



Office of the Inspector General Commonwealth of Massachusetts

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Supplemental Report Regarding the Hinton Drug Laboratory

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Executive Summary

Over the course of eighteen months, the Office of the Inspector General (“OIG”) conducted a comprehensive review of over 15,000 drug samples originally tested between 2002 and 2012 at the Forensic Drug Laboratory at the William A. Hinton State Laboratory Institute (“Hinton Drug Lab” or “Drug Lab”). The OIG was focused on certain samples that the Hinton Drug Lab had repeatedly tested, with inconsistent results, but had typically only reported the final result to the parties in the corresponding criminal case. From this review, the OIG identified 645 drug samples, 609 of which were retested by NMS Labs (“NMS”), an independent, out-of-state laboratory, to ensure the accuracy of the Drug Lab’s analytical findings.

For 551 of the 609 samples retested, NMS found the same substance that the Hinton Drug Lab had certified. For eleven (11) of the samples retested, NMS made no findings of any controlled substances under the Massachusetts Controlled Substances Act, M.G.L. c. 94C. For seven (7) of the samples retested, NMS found a different controlled substance from what the Hinton Drug Lab had certified. For six (6) of the samples retested, NMS identified the same controlled substance by one analytical method, but was unable to confirm that finding by a secondary method as required under NMS’ testing protocols. Finally, for thirty-four (34) of the samples retested, NMS found the same controlled substance that the Hinton Drug Lab had found, but also found additional controlled substances in the sample.

Ultimately, despite the OIG’s concern about the existence of Hinton Drug Lab samples that had undisclosed internal inconsistencies among the test results, the OIG did not find widespread testing inaccuracies.

However, in the course of retesting, the OIG found that the Hinton Drug Lab had classified two substances – benzylpiperazine (“BZP”) and 5-methoxy-N,N-diisopropyltryptamine (“Foxy”) – as Class E substances, when, in fact, neither substance was illegal under Massachusetts law.

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Background

I. The OIG's 2014 Drug Lab Report

On March 4, 2014, the OIG issued a report entitled “Investigation of the Drug Laboratory at the William A. Hinton State Laboratory Institute 2002-2012” (“OIG’s 2014 Drug Lab Report” or “Drug Lab Report”).¹ In that report, the OIG issued findings related to its fifteen-month, independent, top-to-bottom review of the Drug Lab. This review followed the discovery by the Massachusetts State Police that a former Drug Lab chemist, Annie Dookhan, had, among other transgressions, changed negative findings into positive findings during the course of drug testing. The OIG made findings in its Drug Lab Report that the Drug Lab was afflicted by inadequate resources, chronic managerial negligence, inadequate training and a lack of professional standards, which created the environment that allowed the chemist to commit her transgressions.

In addition, the OIG found that certain Drug Lab samples were tested multiple times, and that the fact of multiple testing was not properly documented or disclosed to the parties in the resulting criminal cases. Specifically, the OIG found that at times during the Drug Lab’s “two-chemist” testing system – in which a primary chemist conducted preliminary tests on the sample and a confirmatory chemist confirmed the primary chemist’s result using a gas chromatograph/mass spectrometer (“GC/MS”) instrument² – the initial confirmatory GC/MS result was inconsistent with the primary chemist’s preliminary identification of the sample. This often happened for benign reasons, including when the aliquot – the vial which held a tiny portion of the sample dissolved in solution that was run on the GC/MS – needed to be more concentrated or diluted to reach a finding. If the confirmatory chemist found a result inconsistent with the primary chemist’s preliminary finding, the aliquot typically was returned to the primary chemist, who would re-submit another aliquot for the same sample to be used for additional testing on the GC/MS. For some of these samples, the OIG found that the repeated testing not only revealed inconsistencies between the primary chemist’s and the original confirmatory chemist’s results, but also sometimes resulted in inconsistencies among multiple confirmatory chemists’ GC/MS findings.

The OIG decided to conduct a review of the samples run multiple times on the GC/MS (“Multi-Run Samples”), given the discrepancies between the primary and confirmatory testing results, and among the confirmatory testing results.

II. Methodology – Identifying the Multi-Run Samples Retest List

As explained in the OIG’s 2014 Drug Lab Report, the Drug Lab typically failed to document when a sample had been tested multiple times on the GC/MS. As a result, the OIG relied on its e-discovery experts, Navigant Consulting, Inc. (“Navigant”), to generate a list of

¹ The OIG’s 2014 Drug Lab Report is available at <http://www.mass.gov/ig/publications/reports-and-recommendations/2014/>.

² A GC/MS is an analytical instrument that confirmatory chemists at the Hinton Drug Lab used to identify substances.

Multi-Run Samples from the electronic data stored on the GC/MS instruments. The OIG's review of the Multi-Run Samples was wide in scope and included the laboratory work of all the chemists who worked in the Drug Lab between 2002 and 2012, as well as all classes of controlled substances that the Drug Lab had tested.³

At the time the OIG released its Drug Lab Report, Navigant had provided the OIG with a list of 9,483 Multi-Run Samples. In March 2014, however, after the OIG issued its report, Navigant notified the OIG that it had discovered 12,160 more potential Multi-Run Samples. Navigant's detection in March 2014 of additional potential Multi-Run Samples was due mainly to its discovery of non-electronic, scanned hardcopy GC/MS reports in the Navigant database,⁴ which suggested the existence of additional GC/MS runs for samples previously understood to have been run only one time. The OIG determined that 10,822 of these 12,160 potential Multi-Run Samples were not truly Multi-Run Samples, but rather were, for example: (1) duplicate copies of the same GC/MS reports; (2) reports of preliminary testing on the gas chromatograph ("GC") instrument;⁵ (3) instances in which the GC/MS was run overnight, creating the appearance of testing on two separate dates; (4) typographical errors on the GC/MS reports; (5) a misread by Navigant's computer search tool of the numbers on a scanned PDF file; or (6) an external request for a retest (for instance, by a defense attorney), that took place months or years after the original test date.

The resulting newly-found 1,338 Multi-Run Samples were added to the 9,483 original Multi-Run Samples list, bringing the total to 10,821 Multi-Run Samples.

