No. CR-17-3366

THE UNITED STATES OF LONE STAR, Plaintiff, v. 1. Lone Star Recycling 2. Leslie Shay Defendants.	§ § § § § § § § § § §	IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF LONE STAR

Prepared by:

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This case file was commissioned by the Texas Young Lawyers Association and was prepared by Pamela Robillard Mackey for the 2016-2017 National Trial Competition

Statement of the Case

This is a criminal action against Lone Star Recycling and Leslie Shay, the president and sole owner of Lone Star Recycling, for knowing endangerment as defined by the Lone Star Resource Conservation and Recovery Act (RCRA). The United States of Lone Star alleges that on or about April 18, 2015, Lone Star Recycling and Leslie Shay knowingly stored and disposed of a hazardous waste, specifically gasoline, without the required permit and thereby placed another person, specifically Matthew Casey, in imminent danger of death or serious bodily injury. Witnesses:

For the Prosecution:

1. Matthew Casey
2. Kelly Severide

For the Defense:

3. Tony Dawson
4. Leslie Shay

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF LONE STAR
No. CR-17-3366

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INDICTMENT
CHARGING STATUTE
42 Lone Star Code § 6928(e)

COUNT ONE

On or about April 18, 2015, within the State and District of Lone Star and elsewhere, the defendants, Lone Star Recycling and Leslie Shay, did knowingly transport, treat, store, dispose of, or export a hazardous waste, to wit gasoline, without a permit and knew at the time that they thereby placed another person, Matthew Casey, in imminent danger of death or serious bodily injury.

All in violation of Title 42, Lone Star Code, Section 6928(e)

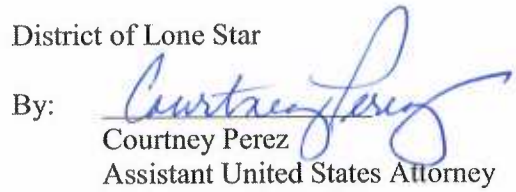
A TRUE BILL

FOREPERSON

APPROVED:

Tim Williams
United States Attorney

District of Lone Star

By: 

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Attorney for the Government

WITNESS AND EXHIBIT LIST

WITNESSES:

1. Matthew Casey (must be male)
2. Kelly Severide (may be male or female)
3. Tony Dawson (may be male, Anthony, or female, Antonia)
4. Leslie Shay (may be male or female)

EXHIBITS:

1. Photograph of loader with claw
2. Schematic drawing of shredder with notations by Matthew Casey
3. Lone Star Recycling Maintenance Log book (April 16 to April 18, 2015)
4. Drawing of shredder with notation by Leslie Shay
5. Photograph of loaded trucks
6. Photograph of types of scraps
7. Photograph of car pile
8. Photograph of Lone Star shredder
9. Photograph of shredded metal
10. Photograph of shredded metal pile
11. Marlowe Resume
12. Opinion letter of Marlowe
13. Newspaper article concerning sentencing of Bill Shay
14. Newspaper article concerning jury verdicts in Hilario case

PROCEDURAL MATTERS

AND

STIPULATIONS AS TO EVIDENTIARY MATTERS

Procedural Matters

1. Federal Rules of Criminal Procedure and Federal Rules of Evidence apply.

2. All witnesses called to testify have identified the parties, other individuals, or tangible evidence in prior testimony and will, if asked, identify the same at trial.

3. Other than what is supplied in the problem itself, there is nothing exceptional or unusual about the background information of any of the witnesses that would bolster or detract from their credibility.

4. This competition does not permit a listed witness, while testifying, to "invent" an individual not mentioned in this problem and have testimony or evidence offered to the court or jury from that "invented" individual.

5. "Beyond the record" shall not be entertained as an objection. Rather, teams shall use cross-examination as to inferences from material facts pursuant to National Rules.

6. The Government and the Defense must call the two witnesses listed as that party's witnesses on the witness list.

7. All exhibits in the file are authentic. In addition, each exhibit contained in the file is the original of that exhibit unless otherwise noted on the exhibit or as established by the evidence.

8. The Court has ruled that gasoline is a hazardous waste as defined by the Lone Star RCRA statute and that Lone Star Recycling did not have a permit for the storage or disposal of gasoline.

9. The court has ruled that Philip Marlowe's opinion is admissible pursuant to Rule 702 and that Mr. Marlowe may testify by way of deposition as the Court previously authorized the deposition of Mr. Marlowe pursuant to Rule 15 of the Federal Rules of Criminal Procedure and Mr. Marlowe is now deceased.

10. It is stipulated that no one shall attempt to contact the problem drafter about this problem before the conclusion of the 2017 National Trial Competition Final Round. Contact with the competition officials concerning this problem must be pursuant to the rules of the competition.

11. 2017 is the year in which this case comes to trial.

12. Presentation and argument on pretrial motions shall be limited to a total time of sixteen minutes divided equally between the parties as follows: (1) the State shall have four minutes to present any pretrial motions; (2) the defense shall have four minutes to respond to the State's motion(s); (3) the defense shall have four minutes to present any pretrial motions; and (4) the State shall have four minutes to respond to the defense's motion(s).

13. This competition permits teams to argue additional case law and other relevant authority to support the team's argument on motions and evidentiary issues. However, no additions or deletions are permitted to the provided jury instructions or to the jury verdict form.

