**Department of Justice**
**Federal Bureau of Investigation**

## CRIMINAL JUSTICE INFORMATION SERVICES (CJIS)

# ELECTRONIC FINGERPRINT TRANSMISSION SPECIFICATION

**May 2, 2005**

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## CHANGE HISTORY 1995-1999

A. CJIS-RS-0010 (V4), August 24, 1995 - This version incorporates RFCs, 787, 842, 850, 877, 896, 898, and 906

B. CJIS-RS-0010 (V5), June 6, 1997 - This version release is a single-sided document and will be managed as such hereafter. This version incorporates the following RFCs:

870R2 Latent Search: need to develop a concept of operations, need to define/verify the requirement for the service provider to cancel searches and need to develop overall resource utilization concept, specification and flow requirements to segments: Sections 3.4.1.5, 3.4.1.6, 3.4.2, 3.11, 3.11.1, 3.11.1.1, 3.11.1.2, 3.11.1.3, 3.11.1.4, App.C: CFS, ETC, NCR, PEN, PRI, QDD, QUE, RIX, ROR, RSR, Table E-9, E-10, E-24, E-25, E-26, E-27, E-28, E-29

935 Modify IAFIS message A1003, A3026, and E1003 to include additional fields to support transmit of electronic rap sheet. Sections 3.1, 3.1.1.1, 3.1.1.11, App. C: ERS, RAP, SCO, Table D-11.

938 Modify EFTS standard to include new Type-10 image record and 3 Type-2 records. Sections 1.2, 3.1.1.1, 3.1.1.2, 3.10, 3.10.1, 3.10.1.1, 3.10.1.2, 3.10.1.3, 3.10.2, 3.10.2.1, 3.10.2.2, Table I-1, I-2, I-3, I-4, J-1, App. K.

944 Change the EFTS to define three non-operational environments - training, test and development. Sections App. B: 1.04 (TOT), Table B-1.

946 Modify EFTS records Type 10 TOT=PHO, Type 2 TOT=PDR,PRR, CPD,CPR. All records had field “IDC” added to them.

960 Extends the period of time from (7 to 14 days) for latent specialists and external users to confirm permanent addition to the unsolved latent fingerprint. Section 3.3.1.1,3.5, 3.5.1.2, 3.5.1.5

961 Provides latent service providers with the capability to solve latent cases. Section Appendix F, 5.0

1021 Added Elements FGN and MSC. Changed the following EFTS Type-2 Records: LSR-changed occurrence of CIN and CIX from 100 to 5, added elements DOB, HGT, WGT, CRI, ERS, NOTE, Deleted the following elements, AGR, HTR, WTR, EAD, OCP, RES; NAR - added element CRI; SRL - added elements FGN, MSC, NCR. Section Appendix C, Appendix E.

1023 Changes to PAT, Addition of AMP. Deleted the NCIC and the PAT from selected TOTs. Added AMP to selected TOTs. Section Appendices C, D, and E.

1029 Redefined error messages based on usage, ERRA for administrative transaction errors, ERRT for ten-print transaction errors, ERRI for image transaction errors, and ERRL for latent transaction errors. Each group of transactions requires different data output when errors are encountered. The current EFTS lists 3 of these messages with the same name and a fourth error message for administrative

messages was added. Customizing the messages this way will decrease response time when an error is encountered. Sections 3.1, 3.1.1.12, 3.2.1.4, 3.3, 3.3.1.8, 3.4, 3.4.1.4, 3.5, 3.5.1.7, 3.6, 3.6.1.1, 3.6.1.4, 3.7, 3.7.1.3, 3.8, 3.11, 3.11.1.5, Appendices D & E.

1025R2 Updated text to include SRE and CRN. Added Civil Record Number (CRN). Section 3.1.1.11, Appendices C and D.

C. CJIS-RS-0010 (V6R2), March 1998 - This version has come about in three stages. A V6 Working Draft was produced in August, 1997 and was reviewed at a *User Technical Review* on August 26, 1997. Subsequent comments were incorporated as revision 1 of this working draft and distributed on September 30, 1997 as Version 6, Revision 1 (Working Draft). Comments were received against revision 1 and were incorporated into an official V6R2 dated March 1998.

C.1 V6WD, August 1997 - This Version 6 Working Draft incorporates the following RCFs:

1024R2 Removed range AGR, WTR, HTR, DPR and DOS from ten-print transactions. Added TAA to criminal ten-print transactions and CRI to all transactions requiring a response. Added PRI and case-ID extensions CIX LCX to latent transactions. Deleted the MIR as a separate transaction (subsumed into IRQ). Added latent requirements. Added placeholder for Type-7 and Type-9 records.

1035R3 Modified latent, and remote ten-print search requirements. Added CRI, FGP, NCR, and ULF to latent search records. Added fields and field edit specifications to Type-7 record. Modified MRC set definition for Type-9 record.

1051R3 Modified SRE (response) requirements to cover incomplete responses when dealing with NFF states.

1069R1 Added Appendix K describing the new NIST Type-10 (photo) record. Removed old Appendix J, which formerly contained the interim Type-10 definition. Added DOS to photo transactions, CPR, CPD PDR, and PRR. Added DOS to PRR and PDR.

1070R1 Modified unsolved latent transactions. Replaced ULNC transaction with UULD. Defined and added ASCN field to unsolved latent file maintenance transitions.

1074R1 Corrected error response text to recognize four distinct error types. Modified ERRI definition.

1078R1 Modified requirements for latent penetration query, latent cognizant query, and latent search status and modification query. Modified corresponding responses. Added ASCN to these queries for reference to prior search submissions. Removed SCO, OCA, ROR, RIX and QUE fields.

1080R1 Modified T9TRANS definition to include AFV.

1087R1 Established maximum sizes for fingerprint images.

1099R1 Established T2ISR, (Image Summary Response) transaction.

In addition to the RFCs listed above, the Version 6 Working Draft (V6WD) incorporates the following noteworthy general changes:

1. Data for the tables in Appendices B through K now are drawn from a database rather than being entered as text in the WordPerfect EFTS document. This database, which is built in Microsoft Access, contains application-specific functionality to generate those tables.
2. The EFTS has been reformatted to present the data in Appendices D and E in a more concise manner. Text has been judiciously added to Section 1 and Appendix D to explain and provide a guide to the new table formats.
3. Text has been added in Section 2 on the use of tagged fields and on error handling.
4. JPEG has been added as an approved compression algorithm for fingerprint images (this applies to UK's Home Office only.) The Addendum, ANSI/NIST-ITL 1a-1997 (American National Standard For Information Systems - Data Format for the Exchange of Fingerprint, Facial & SMT Information) has been incorporated into the EFTS for Type-10 Record Definitions.

Further, there have been changes in V6WD to some data elements and/or logical records which are not due to a prior RFC. These changes were made only to correct obvious oversights/errors in an RFC or in V5 data. Detail of these numerous changes has been documented in the EFTS V6WD Comments and Dispositions document.

C.2 V6WDR1, September 30, 1997 - This revision of the working draft incorporates changes arising from the disposition of comments by attendees of the *User Technical Review* on August 26, 1997, together with changes due to comments from internal reviews of V6WD. The internal reviews have resulted in RFCs 1127R1, 1129R1, and 1130R1. While the intent of these was to change the IAFIS MDD, they have affected some EFTS data. All such changes have been captured in the EFTS V6 Comment Dispositions document.

C.3 V6R2, March 1998 - RFC 1168R1 incorporates changes arising from ISS comments against V6WDR1 and IAFIS/SEU activities to make engineering data consistent between the EFTS and IAFIS' Message Data Dictionary (MDD). These internal reviews have also resulted in some of the content of RFC 1149R1. While the intent of this RFC has been to correct the MDD, some changes also have affected the EFTS, and have been incorporated into V6R2.

The following changes are noteworthy:

1. Every set using CRI now allows up to three instances of it. This provides a means to handle intermediate routing from the State Ident Bureau to the Local Booking Station where necessary. Additional instance of the CRI can be used as the States wish to support Applicant Submissions and other such needs.
2. Text in the body of the EFTS (especially Sections 3 and Appendix C) now states more clearly the intent and use of transactions and elements.
3. An Appendix L has been added that collects EFTS-wide summary tables for reference by developers. Currently, two types of tables have been put into this Appendix. The first is a set of two tables listing first in Alphabetic order, then in Tag order every EFTS element.

The second is a set of two tables, the first listing recordset requirements for each submission, the second listing recordset requirements for each possible response to each submission.

4. EFTS specifications for elements and sets are now consistent with the IAFIS's MDD, now providing the same interface information to IAFIS segment developers and to the EFTS development community. These changes to Version 6 Revision 2 EFTS data, which are the results of a maturing IAFIS design, provide the robustness in the communication interface needed to support the user community's automation of ten-print submissions.

D. CJIS-RS-0010 (V7), January 29, 1999 - This version incorporates several important revisions. New Type-9 records are defined for ten-print and latent features searches. Latent transactions are revised. Several appendices are revised to provide references that were noted as lacking, and organization of some material has been changed to make it more accessible than in previous versions. The following provides more detail:

1195R2 Added these to Appendix C. Made PAT mandatory in ten-print features search. Added RCD1, RCD2 to TPFS, TPIS, LFFS, LFIS, LPNQ. Added optional FGP to LPNQ. Remove IMA from LFFS

1200R2 Defined new Native Mode Searches for the EFTS. Replaced old T9TRANS (Table J-1) recordset with T9TRANS_L (Table J-1) for latent searches and T9TRANS_T (Table J-2) for ten-print searches. Completely replaced Appendix J as a result. Added Reference Note Table (Table J-3) to Appendix J.

1213R1 Major Revision to EFTS. Incorporated IAFIS View Review Errata affecting EFTS. Incorporated changes to Latent Transactions per November 15, 1998 EFTS Users Meeting. Incorporated various changes based upon user comments from NY, SC, CA, User Meeting Minutes, AFIS (Lockheed Martin, Orlando FL) EFIPS (Lockheed Martin, OakRidge TN), FBI Latent Fingerprint Section (Steve Meagher) and IAFIS System Engineering Unit. The following general revisions are of interest:

1. Replaced entire Appendix J.
2. Revised Appendix L, replacing reference tables cross-referencing element IDs and tag numbers, and tables listing recordsets by transaction type.
3. Added detail to error codes in Appendix M.
4. Reorganized Reference Note Tables, distributing notes to appendices in which they are referenced.
5. Added discussion on ORI vice CRI use.
6. Added discussion of User Defined fields and edit restrictions to same.
7. Revised discussion of IAFIS error handling.
8. Revised descriptions of latent and native-mode search transactions.

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**Change History Section**

| Version/ Revision | Description of Change | QA Approval | Date |
|---|---|---|---|
| 7.1 | Includes the following December 2004 APB approved changes:<br>**SPCR 16354** Update the EFTS to provide clarification for the CRI Field<br>**SPCR 16439** Update the EFTS to standardize the Reason Fingerprint field per recommendations by IS issue 3A<br>**SPCR 17129** Update EFTS Section 3.1 Electronic Ten-Print Submission with change made under PI903/PI801<br>**SPCR 17819t** Update EFTS to include new STOT =NFAP for FTTTF – Flight School<br>**SPCR 17954** Add TPRS to Table A-1 priorities for EFTS.<br>**SPCR 19656a** IISS Requests Modifications to EFTS:Update Appendix C with NCIC Code Manual Reference Changes within Fields 2.021 CTZ, 2.044 GEO, 2.020 POB; Update Appendix C definition of Field 2.073 CRI; Update Appendix C with clarification of definition Field 2.042 MIL; Update Appendix C clarify definition of TSR 2.043 to support National Child Protection Act of 1993; Update Appendix C & D CSL reference to indicate CPL as mandatory field; Update Appendix C remove references of Fields 2.055 SLE and SSD 2.054; Update Appendix B to remove references of Test transactions.<br>**SPCR 19656b** PDS Requests Modifications to the Current EFTS: Replace Appendix F and G with updates from the National Fingerprint-Based Applicant Check (N-FACS) Study, April 5, 2004; Update Appendix B clarify definition Field 1.09 TCN; Update Section 3.2.1.5 -with notation that TPRS is limited usage TOT; Update Appendix C clarification of Field 2.009 OCA length; Change document version to V7.1.<br>**SPCR 19656c** IIETF Requests Modifications to EFTS: Updates to Section 3.1, 3.1.1, 3.1.2, Appendix D, and Acronyms to add TOT NFAP; Update to Sections 3.2, 3.2.1, Appendix A, Appendix D, and Acronyms to add TOT TPRS; Add Type-14 references to Section 3.1.2 and new Appendix N to Capture Type 14 specifications.<br>**SPCR 19656d –** WIN State Comments and ITMS final edits. Includes: updates for all ANSI/NIST-ITL references; addition of new Change History Page; inclusion of all Appendices TABLES that were previously “placeholder only”; document formatting for double-sided printing; and other minor typographical and/or editorial corrections. New CJIS document number assigned to the document. Kept the 7.1 revision number. | T. Cheuvront | 6/15/2005 |

# TABLE OF CONTENTS

## LIST OF TABLES

## LIST OF FIGURES

## LIST OF APPENDICES

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# PREFACE

## How To Use This Document

The Appendices of this document contain all the information that you will need in order to find all information regarding a particular type of electronic transaction. 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, Appendix E for Latent searches and submissions. Appendix F gives IAFIS Image Quality Specifications for fingerprint scanners and displays. Appendix H presents the Type-7 field list. Appendix I presents Image retrieval and maintenance transactions. Appendix J gives the Type-9 field list. Appendix K details the Type-10 field list and the Type-2 (Photo) field lists. Appendix L provides a complete cross-reference of elements and their tag numbers, and lists logical record requirements for each EFTS 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 field list, Appendix D for the Type-2 CAR field list, and Appendix C for field definitions.

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# SECTION 1

# INTRODUCTION

## 1.1 Background

For almost 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 are now accepted as a national standard for the exchange of fingerprint, identification, and arrest data between criminal justice agencies.

However, because fingerprint cards must be physically transported and processed, substantial delays are introduced into the identification cycle. To improve the speed and accuracy of the fingerprint identification process and eliminate the need for contributing agencies to create and mail paper fingerprint cards to the Federal Bureau of Investigation (FBI) for processing, the FBI Criminal Justice Information Services (CJIS) Division is developing an Integrated Automated Fingerprint Identification System (IAFIS) that will support the paperless submission of fingerprint records.

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) Identification Services Subcommittee, the FBI has developed in conjunction with the National Institute of Standards and Technology (NIST), and the fingerprint identification community, a standard for electronically encoding and transmitting fingerprint image, identification, and arrest data. This standard is comprised of an American National Standards Institute (ANSI) standard entitled "Data Format for the Interchange of Fingerprint, Facial, & Scar Mark & Tatoo (SMT) Information" (ANSI/NIST-ITL 1-2000).

The ANSI standards define the content, format and units of measurement for the exchange of information that may be used in the fingerprint identification of a subject. Such information is intended for use in the interchange between criminal justice administrations or organizations that use an Automated Fingerprint Identification System (AFIS), and will provide a common interface for AFISs and related systems nationwide.

## 1.2 Contents of Specification

While the ANSI standards 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. The basic requirements for Logical Records Type-1, Type-2, Type-4, Type-7, Type-9, and Type-10 set forth in the ANSI standards 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, and Type-10 as well as for any special requirements for the other record types, are contained in this specification.

## 1.3 Change Control

The Electronic Fingerprint Transmission Specification (EFTS) defines the interface between IAFIS and the States' systems. Any changes to the data fields or formats within the EFTS must honor previously published protocols to ensure that the States' systems are not adversely affected. Since IAFIS and the States' systems are being developed independently, a process has been established which provides for coordinated enhancements within the various systems while maintaining reliable interoperability. This process is based in 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 the 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.)

### 1.4.2 Use of Separator Characters

Separator characters may best be understood by considering them necessary for what follows, 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 IAFISs validating each subfield in a grouped field to see whether it contains valid data or 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 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.

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

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 is 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 EFTS 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.

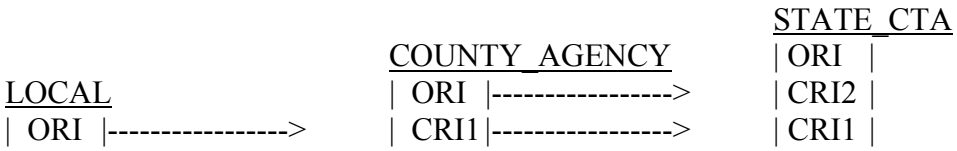
## 1.7 Data Storage in the IAFIS Database

Data that is submitted in IAFIS transactions may or may not be stored in a table in the IAFIS database. Data that is not stored is 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 is stored in IAFIS is always converted to uppercase prior to storage. Therefore, if this data is returned as part of the response to a subsequent submission (or a 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 CTA for transmission to the FBI. In such a case the transmission of ORIs and CRIs might appear as follows:




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 CTA, 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 CTA 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 CTA is entered in the ORI field. The transaction is then forwarded to the FBI via the CJIS WAN. 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 CTA 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 identification information between Federal, State and local users and the FBI. It provides a description of all requests and responses associated with electronic fingerprint identification services. These fingerprint identification services include the following:

1. Ten-Print Services
2. Latent Services
3. Fingerprint Image Services

Ten-print services can be accessed through electronic ten-print submissions and remote searches. Electronic submissions involve processing and evaluation judgments by FBI personnel. Remote 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 comprised of electronic latent submissions handled by FBI latent examiners and automatic remote searches of the FBI latent databases. Finally, image requests are used to solicit fingerprint images stored by the FBI. All transactions and messages are compliant with the ANSI standard for exchange of fingerprint information.

Section 3 gives a description of the seven types of fingerprint 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 is 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 provides the interim image quality specifications. 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 1-2000 Electronic Fingerprint Transmission Standard. The ANSI/NIST 2000 defines a standard for transmitting mugshots. 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.

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## SECTION 3

## DESCRIPTION OF OPERATIONAL CONCEPTS

The FBI CJIS Division will process the following seven types of fingerprint and four photo transactions from the four main service areas in its electronic environment:

Ten-Print Services
- Electronic Ten-Print Submissions
- Remote Ten-Print Searches

Latent Services
- Electronic Latent Submissions
- Remote Latent Searches
- Latent Image Maintenance Requests

Image Services
- Remote Requests for Fingerprint Images
- Electronic Requests to Upgrade Fingerprint Images

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

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

### 3.1 Electronic Ten-print Submissions

The processing flow for criminal ten-print electronic submissions is illustrated in Figure 1, "Electronic Ten-Print Submission." These 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 ten-print electronic submission is similar to the criminal ten-print 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.

