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**Supplemental Forensic Case Report
September 27, 2007**

To:
Don Horgan
523 Octavia Street
San Francisco, CA 94102

BODE Case #: 2S04-114
Agency ID #: 1993-WVS-05716; 93-05-0666

List of Evidence Received on April 5, 2007 for possible mitochondrial DNA analysis:

<u>BODE Sample #</u>	<u>Agency ID</u>	<u>Description</u>
2S04-114-40	93-05716/ME-329-93	Labeled as "Pulled Hair Sample James M. Moore"
2S04-114-41	93-05716/ME-329-93	Labeled as "Dried Bld Sample James M. Moore"
2S04-114-42	93-05717/ME-330-93	Labeled as "Pulled Hair Sample Steve Branch"
2S04-114-43	93-05717/ME-330-93	Labeled as "Dried Blood Sample Steve Branch"
2S04-114-44	93-05718/ME-331-93	Labeled as "Pulled Hair Sample Christopher Byers"
2S04-114-45	93-05718/ME-331-93	Labeled as "Dried Blood Sample Christopher Byers"

See Appendix A for additional items of evidence received.

The mtDNA sequences reported in this case were determined by procedures that have been validated according to standards established by the Scientific Working Group on DNA Analysis Methods (SWGDM) and adopted as Federal Standards. The Federal Bureau of Investigation mtDNA population database was used to determine the number of times an mtDNA sequences was observed for the evidence items listed below.

RESULTS:

- 1.) MtDNA sequences were obtained from reference items 2S04-114-41, 2S04-114-43, and 2S04-114-45 and were compared to results obtained from the evidence items reported on December 30, 2005.
- 2.) The mtDNA sequence obtained from 2S04-114-41 (James M. Moore) is **CONSISTENT** with the following items of evidence:
 - a. 2S04-114-03B (Hair from M. Moore ligature)
 - b. 2S04-114-21A (Hair from scout cap)

The donor of 2S04-114-41 (James M. Moore) **CANNOT BE EXCLUDED** as a source of the evidence items listed above.

The number of observations of this mtDNA sequence in the FBI database is as follows:

Database	No. of observations
African American	0 in 1305
Caucasian	0 in 1674
Hispanic	0 in 686
Asian	0 in 848
Native American	0 in 326
Total	0 in 4839

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- 3.) The mtDNA sequence obtained from 2S04-114-43 (Steve Branch) is **CONSISTENT** with the following items of evidence:
- a. 2S04-114-08A (Dark Caucasian hair from S. Branch)
 - b. 2S04-114-08Ba (Dark Caucasian hair from S. Branch)
 - c. 2S04-114-08Bb (Dark Caucasian hair from S. Branch)

The donor of 2S04-114-43 (Steve Branch) **CANNOT BE EXCLUDED** as a source of the evidence items listed above.

The number of observations of this mtDNA sequence in the FBI database is as follows:

Database	No. of observations
African American	0 in 1305
Caucasian	0 in 1674
Hispanic	0 in 686
Asian	0 in 848
Native American	0 in 326
Total	0 in 4839

- 4.) The mtDNA sequence obtained from 2S04-114-45 (Christopher Byers) is **CONSISTENT** with the following items of evidence:

- a. 2S04-114-11B (Hair found on C. Byers's body)
- b. 2S04-114-11C (Hair found on C. Byers's body)
- c. 2S04-114-11P (Hair found on C. Byers's body)
- d. 2S04-114-11Q (Hair found on C. Byers's body)
- e. 2S04-114-11V (Hair found on C. Byers's body)
- f. 2S04-114-11Z (Hair found on C. Byers's body)
- g. 2S04-114-14 (Hair from lower body of C. Byers)
- h. 2S04-114-18B (Hair from sheet)
- i. 2S04-114-18C (Hair from sheet)
- j. 2S04-114-18D (Hair from sheet)
- k. 2S04-114-18E (Hair from sheet)
- l. 2S04-114-18F (Hair from sheet)
- m. 2S04-114-18H (Hair from sheet)
- n. 2S04-114-18I (Hair from sheet)
- o. 2S04-114-20B (Hair from E3)

The donor of 2S04-114-45 (Christopher Byers) **CANNOT BE EXCLUDED** as a source of the evidence items listed above.

The number of observations of this mtDNA sequence in the FBI database is as follows:

Database	No. of observations
African American	0 in 1305
Caucasian	6 in 1674
Hispanic	5 in 686
Asian	0 in 848
Native American	0 in 326
Total	11 in 4839

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5.) A partial sequence was obtained from 2S04-114-17 and is **CONSISTENT** with 2S04-114-45 (Christopher Byers).

