



# **TENNESSEE BUREAU OF INVESTIGATION**

## *Forensic Services Division*

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### **CODIS Standard Operating Procedures Manual**

#### **5.0 - Profile Management**

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#### **5.0 – PROFILE MANAGEMENT**

- 5.1 DNA analysis results may be entered into CODIS manually via the STR data entry module or by the CODIS import function. The latter version of DNA data input must be in the Common Message Format (CMF).
- 5.2 DNA data entry into NDIS/SDIS/LDIS is allowed for numerous types of specimens. For forensic unknown profiles, mixture profiles and partial profiles involving possible elimination standards that have not been received by the laboratory, the analyst shall request and document the request for standards prior to technical review, upload, and searching of a profile in CODIS. This request may be in the form of a phone call, email, official TBI report, or an outsource vendor lab report. The request shall be made prior to technical review, upload, and searching of profiles in SDIS and/or NDIS. To meet eligibility requirements prior to upload to and search of a profile in SDIS and/or NDIS, an analyst must place documentation in the case file of the following three criteria in the case file: (1) A crime has been committed; (2) The DNA sample was recovered directly from the crime scene and is attributed to the putative perpetrator; and (3) Elimination sample(s) have been requested, if applicable. The technical reviewer shall verify the eligibility criteria prior to upload or searching of the profile.
- When elimination standards are received and do match to the forensic profile, the forensic profile shall be removed from CODIS and its deletion shall be captured in an official TBI report.

##### 5.2.1 Forensic Unknown profiles:

- 5.2.1.1 A biological sample originating from a single source (or may be a fully deduced profile originating from a mixture) associated with a crime/crime scene and whose DNA source is attributable to a putative perpetrator. These are not reference samples from known individuals, such as from victims, suspects, and offenders.
- 5.2.1.2 The Forensic Unknown specimen category in the CODIS software is stored in the Forensic Index and contains results for all 13 original CODIS Core Loci.

##### 5.2.2 Forensic Mixture profiles:

- 5.2.2.1 A biological sample associated with a crime/crime scene that contains DNA contributed from more than one source

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attributable to a putative perpetrator(s). Forensic mixture profiles eligible for upload to NDIS must contain at least eight (8) of the 13 original core loci, and may contain at least one locus having three (but no more than 5) alleles. Forensic mixture profiles that cannot be easily resolved as belonging to a victim and an unknown contributor may be entered containing alleles possibly belonging to the victim. Alleles within a mixture that can be unambiguously attributed to a victim or other non-probative individuals (those requiring an elimination standard) shall not be entered.

5.2.2.2 Forensic mixtures may be entered into the Forensic Mixture Category. However, before any profile is entered, the **Moderate Match Estimation (MME)** must meet the NDIS requirement.

5.2.2.2.1 For upload to NDIS, only alleles from the 13 original core loci will be used in the MME calculation. NDIS requirement is that a profile meet the minimum threshold of 10,000,000 (1.000E+007). Any profiles not meeting this threshold will be rejected at NDIS with a rejection code of "me."

5.2.2.2.2 For upload to SDIS only (**Not for NDIS Upload**), the MME threshold is set at 50 (5.000E+001), with a minimum of five (5) loci for the entered profile with three (3) of the 13 original core loci. Please note that any loci containing obligate alleles or loci with the partial locus indicator selected as yes, will be searched as if they are a homozygous allele during the weekly high stringency search. Because of this, it is recommended that profiles containing less than eight (8) loci, which is the minimum for the weekly moderate stringency search, contain at least four (4) loci without obligates or a partial locus since one mismatch is allowed in the high stringency search. Any profiles found to have a large number of adventitious matches will be requested to be removed from CODIS.