Substantive Matters

1. 42 Lone Star Code § 6928 provides:

(a) COMPLIANCE ORDERS

(1) Except as provided in paragraph (2), whenever on the basis of any information the Administrator determines that any person has violated or is in violation of any requirement of this subchapter, the Administrator may issue an order assessing a civil penalty for any past or current violation, requiring compliance immediately or within a specified time period, or both, or the Administrator may commence a civil action in the United States district court in the district in which the violation occurred for appropriate relief, including a temporary or permanent injunction.

(2) In the case of a violation of any requirement of this subchapter where such violation occurs in a State which is authorized to carry out a hazardous waste program under section 6926 of this title, the Administrator shall give notice to the State in which such violation has occurred prior to issuing an order or commencing a civil action under this section.

(3) Any order issued pursuant to this subsection may include a suspension or revocation of any permit issued by the Administrator or a State under this subchapter and shall state with reasonable specificity the nature of the violation. Any penalty assessed in the order shall not exceed $25,000 per day of noncompliance for each violation of a requirement of this subchapter. In assessing such a penalty, the Administrator shall take into account the seriousness of the violation and any good faith efforts to comply with applicable requirements.

(b) PUBLIC HEARING

Any order issued under this section shall become final unless, no later than thirty days after the order is served, the person or persons named therein request a public hearing. Upon such request the Administrator shall promptly conduct a public hearing. In connection with any proceeding under this section the Administrator may issue subpoenas for the attendance and testimony of witnesses and the production of relevant papers, books, and documents, and may promulgate rules for discovery procedures.

(c) VIOLATION OF COMPLIANCE ORDERS

If a violator fails to take corrective action within the time specified in a compliance order, the Administrator may assess a civil penalty of not more than $25,000 for each day of continued noncompliance with the order and the Administrator may suspend or revoke any permit issued to the violator (whether issued by the Administrator or the State).

(d) **CRIMINAL PENALTIES** Any person who—

(1) knowingly transports or causes to be transported any hazardous waste identified or listed under this subchapter to a facility which does not have a permit under this subchapter,

(2) knowingly treats, stores, or disposes of any hazardous waste identified or listed under this subchapter—

(A) without a permit under this subchapter; or

(B) in knowing violation of any material condition or requirement of such permit; or

(C) in knowing violation of any material condition or requirement of any applicable interim status regulations or standards;

(3) knowingly omits material information or makes any false material statement or representation in any application, label, manifest, record, report, permit, or other document filed, maintained, or used for purposes of compliance with regulations promulgated by the Administrator under this subchapter;

(4) knowingly generates, stores, treats, transports, disposes of, exports, or otherwise handles any hazardous waste or any used oil not identified or listed as a hazardous waste under this subchapter (whether such activity took place before or takes place after November 8, 1984) and who knowingly destroys, alters, conceals, or fails to file any record, application, manifest, report, or other document required to be maintained or filed for purposes of compliance with regulations promulgated by the Administrator under this subchapter;

(5) knowingly transports without a manifest, or causes to be transported without a manifest, any hazardous waste or any used oil not identified or listed as a hazardous waste under this subchapter required by regulations promulgated under this subchapter to be accompanied by a manifest;

(6) knowingly exports a hazardous waste identified or listed under this subchapter (A) without the consent of the receiving country or, (B) where there exists an international agreement between the United States and the government of the receiving country establishing notice, export, and enforcement procedures for the transportation, treatment, storage, and disposal of hazardous wastes, in a manner which is not in conformance with such agreement; or

(7) knowingly stores, treats, transports, or causes to be transported, disposes of, or otherwise handles any used oil not identified or listed as a hazardous waste under this subchapter—

(A) in knowing violation of any material condition or requirement of a permit under this subchapter; or

(B) in knowing violation of any material condition or requirement of any applicable regulations or standards under this chapter;

shall, upon conviction, be subject to a fine of not more than $50,000 for each day of violation, or imprisonment not to exceed two years (five years in the case of a violation of paragraph (1) or (2)), or both. If the conviction is for a violation committed after a first conviction of such person under this paragraph, the maximum punishment under the respective paragraph shall be doubled with respect to both fine and imprisonment.

(e) KNOWING ENDANGERMENT

Any person who knowingly transports, treats, stores, disposes of, or exports any hazardous waste identified or listed under this subchapter or used oil not identified or listed as a hazardous waste under this subchapter in violation of paragraph (1), (2), (3), (4), (5), (6), or (7) of subsection (d) of this section who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than $250,000 or imprisonment for not more than fifteen years, or both. A defendant that is an organization shall, upon conviction of violating this subsection, be subject to a fine of not more than $1,000,000.

(f) SPECIAL RULES

For the purposes of subsection (e) of this section—

(1) A person's state of mind is knowing with respect to—

(A) his conduct, if he is aware of the nature of his conduct;

(B) an existing circumstance, if he is aware or believes that the circumstance exists; or

(C) a result of his conduct, if he is aware or believes that his conduct is substantially certain to cause danger of death or serious bodily injury.

(2) In determining whether a defendant who is a natural person knew that his conduct placed another person in imminent danger of death or serious bodily injury—

(A) the person is responsible only for actual awareness or actual belief that he possessed; and

(B) knowledge possessed by a person other than the defendant but not by the defendant himself may not be attributed to the defendant; *Provided*, That in proving the defendant's possession of actual knowledge, circumstantial evidence may be used, including evidence that the defendant took affirmative steps to shield himself from relevant information.

