



DISTRICT OF COLUMBIA

**DFS**

**DEPARTMENT OF  
FORENSIC SCIENCES**

Forensic Science Laboratory | Public Health Laboratory | Crime Scene Sciences

# SCIENCE ADVISORY BOARD

October 16, 2020

# WebEx Meeting Information

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**Friday, July 31, 2020**

- Join from 8:15 am | (UTC-04:00) Eastern Time (US & Canada)
- Meeting will officially start at 09:00am

## **Join by phone – Attendees have to call in**

- Tap to call in from a mobile device (attendees only)
- **1-650-479-3208** Call-in toll number (US/Canada)
- Access code: **1575270059**

## **Join from a video system or application**

- Dial **1575270059@dcnet.webex.com**
- You can also dial 173.243.2.68 and enter your meeting number.

## **Join using Microsoft Lync or Microsoft Skype for Business**

- Dial **1575270059.dcnet@lync.webex.com**



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# SCIENCE ADVISORY BOARD MEETING

10/16/2020

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# THIS MEETING WILL BEGIN SHORTLY.



**YOUR MIC IS  
ON MUTE**



**USE THE CHAT  
TO COMMENT  
OR TO ASK A  
QUESTION**



**THE MEETING  
IS BEING  
RECORDED**

# AGENDA

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- Roll Call – Review of Minutes from Previous Meeting, Approval of Minutes
- Director's Update
- Public Health Laboratory (PHL) Update
- FSL Latent Fingerprints (LFU) – Paperless
- FSL Forensic Biology Unit (FBU) – STRmix issue
- DFS Quality Update
- FSL Firearms Examination Unit (FEU)
  - Document Review
  - Closeout
- Old Business/ New Business/ Future Meetings
- Closing and Adjournment



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# DIRECTOR'S UPDATE

July 31, 2020



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# DFS-FY20

## WHAT A YEAR IT HAS BEEN





# DFS 2019 ANNUAL REPORT

**STATE-OF-THE-ART  
SCIENCE,  
SAFER  
STREETS.**

**2019 ANNUAL REPORT**

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**TRAINING AND QUALITY WORKLOAD MEASURES**

Scientists completed a total of 3,719 hours of training in FY19. Below is a breakdown of training hours by employees over the past four years:

TRAINING & QUALITY MEASURES by Year	FY16	FY17	FY18	FY19
Hours Completed by Employees	N/A	2,200	3,400	3,719

**TYPES OF TRAINING**

**Agency**

- » Launched Diversity and Inclusion Initiative with leadership training

**Multiple Divisions**

- » Office of the Chief Medical Examiner (OCME) Field Disaster Morgue Training
- » ANSI National Accreditation Board (ANAB Assessor Course)

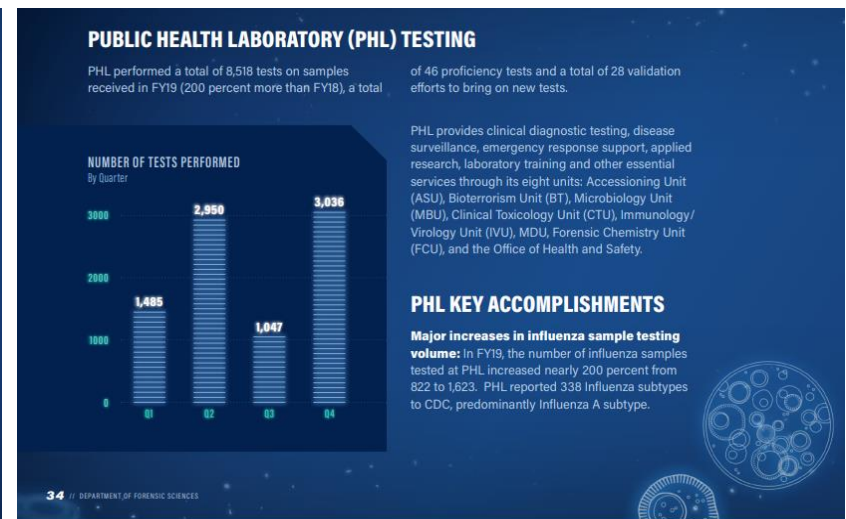
**Crime Scene Sciences Division**

- » Basic Bloodstain Pattern Recognition Course
- » Difficult Injury Photography
- » 3D Shoe Impression Photography and Casting
- » Courtroom Testimony Techniques
- » 33 scientists received International Association of Identification Certification

**Forensic Science Laboratory (Forensic Biology Unit)**

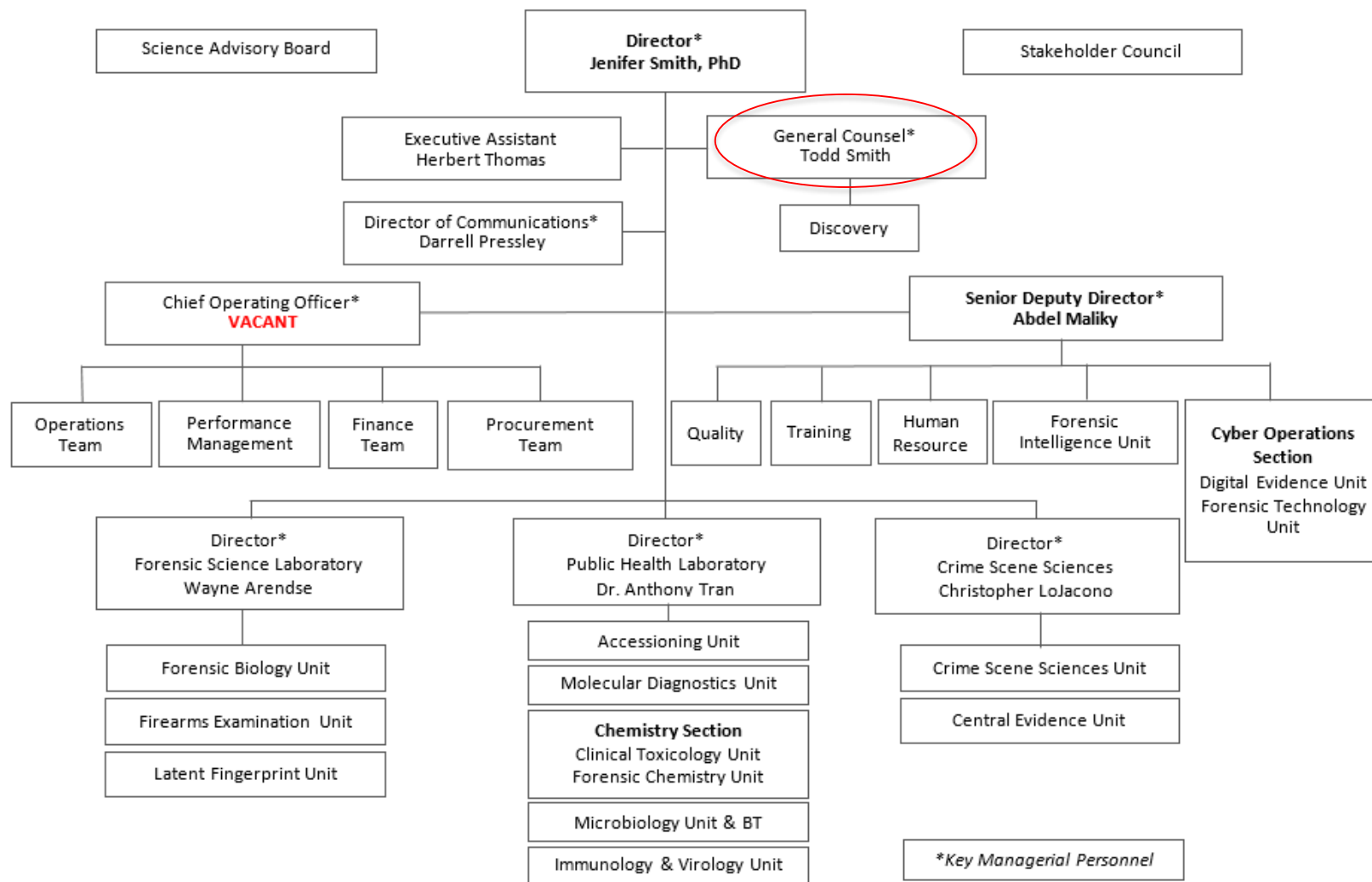
- » From Training to Trial... Probabilistic Genotyping
- » Annual CODIS Conference

38 DEPARTMENT OF FORENSIC SCIENCES

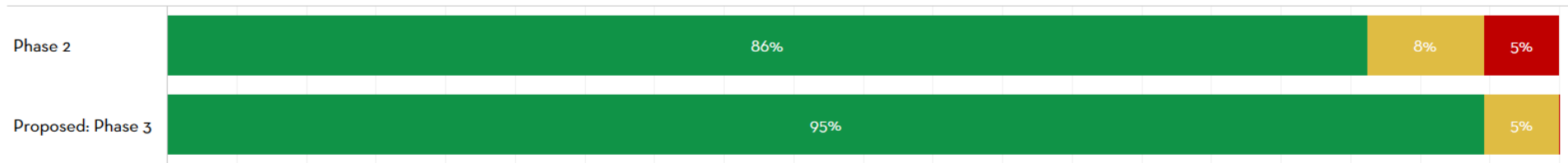


Online at: [dfs.dc.gov](https://dfs.dc.gov)

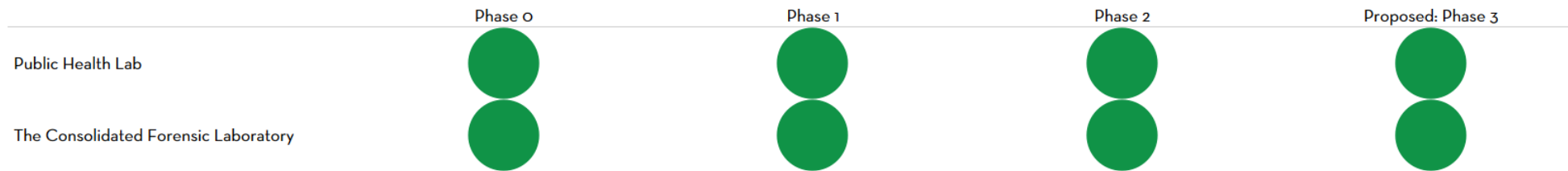
# DFS ORGANIZATION



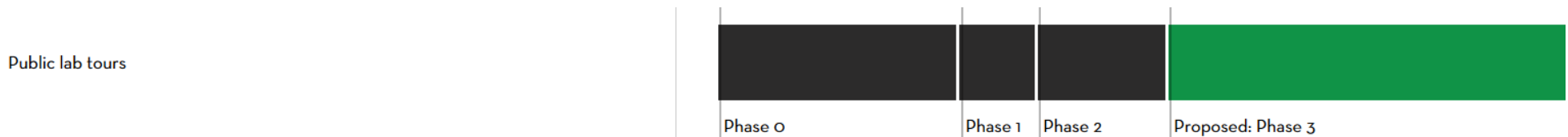
# COVID19 OPERATIONAL STATUS



■ Percent of Staff Full Time Teleworking  
■ Percent of Staff Partial Telework  
■ Percent of Staff Full Time in Person



Operating Status  
■ Open to Public and Employees



Operational Status & Service Delivery:  
■ Suspended  
■ Normal



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# FORENSIC INTELLIGENCE UNIT

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FIU received and **processed 4,387 requests** from key stakeholder agencies, 189 more than the previous year.



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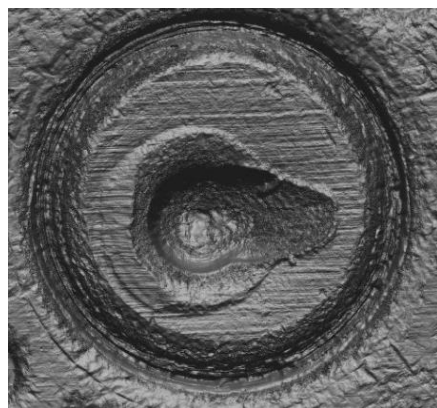


# FORENSIC SCIENCE LABORATORY

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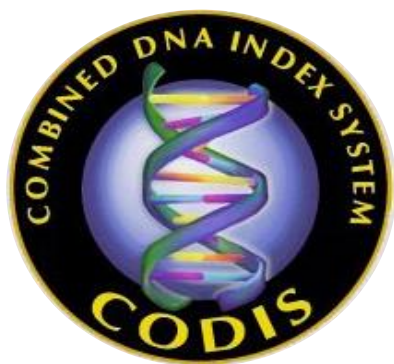
**Forensic Biology Unit**



**Firearms Examination Unit**



**Latent Fingerprint Unit**



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# FSL – PRODUCTIVITY

## LFU PRODUCTIVITY – FY20\*

- Completed **4775** cases - average TAT of **11** days
  - EP completed 1860 cases - average TAT of 2.4 days with a backlog of 52 cases
- LFU has no current backlog
- Staff Compliment 20 – 25% TW per week

## FBU PRODUCTIVITY – FY20\*

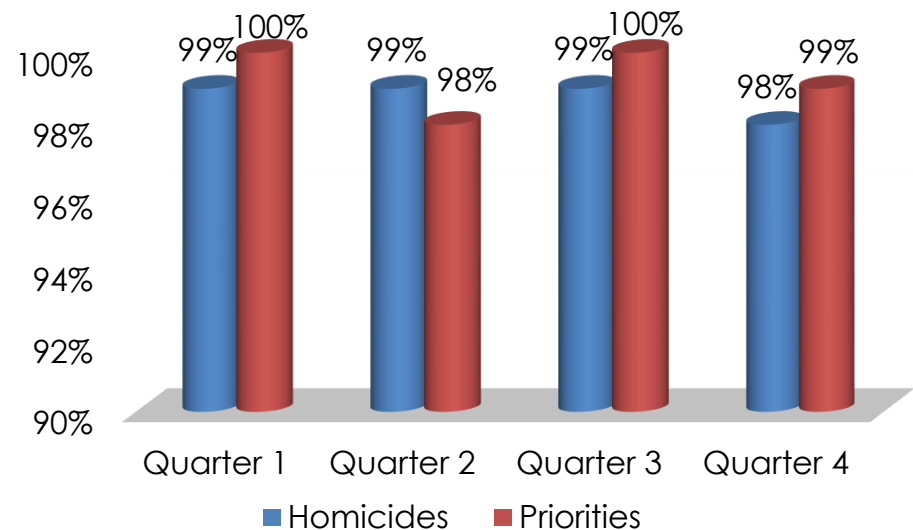
- Received **218** Sexual Assault Kits for testing - average TAT **74** days.
  - 4 cases > 90 days due to permission to consume delays
- FBU has no current backlog of Sexual Assault Kits
- Staff Compliment 19 - 35% TW per week

## FEU PRODUCTIVITY – FY20\*

- Completed **514** cases with an average turnaround time of **36** days
- Backlog of 194 cases
- 63% of eligible cartridge cases were entered into NIBIN in 2 business days or less
- Staff Compliment 17 – No regularly scheduled TW

**\*FY20 updated through 09/29/20**

## KPI's FY20 by Quarter Cases Completed



Workload measures	FY19	FY20
FEU - NIBIN Entries	4257	5053 <span style="color: green;">↑</span>
FEU - NIBIN Hits	775	208 <span style="color: red;">↓</span>
FEU - Test Fires	2228	2270 <span style="color: green;">↑</span>
LFU - AFIS Entries	7238	7881 <span style="color: green;">↑</span>
LFU - AFIS Hits	1553	1816 <span style="color: green;">↑</span>
FBU - CODIS Entries	625	749 <span style="color: green;">↑</span>
FBU - CODIS Hits	232	256 <span style="color: green;">↑</span>



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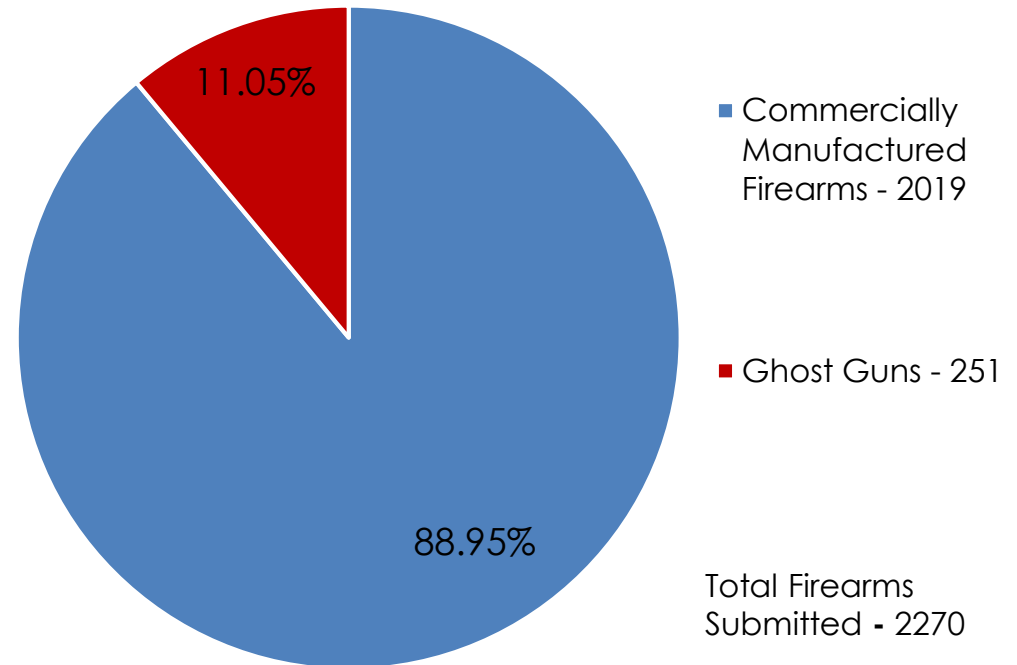
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# FEU GHOST GUNS

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- **198%** increase over FY19.
- Over 90% of Ghost Guns recovered were handguns.
- 12 Ghost Guns were recovered in relation to homicide cases.
- 247 of the 251 Ghost Guns recovered were operable
- 2 Ghost Guns received were fully automatic.

Ghost Gun Submissions for FY20



# FIGHTING BACK ON GHOST GUNS

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- Tracking of ghost guns in the District in 2017 by FEU and FIU began under FSL Division Director Karen Wiggins.
- Provided expert support in defining “ghost gun” and “unfinished frame or receiver” for Mayor Bowser’s *Ghost Guns Prohibition Emergency/Temporary Amendment Act of 2020*, which effectively banned ghost guns in the District
- Worked with DC OAG in support of *District of Columbia v. Polymer80*, consulting with the trial team, providing deep statistical analysis of ghost gun trends, and identifying a volume of recent cases where District visitors and residents were the victims of ghost gun violence
- Effective July 27, 2020, the leading supplier of ghost guns, Polymer80, Inc., has voluntarily ceased shipping ghost guns into the District



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# CRIME SCENE SCIENCES

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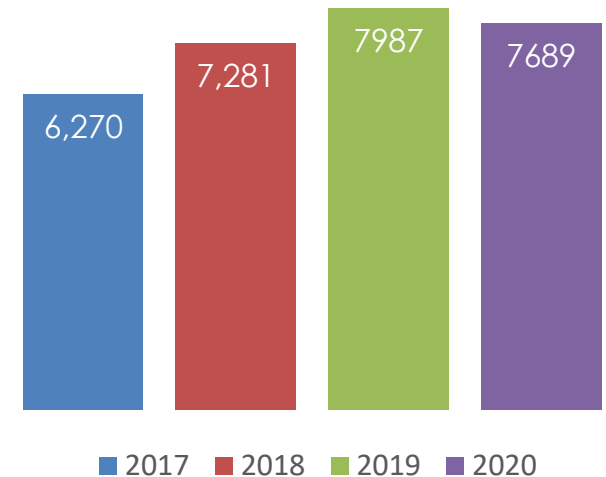
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# CRIME SCENE SCIENCES

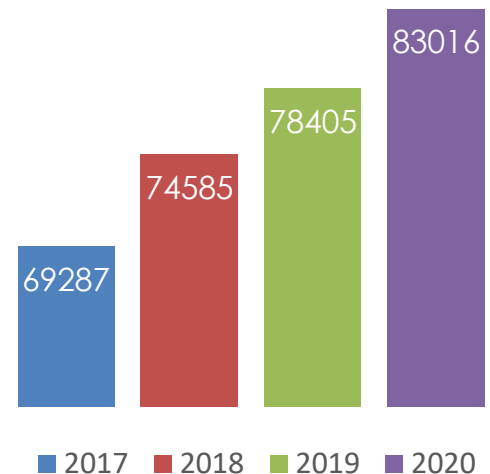
## Crime Scenes Processed

	2018	2019	2020 (9/30/20)
Scene Response (30 minutes or less)	69%	84%	87%
Scene Reports distributed under 14 days	77%	91%	95%



## Evidence Collected

	2019	2020 (as of Q3)
Firearms transferred to ECB within 21 days	97%	97%
Drugs transferred to ECB within 30 days	99%	100%
Valuables transferred to ECB within 14 days	100%	97%



# EVIDENCE TRANSFER



CEU and members of the Evidence Control Branch moved over 1,100 pieces of flammable evidence (lighters, batteries, cosmetics, fire debris).

DFS had been storing these items since 2013.





# DIGITAL EVIDENCE UNIT: THE FUTURE OF EVIDENCE

In 2020, DEU can get into locked iOS and Android devices!



Vehicle forensics request up over 100% since last year!

