1 is the number of candidates returned from the Ad Hoc Subject Search (element NUMCANS). Insert %2 is the element MAXCANS from the search request or, if MAXCANS is not specified in the search request, the default value.
L0145	The Service Provider is not authorized to perform the type of Ad Hoc Subject Search requested, or the query contains a restricted item. Contact the ITN Segment Administrator to determine corrective action.	

Note: In the case of elements that are composites of two or more other element values (*e.g.*, DATETIME), an additional error code may be returned to report the error in the subelement as long as the composite element is reported also.

Key	Error Class
A	Authorization – Security Errors
E	Element – Intersegment and External Message Element Errors
H	Header – Intersegment Message Header Errors
L	Logic – Operational Errors
R	Error with Retry allowed
S	Status – Segment Status Errors
W	Warning only

Notes:

1. For errors detected in EBTS messages, the Element Name will be the EBTS Field Tag.
2. In the MDD Error description column, the % number expression represents the value provided in the like-numbered Insert column.

APPENDIX N

CIVIL BACKGROUND CHECKS USING FLAT IMPRESSIONS DESCRIPTORS AND FIELD EDIT SPECIFICATIONS FOR TYPE-14 LOGICAL RECORDS

This section presents the descriptors and field specifications for Type-14 logical records used with flats-based civil background checks. The flat fingerprint impressions are contained in three Type-14 image records. Two of the image records contain the left and right simultaneous four finger impressions, and the third contains the two thumbs. Offsets to the locations of image segments containing the individual fingers are included with the image records. Most of the following definitions are taken from the ANSI standard, Data Format for the Interchange of Fingerprint, Facial, & Other Biometric Information (ANSI/NIST-ITL 1-2007). Additional fields are defined to contain the NIST Fingerprint Image Quality (NFIQ) metric, alternate image quality metrics, and metrics for predicting the correctness of the segmentation.

AFM 14.024 – Alternate Fingerprint Quality Metric. This ASCII field is used to specify one or more different metrics of fingerprint image quality score data for the image stored in this record. The meaning attributed to this metric must be defined and interpreted by the producer of the scoring algorithm or by the person or system used to assign the metric to the fingerprint image. The metric may be a predictor of AFIS matcher accuracy performance or a different metric to indicate a value associated with the quality of the fingerprint image for a particular function.

This field may contain one or more subfields, each consisting of four information items separated by the <US> separator character. The first information item is the finger number as chosen from Table 12. The other three items identify a quality score and the algorithm used to create the quality score. This information is useful to enable the recipient of the quality score to differentiate between quality scores generated by different algorithms and adjust for any differences in processing or analysis as necessary.

1. The second information item shall be a quantitative expression of the predicted matching performance of the biometric sample. This item contains the ASCII representation of the integer image quality score between 0 and 100 assigned to the image data by a quality algorithm. Higher values indicate better quality. An entry of "255" shall indicate a failed attempt to calculate a quality score. An entry of "254" shall indicate that no attempt to calculate a quality score was made. The use of additional values to convey other information should be harmonized with ISO/IEC 19794 standards.

2. The third information item shall specify the integer value that is the ID of the vendor of the quality algorithm used to calculate the quality score. The IBIA shall maintain the Vendor Registry, which will map the value in this field to a registered organization.

3. The fourth information item shall specify a numeric product code assigned by the vendor of the quality algorithm, which may be registered with the IBIA, but registration is not required. It indicates which of the vendor's algorithms was used in the calculation of the quality score.

This field contains the ASCII representation of the integer product code and should be within the range 1 to 65,535.

This subfield is repeated for each finger image and quality algorithm used, separated by the <RS> character.

BPX 14.012 – Bits Per Pixel. This mandatory ASCII field shall contain the number of bits used to represent a pixel. This field shall contain an entry of 8 for normal grayscale values of 0 to 255.

CGA 14.011 – Compression Algorithm. This mandatory ASCII field shall specify the algorithm used to compress grayscale images. An entry of "NONE" in this field indicates that the data contained in this record are uncompressed. For those images that are to be compressed, this field shall contain "WSQ," the preferred method for the compression of ten-print-fingerprint images.

COM 14.020 – Comment. This optional field may be used to insert comments or other ASCII text information with the ten-print image data.

DAT 14.999 – Image Data. This field shall contain all of the data from a captured ten-print image. It shall always be assigned field number 999 and must be the last physical field in the record. For example, 14.999: is followed by image data in a binary representation. Each pixel of uncompressed grayscale data shall be quantized to eight bits (256 gray-levels) contained in a single byte. If compression is used, the pixel data shall be compressed in accordance with the compression technique specified in the CGA field.

