Department of Justice
Federal Bureau of Investigation

CRIMINAL JUSTICE INFORMATION SERVICES (CJIS)

ELECTRONIC FINGERPRINT TRANSMISSION SPECIFICATION

JANUARY 1999

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CHANGE HISTORY

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 RFCs:

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 and 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 transactions.

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.)
5.   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.

RECORD OF CURRENT CHANGES

RFC	VERSION	SECTION	DESCRIPTION OF CHANGE

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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 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-references of elements and their tag numbers, and lists logical record requirements for each EFTS transaction type. Appendix M contains error message details. 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.

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 Information" (ANSI NIST-CSL 1-1993), together with an Addendum, "Data Format for the Interchange of Fingerprint, Facial & SMT Information (ANSI/NIST-ITL 1a-1997).

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 1993 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 IAFIS's 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:

1• A mandatory field is missing in a submitted recordset (e.g., NAM is missing in T2CAR) and would result in immediate rejection;

2• 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;

3• 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;

4• 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 which 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 which 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:

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

When generated at the local level, no CRI need exist since this ORI is the originator. On receipt by the county agency and subsequent transmission to the state 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.

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 newly added Type-10 records, which are defined in the ANSI/NIST Addendum to the Electronic Fingerprint Transmission Standard. This addendum now 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.

SECTION 3

DESCRIPTION OF OPERATIONAL CONCEPTS

The FBI CJIS Division will process the following seven types of fingerprint transactions from the three 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 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.

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 subject search will be conducted. If no identification is effected through comparison of candidates resulting from subject search, a fingerprint search will be executed through the FBI's AFIS. The fingerprint images of any resulting file candidates will be compared to the search fingerprint images by FBI
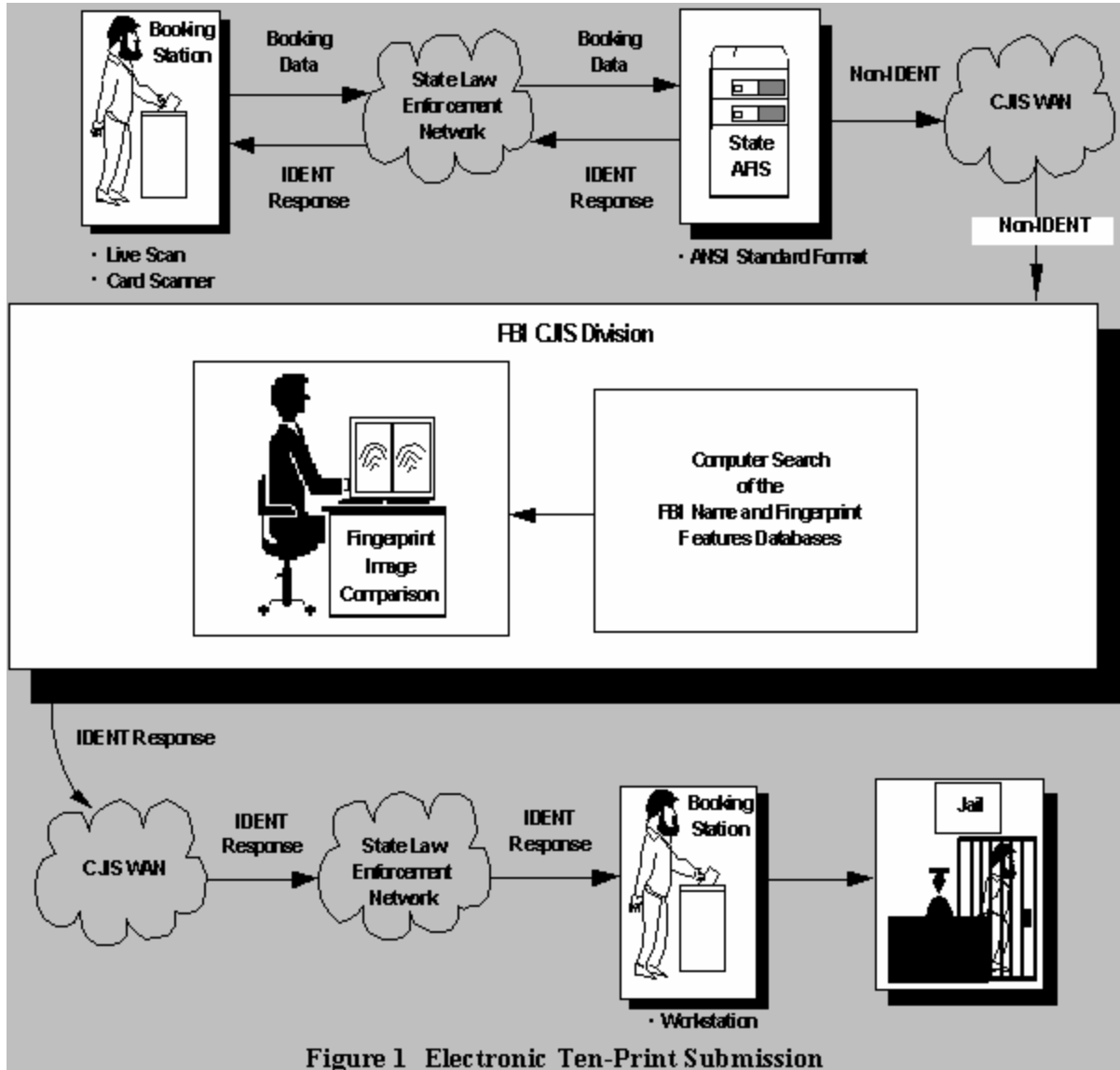
Figure 1 Electronic Ten-Print Submission

fingerprint examiners. 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

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[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.

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
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
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 is discussed in Appendix C. The fingerprint images of those candidates are then manually 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 which 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.

3.1.2 Requirements for Logical Record Types

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

* 1 - Type-1 Header Record
* 1 - Type-2 Record
* nominally 14 - Type-4 records as follows:
    - 10 Rolled Impressions
    - 4 Sets of Plain Impressions
* 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 and NFUF transactions.

(See Appendix C writeup 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:

* 1 - Type-1 Header Record
* 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

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.