(3) It is an affirmative defense to a prosecution that the conduct charged was consented to by the person endangered and that the danger and conduct charged were reasonably foreseeable hazards of—

(A) an occupation, a business, or a profession; or

(B) medical treatment or medical or scientific experimentation conducted by professionally approved methods and such other person had been made aware of the risks involved prior to giving consent.

The defendant may establish an affirmative defense under this subsection by a preponderance of the evidence.

(4) All general defenses, affirmative defenses, and bars to prosecution that may apply with respect to other Federal criminal offenses may apply under subsection (e) of this section and shall be determined by the courts of the United States according to the principles of common law as they may be interpreted in the light of reason and experience. Concepts of justification and excuse applicable under this section may be developed in the light of reason and experience.

(5) The term "organization" means a legal entity, other than a government, established, or organized for any purpose, and such term includes a corporation, company, association, firm, partnership, joint stock company, foundation, institution, trust, society, union, or any other association of persons.

(6) The term "serious bodily injury" means—

(A) bodily injury which involves a substantial risk of death;

(B) unconsciousness;

(C) extreme physical pain;

(D) protracted and obvious disfigurement; or

(E) protracted loss or impairment of the function of a bodily member, organ, or mental faculty.

(g) CIVIL PENALTY

Any person who violates any requirement of this subchapter shall be liable to the United States for a civil penalty in an amount not to exceed $25,000 for each such violation. Each day of such violation shall, for purposes of this subsection, constitute a separate violation.

GRAND JURY 14-1 TESTIMONY OF

DISTRICT OF LONE STAR MATTHEW CASEY

IN THE MATTER OF A SPECIAL INVESTIGATION

Lone Star, Courthouse

1929 Alamo Street, Room 320

Lone Star 10062

Thursday, January 14, 2016

The above-entitled matter came on for hearing before the Lone Star Grand Jury at the hour of 1:10 p.m.

A P P E A R A N C E S

FOR LONE STAR: COURTNEY PEREZ

LONE STAR U.S. ATTORNEY'S OFFICE

I N D E X

E X H I B I T S

Exhibit Number	Initial Reference
Exhibit 1 (photograph of loader with claw)	page 5
Exhibit 2 (schematic drawing of shredder with notations by Mr. Casey)	page 6
Exhibit 3 (Lone Star Recycling maintenance log books (April 16 to 18)	page 5

Where upon, the following proceedings were had and done on Thursday, January 14, 2016:

FOREPERSON: We have a quorum. There are no unauthorized persons present.

MATTHEW CASEY,

The Witness here, having been first dully sworn, was examined and testified on his oath as follows:

EXAMINATION

BY:

Q Good afternoon, Mr. Casey.

A Good afternoon.

Q Could you please state your name and spell you last name for the court reporter?

A My name is Matthew Casey; M-A-T-T-H-E-W C-A-S-E-Y.

Q Where are you employed?

A I am unemployed. Since the fire, I can't work anymore.

Q And what fire is that Mr. Casey?

A The fire at Lone Star Recycling that damn near killed me. Sorry folks, don't mean to swear, but it is really upsetting.

Q So let me ask it this way Mr. Casey, on April 18 of 2015, where were you employed?

A I was employed as a maintenance man at Lone Star Recycling.

Q I will have you tell the jurors all about that, but before we get to that, can you tell the folks on the jury a little bit about yourself.

A Well, I was born and raised right here in Lone Star. I come from a broken home. My mother Nancy spent 15 years in prison for murdering my Dad. He was a really abusive guy

and one day she just couldn't take it anymore. She's out now and I help her with her rent and make sure she does okay on parole. I graduated from Lone Star Central High School and went on to Lone Star Trade School to learn how to maintain heavy equipment. I had a couple of jobs before I landed at Lone Star Recycling about three years ago.

Q Tell us about Lone Star Recycling

A Well up until the fire, I thought it was a dream job. You see it's a place where this giant shredder takes all kinds of metal, but mostly crushed cars, and shreds 'em so that the metal is easier to recycle.

Q What was your job at Lone Star Recycling?

A I was the maintenance man. Which basically meant that I needed to keep the equipment in top condition. I had to change out the hammers that crushed the metal; change the oil; fix any electrical problems. Basically all the routine maintenance as well as operation issues that came up during my shift. Had to keep the machinery running. If it wasn't running, Lone Star wasn't making money and if we weren't making money, there was hell to pay. Whoops, sorry that I keep swearing.

Q Directing your attention now to April 18, 2015, did you work that day?

A Yes, I worked the afternoon shift. That meant I came on at noon and got off at 8 pm.

Q Did something unusual happen that day?

A Yes ma'am, changed my life.

Q Please tell the jury what happened that day.

A I came into work a little before noon and clocked in. I get paid by the hour, $25.59 per hour to be exact, plus benefits. The usual crew was there. Leslie Shay who is the president and owner of the business. Shay is there every day, all day and April 18th was no exception. Kelly Severide was there as well. That was when Kelly was still workin' there

before Kelly was fired. Kelly was working the scale and pre-inspection station. Christopher "the Claw" Hermann was working the loader – it looks like an excavator but instead of a front end loader, it has a claw on it.

Q Let me stop you right there, Mr. Casey. I am handing you what has been marked as exhibit 1. Do you recognize it?

A Oh yeah, that's the loader I was talking about. That's Chris in the cab there and he is working the scrap metal pile.

Q Who else was working at Lone Star on April 18th, 2015?

A Well there would have been two to four pickers. These guys pick through the shredded metal looking for copper. Copper is very valuable so Lone Star separates it out then sells it separate from the other shredded metals.