DMM 14.030 – Device Monitoring Mode. This optional field provides information describing the level of human monitoring for the image capture device. This field will contain an entry from Table 26 of ANSI/NIST-ITL 1-2007 to indicate the monitoring mode of the biometric sample capture device.

Table 26. Device Monitoring Modes

Condition	Description
ASSISTED	Person available to provide assistance to subject submitting the biometric
OBSERVED	Person present to observe operation of the device but provides no assistance
UNATTENDED	No one present to observe or provide assistance
UNKNOWN	No information is known

FGP 14.013 – Finger Position. This mandatory tagged field shall contain finger position code that matches the ten-print image. The decimal code number corresponding to the known or most probable finger position shall be taken from Table N-1 and entered as a one- or two-character

ASCII subfield. Table 1 also lists the maximum image area that can be transmitted for each of the 14 possible finger positions.

Table N-1. Finger Position Code & Maximum Size

Finger Position	Finger Code	Width (mm)	Width (in)	Length (mm)	Length (in)
Unknown	0	40.6	1.6	38.1	1.5
Right thumb	1	40.6	1.6	38.1	1.5
Right index finger	2	40.6	1.6	38.1	1.5
Right middle finger	3	40.6	1.6	38.1	1.5
Right ring finger	4	40.6	1.6	38.1	1.5
Right little finger	5	40.6	1.6	38.1	1.5
Left thumb	6	40.6	1.6	38.1	1.5
Left index finger	7	40.6	1.6	38.1	1.5
Left middle finger	8	40.6	1.6	38.1	1.5
Left ring finger	9	40.6	1.6	38.1	1.5
Left little finger	10	40.6	1.6	38.1	1.5
Plain right thumb	11	25.4	1.0	50.8	2.0
Plain left thumb	12	25.4	1.0	50.8	2.0
Plain right four fingers	13	81.3	3.2	76.2	3.0
Plain left four fingers	14	81.3	3.2	76.2	3.0
Left and Right thumbs	15	81.3	3.2	76.2	3.0

HLL 14.006 – Horizontal Line Length. This mandatory ASCII field shall contain the number of pixels contained on a single horizontal line of the transmitted image.

HPS 14.009 – Horizontal Pixel Scale. This mandatory ASCII field shall specify the integer pixel density used in the horizontal direction providing the SLC contains a "1" or a "2." Otherwise, it indicates the horizontal component of the pixel aspect ratio.

IDC 14.002 – Image Designation Character. This mandatory ASCII field shall be used to identify the ten-print-fingerprint image contained in the record. This IDC shall match the IDC found in the file content (CNT) field of the Type-1 record.

IMP 14.003 – Impression Type. This mandatory one-byte ASCII field shall indicate the manner by which the ten-print image information was obtained. The appropriate code (0-3) selected from Table 11 of the ANSI/NIST-ITL 1-2007 standard shall be entered in this field.

IQM 14.022 – Image Quality Metric. This mandatory ASCII field shall contain the image quality scores for the individual fingers. Each finger score is defined by the FINGER NUMBER and the QUALITY SCORE separated by the <US> separator. Individual finger quality definitions are separated by the <RS> separator. This field will be accepted for legacy users only. All new IAFIS users will be required to populate the Alternate Fingerprint Quality Metric field (14.024 AFM).

LEN 14.001 – Logical Record Length. This mandatory ASCII field shall contain the total count of the number of bytes in the Type-14 logical record. Field 14.001 shall specify the length

of the record, including every character of every field contained in the record, and the information separators.

<u>MCP</u> 14.014 – Major Case Prints. This optional tagged field shall be present when the finger position code "19" appears in Field 14.013. This field shall consist of two mandatory information items. The first is the probable decimal finger position code (0-10) taken from Table 12. A "0" indicates that all the fingers of a possible candidate should be searched. The second information item is the code taken from Table 31 to indicate the portion of the major case print fingerprint image that is stored as a single image in the database. There may be up to 17 such images for a single finger. There may be up to four full-finger images in an entire joint image (EJI). These are numbered 1 to 4 as they appear left to right in the EJI and correspond to the *x* in FV*x*.