The number of observations of this mtDNA sequence in the FBI database is as follows:

Database	No. of observations
African American	0 in 1305
Caucasian	14 in 1674
Hispanic	15 in 686
Asian	0 in 848
Native American	0 in 326
Total	29 in 4839

6.) The mtDNA sequences obtained from the following items are **NOT CONSISTENT** with reference items 2S04-114-41, -43, or -45:

- a. 2S04-114-03Aa
- b. 2S04-114-15
- c. 2S04-114-18A
- d. 2S04-114-21B
- e. 2S04-114-23
- f. 2S04-114-27

The individuals associated with 2S04-114-41, -43 and 45 (Moore, Branch, and Byers) **CAN BE EXCLUDED** as a source of the items listed above.

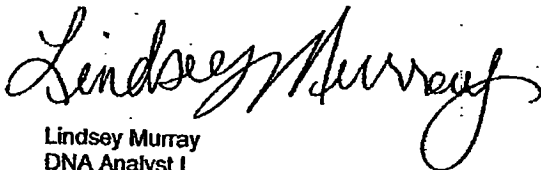
7.) Results for 2S04-114-20A were unconfirmed and therefore no conclusions were made for this sample.

See Table 1, 2, and 3 for a summary of mtDNA sequences reported for reference sample 2S04-114-41, -43, -45 and Appendix B for the results obtained for the evidence items reported on December 30, 2005.

Notes:

1. Mitochondrial DNA (mtDNA) is found in sub-cellular organelles called mitochondria. A specific, non-coding region of the mitochondrial genome called the D-loop, or hyper-variable control region, is known to have variability within the human population. Multiple copies of this region of mtDNA are generated using the polymerase chain reaction (PCR). The base composition, or sequence, is then determined using automated DNA sequencing.
2. Reference items 2S04-114-40, -42, -44 were not processed at this time.
3. The submitted evidence will be returned to the Arkansas State Crime Laboratory.

Report submitted by,



Lindsey Murray
DNA Analyst I

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Table 1. mtDNA sequence for reference item 2S04-114-41.

Position	2S04-114-41
<i>HVI</i>	
<i>Reported Range</i>	
<i>16024 - 16365</i>	
16069	T
16126	C
16193	T
16195	C
16242	A
16357	C
<i>HVII</i>	
<i>Reported Range</i>	
<i>73 - 340</i>	
73	G
150	T
152	C
263	G
295	T
309.1	C
315.1	C

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Table 2. mtDNA sequence for reference item 2S04-114-43.

Position	2S04-114-43
<i>HVI</i>	
<i>Reported Range</i> 16024 - 16365	
16069	T
16126	C
16145	A
16186	T
16231	C
16261	T
<i>HVII</i>	
<i>Reported Range</i> 73 - 340	
73	G
75	A
150	T
152	C
195	C
215	G
263	G
295	T
309.1	C
315.1	C
319	C

Table 3. mtDNA sequence for reference item 2S04-114-45.

Position	2S04-114-45
<i>HVI</i>	
<i>Reported Range</i> 16024 - 16365	
16069	T
16126	C
16145	A
16172	C
16222	T
16261	T
<i>HVII</i>	
<i>Reported Range</i> 73 - 340	
73	G
242	T
263	G
295	T
315.1	C

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The following notations may apply:

- a. Transition or transversion polymorphisms as compared to a standard sequence (Anderson, et al. 1981. *Nature* 290:457-465) are designated by the appropriate letter (base).
- b. A deletion is designated by a "D."
5. An insertion is designated a ".1" for a one base insertion, and a ".2" for a two base insertion.

Note: Polycytosine stretches are often difficult to interpret. A possible cause may be the presence of a mixture of length variants in the mtDNA of an individual. A predominant length species is often apparent; however, the frequency of a particular length species cannot be determined accurately and may vary between maternal relatives. The sequence reported for Hypervariable Region 1 represents the first 10 cytosines observed, beginning at position 16184. The sequence reported for Hypervariable Region 2 represents the number of confirmed cytosines present in the predominant base sequence. When no predominant base sequence is observed, the insertions that could not be confirmed are designated by a "N."

- d. A position that could not be confirmed is designated by a "N."