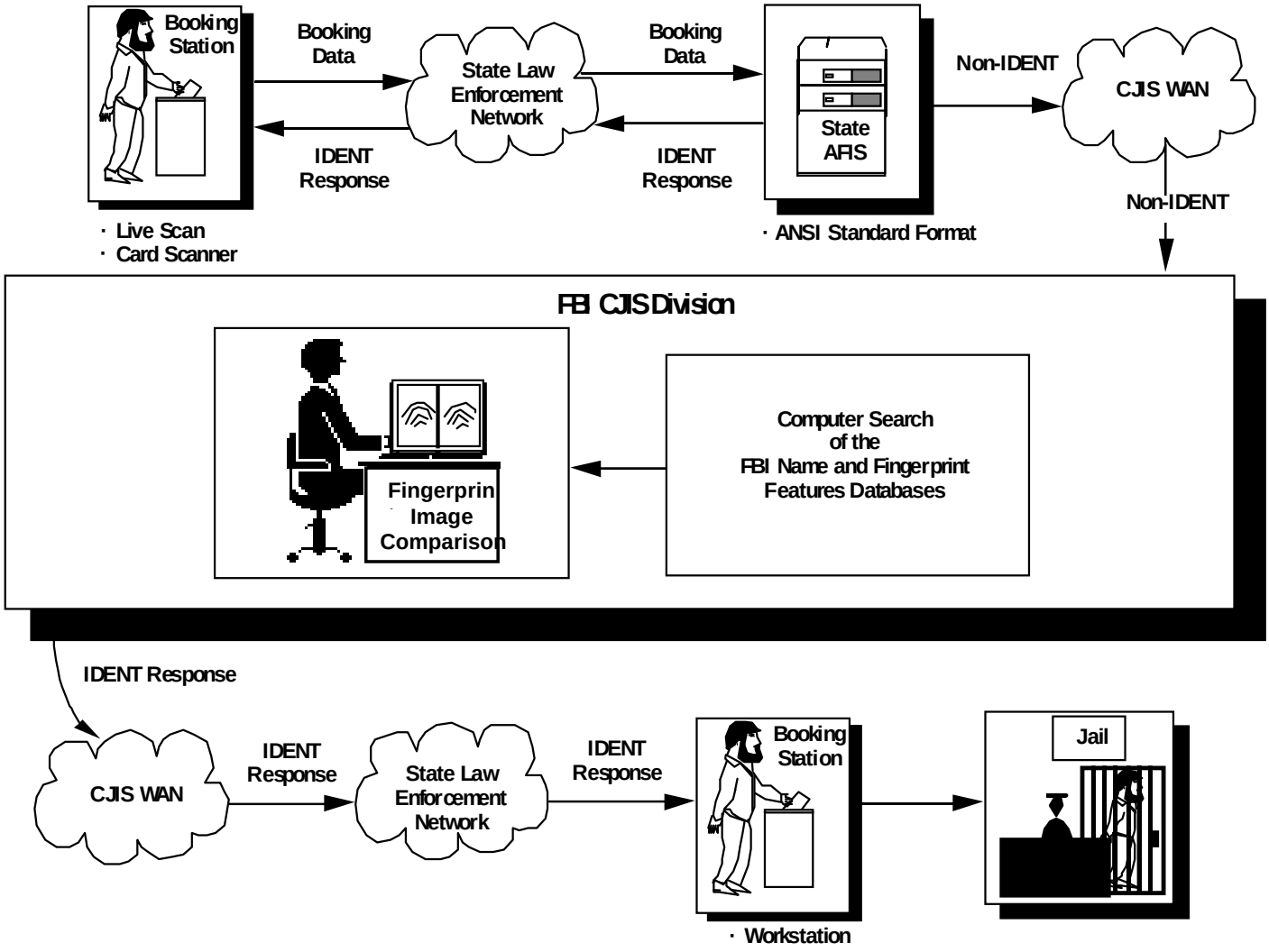


**Figure 1 Electronic Ten-Print Submission**

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 feature 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).

Electronic criminal transactions will have a nominal 2-hour turnaround within IAFIS. Civil transactions, and card-based transactions, once received, will have a 24-hour nominal turnaround. The turnaround times are based on the type of transaction and are specified in Appendix A.

There are several types of ten-print electronic 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) |
| FANC | Federal Applicant (No Charge) |
| FAUF | Federal Applicant User Fee |
| NFAP | Non-Federal Advanced Payment |
| NFUF | Non-Federal Applicant User Fee |
| MAP | Miscellaneous Applicant Civil |
| DEK | Known Deceased |
| 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 |

[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.

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 and optionally may include up to 4 photos of the subject. 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 ASL and 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.

#### 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, and optionally up to 4 photos of the subject. 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 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. 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.

#### 3.1.1.4 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 (OCS); and (2) federal agencies in connection with employment, security updates, or contract personnel. 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 resubmittal of user-fee submissions that the FBI has rejected. Such resubmittals are allowed only when the fingerprint image quality of the original submission was unacceptable.

#### 3.1.1.5 Non-Federal Applicant User Fee (NFUF)

These submissions are for non-criminal justice and licensing purposes in which the contributor is charged a fee. Examples of the types of contributors of this type of transaction are: federal and state banking institutions, regulatory agencies (such as stock exchanges, bankers' associations, securities dealers, Nuclear Regulatory Commission, Securities and Exchange Commission, racing or gaming control board, etc.). Their purpose for submitting such requests is to ascertain whether individuals who have applied for licensing or employment with their 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 resubmittal of user-fee submissions that the FBI has rejected. Such resubmittals are allowed only when the fingerprint image quality of the original submission was unacceptable.

#### 3.1.1.6 Miscellaneous Applicant Civil (MAP)

These no-charge submissions are for non-federal law enforcement and criminal justice employment. The MAP TOT is summarized in Table D-3. Edit specifications for the fields it uses may be found in Table C-1.

#### 3.1.1.7 Known Deceased (DEK)

These transactions are submitted for a deceased individual whose identity is known to the contributor. 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.

#### 3.1.1.8 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. 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.

#### 3.1.1.9 Missing Person (MPR)

These non-criminal submissions pertain to persons reported as missing. 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 CAR field. The MPR TOT is summarized in Table D-3. Edit specifications for the fields it uses may be found in Table C-1.

#### 3.1.1.10 Amnesia Victim (AMN)

These non-criminal submissions pertain to persons known to have amnesia who are unaware of their own identity. 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.

#### 3.1.1.11 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 NAME, FBI number and State ID (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 EFTS 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 they complete processing, the FBI 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.

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

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

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

### 3.1.1.12 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.

### 3.1.1.13 Non-Federal Advanced Payment (NFAP)

These submissions are for non-criminal justice purposes in which the contributor is charged a fee in advance. Examples of the types of contributors for this TOT are as follows: 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 resubmittal of user-fee submissions that the FBI has rejected. Such resubmittals 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 CJIS prior to use.

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

Or
X For non-criminal justice purposes (e.g., FAUF, FANC, NFUF, NFAP, MAP) and with CJIS coordination and authorization,
3 – Type-14 records (refer to Appendix N) as follows:
- 2 Plain Simultaneous 4 Finger Impressions
- 1 Plain Left and Right Thumb Impression

X 0-4 - Type-10 Records containing photos may be submitted with CAR, CNA, AMN, DEK, DEU, and MPR transactions. Photos are not allowed with FANC, FAUF, MAP, NFAP, and NFUF transactions.

(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

### 3.2 Remote Ten-Print Searches

To conduct a remote 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 remotely 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, 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 remote 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 |

A hierarchical approach to ten-print searches must be adhered to. 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 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 remote ten-print searches is shown in Figure 2, "Remote Ten-Print Search."

All electronic transactions between the FBI and the originating state agency will be routed via the CJIS WAN. State and local agencies must handle the continuance of these transactions among themselves through the state network.

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

| TOT | RESPONSE TRANSACTION |
|---|---|
| SRT | Search Result - Ten-print |
| ERRT | Ten-Print Transaction Error |

The response to a valid remote ten-print search 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.

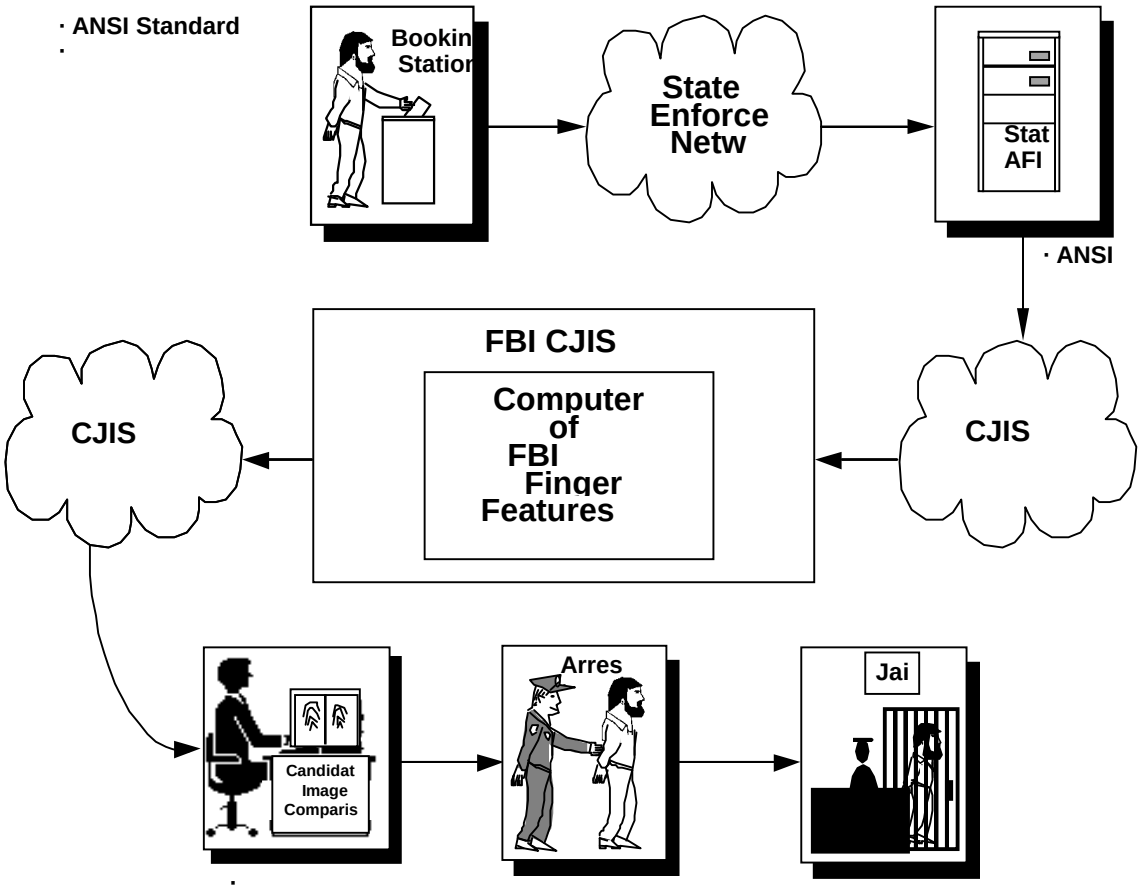


**Figure 2 Remote Ten-Print Search**

### 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 remote ten-print search request. It includes a candidate list comprised 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)

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 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 CJIS prior to use.

### 3.2.2 Requirements for Logical Record Types

Input: The types and quantities of logical records required to submit a remote ten-print search are as follows:

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

Response: In response to a remote ten-print search request, the following logical records will be returned:

X 1 - Type-1 Header Record
X 1 - Type-2 Record
X 0 to 14 - Type-4 fingerprint image records containing the requested fingerprint images of the first candidate.

The remaining candidates' fingerprints may be retrieved via a remote request for fingerprint image transaction.

### 3.3 Electronic Submission of Latent Prints

Electronic latent print submissions 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 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, 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 |

A hierarchical approach to AFIS searches must be adhered to. Submissions by local agencies must be processed by the local AFIS (if available) and electronically transmitted to a state AFIS (if available) before being submitted to the FBI. If an identification 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.

All electronic transactions between the FBI and the originating agency will be routed via the CJIS WAN. State and local agencies must handle the continuance of these transactions among themselves through the state network.

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.

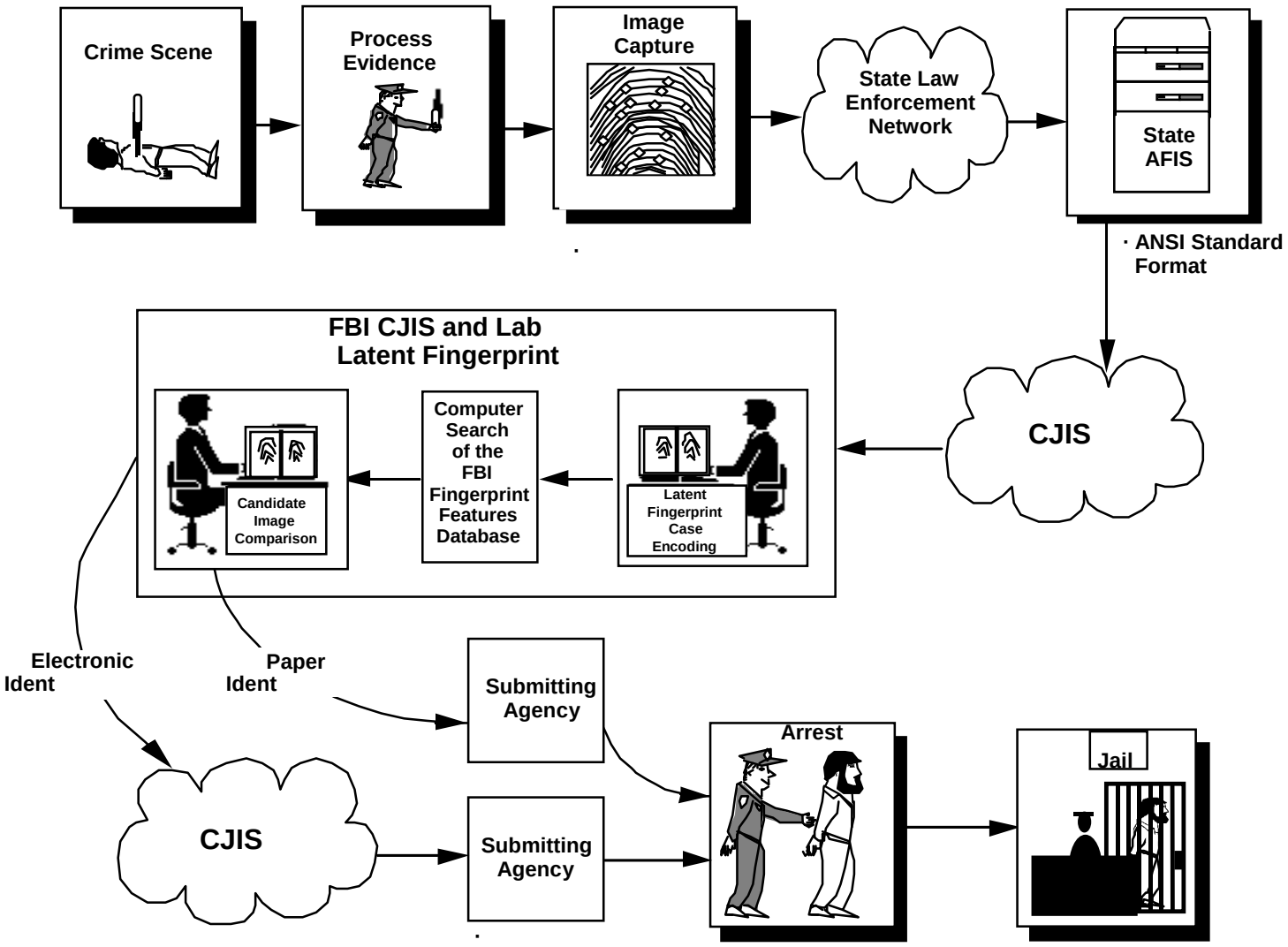


**Figure 3 Electronic Latent Submission**

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 protocols acknowledgments for the transaction types CFS and MCS. However, a Latent Fingerprint Section (LFPS) 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. Multiple fingerprint images may be submitted if the submitter believes the images are from a single subject. Multiple images also must be accompanied by a finger number for each image. Only this set of finger numbers will be searched. The FBI latent fingerprint specialists will execute a preliminary search (penetration query) to determine if the criteria exceeds the 30 percent threshold. If the search criteria exceeds that 30 percent limit, the search will be rejected. If the 30 percent limit is not exceeded, then FBI latent fingerprint specialists will submit the search for processing. 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. The Ident/non-Ident decision 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 fourteen ten-print images if an identification has been made. The latent search image(s) will be temporarily stored in the Unsolved Latent File for fourteen days if requested in the submission by the originator. If the search results in a non-Ident, the addition of the latent image to the Unsolved Latent File will be confirmed. 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. 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 is 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 fourteen 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 field (ACN). 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 30 percent 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 to 14 - Type-4 Fingerprint Image Records. (1 to 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., palm prints 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 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 to 14 - Type-4 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 Remote 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 remote 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 remote 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 temporarily added to the ULF file for fourteen days (the default setting of the ULF flag is "no"). The ULF flag is present in the Latent Fingerprint Image Search (LFIS), the Latent Fingerprint Features Search (LFFS), and the Latent Fingerprint Submission (LFS) messages. The descriptor data contained in the Type-2 records, T2LFFS and T2LFIS, are used as search parameters to narrow the search penetration so that the 30% maximum is not exceeded. The same descriptors may be submitted in a separate Latent Penetration Query, prior to initiating the search, to determine the penetration.

The remote 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 remote latent fingerprint searches transmitted to the FBI:

| TOT | TRANSACTION |
|---|---|
| LFIS | Latent Fingerprint Image(s) Searches |
| LFFS | Latent Fingerprint Features Searches |
| LPNQ | Latent Penetration Query |

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 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.

All electronic transactions between the FBI and the originating agency will be routed via the CJIS WAN. State and local agencies must handle the continuance of these transactions among themselves through the state network.

The following are the potential responses to remote 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 remote 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 remote latent search included 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 remote latent fingerprint image transactions is illustrated in Figure 4, "Remote Latent Search".