Note: Fields 14.014 and 14.015 are included to make the standard flexible enough to accommodate many different scenarios and applications. These two fields facilitate searching of latents formatted within Type-13 records against Type-14 records contained in the various database files. The search of a latent against a database can be narrowed with the use of additional information such as finger position, finger segment, or full finger view. It is unlikely that an entire EJI will ever be left at the scene of a crime. But a latent can be searched against the EJIs in an image or features file based on a specific finger segment or full finger view. This can be accomplished for a portion of the latent described by the X and Y coordinates.

<u>MPS</u> 14.015 – Major Case Print Segment Positions. This optional ASCII field may contain offsets to the locations for the bounding box of the EJI, each of the full-finger views, or segments within the EJI. When used, this field shall consist of six mandatory information items to describe the type or portion of the image and its location within an entire joint image. The first information item is the number of the full-finger view with values of "FV0" through "FV4." A value of "FV0" is used to specify the bounding coordinates for all of the combined full-finger views within the EJI. Values of "FV1" to "FV4" specify the bounding coordinates for each full-finger view. The second information item is used to identify the location of a segment within a full-finger view. It will contain the not applicable code "NA" if the image portion refers to a full-finger view or to the entire joint image locations. It shall contain "PRX," "DST," "MED" for a proximal, distal, or medial segment. The next four information items are the horizontal and vertical offsets relative to the origin positioned in the upper left corner of the image. The horizontal offsets (X) are the pixel counts to the right, and the vertical offsets (Y) are the pixel counts down. The location of the image portion is defined by the sequence of X coordinates (LEFT, RIGHT) and the Y coordinates (TOP, BOTTOM), of its bounding box. For the case of a fingertip, the first information item shall be "TIP," and the second information item shall be "NA." The next four information items are the horizontal and vertical offsets as defined above. The six information items within the field are separated by five <US> separators. This information will describe either the location of the entire joint image, one full-finger view, or segment. Individual full-finger or segment definitions may be repeated as subfields separated by the <RS> separator.

<u>SEG</u> 14.021 – Finger Segment Position(s). This mandatory ASCII field shall contain offsets to the locations of image segments containing the individual fingers within the image. The offsets

are relative to the origin (0,0), which is in the upper left corner of the image. The horizontal offsets (X) are the pixel counts to the right, and the vertical offsets (Y) are the pixel counts down. A finger segment is defined by the FINGER NUMBER, the X coordinates (LEFT, RIGHT), and the Y coordinates (TOP, BOTTOM) of its bounding box. The five information items within a finger segment definition are separated by the <US> separator. Individual finger segment definitions are separated by the <RS> separator.

SHPS 14.016 – Scanned Horizontal Pixel Scale. This optional ASCII field shall specify the horizontal pixel density used for the scanning of the original impression providing the SLC field contains a "1" or "2." Otherwise, it indicates the horizontal component of the pixel aspect ratio.

SVPS 14.017 – Scanned Vertical Pixel Scale. This optional ASCII field shall specify the vertical pixel density used for the scanning of the original impression providing the SLC field contains a "1" or a "2." Otherwise, it indicates the vertical component of the pixel aspect ratio.

SLC 14.008 – Scale Units. This mandatory ASCII field shall specify the units used to describe the image sampling frequency (pixel density). A "1" in this field indicates pixels per inch; a "2" indicates pixels per centimeter. A "0" in this field indicates no scale is given. For this case, the quotient of HPS/VPS gives the pixel aspect ratio.

SQM 14.023 – Segmentation Quality Metric. This optional ASCII field provides a measure of estimated correctness regarding the accuracy of the location of the segmented finger within the right or left four fingers or two thumbs slap image. For each segmented finger, this field shall contain four information items separated by the <US> separator character. The first information item is the finger number between one and ten as chosen from Table 12. The other three items identify a quality score and the algorithm used to create the quality score. This information is useful to enable the recipient of the quality score to differentiate between quality scores generated by different algorithms and adjust for any differences in processing or analysis as necessary.

1. The second information item shall be a measure of estimated correctness regarding the accuracy of the location of the segmented finger. This item contains the ASCII representation of the integer image quality score between 0 and 100 assigned to the image data by a quality algorithm. Higher values indicate better quality. An entry of "255" shall indicate a failed attempt to calculate a quality score. An entry of "254" shall indicate that no attempt to calculate a quality score was made. The use of additional values to convey other information should be harmonized with ISO/IEC 19794 standards.

2. The third information item shall specify the integer value that is the ID of the vendor of the quality algorithm used to calculate the quality score. The IBIA shall maintain the Vendor Registry of CBEFF Biometric Organizations that will map the value in this field to a registered organization.

