COMMONWEALTH OF MASSACHUSETTS
CIVIL SERVICE COMMISSION

SUFFOLK, ss.

One Ashburton Place –Room 503
Boston, MA 02108
617-727-2253

IN RE:

BOSTON POLICE DEPARTMENT
DRUG TESTING APPEALS
("D" CASES)

CASE NOS: D-01-1409 (Thompson)
D-02-656 (Beckers)
D-02-657 (Jones)
D-03-116 (McGowan)
D-03-212 (Bridgeman)
D-03-213 (Harris)
D-03-214 (Washington)
D-03-362 (Bridgeforth)
D-04-52 (Downing)
D1-07-107 (Guity)

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Commissioner:

Paul M. Stein

DECISION

Ten Appellants[1] brought these appeals to the Civil Service Commission (Commission), pursuant to G.L.c.31,§§41-43, to seek reinstatement following decisions of the Boston Police Department (BPD) discharging each of them from employment as tenured BPD police officers after they tested positive for the presence of cocaine in hair samples collected from them. The Appellants claim that the hair tests relied upon by the

[1] Preston Thompson, Richard Beckers, Ronnie Jones, Jacqueline McGowan, Oscar Bridgeman, Shawn Harris, Walter Washington, William Bridgeforth, George Downing & Rudy Guity.

BPD are not based on scientifically sound and generally accepted methodology and that the process used to collect and test their samples was seriously flawed, making the test results insufficient to prove "just cause" for their terminations.

The Commission agreed to a request to postpone the hearing of these appeals while the parties focused their resources on a related federal civil rights lawsuit for compensatory and punitive damages against the City of Boston brought on behalf of many of the Appellants and other BPD officers by another major Boston law firm (not counsel for the Appellants in these appeals), which lawsuit alleged that the BPD hair testing process had a disparate impact on African Americans and, therefore, violated their federal and state constitutional and statutory rights for which the plaintiffs were entitled to compensatory and punitive damages. Ronnie Jones et als v. City of Boston, C.A. No. 05-11832-GAO.

The processing of the appeals was also stymied because the laboratory that performed the hair tests (Psychemedics Inc.) claimed a proprietary interest in aspects of its hair testing methodology and strenuously declined to produce certain documents needed to adjudicate these appeals. The Commission, unlike a court, has no statutory power to enforce an order to compel discovery or testimony from a non-party or to issue and enforce a contempt order. This obstacle was finally overcome when counsel for the Appellants was persuaded to consent to be bound by the terms of the confidentiality agreement that was entered in the federal court lawsuit with respect to Psychemedics's proprietary evidence and to consent to the jurisdiction of the federal court to enforce any violations of that order.(*Exh.43;Tr.III:522-537;Tr.IV:624-627,747-749;Tr.XI:2188-2190*)

After nearly five years, the federal lawsuit was still was in the discovery stage. The Commission finally eschewed further requests for delay and scheduled these appeals for

consolidated hearings on the merits. The Commission held eighteen days of evidentiary hearings over a five month period from October 21, 2010 through February 4, 2011, at which time the Commission received two hundred and two exhibits and heard oral testimony from each of the Appellants, from three expert witnesses called by the BPD [Dr. Eleanor Gilbert, M.D.; Dr. Leo Kadehjian, Ph.D.; and Thomas Cairns, Ph.D.]; from Attorney Susan Horwitz and two expert witnesses called by the Appellants [Dr. J. Michael Walsh, Ph.D.; Professor Douglas Rollins, M.D., Ph.D.]; and from two other BPD personnel [Lt. Stephen Meade, Commanding Officer of the BPD's Drug Control Unit (DCU) and Roberta Mullan, Director of BPD's Occupational Health Unit (OHU)].

The Commission received post-hearing memoranda from the parties on July 15, 2011. In October 2012 the parties informed the Commission that the federal court civil action had been dismissed. See Jones v. City of Boston, 2012 WL 4530594 (D.Mass.2012).

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I. Executive Summary

This Decision affirms the BPD's undisputed right to ensure a drug-free workplace and, to that end, employ all lawful means, consistent with the terms of any collective bargaining agreement, to identify and terminate police officers who use illegal drugs. After receiving extensive testimony and evidence from experts presented by the BPD and the Appellants, the Commission finds that the BPD's annual hair testing plan is an appropriate tool to enforce such a policy, although a positive hair test does not provide the 100% irrefutable evidence of drug ingestion that the BPD (and the police union) believed it did when the policy permitting such testing was negotiated and implemented.

Workplace hair testing for drugs, as distinct from urinalysis, has been and remains a "work in progress". There has been a long-standing debate within both the scientific and law enforcement communities as to how accurately hair tests are able to differentiate between drug found in hair due to ingestion as opposed to contamination by external or passive means. There are no uniform, nationally approved standards for hair testing. Protocols vary from laboratory to laboratory and have changed significantly over time. Depending on what protocol is applied, what laboratory does the testing, or what instrumentation is used, many Appellants would test negative rather than positive. The BPD was the first and, until 2009, the only major municipal police department conducting annual hair testing of officers. The FBI Laboratory recently suspended hair testing of law enforcement personnel pending further study as to its efficacy.

The Commission concludes that, under basic merit principles and "just cause" standards of the Civil Service Law (G.L.c.31, §§1, 41-43) applicable to all tenured public employees, a BPD police officer's hair test that is reported as positive may be used for the purpose of determining whether or not an officer had used illicit drugs. A reported

positive test result, however, is not necessarily conclusive of ingestion and, depending on the preponderance of evidence in a particular case, may or may not justify termination or other appropriate discipline of a tenured BPD officer. Under these principles, the BPD met its burden to establish just cause to terminate Officers Thompson, Bridgeman, Bridgeforth and Guity. Their appeals are dismissed. The preponderance of the evidence fails to establish just cause to terminate Officers Beckers, Jones, McGowan, Harris, Washington and Downing. Their appeals are allowed in part.

II. Findings of Fact

Based on the exhibits, the stipulations of the parties, the oral testimony of the witnesses, and the inferences reasonably drawn from the evidence that I find credible, I make the findings of fact set forth below.

A. The Appellants' Prior Employment History

1. Preston Thompson. The Appellant, Preston Thompson, grew up in Boston, Massachusetts. He graduated from Boston Technical High School in 1973. He comes from a family of police officers. He became a BPD police officer in June 1979 and served through August 2001. During his 22-year career with the BPD, his hair color was black. At some point in his career he served as a union representative. He had no prior record of discipline. (*Exhs. 133 & 147; Tr.XIV:2654-2657, 2661, 2675, 2697, 2700 [Thompson]*)

2. For most of his career with the BPD, Mr. Thompson worked as a patrol officer. Approximately eight years prior to his discharge, as a result of work-related injuries, he requested a transfer to BPD headquarters and was assigned desk duty as a dispatcher. He was on injured leave beginning in January 2001 until his termination. After his discharge, Mr. Thompson filed for accidental disability retirement which was approved and became effective in or about October 2003. (*Tr.XIV:2656-2657,2666-2669,2684 [Thompson]*)

3. Mr. Thompson admitted to having experimented with drugs in high school and briefly thereafter, including smoking marijuana and snorting cocaine approximately half-a dozen times, when provided to him by friends. He is a social drinker of alcohol. He denies using illegal drugs for recreation, to relieve pain or stress, or for any other purpose at any time since becoming a BPD police officer in 1979. (*Tr.XIV:2655, 2675-2679, 2685-2693[Thompson]*)

4. Mr. Thompson's annual hair test for drug use in 1999 administered by the BPD was reported negative. His 2000 annual hair test was positive for cocaine but reported as negative after additional testing. (*Exhs.30, 132ID, 202; Tr.XIV:2659-2666 [Thompson]*)

5. At the time of the Commission's hearing, Mr. Thompson was employed part-time as a security guard at the Massachusetts College of Pharmacy.(*Tr.XIV:2704 [Thompson]*)

6. Richard Beckers. The Appellant, Richard Beckers was appointed as a BPD police officer in February 1989. He served as a patrol officer until he was terminated in August 2002. He received a 19-month suspension in 1995 for his involvement in an on-duty accident while operating a police cruiser. Mr. Beckers and the Appellant, Rudy Guity, are cousins. (*Exhs.125&147;Tr.XII:2264,2272-2292[Beckers];Tr.XV:2926[Guity]*)

7. Mr. Beckers's annual hair tests for drug use administered by the BPD in 1999, 2000 and 2001 were reported negative. He testified with a firm demeanor that he does not "do drugs" and specifically denied using cocaine in any form or even being in the presence of anyone who was snorting or smoking it to his recollection. I found no sign of prevarication that would discredit this testimony. (*Exh.118; Tr.XII:2219,2267-2268, 2292, 2320-2322 [Beckers]*)

8. Ronnie Jones. The Appellant, Ronnie Jones, worked as a BPD police officer for twenty years, from March 1983 until his termination in August 2002. He was assigned

duties as a patrol officer throughout the city, including approximately four years with the Mobile Operation Patrol (MOP) unit, where he provided motorcycle escorts for dignitaries and supported drug raids. His hair was black. His one prior discipline involved an oral reprimand in 1984. (*Ex.147; Tr.XI:2014-2017, 2041-2046, 2050-2051, 2072-2074[Jones]; Tr.XIV:2719[Washington]*)

9. In 2001, Mr. Jones married a former female BPD police officer whom he had been dating for about ten years before she voluntarily left the department in 2000. Prior to her resignation, she had tested positive for cocaine and completed a 45-day rehabilitation program in lieu of termination that was offered to her pursuant to the BPD's drug testing regulation, Rule 111.[2] She resigned in 2000 due to a medical condition that required major surgery. (*Exh. 5; Tr.XI:2057-2060 [Jones]*)

10. Mr. Jones's annual hair tests for drug use administered by BPD in 1999, 2000 and 2001 were reported negative. (*Exh. 16; Tr. 2018 [Jones]*)

11. Mr. Jones stated emphatically that "I don't do drugs" and neither does his wife. In response to specific questions at the hearing from this Commissioner, Mr. Jones unequivocally denied that he ever ingested cocaine into his body in any form and denied ever even having come into contact with crack cocaine being consumed by others. He stopped drinking alcohol in 1991. I perceive no reason to doubt his testimony, which largely held up on stiff cross-examination. (*Exh.103 (Confidential Exhibit); Tr.XI: 2020-2022, 2027-2028,2039,2051,2061-2066,2067-2071(Confidential Testimony),2080-2085 [Jones];2188-1296[Exh.103 Withdrawn]*)

[2] BPD Rule 111(Exh.5) is the administrative rule governing drug testing of BPD officers. The BPD had negotiated with the Boston Police Patrolmen's Association (BPPA), the collective bargaining unit to which each Appellant belongs, to provide among other things, that, in any case of a the first-time positive test, the officer would be given a 45-day suspension in lieu of termination if (s)he agreed to enter a rehabilitation program and submit to random testing for a three year period after completing the program. (*Exh.5 & 147*) Further detail about Rule 111 is set forth in Finding Nos. 35 through 55 below.

12. Jacqueline McGowan. The Appellant, Jacqueline McGowan was hired by the BPD in 1983 as a Police Cadet. She became a full-time BPD police officer in September 1987 and was terminated in October 2002. Her assignments over her fifteen-year tenure involved patrol duties save for one six month assignment to the Drug Control Unit. During her employment, she wore her light brown tinted hair at shoulder length. She described once having to report a colleague to her BPD superiors because she believed the officer was addicted to drugs and needed to get help. (*Exh.147; Tr.XVI:3210-3211,3229-3232 [McGowan];Tr.XVII:3274-3276[McGowan]*)

13. Ms. McGowan admitted to a history of alcohol abuse that began during her tenure with the BPD. She entered treatment programs for alcohol abuse in 1993, 1996 and 1997. She acknowledged drinking on duty in February 1997 which resulted in disciplinary action against her that was settled by her agreement to seek treatment and be randomly tested by breathalyzer. She has continued to drink alcohol, but she did not again drink while on duty. (*Exh.176; Tr.XVI3204-3205,3244-3254 [McGowan]*)

14. Beginning sometime in 1997 or 1998, Ms. McGowan became reacquainted with an old school friend and they became "drinking buddies". The friend introduced her to powder cocaine, which her friend provided and they snorted together while drinking heavily, always at the friend's home. Initially, Ms. McGowan used cocaine once every two weeks and promised herself each time was the last, but, after two years, she was using it every week on her days off. At that point, she knew she had become addicted. (*Tr.XVI:3237-3241, 3256[McGowan]; Tr.XVII:3276-3279 [McGowan]*)

15. Ms. McGowan tested positive for cocaine in a hair drug test administered in September 1999. She did not deny the validity of the test result and entered into the BPD's standard Rule 111 Settlement Agreement, by which she served a 45-day

suspension, entered rehabilitation and agreed to submit to random urine testing several times a month, under the BPD's auspices, for three years. All random urine test results were negative as were her annual 2000 and 2001 hair tests administered by the BPD. No evidence was offered to imply that Officer McGowan did anything to surreptitiously alter those results.(*Exhs.168,169,170,175ID,194; Tr.XVI:3200-3204, 3208-3210 [McGowan]*)

16. After testing positive in 1999, Ms. McGowan severed her relationship with the friend who had been her only source of cocaine. Ms. McGowan made a very positive impression as a witness. Her candor about her prior drug history and her unflinching demeanor when affirming her subsequent rehabilitation gave her testimony the ring of truth. (*Tr.XVI:3219, 3257-3258 [McGowan]; Tr.XVII:3274-3283[McGowan]*)

17. Oscar Bridgeman. The Appellant, Oscar Bridgeman, was employed as a BPD patrol officer from June 1988 until his termination in October 2002. He worked mainly in the Roxbury area of Boston. For the last several years of his employment, he was assigned to the "wagon", a specialty vehicle used to transport multiple prisoners from the scene of an arrest to a detention facility or from one facility to another. He admitted to making false 911 calls to the BPD while employed, which apparently came to the attention of the BPD, but did not lead to formal discipline. His hair was short and black, and turning gray. (*Exh.147;Tr.XVI:3083-3088,3100,3119-3125,3171-3181 [Bridgeman]*)

18. Mr. Bridgeman occasionally used marijuana as a young man prior to becoming a BPD police officer, [3] and once while on a trip to Amsterdam in 1996. He acknowledged suffering from depression and alcohol abuse while employed with the BPD. (*Tr.XVI:3093-3094, 3127, 3138(Confidential)[Bridgeman]*)

[3] I do not find Mr. Bridgeman's denial of "drug abuse" in his 1988 BPD medical history report inconsistent with this prior use. (*Exh. 164 (Confidential); Tr.XVI:3129-3130, 3131-3136 (Confidential) [Bridgeman]*)

19. Mr. Bridgeman's hair had tested negative for drugs in the 1999 and 2000 annual BPD drug tests. He tested positive for cocaine in the 2001 annual hair test which "freaked" him. He waived a safety net test and agreed to the 45-suspension and returned to duty after completing the required treatment program, after which he was subject to random urine testing under the BPD's auspices. He was followed by the OHU and tested about one dozen times, the last being on September 27, 2002. The results of all the random urine tests were reported as negative. No evidence was offered that infers Officer Bridgeman did anything to attempt to alter those test results. OHU reported that Officer Bridgeman was "anxious" about taking the next upcoming hair test. (*Exhs.160,161,163, 165,166,167ID;Tr.XVI:3091, 3093, 3095-3099, 3136-3138(Confidential), 3144-1345 (Confidential), 3161-3168, 3193-3196[Bridgeman]*)

20. At the Commission hearing, Mr. Bridgeman conceded that he had admitted to using cocaine to the BPD after testing positive in 2001, but that his admission wasn't true. He testified he had admitted using drugs only because he "had a lot of personal issues" at the time that he knew he needed to get into a program for treatment of his alcohol abuse and depression that he had been neglecting to address. Reports of his meetings with the OHU also refer to his admission of drug use as well as other statements that he used drugs to "self-medicate" and that he claimed to be "clean" since completing the program. Mr. Bridgeman denied any specific recollection of the OHU meetings. He repeatedly testified that marijuana was the only illegal drug he had ever used. (*Exhs.165ID(Confidential), 166ID(Confidential); Tr.XVI:3092-3095,3099,3112,3139-3158(Confidential),3160-3065,3168[Bridgeman]*)

21. Shawn Harris. The Appellant, Shawn Harris, grew up in Boston. He graduated from Brookline High School in 1987. He enlisted in the U.S. Army and served on active

duty from 1987 to 1989 and in the Army National Guard from 1989 through 1995. He became a BPD police officer in May 1999 and was terminated in April 2003. During his tenure, he was presented with a Hannah Award by the Commonwealth of Massachusetts (the highest award a Massachusetts police office can receive) as well as a commendation from the BDP, for his valor in handling a street shooting in Dorchester that led to the arrest of several gang members He wore his black hair in a military cut. After being terminated, Mr. Harris earned his bachelor's degree from UMass/Boston. (*Exh.147; Tr.XVII:3284-3289,3333-3335 [Harris]*)

22. During his military service, Mr. Harris submitted to dozens of random urinalysis drug tests, all of which were negative. In military drug testing, an observer views the soldier urinate. Mr. Harris also previously submitted to the BPD's hair tests for drugs prior to entering the Police Academy in 1999 and in an annual test in 2000, both of which were reported as negative. He was struck by an automobile while performing a work detail and was excused from his 2001 annual drug screen. He emphatically denied ever having used any illegal drugs and cocaine in particular. (*Exh.5; Tr.XVII:3289-3290, 3307, 3329-3331[Harris]*)

23. Walter Washington. The Appellant, Walter Washington, graduated from Boston Technical High School in 1985. In June 1989, he was appointed as a firefighter with the Boston Fire Department. He became a BPD police officer in November 1989 and was terminated in April 2003. He worked mainly as a patrol officer with one rotation to the motorcycle unit. During his BPD tenure, he had black hair that he kept cut short. (*Exh.147;Tr.XIV:2715-2725,2770 [Washington]*)

24. In his Commission testimony, Mr. Washington admitted to having smoked marijuana in high school.[4] He denied ever using cocaine or any other illegal drug. His annual BPD hair tests for drug use in 1999, 2000 and 2001 were reported as negative. (*Tr.XIV:2726-2728,2771-2772 [Washington]*)

25. Since he was terminated from the BPD, Mr. Washington has held several jobs driving commercial vehicles, one of which was working as a UPS delivery driver, a position he has held for the past three years.These jobs all required successfully passing initial hire and periodic urinalysis screening. (*Tr.2808-2811[Washington]*)

26. William Bridgeforth. The Appellant, William Bridgeforth, was employed as a BPD police officer from February 1989 until his termination in September 2003. Save for a brief assignment to the drug control unit around 1990, he worked exclusively as a patrol officer. Prior to his employment with the BPD, he served six years as a police officer with the MBTA. He kept a shaved head and wore a full beard. He lived in an apartment building where known cocaine users also resided. (*Exh. 147; Tr.XI:2093-2096, 2116-2117, 2143-2147-2154, 2166, 2181-2183 [Bridgeforth]*)

27. Mr. Bridgeforth submitted to annual hair tests for drugs under the auspices of the BPD for the years 1999 through 2001, all of which were reported negative. (*Tr.XI:2096[Bridgeforth]*)

28. Mr. Bridgeforth's 2002 annual hair test was reported positive for cocaine, as was another hair test Mr. Bridgeforth obtained on his own. Mr. Bridgeforth signed a Rule 111 settlement agreement, accepting a 45-day suspension, entered a drug rehabilitation program, after which he was subject to random urine testing for a three-year period. The

[4] I do not find this testimony inconsistent with Mr. Washington's denial of "drug abuse" as stated on his BPD health history questionnaire. (*Exh. 193(Confidential); Tr.XVIII:3451*)

urine tests conducted from October 1, 2002 through April 2, 2003 were reported negative. (*Exhs.104, 110, 111, 112; Tr.XI:2096-2109,2112-2113 2160-2174 [Bridgeforth]*)

29. Mr. Bridgeforth denied ever using cocaine and was "totally shocked" to learn about his 2002 positive drug tests. Mr. Bridgeforth's two-month old son had been diagnosed with a serious medical condition and he also supported seven other children, including six from a previous marriage. He claimed he needed to keep his job to provide for his son's medical care, as well as to fulfill his obligation to support his other children, which compelled him to sign the Rule 111 agreement. (*Tr.XI:2097-2102,2152,2162-2164,2179-2179,2183-2187 [Bridgeforth]*)

30. George Downing. The Appellant, George Downing, graduated from South Boston High School in the late 1980s and became a BPD police officer in March 1996, serving until his termination in January 2004. His duties included a variety of patrol assignments, including time with the "anti-crime" unit, a plainclothes unit that focused on apprehending persons with outstanding arrest warrants. Beginning in or about 2000, he grew his hair long and wore it in braids. (*Exh.147; Tr.XV:29-54-2963, 2980 [Downing]*).

31. Mr. Downing was tested under the BPD's annual hair drug tests administered in 1999, 2000, 2001 and 2002. Those test results were all reported negative. He strenuously denied ever using any illegal drugs, save for once getting high on marijuana in high school and trying it a few more times during that period of his youth. (*Tr.XV:2961,2964-2968,2995-2996,2999-3001,3003,3017-3018,3024 [Downing]*)

32. Following a period of unemployment after his termination from the BPD, Mr. Downing obtained work as a security guard, beginning in or about 2005. He had recently been appointed to a supervisory position with an employer who provides security services to the federal Department of Homeland Security. In these positions, Mr. Downing is

licensed to carry a firearm and has been required to take random urinalysis tests for drug use, all of which have been reported negative. (*Tr.XV:2990-2991, 3005-3006 [Downing]*)

33. Rudy Guity. The Appellant, Rudy Guity, was appointed as a BPD police officer in June 1979 and was terminated in March 2007, five years short of his retirement date, making him the longest-serving BPD officers of the ten appellants. His duties included patrol assignments, in vehicles, on bicycles and on foot, as well as an assignment to the drug unit in the 1990s. His record includes approximately one dozen written commendations for his work and one disciplinary suspension. He had black hair until he became bald around 2003, and wore a beard that was a blend of black and grey.(*Exhs. 144 & 147; Tr.XIV:2811-2818, 2851-2855 [Guity]; Tr.XV:2901[Guity]*)

34. Mr. Guity denied personally ever using illegal drugs at any time. His first seven annual hair tests for drug use from 1999 through 2005 were all reported negative. He "believed in the hair test" throughout that period, even after he learned that other BPD officers, including his cousin, Richard Beckers, whom he "knew" did not use drugs, had tested positive. (*Tr.XV:2928, 2933-2937 [Guity]*)

B. History of BPD Testing for Drug Use

35. Employee workplace drug testing came into national prominence in the 1980s, on the impetus of an Executive Order issued in 1986 by President Ronald Reagan and ensuing federal statutes and regulations that implemented a federal policy to promote a drug free workplace and authorized procedures for mandatory urinalysis testing of certain employees holding specified sensitive positions, as well as promoting testing for drug use on a voluntary and "reasonable suspicion" basis. The federal drug testing program covers ten to fifteen million workers, including about two million federal employees, ten million transportation workers, and another two to three million employees in industries

regulated by the Federal Government, such as nuclear power operators. It also applies to criminal justice drug testing performed by the federal judiciary. *(Exhs.23 ,33 through 36, 37A[Redacted Walsh Report]; Tr.III:460-485 [Walsh]; Tr.IV:753-756,772 [Walsh]; Tr.VII:1196-1199[Rollins];Tr.IX:1489-1490,1495[Kadehjian]*)

36. The BPD first codified a substance abuse policy in 1986, as Rule 111, which espoused a "zero-tolerance" policy for drug use among its personnel and a 100% drug-free workforce. As originally promulgated, Rule 111 prohibited both on-duty and off-duty use of illegal drugs and illegally-used prescription drugs, and provided for urinalysis testing of BPD personnel for "reasonable suspicion" of such drug use and on a random basis. (*Exhs.5,7,8,9,54,147,195[Reagan Depos.,pp.26-29];Tr.V:843-844[Mullan]; Tr.VI: 1010 [Horwitz];see also Tr.III:617[Walsh]*)

37. The BPD was forced to abandon random drug testing after the Massachusetts Supreme Judicial Court held that random urinalysis testing of BPD officers imposed an unreasonable search and seizure under the Massachusetts Declaration of Rights[5]. As a result, absent agreement thereafter, the BPD could lawfully test an officer only on "reasonable suspicion" of drug use. As a practical matter, detecting drug use by a fellow officer is difficult and few instances of "reasonable suspicion" are reported. (*Exhs. 53D, 195[Reagan Depos.,pp.26,29], 196[Evans Depos.,pp.8-9]; Tr.VI:952-961[Horowitz]; Tr.XI:2055-2058[Jones];Tr.XI:2158[Bridgeforth];Tr.XII:2269 [Beckers]; Tr.XIV:2694-2698[Thompson];Tr.XV:2903-2906[Guity];Tr.XV:3018-3019 [Downing]; Tr.XVI:3229-3233[McGowan]; Tr.XVII:3233[Harris]*)

[5] In this respect, the SJC held that Art. 14 of the Massachusetts Declaration of Rights was more expansive than the protection provided by the Fourth Amendment to the U.S. Constitution, which did not preclude such random drug testing. See Guiney v. Police Comm'r of Boston, 411 Mass. 328, 329 (1991), *citing* National Treasury Employees Union v. Van Raab, 489 U.S. 656 (1989) and Guiney v. Roache, 873 F.2d 1557 (1st Cir.), cert. den. 493 U.S.963 (1989)

38. In 1996, the BPD reopened the subject of resuming random drug testing during negotiations for a new collective bargaining agreement to become effective in January 1999, to which the BPPA strenuously objected both on legal and personal privacy grounds. To alleviate the union's expressed concerns, the BPD offered the concept of "announced" hair testing (within a 60-day window of an officer's birthday) as a less invasive, and non-random alternative. The idea emanated from then Police Commissioner Paul F. Evans, who heard through his contacts with other major city police chiefs that a company by the name of Psychemedics had developed a method for testing hair for drugs. (*Exh.195[Reagan Depos.,pp.12-13,27-36,79-80,86-89,99-100], Exh.196[Evans Depos., pp.8-11,21-23]; Tr.VI:964-969[Horwitz]*)

39. While this proposal was pending, the BPD switched from urine testing police recruit candidates during the application process and started using Psychemedics to conduct hair tests on all candidates. (*Tr.V:843-845[Mullan]*)

40. Eventually, an agreement for hair testing sworn officers was reached and reduced to writing as Section 20 of a Memorandum of Understanding dated May 28, 1998 (the 1998 MOU), which was also incorporated in the collective bargaining agreement (CBA) and provided for the following addition to Rule 111:

> To be effective January 1, 1999, modify Rule 111, Substance Abuse Policy by inserting additional section "G" into "Section V. Testing" to read as follows:
>
> "G. Annual Drug Testing. – In a joint desire to achieve and maintain a work force that is 100% drug free and in further recognition that the Department has not yet achieved such goal, the parties agree that all sworn personnel shall be subject to an annual drug test to be conducted through a fair, reasonable and objective hair analysis testing system. Each officer shall submit to such annual test on or within thirty (30) calendar days of each officer's birthday. The Department shall schedule each examination and so notify each officer as far in advance as practicable. Hair testing does not contemplate or include testing for alcohol.
>
> "The Department agrees that it will establish and adhere to written collection and testing procedures for hair samples. These procedures shall be fair

> and reasonable so as to ensure the accuracy and integrity of the test process. These written procedures will be appended to this Rule and become incorporated thereto. The union, should it so request, shall meet with the Department in order to discuss issues relative to the collection and testing process. Nothing contained herein alters the current policy as it relates to other drug/alcohol testing, procedures, or requirements."

