APPENDIX F

Common Message Format for CODIS

U.S. Department of Justice
Federal Bureau of Investigation

CODIS
Interface Specification (CMF 2.5)

For

Contract Laboratories

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U.S. Department of Justice
Federal Bureau of Investigation
Washington, DC 20535

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1 Overview

This specification describes the interface between the CODIS and external systems. This specification consists of the following sections:

- **Common Message Format –** summarizes the components of the CODIS Interface Specification Common Message Format (CMF).
- **Implementation –** describes the CODIS Interface Specification implementation for PCR-based DNA typing.
- **Appendix A-Example CMF file for PCR Specimens.**
- **Appendix B-Import XML DTD file –** defines the valid XML structure for a CMF file.
- **Appendix C-Cascade Style Sheet –** defines the manner in which a browser will display a CMF file.
- **Appendix D – Kit Information** – defines the currently available kits, the loci for those kits, and the accepted allele values for each locus.

Questions regarding this document and requests for an electronic copy of this document and all style sheets, etc. should be referred to Mr. Jin Kang, SAIC, 703.394.4252.

Important Note: The CMF 2.5 format is a subset of the CMF 2.0 format. The CMF 2.5 format is specifically designed for the contract labs participating in the NIJ program. CMF 2.0 files do not need to be modified.

2 Common Message Format

The CODIS Interface Specification uses a Common Message Format (CMF) to enable the exchange of data between CODIS and external systems. The CMF defines the packaging of information for import into CODIS and is based on the Extensible Markup Language (XML) industry standard.

There are two types of CMF Packets: batch and user. A CMF message has the following general format:

CMF Header
CMF Packet
CMF Packet
•
•
•

2.1 CMF Header

The CMF Header contains the following information:

- CMF Header Version.
- CMF Message Type.
- Source Laboratory Name.
- Destination Laboratory ORI.
- Creation Date/Time.

2.2 CMF Packet

CMF packets have the following characteristics:

- Packet Type.

- Packet Version.
- Packet Data.

The Packet Version indicates the version of the Packet Data portion of the CMF file.

2.3 CMF Data Types and Formats

CMF files are described using consistent data types and formats.

2.3.1 Data Types

Data types refered to in this document are defined by the SQL Server 6.5 data type definitions:

- int – Is a datatype that holds whole numbers from -2 (31) (-2,147,483,648) through 2 (31) - 1 (2,147,483,647). Storage size is 4 bytes.
- smallint – Is a datatype that holds whole numbers from -2 (15) (-32,768) through 2 (15) - 1 (32,767). Storage size is 2 bytes.
- float(n) – Is a datatype that holds real numbers where n is the units of precision. The range of values is approximately from 3.4E - 38 through 3.4E + 38. In all instances where float is used within this document, n equals 1. Storage size is 4 bytes.
- bit – Is a datatype that holds either 1 or 0. Integer values other than 1 or 0 are accepted but are always interpreted as 1. Storage size is 1 byte.
- smalldatetime – Is a date and time datatype. This parameter's storage size is 4 bytes, consisting of one small integer for the number of days after January 1, 1900, and one small integer for the number of minutes past midnight. Data values for smalldatetime range from January 1, 1900, through June 6, 2079, with accuracy to the minute.

2.3.2 Date Formats

Date formats referred to in this document follow the Visual Basic 5.0 format notation conventions. All times are based on a 24-hour clock.

- dd Display the day as a number with a leading zero (01 – 31).
- mmm Display the month as an abbreviation (Jan – Dec).
- yyyy Display the year as a 4-digit number (100 – 9999).
- hh Display the hour as a number with leading zeros (00 – 23).
- nn Display the minute as a number with leading zeros (00 – 59).

3 Implementation

3.1 File Format

The CMF file, coded in XML, contains information about the specimens to be imported into CODIS. This file consists of a CMF header and one or more packets structured in the format listed below. For readability in this document, the format shown below does not include the actual XML syntax. Tabs, carriage returns, and blanks may be inserted at the beginning or end of any line to improve readability. Comments may be included in the file following the XML comment syntax. The CODIS Import program will assign a default value to the population groupfield if it is not provided within the CMF file. See *Appendix A* for an example Import CMF file for PCR Specimens. *Appendix B* includes the Document Type Definition (DTD) document used in interpreting and validating the XML file. *Appendix C* includes the Cascade Style Sheet (CSS) document used in displaying the XML .