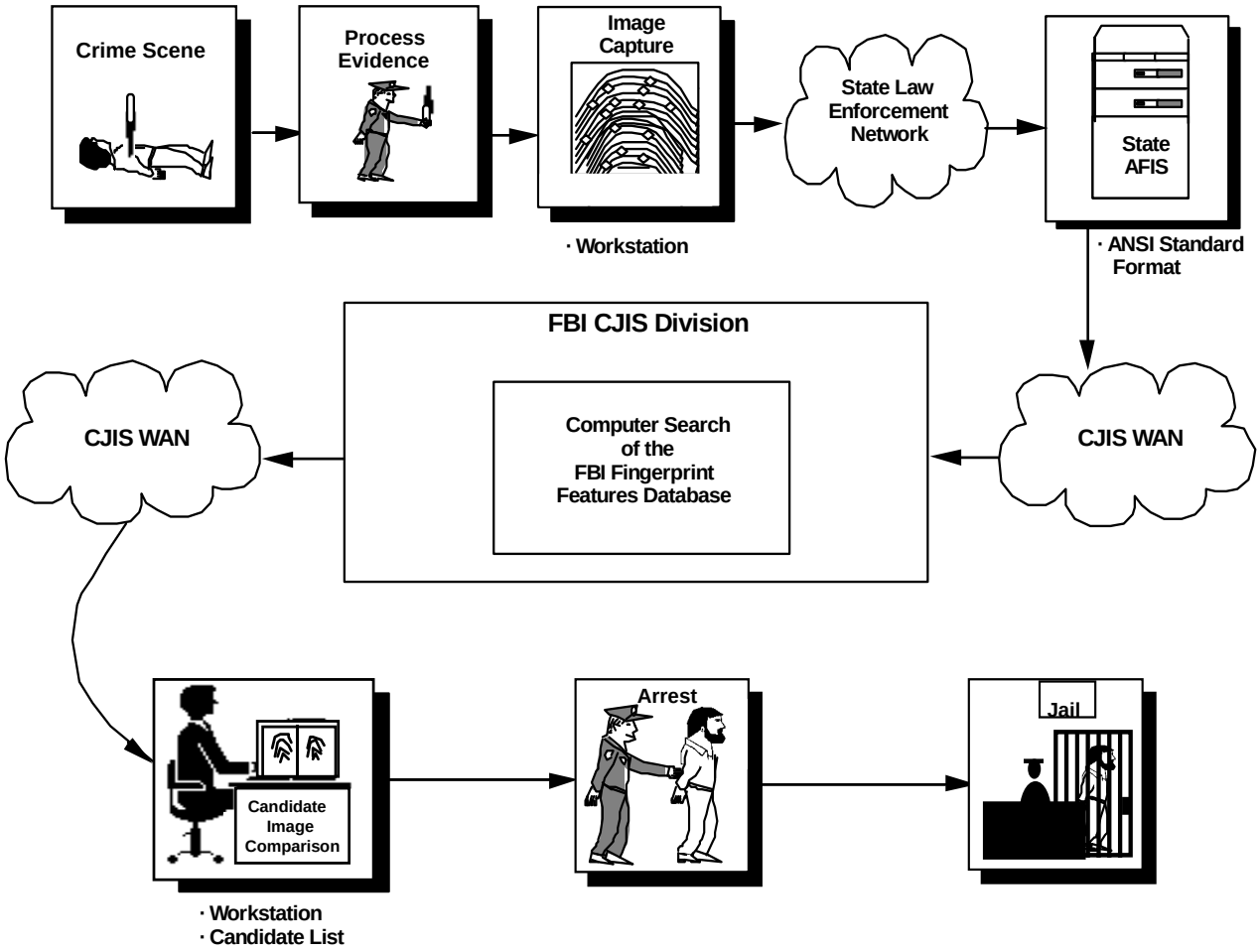


**Figure 4 Remote Latent Search**

### 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, submitter may use the PAT (2.034) and FGP (2.074) fields and the FGN field of the Type-7 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 FGN 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.

Latent fingerprints submitted for remote 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 is different from that 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 above. 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 in order 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 remote latent search request. It will include a candidate list comprised 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. 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 ten-print matches an unsolved latent case previously submitted by a state or local agency. This transaction is an unsolicited response to the sponsor of the unsolved latent fingerprint, not to the submitter of the ten-print fingerprint images. The response will include the FBI number, name, personal identifiers, and fingerprint images of the subject 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 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 remote latent search request are as follows:

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

Note: The Latent Penetration Query (LPNQ) does not require the Type-4 or Type-9 submission.

Response: In response to a remote 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 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 user submits three fingers to be searched against the repository, specifying NCR of 7 and only 5 candidates are returned, the user will receive 5 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 remote request for fingerprint image transaction (i.e., IRQ).

For the Latent Penetration Query Response, the penetration data will be in the Type-2 record.

For the Unsolved Latent Match (ULM),

X 1 - Type-1 Header Record
X 1 - Type-2 Record
X 1 - 10 - Type-4 record (containing the image(s) of the candidate's finger that matched the latent print) and 0 - 10 Type-4 or Type-7 record (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."

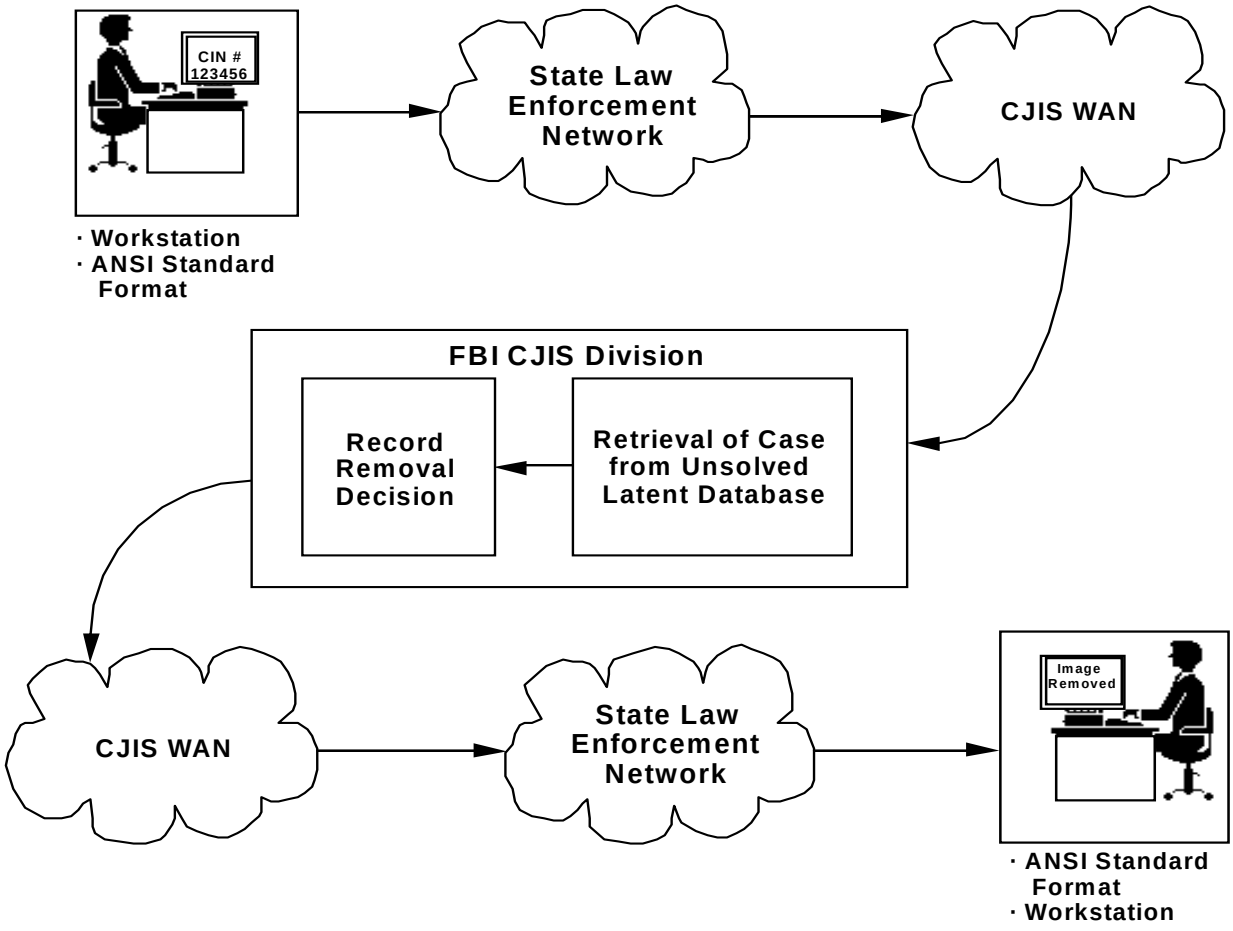


**Figure 5 Electronic Requests to Delete Unsolved Latent Fingerprint Records**

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 fourteen days of receipt of the IAFIS response to a 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 fourteen 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 Remote Requests For Fingerprint Images

Remote fingerprint image services include a transaction for requesting fingerprint images on file at the FBI and to request updates of existing images (see Section 3.7, *Electronic Request to Update Fingerprint Images*).

To initiate a remote request for fingerprint image(s) from the FBI's database, the sending agency electronically transmits the FBI Number of the subject. This request will be routed to the FBI, processed, and returned to the requester through the CJIS WAN. If the requester is a local agency, the request and response will be interfaced with the CJIS WAN through the state law enforcement network. There will be no manual intervention on the part of the FBI.

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

The following TOTs are applicable for remote requests for fingerprint images:

| TOT | TRANSACTION |
|---|---|
| IRQ | Fingerprint Image Request |

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

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

### 3.6.1 Type of Transaction Definitions

#### 3.6.1.1 Fingerprint Image Request (IRQ)

This transaction enables users to retrieve ten-print images from the FBI Criminal Ten-print Fingerprint Image Master File. This TOT provides for the request of fingerprint images from the FBI files so a comparison can be made by the requester at remote facilities. The requester identifies the FBI Number(s) of the subject(s) whose prints are being requested. Up to 1000 subjects' ten-print fingerprint files may be requested per transaction. Specific fingerprint images or the complete set may be requested. The transaction will be processed, and requester-selected fingerprint images on file at the FBI will be transmitted in the response. Each FBI 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 FBI numbers, such as an image set not being on file, will be reported in the Fingerprint Image Response Summary (ISR). The remaining valid FBI numbers will result in individual IRR responses. The Logical Record Layout for the IRQ TOT is given in Table I-1.

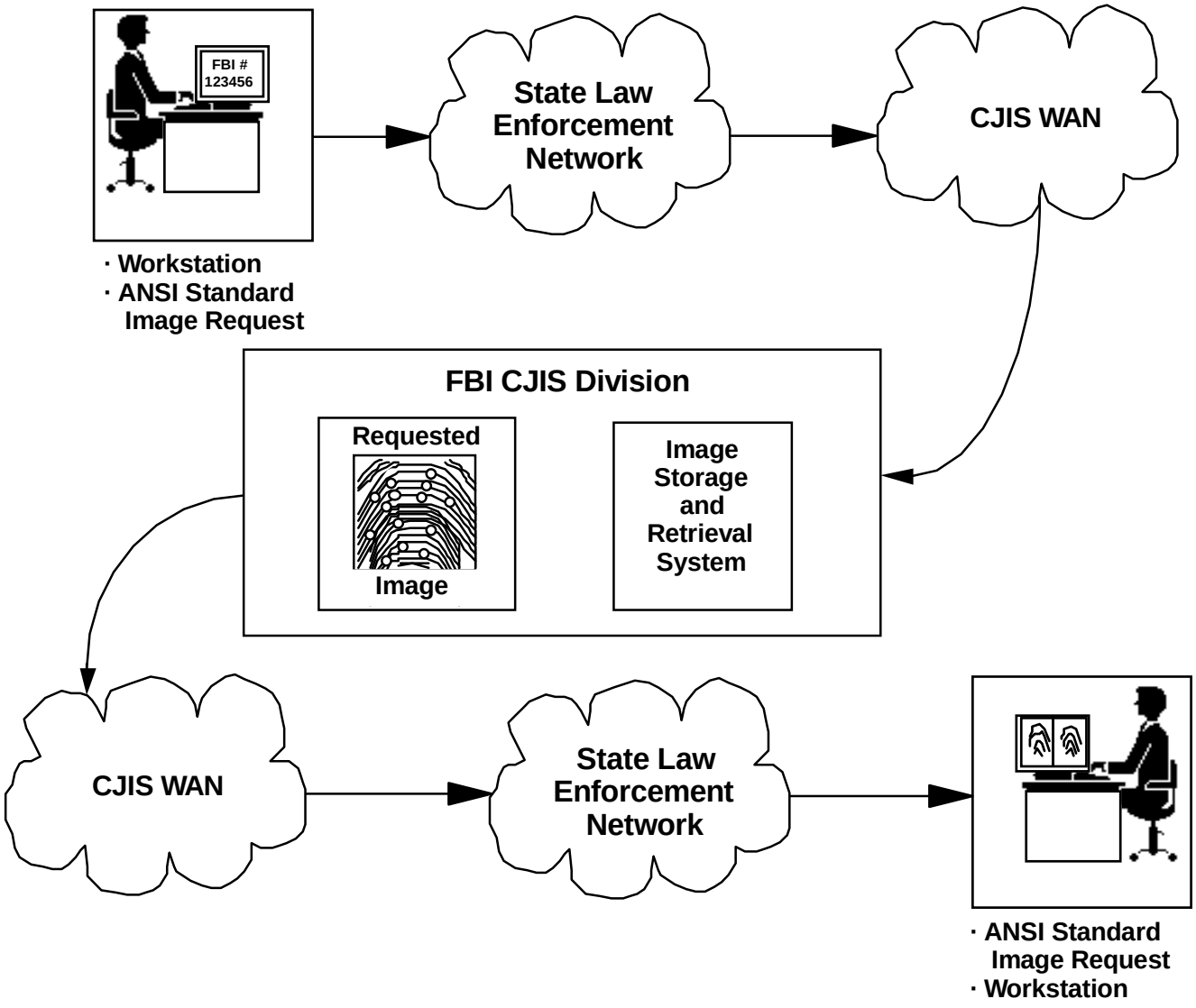


**Figure 6 Remote Fingerprint Image Request**

### 3.6.1.2 Reserved

### 3.6.1.3 Fingerprint Image Request Response (IRR)

This transaction is returned by the FBI to provide requested fingerprint images on file at the FBI to the requester. Each FBI number in the request having images available causes a separate response. The response will include the FBI number and the requested Type-4 fingerprint images. The specified fingerprint images will be transmitted in the response. The Logical Record Layout for the IRR TOT is given in Table I-2.

#### 3.6.1.4 Fingerprint Image Response Summary (ISR)

This transaction is returned by the FBI to summarize the results of the image request processing. Each FBI number in the original request is listed, along with its related process status. Status may be image request success, invalid FBI 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 a remote fingerprint image request are as follows:

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

Response: The response to a remote fingerprint image request will include the following logical records:

X 1 - Type-2
X 1 to 14 - Type-4 Fingerprint Image Records in the IRR transaction only.

## 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 a TOT of "FIS." 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 a 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.

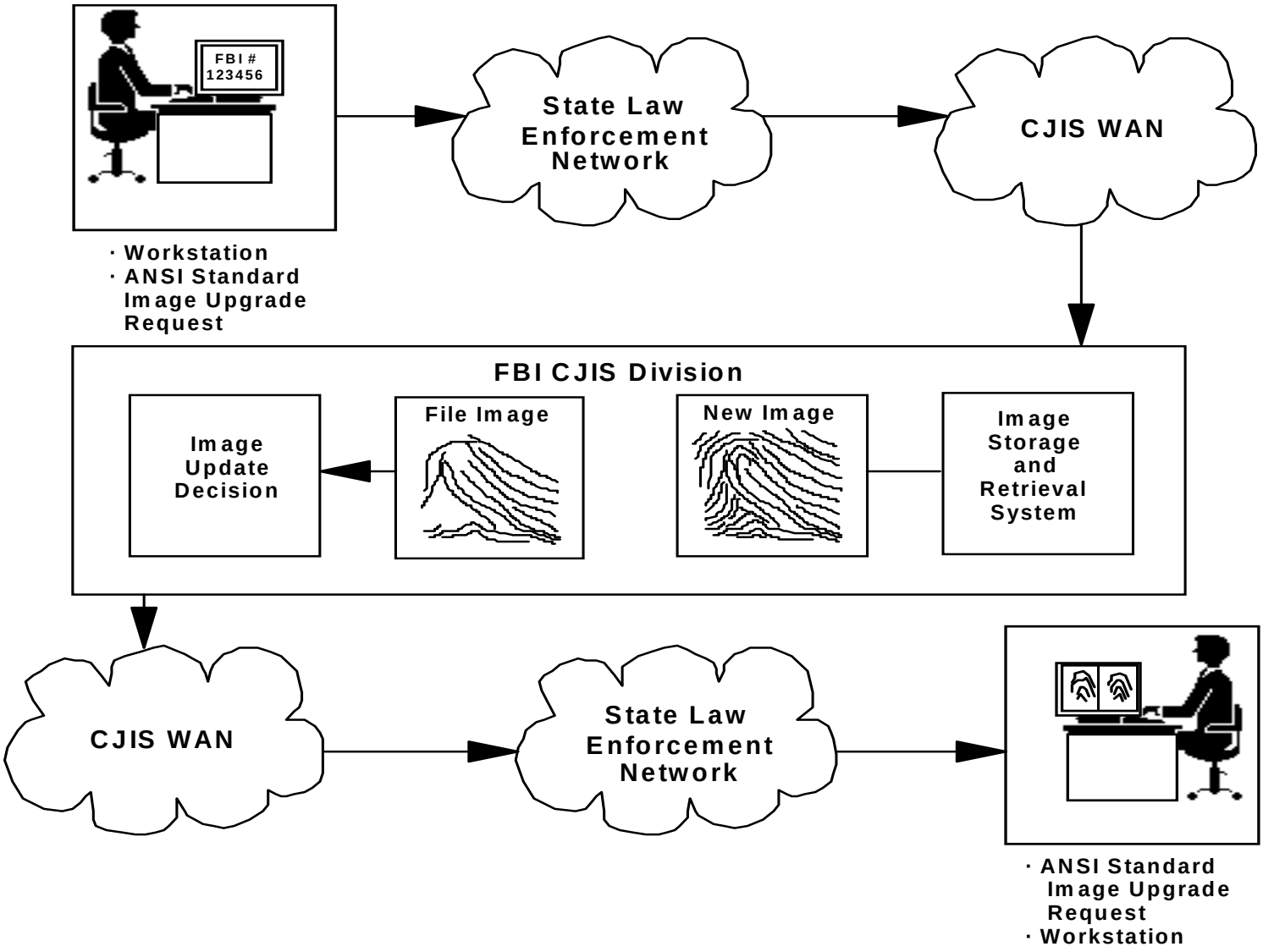


**Figure 7 Electronic Requests to Upgrade Fingerprint Images**

### 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 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 data field(s) do not pass internal editing criteria, an error response will be transmitted back to the submitting agency. Each reason(s) for rejection will be detailed in the Status/Message (MSG) field. Up to eleven 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 contained 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 of 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 value manually. If any optional data are in error, the data will be ignored.

The error response will be included in the ERRT, ERRA, or ERRL transaction as appropriate. The following is a non-inclusive list of the type 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 whose handlers have been designed to date.

## 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 1-2000, American National Standard For Information Systems - Data Format for the Interchange of Fingerprint, Facial, & Scar Mark & Tatoo (SMT) Information," dated July 27, 2000.

### 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's 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 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 ten-print 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 |
|---|---|
| None used | 0 |
| Wavelet Scalar Quantization (WSQ) FBI Revision 2.0 | 1 |
| Joint Photographic Experts Group (JPEG) | 2 |

### 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. IAFIS will enforce an upper limit on a Type-4 (i.e., Ten-Print image) record: any submissions with any Type-4 image record larger than 200 kByte will be rejected by IAFIS.

**Table 3-3 Maximum Sizes for Fingerprint[3]**

| Fingerprint | Width<br>pixels (inches) | Height<br>pixels (inches) |
|---|---|---|
| Rolled Impression<br>Fingers 1 – 10 | 800 (1.6) | 750 (1.5) |
| Plain Thumb Impression | 500 (1.0) | 1000 (2.0) |
| 4 Finger Plain Impressions | 1600 (3.2) | 1000 (2.0) |

## 3.10 Electronic Criminal Subject Photo Services

Electronic criminal photo services include a transaction for requesting criminal photo sets on file at the FBI and a transaction to delete photo sets.