(*Exhs. 5,7, 9 & 54; Tr.VI:970-972[Horwitz*])

41. Before proposing "announced" hair testing, the BPD made an effort to research the subject, in general, as well as Psychemedics's testing standards, in particular. The research was conducted principally by Michael Reagan, then Deputy Directory of BPD's Office of Labor Relations, along with inside and outside labor counsel. Several meetings were arranged with Psychemedic's legal counsel, William Thistle, and its senior scientist, Dr. Thomas Cairns. *The BPD "wanted to make sure that . . . [i]f we disciplined an officer for being positive, that they truly had done drugs*."(*Exhs.195[Reagan Depos.,pp.20-21,31-61,66-68,78],Exh.196[Evans Depos.,pp.10,14-24](emphasis added)*)

42. Mr. Reagan was convinced that "the science is solid, and it isn't random, it isn't as invasive. That combination of factors led us to believe that hair testing was a good idea. . . ." *Commissioner Evans was "absolutely a hundred-percent certain that in fact this was a valid process and made it clear, you show me scientifically that it's not, then I will cease.*" (*Exhs.195[Reagan Depos.,p.29], 196[Evans Depos.,p.37(emphasis added)]*)

43. As prescribed by the 1998 MOU, the BPD prepared a set of procedures for the implementation of the hair testing program, which were incorporated into Rule 111 as Appendix D. The details contained in these procedures are the product of several months of meetings and the exchange of documents among BPD's then Director of Labor Relations, Deputy Superintendent John Ferguson and his staff, as well as BPPA's labor counsel, Susan Horwitz. (*Exhs.5,7,9,59[Reagan Arbitration Testimony Excerpt], 60,195[Reagan Depos,pp.67-68];Tr.VI:973-976,1028-1032,1047-1048[Horwitz]*)

44. The main focus of these discussions concerned two issues: (a) the integrity of the chain of custody from collection to testing; and (b) assurance that the test distinguished the presence of drugs in a hair sample as a result of voluntary ingestion as opposed to some form of external or environmental contamination due to an officer's contact with drugs in the course of his duties. After the BPD agreed to incorporate several minor procedural changes suggested by the BPPA, the BPPA was satisfied with the essential elements of the testing plan: namely, the collection process; the "cutoff" levels to be used, i.e., the quantity of drugs present in a hair sample that Psychemedics considered to constitute a positive indication of drug ingestion; the availability for any officer to take a second "safety net" retest; and the oversight by the BPD's independent Medical Review Officer (MRO), met the agreed-upon standard for a "fair, reasonable and objective hair analysis testing system." (*Exhs. 7 & 9; Tr.VI;976-981,1033-1036[Horowitz]*)

45. Neither the BPD nor the BBPA had more than a superficial knowledge of the science behind hair testing for drugs at this point. The BPPA understood that Psychemedics was "the only game in town" and both parties relied heavily on Psychemedics's assurance that its "industry standard" testing was scientifically accepted and state-of-the art in hair testing. (*Exhs.7, 9, 59[Reagan Arbitration Testimony], 60, 196[Evans Depos.,pp.40-42]; Tr.VI:981,1025, 1031-1034, 1055-1056[Horwitz]*)

46. As finally promulgated, the revised Rule 111 required all sworn officers to submit to an annual drug test for the presence of illegal substances, not to include alcohol, administered within a 60 day window of the officer's birthday.[6] The procedures

[6] The procedures for annual hair testing supplement the prior use of mandatory testing upon (a) "reasonable suspicion": (b) as "follow-up testing" for officers who have undergone treatment for prior drug use; and (c) certain other situations, including pre-employment screening, during the officer's initial probation period, and as a condition to promotion or assignment to certain specialized units, such as Drug Control. (*Exh. 5, Section V*)

for such testing set forth in Appendix D of Rule 111 included the following:

- Advance notice to the officer to be tested
- Hair samples to be collected by BPD Occupational Health Unit personnel "certified" in collection procedures
- Use of a Sample Acquisition Card (SAC) to document the collection process and hold the hair sample in a secure manner
- Secure storing and shipping to a "licensed laboratory that is certified to perform hair testing"
- Review of the test results by a Medical Review Officer (MRO), who must be a qualified physician knowledgeable of substance abuse disorders, to include a confidential interview with any officer who tests positive to ascertain, among other things, whether there is a medically acceptable explanation for the positive test result. This provision of the rule expressly states: "It is important to note that it is highly unlikely that a medically acceptable explanation will be found for the presence of cocaine or marijuana."
- Provision for any officer who tests positive to take a "safety net" test which "must be performed under the same or more stringent procedures as recommended by the manufacturer." The safety net test must be requested within 72 hours of being notified of the positive test result and at the officer's expense, with the right of reimbursement in the event of a negative result.
- Provision for access by any officer of "any and all records(s) relating to his/her hair test result that is/are in the possession of the [BPD]."

(*Exh. 5, Section V.G & Appendix D*)

47. Rule 111 prescribes the following "Consequences of a Positive Test".

ILLICIT DRUGS
Sworn personnel who receive a verified positive test result for illicit drugs will be subject to termination. However, where the Officer's only violation is a positive test for illicit drug use and it is the Officer's first offense, the Commissioner shall offer voluntary submission to the following alternative program:

- Up to a 45 day suspension without pay
- Execution of a Rehabilitation Agreement and submission to treatment/ rehabilitation
- placement in an administrative position and suspension of weapon carrying privileges upon return to work following suspension until certified by the treatment provider to be recovering and able to safely carry weapons, and
- submission to [up to thirty-six months of unannounced, i.e, random] "follow-up testing" as described in section V(B) above.

Note that failure to comply with the terms of the Rehabilitation Agreement either during or after the suspension period would constitute a separate violation of this policy and shall result in a recommendation of termination.

ALCOHOL OR ILLEGALLY-USED DRUGS
Sworn personnel who test positive for alcohol or illegally used drugs shall be subject to disciplinary procedures up to any including termination. However, the first time an Officer tests positive for alcohol or illegally used drugs, the Officer shall be offered and the Officer shall sign a Rehabilitation Agreement and the officer shall receive up to a 5 day suspension. Note that refusing to sign the Rehabilitation Agreement under these circumstances constitutes a separate violation of this policy. Sworn personnel who sign the Rehabilitation Agreement and undergo treatment will be assigned administrative duties and have their weapon carrying privileges suspended until such time as they are certified, by the treatment provider, to be recovering and able to safely carry weapons, at which time the disciplinary procedures being held in abeyance shall not be served. A record of the original disciplinary action, as well as successful completion of rehabilitation, shall remain in the Officer's medical personnel file. They will also be subject to Follow-Up drug testing as described in V(B) above.

(*Exh.5, Sections V & VI*)

48. Psychemedics provided on-site training and testing of the BPD personnel in the OHSU responsible for collecting hair samples. Upon completion of training, BPD personnel were tested and certified by Psychemedics as proficient in the techniques and requirements for collecting hair samples. The BPD officer pool was briefed on the new process and hair testing began in January 1999. (*Exhs.147, Exh.196 [Evans Depos.,pp.16-18]; Tr.V:847-848, 866,881-884[Mullan] Tr.VI:1054[Horwitz]*)

49. Initial hair testing revealed that the BPPA and the BPD differed as to what they believed they had agreed upon, which precipitated a series of grievances under the collective bargaining agreement.

- In *City of Boston & BPPA (Foley), Case #16-1376*, an arbitrator determined that an officer who had a positive hair test for cocaine in June 1999 and agreed to sign a Settlement Agreement consenting to enter rehabilitation, was unable to grieve the just cause for the discipline or claim that she had been coerced into signing the agreement. Rather, the concept of "obey and grieve" did not apply and she was required under the CBA to choose one path or the other, but could not do both

simultaneously. The Award stated that "it was within the realm of possibility that an innocent person will receive a positive test result for illicit drugs" and "ironically, the alternative program [option of suspension/rehabilitation] benefits the guilty, not the innocent" and "is not an option for the truly innocent person who is determined to challenge the test result . . . ."

- In *City of Boston & BPPA (D. Smith), Case #16-1390*, an officer who had tested positive for marijuana in March 1999 at nearly eight times the cut-off level and entered rehabilitation was improperly subjected to premature follow-up random testing before his rehabilitation period was complete, and could not be subjected to urine testing that employed a cut-off standard that was lower than the standard expressly contained in Rule 111 for such testing.
- When it became known that Psychemedics's cutoff for a positive follow-up "safety net" test was less than half of the cutoff for the initial test, the BPPA complained that the smaller level violated the agreement that the safety net was essentially a "re-test" and must be performed under the "same or more stringent procedures" as the initial test as Rule 111 stated. In *City of Boston & BPPA (Pulido), Case #16-1352*, an arbitrator rejected this contention, siding with the BPD that: (a) nothing in Rule 111 or in the collective bargaining agreement has spelled out the specific cutoff levels for either initial or safety net hair testing (as opposed to the cutoff levels in the *Smith* case) that had been previously specified in Rule 111 regarding urine testing), and what the Union asked for and what the City agreed to provide was the "the 'Safety Net' procedure available from [Psychemedics]," and (b) the safety net test was a "confirmatory" test, not a "do over" and the record failed to establish any unfairness or unreasonableness in the

use of the lower cutoff level specified by Psychemedics for reporting the result of such a test. The Award stated, however: "That is not to say that there could never be a situation in which a a drug-free individual could end up with false positive results on both the intial and the safety-net test."

- In *City of Boston & BPPA (Puzzo), Case #16-1395*, an arbitrator reached similar conclusions in finding that there was just cause to discipline an officer who had tested positive for cocaine in November 1999. The Award specifically found that use of a lower cutoff for safety net "confirmatory testing was undertaken in a fair and reasonable manner" that did not violate the collective bargaining agreement. Nor was the collective bargaining agreement violated by the requirement that the officer enter into a Settlement Agreement to accept a 45-day suspension, enter rehabilitation and waive all rights of appeal from the discipline (including appeals to the Commission). The Award reasoned: "A verified, positive test result for illicit drugs is *prima facie* evidence of illicit drug use for which an officer is subject to termination. . . .I find it fundamentally inconsistent for an officer to seek drug rehabilitation . . . while, simultaneously, insisting upon his or her innocence and challenging the drug test results."

(*Exhs. 7(emphasis added), 8, 9 , 59[Reagan Arbitration Testimony]; Tr.VI:984-988, 996-999,1011-1014, 1025-1026, 1041-1044[Horwitz]*)

50. The issue of alleged potential racial disparity in the hair test results was another early topic of discussion. Commissioner Evans met with representatives of the Massachusetts Association of Minority Law Enforcement Officers (MAMLEO) and others to address these concerns. The BPD consistently maintained that there was no

evidence that the ethnic or physical characteristics of an officer's hair could skew the results of a hair test. (*Exh.196 [Evans Depos., pp.26-40]*)

51. In July 2006, the BPPA proposed changes to the BPD hair test procedures, principally focused on the cutoff threshold and the safety net process. By Memorandum of Agreement, incorporated into the collective bargaining agreement effective July 1, 2007, the BPPA and the BPD agreed to modify the hair testing procedures as follows:

- Simultaneous collection of three separate hair samples, two to be sent to Psychemedics and one kept in secure storage by BPD;
- Set a specific cut off threshold for a positive test for cocaine by Psychemedics as: (a) minimum of 5ng/10mg of cocaine; and (b) contains 1.0ng of norecocaine or a benzoyleconine/cocaine ratio of 5% or greater; [7]
- Require that both Psychemedics samples must test above the specified cut-off threshold and test within 30% of each other to receive a positive test, a procedure known as "double confirmation" testing;
- Permit an officer to have the third sample tested at his/her expense by Quest Laboratories for presence of the drug at that laboratory's "limit of detection" (defined as 50pg/mg for all drugs except marihuana (which is 0.05 pg/mg)

(*Exhs.58 through 58;Tr.989-1005,1037-1039[Horwitz];Tr.XIII:2373-2377(Confidential), 2589-2590[Cairns]*)

52. From its inception in 1999 through 2006, the BPD undertook approximately 17,000 total hair drug tests. About 87 to 98 tests were reported positive for illicit drugs. No officer assigned to the BPD Drug Control Unit (DCU), a unit of approximately 88 officers dedicated to drug interdiction, or to the Evidence Management Unit (EMU), which handles and manages drug evidence as well as the disposition of drug evidence, for a period of at least ninety days prior to the date of that officer's annual hair test was ever reported positive. (*Exhs.147,148[Sutliff Aff't]; Tr.V:795-798 ,808, 825 [Meade]*)[8]

[7] A more detailed description of the technical terminology is found below (at Finding Nos. 56-75)

[8] The test results for the DCU and EMU officers were not known. The fact that these tests were reported negative does not necessarily mean that no drugs were found in their hair samples, but only that the levels, if any, did not meet the cutoff criteria then applicable. (*Tr.VI:815-816{Meade]*)

53. From 2007 until the Commission hearings in 2010, only one known BPD officer's hair test was reported positive for cocaine. (*Tr.VI:1049-1050,1057[Horwitz]*)

54. In terms of ethnicity, no officer of Asian-American descent was reported positive for cocaine in a BPD hair test administered from 1999 through 2010. Of approximately 4200 to 4300 hair tests on African American officers from 1999 through 2006, between 55 and 58 of them tested positive for cocaine. (*Exhs. 147, 158 [Sutliff Aff't]*)

55. With one exception, involving a chain of custody issue, all BPD officers who tested positive for drugs on a hair drug test and who refused to sign a settlement agreement and enter into a rehabilitation program, and all officers who tested positive for drugs a second time have been terminated from employment pursuant to Rule 111. (*Exh.147*)

C. <u>The Science of Testing Hair for Drug Use</u>

1. <u>Terminology</u>

56. <u>Cocaine</u>. Cocaine (COC) is one of the five categories of illicit drugs enumerated by name in BPD Rule 111.[9] The National Institute on Drug Abuse (NIDA) describes cocaine as a "powerfully addictive" stimulant that is one of the oldest know psychoactive substances, derived from coca leaves, and previously used as the main ingredient in most tonics and elixirs used to treat illness in the early twentieth century. Cocaine comes in two chemical forms that are currently abused: cocaine hydrochloride, a water-soluble salt and water-insoluble cocaine base (or freebase) used to produce a rock-like smokeable substance known as "crack" cocaine. Cocaine produces a "high" lasting 10 to 30 minutes. With repeated exposure, tolerance can develop, which requires higher doses and more

[9] All of the Appellants were terminated solely because they tested positive for use of cocaine. BPD Rule 111 also covers testing for use of marijuana, opiates (heroin), amphetamines and phencyclidine (PCP) for which none of the Appellants tested positive. (*Exhs.5 & 147*)

frequent use to register the same level of brain stimulation. According to NIDA:

> It is unlikely that an individual will be able to reliably predict or control the extent to which he or she will continue to want to use [cocaine]. And, if addiction takes hold, the risk for relapse is high even following long periods of abstinence. Recent studies have shown that during periods of abstinence, the memory of the cocaine experience or exposure to cues associated with drug use can trigger tremendous craving and relapse to drug use.

(*Exh.90*)

57. In testimony before the Commission, Professor Douglas Rollins, M.D., Ph.D., and Dr. Leo Kadehjian, Ph.D., each confirmed the extraordinarily powerful euphoria produced by cocaine, especially crack cocaine. They also distinguished the pharmacological effects of cocaine from opiates, such as heroin, in which a user builds up physical tolerance to the opiate, requiring an inexorable need for more and more heroin to avoid the extremely severe, even life-threatening physical and emotional conditions experienced in withdrawal. For reasons that neither expert knew, there is a phenomenon in which so-called "recreational" cocaine users do not develop such a physical addiction and, for some limited periods of time, are able to handle the absence of experiencing pleasure (or ahedonia) that abstinence produces, until behavioral or social pressure, as opposed to physical dependency, eventually makes the desire for another euphoric hit impossible to resist. Both experts believed that it was reasonable to expect such a "recreational" user to be able to manage abstinence for a period of days or perhaps weeks, but that it would be "difficult" if not impossible to expect a user to be able to abstain for a month or more. (*Tr.X:1883-1894[Rollins];Tr.X;1898-1903[Kadehjian]*)

58. Cocaine was labeled "the" drug of the 1980s and 1990s because of its extreme popularity during that period. Data suggests that the percentage of cocaine use by age group varies from about 2.5% for ages 18 to 25 to less than 1% for those over age 35. As of 2009, there were an estimated 1.9 million current (within past month) cocaine users, of

which about 350,000 were crack cocaine users. Seventy-two percent (72%) of cocaine users who enter a drug treatment program are likely to be "poly drug" abusers, or users of more than one substance. Although reported marijuana use is about five times greater than cocaine use nationally, of the approximately 2,000 drug arrests made by the BPD each year, cocaine is involved in 40% or more of them. (*Exhs.37A & 90; Tr.IV;634-640[Walsh];Tr.V:800,809[Meade]*)

59. Commercially produced cocaine powder, so-called pharmaceutical-grade, is nearly 99% pure. "Street cocaine" available on the black market is usually diluted or "cut" (as much as 50%) with other substances, and varies in purity and content depending on the source, the method of production and the purity after being "cut". (*Exhs.4,42 & 47;Tr.I:261-262[Cairns]; Tr.IV:.688-689[Walsh];Tr.XIII:2493,2499[Cairns]*)

60. Cocaine Metabolites. Once cocaine is ingested, it travels through the blood stream until it is converted in the liver to a series of derivative substances, or metabolites, that eventually are expelled through the urine, a process that takes about 72 hours to complete.[10] The key metabolites, in order of their abundance, are benzoylecgonine (BE), cocaethylene (CE) and norcocaine (NCOC). CE is produced when cocaine interacts with alcohol. Additional metabolites are produced in lower concentrations and less frequently analyzed. Cocaine metabolites are also present in both manufactured (pharmaceutical grade) and street cocaine. (*Exhs.4,42,46&47;Tr.I:61-70,71-72,82-83,134-135[Cairns]; Tr.II:261-262, 302-303, 322 [Cairns]; Tr.III:540-541(Confidential),574-575, 591-594 599 609-610 [Walsh]; Tr.IV:683-686,781-782[Walsh]; Tr.VII:1125[Rollins]; Tr.VIII: 1354 [Rollins]; Tr.XIII:2358[Cairns]*)

[10] Urine testing for drug use actually depends on finding the presence of metabolite, i.e. BE in the case of cocaine, rather than the parent drug (COC). (*Tr.I:61[Cairns]; Tr.IV:757-758, 781-782[Walsh]*)

61. Quantities. The quantities involved in drug testing are extremely small, involving particles invisible to the eye. It involves detection of "parts per billion" according to Dr. Kadehjian, and, as, Dr. Walsh put it, "equivalent to identifying one second [of time] in a period of 27 years." (*Exh. 21*; *Tr.III:498 [Walsh]; Tr.IX:1645 [Kadehjian]*).

62. Drug quantities are measured by weight in parts of a gram (g): a kilogram (kg) is one thousand grams; a milligram (mg) is a thousandth of a gram (0.001 gram); a microgram (μg) is a millionth of a gram (0.000001 gram); a nanogram (ng) is a billionth of a gram (0.000000001); a picogram (pg) is a one thousandth of a nanogram, and a trillionth of a gram (0.000000000001). A hair sample collected for testing (about 80 strands) can range from about 25 to 100 milligrams, which is usually subdivided into portions for testing. A "line" of cocaine weighs about 50 to 100 milligrams. Crack cocaine comes in a small "rock" of five to ten milligrams. (*Exhs.37A,61; Tr.I:98,105, 114-115,121,144-145[Cairns];Tr.III:495-498[Walsh];Tr.IV:701-702[Walsh]; Tr.VIII: 1312-1313,1401,1404[Rollins];Tr.IX:1566[Kadahjian];Tr.X:1787-1788,1904-1911 [Kadehjian]; Tr.XIII:2347-2349,2493 [Cairns]*)

63. The technology known as mass spectrometry has been in widespread use in forensic drug testing. There are various types of instruments that use this technology. The method known as LS/MS/MS is considered the "gold standard" in analytical chemistry. Some instruments are capable of measuring quantities in attograms, which are a million times smaller than picograms. *(Exh.129;Tr.II:317-319[Cairns]; Tr.VII: 1089[Rollins] Tr.IX:1481,1565-1566,1675 [Kadehjian]; Tr.X:1877[Kadehjian]*)

64. For illustration purposes, Exhibit 48 is a photograph showing approximately 12 milligrams of hair. Exhibit 40A is a photograph showing approximately 12 grams of hair

and 15 milligrams of cocaine powder. (*Exhs. 40A & 48; Tr.IV: 586-590,706-713[Walsh]; Tr.XIV:2631*)

65. Hair Structure. Human hair emanates from bulbous structures below the skin starting from the base, or papilla, which contain cells fed by capillaries from the blood stream that grow around a center, called the medulla, into fibrous strands called the cortex (think, a series of intertwined, rope-like structures), surrounded by an exterior comprised of five to ten layers of dense overlapping cells called the cuticle (think, layers of house shingles). The cortex contains two principal types of cells: about 96 percent are keratinocytes, the main component of hair, and about 4 percent are melanocytes, which make melanin (eumelenin and pheomelenin) that give hair its pigment. Black hair contains the most eumelanin and red hair contains the least eumelanin. Grey or white hair contains little or no melanin. (*Exhs.20,22,37A,61,62,65,72,76,79,83,93,115&129; Tr.I:85-86[Cairns];Tr.III:513-514[Walsh];Tr.VII:1093,1327-1331,1364,1385,1422-1424 [Rollins]; Tr.IX:1511-1531, 1551, 1614, 1646-1647[Kadehjian]*)

66. A basic premise for hair testing for drugs is the scientific fact that nascent hair cells in the papilla absorb drug molecules circulating in the blood and permanently embed them into the cell (essentially, frozen in a time capsule[11]), and stay with the cell as it moves linearly when the hair follicle grows. Head hair grows about one centimeter or half an inch per month and emerges from the scalp after a period of one week to one month. A hair follicle's growth phase continues for several years, after which time the follicle enters a resting phase, separates from the papilla, stops adding new cells to the shaft and, weeks later, the follicle falls out. A new hair follicle is then generated in the

[11] A study of the corpse of the poet John Keats, more than a century after his death, disclosed the presence of opiates that had embedded in his hair during his lifetime. (*Exhs.114 & 115; Tr.I:161-162 [Cairns])*

papilla and the cycle repeats itself about twenty times over a person's lifetime. At any given point, about 85% of head hair is in its growth (anagen) phase. The same principles apply to beard, underarm, chest, and pubic hair, although the cycle time varies depending on location. (*Exhs.20,36,67,76,77,83,92,114,115 & 129; Tr.I:62-64, 76, 89-90, 161 [Cairns]; Tr.II:441-444 [Cairns]; Tr.IV:779 [Walsh]; Tr.VIII:1354-1355,1374,1442 [Rollins]; Tr.IX:1524-1531, 1656-1657, 1662-1665 [Kadehjian]*; *Tr.XIII:2345, 2393, 2379-2381, 2429-2431, 2455, 2609[Cairns]*)

67. It is also generally accepted in the scientific community that hair follicles are somewhat porous and may be penetrated by exposure of the exterior of the cuticle to a drug molecule deposited on the surface which, under certain conditions, can permeate into the layers of the cuticle and lodge in the interstitial spaces within the cortex and medulla. This is generally referred to as "passive" or "environmental" contamination. Porosity of hair is considered an important determining factor in the rate of external contamination and is influenced by a variety of factors, including gender (in general, female hair, especially if treated, is more porous than male hair) and the extent to which hair structure is altered, damaged or penetrated such as through cosmetic treatment or laboratory testing. (*Exhs.2,20,21,36,61,65 through 68,71,77,93,114,115,116,129; Tr.I:72-74,80[Cairns];Tr.VII:1156[Rollins];Tr.VIII:1378-1379,1421-1425[Rollins];Tr.IX: 1517-524, 1556, 1582-1583, 1613-1616, 1666-1668 [Kadehjian]; Tr.X:1972-1973, 1993-1995 [Kadehjian]; Tr.XIII:2355-2357,2522-2524[Cairns]*)

68. There is also scientific support for the premise that drugs can enter the hair of a non-user though "passive inhalation". i.e., second-hand smoke, as well as what is sometimes called "passive ingestion", i.e., contamination via drug contact with the skin,

sweat and sebum (a skin lubricant associated with hair produced by the sebaceous gland). The technology of a "nicotine patch" and a "sweat patch" employs this latter principle, although these devices contain certain chemical agents designed to enhance the transfer of the chemicals in the patch through the skin, which, in its natural state, is considered a relatively impermeable membrane. (*Exhs.2,77,86,114;Tr.I:73-74,79-80,143[Cairns]; Tr.VII:1088-1090 [Rollins]; Tr.IX:1479-1486 [Rollins]; Tr.IX:1582-1583,1640-1643, 1674-1680 [Kadehjian]; Tr.X:1992-1995 [Kadehjian]*)

69. Window of Detection. The period of prior drug use captured by a drug test is known as the window of detection or "look-back" period. It is a function of the duration of time that an ingested drug or its metabolites remain in the body. Thus, blood and urine testing have a window of detection of hours or days for most drugs, and perhaps weeks for chronic drug abusers, after which time the body has completely metabolized the drug and eliminated all evidence of prior use through the urine. (*Exhs.84,114;Tr.I:75[Cairns]; Tr.III:563-564(Confidential),609-615[Walsh];Tr.777-780[Walsh];Tr.VIII:1354[Rollins]; Tr.IX:1656,1672-1673[Kadehjian];Tr.XIII:2443-2444[Cairns]*)

70. Because drugs and drug metabolites are permanently stored in the hair cell, hair testing provides a much longer window of detection. Drug molecules will appear in the papilla within minutes of ingestion and, with appropriate analytic techniques, can be detected from that point forward for years into the future. Techniques even exist to estimate how long ago the drug was deposited into the cell, based on its location in the hair follicle and, thereby, can disclose the pattern of an individual's drug use over time (e.g., chronic or sporadic; increasing, decreasing; etc.). (*Exhs.84,88,89,114,115,129; Tr.I: 75-76,89 [Cairns]; Tr.II:305 [Cairns]; Tr.IV:667-668 [Walsh]; Tr.VIII:1354-1355,1420-1421 [Rollins]*; *Tr.IX:1567-1570,1656-1657 [Kadehjian]; Tr.XIII:2379-2380 [Cairns]*)

71. Limits of Quantification/Detection. The expert witnesses sometimes appeared to use these terms interchangeably, although they do have distinct, albeit related meaning. A limit of detection (LOD) is the smallest quantity of a drug or drug metabolite that is capable of detection with reasonable scientific certainty to be present in a test sample. A limit of quantification (LOQ), or what Dr. Kadehjian calls limit of quantitation, is the amount below which the equipment cannot accurately state the quantity of the substance present in the sample within an acceptable range of variability (which is generally considered to be +/- 20%). LOD is generally 40% below LOQ. Detection of a substance too small to be reliably quantified is also called a "trace." (*Tr.I:155-157 [Cairns]; Tr.II:308-309,321-322,395[Cairns]; Tr.III:497-501[Walsh]; Tr.IV:756[Walsh]*; *Tr.VII: 1120,1130 [Rollins]; Tr.IX:1574,1578-1579 [Kadehjian]; Tr.X:1789,1942-1944,1945 [Kadehjian];Tr.XIII;2342,2353,2368-2370,2391-2392,2400,2412,2456,2461-2462,2546-2547,2551-2552 [Cairns])*

72. Each testing laboratory sets its own LOD and LOQ according to the equipment it uses. When the BPD began hair testing in 1999, the LOQ of the most sensitive mass spectrometry equipment then used by Psychemedics to confirm a positive drug test was 2.0 ng of cocaine/10 mg hair. A year or two later, Psychemedics acquired new state-of-the-art mass spectrometry instrumentation that enabled it to reliably measure cocaine at LOQs ten times smaller than older equipment, i.e., to 0.2ng of cocaine/10 mg hair. (*Tr.I:195-197,263-264,321-322,395-397[Cairns]; Tr.III:563-564(Confidential) [Walsh]; Tr.IV:756[Walsh];Tr.VII:1130[Rollins]; Tr.IX:1575,1683 [Kadehjian]*)

73. Cutoffs. The cutoff is the minimum quantity of parent drug and/or drug metabolite that must be present in a test sample to trigger a positive test result purporting to confirm ingestion of a drug by the test subject. For urine testing, laboratories apply the

cut-off criteria set by the U.S. Department of Health & Human Services (HHS) under federal regulations for workplace urine drug testing by agencies and programs covered by the regulations. These criteria focus on the level of associated drug metabolite (BE, in the case of cocaine) produced by the kidneys prior to passing the substance as urine through the bladder. The initial HHS cutoffs to test urine test for cocaine were set "arbitrarily high" at the onset of drug testing twenty years earlier. With improved technology and study data, the cocaine cutoff criteria for urine testing recently were able to be reduced by 50% (and now specify a minimum confirmation level of 100ng/mL, effective as of October 1, 2010, to report a test positive for cocaine. (*Exhs.25 through 28,35;Tr.I:61-68, 122-123[Cairns];Tr.II:301,351[Cairns];Tr.IV:729-733[Walsh]; Tr.VII:1159 [Rollins]; Tr.IX:1681-1682,1740[Kadehjian]:Tr.XIII:2458[Cairns]*)

74. For reasons further discussed below, hair testing has never been approved for use in federal workplace drug testing and HHS regulations prescribe no cut-off requirements for such testing. Thus, except in Florida and Oklahoma, which enacted statutory cutoff criteria for hair drug testing, each individual testing laboratory, Psychemedics included, sets and, from time to time, revises, the cut-off criteria used for determining whether a hair sample tests positive for cocaine. The cutoff criteria for cocaine that is generally followed within the hair testing industry, and the one currently used by Psychemedics, is the presence of a level the parent drug at 5ng COC/10mg hair (also expressed as 0.5 ng COC/1.0mg hair and/or 500 pg COC/1.0mg hair), usually accompanied by confirmation of the presence of a defined concentration of at least one cocaine metabolite (e.g., BE, NOC and/or CE). One laboratory – Quest Diagnostics – uses a lower parent drug cutoff of 3ng COC/10mg hair. There is also support in the scientific literature for tiered cutoff levels, i.e., a COC level of 10ng/10mg as a "stand alone" cutoff and a lower level "when

supported by other evidence of drug intake." (*Exhs.4, 25 through 28, 35, 37A, 52A (Confidential),61,64,67,92,93,108,114,147;Tr.I:113-135[Cairns];Tr.II:243,252-260,401-402 [Cairns]; Tr.III:494 [Walsh]; Tr.VII:1128-1130,1242-1243 [Rollins]; Tr.VIII:1419 [Rollins];Tr.X:1997-2006[Kadehjian];Tr.XI:2127-2136[Bridgeforth];Tr.XIII:2425-2427, 2502-2509 [Cairns]*)

75. Cutoffs used to test for cocaine in hair are thousands of times higher than the cutoffs used to test for marijuana. Marijuana is not an alkaloid, as is cocaine, and, therefore, is not absorbed with the same affinity in hair. For this reason, a hair test is considered relatively ineffective for detecting marihuana use, which explains why relatively fewer hair tests are reported positive for marihuana than cocaine, despite evidence that marihuana use is far more prevalent in the general population. (*Exh.37A; Tr.I:122[Cairns];Tr.IV:633-634,640-641[Walsh];Tr.VII:109,1195-1196[Rollins];Tr.IX: 1565-1567,1668-1670[Kadehjian]*)

2. <u>History</u>

76. After the creation of the Federal Drug-Free Workplace Program implementing President Reagan's 1986 Executive Order, developing regulations to meet this initiative and the federal legislation that followed, as well designing a laboratory certification program to accredit laboratories to perform forensic drug tests under the regulations fell to Dr. Michael Walsh, Ph.D., NIDA's then Director of Applied Research and Workplace Initiatives at the National Institute for Drug Abuse (NIDA), and one of the expert witnesses called by the Appellants to testify before the Commission. Dr. Walsh assisted in promulgation of "Mandatory Guidelines", or so-called "NIDA Guidelines" that regulate federal workplace urine drug testing programs as well as creation of the National