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.
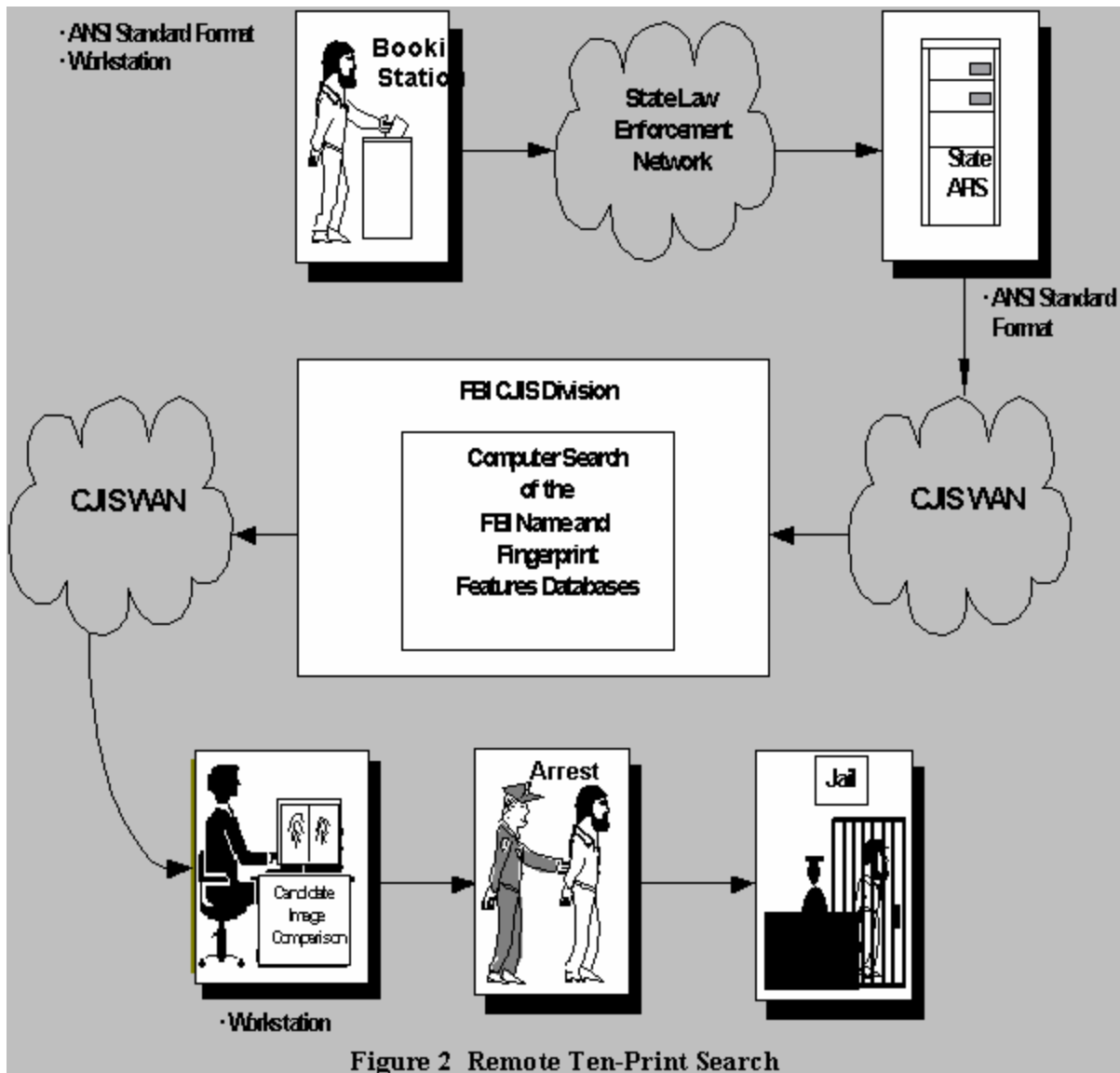
Figure 2 Remote Ten-Print Search

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.

3.2.2 Requirements for Logical Record Types

Input: The types and quantities of logical records required to submit a remote ten-print search are as follows:
- 1 - Type-1 Header Record
- 1 - Type-2 Record
- 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:

- 1 - Type-1 Header Record
- 1 - Type-2 Record
- 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
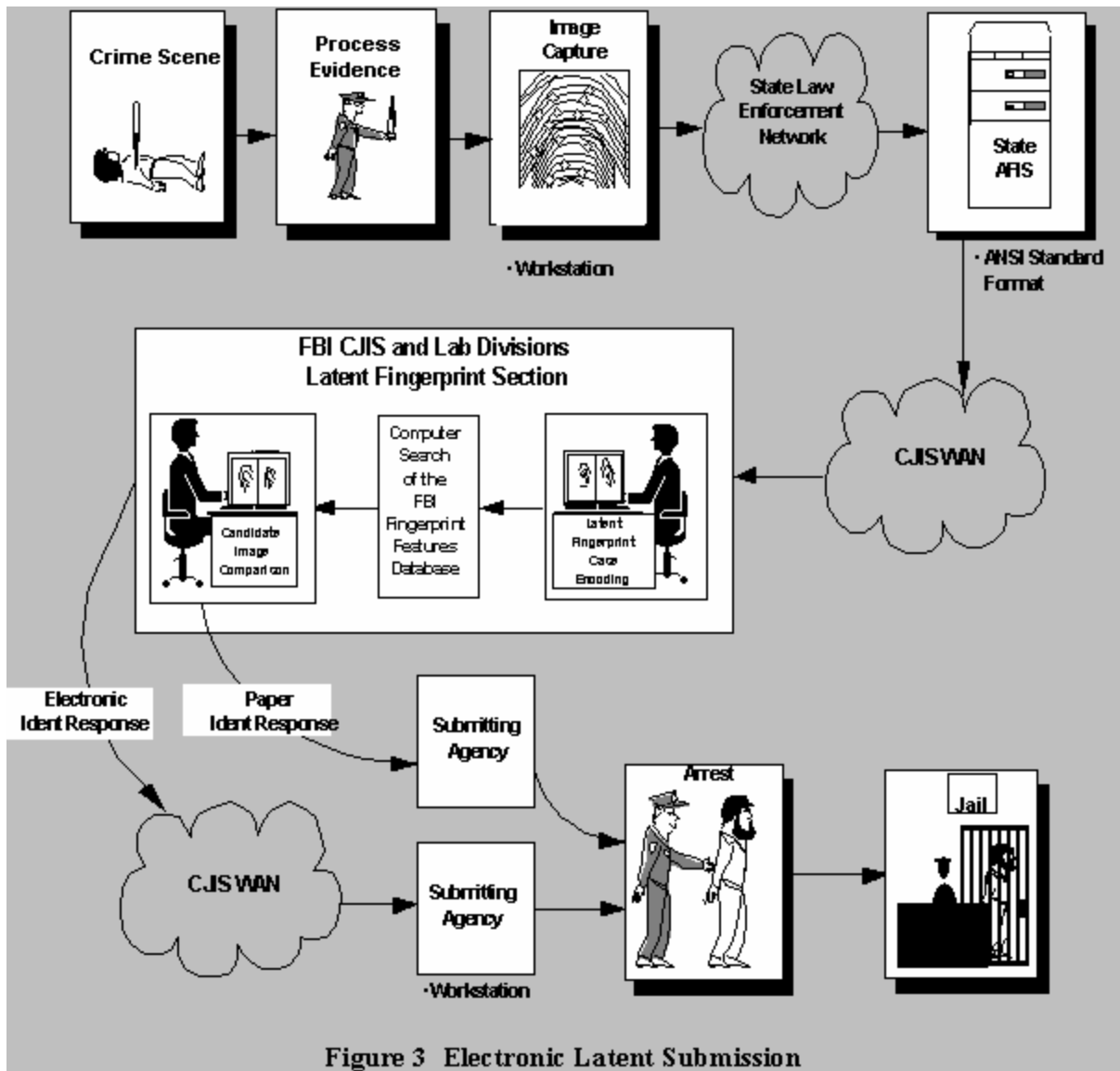
Figure 3 Electronic Latent Submission

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.

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:

- 1 - Type-1 Header Record
- 1 - Type-2 Record
- 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
- 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):

- 1 - Type-1 Header Record
- 1 - Type-2 Record
- 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".

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.