To initiate a request for a photo set from the FBI's database, the sending agency electronically transmits the FBI number and optionally a DOA of the subject. This request will be routed by way of the CJIS WAN to the FBI, processed, and returned to the requester through the CJIS WAN. If the requester is a local agency, the request and response will be interfaced with the CJIS WAN through the state law enforcement network. There will be no manual intervention on the part of the FBI.

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

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

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

| TOT | TRANSACTION |
|---|---|
| CPR | Criminal Subject Photo Request |
| CPD | Criminal Subject Photo Delete Request |

[3] Regarding acceptable image sizes, scanner systems/devices installed prior to the EFTS V6R2 publication date are grandfathered.

The FBI's response to remote 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 Criminal Subject Photo Request (CPR)

This TOT of "CPR" transaction enables users to retrieve a photo set from the FBI Criminal Photo File. Each set of photos comprises from 1 to 4 photos of a subject posed from different views. Each photo set is linked to the subject by the Date of Arrest (DOA). The transaction will be processed, and 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 Criminal 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. 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 TOT of "PRR" is a response for a retrieve request and the TOT of "PDR" 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" TOT's.

### 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 criminal 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 criminal photo request will include the following logical records:

X 1 - Type-1 Header Record
X 1 - Type-2 (TOT=PRR) Record
X 1 to 4 - Type-10 Image Records.

#### 3.10.2.2 Photo Delete Request

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

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

Response: The response to a criminal 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 operations. They include the Latent Repository Statistics Query (LRSQ) and 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 the users to determine the status of one fingerprint search or multiple searches previously submitted by the requestor's organization. The LSMQ also allows the user to adjust priorities or search order for performing the searches, or to cancel previously submitted search requests.

The following Types of Transactions (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, above. 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 requestor 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 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

## APPENDIX A

## TRANSACTION PRIORITIES

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

The assignment of priorities will be as follows:

**Table A-1. Priorities**

| **Level 1 - Urgent** | **Level 2 - Routine** | **Level 3 - Secondary** | **Level 4 - Test/Training** |
|---|---|---|---|
| 2 hour average response | 24 hour average response | Over 24 hour response | test and training response **TBR** |
| CAR[1] | | IRQ[6] | |
| TPIS | NFAP[7] | CPD | |
| TPFS | FANC | CPR | |
| TPRS[7] | FAUF | | |
| CNA | NFUF | | |
| | MAP | | |
| | LFIS[4] | | |
| | LPNQ | | |
| | LRSQ | | |
| | LSMQ | | |
| | LFFS[4] | | |
| | CFS[4] | | |
| | ELR[4] | | |
| | MCS[4] | | |
| | LFS[4] | | |
| | AMN | | |
| | DEU | | |
| | DEK | | |
| | MPR | | |
| | FIS[2] | | |
| | IRQ[5] | | |
| | ULD | | |
| | ULAC | | |

[1] Reserved.

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

[3] Reserved.

[4] Latent submission responses and latent remote search responses shall be transmitted within 1 day after initiation of search on IAFIS. Latent responses (i.e., LSR, NAR, ULM) for electronic submissions and remote responses (i.e., SLR) will be transmitted for the latent searches shown above.

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

[6] The response time for retrieval of 101 to 1000 fingerprint image sets may exceed 24 hours. The response is transmitted in individual messages.

[7] For limited use.

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 24-hour turnaround but can be reassigned (or submitted at higher priority) to Level 3 because the contributor is not affected. Additionally, urgent Level 2's may be received, in which case they are reassigned to Level 1, 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 $^{U}_{S}$ separator, multiple subfields shall be separated by the $^{R}_{S}$ separator, and information fields shall be separated by the $^{G}_{S}$ separator. Immediately following the last information field in the Type-1 logical record, an $^{F}_{S}$ 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 & Tatoo (SMT) Information (ANSI/NIST-ITL 1-2000).* Any information that is underlined is the FBI-specific requirements.

**CNT 1.03 - 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 records contained in this logical file. This number is also equal to the count of the remaining subfields of Field 1.03. The $^{U}_{S}$ 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 and Type-10 records contained in the file shall each be comprised of two information items. The first information item shall be one or two characters chosen from one of the following: the ANSI Standard Table 1 that 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 $^{U}_{S}$ character shall be used to separate the two information items. (Only Type-1, Type-2, Type-4, Type-7, Type-9 and Type-10 records will be accepted by the FBI.)

**DAI 1.07 - 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.

**DAT 1.05 - Date.** This **mandatory** field shall contain the date that the transaction was initiated. The date shall appear as eight digits in the format CCYYMMDD. 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 in the month. For example, 19920601 represents June 1, 1992. The complete date shall not exceed the current date.

**LEN 1.01 - 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 1.11 - 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 1.12 - 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 1.08 - 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 EFTS 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 State CTA) 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 1.06 - Transaction Priority.** When this 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 4, with "1" denoting the highest priority. The default value shall be "4" if no value is indicated.

**TCN 1.09 - 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 ten-to-forty byte alphanumeric-special (ANS) field.

**TCR 1.10 - 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 ten-to-forty byte alphanumeric-special (ANS) field.

**TOT 1.04 - 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 1.02 - 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 1-2000, *Data Format for the Interchange of Fingerprint, Facial ,& Scar Mark & Tatoo (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 entry in this field for this 1993 approved standard shall be "0200". The original 1986 standard would be considered the first version or "0100". 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.”

## TABLE B-1. FIELD LIST FOR TYPE-1 (TRANSACTION) LOGICAL RECORDS

| IDENTIFIER | CONDITION | FIELD NUMBER | FIELD NAME | CHARACTER TYPE | FIELD SIZE PER OCCURRENCE | | OCCURRENCES | | MAXUMUM NUMBER OF BYTES INCLUDING CHARACTER SEPARATORS AND FIELD NUMBER | EXAMPLE DATA | **SPECIAL CHARACTERS ALLOWED** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MIN. | MAX. | MIN. | MAX. | | | |
| LEN | M | 1.01 | LOGICAL RECORD LENGTH | N | 2 | 3 | 1 | 1 | 9 | 1.01:230<GS> | |
| VER | M | 1.02 | VERSION | N | 4 | 4 | 1 | 1 | 10 | 1.02:0200<GS> | |
| CNT | M | 1.03 | 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 | 1.04 | TYPE OF TRANSACTION | A | 3 | 5 | 1 | 1 | 11 | 1.04:CART<GS> | |
| DAT | M | 1.05 | DATE | N | 8 | 8 | 1 | 1 | 14 | 1.05:19940925<GS> | |
| PRY | O | 1.06 | TRANSACTION PRIORITY | N | 1 | 1 | 0 | 1 | 7 | 1.06:1<GS> | |
| DAI | M | 1.07 | DESTINATION AGENCY IDENTIFIER | AN | 9 | 9 | 1 | 1 | 15 | 1.07:DCFBIWA6Z<GS> | |
| ORI | M | 1.08 | ORIGINATING AGENCY IDENTIFIER | AN | 9 | 9 | 1 | 1 | 15 | 1.08:NY0303000<GS> | |
| TCN | M | 1.09 | TRANSACTION CONTROL NUMBER | ANS | 10 | 40 | 1 | 1 | 46 | 1.09:1234567890<GS> | Any printable 7-bit ascii character is allowed. |
| TCR | O | 1.10 | TRANSACTION CONTROL REFERENCE | ANS | 10 | 40 | 0 | 1 | 46 | 1.10:1234567890<GS> | Any printable 7-bit ascii character is allowed. |
| NSR | M | 1.11 | NATIVE SCANNING RESOLUTION | NS | 5 | 5 | 1 | 1 | 11 | 1.11:20.00<GS> | Period |
| NTR | M | 1.12 | NOMINAL TRANSMITTING RESOLUTION | NS | 5 | 5 | 1 | 1 | 11 | 1.12:20.00<FS> | Period |

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 Characterdatory; 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, which the FBI treats as being user-defined: ATN, SCO, OCA, SID, OCP, EAD, RES, CRI, IMA, 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, that 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

EFTS transactions will be Y2K compliant. 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 EFTS 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

**ACN 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. Commas, hyphens, ampersands, slashes, number signs, and blanks are all allowed as special characters.

**AGR 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. There shall be no separator character used between the ages.

**AKA 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 $^{R}_{S}$ 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 the minimum of one alpha character.
3. Blank before or after comma is invalid.
4. Hyphen in first and last position of any name segment is invalid.
5. Two consecutive blanks or hyphens between characters are invalid.

**AMP 2.084 - AMPUTATED OR BANDAGED.** This grouped field contains information about amputated or bandaged fingerprints in an EFTS submission. It is comprised of two subfields, Finger Number (**FGP**), and Amputated Or Bandaged Code (**AMPCD**). The two-character finger position code is followed by the $^{U}_{S}$ separator and the amputated or bandaged code. Multiple fingers shall be separated by the $^{R}_{S}$ separator. This field is to be used anytime 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:

| Finger Position | FGP |
|---|---|
| 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 submitter did not, or was unable to, supply a print of the ninth finger.

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

**ASL 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 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 1 day forward (24 hours), in order 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}$

**ATN 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.

**CAN 2.064- CANDIDATE LIST.** This grouped field shall contain a candidate list. It is comprised of two subfields: FBI number (**FNU**), and Name (**NAM**), separated by a $^{U}_{S}$ separator, 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 FBI number and name set shall be separated from the next by the $^{R}_{S}$ separator character.

**CFS 2.077 - CANCEL FINGERPRINT SEARCH.** This field will contain the information required to cancel a latent FP 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 which 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. state CTA). When the controlling agency has the same ORI as the CTA, 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 CTA 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**.) 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 EFTS 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.

**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 1 day forward (24 hours), in order 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 $_{S}^{R}$ separator character. A CDD (if available), followed by a COL, followed by a CPL each separated by a $_{S}^{U}$ separator character must be present for each occurrence of the CSL field. If the CDD is not available, a $_{S}^{U}$ separator character alone shall be used immediately after the field tag or preceding $_{S}^{R}$ 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$_{S}^{U}$DUI$_{S}^{U}$5 DAYS JAIL, PAY COURT COSTS$_{S}^{R}$19940930$_{S}^{U}$POSSESSION OF FIREARMS$_{S}^{U}$10 DAYS JAIL, PAY COURT COSTS, $50$_{S}^{G}$

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

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

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 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.

**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 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 1 day forward (24 hours), in order 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 as specified in Section 1.2 of this Appendix. 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 as 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 1 day forward (24 hours), in order 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.

**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 2 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 remote user transmit this number if it is known.

**FGP 2.074 - FINGER POSITION.** This field is used for latent submissions and remote 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 $^{R}_{S}$ character separator. For remote 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 1-2000." Up to 13 individual finger numbers may be listed, separated from one another by the $_{S}^{U}$ 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.

**FNR 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 5, "Finger Position Code", in Section 10 of "ANSI NIST-ITL 1-2000." Up to 13 individual finger image numbers may be listed, separated from one another by the $_{S}^{R}$ separator. If all 14 ten-print images are desired, 00 is shown instead of individual finger numbers. For transactions which allow only the ten rolled fingerprint images, when all ten images are desired, list each one separately, as $01_{S}^{R}$ $02_{S}^{R}$ ... $_{S}^{R}10_{S}^{G}$.

**FPC 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 comprised 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:

2.033:121011161411091117 13$^{G}_{S}$

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 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, this must not

be done in the NCIC FPC since 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, should not be used 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 $^{R}_{S}$ 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 inchesthenthe 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.

**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, comprised of three subfields: the Make (**MAK**), Model (**MODL**), and Serial Number (**SERNO**) of the acquisition device, separated by the $^{U}_{S}$ separator character.

**IMT 2.062 - IMAGE TYPE.** This field identifies the type of image (e.g., palm prints, 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 record (s) present:

| | |
|---|---|
| Fingerprint | 1 |
| Lower Joint | 2 |
| Palm Print | 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 record keeping purposes. Although the field is optional, it is imperative that the remote 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 $^{R}_{S}$ separator character.

| Identifying Agency | Code |
|---|---|
| Air Force Serial Number | AF |
| 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 |
| Passport Number (U.S. Only) | PP |
| Port Security Card Number | PS |
| Selective Service Number | SS |
| Veterans Administration Claim Number | VA |

**MSC 2.089 - MATCHSCORE.** 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 $^{R}_{S}$ 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 all allowed as special characters. Numerics 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" |

**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.

**NOT 2.088 - NOTE FIELD.** This free-text field is used to provide additional information regarding electronic latent submissions.

**OCA 2.009 - ORIGINATING AGENCY CASE NUMBER**. This field contains the one to twenty character Originating Agency Case Identifier (OCA) that has been assigned by the originating agency. This alphanumeric-special (ANS) field may contain any printable 7-bit ASCII character with the exception of the period ("."). 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 one categorized as property, and a "3" for one categorized as both.

**PAT 2.034 - Pattern Level Classifications.** This grouped field contains information about the finger(s) pattern types. It is comprised of two subfields, Finger Number (**FGP**), and Pattern Classification Code (**PATCL**). The two-character finger position code followed by the $^{U}_{S}$ 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 $^{U}_{S}$ separator. Multiple fingers shall be separated by the $^{R}_{S}$ 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}$

**PEN 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.

**PHT 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.

**POB 2.020 - PLACE OF BIRTH.** The subject's place of birth shall be entered in this field. Indicate in this POB field the state (Mexican, United States), territorial possession, province (Canadian), 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 - "PALM PRINTS AVAILABLE" INDICATOR.** If palm prints 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 the highest priority). The priority levels will generally correspond to the following crime types in descending order of priority:

- X Homicide, rape, and special circumstances
- X Kidnap, assault, and robbery
- X 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 |

**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 |
| 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.

**RCD1 2.091 - Ridge Core Delta One for Subpattern Classification.** This grouped field contains information about the finger(s) ridge counts and is used for Remote Native Mode Searches in conjunction with the Pattern Level Classification (PAT - 2.034). It is comprised of two subfields, Finger Number (**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.

**RCD2 2.092 - Ridge Core Delta Two for Subpattern Classification.** This grouped field contains information about the finger(s) ridge counts and is used for Remote Native Mode Searches in conjunction with the Pattern Level Classification (PAT - 2.034). It is comprised of two subfields, Finger Number (**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, 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.

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 | Ridge Count 1 | Ridge Count 2 |
|---|---|---|---|
| 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 | US | WU | | RS | 02 | US | LS | | RS | 03 | US | AU | | RS | 04 | US | XX | ... | RS 10 US WU GS |
| 2.091:01 | US | 9 | | RS | 02 | US | 4 | | RS | 03 | US | 0 | | RS | 04 | US | 0 | ... | RS 10 US 14 GS |
| 2.092:01 | US | 7 | | RS | 02 | US | 0 | | RS | 03 | US | 0 | | RS | 04 | US | 0 | ... | RS 10 US 21 GS |

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 | US | RS | US | WU | US | AU | RS | 07 | US | XX | RS | 09 | US | AU | US | LS | GS | | | | | | |
| 2.091:01 | US | 9 | US | 9 | US | 0 | RS | 07 | US | 0 | RS | 09 | US | 0 | US | 8 | GS | | | | | | |
| 2.092:01 | US | 0 | US | 11 | US | 0 | RS | 07 | US | 0 | RS | 09 | US | 0 | US | 0 | GS | | | | | | |

**REC 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".

**RES 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.

**RET 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, 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. This field will indicate if the card is submitted for licensing, gun permit, or criminal justice employment, non-criminal justice employment, adoption, naturalization, volunteer background checks, or gaming certification. Commas, blanks, dashes, hyphens and slashes are all allowed as special characters.

**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 32000 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.

**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 Remote 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.

**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 NY, OR, or PA 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.

**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.

**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.

**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 and NFUF transactions as follows.

| Type of Record | Code | Applicable Type of Transaction |
|---|---|---|
| Pre-commission candidate record with fingerprints | P | FAUF/NFUF |
| Civil submission in support of the National Child Protection Act of 1993 | V | NFUF* |

* When submitting fingerprints using 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.

**ULF 2.083 - UNSOLVED LATENT FILE.** This one-character alpha field is used to designate whether a latent image or features record in search should be added to the Unsolved Latent File. Submit a "Y" for yes. For a no, 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 3-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 Number | Field Name | Character Type | Minimum Field Size | Maximum Field Size | 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 | SET | | | 2.084:03<US>XX<RS>09<US>UP<FS> | |
| | | FINGER NUMBER (FGP) | N | 2 | 2 | | |
| | | AMPUTATED OR BANDAGED CODE (AMPCD) | A | 2 | 2 | | |
| ASL | 2.047 | ARREST SEGMENT LITERAL | SET | | | 2.047:DUI<RS>19940920<US>POSSESSION OF FIREARMS<GS> | Any printable 7-bit ascii character is allowed. |
| | | DATE OF OFFENSE (DOO) | N | 8 | 8 | | |
| | | ARREST OFFENSE LITERAL (AOL) | ANS | 1 | 300 | | Any printable 7-bit |
| 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 | SET | | | 2.064:273849CA2<US>BROWN,JOHN D<RS>83625NY<US>COLLINS,TERRY G<GS> | Commas, hyphens, or blanks are all allowed as special characters. |
| | | FBI NUMBER (FNU) | AN | 1 | 9 | | |
| | | NAME (NAM) | AS | 3 | 30 | | Commas, hyphens, or |
| CFS | 2.077 | CANCEL FP SEARCH | N | 1 | 10 | 2.077:3124<GS> | |
| CIN | 2.010 | CONTRIBUTOR CASE IDENTIFIER NUMBER | SET | | | 2.010:INCIDENT NUMBER<US>1963BRT715<GS> | Any printable 7-bit ascii character is allowed. |
| | | CONTRIBUTOR CASE PREFIX (CIN_PRE) | ANS | 1 | 24 | | |
| | | CONTRIBUTOR CASE ID (CIN_ID) | ANS | 1 | 24 | | |

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 Number | Field Name | Character Type | Minimum Field Size | Maximum Field Size | Example | Special Characters |
|---|---|---|---|---|---|---|---|
| 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<FS> | |
| CSL | 2.051 | COURT SEGMENT LITERAL | SET | | | 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. |
| | | COURT DISPOSITION DATE (CDD) | N | 8 | 8 | | |
| | | COURT OFFENSE LITERAL (COL) | ANS | 1 | 300 | | Any printable 7-bit |
| | | OTHER COURT SENTENCE PROVISION LITERAL (CPL) | ANS | 1 | 300 | | Any printable 7-bit |
| 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. |
| ERS | 2.075 | ELECTRONIC RAP SHEET | ANS | 4 | 200000 | 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> | |

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 Number | Field Name | Character Type | Minimum Field Size | Maximum Field Size | Example | Special Characters |
|---|---|---|---|---|---|---|---|
| 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 COMMENTS | 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> | |
| IMA | 2.067 | IMAGE CAPTURE EQUIPMENT | SET | | | 2.067:DBI<US>1134<US>12345<GS> | Any printable 7-bit ascii character is allowed. |
| | | ORIGINATING FINGERPRINT READING SYSTEM MAKE (MAK) | ANS | 1 | 25 | | Any printable 7-bit |
| | | ORIGINATING FINGERPRINT READING SYSTEM MODEL (MODL) | ANS | 1 | 25 | | Any printable 7-bit |
| | | ORIGINATING FINGERPRINT READING SYSTEM SERIAL NUMBER (SERNO) | ANS | 1 | 50 | | Any printable 7-bit |
| 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 |