The OIG analyzed these 10,821 Multi-Run Samples by reviewing the following documentation for each sample to determine the consistency of the testing results: (1) the control cards;⁶ (2) the control sheets;⁷ (3) the powder sheets;⁸ (4) both handwritten and typed batch

³ Each controlled substance defined in Chapter 94C of the Massachusetts General Laws is assigned to a specific "class." There are five different classes of controlled substances: Classes A, B, C, D and E. Class A substances have the most severe criminal punishments and Class E substances have the least severe penalties. For a list of which substances are included in each class, see M.G.L. c. 94C, § 31.

⁴ As described in the 2014 Drug Lab Report, the OIG relied on Navigant, to process 3,417 gigabytes of relevant electronically stored information, and also to scan 3.5 million hardcopy pages of Drug Lab-related documents stored at the Drug Lab, as well as other locations.

⁵ A GC is an analytical instrument that primary chemists at the Hinton Drug Lab sometimes used to preliminarily identify substances.

⁶ The control card documented information about the sample as it went through the analytical process, including the sample's analytical results, net weight, and the identities of the primary and confirmatory chemists. The Drug Lab used the final drug identification on the control card to generate the drug certificate of analysis.

⁷ The control sheet tracked samples through the confirmatory testing process.

⁸ The powder sheet documented the preliminary testing process, including a sample's identifying information, physical condition, gross and net weights, the results of each preliminary test, the preliminary identification, and ultimately, the final GC/MS result.

sheets;⁹ and (5) any other documents associated with each sample, including the drug receipt¹⁰ and, if available, the drug certificate of analysis.¹¹ The OIG then looked at the GC/MS results for each sample and, in some instances, reviewed the more detailed GC/MS reports. The OIG's forensic experts, Jack Mario¹² and Michael Wolf¹³ of Marcum LLP, aided the OIG in analyzing the GC/MS reports to determine if there were inconsistencies to be resolved through retesting.

Using the information gleaned from the underlying drug testing documentation, the OIG identified 3,347¹⁴ samples for retesting from the original 9,483 Multi-Run Samples.¹⁵ From the supplementary list of 1,338 Multi-Run Samples that Navigant provided to the OIG after it issued its Drug Lab Report, the OIG identified an additional 633 samples for retesting. Thus, the OIG identified a total of 3,980 samples for retesting.

III. Methodology – Creating the Final Retest List

As noted in the OIG's 2014 Drug Lab Report, the OIG conducted preliminary retesting of certain samples through its forensic experts' use of a handheld Raman spectrometer instrument called a "TruNarc," manufactured by Thermo Fisher Scientific. In total, the OIG tested 1,203 Multi-Run Samples with the TruNarc. For 739 of those 1,203 samples, the TruNarc's finding

⁹ The batch sheet documented the location of each vial placed on the GC/MS autosampler.

¹⁰ The drug receipt documented the police departments' initial submission of the drug evidence to the Hinton Drug Lab and contained the name of the submitting department, name of the defendant(s), case number associated with the evidence, description of the submitted item(s), and the assigned Hinton Drug Lab Sample Number(s).

¹¹ The drug certificate was a notarized document signed by both the primary and secondary chemists reflecting the Hinton Drug Lab's analytical finding. As previously noted in the 2014 Drug Lab Report, the Hinton Drug Lab used a template to create their drug certificates, in which a prior drug certificate would be overridden by the creation of a new drug certificate. The Drug Lab had no policy of keeping a copy of each drug certificate at the Drug Lab; rather, typically, the one and only drug certificate for each sample was returned to the Police Department with the sample.

¹² Mario is a chemist with more than thirty years of experience analyzing seized drugs, including over ten years supervising drug analysts in an accredited crime laboratory in Suffolk County, New York. He has published several papers, and is a recently retired member of the Core Committee of the Scientific Working Group for the Analysis of Seized Drugs ("SWGDRUG"), as well as a member of the Northeastern Association of Forensic Scientists, the American Academy of Forensic Sciences, the American Society for Testing and Materials, and the International Association for Identification. Mario has provided presentations on drug testing to the forensic community for several decades.

¹³ Wolf is the former interim Director of Scientific Services for the state of Connecticut, and before that, was a member of the Governor's Forensic Laboratory Working Group for the state of Connecticut, which developed and implemented constructive reforms following the revocation of the Connecticut Forensic Science Lab's accreditation. Additionally, Wolf acted as a special investigator for the North Carolina Attorney General's Office in the investigation of a North Carolina forensic lab that had been the subject of alleged wrongdoing after a defendant's murder conviction was overturned. Wolf has a long history of public service as a former Assistant Director with the Federal Bureau of Investigation ("FBI"), where he managed large-scale investigations of fraud and other criminal activities, and headed remedial actions that shepherded initial accreditation of the FBI Laboratory by the American Society of Crime Laboratory Directors/Laboratory Accreditation Board ("ASCLD/LAB").

¹⁴ The OIG's 2014 Drug Lab Report contained a typographical error on page 110 and incorrectly stated this number to be 3,349, when it should have stated 3,347. The correct number appears on page 121 of the Drug Lab Report.

¹⁵ For a detailed description of the criteria used to determine which Multi-Run Samples to retest, see the OIG's 2014 Drug Lab Report, <http://www.mass.gov/ig/publications/reports-and-recommendations/2014/>, at pages 109-110.

was consistent with the reported Hinton Drug Lab finding. The OIG then removed the 739 Multi-Run Samples that had a consistent TruNarc finding from the retest list.

The OIG also removed from its list 1,029 samples that police departments reported had either: (1) been destroyed in the ordinary course, pursuant to court orders obtained in accordance with M.G.L. c. 94C, § 47A, prior to the Massachusetts State Police's investigation into Dookhan; (2) had already been retested by the Massachusetts State Police; or (3) were otherwise unavailable for retesting.¹⁶

In addition, the OIG removed 679 residues¹⁷ from the retest list, reasoning that virtually the entire sample could have been consumed during the Drug Lab's initial testing, so a negative finding at this point would be unreliable.