Q Do you know the names of the pickers that were working that day?

A No. It is a really tough job and nobody lasts very long at it. Pickers just come and go.

Q What did you do after clocking in?

A I went over the maintenance logs from the shift before. That shift runs from 5 am to 1 pm so that there is an overlap of an hour between the two maintenance crews. However, the other maintenance guy had left early so I didn't see him, just read the log book.

Q Mr. Casey I am handing you what has been marked as exhibit 3. Do you recognize it?

A Yep, it is a few pages out of the log book.

Q Is that book kept by the maintenance men that are employed by Lone Star Recycling?

A Yep. Anytime we do anything we have to immediately write it in the log book. If we did the work, then we have to initial it. If a contractor, like an electrician did the work, then

we got to have them initial the book. Leslie is really particular about us keeping an accurate record of all maintenance.

Q What did the log book tell you, if anything?

A Looked like it had been a pretty routine night. Shredder had acted up a couple of times, it always does. Guys had been down in the pit, working on the underbelly of the shredder to keep her running.

Q Let me stop you there. What is "the pit?"

A Well underneath the main compartment of the shredder, there is a pit that has been dug out so you can get under the main compartment and do any necessary work under there. It is really dangerous to go down into the pit with the shredder running. So, company policy is that the shredder is supposed to be off when one of us maintenance guys goes into the pit. But the owner just throws a fit anytime we have to power down, so sometimes we go in with the shredder running, if we think it is going to be a quick fix.

Q Mr. Casey I am handing you what has been marked as exhibit 2. Do you recognize it?

A Yep

Q What is it?

A It's a right pretty drawing of a shredder like the one we use at Lone Star Recycling.

Q Is the pit that you have referred to shown on that drawing?

A No

Q Can you mark on the drawing where the pit is located?

A Yep, can I just use this red marker?

Q Yes, please do.

A The pit is right here.

Q Mr. Casey, please write “PIT” where the pit is located and put your initials next to the additions that you have made on Exhibit 2.

A Done

Q What maintenance had been performed in the pit in the shift before yours?

A Looked like there had been the usual number of jams that had to be dealt with. One jam ended up breaking off one of the guards that keeps all but the right size of shred from leaving the tumbler. Shredder had to be powered down for that. A welder went in and fixed the break.

Q Anything else of note?

A Nope, just business as usual.

Q What if anything happened on your shift?

A Well about 2:30 in the afternoon there was this super-loud popping and grinding noise coming from the shredder. Sounded like the world was ending. So, I told Kelly and Claw that we needed to shut down the shredder so I could go take a look. Kelly said there would be hell to pay if we did that, ‘cause Leslie was still at the site. So, without shutting off the shredder I started down into the pit.

Now the pit has some lighting in it, but the lights weren’t working. It was so dark in there that I couldn’t see so I went back to the maintenance shed and grabbed a trouble light - you know one of those work lights with a cage around the bulb – and a super long extension cord. Plugged the extension cord in, the trouble light into the extension cord and walked back into the pit.

Q Was the shredder still running?

A Yep

Q What happened next?

A Well, I noticed some puddles right under the drum of the shredder. And I thought I smelled gasoline, which would not have been unusual. I often smelled gasoline in the pit. With cars dripping with gasoline, there was often gasoline in the pit. I needed more light to check it out, so I pulled on the trouble-light cord to get it to reach. I was trying to figure out what the puddle was all about when there was this gigantic "whump." You know the sound a gas stove makes when you light it with a match but you've let the gas run a little too long? Well it was just like that only a gazillion times louder.

Q What happened next?

A Well there was this blinding flash of light and suddenly I was on fire. All my clothes just started burning. I dropped the light and ran back up the ramp. I was scared to death and I totally panicked. Lucky for me, Leslie was standing right there and grabbed a hold of me, threw me in the dirt and rolled me over and over until the flames were out. Without Leslie standing right there, I'd be a dead man.

Q What happened next?

A Well, I don't remember much after that. I know somebody called 911 and I was taken to the hospital. I suffered severe burns over 90% of my body. About the only thing that didn't burn was my face. I was in the hospital for 90 days. For the first few, no one knew if I was gonna make it. But I did. After I got out of the hospital I went to Craig Rehabilitation Center. For the next nine months I had daily rehab and PT. They said PT stands for physical therapy, but I gotta tell you, it stands for pain and torture.

Q And have you fully recovered, Mr. Casey?

A No, not really. The scarring on my body, the part you can't really see is pretty horrendous. I don't date any more. And my feet and lower legs were so badly burned that I still have a lot of pain when I walk. So, I am on permanent disability. I loved my job; but I can't work anymore.

Q Thank you Mr. Casey, I have no further questions.

LSF-302 (Rev. 5-8-10)

LONE STAR BUREAU OF INVESTIGATION
REPORT OF INTERVIEW OF KELLY SEVERIDE

(as amended May 15, 2015)

Date of Entry; April 19, 2015

The following report was generated by Agent Brantley Jones, Lone Star Bureau of Investigation:

On April 19, 2015, Kelly Severide presented at the offices of the Lone Star Federal Bureau of Investigation in the great District of Lone Star. Severide presented at the request of this Agent, Severide having been an eyewitness to the events of April 18, 2015 when Matthew Casey was burned beyond recognition due to an industrial fire at Lone Star Recycling (LSR).