	Requests Received	Completed Requests
FY2017	333	340
FY2020	1325	1302



# FY21 IMPROVEMENTS - LIMS

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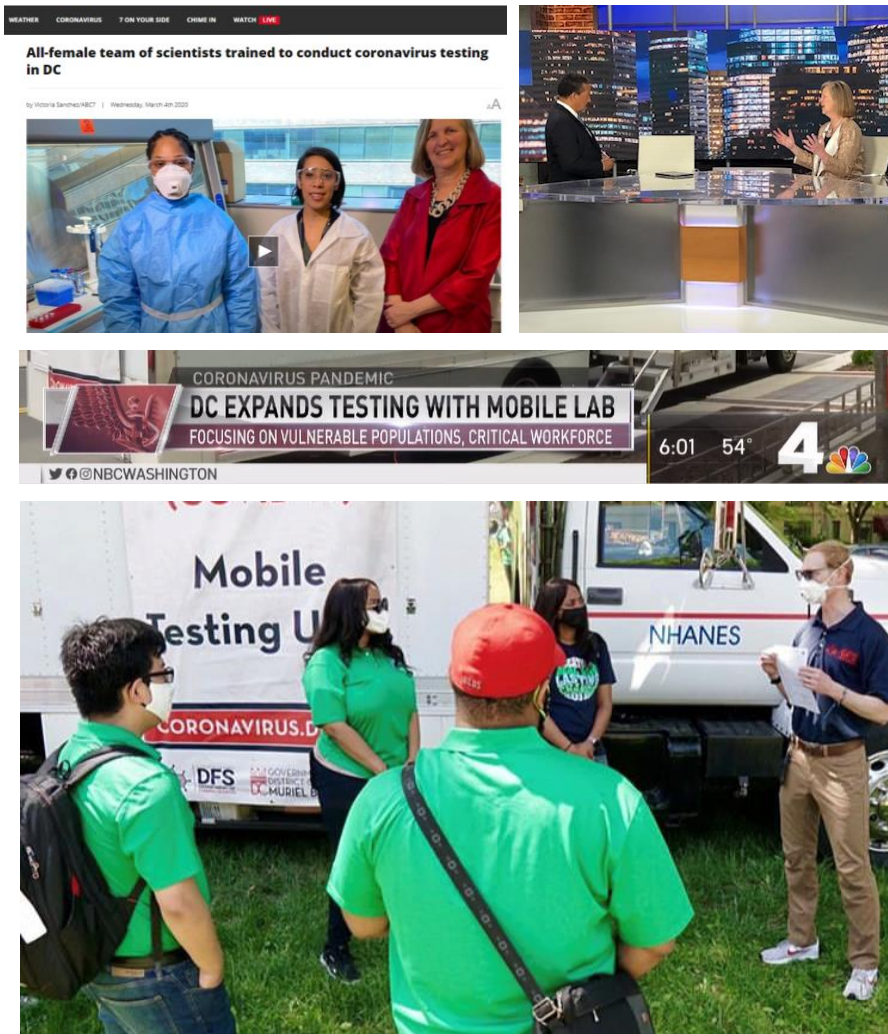
DFS is upgrading **JusticeTrax** to a new version with new features:

- Web-based interface
- Customized modules
- New Crystal Reports
- FileOnQ Integration
- Mobile Device Integration
- Web-application ready

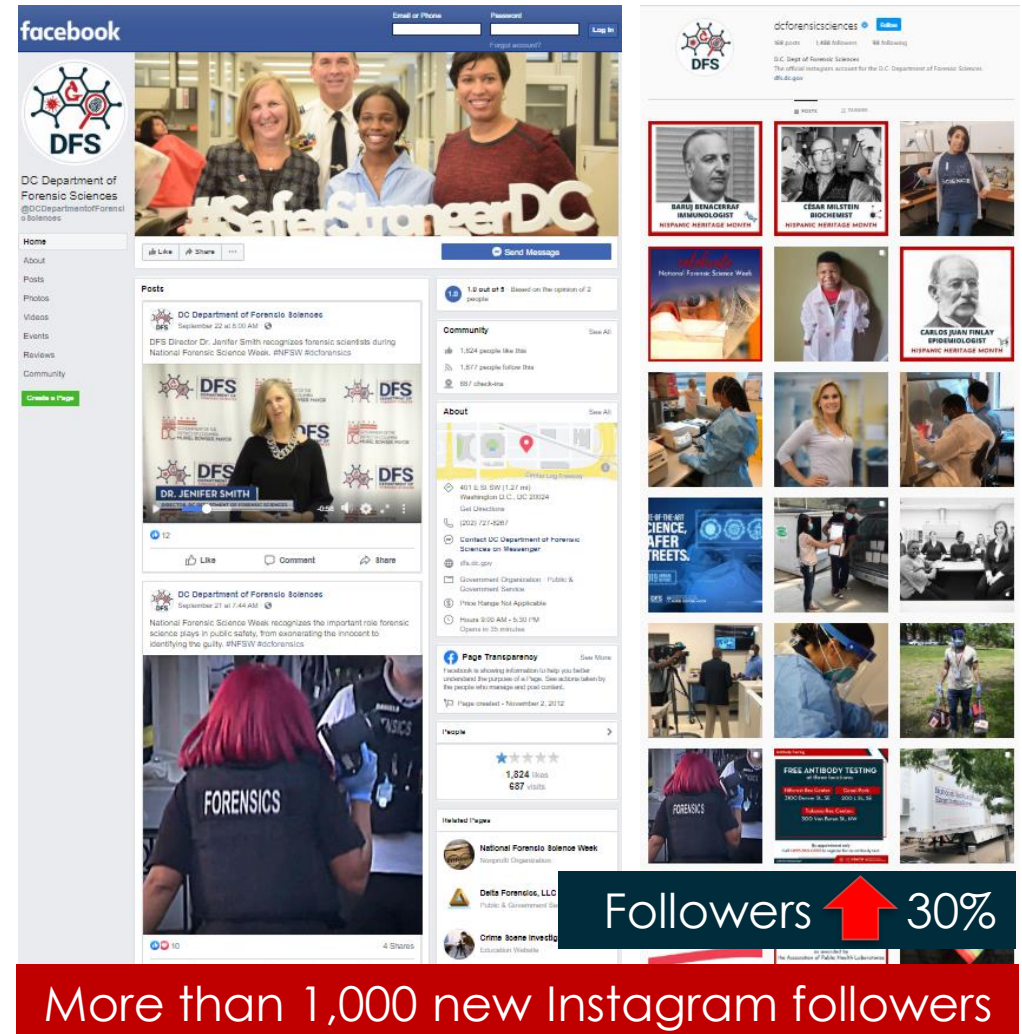


# OUTREACH & ENGAGEMENT

## Media Coverage & Resource Days



## Social Media



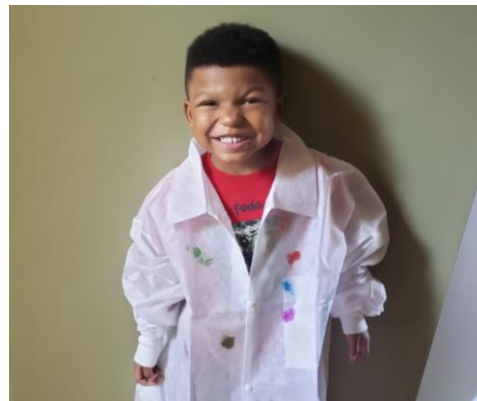
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# OUTREACH & ENGAGEMENT

## Virtual Family Day



200 employees participated from home

## All-Hands Meetings & NFSW



# DIVERSITY & INCLUSION FRAMEWORK



## Diversity & Inclusion

“At DFS, we celebrate our agency’s cultural differences across race, gender, age, religion, and identity, by building an inclusive environment where every voice is heard and embraced. Our Diversity and Inclusion (D&I) Program provides a platform for shared ideas with mutual respect for each other’s work experiences and goals to create an atmosphere where employees thrive. We will continue our efforts to build an inclusive culture that stands on the principles of accountability, integrity, and trust, to better support our employees and the communities we serve.”

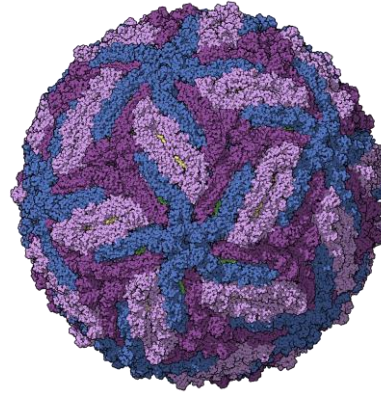


# PUBLIC HEALTH LABORATORY

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Microbiology Unit



Immunology & Virology Unit



Tier 1 BT Lab  
and Tier 2 CT Lab



Chemistry Section



Molecular Diagnostics Unit



Accessioning Unit



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## PHL PERSONNEL UPDATE



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# NEW HIRES

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- MDU Chief
  - Dr. Jocelyn Hauser
- Health and Occupational Safety Manager
  - Dale Jennings
- Grants Coordinator
  - Vicki Sussman
- All to start October 26



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# YEAR IN REVIEW: DFS COVID-19 RESPONSE TO THE PANDEMIC

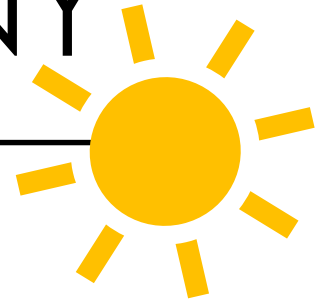


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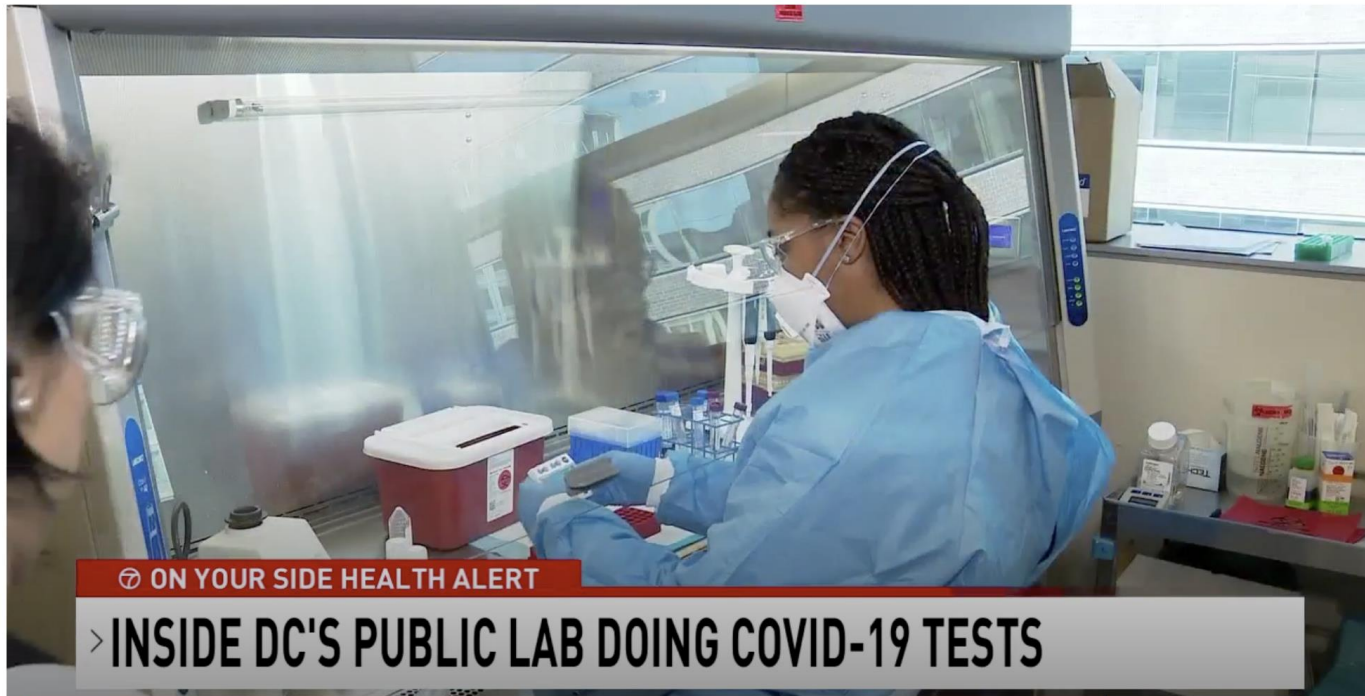
# INITIAL FORECAST: SUNNY



## All-female team of scientists trained to conduct coronavirus testing in DC

by Victoria Sanchez/ABC7 | Wednesday, March 4th 2020

AA



ON YOUR SIDE HEALTH ALERT

> INSIDE DC'S PUBLIC LAB DOING COVID-19 TESTS

EXCLUSIVE

FOX 5

INSIDE LOOK INTO CORONAVIRUS TESTING FACILITIES



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# ONLINE MARCH 3<sup>RD</sup>

Capacity 50 samples/day



30 Extractions

3x per day = 180

2 hours



25 Per Plate = 100

3 hours

Slides courtesy of Dr. Courtney



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# WEEK OF MARCH 18<sup>TH</sup>

Capacity 100 samples/day

## Extraction Options



8 at one time 8 at one time

16 extractions  
1 hour per run

6x per day = 96



25 Per Plate = 100 x 1 runs per day

3 hours

Slides courtesy of Dr. Courtney



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# WEEK OF MARCH 25<sup>TH</sup>

Capacity 150 samples/day  
Avg daily patients = 21

## Extraction Options

16 Extractions



2.5 hours per run

3x per day = 144

3 days



1 hour per run

6x per day = 96



6x per day = 96

25 per plate = 150 x 1 runs per day

3 hours



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# FULL AUTOMATION

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Started March 30<sup>th</sup> - Panther Fusion



Capacity: 600+ samples/day

Avg daily patients = 75

2:20 hours/sample  
120 samples/run  
~300 samples/8 hour  
Ability to process overnight

Sample to Answer  
No need to compete for all the same reagents  
Much less staffing needed  
Already had Fusion in place and staff trained

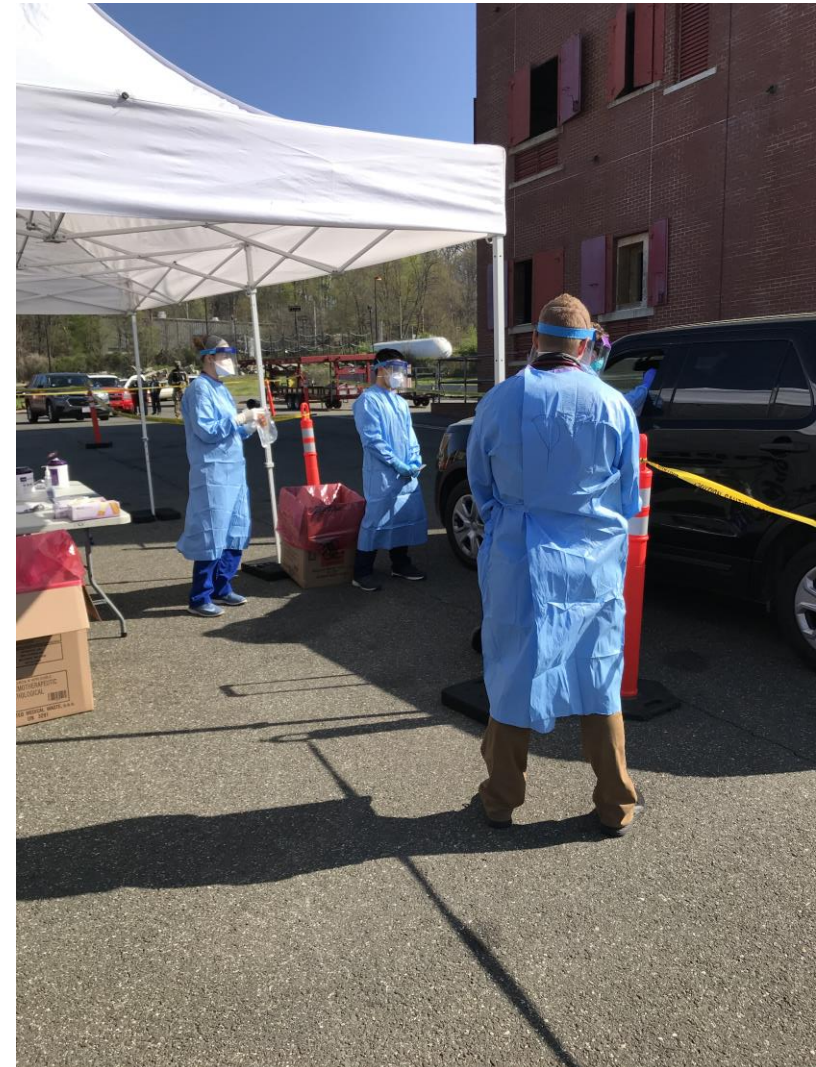


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# WHY FULL AUTOMATION?



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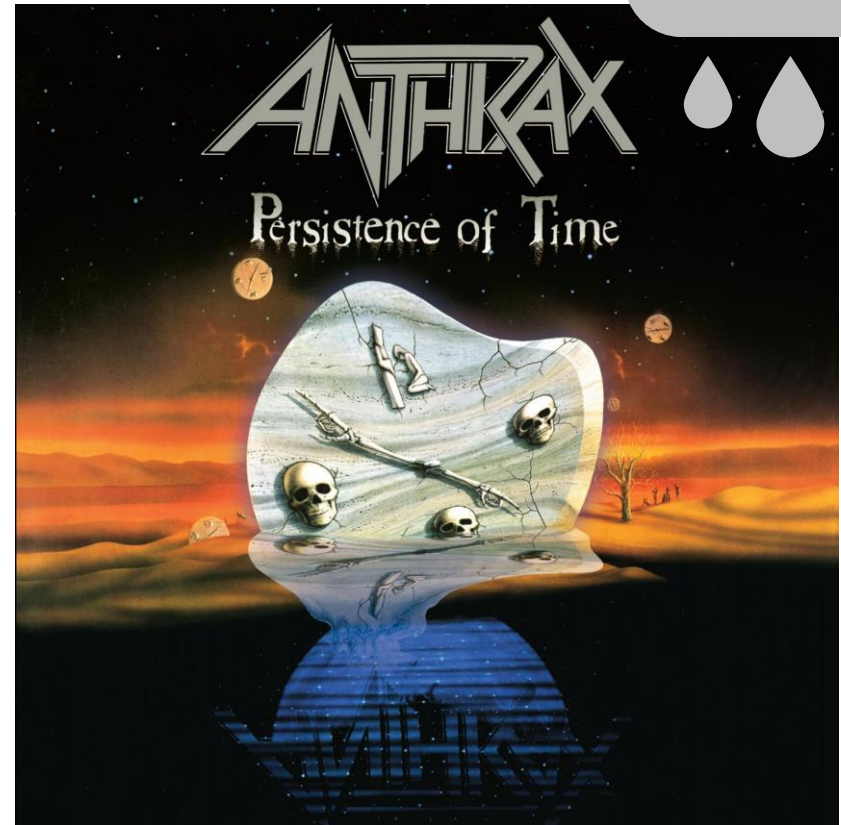
<https://www.apmreports.org/story/2020/07/15/washington-dc-response-to-coronavirus>



# FORECAST: DARK & STORMY

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- Fusion FDA EUA received 3/16/2020
- Reagents not ready until 3-4 weeks later
- **Do not take no for an answer!**



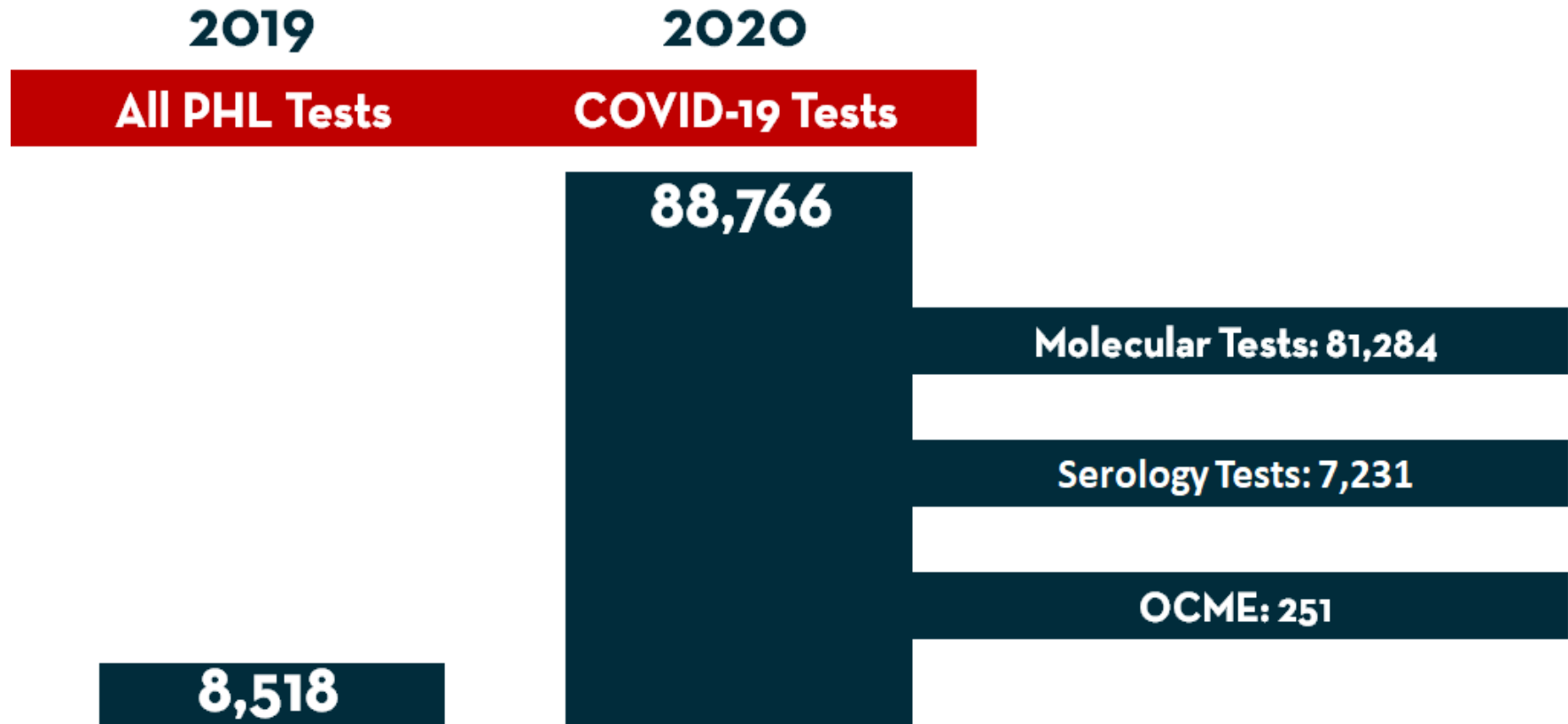
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# 2019 VS 2020

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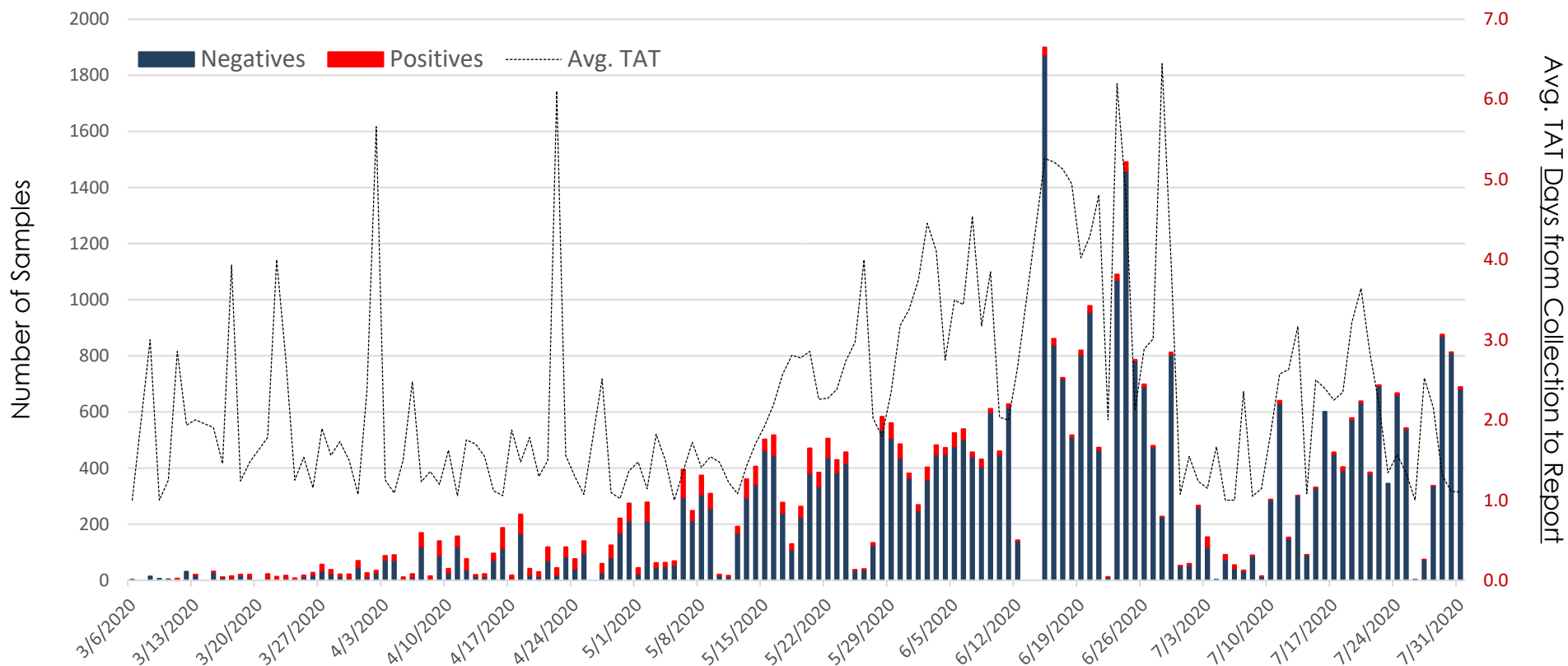