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- 5.2.2.2.3 During entry of a forensic mixture profile, the MME will appear on the specimen detail report when printed. It can also be copied and pasted into the specimen comments box or captured using the print screen function to print out a copy of the computer screen to include in the casefile.
- 5.2.2.2.4 An analyst may be asked to delete a sample from NDIS, SDIS, or LDIS if numerous adventitious matches are obtained from a Moderate search.
- 5.2.2.3 Mixture profiles entered into CODIS may make use of the required allele function within CODIS, which is designated by a plus (+) following the allele. This is helpful in reducing ambiguous matches to the mixture since searching the profile within CODIS will only return results containing the required allele at the designated locus. Only one designated allele per locus is allowed and this function should be used sparingly.
- 5.2.2.4 Caution must be utilized when determining which alleles should be entered into CODIS from more complicated mixtures. However, a DNA analyst may use his/her discretion when entering multiple profiles from complicated mixtures. All alleles from mixture profiles entered into CODIS must be interpretable.
- 5.2.2.5 Profiles that do not qualify for Forensic Mixture because the MME is below the threshold of 10,000,000 (1.000E+007) may qualify for **Forensic Targeted**.
- 5.2.2.5.1 The profile must have eight (8) original core loci.
- 5.2.2.5.2 Any locus that exhibits allelic dropout must be marked with the partial locus indicator.

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- 5.2.2.5.3 Any locus that has an obligate allele designation (“+”) must be marked with the partial locus indicator. This is due to the search parameters NDIS uses when searching profiles in the Forensic Targeted categories.
- 5.2.2.5.4 The calculated MRE threshold will be 10,000,000 (1.000E+007) or greater.
- 5.2.2.5.5 Profiles that meet the requirements for entry into Forensic Targeted will be uploaded to NDIS and searched according to NDIS search configurations for the Forensic Targeted index. Any locus with more than 2 alleles will be searched at moderate stringency at the NDIS level.

#### 5.2.3 Forensic Partial profiles:

- 5.2.3.1 A biological sample originating from a single source (or may be a deduced profile originating from a mixture) attributable to the putative perpetrator with either locus or allelic dropout at any of the 13 original core loci. These profiles reside in the Forensic Partial specimen category in the CODIS software, which is located in the Forensic Partial Index. Forensic Partial profiles contain at least eight (8) original core loci with no more than one locus of the profile containing three (3) alleles (to allow for the possibility of a tri-allele).
- 5.2.3.2 Forensic partial profiles are to be entered into the Forensic Partial Category. However, before any profile is entered, the **Moderate Match Estimation (MME)** must meet the NDIS requirement.
  - 5.2.3.2.1 For upload to NDIS, only alleles from the 13 original core loci will be used in the MME calculation. The NDIS requirement is that a profile meet the minimum threshold of 10,000,000 (1.000E+007). Any profiles not meeting this threshold will be rejected at NDIS with a rejection code of “me.”

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- 5.2.3.2.2 For upload to SDIS only (**Not for NDIS Upload**), the MME threshold is set at 50 (5.000E+001), with a minimum of five (5) loci for the entered profile with three (3) original core loci. Please note that any loci containing obligate alleles or loci with the partial locus indicator selected as yes, will be searched as if they are a homozygous allele during the weekly high stringency search. Because of this, it is recommended that profiles containing less than eight (8) loci, which is the minimum for the weekly moderate stringency search, contain at least four (4) loci without obligates or a partial locus since one mismatch is allowed in the high stringency search. Any profiles found to have a large number of adventitious matches may be requested to be removed from CODIS.
- 5.2.3.2.3 During entry of a forensic partial profile, the MME will appear on the specimen detail report when printed. It can also be copied and pasted into the specimen comments box or captured using the print screen function to print out a copy of the computer screen to include in the casefile.
- 5.2.3.2.4 An analyst may be asked to delete a sample from NDIS, SDIS, or LDIS if numerous adventitious matches are obtained from a Moderate search.
- 5.2.3.3 Partial profiles entered into CODIS should be marked as a partial profile using the yes/no selection located above the MME field on the STR/Y-STR Data Entry page. These profiles should also make use of the partial locus indicator function within the allele entry field when being entered into CODIS. The partial locus indicator is a yes/no pull down selection for each locus which is made in the "Partial Profile" column in the STR/Y-STR Data Entry page. The partial



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locus indicator allows the casework analyst and the LDIS, SDIS, and NDIS labs to better evaluate partial profile matches based on the profiles contained.