The OIG also removed an additional 841 samples from the retest list after determining that the samples had not resulted in adverse dispositions for any criminal defendants. These removed samples included: (1) those that were involved in controlled buys and investigations that did not result in criminal cases; (2) those that were at issue in arrests in which criminal charges never issued; and (3) those in which the criminal charges were dismissed.¹⁸

Finally, the OIG removed 47 steroid samples from the retest list after determining that its initial finding of inconsistency among the Hinton Drug Lab testing was in error. That is, the OIG initially understood there to be inconsistencies between the primary chemist's preliminary steroid finding – *e.g.*, testosterone cypionate – and the confirmatory chemist's finding – *e.g.*, testosterone propionate. The OIG learned, however, that for the 47 steroid samples removed from the list, the preliminary findings were based solely on the labeling of the steroid container and not on chemical testing. Therefore, the initial finding was actually “unknown,” as opposed to an analytical finding of, for example, testosterone cypionate. Because all of the GC/MS test results were consistent, the OIG determined that these 47 steroid samples should not be retested.¹⁹

For the reasons described above, the number of samples to be retested decreased from 3,980 to 645 samples after the removal of the following samples: (1) 739 samples where the TruNarc finding was consistent with the Drug Lab's finding; (2) 1,029 samples reported to be

¹⁶ For a variety of reasons, including database conversions and recordkeeping errors, certain police departments could not locate all of the samples that the OIG requested be sent for retesting.

¹⁷ A residue refers to a small quantity of substance, often contained in a needle, spoon, wrapper or other type of drug paraphernalia. Chemists often have to scrape or “rinse” these items in order to obtain enough of the substance to perform chemical analysis on it.

¹⁸ The OIG's retesting efforts stemmed from the OIG's concern for the accuracy of testing results for samples that the Hinton Drug Lab had repeatedly tested, with inconsistent results, but had reported only the final result to the parties in the resulting criminal case. The OIG, therefore, retested only those samples that resulted in an adverse disposition to a criminal defendant. Retesting all of the Hinton Drug Lab samples, or even all of the samples on the OIG's retest list, would have been prohibitively expensive.

¹⁹ As noted in the 2014 Drug Lab Report at page 110, Multi-Run Samples whose sole inconsistency was a preliminary finding of “unknown,” with all GC/MS runs thereafter consistent with the initial GC/MS finding, were removed from the retest list, as there was no true discrepancy among testing results.

destroyed, already retested or otherwise unavailable; (3) 679 residues; (4) 841 samples that resulted in no adverse disposition for a criminal defendant; and (5) 47 steroid samples.

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Retesting

For purposes of retesting the samples on the OIG's final retest list, the OIG contracted with NMS Labs, located in Willow Grove, Pennsylvania. For the past forty years, NMS Labs has been nationally prominent in providing forensic testing services to public sector laboratories, law enforcement agencies and medical examiners, in addition to serving as expert witnesses for both the defense and prosecution. NMS is accredited by the American Society of Crime Laboratory Directors/Laboratory Accreditation Board ("ASCLD/LAB")²⁰ for the testing of controlled substances.

I. NMS' Testing Protocols

NMS tests for controlled substances using more sensitive GC/MS parameters and procedures than the Hinton Drug Lab. As a result of this greater sensitivity, NMS' testing is more likely to reveal more substances in a single sample, even those in trace amounts. The Hinton Drug Lab's approach to testing, in which it identified controlled substances in a sample, but not necessarily those present in only trace amounts, is consistent with the approach used by many seized-drug laboratories.

NMS' testing techniques are more sensitive in two ways. First, NMS' extraction procedures allow for a greater number of substances to be revealed. Extraction is the process by which a chemist adds a chemical to a sample in order to separate the controlled substances from non-controlled cutting agents or adulterants. NMS' acid-base extraction procedure is more effective than the Hinton Drug Lab's methanol-base extraction procedure at targeting controlled substances in a sample, while eliminating adulterants.

Second, NMS utilizes a more sensitive method for injecting the extracted sample into the GC/MS than the Hinton Drug Lab. NMS' splitless injection method results in the injection of more of the extracted sample into the GC/MS than the Hinton Drug Lab's split method, allowing for the GC/MS to potentially reveal a greater number of substances.

II. Samples Tested By NMS

Beginning in April 2014 and concluding in October 2015, the OIG coordinated with 96 police departments to have the 645 Multi-Run Samples identified above sent to NMS for retesting.

Certain samples that the police departments sent to NMS, however, could not be tested, either because they had degraded over time²¹ or because the samples contained substances that

²⁰ ASCLD/LAB specializes in the accreditation of public and private crime laboratories. The accreditation process involves an extensive review of a laboratory's policies and procedures to ensure that they meet certain standards.

²¹ Some controlled substances, including certain vegetable matter, degrade over time. Factors that can influence degradation include the age of the substance and the way in which the substance was stored (including exposure to temperature and light). The degradation of a substance may change its molecular structure such that retesting would likely result in a negative finding.

were outside the capability of NMS' testing methodologies.²² In total, the OIG instructed NMS not to test ten (10) degraded samples²³ and twenty-eight (28) samples that were outside of NMS' testing capabilities, leaving 607 samples to be retested.

In addition, NMS received two (2) samples for testing in error, making 609 the total number of samples retested.

²² Substances that NMS does not have the ability to test for include the following: megestrol acetate, terbutaline, allopurinol, clomiphene, clorazepate, norgestrel, 1,4-butanediol, ciprofloxacin, furosemide, GHB and isobutyl nitrite.

²³ Two samples – Hinton Drug Lab Sample Nos. D746009 and D640285, discussed in detail below – were in a degraded condition and were retested before the OIG was able to instruct NMS not to test substances that appear degraded.

Retesting Results

The results of the retesting revealed that for 551 of the 609 samples retested, NMS found the same substance that the Hinton Drug Lab had certified. The remaining retest results found the following: (a) for eleven (11) of the samples retested, NMS made no findings of any controlled substances; (b) for seven (7) of the samples retested, NMS found a different substance from what the Hinton Drug Lab had certified; (c) for six (6) of the samples retested, NMS identified the same controlled substance by one analytical method, but was unable to confirm that finding by a secondary method as required under NMS' testing protocols; and (d) for thirty-four (34) of the samples retested, NMS found the same substance that the Hinton Drug Lab had found, but also found additional controlled substances in the sample. See Summary Table of Retesting Results, at Appendix A.