Crime Scene

Process Evidence

Image Capture

· Workstation

State Law Enforcement Network

State AFIS

· ANSI Standard Format

FBI CJIS Division

Computer Search of the FBI Fingerprint Features Database

CJIS WAN

CJIS WAN

Candidate Image Comparison

· Workstation
· Candidate List

Arrest

Jail
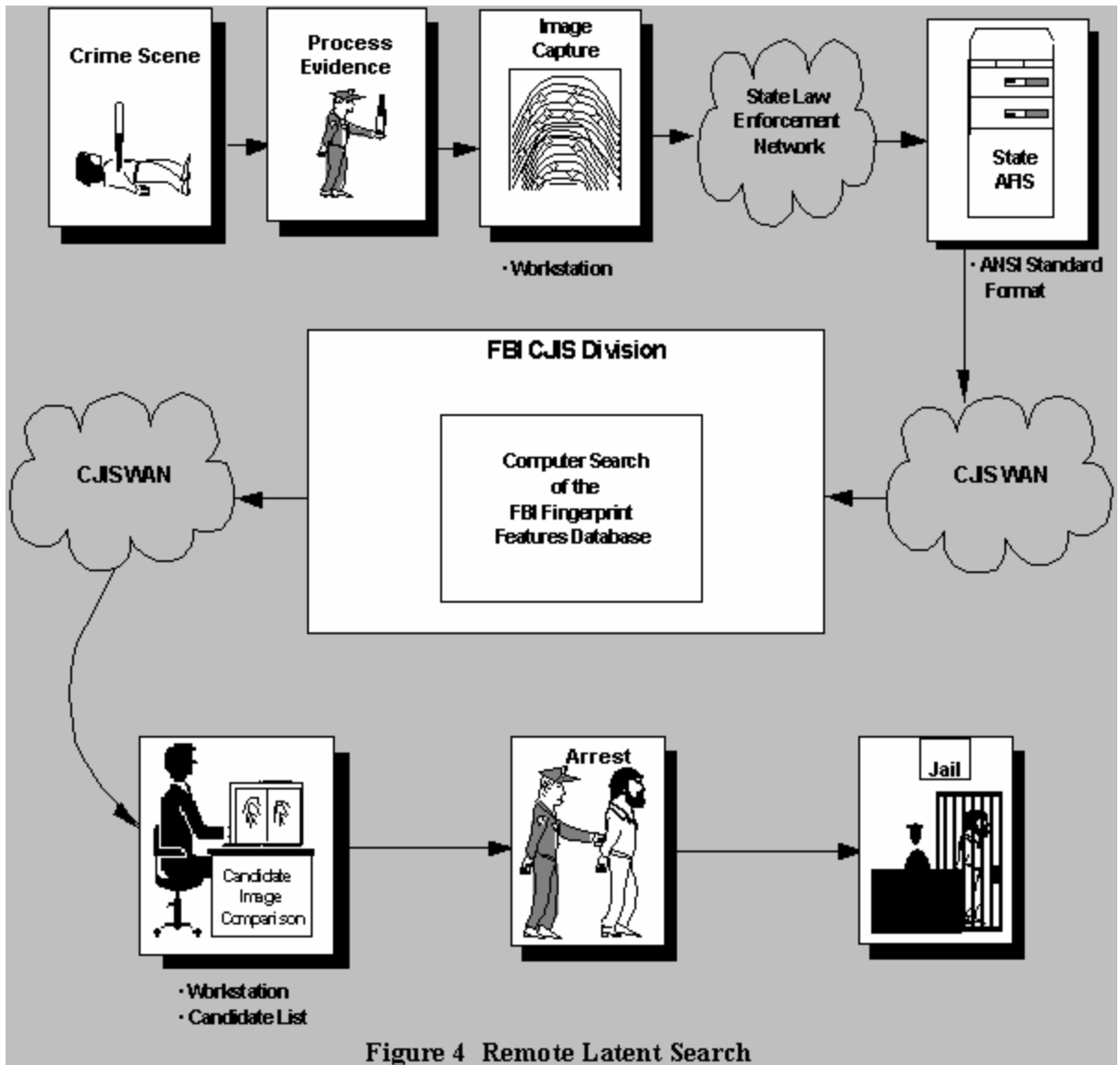
Figure 4 Remote Latent Search

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:

- 1 - Type-1 Header Record
- 1 to 2 - Type-2 Record
- 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:

- 1 - Type-1 Header Record
- 1 - Type-2 Record
- 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),
- 1 - Type-1 Header Record
- 1 - Type-2 Record
- 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."
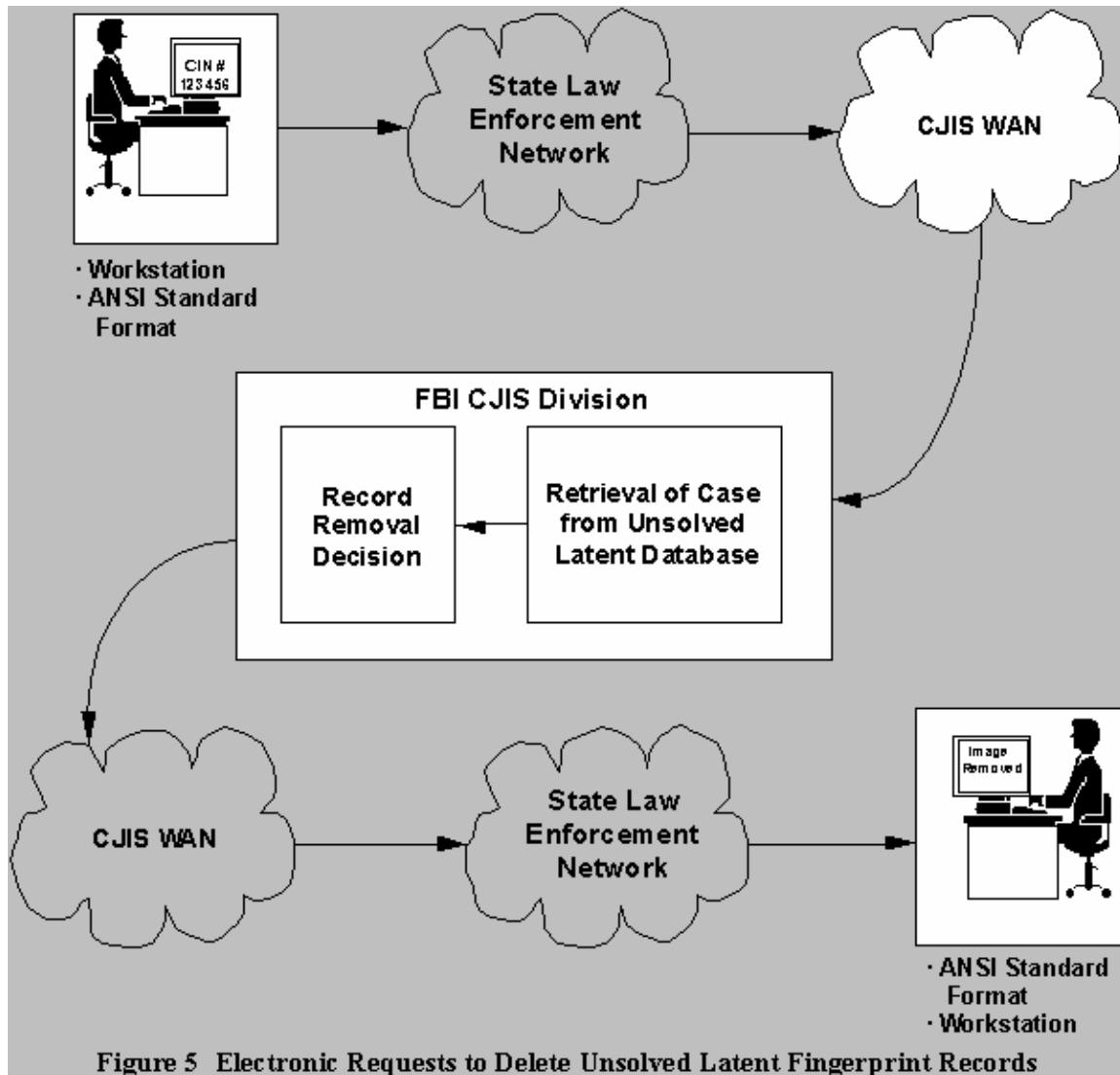
Figure 5 Electronic Requests to Delete Unsolved Latent Fingerprint Records

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

    <u>TOT</u>   <u>TRANSACTION</u>

    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:

- 1 - Type-1 Header Record
- 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:

- 1 - Type-1 Header Record
- 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."

