

WHAT'S NEWS @ HFSC

HOUSTON FORENSIC SCIENCE CENTER • NOVEMBER 2019

HFSC's DNA training extended to include probabilistic genotyping, outsourcing continues

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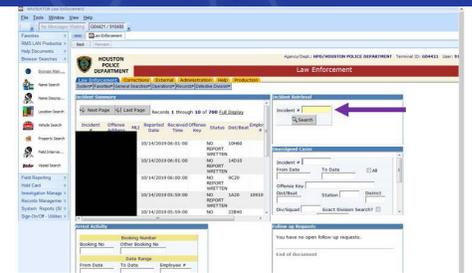
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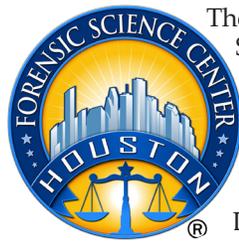
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The Houston Forensic Science Center has extended a year-long training program to include probabilistic genotyping, a new way to interpret DNA data which will ultimately benefit stakeholders and the community.

HFSC had announced in June 2018 a plan to send incoming DNA requests to a commercial lab while it completed a cross-training program designed to create a more efficient process. The training, outsourcing of work and backlog elimination should have been completed by October, however, the need to teach staff the complex probabilistic genotyping software and interpretation alongside a facility move has forced HFSC to extend the timelines.

It is crucial that the training on probabilistic genotyping is thorough and analysts are comfortable with the new interpretation method to avoid some of the issues and confusion that have cropped up elsewhere in the nation, including during trial.

At this time, HFSC has a backlog of about 1,100 DNA requests. Of those, nearly 700 have returned from the commercial laboratory and the initial report has been sent to stakeholders. HFSC now has to do an in-house review of the work to determine what might be eligible for upload into the DNA database. A little over 200 are part of the in-house backlog.

HFSC's DNA section is currently shutdown due to the recent facility move. Sexual assault kits and urgent requests are being sent to a commercial laboratory for testing during this time.

"While these numbers don't look great, the training HFSC is

providing staff will have long-term benefits to the community," said Dr. Peter Stout, HFSC's CEO and president. "The new data interpretation method is complex and we have to ensure our analysts are properly trained and comfortable performing the work. A robust training program is crucial to a quality product."

By the end of the year, HFSC's DNA section will be using STRmix, a probabilistic genotyping software, to interpret profiles. The software uses complex mathematical formulas and algorithms _ similar to those used in the stock market and aeronautics _ to create a likelihood ratio. In the case of a crime lab like HFSC, a likelihood ratio provides a probability, based on competing explanations, that DNA found on evidence either came from a specific individual or originated from an unknown person.

"There is a push in the forensic community to incorporate probabilistic genotyping into the workflow because it allows analysts to make better use of data, especially when we're looking at complex mixtures" said Robin Guidry, HFSC's DNA technical lead.

It eliminates some of the biases in the current approach used by most labs, including HFSC, and removes weaknesses from the conventional methods used for calculating statistics on mixtures. As DNA chemistries becomes more sensitive and labs are able to generate data from smaller samples, this type of approach becomes more crucial because forensic labs will be asked to handle larger numbers of complex mixtures.

"This changes a great deal of what we have done until now so even though training is taking longer and backlogs are bigger than we'd like, in the long run this will benefit all Houstonians," Dr. Stout said.



A Few Words From Our PRESIDENT

HOUSTON FORENSIC SCIENCE CENTER

Peter Stout, PH.D.
CEO/President

New technology: it's enticing, promising, tempting, attractive and, don't forget, it makes us sound cutting-edge and on top of our game.

Realistically, though, there are pros and cons to all things dubbed "new" and "high-tech." And there are risks associated with trying to be the first to jump on anything untested. This is especially true in forensics when a bad outcome from being the guinea pig can mean someone's life.