3. The fourth information item shall specify a numeric product code assigned by the vendor of the quality algorithm, which may be registered with the IBIA, but registration is not required. It indicates which of the vendor's algorithms was used in the calculation of the quality score.

This field contains the ASCII representation of the integer product code and should be within the range 1 to 65,535. This subfield is repeated for each segmented finger whose coordinates appear in field 14.021.

The <RS> character separates each set of four information items. For the case where more than one segmentation algorithm is applied to a multi-finger plain image, the set of segmentation information items for each finger shall be ordered corresponding to the entries in field 14.021.

SRC 14.004 – Source Agency. This mandatory ASCII field shall contain the identification of the administration or organization that originally captured the ten-print image contained in the record. Normally, the ORI of the agency that captured the image will be contained in this field. The SRC may contain up to 43 identifying characters. The data content of this field shall be defined by the user and be in accordance with the receiving agency.

TCD 14.005 – Ten-Print Capture Data. This mandatory ASCII field shall contain the date that the ten-print image was captured. The date shall appear as eight digits in the format CCYYMMDD. The CCYY characters shall represent the year the image was captured; the MM characters shall be the tens and units values of the month; and the DD characters shall be the tens and units values of the day in the month. For example, the entry 20000229 represents February 29, 2000. The complete date must be a legitimate date.

VLL 14.007 – Vertical Line Length. This mandatory ASCII field shall contain the number of horizontal lines contained in the transmitted image.

VPS 14.010 – Vertical Pixel Scale. This mandatory ASCII field shall specify the integer pixel density used in the vertical direction providing the SLC contains a “1” or a “2.” Otherwise, it indicates the vertical component of the pixel aspect ratio.

TABLE N-2. Field List for Flats Civil Check Type-14 Record

Identifier	Condition	Field Number	Field Name	Character Type	Field Size Per Occurrence ---------- Min	Max	Occurrences ---------- Min	Max	Maximum Number of Bytes …	Example Data
LEN	M	14.001	LOGICAL REC LENGTH	N	4	8	1	1	15	14.001:40164<GS>
IDC	M	14.002	IMAGE DESIGNATION CHAR	N	2	5	1	1	12	14.002:01<GS>
IMP	M	14003	IMPRESSION TYPE	A	2	2	1	1	9	14.003:0<GS>
SRC	M	14.004	SOURCE AGENCY/ORI	AN	10	21	1	1	28	14.004:CA0000001<GS>
TCD	M	15.005	TEN-PRINT CAPTURE DATE	N	9	9	1	1	16	14:005:20040227<GS>
HLL	M	14.006	HORIZONTAL LINE LENGTH	N	4	5	1	1	12	14:006:1600<GS>
VLL	M	14.007	VERTICAL LINE LENGTH	N	4	5	1	1	12	14:007:1450<GS>
SLC	M	14.008	SCALE UNITS	N	2	2	1	1	9	14.008:1<GS>
HPS	M	14.009	HORIZONTAL PIXEL SCALE	N	2	5	1	1	12	14:009:500<GS>
VPS	M	14.010	VERTICAL PIXEL SCALE	N	2	5	1	1	12	14:010:500<GS>
CGA	M	14.011	COMPRESSION ALGORITHM	A	5	7	1	1	14	14:011:1<GS>
BPX	M	14.012	BITS PER PIXEL	N	2	3	1	1	10	14:012:8<GS>
FGP	M	14.013	FINGER POSITION CODE	N	2	2	1	6	25	14.013:13<GS>
MCP	O	14.014	MAJOR CASE PRINT	A/N	6	7	0	1	14	14.014:<GS>
MPS	O	14.015	MAJOR CASE PRINT SEGMENT POSITION	A/N	15	28	0	12	343	14.015:<GS>
SHPS	O	14.016	SCAN HOR PIXEL SCALE	N	2	5	0	1	12	14.016:<GS>
SVPS	O	14.017	SCAN VER PIXEL SCALE	N	2	5	0	1	12	14.017:<GS>
RSV	O	14.018-14.019	RESERVED FOR FUTURE DEFINITION	--	--	--	--	--	--	--
COM	O	14.020	COMMENT	A/N	2	128	0	1	135	14.020:<GS>
SEG	O	14.021	FINGER SEGMENTATION POSITIONS	N	10	23	0	*	*	14.021:<GS>