I. NMS Did Not Find the Presence of Any Controlled Substance

On eleven (11) occasions, NMS analyzed a sample that the Hinton Drug Lab had certified as containing a controlled substance and did not find the presence of any controlled substances. These samples are described in further detail below.

1. Hinton Sample No. B08-08323

With respect to Hinton Drug Lab Sample No. B08-08323, the Drug Lab paperwork indicates that on January 16, 2009, the primary chemist was unable to identify a gray, chunky substance after four color tests²⁴ and a GC analysis. Confirmatory chemists analyzed the substance twice on the GC/MS, first on January 23, 2009 and again on January 28, 2009, both times finding the presence of cocaine. On January 29, 2009, Hinton Drug Lab chemists certified that the sample contained cocaine, a Class B substance.

When NMS retested B08-08323, it made no findings of any controlled substances.

The OIG notified the Suffolk County District Attorney's Office of this discrepancy.

2. Hinton Sample No. B08-17174

With respect to Hinton Drug Lab Sample No. B08-17174, the Drug Lab paperwork indicates that on February 4, 2009, the primary chemist preliminarily identified an off-white, chunky substance as containing cocaine. This finding was based on one weak positive color test²⁵ and two positive microcrystalline tests.²⁶ Confirmatory chemists analyzed the substance

²⁴ Color tests are a type of bench test that the primary chemist utilized to help preliminarily identify a substance. A reagent is added to the substance and the resulting color change indicates the type of substance present.

²⁵ A weak positive color test refers to a color test in which the color change occurs gradually or produces a dull or faint shade of color. This can be caused by the existence of only non-controlled substances in the sample or a low quantity of a controlled substance, overwhelmed by adulterants.

twice on the GC/MS, first on February 11, 2009, finding no integrated peaks,²⁷ and again on February 12, 2009, finding the presence of cocaine. On February 18, 2009, Hinton Drug Lab chemists certified that the sample contained cocaine, a Class B substance.

When NMS retested B08-17174, it made no findings of any controlled substances.

The OIG notified the Suffolk County District Attorney's Office of this discrepancy.

3. Hinton Sample No. D740494

With respect to Hinton Drug Lab Sample No. D740494, the Drug Lab paperwork indicates that on October 19, 2004, the primary chemist preliminarily identified a white, powder substance as containing cocaine. This finding was based on a weak positive color test, two positive microcrystalline tests, and a GC analysis that indicated the presence of cocaine. Confirmatory chemists analyzed the substance five times on the GC/MS. The first time, on October 21, 2004, the confirmatory chemist found an indication of the presence of cocaine. The second time, on October 26, 2004, the confirmatory chemist found an indication of the presence of cocaine. The third time, on October 27, 2004, the confirmatory chemist found no controlled substances. The fourth time, on October 27, 2004, the confirmatory chemist found a weak indication of the presence of cocaine. The fifth time, on October 28, 2004, the confirmatory chemist found a strong indication of the presence of cocaine. On November 1, 2004, Hinton Drug Lab chemists certified that the sample contained cocaine, a Class B substance.

When NMS retested D740494, it made no findings of any controlled substances.

The OIG notified the Essex County District Attorney's Office of this discrepancy.

4. Hinton Sample No. B09-06865

With respect to Hinton Drug Lab Sample No. B09-06865, the Drug Lab paperwork indicates that on December 30, 2009, the primary chemist preliminarily identified an off-white, chunky substance as containing cocaine. This finding was based on a positive color test and two positive microcrystalline tests. Confirmatory chemists analyzed the substance twice on the GC/MS, first on January 9, 2010 finding no integrated peaks, and again on January 13, 2009, this time finding the presence of cocaine. On January 14, 2010, Hinton Drug Lab chemists certified that the sample contained cocaine, a Class B substance.

When NMS retested B09-06865, it made no findings of any controlled substances.

The OIG notified the Essex County District Attorney's Office of this discrepancy.

²⁶ Microcrystalline tests are a type of bench test that the primary chemist performed to help preliminarily identify a substance. A small amount of solution is added to a small amount of the substance and then observed under a microscope to determine if crystals develop. Crystal form or shape can indicate the type of substance present.

²⁷ A finding of "no integrated peaks" means that the GC/MS was unable to identify a substance satisfying the abundance threshold and parameters set by the GC/MS operator. A GC/MS result finding "no integrated peaks" does not necessarily mean that the sample does not contain a controlled substance.

5. Hinton Sample No. B10-07736

With respect to Hinton Drug Lab Sample No. B10-07736, the Drug Lab paperwork indicates that on October 1, 2010, the primary chemist preliminarily identified a brown, mushy, sticky substance as containing tetrahydrocannabinol (“THC”), a component of marijuana. This finding was based on a GC analysis that indicated the presence of THC, as well as a weak positive color test. Confirmatory chemists analyzed the substance twice on the GC/MS, first on October 13, 2010, finding no integrated peaks, and again on October 14, 2010, finding the presence of THC. On October 26, 2010, Hinton Drug Lab chemists certified that the sample contained Delta-9-Tetrahydrocannabinol (THC), a Class D substance.

When NMS retested B10-07736, it made no findings of any controlled substances.

The OIG notified the Essex County District Attorney’s Office of this discrepancy.

6. Hinton Sample No. D805498

With respect to Hinton Drug Lab Sample No. D805498, the Drug Lab paperwork indicates that on approximately February 15, 2006²⁸, the primary chemist preliminarily identified a burnt cigarette as containing THC, a component of marijuana. This finding was based on visual and microscopic analysis, a positive color test, and a positive GC analysis. Confirmatory chemists analyzed the substance twice on the GC/MS. The first time, on February 18, 2006, the confirmatory chemist found no integrated peaks. The second time, on February 22, 2006, the confirmatory chemist found the presence of dronabinol (THC) and cannabinalol, a breakdown of THC. On February 28, 2006, Hinton Drug Lab chemists certified that the sample contained marijuana, a Class D substance.