And so, I prefer to watch and learn from others what works and what doesn't. So HFSC is not the first one to implement probabilistic genotyping software in its DNA lab. We are also not the last. We fall someplace in the middle. But that's kind of a sweet spot. We have watched and learned from the mistakes and issues that have cropped up elsewhere in the country, both in the new interpretation method and in court.

This means our rollout can be a little smoother. We have the luxury, too, of not only understanding what kind of training and how much training our people need, but also what the courts are doing and saying about the technique. We can better train stakeholders, and we can make the transition just a little smoother for all involved.

Because new technology is not easy.

In our toxicology section, we are about 10 years behind on instrumentation. Getting the right instruments so we could be truly responsive to the community's needs has been a MUST that could only be accomplished in a new facility. And yet it will take nearly a year to validate new methods and train our people.

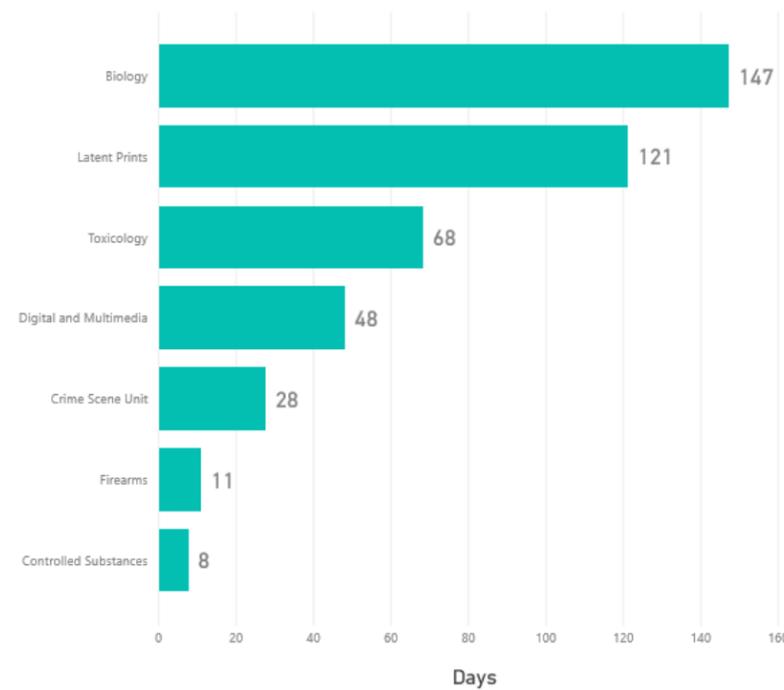
Everything we do impacts lives and so we have little room to make mistakes. If that means we won't be first, that's OK.

In our line of work, it's more important to get it right.

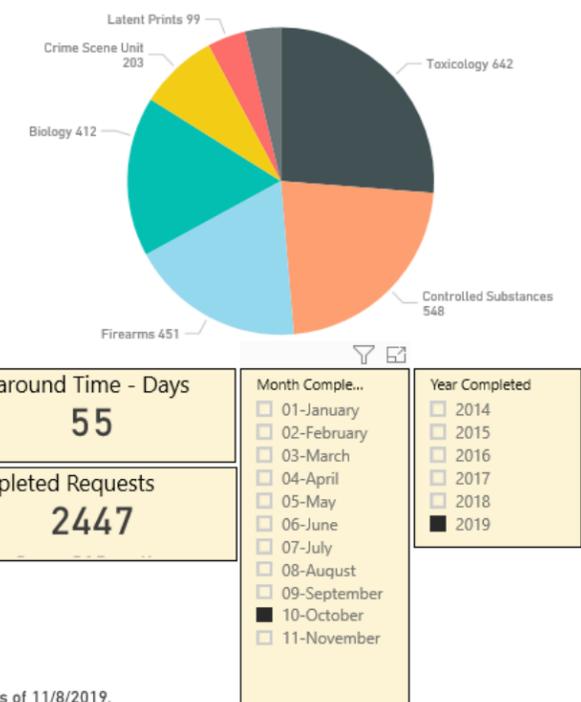
Peter Stout, PH.D.
CEO/President

HFSC At A Glance

Average Turnaround Time for October 2019



Requests Completed by Section



Turnaround Time - Days	55
Completed Requests	2447

Month Completed	Year Completed
01-January	2014
02-February	2015
03-March	2016
04-April	2017
05-May	2018
06-June	2019
07-July	
08-August	
09-September	
10-October	
11-November	

This data is current as of 11/8/2019.