5.2.3.4 Profiles that do not qualify for Forensic Partial because the MME is below the threshold of 10,000,000 (1.000E+007) may qualify for **Forensic Targeted**.

5.2.3.4.1 The profile must have eight (8) original core loci.

5.2.3.4.2 Any locus that exhibits allelic dropout must be marked with the partial locus indicator.

5.2.3.4.3 The calculated MRE threshold will be 10,000,000 (1.000E+007) or greater.

5.2.3.4.4 Profiles that meet the requirements for entry into Forensic Targeted will be uploaded to NDIS and searched according to NDIS search configurations for the Forensic Targeted index.

5.2.4 Y STR profiles:

5.2.4.1 Y STR profiles will generally not be entered into the CODIS database except with approval of a CODIS administrator. If an autosomal STR profile exists for the forensic specimen, the Y STR profile will be added under the existing specimen category. If no autosomal profile exists, the Y STR profile will be entered under the Y STR specimen category. If an autosomal STR profile is later developed from the evidence that can be associated with the Y STR profile, the relevant alleles should be added and the specimen category changed to the appropriate specimen category for the autosomal STR profile. No established autosearch for Y STR profiles has been established at this time due to insufficient database size. Y STR profiles associated with "unknown" specimens that were not matched to a subject should be keyboard searched against the Lab/Staff database prior to entry. To search, open the Identity Search Configuration window, deselect STR, select Y-STR and change the Minimum # of Loci Required to Report a Match to 20. The results of this



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keyboard search should be printed and retained. When exiting Searcher, do not save the changes to the Search Configuration Default.

- 5.2.5 Unidentified Human (Remains) profiles may be entered and uploaded to NDIS using one (1) original core loci plus amelogenin. For a profile to be used in an identity search at the NDIS level, seven (7) of the original core loci plus amelogenin are required. Only fully designated loci (those for which there is no ambiguity regarding the number of alleles) should be entered for these profiles.
  - 5.2.6 Missing Person or Deduced Missing Person profiles may be uploaded to NDIS. Seven (7) of the original core loci plus amelogenin is required for upload to CODIS. Profiles from Close Relatives of the missing person may also be entered. All 20 core loci plus amelogenin are required for Relatives of Missing Persons and Spouses to be uploaded to CODIS. Only fully designated loci (those for which there is no ambiguity regarding the number of alleles) should be entered for these profiles.
  - 5.2.7 Convicted offender, sex offender registry, and arrestee profiles. All 20 core loci must be attempted for upload to CODIS.
  - 5.2.8 A subject's known standard submitted in a case for comparison may be entered into the Suspect index, if the sample was given by the issuance of a search warrant or court order and a copy of said warrant/order accompanies the submitted sample. The subject's known profile may not be uploaded beyond SDIS.
  - 5.2.9 Profile(s) from a case that is past the crime's statute of limitations may be entered into CODIS if it meets the acceptability standards.
- 5.3 DNA data entry into SDIS/LDIS is not allowed for the following types of specimens:
- 5.3.1 Victim standards.
  - 5.3.2 Elimination standards.
  - 5.3.3 Subject profile from evidence that has a direct link to the subject (e.g. subject blood on subject's clothing).

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#### 5.4 Data Entry Format

##### 5.4.1 Specimen Category

Choose the appropriate category for the specific sample. All unreviewed samples (those not yet subject to technical review) shall be designated as “Unreviewed Forensic” until a full technical review has been completed. Refer to section 5.2 for a description of each Specimen Category.

##### 5.4.2 Specimen ID

Cannot be longer than twenty-four (24) alpha-numeric characters.

5.4.2.1 For TBI casework specimens, utilize the case and exhibit number (e.g. 0810004321-14a). For cases involving sperm/semen, “S” may be utilized to designate the sperm fraction (e.g. 0810004321-14aS). For unsolved cases, the Source ID is defaulted as “NO”. If the profile entered into the database is solved before the date of entry into CODIS, the Source ID function will be selected as “YES”. For solved cases, the specimen ID may begin with “S” (e.g. S0810004321-14aS) at analyst’s discretion.