CMF Header:

CMF Header Version (2.5 float(1))
CMF Message Type (Import, 32 characters)
Source Laboratory Name (40 characters)

CODIS Laboratory (destination) ORI (10 characters)
Creation Date/Time of this file (smalldatetime, dd-mmm-yyyy hh:nn)

CMF Packet Type = Batch

CMF Packet Version (2.5 float(1))
Run/Batch/Gel Number (40 characters)
Ladder/Kit Used (75 characters)
FOR each lane/item
    Lane/Item Number (32 characters)
    Lane/Item Type (SPECIMEN/CONTROL/STANDARD/EMPTY, 8 characters)
    IF Lane/Item Type = CONTROL:
        CODIS Control (10 characters)
    ELSEIF Lane/Item Type = SPECIMEN:
        CODIS Specimen Number (32 characters)
        CODIS Specimen Category (40 characters)
        CODIS Population Group (15 characters, may be blank)
    ENDIF
ENDFOR
IF CODIS Technology = PCR:
    FOR each reading
        Reading Type (15 characters)
        Reading By (20 characters, User ID of CODIS user)
        Reading Date/Time (smalldatetime, dd-mmm-yyyy hh:nn)
        FOR each SPECIMEN/CONTROL lane/item
            Lane/Item number (32 characters)
            FOR each Locus
                CODIS Locus Name (10 characters)
                FOR each allele
                    PCR Value (10 characters)
                ENDFOR
            ENDFOR
        ENDFOR
    ENDFOR
ENDIF

CMF Packet Type = CODIS User

User ID of CODIS user (20 characters)
CMF Packet Version (2.5, float(1))
User Lab ORI (10 characters)
First Name (20 characters)
Last Name (20 characters)
Start Date (smalldatetime, dd-mmm-yyyy)
Stop Date (smalldatetime, dd-mmm-yyyy)
User Role (32 characters)

3.1.1 Import Header Values

The following table lists details for fields in the Import CMF header:

Field	Values/Formats	Req.	XML Tag	Comments
CMF Header Version	2.5 Float(1) 1 to Max	Yes	HEADERVERSION	Used to specify the version of the CMF header used. As requirements change, newer versions/formats of the CMF Header will be used.
CMF Message Type	Import Up to 32 characters.	Yes	MESSAGETYPE	The only valid message type is Import.
Source Laboratory Name	Up to 40 characters.	Yes	SOURCELAB	The name of the source laboratory producing the CMF file. This will contain the name of the contract laboratory.
Destination ORI	Up to 10 characters.	Yes	DESTINATIONLABORI	CODIS ORI for the destination CODIS laboratory that will import the CMF file. This is the State lab's ORI and will be provided to the contract lab by the State.
Creation Date/Time	Smalldatetime, dd-mmm-yyyy hh:nn	Yes	CREATIONDATETIME	The date/time for when the CMF file was created.

3.1.2 Import Packet Values

Import supports two packet types: Batch and User. The following tables list details for fields in the Import CMF packets:

3.1.2.1 Batch Packet Values

Batch packets describe the Run/Batch/Gel being imported into CODIS. The table below describes the fields in a Batch packet.

Field	Values/Formats	Req.	XML Tag	Comments
CMF Packet Version	2.5 Float(1) 1 to Max	Yes	BATCH_PACKETVERSION	Used to specify the version of the CMF packet used. As requirements change, newer versions/formats of the CMF packet will be used.
CODIS Run/Batch/Gel Number	Up to 40 characters, including embedded blanks.	Yes	BATCHNUMBER	Run/batch/gel number. Assigned by contract lab.

Ladder/Kit Used	Up to 75 characters.	Yes	LADDER	Valid CODIS Ladder/Kit. See Appendix D for the complete list of kits.

For each lane/item, as specified by the Number of lanes/items field, the following information is provided.

Field	Values/Formats	Req.	XML Tag	Comments
Lane/Item Number	Up to 32 characters.	Yes	LANENUMBER	An identifier of lane position within the Run/Batch/Gel Assigned by the contract lab.
Lane/Item Type	Control Specimen Standard Empty Up to 10 characters.	Yes	LANETYPE	Valid CODIS lane/item type. A Control lane indicates a lane that contains a control. A Specimen lane indicates a lane that contains a specimen. A Standard lane indicates a lane that contains a ladder. This lane type may not be needed for non-gel based systems. An Empty lane indicates a lane that contains no data. This lane type may not be needed for non-gel based systems.

If Lane/Item Type = Empty or Standard, then no additional information is required.

If Lane/Item Type = Control, then the following information is provided.

Field	Values/Formats	Req.	XML Tag	Comments
CODIS Control	Up to 10 characters.	Yes	CONTROLNAME	Valid CODIS control.

If Lane/Item Type = Specimen, then the following information is provided.

Field	Values/Formats	Req.	XML Tag	Comments
CODIS Specimen Number	Up to 32 characters.	Yes	SPECIMENNUMBER	A unique identifier for the specimen within the batch.
CODIS Specimen Category	Convicted Offender.	Yes	SPECIMENCATEGORY	Convicted Offender should be used for all specimens.
CODIS Population Group	Black Caucasian Hispanic American Indian Not Available Oriental Unknown Unspecified Up to 15 characters or blank.	No	POPULATIONGROUP	Valid CODIS population group. The State will specify whether to output this field.