Laboratory Certification Program (NLCP"). (*Exhs. 32 through 34 & 37A, 61; Tr.III:457-473[Walsh]; Tr.IV:760-761[Walsh]; Tr.VII: 1081-1082[Rollins]*)

77. In 1989, Dr. Walsh became the Executive Director of the President's Drug Advisory Council, where he continued to coordinate the implementation of federal workplace drug program across numerous federal agencies, including the Department of Defense, under both President Reagan and Clinton. Dr. Walsh left government service in 1993 and established the Walsh Group, a research and consulting firm providing expertise in substance abuse policy, applied research and technology development. He has continued to serve as a consultant to the Substance Abuse and Mental Health Services Administration (SAMHSA), a newly established agency to which responsibility for drug testing was transferred from NIDA in the early 1990s. (*Exhs. 32 & 37A; Tr.III:465 [Walsh]; Tr.VII:1078-1079[Rollins]*)

78. As previously noted, the Mandatory Guidelines were initially promulgated as a program to provide solely for drug testing of urine samples. Random urine testing is a long-recognized scientific method for drug testing, with known limitations that must be taken into account, including: a short window of detection; privacy concerns that created legal issues as well as the potential for human error at the collection site to mistakes in identifying samples; the risk that a test subject can switch samples or take evasive measures immediately prior to or during the test; the special requirements associated with shipping a hazardous fluid; the potential for laboratory contamination or mishandling during sample analysis; and the problem that assertion of irrefutable claims of inadvertent or innocent ingestion (the so-called "poppy seed" or "brownie defense") could be used to explain a positive urine test. (*Exhs.20,21,61,114,115 & 129; Tr.I:76 [Cairns]; Tr.III:604-*

618,772 [Walsh]; Tr.VII:1157,1194-196,1214 [Rollins]; Tr.VIII:1352-1353 [Rollins]; Tr.IX:1533-1543,1659 [Kadehjian])

79. The impetus for testing hair for drugs of abuse derives from government research in the late 1970s performed in California by Dr. Werner Baumgartner, Ph.D., later to become the founder of Psychemedics, and his colleagues at the West Los Angeles Medical Center. In 1988, Dr. Thomas Cairns, Ph.D., a biochemist and toxicologist, then an expert in mass spectrometry with the Food and Drug Administration, joined Psychemedics as a consultant, under conflict of interest waiver, to develop a hair drug test for Psychemedics. Dr. Cairns retired from the FDA in 1995 and joined Psychemedics full-time as Vice-President for Research and Development. At the time of the Commission hearings, Dr. Cairns served as Psychemedics's senior scientific advisor, with overall responsibility for all of Psychemedic's laboratory operations, including testing, compliance and certification, and quality control. (*Exhs 1,20 61&115;Tr.I:34-42, 127[Cairns];Tr.II:360-361[Cairns];Tr.IV:759[Walsh];Tr.1108-1109[Rollins];Tr.X:1986 [Kadehjian];Tr.XIII:2441[Cairns]*)

80. Although hair testing had been known to forensic science since the 1800s, drug testing of hair had received scant attention in published scientific literature. In 1988, a major article was published by Psychemedics that drew on its own work as well as a few others, and postulated that hair testing, if it were conducted by the methods pioneered by Psychemedics, was a more effective and preferable alternative to urine testing. (*Exhs.20, 88, 115; Tr.IX:1509[Kadehjian]*)

81. Over the next two decades, the body of scientific literature on the subject took off. Psychemedics scientists published over 25 peer-reviewed articles and Dr. Kadehjian catalogued as many as 800 articles overall. (*Exhs. 2,4,20, 38,49,41,46,62, 64 through 82,*

84, 89, 114, 116, 129, 130; Tr.IX:1492,1496-1497,1504,151,1610-1611 [Kadehjian])[12]

82. In 1996, an international group of scientists formed The Society of Hair Testing (SOHT) which issued a Consensus that set forth recommended criteria for hair testing for drugs. These recommendations suggested an appropriate location for collection samples (posterior vertex region of the scalp), use of decontamination washing procedure and assay of the contents of the washes, identification of metabolites and metabolite-to-parent drug ratios to rule out passive contamination (5% BE or CE), confirmation testing of initial screening, using mass spectrometry or other comparable technology, and adequate chain of custody and quality controls. (*Exh.26: Tr.I:57[Cairns];Tr.II:400-409[Cairns]; Tr.VIII:1355-1356[Rollins];Tr.IX:1634-1635[Kadehjian];Tr.X:1979-1982[Kadehjian]*)

83. The SOHT Consensus was reviewed and reissued in 2004, at which time a recommended cutoff value for COC was included (0.5ng/mg, when accompanied by the presence of at least 0.5ng/mg of BE, COC, NCOC or ecgonine methyl ester. SOHT's recommendations "aren't lab SOP's that would allow you to take those recommendations and set up a hair testing drug laboratory". SOHT's recommendations are given "some weight", mainly, in Italy and Germany. (*Exh.92;Tr.XIII:2504-2508[Cairns]*)

84. In 2001, the United Nations International Drug Control Programme produced "Guidelines for Testing Drugs Under International Control in Hair, Sweat & Saliva". This document notes that more than 400 articles concerning hair analysis have been published since 1979. The document states that "routine analysis of drugs in hair can provide much useful information" and "there is reasonable agreement that the qualitative

[12] Dr. Rollins criticized the inability of others to replicate Psychemedics's proprietary test procedures, which meant that most peer review articles relied on what Psychemedics scientists were reporting or had otherwise publically disclosed. (*Tr.VII:1170-1171{Rollins]; Tr.1310, 1444-1451[Rollins]. See also Exhs. 29 & 52A-52I. (Confidential); Tr.I:147-148[Cairns]; Tr.IX:1591[Kadehjian]*)

results from hair analysis are valid". However, "the interpretation of the results and thevalue of quantitative data are still under debate", "important issues in hair analysis are still open" and "a great deal of research still has to be performed". In particular, "attempts have been made to distinguish external contamination from the presence of drugs in hair due to active use, but this point is still highly controversial." The document also notes that sweat and saliva have received less attention than hair testing, but they, also, "offer new non-invasive techniques requiring little specialist technical skills and show potential in complementing hair as alternative specimens to blood and urine." (*Exh.93;Tr.X:1821-1831[Kadehjian]*)

85. In the late 1990s or early 2000, SAMHSA established several "Working Groups" of drug testing experts, including Psychemedics, who were tasked, among other things, to develop guidelines to add hair testing into the federal workplace program. This initiative produced a set of proposed revised regulations published by SAMHSA in 2004, which included new rules for hair testing and other alternative testing modalities (sweat, saliva) as well other regulatory changes thought to improve the testing protocols and devices for testing urine specimens. (*Exhs.23,36,37A,61; Tr.I:124-127[Cairns]; Tr.III:484-487 [Walsh]; Tr.IV:652 [Walsh] Tr.IX:1576 [Kadehjian]; Tr.X:1753-1756 [Kadehjian]*)

86. The 2004 proposed SAMHSA guidelines for hair testing included a requirement for collection of a "split sample" of head hair (a 100 mg sample split into two parts of approximately 50 mg each) and proposed parent drug (COC) concentration of 500pg/mg, with confirmation testing for the presence of a metabolite – either BE (at least 5% of the COC quantity) or at least 50 pg of CE or NCOC). The proposed guidelines also included standards for validity testing and certification of laboratories to conduct hair testing for drugs. (*Exh. 36; Tr.I:123-129[Cairns];Tr.III:475-476[Walsh]*)

87. In November 2008, after four years of review, SAMHSA promulgated the revisions to the Mandatory Guidelines, which became effective October 1, 2010. As promulgated, urine remained, and still remains, the only approved modality under the federal program for employee drug testing. SAMSHSA stated:

> The submitted public comments and additional comments raised by Federal Agencies during subsequent internal review . . . raised significant scientific, legal and public policy concerns about the use of alternative specimens. . . .Since the scientific, legal and public policy information . . . is not as complete . . . the use of these is more challenging.

The three specific concerns SAMHSA identified about alternatives to urine testing that required further study are: (1) level of confidence that laboratories were capable of testing by alternative means with acceptable accuracy; (2) evidence that certain types of drugs were difficult to detect by alternative means; and (3) evidence that the specific drug classes that were difficult to detect varied by donor and specimen type. (*Exh.36*)

88. In 2006, the U.S. Department of Justice funded a research grant by RTI International to "investigate COC analyte concentrations in hair and determine if concentration ratios could be established to distinguish between hair from a COC user and hair from a non-user". RTI International issued its Final Report in January 2009 (RTI Report), which concluded:

> [U]se of cut-off concentrations for any or all of the COC analytes would not be reliable to discriminate drug user's hair from dry contaminated hair. . . .All three analytes (i.e., CE, NCOC and BE) can be present at varied concentrations in illicit COC as by-products of the manufacturing process, and as such, will confound the use of ratios to discriminate contamination from use. . . . Even after decontaminating the hair, the application of concentration and ratio decision points does not adequately discriminate contamination from drug use.
>
> . . .
>
> These results have implications for the proposed federal Mandatory Guidelines because the decision criteria, as proposed in this study, do not adequately discriminate contamination. This is of particular concern for those individuals whose occupation (e.g., law enforcement) may put them in contact with large amounts of COC in their environment; therefore, a requirement for

> decontamination and further research are needed to determine the viability of comparative criteria using information from the decontamination." [13]

(*Exh.4*)

89. The RTI Report expressly states that it did not necessarily reflect the official position or policies of the U.S. Justice Department. In July 2009, however, on the strength of the RTI Report, the FBI Laboratory decided to suspend hair testing in all cases, except criminal cases involving children:

> [E]nvironmental cocaine level to which an average person may be unknowingly exposed are considerably lower than the amount of cocaine used to contaminate the hair samples in the [RTI Report]. However, the data sufficiently demonstrate that exterior contamination of hair with cocaine hydrochloride can lead to an innocent individual being accused of cocaine use. This is a particular concern for the FBI Laboratory, as most of the cases received over the past 20 years have involved subjects who do have legitimate contact with cocaine in the course of their profession (e.g., attorneys involved in prosecuting or defending drug charges, law enforcement officers handling drug evidence, and crime laboratory employees).
>
> [I]dentification of cocaine in an individual's hair means that the individual was *exposed* to cocaine. What remains unclear is if that exposure was from unknown contact, contact as part of the individual's occupation, exposure through being in a room while cocaine was being used, or if it is from personal use by the subject. Without a justifiable interpretation of positive cocaine findings in hair, our laboratory will decline to perform these examinations except for criminal cases involving children.
>
> [T]he FBI Laboratory would like to encourage further research in this area to determine the best approach to differentiate positive cocaine findings in hair samples as contamination versus ingestion. Wash protocols may provide a means to answer this question as suggested by Schaffer et al.[citation], as may identification of a true metabolic marker of cocaine that is only produced in vivo."

(*Exh.39*) (*emphasis* in original)

[13] The parties dispute the significance of the RTI Report's specific mention of the Psychemedics hair test decontamination procedures, as to whether it implies that such procedures were among those expressly found problematic and required further research, or whether the authors meant to suggest that Psychemedics procedures were the "comparative criteria" that they hoped would meet the concerns presented in the report. (*Exhs 4, 22, 37A, 40 & 61;Tr.III:572-574[Walsh];Tr.IV:659-660,696-697,717-718 [Walsh];Tr.VIII:1293-1297,1034-1305,1379-1382,1466-1470[Rollins]; Tr.IX:1594-1606[Kadehjian*]) This aspect of the RIT Report is covered in further detail in the findings concerning the scientific evidence supporting Psychemedics cutoff criteria.

90. For similar reasons, in 2009, Dr. Donald Kippenberger, a former Psychemedics laboratory director and member of SAMHSA's Hair Working Group, who was then employed with the U.S. Army Medical Command, recommended that all military labs within the Department of Defense cease hair drug testing. (*Exh.40; Tr.I:126 [Cairns]; Tr.IV:648-649[Walsh]*)

91. In July 2010, three European doctors associated with SOHT concurred with the FBI Laboratory's decision to suspend hair testing of persons with legitimate occupational exposure to cocaine. They wrote: "it is quite unlikely that an innocent citizen in his daily environment might contaminate his hair to such an extent leading to a cocaine positive", but the "probability is relatively high for persons who are professionally or illegally in steady close contact to the drug, such as narcotics officers. . . ." (*Exh. 41;Tr.III:519-520[Walsh];Tr.IV:760[Walsh]:Tr.XIII:2575-2576[Cairns]*)

92. The evidence presented to the Commission established that two major city police departments utilize hair drug testing of its sworn officer force. In addition to Boston, New York City proposed hair testing officers in 2005 and recently began such testing after a 2009 state court decision overruled a lengthy challenge to its implementation (involving collective bargaining rights, not the science of the test). The evidence established that Chicago, Los Angeles and San Francisco continue to test officers through urine testing only. Thus, at least in the United States, virtually all law enforcement hair drug testing prior to 2010 involved pre-employment screening of police candidates, but not permanent sworn officers. (*Exhs.80,129,197 through 202; Tr.I:49[Cairns]; Tr.II:403-404[Cairns]; Tr.VII:1089[Rollins]; Tr.VIII:1386-1387[Rollins]:Tr.XVIII:3466-3487*)

93. Hair testing for drugs in workplace environments, other than law enforcement, has been extensive and world-wide. Dr. Kadehjian estimated that there are about a dozen

laboratories in the United States that now perform drug tests on hair. Dr. Cairns estimated that Psychemedics has tested over six million hair samples in the twenty years Psychemedics has been offering them. Tests have been conducted for major corporations including U.S. Steel, Toyota and GM, as well as for school departments across the country. Hair tests are performed in Europe, primarily Italy and Germany, where hair tests are part of the motor vehicle licensing process. (*Exh. 94*; *Tr.I:43,49-50 [Cairns]; Tr.II:403-404[Cairns];Tr.VII:1089[Rollins];Tr.IX:1635,1694-1695[Kadehjian]: Tr.XIII: 2507-2508[Cairns]*)

3. <u>Psychemedics Testing Procedures</u>

94. Psychemedics operates the largest hair testing program in the drug testing industry world-wide. It has served as one of two reference laboratories used for proficiency testing of European drug testing facilities under the auspices of SOHT and HAIRVEQ.[14] (*Exhs.20 through 22, 94; Tr.I:56-60[Cairns]; Tr.VII:1138-1139,1207-1211, 1219[Rollins]; Tr.X:179,1832-1833[Kadehjian]; Tr.XIII:2502,2534[Cairns]*)

95. Psychemedics is licensed as a clinical laboratory to perform forensic drug testing under the federal Clinical Laboratory Improvement Act (CLIA), as well as by nearly a dozen states, including Florida, New York and California. It is certified as an Accredited Laboratory by the College of American Pathologists. In order to achieve and maintain this status, Psychemedics submits to site visits and proficiency testing which involves demonstrating that its testing procedures accurately report the quantities of drugs in blind testing of control samples within an acceptable level of variability (as much as +/-50% in a single specimen, but not over +/-20% overall). Psychemedics

[14] HAIRVEQ's published report of Italian drug laboratories suggests that a substantial number had a "false negative" problem, i.e., they were unable to detect the presence of drugs in spiked samples, as compared to Psychemedics, which was reasonably accurate in assaying all such samples. (*Exh.94*)

passed all such tests satisfactorily. Licensure and accreditation do not reflect vetting of the theoretical principles of hair testing, per se, but they do represent a confidence by the regulators that a laboratory's instrumentation and procedures measure the quantities of drugs present in test samples with reasonable scientific accuracy.(*Exhs.20 through 22, 37A,40,61,95A-95H; Tr.I:43-47,55-60[Cairns]; Tr.II:384-389[Cairns]; Tr.III:500-504 [Walsh];Tr.IV:739-740,752[Walsh];Tr.VII:1079-1081, 1136-1140,1219-1220,1355-1356 [Walsh]; r.IX:1490-1491,1507,1683-1705[Kadehjian]; Tr.X:1790-180,1843-1844,1955, 1977[Kadehjian]; Tr.XIII:2391-2392,2533-2546[Cairns*])

96. Psychemedics hair testing follows rigorous, somewhat unique, protocols beginning with the procedures for collecting, storing, coding and shipping samples to Psychemedics through the analysis and certification of the test results. These protocols are contained in proprietary documents known as "Standard Operating Procedures" (SOPs), that Psychemedics has revised from time to time. Selected portions of the SOPs, limited to the portions delineating the criteria for confirmation of cocaine and its metabolites in hair testing as promulgated from 1999 through 2005, were received in evidence as CONFIDENTIAL exhibits. Evidence about the SOPs relies mainly on the expert testimony on this subject, introduction of published literature describing the Psychemedics testing process, as well as the testimony about the specific "Test Results Support Documentation" (sometimes call "litigation packages") prepared with respect to the hair tests of each Appellant. (*Exhs 4, 10 through 19, 28 through 31,37(Confidential), 46,48,50,51,52A-52I (Confidential), 60, 61, 68 through 70, 71, 100, 110, 114 through 116, 118,120,128,129, 132ID,184 through 189,194; Tr.I:80-82,87-114,130-230[Cairns]; Tr.II:237-242,264-349[Cairns];Tr.III:522-535,565-567(Confidential)[Walsh];Tr.V:936-939(Confidential); Tr.VII:1099-1131,1170-1172,1201-1203 [Rollins]; Tr.VIII:1263-1264*

[Rollins];Tr.IX:1544-1548,1560-1565,1606-1609,1680-1683,1703-1705,1773-1777,1803 [Kadehjian]; Tr.X:1932-1938[Kadehjian]; Tr.XIII:2336-2353,2344(Confidential), 2359-2362(Confidential),2363-2372,2373-2378(Confidential),2395-2400(Confidential),2402-2440, 2445-2451,2531-2532,2546-2547,2562-2568,2577-2590,2601-2604[Cairns])

97. Psychemedics's hair testing incorporates an impressive variety of quality control procedures intended to assure that the test results reported for every batch of samples is reasonably accurate. These procedures involve: inserting numerous control samples with each batch of tests and measuring them for drug and metabolite content; interjecting solvents between samples to eliminate "carry-over" (i.e. one sample picking up a remnant of the previous sample); and scrutiny of any unusual test results by the senior scientific staff. (*Tr.I:42,50-53,184,197-198[Cairns]; Tr.II:272-281,306,315[Cairns]; Tr.VII:1246-1247[Rollins]; Tr.IX:1560-1561,1703-1704[Kadehjian]; Tr.X:1791,1955[Kadehjian]); Tr.XIII:2353-2358,2415-2417,2447-2449,2548-2549,2567-2568,2578-2581[Cairns]*)

98. The protocols prescribed by Psychemedics to test BPD officers require compliance with essentially eight sequential steps necessary to reach a positive test result:

(a) Collection. Hair samples are collected in an exam room reserved for drug testing by BPD personnel assigned to the OHU, who have been trained by Psychemedics. Officers are scheduled for appointments about a week in advance, generally about 30 days prior to their birthdays. After verification of the officer's identity, the cutting instrument is sanitized and the collector cuts the required amount of hair as close to the skin as possible, ideally, from the crown of the head (or from the nape, beard/mustache, chest, arms/leg or underarm, in that order of preference). The preferred length is 3.9 cm (about 40 to 50 mg and an inch and a half of head hair representing 90 days of growth). Hair less than 1.3 cm long or less than 25 to 30 mg will be deemed unsuitable, and a

donor may be asked to grow his/her hair and return for testing at a later date. The collector records the relevant particulars on a Test Request Form (TRF) which bears a unique bar code label. The sample is placed in a foil pouch with "root end" indicated, which is deposited into a cardboard envelope called a Sample Acquisition Card (SAC). The anonymous bar code label identifier is removed from the TRF and placed on the SAC. The envelope is sealed and initialed by the officer to certify that the procedures described above were followed. A copy of the TRF, with the officer's contact information is placed in a separate sealed envelope for later use by the BPD's Medical Review Officer (to match the bar code to the donor when results are reported). The SAC is secured in a safe until shipped via FedEx® courier to Psychemedics. (*Exhs.5,48,50,51,60,147;Tr.I:87-90,97-98,223[Cairns];V:847-90[Mullan];Tr.XIII: 2347-2350,2429-2430[Cairns]; Tr.XVIII: 3378-3380[Gilbert]*)

(b) Accession. Upon receipt at Psychemedics, the sample package is inspected to assure that the seal remains intact. It is assigned a new tracking number (LAN) [15] that follows the sample through the testing process, each step of which is recorded on a chain of custody form. The accessioner checks the length, weighs out one 8mg portion to be sent for initial screening, and places the rest of the sample in secure storage. The integrity of Psychemedics accession and chain of custody process was not challenged by the Appellants. (*Tr.I:90-98[Cairns];Tr.XIII:2350-2352[Cairns]*)

(c) Initial Screening. The 8mg hair samples are divided into five individual test tubes and initially tested in batches of 150 via a radio immunoassay (RIA) "kit", which is a

[15] The first two digits of a LAN numbers indicate the type of test to be performed: "11" denotes an original sample; "41" denotes a follow-up or "safety net" test; and other numbers are assigned to "control" samples or re-tests ordered because of a concern about an original or safety net test result. (*Tr.I:189-190[Cairns]; Tr.II:278-279[Cairns];Tr.XIII:2365-2366[Cairns])*

well-established biochemical technique that is capable of identifying molecular substances by causing the targeted molecules to bond with an antibody specifically known or designed to attract exclusively that one particular molecular structure, and then, in effect, counting the number of molecules by highly sensitive radioactive tags emitted in the bonding process. Psychemedic's RIA cocaine kit is a patented "medical device" that utilizes a liquefied hair sample and which has received "clearance" from the U.S. Food and Drug Administration (FDA) to be "substantially equivalent" to another presently legally marketed device (an RIA kit used to detect cocaine in urine), so that it is exempt from FDA pre-market approval.[16] Such FDA clearance, however "does not mean that FDA has made a determination that [a] device complies with other requirements of . . . any Federal statutes and regulations" or "in any way denote official approval of the device" and "representation that creates an impression of official approval . . . is misleading and constitutes misbranding." Psychemedics' RIA analysis provides only a "presumptive presence" of cocaine and cannot be used to confirm cocaine use by the sample subject without further testing by the more sophisticated mass spectrometry method. RIA analysis is considerably less costly than running mass spectrometry tests, so its primary value is to serve as a useful first-level cost-effective tool to weed out the bulk of presumptively negative samples that fall below the cutoff and, thus, to limit the number of samples that need to be run through mass spectrometry for any specific drug group. RIA is no longer considered suitable or generally used as a means for final confirmatory testing for drugs. (*Exhs. 28, 29, 31; Tr.I:47-49,99-105,144-145[Cairns]; Tr.II:409-424[Cairns]; Tr.IV:754-755[Walsh];Tr.XIII:2336-2337[Cairns])*

[16] The RIA process involves simultaneously testing for five separate drug groups, using a different antibody specific to each drug group. (*Tr.I:103[Cairns]*)

(d) Confirmatory Testing. Hair samples screened by initial RIA analysis that detect no COC in a concentration above the cutoff of 5ng/10 mg of hair are reported "negative" and are not subject to further testing for COC. Samples at or above the COC cutoff proceed through a second confirmatory test process using a newly selected portion of the subject's hair that is first washed with 15 minutes of soaking in isopropanol followed by three and a half hours of washing with a phosphate buffer. The final wash solution is tested for the presence of any remaining COC (using RIA testing)[17] for use in the final analysis of the results. The hair is then liquefied and placed in a centrifuge to precipitate a solid pellet containing the hair sample's melanin. The liquefied portion of the hair digest, minus the pellet of melanin, is tested for the presence of COC and the metabolites (BE, CE and NCOC) via mass spectrometry technology (LS/MS/MS). (*Exhs.128, 129; Tr.I:85,105-112,149-150[Cairns]; Tr.II:317-321[Cairns]; Tr.IX:1544-1548[Kadehjian]; Tr.XIII:2339,2345-2347,2445-2447 [Cairns]*)

(e) Analysis of Results. The mass spectrometry results are analyzed under decision criteria established by Psychemedics and set forth in the company's SOPs. While mass spectrometry results often track the RIA screen results, there are exceptions. As much as half of some batches of "presumptively positive" samples by RIA analysis will wind up negative by more precise mass spectrometry testing criteria.

- First, the concentration of COC in the liquefied hair sample found by mass spectrometry testing must equal or exceed the 5ng/10 mg COC cutoff, after applying a so-called "Wash Criterion" or "wash kinetics rule". The Wash Criteria is a convention derived by Psychemedics from the science of wash kinetics, that

[17] Dr. Rollins points out that the RIA screening of the final wash solution uses a different "kit", i.e., method from the RIA analysis "cleared" by the FDA for intimal screening, and the parameters of its precision and accuracy were not fleshed out in the evidence. (*Exh.60; Tr.II:394[Cairns];Tr.VII:1114-1118 [Rollins*]).

multiplies, by five, the amount of COC, if any, found in the last (fifth) wash of the hair sample prior to mass spectrometry testing (as described above) and subtracts that sum from the COC in the hair sample as reported by mass spectrometry testing. The Wash Criterion is meant to extrapolate the maximum amount of COC theoretically attributable to external contamination (as opposed to ingestion) that remained in a hair sample prior to liquefaction that had not been removed by the three and one half hour wash procedure. Psychemedics reports a sample as positive only if the mass spectrometry result, net of the amount calculated after applying the Wash Criterion, equals or exceeds the cutoff criteria.

- Second, mass spectrometry testing must confirm the presence of cocaine metabolites (BE, CE and/or NCOC) in concentrations as specified from time to time in the SOPs.
  - Initially, Psychemedics specified a minimum quantity of 0.5ng of CE or a ratio of BE/COC of at least 10%.
  - In 2000, Psychemedics reduced the BE concentration ratio to 5% and added NCOC (in gross concentrations above 1.1 ng, and net concentration of 0.5ng after deducting any NCOC found in the last wash, by further mass spectrometry testing of the last wash), if accompanied by "some BE."
  - Psychemedics again changed the criteria in 2001 to require "some BE" plus a minimum quantity of NCOC (0.5ng) and a minimum NCOC/COC ratio (1%)
  - In 2004, Psychemedics increased the BE minimum from 0.25ng to 0.5ng.
  - The 2007 revision to Rule 111 made by agreement with the BPPA, eliminated CE as a metabolite used for confirmation testing.

(*Exhs.37A, 52A-52I (Confidential), 58, 61, 68, 70, 114, 116, 128, 129; Tr.I:122-134,140-142,149-152,395-396 [Cairns]; Tr.III:538-566(Confidential)[Walsh]; Tr.VII:1115-1117 [Rollins]; Tr.XIII:2339-2343, 2394-2400,2600-2604 (Confidential)[Cairns]*)

(f) Certification. The decision that a mass spectrometry test result meets the criteria for reporting a sample positive for cocaine is made by a member of the Psychemedics staff of medical technicians, known as the certifying scientists. If the test result does not meet the criteria stated in the SOPs, the certifying scientist must report the result as negative. If the criteria are met, the certifying scientist may report the result as positive or, in an unusual case, may choose to refer a result to the Psychemedics laboratory director and/or to a Psychemedics internal review committee. In some cases, a sample may be deemed "unsuitable" (too little hair, for example), which will trigger a request that the subject provide a new sample for retesting. (*Exhs. 52A-52I(Confidential); Tr.I:122,137-143, 197-198[Cairns]; Tr.XIII:2447-2449[Cairns]*)

(g) Follow-up by MRO. Psychemedics reports the certified test results to a Medical Review Officer (MRO) selected by the BPD. An MRO is a medical professional with specific experience in occupational health and, specifically, substance abuse, who has been certified to perform the duties of an MRO. Psychemedics plays no role in the selection or management of the MRO. In the time frame involved in this appeal, BPD employed two physicians as the MRO; initially Dr. Benjamin Hoffmann and, beginning in 2003 or 2003, Dr. Eleanor Gilbert. An MRO's role is to review the test results, confirm the chain of custody, and in the case of a positive result, to reach out to the officer and ascertain whether there was any alternative medical explanation for the result other than ingestion of an illicit drug. After completing these steps, an MRO makes the ultimate decision to accept the Psychemedics positive test as confirming that the officer has

committed a violation of Rule 111 and reporting that to the BPD. (*Tr.I:92,136,201-202 [Cairns]; Tr.II:347-349, 429-435[Cairns]; Tr.XIII:2381-2390, 2447-2449 [Cairns]; Tr.XVIII:3344-3393, 3424-3448[Gilbert]*)

(h) Follow-up (aka "Safety Net") Testing. During the timeframe involved in these appeals, an officer who has tested positive for an illicit drug without any alternative explanation other than ingestion of the drug was offered an opportunity to provide a new hair sample, to be collected by BPD in the same manner as the initial sample, and submitted another test by Psychemedics. Although BPD's Rule 111 refers to this process a "safety net" test, Psychemedics prefers the terminology "follow-up" test, because, unlike a "true safety-net" test, it uses a different sample, cut at a different time (and sometimes from a different part of the body), which sometimes requires additional procedures (called "sectioning") and other judgment calls in order to attempt to equate the differences in collection site and growth patterns between collection of the original and follow-up samples. In addition, although the follow-up test uses the same wash procedures and mass spectrometry method of analysis as the original test (the first-step RIA screen is not performed), the criteria for confirming the mass spectrometry "follow-up" test result as positive for cocaine was significantly different than the criteria cut-off applied to the original sample. Rather, the test was deemed positive if any quantity of cocaine (COC) was detected in the follow-up sample (i.e., a concentration at or above the LOD/LOQ capability of the mass spectrometry equipment) and without regard to the presence or absences of any cocaine metabolites (BE, CE or NCOC). As stated above (Finding No. 72), the level of detection necessary to call the follow-up test positive for cocaine was originally set in 1999 at 2.0ng COC/10mg hair, and, when Psychemedics obtained more sophisticated equipment a year or so later, the concentration level for a

positive follow-up test was reduced to 0.2ngCOC/10 mg hair. (*Exhs. 5, 52A-52I (Confidential), 128; Tr.I:153-162 193-197 [Cairns]; Tr.II:305-306[Cairns]; Tr.IX:1573-1574[Kadehjian]; Tr.XIII: 2365-2372,2446-2456[Cairns]*)

4 . <u>Critique of the Science of Testing Hair for Drug Use</u>

99. The use of hair testing to detect drug use, in general, and cocaine use in particular, has come under scientific criticism for a number of reasons. The principal dispute concerns whether current methodology used to test hair for drugs is able to exclude from measurement drugs present from sources other than ingestion, particularly contaminating drug transferred from the environment, which may occur by several different mechanisms, such as passive deposition from vapors or aerosolized particulates in the atmosphere, indirect transfer from a contaminated surface by one's hand, or direct transfer by contact of the hair with a contaminated surface (such as bedding or furniture).[18] The Appellants proffered expert testimony that there is no consensus in the scientific community to support such a proposition. The BPD, while conceding that contamination remains a serious issue that must be addressed in hair testing, proffered expert testimony that supported the Psychemedics's position that Psychemedics' employs a uniquely sophisticated process that, in fact, surmounts all doubt about its ability to distinguish the source of drug in hair as due to ingestion versus contamination.