5.4.2.2 For convicted offender samples, the unique database number format Dxx-xxxxx is utilized. The Source ID function is selected as “Yes” for these types of samples.

5.4.2.3 For arrestee samples, the unique database number format Axx-xxxxx is utilized. The Source ID function is selected as “Yes” for these types of samples.

5.4.2.4 For TBI missing person cases, the unique database number format MPxx-xxxx is utilized to designate relatives of missing person samples.

5.4.2.5 For TBI lab/staff profiles, a unique database number format will be used. LAB-xxx is used for laboratory/contract employees, SA-xxx is used for criminal investigators/Special Agents, CONTRACT-xxx is used for TBI contract employees, DEA-xxx is used for on-site DEA lab personnel, FAM-xxx is used for lab family members, INTERN-xxx is used for TBI lab interns, SUPPORT-xxx is used for support personnel such as technicians/administrative assistants, Jan-xxx is used for janitorial/maintenance employees, and



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Serv-xxx is used for service technicians. Additional profiles from possible contamination sources, such as profiles sent from vendor laboratories, and profiles that could not be tracked to the source of contamination will be recorded as CONTAM-xxx. The database recording the identity of all the above listed profiles will be maintained by the CODIS administer (or designee) and stored in folder on the G drive accessible only by CODIS personnel.

- 5.4.2.6 For forensic samples worked by a vendor laboratory to be entered into CODIS by TBI, a combination of TBI laboratory and vendor laboratory case numbers should be used. For sample naming purposes, the TBI lab number will precede the vendor lab case number. An example of this format is 151001234(VL15-0000-01). Please note that the Specimen ID for CODIS entry cannot exceed 24 characters.
- 5.4.2.7 **NON-TBI FUNDED ANALYSIS:** Specimen IDs for forensic samples worked by a vendor lab under funding from an outside agency must be entered into CODIS using a two letter prefix to designate the sample as arising from an outside funding source. Specimen IDs for samples worked under the DANY National Rape Kit Backlog Reduction Program, but administered by the TBI, will begin with the letters NY, followed by the TBI laboratory case number. As the Specimen ID field is limited to 24 characters, the vendor lab case number/exhibit number will be entered into the Case ID field of the STR/Y-STR Data Entry page. Additional samples worked by vendor labs using funding from outside agencies will be given a different unique two letter code for each funding source. Each unique two letter designator will be distributed to all analysts for use prior to entry of any specimens.
- 5.4.3 An off-ladder designation (OL) may not be entered as part of the profile. If a numerical value can be assigned to the OL allele, then that value may be used as part of the profile. If an allele from a particular STR locus rests above the largest peak or falls below the smallest peak of the ladder, the allele will be designated as either greater than (>) or less than (<), respectively.
- 5.4.4 A case may not have more than one sample with the same DNA profile entered into SDIS/LDIS. For example, if four bloodstains located on a

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piece of evidence in a case yield the same profile or a DNA profile was obtained from multiple pieces of evidence in a case, only one profile shall be entered into SDIS/LDIS. The sample with the largest number of core loci above threshold shall be the profile entered.

5.4.5 The “Assigned To” section should reflect the analyst’s name that worked the case.

#### 5.5 Short Tandem Repeat (STR) data entry

5.5.1 For all STR data entry on TBI cases, the electropherogram will be used to enter forensic casework profiles into CODIS. The alleles and/or designations of a profile for CODIS entry will be indicated on the electropherogram. The analyst will enter only Reading #1. Reading #2, which is a clerical check, will be entered by an individual other than the casework analyst. After entering Reading #2, the second reader will then record his/her initials and date on the electropherogram used for CODIS entry.

5.5.2 Procedures for determining accurate STR typing results are detailed in the TBI Forensic Biology STR Typing Protocol.

5.5.3 DNA profiles entered into CODIS must be associated with a DNA Analyst that has been previously approved as a CODIS user by the FBI.

5.5.4 TBI Laboratory reports that contain STR results that will be uploaded to NDIS shall include a statement that indicates that this information has been added to the CODIS system (see section 5.7).