The format of the remainder of the Batch packet is dependent upon the type of DNA technology (RFLP or PCR) used to create the Batch. The following table describes the format for PCR results in a Batch packet.

Field	Values/Formats	Req.	XML Tag	Comments
CODIS Locus name	Up to 10 characters.	Yes	LOCUSNAME	See Appendix D for valid Locus names.
Reading Type	Analytic Verification Up to 15 characters.	Yes	PCRREADINGTYPE	Contract labs analyzing convicted offender specimens should use Analytic. QA labs should use Verification.
Reading By	Up to 20 characters.	Yes	PCRREADINGBY	A valid CODIS User ID of the person performing the reading.
Reading Date/Time	smalldatetime, dd-mmm-yyyy hh:nn	Yes	PCRREADINGDATETIME	Date/time the reading was performed.
Lane/Item number	smallint 1 to Max	Yes	PCRLANENUMBER	Number of lane/item where alleles are located.
PCR Locus Value	Up to 10 characters.	Yes	PCRVALUE	See Appendix D for valid alleles values for each locus.

3.1.2.2 CODIS User Packet Values

The following table lists the acceptable values and formats for the CODIS User packet type.

Field	Values/Formats	Req.	XML Tag	Comments
User ID	Up to 20 characters.	Yes	USERID	Typically, this is the Windows NT login ID for the user.
CMF Packet Version	2.5 Float(1) 1 to Max	Yes	USER_PACKETVERSION	Used to specify the version of the CMF Packet used. As requirements change, newer versions/formats of the CMF Packet will be used.
User Lab ORI	Up to 10 characters.	Yes	USERORI	CODIS lab ORI for the user (the State's ORI).
First Name	Up to 20 characters.	Yes	FIRSTNAME	First name of the user.
Last Name	Up to 20 characters.	Yes	LASTNAME	Last name of the user.
Start Date	Smalldatetime, dd-mmm-yyyy	Yes	STARTDATE	The date the user is allowed to begin entering data via the Import process.
Stop Date	Smalldatetime, dd-mmm-yyyy	Yes	STOPDATE	The date the user is not allowed to enter any further data into CODIS via the Import process.
User Role	Non-host user Up to 32 characters.	Yes	USERROLE	The only valid value is non-host user.

4 Validation

The Import application validates both the format of the CMF 2.5 file and the data contained within the file. The format of the CMF 2.5 file can also be validated by Contractors using an XML Validator such as the one available from Microsoft at the following URL :

http://msdn.microsoft.com/downloads/samples/internet/xml/xml_validator/default.asp

Appendix A. Example CMF File for PCR Specimens

An example of an Import file from a Hitachi FMBIO for CTTv results follows:

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<!DOCTYPE IMPORTFILE SYSTEM "import.dtd">
<?xml-stylesheet type="text/css" href="import.css" ?>
<!--
        CODIS Import File
-->
<IMPORTFILE>
  <HEADERVERSION>2.5</HEADERVERSION>
  <MESSAGETYPE>Import</MESSAGETYPE>
  <SOURCELAB>VA122015Y</SOURCELAB>
  <DESTINATIONLABORI>VA122015Y</DESTINATIONLABORI>
  <CREATIONDATETIME>30-Jun-1999 09:00</CREATIONDATETIME>
  <!--CODIS Import File-->
  <BATCH>
    <BATCH_PACKETVERSION>2.5</BATCH_PACKETVERSION>
    <BATCHNUMBER>RUN990222001</BATCHNUMBER>
    <LANE>
      <LANENUMBER>1</LANENUMBER>
      <LANETYPE>Control</LANETYPE>
      <CONTROL>
        <CONTROLNAME>K562</CONTROLNAME>
      </CONTROL>
    </LANE>
    <LANE>
      <LANENUMBER>2</LANENUMBER>
      <LANETYPE>Specimen</LANETYPE>
      <SPECIMEN>
        <SPECIMENNUMBER>990222C</SPECIMENNUMBER>
        <SPECIMENCATEGORY>Convicted Offender</SPECIMENCATEGORY>
        <POPULATIONGROUP>Caucasian</POPULATIONGROUP>
      </SPECIMEN>
    </LANE>
    <LANE>
      <LANENUMBER>3</LANENUMBER>
      <LANETYPE>Specimen</LANETYPE>
      <SPECIMEN>
        <SPECIMENNUMBER>990222D</SPECIMENNUMBER>
        <SPECIMENCATEGORY>Convicted Offender</SPECIMENCATEGORY>
        <POPULATIONGROUP>Unknown</POPULATIONGROUP>
      </SPECIMEN>
    </LANE>
    <LANE>
      <LANENUMBER>4</LANENUMBER>
      <LANETYPE>Specimen</LANETYPE>
      <SPECIMEN>
        <SPECIMENNUMBER>990222E</SPECIMENNUMBER>
        <SPECIMENCATEGORY>Convicted Offender</SPECIMENCATEGORY>
        <POPULATIONGROUP>Caucasian</POPULATIONGROUP>
      </SPECIMEN>
```