[18] The parties devoted considerable evidence to the additional criticism that hair color, racial and/or "cultural" factors, biased the results of a hair drug test, due to the differences in the melanin content, structure and cosmetic treatment of black and African hair versus brown and blonde hair. (*Exhs.20 through 22,37,40,61 through 63, 65, 71, 73, 74, 78 through 82, 115; Tr.III:513-52 1[Walsh]; Tr.IV:642-648,734-739 [Walsh]; Tr.VII:1090-1101,1183-1184,1253-1255[Rollins];Tr.VIII:1323-1338,1362-1365,1384-1389, 1392-1396[Rollins]; Tr.IX:1521-1523,1550-1555,1621-1654[Kadehjian]; Tr.X:1814,1881-1883,1964-1968[Kadehjian]; Tr.XIII:2477, 2525[Cairns]*) This evidence of bias turned out to be highly problematic and became largely academic as it was not tied directly to probative proof that established how any particular Appellant's test results were skewed, if at all, by any such alleged bias. As to racial bias, the federal district court's dismissal of the civil rights claims of certain of the Appellants is preclusive as to them and strongly persuasive as to any other Appellant's claim of racial bias. See Opinion and Order, <u>Jones v. City of Boston</u>, U.S.Dist.Ct. (D.Mass.) No. 05-cv-11832-GAO, 2012 WL 4530594 (O'Toole, USDJ), 2012 WL 4530594. Accordingly, the Commission has no cause to further consider the bias claims here.

(*Exhs 2,4,.20 through 22,37,39,40,41,61,64 through 68,70,71, 72, 75, 77, 114 through 117, 129; Tr.I:354-355[Cairns]; Tr.III:505-511[Walsh]; Tr.IV:717-718 [Walsh]; Tr.VII:1099-1101,1117,1171[Rollins]; Tr.VIII:1304-1305,1431-143,1465-1466 [Rollins]; Tr:IX;1582-1590[Kadehjian]:Tr.X:1951-1954[Kadehjian]*)

100. Levels of Cocaine Found in the Environment. The fact that cocaine powder and vapors exist in the general environment and can be transferred is a generally accepted scientific proposition, but little study has been made to quantify the concentrations found in cocaine smoke or on contaminated surfaces, which are the means that could be the source of transfer of such substances into the hair of a non-user. (*Exhs.2,4,39,65,66,68,71; Tr.I:73-80[Cairns]; Tr.III:505-511,587[Walsh]; Tr.VII:1102-1103,1145-1147,1155-1156,1167[Rollins];Tr.VII:1236-1238[Rollins];Tr.VIII:1451-1454 [Rollins])*

101. The lack of a reliable benchmark for quantification of the potential for external contamination was one of the core concerns expressed in the 2009 RTI study performed for the Department of Justice which led the FBI to suspend cocaine analysis that year in hair for most cases:

> The extent of surface contamination is poorly understood for environments where exposure may occur such as for law enforcement who work in areas where there is known drug usage. Better estimation of the extent of surface contamination and the quantities of drug that could be realistically transferred to hair is a central component to understanding if contamination models are using quantities of COC that are too low or too high to be realistic.

(*Exh.4)*

102. Only three studies of the level of cocaine actually found in the environment appear to have been published. A 2001 study by the Cleveland Ohio County Coroner reported a study of US paper currency ($1 and $20 bills) in general circulation in five cities that found that 92% of the bills were contaminated with cocaine at levels from

0.01µg (10ng) to 235 µg per bill. This compares to an earlier study of currency obtained from financial institutions that found less than 13 ng of cocaine on most bills. In a 2008 study, Smith & Kidwell, reported finding cocaine on the desks of Washington DC area elementary school children in average concentrations of 150 ng (115 urban school desks) and 11ng (96 suburban school desks), as well as concentrations of BE at levels of 147ng (urban desks) and 0.87ng (suburban desks). (*Exhs. 44 & 45; Tr.I:73-80[Cairns]; Tr.III:505-511, 578 [Walsh];Tr.VIII:1399-1405[Rollins]*)

103. Transfer of Environmental Contamination to Hair. In a laboratory study of simulated environmental contamination, Wang & Cone exposed subjects to vaporization of 100mg of cocaine base in a closed room and then tested for cocaine in their hair, which disclosed initial concentrations in the two subjects equivalent to 260.5ng/10mg and 450.7ng/10mg, and BE in concentrations of 30% and 15% respectively. Although this study is essentially anecdotal and some scientists have criticized the decontamination aspects of the Wang & Cone study, its findings as to the amount of cocaine that was transferred from the vapor to the subjects' hair is founded on reasonably sound scientific methods and is accepted as credible. Even the critics of the study also acknowledged that, in the final analysis, "it may be impossible to conjecture how much cocaine could be deposited accidentally on a non-drug using bystander." (*Exhs. 65,66, 116; Tr.I:73-80[Cairns];Tr.IV:759[Walsh])*

104. In another study of sets of infant children of (non-breast feeding) mothers who were known drug users, tested by both urinalysis and mass spectrometry hair testing of washed samples, Smith & Kidwell showed that the children had cocaine (and BE) present in levels comparable to the levels found in the hair of the child's mother and well-above the COC 5ng/10mg cutoff. These results are not fully explained by the smaller body

weight of the children, or the possible accidental ingestion (relying, in part, on the results of the companion urinalysis testing that confirm this conclusion). Psychemedics scientists and other took exception to the methodology of this study, which I have considered, but I will not discount this study entirely as it is some probative evidence that confirms the potential transfer rates inferred for a more general population. (*Exhs.38, 67, 114*)

105. Another source of data about transfer of cocaine to hair are laboratory experiments in which hair was artificially contaminated, either by soaking in a cocaine solution or rubbing cocaine power into the hair. The data reported in one of these studies suggest that, in a controlled laboratory setting, samples of 12 grams of hair was exposed to 15mg of cocaine powder, rubbed into the scalp, and resulted in external contamination of the sample in concentrations of 200ng/10mg and more. Psychemedics was one of the participating laboratories in this study, and independently reported range of uptake from 100ng/10 mg to 1800ng/10 mg, but criticized the studies as poor models of "real life" contamination – one study involved the equivalent of soaking an entire head of hair (100 grams) in a solution containing one gram of cocaine – as well as concerns about alleged technical flaws in the wash procedures used to extract the cocaine from the hair, such as the temperature of the wash solution and the shaking technique used. It is also suggested that laboratory experiments meant to evaluate samples over an extended period of time can be tainted because samples may have been store in a damp condition, which would have exacerbated the levels of drug intake as well as have promoted hydrolysis that could have converted some cocaine to BE. While the criticisms are credible, they do not substantially discredit the premise supported by the data in these studies that confirm levels of cocaine intake (well above the Psychemedics SOP cutoffs) in a non-user's hair that is exposed to contamination of, through the external surface of the cuticle and

without ingestion. (*Exhs.2,4,46,64,66,68 through 72,77,116,117; Tr.IV: 698-713,719-724 [Walsh]; Tr.VII:1143-1145 [Rollins]: Tr.VIII:1287-1288,1310-1313 [Rollins]*)

106. In a 1997 article published by Mieczkowski, a criminology professor, hair test procedures close to (but not identical to) those then followed by Psychemedics were used to measure cocaine in the hair of a volunteer population of municipal narcotics officers and evidence room clerks. The article described "tongue testing" and "bumping", during which undercover police officers intentionally ingest or smoke cocaine as part of their surveillance and arrest of suspected drug dealers. After decontamination of the hair samples (by washing), these particular officers all tested negative for cocaine, well under the 5ng/10mg cutoff, but the reported levels of cocaine found in and removed from the hair of these officers is of significance in understanding the potential level of external contamination to which these officers were subjected. The alcohol and phosphate buffer washes of nearly every officer (48 out of 50 samples) contained some cocaine, with a mean value of 0.5ng/10mg (two samples had over 3.0ng/10mg). As it is inferred the officers who volunteered for the study were all non-users, this evidence is persuasive scientific proof that a significant range of environmental contamination occurs in the course of the duties of these law enforcement personnel. Mieczkowski also hypothesized:

> It may be possible that with chronic, intimate, skin-to-skin contact . . . that an innocent person becomes contaminated via contact and ingestion and could attain sufficient concentration in the hair to cross the lowest threshold as an evidentiary positive.

(*Exh.67; Tr.III:519-520[Walsh]; Tr.IV:762-763[Walsh]; Tr.IX:1619-1620[Kadehjian]; Tr.X:1974-1976[Kadehjian]*)

107. By way of comparison, in a population study of 187,000 workplace subjects by Psychemedics, 181,000 subjects (96%) tested by RIA analysis showed zero cocaine in

their hair. The Cleveland Coroner's study and others, reported little evidence that cocaine on currency transferred readily to the hands of bank tellers who routinely handled it. This evidence tends to suggest that external contamination of hair by the transfer of cocaine found in the general environment occurs relatively infrequently. This study also reinforces the proposition that, for whatever reasons, as suggested by Mieczkowski, the FBI Laboratory and others, hair of law enforcement officers who have regular contact with cocaine in the performance of their duties, is more likely than those in the general population to be routinely externally contaminated. (*Exhs.4,20,39,40,41,67,69,84,131ID, 202;Tr.I:126 [Cairns];Tr.III:519-520[Walsh];Tr.IV:648-649,760[Walsh]*); *Tr.VIII:1405, 1461-1462 [Rollins]; Tr.IX:1619-1620,1636-1645[Kadehjian]*); *Tr.III:519-520[Walsh]; Tr.IV:760 [Walsh]: Tr.XIII:2575-2576, 2591-2596[Cairns]*

108. A Psychemedics study of 75 cocaine users (confirmed by urinalysis) also sheds some light on the levels of external contamination, as well the considerable degree of variability in the amount of cocaine that can enter the hair via presumed external contamination (i.e., that which was removed from the hair through the Psychemedics decontamination wash process), which ranged from less than one nanogram to a high of thousands of nanograms per 10mg of hair. The sample group ranged from light to heavy users (confirmed levels of ingested cocaine from 6.5 to 2,270 ng/10 mg). Since the data were published only in part, however, they do not fully correlate the ratios of external contamination to ingested cocaine according to the subjects' use level. The study does report that, generally, at low levels of use, the proportion of cocaine in hair attributed to contamination ranged from 10% to 40%, with one example of a light/moderate user (40ng/10mg) having 240ng/10mg of contamination, or about 86% of the total cocaine

detected in the hair. Another light/moderate user (64ng/10mg ingested cocaine reported) had 1,307ng/10mg of cocaine attributed to external contamination. (*Exhs. 69 & 71*)

109. It was hypothesized that that "non-head hair . . . is much less prone to external contamination" than head hair. This hypothesis has not been critically examined in the scientific literature, but the experts agreed and I find it credible. Dr. Walsh testified:

> Q. And do you agree . . . that chest hair or underarm hair is . . . much less prone to external contamination . . .?
> A. It would be less likely to be contaminated . . . than head hair.
> Q. Is there some reason you don't use "much less likely"?
> A. No . . . my feeling is if you get it on your hands, you're likely to be touching these other parts of your body as well where it could be easily transferred. If you're just walking around, those areas are much less likely to be contaminated by aerosolized cocaine, by smoke or going in and making a drug raid where there's a whole bunch of stuff in the air. Those chest hairs and underarm hairs are much less likely to be contaminated than head hair.

(*Exh.41; Tr.IV:670-672[Walsh]*)

110. It was also hypothesized that a non-user could inadvertently, and unconsciously, ingest small amounts of cocaine, such as by putting an environmentally contaminated finger into the mouth. This hypothesis is logically sound, but there are no data that have studied this method of contamination. (*Tr.VIII:1368-1369,1397-1398[Rollins]*)

111. Cocaine Metabolites. Early scientific opinion suggested that detection of one or more cocaine metabolites in hair justified an inference that would rule out external contamination as the source, on the premise that the metabolites were indicators that, as in urine, the human body had produced those metabolites through hydrolysis (the process of converting ingested cocaine in the bloodstream into a water-soluble substance that enables it to be eliminated from the body through urination) and, thus, "differentiate environmental contamination from actual use because of the presence of the metabolite, which is not present when environmental contamination is the source of the drug." The weight of the credible scientific study, however, confirms that, in fact, significant levels

of cocaine metabolites are produced in the manufacture and handling of cocaine as well as evidence that cocaine metabolites can be produced in hair via means other than ingestion. Thus, the original premise has been discredited and is not reasonably accepted within the scientific community. Of the three most prevalent metabolites (BE, CE and NCOC), none are now considered stand-alone, unique markers of ingestion, and, so far, none of the other lesser metabolites are produced in concentrations sufficient to be reliably measured by current technology. I give no weight to state statutes (Oklahoma and Florida) and the proposed 2004 proposed SAMHSA hair testing guidelines contained metabolite criteria, which had been based on the erroneous premise that they were unique markers of ingestion. Nor do I credit the testimony of Dr. Cairns on this point that street cocaine contains only "traces" of BE, CE and NCOC. (*Exhs.4,25,26,36,39,41 through 47,61,65,114,129;Tr.I:61,82-83[Cairns];Tr.II:261-262 [Cairns];Tr.IV:676-678,770-771[Walsh];Tr.VII:1125-1126,1248-1252[Rollins]; Tr.XIII: 2358[Cairns]*)

112. Benzoylecgonine (BE). BE is the principal metabolite of ingested cocaine produced by the body through hydrolysis. This is the metabolite that is used to detect cocaine use in urine testing. SAMHSA guidelines for a urine test for cocaine require a BE concentration of 150ng/mL. One mL of liquid represents one gram (1,000 mg) of solid mass, so that this concentration is the equivalent of 1.5ngBE/10mg liquid. By comparison, the levels used by Psychemedics to confirm a positive hair test for cocaine based on presence of BE metabolites are the equivalent of finding concentrations of BE in hair about three times smaller than those used for a positive urine test.

- Credible scientific evidence confirms that BE is found in street cocaine in concentrations of 10% of the total drug material, and possibly more. Four separate studies (by Cairns et al, by Bourland et al, and two by RTI of "street" and

"clinical" cocaine users) tabulated in the Ropero-Miller & Stout 2009 RTI report show a wide range of BE/COC concentration in the hair of about 150 known drug users up to 50% and more. The RTI "street" users study showed that concentrations of BE in their hair of 29% to be typical and all studies showed concentrations above 10% to be typical, with no apparent correlation between metabolite content to total drug ingested.

- Psychemedics' study of 187,000 workplace subjects showed that close to 5% BE/COC ratios as typical for workplace subjects who tested positive with relatively high levels of COC (i.e., above 20ng/10mg hair, as well as for subjects with both BE and CE present). At lower levels of cocaine concentration, however, purportedly consistent with casual users, the ratios were significantly higher, reaching 15.8% at COC levels at the 5ng/10mg cutoff.[19]
- Psychemedics's frequent changes to its "BE Rule" (the quantity and/or ratio of BE/COC that must be found to confirm a result as positive for ingestion) are largely matters of judgment than accepted scientific analysis.
- Laboratory experiments have shown that BE also can be hydrolyzed in externally contaminated hair and the concentrations actually can increase over time to levels above the cutoffs of the "BE Rule" in Psychemedics's SOPs. One study showed BE at levels of 8% in hair contaminated with pharmaceutical cocaine (which contained no BE), after 70 days of daily shampooing.

[19] The Psychemedics workplace subjects study did not evaluate the BE/COC ratios for subjects who tested negative (i.e., cocaine concentrations <5ng/10mg), (*Exhs. 69 & 202* **)** The trend of the three lowest data points in the study would permit the inference that BE/COC ratios below cutoff would be at least equivalent, and perhaps even higher than 15%.

- BE can also be created in the testing process itself. Psychemedics scientists acknowledged in a published article that "the digestion of hair [in preparation for MS/LS/LS assay] . . . causes a small degree of cocaine breakdown (approximately 6%) by hydrolysis reactions. In another published article, Psychemedics scientists acknowledged "uncertainty as to what levels of this metabolite [BE] are expected to be present in all cocaine users". In one study, BE was found in concentrations of as much as 11.7% BE/COC.
- Psychemedics scientists acknowledge creation of BE as part of the hair testing process is a "concern". Psychemedics now runs hydrolysis controls on each test batch to measure the amount of BE created in the testing process. Thus, given these controls, BE creation by the Psychemedics wash procedure appears to be less of a concern than that created by other decontamination methods.

After weighing the credible evidence, I find no scientific consensus about the concentrations of BE/COC, if any, that reliably and conclusively confirms a hair test as positive for cocaine ingestion.(*Exhs.2,4,35,37A,39,40,41,46,61,64,65,66,6 ,68,71,113, 116 & 129; Tr.I:61,123-130[Cairns]; Tr.III:573-576[Walsh]; Tr.VII:1251[Rollins]; Tr.VIII:1358-1359,1374-1376,1406-1413[Rollins];Tr.IX:1560-1561[Kadehjian]; Tr.X: 1915-1940[Kadehjian];Tr.XIII:2353-2358,2548-2549,2578-2581 [Cairns]*)

113. Cocaethylene (CE). CE is metabolized from cocaine when it is combined with ethanol (alcohol) and can occur in vitro if, and only if, the user has consumed both of those substances and they are circulating in the bloodstream simultaneously.

- Psychemedics set its current CE/COC cutoff at the "two percent concentration range" (together with the presence of "some" BE) based on an unidentified survey of street cocaine that purportedly indicated "very low levels of

cocaethylene, below half a percent" in street cocaine, so that CE at two percent was "well above any level that would be encountered from street cocaine" and could be uses as a "unique marker" of ingestion.[20]

- In fact, published scientific articles have demonstrated that CE also is created in the common practice of smuggling cocaine dissolved in bottles of liquor, and concentrations of as much as 20% has been detected in cocaine obtained from this type of smuggling operation.
- CE also is produced, but in small amounts, as a manufacturing by-product resulting from both pharmaceutical processing (in the "recrystallization step" which uses ethanol) and in virtually all street cocaine. Cocaine produced by the "Columbian method", which provides about 98% of the illicit cocaine in the US has been found to contain as much as 2% CE/COC.
- In the Psychemedics study of 187,000 workplace applicants, about half of the 6,000 subjects who tested positive for cocaine also had CE. Although the tabulation of the results leaves room for some ambiguity, the ratio of CE/COC for these subjects seems to cluster at ratios of CE/COC significantly above 10%. (e.g., for COC levels from 5ng/10mg to 10ng/10 mg, 62% had over 1.0ng CE and 24% had more than 3.0 ng CE.) There are no clear data to discern how much CE was present in any of the 6,000 subjects with some cocaine detected but whose tests were declared negative per the Psychemedic's SOP criteria then in effect.
- In a 2006 laboratory study by Stout et al, hair was contaminated with cocaine power that contained 0.6% CE, and resulted in concentrations of CE in some (182

[20] Under the revised test parameters set forth in the 2007 revision to Rule 111 as agreed to between the BPD and the BPPA, CE does not appear as one of the metabolites that may be used to confirm a positive test result. (*Exh. 58*)

out of 585) hair samples, even after decontamination, of as much as 2%, i.e., more than three times the amount found in the contaminated original source material. The 2009 RTI study confirmed this observation -- exposure to cocaine material having 1.4% CE produced up to a maximum CE/COC ratio in hair of 4.8%. The RIT report also concludes that "there may not be a direct relationship between the concentration of CE . . . and the concentration in the contaminating COC."

For these reasons, I do not find credible the published articles by Psychemedics's scientists, or testimony of Dr. Kadehjian that "CE is a definitive metabolite in that it can form only by the simultaneous ingestion of cocaine and ethanol" or that the presence of any "quantitative amounts" of CE provides "unambiguous proof of use of cocaine and not external contamination". (*Exhs.2,22,42,46,47,129;Tr.I:67,83,134-135[Cairns]; Tr.II:261-262,305,316,355[Cairns];Tr.III:574-575,591-593[Walsh];Tr.IV:675-689 [Walsh]; Tr.IX:1570-1571[Kadehjian];T r.X:1915-1940[Kadehjian];Tr.XIII:2340-2341, 2548-2549, 2581 [Cairns]*)

114. Norcocaine (NCOC). NCOC is a "lower level metabolite" and the least investigated of the three cocaine metabolites used in drug hair testing. The only published articles presented in evidence that analyzed NCOC were the Stout et al October 2006 laboratory study and the 2009 RTI report.

- In the 2006 Stout study, hair samples were contaminated with pharmaceutical grade COC containing approximately 0.1% NCOC which resulted in finding NCOC in concentrations of more than 0.5ng/10mg in 20 non-decontaminated samples and 13 decontaminated samples (out of a total of 585 samples).
- The 2009 RTI report found NCOC in street cocaine used in that study, having various degrees of purity, ranging from a trace to 8.7% of the drug material, and

resulted in a maximum NCOC/COC ratio of 25% in the hair samples. In the studies of drug users, RTI found COC/NCOC ratios from 0.0% to 20.3% Thus, RTI made the same observation about NCOC as for CE, namely: "These ratios indicate that there may not be a direct relationship between the concentration of . . . NCOC in hair and the concentration in the contaminating COC."

- The 2009 RTI report also made the finding that I find credible about the effect of extermal exposure to illicit cocaine powder that contained high levels of NCOC: "*For those specimens exposed to high NCOC that contained COC, 33% of the light haired specimens and 92% of the dark haired specimens would have been determined as positive by all of the criteria using NCOC.*" (*emphasis added*)

(*Exhs. 2, 4 & 46: Tr.I:67[Cairns]:Tr.II:322[Cairns])*

115. Justification for Cutoff Level and Metabolite Ratios. Most of the half-dozen companies who perform hair testing for illicit drugs use a COC cutoff of 5ng/10mg (or lower), plus some additional metabolite criteria. Dr. Cairns pointed to four studies to justify this level as a reasonable point of distinction that conclusively eliminates all risk that a non-user, and probably even a one-time user, would test positive. Based on these studies, Dr. Cairns testified that, depending on purity, a positive test at the 5ng/10mg COC level would take ingestion of a minimum of 60mg to 660mg of cocaine a month, or the equivalent of about one line to six lines a month. Although three of the four studies were conducted by Psychemedics scientists, and relied on self-reported patterns by drug users who tested positive at the cutoff level, these studies were not disputed and I accept their conclusions as credible. (*Exhs.28,29,69,113,114&131ID;Tr..II:351-353[Cairns]; Tr.IV:729[Walsh];Tr.VIII:1419 [Rollins]; Tr.IX:1567-1569[Kadehjian];Tr.X:2003-2005 [Kadehjian]; Tr.XIII:2546-2499[Cairns]*)

116. There is some scientific support, although it appears to be limited, for the proposition that, given the inexact understanding of drug incorporation and extraction from hair and the concomitant judgmental aspects that enter into setting a cutoff level, a preferred approach is to set a range of cutoff criteria that would use some level of judgment between an absolute upper limit that is deemed conclusively positive and a lower limit that might be called plausibly positive if "supported by other evidence of drug intake." One study suggested use of a 10ng/10mg absolute cutoff as a conclusive positive and a 5ng/10mg lower cutoff as conclusively negative, with application of additional criteria or evidence to confirm as positive or negative test results between those limits. The analogy was drawn to OUI blood/alcohol ratios, which range from 0.2% to 0.8%, depending on driver type, as well as urine testing, where issues of dilution of a test sample are handled differently depending on the level of dilution detected. No testing laboratory is known to employ a tiered approach. (*Exh.68; Tr.X:1995-2006 [Kadehjian]*)

117. As previously noted, the evidence to justify the selection of metabolite ratios, unlike the COC cutoff, rests almost entirely on judgment and have not remained uniform. Psychemedics has made numerous changes, from time to time, in the metabolite ratios it applies, as described above. No set standard has coalesced for appropriate concentrations of metabolites in hair. The consensus in the scientific community on this issue is that further study is needed. (*Exhs.2,4,25,27,35,36,37A,39,40,41,46,52A(Confidential), 61,64, 65,66,68,71,113,116,129; Tr.I:61,67,123-130[Cairns]; Tr.III:573-576[Walsh]; Tr.VII: 1251[Rollins]; Tr.VIII:1358-1359,1374-1376[Rollins]; Tr.IX:1560[Kadehjian]; Tr.X: 1915-1940[Kadehjian];Tr.XIII:2353-2358,2548,2578-2581 [Cairns]*)

118. Justification for the Cutoff Used in Follow Up "Safety Net" Testing. The so-called "safety net" test offered to the Appellants as a means of confirming that the officer

had ingested cocaine, was collected and tested by mass spectrometry in the same manner as the original sample, but confirmation as positive used the test equipment's LOD/LOQ as the cutoff (originally 2ng/10mg and later reduced to 0.2ng/10mg), rather than the generally accepted standard of 5ng/10mg used in the test of the initial sample. The purpose of the second test was not to confirm the level of drug or metabolite, but simply to see if any detectible drug could be found in the subject's hair sample. So long as the second test showed any COC above the LOD/LOC, without regard to whether any metabolite was also present, the test would be called positive, no matter how little COC was present or how much variability there may have been between the actual COC levels in the two tests. (*Exhs. 5,52A-52I(Confidential) & 128; Tr..I: 153-161, 193-194 [Cairns]; Tr.IV:630[Walsh]; Tr.XIII:2364-2372,2585-2590[Cairns]*)

119. The use of LOD/LOQ confirmatory testing comes from the SAMSHA guidelines for urine testing, which prescribes that two separate "split" samples of urine must be collected from the test subject. If one sample tests positive for a drug metabolite, the second sample is tested for the presence of that metabolite at the LOD/LOQ. The SAMHSA guidelines do not prescribe the LOD/LOQ level, but that is left to each individual test laboratory, depending on the sensitivity of the equipment used. The basis for using LOD/LOQ for testing the second urine sample was scientific uncertainty about the long-term stability of the drug metabolite in a urine sample, i.e., how long would the metabolite remain in the urine without changing the discrete chemical structure that identified it as a drug metabolite. (*Tr.IX:1572-1575[Kadehjian]*)

120. The concern about the integrity of drugs in urine does not arise with hair samples, where the drug remains extremely stable over many years. The justification for using LOD/LOQ to confirm the BPD's "follow up" hair drug test rests, rather, on the fact

that the two tests are conducted at different points in time, may come from different body sites, and need to account for the subjects abstaining from drugs and/or use of aggressive "avoidance" techniques to reduce the drug concentration in the interval between learning of an initial positive test and providing the follow-up test sample. (*Tr.I:161-162[Cairns]; Tr:XIII:2413-2415,2452-2456,2551-2561,2604-2624[Cairns]*)

121. Because of the stability of drug in hair, hair testing offers alternatives to the urinalysis-type LOD/LOQ confirmatory test used by the BPD. One alternative, called "double confirmation", involves taking two samples from the donor at the same time and, if one sample tests positive at the established cutoff (i.e. 5ng/10mg), the second sample also is tested and the two results compared. Only if both samples test positive at the standard cutoff and the two results fail within a statistically acceptable range of variability, will the sample be declared positive for drug ingestion. As previously stated, in July 2007, the BPD changed Rule 111 to provide for a double confirmation procedure (with an allowable 30% variability factor). The only other major city police department (NYPD) known to use hair drug testing of sworn officers always required that Psychemedics apply a double (actually "triple") confirmation protocol. (*Exhs.58,116,200 & 201;Tr.I:161-162[Cairns];Tr.XIII:2373-2377(Confidential),2589-2590[Cairns]*)

122. Another alternative, called "sectioning", involves the separation of a hair sample into different lengths, which correspond to different time frames of growth. This process is most useful in assaying the use patterns of drug users to provide a broad picture of their progress in rehabilitation, or relapse. It is also available, if sufficient hair can be sampled, as a tool to match hair samples taken in workplace testing settings at different intervals so that both samples can be attributed to roughly the same time frame. This could confirm, for example, whether or not a workplace user had diluted the drug

content by abstaining from drug use for a period of weeks or months prior to testing. (*Exh.116; Tr.I:88-90,158-161,304-316 [Cairns];Tr.XIII:2379-2381,2432-2433[Cairns]*)