5.5.5 Casework STR profiles entered into SDIS and subsequently uploaded to NDIS must have eight (8) of the 13 original core loci and all 20 core loci shall have been attempted and the profile must meet the MME threshold of 10,000,000 (1.000E+007). Specimens not adhering to these requirements must either be entered under the specimen category **Not for NDIS Upload** or may qualify for **Forensic Targeted**. **Not for NDIS** specimens may be uploaded to SDIS, but will not be transmitted to NDIS.

5.5.6 Casework STR profiles entered into LDIS for searching purposes should not be uploaded to SDIS unless the minimum number of loci and MME to allow the profile to be searched at SDIS are met.



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#### **5.6 NDIS eligibility**

The DNA data acceptable at NDIS must be reviewed yearly. As of January 2008, the annual review will be conducted as a training module through the CODIS website on the CJIS-SEN. Profile eligibility must be associated with a crime/crime scene. If the TBI submittal form does not have complete and clear information concerning the association of a piece of evidence to a particular crime/crime scene, the analyst shall gain more information from the investigating officer/agency in order to determine profile eligibility. Additionally, this information shall be maintained in the case file.

#### **5.7 Results statements for TBI Reports concerning CODIS entries**

These statements may be modified as needed to reflect the appropriate specimen category, i.e. forensic unknown, forensic mixture, forensic partial, missing person, unidentified human remains.

5.7.1 This unknown DNA profile will be added to the State and National CODIS databases and the search results will be issued in a separate report.

5.7.2 This DNA profile will be added to the State and National CODIS databases. This profile will remain in the databases and searched weekly. You will be notified in the event of a future investigative lead.

5.7.3 This unknown, partial DNA profile will be added to the State CODIS database. It is not eligible for addition to the National database. The search results will be issued in a separate report.

5.7.4 This partial DNA profile will be added to the State CODIS database and will remain in the State database and searched weekly. This partial DNA profile is not eligible for addition to the National database. You will be notified in the event of a future investigative lead.

5.7.5 This unknown DNA profile was searched in the State and National CODIS databases and no matches were detected as of this report date. This profile will remain in the databases and searched weekly. You will be notified in the event of a future investigative lead.

5.7.6 This unknown DNA profile was searched against the State CODIS database and no matches were detected as of this report date. A search of the National CODIS database is pending. The results from this national search will be provided in a separate report. Additionally, this profile will

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remain in the databases and searched weekly. You will be notified in the event of a future investigative lead.

- 5.7.7 This unknown, partial DNA profile was searched against the State CODIS database and no matches were detected as of this report date. Additionally, this profile will remain in the State database and searched weekly. This partial DNA profile is not eligible for addition to the National database. You will be notified in the event of a future investigative lead.
- 5.7.8 This unknown DNA profile was searched against the CODIS database and a match was detected. The information being provided is an investigative lead only. In order to confirm this, a blood or buccal sample from (Name) (DOB) must be submitted for DNA testing.
- 5.7.9 The DNA profile previously obtained from this exhibit has been removed from the CODIS database. This profile does not meet the current CODIS eligibility requirements.
- 5.7.10 The DNA profile previously obtained from this exhibit has been removed from the CODIS database after comparison to the elimination standard noted above.
- 5.7.11 This DNA profile is not eligible for entry into the CODIS database.
- 5.7.12 During a search of the CODIS databases, an association was made to Lab # (agency/case#/officer). For additional information, contact the undersigned analyst.
- 5.7.13 During a search of the CODIS databases, an association was made to Lab #. The information being provided is an investigative lead only. In order to confirm this, a blood or buccal sample from (Name) (DOB) must be submitted for DNA testing.
- 5.8 If it becomes necessary to delete an evidence profile from CODIS, the investigating officer or agency must be informed via an official TBI report.
- 5.9 Casework profiles offered to SDIS by the Metro Nashville PD (MNP) crime lab will be subject to their own policies and procedures and NDIS policies and procedures. TBI will maintain casework profiles for MNP) at the SDIS level.