Figure 6 Remote Fingerprint Image Request
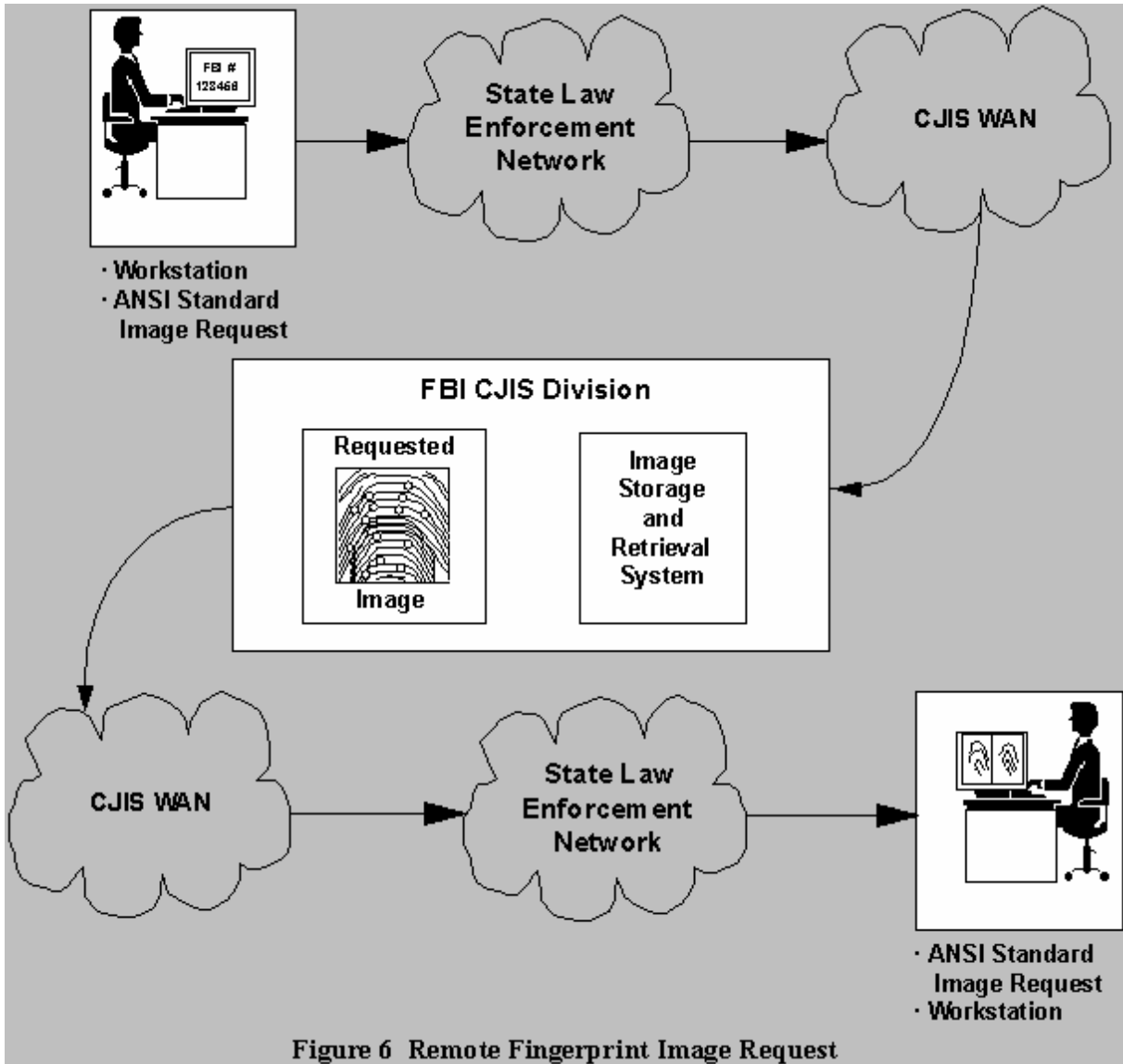
will respond with a Fingerprint Image Response Summary listing all requested FBI numbers and their response status. The FBI's response will contain a TOT of "ISR" in the Type-1 Record.

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 are 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.

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.

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:

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

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

- 1 - Type-2
- 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

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.
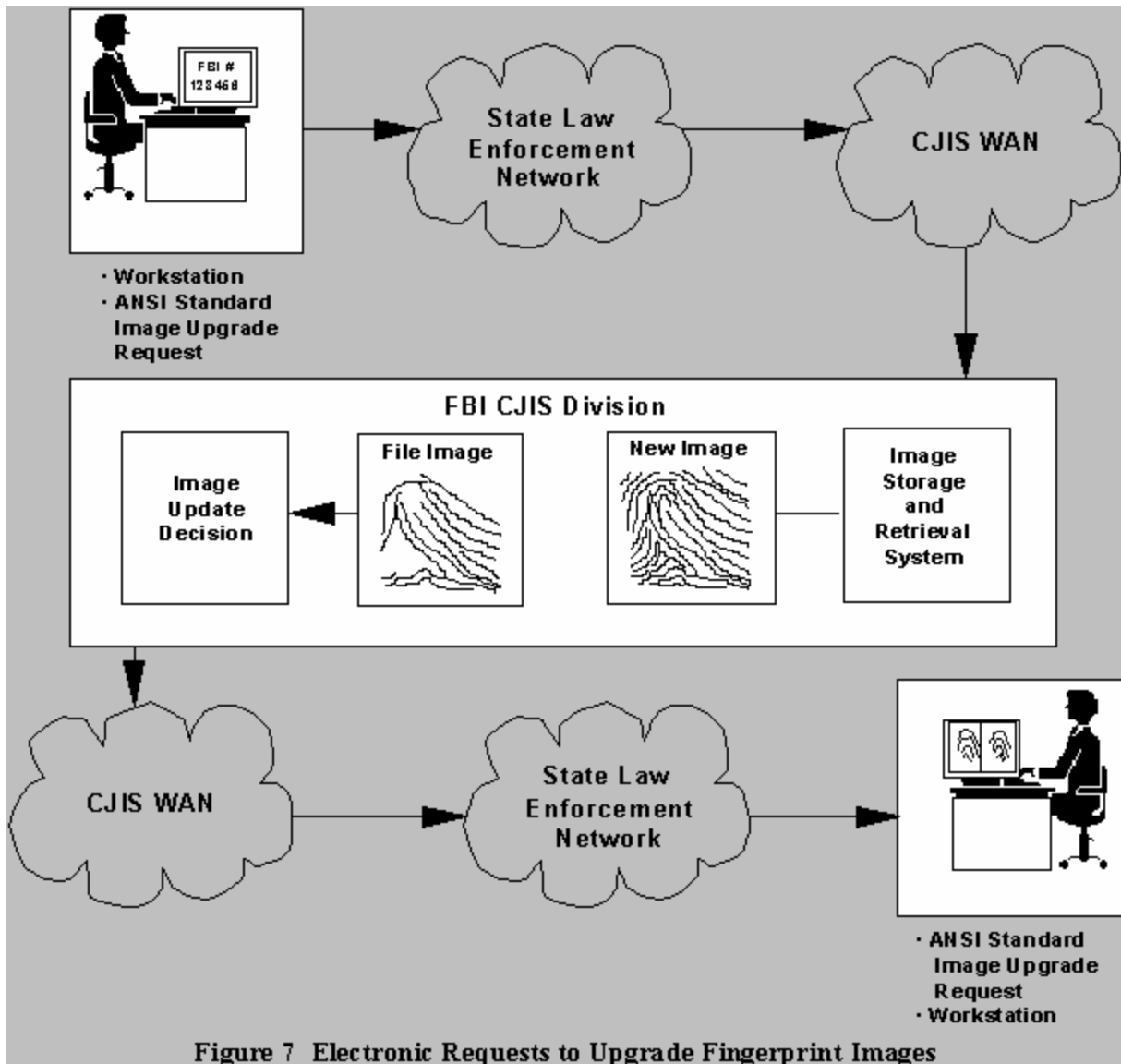
Figure 7 Electronic Requests to Upgrade Fingerprint Images

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:

- 1 - Type-1 Header Record
- 1 - Type-2 Record
- 14 - Type-4 Fingerprint Image Records.

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

- 1 - Type-1 Header Record
- 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 which 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, 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:

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

The following are four unique types of error responses:

- Ten-print Error Response (ERRT)
- Latent Error Response (ERRL)
- Image Error Response (ERRI)
- 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-CSL 1-1993, American National Standard For Information Systems - Data Format for the Interchange of Fingerprint Information," dated November 22, 1993.

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.

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.