Identifier	Condition	Field Number	Field Name	Character Type	Field Size Per Occurrence ---------- Min	Max	Occurrences ---------- Min	Max	Maximum Number of Bytes …	Example Data
SEG	M	14.021	SEGMENT POSITION				2	4	99	14.021:10<US>3<US>352<US>725<US>1265<RS>
	M		FINGER NUMBER	N	1	2	1	1		9<US>375<US>750<US>175<US>765<RS>
	M		LEFT	N	1	4	1	1		8<US>800<US>1150<US>5<US>581<RS>
	M		RIGHT	N	1	4	1	1		7<US>1200<US>1598<US>274<US>801<GS>
	M		TOP	N	1	4	1	1		
	M		BOTTOM	N	1	4	1	1		
IQM	O*	14.022	IMAGE QUALITY METRIC				2	4	58	14.022:10<US>6<RS>9<US>4<RS>8<US>3<RS>7<US>3<GS>
	0		FINGER NUMBER	N	1	2	1	1		
	0		QUALITY SCORE	N	1	2	1	1		
SQM	M	14.023	SEGMENTATION QUALITY METRIC	N	16	76	0	*	*	14.023:10<US>75<US>IBIA VENDOR ID#<US>VENDOR QUALITY ALGORITHM ID<GS>
AFM	M[1]	14.024	ALTERNATE FINGERPRINT QUALITY METRIC	N	16	76	0	*	*	14.023:10<US>255<US>IBIA VENDOR ID<US>VENDOR ALGORITHM ID #<GS>
RSV		14.025-14.029	RESERVED FOR FUTURE DEFINITION	--	--	--	--	--	--	
DMM	O	14.030	DEVICE MONITORING MODE	A	8	11	0	1	18	14.030:ASSISTED<GS>
RSV		14.031-14.199	RESERVED FOR FUTURE DEFINITION	--	--	--	--	--	--	
UDF	O	14.200-14.998	USER-DEFINED FIELDS	--	--	--	--	--	--	
DAT	M	14.999	IMAGE DATA	B	2	--	1	1	--	14.999:<IMAGE DATA COMPRESSED@ 15:1> <FS>

APPENDIX N NOTES

1. IMQ (14.022) is accepted for legacy users only. New IAFIS users are required to populate the Alternate Fingerprint Image Quality Metric field (14.024 AFM). Eventually, all users will be required to use 14.024 instead of 14.022.

APPENDIX AC

ACRONYMS

A	Army
AA	Plain Arch
ABIS	DoD Automated Biometric Identification System
AC	Approximate Finger Class
ACN	Action to be Taken
AF	Air Force Serial Number
AFIS	Automated Fingerprint Identification System
AFM	Alternate Fingerprint Quality Metric
AFV	AFIS Feature Vector
AGR	Age Range
AKA	Aliases
AMN	Amnesia Victim
AMP	Amputated or Bandaged
AMPCD	Amputated or Bandaged Code
AN	Non-Immigrant Admission Number
ANS	Alphanumeric Special
ANSI	American National Standards Institute
AOL	Arrest Offense Literal
APAT	Pattern Classification
APB	Advisory Policy Board
AR	Alien Registration Number
AS	Air National Guard Serial Number, Army Serial Number, or National Guard Serial Number
ASCII	American National Standard Code for Information Interchange
ASL	Arrest Segment Literal
ATN	"Attention" Indicator
AU	Arch, Type Not Designated
BAL	Bald
BCD	Biometric Capture Date
BDB	Biometric Data Block
BDQ	Biometric Data Quality
BF	Bureau Fugitive Index Number
BFO	BDB Format Owner
BFT	BDB Format Type
BIR	Biometric Information Record
BLK	Black
BLN	Blond or Strawberry Blond
BLU	Blue
BO	Both Criminal File and Civil File
BPX	bits per pixel
BRO	Brown