Turnaround times increased slightly in October, but that was to be expected as the labs packed, moved and shutdown.

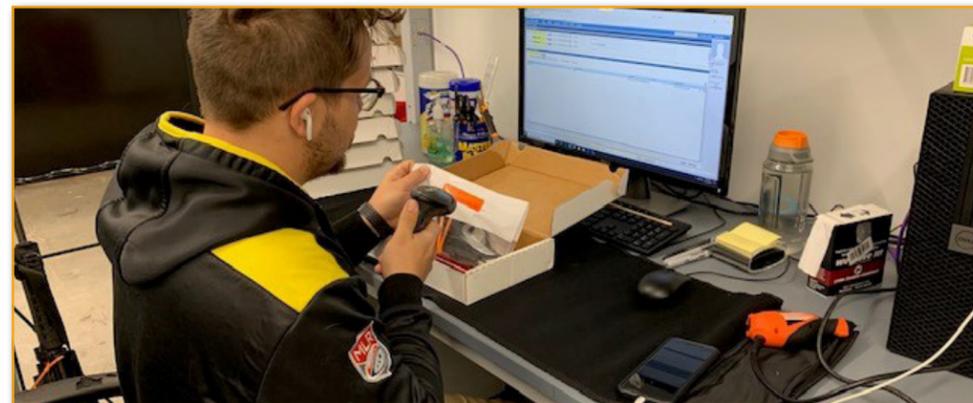
But the uptick was slight from an average turnaround time of 53 days in September to 55 in October. That number is expected, though, in the last few months of 2019 and early 2020 as sections continue to work toward reopening and then focus on eliminating backlogs that built up during the shutdowns.

HFSC has communicated with stakeholders about the impacts of the move and will continue to share information as it comes available.

For questions about the shutdowns and where to send urgent cases, please call 713-929-6760 or email triage@houstonforensicscience.org.

For more information, please visit www.houstonforensicscience.org

HFSC HAS A NEW HOME



It's official: all Houston Forensic Science Center staff are for the first time ever housed in one location outside of police headquarters.

The phased move that began in April ended with a final staff move on November 7.

Now that all the instruments, equipment and staff have moved the focus is on unpacking and getting all the labs up and running.

The crime scene unit, digital multimedia, latent print, seized drugs and firearms sections are operational. The DNA and toxicology sections are shutdown and will begin to slowly come online around the holidays.

"While the short-term pain of shutdown labs will be felt by stakeholders, the long-term benefits to all, and especially the community, will be worth it," said Dr. Peter Stout, HFSC's CEO and president.

"Houston has struggled with forensics for years and now, after five years, the agency the city created to provide independent services to the Houston Police Department has a lab specially designed and created

to suit its needs. This is what the community and the justice system require," he added.

HFSC's new downtown location is in a high-rise building shared with other tenants. But the laboratories have been built out to consider the sensitivities associated with handling evidence and the risks of contamination.

The City of Houston signed a 30-year lease with the owner of the building who rolled the cost of the construction into the life of the agreement. It was this mechanism that allowed HFSC to move into new space while keeping the agency's annual real estate costs static.

Laboratory personnel are now busy performance checking and validating instruments and unpacking chemicals and other supplies. The DNA staff are performing thorough cleanings and subsequent testing of the space to ensure it is clean of foreign DNA. Until that process is complete they cannot bring evidence into the area.