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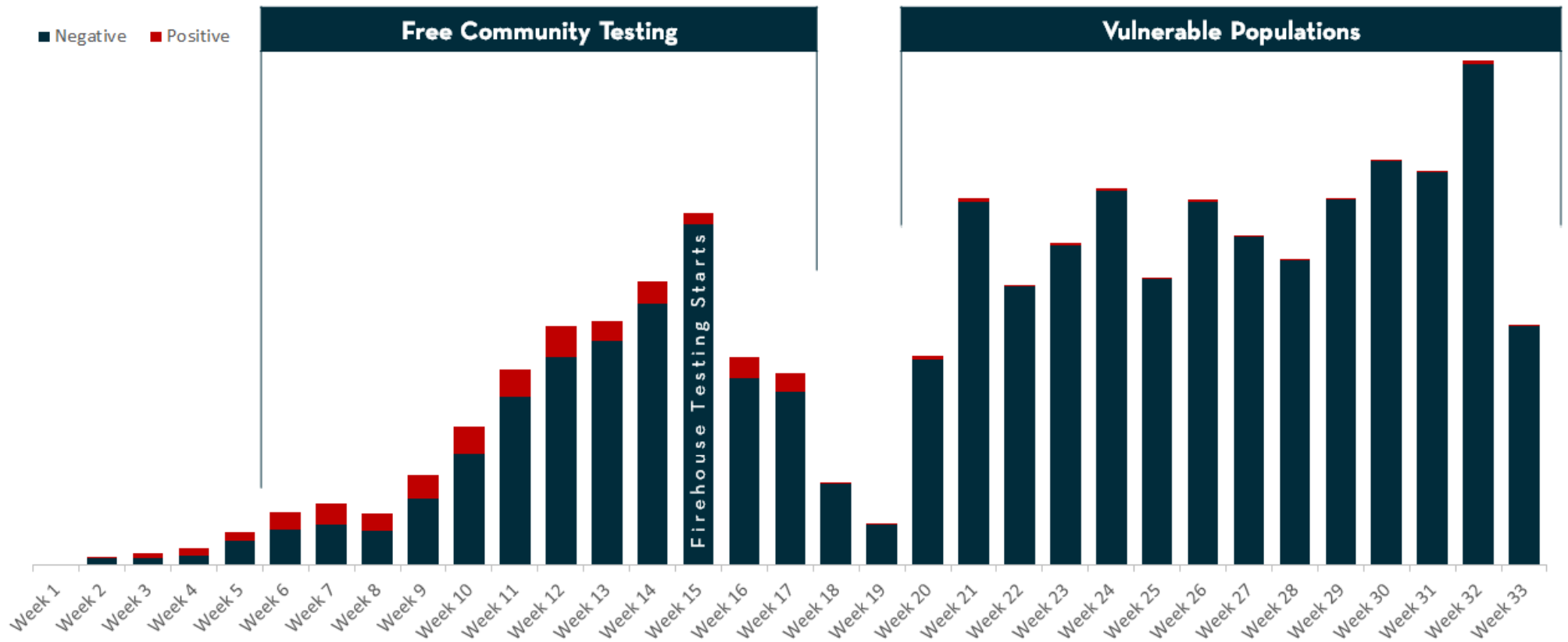


# COVID-19 TESTING

- Exponential increase in testing began in May
- Total samples tested as of 7/31/20 = 40,206



# TESTING BUILD-UP



This week/Week 33: Sunday-Wednesday



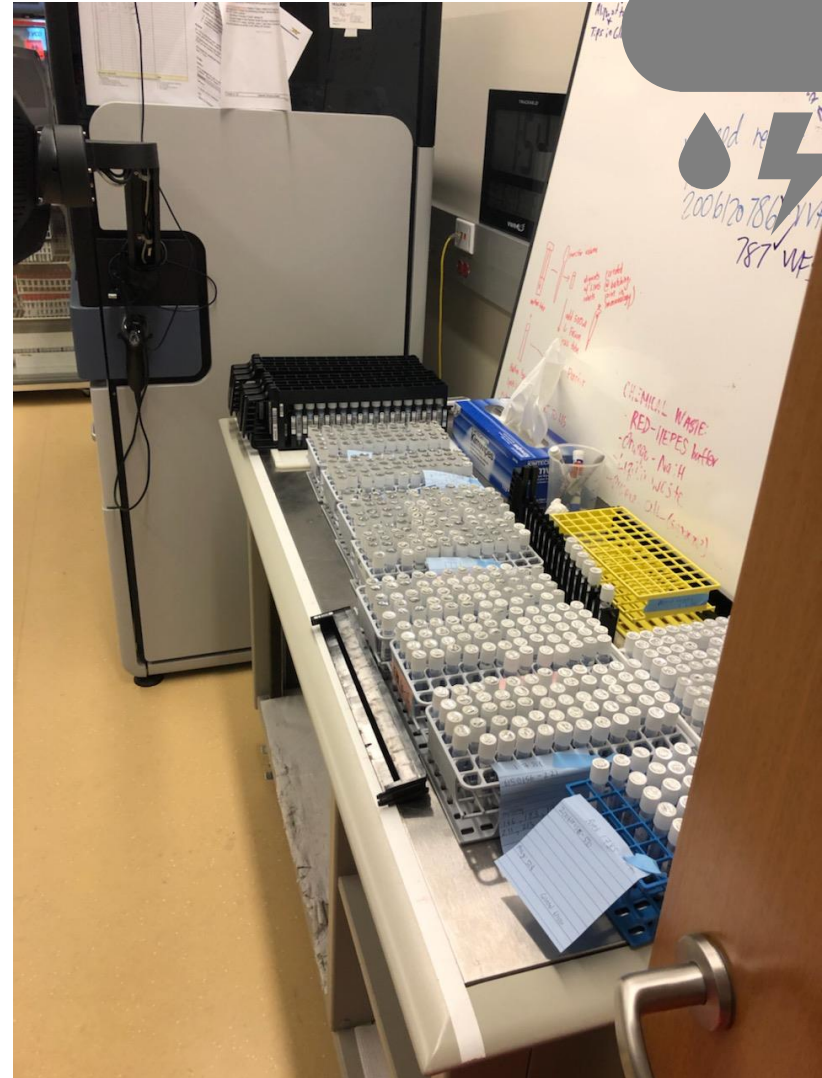
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# FORECAST: SEVERE STORMS



# POCT DEPLOYMENT

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## ABBOTT ID NOW™ Distribution Plan (17)



- Homeless Shelters = 3
- Dept of Corrections = 2
- Dept of Behavioral Health = 2
- Dept of Youth Rehabilitation Services = 1
- Mary's Center = 1
- Long-term, acute care or skill nursing facilities (>100 beds)
  - Knollwood = 1
  - Transitions = 1
- DFS Mobile Testing Unit = 5
- United Medical Center = 1



# REQUIREMENTS FOR TESTING

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- Initial site assessment
- Complete site specific risk assessment
- Identify 1-2 staff to be trained
- Training conducted by DFS PHL staff
- Competency assessment documented
- Proficiency testing conducted twice annually





# IF THEY WON'T COME TO YOU...

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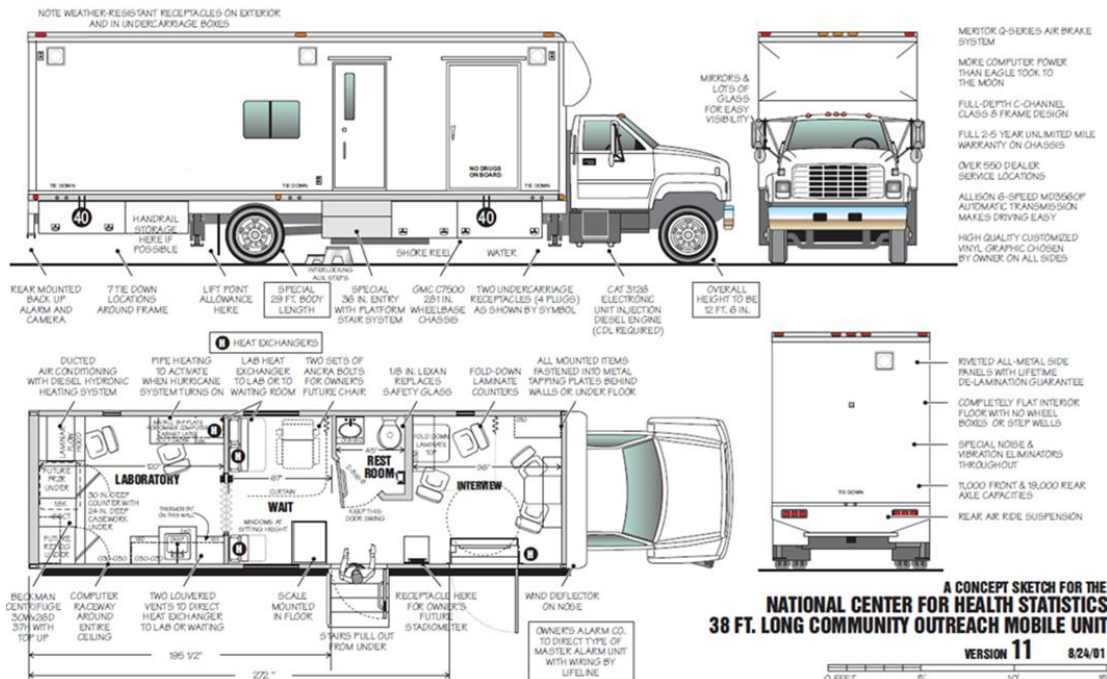
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# THE NATIONAL HEALTH & NUTRITION EXAMINATION SURVEY (NHANES) TRUCK



- Lab area with bio hood
- Space for Cepheid & Abbott equipment
- Refrigerator and Freezer
- Sink
- Patient sampling area
- Bathroom facility



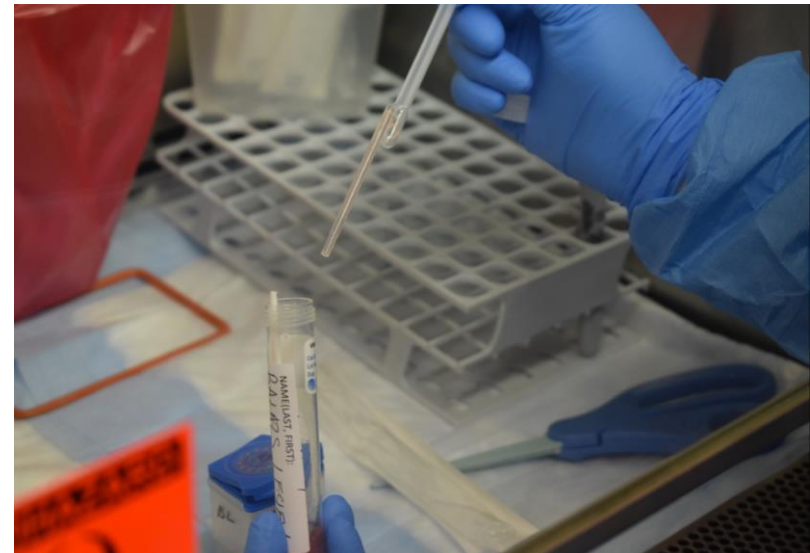
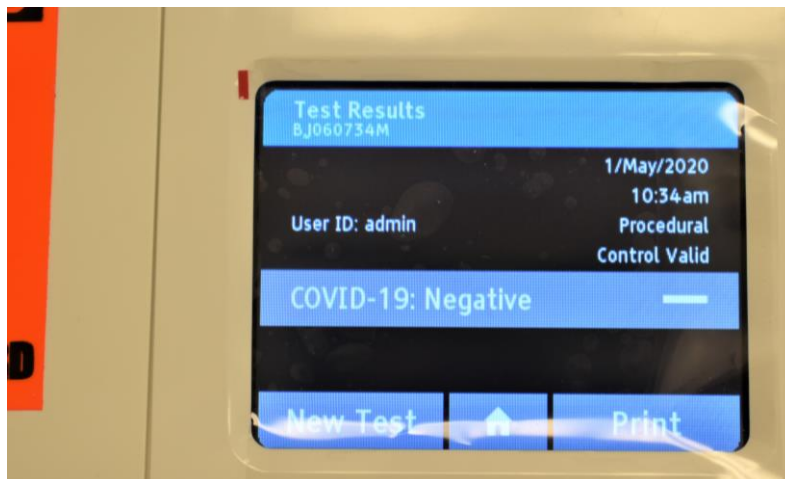
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# DFS PHL MOBILE TESTING





# SUPPORT FOR OCME

---

- Support for OCME SARS-CoV-2 testing from beginning of pandemic in DC utilizing the only FDA EUA test available – CDC 2019-nCoV rRT-PCR
- Quickly verified the use of the test for post-mortem specimens
- Plan is to begin sequencing to provide molecular epidemiological linkages
- To date, PHL has tested 244 samples with an average TAT of 1.49 days



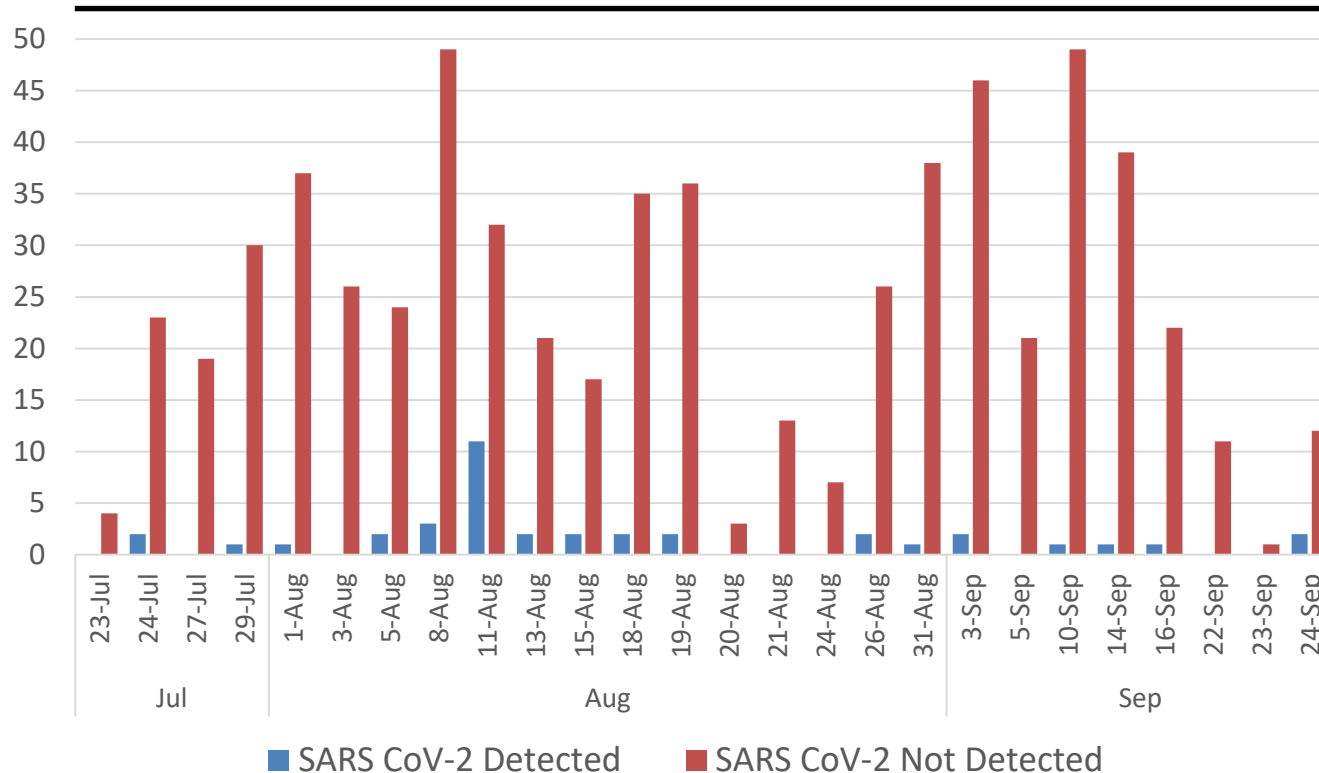
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# POLICE & FIRE CLINIC TESTING



Testing completed in an average of **11 hours**

Allows for prevention of COVID-19 spread within agency

Started biweekly FEMS surveillance testing last week

Agency	Detected	Not Detected	TOTAL
DC FEMS	8	211	219
DC MPD	30	430	460
TOTAL	38	641	679



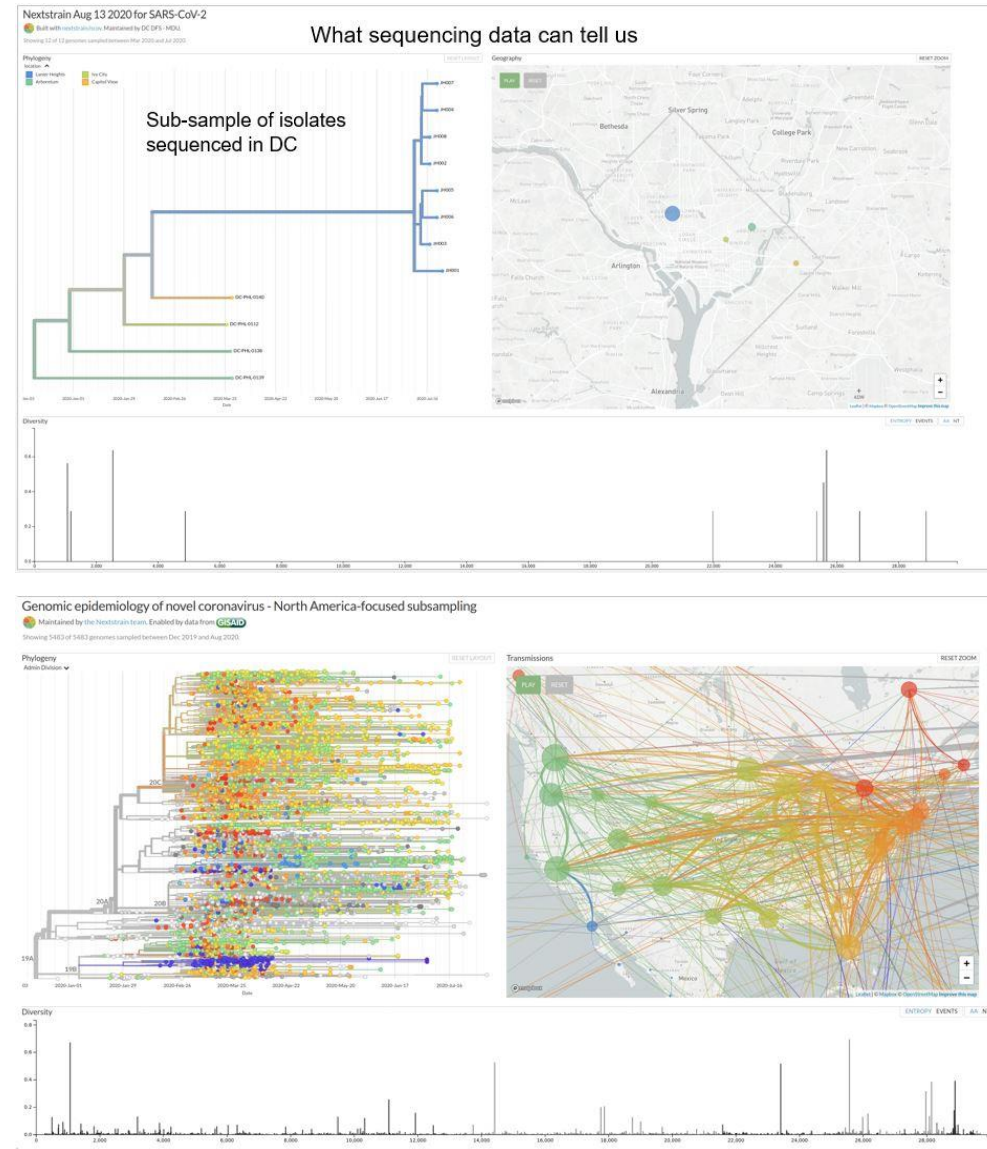
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# VALUE OF SEQUENCING

- Whole genome sequencing of SARS-CoV-2 isolates can provide definitive epidemiological linkages to help outbreak investigations
- Thus far we have sequenced over 70 SARS-CoV-2 samples
- With sufficient sequencing, tracking of viral lineages and spread can be achieved



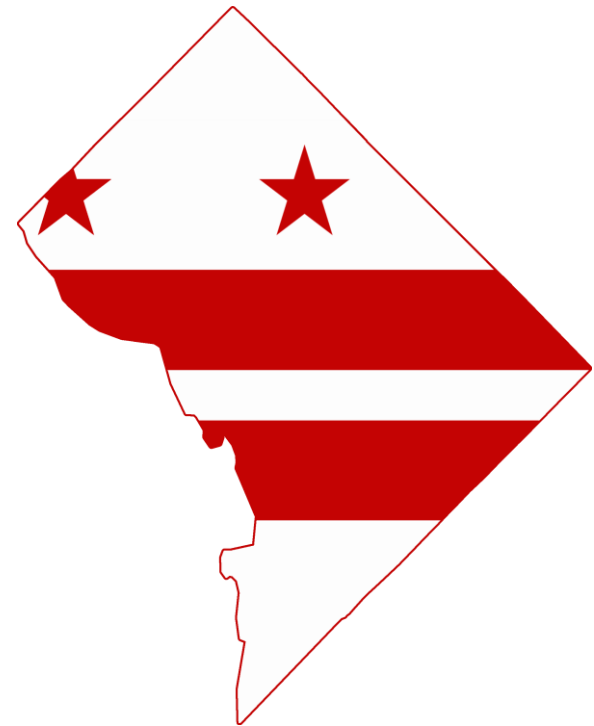
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# TESTING SNAPSHOT (4/28/2020)

	District-wide Population: 702,455	PHL	Drive-Thru/ Walk-up	Vulnerable Populations
Patients Tested	19,229	2,595	1,401	1,194
Positivity (%)	21.4	34.8	23.7	47.8



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# TESTING SNAPSHOT (10/14/2020)

	District-wide Population: 702,455	PHL	
		Molecular	Serology
Patients Tested	450,614	81,284	7,231
Positivity (%)	3.6	3.7	6.9



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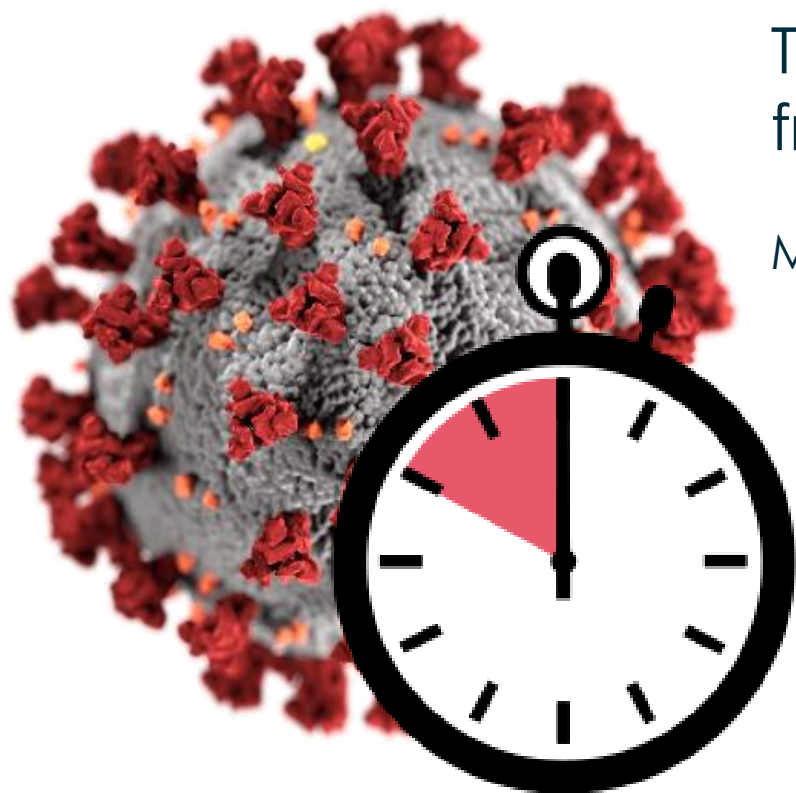
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# COVID-19 TESTING