```
</LANE>
<PCRREADING>
  <PCRREADINGTYPE>Analytic</PCRREADINGTYPE>
  <PCRREADINGBY>KEllis</PCRREADINGBY>
  <PCRREADINGDATETIME>30-Jun-1999 07:13</PCRREADINGDATETIME>
  <PCRLANE>
    <PCRLANENUMBER>2</PCRLANENUMBER>
    <LOCUS>
      <LOCUSNAME>CSF1PO</LOCUSNAME>
      <PCRALLELE>
        <PCRVALUE>9</PCRVALUE>
      </PCRALLELE>
      <PCRALLELE>
        <PCRVALUE>10</PCRVALUE>
      </PCRALLELE>
    </LOCUS>
    <LOCUS>
      <LOCUSNAME>TH01</LOCUSNAME>
      <PCRALLELE>
        <PCRVALUE>2</PCRVALUE>
      </PCRALLELE>
      <PCRALLELE>
        <PCRVALUE>10</PCRVALUE>
      </PCRALLELE>
    </LOCUS>
    <LOCUS>
      <LOCUSNAME>TPOX</LOCUSNAME>
      <PCRALLELE>
        <PCRVALUE>6</PCRVALUE>
      </PCRALLELE>
      <PCRALLELE>
        <PCRVALUE>8</PCRVALUE>
      </PCRALLELE>
    </LOCUS>
    <LOCUS>
      <LOCUSNAME>vWA</LOCUSNAME>
      <PCRALLELE>
        <PCRVALUE>16</PCRVALUE>
      </PCRALLELE>
      <PCRALLELE>
        <PCRVALUE>16</PCRVALUE>
      </PCRALLELE>
    </LOCUS>
  </PCRLANE>
  <PCRLANE>
    <PCRLANENUMBER>3</PCRLANENUMBER>
    <LOCUS>
      <LOCUSNAME>CSF1PO</LOCUSNAME>
      <PCRALLELE>
        <PCRVALUE>9</PCRVALUE>
      </PCRALLELE>
      <PCRALLELE>
        <PCRVALUE>10</PCRVALUE>
      </PCRALLELE>
    </LOCUS>
```

```
    <LOCUS>
      <LOCUSNAME>TH01</LOCUSNAME>
    </LOCUS>
    <LOCUS>
      <LOCUSNAME>TPOX</LOCUSNAME>
      <PCRALLELE>
        <PCRVALUE>6</PCRVALUE>
      </PCRALLELE>
      <PCRALLELE>
        <PCRVALUE>8</PCRVALUE>
      </PCRALLELE>
    </LOCUS>
    <LOCUS>
      <LOCUSNAME>vWA</LOCUSNAME>
      <PCRALLELE>
        <PCRVALUE>16</PCRVALUE>
      </PCRALLELE>
      <PCRALLELE>
        <PCRVALUE>16</PCRVALUE>
      </PCRALLELE>
    </LOCUS>
  </PCRLANE>
  <PCRLANE>
    <PCRLANENUMBER>4</PCRLANENUMBER>
    <LOCUS>
      <LOCUSNAME>CSF1PO</LOCUSNAME>
      <PCRALLELE>
        <PCRVALUE>7</PCRVALUE>
      </PCRALLELE>
      <PCRALLELE>
        <PCRVALUE>12</PCRVALUE>
      </PCRALLELE>
    </LOCUS>
    <LOCUS>
      <LOCUSNAME>TH01</LOCUSNAME>
      <PCRALLELE>
        <PCRVALUE>3</PCRVALUE>
      </PCRALLELE>
      <PCRALLELE>
        <PCRVALUE>8</PCRVALUE>
      </PCRALLELE>
    </LOCUS>
    <LOCUS>
      <LOCUSNAME>TPOX</LOCUSNAME>
      <PCRALLELE>
        <PCRVALUE>7</PCRVALUE>
      </PCRALLELE>
      <PCRALLELE>
        <PCRVALUE>10</PCRVALUE>
      </PCRALLELE>
    </LOCUS>
    <LOCUS>
      <LOCUSNAME>vWA</LOCUSNAME>
      <PCRALLELE>
        <PCRVALUE>8</PCRVALUE>
```

```
          </PCRALLELE>
          <PCRALLELE>
            <PCRVALUE>12</PCRVALUE>
          </PCRALLELE>
        </LOCUS>
      </PCRLANE>
    </PCRREADING>
  </BATCH>
</IMPORTFILE>
```

Appendix B. Import XML DTD File

The Import XML DTD file follows:

```
<?xml encoding="UTF-8"?>

<!--

**************************************************
CODIS Import Specification
**************************************************
The optional character following a name or list
governs whether the element or the content particles
in the list may occur one or more (+), zero or
more (*), or zero or one times (?). The absence of
such an operator means that the element or content
particle must appear exactly once.