BTY	Biometric Type
CAN	Candidate List
CAR	Criminal Ten-Print Submission (Answer Required)
CBEFF	Common Biometric Exchange File Format
CCN	Court Case Number
CDD	Court Disposition Date
CFS	Comparison Fingerprint Image Submission or Cancel Fingerprint Search
CG	Coast Guard Serial Number
CHQ	Characterization Quality
CI	Criminal File
CI	Central Pocket – Loop Whorl – Inner
CI	Canadian Social Insurance Number
CIN	Contributor Case Identifier Number
CIX	Contributor Case Identifier Extension
CJIS	Criminal Justice Information Services
CLQ	Classifier Quality
CM	Central Pocket – Loop Whorl – Meeting
CNA	Criminal Ten-Print Submission (No Answer Necessary)
CNT	File Content
CO	Central Pocket – Loop Whorl – Outer
COF	Coordinate Offsets
COM	Comment
COTS	Commercial Off-the-Shelf
CPD	Subject Photo Delete Request
CPDR	Criminal Fingerprint Card Direct Route
CPL	Other Court Sentence Provision Literal
CPNU	Criminal Fingerprint Card Processing Non-Urgent
CPR	Subject Photo Request
CR	Criminal File
CRA	Core(s) Attributes
CRI	Controlling Agency Identifier
CRN	Civil Record Number
CRP	Core Position
CSA	CJIS State Authority
CSF	Cascaded Search Flag
CSL	Court Segment Literal
CSN	Candidate Sequence Number
CSP	Color Space
CSR	Civil Search Requested
CST	Case Title
CTF	Contrast Transfer Function
CTZ	Country of Citizenship
DAI	Destination Agency Identifier
DCS	Directory of Character Sets
DEK	Known Deceased
DEU	Unknown Deceased

DHS	Department of Homeland Security
DI	Central Pocket – Double Loop Whorl – Inner
DLA	Delta(s) Attributes
DLT	Delta(s) Position
DM	Central Pocket – Double Loop Whorl – Meeting
DMI	Disposition Maintenance Indicator
DMM	Device Monitoring Mode
DO	Central Pocket – Double Loop Whorl – Outer
DOA	Date of Arrest
DOM	Domain Name
DOO	Date of Offense
DOS	Date of Arrest – Suffix
DPR	Date Printed
DSPE	Electronic Disposition Reporting
DSPR	Disposition Response
DST	Distal
DUI	Device Unique Identifier
EAD	Employer and Address
EBTS	Electronic Biometric Transmission Specification
ECL	Eye Color
EFTS	Electronic Fingerprint Transmission Specification
EID	Employee Identification Number
EJI	Entire Joint Image
ELR	Evaluation Latent Fingerprint Submission Request
ERRA	Administrative Transaction Error
ERRI	Image Transaction Error
ERRL	Latent Transaction Error
ERRT	Ten-print Transaction Error
ERS	Electronic Rap Sheet
ETC	Estimated Time to Complete
EXP	Response Explanation
EYE	Color Eyes
F	Air Force
FANC	Federal Applicant (No Charge)
FAUF	Federal Applicant User Fee
FBI	Federal Bureau of Investigation or FBI Number
FCP	Fingerprint Characterization Process
FFN	FBI File Number
FGN	Finger Number
FGP	Finger Position
FID	Feature Identifier
FIS	Fingerprint Image Submission
FISR	Fingerprint Image Submission Response
FIU	Fingerprint Image(s) Updated
FMT	Minutiae Format
FNDR	Federal No-Charge Direct Route

FNR	Finger Number(s) Requested
FNU	FBI Number
FP	Fingerprint
FVR	Fingerprint Verification Report
FV*x*	Full Finger View (*x* = a number)
G	Coast Guard
GCA	Grayscale Compression Algorithm
GEO	Geographic Area of Search
GMT	Greenwich Mean Time
GRN	Green
GRY	Gray
GS	(Some kind of separator, found on pp. 5, 72, and J-21)
GUI	Global Unique Identifier
HAI	Hair Color
HAZ	Hazel
HDV	CBEFF Header Version
HGT	Height
HLL	Horizontal Line Length
HPS	Horizontal Pixel Scale
HTR	Height Range
HW	hardware
IAFIS	Integrated Automated Fingerprint Identification System
IBIA	International Biometrics Industry Association
ICN	IAFIS Control Number
ICO	Identification Comments
ID	Identity or Identification
IDC	Image Designation Character
IID	Iris Image Data
IIE	Iris Image Enrollment
IIER	Iris Image Enrollment Request Response
III	Interstate Identification Index
IIR	Iris Images Requested
IMA	Image Capture Equipment
IMG	Image Data
IMP	Impression Type
IMT	Image Type
INCITS	International Committee for Information Technology Standards
IO	Identification Order Number
IPC	Image Property Code
IQM	Image Quality Metric
IQS	Image Quality Score
IRD	Iris Capture Date
IRQ	Fingerprint Image Request
IRR	Fingerprint Image Request Response
ISO	International Organization for Standardization
ITL	Information Technology Laboratory