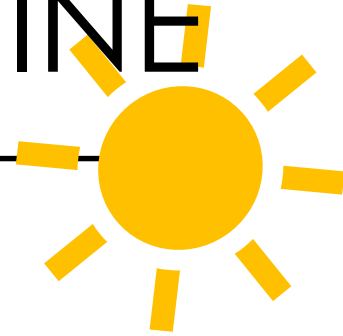
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Turnaround Time = 1-3 days  
from collection

Molecular = 2.43 days | Serology = 1.29 days

# FUTURE FORECAST: SUNSHINE



**FRIDAY, SEPTEMBER 25, 2020**

DAILY NUMBERS

CUMULATIVE SINCE 3/2/20

	POSITIVE	NEGATIVE	TOTAL	AVG TAT DAYS FROM COLLECTION	POSITIVE	NEGATIVE	TOTAL
DRIVE-THRU	--	--	--		1,326	18,250	19,576
MOBILE TESTING	--	--	--		88	799	887
SUBMITTED TO PHL	5	1,203	1,208		1,586	46,605	48,191
<b>MOLECULAR TOTAL</b>	<b>5</b>	<b>1,203</b>	<b>1,208</b>	<b>1.42</b>	<b>3,000</b>	<b>65,654</b>	<b>68,654</b>
<b>SEROLOGY TOTAL</b>	<b>1</b>	<b>6</b>	<b>7</b>	<b>1</b>	<b>500</b>	<b>6,731</b>	<b>7,231</b>



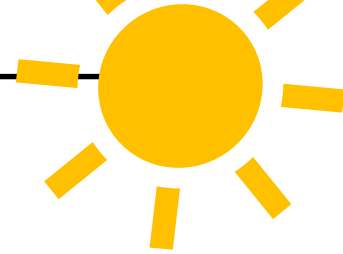
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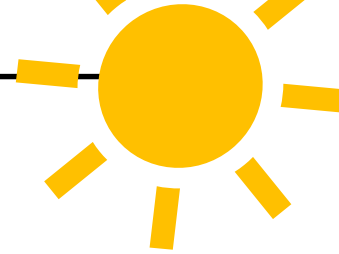
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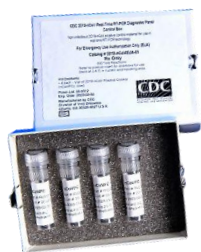


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# COVID-19 TESTING

## How did we do it?



### CDC Test

500 tests/kit  
240 tests  
in 24 hours



### Panther

2 instruments  
1,150 tests  
in 24 hours



### Cepheid

4 instruments  
35-40 tests  
in 60 mins  
2,173 tests to date



### Mobile Unit

5 instruments  
50 tests  
in 8 hours  
887 tests to date

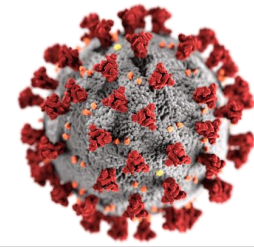


### Abbott ID NOW

11 instruments  
1 test  
in 20 mins

# CHALLENGES

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## March - April

- All PHL Tests were ordered and accessioned using paper forms
- All PHL results reported by phone calls followed by faxing
- Initial testing max capacity was 50 samples/day
  - CDC test was manual- no automation
  - PHL only had 4 scientists available to conduct testing and only 1 shift/day
  - Reagent supplies were difficult to obtain

## April - May

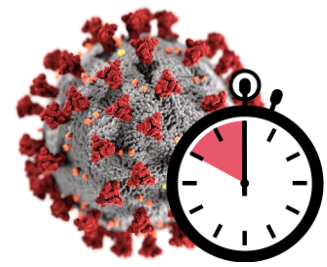
- Panther Fusion came on line March 30th and increased capacity to 600 samples/day
- Initiation of Drive Thru testing – limited to essential workers with symptoms
  - Growing Pains: Incomplete records would lead to delay in accessioning and inflexible reporting for critical customers
  - Microsoft App- developed for registration of drive-thru samples – first step towards automation
- Expansion of testing required for St Elizabeth's and DOC due to court orders-

## June - July

- Expansion of Community Sampling sites from 2 to 7 ( including fire houses)
  - Multiple days - submission of samples exceeded PHL daily capacity
  - Delay in establishing LabCorp to receive samples- not until June 23rd
  - “Feast or Famine” = daily number of samples submitted
  - Introduction of Lab on Line (PHL's improved electronic ordering system)
  - Limited Cepheid supplies

# OPPORTUNITIES

---



## **Enhanced Focus on the most vulnerable populations**

- The majority of PHL testing for congregate care facilities, homeless shelters, DC agencies (DOC, DYRS, St. Elizabeth's) & DC critical personnel.

## **Enhanced Customer Service**

- Superior turn around times compared to private labs (Lab Corp)
- Distribution, training and supplies for point of care testing platforms
  - Abbott ID Now
  - Cepheid (Howard and UMC)

## **Enduring Enhanced Infrastructural Changes**

- High thru-put testing capabilities that increased capacity and expanded “menu” of testing platforms
- Expanded variety of testing platforms- flexibility for future needs ( influenza, HIV, the next pandemic)
- Electronic Ordering and Reporting systems – replaced paper forms and faxing
- Established a mobile testing capacity for very little cost
  - Free truck – \$10,000 for maintenance
  - Free instruments and test kits plus \$7000/month supplies
  - Same day results delivered to LTC facilities
- Established COVID19 sequencing capability - direct assistance for contact tracing

# IT TAKES A VILLAGE

---



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# SPECIAL THANKS TO PHL COVID-19 RESPONSE TEAM

---

- Accessioning
  - Katie Morris
  - Lesley Krien
  - Andrew Alviar
  - Donovan Bialose
  - Sarah Horn
  - Tamla Mings
  - Sara Romero
  - Claire Sandler
  - Tanisha Walker
- Molecular Diagnostics
  - Brittany Hamilton
  - Rakeiya McKnight
  - Connie Maza
  - Elizabeth Zelaya
  - Melodie Nasr
- Immunology/Virology
  - Jessie Lowry
  - Brandon Williams
  - Cleveland Weeden
  - Cletus Atta
  - Inho Cha
  - Hannah Clark
  - Isabel Harvin
  - Sara Sprague
- DOEE
  - Jennifer Kulp
- Microbiology
  - Michael Adjei
  - Reggie Blackwell
  - Denise Edwards
  - Sosina Merid
- Chemistry
  - Michael Krause
  - Justin Jacob
  - Olin Jackson
- Communications
  - Richard Jordan
  - Darrell Pressley
- Admin/Operations
  - Nia Deot
  - Patty McMullen
  - Ken Wallington
  - Hana Asnake
  - Kalidan Tamiru
  - Shayla Montalvo
  - Tatiana Schrader
- Health & Safety
  - Rachel Mando
  - Regina Geter
- Outreach
  - Andrea Cabello
  - Amal Hajjami
  - Zoe Kaplan
  - John Mura
- BioWatch Surge
  - Yolis Begazo
  - Matt Hedin
  - Glory Umoh
  - Maria Medina
  - Maikan Kone
  - Rico Duncan
- Sr. Leadership
  - Jenifer Smith
  - Colleen Courtney
  - Pushker Raj
  - Matt McCarroll
  - Berihun Taye
  - Julie Kiehlbauch
  - Kimary Harmon
  - Luke Short
  - Chris Lojacono
- Crime Scene Sciences
  - Grant Greenwalt
  - Joe Starnier
- Mobile Testing Unit
  - Monica Mann
  - Channyn Williams
- CDC
  - Shelby Chastain-Potts
  - David Payne
  - Jessica Prince-Guerra



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BUT LIFE GOES ON...



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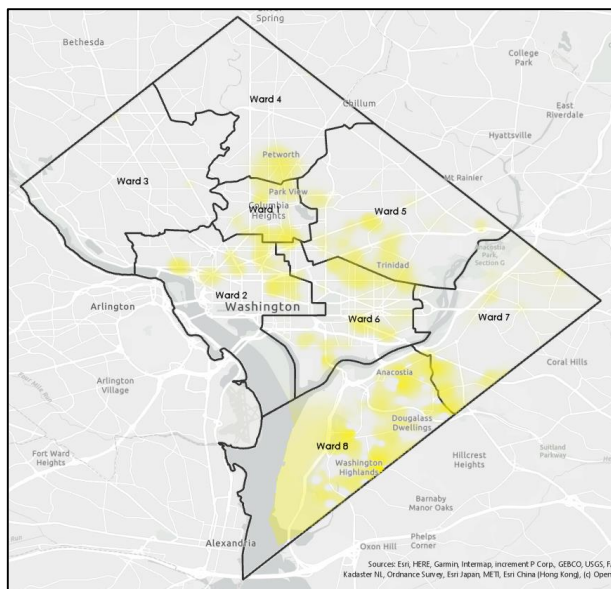
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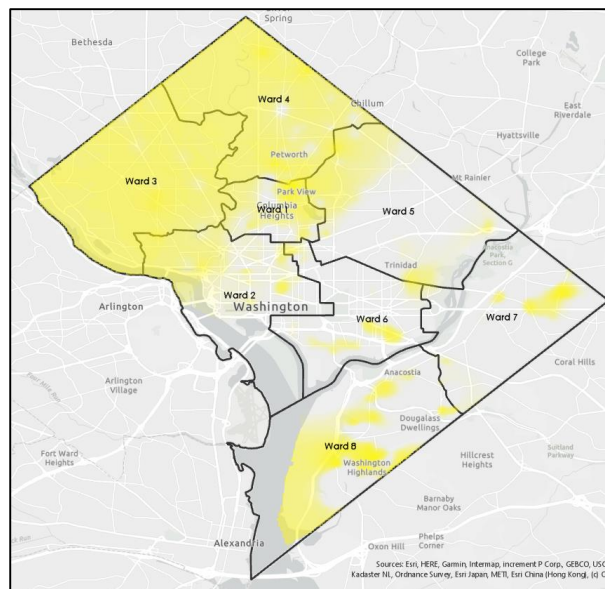
# OPIOID SURVEILLANCE

- Fentanyl is now widespread, with focus away from analogs.

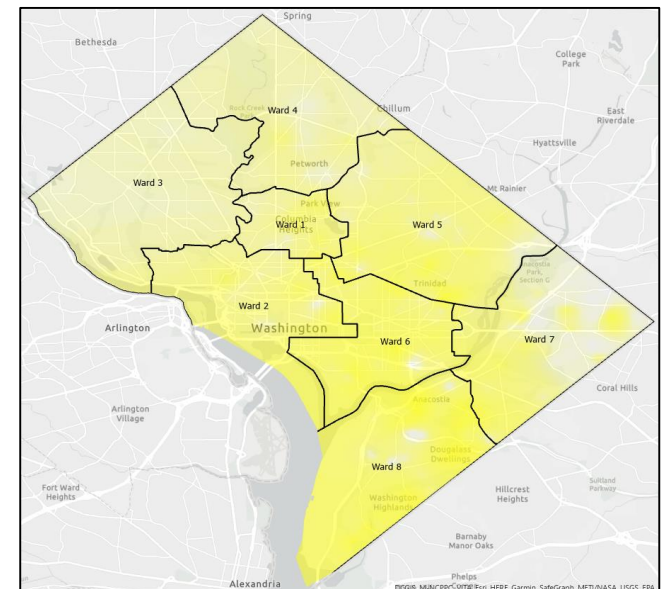
**2018 Fentanyl & Analogs**



**2019 Fentanyl & Analogs**



**2020 Fentanyl & Analogs**



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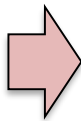
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# OPIOID SURVEILLANCE

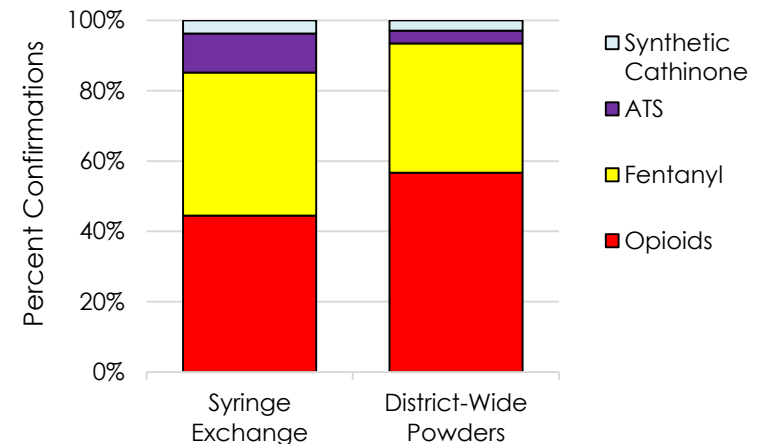
## ○ Syringe exchange program underway



Syringe Exchange Program  
(Sept-2020)



0.45 $\mu$ m  
Filtered GCMS



1. **Methamphetamine** ("Meth" aka ATS) is at much higher rates than previously found in death investigations
2. **Xylazine** is in 20% of syringes tested (most commonly with fentanyl)
3. Syringe surveillance matches powders in routine casework



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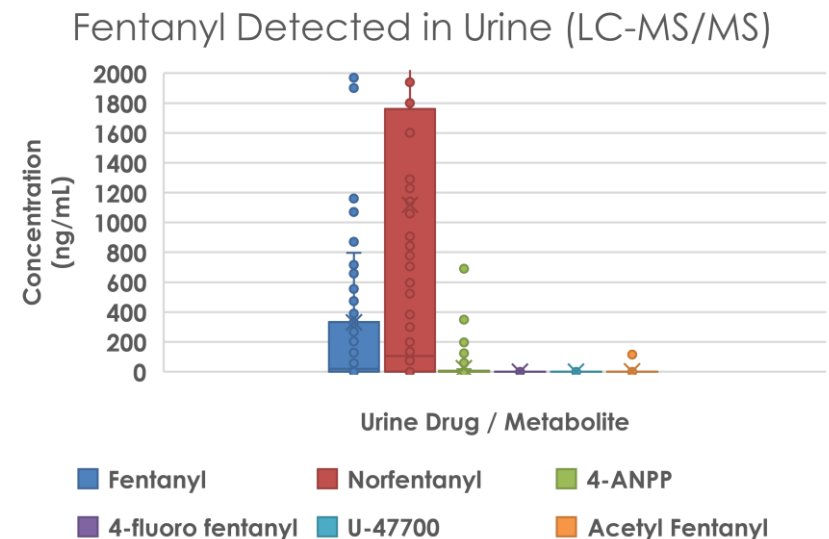
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# DBH COLLABORATION

- Surveillance project with DBH-Opioid Treatment Program completed
- Measured both Methadone levels and looked for fentanyl / analogs

Ratio	Value	Interpretation	All Sites
EDDP(ng/mL) Methadone(ng/mL)	>0.60	Methadone Ingested (normal situation)	124 (84%)
	0.090 < Ratio <0.60	Inconclusive	5 (3%)
	<0.090	Methadone added to sample ("spike")	18 (12%)



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# DBH COLLABORATION

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- Drug Screening for DBH at DFS PHL
  - 9/4/20 - received \$182,275.40 for purchase of Alinity-c analyzer for drug screening
  - Placed order immediately and Alinity-c was delivered on 9/29/20
  - PHL will provide diagnostic services for drug of abuse panel of 14 drugs including Tramadol, a newly FDA approved drug with significant abuse and/or dependence



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# AGENDA

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- ✓ Roll Call – Review of Minutes from Previous Meeting, Approval of Minutes
- ✓ Director's Update
- ✓ Public Health Laboratory (PHL) Update
- FSL Latent Fingerprints (LFU) – Paperless
- FSL Forensic Biology Unit (FBU) – STRmix issue
- DFS Quality Update
- FSL Firearms Examination Unit (FEU)
  - Document Review
  - Closeout
- Old Business/ New Business/ Future Meetings
- Closing and Adjournment



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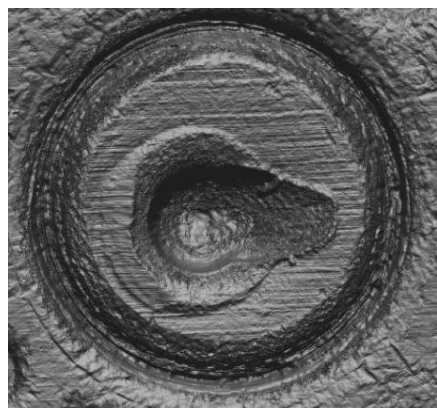
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# FORENSIC SCIENCE LABORATORY

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**Forensic Biology Unit**



**Firearms Examination Unit**



**Latent Fingerprint Unit**



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# LFU Paperless - SAB

October 16, 2020

# FY20 LFU Strategic Initiative

- Why Paperless?
  - LFU Latent exams already had electronic processes in use:
    - LIMS worksheets/case notes
    - LIMS report
    - Mideo workspaces
  - Only minor workflow modifications needed to achieve goal
    - Creating electronic versions of:
      - Technical and Administrative review sheets
      - Evidence processing worksheet
      - Evidence processing report
    - “Print to PDF” instead of printing and scanning docs
    - Save money (folders, ink and paper)
    - Limited space for future case files


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401 E Street SW, Washington, DC 20024

**Report of Examination**  
Latent Fingerprint Unit (LFU)  
Latent Print Analysis

<b>DFS Case Number:</b> DFS-20-07417	<b>Primary Agency:</b> Metropolitan Police Department <b>Agency Case #:</b> 2020-097088	<b>Requesting Agency:</b> Metropolitan Police Department <b>Agency Case #:</b> 2020-097088	<b>Offense:</b> Burglary Two-B2	<b>Report Date:</b> 09/29/2020
---	---	--	------------------------------------	-----------------------------------

**Request Number:** 1

**Related Evidence Items:**  
 Item 1.1 - Latent lift recovered from front door  
 Item 1.2 - Latent lift recovered from front door  
 Item 1.3 - Latent lift recovered from front door


<b>Related Individual(s):</b> Eboney Roxaine Mathews	<b>Individual's #:</b> PDID 639744	<b>Identified:</b> Yes
---	---------------------------------------	---------------------------

**Analysis Results:**  
 Item(s) of No Value: 1.2 and 1.3  
 Item(s) of Value: 1.1

**Comparison Results:**

Item #	Impression #	AFIS Results	Identification(s) <small>(From Request, AFIS or Manual Comparison)</small>	Exclusion(s)	Inconclusive(s) <small>(See Remarks if applicable)</small>
1.1	1.1.1	ID	Left middle #8, PDID 639744		
1.1	1.1.2	No ID		PDID 639744	

**Remarks:**  
 Analysis Start Date: 9/22/2020  
  
 All unidentified AFIS quality latent print(s) have been searched through DCAFIS, FBI NGL, NOVARIIS and RAFIS databases.

Page 1 of 2  


# IMPLEMENTATION

	LFU Paperless Laboratory Quarterly Plan
Phase 1: (Q1)	<ul style="list-style-type: none"> <li>• Identification of potential implementation methods and workflow needs ✓</li> <li>• Creation of beta documents for - Evidence Processing and Latent Comparisons ✓</li> </ul>
Phase 2: (Q2)	<ul style="list-style-type: none"> <li>• Testing of beta documents ✓</li> <li>• Identification of technology needs in Evidence Processing to facilitate electronic records ✓</li> <li>• Start gap analysis of existing LFU examination documentation, Mideo Worksheets, and ability to generate electronic case files using existing methods ✓</li> <li>• Create draft workflows for LFU latent analysis and EP ✓</li> </ul>
Phase 3: (Q3)	<ul style="list-style-type: none"> <li>• Complete gap analysis initiated in Q2 ✓</li> <li>• Finalize new workflows ✓</li> <li>• Additional testing of developed electronic documentation in evidence processing and latent comparisons ✓</li> <li>• Finalization of electronic documentation to be used in evidence processing and latent comparisons ✓</li> </ul>
Phase 4: (Q4)	<ul style="list-style-type: none"> <li>• Training of all LFU Examiners and Analysts to ensure awareness and compliance ✓</li> <li>• Edit any relevant LFU SOPs and place in Qualtrax for approval and publication ✓</li> <li>• Go LIVE in LFU Evidence Processing</li> <li>• Go LIVE in LFU Latent Comparisons</li> </ul>



# LFU Paperless Laboratory

---

- Tentative workflow created
- New documents created and tested
- Identified the following gaps:
  1. Adobe/PDF issues
  2. Case tracking without a hardcopy case file
  3. Case tracking and labeling during the review process
  4. Formatting issues with some electronic docs
  5. Documenting info electronically that was previously handwritten



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# LFU Paperless Laboratory

- Addressed gaps with the following:
  - Installing Adobe for creating PDFs
  - Re-formatting EP worksheet to allow for drop-downs and text boxes
    - Purchased tablets for EP to utilize
- Developed naming convention for case tracking
  - Examples - IP for In Progress, AR for Admin Review, TR for Tech Review
- Setting up electronic signatures for verifications



DFS#:  
Date:  
Analyst:

	NOT ANALYZED	VISUAL WITH ALS	RUVIS	CYANOCRYLATE (CA)	Dye Stains: 1. N/A 2. N/A	1. NINHYDRIN (NIN) 2. N/A	Blood Reagents AMIDO BLACK AQ (ABA)	Powders BLACK POWDER (BP)	Adhesives WETWOP BLACK (WB)	Other 1. IODINE (I)
REAGENT LOT#:										
TEST PRINT:				<input type="checkbox"/> NEG <input type="checkbox"/> POS		<input type="checkbox"/> NEG <input type="checkbox"/> POS				
ALS λ (nm)			254							
Filter Type Used:		N/A			N/A	N/A	N/A	N/A		
Item #:										

Photo Review: ☐ Photo Reviewer: Choose an item.

Total recovered latent prints: Click or tap here to enter text. Total Photographs:

# LFU Paperless Laboratory

- All analysts and contractors trained in new process and tested using current cases
  - LFU TL collating cases for validation
- LFU03 (Case File SOP) updated
- LFU02 (EP SOP) updated
  - Pending approval in Qualtrax
  - Will retire old/current case file and reporting policy once approved
- Go-LIVE date – October 15<sup>th</sup> or by November 1<sup>st</sup>



DFS-20-06317 GVG

Share View

« FSL (\\DFSFILE01) (M:) » Latents » Electronic Case Files » 2020 » Latent Exams Case Files » DFS-20-06317 GVG

	Name	Date modified	Type	Size
Executive	20103605 LFU Report	9/17/2020 7:21 AM	PDF File	621 KB
/G	Analysis WS	9/16/2020 10:22 AM	PDF File	144 KB
Examples	LFU Administrative Review Form AMC	9/21/2020 11:54 AM	PDF File	286 KB
	LFU Technical Review Form BE	9/21/2020 11:54 AM	PDF File	293 KB
acts	Scans	9/17/2020 8:01 AM	PDF File	1,456 KB



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# LFU Paperless Laboratory

- COVID-19 workplace modifications
  - Was able to accommodate 20-25% of staff teleworking at a time
  - Accelerated the testing of the “Paperless Lab”
    - Created fillable PDFs for employees doing review during telework
    - Started testing different methods for reviews and verifications
  - Can continue and accommodate more teleworking in FY21 with having a paperless case file process

District of Columbia Department of Forensic Sciences

DFS Case Number: \_\_\_\_\_  
 Analyst's Initials: \_\_\_\_\_  
 Date: \_\_\_\_\_

## Latent Fingerprint Unit Technical Review Checklist

	Yes	No	N/A
<b>SUPPORTING DOCUMENTATION</b>			
Are the notes legible and understandable?	✓		
Do the worksheets reflect all analyses, comparisons, and evaluations conducted?	✓		
Have all impressions of value been properly sub-itemized and related to the request?	✓		
Do the notes support the conclusion?	✓		
Have all applicable individuals been added and related?	✓		
Are all images used to support conclusions in the case file and/or in electronic/digital storage?			
Has the Chain of Custody been properly documented?			
If applicable, has the evidence been transferred to the appropriate storage Room?			
<b>EXAMINATION PROCESS</b>			
Have appropriate tests/exams been performed according to LFU Standard Operating Procedures?			
Has the verification process been properly documented under “Additional Data” and on the worksheets?			
Are the results, opinions and interpretations in the report accurately supported by the technical records?			
<b>FINAL REPORT</b>			
Is the report format and wording in accordance with the LFU Standard Operating Procedures?			
Are all related items referenced in the report (whether analyzed or not analyzed)?			
Are the item descriptions in the report consistent with the case information?			
Have the requested examinations been addressed?			
Are the results properly transcribed and clearly communicated to the reader?			
Has the technical review been documented in accordance with LOM03?			
Have you assigned the technical review to yourself and changed the milestone in LIMS to “Tech Reviewed”?			
<b>Technical Reviewer:</b> _____		<b>Date:</b> _____	

LFU Technical Review Form  
 Document Control Number: 2112  
 Revision: 6

Page 1 of 1  
 Issuing Authority: Director  
 Issue Date: 6/26/2020 4:08:59 PM

UNCONTROLLED WHEN PRINTED



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# Questions?