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Appendix A: List of evidence received on July 7, 2004 for DNA Analysis:

Bode #	Item ID	Description
2S04-114-01	93-05716 FP2	Labeled as "Left hand nail scrapings from M. Moore."
2S04-114-02	93-05716 FP3	Labeled as "Right hand nail scrapings from M. Moore."
2S04-114-03	93-05716 FP6	Labeled as "Hair from M. Moore ligature."
2S04-114-03A		Slide with two hairs (-03Aa and -03Ab).
2S04-114-03B		Slide with one hair.
2S04-114-04	93-05716 FP6-Q39	Labeled as "Possible tissue from ligature from M. Moore."
2S04-114-05	93-05716 Q1 - Q4	Labeled as "Swabs from M. Moore."
2S04-114-05A		Three "oral" swabs.
2S04-114-05B		Three "rectal" swabs.
2S04-114-05C		Two "nasal" swabs.
2S04-114-05D		Two "penile" swabs.
2S04-114-06	93-05717 FP3	Labeled as "Left hand nail scrapings from S. Branch."
2S04-114-07	93-05717 FP4	Labeled as "Right hand nail scrapings from S. Branch."
2S04-114-08	93-05717 FP5	Labeled as "Two dark Caucasian hairs from S. Branch."
2S04-114-08A		Slide with one hair.
2S04-114-08B		Slide with two hairs (-08Ba and -08Bb).
2S04-114-09	93-05717 FP6	Labeled as "Hair from ligature from S. Branch (skin, tissue, hair from ligature)."
2S04-114-10	93-05717 K1, Q1 - Q4	Labeled as "Blood sample and swabs from S. Branch."
2S04-114-10A		Stained string.
2S04-114-10B		Three "oral" swabs.
2S04-114-10C		Three "rectal" swabs.
2S04-114-10D		Three "nasal" swabs.
2S04-114-10E		Two "penile" swabs.
2S04-114-11	93-05718 FP3	Labeled as "Hair found on C. Byers's body."
2S04-114-11A through -11Z		Slide with 26 hairs (-11A through -11Z).
2S04-114-12	93-05718 FP4	Labeled as "Left hand nail scrapings from C. Byers."
2S04-114-13	93-05718 FP5	Labeled as "Right hand nail scrapings from C. Byers."
2S04-114-14	93-05718 FP6	Labeled as "Hair from lower body of C. Byers."
2S04-114-15	93-05718 FP8	Labeled as "Hair from C. Byers ligature."
2S04-114-16	93-05718 Q4	Labeled as "Possible tissue from C. Byers ligature (skin, tissue, hair from ligature)."
2S04-114-17	93-05718 FP9	Labeled as "Hair from perineum of C. Byers ligature."
2S04-114-18	93-05718 FP10	Labeled as "Negroid hair from white sheet." [slide with 9 hairs]
2S04-114-18A		Hair from sheet, described as "Negroid hair frag."
2S04-114-18B		Hair from sheet.
2S04-114-18C		Hair from sheet.
2S04-114-18D		Hair from sheet.
2S04-114-18E		Hair from sheet.
2S04-114-18F		Hair from sheet.
2S04-114-18G		Hair from sheet.
2S04-114-18H		Hair from sheet, described as "animal hair."
2S04-114-18I		Hair from sheet.
2S04-114-19	93-05718 Q1-Q3	Labeled as "Swabs from C. Byers"
2S04-114-19A		Three "oral" swabs.
2S04-114-19B		Three "rectal" swabs.
2S04-114-19C		Three "nasal" swabs.
2S04-114-20	93-05716 E3	Labeled as "Hair from E3."
2S04-114-20A		Slide with two hairs (-20A and -20B).
2S04-114-21	93-05716 E5	Labeled as "Hair from scout cap."

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Appendix A: List of evidence received on July 7, 2004 for DNA Analysis: (continued)