"Building and moving a forensic laboratory is complex. There are things that must be considered that do not necessarily

exist in a research setting," Dr. Stout said. "Our shutdown also impacts the entire justice system so the pressure to resume work is felt by all."

The latent print section has been operational for several weeks. The unit that handles the National Integrated Ballistic Information Network (NIBIN) has been operating for about a week and the rest of firearms resumed casework last week. Seized drugs began processing casework this week.

Toxicology will resume blood alcohol testing on January

1, but drug analysis will be sent to a commercial lab for about nine months as the section validates new instruments.

The DNA section expects to be operational by December 2.

During the shutdowns, backlogs will increase and the sections will then spend a few months eliminating the buildup.

"We apologize in advance for the delays this move is causing and thank all our stakeholders for their patience. But we truly believe that in the end this will benefit everyone," Dr. Stout said.



HFSC'S CSU: EXPANSION POSSIBILITIES

EXPANDING THE CRIME SCENE UNIT'S RESOURCES WILL IMPROVE PUBLIC SAFETY

The Houston Forensic Science Center's crime scene unit expanded its services on a limited trial basis in 2019 to better gauge the impact it could have on public safety and the justice system.

HFSC's CSU has historically responded only to homicides, officer-involved shootings, questionable deaths and child deaths. This year, the unit responded to other violent crimes and high-profile incidents.

Having trained, dedicated crime scene investigators at more and a greater variety of crime scenes helps ensure evidence is handled appropriately and is not overlooked, improving outcomes for victims and defendants.

"At HFSC we believe that having CSIs at more scenes will ultimately help the justice system improve its outcomes and the community overall," said Jerry

Pena, director of HFSC's CSU and digital multimedia division.

"Unfortunately, with our current staff size we are limited in what we can offer the city in terms of expanded services," Mr. Pena said. "But we are hopeful that we will slowly be able to expand the unit to allow for a broader response."

HFSC's CSU is an

accredited, all-civilian unit that is specially trained in crime scene investigation. As a result, evidence is collected according to specific

protocols and documented in a manner that allows for better forensic testing.

As part of its trial expansion, the CSU responded to an average of nearly 12 aggravated assaults per month in 2019, up from an average of 9.7 per month in 2018. CSIs also responded to an average of 2.5 aggravated robberies per month,