MAXIMUM SIZES FOR FINGERPRINT IMAGES [3]

Fingerprint	Width pixels (inches)	Height pixels (inches)
Rolled Impressions 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

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

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

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:

- 1 - Type-1 Header Record
- 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:

- 1 - Type-1 Header Record
- 1 - Type-2 (TOT=PRR) Record
- 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:

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

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

- 1 - Type-1 Header Record
- 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:

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

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

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

TRANSACTION PRIORITIES

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		CPD	
TPFS	FANC	CPR	
	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

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**

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 separator, multiple subfields shall be separated by the separator, and information fields shall be separated by the separator. Immediately following the last information field in the Type-1 logical record, an 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 Information (ANSI/NIST-CSL 1-1993)* and its Addendum, *Data Format for the Interchange of Fingerprint, Facial & SMT Information (ANSI/NIST-ITL 1a-1997).* Any information that is underlined is the FBI-specific requirements.

1.01 Logical Record Length (LEN) 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

1.02 Version Number (VER) This **mandatory** four-byte ASCII field shall be used to specify the version number of the ANSI Standard, *Data Format for the Interchange of Fingerprint 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".

1.03 File content (CNT) 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 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, or from the Addendum to the ANSI Standard Table 8, which states the record type. The second information item shall be the IDC associated with the logical record pertaining to that subfield. The IDC shall be a positive integer equal to or greater than zero. The character shall be used to separate the two information items. <u>(Only Type-1, Type-2, Type-4, Type-7 Type-9 and Type-10 records will be accepted by the FBI.)</u>

1.04 Type of Transaction (TOT) This **mandatory** field shall contain an identifier, designating the type of transaction and subsequent processing that this logical file should be given. Test and operational environments will be supported by IAFIS. A suffix of "T" added to the three- or four character TOT in the Type-1 record will immediately identify the environment as being a "test". For example, CART specifies that a test of the Criminal Ten-print transaction (CAR) is being submitted. If there is no suffix of "T" then the TOT is operational.

1.05 Date (DAT) 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.

1.06 Transaction Priority (PRY) 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.

1.07 Destination Agency Identifier (DAI) 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. <u>This field shall be a nine-byte alphanumeric field.</u>

1.08 Originating Agency Identifier (ORI) 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. <u>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.</u> **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**.)

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

1.10 Transaction Control Reference (TCR) 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.

1.11 Native Scanning Resolution (NSR) 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"

Nominal transmitting Resolution (NTR) 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"

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

IDENTIFIER	CONDITION	FIELD NUMBER	FIELD NAME	CHARACTER TYPE	FIELD SIZE PER OCCURRENCE MIN.	FIELD SIZE PER OCCURRENCE MAX.	OCCURRENCES MIN.	OCCURRENCES MAX.	MAXUMUM NUMBER OF BYTES INCLUDING CHARACTER SEPARATORS AND FIELD NUMBER	EXAMPLE DATA	SPECIAL CHARACTERS ALLOWED
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 Characters

APPENDIX C

DESCRIPTORS AND FIELD EDIT SPECIFICATIONS
FOR TYPE-2 LOGICAL RECORDS

**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 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 separator and the amputated or bandaged code. Multiple fingers shall be separated by the 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.

2.084:03XX09UP

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 complete date shall not exceed the current date. Up to 40 occurrences of the ASL are allowed. Each occurrence of the ASL shall be separated by the separator character. The DOO shall be separated from the AOL by the separator character. A DOO is prohibited without a corresponding AOL offense. If a DOO is not present, a character separator shall still be used.

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

2.047:19940915DUI19940920POSSESSION OF FIREARMS

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 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 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 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 transactions, the first instance of this one-to-nine byte 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 free-text field is user defined. 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 CRI, in which case its replacement will be used.

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 complete date shall not exceed the current date. 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 separator character. A CDD (if available), followed by a COL, followed by a CPL each separated by a separator character must be present for each occurrence of the CSL field. If the CDD is not available, a separator character alone shall be used immediately after the field tag or preceding separator character. The **COL** is 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:

2.050:19940930DUI5 DAYS JAIL, PAY COURT COSTS19940930POSSESSION OF FIREARMS10 DAYS JAIL, PAY COURT COSTS, $50

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

2.050:DUI5 DAYS JAIL, PAY COURT COSTS19940930POSSESSION OF FIREARMS10 DAYS JAIL, PAY COURT COSTS, $50

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 Code Manual.

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 after Time-Zone adjustment.

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 after Time-Zone adjustment.

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, the codes will be separated by the 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 5, Finger Position Code, in Section 10 of "ANSI NIST-CSL 1-1993." Up to 13 individual finger numbers may be listed, separated from one another by the 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-CSL 1-1993." Up to 13 individual finger image numbers may be listed, separated from one another by the 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 02 ... 10.

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:

2.033:12101116141109111713
A combination of loops and whorls with an amputated right index finger might read:

2.033:12XX11CO14115906Cl13

* 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 Code Manual. Each GEO shall be separated from the next by the separator character. If inclusion of all 50 states is desired, this field shall remain blank.

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

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

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

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

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

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

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 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 transmit 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 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. As many as four miscellaneous numbers may be included in this field. Each MNU shall be separated from the next by the 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 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 ("."). The length of the OCA field submitted varies by category of transaction: The length of OCA should be 10 characters for CRIMINAL transactions, and 15 for CIVIL. 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 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 separator. Multiple fingers shall be separated by the 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:

2.034:01WU02LS03LS04LS05LS06RS07RS08LS09RS10RS

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

2.034:01RSWUAU02RSAUWU03WU04RS05WU06LS
07WU08AU09AU10WUAU

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 Code Manual. 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:

- Homicide, rape, and special circumstances
- Kidnap, assault, and robbery
- 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 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 separator. Multiple fingers, if provided, shall be separated by the 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 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 separator. Multiple fingers, if provided, shall be separated by the 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  WU       02   LS      03  AU       04  XX ...   10  WU
2.091:01  9        02   4       03  0   04   0   ...   10  14
2.092:01  7        02   0       03  0   04   0   ...   10  21
```

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 RS  WU  AU  07  XX   09  AU  LS
2.091:01 9    9    0   07  0       09  0   8
2.092:01 0    11   0   07  0       09  0   0
```

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, gaming certification, and others under State control. 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 which 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).

SLE 2.055 - CUSTODY OR SUPERVISORY STATUS LITERAL. This field contains the free-text description of the subject's custody or supervision status. The first character must not be blank. Entry of SLE requires that SSD also be entered.

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.

SSD 2.054 - CUSTODY OR SUPERVISORY STATUS START DATE. This field contains the start date for the subject's indicated custody or supervisory status. The date shall appear as an eight-digit number in the same format as specified for CDD. SSD may not be less than DOA. Complete date may not exceed current date. If custody data are submitted, all custody fields (SSD, OCA and SLE) must be present.

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

TSR 2.043 - TYPE OF SEARCH REQUESTED. A one-byte code shall be entered in this field from the following table to indicate the type of record being submitted. The field is applicable to the FAUF and NFUF transactions as follows.

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

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

APPENDIX D

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

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 applies 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 t he 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.
RES	O	2.041	RESIDENCE OF PERSON FINGERPRINTED	ANS	1	120	0	1	127	2.041:5021 OAK LEAF DRIVE, BUFFALO, NY<GS>	Any printable 7-bit ascii character is allowed.
DOA	M	2.045	DATE OF ARREST	N	8	8	1	1	15	2.045:19950324<GS>	

Under the condition column: O = Optional; M = Mandatory; C = Conditional, see notes. Under the character type column: A = Alpha; B = Binary; N = Numeric; S = Special Characters