# AGENDA

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- ✓ Roll Call – Review of Minutes from Previous Meeting, Approval of Minutes
- ✓ Director's Update
- ✓ Public Health Laboratory (PHL) Update
- ✓ FSL Latent Fingerprints (LFU) – Paperless
- FSL Forensic Biology Unit (FBU) – STRmix issue
- DFS Quality Update
- FSL Firearms Examination Unit (FEU)
  - Document Review
  - Closeout
- Old Business/ New Business/ Future Meetings
- Closing and Adjournment



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# STRmix Issues - SAB

October 16, 2020

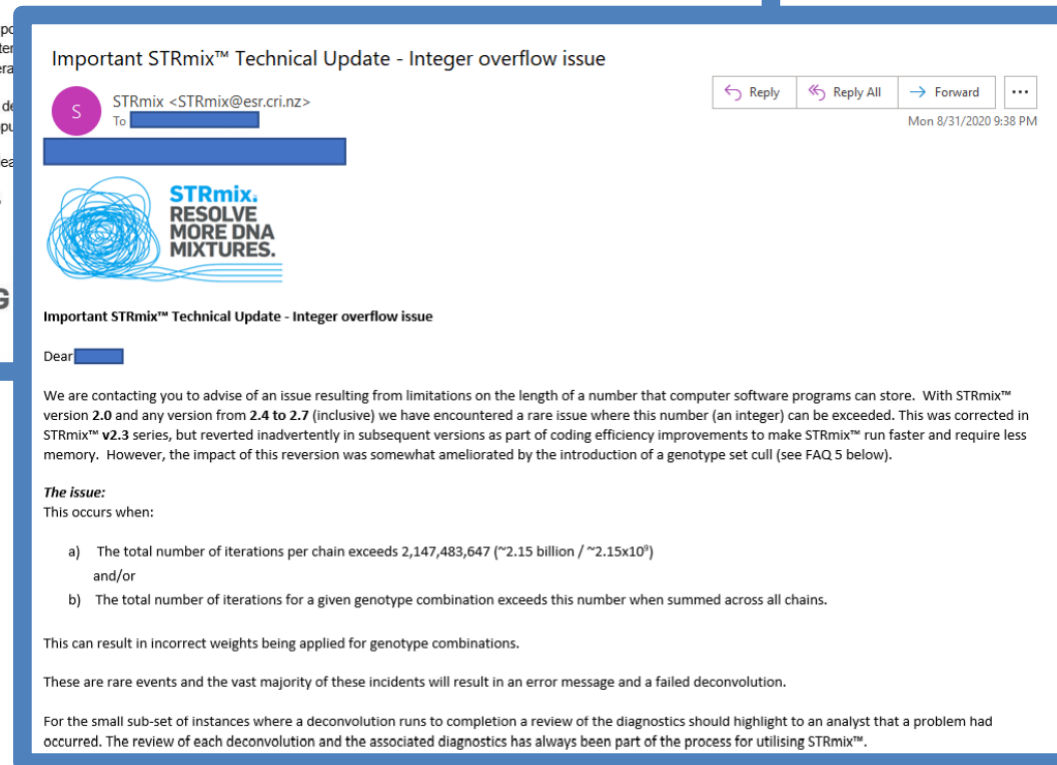
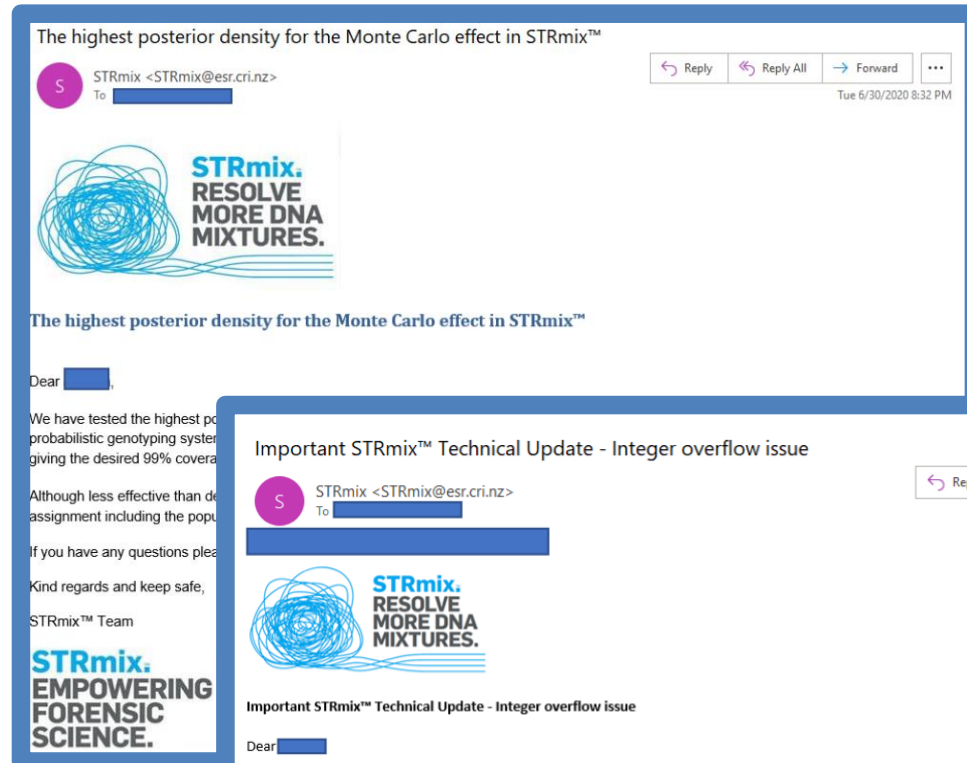
# FBU20-019 Recent STRmix™ Technical Notifications

The **highest posterior density** for the Monte Carlo effect in STRmix

- Received 06/30/2020

Important STRmix Technical Update – **Integer Overflow Issue**

- Received 08/31/2020



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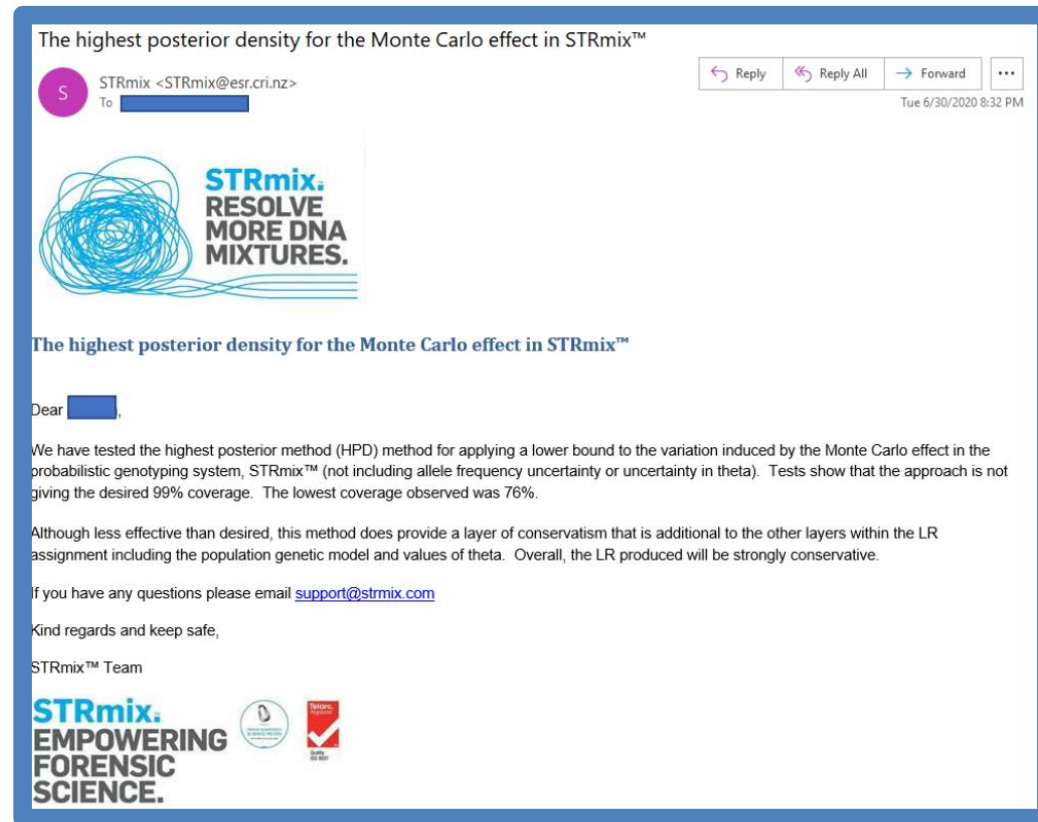
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# FBU20-019 Recent STRmix™ Technical Notifications

The **highest posterior density** for the Monte Carlo effect in STRmix

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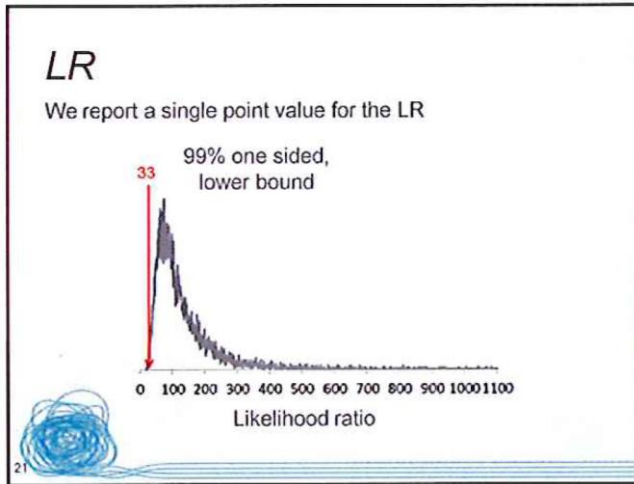


# The HPD for the Monte Carlo effect in STRmix™

As recommended, the DFS FBU utilizes the highest posterior density method (HPD) feature in STRmix™ to report conservative likelihood ratios for all qualitative inclusions or inconclusives.

- “Likelihood ratio (LR) statistical calculations are performed using the STRmix™ software tool... The combined LR calculated by STRmix™ is referred to as a point estimate. Because the true answer is not known, a credible interval is then applied around the point estimate known as a one-sided 99% highest posterior density (HPD) credible interval. This interval accounts for the uncertainty associated with the point estimate LR. This interval is commonly applied in Bayesian statistical calculations to give a range (i.e., with 99% credibility) of where the true allele proportions actually lie. The lower end of the HPD interval is reported from STRmix™ to be most conservative to the accused or person of interest.”

(Excerpt from the “Examination Methods” section of the DFS FBU Report of Examination.)



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# The HPD for the Monte Carlo effect in STRmix™

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**ISSUE:** Additional analysis by STRmix developers indicated HPD method is not reaching the desired 99% coverage for some profiles.

- STRmix recommended reporting the HPD LR as a “conservative lower bound” instead of a 99% one-sided lower bound.



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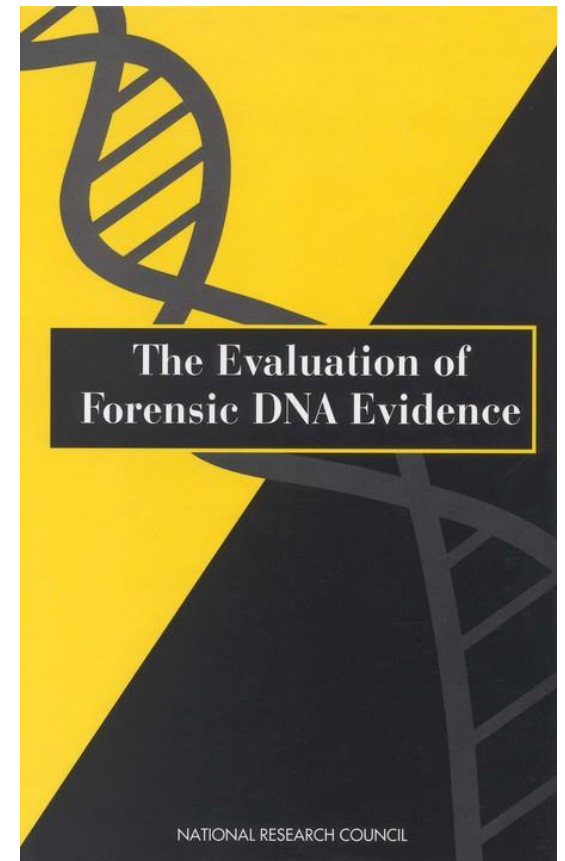
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# The HPD for the Monte Carlo effect in STRmix™

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## IMPACT: Minimal

- Additional layers of conservative are still effectively performing and being applied by DFS FBU.
  - Balding and Nichols sub-population model (NRC II, Recommendation 4.2)
  - Conservative value for theta
  - Application of HPD to account for uncertainty in allele frequencies
- No available “fix” and turning feature “off” would result in values that are less favorable to the defendant.



# The HPD for the Monte Carlo effect in STRmix™

---

## ACTIONS:

1. Provided verbal and written notification to DFS-FBU staff and DFS/FSL Directors. **COMPLETED**
2. Edited FBU SOPs and associated documents. **IN PROGRESS**
3. Provided written notification to DFS/FSL Directors, DFS Customers and DFS Scientific Advisory Board **IN PROGRESS**

Re-examinations and/or amended reports are not required as this issue does not affect the previously reported LR.



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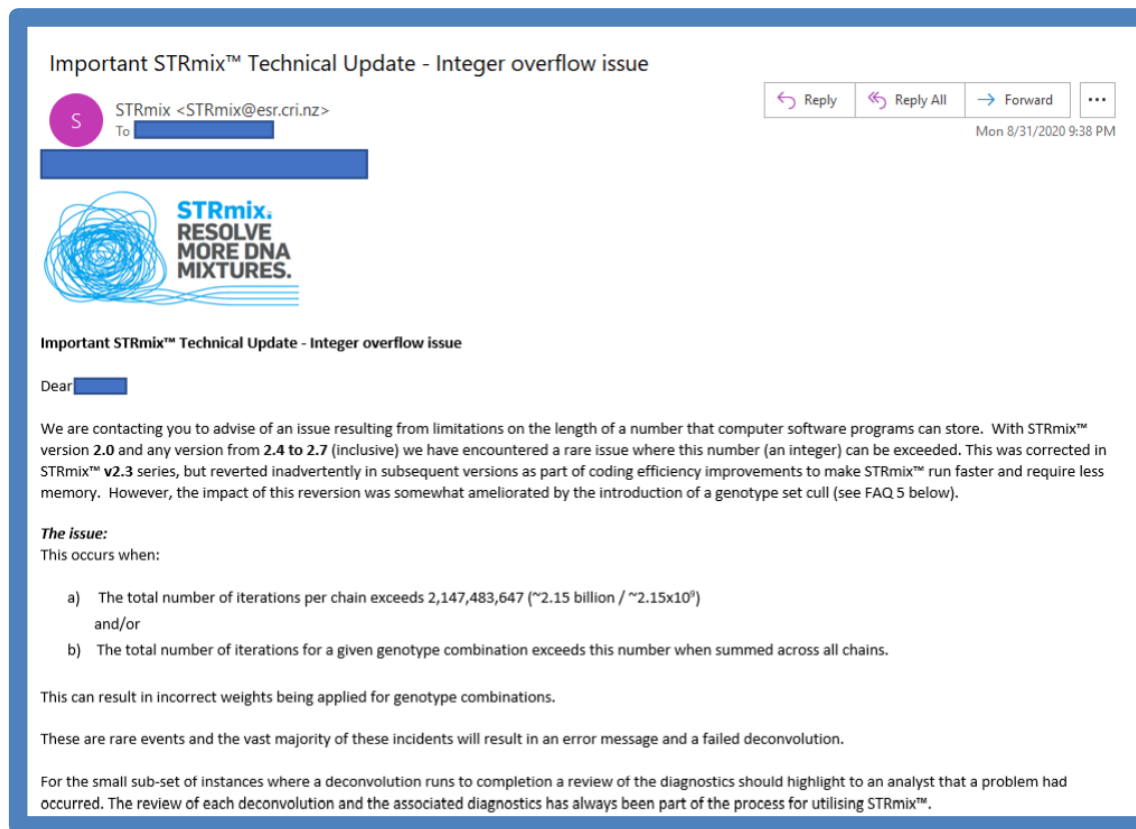
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# FBU20-019 Recent STRmix™ Technical Notifications

## Important STRmix Technical Update – **Integer Overflow** Issue

○ Received 08/31/2020



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# Important STRmix Technical Update: Integer Overflow Issue

- STRmix uses a common method called Markov Chain Monte Carlo (MCMC) to perform deconvolution. Each proposed genotype/mass parameters set is called an iteration. The iteration is then accepted or rejected based on how well it “fits” the observed data.
- Based on validation, a typical profile is appropriately deconvoluted after it has reached 500,000 accepted (good fit) iterations.
- The acceptance rate is listed on the STRmix summary report and can indicate the complexity of the profile.

SUMMARY OF CONTRIBUTORS

Contributor	1	2
DNA Amounts	2568	287
Mixture Proportions	90%	10%
Degradation starting at 80.0bp (rfu/bp)	2.718	0.399

RUN INFORMATION

Total iterations (Acceptance Rate)	1845978.0 (1 in 4.61)	Gelman-Rubin convergence diagnostic	1.01
Inter replicate efficiency	PCR 1 - 100.00%	Allele variance (mode=12.349)	8.00
Effective sample size	8511.82	Stutter variance (mode=10.436)	10.00
Average (log) likelihood	52.27	Seed value	730299
Mx prior mean	n/a	Mx prior variance	n/a

SUMMARY OF CONTRIBUTORS

Contributor	1	2	3	4	5
DNA Amounts	912	675	531	443	362
Mixture Proportions	31%	23%	18%	15%	12%
Degradation starting at 89.0bp (rfu/bp)	1.924	1.217	1.021	0.821	0.465

RUN INFORMATION

Total iterations (Acceptance Rate)	1.6680651E7 (1 in 41.70)	Gelman-Rubin convergence diagnostic	1.35
Inter replicate efficiency	PCR 1 - 100.00%	Allele variance (mode=12.349)	11.80
Effective sample size	36726.40	Stutter variance (mode=10.436)	14.50
Average (log) likelihood	54.37	Seed value	790608
Mx prior mean	n/a	Mx prior variance	n/a



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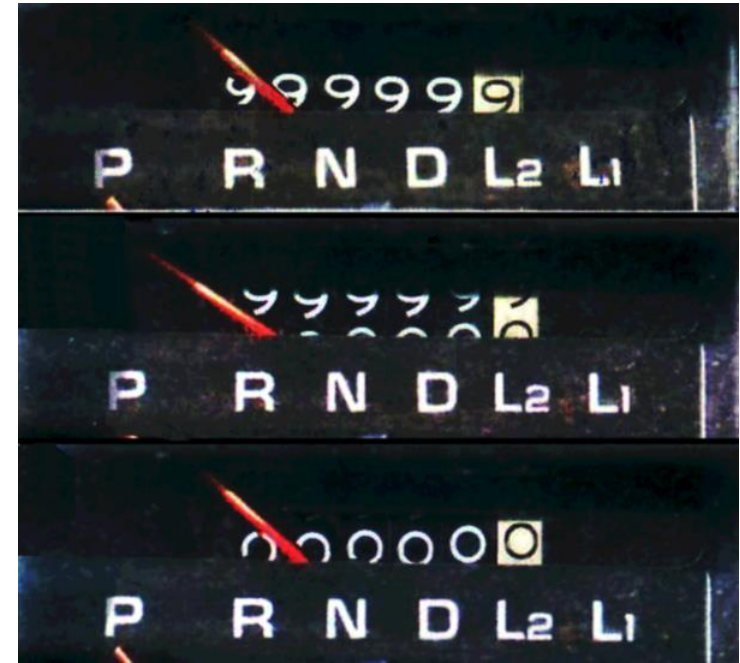
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# Important STRmix Technical Update: Integer Overflow Issue

**ISSUE:** Certain versions of the STRmix software are unable to store numbers beyond a certain length (>2.15 billion) when processing a profile.

- Typically the software will produce an error message or failed run when the number of iterations is greater than 2.15 billion. However, during additional evaluations, the STRmix developers identified a small number of runs which completed despite the issue. Incorrect values were assigned to a portion of the software's interpretation in these runs.



# Important STRmix Technical Update: Integer Overflow Issue

## IMPACT:

- Rare in data analyzed with Version 2.4.06 (GlobalFiler™)
  - STRmix determined the rate of occurrence to be extremely low. All instances had already been identified as problematic based on unreasonable diagnostics and/or analyst review of the results.
  - All diagnostic values are already checked by DFS-FBU analysts AND technical reviewers.
  - The issue affects complex mixtures with low level minor contributors. FBU case approach includes a qualitative review prior to and following STRmix to determine whether all or some contributors of a mixture are or are not suitable for comparison.
  - If a statistic is calculated for a true contributor from an affected run, it would result in a lower LR than if it was calculated from an unaffected run.
- No effect to data analyzed with Version 2.3.06 (Identifiler™ Plus)



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# Important STRmix Technical Update: Integer Overflow Issue

## **ACTIONS:**

1. Provided verbal and written notification to DFS-FBU staff and DFS/FSL Directors. **COMPLETED**
2. Utilized manufacturer provided tool to scan previously reported STRmix casework and validation runs. No runs were identified out of more than 5,000 files. **COMPLETED**
3. Edited FBU SOPs and associated documents. **IN PROGRESS**
4. Provided written notification to DFS Customers and DFS Scientific Advisory Board. **IN PROGRESS**

Re-examinations and/or amended reports are not required as this issue did not affect any previously reported STRmix results.



# FBU SOP Edits

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FBU Standard Operating Procedures (SOPs) and other documentation:

- Interpretation SOPs (Identifiler Plus and GlobalFiler)
- STRmix SOPs (Identifiler Plus and GlobalFiler)
- Report Wording Guidelines
- Report Template
- Technical Review Form



Edits include:

- HPD statements modified from “99% one-sided” to “lower bound.”
- Additional notes were added for analysts and reviewers to check the total number of iterations and locus genotype weightings when evaluating the STRmix Summary Report.