Severide is 32 years old, married, parent of two with a bachelor's degree in engineering from Lone Star State University. Severide has lived in Lone Star since birth. Severide has been the Chief of Operations at Lone Star for five years.

Severide was informed that the interview was entirely voluntary and Severide was free to leave at any time. Severide stated that there was nothing to hide and that speaking with the Bureau was the right thing to do.

Severide explained that LSR is a metal recycling operation utilizing a large shredder designed to shred metals, primarily automobiles. Severide explained that the shredding makes the metal better for reprocessing and reusing.

Severide explained that the metal is brought to the LSR yard on flatbed trucks. The trucks pull forward onto the scales, the metal is weighed, the trucks then pull forward and the metal is unloaded onto the scrap heap.

Severide's job is to run the scales and to inspect the loads to be sure that the load contains only shreddable materials.

When Severide first started working at LSR, the policy was that LSR would only purchase crushed car hulls. Meaning that all cars had to be drained of all fluids, including gasoline and that the motor, the trannies, wire harness, etc. had to be removed and the car hull crushed. But as time went on and the competition

increased from other recycling yards and the price LSR could sell the shredded steel decreased, Severide was told by Shay to accept crushed whole cars. Severide said that with the huge amount of exports of finished and semi-finished steel coming out of China, the price of steel has been so depressed that LSR had to reduce its standards to stay in business. Severide said everyone knew it was really dangerous to process whole cars with gasoline and other fluids in them, but Shay said they had to do it to keep the doors open.

Severide said that in the last two years the trucks hauling crushed cars to LSR would pull onto the scale and there would be gasoline dripping everywhere. Severide smelled gasoline all day long, as it dripped off the flatbed trucks and onto the scales and the dirt around the scales. Severide said that the cars often had so much gasoline that when Claw (Christopher Hermann) picked the cars up off the scrap heap and fed them into the shredder, gasoline would still be dripping from the cars, all over the scrap heap, all over the shredder. Severide said there was gasoline everywhere, every work-day for two years.

Severide raised the issue with Leslie Shay, stating that the gasoline was a health hazard and was probably a hazardous waste under the laws of Lone Star. Shay just said to stop worrying about it, that everything was fine, that LSR was properly permitted and the processes that were being used were perfectly legal.

Severide believes that LSR came under investigation by the Lone Star Occupational Health and Safety Administration for storing gasoline without a permit sometime in early 2015. Although the investigator never asked Severide any questions, Severide believes that Shay and LSR were fined because on the last day the investigator was in the yard at LSR, Severide saw Shay give the investigator a bulky envelope. After Shay gave him the envelope, the investigator just left and never came back.

Severide said that as the sole bread winner in the family, the job was really important. Severide had to keep the job at LSR. Severide was paid really well with excellent benefits and could never get as good a compensation package anywhere else.

On the day of the fire, Severide reported to work at 9 am, Severide's usual start time. Severide tuned on the electronic scales, opened the front gates to the trucks waiting outside and began having the trucks pull forward one truck at a time. Severide inspected the loads, turned a blind eye to the gasoline dripping off the trucks as Severide had been instructed to do and recorded the weight. Severide

then subtracted the weight of the truck and trailer, computed the amount due and owing, paid the driver and had the driver pull forward. Severide directed the driver as to where the load of metal was to be dropped.

Severide said it was a really busy day so Severide never left the front of the yard. Severide did not speak with Matthew Casey, the maintenance man on duty, nor with Claw, the loader operator, nor with the pickers. Severide did see Shay and exchanged a few pleasantries but did not talk much.
Severide was not aware of any maintenance issues with the shredder, that it had been working fine all day. Severide said the shredder had not been shut off at any point in the day for maintenance. Severide was sure that the shredder had not been turned off at all. Severide said that Shay has a conniption fit if the shredder is turned off, so maintenance is always done while the shredder is running.

This Agent then showed Severide the maintenance log books (Exhibit 3) secured from the facility pursuant to a search warrant and directed Severide's attention to the entries for April 18, 2015, specifically to the entries from the morning of April 18th where it appears that the log reflects that the shredder was turned off for maintenance. Severide said that the logs can reflect whatever fantasy Shay might have, but the shredder was never off between the time he arrived at 9 am and the time of the fire. Severide did not know of a welder named Tony Dawson. Severide said he would not know any welder that worked at LSR because the welder would have been an independent contractor because no one at LSR knew how to weld.

About 2:30, Severide heard an explosion back by the shredder. Severide noted that explosions were common place near the shredder, propane tanks left in vehicles, air-bag canisters, all sorts of things got fed into the shredder and caused explosions on a daily basis. Everyone just got used to it. But this explosion was different. Kinda like someone had lit a gigantic gas stove. There was this giant "whump" that hurt Severide's ears. Severide then heard all manner of yelling and screaming.

Severide took off for the shredder and as Severide came around the scrap heap saw Shay rolling Matthew Casey in the dirt. Casey was screaming his head off and Shay was hollering "call 911, call 911."

What Severide later heard was that Shay had ordered Casey down into the pit while the shredder was running; that Casey had gone down there with a trouble light plugged into an old extension cord. The extension cord was really frayed and it sparked. With all the gasoline everywhere the spark ignited the gasoline and Casey was burned very badly.

This Agent showed Severide Exhibits 5 through 10.

Severide confirmed that all 6 exhibits accurately reflected the yard and recycling activities at LSR.

That concluded the interview on April 19, 2015.