2S04-114-21		Slide with two hairs (-21A and -21B).
2S04-114-22	93-05716 E126	Labeled as "Hair from knife."
	93-05717 E127	
2S04-114-23	LS1-QH	Labeled as "Hair from tree stump."
2S04-114-24		Slide with two hairs (-24A and -24B).
2S04-114-25	93-05716 E3 Q10	Labeled as "Cutting from blue pants."
2S04-114-26	93-05716 E7 Q6	Labeled as "Cutting from jeans."
2S04-114-27	93-05717 FP7	Labeled as "Dyed hair from white sheet used to cover S. Branch."
2S04-114-28	93-05716 E27	Labeled as "Hair from knife."
2S04-114-29	93-05716 E28	Labeled as "Hair from butterfly knife."
2S04-114-30	93-05716 E134	Labeled as "Hair from knife."
2S04-114-31	93-05716 E178	Labeled as "Kershaw folding knife."
2S04-114-32	93-05716 E1A	Labeled as "Bag of clothing."
2S04-114-32A		Pair of white socks.
2S04-114-32B		Leather (or vinyl) pull tab of unknown origin.
2S04-114-32C		Plastic bag "Time Saver."
2S04-114-32D		Tan button down shirt.
2S04-114-32E		Black thermal shirt.
2S04-114-32F		Cargo style jeans.
2S04-114-32G		One "BIC" disposable razor.
2S04-114-32H		One "BIC" disposable razor.
2S04-114-33	93-05718 FP8 L1	Labeled as "Ligature between L-leg and L-wrist and R-leg and R-wrist [Byers]."
2S04-114-33A		Left side.
2S04-114-33B		Right side.
2S04-114-34	93-05717 FP6 L2	Labeled as "Ligature between ankles and wrist, L-leg, L-wrist, R-leg, R-wrist [Branch]."
2S04-114-34A		Left side.
2S04-114-34B		Right side.
2S04-114-35	93-05717 FP6 L3	Labeled as "Ligature, L-leg, L-wrist, R-leg, R-wrist [Moore]."
2S04-114-35A		Left side.
2S04-114-35B		Right side.
2S04-114-36	93-05716 E17	Labeled as "Three tree branches."

List of evidence received on October 12, 2006 for DNA analysis:

BODE #	Item ID	Description
2S04-114-37	N/A	Reference buccal swabs (ECHOLS)
2S04-114-38	N/A	Reference buccal swabs (MISSKELLEY)
2S04-114-39	N/A	Reference buccal swabs (BALDWIN)

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Appendix B: Mitochondrial DNA Sequence Results reported on December 30, 2005.

	15998-16390	35-361
2S04-114-03Aa Hair from ligature (Moore)	16221 T Confirmed Region: 15998-16390	263 G 309.1 C 315.1 C Confirmed Region: 35-361
2S04-114-03B Hair from ligature (Moore)	16069 T 16126 C 16193 T 16195 C 16242 A 16357 C Confirmed Region: 15998-16390	73 G 150 T 152 C 263 G 295 T 309.1 C 315.1 C Confirmed Region: 35-361
2S04-114-08A Hair (Branch)	16069 T 16126 C 16145 A 16186 T 16231 C 16261 T Confirmed Region: 15998-16390	73 G 75 A 150 T 152 C 195 C 215 G 263 G 295 T 309.1 C 315.1 C 319 C Confirmed Region: 35-361
2S04-114-08Ba Hair (Branch)	16069 T 16126 C 16145 A 16186 T 16231 C 16261 T Confirmed Region: 15998-16390	73 G 75 A 150 T 152 C 195 C 215 G 263 G 295 T 309.1 C 315.1 C 319 C Confirmed Region: 35-361

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<p>2S04-114-08Bb</p> <p>Hair (Branch)</p>	<p>16069 T 16126 C 16145 A 16186 T 16231 C 16261 T</p> <p>Confirmed Region: 15998-16390</p>	<p>73 G 75 A 150 T 152 C 195 C 215 G 263 G 295 T 309.1 C 315.1 C 319 C</p> <p>Confirmed Region: 35-361</p>
<p>2S04-114-11B</p> <p>Hair from body (Byers)</p>	<p>16069 T 16126 C 16145 A 16172 C 16222 T 16261 T</p> <p>Confirmed Region: 15998-16390</p>	<p>73 G 242 T 263 G 295 T 315.1 C</p> <p>Confirmed Region: 49-361</p>
<p>2S04-114-11C</p> <p>Hair from body (Byers)</p>	<p>16069 T 16126 C 16145 A 16172 C 16222 T 16261 T</p> <p>Confirmed Region: 15998-16390</p>	<p>73 G 242 T 263 G 295 T 315.1 C</p> <p>Confirmed Region: 35-361</p>
<p>2S04-114-11P</p> <p>Hair from body (Byers)</p>	<p>16069 T 16126 C 16145 A 16172 C 16222 T 16261 T</p> <p>Confirmed Region: 15998-16390</p>	<p>73 G 242 T 263 G 295 T 315.1 C</p> <p>Confirmed Region: 35-361</p>
<p>2S04-114-11Q</p> <p>Hair from body (Byers)</p>	<p>16069 T 16126 C 16145 A 16172 C 16222 T 16261 T</p> <p>Confirmed Region: 15998-16390</p>	<p>73 G 242 T 263 G 295 T 315.1 C</p> <p>Confirmed Region: 49-361</p>

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BODE Case #: 2S04-

Agency Case #: 1993-16; 93-05-0666

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Appendix B: Mitochondrial DNA Sequence Results reported on December 30, 2005 (continued).