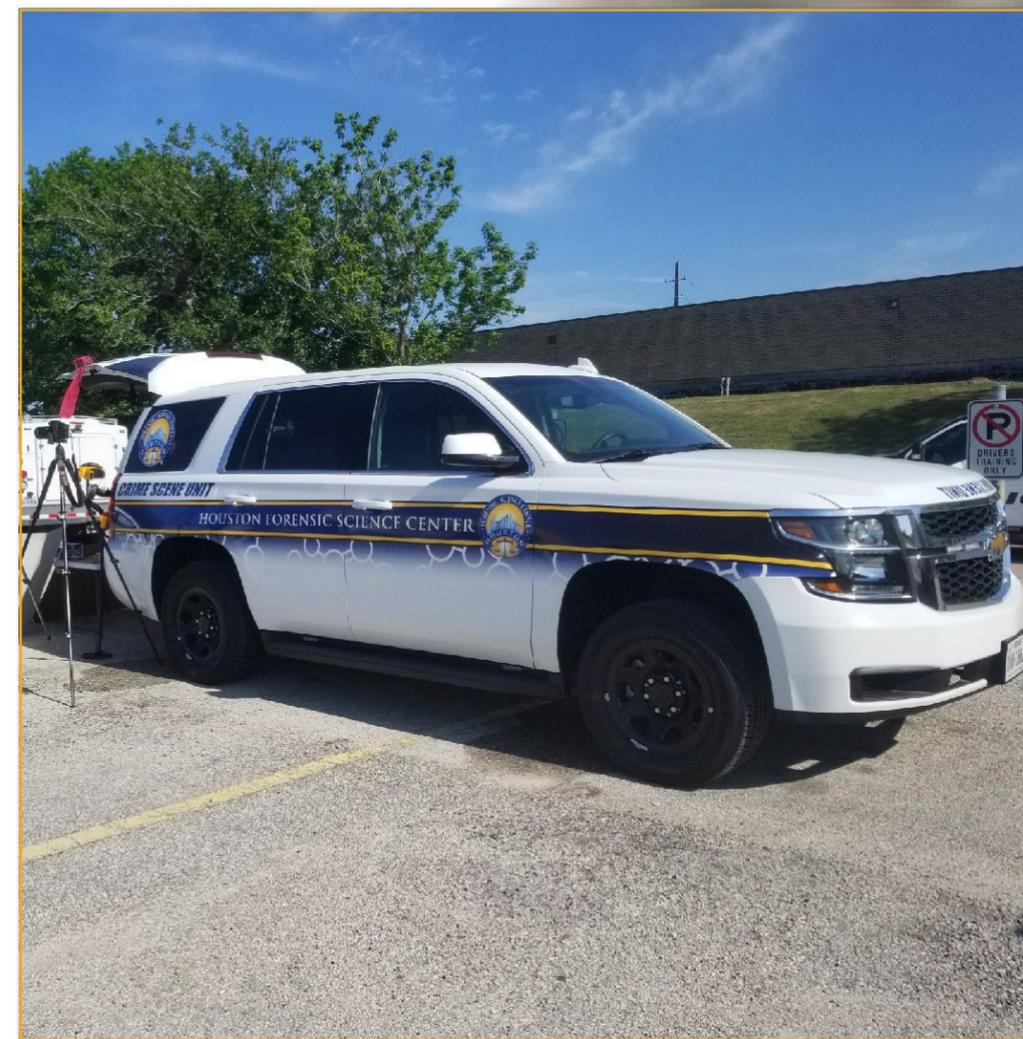
an increase from fewer than one a month a year earlier. They also made a concerted effort to be on scene at burglaries and sexual assaults.

There are currently about 20 CSIs in the 24/7 unit that is responsible for major crimes in a 685-square mile area. Compare that to Chicago that has about 200 CSIs in a city with a similar population spread across fewer than 300 square miles.

In addition, HFSC has learned that as CSU responds to more crimes the influx of evidence into the latent print section creates a resource challenge for that group.

"These are good problems to have. It means we are doing a better job responding to scenes and collecting evidence that can help solve crime. The problem is we need to have the appropriate resources to truly be responsive in a manner that helps the city and the justice system," said Dr. Peter Stout, HFSC's CEO and president.

The goal in the coming years is to expand these units and provide additional CSU services to the Houston Police Department and by extension, the residents of Houston.



NIBIN THE NEED FOR QUICK ANSWERS



It was the .45 caliber shell casings that solved the crimes. Left behind at the scenes of two separate crimes _ one a robbery in August 2018 and the second when a gunman fired outside of a car window a month later _ it was those shell casings that would lead investigators to the suspect.

Houston Police Department officers had recovered the casings from the crime scenes and had them uploaded into the National Integrated Ballistic Information Network (NIBIN.) NIBIN is a national firearms database overseen by the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF.) It allows firearms examiners to link cartridge casings to a firearm, and that is what happened in this case.

The information can be so crucial in the early hours and days of an investigation that HFSC routinely issues NIBIN investigative leads within days of a request: the right answer at the right time.

The shell casings, however, would have remained nothing more than

The Houston Forensic Science Center's firearms section's workflow puts a strong emphasis on the use of the National Integrated Ballistic Information Network (NIBIN) because it is often the key to getting investigators information quickly and at the key, early part of an incident.

By Jordan Benton

images in a database if police hadn't recovered a firearm in November 2018 when they arrested a suspect for evading arrest in a vehicle.