AMENDMENT

On May 15, 2015, Severide called this Agent to inform this Agent that Severide has resigned from LSR effective immediately.

After Severide left this Agent's office on April 19, 2015, Severide began thinking about whether to stay at LSR. Casey's injuries on top of the fact that on May 2, 2015, the sister plant to LSR, Fulton County Recycling, killed a young worker, got Severide thinking about quitting. He knew that Shay had an ownership interest in Fulton County Recycling and had clearly not learned how dangerous the operations were to the workers.

Severide quit LSR when the other owner of LSR and Fulton County Recycling, Shay's father, plead guilty and was convicted for buying scrap metal at the Fulton County yard from heroin addicts, knowing that the metal was stolen. Severide said that during Shay's father's case, it came out that this had been going on for more than a decade.

Severide said that was too much for him. Severide's brother died of a heroin overdose. Although it was never proven, Severide believes that Shay's father bought metal from Severide's brother helping him to get the money to feed his addiction.

Severide stated that he is very bitter about the death and that Shay's father is to blame.

That concluded the telephone conversation.

Adoption of Statement

I, Kelly Severide, having had full and fair opportunity to completely review the forgoing LONE STAR BUREAU OF INVESTIGATION REPORT OF INTERVIEW OF KELLY SEVERIDE (as amended May 15, 2015) do hereby adopt and approve such statement. Such statement is an accurate and complete record of the events leading up to and including the fire in the pit at Lone Star Recycling that was caused by the illegal storage and disposal of gasoline and resulted in serious bodily injury to Matthew Casey.

I further state and affirm that the foregoing Statement is a full and complete account of all matters relevant to the events of April 18, 2015 to the best of my memory and recollection. I have not omitted any important facts or details about the incident or about any of the participants.

Kelly Severide

June 1, 2015

Andrew Dornburg

SUBJECT: INTERVIEW WITH LESLIE SHAY
OFFICES OF ANDREW DORNBURG, licensed private investigator

This memorandum is the result of a transcription of my notes. My notes were recorded in Gregg shorthand contemporaneously with the oral statement of Leslie Shay. This memorandum is a substantially verbatim recital of the oral statement made by Leslie Shay to me.

On February 10, 2016, at 9 am sharp. Leslie Shay (DOB: June 14, 1976) arrived at my office. Shay presented at the request of Defense Counsel who asked that I conduct a thorough interview of Shay. Shay and the company, Lone Star Recycling, were indicted on February 2, 2016 on one count of knowing endangerment under the environmental laws of Lone Star.

Shay arrived promptly, was well groomed, sober and subdued.

Shay was born in Fulton County to William "Bill" and Jenny Shay, the only child of that union. Shay's parents were in their mid-forties when Shay was born. Jenny Shay died in childbirth and Shay was raised by Bill Shay. It was a privileged childhood where Shay wanted for nothing except the love of Shay's father. He was distant, a strict disciplinarian and Shay could never seem to please him. Shay left home at 18, moved to Lone Star and enrolled in the paramedic program at Lone Star Health and Hospital. Shay graduated first in the class and was immediately hired by Lone Star Ambulance. Shay rode as a paramedic on the ambulance, responding to innumerable emergency situations for 10 years. Shay was repeatedly recognized by the Mayor of Lone Star for bravery and won many civic awards for excellent response to emergency situations.

Shay never married and does not have any children

Shay's father was part owner and operator of Fulton County Recycling. He began the business in the late 1960's with the purchase of a state-of-the-art Newell Company shredder that was designed and manufactured by Bill Shay's childhood friend, Alton Newell. Bill Shay was very successful in capturing the entire metal recycling market for Fulton County.

In 2005, Bill Shay bought the recycling facility located here in Lone Star. He spent a year refurbishing the equipment, installed all the latest recycling and shredding machinery and gave Leslie Shay a 50% ownership in the business on Leslie's 30th birthday. Although Shay was perfectly happy as a paramedic, Shay, always wanting to

please Bill Shay, quit the job as a paramedic and began working full time at Lone Star Recycling. (After Bill Shay was convicted for violation of the organized crime laws in connection with his purchase of scrap metal from heroin addicts, he gave the his 50% ownership to Shay. Thus, Shay is the sole owner of Lone Star Recycling).

Having never run a business before, Shay worked hard to learn the recycling business and all there was to know about running a small business. However, whereas Bill Shay had made a small fortune at Fulton County Recycling, Shay was not so fortunate. With the Great Recession, the flooding of the steel market by China which depressed the price of finished and semi-finished steel and more competitors moving into the market, Shay had to work night and day just to keep afloat. Shay estimates a normal work week at about 80 hours.

Despite the difficult financial situation, Shay always paid the employees of Lone Star Recycling extremely well. Shay believed strongly that the employees needed excellent wages and benefits. In addition to their wages, all employees received a certain percentage of the day's profits based on their respective jobs with the maintenance crew, the scale operator and the loader operator being paid the most. This was to incentivize the employees to work hard, as profits were directly tied to the amount of steel shredded in any one day.

Shay was also extremely safety conscious. Shay posted numerous warning posters throughout the facility, had regular safety inspections performed by the manager of safety from the Fulton County facility and never had a single complaint from any employee or from Lone Star's Occupational Safety and Health Administration. LSOSHA inspected the facility at least twice a year.