123. Analytic Variability. Hair testing, as any scientific analytic method, allows for some degree of variability, both with respect to reproducibility (i.e. the precision with which the testing the same specimen multiple times will produce comparable results) and accuracy (i.e., obtaining the expected result for a control specimen with a known or established quantity). As previously stated, the generally accepted standard of variability in forensic chemistry expects that, to be considered reliable, results produced by a particular analytic methodology must fall within a range of +/-20%. SAMSHA allows for a single variation in drug testing of up to 50% on a one-time basis, which I infer is intended to "recognize that there are outliers in science", as Dr. Cairns testified. There is no doubt that, in general, Psychemedics hair testing procedures meet or exceed these scientific standards of variability. (*Exhs.22, 29 & 61; Tr.II:381-389,272-274,281 {Cairns]; Tr.III:498[Walsh]; Tr.VII:1245-1247[Rollins]; Tr.IX:1578-1581[Kadehjian]; Tr.X:1976-1978[Kadehjian]; Tr.XIII:2368,2457-2495,2545-2547[Cairns]*)

124. The Appellants point to instances of unusual variability in the particular hair test results as reported for seven of ten Appellants, purportedly ranging from 39% to 96%, to discredit the Psychemedics testing process as unreliable and the conclusion that any of them ingested cocaine as unjustified. Psychemedics responded with evidence that the sets of samples being compared are not truly the "same", pointing to discrepancies in timeframe of collection, sample site and avoidance practices, and thus, this evidence of individual test data variability must be discounted as irrelevant. I am satisfied that proof of unusual analytic variability in these test results is not sufficient to impugn the Psychemedics testing process, per se, as invalid for that reason. This evidence, however,

presents bona fides issues of fact regarding whether or not the disputed discrepancies claimed to explain that variability are credible. In general, the comparison of two different hair samples, taken at different times and/or from different locations on the body is confounded by such factors as: (a) variability of hair structure, which (unlike urine) is not a homogeneous matrix even if taken from the same part of the body; (b) different growth patterns which vary depending the location and the proportions of the samples that are in the growth or non-growth stages, and (c) the extent to which the porosity, and techniques to influence porosity, affect the process of incorporation of drug into, and extraction from, a person's hair. These evidentiary issues are further addressed in findings concerning each of the particular Appellants involved. (*Exhs.10,12 through 19, 22, 29,30,61 71,72, 116,202; Tr.I:160[Cairns];Tr.II:,325-327,406-407,437-441[Cairns]; Tr.IV:764[Walsh];Tr.VIII:1369-1374[Rollins]; Tr.IX:1517-1518,1661-1663[Kadehjian]; Tr.X:1844,1860,1954-1958[Kadehjian]; Tr.XIII:2410-2414,2462-2470, 2551-2561, 2604-2623 [Cairns]*)

125. Psychemedics Decontamination Procedures. The parties put considerable effort into addressing a long-standing dispute, evidenced in the testimony and scientific literature, about whether or not decontamination procedures applied to hair samples prior to testing are effective to extract drugs deposited by external contamination, so that the drug and metabolite concentrations left in the hair sample, when tested, can be conclusively attributed to ingestion. Discussion of decontamination strategies other than those employed by Psychemedics in testing the Appellants, has little, if any, evidentiary value, other than to note that the scientific community has not coalesced upon one single strategy. Indeed, the SAMHSA proposed guidelines contained no provision for decontamination at all and it is unclear whether the states (Oklahoma and Florida) which

provide statutory authority for hair drug testing require decontamination procedures or not. There is consensus that Psychemedics's current 3.75 hour, proprietary shaking and bumping, extended buffer wash process, combined with its unique fifth wash kinetics calculation, can be a "good tool" in some cases, such as child custody determinations where exposure (not necessarily use) is relevant, and "may be useful in studies of *chronic use*". It is effective to identify artificially contaminated samples in numerous clinical and laboratory tests with equal or better precision and accuracy than any other presently available strategy. (*Exhs. 2,3(emphasis added),4,20 through 22,46, 68 through 71, 75, 94, 114 through 117, 129; Tr.I:81-82,106-111,130-153[Cairns]; Tr.IV:662-664,717-718,733-744,594-599[Walsh];Tr.1135-1140[Rollins]; Tr.VIII:1269, 1296-1298, 1304-1305, 1431[Rollins]; Tr.IX:1583-1595, 1660 [Kadehjian]; Tr.X:1832-1836 [Kadehjian]; Tr.XIII:2516-2517 [Cairns]*)

126. One of the reasons that Dr. Rollins took issue with the efficacy of decontamination washing was his hypothesis that washing could not remove contaminated drug material that had bound to the melanin in hair, and that melanin was known to have strong tendency to bind with drugs. While this technical concern could be relevant to some laboratory decontamination strategies, Psychemedics uses a procedure that centrifuges the melanin into a solid "pellet" and removes the pallet from the hair digest prior to mass spectrometry analysis. Thus, even assuming that Dr. Rollins' hypothesis were correct, any drug that had bound to the melanin (whether by ingestion or external contamination) and remained in the pellet is not counted in the mass spectrometry analysis as performed by Psychemedics. Dr. Rollins also hypothesized that the process of digesting and centrifuging the hair sample "disrupts" the affinity of drugs to melanin, implying that some quantity of external contamination

which somehow bound with the melanin was then compounded with the drug in the digest, and treated as ingested for purposes of analysis. He had no "scientific basis" for this hypothesis, however, and, therefore, I give this specific criticism no weight. (*Exhs. 22 & 74; Tr.I:86[Cairns]; Tr.VII:1101-1108[Rollins];Tr.VIII:1334-1344,1388-1389, 1439-1433[Rollins];Tr.IX:1522-1523,1548[Kadehjian];Tr.XIII:2345-2346 [Cairns]*)

127. What I do find problematic about the reliability of Psychemedics decontamination strategy is the documented concern in the scientific community that not enough is known about real-world drug exposure, and the mechanisms for incorporation into, and extraction from hair, to permit the inference that an innocent person who has been externally contaminated by exposure to street cocaine and cocaine users in a real world setting will always be identified as a non-user. Psychemedics scientists are unequivocal in vouching for its methodology; Dr. Cairns is sure that "nobody in the negative population could ever, ever be classified as a user. No way that could happen." I do not doubt the sincerity of these scientists, but there is an equally compelling credible body of critics who are not so convinced, most notably, the scientists at RTI whose published articles and reports, as described earlier, conclude that the scientific evidence falls short of endorsement of any decontamination strategy, as well as the FBI Laboratory and SAMHSA, both of whom remain skeptical and have not yet endorsed any form of hair testing for illicit drugs as sufficiently reliable to be used on federal law enforcement officers and other federal employees. For example, the 2009 RTI report summarized its findings on this point as follows:

> The most effective decontamination strategy remains debated. Further work to examine the efficacy of decontamination procedures is essential, and it would include not only the use of decontamination strategies, but also the evaluation of hair-drug concentrations in comparison to the drug detected in the decontamination solvents. The criteria for both known contaminated and drug-

user hair specimens subjected to these decontamination procedures also needs to be evaluated.

These same doubts have been expressed by the scientific community for some time. In the early (2001) studies by Romano et al, of the state of drug decontamination procedures, "a positive result should be interpreted with extreme caution" and should not be used as a stand-alone means for confirming use by a person not otherwise known to be abusing drugs as opposed to having been contaminated by external or passive exposure in the natural environment. In 2001, the United Nations drug testing task force described the state of hair testing in substantially the same way, and that opinion has not changed. Dr. Walsh described the view within the scientific community to acknowledge that Psychemedics is "doing a good job", but that the "state of the art" is not developed to the point that any one test protocol or wash procedures will "give you a confidence level of whether its use or contamination." (*Exhs.2,4,22,35,36 through 41, 46, 64, 65,66,72,77,93;Tr.III:457-478,570-586,595-599 [Walsh];Tr.IV:659-660, 666 ,674-675, 698-700,722-723, 759-760, 770-772 [Walsh]; Tr.VII:1095,1117-1118,1134-1135, 1144-1147, 1155, 1167-1171,1198-1199, 1201-1205,1231-1232 [Rollins]; Tr.VIII: 1287-1288 [Rollins]; Tr.X;1828-1832 [Kadehjian];Tr.XIII:2362[Cairns])*

128. The 1997 Mieczkowski article is the one study containing data on hair tests given to real-world working police officers. That article, even Dr. Rollins admitted, does report that decontamination did remove virtually all externally deposited cocaine in that volunteer sample of about two dozen narcotics officers and evidence room clerks, all of whom tested negative for cocaine under the procedures then used by Psychemedics, as demonstrated by the presence of zero cocaine in the final washes and hair digests of

most all of the officers tested.[21] There is also evidence that no BPD narcotics officer has ever tested positive, although there is no comparable data of the test results of these BPD officers, while they may have tested negative, to show how much cocaine and metabolite was found in their wash extracts and how much, if any, was left their final hair digest after decontamination. Even the Mieczkowski article hypothesized that there were scenarios in which innocent persons could be contaminated to a degree that they would have tested positive. (*Exhs.4, 67 & 158; Tr.V.795-838[Meade]; Tr.VII:1169 [Rollins]; Tr.VIII:1458-1466[Rollins]; Tr.IX:1614-1617 [Kadehjian]*)[22]

129. One Appellant unwittingly put a face on this unsettled scientific concern that laboratory simulations of drug contamination may not be a true proxy for real life contamination scenarios. Under stern questions from this Commissioner concerning his veracity (about which more will be said below), George Downing offered a spontaneous, clearly unrehearsed, but deeply-felt opinion:

> [It] is one thing to listen to all of these scientists talk about . . . desks and circumstances of cocaine on it and all these guinea pigs and white hair and gerbils. But I never heard scientists say I have put an individual in a project . . . saying go through the hallway. . . . This is what we did. . . . I never hear a scientist get up and say what we did was put him with this crackhead and see what happens.

Although this opinion carries only limited evidentiary weight, it does capture, in lay terms, the same key shortcoming behind hair testing that had led many experts to conclude it is premature to be used as a conclusive means of confirming employee drug abuse, especially in the context of law enforcement personnel. (*Tr.XV:3038 [Downing]*)

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[21] The LOD of the equipment used by Psychemedics at the time was 2ng/10mg, and Psychemedics only reports to the first decimal place. Thus, I infer that a "zero" report would not be inconsistent with a cocaine concentration of as much as 1.99ng. (*Tr.I:195-197,263-264,321-322,395-397 [Cairns]; Tr.III:563-56 [Walsh]; Tr.IV:756 [Walsh]; Tr.VII:1130 [Rollins]; Tr.IX:1575,1683 [Kadehjian]);Tr.XIII:2364 [Cairns]*)

[22] Professor Mieczkowski also published a second article in 2003 with data about drug testing by a police department in an unidentified "major eastern American city", which used hair testing only for job applicants. Officers were tested only by urine screening. (*Exh. 84*)

130. Chain of Custody Issues. The Appellants presented evidence that the BPD and Psychemedics failed to conform to certain procedures prescribed by its own testing protocols, including, failure to take precautions such as not always wearing gloves during the collection process, mismarking the quantity of hair collected, failing to timely transmit the samples for testing, entering erroneous personal identification information, and failure to inject solvents between hair digests to prevent "carry-over" of drug content from one sample to the next. While many of these errors did occur, there was no proffer that warrants an inference that any of them, in fact, impugned the accession or testing of any samples collected from any of the Appellants and it would be speculation to infer that any of these mistakes were material to the results in any particular Appellant's test. (*Exhs. 10 through 19; Tr.V:883[Mullan];Tr.XIII:2415-2416[Cairns]*)

131. Dr. Kadehjian's Credentials. The Appellants challenged the credentials of Dr. Kadehjian, the BPD's only expert witness not affiliated with Psychemedics, to vouch for its testing process. Dr. Kadehjian is a biochemist, with no direct drug testing experience or research credentials, unlike Dr. Rollins (who holds a medical and a scientific doctorate, has done research on the incorporation of drugs in hair, was an MRO and was medical director for the 2002 Winter Olympics), or Dr. Walsh (who, among other things, was a key player in the design and implementation of the SAMHSA federal drug testing guidelines). Dr. Kadehjian knew little of Psychemedics hair testing procedures until he was retained as an expert in the present dispute. These concerns affect the weight given to his testimony, but his undisputed expertise in biochemistry and daily practice of following the published literature, is sufficient to satisfy me that he is qualified to offer his opinion on the state of the scientific community's acceptance of hair drug testing, in general, and what he came to learn about Psychemedics hair testing in particular. (*Exhs.*

6,20 through 22 , 32,37A, 61, 93; Tr.III:457-485 [Walsh]; Tr.VIII:1067-1079[Rollins]; Tr.IX:1570-1571,1721-1739[Kadehjian]; Tr.X:1821-1832,1938-1939 [Kadehjian])

132. Where, however, the Appellants showed that the underlying source material on which Dr. Kadehjian relied did not support his opinions, I give those particular opinions no weight. For example, Dr. Kadehjian opined in his initial expert report that the SAMHSA "published" procedures for hair drug testing that, although not "formally implemented", have "recognized the utility of hair as a suitable specimen . . . with the same level of confidence that has been applied to the use of urine". The evidence showed that this opinion was hyperbole, at best, and possibly could be called misleading. Similarly, Dr. Kadehjian opined that "the United Nations has recognized the role of hair drug testing . . . and has provided hair testing guidelines." In fact, the role that the UN recognized for hair drug testing was as "a complementary test for urinalysis", not as a stand-alone test. Dr. Kadehjian's outdated opinions about the scientific consensus CE as a distinct metabolic marker of ingestion were noted in the findings above on that subject. (*Exhs. 6,20 through 22,32,37A,61,93; Tr.III:457-485 [Walsh]; Tr.VIII:1067-1079[Rollins]; Tr.IX:1570-1571,1721-1739[Kadehjian]; Tr.X: 1821-1832,1938-1939 [Kadehjian]*)

133. Changes to Psychemedics's Standard Operating Procedures. Both Drs. Walsh and Rollins criticized the volume and frequency of changes made by Psychemedics to its SOPs. While some were "not big", some were "significant" (i.e., made the difference in whether an Appellant's test result was declared positive or negative) and ought to have been supported by validation studies to back up the change, which are costly, and did not appear to have done in every case. Dr. Walsh has heard RTI scientists refer to the Psychemedics's SOPs as the "creeping criteria." Dr. Kadehjian disputed this view,

noting that SAMHSA also changes to its drug testing standards from time to time and that "good laboratory practice dictates that SOPs receive ongoing critical assessment and reassessment" so that "its procedures are the most accurate and reliable that they can provide". He believed that Psychemedics's hair testing SOP changes "demonstrates routine and diligent oversight of their laboratory operations and responsiveness to changing technology advances and programmatic requirements." Save for lowering of the "safety-net" cut off to the limit of detection based on the acquisition of better equipment, however, neither Dr. Kadehjian nor Dr. Cairns described what specific data or backup lead to so many outcome determinative changes in span of a few years' time. Dr. Walsh noted that changes in SAMSHA test guidelines follow a rigorous period of notice and comment. (*Exhs.21,22, 37(Confidential), 40, 61; Tr.I:124- 129 [Cairns]; Tr.II:390-391[Cairns];Tr.III:538-567(Confidential)[Walsh]; Tr.IV: 652, 725-733,751-754[Walsh]; Tr..IX:1579,1680-1683 [Kadehjian];Tr.X:1782 [Kadehjian]; Tr.XIII:2395-2401,2421-2422,2531-2532(Confidential)[Cairns]*)

D. <u>The Drug Tests Supporting Discharge of the Appellants</u>

134. Each of the Appellants were discharged from employment solely because the BPD had received confirmation that they had tested positive for cocaine on a Psychemedics hair drug test and either: (a) this was their first confirmed positive test and they refused to enter into a settlement agreement to receive a 45-day suspension and undergo rehabilitation [Thompson, Jones, Beckers, Harris, Washington, Downing & Guity] or (b) this was their second confirmed positive test which required automatic termination under Rule 111. [McGowan, Bridgeman & Bridgeforth]. (*Exhs. 10 through 19,100,101,110,111,137,147,156,160,167ID,168 through 174, 175ID, 176, 180 through 182, 183(Confidential), 184 through 190*)

135. Preston Thompson. On June 14, 2001, a 6.0 cm hair sample was collected from the back (nape) of Officer Thompson's head. The SAC was annotated "bad align", meaning that the hair lengths were not of uniform length and did not line up. A 12.4 mg portion of the sample was tested with the following results: COC:13.7ng/10mg (a retest showed 9ng/10mg); BE:1.8ng/10mg (13.6%); CE:3.9ng/10mg (28.4%); NCOC:0.0; COC in Last Wash: 0.0. (*Exh.18; Tr.II:328-330 [Cairns]*)

136. Dr. Hoffman, then the MRO, spoke to Officer Thompson who said he was "not doing cocaine". Office Thompson had never worked in the Drug Control Unit (DCU) or the Evidence Unit. He had been on disability leave for several months (since January 2001) prior to his test and offered no specific exposure theory.[23] The MRO reported the test as positive on June 25, 2001. (*Exhs.18 & 158;Tr. 2668-2674 [Thompson]*)

137. A "safety net" hair sample of 4.0 cm was collected on June 29, 2001 from the nape of Officer Thompson's head. An 11.9mg portion of the sample was tested with the following results: COC:13.0ng/10mg; BE:1.7ng/10mg (13.8%); CE:4.57ng/10mg (35.1%); NCOC:0.0; COC in last wash:0.0. The test was reported positive to the MRO on July 10, 2001. (*Exh.18;Tr.II:330[Cairns]*)

138. Officer Thompson declined to sign a Settlement Agreement to accept a suspension and was discharged. He appealed his termination to the Commission (CSC No. D-01-409 which allowed his appeal by Decision dated June 23, 2003. On July 2,

[23] The BPD employs an "Unprotected Exposure Form" which officers are directed to submit to report to the OHU whenever the officer has been exposed to certain environmental risks, including "unknown chemicals/powder when investigating a premise". Lt. Meade provided hearsay testimony that the form had been used by DCU officers to report exposure to drugs, but there was no direct evidence of the circumstances, when those reports were made, or how often and routine they were. The form plainly focuses on exposure to "potentially infectious" substances such as bodily fluids encountered in the line of duty, when acting as a "RESCUER". I find the evidence inconclusive that the BPD officers understood the form was intended to report instances of external drug contamination and Io draw no inference from the failure of Officer Thompson, or any other of the Appellants, to submit such a form disclosing external exposure to cocaine. (*Exh. 49:Tr.V:807-809[Meade]*)

2004, the Suffolk Superior Court (Cratsley, J.), vacated the Commission's decision on procedural grounds and remanded his appeal for a new evidentiary hearing. (*Exhs 133, 134,147; Tr. XIV:2674 [Thompson]*)

139. Evidence of Officer Thompson's prior 2000 hair tests also was proffered, which showed that (a) the initial test of 3.7cm of nape hair was positive (15.7ng COC; 3.1ng BE (19.7%); 3.3ng CE (21%), (b) a re-test of 2.5 cm of another portion of the same sample was also positive (COC: 9.0ng; BE:1.4ng (15.5%); CE:1.4ng(15.5 %); but (c) his 2000 "safety net" , taken from his underarm, was negative: COC: 0.3ng (below the "safety net" cutoff of 2ng at the time). Dr. Cairns explained that when a safety net comes back negative with such a degree of variation in result, it is cause for investigation by the Psychemedics technical staff. The original documentation for this safety net was not maintained for more than the standard five years, so the precise length of the safety net sample is not known. The 2000 test was declared negative due to an inability of Psychemedics to find a sufficiently credible reason to explain the variation in results and, therefore, "give the benefit of the doubt" to the donor, despite a personal belief that the test results showed ingestion. (*Exhs. 30, 202; Tr. 2665-2666 [Thompson])*

140. Richard Beckers. On April 2, 2002, Officer Beckers provided a 1.6 cm sample of head hair. He was not scheduled to be tested but he was at BPD headquarters for a seminar and requested the opportunity to take the test while he was there. A 12.2 mg portion of the sample was tested with the following results: COC:11.63ng/10mg; BE 0.64ng/10mg (5.5%); CE: 0.0; NCOC: 0.32; COC in Last Wash:0.3ng. (*Exh.10; Tr.I:179-185[Cairns];Tr.XII:2214-2217;Tr.XIII:2412 [Cairns]*)

141. Dr. Hoffman, then the MRO, spoke to Officer Beckers who said he had no knowledge why he tested positive. He offered no specific exposure theory. He had

never worked in the DCU or Evidence Unit. The MRO reported the test as positive on June 25, 2001. (*Exh.10,119 & 158;Tr.II:328-330 [Cairns];TrXII:2271-2272 [Beckers]*)

142. On April 18, 2002, immediately upon learning that he had tested positive, Officer Beckers went to his private physician at Harvard Vanguard where he had another hair test performed, as well as blood and urine tests. According to his physician, the hair test "showed no evidence of cocaine usage", but the methodology used was not provided. I give the results no weight. (*Exhs. 121, 126; Tr.XII:2229[Beckers]*)

143. A "safety net" hair sample of 2.4 cm was collected on April 22, 2002 from Officer Beckers's head. A 12.4mg portion of the sample was tested with the following results: COC: 2.62ng/10mg; BE:0.32ng/10mg (12.2%); CE:0.0; NCOC:0.0; COC in Last Wash:0.0. The test was reported positive to the MRO on April 30, 2002. (*Exh.10, 119;Tr.I:190-192[Cairns];Tr.XII:2218-2223[Beckers];Tr.XIII:2313[Cairns]*)

144. On April 23, 2002, Officer Beckers went to an independent laboratory in Woburn to seek another hair test. The laboratory took a 2.0 cm sample which it chose to send to Psychemedics, who tested a 13mg portion with the following results: COC: 2.8ng/10mg; BE:0.3ng/10mg (13.7%); CE: 0.0; NCOC:0.0. Psychemedics processed the sample as an "initial screen" and reported the test negative on April 26, 2002. (*Exh. 120; Tr.XII:2310-2312 [Beckers]*)

145. Officer Beckers declined to sign a Settlement Agreement to accept a suspension and was discharged. (*Exhs 133 & 134; Tr.XII:2218-2219[Beckers]*).

146. Mr. Beckers applied to the DET for unemployment benefits. Based on finding his "direct and credible testimony" he did not use illegal drugs, as well as inconsistencies in the evidence proffered by BPD regarding the test procedures, the DET Review Examiner awarded benefits. That decision was not appealed. (*Exh. 123ID*)

147. At the hearing before the Commission, Mr. Beckers proffered several reasons for his "false positive" test result including: (a) possible contamination from unwashed instruments used by his barber; (b) use of a hair straightening treatment; and (c) contamination during drug arrests. Although these reasons are theoretically plausible, they were not supported by specific and scientifically sound expert testimony. None of these reasons are given any weight. (*Tr.XII:2218-2226,2266-2271[Beckers]*)

148. The BPD proffered evidence that Officer Beckers never served in the DCU and could not recall being involved in any drug arrests or having drugs in his cruiser in the year prior to his 2002 hair test. The BPD also pointed to Officer Beckers prior years test results which, although negative because there was insufficient metabolite to confirm the test as positive, had shown COC levels (14.0ng in 2000 and 33ng in 2002). (*Exhs. 118, 123ID; Tr.XII:2207-2208,2218-2226 [Beckers]*)

149. Ronnie Jones. On March 14, 2002, Officer Jones provided a 1.7 cm sample of head hair. A 12.8 mg portion of the sample was tested with the following results: COC: 5.12ng/10mg; BE:1.25ng/10mg (24.4%); CE:0.0; NCOC:0.0; COC in Last Wash:0.0. (*Exh.16;Tr.I:292-295[Cairns];Tr.XI:2214-2217[Jones];Tr.XIII:2412 [Cairns]*)

150. Dr. Hoffman, then the MRO, spoke to Officer Jones who offered no specific exposure theory. Officer Jones had never worked in the DCU or Evidence Unit. The MRO reported the test as positive on March 20, 2001. (*Exh.11,119;Tr.II:328-330 [Cairns];Tr.XI:2022,2051[Jones]*)

151. On March 26, 2002, Officer Jones saw his private physician at Harvard Vanguard who collected a urine specimen which was reported negative for cocaine. (*Exh.99;Tr.XI:2026-2027[Jones)*]

152. A "safety net" hair sample of 1.5 cm was collected on March 27, 2002 from Officer Jones's head. A 12.4mg portion of the sample was tested with the following results: COC:2.44ng/10mg; BE:0.48ng/10mg (19.2%) ; CE:0.0; NCOC:0.0; COC in Last Wash:0.0 . The test was reported positive to the MRO on April 30, 2002. The test was reported positive to the MRO on April 2, 2002. (*Exh.10,119;Tr.II:296-297[Cairns]; Tr.XI:2034 [Jones])*

153. Also on March 27, 2002, Officer Jones went to an independent laboratory in Woburn which took a 1.0 cm hair sample and sent it to Psychemedics for testing which reported it negative in the initial RIA screen. (*Exh.100; Tr.XI:2034-2038[Jones]*)

154. Officer Jones declined to sign a Settlement Agreement to accept a suspension and was discharged. (*Exhs 101 & 102; Tr.XI:2038-2039[Jones]*)

155. Mr. Jones applied to the DET for unemployment benefits. The Review Examiner denied the application and, ultimately, the Appeals Court upheld the DET's decision. (*Exhs. 154ID & 155ID; Administrative Notice [Jones v. City of Boston, 63 Mass.App.Ct. 1119 (2005) (Rule 1:28 Decision)]*)

156. Jacqueline McGowan. On August 20, 2002, Officer McGowan provided a 3.9 cm sample of head hair. A 12.7 mg portion was tested with the following results: COC: 5.76ng/10mg; BE:1.25ng/10mg(1.7%); CE:2.48ng/19mg(43%); NCOC: 0.11ng/10mg [i.e., "trace"] [24]; COC in Last Wash:0.6ng. This result was reported positive to the MRO on August 29, 2002. (*Exh.17;Tr.I:298-301[Cairns]; Tr.XIII:2412 [Cairns] Tr.XVI: 3210-3213[McGowan]*)

[24] This measurement, among others, appears to be below the 0.2ng/10mg LOD/LOQ of the test equipment, and would be considered a "trace" amount according to Dr. Cairns (*Tr.II:343, 321-322[Cairns]; Tr.XIII: 2353, 2480-2418[Cairns]*)

157. The parties disputed whether Officer McGowan's initial test result was actually positive. Dr. Rollins explained that, if the reported value of 0.6ng COC in the Last Wash is the COC reading as determined by RIA multiplied by five, then, that would mean the RIA analysis detected 0.12ng, which is below the LOD of the instrumentation. He also explained that RIA is only a "semi-quantitative" measure that is being equated with a highly quantitative number (LS/MS-MS), that the precision and accuracy of the RIA wash "kit" (as opposed to the FDA cleared initial assay kit) is not known and considerable variability in the measurement can be expected. A small variation in that number would bring the COC number below the 5ng/10mg cutoff. On the other hand, if the raw RIA count of COC in the last wash was 0.6, that would require a reduction of the 5.7ng LS/MS-MS number by five times that figure, also bringing the result below the 5ng/10mg cutoff. (*Exh 61; Tr.VII:1114-1126 [Rollins]*)

158. Dr. Kadehjian did not dispute Dr. Rollins's math, but claimed he in his written report that Dr. Rollins misunderstood the Psychemedics SOPs, stating that the wash kinetics calculation was irrelevant because "wash kinetics were not applicable in Ms. McGowan's case because of the presence of the cocaine metabolite cocaethylene, which excludes external contamination and . . . provides unambiguous proof of use of cocaine as opposed to external ingestion." This opinion is not credible, given the weight of scientific authority described above that CE is not a definitive marker of ingestion, and it is inconsistent with Dr. Cairns description of the wash kinetics deduction for purposes of the COC cutoff as being a calculation that is independent of consideration of metabolites. (*Exhs. 20 & 58; Tr.XIII:2550-2551[Cairns])*

159. Dr. Gilbert, then the MRO, spoke to Officer McGowan who offered no specific exposure theory. Officer McGowan had never worked in the DCU or Evidence Unit.