When NMS retested D805498, it found cannabinalol, a substance not classified under Massachusetts law, but not dronabinol (THC).

The OIG notified the Middlesex County District Attorney’s office of this discrepancy.

7. Hinton Sample No. D740580

With respect to Hinton Drug Lab Sample No. D740580, the Drug Lab paperwork indicates that on January 20, 2005, the primary chemist preliminarily identified an off-white pill as possibly an anabolic steroid, based on appearance and labeling. Confirmatory chemists analyzed the substance four times on the GC/MS. The results of the first GC/MS analysis on January 21, 2005 are unavailable.²⁹ The second time, on February 8, 2005, the confirmatory chemist found the presence of phenobarbital and nimesulide, the latter a substance not classified under Massachusetts law. The third time, on February 10, 2005, the confirmatory chemist found

²⁸ The OIG was unable to locate the powder sheet for this sample, and relied solely on the date provided on the control sheet.

²⁹ In this instance, Navigant was able to determine that the sample was first run on the GC/MS on January 21, 2005 but the results of the run are not readable due to corrupt data.

the presence of nimesulide, but not phenobarbital. The fourth time, on February 16, 2005, the confirmatory chemist found the presence of both phenobarbital and nimesulide. On February 22, 2005, Hinton Drug Lab chemists certified that the sample contained phenobarbital, a Class D substance.

When NMS retested D740580, it made a finding of nimesulide, a substance not classified under Massachusetts law, but not phenobarbital.

After the sample was retested, the OIG determined that this sample did not result in an adverse disposition for the defendant. Therefore, the OIG did not notify a District Attorney's Office about this discrepancy.

8. Hinton Sample No. D775714

With respect to Hinton Drug Lab Sample No. D775714, the Drug Lab paperwork indicates that on November 8, 2006, the primary chemist preliminarily identified an orange, round tablet with the markings of an "R" on one side and "129" on the reverse side, by appearance and labeling as well as a positive GC analysis, as containing clonidine. Confirmatory chemists analyzed the substance twice on the GC/MS, first on November 13, 2006 finding no controlled substances, and again on November 14, 2006, this time finding the presence of clonidine. On November 17, 2006, Hinton Drug Lab chemists certified that the sample contained clonidine, a Class E substance.

When NMS retested D775714, it made no findings of any controlled substances.

The OIG notified the Suffolk County District Attorney's Office of this discrepancy.

9. Hinton Sample No. B09-03371

With respect to Hinton Drug Lab Sample No. B09-03371, the Drug Lab paperwork indicates that on November 5, 2009, the primary chemist was unable to identify a green, round tablet with no visible markings based on one color test and a GC analysis. Confirmatory chemists analyzed the substance twice on the GC/MS. The first time, on November 14, 2009, the confirmatory chemist found no controlled substances. The second time, on November 21, 2009, the confirmatory chemist found the presence of clonidine. On December 1, 2009, Hinton Drug Lab chemists certified that the sample contained clonidine, a Class E substance.

When NMS retested B09-03371, it made no findings of any controlled substances.

The OIG notified the Suffolk County District Attorney's Office of this discrepancy.

10. Hinton Sample No. D746009

With respect to Hinton Drug Lab Sample No. D746009, the Drug Lab paperwork indicates that on June 2, 2005, the primary chemist preliminarily identified liquid in a needle and syringe as containing cocaine. This finding was based on one positive color test, two positive

microcrystalline tests, and an inconclusive GC analysis. Confirmatory chemists analyzed the substance twice on the GC/MS, first on June 9, 2005 and again on June 15, 2005, finding the presence of cocaine both times. On June 20, 2005, Hinton Drug Lab chemists certified that the sample contained cocaine, a Class B substance.

When NMS retested D746009, it made no findings of any controlled substances.

Note that this sample is a residue and was tested by NMS before the OIG instructed NMS not to test residue samples.

The OIG notified the Suffolk County District Attorney's Office of this discrepancy.

11. Hinton Sample No. D640286

With respect to Hinton Drug Lab Sample No. D640286, the Drug Lab paperwork indicates that on approximately March 14, 2003,³⁰ the primary chemist was unable to identify tablets based on ultraviolet spectroscopic analysis³¹ and a color test. The same chemist analyzed the substance twice on the GC/MS, first on March 15, 2003 finding no controlled substances, and again on March 21, 2003, finding the presence of lysergide ("LSD"). It is the OIG's understanding that on approximately March 24, 2003, a Hinton Drug Lab chemist certified that the sample contained lysergic acid diethylamide (LSD), a Class B substance.³²

When NMS retested D640286, it made no findings of any controlled substances.

It is the OIG's understanding that the contents of D640286 may have degraded; NMS tested this sample before the OIG instructed NMS not to test samples that appeared degraded.

The OIG notified the Suffolk County District Attorney's Office of this discrepancy.

II. NMS Found a Different Substance Than What the Hinton Drug Lab Certified

On seven (7) occasions, NMS analyzed a sample and found a different substance than the substance that the Hinton Drug Lab certified. These seven samples are described in further detail below.

1. Hinton Sample No. B10-12281

With respect to Hinton Drug Lab Sample No. B10-12281, the Drug Lab paperwork indicates that on January 19, 2011, the primary chemist preliminarily identified blue, round

³⁰ The OIG was unable to locate the powder sheet for this sample, and relied solely on the handwritten notes located on the back of the control card and on the control sheet.

³¹ Ultraviolet spectroscopic analysis is an analytical technique that primary chemists at the Hinton Drug Lab sometimes used to preliminarily identify substances.

³² The OIG was unable to locate the drug certificate for this sample and relied on information obtained from the control card.

tablets with the markings of an “m” on one side and an underscored “30” on the reverse side, by appearance and labeling, as containing oxycodone. This is, in fact, consistent with the appearance and labeling of an oxycodone tablet. Confirmatory chemists analyzed this substance twice on the GC/MS, first on January 22, 2011 finding the presence of tramadol, and again on January 29, 2011, finding the presence of oxycodone. On February 8, 2011, Hinton Drug Lab chemists certified that the sample contained oxycodone, a Class B substance.