Status of edits: Awaiting approval in Qualtrax

# AGENDA

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- ✓ Roll Call – Review of Minutes from Previous Meeting, Approval of Minutes
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# QUALITY UPDATE



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# CLIA and DSAT QA

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- Public Health Laboratory Division
  - CLIA (Federal) – Valid until 11/9/2020
    - No word on when audit will occur
    - Many laboratories are receiving extensions on certificates
  - CDC Division of Select Agents and Toxin
    - Recertification inspection closed on 10/15/19
    - Recertified through 12/11/2022



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# DFS ANNUAL INTERNAL AUDIT

## June 1-12, 2020

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### DFS Annual Internal Audit

- From Digital Evidence Unit (DEU), Firearms Examination Unit (FEU), Forensic Biology Unit (FBU), Forensic Chemistry Unit (FCU), and Latent Fingerprint Unit (LFU)
- ISO 17025:2017 & ANAB AR3125:2019
- DFS Department Operation Manuals (DOM), Laboratory Operations Manuals (LOM), Standard Operating Procedures (SOP), Chemical Hygiene and Safety Program, and General Laboratory Practices
- Total of 21 QCARs and 19 QPARs issued

**All QCARs will be shared with SAB when completed.**



# DFS ANNUAL INTERNAL AUDIT

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## DEU QCARs

ID	Division	Unit	Source	Issue	Current Step
12911	DEPUTY DIRECTORATE	DEU	Internal Audit	Testimony evaluations were not completed for CY 2019.	Part C & Closeout Memo
12996	DEPUTY DIRECTORATE	DEU	Internal Audit	One member had not taken the required 2019 proficiency test.	Part C & Closeout Memo

# DFS ANNUAL INTERNAL AUDIT

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## FCU QCARs

ID	Dvision	Unit	Source	Issue	Current Step
12995	DEPARTMENT OF FORENSIC SCIENCES	SAFETY	Internal Audit	First Aid Kit in FCU had contents that had expired.	Part B: Cause Analysis & Plan Development
13005	PUBLIC HEALTH LABORATORY (PHL)	FCU	Internal Audit	In FCU, expired chemicals were contained in the same cabinet as in-use chemical.	Part D & VE Memo: CA Effectiveness Review
13009	PUBLIC HEALTH LABORATORY (PHL)	FCU	Internal Audit	Missing analysis start and end dates, and evidence seal issue.	CAR Completed

# DFS ANNUAL INTERNAL AUDIT

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## LFU QCARs

ID	Division	Unit	Source	Issue	Current Step
12855	FORENSIC SCIENCE LABORATORY (FSL)	LFU	Internal Audit	In Evidence Processing, DNA sample collection location and conditions not documented in the case notes at the time of collection, but included in the laboratory report.	CAR Completed
12877	FORENSIC SCIENCE LABORATORY (FSL)	LFU	Internal Audit	Upload of final Admin and Tech scans of the case file to the LIMS case images tab, rather than in the LFU Case File sub-folder, and supplemental files were not placed in a supplemental sub-folder.	CAR Completed
12908	FORENSIC SCIENCE LABORATORY (FSL)	LFU	Internal Audit	Testimony evaluations were not completed for CY 2019.	CAR Completed

# DFS ANNUAL INTERNAL AUDIT

## FEU QCARs

ID	Division	Unit	Source	Issue	Current Step
13095	FORENSIC SCIENCE LABORATORY (FSL)	FEU	Internal Audit	Conclusions and note issues.	CAR Completed
13098	FORENSIC SCIENCE LABORATORY (FSL)	FEU	Internal Audit	Cases missing items such as conclusions, photographs, etc.	CAR Completed
13003	DEPARTMENT OF FORENSIC SCIENCES	SAFETY	Internal Audit	First Aid Kit in FEU had contents that had expired.	Part B: Cause Analysis & Plan Development
13031	FORENSIC SCIENCE LABORATORY (FSL)	FEU	Internal Audit	Water recovery tank in need of cleaning and maintenance.	Part C & Closeout Memo: Corrective Action Implementation
13025	FORENSIC SCIENCE LABORATORY (FSL)	FEU	Internal Audit	No information regarding test fired item in the jacket, nor in letter of results.	Part D & VE Memo: CA Effectiveness Review
12804	FORENSIC SCIENCE LABORATORY (FSL)	FEU	Internal Audit	Typographical notation errors in technical notes.	Part D & VE Memo: CA Effectiveness Review
13007	FORENSIC SCIENCE LABORATORY (FSL)	FEU	Internal Audit	Chemical present and opened without an MSDS and not listed in LIMS	Part D & VE Memo: CA Effectiveness Review

# DFS ANNUAL INTERNAL AUDIT

## FEU QCARs

ID	Division	Unit	Source	Issue	Current Step
13018	FORENSIC SCIENCE LABORATORY (FSL)	FEU	Internal Audit	Testimony evaluations were not completed for CY 2019.	Part D & VE Memo: CA Effectiveness Review
13027	FORENSIC SCIENCE LABORATORY (FSL)	FEU	Internal Audit	Firearm listed as in normal operating condition in report and in notes listed as malfunctioning decocking lever, which makes it fireable.	Part D & VE Memo: CA Effectiveness Review
13029	FORENSIC SCIENCE LABORATORY (FSL)	FEU	Internal Audit	Case was verified, technically and administratively reviewed by the same person.	Part D & VE Memo: CA Effectiveness Review
13033	FORENSIC SCIENCE LABORATORY (FSL)	FEU	Internal Audit	FEU SOP had the wrong Chemical formula written out twice.	Part D & VE Memo: CA Effectiveness Review
13035	FORENSIC SCIENCE LABORATORY (FSL)	FEU	Internal Audit	FEU Training Manual modules not signed off.	Part D & VE Memo: CA Effectiveness Review
13100	FORENSIC SCIENCE LABORATORY (FSL)	FEU	Internal Audit	Innacurate date of Item entered into NIBIN.	Part D & VE Memo: CA Effectiveness Review



# INTERIM ASSESSMENT

- An interim assessment was requested by DFS in response to concerns raised by our prosecutorial stakeholders.
- Scope: Conduct an assessment of the FEU in accordance with accreditation requirements, and to report the findings of the assessment in a fair and impartial manner.
- Assessment Type: Interim Activity
- On-Site Assessment Dates: **July 6-10, 2020** (Lead Assessor) and **July 6-9, 2020** (Technical Assessor)
- Accreditation Requirements: ISO/IEC 17025: 2017 Testing/Calibration Laboratories and ANAB Forensic Testing & Calibration AR 3125:2019 Sections 6, 7, and 8.7



## **Lead Assessor: Kerri T. Heward**

- 2015–present: Laboratory Director of the Washoe County Sheriff 's Office Forensic Science Division (FSD);
- Trained as a firearms and toolmark examiner in 1997 and actively worked cases until about 7 years ago
- Lead assessor for ANAB since 2015 and a technical assessor for over 15 years.

## **Technical Assessor: John Yoshida**

California Department of Justice, Criminalistics Laboratories

- Contract Lead Assessor for ANAB: March 2015 to Present
- Laboratory Director: June 2000 to June 2011
- Criminalist: November 1982 to January 1990
- Firearms and Toolmark Identification Criteria, Department of Justice



# ITEMS PROVIDED PRIOR TO INTERIM ASSESSMENT

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- Quality Manuals, procedures and casework for firearms back to 2016.
- All documentation surrounding the 2017 NIBIN Verification Error – and all Quality Corrective Action Reports associated with it.
- Organizational charts that show the structure from 2016 with each change until current day.
- Proficiency test plan and results summary for the past four years (all sections) and plan for the next four years (all sections).
- Training records for all firearms staff.
- Records that demonstrate verification of the competence of Firearms contract staff.
- Data for the cases where a complaint or a QCAR exists (Firearms – past 4 years).
- Authorization paperwork for all firearms staff.
- Internal audits and management review documentation.
- Review QCAR summary and request additional documentation for review that samples all sections and time period in the past 4 years.

# INTERIM ASSESSMENT ON SITE ACTIVITIES

## July 6-10

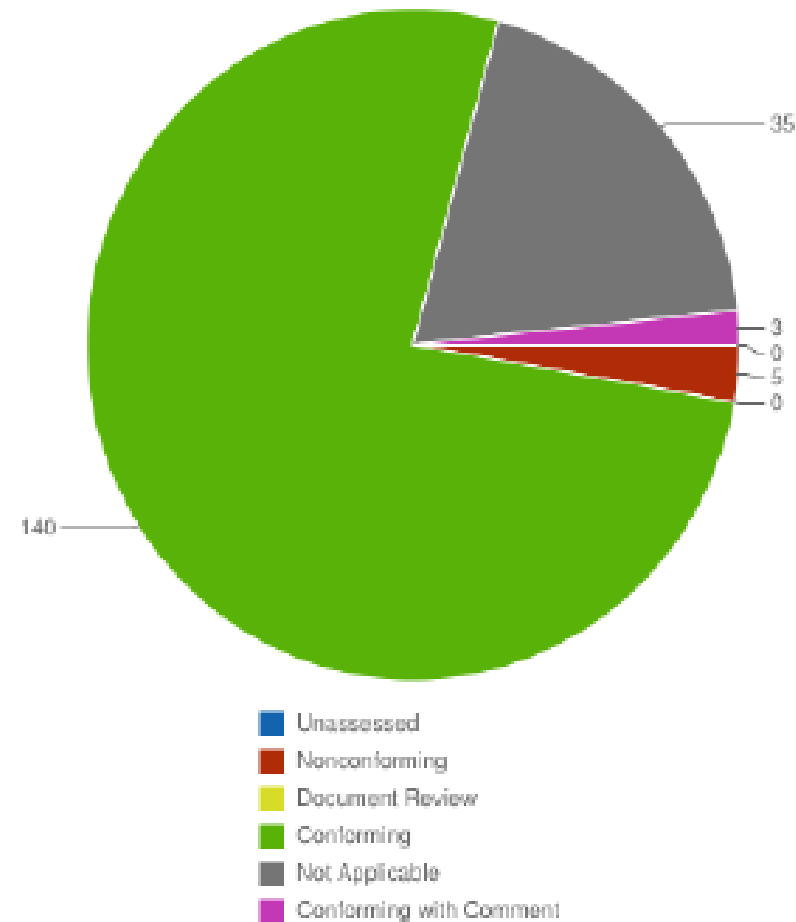
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- **Opening Meeting:** Overview of available documents and records and familiarization with information management system
- **Personnel interactions and Witnessing of Work:**
  - Interviewed 13 FEU staff members
  - Attended unit meeting and huddles
  - Watched all personnel involved with testing/calibration/inspection tasks
  - Identified test, calibration and/or inspection records.
  - Additional records were requested as needed
- **Review of documents:**
  - 105 cases jackets
  - Training, competency testing and authorizations
  - Monitoring Record (e.g., proficiency testing, interlaboratory comparison)
  - Internal Audit & Management Review
  - Non-conforming work, correction actions and preventive actions
- **Review of records:**
  - Quality control data
  - Test/Calibration/Inspection method validation data
  - Equipment calibrations to establish metrological traceability
  - Equipment maintenance
  - Reagent preparation
- **Closing Meeting:** Presentation of the interim report

# QUALITY: FEU INTERIM ASSESSMENT RESULTS

---

- 5 Nonconforming:
  - Educational Requirement
  - Training and competency records
  - Evidence Transferring
  - QCAR Process
- 3 Conforming with Comment
- Interim Report issued with summary of issues
- DFS responded within 30 days



# ANAB NONCONFORMITY #1

Standard	6.2.2.1
Quote:	Personnel who authorize results, opinions and/or interpretations in the following disciplines shall meet the minimum educational s requirements established in the country in which the laboratory operates

**Issue:** FEU contractors did not possess a 4 year degree as required by the DFS PD. DFS PD for FEU examiners was both the 301 and 401 series. The 301 series does not require a 4 year degree. The combined PD for 301/401 did not contain appropriate language that reflected experience can replace the 4 year degree.

**DFS Actions to address non-conformity:**

1. The combined PD 301/401 for Forensic Scientist (Firearms & Tool mark Analyst) was revised and processed by DCHR.
2. DFS incorporated verbiage into the new FEU Training manual to address Contract Examiners and New Examiner hires with previous experience ( **DFS Training Manual sect. 1.4 and FEU Training Manual sect. 20.0**) Also to address AR3125: 6.2.2.2 Note 1 (*Past work experience and training may be substituted for portions of the training program to the extent that it has been demonstrated to be relevant and sufficient*)
3. Contract Examiners will be treated as Employees to comply with AR3125: 6.2.3.1
4. All current contractors were evaluated to ensure they meet the experience criteria as proposed in new PD. One contractor does not have a 4 year degree. All FEU examiners do possess a 4 year degree. The experience equivalency has been documented for the one contractor.

**ANAB Acceptance:** ANAB accepted this resolution of this non-conformity



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# ANAB NONCONFORMITY #2

Standard	6.2.5 (a) (c)
Quote:	The laboratory shall have procedure(s) and retain records for: (a) determining the competence requirements (c) training of personnel

**Issue:** The training records of contractors in the FEU were not maintained by DFS

**DFS Actions to address non-conformity:**

1. Section 1.4 was created in Training Manual to address the evaluation of previously experienced Contract and New Examiner hires. This policy will require a written technical assessment of their training and competency upon onboarding and continued competency evaluation during their tenure at DFS. This information will reside in Qualtrax under the Deputy Director Folder in the training folder.
2. Incorporated Module 20.0 into FEU Training Manual in order to evaluate experience of Previously Qualified Firearms Examiner/Contractor that are hired within the unit.
3. Incorporated Module 20.0 Checklist into FEU Training Manual to be used to document the evaluation of the experience of Previously Qualified Firearms Examiner/Contractor that are hired within the unit.
4. Discussed changes within Training Manual with unit managers during the next Training Meeting of August.
5. Evaluated and documented experience of Firearm Examiner as proposed in new PD.

**ANAB Acceptance:** ANAB accepted this resolution of this non-conformity

# ANAB NONCONFORMITY #3

Standard	7.4.1.1 (d)
Quote:	When an item is considered to be evidence, the procedure shall: (d) require chain-of-custody for: 1) all items received; and 2) items that are collected or created and preserved for future testing (e.g., ESDA lifts, test-fired ammunition, latent print lifts, photos, trace evidence, DNA extracts)

**Issue:** During the audit a FEU technician was observed transferring an item of evidence to an employee's desk instead of directly to an employee or a designated secure location.

**DFS Actions to address non-conformity:**

1. FEU12 Evidence Handling and Case Distribution: 7.1.2.1 and 7.1.2.2 changed to reflect that evidence being picked up from CEU will be remanded into the personal custody of the member picking up the evidence. Chain of custody will reflect the transfer of person-to-person, person-to-location, location-to-person.
2. Mandatory training given to all unit members about the changes FEU12 Evidence Handling and Case Distribution: 7.1.2.1 and 7.1.2.2.
3. Random monthly check DFS wide are being conducted by Quality Unit to ensure compliance in the new SOP

**ANAB Acceptance:** ANAB accepted this resolution of this non-conformity

# ANAB NONCONFORMITY #4

Standard	8.7.1
Quote:	<p>When a nonconformity occurs, the laboratory shall: React to the nonconformity and, as applicable Take action to control and correct it.</p> <p>Address the consequences</p> <p>Evaluate the need for action to eliminate the cause(s) of the nonconformity, in order that it does not recur or occur elsewhere, by:</p> <p>Reviewing and analyzing the nonconformity</p> <p>Determining the causes of the nonconformity.</p> <p>Determining if similar nonconformities exist or could potentially occur.</p>

**Issue:** The auditors' review of QCAR records from 2016 - 2019 indicated in many instances a more robust investigation of root cause was needed. The auditor observed that DFS had made recent changes in Quality Management staff and practice. More recent QCAR records demonstrate appropriate root cause analysis and corrective actions.

**DFS Actions to address non-conformity:**

1. DFS has made recent changes in Quality Management staff and Quality Management practices.
2. Internal Audit Team members attended the ANAB ISO 17025 Internal Auditing Course April 20-23rd, 2020.
3. Managers and Quality Team attended Root Cause Analysis course May 19th 2020.
4. Quality Team continue to assume review responsibility over root cause, action steps and approval of appropriate time frame for report completion. Require action steps meet minimum criteria of prevention, assurance, training and acknowledgement before they are approved for advance to the next part.
5. Quality provided action step training classes for responsible parties. Class includes the purpose and how to write action steps, and to look for risk and/or opportunity for improvement which will be a requirement that shall appear in the corrective action process.
6. Evaluated past nonconformities, conducted a risk assessment, evaluated whether actions steps were effective or not and mitigated any potential risk.

**ANAB Acceptance:** ANAB accepted this resolution of this non-conformity

# ANAB NONCONFORMITY #5

Standard	8.7.2
Quote:	Corrective actions shall be appropriate to the effects of the nonconformities encountered.

**Issue:** (This is the same as before but different standard.) The auditors' review of QCAR records from 2016 - 2019 indicated in many instances a more robust investigation of root cause was needed. The auditor observed that DFS had made recent changes in Quality Management staff and practice. More recent QCAR records demonstrate appropriate root cause analysis and corrective actions.

**DFS Actions to address non-conformity:**

1. DFS has made recent changes in Quality Management staff and Quality Management practices.
2. Internal Audit Team members attended the ANAB ISO 17025 Internal Auditing Course April 20-23rd, 2020.
3. Managers and Quality Team attended Root Cause Analysis course May 19th 2020.
4. Quality Team continue to assume review responsibility over root cause, action steps and approval of appropriate time frame for report completion. Require action steps meet minimum criteria of prevention, assurance, training and acknowledgement before they are approved for advance to the next part.
5. Quality provided action step training classes for responsible parties. Class includes the purpose and how to write action steps, and to look for risk and/or opportunity for improvement which will be a requirement that shall appear in the corrective action process.
6. Evaluated past nonconformities, conducted a risk assessment, evaluated whether actions steps were effective or not and mitigated any potential risk.

**ANAB Acceptance:** ANAB accepted this resolution of this non-conformity

# OFF-SITE SURVEILLANCE ASSESSMENT TEAM (ANAB)

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August 10-12, 2020

- Lead Assessor and Firearms – Kerri Heward – Washoe County Sheriffs Office
- Biology + QAS – Nicole Hahn – Texas Department of Public Safety
- Friction Ridge – Stacy Enemark – Johnson County Sheriffs Department
- Digital – Brian Koge – Hawaii Police Department (retired)
- Seized Drugs – Kamala Hinnergardt – Kansas Bureau of Investigation

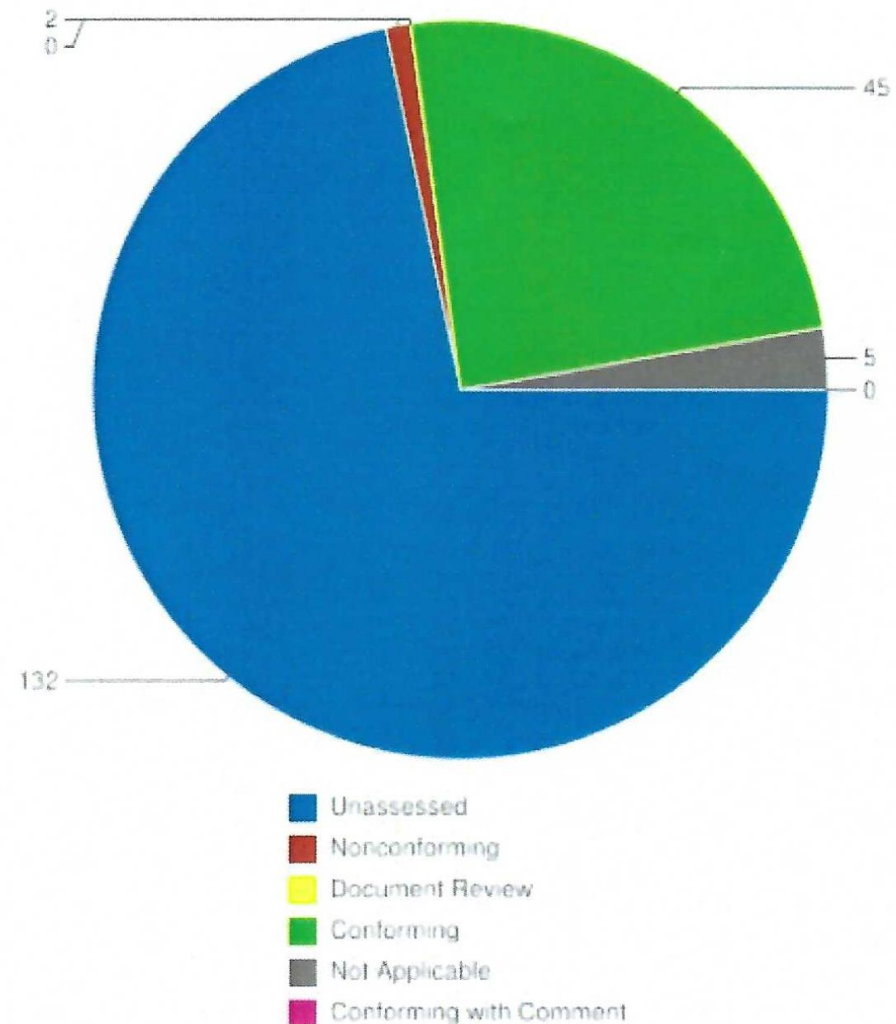




# OFF-SITE ASSESSMENT RESULTS

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- 2 Nonconforming:
  - Reporting of Results
  - Evidence Transferring
- 0 Conforming with Comments
- Interim Report issued with summary of issues
- DFS responded within 30 days



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# ANAB NONCONFORMITY #1

Standard	7.4.1.1 (d)
Quote:	<p>For all test items received except known origin individual characteristic database samples, does the procedure: a) address requirements for storage, packaging, and sealing of items to: 1) protect the integrity of all items? and 2) require items to be re-sealed as soon as practicable? b) address measures to be taken to secure unattended items? c) require chain-of-custody for: 1) all items received? And 2) items that are collected or created and preserved for future testing (e.g., ESDA lifts, test-fired ammunition, latent print lifts, trace evidence, DNA extracts)? d) require chain-of-custody to securely and accurately identify: 1) the individual(s) or location(s) receiving or transferring the item(s)? and 2) the item(s) being transferred? and 3) the chronological order of all transfers, minimally including the date? e) require communication to the customer regarding the disposition of all items received; and f) address communication to the customer regarding items collected or created and preserved for future testing? ANAB NOTE 1 c) An item being tracked could contain multiple components and be tracked as one item. ANAB NOTE 2 d).1) Documentation of internal transfers does not need to include use of personal storage locations.</p>

**Issue:** Auditor observed person to person transfer of evidence from CEU and name was not recorded. This should have been a person to location to person transfer.

**DFS Actions to address non-conformity:**

1. FEU12 Evidence Handling and Case Distribution: 7.1.2.1 and 7.1.2.2 changed to reflect that evidence will be retrieved from location in CEU(location to person transfer).
2. Chain of custody for all ISO 17025:2017 units reflect the transfer of person-to-person, person-to-location, location-to-person.
3. Mandatory training given to all units obtaining evidence from CEU to clarify these changes.
4. Random monthly check DFS wide are being conducted by Quality Unit to ensure compliance in the new SOP.

5. **ANAB Acceptance:** ANAB accepted this resolution of this non-conformity



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# ANAB NONCONFORMITY #2

Standard	7.8.1.2.2 (b)
Quote:	Is there a procedure for reporting of results that: (b) requires qualifying the significance of associations in the report whether by a statistic or a qualitative statement

**Issue:** The new 2017 standards require reports have statements within them that explain the meaning of an “identification”, “inconclusive” or “non-identification” interpretations. LFU had that information within their notes, not within the report. Other relevant DFS units did have those descriptions.

**DFS Actions to address non-conformity:**

1. LFU has added the definitions for Identification and Exclusion to the remarks section of the laboratory report for inclusion when appropriate.
2. Only approved Language will be added to the report template with an assessment for conformity to follow within 30 days.
3. LFU staff instructed on the new language for inclusion in their reports.
4. Technical and administrative reviewers monitoring for compliance.