Shay was asked about the maintenance of the equipment at the recycling center. Shay responded that there were two kinds of maintenance: routine and situational. The routine maintenance including routine cleanings, oil changes, hammer changes. The routine maintenance was designed to anticipate problems and solve them before they happened. Situational maintenance was more like repairs. If the machines stopped working during the shifts, the maintenance men would need to fix the problem. Both kinds of maintenance were to be recorded in log books kept in the front office by the scales. If any work was done by the maintenance crew, the date and time of the action, the reason for the action, the action taken were all to be logged in immediately after completing the maintenance or repair. The person actually completing the repair, whether an employee or an independent contractor, was to initial the log-book entry.

Shay was asked if the machinery was ever turned off for maintenance. Shay said that the shredding machinery and the loaders, the primary equipment at the yard, were powered down every night at 8 pm and not restarted until 8 am the next morning. This allowed the first-shift maintenance crew three hours every day (from 5 am to 8 am) to perform whatever maintenance, whether routine or situational, that was needed. However, if during the day an issue arose that required the maintenance crew to repair the machinery, the machinery was to be shut down completely, lockouts placed on the ignition and the area cleared by the maintenance crew before any repairs began. Everyone was under strict instruction not to work on the machinery if it was running as it presented a very dangerous situation to do so. Shay said that after the accident involving Casey Matthews, some of the pickers (later identified as Chris Bloom, Caleb Miller, Mark Altman and Scott Riddle) who had worked at the yard told Shay the maintenance crew often worked on the machinery while it was still running. Shay believes with the benefit of hindsight the maintenance men knew they would make less money if the machinery was turned off, so they took terrible risks. Shay said if Lone Star Recycling was still operational, Shay would not give out bonuses based on the day's profits. Shay explained that after the raid by the Lone Star Bureau of Investigation and getting indicted, Shay closed the yard.

Shay was asked to describe the events of April 18, 2015. Shay said it was a normal Friday. Upon arriving at work at the usual time, 11 am, Shay checked the maintenance log books. Shay assumed the routine maintenance had been performed between 5 am and 8 am that morning even though the log book did not reflect it. There had been one really big jam at about 10:30 am that required that one of the guards at the bottom of the drum be welded. The guards keep the metal in the drum until it is small enough and then it drops out the bottom onto a conveyor belt.

Shay showed me a drawing of the inner works of the shredder and drew an arrow towards where the broken guard was. I marked it as Exhibit 4 and attached it to this report.

A contract welder, Tony Dawson, apparently did the work. Dawson is a long time contractor at both Fulton County and Lone Star Recycling. Dawson had a horrible heroin addiction but Shay helped him get clean 15 years ago when Shay was still a paramedic. Dawson has been a friend ever since. The Lone Star Recycling employees are told to call Dawson first if any welding is needed on site. No Lone Star Recycling employee knows how to weld.

Shay said that other than a few minor items, it was business as usual.

Shay always walks the yard at about 3:00 to 3:30 each afternoon. Shay says it is important that the employees know that Shay is there and watching. Shay was making the usual rounds. Shay was back by the maintenance pit when Shay saw a very old and frayed extension cord on the ground leading into the pit beneath the drum of the shredder. Shay explained that a concrete pit had been constructed below the drum of the shredder to allow easy access to the drum. Because of the wear and tear on the drum, easy access to maintain the equipment is essential. The floor of the pit is a sloping concrete ramp down to and below the drum. There are four sconce lights lighting the ramp and four lights lighting the area underneath the drum.

Shay noticed the extension cord and thought it very unusual to have a frayed extension cord on the premises. Such sloppy maintenance was against company policy. Additionally Shay could not figure out why an extension cord would be leading down the ramp to the maintenance pit while the machinery was running. As Shay bent down to inspect the cord more closely there was an explosion in the pit. Shay heard an animal-like screaming and Matthew Casey ran up the ramp, his clothes engulfed in flames, screaming and screaming. Shay grabbed Casey and threw him to the ground. Shay lay on top of Casey and began rolling him over and over to put out the flames. Shay was yelling, “call 911, call 911.” Shay remembers Kelly Severide coming around the corner of the shredder and believes Kelly is the one who called 911. The ambulance crew Shay used to ride with responded to the call and took Casey to Lone Star Health and Hospital. Shay started to describe Casey’s injuries but couldn’t continue as Shay began to sob at the memory.

Shay visited Casey every day at the hospital. Shay was grateful that Lone Star had provided such excellent benefits because all of Casey’s care was covered by his insurance. Shay visited Casey every day at the Rehab center until Shay’s lawyer said given that Casey was the named victim in the ongoing criminal investigation; Shay should not have any further contact with Casey. Shay listened to the lawyer, but worries about Casey every day.

Shay was then provided with a copy of the 302 for Severide and asked to read it. Shay got more and more upset but read the entire statement. Shay was asked to comment on Severide’s allegations concerning the gasoline.

Shay was visibly upset and declared “it is all a complete lie.” Shay went on to explain that while it was true that in the beginning Lone Star Recycling only accepted car hulls and later began accepting whole cars, it never accepted cars with gasoline or other fluids. Shay said it would not make any sense to accept cars with gasoline because gasoline is heavy but unusable for Lone Star Recycling. Shay said it would not make any sense for Lone Star to pay for a heavy liquid for which it had no use. Shay knew that gasoline was a hazardous waste that would have required a special permit were Lone Star Recycling to store or dispose of gasoline. Shay said no such permit was ever requested or obtained because Lone Star was never in the business of storing or disposing of gasoline.