When NMS retested B10-12281, it found tramadol, a Class E substance, but not oxycodone.

Note that around the time this sample was analyzed at the Hinton Drug Lab, chemists there had observed an influx of counterfeit oxycodone tablets that primarily contained tramadol.

After the sample was retested, the OIG determined that this sample did not result in an adverse disposition for the defendant. Therefore, the OIG did not notify a District Attorney’s Office about this discrepancy.

2. Hinton Sample No. B10-11771-1³³

Similar to the sample above, with respect to Hinton Drug Lab Sample No. B10-11771-1, the Drug Lab paperwork indicates that on January 11, 2011, the primary chemist preliminarily identified blue, round tablets, with the markings of an “m” on one side and an underscored “30” on the reverse side, by appearance and labeling, as containing oxycodone. This is, in fact, consistent with the appearance and labeling of an oxycodone tablet. Confirmatory chemists analyzed this substance twice on the GC/MS, first on January 15, 2011 finding the presence of tramadol, and again on January 29, 2011 finding the presence of oxycodone. On February 8, 2011, Hinton Drug Lab chemists certified that the sample contained oxycodone, a Class B substance.

When NMS retested B10-11771-1, it found tramadol, a Class E substance, but not oxycodone.

As noted above, around the time sample B10-11771-1 was analyzed at the Hinton Drug Lab, chemists there had observed an influx of counterfeit oxycodone tablets that primarily contained tramadol.

The OIG notified the Bristol County District Attorney’s Office of the discrepancy.

3. Hinton Sample No. B10-09249

With respect to Hinton Drug Lab Sample No. B10-09249, the Drug Lab paperwork indicates that on November 23, 2010, the primary chemist preliminarily identified a blue, round tablet, with the markings of a “v” on one side and a “2531” on the reverse side, by appearance

³³ Hinton Drug Lab Sample No. B10-11771 consisted of eleven blue, round pills, ten of which looked the same and were designated as Sample No. B10-11771-1 and one of which looked different and was designated as Sample No. B10-11771-2.

and labeling, as containing oxycodone. In fact, according to the drug identification resource employed by the Hinton Drug Lab, the appearance and labeling of the tablet is consistent with a finding of clonazepam. Confirmatory chemists analyzed this substance three times on the GC/MS. The first two times, on November 30, 2010 and December 3, 2010, the confirmatory chemists found no integrated peaks. The third time, on December 14, 2010, the confirmatory chemist found the presence of oxycodone. On December 16, 2010, Hinton Drug Lab chemists certified that the sample contained oxycodone, a Class B substance.

When NMS retested B10-09249, it found clonazepam, a Class C substance, but not oxycodone.

The OIG notified the Suffolk County District Attorney's Office of this discrepancy.

4. Hinton Sample No. B10-04083-B³⁴

With respect to Hinton Drug Lab Sample No. B10-04083-B, the Drug Lab paperwork indicates that on August 5, 2010, the primary chemist was unable to identify some broken white tablets based on a color test and a GC analysis. Confirmatory chemists analyzed this substance four times on the GC/MS. The first time, on August 11, 2010, the confirmatory chemist found the presence of venlafaxine. The second time, on August 14, 2010, the confirmatory chemist found a weak indication of the presence of oxycodone, but mostly acetaminophen. The third time, on August 21, 2010, the confirmatory chemist found the presence of only acetaminophen. The fourth time, on August 25, 2010, the confirmatory chemist found the presence of diltiazem. On September 2, 2010, Hinton Drug Lab chemists certified that the sample contained venlafaxine, a Class E substance.

When NMS retested B10-04083-B, it found oxycodone, a Class B substance, but no other controlled substances.

The OIG notified the Essex County District Attorney's Office of this discrepancy.

5. Hinton Sample No. B10-03784

With respect to Hinton Drug Lab Sample No. B10-03784, the Drug Lab paperwork indicates that on August 4, 2010, the primary chemist was unable to identify a yellow, round, tablet with scraped-off markings based on three color tests and a GC analysis. Confirmatory chemists analyzed this substance three times on the GC/MS. The first time, on August 11, 2010, the confirmatory chemist found a weak indication of the presence of oxycodone, but found mostly acetaminophen. The second time, on August 20, 2010, the confirmatory chemist found the presence of venlafaxine. The third time, on August 24, 2010, the confirmatory chemist found the presence of oxycodone. On August 27, 2010, Hinton Drug Lab chemists certified that the sample contained oxycodone, a Class B substance.

³⁴ Hinton Drug Lab Sample No. B10-04083 consisted of three green, round tablets, which were designated as Sample No. B10-04083-A and broken white tablets, which were designated as Sample No. B10-04083-B.

When NMS retested B10-03784, it found only venlafaxine, a Class E substance.

The OIG notified the Suffolk County District Attorney's Office of this discrepancy.

6. Hinton Sample No. B11-12178

With respect to Hinton Drug Lab Sample No. B11-12178, the Drug Lab paperwork indicates that on June 21, 2012, the primary chemist preliminarily identified a yellow, octagonal tablet with the number "40" imprinted on one side as possibly containing oxycodone or oxymorphone. This finding was based on appearance and labeling, three color tests and an inconclusive GC analysis. Confirmatory chemists analyzed the substance twice on the GC/MS. On both occasions, first on June 23, 2012 and the second on June 28, 2012, confirmatory chemists found the substance to contain oxymorphone. That finding was written on the control card. On July 5, 2012, however, Hinton Drug Lab chemists certified that the sample contained oxycodone, a Class B substance.

When NMS retested B11-12178, it found oxymorphone, a Class B substance, but not oxycodone.

It seems possible that this inaccurate Hinton Drug Lab finding was the result of a typographical or data entry error in the creation of the drug certificate, as opposed to a testing error. The practice at the Hinton Drug Lab was for the primary chemist to submit a completed control card to the evidence office for the creation of the drug certificate. Here, the completed control card indicates a finding of oxymorphone, but the drug certificate indicates a finding of oxycodone. Therefore, it seems possible that the chemists analyzed the sample correctly but that an error was committed during the creation and signing of the drug certificate.