-->

<!ELEMENT IMPORTFILE (HEADERVERSION, MESSAGETYPE,
                      SOURCELAB, DESTINATIONLABORI, CREATIONDATETIME, BATCH+,
USER*)>
        <!ELEMENT HEADERVERSION (#PCDATA)>
        <!ELEMENT MESSAGETYPE (#PCDATA)>
        <!ELEMENT SOURCELAB (#PCDATA)>
        <!ELEMENT DESTINATIONLABORI (#PCDATA)>
        <!ELEMENT CREATIONDATETIME (#PCDATA)>

<!ELEMENT PCRREADING (PCRREADINGTYPE, PCRREADINGBY,
                      PCRREADINGDATETIME, PCRLANE+)>
        <!ELEMENT PCRREADINGTYPE (#PCDATA)>
        <!ELEMENT PCRREADINGBY (#PCDATA)>
        <!ELEMENT PCRREADINGDATETIME (#PCDATA)>

<!ELEMENT BATCH (BATCH_PACKETVERSION, BATCHNUMBER, LADDER, , LANE+,
PCRREADING+)>
        <!ELEMENT BATCH_PACKETVERSION (#PCDATA)>
        <!ELEMENT BATCHNUMBER (#PCDATA)>
        <!ELEMENT LADDER (#PCDATA)>

<!ELEMENT LANE (LANENUMBER, LANETYPE, CONTROL?, SPECIMEN?)>
        <!ELEMENT LANENUMBER (#PCDATA)>
        <!ELEMENT LANETYPE (#PCDATA)>

<!ELEMENT CONTROL (CONTROLNAME)>
        <!ELEMENT CONTROLNAME (#PCDATA)>

<!ELEMENT SPECIMEN (SPECIMENNUMBER, SPECIMENCATEGORY, POPULATIONGROUP?,
                    )>
        <!ELEMENT SPECIMENNUMBER (#PCDATA)>
        <!ELEMENT SPECIMENCATEGORY (#PCDATA)>
        <!ELEMENT POPULATIONGROUP (#PCDATA)>
```

```
<!ELEMENT PCRLANE (PCRLANENUMBER, LOCUS+)>
        <!ELEMENT PCRLANENUMBER (#PCDATA)>

<!ELEMENT LOCUS (LOCUSNAME, PCRALLELE*)>
        <!ELEMENT LOCUSNAME (#PCDATA)>

<!ELEMENT PCRALLELE (PCRVALUE, PCRREQUIRED?)>
        <!ELEMENT PCRVALUE (#PCDATA)>
        <!ELEMENT PCRREQUIRED (#PCDATA)>

<!ELEMENT USER (USERID, USER_PACKETVERSION, USERORI, FIRSTNAME,
                        LASTNAME, STARTDATE, STOPDATE?, USERROLE)>
        <!ELEMENT USERID (#PCDATA)>
        <!ELEMENT USER_PACKETVERSION (#PCDATA)>
        <!ELEMENT USERORI (#PCDATA)>
        <!ELEMENT FIRSTNAME (#PCDATA)>
        <!ELEMENT LASTNAME (#PCDATA)>
        <!ELEMENT STARTDATE (#PCDATA)>
        <!ELEMENT STOPDATE (#PCDATA)>
        <!ELEMENT USERROLE (#PCDATA)>
```

Appendix C. Cascade Style Sheet

The Import XML Import file references a cascading style sheet file (<?xml-stylesheet type="text/css" href="import.css" ?>). The Import XML cascade style sheet file follows:

```
IMPORTFILE
{
  display: block;
  font-family: Arial, Helvetica, sans-serif;
  font-size: x-small;
  width: 30em;
  background-color: #AAADEA;
}

IMPORTFILE HEADERVERSION, MESSAGETYPE, SOURCELAB, DESTINATIONLABORI,
CREATIONDATETIME
{
  display: block;
  color: #DDDDDD
}

BATCH
{
  color: #FFFFAA
}

BATCH BATCH_PACKETVERSION, BATCHNUMBER, LADDER{
  display: block;
  text-indent: 1.5em;
  font-weight: bold
}


BATCH LANE
{
  display: block;
  text-indent: 3.0em;
}

LANE
{
  display: block;
  color: blue
}

LANE LANENUMBER
{
  display: inline;
  font-weight: bold
}
LANE LANETYPE
{
  display: inline;
  font-weight: bold
```

```
}

CONTROL
{
 display: block;
 color: green
}

CONTROL CONTROLNAME
{
 display: block;
 text-indent: 4.5em;
}

SPECIMEN
{
 display: block;
 color: red
}

SPECIMEN SPECIMENNUMBER, SPECIMENCATEGORY,  POPULATIONGROUP
{
 display: block;
 text-indent: 4.5em;
}