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 Number | Field Name | Character Type | Minimum Field Size | Maximum Field Size | Example | Special Characters |
|---|---|---|---|---|---|---|---|
| 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 character |
| 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. |
| NCR | 2.079 | NUMBER OF CANDIDATE'S IMAGES RETURNED | N | 1 | 2 | 2.079:10<GS> | |
| NOT | 2.088 | NOTE FIELD | ANS | 1 | 1000 | 2.088:NOTE<GS> | Any printable 7-bit ascii character is allowed. |
| 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 CLASSIFICATIONS | SET | | | 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> | |
| | | FINGER NUMBER (FGP) | N | 2 | 2 | | |
| | | PATTERN CLASSIFICATION CODE (PATCL) | A | 2 | 2 | | |
| PEN | 2.078 | PENETRATION QUERY RESPONSE | N | 2 | 2 | 2.078:10<FS> | |
| PHT | 2.036 | "PHOTO AVAILABLE" INDICATOR | A | 1 | 1 | 2.036: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 Number | Field Name | Character Type | Minimum Field Size | Maximum Field Size | Example | Special Characters |
|---|---|---|---|---|---|---|---|
| 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> | |
| RCD1 | 2.091 | RIDGE CORE DELTA ONE FOR SUBPATTERN CLASSIFICATION | SET | | | 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> | |
| | | FINGER NUMBER (FGP) | N | 2 | 2 | | |
| | | RIDGE COUNT NUMBER 1 (RCN1) | N | 1 | 2 | | |
| RCD2 | 2.092 | RIDGE CORE DELTA TWO FOR SUBPATTERN CLASSIFICATION | SET | | | 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> | |
| | | FINGER NUMBER (FGP) | N | 2 | 2 | | |
| | | RIDGE COUNT NUMBER 2 (RCN2) | N | 1 | 2 | | |
| REC | 2.082 | RESPONSE CODE | A | 1 | 1 | 2.082:Y<FS> | |
| 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 all allowed as special characters. |
| RSR | 2.065 | REPOSITORY STATISTICS RESPONSE | ANS | 1 | 32000 | 2.065:(ASCII TEXT DATA)<GS> | Period (as decimal point), Tab (as field delimiter), Newline (as record separator) |

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 Number | Field Name | Character Type | Minimum Field Size | Maximum Field Size | Example | Special Characters |
|---|---|---|---|---|---|---|---|
| SCNA | 2.086 | AFIS SEGMENT CONTROL NUMBER | N | 1 | 10 | 2.086:3124<FS> | |
| SCO | 2.007 | SEND COPY TO | ANS | 9 | 19 | 2.007:NY030025P<GS> | Any printable 7-bit ascii character is allowed. |
| 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 |
| SLE | 2.055 | CUSTODY OR SUPERVISORY STATUS LITERAL | ANS | 1 | 300 | 2.055:RELEASED BY COURT ORDER,19940930<GS> | Any printable 7-bit ascii character is allowed. First character must not be blank. |
| 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. |
| SOC | 2.016 | SOCIAL SECURITY ACCOUNT NUMBER | N | 9 | 9 | 2.016:220565855<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<FS> | |
| TSR | 2.043 | TYPE OF SEARCH REQUESTED | A | 1 | 1 | 2.043:P<GS> | |
| ULF | 2.083 | UNSOLVED LATENT FILE | A | 1 | 1 | 2.083:Y<FS> | |
| 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-TWO (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 superscripts in the upper left-hand corner of the cell is a reference to any note (Table D-4) pertaining to the use of that field in the record.

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

# TABLE D-1. FIELD LIST FOR TEN-PRINT, ANSWER-REQUIRED (CAR) TRANSACTION

| IDENTIFIER | CONDITION | FIELD NUMBER | FIELD NAME | CHARACTER TYPE | FIELD SIZE PER OCCURRENCE | | OCCURRENCES | | MAXUMUM NUMBER 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,RM 11867<GS> | Any printable 7-bit ascii character with the exception of 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 with the exception of 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 all 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 all 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, ANSWER-REQUIRED (CAR) TRANSACTION

| IDENTIFIER | CONDITION | FIELD NUMBER | FIELD NAME | CHARACTER TYPE | FIELD SIZE PER OCCURRENCE | | OCCURRENCES | | MAXUMUM NUMBER 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. |
| | | | FINGERPRINTED | | | | | | | DRIVE, BUFFALO, NY<GS> | RES O 2.041 RESIDENC 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 NUMBER | FIELD NAME | CHARACTER TYPE | FIELD SIZE PER OCCURRENCE | | OCCURRENCES | | MAXUMUM NUMBER 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 | 12406 | 2.047:19940915<US>DUI<RS>19940920<US>POSSESSION OF | Any printable 7-bit ascii character is allowed. |
| | O | | DATE OF OFFENSE (DOO) | N | 8 | 8 | 0 | 1 | | FIREARMS<GS> | |
| CSL | O | 2.051 | COURT SEGMENT LITERAL | | | | 0 | 40 | 24446 | 2.051:19940930<US>DUI<US>5 DAYS JAIL, PAY COURT | Any printable 7-bit ascii character is allowed. |
| | O | | COURT DISPOSITION DATE (CDD) | N | 8 | 8 | 0 | 1 | | COSTS<RS>19940930<US>POSSESSION OF | |
| | M | | COURT OFFENSE LITERAL (COL) | ANS | 1 | 300 | 1 | 1 | | FIREARMS<US>10 DAYS JAIL, PAY COURT COSTS, $50<GS> | |
| SSD | O | 2.054 | CUSTODY OR SUPERVISORY STATUS - START DATE | N | 8 | 8 | 0 | 1 | 15 | 2.054:19940930<GS> | |
| SLE SUPERVISORY STATUS LITERALORDER,19940930<GS> | O 9 | 2.055 COURT | CUSTODY OR | ANS | 1 | 300 | 0 | 1 | 307 | 2.055:RELEASED BY | 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. |

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 NUMBER | FIELD NAME | CHARACTER TYPE | FIELD SIZE PER OCCURRENCE | | OCCURRENCES | | MAXUMUM NUMBER 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 | 109 | 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<FS> | |
| | M | | FINGER NUMBER (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<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 D-2. FIELD LIST FOR TEN-PRINT RESPONSE, ELECTRONIC (SRE) TRANSACTION

| IDENTIFIER | CONDITION | FIELD NUMBER | FIELD NAME | CHARACTER TYPE | FIELD SIZE PER OCCURRENCE | | OCCURRENCES | | MAXUMUM NUMBER 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 Q DOE,RM 11867<GS> | Any printable 7-bit ascii character with the exception of 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 with the exception of 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 all allowed as special characters. |
| | | | ADDRESS | | | | | | | EAD O 2.039 EMPLOYER CONSTRUCTION COMPANY,327 MAPLE AVE, BUFFALO,NY<GS> | 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. |
| 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 NUMBER | FIELD NAME | CHARACTER TYPE | FIELD SIZE PER OCCURRENCE | | OCCURRENCES | | MAXUMUM NUMBER OF BYTES INCLUDING CHARACTER SEPARATORS AND FIELD NUMBER | 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 all 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 | 200000 | 0 | 1 | 200007 | 2.075:<rap sheet here><GS> | Any printable 7-bit ascii character is allowed. |
| CRN | O 8 | 2.085 | CIVIL RECORD NUMBER | AN | 9 | 9 | 0 | 1 | 16 | 2.085:V12345678<FS> | |
| TAA | O | 2.087 | TREAT AS ADULT | A | 1 | 1 | 0 | 1 | 8 | 2.087: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 D-3. SUMMARY FIELD LISTS FOR TEN-PRINT TRANSACTIONS
## (Maximum Occurrences of Each Element for Each Logical Record Type)

| Tag Elem | AMN | CAR | CAN | DEK | DEU | ERRT | FANC | FAUF | MAP | MPR | NFAP | NFUF | SRE | SRT | TPFS | TPIS | TPRS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.001 LEN | 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 |
| 2.005 RET | 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 | 1 |
| 2.007 SCO | 9 | 9 | | 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 | 1 |
| 2.014 FBI | | [5] 5 | [5] 5 | 5 | | 5 | 5 | 5 | 5 | | 5 | 5 | [8] 1 | | | | |
| 2.015 SID | | [6] 1 | [6] 1 | 1 | | 1 | | | 1 | | 1 | 1 | 1 | | | | |
| 2.016 SOC | | 4 | 4 | 4 | | | 4 | 4 | 4 | 4 | 4 | 4 | | | | | |
| 2.017 MNU | 4 | 4 | 4 | 4 | 4 | 4 | [3] 4 | [3] 4 | 4 | 4 | 4 | 4 | | | | | |
| 2.018 NAM | [4] 1 | 1 | 1 | 1 | [4] 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | |
| 2.019 AKA | | 10 | 10 | 10 | | | 10 | 10 | 10 | 10 | 10 | 10 | | | | | |
| 2.020 POB | | 1 | 1 | 1 | | | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 2.021 CTZ | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| 2.022 DOB | [4] 5 | 5 | 5 | 5 | [4] 5 | | 5 | 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 | | | | | |
| 2.026 SMT | 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 TEN-PRINT TRANSACTIONS
## (Maximum Occurrences of Each Element for Each Logical Record Type)

| Tag Elem | AMN | CAR | CAN | DEK | DEU | ERRT | FANC | FAUF | MAP | MPR | NFAP | NFUF | SRE | SRT | TPFS | TPIS | TPRS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.027 HGT | 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 | | | | | |
| 2.031 EYE | 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 | | | | | |
| 2.034 PAT | | | | | | | | | | | | | | | 1 | [7] 1 | [7] 1 |
| 2.035 PPA | | 1 | 1 | | | | | | | | | | | | | | |
| 2.036 PHT | | 1 | 1 | | | | | | | | | | | | | | |
| 2.037 RFP | | | | | | | 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 | 1 | 1 | 1 |
| 2.040 OCP | | 1 | 1 | | | | 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 | 1 | 1 | 1 | 1 | 1 |
| 2.042 MIL | | | | | | | 1 | 1 | | | | | | | | | |
| 2.043 TSR | | | | | | | | 1 | | | 1 | 1 | | | | | |
| 2.045 DOA | | 1 | 1 | | | | | | | | | | | | | | |
| 2.047 ASL | | [2] 40 | [2] 40 | | | | | | | | | | | | | | |
| 2.048 CSR | 1 | | | | 1 | | | | | 1 | | | | | | | |
| 2.051 CSL | | 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 TEN-PRINT TRANSACTIONS
## (Maximum Occurrences of Each Element for Each Logical Record Type)

| Tag Elem | AMN | CAR | CAN | DEK | DEU | ERRT | FANC | FAUF | MAP | MPR | NFAP | NFUF | SRE | SRT | TPFS | TPIS | TPRS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.054 SSD | | 1 | 1 | | | | | | | | | | | | | | |
| 2.055 SLE | | [9] 1 | [9] 1 | | | | | | | | | | | | | | |
| 2.056 ICO | 1 | 1 | 1 | 1 | 1 | | | | | 1 | | | | | | | |
| 2.057 FNR | | | | | | | | | | | | | | | 13 | 13 | 13 |
| 2.059 SRF | | | | | | | | | | | | | 1 | | | | |
| 2.060 MSG | | | | | | 11 | | | | | | | | | | | |
| 2.064 CAN | | | | | | | | | | | | | | 25 | | | |
| 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 | | | | | | | | | | | | | 1 | | | | |
| 2.073 CRI | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 2.075 ERS | | | | | | | | | | | | | 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 | | [2] 9 | | | |
| 2.085 CRN | | | | | | | | | | | | | [8] 1 | | | | |
| 2.087 TAA | | 1 | 1 | | | | | | | | | | 1 | | | | |
| 2.091 RCD1 | | | | | | | | | | | | | | | 1 | 1 | 1 |
| 2.092 RCD2 | | | | | | | | | | | | | | | 1 | 1 | 1 |

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

## TABLE D-4. 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 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 or 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.

# TABLE D-1. FIELD LIST FOR A TYPE-2 CAR LOGICAL RECORD

| IDENTIFIER | CONDITION | FIELD NUMBER | FIELD NAME | CHARACTER TYPE | FIELD SIZE PER OCCURRENCE | | OCCURRENCES | | MAXUMUM NUMBER OF BYTES INCLUDING CHARACTER SEPARATORS AND FIELD NUMBER | EXAMPLE DATA | **SPECIAL CHARACTERS ALLOWED** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MIN. | MAX. | MIN. | MAX. | | | |
| ASL | M [3] | 2.047 | ARREST SEGMENT LITERAL | | | | 1 | 40 | 12406 | 2.047:19940915199409917<US>DUI<RS>19940920<US>POSSESSION OF FIREARMS<GS> | Commas, hyphens, ampersands, slashes, number signs, dollar signs, periods, plus signs and blanks are all allowed as special |
| | 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 | 24446 | 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> | Commas, hyphens, ampersands, slashes, number signs, dollar signs, periods, plus signs and blanks are all allowed as special |
| | O | | COURT DISPOSITION DATE (CDD) | N | 8 | 8 | 0 | 1 | | | |
| | M | | COURT OFFENSE LITERAL (COL) | ANS | 1 | 300 | 1 | 1 | | | |
| | M | | OTHER COURT SENTENCE PROVISION LITERAL (CPL) | ANS | 1 | 300 | 0 | 1 | | | |
| SSD | O | 2.054 | CUSTODY OR SUPERVISORY STATUS - START DATE | N | 8 | 8 | 0 | 1 | 15 | 2.054:19940930<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

## 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.001 | LEN | 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 |
| 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 |
| 2.007 | SCO | 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 |
| 2.011 | CIX | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 1 | 1 | 1 | 1 | 1 | 1 |
| 2.012 | LCN | 1 | 1 | 1 | 1 | 1 | 1 | 1 | [7] 1 | [7] 1 | | [7] 1 | | 1 |
| 2.013 | LCX | 1 | 1 | 1 | 1 | 1 | 1 | 1 | [7] 1 | [7] 1 | | [7] 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 | | | | | | | | | |

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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | | | | | | | | |
| 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 |
| 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 |
| 2.088 | NOT | 1 | 1 | 1 | 1 | | | | | | | | | |
| 2.089 | MSC | | | | | | | | | | | 99 | | |
| 2.091 | RCD1 | | | | | | | | 1 | 1 | 1 | | | |
| 2.092 | RCD2 | | | | | | | | 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 | ULD | ULAC | ULAR | ULDR | UULD | LRSQ | LSMQ | LRSR | LSMR | ERRA |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.001 | LEN | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 2.002 | IDC | 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 |
| 2.007 | SCO | 9 | 9 | | | | | 9 | | 9 | 9 |
| 2.010 | CIN | 1 | 1 | 1 | 1 | 1 | | [9] 200 | | 200 | |
| 2.011 | CIX | 1 | 1 | 1 | 1 | 1 | | [9] 200 | | 200 | |
| 2.012 | LCN | 1 | 1 | 1 | 1 | 1 | | | | | |
| 2.013 | LCX | 1 | 1 | 1 | 1 | 1 | | | | | |
| 2.014 | FBI | | | | | | | | | | |
| 2.015 | SID | | | | | | | | | | |
| 2.016 | SOC | | | | | | | | | | |
| 2.017 | MNU | | | | | | | | | | |
| 2.018 | NAM | | | | | | | | | | |
| 2.019 | AKA | | | | | | | | | | |
| 2.020 | POB | | | | | | | | | | |
| 2.021 | CTZ | | | | | | | | | | |
| 2.022 | DOB | | | | | | | | | | |
| 2.023 | AGR | | | | | | | | | | |
| 2.024 | SEX | | | | | | | | | | |
| 2.025 | RAC | | | | | | | | | | |
| 2.026 | SMT | | | | | | | | | | |
| 2.027 | HGT | | | | | | | | | | |
| 2.028 | HTR | | | | | | | | | | |
| 2.029 | WGT | | | | | | | | | | |
| 2.030 | WTR | | | | | | | | | | |
| 2.031 | EYE | | | | | | | | | | |
| 2.032 | HAI | | | | | | | | | | |
| 2.033 | FPC | | | | | | | | | | |
| 2.034 | PAT | | | | | | | | | | |
| 2.035 | PPA | | | | | | | | | | |
| 2.036 | PHT | | | | | | | | | | |
| 2.037 | RFP | | | | | | | | | | |
| 2.038 | DPR | | | | | | | | | | |
| 2.039 | EAD | | | | | | | | | | |
| 2.040 | OCP | | | | | | | | | | |
| 2.041 | RES | | | | | | | | | | |
| 2.042 | MIL | | | | | | | | | | |
| 2.044 | GEO | | | | | | | | | | |
| 2.045 | DOA | | | | | | | | | | |
| 2.046 | DOS | | | | | | | | | | |
| 2.047 | ASL | | | | | | | | | | |

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 | ULD | ULAC | ULAR | ULDR | UULD | LRSQ | LSMQ | LRSR | LSMR | ERRA |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.051 | CSL | | | | | | | | | | |
| 2.053 | OFC | | | | | | | | | | |
| 2.054 | SSD | | | | | | | | | | |
| 2.055 | SLE | | | | | | | | | | |
| 2.056 | ICO | | | | | | | | | | |
| 2.059 | SRF | | | | | | | | | | |
| 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 |
| 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 | 1 | 1 | 1 | | [9] 200 | | 200 | |
| 2.088 | NOT | | | | | | | | | | |
| 2.089 | MSC | | | | | | | | | | |
| 2.091 | RCD1 | | | | | | | | | | |
| 2.092 | RCD2 | | | | | | | | | | |

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

## TABLE E-3. APPENDIX E REFERENCE NOTES

1. If the originator of this TOT is the FBI, then 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.

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# APPENDIX F

# IAFIS IMAGE QUALITY SPECIFICATIONS

## 1.0 SCOPE AND PURPOSE

These specifications apply to: (1) systems which scan and capture fingerprints[4] 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 insuring 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 principle 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.

[4] 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 8 bits per pixel (256 gray-levels). The magnitude of "R" is either 500 pixels per inch (ppi) or 1000 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 2-1 gives the preferred capture sizes, applicable to both card scan and live scan systems. Scanner capture dimensions should never be less than 90% of those given in Table 2-1, with the exception that when scanning fingerprint cards, the card form dimensions take precedence. Maximum capture sizes may be found in [EFTS] and [ANSI/NIST].

**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 livescan 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% 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 1000 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% 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.

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% 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 1000 ppi requirement corresponds to a positional accuracy of ± 0.71% 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.

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 1000 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 1000 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:

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

1000 ppi scanner, for f = 1.0 to 20.0 cy/mm:

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

Background:
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 % 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% 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. In order 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% of the average gray-levels between every two adjacent quarter-inch long rows and 99.0% 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% 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].
In order 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 % of the captured individual fingerprint images shall have a gray-scale dynamic range of at least 200 gray-levels, and at least 99.0 % 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 8 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 which 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, which 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, which 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 F 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), which can capture 4 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), which capture 4 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

The fingerprint printer, consisting of a printer and specialized print algorithm, must be capable of producing hardcopy images which 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[5] with 1200 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 principle function is to produce life-size prints of digital fingerprints that have met IAFIS format requirements, as specified in [EFTS] 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 mugshots 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.