The MRO reported the test as positive to the BPD in September 2002. (*Exhs.17,158, 184;Tr.II:298-391 [Cairns];Tr.XVI:3211-3212,3226[McGowan]; Tr.XIII:2619[Cairns]*)

160. A "safety net" hair sample of 3.9 cm was collected on September 6, 2002 from Officer McGowan's head. The sample was sectioned into two portions: (a) a 1.3 cm portion (8.6 mg) representing the most recent 30 days growth, which was tested twice and (b) a second 2.6 mg portion (12.2 mg) representing the oldest (60 days) of growth. The test results for the two sections:

- New Growth – first injection: COC:0.5ng/mg; BE:0.28ng/10mg (52%); CE:0.5ng/10mg (100%); NCOC:0.0; COC in Last Wash: 0.0
- New Growth – second injection: COC:0.5ng/mg; BE:0.26ng/10mg (44%); CE:0.5ng/10mg (100%); NCOC:0.0; COC in Last Wash 0.0
- Old Growth -- COC:0.2ng/10mg; BE:0.1ng/10mg [i.e.,"trace"] (44%) CE:0.2ng/10mg; NCOC:0.0; COC in Last Wash: 0.0

(*Exhs. 17, 22 & 61;TrI:309-332[Cairns]; XIII:2619-2621[McGowan]*)

161. The first (new growth) section was declared too small to represent a valid test. Under Psychemedics procedures, however, since the second (old growth) section was negative (at the safety net LOD/LOQ of 0.2ng), Officer McGowan's hair test could have been reported negative. As Dr. Cairns testified, Psychemedics SOP prescribe that if the old growth section is negative, "it's negative and goes out negative", and no one has authority to change a negative to a positive. In Officer McGowan's case, however, she was required to submit to a second "safety net" test. (*Exhs. 17, Tr.XIII:2433, 2448-2449,2582-2583[Cairns}*)

162. On September 27, 2002, a second "safety net" sample of 3.9 cm of head hair was taken from Officer McGowan. It was sectioned into a 12.9 cm section of "new growth" and a 12.8 cm section of "old growth", and tested with the following results:

New Growth – COC:0.2ng/10mg; BE: 0.09ng/10ng hair [i.e. "trace"](45%); CE:0.08ng/10mg [i.e."trace"] (40%); NCOC:0.0; COC in Last Wash:0.0

Old Growth – COC:1.4ng/10mg; BE:0.4ng/10mg (%) CE:1.0ng/10mg (71%); NCOC:0.0; COC in Last Wash:0.0

The new growth section was reported negative. The old growth section was reported positive to the MRO on October 7, 2002. (*Exh.17:Tr.I:296-297[Cairns];Tr.XVI:[McGowan])*

163. As this was considered a second failed drug test, Officer McGowan was subject to automatic discharge from employment under Rule 111. (*Exhs. 168 through 176*)

164. At the hearing before the Commission, Ms. McGowan admitted she continued to drink alcohol but strenuously denied a relapse into drug abuse. She credibly testified that the social influence of the acquaintance with whom she had used cocaine was over. She did acknowledge having a seriously stressful situation within the year prior to her 2002 hair test, with the death of her sister. (*Tr.XVI:3219-3225,3252-3254[McGowan]*)

165. When asked at the hearing before the Commission to account for the large differences in Officer McGowan's initial and safety test results (variations of nearly 100% in some results), Dr. Cairns proffered that it was due to "good avoidance techniques." He said there were certain products on the market, but he gave little detail about what they were or on what basis he knew that they could made such a significant difference in test results. To the contrary, he testified that a drug user could not beat a Psychemedics hair test through any known avoidance techniques. *(Tr.XIII:2453-2454,2574-2575,2622-2624[Cairns]*)

166. Oscar Bridgeman. On October 2, 2002, Officer Bridgeman provided a 1.1 cm sample of head hair. A 12.5 mg portion was tested with the following results: COC:10.1ng/10mg; BE:9ng/10mg(88.8%); CE:0.0; NCOC: 0.16ng/10mg[i.e."trace'];

COC in Last Wash:0.3ng. The result was reported positive to the MRO on October 5, 2002. (*Exh.12;Tr.I:212-226[Cairns];Tr.XVI:2214-2217 [Bridgeman]*)

167. Dr. Gilbert, then the MRO, spoke to Officer Bridgeman, who offered no specific exposure theory. Officer Bridgeman had never worked in the DCU or Evidence Unit. Based on the second "safety net result", the MRO reported the test as positive to the BPD. (*Exhs.12,158,185; Tr.XVI:3119[Bridgman]*)

168. On October 9, 2002, Officer Bridgeman went to his private physician who administered urine and blood tests which were submitted to Quest Laboratories and reported negative. (*Exh. 162; Tr.XVI:3101-3106, 3155-3162 [Bridgeman]*)

169. A "safety net" hair sample of 1.0 cm was collected on October 15, 2002 from Officer Bridgeman's head. A 12.4 mg portion was tested with the following results: COC: 4.1/10mg; BE:4.5ng/10mg (109.5%); CE:0.0; NCOC:0.6ng/10mg; COC in Last Wash:0.3ng. The test was reported positive to the MRO on October 22, 2002. (*Exh.12,185;Tr.I:219-220 [Cairns])*

170. As this was considered a second failed drug test, Officer Bridgeman was subject to automatic discharge from employment under Rule 111. (*Exh. 167ID*)

171. At the hearing before the Commission, Mr. Bridgeman attributed his 2002 "false positive" test to a habit he had of putting drugs confiscated from suspects in his pocket where he also kept cookies to eat. I do not believe this explanation as I find it incredible that any BPD officer would be so cavalier about securing contraband in such a manner as would violate BPD procedures for handling physical evidence and could clearly compromise a criminal investigation. It is doubly incredible that Officer Bridgeman would persist in such an unprofessional practice after testing positive for

cocaine in 2001 and while subsequently dealing with his own admitted substance abuse issues. (*Exh.191; Tr.XVI:3174-3181[Bridgeman]*)

172. Shawn Harris. On December 4, 2002, Officer Harris gave a 1.3 cm sample of chest hair. A 12.0 mg portion was tested with the following results: COC:8.18ng/10mg; BE:0.73ng/10mg(8.99%); CE:0.05ng/10mg[i.e. "trace"] (0.6%); NCOC: 0.15ng/10mg; COC in Last Wash:0.0. On December 7, 2002, the result was reported positive to the MRO.(*Exhs.15&186;Tr.I:282-294[Cairns];Tr.XVII:3290-3291[Harris]*)

173. Dr. Gilbert, then the MRO, spoke to Officer Harris, who offered no specific exposure theory. Officer Harris had never worked in the DCU or Evidence Unit. While on duty, he wore a bullet proof t-shirt vest over his chest hair. The MRO reported the test as positive to the BPD. (*Exhs.15,158,186; Tr.I:285-291[Cairns]; Tr.XVII:3317-3321[Harris]*)

174. A "safety net" hair sample of 1.0 cm of chest hair was collected on December 17, 2002 from Officer Harris. A 12.9 mg portion was tested with the following results: COC: 7.9/10mg; BE:0.7ng/10mg (9.6%); CE:0.6ng/10mg(7.5%); NCOC:0.27ng/10mg; COC in Last Wash:0.0ng. The test was reported positive to the MRO on December 26, 2002. (*Exh.15,186;Tr.I:219-220[Cairns])*

175. On December 18, 2002, Officer Harris took an independent blood and urine drug tests which were reported by Quest Laboratories as negative for cocaine. (*Exh. 178; Tr.XVII:3295-3301[Harris]*)

176. On or about December 19, 2002, Officer Harris submitted an independent hair test which was rejected as too small to be tested. He submitted a second sample of 1.5 cm of chest hair on January 2, 2003, which was tested at National Medical Services, an affiliate of Quest Diagnostics, by a form of immunoassay called ELISA (which uses

biochemical, as opposed to radioactive screening in an RIA immunoassay) with the result reported "NONE DETECTED" for cocaine. According to a "Hair Information Packet" produced by National Medical Services, a "NONE DETECTED" result could mean one of a number of things, including, among others, that: "Subject did not use the drug in a chronic/repetitive manner during the time period represented by the hair length", "Not enough drug incorporated in to hair to be detected" or "Drug which may have been present degraded or was washed out of the hair". Neither the specific cutoff or detected concentrations of drug and metabolite, if any, nor the LOD/LOQ of the equipment were disclosed. (*Exhs. 122ID, 28,29, 127, 179; Tr.XVII:3302-3305[Harris]*)

177. Officer Harris declined to sign a Settlement Agreement to accept a suspension and was discharged. (*Exhs. 180 through 182, 183(Confidential); Tr.XVII:3307[Harris]*)

178. Walter Washington. On September 26, 2002, Officer Washington provided a 3.0 cm sample of chest hair. A 12.8 mg portion was tested with the following results: COC:6.13ng/10mg; BE:0.37ng/10mg(5.5%); CE:0.0; NCOC: 0.01ng/ 10mg [i.e. "trace"]; COC in Last Wash:0.0. The result was reported positive to the MRO on October 1, 2002. (*Exhs.119&187;Tr.II:342-343[Cairns];Tr.XIV:2759-2760 [Washington]*)

179. Dr. Gilbert, then the MRO, spoke to Officer Washington, who offered no specific exposure theory. Officer Harris had never worked in the DCU or Evidence Unit. The MRO reported the test as positive to the BPD on September 2002. (*Exhs.15, 158,186; Tr.I:285-291[Cairns]; Tr.XIV:2727 [Washington]*)

180. A "safety net" hair sample of 3.2 cm of chest hair was collected on October 9, 2002 from Officer Washington. A 12.4 mg portion was tested with the following results: COC:3.79/10mg; BE:0.43/10mg (11.3%); CE:0.6ng/10mg (7.5%); NCOC:0.07ng/10mg

[i.e.,"trace"]; COC in Last Wash:0.0ng. The test was reported positive to the MRO on October 16, 2002. (*Exhs.19,187;Tr.II:343-345[Cairns])*

181. On October 10, 2002, Officer Washington went to his private physician and submitted to urine , blood and hair drug testing. The urine and blood tests were reported as negative. (*Exh. 135 & 138(Confidential); Tr.XIV:2735-2755[Washington]*)

182. The hair test was performed pursuant to the instructions provided with a Psychemedics over-the-counter hair drug test kit called the PDT-90 that Officer Washington had bought at a drug store and brought with him to the doctor's office. The hair sample was taken from Officer Washington's chest and tested by Psychemedics under its protocols for an initial drug screen, with the following results: COC:4.82ng/10mg; BE:0.29ng/10mg (6.0%). Since the PDT-90 tests are measured at the 5ng/10mg cutoff, Psychemedics reported the test result as negative. (*Exhs. 135 & 202; Tr.XIV:2735-2758[Washington]*)

183. Officer Washington declined to sign a Settlement Agreement to accept a suspension and he was discharged. (*Exhs. 183(Confidential); Tr.XIV:2760-2761 [Washington]*)

184. William Bridgeforth. On April 24, 2003, Officer Bridgeforth provided a 3.0 cm sample of underarm hair. Officer Bridgeforth then had a full beard, which was the preferred site, but there was no explanation given for choosing underarm hair. A 12.6 mg portion of the sample was tested with the following results: COC:11.6/10mg; BE:1.7ng/10mg(14.7%); CE:0.0; NCOC: 0.25ng/10mg ; COC in Last Wash:0.3ng. The result was reported positive to the MRO on April 30, 2003. (*Exhs. 11, 105 ,106 & 188; Tr.I:199-205[Cairns]; Tr.V:865{Mullan]; Tr.XI:2116-2117 [Bridgeforth]*)

185. Dr. Gilbert, then the MRO, spoke to Officer Bridgeforth, who offered no specific exposure theory. Officer Bridgeforth last worked in the DCU in 1990 and had never worked in the Evidence Unit. The MRO reported the test as positive to the BPD on 2003. (*Exhs.11,105,106,158,188; Tr.I:206-210[Cairns]; Tr.XI:2154-2159[Bridgeforth]*)

186. A "safety net" hair sample of 2.2 cm of underarm hair was collected on May 6, 2003 from Officer Bridgeforth. A 12.9 mg portion was tested with the following results: COC:10.59ng/10mg;BE:1.34ng/10mg(12.7%C); CE:0.0;NCOC:0.2ng/10mg; COC in Last Wash:0.0ng. The test was reported positive to the MRO on May 14, 2003. (*Exhs.11,105, 106, 188;Tr.I:206-210[Cairns])*

187. Also on May 6, 2003, Officer Bridgeforth went to his private physician and took a urine drug tests which were reported as negative for cocaine. (*Exh.107; Tr.XI:2121-2127 [Bridgeforth]*)

188. On May 13, 2003, Officer Bridgeforth gave a sample of an unspecified quantity of underarm hair which was tested by Quest Diagnostics Ltd using an immunoassay initial screening method and reported negative. According to the Quest Diagnostics test report: "If a drug was reported negative, it means that either no drug was detected or if a drug was detected, it was present at a concentration less than the laboratory's established cutoff level." No specific cocaine or metabolite levels were reported and neither they, nor Quest's LOD/LOQs or decontamination procedures, if any, were disclosed. Dr. Cairns believed, however, that Quest followed the SAMHSA proposed guidelines, which provide for a 5% BE and 0.5ng CE or NCOC rule, but no required decontamination strategy. (*Exhs. 4,36,108; Tr.XI:2129-2135[Bridgeforth]; Tr.XIII:2425-2427[Cairns]*)

189. As this was considered a second failed drug test, Officer Bridgeforth was subject to automatic discharge from employment under Rule 111. (*Exh. 147*)

190. Mr. Bridgeforth applied to the DET for unemployment benefits. The BPD did not attend the hearing. Based on the finding that "there is insufficient evidence . . . to support a conclusion that the claimant used cocaine", he was awarded benefits by the decision of the DET hearing officer. That decision was not appealed. (*Exh. 109ID*)

191. At the Commission hearing, Mr. Bridgeforth offered a series of explanations for his "false positive" test result. He claimed that he would see "white powder" on the passenger seat his cruiser which he assumed was confectionary powder from cake or donuts and brush it off, but it could have been cocaine, and he was called to parties where pot and crack cocaine smells were in the air. I do not doubt this testimony as genuine, but it did not hold up on cross-examination as a likely source of external contamination. Since he had previously tested positive, he was more aware, and said he did not "touch anything he shouldn't touch or brush off anything he shouldn't brush off". He could not recall a single instance of smelling crack cocaine smoke on a police call in the year prior to his 2003 test. (*Tr.XI:2144-2167[Bridgeforth]*)

192. Mr. Bridgeforth also testified that he lived in a townhouse that shared a hallway, wall and heating vent with another unit. In or about 2000 or 2001, new neighbors who used crack cocaine and were arrested for drug crimes at some point, occupied this adjacent unit. This testimony had the ring of truth and I credit that this situation is an example of a real-world illustration of a source of passive, environmental contamination that could explain his positive tests in 2002 and 2003, after three prior years of testing negative. In deciding what weight this evidence deserves, however, it must be taken together with the other evidence that Mr. Bridgeforth's hair tests were performed on his underarm hair, the fact that he chose not to contest his positive hair test in 2002, as well

as the generally vague nature of the testimony about the timeframe in which this situation arose. (*Tr.XI:2149-2152,2182-2185[Bridgeforth]*)

193. George Downing. On May 7, 2003, Officer Downing provided a 1.3 cm sample of nape hair. At the time, he wore his hair in braids, which he was willing to take down to obtain a longer sample of head hair, but the BPD collector elected not to follow recommended procedure to do so. The sample was sectioned and a 12.2 mg portion of the sample (I infer 3.9 cm of the most recent growth) was tested with the following results: COC:5.86ng/10mg; BE:0.69ng/10mg(11.8%); CE:0.0; NCOC); COC in Last Wash:0.0. The result was reported positive to the MRO on May 13, 2003. (*Exhs. 13, 51 & 189; Tr.I:222-225[Cairns]; Tr.V:863-865 [Mullan]; Tr.XV:2958-2962 [Downing]*)

194. Dr. Gilbert, then the MRO, spoke to Officer Downing, who offered no specific exposure theory. Officer Downing had never worked in the DCU or Evidence Unit. The MRO reported the test as positive to the BPD. (*Exhs.13, 158,189; Tr.XIV: [Washington]*)

195. On May 13, 2003, Officer Downing provided a 7 cm hair sample which was submitted for testing to Quest Diagnostics. An Affidavit from Patrick M. Carpenter, Director of Toxicology Operations for Quest Diagnostics, to which was attached a test documentation package, was received in evidence. The Affidavit stated:

> A hair specimen collected 05-13-03 and identified by the name of George Downing and SSN ***-**-**** was . . . tested and the results were as follows: Test Method – Immunoassay Screen for . . . Cocaine [and other drugs] . . .Results: NEGATIVE. Screen indicating no presence of drugs in hair.
>
> After studying the analytical data, my interpretation of these results is that either no drug was detected, or if drug was detected, it was present at a concentration less than the laboratory's established cutoff level, conclusive evidence of [the donor's] drug use within approximately 90 days of the time of this sample being collected[25] . . .I find the laboratory chain of custody to be intact. . . The documentation reproduced in this package represents true and correct copies of original business records . . . .

[25] I infer that this means the sample was sectioned and only the 3.9 cm of most recent growth was tested.

Dr. Cairns examined the Quest Diagnostics Affidavit and test package and opined, via a reply Affidavit, that the test result data placed Mr. Downing's sample in the range of "low control" samples (i.e., samples spiked with cocaine at levels below the cutoff , which means that his hair was not "drug free. Concentration of immunoassay results are in inverse order of drug concentration – the higher the number the less drug. I infer Dr. Cairns could have estimated the actual drug content in Mr. Downing's sample, but he did not include that information. (*Exh. 15, 129 & 190; Tr.I:411-415[Cairns]; Tr.XV:2974{Downing]; Tr.XIII:2463-2465{Cairns}*)

196. A "safety net" hair sample of 10-13 cm cm of head hair was collected on May 16, 2003 from Officer Downing. A 12.7 mg portion of the sample was tested with the following results: COC:1.94ng/10mg; BE:0.33/10mg (17%); CE:0.6ng/10mg (7.5%); NCOC:0.02ng/10mg [i.e.,"trace"]; COC in Last Wash:0.0ng. The test was reported positive to the MRO on June 2, 2003. (*Exhs.13,189;Tr.I:226-230{Cairns]; Tr.XV:2968-29837 [Downing])*

197. Also on May 16, Officer Downing submitted to a second independent hair test that was screened by National Medical Services by immunoassay (ELISA) for cocaine and reported "NONE DETECTED". No Affidavit or additional data about this test was provided. (*Exh. 152); Tr.XV:2984-2988[Downing]*)

198. Officer Downing declined to sign a Settlement Agreement to accept a suspension and was discharged. (*Exh. 147)*

199. Mr. Downing applied for unemployment benefits. The DET Review Examiner found that "the claimant did not use cocaine during his employment" and awarded benefits, after weighing Mr. Downing's "consistent" and "thoroughly detailed" testimony, together with his two independent negative hair test results, finding that it was

not plausible "that an officer would immediately, on his own, go out and pay for his own hair tests if her were using cocaine" or would refuse to "sign a rehabilitation agreement" if it would save his job. The BPD sought judicial review and, ultimately, the Appeals Court upheld the DET's award of benefits. (*Exhs.154ID&155ID;Tr.XV:2993-2994 [Downing]; Administrative Notice [City of Boston v. Downing, 78 Mass.App.Ct. 78 (2008)])*

200. Rudy Guity. On April 27, 2006, Officer Guity provided a 1.1 cm sample of beard hair. A 12.2 mg portion of the sample was tested with the following results: COC: 10.71ng/10mg; BE:0.994ng/10mg(9/2%); CE:0.0; NCOC: 0.05ng/10mg [i.e.,"trace"]; COC in Last Wash:0.0. The result was reported positive to the MRO. (*Exhs. 14; Tr.II:265-267[Cairns]; Tr.XIV:2816 [Guity])*

201. Dr. Hoffman, then the MRO, spoke to Officer Guity, who denied using cocaine. Officer Guity had never worked in the DCU or Evidence Unit. He said that he had recently had a root canal and had been administered lidocane, and had cataract surgery, which could be the reasons for his "false positive" result. The MRO told him "they don't use cocaine any more" and requested copies of the relevant medical records which were provided after some delay. The MRO reported the test as positive to the BPD on 2006. (*Exhs.14,138 through 140(Confidential);158; Tr.XIV:2727-2728 [Guity]*)

202. A "safety net" hair sample of 4.6 cm of beard hair was collected on May 18, 2006 from Officer Guity. A 12.5 mg portion of the sample was tested with the following results:COC:17.39/10mg; BE:1.74/10mg (10%); CE:0.0; NCOC:0.07ng/10mg [i.e., "trace"]; COC in Last Wash:1.6ng. The test was reported positive to the MRO on May 26, 2006. (*Exh.19,187;Tr.II:266-272[Cairns]; Tr.XIV:2843[Guity])*

203. On June 1, 2006, Officer Guity took a urine and a blood drug test administered through Family Medical Center, both of which were reported negative, with no further details. (*Exh. 142 & 143; Tr.XIV:2848-2851[Guity]*)

204. Officer Guity declined to sign a Settlement Agreement to accept a suspension and was discharged. (*Exhs. 141ID & 147); Tr.XIV:2842-2843,2846[Guity]*)

205. Mr. Guity applied to the DET for unemployment benefits. The Review Examiner awarded benefits, finding Mr. Guity credible when he testified that he "has never used recreational drugs" and that three of the prescriptions he had been taking – proparcaine, liquid codeine and lidocaine – were all cocaine derivatives, which explained the positive test result. The BPD sought judicial review and, after trial, the DET award was upheld by the Boston Municipal Court, from which no further appeal was taken. (*Exhs.145ID; Tr.XIV:2856-2862[Guity]*)

206. At the Commission hearing, Mr. Guity proffered the medical records that showed the medications which he said explained the positive test result. He conceded he had no personal knowledge that he was administered any form of cocaine in either medical procedures and offered no expert testimony to support the assertion that these medications could trigger such a result and the documents were admitted solely for the limited purpose of identifying the medications and the fact that this information had been disclosed to the MRO. By affidavit, Dr Cairns proffered credible and uncontroverted evidence that every drug has a unique molecular fingerprint. He illustrated how cocaine's molecular structure differs from lidocaine, proparacaine and codeine, so that those drugs "could not result in a false positive for cocaine under Psychemedics hair drug testing protocols." (*Exhs. 138 through 140(Confidential), 202; Tr.XV:3914-3915[Guity*]. *See also Exh.4 [Figure 3. Chemical structure of cocaine analytes]*)

207. During his testimony, Mr. Guity described the urine and blood tests he took. The following day, he reiterated his testimony that, although he was earning about $80,000 a year, he did not have "20 cents" to pay for a hair test and did not even inquire about what it would have cost. Further into cross-examination, after being asked about those tests he was asked in the following colloquy about taking an independent hair test.

> Q. Mr. Guity, I note that you didn't have a hair test performed, did you?
> A. No, sir.
> Q. And you knew of other officers in the past who had, had hair tests performed outside of the Boston Police Department?
> A. Yes, sir.
> Q. In fact, were you aware of officers who had previously attempted to challenge the Boston Police Department drug test?
> A. Yes, sir.
> Q. Were you aware at the time that you failed your BPD hair test that other officers had attempted to introduce urine and blood tests as evidence of innocence?
> A. No, sir.
> Q. One of your cousins is an Appellant in this case, correct?
> A. That's correct, sir.
> Q. Who is that?
> A. Richard Beckers.
> Q. Are you aware . . . that Mr. Beckers had failed the Boston Police Department hair drug test before you, correct?
> A. Yes, sir.
> Q. Were you familiar with Mr. Beckers trying to challenge his hair test results?
> A. Yes, sir.
> Q. Were you aware that he had submitted independent hair testing?
> A. Well, I really didn't get into that.
> Q. My question is whether or not you knew.
> A. It doesn't concern me.
> Q. But even with your knowledge of other officers having submitted independent hair tests, you decided not to choose that option for yourself, correct?
> A. Yes.

The following day, Mr. Guity was recalled to recant this testimony, and admitted that he had, indeed, known that other BPD officers had sought independent hair tests and that, he, too, had submitted to an independent hair test which came back reported as POSITIVE for cocaine. He said the test had simply slipped his mind. I do not find credible the excuse of a lapse of memory on this point, especially from a former long-

time career police officer who personally sat through many of the eighteen days of hearing of this matter. The extreme degree of prevarication that Mr. Guity demonstrated by this testimony on a key evidentiary issue imposed a mortal wound on his credibility. (*Tr.XV:2925-2927,2939-2940,2951-2952 [Guity]; Tr.XVI:3050-3082 [Guity]*)

III. Conclusion

A. Applicable Legal Standards

1. Civil Service Law Applicable To Disciplinary Appeals

A tenured civil service employee aggrieved by a disciplinary decision made pursuant to G.L.c.31,§41, may appeal to the Commission under G.L. c.31, §43:

> *If the commission by a preponderance of the evidence determines that there was just cause for an action taken against such person it shall affirm the action of the appointing authority*, otherwise it shall reverse such action and the person concerned shall be returned to his position without loss of compensation or other rights; provided, however, *if the employee by a preponderance of evidence, establishes that said action was based upon harmful error in the application of the appointing authority's procedure, an error of law, or upon any factor or conduct on the part of the employee not reasonably related to the fitness of the employee to perform in his position, said action shall not be sustained*, and the person shall be returned to his position without loss of compensation or other rights. The commission may also modify any penalty imposed by the appointing authority. (*emphasis added*)

Under G.L.c.31, §43, the Commission is to determine, under a "preponderance of the evidence" test, whether there was just cause for the decision of the appointing authority. See, e.g., Leominster v. Stratton, 58 Mass.App.Ct. 726, 728, rev.den., 440 Mass. 1108 (2003); Police Dep't of Boston v. Collins, 48 Mass.App.Ct. 411 (2000); Cambridge v. Civil Service Comm'n, 43 Mass.App.Ct. 300, 304, rev.den., 426 Mass. 1102 (1997). McIsaac v. Civil Service Comm'n, 38 Mass.App.Ct. 473, 477 (1995); Watertown v. Arria, 16 Mass.App.Ct. 331, rev.den., 390 Mass. 1102 (1983).

> The term 'just cause' must be construed in light of the purpose of the civil service legislation in which it appears. The purpose is to 'free public servants from political pressure and arbitrary separation. . . but not to prevent removal of those

> who have proved to be incompetent or unworthy to continue in the public service. [citation] '[I]n order to carry out the legislative purpose, the appropriate inquiry is whether the employee has been guilty of substantial misconduct which adversely affects the public interest by impairing the efficiency of the public service.' [citations]

School Comm. of Brockton v. Civil Service Comm'n, 43 Mass.App.Ct. 486,488, rev.den. 426 Mass.1104 (1997). See also Murray v. Second Dist. Ct., 389 Mass. 508,514(1983) [26]

The Commission is guided by "the principle of uniformity and the 'equitable treatment of similarly situated individuals' [both within and across different appointing authorities]" as well as the "underlying purpose of the civil service system 'to guard against political considerations, favoritism and bias in governmental employment decisions.'" Town of Falmouth v. Civil Service Comm'n, 447 Mass. 814, 823 (2006) and cases cited. It is also a basic tenet of the "merit principle" which governs Civil Service Law that discipline must be remedial, not punitive, designed to "correct inadequate performance" and "separating employees whose inadequate performance cannot be corrected." G.L.c.31,§1. In performing its function:

> "[T]he commission does not view a snapshot of what was before the appointing authority . . . the commission hears evidence and finds facts anew. . . . [in] 'a hearing de novo upon all material evidence and a decision by the commission upon that evidence and not merely. . .a review of the previous hearing held before the appointing officer. There is no limitation of the evidence to that which was before the appointing officer' . . .For the commission, the question is . . .'whether, ***on the facts found by the commission, there was reasonable justification for the action taken by the appointing authority in the circumstances found by the commission to have existed when the appointing authority made its decision***.' "

Leominster v. Stratton, 58 Mass.App.Ct. 726,727-728 (2003) (affirming Commission

[26] The Appeals Court has distinguished the standard of "just cause" applicable to disciplinary decisions from the more deferential standard applicable in hiring decisions which come to the Commission under a different section of the Civil Service Law (G.Lc.31,§2(b))."We think that the standards are materially different. Simply put, a municipality should be able to enjoy more freedom in deciding whether to appoint someone as a new police officer that in disciplining an existing tenured one." See "Memorandum and Order on the Plaintiff's Motion for Judgment on the Pleadings", City of Attleboro v. Massachusetts Civil Service Comm'n, C.A. BRCV2011-00734 (MacDonald, J), citing City of Beverly v. Civil Service Comm'n, ,78 Mass.App.Ct.182,191 (2010).

decision rejecting evidence of appellant's failed polygraph test and domestic abuse orders and crediting appellant's exculpatory testimony) (*emphasis added*). cf. Town of Falmouth v. Civil Service Comm'n, 447 Mass. 814, 823 (inconsequential differences in facts found insufficient to hold justification unreasonable)

The burden of proof by a preponderance of the evidence is satisfied "if it is made to appear more likely or probable in the sense that actual belief in its truth, derived from the evidence, exists in the mind or minds of the tribunal notwithstanding any doubts that may still linger there." Tucker v. Pearlstein, 334 Mass. 33, 35-36 (1956); Selectmen of Wakefield v. Judge of First Dist. Ct., 262 Mass. 477, 482 (1982). An action is justified if it is "done upon adequate reasons sufficiently supported by credible evidence, when weighed by an unprejudiced mind; guided by common sense and by correct rules of law." Commissioners of Civil Service v. Municipal Ct. of Boston, 359 Mass. 211, 214 (1971); Cambridge v. Civil Service Comm'n, 43 Mass.App.Ct. 300, 304, rev.den., 426 Mass. 1102 (1997); Selectmen of Wakefield v. Judge of First Dist. Ct., 262 Mass. 477, 482 (1928).The Commission must take account of all credible evidence in the entire administrative record, including whatever would fairly detract from the weight of any particular supporting evidence. See, e.g., Massachusetts Ass'n of Minority Law Enforcement Officers v. Abban, 434 Mass. 256, 264-65 (2001). The Commission is entitled to due weight for its experience, technical competence, and specialized knowledge, as well as to the discretionary authority conferred upon it. . .This standard of review is highly deferential to the agency on questions of fact and reasonable inferences drawn therefrom.' " Brackett v. Civil Service Comm'n, 447 Mass. 233, 241-42 (2006) and cases cited.