PCRREADING
{
 display: block;
 text-indent: 3.0em;
}

PCRREADING PCRREADINGTYPE, PCRREADINGBY, PCRREADINGDATETIME
{
 display: block;
 color: green;
}

PCRREADING PCRLANE
{
 display: block;
 text-indent: 4.5em;
}

PCRREADING PCRLANE PCRLANENUMBER
{
 display: block;
 font-weight: bold;
 color: blue;
}

PCRREADING PCRLANE LOCUS
{
 display: list-item;
 color: green;
```

```
}

LOCUSNAME
{
 display: block;
 color: #FFFFAA;
 font-weight: bold;
 text-indent: 6.0em;
}

LOCUS PCRALLELE
{
 display: block;
 font-style: italic;
 color: green;
}

LOCUS PCRALLELE PCRVALUE
{
 display: block;
 font-size: x-small;
 text-indent: 9.0em;
 color: blue;
}

LOCUS PCRALLELE
{
 display: block;
 font-size: x-small;
 text-indent: 9.0em;
 color: blue;
}

USER
{
 display: block;
 color: green;
 text-indent: 1.5em;
}

USER USERID
{
 display: block;
 font-weight: bold;
}

USER USER_PACKETVERSION, USERORI, FIRSTNAME, LASTNAME, STARTDATE, STOPDATE,
USERROLE
{
 display: block;
 text-indent: 3.0em;
}
```

Appendix D. Valid PCR Loci with Allele Values

The table below shows the currently accepted PCR Kits. More kits may be added in the future.

Manufacturer	**Kit Name to be output in CMF**
Promega	GenePrint PowerPlex 1.1(Catalog numbers DC6091/6090)
Promega	GenePrint PowerPlex 1.2 (Catalog numbers DC 6101/6100)
Promega	GenePrint PowerPlex 2.1 (Catalog numbers DC 6471/6470)
PE Applied Systems	AmpF/STR Profiler Plus (PIN 4303326)
PE Applied Systems	AmpF/STR Cofiler (PIN 4305246)
PE Applied Systems	AmpF/STR Profiler Plus and AmpF/STR Cofiler (PIN 4305979)
Promega Monoplex	Monoplex D5S818 (Catalog number DC6161)
Promega Monoplex	Monoplex D7S820 (Catalog number DC6141)
Promega Monoplex	Monoplex D13S317 (Catalog number DC6151)
Promega Monoplex	Monoplex D16S539 (Catalog number DC6131)
Promega Monoplex	Monoplex TH01 (Catalog number DC5081)
Promega Monoplex	Monoplex TPOX (Catalog number DC5111)
Promega Monoplex	Monoplex CSF1PO (Catalog number DC5091)
Promega Monoplex	Monoplex vWA (Catalog number DC5141)

The table below shows the current PCR Loci and the valid allele values associated with them. New loci and alleles may be added in the future.

Locus	**Value to be output in CMF**
Amelogenin	X
	Y
CSF1PO	<6
	6
	6.1
	6.2
	6.3
	6.X
	<7
	7
	7.1
	7.2
	7.3
	7.X
	8
	8.1

Locus	Value to be output in CMF
	8.2
	8.3
	8.X
	9
	9.1
	9.2
	9.3
	9.X
	10
	10.1
	10.2
	10.3
	10.X
	11
	11.1
	11.2
	11.3
	11.X
	12
	12.1
	12.2
	12.3
	12.X
	13
	13.1
	13.2
	13.3
	13.X
	14
	14.1
	14.2
	14.3
	14.X
	15
	>15
D13S317	<7
	7
	7.1
	7.2
	7.3
	7.X
	<8
	8
	8.1
	8.2
	8.3
	8.X
	9
	9.1
	9.2
	9.3

Locus	Value to be output in CMF
	9.X
	10
	10.1
	10.2
	10.3
	10.X
	11
	11.1
	11.2
	11.3
	11.X
	12
	12.1
	12.2
	12.3
	12.X
	13
	13.1
	13.2
	13.3
	13.X
	14
	14.1
	14.2
	14.3
	14.X
	15
	>15
D16S539	<5
	5
	5.1
	5.2
	5.3
	5.X
	8
	8.1
	8.2
	8.3
	8.X
	9
	9.1
	9.2
	9.3
	9.X
	10
	10.1
	10.2
	10.3
	10.X
	11
	11.1

Locus	Value to be output in CMF
	11.2
	11.3
	11.X
	12
	12.1
	12.2
	12.3
	12.X
	13
	13.1
	13.2
	13.3
	13.X
	14
	14.1
	14.2
	14.3
	14.X
	15
	>15
D18S51	<9
	9
	9.1
	9.2
	9.3
	9.X
	10
	10.1
	10.2
	10.3
	10.X
	11
	11.1
	11.2
	11.3
	11.X
	12
	12.1
	12.2
	12.3
	12.X
	13
	13.1
	13.2
	13.3
	13.X
	14
	14.1
	14.2
	14.3
	14.X

Locus	Value to be output in CMF
	15
	15.1
	15.2
	15.3
	15.X
	16
	16.1
	16.2
	16.3
	16.X
	17
	17.1
	17.2
	17.3
	17.X
	18
	18.1
	18.2
	18.3
	18.X
	19
	19.1
	19.2
	19.3
	19.X
	20
	20.1
	20.2
	20.3
	20.X
	21
	21.1
	21.2
	21.3
	21.X
	22
	22.1
	22.2
	22.3
	22.X
	23
	23.1
	23.2
	23.3
	23.X
	24
	24.1
	24.2
	24.3
	24.X
	25

Locus	Value to be output in CMF
	25.1
	25.2
	25.3
	25.X
	26
	>26
D1S80	<14
	14
	15
	16
	17
	18
	19
	20
	21
	22
	23
	24
	25
	26
	27
	28
	29
	30
	31
	32
	33
	34
	35
	36
	37
	38
	39
	40
	41
	>41
D21S11	<24.2
	24.2
	24.3
	24.X
	<25
	25