ITN	Identification, Tasking, and Networking
JPEG	Joint Photographic Experts Group
LCD	Latent Capture Date
LCN	Latent Case Number
LCX	Latent Case Number Extension
LFFS	Latent Fingerprint Features Search
LFIS	Latent Fingerprint Image(s) Search
LFS	Latent Fingerprint Image(s) Submission
LFMR	Latent File Maintenance Response
LPNQ	Latent Penetration Query
LPNR	Latent Penetration Query Response
LRSQ	Latent Repository Statistics Query
LRSR	Latent Repository Statistics Response
LS	Left Slant Loop
LSIR	Latent Search Ident Response
LSMQ	Latent Search Status and Modification Query
LSMR	Latent Search Status and Modification Response
LSR	Latent Submission Results
M	Marines
MAK	Make
MAP	Miscellaneous Applicant Civil
MAR	Maroon
MC	Marine Corps Serial Number
MCL	Major Case Latent
MCP	Major Case Print
MCS	Major Case Image(s) Submission
MD	Mariner's Document or Identification Number
MDD	Message Data Dictionary
MDX	Minutiae Identification Index
MED	Medial
MET	Method
MFC	Message Field Code
MIL	Military Code
MIN	Minutiae
MMS	Make/Model/Serial Number
MNC	Maximum Number of Candidates
MNT	Minutiae Type Designation
MNU	Miscellaneous Identification Number
MODL	Model
MP	RCMP Identification of Fingerprint Section Number
MPR	Missing Person
MPS	Major Case Print Segment
MRC	Minutiae and Ridge Count Data
MSG	Message [or] Status/Error Message (appears both ways)
MTD	Minutiae Type Designation
MTF	Modular Transfer Function or Modulation Transfer Function (appears both ways)

MUL	Multicolored
N	Navy
NA	National Agency Case Number
NAM	Name
NAR	Notification of Action Response
NCIC	National Crime Information Center
NCR	Number of Candidates Returned [or] Number of Candidates' Images Returned
NDR	Name of Designated Repository
N-FACS	National Fingerprint-Based Applicant Check Study
NFAP	Non-Federal Advanced Payment
NFF	National Fingerprint File
NFIQ	NIST Fingerprint Image Quality
NFUE	Non-Federal User-fee Expedite
NFUF	Non-Federal Applicant User Fee
NIR	Number of Images Requested
NIST	National Institute of Standards and Technology
NMN	Number of Minutiae
NNDR	Non-Federal No-Charge Direct Route
NOT	Note Field
NRC	Number of Required Candidates
NS	Navy Serial Number
NSR	Native Scanning Resolution
NTR	Nominal Transmitting Resolution
OA	Originating Agency Police or Identification Number
OCA	Originating Agency Case Number
OCP	Occupation
OEM	Original Equipment Manufacturer
OFO	Other federal organizations
OFR	Originating Fingerprint Reading System
ONG	Orange
ORI	Originating Agency Identifier
ORN	Orientation Uncertainty
PAS	Photo Acquisition Source
PAT	Pattern Level Classifications
PATCL	Pattern Classification Code
PAX	Photo Acquisition Source
PCD	Palmprint Capture Date
PDR	This is listed throughout the document as both Photo Delete Request and Photo Delete Response, with one instance of Photo Delete Request Response
PEN	Penetration Query Response
PHD	Photo Date
PHT	"Photo Available" Indicator
PI	Personal Identification Number (State Issued Only)
PI	Plain Whorl – Inner
PLE	Purple
PLP	Palmprint Position

PM	Plain Whorl – Meeting
PNG	Portable Network Graphics
PNK	Pink
PO	Plain Whorl – Outer
POA	Pose Offsent Angle
POB	Place of Birth
POS	Subject Pose
PP	Passport Number (U.S. only)
PPA	Palm Prints Available
PPE	Palmprint Enrollment Request
ppi	pixels per inch
PPR	Palmprint Enrollment Response
PRI	Priority
PRR	This appears in different places as Subject Photo Request Response and as Photo Request Response (p. iv)
PRX	Proximal
PRY	Transaction Priority
PS	Port Security Card Number
PTD	Person Type Designator
PTY	Photo Type
PUM	Position Uncertainty
PXS	Photo Description
QDD	Query Depth of Detail
QMS	Quality Measure
RAC	Race
RAE	Rotation Angle of Eye
RAP	Request for Electronic Rap Sheet (p. iii), also Record of Arrests and Prosecutions (p. 31)
RAU	Rotation Uncertainty
RBE	Rap Back Eligibility Request
RBER	Rap Back Eligibility Response
RBFD	Rap Back Flag Delete Request
RBHN	Rap Back Hit Notification
RBM	Rap Back Maintenance Request
RBMR	Rap Back Maintenance Response
RBR	Rap Back Request
RBRE	Rap Back Record Enrollment
RBRO	Rap Back Record Owner
RBV	Rap Back Verification Request
RBVS	Rap Back Verification Status
RCD1	Ridge Core Delta One for Subpattern Classification
RCD2	Ridge Core Delta Two for Subpattern Classification
RCN1	Ridge Count Number One
RCN2	Ridge Count Number Two
RDG	Minutiae Ridge Count Indicator
REC	Response Code