It is the purview of the hearing officer to determine credibility of testimony presented to the Commission. "[T]he assessing of the credibility of witnesses is a preserve of the [commission] upon which a court conducting judicial review treads with great reluctance." E.g., Leominster v. Stratton, 58 Mass.App.Ct. 726, 729 (2003) See Embers of Salisbury, Inc. v. Alcoholic Beverages Control Comm'n, 401 Mass. 526, 529 (1988); Doherty v. Retirement Bd. Of Medford, 425 Mass. 130, 141 (1997). See also Covell v. Dep't of Social Services, 439 Mass. 766, 787 (2003) (where live witnesses gave conflicting testimony at an agency hearing, a decision relying on an assessment of their relative credibility cannot be made by someone who was not present at the hearing)

Finally, civil service law governing the rights of individual tenured employees operates in tandem with Chapter 150E, which provides for collective bargaining on behalf of organized public employees. A collective bargaining agreement may establish rules governing the terms and conditions of employment that are consistent with civil service law, but the rights accorded to a public employee covered by the civil service law cannot be modified or superseded through collective bargaining. It is well-settled that, in the event of a material conflict between civil service law and a collective bargaining agreement, the civil service law will take precedence. See, e.g., Local 1652, Int'l Ass'n of Firefighters v. Framingham, 442 Mass. 463, 477n.15 (2004); City of Fall River v. AFSCME Council 93, Local 3117, 61 Mass.App.Ct. 404, 411 (2004); Leominster v. Int'l Bhd of Police Officers, Local 338, 33 Mass.App.Ct. 121, 124-125, rev.den., 413 Mass. 1106 (1992); Tocci v. City of New Bedford, 18 MCSR 36 (2005)

2. Expert Testimony & Scientific Evidence

When an Appointing Authority relies on scientific evidence provided through expert witnesses, the Commission is mindful of the responsibility to ensure: (a) the scientific

principles and methodology on which an expert's opinion is based are grounded on an adequate foundation, by establishing its reliability, most frequently, through proof of "general acceptance in the scientific community" or by showing reliability through some other relevant alternative means, e.g., Canavan's Case, 432 Mass. 304, 311, 733 N.E.2d 1042, 1048 (2000) *citing* Commonwealth v. Lanigan, 419 Mass. 15, 641 N.E.2d 1342 (1994); In re Adoption of Hugo, 428 Mass. 219 (1998); (b) the witness is qualified by "education, training, experience and familiarity" with special knowledge bearing on the subject matter of the testimony, e.g., Letch v. Daniels, 401 Mass. 65, 69-69, 514 N.E.2d 675, 677 (1987); and (c) the witness has sufficient knowledge of the particular facts from personal observation or other evidence, e.g., Sacco v. Roupenian, 409 Mass. 25, 28-29, 564 N.E.23d 386, 388 (1990) [27]

The Commission is obliged to scrutinize evidence of a scientific test not only for its general reliability, but also with respect to whether the weight of the evidence supports specific application of the theory and method to the facts of the case. See, e.g., Commonwealth v. Patterson. 445 Mass. 626, 628 (2005) (analysis "includes ensuring not only the reliability of the abstract theory and process underlying an expert's opinion, but the particular application of that process"); Commonwealth v. Gaynor, 443 Mass. 245, 249-66 (2005) (questions about the reliability and weight to be given to scientific tests required a fact-based determination, including credibility assessments); Commonwealth

[27] The Commission's notes that it is granted broader discretion in the admission of evidence than permitted in the Massachusetts courts. Compare G.L.c.30A, §11(2) with Department of Youth Services v. A Juvenile, 398 Mass. 516, 531, 499 N.E.2d 812, 821 (1986) No party objected to the admission of the Psychemedics's test documentation used to determine and report to the BPD the results of the Appellants' positive drug test results, nor was a formal objection lodged as to the admission of expert testimony (save for the one issue concerning Dr. Kadehjian described in Finding Nos. 131-and 132). Thus, the appeals do not require a strict application of the process described in Lanigan/Daubert principles as to the admissibility of the scientific evidence, although those principles still do inform the Commission's judgment as to the weight that such evidence deserve.

v. Beausoleil, 297, Mass. 2006, 220-21 (1986) (blood tests admissible "only if . . . proper testing procedures were employed in the particular case"); Commonwealth v. Wynaught, 377 Mass. 14, 17-18 (1979) (defendant did not challenge the basic scientific validity behind using radar to detect a vehicle's speed, but the "more substantial question is cases where radar results are offered regards the accuracy of the particular speedometer at the time the speed measurement was made.")

Experts' conclusions are not binding on the Commission, as the trier of the facts, which may decline to adopt them in whole or in part and give them such weight as they deserve. See, e.g., Police Dep't of Boston v. Kavaleski, 460 Mass. 680, 694-695 (2012); Commonwealth v. Gaynor, 443 Mass. 245, 266 (2005); Turners Falls Ltd. Partnership v. Board of Assessors, 54 Mass.App.Ct. 732, 737-38, rev. den., 437 Mass. 1109 (2002). See also, Ward v. Commonwealth, 407 Mass. 434, 438 (1990); New Boston Garden Corp. v. Board of Assessors, 383 Mass. 456, 467-73 (1891); Dewan v. Dewan, 30 Mass.App.Ct. 133, 135, rev.den., 409 Mass. 1104 (1991).

3. Massachusetts Judicial Decisions

The subject of the BPD's workplace drug testing policy has been considered by the Massachusetts appellate courts on four prior occasions.

In Guiney v. Police Comm'r of Boston, 411 Mass. 328 (1991), the SJC struck down the use of random urine testing of BPD officers for drugs as an unreasonable search and seizure under the Massachusetts Declaration of Rights, distinguishing its decision from an earlier opinion allowing such random testing of untenured police cadets applying for appointment as permanent police officers. In reaching this conclusion, the SJC declined to follow the decision of the U.S. Supreme Court which had recently held that random drug testing of BPD tenured officers did not violate the U.S. Constitution. See Guiney v.

Roache, 873 F.2d 1557 (1st Cir.), cert. den., 493 U.S. 963 (1989), citing National Treasury Employees v. Von Raab, 489 U.S. 656 (1989). The majority opinion held:

> [T]he Commissioner has made no demonstration, on the record or otherwise, that facts exist that warrant random drug tests of police officers. *The record offers nothing to show that there is a drug problem in the Boston police department*. Nor is there anything outside the record of which we could take notice that would permit such a conclusion.

411 Mass. at 331-332 (*emphasis added*)

The evidence in these appeals of the miniscule number of officers who have tested positive under Rule 111 confirms the SJC's conclusion that the BPD does not have, and never did have, "a drug problem." Nevertheless, no party has questioned the BPD's zero tolerance policy for drug use. Surely, it fits within the purview of the BPD under civil service law to decide that even one police officer who uses illicit drugs is one employed officer too many. (It should also be said that the termination of one innocent officer in the mistaken belief that (s)he used drugs is also one terminated officer too many.)

In Dean v. Boston Police Dep't, 64 Mass. 111, rev.den. 445 Mass. 1107 (2005) (unpublished Rule 1:28 decision), the Appeals Court affirmed this Commission's dismissal of the appeal of a former BPD officer who was terminated pursuant to Rule 111 after testing positive for a second time on her annual hair test. Ms. Dean argued that her 2001 positive hair test was an echo of drug ingested the year before and raised various objections to the test. Her claims were not supported by any expert testimony and rebutted by two experts called by the BPD. The Appeals Court held that the evidence did not support the plaintiff's speculative theories and held that BPD was "entitled under Rule 111 to take action on the basis of the documentation as substantial evidence of positive tests, particularly in light of the absence of any meaningful evidence to the contrary." Id. This non-precedential decision, which did not address the disputed

scientific and evidentiary issues presented in these appeals, does not heavily inform the decision to be made by the Commission here.

The Appeals Court also decided appeals taken by two Appellants in these appeals – Ronnie Jones and George Downing – from decisions of the DET on their applications for unemployment benefits. In Jones v. City of Boston, 63 Mass.App.Ct. 1119 (2005) (unpublished Rule 1:28 decision), the Appeals Court affirmed the DET's denial of benefits to Mr. Jones, holding that "the evidence, viewed in the aggregate, supports the DET decision . . . The DET review examiner chose not to credit Jones's testimony [and, instead, to credit the evidence of two positive test results] and this court cannot displace the DET's factual findings and credibility determinations." Id.

In City of Boston v. Downing, 73 Mass.App.Ct. 78 (2008), the Appeals Court affirmed the DET's decision to award unemployment benefits to Mr. Downing, holding that the DET's decision that Mr. Downing had not ingested cocaine was supported by substantial evidence in the record and "the evidence points to no felt or appreciable probability of the contrary." In this, the only officially published Massachusetts appellate court opinion in an appeal involving a hair test for illicit drugs, the Appeals Court stated:

> *We acknowledge that the examiner could have inferred from the Psychemedics test result that Downing had ingested cocaine. However, the examiner found and concluded otherwise based upon her acceptance of Downing's testimony which, in her view, was supported and bolstered by his prompt submission to two independent drug tests, his refusal to enter into drug rehabilitation agreement knowing that his refusal would result in his discharge, and the absence of any history of drug use*.
>
> *In arguing that the weight of the evidence ran overwhelmingly to the contrary of the examiner's finding, the city asserts that the department's positive test results were entitled to 'more credence' than the evidence presented by Downing, including his negative test results*. To support its argument, the city relies on evidence tending to show that the Psychemedics tests provide an accurate and reliable scientific methodology for identifying drug use while identifying various factors that it contends detract from the probative value of Downing's independent

> test results. *Because this argument is directed to the weight of the evidence, it is unavailing*. [Citations].
>
> *Equally unavailing is the city's challenge to the inferences the examiner drew from the evidence showing that Downing sought independent drug testing and refused to sign a drug rehabilitation agreement.* The city argues: (1) an officer who tested positive during an annual screening has nothing to lose in seeking independent drug tests that might provide a basis to contest the department's results; and (2) Downing's refusal to admit to drug use and enter into a drug rehabilitation agreement is characteristic of drug abusers.[Footnote omitted] *As previously explained, application of the substantial evidence test does not empower us to make a de novo determination of the facts, to make credibility choices, or to draw inferences different from those drawn by the examiner on the facts found.*

Id., 73 Mass.App.Ct. at 83-84. (*emphasis added*)

The Commission is obliged to acknowledge that, due to the unique features and public policy inherent in DET proceedings, no preclusive effect can be given, per se, to a DET decision. Compare Tuper v. North Adams Ambulance Serv., Inc., 428 Mass. 132 (1998) with Commissioner of the Dep't of Empl. & Training, 428 Mass. 138 (1998). See also Supeno v. Equity Office Properties Mgmt, 70,473-474, rev.den.450 Mass. 1104 (2007). For this reason, at the hearing, this Commissioner made an interim ruling on the Appellant's proffer of DET awards to four of the Appellants and admitted them solely for the limited purpose of establishing the fact of the award. (Tr. XII:2260-2263; Tr.XIII:2318-2142). By the same token, the adverse DET ruling against Mr. Jones does not preclude his claim here that he did not ever ingest illicit drugs. Nevertheless, it bears notice that the Appeals Court has held that it was properly within the purview of the fact-finding authority of the DET review examiner to weigh the evidence of a positive hair test against other evidence in the record.

In Jones v. City of Boston, 2012 WL 4530594 (D. Mass. 2012) (O'Toole, USDJ), summary judgment was granted, dismissing all claims of the plaintiffs (including several of the Appellants in these appeals and other officers). The federal plaintiffs had asserted

that the BPD's termination of their employment based on a failed hair drug test violated their federal and state constitutional and statutory civil rights because the Psychemedics hair test has a disparate impact on African-Americans. The U.S. District Court found that the plaintiffs' statistical evidence, even if it were accepted as reliable, was insufficient to show the necessary disparate impact or permit an inference of any intent to discriminate (e.g., the pass rate for African-American officers was at least 97% of that of white officers) and the insufficiency was "dramatically highlighted by the rest of the pertinent evidence. No reasonable jury could find that the plaintiffs had established a pertinent case of disparate impact." Id.

The U. S. District Court's opinion did not reach the merits of the scientific evidence supporting the reliability and accuracy of the hair testing process in question. However, in rejecting the federal plaintiffs' related claims for procedural due process violations, Judge O'Toole anticipated that such inquiry would be made, finding that the plaintiffs' due process rights were satisfied through the available remedies of internal review procedures at the BPD and de novo appeal to this Commission, where the plaintiffs could "introduce evidence to challenge the results of their hair tests" and "have their independent drug tests admitted and considered as evidence in their hearings [presuming they were properly authenticated through a valid chain of custody]." Id. See also Villare v. Town of North Reading, 8 MCSR 44, reconsid'd, 8 MCSR 53 (1995) (discussing need for de novo fact finding by "disinterested" Commission in context of procedural due process); Bielawksi v. Personnel Admin'r, 422 Mass. 459, 466 (1996) (same)

4. Other Judicial Review of Hair Testing

There are few reported judicial decisions in other jurisdictions that have addressed challenges to the scientific validity of hair testing for illicit drugs by employees who had been terminated after testing positive. No reported decision appears to have ruled the use of the tests invalid, but no decision appears to have been provided with the breadth of the scientific evidence concerning the use of a hair test as a stand-alone proof of ingestion when other credible evidence of non-ingestion was also provided.

In Nevada Employment Security Dep't v. Holmes, 112 Nev. 275, 914 P.2d 611 (1996), the Nevada Supreme Court upheld the denial of unemployment benefits to a casino worker who had tested positive on two hair tests, one at a level of 98ng/10mg (which would be nearly twenty times above the 5ng/10mg cutoff), finding that (apparently uncontested) expert testimony from two Psychemedics employees and the current scientific literature established that "there are, arguably, no certainties in science" but "RIA testing, especially when coupled with a confirmatory GS/MS test is now an accepted and reliable method for detecting illicit drug use." Id., 112 Nev. 275 at 282.

In Goldin v. Kelley, 77 A.D.3d 475, 908 N.Y.S.2d 768 (1st Dep't. 2010)), the court upheld termination of a NYPD police officer who had tested positive on a hair test at levels four times above the cutoff, holding that drug test results were sufficient evidence to justify the conclusion that he had knowingly ingested cocaine as opposed to having been passively contaminated through intimate contact with a cocaine-using girlfriend. The opinion did not explicitly address the scientific issues.[28] In Brown v. City of New York, 250 A.D. 546, 673 N.Y.S..2d 643 (1st Dep't 1998), the court rejected a claim by a

[28] The Goldin v Kelly opinion rejected the argument that use of a hair test result violated the court injunction then in effect that prohibited the NYPD from using hair testing, because the test in question had been conducted prior to the entry of that injunction. 77 A.D.3d at 477.

probationary NYPD officer that he was wrongfully terminated after testing positive for cocaine on a hair test, finding that he offered only "speculative assertions" that the test was invalid and that, as a probationary employee, he stood on a different footing from tenured officers, who, by law, then could be tested only by means of urinalysis.

Virtually all other reported decisions have found the evidence insufficient to establish that hair testing for illicit drugs had achieved sufficient status as a reliable method to be used as the sole evidence that conclusively proved an employee had ingested drugs, either remanding the case for further fact-finding or upholding the decision based on additional evidence of ingestion. See, e.g., Scott Forge Co. v. Labor & Indus. Rev. Comm'n, 340 Wis.2d 498, 812 N.W.2d 540 (2012) (unpublished opinion) (remanded for further findings supporting conclusion that employee had not ingested drugs despite positive hair test); Hart v. ArcelorMittal Steel, 2011 WL 1296609 (N.D.Ind.2011) (employee smelled of marijuana and admitted use); McFarland v. Special-lite, Inc, 2010 WL 3259769 (W.D.Mich. 2010) (admitted use);(Broadus v. Unemployment Compensation Bd. of Review, 721 A.2d (Comm. Ct. 1998) (vacated order that had denied unemployment benefits based solely on evidence of positive hair test); Brinson v. Safir, 255 A.D.247, 680 N.Y.S.2d 500 (1st Dep't) (informants and surveillance of officer confirmed evidence of illicit conduct). See also Tauk v. Tauk, 43 Conn.L.Rptr. 129, 2007 WL 1053922 (Conn. Super. 2007) (court review of judicial decisions and scientific literature found no clear acceptance of validity of hair testing employees and numerous disputed issues that required a further plenary Daubert evidentiary hearing); State v. Kite, 114 P.3d 1000 (Kans.App. 2005) ("it does not appear that this method [Psychemedics hair test] has achieved wide judicial acceptance. . . .a trial court first should have an opportunity to examine, weigh and decide disputed facts to determine whether the test is sufficiently

reliable to be admissible for any purpose in Kansas."); United States v. Bush, 47 M.J. 305 (Armed Forces Ct. App.), cert. den., 118 S.Ct. 1048 (1998) (conviction based on positive hair test plus evidence that military officer had surreptitiously substituted a saline solution for a urine sample); United States v. Medina, 749 F.Supp. 59 (E.D.N.Y. 1990) (hair analysis report accepted as "some proof" that probationer violated the conditions of his probation. "Other evidence supports that conclusion beyond all possible doubt.")

In two reported decisions, the court remanded the case to permit the tested party an opportunity to use a negative hair test result as additional exculpatory evidence to rebut a positive urine test. United States v. Nimmer, 43 M.J. 252 (Armed Forces Ct. App. 1995); Bass v. Florida Dep't of Law Enf. Crim. Justice Standards & Training Div., 627 So.2d 1321 (3rd Dist.Ct. App. 1993).

Finally, a body of case law has begun to develop which imposes tort liability upon employers and drug testing laboratories for injury due to "false positive" hair drug testing. See, e.g., Narcisse v. Turner Industries Group, LLC, 2012 WL 1565293 (E.D.La. 2012) (employer cannot assert privilege against defamation claim because hair drug testing of employees is not authorized by Louisiana law); Cutler v. Quality Terminal Services, Inc. 2011 WL 98927 (N.D.Ill. 2011) (allowing negligence cross-claim by employer against Psychemedics); Webster v. Psychemedics, 2011 WL 2520157 (Tenn.Ct.App.2011) (remanded case for trial of negligence claim against Psychemedics); Landon v. Kroll Laboratory Specialists, Inc., 91 A.D.3d 79, 934 N.Y.S.2d 183 (2nd Dep't. 2011) and cases cited (recognizing duty of care running from drug testing laboratory to employee); Lewis v. Federal Reserve Bk., 2004 WL 2035006 (E.D.La.2004) (recognizing claim of defamation against Psychemedics)

B. Hair Testing as the Sole Basis for Termination

The present state of hair testing for drugs of abuse, while potentially useful in clinical assessment settings, and in the context of child custody, criminal probation and pre-employment hiring decisions, does not meet the standard of reliability necessary to be routinely used as the sole grounds to terminate a tenured public employee under just cause standards governing civil service employees under Massachusetts law.

Hair testing for drugs of abuse has not achieved general acceptance within the scientific or law enforcement communities. There are no universal industry standards controlling the performance of such testing. Save for general agreement that a level of 5ng/10mg of cocaine (plus some less uniformly-agreed level of metabolite) is the minimum concentration indicative of a low-level user, there are no uniform benchmarks for interpreting test results. Of the several laboratories that now offer hair testing to employers, the testing methods vary from laboratory to laboratory. While some parameters (cutoffs, decontamination procedures, etc) are described generally in published literature, substantial parts of the methodologies are hidden behind claims of competitive proprietary interest and cannot be replicated by others. There is a dearth of judicial precedent for allowing an employer to terminate an employee, and especially a tenured public employee, solely on the basis of a positive hair test. The BPD appears to have been the first major municipal police department to begin hair testing of its sworn officers in 1999, and remained the only such department to rely on hair testing in disciplinary matters until the NYPD began a similar testing program in 2009.

Although a lack of unanimity of opinion does not necessarily preclude a finding of general acceptance, especially as to a new scientific method, the criticism from sources such as the FBI Laboratory who have no proprietary interest in any one laboratory

testing process, represents more than merely one side of a legitimate scientific debate. In particular, the scientific evidence is compelling that no proven level of any cocaine metabolite has been identified that is conclusive of ingestion. Despite more than a decade of study and a clear federal policy against drugs in the workplace, SAMHSA has declined to approve hair testing as a modality for detection of illicit drugs by employees of the federal government and those employed in the private sector that are subject to federal oversight. Persuasive, credible evidence also demonstrates that further appropriate controlled population studies and research is needed to: (a) identify the composition and levels of cocaine material present in, and transferred from the environment to nonusers, particularly law enforcement officers, as opposed to users; (b) identify, if possible, a definitive metabolite marker of ingestion; and (c) complete a scientifically-grounded assessment of the efficacy of so-called "avoidance techniques" and other conscious and unconscious factors that influence hair test results. This information is essential before any specific laboratory-tested decontamination procedures and test protocols (including those of Psychemedics) are likely to be accepted as scientifically reliable to the degree that, when applied in a real-world disciplinary scenario, a positive test reading is, and can only be, due to ingestion of an illicit drug.

In sum, given the uncertainty about the efficacy of current decontamination strategies and metabolite criteria to rule out all real-world contamination scenarios, hair test results cannot be used in rote fashion as a conclusive and irrefutable means to terminate a BPD officer on the premise that such testing is "generally accepted" as reliable.

The Commission also may consider whether, despite a lack of consensus within the scientific community, the BPD has proved that the specific Psychemedics hair tests

performed on the Appellants in these appeals have been shown to be reliable as conclusive evidence of ingestion by any "other means", such as those enumerated by Lanigan/Daubert. This question is a closer call. Psychemedics's Senior Scientist, Dr. Cairns, acquitted himself well as a witness in defense of the Psychemedics hair test, putting his company at the cutting edge of the hair testing business. Even Psychemedics, however, has followed something of a "hunt and peck" approach as it has tried to refine its testing procedures to adapt to each wave of criticism that emerged.

In particular, Psychemedics has never fully reconciled its metabolite criteria with the strong evidence that use of any such criteria is problematic, at best. There has been little public disclosure, peer review or test data that support Psychemedics's selection of, and changes to its metabolite criteria (e.g., BE ratio from 10% to 5%). Depending on which criteria is applied at any given point in time a number of the Appellants would have tested negative, rather than positive. The following chart tabulates how many of the Appellant's test results would have been called negative under a prior or subsequent SOP. (See Appellants' Brief, pp.12-15)

Appellant	**Psychemedics SOP Effective Dates**					
	1999	**1st 2000**	**2nd 2000**	**3rd 2000**	**2001**	**2004**
Beckers	NEG	NEG	NEG			
McGowan	NEG	NEG	NEG	NEG	NEG	
Harris	NEG					
Washington	NEG	NEG	NEG			NEG
Downing	NEG	NEG	NEG	NEG	NEG	
Guity	NEG	NEG	NEG			

Similarly, while some degree of variation can be explained by the time delay between initial sampling and subsequent follow-up safety-net and/or independent tests of the Appellants, the difference in most of the test results for many of the Appellants greatly exceeds the 20% variability allowed in forensic chemistry, as well as the 30% variability

provided by current BPD "double confirmation" rules. Variations to this degree would require them to be reassessed or reported negative under the rules currently in effect. Only some, but not all of these large discrepancies in the Appellants' results have been adequately explained by the difference in collection dates and other factors.

Appellant	Variation Between Test Results	Second Test Below Initial COC Cutoff Level
Beckers	-77.5%	YES
Jones	-52.9%	YES
McGowan	-75.4% to - 96.4%	YES
Bridgeman	-59.4%	YES
Washington	-39.3%	YES
Downing	-67.2%	YES
Guity	+61.6%	NO

Clearly, this degree of variability and potential difference in outcome is not indicative of a mature, stable and reliable methodology and cannot be reconciled with basic merit principles of the Civil Service Law that demand equal and uniform treatment in disciplinary decisions affecting tenured civil service employees.

Another troubling aspect of the Psychemedics procedures used to test the Appellants, is the so-called follow-up "safety net" test used to rule out any possible false positive. This test, however, is reported positive so long as the follow-up sample contains any amount of machine-detectible drug (2.0ng/10mg of cocaine prior to November 2001 and reduced to 0.2ng/10mg thereafter). Dr. Cairns and Dr. Kadehjian fully explained the theory and origin of the use of a machine-driven LOD/LOQ safety net cutoff, specifically, that, in urine testing, where two samples were collected simultaneously, the concentration of the water soluble drug metabolite in the sample was likely to degrade by an unknown amount by the time the second sample was tested. Since testing of urine does not need to exclude the issue of external contamination to the degree hair testing does, a

machine-driven LOD/LOQ cutoff for testing the second urine sample seems an understandable choice.

It does not seem logical, however, to transfer this concept to hair testing. It is true that the BPD procedures did not call for a "true safety net" (i.e. re-testing a portion of the same "split" sample), so there are some similar issues associated with follow up testing that uses samples collected on different dates. However, the use of "true safety nets" and "double confirmation" in hair testing was always available and, indeed, that is the procedure now followed by the BPD. It is the procedure that the NYPD always followed. Second, there is virtual unanimity for the premise that environmental contamination is expected to be found many (although not all) non-users' hair, especially law enforcement personnel who come into contact with drugs in the course of their duties. There is also agreement with the premise that decontamination theories are not intended to, and do not guarantee removal of every last nanogram of contamination, but only purport to remove enough to assure that whatever remains is less than the absolute minimum level for presumption ingestion (i.e., 5ng/10mg, plus a sufficient amount of metabolite).

No satisfactory explanation was provided (and probably none can be provided) to justify why, on the one hand, an initial confirmatory hair test (and, in the case of "double confirmation" procedures, for a sample taken at the same time) would be declared positive if, and only if, after decontamination, the drug concentration exceeded 5ng/10mg (plus a metabolite), but that a safety net sample taken a few days or weeks later would be declared positive from the same donor and after the same decontamination procedures were applied, even if only as little as 0.2ng/10mg of COC could be detected. There is no dispute that the instrumentation has an LOD/LOQ capable of measuring such minuscule quantities, but that is beside the point. The incongruity here is that the use of such an

arbitrary machine-driven cutoff bears no relation to the purported scientifically-justified rationale developed to arrive at the initial cutoff criteria all parties to this case seem to accept as the minimum needed to be reached in order to be satisfied that the result is conclusive of ingestion versus contamination. In sum, given the unique risk of external contamination inherent in hair testing, a machine-driven LOD/LOQ cutoff cannot logically be reconciled with the premises underlying the selection of the initial cutoff criteria, and the undisputed limitations of any decontamination procedure to eliminate externally deposited drugs, that much more drug must be found in order to infer ingestion than merely the minimum amount that the instrumentation is capable of detecting.

Finally, there are no certainties in science and the degree of error in any scientific testing methodology is also a relevant factor to be considered. Although the evidence suggests that Psychemedics achieves an average degree of instrumentation error well below the +/-20% standard in forensic chemistry (perhaps below 5%), it remains a concern that, in any individual case, and especially for two hypothetically identical samples at or near cutoff levels, some will be read as below the cutoff and reported negative and some will be read as above the cutoff and reported positive solely by virtue of the acknowledged allowable range of error inherent in the instrumentation. While those results may be scientifically acceptable from an instrumentation calibration perspective, potential variations of as much as 20% (or even 5%) are not acceptable when they would be used to make the difference in an employer's decision whether an employee is retained in employment or terminated, especially in a close case at or near cut off levels.

In sum, Psychemedics's use of shifting and problematic metabolite criteria applied to the Appellants, the use of an illusory so-called follow-up LOD/LOQ safety net despite

the availability of the more rational option of double confirmation testing, as well as the arbitrary effect that the level of instrumentation variability allows in reading test results, leaves the Psychemedics hair tests short of being an acceptable and reliable method that is entitled to be given, in effect, such irrefutable weight, that, in every case, standing alone, it may be used to conclusively distinguish an officer who has used cocaine from a non-user who has been environmentally contaminated.

The Appellants contend that, if a Psychemedics test result, standing alone, cannot support the conclusion that a BPD officer ingested drugs and, therefore, provides no just cause for termination, per se, that finding ends the inquiry, because all of the Appellants were terminated solely because they tested positive (See Exh. 147) and were not allowed to present any mitigating justification at the appointing authority level disciplinary hearing. The Appellants argue that the BPD is bound by the reason given at the time of termination and, when that reason has not been proved, no basis exists upon which to find just cause to terminate any of the Appellants. This argument is unavailing.

G.L.c.31,§41 does require an appointing authority who contemplates disciplining a tenured employee to give written notice of the "specific reason or reasons" for proposed discipline. The notice, however, does not require more than a clear and plain statement sufficient to afford the employee fair opportunity to learn of, and respond, to the charges. Although the Appellants correctly point out that their terminations were based solely on the rote determination of having positive drug tests, the essence of the charge was the ultimate inference that such test results meant that the officer had used illicit drugs. Although the Commission agrees that, on their own, those test results, per se, do not necessarily carry the BPD over the threshold to meet its burden of proof on the ultimate issue, when, in any particular case, the positive test results are considered together with

other probative evidence supporting an inference of ingestion, the Commission will not let semantics override such probative evidence of misconduct on the part of a BPD sworn officer. For all of its flaws, the BPD hair test has a legitimate place in narrowing down which of its few officers may reasonably be suspected of abusing illicit drugs and taking appropriate measures, consistent with the Massachusetts Declaration of Rights and Massachusetts law, that confirm suspected use, as well as to enable the affected officer to establish his or her innocence through probative evidence presented on his or her behalf.

In sum, the Commission must review each Appellant's test results, together with all other probative evidence to decide, as in any Section 43 *de novo* appeal, whether, or not the BPD met its burden to prove misconduct (i.e., ingestion of illicit drugs) by a preponderance of evidence as to each individual Appellant. For the reasons explained below, the BPD did meet its burden to show just cause for the discharge of Officers Thompson, Bridgeforth, Bridgeman and Guity. The BPD did not meet its burden to establish just cause for the termination of Officers Beckers, Jones, McGowan, Harris, Washington and Downing.

C. Sufficiency of the Evidence of Appellants' Drug Use

1. Preston Thompson. Officer Thompson tested positive on his initial 2001 hair test at 13.7 ng/10mgCOC, with BE at 13.6% and 3.96ng of CE. His follow-up two weeks later was consistent at 13ng/10mg COC with BE of 13.9% and 4.57ng of CE. These levels of COC – nearly three times the cutoff under any set of protocols now employed or previously employed by Psychemedics in testing BPD officers – add sufficient additional force to the test results. When Mr. Thompson's 2001 test results are taken together with his earlier hair test history, which, although ultimately declared negative officially, also showed results considerably above cut-off which were

discounted to give him the "benefit of the doubt" and the absence of any evidence of specific exposure that would explain these elevated levels, the preponderance of evidence supports the conclusion that Officer Thompson had used cocaine. It is also relevant that Officer Thompson was on medical leave, recovering from injuries suffered on duty (which eventually resulted in qualifying for disability retirement) and he had not performed the duties of a BPD officer for nearly six months prior to his 2002 hair test. Officer Thompson did not seek or obtain an independent hair test. As a result, the BPD had just cause to terminate him.