The vehicle matched the description provided to HPD in the September 2018 incident. When police searched the car that November they seized a .45 caliber semi-automatic pistol and submitted it to HFSC for examination.

An HFSC firearms examiner test-fired the semi-automatic pistol. The casing from that test-fire "hit" against the .45 caliber casings recovered from both the aggravated robbery in August 2018 and the shooting a month later. The information of a hit was shared by HFSC with the ATF.

Presented with the information, the suspect who had been jailed for evading arrest confessed to shooting the victim in the aggravated robbery and provided investigators with information leading to a second suspect.

One suspect has been sentenced to 32 years in prison. The second awaits trial.



INTELLINETICS FINDING YOUR REPORT

Forensic reports are available to HPD officers in several ways By Jordan Benton

The Houston Forensic Science Center has taken steps in recent years to make its reports and data more easily accessible and to ensure stakeholders receive the information they need in a timely and efficient manner. As part of this effort, all HFSC reports are uploaded into Intellinetics, a system that is available to all HPD officers via the Record Management System or RMS.

The first step is to log into RMS. You will first need to enter your incident number and pull up the case information. Once the general case information is pulled up, scroll to the bottom of the page until you find a hyperlink that reads **"Intellinetics Documents."** You will then see a list under **"Folder Indexes."** In that list, select **"Lab Reports,"** where you should find any lab reports corresponding to your case.