RED	Red or Auburn
RES	Residence of Person Fingerprinted
RET	Retention Code
RFC	Request For Change
RFP	Reason Fingerprinted
RFR	Request Features Record
RISC	Repository for Individuals of Special Concern
RMS	Root Mean Squared
ROV	Region of Value
RPIS	Rapid Print Image Search
RPSR	Rapid Print Image Search Response
RPR	Request Photo Record
RSO	Octant Residuals
RSR	Repository Statistics Response
RSV	Reserved
RTID	(Canada) Real Time Identification
SAN	State Arrest Number
SAP	Subject Acquisition Profile
SCNA	AFIS Segment Control Number
SCO	Send Copy To
SDOB	Submitted Date of Birth
SDY	Sandy
SEC	Subject Eye Color
SEG	Fingerprint Segment Position(s)
SERNO	Serial Number
SEX	Sex
SFP	Subject Feature Points
SHC	Subject Hair Color
SHPS	Scan Horizontal Pixel Scale
SID	State Identification Number
SLC	Scale Units
SLE	Three different definitions throughout: Custody or Supervisory, Custody or Supervisory Status, and Custody or Supervisory Status Literal (p. x)
SMD	SMT Descriptors
SMT	Scar, Mark and Tattoo
SMS	SMT Size
SNAM	Submitted Name
SOC	Social Security Account Number
SOR	Want or Sex Offender Registry
SPA	Subject Pose Angle
SPC	Special Population Cognizant Files
SPCA	Special Population Cognizant File Record Add
SPCAC	Special Population Cognizant File Add Confirm
SPCD	Special Population Cognizant File Record Delete
SPCDC	Special Population Cognizant File Delete Confirm
SPCM	Special Population Cognizant File Modify

SPCMC	Special Population Cognizant File Modify Confirm
SPCN	Special Population Cognizant Number
SQM	Segmentation Quality Metric
SQS	Subject Quality Score
SRC	Source Agency
SRE	Submission Results – Electronic
SRF	Search Results Findings
SRL	Search Results — Latent
SRT	Search Results — Ten-Print
SS	Selective Service Number
SSD	Custody or Supervisory Status Start Date
STD	Special Table Data
SVPS	Scan Vertical Pixel Scale
SW	software
SXS	Subject Facial Description
TAA	Treat As Adult
TBD	To Be Determined
TBR	To be Resolved
TCD	Ten-Print Capture Date
TCN	Transaction Control Number
TCR	Transaction Control Reference
TIP	Rolled Tip
TOT	Type of Transaction
TPFS	Ten-Print Fingerprint Features Search
TPIS	Ten-Print Fingerprint Image Searches
TPRS	Ten-Print Rap Sheet
TPRR	Ten-Print Rap Sheet Response
TSR	Type of Search Requested
TT	Tented Arch
UC	Unclassifiable [or] Unable to Classify
UCN	Universal Control Number
UDF	User-Defined Field
UDI	User-Defined Image
UK	United Kingdom
ULAC	Unsolved Latent Add Confirm Request
ULAR	Unsolved Latent Add Confirm Response
ULD	Unsolved Latent Record Delete Request
ULDR	Unsolved Latent Delete Response
ULF	Unsolved Latent File
ULM	Unsolved Latent Match Response
UP	Unable to Print
US-VISIT	U.S. Visitor and Immigrant Status Indicator Technology
UTD	User-Defined Testing Date
UULD	Unsolicited Unsolved Latent Delete
V	Version
VA	Veterans Administration Claim Number

VAR	Value-Added Reseller
VER	Version
VID	Version Identifier
VLL	Vertical Line Length
VPS	Vertical Pixel Scale
WGT	Weight
WHI	White
WSQ	Wavelet Scalar Quantization
WTR	Weight Range
WU	Whorl, Type Not Designated
XI	Central Pocket – Accidental Whorl – Inner
XM	Central Pocket – Accidental Whorl – Meeting
XO	Central Pocket – Accidental Whorl – Outer
XXX	Unknown