**ANAB Acceptance:** ANAB accepted this resolution of this non-conformity

# FBI QUALITY ASSURANCE STANDARDS AUDIT FOR DNA TESTING LABORATORIES

## THE FBI QUALITY ASSURANCE STANDARDS

### AUDIT FOR

### FORENSIC DNA TESTING LABORATORIES

IN ACCORDANCE WITH THE QUALITY ASSURANCE STANDARDS

FOR FORENSIC DNA TESTING LABORATORIES

EFFECTIVE JULY 1, 2020

An Audit of: DC Department of Forensic Sciences

Address of Laboratory: 401 E Street SW; Washington, District of Columbia 20024

Dates of Audit: August 10, 2020 – August 12, 2020 (virtual external QAS audit approved by  
NDIS Custodian August 6, 2020)

Type of Audit: External ☒ Internal ☐

Was the audit done in conjunction with an accreditation assessment? Yes ☒ or No ☐

Revision Date of Guidance Document referenced 7/1/2020

Are there findings associated with this audit? Yes ☐ or No ☒

Audit Team: Amanda Nicole Hahn

Click here to enter name of auditor.	Click here to enter name of auditor.
Click here to enter name of auditor.	Click here to enter name of auditor.
Click here to enter name of auditor.	Click here to enter name of auditor.
Click here to enter name of auditor.	Click here to enter name of auditor.
Click here to enter name of auditor.	Click here to enter name of auditor.

#### For Laboratory:

Date Final Audit Report Received: Click here to enter a date

Date Audit Documentation Sent to NDIS: Click here to enter a date or N/A ☐

- FBI QAS Audit: August 10 thru 12, 2020
- No nonconformities
- The fifth straight year that the Forensic Biology Unit has had no nonconformities



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# QUALITY – ISO17025:2017

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October 1, 2020

Wayne Arendse  
DC Department of Forensic Sciences  
401 E Street SW  
Washington, DC 20024

Dear Director Arendse,

Congratulations, ANAB has approved the continuation of your organization's accreditation based upon the results of your recent activities (Surveillance Assessment and Interim Assessment). Continuation of accreditation is a formal acknowledgement that your organization continues to operate in conformance with accreditation requirements. The reports for both activities are included with this letter.

The provided ANAB accreditation symbol may be used to convey your accredited status. An accreditation symbol must not be used in any way which implies accreditation in any area outside of the scope of accreditation. If appropriate, the accreditation symbol may be used on your organization's website, reports, letterhead, business cards, and other official documents. Please refer to [PR 1018 Policy on Use of ANAB Accreditation Symbols and Claims of Accreditation Status](#) for all required information. This policy also provides information on your ability to use a combined mark that contains the ANAB accreditation symbol and the International Laboratory Accreditation Cooperation (ILAC) mark.

The next assessment activity is scheduled to be a Surveillance Document Review in August 2021.

Thank you for your ongoing commitment to quality and the accreditation process.

Sincerely,

Melissa Kennedy  
Director of Accreditation  
ANSI National Accreditation Board

cc: Lyndon Watkins, Quality Manager  
ANAB Office

- **All** Nonconforming and Conforming with comment issues were addressed.
  - Continuation of Accreditation was granted to DFS on October 1, 2020
- “Congratulations, ANAB has approved the continuation of our organization's accreditation based upon the results of your recent activities. Continuation of accreditation is a formal acknowledgement that your organization continues to operate in conformance with accreditation requirements.”



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# CLOSURE OF FIREARMS COMPLAINT

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- On June 16, 2020, AUSA Michael Ambrosino filed a complaint with ANAB against DFS:
  - Allegation 1: *Multiple Examiners made an Erroneous Identification of Two Cartridges*
    - ANAB agreed the initial 2016 DFS examination of the two cartridges was erroneous
    - “The fourth [2020] DFS examiner’s notes support the inconclusive results.”
  - Allegation 2: *The Laboratory Compared Incorrect Evidence as Part of a 2017 NIBIN Verification*
    - “The allegation that the laboratory compared incorrect evidence is not valid; however, the laboratory records, including the reported results, did not reflect the comparison of the correct evidence.”
  - Allegation 3: *DFS Failed to Properly Investigate the Cause of these Issues*
    - “The allegation that DFS failed to properly investigate the cause is not valid.”
- ANAB’s complaint review included all reports provided by the prosecution’s *ad hoc* auditors
- ANAB **closed** the complaint on October 2, 2020



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# CERTIFICATE



## CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

**DC Department of Forensic Sciences**  
401 E Street SW, Washington, District of Columbia 20024 USA


Fulfills the requirements of

**ISO/IEC 17025:2017**  
**ANAB Forensic Testing & Calibration AR 3125:2019**  
**FBI Quality Assurance Standards for Forensic DNA Testing Laboratories:2011**

In the field of

**Forensic Testing**

This certificate is valid only when accompanied by a current scope of accreditation document.  
The current scope of accreditation can be verified at [www.anab.org](http://www.anab.org).

  
Pamela L. Sale, Vice President, Forensics

Expiry Date: 31 December 2022  
Certificate Number: FT-0213



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# SCOPE



**SCOPE OF ACCREDITATION TO:**  
ISO/IEC 17025:2017

ANAB Forensic Testing & Calibration AR 3125:2019  
FBI Quality Assurance Standards for Forensic DNA Testing Laboratories:2011

**DC Department of Forensic Sciences**  
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Washington, District of Columbia 20024 USA

## FORENSIC TESTING

Expiry Date: 31 December 2022

Certificate Number: FT-0213

Discipline: Biology		
Component/Parameter	Item	Key Equipment/Technology
DNA Profile Determination	Short Tandem Repeat (STR)	Capillary Electrophoresis
Individual Characteristic Database	DNA Profile	National DNA Index System (NDIS)
Physical Comparison	DNA Profile	Software Program
Qualitative Determination	Body Fluid	Chemical General Microscopy Visual

Discipline: Digital and Video/Imaging Technology and Analysis		
Component/Parameter	Item	Key Equipment/Technology
Acquisition/Extraction	Digital Data	Software Program
Content Analysis	Digital Data	Software Program Visual

Discipline: Firearms and Toolmarks		
Component/Parameter	Item	Key Equipment/Technology
Function Evaluation	Firearm	Measuring Equipment Visual
Individual Characteristic Database	Ammunition	National Integrated Ballistic Information Network (NIBIN)
Physical Comparison	Ammunition Tool/Toolmark	General Microscopy Visual
Product (Make/Model) Determination	Ammunition Firearm	General Microscopy Measuring Equipment Reference Collection
Serial Number Restoration	Physical Item	Chemical Magnetic Visual

Discipline: Friction Ridge		
Component/Parameter	Item	Key Equipment/Technology
Enhancement	Ridge Detail	Chemical Physical
Individual Characteristic Database	Ridge Detail	Next Generation Identification System (NGI)
Physical Comparison	Ridge Detail	Software Program Visual

Discipline: Seized Drugs		
Component/Parameter	Item	Key Equipment/Technology
Qualitative Determination	Botanical Liquid Solid	Chemical Gas Chromatography General Microscopy Infrared Spectroscopy Mass Spectrometry Visual
Quantitative Measurement	Solid	Gas Chromatography
Weight Measurement	Botanical Liquid Solid	Balance



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# AGENDA

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- ✓ Roll Call – Review of Minutes from Previous Meeting, Approval of Minutes
- ✓ Director's Update
- ✓ Public Health Laboratory (PHL) Update
- ✓ FSL Latent Fingerprints (LFU) – Paperless
- ✓ FSL Forensic Biology Unit (FBU) – STRmix issue
- ✓ DFS Quality Update
- FSL Firearms Examination Unit (FEU)
  - Document Review
  - Closeout
- Old Business/ New Business/ Future Meetings
- Closing and Adjournment



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# FEU Document Review - SAB

October 16, 2020



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# INTRODUCTION

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## Table of Contents:

- Documents Reviewed
- SAB Reviewers
- Recommendations Summary
- Comments & Responses per Document
- Questions

# INTRODUCTION

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## Documents Reviewed:

- FEU 01 Examination and Test Fire of Firearms and Weapons
- FEU 02 Examination of Ammunition and Ammunition Components
- FEU 03 NIBIN Operational Procedure
- FEU 06 Writing and Distribution of Reports
- FEU 12 Evidence Handling and Case Distribution
- FEU Technical Review Form
- FEU Definitions Sheet
- FEU Training Manual

# INTRODUCTION

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Scientific Advisory Board Reviewers:

- Dr. Lakeisha McClary
- Mr. Robert Thompson

# INTRODUCTION

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## Recommendations Summary:

FEU Response	Total Count
Change Accepted	68
Change Accepted with Modification	3
Change Not Accepted	3
Question(s) Answered (No Change)	13

# FEU 01: EXAMINATION OF FIREARMS

Reviewer	Comment	Applicable Section	FEU Response
McClary	A peculiar clause. Isn't it likely that this would be true most of the time? Recommendation: Cartridge samples will be etched or color coded prior to test firing.	7.3.4.1 If more than one case requires cartridges of similar family or caliber, samples will be etched or color coded prior to test firing.	If only one firearm is being shot into the water tank prior to bullet recovery, or if multiple firearms are being shot into the water tank, and they are all of different caliber, the color coding or etching would not be necessary.
Thompson	Should this information be more properly entered in FA Type 7.4.2.5? or Action Type?	7.4.3.1. Action field: record ghost guns by typing "Ghost gun" in this field	This information is only recorded in this field for stats; the fields available to us within LIMS are limited, and we do not want this to be confused with (or recorded instead of) firearm type or action type.
Thompson	Added comma after "possible", replaced "upon" with "only after", added "and authorization by"	7.5.2 If the firearm is not operable, restore the firearm to firing condition if <b>possible, only after</b> notification to, <b>and authorization by</b> , the contributor; record this in the Case Activities log in LIMS.	Some changes (punctuation) accepted; our partnership with stakeholders does not require authorization prior to this step. Stakeholders understand that firearms submitted will be made to test fire if possible.
Thompson	Is there discrimination between manufacturer mods and/or post production modifications? As written, all modifications would be included.	7.5.5 Any modifications that are observed will be documented on the firearms worksheet.	Any modifications observed should be recorded in notes, regardless of whether during or post-production.



# FEU 02: EXAMINATION OF AMMUNITION

Reviewer	Comment	Applicable Section	FEU Response
Thompson	<p>This sentence has the appearance of policy, and not based on research or current standards. If it is policy, state this in the criterion. However, I would advise against this policy/criterion since it is not necessary to be so proscriptive. Clear identifications may be concluded on a single toolmark surface in these situations.</p> <p>Also corrected misspelling of "characteristics"</p>	7.7.2.1 Identification- ...In the absence of other sources or a firearm, at least two regions of interest shall be used to demonstrate strong support for an identification.	<p>This is FEU policy.</p> <p>Misspelling correction accepted.</p>
Thompson	As comment above, this sentence appears as a proscriptive policy, not based on standards in situations as described. Again, if it is policy, state this in the criterion. However, there are instances where an elimination could be concluded using a single toolmark area.	7.7.2.2 Elimination- ...In the absence of other sources or a firearm; class characteristics; subclass characteristics, at least two regions of interest shall be used to demonstrate strong support for an elimination based on individual characteristics.	This is FEU policy.
Thompson	Added "Number of lands and grooves = $c / LWD + GWD$ "	9.1 Equations	<p>Change accepted with modification (because some of the variables are already represented in the equations):</p> $N = c / TX$

# FEU 06: REPORTING

Reviewer	Comment	Applicable Section	FEU Response
McClary	[Is the first "Report Date" the] prior/previous?	7.4.9.1 Items associated with [Item #], submitted under [DFS#, Initials], previously examined and reported on [Report Date] and items associated with [Item #], submitted under [DFS#, Initials] examined and reported on [Report Date ] are [caliber] cartridge cases, which were evaluated to complete this NIBIN verification report.	Both of these "Report Date" fields are referring to previous reports, since for this section (7.4.9.1), reports would have been issued in which comparisons were made. This section is for NIBIN reports where inter-comparisons are being completed.
McClary	[Is the second "Report Date" the] current report date?		

# FEU 12: EVIDENCE HANDLING & CASE DISTRIBUTION

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Reviewer	Comment	Applicable Section	FEU Response
Thompson	Should not death investigation be a Part I priority investigation (2.3.1)?	2.3.2. Part II offenses are only examined microscopically by stakeholder request. Part II offenses include...	According to MPD, Death Investigation is in the Part II offense category.

# FEU TECHNICAL REVIEW FORM

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Reviewer	Comment	Applicable Section	FEU Response
McClary	Why an A? Is there a B?	A. Is this information properly numbered and labeled?	It is listed as A in follow up to the question before it; there is no B.

# FEU DEFINITIONS SHEET

Reviewer	Comment	Applicable Section	FEU Response
Thompson	Rephrased "Ghost Gun: A firearm created by an individual, with no serial number, rendering it untraceable; includes 80%-kit firearms and 3D-printed firearms, and sometimes lacks make/model information as well as serial number. Does not apply to firearms manufactured prior to Gun Control Act of 1968."	Ghost Gun: A firearm <b>manufactured</b> , with no serial number, rendering it untraceable; includes 80%-kit firearms and 3D-printed firearms, and <b>occasionally</b> lacks make/model information. <b>This term</b> does not apply to <b>legal</b> firearms manufactured prior to Gun Control Act of 1968.	Change accepted, with the following revision: "A firearm, <b>manufactured and/or assembled...</b> "



# TRAINING MANUAL

Reviewer	Comment	Applicable Section	FEU Response
McClary	Are [they] pass/no pass? It would be helpful to include that here since an acceptable numerical score is [provided] for written examinations	1.2.3 Satisfactory understanding of the information learned in the modules may be demonstrated through written examinations (grade $\geq 80\%$ ), oral presentations, practical examinations and/or exercises.	Per the Training Unit Manager, practical exercises can be graded as a pass/fail, as long as the criteria for passing and failing is defined, per exercise. Oral and written exams will still be $\geq 80\%$ and rubrics will be provided.
McClary	How are these competency levels "demonstrated"? Would someone with previous training still have to do certain modules or how would they "test out" of a particular option? Are there certain modules that cannot be tested out, and in effect, required of all new trainees and examiners?	1.3.1 ...Demonstrated competency levels may allow a trainee to test out of particular modules within the Training Program.	If someone comes in with prior experience, and has completed a training program elsewhere, they will be subject to the "Previously Qualified Firearms Examiner /Contractor Module". If they have completed comparable training modules elsewhere, they will need to provide transcripts, certificates, and/or completed curricula. This documentation will be reviewed to complete the checklists at the end of the respective modules.

# TRAINING MANUAL

Reviewer	Comment	Applicable Section	FEU Response
McClary	Would [templates] of each report be helpful here?	16.4.1 ...Topics that will be covered include, but are not limited to, report formatting and report wording guidelines/language	Report templates are included and available for reference by trainees. The templates are kept on Qualtrax, but are not controlled documents.
McClary	For trainee or trainer?	Job Title : (in module sign-off checklist)	Job title is for the trainee (technician or examiner).
McClary	Is this true only in this module? Such a note was not included in Module 16.0 or other existing modules in the training manual. If the note only applies to Module 17.0, then I recommend adding the phrase "for Module 17.0" as "Study/discussion questions for Module 17.0 may be incorporated..."	17.3.5 ...Note : Study/discussion questions may be incorporated into mini oral quiz sessions or a written exam to evaluate the trainees understanding of topics covered in this module.	Yes; this note is included only in modules to which it applies. This will be clarified as suggested.
McClary	How is a trainee to know when this exercise/skill is applicable? Same question for 17.4.3	17.4.2. As applicable , trainee must conduct at least 5 supervised administrative reviews on case files...	Not everyone in the unit is authorized to complete the same types of cases. The "as applicable" is referring to only conducting reviews on the types of cases that are authorized.

# TRAINING MANUAL

Reviewer	Comment	Applicable Section	FEU Response
McClary	Are these correct formats for citations of this type? I would have a hard time finding them. There is no page range for 18.3.1 and no journal/book for 18.3.2	18.3.1. "The Firearms-Toolmark Examiner in Court" SA HODGE and SA BLACKBURN, AFTE Journal, October, 1979. 18.3.2. "Court Acceptance of Firearms Laboratory Examiners" SA SIBERT.	Citations were reviewed for this module and corrected or removed (including 18.3.1 and 18.3.2) as appropriate.
Thompson	Should not every practical test be passed at the ultimate performance level for the test taken. How would a grade be given above or below the 80% grade? Additionally, should every practical test be scored in this fashion (>80%)? This would be equivalent of having 1 in 5 comparisons in error.	1.7.1 Some modules will consist of a practical examination. Trainees must successfully complete the practical component with a passing score of 80% or higher. The scoring will be completed by the trainer or designate and could consist of a demonstration, completion of a relevant examination and/or worksheet and discussion.	Per the Training Unit Manager, practical exercises can be graded as a pass/fail, as long as the criteria for passing and failing is defined, per exercise. Oral and written exams will still be $\geq 80\%$ and rubrics will be provided.

# TRAINING MANUAL

Reviewer	Comment	Applicable Section	FEU Response
Thompson	Prior to the mock trials I would advise instruction in public speaking. This would introduce the trainee to skills necessary in trial, public presentations, and professional association presentations. The trainee's performance in mock trials and later testimony will be greatly enhanced by public speaking instruction.	1.9 Mock Trials	We will handle this internally through the Training Unit.
Thompson	Would not this be required?	1.11.1 and 1.11.2 A trainee/contractor may receive an authorization memo to perform certain duties within the FEU following the determination of competency on modules or documented prior work experience.	An authorization memo is required prior to performing any type of procedure handling evidence; this is meant to indicate that they may receive one prior to completion of training program.

# Questions?





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# FEU Closeout - SAB

October 16, 2020

# FEU SUPERVISOR – JONATHAN FRIED

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- DFS Since March, 2015
- FEU Supervisor - September, 2019
- MS Forensic Science – University of New Haven (2001)
- 19 Years Law Enforcement, Crime Scene, Forensics
  - Training and Development Specialist
  - Quality Assurance Experience and Internal Audits for DFS (Training and Quality Team 3+ Years)
- Qualified as an Expert Witness in State and Federal Court as a Forensic Scientist – Firearms and Toolmarks Examiner with the Las Vegas Metropolitan Police Department Prior to DFS.
- Successfully Completed Initial Competency and All Proficiency Tests Since Joining the FEU.
- Asked to Conduct a Document Review of a NIBIN Verification Case in January, 2020.



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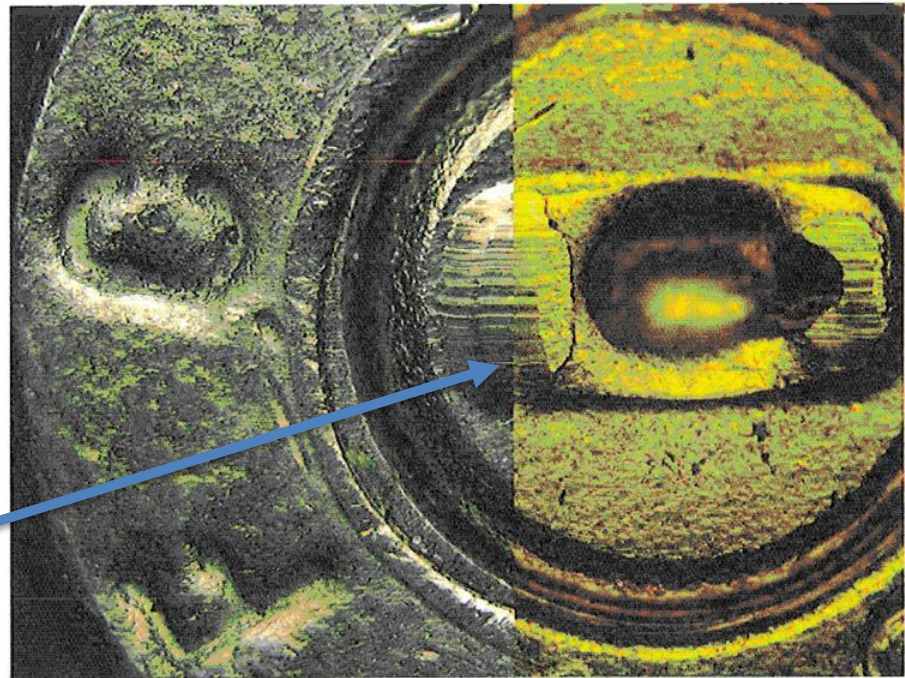
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# USAO COMPLAINT

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- FEU Contractor identified two fired cartridge cases from two homicide crime scenes as having been fired from the same firearm on report dated 8/8/2017.
- The USAO received a subsequent report from a private examiner concluding different firearms fired the same two cartridge cases.

- Photograph of an “identification” from the FEU Contractor’s case file.
- The conclusion was based on agreement in the firing pin aperture shear marks.



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# DFS INTERNAL REVIEW

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- Document review of the FEU Contractor case file, and response sent from Dr. Smith to the USAO.
  - Proposed that the photograph from the case file was compelling support of an “identification.”
  - As part of the document review, and based on that photograph, DFS requested the case and photographic documentation of the private examiner.
- The private examiner provided photographs to DFS.
  - Photograph of their elimination was of two different item #s than those reported by the FEU Contractor.
  - This prompted the FEU to recall the evidence and review the items.



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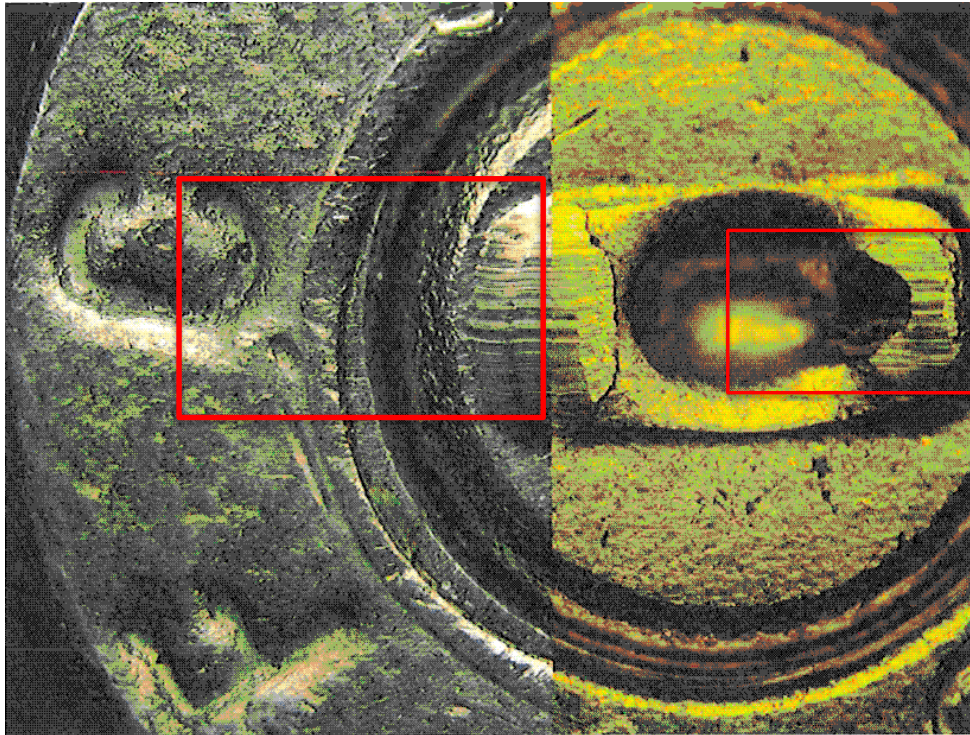
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# FEU INTERNAL REVIEW

Photo From FEU Contractor  
Case File – August, 2017



Note: *Red* Boxes Added For Emphasis

Photo Taken During FEU  
Review - April, 2020



**Decision made to re-examine the evidence, and issue a  
re-examination report.**



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# FEU RE-EXAMINATION

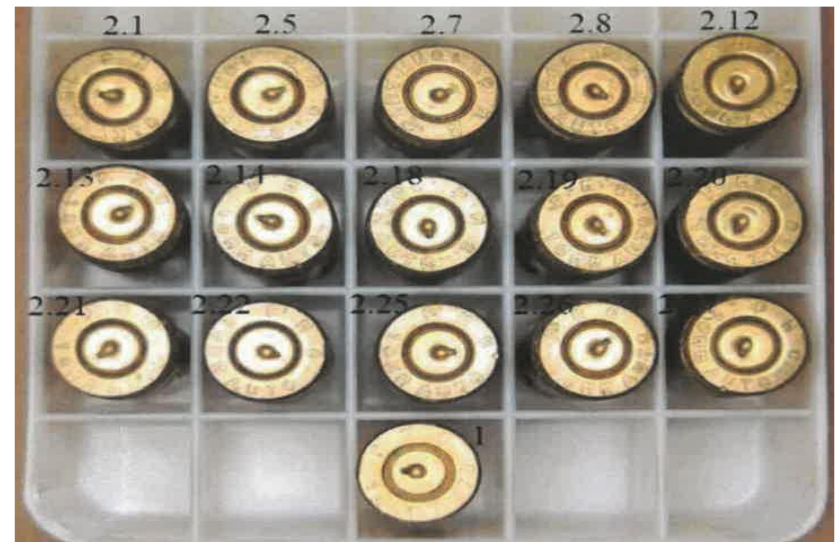
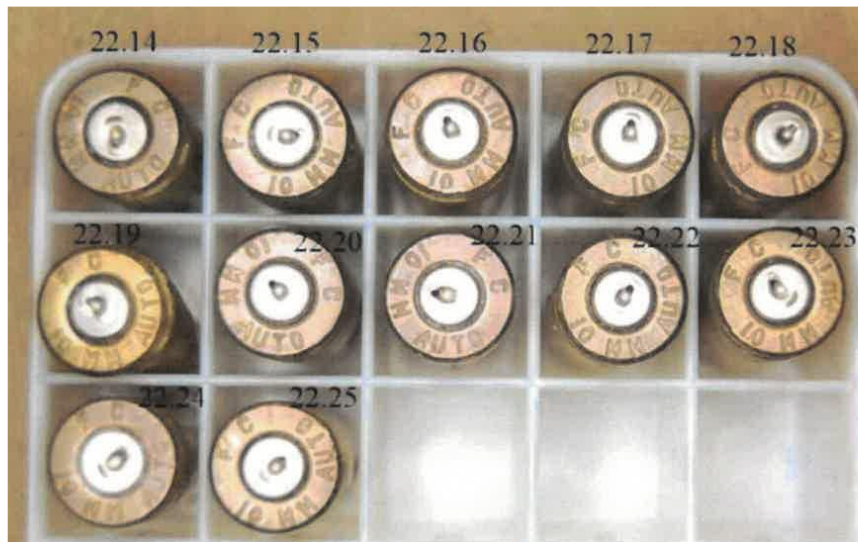
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## Purpose

- To determine if the two items reported on in a previous NIBIN Verification report fired in the same firearm?