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

IDENTIFIER	CONDITION	FIELD 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 FIREARMS<GS>	Any printable 7-bit ascii character is allowed.
	O		DATE OF OFFENSE (DOO)	N	8	8	0	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>	Any printable 7-bit ascii character is allowed.
	O		COURT DISPOSITION DATE (CDD)	N	8	8	0	1			
	M		COURT OFFENSE LITERAL (COL)	ANS	1	300	1	1			
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 ascii character is allowed. First	ANS	1	300	0	1	307	2.055:RELEASED BY	Any printable 7-bit 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.
AND			ADDRESS							EAD O 2.039 EMPLOYER ANS 1 120 0 1 127 2.039:ACE CONSTRUCTION COMPANY,327 MAPLE AVE, BUFFALO,NY<GS>	2.039:ACE Any printable 7-bit ascii character is allowed.
OCP	O	2.040	OCCUPATION	ANS	1	50	0	1	57	2.040:PLUMBER<GS>	Any printable 7-bit ascii character is allowed.
RES	O	2.041	RESIDENCE OF PERSON FINGERPRINTED	ANS	1	120	0	1	127	2.041:5021 OAK LEAF DRIVE, BUFFALO, NY<GS>	Any printable 7-bit ascii character is allowed.
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	CNA	DEK	DEU	ERRT	FANC	FAUF	MAP	MPR	NFUF	SRE	SRT	TPFS	TPIS
2.001	LEN	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2.002	IDC	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2.005	RET	1	1	1[1]	1	1		1	1	1	1	1				
2.006	ATN	1	1		1	1	1	1	1	1	1	1	1	1	1	1
2.007	SCO	9	9		9	9	9	9	9	9	9	9	9	9	9	9
2.009	OCA	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2.014	FBI		5[5]	5[5]	5			5	5	5	5	5	1[8]			
2.015	SID		1[6]	1[6]	1			1			1	1		1		
2.016	SOC		4	4	4			4	4	4	4	4				
2.017	MNU	4	4	4	4	4	4	4[3]	4[3]	4	4	4				
2.018	NAM	1[4]	1	1	1	1[4]		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				
2.021	CTZ	1	1	1	1	1		1	1	1	1	1				
2.022	DOB	5[4]	5	5	5	5[4]		5	5	5	5	5				
2.024	SEX	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				
2.026	SMT	10	10	10	10	10		10	10	10	10	10				
2.027	HGT	1	1	1	1	1		1	1	1	1	1				
2.029	WGT	1	1	1	1	1		1	1	1	1	1				
2.031	EYE	1	1	1	1	1		1	1	1	1	1				
2.032	HAI	1	1	1	1	1		1	1	1	1	1				
2.034	PAT														1	1[7]
2.035	PPA		1	1												
2.036	PHT		1	1												
2.037	RFP							1	1	1		1				
2.038	DPR	1			1	1		1	1	1	1	1				
2.039	EAD		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
2.041	RES	1	1	1	1	1		1	1	1	1	1	1	1	1	1
2.042	MIL							1	1							
2.043	TSR							1				1				
2.045	DOA		1	1												
2.047	ASL		40[2]	40[2]												
2.048	CSR	1				1						1				
2.051	CSL		40	40												
2.054	SSD		1	1												
2.055	SLE		1[9]	1[9]												
2.056	ICO	1	1	1	1	1					1					
2.057	FNR														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				
2.070	RAP	1	1		1	1		1	1	1	1	1				

NOTE: Shaded cells represent optional element. 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	CNA	DEK	DEU	ERRT	FANC	FAUF	MAP	MPR	NFUF	SRE	SRT	TPFS	TPIS
2.071	ACN												1			
2.073	CRI	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
2.075	ERS												1			
2.084	AMP	9[7]	9[7]	9[7]	9[7]	9[7]		9[7]	9[7]	9[7]	9[7]	9[7]		9[2]		
2.085	CRN												1[8]			
2.087	TAA		1	1									1			
2.091	RCD1														1	1
2.092	RCD2														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 imp ression 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.

APPENDIX E

SUMMARY FIELD LISTS FOR LATENT TRANSACTIONS

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	
2.002	IDC	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	
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	
2.011	CIX	5	5	5	5	5	5	5	1	1	1	1	1	
2.012	LCN	1	1	1	1	1	1	1	[7] 1	[7] 1		[7] 1		
2.013	LCX	1	1	1	1	1	1	1	[7] 1	[7] 1		[7] 1		
2.014	FBI		1	1		[5] 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								
2.019	AKA		10	10		[6] 10								
2.020	POB	1	1	1		[5] 1			1	1	1			
2.021	CTZ		1	1		[6] 1								
2.022	DOB		5	5		[6] 5								
2.023	AGR	1							1	1	1			
2.024	SEX	1	1	1		[6] 1			1	1	1			
2.025	RAC	1	1	1		[6] 1			1	1	1			
2.026	SMT	10	10	10		[6] 10			10	10	10			
2.027	HGT		1	1		[6] 1								
2.028	HTR	1							1	1	1			
2.029	WGT		1	1		[6] 1								
2.030	WTR	1							1	1	1			
2.031	EYE	1	1	1		[6] 1			1	1	1			
2.032	HAI	1	1	1		[6] 1			1	1	1			
2.033	FPC					1								
2.034	PAT	1	1	1		[6] 1			1	1	1			
2.035	PPA		1			1								
2.036	PHT		1	1		1								
2.037	RFP		1											
2.038	DPR		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	[5] 40	40	[5] 40	[5] 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						
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	
2.074	FGP	[8] 10		1	[8] 10				[8] 10	[8] 10	10	99		[8]
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		
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 inludes CSL. CSL and ASL must be included where
     submission includes SLE.

APPENDIX F

IAFIS IMAGE QUALITY SPECIFICATIONS

APPENDIX F

IAFIS IMAGE QUALITY SPECIFICATIONS

1.0 SCOPE AND PURPOSE

These specifications apply to fingerprint scanner systems and printers that will supply fingerprint data to the Integrated Automated Fingerprint Identification System (IAFIS), and to printers and displays within the IAFIS. They provide objective criteria for insuring image quality.

Electronic images must be of sufficient quality to allow for: (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 without any banding, streaking or other visual defects. Finer detail such as pores and incipient ridges are needed since they can play an important role in the comparison. Additionally, the gray-scale dynamic range must be captured with sufficient depth to support image enhancement and restoration algorithms.

The image quality requirements have associated test procedures, which are described in the document *Test Procedures for Verifying IAFIS Scanner Image Quality Requirements.* These procedures will be used by the Government in acceptance testing to ensure compliance with the requirements, 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 to meet modulation transfer function specifications. A vendor may recommend alternate testing methods.

2.0 FINGERPRINT SCANNERS

The following subsections describe the image quality performance characteristics required for a fingerprint scanner (live scan and card scan). These specifications require that the scanner shall capture fingerprints at a minimum resolution in both the detector row and detector column directions (also known as 'along-scan' and 'cross-scan' directions) of 500 pixels/inch, plus or minus 5 pixels per inch. The final output delivered image from the scanner system shall have a resolution of 500 pixels/inch, plus or minus 5 pixels per inch, and each pixel shall be gray level quantized to 8 bits. [Requirement described in the ANSI standard: *Data Format for the Interchange of Fingerprint Information*, ANSI/NIST-CSL 1-1993.]

2.1 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   0.0007,   for 0   X   0.07

 D   0.01X,   for 0.07 X   1.50

 where: D, X, Y are in inches and D = Y - X

The requirement corresponds to a positional accuracy of ± 1% 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 geometric image accuracy shall be measured using precision 1 cycle per millimeter Ronchi targets on white Mylar reflective base manufactured by Applied Image, Inc.[4]

2.2 Modulation Transfer Function

 The measured modulation transfer function (MTF) of the scanner, in both the detector row and detector column directions, and over any region of the scanner's field of view, shall have modulation values which fall within the ranges given in the following MTF table, at the given spatial frequencies:

cyc/mm	MTF
1	.905 to 1.00
2	.797 to 1.00
3	.694 to 1.00
4	.598 to 1.00
5	.513 to 1.00
6	.437 to 1.00
8	.312 to 1.00
10	.200 to 1.00

The MTF shall be measured using test chart number M-13-60-1X manufactured by Sine Patterns, Inc.[5]. 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. These maximum and minimum levels represent the corresponding locally averaged image gray levels mapped through a calibration curve into target reflectance space, where the local average of gray levels is computed in a direction orthogonal to the sinusoidal variation direction. Sample image modulation is then defined as:

---

[4]Applied Image, 1653 East Main Street, Rochester, NY 14526, Phone (716) 482-0300

[5]Sine Patterns, 236 Henderson Drive, Penfield, NY 14526, Phone (716) 248-5338

(maximum - minimum) / (maximum + minimum)

The calibration curve is constructed by performing a least squares linear regression curve fit between the image gray levels of the 14 density patches in the test target and the corresponding target reflectance values. The scanner MTF at each frequency is then defined as:

MTF = representative image modulation / target modulation

[Target modulations and target density patch values are supplied with the test target by the manufacturer.]