2S04-114-11V Hair from body (Byers)	16069 T 16126 C 16145 A 16172 C 16222 T 16261 T Confirmed Region: 15998-16390	73 G 242 T 263 G 295 T 315.1 C Confirmed Region: 35-361
2S04-114-11Z Hair from body (Byers)	16069 T 16126 C 16145 A 16172 C 16222 T 16261 T Confirmed Region: 15998-16390	73 G 242 T 263 G 295 T 315.1 C Confirmed Region: 35-361
2S04-114-14 Hair from lower body (Byers)	16069 T 16126 C 16145 A 16172 C 16222 T 16261 T Confirmed Region: 15998-16390	73 G 242 T 263 G 295 T 315.1 C Confirmed Region: 49-361
2S04-114-15 Hair from ligature (Byers)	16093 C 16192 T 16256 T 16262 T 16270 T Confirmed Region: 15998-16390	73 G 263 G 315.1 C Confirmed Region: 35-361
2S04-114-17 Hair from perineum (Byers)	16222 T 16261 T Confirmed Region: 16210-16390	Not Analyzed

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Appendix B: Mitochondrial DNA Sequence Results reported on December 30, 2005 (continued).

Case ID	Sample Description	Sequence Data	Reference Data
2S04-114-18A	Negroid hair from sheet	16129 A 16183 D 16189 A 16215 G 16223 T 16278 T 16294 T 16311 C 16360 T	73 G 151 T 152 C 182 T 186 A 189 C 247 A 263 G 315.1 C 316 A
		Confirmed Region: 15998-16390	Confirmed Region: 35-361
2S04-114-18B	Hair from sheet	16069 T 16126 C 16145 A 16172 C 16222 T 16261 T	73 G 242 T 263 G 295 T 315.1 C
		Confirmed Region: 15998-16390	Confirmed Region: 35-361
2S04-114-18C	Hair from sheet	16069 T 16126 C 16145 A 16172 C 16222 T 16261 T	73 G 242 T 263 G 295 T 315.1 C
		Confirmed Region: 15998-16390	Confirmed Region: 35-361
2S04-114-18D	Hair from sheet	16069 T 16126 C 16145 A 16172 C 16222 T 16261 T	73 G 242 T 263 G 295 T 315.1 C
		Confirmed Region: 15998-16390	Confirmed Region: 35-361
2S04-114-18E	Hair from sheet	16069 T 16126 C 16145 A 16172 C 16222 T 16261 T	73 G 242 T 263 G 295 T 315.1 C
		Confirmed Region: 15998-16390	Confirmed Region: 35-361

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Appendix B: Mitochondria

Sequence Results reported on December 10, 2005 (continued).

2S04-114-18F Hair from sheet	16069 T 16126 C 16145 A 16172 C 16222 T 16261 T Confirmed Region: 15998-16390	73 G 242 T 263 G 295 T 315.1 C Confirmed Region: 35-361
2S04-114-18H Hair from sheet	16069 T 16126 C 16145 A 16172 C 16222 T 16261 T Confirmed Region: 15998-16390	73 G 242 T 263 G 295 T 315.1 C Confirmed Region: 49-361
2S04-114-18I Hair from sheet	16069 T 16126 C 16145 A 16172 C 16222 T 16261 T Confirmed Region: 15998-16390	73 G 242 T 263 G 295 T 315.1 C Confirmed Region: 35-361
2S04-114-20B Hair from E3	16069 T 16126 C 16145 A 16172 C 16222 T 16261 T Confirmed Region: 15998-16390	73 G 242 T 263 G 295 T 315.1 C Confirmed Region: 49-361
2S04-114-21A Hair from scout cap	16069 T 16126 C 16193 T 16195 C 16242 A 16357 C Confirmed Region: 16009-16390	73 G 150 T 152 C 263 G 295 T 309.1 C 315.1 C Confirmed Region: 35-361

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Appendix B: Mitochondrial DNA Sequence Results reported on December 30, 2005 (continued).

Mitochondrial DNA Sequence Results		
2S04-114-21B Hair from scout cap	16223 T 16278 T 16362 C Confirmed Region: 16210-16390	Not Reported
2S04-114-23 Hair from scout cap	Anderson Confirmed Region: 16009-16390	263 G 309.1 C 315.1 C Confirmed Region: 35-361
2S04-114-27 Dyed hair from white sheet (Branch)	16261 T Confirmed Region: 15998-16390	263 G 309.1 C 315.1 C Confirmed Region: 49-361

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