## Examination

- All 10mm cartridge cases from both scenes were evaluated, and the two original items were re-examined.



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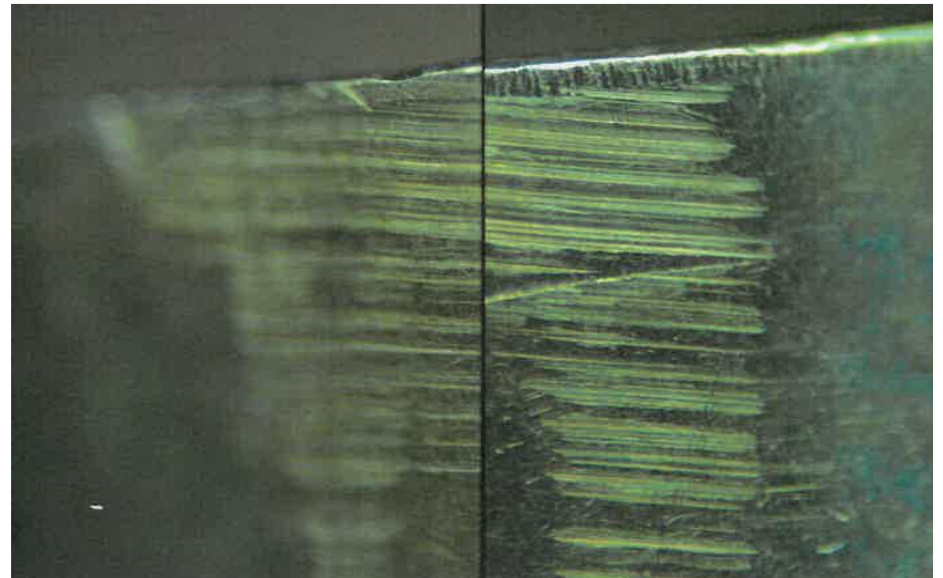
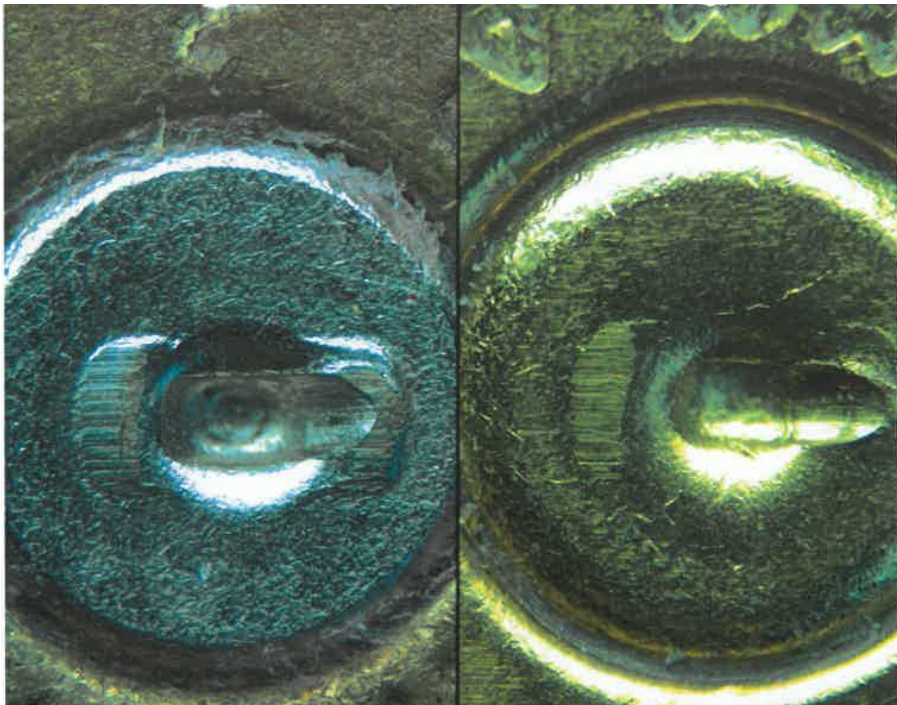
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# FEU RE-EXAMINATION

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## Observations

- Reproducibility of individual characteristics within each group.
- Metal composition consistent within each group but different between the groups.
- The original items exhibit some areas of agreement of individual marks and some areas of disagreement of individual marks.



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# FEU RE-EXAMINATION

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## Inconclusive

- An inconclusive is justified when in an examiner's opinion, there is agreement of all discernible class characteristics, but due to an absence, insufficient agreement and/or disagreement, or lack of reproducibility of individual characteristics, no other conclusion can be reached.

***The justifications for the possible conclusions reached in a firearms examination have been adopted from the “United States Department of Justice Uniform Language for Testimony and Reports for the Forensic Firearms/Toolmarks Discipline Pattern Examination” document.***

# LIMITATIONS

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- Different metal compositions can mark differently. To account for this FEU test fires are performed with both nickel and brass primers whenever possible.
- The two incidents occurred approximately one month apart, and the condition of the firearm(s) used between incidents can not be established.
- With no firearm, no additional test fires can be generated to account for the limitations above.
- Reports are written with the understanding that firearms identification is an empirical science that relies on objective observations and a subjective interpretation of microscopic and macroscopic marks of value.

# Questions?



# DFS - FEU CASE FILE REVIEW

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- A documentation error discovered in January 2020 triggered a review of NIBIN reports that were completed and verified by DFS Contractors.
- 20% of NIBIN reports that were completed by the examiner contractor, and 20% of NIBIN verifications by the verifying contractor from a specific time period (1/01/2017 until their departures from DFS) were randomly selected for review. This resulted in **172 case files**.
- This project began in July 2020 and is currently ongoing.
- To date there have been **215 Reviews** from **142/172 cases** completed.



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# DFS - FEU CASE FILE REVIEW

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- A **Case** is defined as a case file containing a report and supporting photographs and documentation.
- A **Review** is defined as comparing the photographs in the case file to the actual items of evidence. A case file often requires multiple reviews, since these cases are NIBIN verifications, and multiple leads may have been examined and reported on.
- Each **Review** involves recalling evidence packages, opening the items that were previously reported on, and documenting the evidence with notes, photographs, and cartridge case worksheets within the Mideo system. The worksheets are then uploaded to each case record in LIMS.





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# DFS - FEU Case File Review Worksheet

- Worksheets, like this one, are generated for each cartridge case review and uploaded to LIMS immediately.
- The photographs, which are annotated contemporaneously to include the case number, item number, caliber, examiner initials, date, and magnification, show the entire headstamp of the items reviewed.
- Weekly progress is reported to the FEU Manager and FSL Director.
- LIMS case activities will be updated for each case to indicate a review was done.

Cartridge Case Worksheet	
	Washington, D.C. Department of Forensic Sciences Firearms Examination Unit Examiner: Jonathan Fried
Laboratory Number: DFS-17-00765 Analysis Date: 10/05/2020 ID Mark/Location: See Notes	
Laboratory Evidence Item #: 17-00765 Item TF 3.1 vs 16-07522 Item 1.1	
	
Packaging: Received under proper seal in manila envelope (TF 3.1) & bag (1.1)	
Notes: 17-00765 Item TF 3.1 - previously etched. JAF etched on case body during this review. 16-07522 Item 1.1 - not previously etched. JAF, case #, item # etched on case body during this review.	
Cartridge Case Type: Rimless	Damage: None
Shotshell: No	Microscope: M8
Caliber/ Gauge: 40 S&W	Primer Composition: Nickel
Brand: Federal (TF 3.1) / Speer (1.1)	Case Composition: Brass (TF 3.1) / Nickel (1.1)
Firing Pin Impression: Elliptical	
Breech Face: Granular	

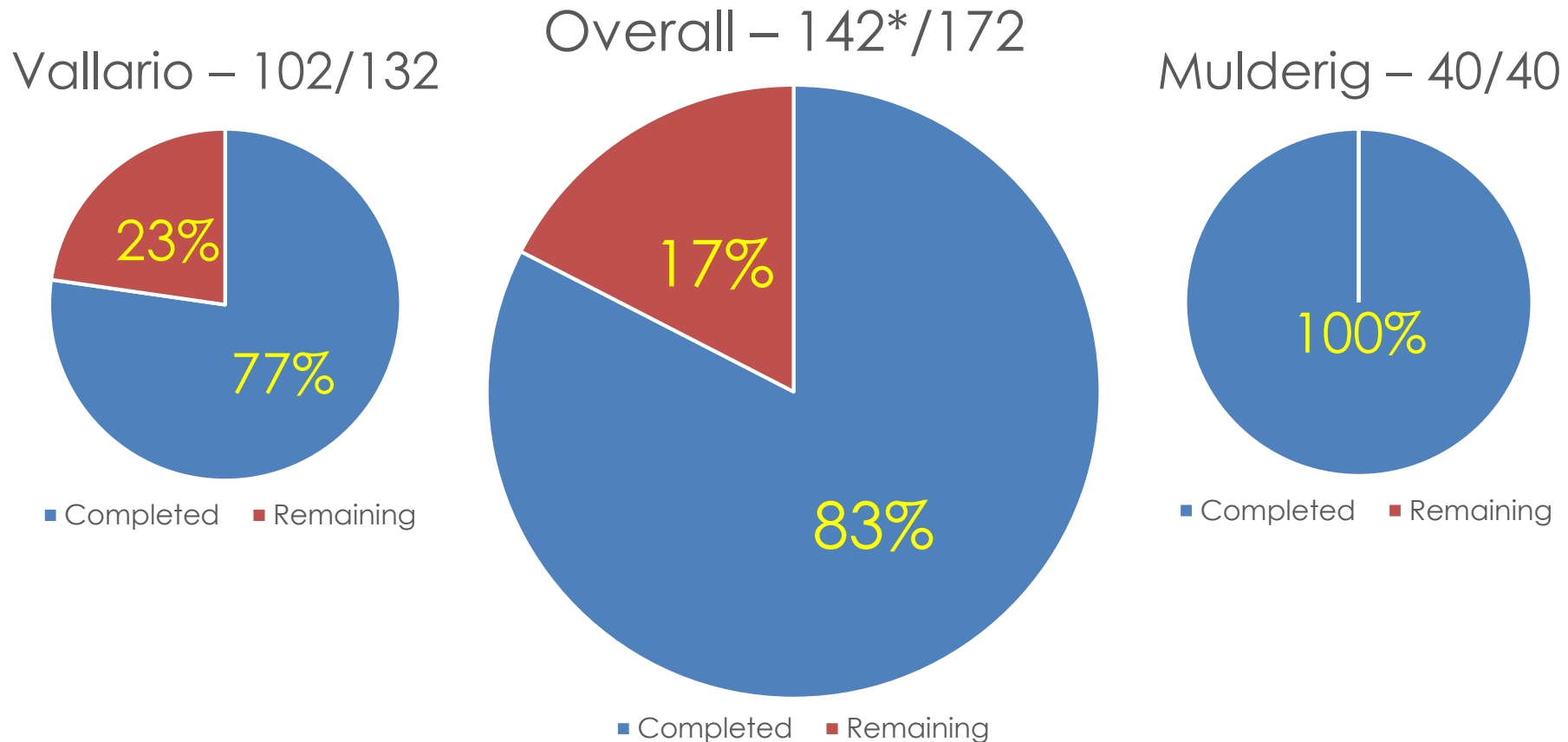


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# CFR PROGRESS TO DATE: 10/07/2020



July 17 - October 7	Comments
Approximately 300 hours Spent on Case File Document Review (evidence retrieval, worksheets, spreadsheets, PowerPoints, etc.)	*3 Cases Were on Both Lists After Random Selection. To Date: 215 Reviews from the 142 Cases.



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# CFR RESULTS TO DATE:10/07/2020

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- There have been 6 cases identified as having photo labeling discrepancies, in which the correct evidence was examined, however an incorrect caption was affixed to the photograph in the case file:
  - DFS-17-01078
  - DFS-16-01683
  - DFS-17-02134
  - DFS-17-06972
  - DFS-19-00937
  - DFS-18-00904
- In 5 of the cases, a different test fire from the same firearm was used for the comparison, thus the conclusion is not affected.
- In the 6<sup>th</sup> case, three cartridge cases were examined, and the photo labels were transposed. Again the conclusions are not affected.



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# Questions?

# DFS-FEU SUPPLEMENTAL REVIEW OF USAO AD-HOC AUDIT

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- An interim report, provided to the SAB by an ad-hoc audit team, identified 6 out of 59 cases of concern, after reviewing the reports and associated documents from DFS examiners and USAO contract examiners.
- USAO contract examiners appear to have reached conclusions identical to DFS on every item of evidence re-worked, in over 90% of re-worked cases.
- In those few cases where a discrepancy exists between conclusions on a portion of evidence examined, no discrepancies appear to be direct contradictions (*i.e.*, identification vs. exclusion), and instead appear to show a greater conservatism in calling identifications within the independent, accredited laboratory setting.



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# DFS-FEU SUPPLEMENTAL REVIEW OF USAO AD-HOC AUDIT

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- For the 5 Initial Cases:
  - Reports and documentation reviewed.
  - The same independent examiner provided results for 4 of the 5 cases in this report, as well as for the 6<sup>th</sup> case below.
  - There were no findings of false identifications or false exclusions identified by the ad hoc audit team.
- For the 6<sup>th</sup> Case:
  - Evidence re-measured, and discrepancy confirmed.
  - QCAR initiated – Instrument desynchronization
  - Amended report issued
  - Training provided
  - **11 bullet worksheets and GRC results reviewed** (mathematically) to cover the time frame from the examiner's first case involving bullets, to when the microscope used for measurements was performance checked: **No Additional Discrepancies.**



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# QCAR # 15167 – Initiated 9/16/2020

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## Issue

- As part of an ad-hoc audit conducted at the request of the USAO, it was reported that an erroneous list of possible firearms was generated based on bullet measurements either being taken incorrectly, or recorded incorrectly, in a 2018 case jacket. A firearm was examined in 2019, in conjunction with the original evidence, and it was determined that the bullets were fired from that firearm. The firearm was not on the list generated in 2018.

## Departures

- LOM01: 4.1.3 "Ensure the report and bench notes are accurate and inclusive of all pertinent information to support a conclusion."
- LOM03 4.2.4 (Technical Reviewer) Ensure conclusions are supported by generated data....
- LOM03 4.3.2 (Administrative Reviewer) Ensure the report is clear concise, accurate...
- FSL QAM 7.8.1.2 FSL personnel will accurately, clearly unambiguously, and objectively report the results of each examination...



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# QCAR # 15167 – Initiated 9/16/2020

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## Root Cause

- The Leica Application Suite (LAS) software desynchronizes from the comparison microscope when the computer goes into hibernation mode. The LAS software will not respond to any subsequent changes made to the microscope settings, unless the software application is restarted on the computer. This resulted in an inaccurate measurement of the lands and grooves of a fired bullet.

## Action Steps

1. The fired bullet was re-measured, and an amended report was issued by the reporting examiner (completed 9/17/2020).
2. A Helpdesk ticket was created to change the hibernation mode setting to avoid the computer from desynchronizing with the microscope (completed 9/18/2020).
3. A FEU Memorandum was issued to ensure that any examiner using the LAS System is required to restart LAS application prior to GRC measurements (completed 10/01/2020).



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# QCAR # 15167 – Initiated 9/16/2020

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## Action Steps (continued)

4. A unit meeting was be held to ensure all members are aware of the issue and how DFS is correcting it (completed 10/07/2020).
5. A measurement workshop/training was conducted to gain a full understanding of the various setups within the Unit to obtain accurate measurements (completed 10/07/2020).
6. The FEU training manual was updated to incorporate a section in Module 15.0 “Examination of Projectiles” regarding practical exercises for GRC measurements and LAS/Leica comparison microscope systems (completed 10/08/2020).
7. The FEU contacted LEICA to see if they are aware of this problem and if there was a newer version of the LAS that addresses this problem (LEICA provided guidance in an email on 10/01/2020, and a representative provided training to the FEU on 10/07/2020).

**CLOSE- OUT MEMO** have been submitted to the DFS Quality Assurance Unit on 10/08/2020



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# Questions?

# SCIENTIFIC ADVISORY BOARD DISCLOSURES

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- The DFS have shared a large volume of documentation have been provided to SAB Chairperson in support of the SAB Review (February through October 2020).
- **02/11/20 - SAB Notification:** SAB Chairman Pete Marone is advised of the USA Liu's letter and report.
- **02/13/20 - DFS Disclosure:** ANAB and SAB are provided full documentation package.
- **03/12/20 - DFS shares information:** SAB Chairman Marone in response to questions he had sent to DFS through slide presentation and attachments.
- **04/17/20 - FEU QA Presentation:** Presentation of the SAB review by FEU.
- **05/06/20 - DFS Disclosure:** Additional information sent to SAB and to ANAB concerning the critical error in FEU. package.



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# SCIENTIFIC ADVISORY BOARD DISCLOSURES

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- **05/22/20 - FSL shares QCARS:** SAB Chairperson and SAB member the 8 QCARS generated by DFS QA Unit, root cause analysis and proposed action to resolve and prevent reoccurrence.
- **05/27/20 - FSL shares QCARS:** Submit revised QCARS and proposed actions to SAB for additional feedback – meeting scheduled for May 29, 2020.
- **06/15/20 – FEU shares additional documentation:** All 2017 FEU memo authorized in FEU for casework, technical and administrative competencies and change in policy for witness verification.
- **06/19/20 - DFS Disclosure: DFS Disclosure ANAB/SAB** regarding interim report and associated documents.
- **06/24/20 – DFS Disclosure:** SAB Chairman disclosure of USAO Interim report.



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# SCIENTIFIC ADVISORY BOARD DISCLOSURES

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- **06/24/20 - FSL Director** and SAB board chairman and board member online meeting to discuss “interim audit” report.
- **06/31/20 - FEU QA and 360 Review Presentation:** Share all information on QCARS and action shares with SAB.
- **08/11/20 - DFS Disclosure:** Shares USAO 2<sup>nd</sup> interim report with SAB Chairman.
- **09/18/20 - DFS Disclosure:** Shares DFS response of the USAO 2<sup>nd</sup> Interim report with SAB Chairman.



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# FEU IMPROVEMENTS

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1. **Elimination factors** - For microscopic examinations, in the absence of multiple sources, at least two areas of agreement are required to identify or eliminate.
2. **Case documentation** - Photomicrographs are to be contemporaneously annotated, within the photographic field. All results are now qualified. Additional checkboxes have been included on the technical and administrative review forms to assist with peer reviews.
3. **Independent verifications** - Verifications are required to be conducted independently and clear instructions on how it must be performed.
4. **Peer reviews** - Separate reviewers are required for the technical and administrative reviews of all cases.
5. **All cases are processed in the same manner** – Firearms examination and NIBIN Hit verifications are examined and reported the same.



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# FEU IMPROVEMENTS

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6. **Training Contractors and Onboarding** – A new module was created for contractors that include training on case documentation and processes prior to casework.
7. **Continuous training and development** - FEU staff and contractors are subject to continuous training and development are trained prior to the authorization of procedures.
8. **Instrumentation** – Measuring Systems have been updated to ensure accurate measurements of evidence.
9. **External proficiency evaluations** - Starting in calendar year 2019, all qualified examiners completed two externally provided proficiency tests per year.
10. **Correlation examinations** - AFTE - NNCTC performance all correlation examinations independently and reports leads directly to customers. The success rate of NIBIN leads:
  - FY17: 277 total leads looked at, 264 HITS – 95.3%
  - FY18: 844 total leads looked at, 834 HITS – 98.8%
  - FY19: 777 total leads looked at 775 HITS – 99.7%
  - FY20: 208 total leads looked at 208 HITS – 100%



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# Questions?

# SCIENTIFIC ADVISORY BOARD REMARKS

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- DFS implemented all SAB recommendations in response to the QCARS generated from the USAO Complaint.
- DFS has recently received re-accreditation
- The USAO 2<sup>nd</sup> Interim report:
  - Each of the two examiners conducting the 2<sup>nd</sup> Interim Audit have 20 years + experience and have excellent credentials and reputations.
  - The examinations conducted were full re-examinations, not paper audits.
  - USAO contract re-examiners appear to have reached conclusions identical to DFS in over 90% of re-worked cases.



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# SCIENTIFIC ADVISORY BOARD REMARKS CONT.

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- In those cases where a discrepancy exists between conclusions on a portion of evidence examined, no discrepancies appear to be direct contradictions (i.e., identification vs. exclusion), and instead appear to show a greater conservatism in calling identifications within the DFS laboratory setting.
- Equipment de-synchronization QCAR has been addressed.



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# SCIENTIFIC ADVISORY BOARD REMARKS CONT.

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- 2016 – Identification error was made
- 2017 – Re-examination by contractor was conducted
- 2020 – Re-examination conducted by FEU Supervisor yielded some inconclusive findings which ANAB supported based on the protocols provided.
- Experience....
- Pattern Recognition
  - Expert opinion may differ – DFS was more conservative with results
  - Trier of fact will make final determination on admissibility and will way in.



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# Questions?

# AGENDA

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- ✓ Roll Call – Review of Minutes from Previous Meeting, Approval of Minutes
- ✓ Director's Update
- ✓ Public Health Laboratory (PHL) Update
- ✓ FSL Latent Fingerprints (LFU) – Paperless
- ✓ FSL Forensic Biology Unit (FBU) – STRmix issue
- ✓ DFS Quality Update
- ✓ FSL Firearms Examination Unit (FEU)
  - ✓ Document Review
  - ✓ Closeout
- Old Business/ New Business/ Future Meetings
- Closing and Adjournment



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