The OIG notified the Essex County District Attorney's Office of this discrepancy.

7. Hinton Sample No. D640285

With respect to Hinton Drug Lab Sample No. D640285, the Drug Lab paperwork indicates that on approximately March 21, 2003,³⁵ the primary chemist was unable to identify tablets based on ultraviolet spectroscopic analysis and one color test. Confirmatory chemists analyzed the substance twice on the GC/MS. The first time, on March 15, 2003, the confirmatory chemist found no controlled substances. The second time, on March 21, 2003, the confirmatory chemist found lysergide (LSD). On March 25, 2003, Hinton Drug Lab chemists certified that the sample contained LSD, a Class B substance.

When NMS retested D640285, it found cocaine, a Class B substance, but not LSD.

³⁵ The OIG was unable to locate the powder sheet for this sample, and relied solely on the handwritten notes located on the front of the control card and on the control sheet.

It is the OIG's understanding that the contents of D640285 may have degraded; NMS tested this sample before the OIG instructed NMS not to test samples that appeared degraded. In addition, likely due to the greater sensitivity of NMS' testing procedures, NMS was able to detect a trace amount of cocaine that the Hinton Drug Lab did not detect.

The OIG notified the Suffolk County District Attorney's Office of this discrepancy.

III. NMS Identified the Presence of a Controlled Substance by One Analytical Method Only

On six (6) occasions, NMS analyzed a sample that the Hinton Drug Lab had certified contained a controlled substance and NMS identified the same controlled substance by GC/MS analysis, but was unable to confirm that finding by a secondary method as required under NMS' testing protocols. These samples are described in further detail below.

1. Hinton Sample No. D679263

With respect to Hinton Drug Lab Sample No. D679263, the Drug Lab paperwork indicates that on approximately June 8, 2004,³⁶ the primary chemist preliminarily identified liquid in a bottle labeled "Morphine Sulfate 10mg/mL" by appearance and labeling, as possibly containing morphine. Confirmatory chemists analyzed the substance twice on the GC/MS, both times on June 10, 2004, first finding no controlled substances, and then finding the presence of morphine. On June 16, 2004, Hinton Drug Lab chemists certified that the sample contained morphine, a Class B substance.

When NMS retested D679263, it identified morphine by GC/MS analysis, but was unable to confirm that finding by a secondary method.

The OIG notified the Suffolk County District Attorney's Office of this result.

2. Hinton Sample No. D816214

With respect to Hinton Drug Lab Sample No. D816214, the Drug Lab paperwork indicates that on approximately June 8, 2007,³⁷ the primary chemist preliminarily identified a crushed, orange substance as possibly containing buprenorphine, based on a GC analysis, as well as six color tests. Confirmatory chemists analyzed the substance three times on the GC/MS. The first time, on June 10, 2007, the confirmatory chemist found no controlled substances. The second time, on June 11, 2007, the confirmatory chemist found no integrated peaks. The third time, on June 12, 2007, the confirmatory chemist found the presence of buprenorphine. On June

³⁶ The OIG was unable to locate the powder sheet for this sample, and relied solely on the handwritten notes located on the front of the control card.

³⁷ The OIG was unable to locate the powder sheet for this sample, and relied on the handwritten notes located on the front of the control card and on the control sheet.

21, 2007, Hinton Drug Lab chemists certified that the sample contained buprenorphine, a Class B substance.

When NMS retested D816214, it identified buprenorphine by GC/MS analysis, but was unable to confirm that finding by a secondary method.

The OIG notified the Suffolk County District Attorney's Office of this result.

3. Hinton Sample No. B08-13137

With respect to Hinton Drug Lab Sample No. B08-13137, the Drug Lab paperwork indicates that on November 4, 2008, the primary chemist preliminarily identified a loose black and white chunky substance as containing cocaine. This finding was based on one positive color test and two positive microcrystalline tests. Confirmatory chemists analyzed the substance four times on the GC/MS. The first time, on November 6, 2008, the confirmatory chemist found no integrated peaks. The second time, on November 11, 2008, the confirmatory chemist found no integrated peaks. The third time, on November 12, 2008, the confirmatory chemist found the presence of cocaine. The fourth time, on November 13, 2008, the confirmatory chemist found the presence of cocaine. On November 24, 2008, Hinton Drug Lab chemists certified that the sample contained cocaine, a Class B substance.

When NMS retested B08-13137, it identified cocaine by GC/MS analysis, but was unable to confirm that finding by a secondary method.

The OIG notified the Suffolk County District Attorney's Office of this result.

4. Hinton Sample No. B11-00360

With respect to Hinton Drug Lab Sample No. B11-00360, the Drug Lab paperwork indicates that on March 15, 2011, the primary chemist preliminarily identified an off-white, chunky substance as containing cocaine. This finding was based on one positive color test and two positive microcrystalline tests. Confirmatory chemists analyzed the substance twice on the GC/MS, first on March 17, 2011 finding no controlled substances, and again on March 21, 2011, this time finding the presence of cocaine. On March 23, 2011, Hinton Drug Lab chemists certified that the sample contained cocaine, a Class B substance.

When NMS retested B11-00360, it identified cocaine by GC/MS analysis, but was unable to confirm that finding by a secondary method.

The OIG notified the Suffolk County District Attorney's Office of this result.

5. Hinton Sample No. D837014

With respect to Hinton Drug Lab Sample No. D837014, the Drug Lab paperwork indicates that on June 28, 2008, the primary chemist preliminarily identified a brown, powdery substance as containing heroin. This finding was based on three positive color tests and an

inconclusive GC analysis. Confirmatory chemists analyzed this substance four times on the GC/MS. The first time, on June 29, 2008, the confirmatory chemist found no integrated peaks. The remaining runs, on July 2, 2008, July 8, 2008, and July 9, 2008, all found a weak presence of morphine. On July 11, 2008, Hinton Drug Lab chemists certified that the sample contained morphine, a Class B substance.

When NMS retested D837014, it identified morphine by GC/MS analysis, but was unable to confirm that finding by a secondary method. In addition, NMS found heroin, a Class A substance.