DNA reports are only available in Intellinetics

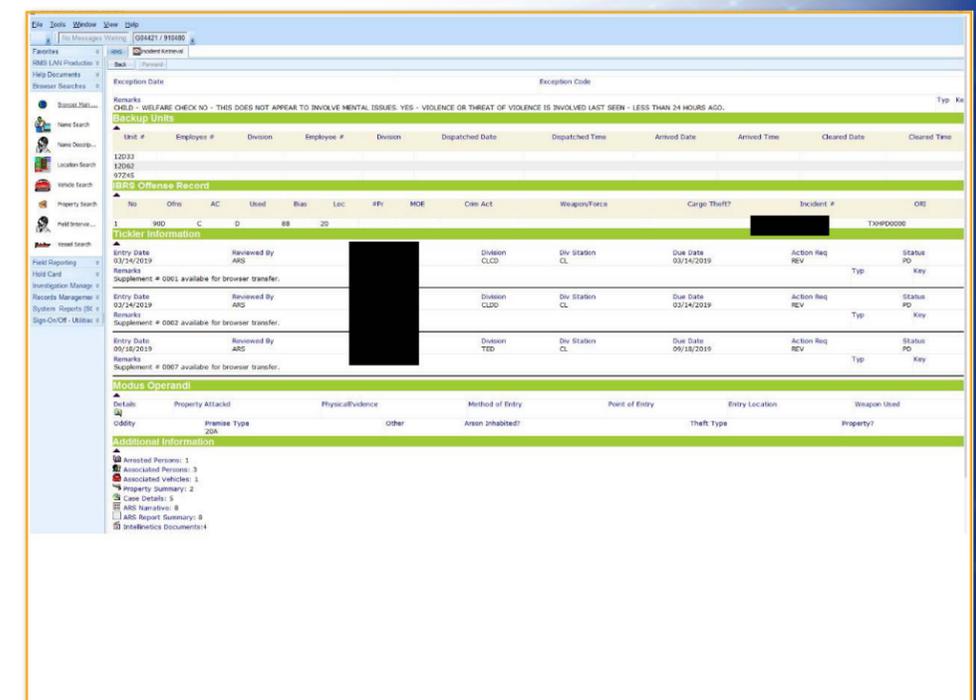
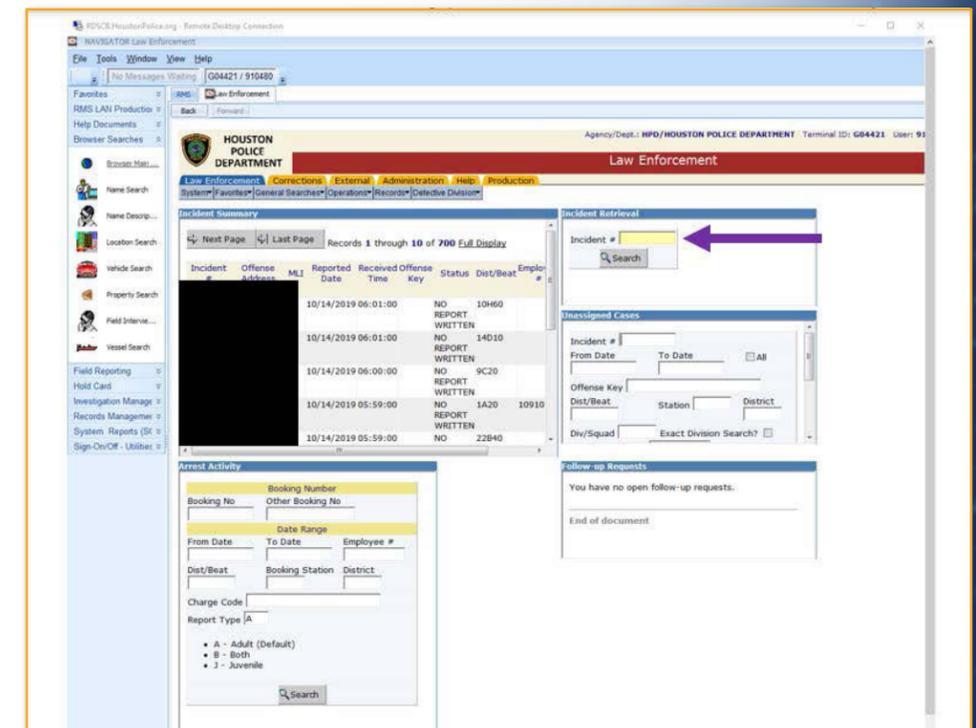
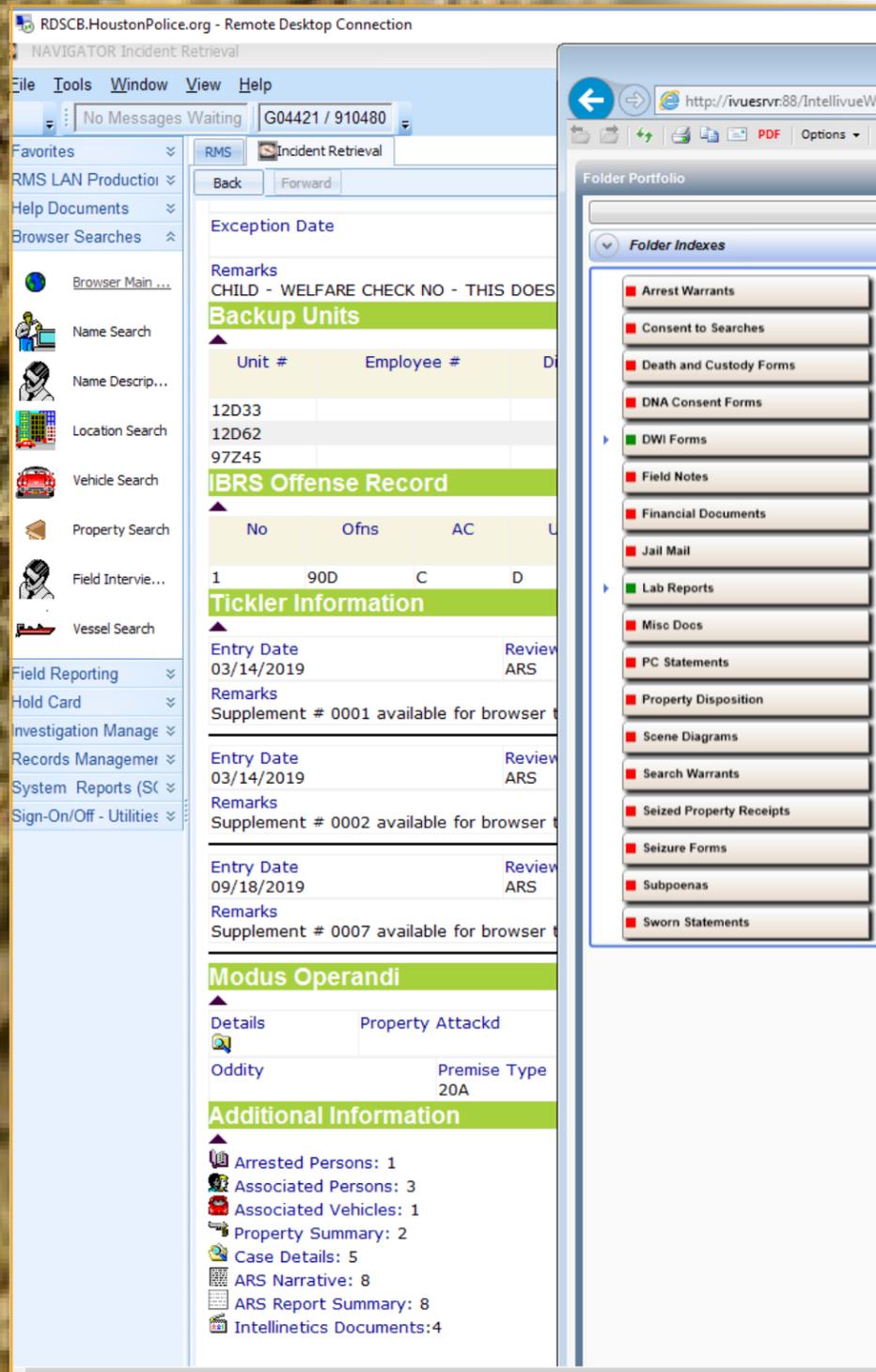
through October 2019. Any reports issued after that date are emailed to the requester. HFSC hopes to begin uploading DNA reports to Intellinetics in the near future, however, at this time that function is not available.