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 1000 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.

Verification of the specific performance requirements in this section 4 of Appendix F 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 1000 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.

[5] 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.

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 anysaturation 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, then 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% of the tested cases in each direction (vertical and horizontal):

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

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

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% 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% 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 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

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 5 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; following sections 4.10.2 through 4.10.5 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, 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 EFTS 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 off-setting 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 EFTS 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, in order to support fingerprint comparisons, i.e., support 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., 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.

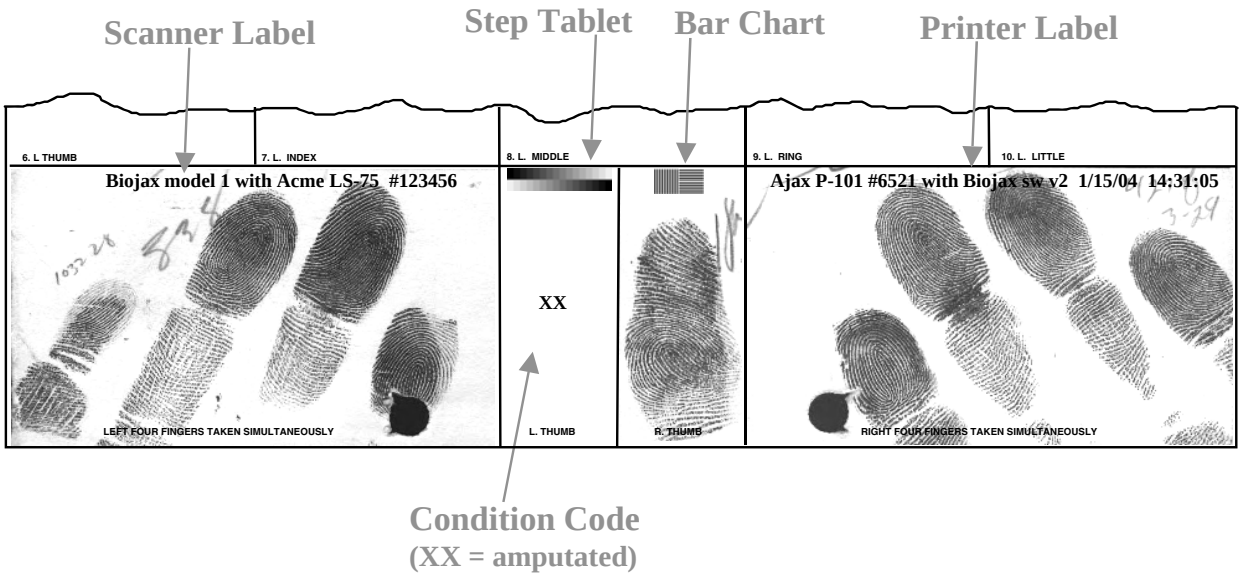


**Figure 4-1 Auxiliary Information Printed in Ten-Print Card Format Print (Example Text)**

## 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 is 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, for example, by 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 email) which affirms 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. | Livescans from 5 subjects (10 rolls & 4 plains, each subject). | section 2.6 |
| | Vendor adds (or deletes) platen membrane to certified device. | 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 |
| 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 | one hundred 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:<br>Sinewave target scans (target supplied by vendor) and ten 10-print card scans (cards supplied by FBI)<br>Livescanner:<br>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 it's 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 1-2000, NIST Special Publication 500-245.

[EFTS] - Federal Bureau of Investigation's *Electronic Fingerprint Transmission Specification*, FBI-CJIS-RS-0010 (Vxxxx), dated xxxxxx.

[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

# INTERIM IAFIS IMAGE QUALITY SPECIFICATIONS FOR SCANNERS

## 1.0 SCOPE AND PURPOSE

These specifications were originally for the purpose of accrediting 500 ppi live scanners and card scanners integrated into automated booking stations. These Appendix G interim image quality specifications for scanners were decommissioned for IAFIS certifications in July 1999; all fingerprint systems submitted for IAFIS certification after July 1999 must meet the Appendix F requirements**.**

### 2.1 Gray-Scale Linearity

No change from Appendix F of *Electronic Fingerprint Transmission Specification*, dated January 29, 1999, FBI document number CJIS-RS-0010 (V7).

### 2.2 Geometric Image Accuracy

The absolute value of the difference "D," between the actual distance "X" between any two points on a target and the distance "Y" between those same two points as measured on the output scanned image of that target, shall meet the following requirements for the value D:

$D \leq 0.001$, for $0 \leq X \leq 0.07$

$D \leq 0.015X$, for $0.07 \leq X \leq 1.50$

where: D, X, Y are in inches and D = absolute value of (Y-X)

The requirement corresponds to a positional accuracy of ± 1.5% for distances between 0.07 and 1.5 inches, and a constant ± 0.001 inches (1/2 pixel) for distances less than or equal to 0.07 inches.

### 2.3 Modulation Transfer Function

| cy/mm | sine wave MTF |
|---|---|
| 1 | 0.889 to 1.40 |
| 2 | 0.778 to 1.40 |
| 3 | 0.667 to 1.40 |
| 4 | 0.556 to 1.40 |
| 5 | 0.444 to 1.40 |
| 6 | 0.333 to 1.00 |
| 8 | 0.111 to 1.00 |
| 10 | 0.000 to 1.00 |

The MTF shall be measured using a sine wave test target unless scanner characteristics are incompatible with imaging a continuous tone sine wave target, in which case a bar target may be used.

### 2.4 Signal-to-Noise Ratio

No change from Appendix F of *Electronic Fingerprint Transmission Specification*, dated January 29, 1999, FBI document number CJIS-RS-0010 (V7).

### 2.5 Gray-level Uniformity

No change from Appendix F of *Electronic Fingerprint Transmission Specification*, dated January 29, 1999, FBI document number CJIS-RS-0010 (V7).

### 2.6 Gray-Scale Range of Image Data

At least 80% of the captured individual fingerprint images shall have a gray-scale dynamic range of at least 150 gray-levels. For this requirement, "dynamic range" is defined as the total number of gray-levels that have signal content from the fingerprint image. Fingerprint card format lines, boxes, and text shall be excluded from the dynamic range computation, and white surround in the immediate vicinity of a given fingerprint shall be included in the dynamic range computation.

## 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 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 & Tatoo (SMT) Information", ANSI/NIST-ITL 1-2000. 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 contents 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 5 "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 thirteenth 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

| IDENTIFIER | CONDITION | FIELD NUMBER | FIELD NAME | CHARACTER TYPE | FIELD SIZE PER OCCURRENCE | | OCCURRENCES | | MAXUMUM NUMBER OF BYTES INCLUDING CHARACTER SEPARATORS AND FIELD NUMBER | EXAMPLE DATA | **SPECIAL CHARACTERS ALLOWED** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MIN. | MAX. | MIN. | MAX. | | | |
| LEN | M | | LOGICAL RECORD LENGTH | B | 4 | 4 | 1 | 1 | 4 | | |
| IDC | M | | IMAGE DESIGNATION CHARACTER | B | 1 | 1 | 1 | 1 | 1 | | |
| IMP | M | | IMPRESSION TYPE | B | 1 | 1 | 1 | 1 | 1 | | |
| FGP | M | | FINGER POSITION | B | 6 | 6 | 1 | 1 | 6 | | |
| ISR | M | | IMAGE SCANNING RESOLUTION | B | 1 | 1 | 1 | 1 | 1 | | |
| HLL | M | | HORIZONTAL LINE LENGTH | B | 2 | 2 | 1 | 1 | 2 | | |
| VLL | M | | VERTICAL LINE LENGTH | B | 2 | 2 | 1 | 1 | 2 | | |
| GCA | M | | GRAYSCALE COMPRESSION ALGORITHM | B | 1 | 1 | 1 | 1 | 1 | | |
| IMG | M | | IMAGE DATA | B | 1 | 6200000 | 1 | 1 | 6200000 | | |

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

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# APPENDIX I

# LOGICAL RECORD LAYOUT FOR TYPE-2 (IMAGE) RECORDS

| IDENTIFIER | CONDITION | FIELD NUMBER | FIELD NAME | CHARACTER TYPE | FIELD SIZE PER OCCURRENCE | | OCCURRENCES | | MAXUMUM NUMBER 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 | 2.001:125<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,RM 11867<GS> | Any printable 7-bit ascii character with the exception of 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 | M | 2.014 | FBI NUMBER | AN | 1 | 9 | 1 | 1000 | 10006 | 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<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) TRANSACTION

| IDENTIFIER | CONDITION | FIELD NUMBER | FIELD NAME | CHARACTER TYPE | FIELD SIZE PER OCCURRENCE | | OCCURRENCES | | MAXUMUM NUMBER 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 DOE,RM 11867<GS> | Any printable 7-bit ascii character with the exception of 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 | M [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 all 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 | 2.036Y<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) TRANSACTION

| IDENTIFIER | CONDITION | FIELD NUMBER | FIELD NAME | CHARACTER TYPE | FIELD SIZE PER OCCURRENCE | | OCCURRENCES | | MAXUMUM NUMBER 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<FS> | |
| | M | | FINGER NUMBER (FGP) | N | 2 | 2 | 1 | 1 | | | |
| | M | | AMPUTATED OR BANDAGED CODE (AMPCD) | A | 2 | 2 | 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 I-3. FIELD LIST FOR IMAGE ERROR RESPONSE (ERRI) TRANSACTION

| IDENTIFIER | CONDITION | FIELD NUMBER | FIELD NAME | CHARACTER TYPE | FIELD SIZE PER OCCURRENCE | | OCCURRENCES | | MAXUMUM NUMBER 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,RM 11867<GS> | Any printable 7-bit ascii character with the exception of 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 | O [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 | 3317 | 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<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) TRANSACTION

| DENTIFIER | CONDITION | FIELD NUMBER | FIELD NAME | CHARACTER TYPE | FIELD SIZE PER OCCURRENCE | | OCCURRENCES | | MAXUMUM NUMBER 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,RM 11867<GS> | Any printable 7-bit ascii character with the exception of 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 | M | 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 all 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 NUMBER (FGP) | N | 2 | 2 | 1 | 1 | | | |
| | M | | AMPUTATED OR BANDAGED CODE (AMPCD) | A | 2 | 2 | 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 I-5. FIELD LIST FOR FINGERPRINT IMAGE SUBMISSION RESPONSE (FISR) TRANSACTION

| IDENTIFIER | CONDITION | FIELD NUMBER | FIELD NAME | CHARACTER TYPE | FIELD SIZE PER OCCURRENCE | | OCCURRENCES | | MAXUMUM NUMBER 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,RM 11867<GS> | Any printable 7-bit ascii character with the exception of 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 | M [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 all 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< GS> | |
| CRI | M | 2.073 | CONTROLLING AGENCY IDENTIFIER | ANS | 1 | 9 | 1 | 3 | 36 | 2.073:NY1234567<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 SUBMISSION RESPONSE (ISR) TRANSACTION

| IDENTIFIER | CONDITION | FIELD NUMBER | FIELD NAME | CHARACTER TYPE | FIELD SIZE PER OCCURRENCE | | OCCURRENCES | | MAXUMUM NUMBER 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 DOE,RM 11867<GS> | Any printable 7-bit ascii character with the exception of 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 | M | 2.014 | FBI NUMBER | AN | 1 | 9 | 1 | 1000 | 10006 | 2.014:62760NY12<GS> | |
| SID | O | 2.015 | STATE IDENTIFICATION NUMBER | ANS | 3 | 10 | 0 | 1000 | 11006 | 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 | 1000 | 301006 | 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> | |

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**

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## APPENDIX J

## DESCRIPTORS AND FIELD EDIT SPECIFICATIONS FOR TYPE-9 LOGICAL RECORDS

**AFV 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.

**APC 9.017 - AFIS/FBI PATTERN CLASSIFICATION.** The 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, while 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 set to "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 with mean of about 50 and 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 minutia divided by the maximum number of neighbors (eight). The normalized minutia quality ranges from unity (best) to zero (worst). A qualified neighbor would be another minutia 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 comprised of a four-digit column coordinate (X) concatenated with 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 subimage used subsequently in image processing. The second information item contains the coordinates of the center of rotation within the subimage about which the subimage 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 subimage after the subimage 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 subimage 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 comprised 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 comprised 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 (5) 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 comprised 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, the "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. It 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 &

Tatoo (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 classed 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 note 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 are as follows:

| Description | Code |
|---|---|
| Live-scan plain | 0 |
| Live-scan rolled | 1 |
| Nonlive-scan plain | 2 |
| Nonlive-scan rolled | 3 |
| Latent impression | 4 |
| Latent photo | 6 |
| Latent lift | 7 |

**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 comprised 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 concatenated 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 minutia quality measure. The two-digit values shall range from zero to 63. The value zero shall indicate a manually encoded minutia. The value one shall indicate that no method of indicating a confidence level is available. Values between two and 63 shall indicate decreasing levels of confidence, with two denoting the greatest confidence.

Minutia type designation (MNT): The fourth information item is the minutia 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 minutiae of the indexed minutia. It shall be formatted as a series of eight subitems, each consisting of a minutia 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 minutia into a five digit number. For AFIS/FBI, the minutia 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 minutia 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 subitem.

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 one if the neighboring minutia lies in the counterclockwise half of the octant. The corresponding character shall be zero if the neighboring minutia lies in the clockwise half of the octant or if there is no neighboring minutia in the octant.

**MIN 9.010 - NUMBER OF MINUTIAE.** This single character field shall contain the count of the number of minutiae recorded for this fingerprint.

**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 comprised 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 minutia 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 was 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 was automatically read but manually edited before encoding and recording. | E |
| Data was 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 "0" (zero) in this field indicates that no ridge count information is available. A "1" (one) indicates that ridge count information is available.

**ROV 9.018- REGION OF VALUE.** This is a field of 3 to 20 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 concatenation 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) REMOTE, NATIVE-MODE TEN-PRINT LOGICAL RECORD

| IDENTIFIER | CONDITION | FIELD NUMBER | FIELD NAME | CHARACTER TYPE | FIELD SIZE PER OCCURRENCE | | OCCURRENCES | | MAXUMUM NUMBER 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 | 2048 | 2048 | 0 | 1 | 2055 | 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) REMOTE, NATIVE-MODE TEN-PRINT LOGICAL RECORD

| IDENTIFIER | CONDITION | FIELD NUMBER | FIELD NAME | CHARACTER TYPE | FIELD SIZE PER OCCURRENCE | | OCCURRENCES | | MAXUMUM NUMBER 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 | | | |
| 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) REMOTE, NATIVE-MODE TEN-PRINT LOGICAL RECORD

| IDENTIFIER | CONDITION | FIELD NUMBER | FIELD NAME | CHARACTER TYPE | FIELD SIZE PER OCCURRENCE | | OCCURRENCES | | MAXUMUM NUMBER 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) REMOTE, NATIVE-MODE TEN-PRINT LOGICAL RECORD

| IDENTIFIER | CONDITION | FIELD NUMBER | FIELD NAME | CHARACTER TYPE | FIELD SIZE PER OCCURRENCE | | OCCURRENCES | | MAXUMUM NUMBER 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 | 19818 | 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 | | MINUTIA TYPE (MNT) | A | 1 | 1 | 1 | 1 | | | |
| | M | | MINUTIA INDEX AND RIDGE COUNT OCTANT 0 (NNNCC) (MRO) | N | 5 | 5 | 1 | 1 | | | |
| | M | | MINUTIA INDEX AND RIDGE COUNT OCTANT 1 (NNNCC) (MRO) | N | 5 | 5 | 1 | 1 | | | |
| | M | | MINUTIA INDEX AND RIDGE COUNT OCTANT 2 (NNNCC) (MRO) | N | 5 | 5 | 1 | 1 | | | |
| | M | | MINUTIA INDEX AND RIDGE COUNT OCTANT 3 (NNNCC) (MRO) | N | 5 | 5 | 1 | 1 | | | |
| | M | | MINUTIA 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) REMOTE, NATIVE-MODE TEN-PRINT LOGICAL RECORD

| IDENTIFIER | CONDITION | FIELD NUMBER | FIELD NAME | CHARACTER TYPE | FIELD SIZE PER OCCURRENCE | | OCCURRENCES | | MAXUMUM NUMBER OF BYTES INCLUDING CHARACTER SEPARATORS AND FIELD NUMBER | EXAMPLE DATA | **SPECIAL CHARACTERS ALLOWED** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MIN. | MAX. | MIN. | MAX. | | | |
| | M | | MINUTIA INDEX AND RIDGE COUNT OCTANT 5 (NNNCC) (MRO) | N | 5 | 5 | 1 | 1 | | | |
| | M | | MINUTIA INDEX AND RIDGE COUNT OCTANT 6 (NNNCC) (MRO) | N | 5 | 5 | 1 | 1 | | | |
| | M | | MINUTIA 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) REMOTE, NATIVE-MODE LATENT LOGICAL RECORD

| IDENTIFIER | CONDITION | FIELD NUMBER | FIELD NAME | CHARACTER TYPE | FIELD SIZE PER OCCURRENCE | | OCCURRENCES | | MAXUMUM NUMBER 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 | 2048 | 2048 | 0 | 1 | 2055 | 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) REMOTE, NATIVE-MODE LATENT LOGICAL RECORD

| IDENTIFIER | CONDITION | FIELD NUMBER | FIELD NAME | CHARACTER TYPE | FIELD SIZE PER OCCURRENCE | | OCCURRENCES | | MAXUMUM NUMBER 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) REMOTE, NATIVE-MODE LATENT LOGICAL RECORD

| IDENTIFIER | CONDITION | FIELD NUMBER | FIELD NAME | CHARACTER TYPE | FIELD SIZE PER OCCURRENCE | | OCCURRENCES | | MAXUMUM NUMBER 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-2. FIELD LIST FOR TYPE-9 (MINUTIAE) REMOTE, NATIVE-MODE LATENT LOGICAL RECORD

| IDENTIFIER | CONDITION | FIELD NUMBER | FIELD NAME | CHARACTER TYPE | FIELD SIZE PER OCCURRENCE | | OCCURRENCES | | MAXUMUM NUMBER 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 | 19818 | 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 | | MINUTIA TYPE (MNT) | A | 1 | 1 | 1 | 1 | | | |
| | M | | MINUTIA INDEX AND RIDGE COUNT OCTANT 0 (NNNCC) (MRO) | N | 5 | 5 | 1 | 1 | | | |
| | M | | MINUTIA INDEX AND RIDGE COUNT OCTANT 1 (NNNCC) (MRO) | N | 5 | 5 | 1 | 1 | | | |
| | M | | MINUTIA INDEX AND RIDGE COUNT OCTANT 2 (NNNCC) (MRO) | N | 5 | 5 | 1 | 1 | | | |
| | M | | MINUTIA INDEX AND RIDGE COUNT OCTANT 3 (NNNCC) (MRO) | N | 5 | 5 | 1 | 1 | | | |
| | M | | MINUTIA 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) REMOTE, NATIVE-MODE LATENT LOGICAL RECORD

| IDENTIFIER | CONDITION | FIELD NUMBER | FIELD NAME | CHARACTER TYPE | FIELD SIZE PER OCCURRENCE | | OCCURRENCES | | MAXUMUM NUMBER OF BYTES INCLUDING CHARACTER SEPARATORS AND FIELD NUMBER | EXAMPLE DATA | **SPECIAL CHARACTERS ALLOWED** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MIN. | MAX. | MIN. | MAX. | | | |
| | M | | MINUTIA INDEX AND RIDGE COUNT OCTANT 5 (NNNCC) (MRO) | N | 5 | 5 | 1 | 1 | | | |
| | M | | MINUTIA INDEX AND RIDGE COUNT OCTANT 6 (NNNCC) (MRO) | N | 5 | 5 | 1 | 1 | | | |
| | M | | MINUTIA 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

## TABLE J-3. 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 pattern
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 subimage 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 remote, native mode ten-print search request. "9.001:" + LEN "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. " \f D

# APPENDIX K

## DESCRIPTORS AND FIELD EDIT SPECIFICATIONS FOR TYPE-10 LOGICAL RECORDS AND LOGICAL RECORD FIELD LISTS FOR TYPE-2 (PHOTO) RECORDS

**CSP 10.012 - COLORSPACE.** This mandatory ASCII field shall contain the color space used to exchange the image. For compressed images, the preferred colorspace using baseline JPEG and JFIF is YcbCr[2] to be coded as "YCC". An entry of "GRAY" shall be used for all gray scale images. For uncompressed color images containing non-interleaved red, green, and blue pixels in that order, this field shall contain "RGB". All other colorspaces are undefined.