2. **Richard Beckers.** Officer Beckers tested positive on his initial 2002 hair test at 11.63ng/10mg COC, with BE at 5.5% (0.64ng) and NCOC at 0.32ng. Had the test been administered six months earlier, it would have been reported negative, because the BE was below 10%, which was the minimum metabolite present needed to confirm a test positive for ingestion before November 2001, when Psychemedics reduced the amount of BE required to test positive down to 5%.[29] His test was declared positive only because of this change to the Psychemedics SOPs. His follow-up three weeks later showed 2.62ng/10mg COC, with BE at 12.2% (0.32ng) and no NCOC. He went to see his private physician immediately after learning that he had tested positive (April 18, 2002) and submitted to urine, blood and hair testing, but no substantive weight can be given to the test results as there was no detail provided about them. I do give substantial weight to the results of his second independent hair test on April 23, 2002, however, which was sent to Psychemedics and a full Psychemedics toxicology report was submitted in evidence which reported the test as negative, with 2.6ng/10mg COC, BE at 11.5% (0.3ng) and no

[29] Officer Beckers's annual hair tests in 1999, 2000 and 2001, under the original cutoff parameters showed COC at even greater levels than his 2002 test, but only a small level of BE, so they were all reported negative as required by Psychemedics's SOPs.

CE or NCOC. He successfully appealed the denial of his unemployment benefits. This persistence at exoneration give further credibility to his testimony that he was not a cocaine user. The short window between his three Psychemedics tests, the consistency of the follow-up and negative independent tests, the presence of only a minute amount of NCOC (compare the present BPD standard requiring 1ng), the questionable use of a 5% BE cutoff to declare the initial test as positive, and the lack of convincing evidence that good avoidance techniques could account for the differences in test results, all add to the conclusion that the preponderance of evidence supports his denial of cocaine use.

3. <u>Ronnie Jones</u>. Officer Jones tested positive on his initial 2002 hair test at 5.12ng/10mg COC, which is just barely positive, and within 2% of being declared negative, which is well within the industry-accepted standard of +/-20% variability as well within even Psychemedics own professed variability levels of 5% to 10%. The presence of BE at 1.25ng (24.4%) does give some added support to the BPD's position that Mr. Jones had ingested cocaine, although given the low absolute COC levels, the analytic variability and credible scientific doubt about BE as a marker of ingestion, those results, standing alone, are not conclusive. The fact that Officer Jones submitted to urine and blood test within days after being informed of his positive hair test is noteworthy but is given little weight. His action in submitting to an independent hair test that went negative in the initial RIA screen by Psychemedics, however, is significant. His follow-up safety net was also negative, showing 2.44 ng/10mg COC with BE at 0.46ng (19.2%). He sought unemployment benefits but was unsuccessful in persuading the DET Review Examiner to award benefits. This determination is entitled to some weight, but, for reasons explained earlier, it is not preclusive.

The BPD emphasizes Mr. Jones's testimony surrounding his relationship with another former BPD officer whom he eventually married, and who had tested positive for cocaine and submitted to rehabilitation prior to leaving the department for other reasons. The BPD argues that if his future spouse did drugs, then so did he. Mr. Jones refused to testify that he knew she was, or had been, a cocaine user. While there is some doubt that this was true, the limited evidence in the record, one way or the other, does not support an inference of prevarication. If she was a user, it would have offered Mr. Jones a plausible source to claim external contamination through his intimate contact with her. Although Mr. Jones probably knew, or should have known his intimate partner had been treated for drug abuse, it is mere speculation that Mr. Jones shared her habit. His motive was just as likely to keep his, and her, personal life, out of the evidence. On balance, the inference about a spouse's habit is inconclusive and neither supports or detracts from Mr. Jones's denial that he used cocaine.

The hair samples taken from Mr. Jones for his initial BPD and follow-up BPD tests were only about 1.5 cm each, which represents about one month's growth. BPD suggests that it should be inferred that, by abstaining from use for the two weeks between tests and using other "avoidance techniques", Officer Jones would be able to reduce the concentration of drug in his hair to levels below cutoff. While the evidence of such a scenario carries some weight, it does not carry the day. The specific avoidance techniques that could produce such a result were not clearly established. Also, without additional evidence, it is implausible to believe that a presumed cocaine-using BPD officer, who has managed to avoid testing positive in the past, who knows the precise window when the next hair test is coming, and who generally receives at least a week's advance notice of

the test date, would practice any different abstinence or avoidance techniques in the weeks before the initial tests as the BPD would infer he did in the weeks between tests.

In sum, the borderline BPD test results, when weighed with the independent follow-up tests that are inconclusive of drug ingestion, together with Mr. Jones's consistent, persistent and credible efforts to clear his record, fail to establish by a preponderance of evidence that the BPD had just cause to terminate Officer Jones for use of illicit drugs while serving as a BPD officer.

4. <u>Jacqueline McGowan</u>. Officer McGowan is another officer whose initial 2002 hair test was borderline positive: 5.76ng/10 mg COC with BE at 21.7%, (1.25ng), CE at 43% (2.48ng) and a trace of NCOC. However, since a significant amount of COC remained in her "last wash", Dr. Rollins gave credible testimony that, in fact, a plausible interpretation of the test result would be that it was negative under Psychemedics test protocols, especially when the BE and CE levels are discounted, having been discredited as definitive markers of ingestion (in fact, CE is no longer used in the 2007 BPD protocols) and the degree of allowed variability in test results is taken into account.

Officer McGowan's two subsequent "safety net" tests add further doubt about any inference to be drawn that her cocaine concentrations exceeded the levels that could reasonably be attributed solely to ingestion. She provided a sample of sufficient length that permitted sectioning to test both "new" and "old" growth. The first safety net test (taken 17 days after the initial test) showed 0.5ng/10mg in the new growth section and even <u>less</u> (barely at the LOD/LOQ) in the <u>old</u> growth section. Under Psychemedics procedures, these follow up results could have been reported as negative, but, instead Psychemedics elected to call for a third sample, which was taken two weeks later and showed 0.2ng/10mg COC with a "trace" of BE and COC in the new growth, and

1.4ng/10mg COC with BE at 28.5% (0.4ng) and CE at 71% (1.4ng) and no NCOC in the old growth.

Had Officer McGowan's second 2002 follow up test been evaluated under the SOPs effective until November 2001, it, too, would have been reported negative, as it fell below the 2.0ng LOD/LOQ. Her test was positive solely because the follow up cutoff was lowered to the LOD/LOQ of 0.2ng. As explained earlier, whatever machine-driven LOD/LOQ is applied, that level has no scientifically-based value, on its own, to prove cocaine ingestion.

Similarly, the follow-up tests (although not a "true" double confirmation) are nearly 100% lower than the initial test, and would fail the variability requirement under the current 2007 BPD testing protocols as well as the industry variability standard +/- 20%. Variations to this degree, especially when the numerical values of the initial test itself was borderline positive, and the reports by some scientists that give support to the proposition that female hair may be uniquely more porous than male hair, leave enough uncertainty about the results in her case to justify that they be given diminished weight.

Finally, Dr. Cairns's efforts to explain the nearly 100% variation in test results were unpersuasive. He did not claim that there was a scientific explanation, e.g., that the difference was due to new growth vs. old growth or the different amounts of "resting" hair versus growing hair collected, but attributed the difference to "good avoidance" techniques. He could not be specific about what these techniques were. As noted earlier, if such techniques could remove ingested cocaine embedded inside hair follicles, it is more probable than not that Officer McGowan (who had admitted prior use and had no more options under Rule 111 if she tested positive again) would be practicing those

techniques just as aggressively, if not more so, in the week or two prior to her scheduled initial test date.

I have not overlooked the fact that Ms. McGowan is an admitted cocaine user. Her testimony at the hearing was candid and responsive to questions. She did not shy from acknowledging her mistakes or try to sugar coat her past. She testified with a steady demeanor which persuaded me that she truly had severed her ties with the individual who had furthered her dependency. She described how her own experience motivated her to report another fellow officer who was abusing drugs, the only example of a BPD officer having turned in a colleague for using drugs. Under the 1999 Settlement Agreement she made with the BPD, Office McGowan was still subject to random urine testing and, to the date of her termination, had never tested positive on a random urine test. While there is always a risk of relapse, and Ms. McGowan does not deny that her sister's premature death was an emotional blow, there is no independent, credible evidence in this record (all random urine tests as well as the 2000 and 2001 annual hair tests were negative) to warrant an inference that she returned to drugs on that or any other occasion.

In sum, although the initial hair drug test result provides some limited evidence that Ms. McGowan used cocaine since completing her rehabilitation almost three years earlier, the preponderance of the other credible evidence of her continued rehabilitation described above, undermines the test results such that the BPD failed to meet its burden to establish just cause to terminate her.

5. <u>Oscar Bridgeman</u>. Officer Bridgeman tested positive on his 2002 hair test with COC of 10.1ng/10mg, BE at 88.8% (9ng/10mg), no CE and a trace of NCOC. His "safety net" test taken two weeks later showed COC of 4.1ng/10mg, with BE at 109.5% (4.5ng), no CE and 0.6ng of NCOC. As this was Officer Bridgeman's second

consecutive positive annual hair test, he was terminated. Although he attempted to obtain an independent hair test, his hair was deemed insufficient in length to conduct a proper test. (This was also an issue with the BPD tests, for which only 1cm of hair was taken, although Psychemedics protocols called for at least 1.3cm and preferably 3.9cm.) The short length of his hair meant that the window of detection in his case was less than 30 days, which provides a rational explanation for why his separate initial and follow-up tests turned out to be atypically different.

Unlike other officers who candidly admitted they had no idea why they would have tested positive, Officer Bridgeman provided what he believed was the reason he may have inadvertently ingested cocaine. His explanation, a variation of the so-called "brownie defense", testified that he would confiscate drugs from suspects from time to time and place them in his pocket where he also kept cookies for snacks, and he posited that he had ingested the cocaine along with the cookies. This explanation was not credible and it undermined Mr. Bridgeman's credibility as a whole.

Mr. Bridgeman would have tested positive under any of the Psychemedics protocols used for testing BPD officers, save possibly the current protocols put into effect in 2007 that require a 30% consistency in test results. The short length of his hair, however, probably explains the larger variation found in his particular situation.

Finally, although Mr. Bridgeman signed the Settlement Agreement and went through drug rehabilitation after his 2001 positive hair test, he denied that he did so only because he needed help with alcohol abuse and other personal issues and not because he had used cocaine. Although his random urine tests were negative since completing rehabilitation Mr. Bridgeman never denied his prior use of drugs until he received his second positive test and was about to be terminated.

The BPD had reason to believe Mr. Bridgeman's prior admission to using cocaine and that his subsequent denials, as well as his "brownie defense" were not credible. His prevarication, taken together with his 2002 hair test results, established by a preponderance of evidence that he did ingest cocaine and that the BPD had just cause to terminate his employment.

6. <u>Shawn Harris</u>. Officer Harris tested positive on his 2002 hair test with COC of 8.18ng/10mg and BE at 8.99% (0.73ng) and small quantities of CE and NCOC. His safety net test was positive with COC of 7.9ng/10mg, and BE at 9.6% (0.7ng),and small quantities of CE and NCOC. Had he been tested under the protocols in effect until November 2001, he would have tested negative, since he had less than 10% BE/COC.

Mr. Harris was a credible witness with a military bearing who testified crisply and responsively. In his brief career with the BPD, he earned a Hannah Award, which puts him in distinguished company that only a small number of Massachusetts police officers attain. He pursued independent urine and hair tests, which were reported negative. Full test documentation was not provided for these tests, however, and the results are given only the limited weight that he took the steps to have such a test performed. The fact that Officer Harris sought to exonerate himself through such testing, however, does adds credibility to his testimony.

There are troubling aspects to the evidence that do detract from his otherwise credible denial of cocaine use. First, the hair samples in his case were taken from his chest hair, which all experts agreed grow more slowly that head hair and are less prone to external contamination. Second, unlike many other of the Appellants, the consistency between his initial and follow-up tests is well-within acceptable levels of analytic variability. Third, although the BE/COC ratio is problematic, generally, and is not conclusive evidence of

ingestion and, specifically, falls below the range that scientific evidence indicated can be present in the environment, the concentration level of the parent drug was consistently above the cutoff of 5ng/10mg in both his Psychemedics's tests.

On balance, Mr. Harris's test result have some evidentiary value, although, in terms of being reported positive, they turn on the difference between applying a 10% versus a 5% BE ratio and there is well-established scientific uncertainty that either ratio BE carries any definitive weight as a marker of ingestion. The test result is made even more problematic because of the low level of the quantities involved, where small differences (i.e. 0.3ng) in the measurement of BE could bring the ratio down even below the 5% level that Psychemedics now espouses. Officer Harris's one positive test, weighed against his credible testimony and consistent denial of drug use, as well as the other evidence of his exemplary character, fails to establish by a preponderance of evidence that the BPD had just cause to terminate his employment.

7. Walter Washington. Officer Washington tested positive on his initial test with 6.13ng/10mg COC and BE of 5.5% (0.37ng), no CE and a trace of NCOC. His follow-up test, two weeks later showed 3.79ng/10mg COC, with BE at 11.3% (0.43ng), CE at 7.5% (0.6ng) and a trace of NCOC. He submitted to urine, blood and hair drug testing. The hair sample was taken by Officer Washington's personal physician using an over-the-counter test kit produced by Psychemedics. The sample was sent to Psychemedics who reported it negative with 4.82ng/10mg COC and BE at 6% (.029ng).

Officer Washington's initial test result would have been reported as negative under the prior SOP in effect until November 2001, since it showed less than 10% BE/COC. He would have tested negative under the SOP change that went into effect in 2004 because the BE result was less than 0.5ng. Thus, his test was declared positive only because he

was tested within the window between the effective dates of those two SOP protocols. In addition, without clear evidence to explain the 39% variation between the hair tests performed by Psychemedics, it can reasonably be inferred that, under the current 2007 protocols, Officer Washington's test results only two weeks apart (although not a "true" double confirmation) would also be declared negative. This is a classic illustration of the effect of the shifting landscape and a lack of uniformity in testing protocols that, in this case, made the unfortunate difference between an officer's continued employment and his termination, a result that is unacceptable under merit principles.

8. <u>William Bridgeforth</u>. Officer Bridgeforth tested positive on his 2003 hair test with COC of 11.6ng/10mg with BE at 14.7% (1.7ng), no CE and a small amount of NCOC. His safety net sample, taken two weeks later showed 10.59ng/10mg COC, with BE at 12.7% (1.34ng). These levels are reasonably consistent and reflect concentrations greater than two times the accepted cutoff for cocaine ingestion. The weight that these elevated levels deserve to be given is also informed by the fact that the hair samples were taken from Officer Bridgeforth's underarm, which is less likely to be environmentally contaminated than head hair. At these levels of concentration and consistency, Officer Bridgeforth's test results would have been declared positive by any of the protocols used by Psychemedics to test BPD officers from inception in 1999 to the present.

While Mr. Bridgeman's efforts to take independent tests to exonerate himself are worthy of some weight, unlike other Appellants, he proffered no accompanying test documentation package for this test and the fact remains that the independent hair test he took also was reported positive.

In addition, Officer Bridgeforth had also tested positive for cocaine in his prior annual hair test, and had agreed to sign the standard Settlement Agreement, which several

arbitrators have construed to be tantamount to an admission to using drugs. His subsequent attempt to deny that he ever used cocaine is inconsistent with this admission.

Mr. Bridgeforth presented some credible evidence at the Commission hearing that he may have been contaminated by proximity to a neighbor who was known to use crack cocaine. Perhaps this testimony, in the absence of any opposition by the BPD, is what convinced the DET review examiner to award him benefits. His explanation lacked sufficient temporal specificity to be fully credible, and would have been more plausible, had it been presented previously to the MRO after learning of either of his positive tests. Thus, the BPD has met its burden of proof by a preponderance of evidence that, despite his denials, Officer Bridgeforth had used cocaine and that it had just cause for his termination.

9. George Downing. Officer Downing tested positive for cocaine in May 2002 with 5.86ng/10mg COC and BE at 11.8% (0.69ng), barely above the then applicable cutoff levels and within 15% variability of testing negative. His safety net test, taken eight days later, showed 1.94ng/10mg COC, BE at 17% (0.33ng) and small amounts of CE and NCOC. Three days before his safety net sample, Officer Downing submitted a hair sample for independent testing (one of two independent tests he took), which was reported negative by Quest Laboratories and for which a full test documentation packet was provided. That test infers that his COC level was below 3ng/10mg on the initial immunoassay screen. His Psychemedics safety net confirmed 1.94ng/10mg COC, with BE at 17% (0.33ng) and &.5 CE (0.6ng) and a trace of NCOC. AT these levels, Officer Downing would have tested negative under the pre-2001 safety net cut of 2ng COC. Also, given the close proximity of the three hair tests, the large variability in results (67%) would more than likely mean that Officer Downing's test

results would have been reported as negative under the BPD's current testing protocol. It should also be noted that Mr. Downing's initial Psychemedics test (the only one to meet the COC and BE/COC cutoffs, was taken from 1.3cm of nape hair because he kept his hair in braids, while the follow-up test was taken from a 10 to12cm length of his full head hair. Thus, as between the two tests, the more reliable one would be the second one, which used a longer window of detection.

Mr. Downing applied for unemployment benefits and persuaded a DET review examiner to award benefits after a plenary evidentiary hearing at which BPD contested the award and, eventually, took the dispute all the way to the SJC which affirmed the DET decision. This Commission was equally impressed with the candid and credible demeanor Mr. Downing presented at the Commission hearing. The BPD points to a colloquy in which this Commissioner put strong questions to Mr. Downing to test his credibility, which BPD argues proves his prevarication. To the contrary, the issue at hand was Mr. Downing's apparent reluctance to acknowledge that he knew other BPD officers who had abused drugs. Although his discomfort with calling out others on that subject was clear, his overall demeanor was that of an honest police officer who knew that drug use among police officers could not be tolerated.

Mr. Downing presented a compelling case that he was wrongfully accused of using cocaine. The BPD did not meet its burden to establish otherwise and did not prove just cause for his termination.

10. <u>Rudy Guity</u>. Officer Guity tested positive on his 2006 hair test with 10.7ng/10mg COC and BE at 9.2% (0.9ng), no CE and a trace of NCOC. His safety net test showed even more drug, with 17.3ng/10mg COC and BE at 10.9% (1.7ng). He is the only Appellant whose follow up test showed a substantially greater level of cocaine than

the initial test. Since the two tests were both taken within three weeks of each other from slowly growing beard hair, the changes cannot be attributable to abstinence or different avoidance techniques. If due to external contamination, there would logically need to be some memorable event that could have caused the 67% increase, but Mr. Guity gave no recollection of such an event. His only explanation was the possibility that he had ingested cocaine through medicine he recently was prescribed, but that reason turned out to be a dead-end when the only evidence presented refuted his hypothesis.

Mr. Guity was one of the Appellants who regularly attended many of the sessions of the lengthy hearing of this matter. He has a congenial personality and one can imagine he was a valuable member of the BPD who made a positive contribution to his community over his three decades of service. He was close to retirement when he was terminated. In a way, it is incongruous to imagine that, if he had been using cocaine, he would have managed to escape detection for so long, and, however he managed to do so, would suddenly have let down his defenses and get caught. Unfortunately, confirmation of such a scenario played itself out in the testimony before this Commission during which Mr. Guity repeatedly testified that he had no memory of learning of independent hair tests by his cousin (among others) or taking one himself (which was reported positive), before he remembered that he did know those facts. It is not plausible that Mr. Guity, after sitting diligently through much of the testimony would have been so ill-prepared to address this adverse evidence head-on. But for his disappointing prevarication on this point, it would be plausible to take his unusually high test results to be a "outlier". Mr. Guity's inexplicable presence of levels of COC found in his beard that are at over two times the presumed cutoff concentration, however, given his lack of credibility, provides sufficient grounds to find just cause for the BPD's decision to terminate him.

IV. Relief to be Granted.

In cases where the Commission's findings of fact and/or conclusions of law differ from those made by the Appointing Authority, G.L.c.31,§43 vests the Commission with the power to affirm, vacate or modify the penalty imposed. The Commission has been delegated with "considerable discretion", albeit "not without bounds", to modify a penalty imposed by the appointing authority, so long as the Commission provides a rational explanation for how it has arrived at its decision to do so. E.g., Police Comm'r v. Civil Service Comm'n, 39 Mass.App.Ct. 594, 600 (1996) and cases cited.

> "It is well to remember that the *power to modify is at its core the authority to* review and, when appropriate, *to temper, balance, and amend*. The power to modify penalties permits the furtherance of uniformity and equitable treatment of similarly situated individuals. *It must be used to further, and not to frustrate, the purpose of civil service legislation, i.e., 'to protect efficient public employees from partisan political control' . . and 'the removal of those who have proved to be incompetent or unworthy to continue in the public service*'."

Id., 39 Mass.App.Ct. at 600. (*emphasis added*). See Faria v. Third Bristol Div., 14 Mass.App.Ct. 985, 987 (1982) (remanded for findings to support modification). See also. School Committee v. Civil Service Comm'n, 43 Mass.App.Ct. 486, rev.den., 426 Mass. 1104 (1997) (modification of discharge to one-year suspension upheld); Dedham v. Civil Service Comm'n, 21 Mass.App.Ct. 904 (1985) (modification of discharge to 18-months suspension upheld); Trustees of the State Library v. Civil Service Comm'n, 3 Mass.App.Ct. 724 (1975) (modification of discharge to 4-month suspension upheld) See generally Town of Falmouth v. Civil Service Comm'n, 447 Mass. 814, 823 (2006), quoting Watertown v. Arria, 16 Mass.App.Ct. 331, 334 (1983); Falmouth v. Civil Service Comm'n, 61 Mass.App.Ct. 796, 800 (2004)

After carefully considering the circumstances involved in the present appeals, the Commission concludes that the appeals of those Appellants as to whom the BPD has met

its burden to establish just cause for termination should be dismissed. Although the facts found by the Commission vary somewhat from those found by the BPD in arriving at the decision to terminate those Appellants, the evidence reasonably supports the decision made by the BPD and the Commission will not substitute its judgment for that of the BPD in those circumstances.

In the case of those Appellants as to which the preponderance of evidence does not support a finding of just cause for termination, the Commission has determined that those Appellants should be permitted to be reinstated to their former positions with the BPD, retroactive to October 21 2010, which represents the date on which the parties finally appeared ready to commence the evidentiary hearings of these appeals. Although the Appellants were terminated prior to that date (some as far back as 2001), reinstatement to the date of original termination is not warranted in the unique circumstances presented here.

First, the unusual delay in bringing these appeals to hearing is due, in significant part, to the decision of the Appellants to defer pressing these appeals for a more typically speedy resolution. To be sure, the complexity of the technical scientific issues as well as the obstacles presented by Psychemedics objections to producing relevant documentation concerning its testing procedures, contributed to the delay, and some of that delay is equally laid at BPD's doorstep. At bottom, however, it was the Appellants' choice to sit on their rights and hold off the decision to retain experts forthwith and do the necessary preliminary work that was needed to be prepared for hearings of these cases.

Second, although the Commission has determined that just cause has not been established to terminate certain Appellants, they do not claim that the BPD;s decisions (albeit erroneous) were made in bad faith or were politically or improperly motivated.

Standing alone, good faith will not justify tempering a dismissal for lack of just cause, but, in the unique circumstances presented here, the Commission finds that it is a factor that should be taken into account in assessing the appropriate relief that should be ordered.

Third, the general rule in employment appeals requires that a wrongfully terminated employee must make reasonable and diligent efforts to mitigate his or her losses. Indeed, most of the Appellants soon found new employment which will factor into their recovery of lost compensation. Although the duty to mitigate does require success, an Appellant who has failed to obtain new employment for years after being terminated by the BPD, makes a weak case to be awarded a windfall recovery after sitting on his or her rights for that long a period of time.

The Commission does recognize that granting modified relief (equivalent to a lengthy suspension) may not restore an Appellant to all of the benefits that would flow were an appeal to be allowed in full. This is an unfortunate consequence, but the necessary result of a balancing of the equities presented under the unique circumstances of these appeals. The Commission expects this form of modified relief will be appropriate in very few, if any, future appeals.

For the reasons stated, the appeals of the Appellants, Preston Thompson, Oscar Bridgeman, William Bridgeforth and Rudy Guity are ***dismissed*****.** The appeals of the Appellants Richard Beckers, Ronnie Jones, Jacqueline McGowan, Shawn Harris, Walter Washington and George Downing are ***allowed***, ***in part***, and they shall be restored to their positions as BPD officers, effective October 21, 2010, without further loss of compensation from and after that date or loss of other benefits to which they are entitled. Nothing in this decision shall require the BPD to re-employ any Appellant who is unable

to meet the present requirements for fitness for duty as prescribed by civil service law and rules.

Civil Service Commission

Paul M. Stein
Commissioner

By a vote of the Civil Service Commission on February 28, 2013:

By 4-0 Vote to DISMISS Appeal No.D-01-1409 [Thompson]: (Bowman, Chairman [AYE]; Ittleman [AYE], Marquis [AYE], McDowell [ABSENT], and Stein [AYE], Commissioners)

By 4-0 Vote to ALLOW Appeal No. D-02-656 [Beckers]: (Bowman, Chairman [AYE]; Ittleman [AYE], Marquis [AYE], McDowell [ABSENT], and Stein [AYE], Commissioners)

By 3-1 Vote to ALLOW Appeal No. D-02-657[Jones]: (Bowman, Chairman [AYE]; Ittleman [NO], Marquis [AYE], McDowell [ABSENT], and Stein [AYE], Commissioners)

By 3-1 Vote to ALLOW Appeal No. D-03-116 [McGowan]: (Bowman, Chairman [AYE]; Ittleman [NO], Marquis [AYE], McDowell [ABSENT], and Stein [AYE], Commissioners)

By 4-0 Vote to DISMISS Appeal No. D-03-212 [Bridgeman]: (Bowman, Chairman [AYE]; Ittleman [AYE], Marquis [AYE], McDowell [ABSENT], and Stein [AYE], Commissioners)

By 4-0 Vote to DISMISS Appeal No. D-03-362 [Bridgeforth]: (Bowman, Chairman [AYE]; Ittleman [AYE], Marquis [AYE], McDowell [ABSENT], and Stein [AYE], Commissioners)

By 4-0 Vote to ALLOW Appeal No. D-03-213 [Harris]: (Bowman, Chairman [AYE]; Ittleman [AYE], Marquis [AYE], McDowell [ABSENT], and Stein [AYE], Commissioners)

By 4-0 Vote to ALLOW Appeal No. D-03-214 [Washington]: (Bowman, Chairman [AYE]; Ittleman [AYE], Marquis [AYE], McDowell [ABSENT], and Stein [AYE], Commissioners)

By 4-0 Vote to ALLOW Appeal No.D-04-52 [Downing]: (Bowman, Chairman [AYE]; Ittleman [AYE], Marquis [AYE], McDowell [ABSENT], and Stein [AYE], Commissioners)

By 4-0 Vote to DISMISS Appeal No.D1-07-107 [Guity]: (Bowman, Chairman [AYE]; Ittleman [AYE], Marquis [AYE], McDowell [ABSENT], and Stein [AYE], Commissioners)

A true record. Attest:

_____
Commissioner

Either party may file a motion for reconsideration within ten days of the receipt of this Commission order or decision. Under the pertinent provisions of the Code of Mass. Regulations, 801 CMR 1.01(7)(l), the motion must identify a clerical or mechanical error in this order or decision or a significant factor the Agency or the Presiding Officer may have overlooked in deciding the case. A motion for reconsideration does not toll the statutorily prescribed thirty-day time limit for seeking judicial review of this Commission order or decision.

Under the provisions of G.L c. 31, § 44, any party aggrieved by this Commission order or decision may initiate proceedings for judicial review under G.L. c. 30A, § 14 in the superior court within thirty (30) days after receipt of this order or decision. Commencement of such proceeding shall not, unless specifically ordered by the court, operate as a stay of this Commission order or decision.

Notice:
Alan H. Shapiro, Esq. (for Appellants)
Jennifer E. Rubin, Esq. (for Appellants)
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COMMONWEALTH OF MASSACHUSETTS

SUFFOLK, ss.

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IN RE:
BOSTON POLICE DEPARTMENT
DRUG TESTING APPEALS

OPINION OF COMMISSIONERS BOWMAN, ITTLEMAN AND MARQUIS

We unanimously concur with Commissioner Stein's conclusions regarding eight (8) of the instant appeals. Commissioners Bowman and Marquis also concur with his conclusions regarding the other two (2) appeals. Thus, the end result, as recommended by Commissioner Stein, stands, with four (4) appeals dismissed and six (6) appeals allowed in part.

Our analysis, however, differs somewhat from Commissioner Stein.

First, we conclude that a positive test result, at the time the tests were administered, creates a rebuttable presumption inferring that the former police officers ingested cocaine.

Second, we tend to give more weight to the fact that the police officers' union, as part of the collective bargaining process, twice accepted hair drug testing along with the provisions related to a 45-day suspension and termination, as warranted. Contrary to any assertions otherwise, the record also shows that the union was actively involved in issues related to appropriate cut-off levels, safety net provisions, etc.

Notwithstanding this somewhat different analysis, we conclude that Commissioner Stein was permitted to assess the credibility of the Appellants' testimony in determining whether, by a preponderance of the evidence, there was just cause for termination.

While this second part of Commissioner Stein's analysis differs somewhat for each of the six (6) appeals that are allowed in part, his decision to credit the Appellants' testimony rested largely on legitimate factors such as his own personal observations of their testimony, their refusal to accept a 45-day suspension (and effectively acknowledge drug use); no prior positive drug test results (with one exception); and their decision to undergo independent hair drug tests, which, in some cases, showed a negative result, including at least one independent test result that, ironically, was administered by Psychemedics.

In regard to those two (2) appeals in which there is a divided vote, Commissioner Ittleman, respectfully, concluded that the test results, along with other factors, did meet the preponderance of evidence standard, and that other factors, cited by Commissioner Stein, did not sufficiently support the Appellants' testimony denying cocaine usage.