2.3 Signal-to-Noise Ratio

Both the ratio of signal to white noise standard deviation and the ratio of signal to black noise standard deviation of the digital scanner shall be greater than or equal to 125 using the following procedure:

1) A random 0.25 inch x 0.25 inch test field within the image area is chosen and the white reference target, Munsell[6] N9-white matte, is placed in the test field.

2) A white test population of 8-bit reflectance values from at least 1000 samples within the test field are collected. The average value and standard deviation are computed from this test population.

3) Steps 1 and 2 are repeated for the black reference target, Munsell N3 - black matte.

4) The signal to noise ratio (SNR) is computed as the difference between average white and average black values, alternately divided by the white noise standard deviation ('white SNR') and the black noise standard deviation ('black SNR').

Note: The scanner shall be set up such that the white reference target is below scanner saturation level, and the black reference target is above scanner dark current level. Also, care should be taken, via direct visual or visual display observation, to avoid areas of dust, pinholes, scratches, or other imperfections on the target when selecting the sub-area for the 1000 samples.

---

[6] Munsell-Macbeth, P.O. Box 230, Newburgh, NY 12551, Phone (914) 565-7660

2.4 Gray-Scale Range of Image Data
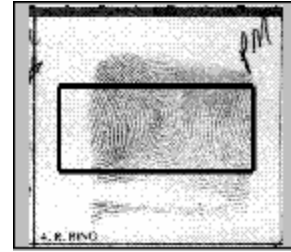
At least 80% of the captured individual fingerprint images shall have a gray-scale dynamic range of at least 200 gray levels and at least 99% shall have a dynamic range of at least 128 gray levels. For this requirements section, 'dynamic range' is defined as the total number of gray levels that have 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 (dashed box at right). Compliance with these dynamic range requirements shall be verified using a stratified sample of fingerprint cards assembled by the Government.
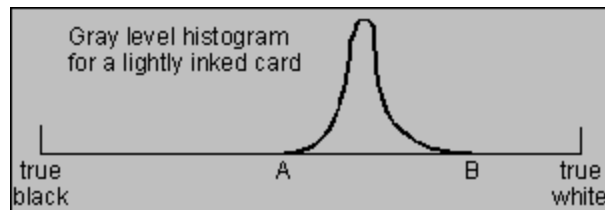
The intent is to avoid excessively low contrast images. Live-scan systems and card scanners at a booking station can control dynamic range by rolling the prints properly. However, with central site or file conversion systems, where a variety of card types and image qualities are encountered, adaptive processing may be necessary. The 8-bit quantization of the gray-scale values for very low contrast fingerprints needs to more optimally represent the reduced gray-scale range of such fingerprints. In the example histogram accompanying this section, the gray-scale values divide up the range from A to B. The parameters A and B are stored with the image to provide an audit trail.

2.5 Gray-scale Linearity

Using the 14 gray patches in the Sine Patterns, Inc. test target M-13-60-1X as the scanner input (independent variable), with their manufacture-supplied reflectance values, none of the corresponding 14 scanner output gray levels (dependent variable) shall deviate by more than 7.65 gray levels from a linear, least squares regression line fitted between the two variables. The output sample values within an area of at least 0.25 x 0.25 inches shall be utilized to compute the average output gray level for each patch.

2.6 Output Gray Level Uniformity

Output gray level uniformity shall be determined by scanning both a white reference target, Munsell N9 - white matte, and a black reference target, Munsell N3 - black matte. The scanner shall be set up such that the white reference target is below scanner saturation level, and the black reference target is above scanner dark current level in the respective tests.
Using the white target as the scanner input, the following three requirements shall be met:

(1)   The outputs of any two adjacent rows or columns of length 9 pixels or greater shall not have mean gray levels that differ by more than 2.5 gray levels.

(2)   For all pixels within a 0.25 inch x 0.25 inch area ('quarter inch area') located in any region of the total scanner field of view, no individual pixel's gray level shall vary from the mean gray level by more than 22.0 gray levels.

(3)   For any two non-contiguous quarter inch areas located anywhere in the total scanner field of view, the mean gray levels of the two quarter inch areas shall not differ by more than 12.0 gray levels.

And, using the black target as the scanner input, the following three requirements shall be met:

(1)   The outputs of any two adjacent rows or columns of length 9 pixels or greater shall not have mean gray levels that differ by more than 1.0 gray levels.

(2)   For all pixels within a 0.25 inch x 0.25 inch area ('quarter inch area') located in any region of the total scanner field of view, no individual pixel's gray level shall vary from the mean gray level by more than 8.0 gray levels.

(3)   For any two non-contiguous quarter inch areas located anywhere in the total scanner field of view, the mean gray levels of the two quarter inch areas shall not differ by more than 3.0 gray levels.

3.0 LATENT PRINT SCANNERS

The following subsections describe the image quality performance characteristics required for a latent print scanner operating in a 1000 pixels/inch mode. These specifications require that the scanner shall capture fingerprints at a minimum resolution in both the detector row and detector column directions (also known as 'along-scan' and 'cross-scan' directions) of 1000 pixels/inch. The final output delivered image from the scanner system (at the 1000 ppi setting) shall have a resolution of 1000 pixels/inch, plus or minus 10 pixels per inch, and each pixel shall be gray level quantized to a minimum of 8 bits. The complete latent print specification consists of all requirements given in this Section, plus all non-conflicting requirements given in Section 2.0 Fingerprint Scanners.

3.1 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:

$$D \le 0.0005, \quad \text{for } 0 \le X \le 0.07$$

$$D \le 0.0071X, \quad \text{for } 0.07 \le X \le 1.50$$

where: D, X, Y are in inches and $D = |Y - X|$

The requirement corresponds to a positional accuracy of $\pm .71\%$ for distances between 0.07 and 1.5 inches, and a constant ± 0.0005 inches (½ pixel) for distances less than or equal to 0.07 inches. The geometric image accuracy shall be measured using precision 1 cycle per millimeter Ronchi targets on white Mylar reflective base manufactured by Applied Image, Inc.[7]

3.2 Modulation Transfer Function

The measured modulation transfer function (MTF) of the scanner, in both the detector row and detector column directions, and over any region of the scanner's field of view, shall have modulation values which fall within the ranges given in the following MTF table, at the given spatial frequencies:

cyc/mm	MTF
1	0.925 to 1.00
2	0.856 to 1.00
3	0.791 to 1.00
4	0.732 to 1.00
5	0.677 to 1.00
6	0.626 to 1.00
8	0.536 to 1.00

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[7]Applied Image, 1653 East Main Street, Rochester, NY 14526, Phone (716) 482-0300

10	0.458 to 1.00
12	0.392 to 1.00
14	0.336 to 1.00
16	0.287 to 1.00
18	0.246 to 1.00
20	0.210 to 1.00

The MTF shall be measured using test chart number M-13-60-1X manufactured by Sine Patterns, Inc.[8]. 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. These maximum and minimum levels represent the corresponding locally averaged image gray levels mapped through a calibration curve into target reflectance space, where the local average of gray levels is computed in a direction orthogonal to the sinusoidal variation direction. Sample image modulation is then defined as:

$$(maximum - minimum) / (maximum + minimum)$$

The calibration curve is constructed by performing a least squares linear regression curve fit between the image gray levels of the 14 density patches in the test target and the corresponding target reflectance values. The scanner MTF at each frequency is then defined as:

$$MTF = representative\ image\ modulation\ /\ target\ modulation$$

[Target modulations and target density patch values are supplied with the test target by the manufacturer.]