**DAT 10.999 - IMAGE DATA.** This field shall contain all of the gray scale or color data from a face image. It shall begin with the ASCII identifier "10.999", and be followed by image data in a binary representation.

Each pixel of uncompressed gray scale data shall be quantized to eight bits (256 gray levels) contained in a single byte. Uncompressed color image data shall be expressed as 24-bit RGB pixels. The first byte shall contain the eight bits for the red component of the pixel, the second byte shall contain the eight bits for the green component of the pixel, and the third byte shall contain the last eight bits for the blue component of the pixel.

If compression is used, the pixel data shall be compressed in accordance with the compression technique specified in the CGA field. If the JPEG algorithm is to be used to compress the data, this field shall be encoded using the JFIF format specification.

**CGA 10.011 - COMPRESSION ALGORITHM.** This mandatory ASCII field shall specify the algorithm used to compress the color or gray scale image. An entry of "NONE" in the field indicates that the data contained in this record is uncompressed.

For those images that are to be compressed, the required method for the compression of facial images to the FBI is specified by the baseline mode of the JPEG algorithm formatted in accordance with the JPEG File Interchange Format, Version 1.02 (JFIF).[1] An entry of "JPEGB" indicates that the scanned or captured image was compressed using baseline JPEG. An entry of "JPEGL" indicates that the lossless mode of the JPEG algorithm was used to compress the image. If the image is captured in gray scale, then only the luminescence component will be compressed and transmitted. When transmitting images to the FBI, the image(s) comprising the image set, that accompany the Ten-Print Criminal Submission, should average no larger than 40KB in size.

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[1] Developed by C-Cube Microsystems, 1778 McCarthy Blvd., Milpitas, CA 95035

[2] Annex F of the Proposed Addendum to ANSI/NIST-ITL 1-2000 contains the information necessary to perform conversions between 24-bit RGB pixels and the YcbCr colorspace.

The FBI will maintain a registry of additional compression techniques and corresponding codes that may be used as they become available in the future.

**HLL 10.006 - HORIZONTAL LINE LENGTH.** This mandatory ASCII field shall contain the number of pixels contained on a single horizontal line of the transmitted image.

**HPS 10.009 - HORIZONTAL PIXEL SCALE.** This mandatory ASCII field shall specify the 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 10.002 - IMAGE DESIGNATION CHARACTER.** The Image Designation Character shall be a sequentially assigned positive integer starting from zero and increasing by one for each finger position, image, or Type-10 record present. Each IDC value matches a value in the Content (CNT) field of the Type-1 message header.

**IMT 10.003 - IMAGE TYPE.** This mandatory ASCII field is used to indicated the type of image contained in this record. It shall contain "FACE", to indicate a face image. The content of this field shall conform to the requirements set forth by the agency to whom the transmission is being sent.

**LEN 10.001 - LOGICAL RECORD LENGTH.** This mandatory ASCII field shall contain the total count of the number of bytes in this Type-10 logical record. Field 10.001 shall begin with "10.001:", 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.

**PHD 10.005 - PHOTO DATE.** This mandatory ASCII field shall contain the date that the facial image contained in the record was captured. The date shall appear as an eight-digit number 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, 19960229 represents February 29, 1996. The photo date 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 1 day forward (24 hours), in order to accommodate the variance between international time zones.

**POA 10.021 - POSE OFFSET ANGLE.** This field shall only be used for the exchange of facial image data if Field 10.020 (POS) contains an "A" to indicate an angled pose of the subject. For a full face or a profile this field should be omitted. This ASCII field specifies the pose position of the subject at any possible orientation within a circle. Its value shall be to a nearest degree. The offset angle shall be measured from the full-face pose position and have a range of values from -180 degrees to + 180 degrees. A positive angle is used to express the angular offset as the subject rotates from a full-face pose to their right (approaching a left profile). A negative angle is used to express the angular offset as the subject rotates from a full-face pose to their left (approaching a right profile). If the entry in the POS field is an "F", "L", or "R", the contents of this field are ignored.

**POS 10.020 - SUBJECT POSE.** This is an optional field to be used for the exchange of facial image data. When included, this field shall contain a one ASCII character code selected from the list below to describe the pose of the subject. For the angled pose entry "A", field 10.021 (POA)

shall contain the offset angle from the full face orientation.

| | |
|---|---|
| Full Face Frontal | F |
| Right Profile (90 degree) | R |
| Left Profile (90 degree) | L |
| Angled Pose | A |

**PXS 10.022 - PHOTO DESCRIPTION.** This optional ASCII field shall be used for the exchange of facial image data. When present, it shall describe special attributes of the captured facial image. Attributes associated with the facial image may be selected from the following values and entered in this field.

| | |
|---|---|
| Subject Wearing Glasses | GLASSES |
| Subject Wearing Hat | HAT |
| Subject Wearing Scarf | SCARF |
| Physical Characteristics | PHYSICAL |
| Other Characteristics | OTHER |

Physical characteristics, such as "freckles" may be entered as a subfield consisting of two information items. The first is "PHYSICAL" followed by the US separator, followed by the characteristics as listed in Part 4 Section 13 of the NCIC Code Manual. The "OTHER" category is used to enter unlisted or miscellaneous attributes of the facial image. This information shall be entered as two information item subfield. This first is "OTHER" followed by the US separator, followed by the unformatted text used to describe the attribute. Multiple attributes and subfields may be listed but must be separated by the RS character.

**SLC 10.008 - SCALE UNITS.** This mandatory ASCII field shall specify the units used to describe the image sampling frequency (pixels density). A "1" in this field indicates pixels per inch. A "2" indicates pixels centimeter. A "0" in this field indicates no scale is given, for this case, the quotient of HPS/VPS give the pixel aspect ratio.

**SRC 10.004 - SOURCE AGENCY/ORI**. This mandatory ASCII field shall contain the identification of the administration or organization that originally captured the facial image contained in the record. Normally, the ORI of the agency that captured the image will be contained in this field. The size and data content of this field shall be denied by the user and be in accordance with the receiving agency.

**VLL 10.007 - VERTICAL LINE LENGTH.** This mandatory ASCII shall contain the number of horizontal lines contained in the transmitted image.

**VPS 10.010 - VERTICAL PIXEL SCALE.** This mandatory ASCII field shall specify the 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 K-1. FIELD LIST FOR CRIMINAL PHOTO REQUEST (CPR) TRANSACTION

| IDENTIFIER | CONDITION | FIELD NUMBER | FIELD NAME | CHARACTER TYPE | FIELD SIZE PER OCCURRENCE | | OCCURRENCES | | MAXUMUM NUMBER 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,RM 11867<GS> | Any printable 7-bit ascii character with the exception of 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 | M | 2.014 | FBI NUMBER | AN | 1 | 9 | 1 | 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> | |

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 CRIMINAL PHOTO DELETE REQUEST (CPD) TRANSACTION

| IDENTIFIER | CONDITION | FIELD NUMBER | FIELD NAME | CHARACTER TYPE | FIELD SIZE PER OCCURRENCE | | OCCURRENCES | | MAXUMUM NUMBER 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,RM 11867<GS> | Any printable 7-bit ascii character with the exception of 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 | M | 2.014 | FBI NUMBER | AN | 1 | 9 | 1 | 1 | 16 | 2.014:62760NY12<GS> | |
| 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> | |

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 CRIMINAL PHOTO REQUEST RESPONSE (PRR) TRANSACTION

| IDENTIFIER | CONDITION | FIELD NUMBER | FIELD NAME | CHARACTER TYPE | FIELD SIZE PER OCCURRENCE | | OCCURRENCES | | MAXUMUM NUMBER 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,RM 11867<GS> | Any printable 7-bit ascii character with the exception of 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 | M | 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. |
| 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 CRIMINAL PHOTO DELETE REQUEST RESPONSE (PDR) TRANSACTION

| IDENTIFIER | CONDITION | FIELD NUMBER | FIELD NAME | CHARACTER TYPE | FIELD SIZE PER OCCURRENCE | | OCCURRENCES | | MAXUMUM NUMBER 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,RM 11867<GS> | Any printable 7-bit ascii character with the exception of 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 | M | 2.014 | FBI NUMBER | AN | 1 | 9 | 1 | 1 | 16 | 2.014:62760NY12<GS> | |
| DOA | M | 2.045 | DATE OF ARREST | N | 8 | 8 | 1 | 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. |
| 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 (CRIMINAL PHOTO) LOGICAL RECORDS

| IDENTIFIER | CONDITION | FIELD NUMBER | FIELD NAME | CHARACTER TYPE | FIELD SIZE PER OCCURRENCE | | OCCURRENCES | | MAXUMUM NUMBER OF BYTES INCLUDING CHARACTER SEPARATORS AND FIELD NUMBER | EXAMPLE DATA | **SPECIAL CHARACTERS ALLOWED** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 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 | 20 | 1 | 1 | 28 | 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> | |
| 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> | |
| DAT | M | 10.999 | IMAGE DATA | B | 2 | 5000000 | 1 | 1 | 5000008 | 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

## TABLE K-6. APPENDIX K REFERENCE NOTES

1. DOA must be present to obtain a specific set of photos, otherwise the latest set 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.

# APPENDIX L

## SUMMARY TABLES

This appendix contains several tables that collect in one place summaries of information that otherwise is dispersed through the EFTS document. Tables L-1 and L-2 cross-reference all currently used EFTS 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 EFTS 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 EFTS 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 requirements for Ten-print submissions is 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 or Type-9 records, respectively, are to be submitted. The number N is the minimum number of fingers required by AFIS for a search, and is currently not known.

# TABLE L-1. COMPLETE ELEMENT CROSS-REFERENCE LIST BY ID

| Element ID | EFTS Tag Number | Element Name |
|---|---|---|
| ACN | 2.071 | ACTION TO BE TAKEN |
| 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 |
| ASL | 2.047 | ARREST SEGMENT LITERAL |
| ATN | 2.006 | "ATTENTION" INDICATOR |
| CAN | 2.064 | CANDIDATE LIST |
| CDD | 2.051A | COURT DISPOSITION DATE |
| CFS | 2.077 | CANCEL FP SEARCH |
| CGA | 10.011 | 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 |
| CPL | 2.051C | OTHER COURT SENTENCE PROVISION LITERAL |
| CRA | 9.021 | CORE ATTRIBUTES |
| CRI | 2.073 | CONTROLLING AGENCY IDENTIFIER |
| CRN | 2.085 | CIVIL RECORD NUMBER |
| CRP | 9.008 | CORE POSITION |
| CSL | 2.051 | COURT SEGMENT LITERAL |
| CSP | 10.012 | 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 |

NOTE: The alpha suffixes shown here on EFTS 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 | EFTS Tag Number | Element Name |
|---|---|---|
| DID | 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 |
| 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 |
| EAD | 2.039 | EMPLOYER AND ADDRESS |
| 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 NUMBER |
| FGP | 2.074 | FINGER POSITION |
| FGP | 2.084A | FINGER NUMBER |
| FGP | 2.091A | FINGER NUMBER |
| FGP | 2.092A | FINGER NUMBER |
| FGP | 7.04 | FINGER POSITION |
| FGP | 9.006 | FINGER POSITION |
| 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 |
| HAI | 2.032 | HAIR COLOR |
| HGT | 2.027 | HEIGHT |

NOTE: The alpha suffixes shown here on EFTS 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 | EFTS Tag Number | Element Name |
|---|---|---|
| HLL | 10.006 | HORIZONTAL LINE LENGTH |
| HLL | 7.06 | HORIZONTAL LINE LENGTH |
| HPS | 10.009 | 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 |
| IMA | 2.067 | IMAGE CAPTURE EQUIPMENT |
| IMG | 7.99 | IMAGE DATA |
| IMP | 7.03 | IMPRESSION TYPE |
| IMP | 9.003 | IMPRESSION TYPE |
| IMT | 10.003 | IMAGE TYPE |
| IMT | 2.062 | IMAGE TYPE (IF TYPE -7 IMAGES) |
| ISR | 7.05 | IMAGE SCANNING RESOLUTION |
| 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 |
| MAK | 2.067A | ORIGINATING FINGERPRINT READING SYSTEM MAKE |
| MAT | 9.023 | MINUTIAE AND RIDGE COUNT DATA |
| MCOUNT | 9.012E | RIDGE COUNT DATA |
| MDX | 9.012A | INDEX NUMBER |
| MDX | 9.023A | MINUTIAE INDEX NUMBER (III) |
| MET | 9.016C | METHOD |
| MIL | 2.042 | MILITARY CODE |
| MIN | 9.010 | NUMBER OF MINUTIAE |
| 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) |

NOTE: The alpha suffixes shown here on EFTS 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 | EFTS Tag Number | Element Name |
|---|---|---|
| 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 | MATCHSCORE |
| MSG | 2.060 | STATUS/ERROR MESSAGE |
| MTD | 9.012D | MINUTIA TYPE DESIGNATION |
| MXYTHETA | 9.012B | X, Y, THETA VALUES |
| NAM | 2.018 | NAME |
| NAM | 2.064B | NAME |
| NCR | 2.079 | NUMBER OF CANDIDATE'S IMAGES RETURNED |
| NMN | 9.015 | NUMBER OF MINUTIAE |
| 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 |
| PEN | 2.078 | PENETRATION QUERY RESPONSE |
| PHD | 10.005 | PHOTO DATE |
| PHT | 2.036 | "PHOTO AVAILABLE" INDICATOR |
| 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 |

NOTE: The alpha suffixes shown here on EFTS 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 | EFTS Tag Number | Element Name |
|---|---|---|
| PRY | 1.06 | TRANSACTION PRIORITY |
| PTD | 2.063 | PERSON TYPE DESIGNATOR |
| 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 |
| RAP | 2.070 | REQUEST FOR ELECTRONIC RAP SHEET |
| 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 |
| 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 |
| ROV | 9.018 | REGION OF VALUE POLYGON |
| RSO | 9.023M | OCTANT RESIDUALS (RRRRRRRR) |
| RSR | 2.065 | REPOSITORY STATISTICS RESPONSE |
| SCNA | 2.086 | AFIS SEGMENT CONTROL NUMBER |
| SCO | 2.007 | SEND COPY TO |
| SERNO | 2.067C | ORIGINATING FINGERPRINT READING SYSTEM SERIAL |
| SEX | 2.024 | SEX |
| SID | 2.015 | STATE IDENTIFICATION NUMBER |
| SLC | 10.008 | SCALE UNITS |
| SLE | 2.055 | CUSTODY OR SUPERVISORY STATUS LITERAL |
| SMT | 2.026 | SCARS, MARKS, AND TATTOOS |
| SOC | 2.016 | SOCIAL SECURITY ACCOUNT NUMBER |
| SRC | 10.004 | SOURCE AGENCY/ORI |
| SRF | 2.059 | SEARCH RESULTS FINDINGS |
| SSD | 2.054 | CUSTODY OR SUPERVISORY STATUS - START DATE |
| TAA | 2.087 | TREAT AS ADULT |
| TCN | 1.09 | TRANSACTION CONTROL NUMBER |

NOTE: The alpha suffixes shown here on EFTS 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 | EFTS Tag Number | Element Name |
|---|---|---|
| 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 |
| ULF | 2.083 | UNSOLVED LATENT FILE |
| VEN | 9.016A | EQUIPMENT |
| VER | 1.02 | VERSION |
| VID | 9.016B | VERSION IDENTIFIER |
| VLL | 10.007 | VERTICAL LINE LENGTH |
| VLL | 7.07 | VERTICAL LINE LENGTH |
| VPS | 10.010 | 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 ) |

NOTE: The alpha suffixes shown here on EFTS 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

| EFTS Tag Number | Element ID | Element Name |
|---|---|---|
| 1.01 | 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 |
| 1.10 | TCR | TRANSACTION CONTROL REFERENCE |
| 1.11 | NSR | NATIVE SCANNING RESOLUTION |
| 1.12 | 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 |

NOTE: The alpha suffixes shown here on EFTS 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

| EFTS 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 |
| 2.051 | CSL | COURT SEGMENT LITERAL |
| 2.051A | CDD | COURT DISPOSITION DATE |
| 2.051B | COL | COURT OFFENSE LITERAL |
| 2.051C | CPL | OTHER COURT SENTENCE PROVISION LITERAL |
| 2.053 | 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 |

NOTE: The alpha suffixes shown here on EFTS 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

| EFTS 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 |
| 2.082 | 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 | MATCHSCORE |
| 2.091 | RCD1 | RIDGE CORE DELTA ONE FOR SUBPATTERN |
| 2.091A | FGP | FINGER NUMBER |

NOTE: The alpha suffixes shown here on EFTS 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

| EFTS 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 |
| 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 |
| 9.010 | MIN | NUMBER OF MINUTIAE |
| 9.011 | RDG | MINUTIAE RIDGE COUNT INDICATOR |
| 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 |

NOTE: The alpha suffixes shown here on EFTS 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

| EFTS Tag Number | Element ID | Element Name |
|---|---|---|
| 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) |

NOTE: The alpha suffixes shown here on EFTS 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

| EFTS 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 |
| 10.999 | DAT | IMAGE DATA |