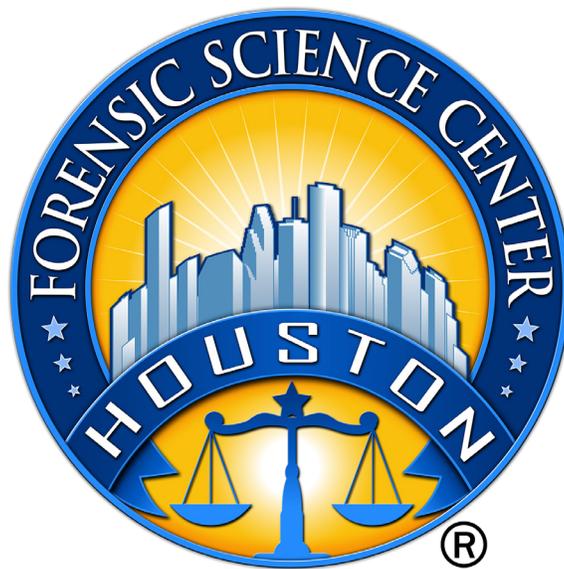
A couple of other things to note:

All reports issued prior to JANUARY 2019 are available in Web prelog. ONLY REPORTS ISSUED AFTER MARCH 2019 ARE AVAILABLE IN INTELLINETICS.

All reports are also automatically emailed to the requester upon release.

The Houston Police Department issued information on accessing HFSC reports in circular 19-0123-008. If you cannot locate a report or have questions about how to find it, please email triage@houstonforensicscience.org or call 713-929-6760 for assistance.





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Media resources are available 24 hours a day, seven days a week.

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