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[8]Sine Patterns, 236 Henderson Drive, Penfield, NY 14526, Phone (716) 248-5338

4.0 IAFIS DISPLAY SPECIFICATIONS

Two types of displays are required. One is for the ten-print examiner and document processing. The other is for the latent examiner.

4.1 Ten-print / Document Processing Display

The ten-print/document processing display shall meet the following performance levels:

Parameter	Value	Comments
Colors	256	8 bits/pixel
Number of addressable pixels	1280 x 1024	
Pixel size	0.28 mm (max)	width at 50% amplitude at center of display
Active display area	14" x 10.5" (min)	Landscape mode
Display refresh	at least 72 Hz noninterlaced	Minimizes flickerrate
Video bandwidth	at least 100 MHz	
Luminance	33 fL (min)	of white area
Video pulse rise & fall time	3 nanosec. (max)	ensures no visible smearing
Geometric pixel location error	±1.5% (max)	No point varies more then 1.5% from its correct position
Operator controls	brightness, contrast	on front panel
Brightness Uniformity	±15% of mean deviation (max)	over entire display at low, medium and high brightness

4.2 Latent Print Comparison Display

 The other display is for use by the FBI's latent fingerprint examiners. Because this display will be used to support latent fingerprint comparisons, the resolution and brightness (luminance) requirements are higher. The display shall be a monochrome cathode ray tube display, which shall meet the following performance levels:

Parameter	Value	Comments
Gray levels	8 bits/pixel @ CRT video input	
Number of addressable pixels	1600 x 1200	
Pixel size	0.19 mm (max)	width at 50% amplitude at center of display
Active display area	14" x 10.5" (min)	Landscape mode
Display refresh rate	at least 72 Hz noninterlaced	Minimizes flicker
Video bandwidth	at least 100 MHz	
Luminance	50 fL (min)	of white area
Video pulse rise & fall time	3 nanosec. (max)	ensures no visible smearing
Geometric pixel location error	±1.5% (max)	No point varies more then 1.5% from its correct position
Operator controls	brightness, contrast	on front panel
Brightness Uniformity	±15% of mean deviation (max)	over entire display at low, medium and high brightness

 The ambient lighting in the work area is expected to be a combination of natural and fluorescent lighting.

5.0 PRINTER SPECIFICATIONS

The fingerprint examiners in the IAFIS environment will depend upon softcopy images to make comparisons and will require hardcopy images in certain instances. Some contributors will print cards from live scan or card scan devices for submission to the FBI. In all such cases the images will be mapped from their digital form to high resolution printing devices. The printed images must be of sufficient quality to support all phases of identification, including conclusive fingerprint comparisons (identification or non-identification decision).

Two classes of printing devices are required. The first is intended to support fingerprint card reproduction. These printers will be used within the IAFIS environment and by submitters who choose to print and mail their live scan results. The printers should provide high throughput, low-cost-per-copy, non-fading output. This monochrome printer shall perform at the following minimum levels:

Gray levels	16
Paper size	8" x 8" (min)
Resolution	500 dots/inch (min.), where each pixel is capable of producing 16 gray levels

A second class of printer is required to support the investigative fingerprint comparison function. Continuous tone monochrome output is required. This printer shall perform at the following minimum levels:

Gray levels	8-bit continuous-tone gray-scale
Paper	Production of output paper print shall not require liquid processing
Paper size	8" x 11"
Resolution	At least 500 pixels per inch, where each pixel is capable of producing 256 gray levels from an 8 bits/pixel input

APPENDIX G

INTERIM IAFIS IMAGE QUALITY SPECIFICATIONS FOR SCANNERS

APPENDIX G

INTERIM IAFIS IMAGE QUALITY SPECIFICATIONS FOR SCANNERS

 These specifications are for the purpose of accrediting current live- and card-scan equipment integrated into automated booking stations. The complete Interim IAFIS Image Quality Specification consists of all requirements given in this document, plus all non-conflicting requirements given in the full IAFIS Image Quality Specification, Appendix F, of the "Electronic Fingerprint Transmission Specification."

IQS 2.1 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   0.001,   for 0   X   0.07

 D   0.015X,   for 0.07   X   1.50

 where: D, X, Y are in inches and D = Y - X

The requirement corresponds to a positional accuracy of $\pm$ 1.5% for distances between 0.07 and 1.5 inches, and a constant $\pm$ 0.001 inches (½ pixel) for distances less than or equal to 0.07 inches.

IQS 2.2 Modulation Transfer Function

cyc/mm	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 test chart number M-13-60-1X manufactured by Sine Patterns, Inc., or by using any other suitable sine wave or square wave target. If using the M-13-60-1X target, the calibration curve is constructed by performing a least squares linear regression curve fit between the image gray levels of the useful density patches in the test target and the corresponding density patch values on the target.

IQS 2.3 Signal-to-Noise Ratio - no change.

IQS 2.4 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 requirements section, '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.

IQS 2.5 Gray-scale Linearity - no change.

IQS 2.6 Output Gray Level Uniformity - no change.

APPENDIX H

DESCRIPTORS AND FIELD EDIT SPECIFICATIONS
FOR TYPE-7 LOGICAL RECORDS

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 5 of the standard "Data Format for the Interchange of Fingerprint Information", ANSI/NIST-CSL 1-1993. The number shall be entered as a binary number, right justified and left zero filled withing 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 number 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 4, 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

APPENDIX I

LOGICAL RECORD LAYOUT FOR TYPE-2 (IMAGE) RECORDS

TABLE I-1.   FIELD LIST FOR IMAGE REQUEST (IRQ) 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	2.001:125<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 perio d 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 IDENT IFIER	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

APPENDIX J

DESCRIPTORS AND FIELD EDIT SPECIFICATIONS
FOR TYPE-9 LOGICAL RECORDS

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
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 Information" Table 7, "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>04650 433<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>XXXXYYY Y <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 MIN.	MAX.	OCCURRENCES MIN.	MAX.	MAXUMUM NUMBER OF BYTES INCLUDING CHARACTER SEPARATORS AND FIELD NUMBER	EXAMPLE DATA	SPECIAL CHARACTERS ALLOWED
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 MIN.	MAX.	OCCURRENCES MIN.	MAX.	MAXUMUM NUMBER OF BYTES INCLUDING CHARACTER SEPARATORS AND FIELD NUMBER	EXAMPLE DATA	SPECIAL CHARACTERS ALLOWED
COF	O	9.019	COORDINATE OFFSETS				0	1	51	9.019:01230444<US>0465 0433<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		ROT ATION 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 + <GS> + "9.002:" + IDC + <GS> + "9.003:" + IMP + <GS> + "9.004:" + FMT + (<GS> + "9.013:" + AFV) + <GS> + "9.014:" + FGN + <GS> +"9.015:" + NMN + <GS> + "9.016:" + FCP + (<GS> + "9.017:" + APC) + (<GS> + "9.019:" + COF) + <GS> + "9.021:" + CRA + <GS> + "9.022:" + DLA + <GS> + "9.023:" + MAT + (<GS> + "9.024:" + CHQ) + (<GS> + "9.025:" + CLQ) + <FS> The Type-9 in Table J-2 defines the ANSI standard logical record sequence for a remote native mode latent search request."9.001:" + LEN + <GS> + "9.002:" + IDC + <GS> + "9.003:" + IMP + <GS> + "9.004:" + FMT + (<GS> + "9.013:" + AFV) + <GS> + "9.014:" + FGN + <GS> +"9.015:" + NMN + <GS> + "9.016:" + FCP + (<GS> + "9.017:" + APC) + (<GS> + "9.018:" + ROV) + (<GS> + "9.019:" + COF) + <GS> + "9.020:" + ORN + <GS> + "9.021:" + CRA + <GS> + "9.022:" + DLA + <GS> + "9.023:" + MAT + <FS>

8. This field is optional if the feature vector, field 9.013, has been provided. " \f D

APPENDIX K

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

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-CSL 1 1993 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 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, 19960229 represents February 29, 1996. The complete date must be a legitimate date and shall not exceed the current date.

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

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	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] contain s 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: fin gers 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.

ACRONYMS

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
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
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