	25.1
	25.2
	25.3
	25.X
	26
	26.1
	26.2
	26.3
	26.X

Locus	Value to be output in CMF
	27
	27.1
	27.2
	27.3
	27.X
	28
	28.1
	28.2
	28.3
	28.X
	29
	29.1
	29.2
	29.3
	29.X
	30
	30.1
	30.2
	30.3
	30.X
	31
	31.1
	31.2
	31.3
	31.X
	32
	32.1
	32.2
	32.3
	32.X
	33
	33.1
	33.2
	33.3
	33.X
	34
	34.1
	34.2
	34.3
	34.X
	35
	35.1
	35.2
	35.3
	35.X
	36
	36.1
	36.2
	36.3
	36.X
	37

Locus	Value to be output in CMF
	37.1
	37.2
	37.3
	37.X
	38
	>38
D3S1358	<12
	12
	12.1
	12.2
	12.3
	12.X
	13
	13.1
	13.2
	13.3
	13.X
	14
	14.1
	14.2
	14.3
	14.X
	15
	15.1
	15.2
	15.3
	15.X
	16
	16.1
	16.2
	16.3
	16.X
	17
	17.1
	17.2
	17.3
	17.X
	18
	18.1
	18.2
	18.3
	18.X
	19
	>19
D5S818	<7
	7
	7.1
	7.2
	7.3
	7.X
	8

Locus	Value to be output in CMF
	8.1
	8.2
	8.3
	8.X
	9
	9.1
	9.2
	9.3
	9.X
	10
	10.1
	10.2
	10.3
	10.X
	11
	11.1
	11.2
	11.3
	11.X
	12
	12.1
	12.2
	12.3
	12.X
	13
	13.1
	13.2
	13.3
	13.X
	14
	14.1
	14.2
	14.3
	14.X
	15
	15.1
	15.2
	15.3
	15.X
	16
	>16
D7S8	A
	B
D7S820	<6
	6
	6.1
	6.2
	6.3
	6.X
	7
	7.1

Locus	Value to be output in CMF
	7.2
	7.3
	7.X
	8
	8.1
	8.2
	8.3
	8.X
	9
	9.1
	9.2
	9.3
	9.X
	10
	10.1
	10.2
	10.3
	10.X
	11
	11.1
	11.2
	11.3
	11.X
	12
	12.1
	12.2
	12.3
	12.X
	13
	13.1
	13.2
	13.3
	13.X
	14
	14.1
	14.2
	14.3
	14.X
	>14
	15
	>15
D8S1179	<8
	8
	8.1
	8.2
	8.3
	8.X
	9
	9.1
	9.2
	9.3

Locus	Value to be output in CMF
	9.X
	10
	10.1
	10.2
	10.3
	10.X
	11
	11.1
	11.2
	11.3
	11.X
	12
	12.1
	12.2
	12.3
	12.X
	13
	13.1
	13.2
	13.3
	13.X
	14
	14.1
	14.2
	14.3
	14.X
	15
	15.1
	15.2
	15.3
	15.X
	16
	16.1
	16.2
	16.3
	16.X
	17
	17.1
	17.2
	17.3
	17.X
	18
	18.1
	18.2
	18.3
	18.X
	19
	>19
DQAlpha	1.1
	1.2
	1.3

Locus	Value to be output in CMF
	2
	3
	4
	4.1
	4.2
	4.3
	4.X
FGA	<18
	18
	18.1
	18.2
	18.3
	18.X
	19
	19.1
	19.2
	19.3
	19.X
	20
	20.1
	20.2
	20.3
	20.X
	21
	21.1
	21.2
	21.3
	21.X
	22
	22.1
	22.2
	22.3
	22.X
	23
	23.1
	23.2
	23.3
	23.X
	24
	24.1
	24.2
	24.3
	24.X
	25
	25.1
	25.2
	25.3
	25.X
	26
	26.1
	26.2

Locus	Value to be output in CMF
	26.3
	26.X
	27
	27.1
	27.2
	27.3
	27.X
	28
	28.1
	28.2
	28.3
	28.X
	29
	29.1
	29.2
	29.3
	29.X
	30
	>30
GC	A
	B
	C
GYPA	A
	B
HBGG	A
	B
	C
LDLR	A
	B
TH01	<5
	5
	5.1
	5.2
	5.3
	5.X
	6
	6.1
	6.2
	6.3
	6.X
	7
	7.1
	7.2
	7.3
	7.X
	8
	8.1
	8.2
	8.3
	8.X
	9

Locus	Value to be output in CMF
	9.1
	9.2
	9.3
	9.X
	10
	10.1
	10.2
	10.3
	10.X
	>10
	11
	>11
TPOX	<6
	6
	6.1
	6.2
	6.3
	6.X
	7
	7.1
	7.2
	7.3
	7.X
	<8
	8
	8.1
	8.2
	8.3
	8.X
	9
	9.1
	9.2
	9.3
	9.X
	10
	10.1
	10.2
	10.3
	10.X
	11
	11.1
	11.2
	11.3
	11.X
	12
	12.1
	12.2
	12.3
	12.X
	>12
	13

Locus	Value to be output in CMF
	>13
vWA	<11
	11
	11.1
	11.2
	11.3
	11.X
	12
	12.1
	12.2
	12.3
	12.X
	<13
	13
	13.1
	13.2
	13.3
	13.X
	14
	14.1
	14.2
	14.3
	14.X
	15
	15.1
	15.2
	15.3
	15.X
	16
	16.1
	16.2
	16.3
	16.X
	17
	17.1
	17.2
	17.3
	17.X
	18
	18.1
	18.2
	18.3
	18.X
	19
	19.1
	19.2
	19.3
	19.X
	20
	20.1
	20.2

Locus	Value to be output in CMF
	20.3
	20.X
	>20
	21
	>21

Appendix G. Import CMF 1.0 Message Format

The Import CMF 1.0 information expected from the external imaging system consists of an ASCII file containing analysis information for those specimens processed by the external imaging system.[1] The file is a CMF message consisting of the following information. (Each line represents a single line of text in the CMF file.)

CMF Header:

CMF Header Version (1.0)
CMF Message ID (Integer)
CMF Message Type (IMPORT)
Imaging system (source) ORI (9 characters)
CODIS Laboratory (destination) ORI (9 characters)
Creation Date/Time of this file (DD-MMM-YYYY HH:MM:SS)
Imaging system organization/company (up to 64 characters)
Imaging system utilized (up to 64 characters)
Number of packets in this file (Integer)

CMF Packets: The IMPORT message contains the specified number of the following types of CMF packets.