NOTE: The alpha suffixes shown here on EFTS 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* | T7 | T9 | T10 | Normal Response | Delayed Response | Error Response |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Ten-Print Submissions* | 3.1.2 | | | | | | | | | | |
| CRIMINAL TEN-PRINT SUBMISSION - ANSWER REQUIRED | 3.1.1.1 | CAR | 1 | 1 | 14 | 0 | 0 | 0-4 | SRE | ULM | ERRT |
| CRIMINAL TEN-PRINT SUBMISSION - NO ANSWER REQUIRED | 3.1.1.2 | CNA | 1 | 1 | 14 | 0 | 0 | 0-4 | none | ULM | ERRT |
| FEDERAL APPLICANT - NO CHARGE | 3.1.1.3 | FANC | 1 | 1 | 14 | 0 | 0 | 0 | SRE | | ERRT |
| FEDERAL APPLICANT - USER FEE | 3.1.1.4 | FAUF | 1 | 1 | 14 | 0 | 0 | 0 | SRE | | ERRT |
| NON-FEDERAL APPLICANT USER FEE | 3.1.1.5 | NFUF | 1 | 1 | 14 | 0 | 0 | 0 | SRE | | ERRT |
| MISCELLANEOUS APPLICANT - CIVIL | 3.1.1.6 | MAP | 1 | 1 | 14 | 0 | 0 | 0 | SRE | | ERRT |
| KNOWN DECEASED | 3.1.1.7 | DEK | 1 | 1 | 14 | 0 | 0 | 0-4 | SRE | ULM | ERRT |
| UNKNOWN DECEASED | 3.1.1.8 | DEU | 1 | 1 | 14 | 0 | 0 | 0-4 | SRE | | ERRT |
| MISSING PERSON | 3.1.1.9 | MPR | 1 | 1 | 14 | 0 | 0 | 0-4 | SRE | | ERRT |
| AMNESIA VICTIM | 3.1.1.10 | AMN | 1 | 1 | 14 | 0 | 0 | 0-4 | SRE | | ERRT |
| *Remote Ten-Print Searches* | 3.2.2 | | | | | | | | | | |
| TEN-PRINT FINGERPRINT IMAGE SEARCH | 3.2.1.1 | TPIS | 1 | 1 | 1-10 | 0 | 0 | 0 | SRT | | ERRT |
| TEN-PRINT FINGERPRINT FEATURES SEARCH | 3.2.1.2 | TPFS | 1 | 1 | 0 | 0 | 1-10 | 0 | SRT | | ERRT |
| *Fingerprint Image Request and Upgrade* | 3.6.2, 3.7.2 | | | | | | | | | | |
| FINGERPRINT IMAGE REQUEST | 3.6.1.1 | IRQ | 1 | 1 | 0 | 0 | 0 | 0 | IRR | | ERRI |
| FINGERPRINT IMAGE SUBMISSION | 3.7.1.1 | FIS | 1 | 1 | 14 | 0 | 0 | 0 | FISR | | ERRI |
| *Criminal Subject Photo Services* | 3.10.2 | | | | | | | | | | |
| CRIMINAL SUBJECT PHOTO REQUEST | 3.10.1.1 | CPR | 1 | 1 | 0 | 0 | 0 | 0 | PRR | | PRR |
| CRIMINAL SUBJECT PHOTO DELETE REQUEST | 3.10.1.2 | CPD | 1 | 1 | 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 | LSR | | ERRL |
| COMPARISON FINGERPRINT IMAGE SUBMISSION | 3.3.1.2 | CFS | 1 | 1 | 14 | 0 | 0 | 0 | none | | ERRL |
| MAJOR CASE IMAGE SUBMISSION | 3.3.1.3 | MCS | 1 | 1 | 0 or 14 | 1-N | 0 | 0 | none | | ERRL |
| EVALUATION LATENT FINGERPRINT IMAGE SUBMISSION | 3.3.1.4 | ELR | 1 | 1 | 1-10 | 1-10 | 0 | 0 | NAR | | ERRL |
| *Remote Latent Fingerprint Searches* | 3.4.2 | | | | | | | | | | |
| LATENT FINGERPRINT IMAGE SEARCH | 3.4.1.1 | LFIS | 1 | 1-2 | 1-10 | 0-10 | 0 | 0 | SRL | ULM, UULD | ERRL |
| LATENT FINGERPRINT FEATURES SEARCH | 3.4.1.2 | LFFS | 1 | 1-2 | 1-10 | 0-10 | 1-10 | 0 | SRL | ULM, UULD | ERRL |
| LATENT PENETRATION QUERY | 3.4.1.5 | LPNQ | 1 | 1 | 0 | 0 | 0 | 0 | LPNR | | ERRL |

* For Ten-Print Submissions, the number of Type-4 images is nominally 14. When less than 14 are sent, the AMP field of the accompanying Type-2 must account for all missing images.

## TABLE L-3. RECORDSET REQUIREMENTS SUMMARY BY TYPE OF TRANSACTION

| Transaction | Ref | TOT | T1 | T2 | T4* | T7 | T9 | T10 | Normal Response | Delayed Response | Error Response |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Latent File Maintenance Requests* | 3.5.2 | | | | | | | | | | |
| UNSOLVED LATENT RECORD DELETE REQUEST | 3.5.1.1 | ULD | 1 | 1 | 0 | 0 | 0 | 0 | ULDR | | ERRL |
| UNSOLVED LATENT ADD CONFIRM REQUEST | 3.5.1.2 | ULAC | 1 | 1 | 0 | 0 | 0 | 0 | ULAR | | ERRL |
| *Latent Administrative Transactions* | 3.11.2 | | | | | | | | | | |
| LATENT REPOSITORY STATISTICS QUERY | 3.11.1.1 | LSRQ | 1 | 1 | 0 | 0 | 0 | 0 | LRSR | | ERRA |
| LATENT SEARCH STATUS AND MODIFICATIONS QUERY | 3.11.1.2 | LSMQ | 1 | 1 | 0 | 0 | 0 | 0 | LSMR | | ERRA |

* For Ten-Print Submissions, the number of Type-4 images is nominally 14. When less than 14 are sent, the AMP field of the accompanying Type-2 must account for all missing images.

## TABLE L-4. RECORDSET REQUIREMENTS SUMMARY BY TYPE OF RESPONSE

| Name of Transaction | Ref | Response Types: Normal | Delayed | Error | T1 | T2 | T4 | T7 | T9 | T10 | Request TOTs |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Ten-Print Responses* | 3.1.2, 3.4.2 | | | | | | | | | | |
| SUBMISSION RESULTS - ELECTRONIC | 3.1.1.11 | SRE | | | 1 | 1 | 0 | 0 | 0 | 0 | CAR |
| SUBMISSION RESULTS - ELECTRONIC | 3.1.1.11 | SRE | | | 1 | 1 | 0 | 0 | 0 | 0 | FANC, FAUF, NFUF, MAP |
| SUBMISSION RESULTS - ELECTRONIC | 3.1.1.11 | SRE | | | 1 | 1 | 0 | 0 | 0 | 0 | DEK, DEU, MPR, AMN |
| UNSOLVED LATENT MATCH RESPONSE | 3.4.1.4 | | ULM | | 1 | 1 | 1-10 | 0-10 | 0 | 0 | CAR, CNA, DEK |
| TEN-PRINT TRANSACTION ERROR | 3.1.1.12 | | | ERRT | 1 | 1 | 0 | 0 | 0 | 0 | all the above |
| *Remote Ten-Print Responses* | 3.1.2, 3.2.2 | | | | | | | | | | |
| SEARCH RESULTS - TEN-PRINT | 3.2.1.3 | SRT | | | 1 | 1 | 0-14 | 0 | 0 | 0 | TPIS, TPFS |
| TEN-PRINT TRANSACTION ERROR | 3.2.1.4 | | | ERRT | 1 | 1 | 0 | 0 | 0 | 0 | TPIS, TPFS |
| *Fingerprint Image Services Responses* | 3.6.2, 3.7.2 | | | | | | | | | | |
| FINGERPRINT IMAGE REQUEST | 3.6.1.3 | IRR | | | 1 | 1 | 1-14 | 0 | 0 | 0 | IRQ |
| FINGERPRINT IMAGE SUBMISSION | 3.7.1.2 | FISR | | | 1 | 1 | 0 | 0 | 0 | 0 | FIS |
| IMAGE TRANSACTION ERROR | 3.6.1.4 | | | ERRI | 1 | 1 | 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 | 1-4 | CPR |
| PHOTO DELETE RESPONSE | 3.10.1.3 | PDR | | PDR | 1 | 1 | 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 | LFS |
| NOTIFICATION OF ACTION RESPONSE | 3.3.1.6 | NAR | | | 1 | 1 | 0 | 0 | 0 | 0 | ELR |
| UNSOLVED LATENT MATCH RESPONSE | 3.4.1.4 | | ULM | | 1 | 1 | 1-10 | 0-10 | 0 | 0 | LFS |
| LATENT TRANSACTION ERROR | 3.3.1.8 | | | ERRL | 1 | 1 | 0 | 0 | 0 | 0 | LFS, CFS, MCS, ELR |
| *Remote Latent Fingerprint Search* | 3.4.2, 3.5.2 | | | | | | | | | | |
| SEARCH RESULTS - LATENT | 3.4.1.3 | SRL | | | 1 | 1 | 0-NCR | 0 | 0 | 0 | LFIS, LFFS |
| LATENT PENETRATION RESPONSE | 3.4.1.6 | LPNR | | | 1 | 1 | 0 | 0 | 0 | 0 | LPNQ |
| UNSOLVED LATENT MATCH RESPONSE | 3.4.1.4 | | ULM | | 1 | 1 | 1-10 | 0-10 | 0 | 0 | LFIS, LFFS |
| UNSOLICITED UNSOLVED LATENT DELETE | 3.5.1.5 | | UULD | | 1 | 1 | 0 | 0 | 0 | 0 | LFIS, LFFS |
| LATENT TRANSACTION ERROR | 3.4.1.7 | | | ERRL | 1 | 1 | 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 | ULD |
| UNSOLVED LATENT ADD CONFIRM RESPONSE | 3.5.1.3 | ULAR | | | 1 | 1 | 0 | 0 | 0 | 0 | ULAC |
| UNSOLICITED UNSOLVED LATENT DELETE | 3.5.1.5 | | UULD | | 1 | 1 | 0 | 0 | 0 | 0 | ULAC |
| LATENT TRANSACTION ERROR | 3.5.1.7 | | | ERRL | 1 | 1 | 0 | 0 | 0 | 0 | ULD, ULAC |
| *Latent Administrative Transaction* | 3.11.2 | | | | | | | | | | |
| LATENT REPOSITORY STATISTICS QUERY | 3.11.1.3 | LRSR | | | 1 | 1 | 0 | 0 | 0 | 0 | LRSQ |
| LATENT SEARCH STATUS AND MODIFICATIONS | 3.11.1.4 | LSMR | | | 1 | 1 | 0 | 0 | 0 | 0 | LSMQ |
| ADMINISTRATIVE TRANSACTION ERROR | 3.11.1.5 | ERRA | 1 | 1 | 0 | 0 | 0 | 0 | | LRSQ, LSMQ | |

## 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 | | | |
| A0004 | Unauthorized EFTS transaction | Requestor is not authorized for transaction type %1. | 1 | TOT of incoming message | | |
| A0008 | Unauthorized ULF Add Confirm | Requested ULF Add Confirm request not authorized. | TBD | | | |
| A0009 | Latent Search Queue Request Reject | This Latent Search Queue modification request is invalid. | | | | |
| 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 | EFTS record parse error | EFTS 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 parseable. | 2 | Logical Record Type | IDC value or the value -1 if the named logical record is missing or is a Type 1 record. | |
| E0005 | EFTS field parse error | EFTS 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 | |
| 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 |

| Code | Error Condition | MDD Error Description | Count | Insert#1 | Insert#2 | Insert#3 |
|---|---|---|---|---|---|---|
| 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 | |
| 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 | | |
| 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 |
| L0018 | Latent search queue full | The requested search exceeds the allocation for your organization or | 0 | | | |
| 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 | |
| L0023 | SID required | NFF participants must provide a SID on a criminal retain ten print submission. | 0 | | | |

| Code | Error Condition | MDD Error Description | Count | Insert#1 | Insert#2 | Insert#3 |
|---|---|---|---|---|---|---|
| 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 | | |
| 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). | | |
| L0032 | Duplicate DOA and DOS | Cannot update subject's record because DOA %1 and corresponding DOS already exist. | 1 | DOA | | |
| 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 | |
| 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 does not exist. | 0 | | | |
| L0043 | No Corresponding Court Count | Cannot add supplemental court data - no corresponding count. | 0 | | | |
| L0044 | No Update Of NFF Record | Cannot update NFF record. | 0 | | | |
| L0045 | Data Already On File | Cannot update this cycle - data already exists in record. | 0 | | | |

| Code | Error Condition | MDD Error Description | Count | Insert#1 | Insert#2 | Insert#3 |
|---|---|---|---|---|---|---|
| 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 | | |
| 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 | | | |
| L0052 | Submitter is not Authorized to Update Record | Requestor is not authorized to perform the requested file maintenance | 0 | | | |
| 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 is 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 | | | |
| 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 | |
| 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 | | |

| Code | Error Condition | MDD Error Description | Count | Insert#1 | Insert#2 | Insert#3 |
|---|---|---|---|---|---|---|
| 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 | | |
| L0089 | Year of Birth out of range | The year of birth in the maintenance request is not within ten 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 | | | |
| L0098 | Arrest Segment Data Error | This maintenance request must include ACH, AON, and AOL. | 0 | | | |
| L0106 | ORI/ZIP | The format of the field ZIP is not consistent with the country specified by ORI. | 0 | | | |
| L0109 | Poor Image Quality | The quality of the fingerprint images is too poor to permit processing. | | | | |
| L0111 | Image Sequence Error | Submitted ten-print finger images are out of sequence. | | | | |
| 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 | The TOT is not representative of the data contained in this submission. | | | | |
| 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. | | | | |

| Code | Error Condition | MDD Error Description | Count | Insert#1 | Insert#2 | Insert#3 |
|---|---|---|---|---|---|---|
| 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 |
| 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 | | |
| 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 | | |
| 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. | | | | |
| 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 |
| 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 | Tenprint Search Notification Error | An error occurred during the routing and reporting of AFIS tenprint search notification. | 0 | | | |

| Code | Error Condition | MDD Error Description | Count | Insert#1 | Insert#2 | Insert#3 |
|---|---|---|---|---|---|---|
| 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 | | |

| 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 EFTS messages, the Element Name will be the EFTS 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 fingers, 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, & Scar Mark & Tattoo (SMT) Information (ANSI/NIST-ITL 1-2000).

**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 is 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.

**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 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 fourteen 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 selected from Table 2 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.

**Table N-2 - Finger impression type**

| Description | Code |
|---|---|
| Live-scan plain | 0 |
| Live-scan rolled | 1 |
| Nonlive-scan plain | 2 |
| Nonlive-scan rolled | 3 |
| Latent impression | 4 |
| Latent tracing | 5 |
| Latent photo | 6 |
| Latent lift | 7 |

**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.

**SEG 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.

**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, or 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.

**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 20 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-3 FIELD LIST FOR FLATS CIVIL CHECK TYPE-14 RECORD

# TABLE N-3 FIELD LIST FOR FLATS CIVIL CHECK TYPE-14 RECORD

| Identifier | Condition | Field Number | Field Name | Character Type | Field Size Per Occurrence | | Occurrences | | Maximum Number of Bytes … | Example Data |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Min | Max | Min | Max | | |
| 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> |

# TABLE N-3 FIELD LIST FOR FLATS CIVIL CHECK TYPE-14 RECORD

| Identifier | Condition | Field Number | Field Name | Character Type | Field Size Per Occurrence | | Occurrences | | Maximum Number of Bytes … | Example Data |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Min | Max | Min | Max | | |
| 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> |
| 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 | | |

| Identifier | Condition | Field Number | Field Name | Character Type | Field Size Per Occurrence<br>---<br>Min | <br><br>Max | Occurrences<br>---<br>Min | <br><br>Max | Maximum Number of Bytes … | Example Data |
|---|---|---|---|---|---|---|---|---|---|---|
| IQM | M | 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> |
| | M | | FINGER NUMBER | N | 1 | 2 | 1 | 1 | | |
| | M | | QUALITY SCORE | N | 1 | 2 | 1 | 1 | | |
| DAT | M | 14.999 | IMAGE DATA | B | 2 | -- | 1 | 1 | -- | 14.999:<IMAGE DATA COMPRESSED@ 15:1> <FS> |

## ACRONYMS

| | |
|---|---|
| AFIS | Automated Fingerprint Identification System |
| AMN | Amnesia Victim |
| ANSI | American National Standards Institute |
| APB | Advisory Policy Board |
| CAR | Criminal Ten-Print Submission (Answer Required) |
| CFS | Comparison Fingerprint Image(s) Submission |
| CGA | Compression Algorithm |
| CJIS | Criminal Justice Information Services |
| CNA | Criminal Ten-Print Submission (No Answer Necessary) |
| CSN | Candidate Sequence Number |
| DEK | Known Deceased |
| DEU | Unknown Deceased |
| ELR | Evaluation Latent Fingerprint Submission Request |
| ERRA | Administrative Transaction Error |
| ERRI | Image Transaction Error |
| ERRL | Latent Transaction Error |
| ERRT | Ten-print Transaction Error |
| FANC | Federal Applicant (No Charge) |
| FAUF | Federal Applicant User Fee |
| FBI | Federal Bureau of Investigation |
| FIS | Fingerprint Image Submission |
| FISR | Fingerprint Image Submission Response |
| GCA | Grayscale Compression Algorithm |
| IAFIS | Integrated Automated Fingerprint Identification System |
| ICN | IAFIS Control Number |
| III | Interstate Identification Index |
| IRQ | Fingerprint Image Request |
| IRR | Fingerprint Image Request Response |
| ITN | Identification Tasking and Networking |
| LFFS | Latent Fingerprint Features Search |
| LFIS | Latent Fingerprint Image(s) Search |
| LFS | Latent Fingerprint Image(s) Submission |
| LFMR | Latent File Maintenance Response |
| LSR | Latent Submission Results |
| MAP | Miscellaneous Applicant Civil |
| MCS | Major Case Image(s) Submission |
| MFC | Message Field Code |
| MNC | Maximum Number of Candidates |
| MPR | Missing Person |
| MSG | Message |
| MTF | Modular Transfer Function |
| NAR | Notification of Action Response |
| NCIC | National Crime Information Center |

| | |
|---|---|
| NCR | Number of Candidates Returned |
| NFAP | Non-Federal Advanced Payment |
| NFF | National Fingerprint File |
| NFUF | Non-Federal Applicant User Fee |
| NIST | National Institute of Standards and Technology |
| NRC | Number of Required Candidates |
| OCS | Officers' Candidate School |
| RMS | Root Mean Squared |
| SCNA | AFIS Segment Control Number |
| SRE | Submission Results — Electronic |
| SRF | Search Results Findings |
| SRL | Search Results — Latent |
| SRT | Search Results — Ten-Print |
| TBD | To Be Determined |
| TBR | To be Resolved |
| TOT | Type of Transaction |
| TPFS | Ten-Print Fingerprint Features Search |
| TPIS | Ten-Print Fingerprint Image Searches |
| TPRS | Ten-Print Rap Sheet |
| TSR | Type of Search Requested |
| 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 |
| UULD | Unsolicited Unsolved Latent Delete |
| WSQ | Wavelet Scalar Quantization |