The OIG notified the Suffolk County District Attorney's Office of this result.

6. Hinton Sample No. B08-14005

With respect to Hinton Drug Lab Sample No. B08-14005, the Drug Lab paperwork indicates that on May 6, 2009, the primary chemist was unable to identify a liquid substance based on two color tests. Confirmatory chemists analyzed the substance twice on the GC/MS, first on May 16, 2009 and then on May 19, 2009, both times finding the presence of morphine and 6-monoacetylmorphine. On May 20, 2009, Hinton Drug Lab chemists certified that the sample contained morphine, a Class B substance.

When NMS retested B08-14005, it identified morphine by GC/MS analysis, but was unable to confirm that finding by a secondary method. In addition, NMS found 6-monoacetylmorphine, a Class B substance.

The OIG notified the Suffolk County District Attorney's Office of this result.

IV. NMS Found Additional Substances

In thirty-four (34) instances, NMS retested Hinton Drug Lab samples and found the same substance that the Hinton Drug Lab found but also found additional controlled substances in the sample. This was likely due to NMS' use of more sensitive testing procedures, as described above, including its extraction process and its GC/MS injection methods. Despite the fact that these NMS results are consistent with the Hinton Drug Lab's results, the OIG notified the appropriate District Attorney's Office in each instance of NMS finding additional substances.

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BZP and Foxy

During the course of the sample retesting described above, the OIG discovered that the Hinton Drug Lab had certified two substances – benzylpiperazine (“BZP”) and 5-methoxy-N,N-diisopropyltryptamine (“Foxy”) – as Class E substances, although neither was a controlled substance under the Massachusetts General Laws.

BZP and Foxy are substances similar to 3,4-methylenedioxy methamphetamine (“MDMA”), more commonly known as “ecstasy.” MDMA is classified under the Massachusetts General Laws as a Class B controlled substance. Although both BZP and Foxy have been federally classified as Schedule I controlled substances since 2004, and thus made illegal under the federal system, the Commonwealth has not yet amended its drug laws to make either substance illegal.³⁸

Between 2008 and 2012, Hinton Drug Lab chemists determined that 187 samples contained BZP. It is the OIG’s understanding³⁹ that the Hinton Drug Lab chemists certified these samples as BZP, a Class E, Subsection B drug, which is a “prescription drug other than those included in Classes A, B, C, D, and Subsection A of this Class.”⁴⁰ BZP is not a prescription drug and, thus, should not have been certified as a Class E substance.

In January 2012, Hinton Drug Lab chemists issued one certificate of analysis certifying a substance to be Foxy, a Class E, Subsection B drug. Foxy, like BZP, is not a prescription drug and therefore should not have been certified as a Class E substance.

In 2011, Hinton Drug Lab chemists internally discussed how to certify substances that were federally scheduled but not classified in Massachusetts. In July 2011, one Hinton Drug Lab chemist sought guidance from the Director of the Division of Analytical Chemistry⁴¹ about how to report BZP, who instructed the chemist to report only the identity of the substance, without certifying that it fell within any class under Massachusetts law. Even thereafter, in November 2011, certain Hinton Drug Lab chemists remained unsure of how to proceed and asked the Supervisor of the Drug Lab what the Drug Lab’s policy was for certifying BZP, since it was federally scheduled but not controlled in Massachusetts.⁴² Chemists continued to certify BZP as a Class E substance through April 2012.

³⁸ A bill to amend M.G.L. c. 94C, § 31, to include BZP as a Class A drug, was filed in the Massachusetts Senate in 2011. The current bill, Senate Bill 1038, is still pending.

³⁹ As noted above, the OIG had access to relatively few drug certificates from the Hinton Drug Lab. In all of the BZP drug certificates available to the OIG, the Drug Lab chemists certified the sample as a Class E, subsection B drug. In addition, the information that the OIG was able to obtain from the Drug Lab’s database, FoxPro, indicates that the Drug Lab classified all 187 BZP samples as Class E substances.

⁴⁰ M.G.L. c. 94C, § 31.

⁴¹ The Director of the Division of Analytical Chemistry was responsible for overseeing several labs in DPH’s Bureau of Laboratory Sciences (“BLS”), including the Drug Lab, the Childhood Lead Screening Lab, the Chemical Terrorism Response Lab, the Environmental Chemistry Lab and the Forensic Drug Lab in Amherst.

⁴² The OIG was unable to determine whether the Supervisor provided any response.

The OIG conducted a review of all other Class E substances that the Hinton Drug Lab had certified and did not discover any other misclassifications of this nature.

The OIG has notified the appropriate District Attorney's Office of each sample that the Hinton Drug Lab found to be either BZP or Foxy as part of a case within its jurisdiction.

Conclusion

The OIG's decision to retest Hinton Drug Lab samples originated from the OIG's finding that the Drug Lab had repeatedly tested certain samples, with inconsistent results, but had typically only reported the final result to the parties in the corresponding criminal case. The OIG determined that it was important to verify the accuracy of those testing results. As a result, the OIG caused to be retested 609 samples at NMS, an independent, out-of-state, forensic drug laboratory.

Of the samples retested, the OIG determined that the Hinton Drug Lab certified accurate findings the vast majority of the time. Thus, despite the OIG's concern about the existence of Hinton Drug Lab samples that had undisclosed internal inconsistencies among the test results, the OIG did not find widespread testing inaccuracies.

In addition, during the course of retesting, the OIG found that the Hinton Drug Lab had classified two substances – BZP and Foxy – as Class E substances, when, in fact, neither substance was illegal under Massachusetts law. The OIG did not discover any other misclassifications of this nature.

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Appendix A: Summary Table of Retesting Results

NMS Retesting Results	Number of Samples
Hinton Drug Lab Samples Tested at NMS	609
NMS Reported the Same Controlled Substance That the Hinton Drug Lab Had Certified	551
NMS Made No Findings of Any Controlled Substances	11
NMS Found a Different Controlled Substance From What the Hinton Drug Lab Had Certified	7
NMS Identified the Same Controlled Substance By One Analytical Method Only	6
NMS Found Additional Controlled Substances	34