```
CMF Packet Type (DNA Analysis Result)
CMF Packet Version (1.0)
        CODIS Technology used for analysis
        IF CODIS Technology = PCR:
                CODIS Specimen Number (24 characters)
                CODIS Sample ID (8 characters)
                CODIS Specimen Category (21 characters)
                CODIS Tissue Type (15 characters, may be blank)
                CODIS Tissue Form (10 characters, may be blank)
                CODIS Population Group (15 characters, may be blank)
                Number of markers
                FOR each marker
                        CODIS Marker Name
                        Number of readings
                        FOR each reading
                                Reading By (8 characters, User ID of CODIS user)
                                Reading Date (DD-MMM-YYYY)
                                Reading Time (HH:MM:SS)
                                Number of alleles
                                FOR each allele
                                        PCR Value
                                ENDFOR
                        ENDFOR
                ENDFOR
        ENDIF
ENDFOR

CMF Packet Type (CODIS User)
CMF Packet Version (1.0)
```

[1] This document is based on the *CODIS Imaging Application Program Interface, 2/3/1997.*

User Lab ORI (9 characters)
User Initials (4 characters)
First Name (20 characters)
Last Name (20 characters)
Start Date (DD-MMM-YYYY, may be blank)
User ID (8 characters, may be blank)
eMail ID (8 characters, may be blank)

An example of an IMPORT file for a DQ-Alpha strip looks like the following:

```
1.0
532
IMPORT
CELLMARK
FL0370100
08-MAR-1995  09:14:22
CellMark
BioImage
1
DNA Analysis Result
1.0
PCR
022395047Q3
0
FORENSIC, UNKNOWN
BLOOD
STAIN
UNKNOWN
1
DQALPHA
1
ABCDEFGH
11-MAR-1995
11:10:23
2
1.1
3
```