Shay said it was Kelly Severide’s job to make sure that all fluid reservoirs, including the gas tank, had been punched and drained before allowing the crushed cars on the scale. Shay added that Severide was fired in May for poor job performance.

Shay showed me the pictures defense counsel had asked Shay to bring. The pictures are marked as exhibits 5 through 10 and attached to this report. Shay confirmed that the pictures accurately reflect the yard and recycling activities at Lone Star Recycling

Adoption of Statement

I, Leslie Shay, having had full and fair opportunity to completely review the forgoing INTERVIEW OF LESLIE SHAY BY ANDREW DORNBURG do hereby adopt and approve such statement. Such statement is an accurate and complete record of my interview with Investigator Andrew Dornburg.

I further state and affirm that the foregoing Statement is a full and complete account of all matter relevant to the events of April 18, 2015, to the best of my memory and recollection. I have not omitted any important facts or details about the incident or about any of the participants.

Leslie Shay — February10, 2016

DEPOSITION OF PHILIP MARLOWE, PHD

Lone Star Health and Hospital

1000 Passing Away Blvd

Lone Star, 10062

Thursday, June 15, 2016

A P P E A R A N C E S

FOR LONE STAR: COURTNEY PEREZ

LONE STAR U.S. ATTORNEY'S OFFICE

FOR THE DEFENDANTS DEFENSE COUNSEL

Lone Star Recycling

Leslie Shay

I N D E X

E X H I B I T S

Exhibit Number	Initial Reference
Exhibit 11 (Marlowe Resume)	page 3
Exhibit 12 (Opinion letter of Marlowe)	page 4

The Witness, Philip Marlowe, having been first dully sworn, was examined and testified on his oath as follows:

EXAMINATION

BY Ms. Perez::

Q Good afternoon, Dr. Marlowe.

A Good afternoon.

Q Could you please state your name and spell you last name for the court reporter?

A My name is Philip Marlowe, P-H-I-L-I-P M-A-R-L-O-W-E.

Q Where are you employed?

A I am employed as an Environmental Scientist and Engineer at Environmental Consultants, Inc, here in Lone Star.

Q How long have you been there?

A I've been employed there since 1989.

Q Dr. Marlowe, I would like the record to reflect that we are sitting in your hospital room, that the court has granted this deposition because you are, and I do apologize sir, terminally ill.

A That is as I understand it, yes.

Q Sir, do you feel well enough to proceed today?

A Yes, I am a bit weak, but they tell me I still have a month to live. I guess being exposed to nasty chemicals my entire professional career has caught up with me. But yes, I am okay, you can continue. However, anything you can do to speed things along would be greatly appreciated.

Q Understood. To that end Dr. Marlowe, I have with me your resume. I have marked it as Exhibit 11. Could you please take a look at it?

A Okay, I have read it.

Q Does this resume properly reflect your educational and professional background?

A Yes it does.

Q Counsel are you willing to stipulate that this resume will be used as the sole information concerning Dr. Marlowe's qualifications?

BY DEFENSE COUNSEL

A Yes.

BY MS. PEREZ

Q Thank you. Then there is no need to go through your qualifications, Doctor.

A I appreciate that.

Q Dr. Marlowe I am now handing you what has been marked as Exhibit 12. It is a letter, purportedly written by you to Defense Counsel dated June 3, 2016. Do you recognize it?

A Yes. This is the letter I wrote to Defense Counsel over there, setting forth what I understood the task to be, the methodology used to complete the task and the results of the testing we were asked to perform.

Q And is the report an accurate summary of the task to be performed, the methodology used to complete the task and the results of the testing you performed.

A Yes.

Q To summarize Dr. Marlowe, is it your opinion, based on the soil testing you performed at Lone Star Recycling that no gasoline was present in any of the 30 soil samples you tested.

A That is my opinion.

Q. Counsel are you willing to stipulate that this letter will be used as the sole source of the task performed, the methodology used, the opinion reached and the fee paid to Dr. Marlowe in this matter.

BY DEFENSE COUNSEL:

A Yes.

BY MS PEREZ:

Q Finally Dr. Marlowe, do you know Bill Shay?

A Yes.

Q How do you know him?

A He was the best man at my wedding 50 years ago and I am the godfather to his only child, Leslie Shay.

Q I have nothing further. Thank you, Dr. Marlowe. And I wish you all the best on your final journey.

SUBJECT: **INTERVIEW OF TONY DAWSON**
BY ASHLEY HYMEL OF THE OFFICES OF ANDREW DORNBURG, licensed private investigator

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This memorandum is the result of a transcription of my notes. My notes were recorded in Gregg shorthand contemporaneously with the oral statement of Tony Dawson. This memorandum is a substantially verbatim recital of the oral statement made by Tony Dawson to me.

On March 4, 2016 at the request of defense counsel I sought to locate Tony Dawson. Leslie Shay had previously informed me that Shay had taken Dawson home on numerous occasions, that Dawson always requested he be let out at the corner of Colfax and Grape and that as a result Shay was very uncertain of Dawson's exact address. Shay assumed Dawson lived in the vicinity of the intersection of Colfax and Grape.

I arrived at the intersection at 8 pm. There is a Benjamin Moore Paint store on the northwest corner of Colfax and Grape. On the northeast corner is a Big O Tire. The southwest corner is home to O'Reilly Auto Parts and the southeast corner is the location of Solera Restaurant.

I parked behind the paint store and walked north on Grape as the neighborhood was a bit rougher to the north than to the south. The first building behind the paint store was a big house that appeared to have been converted into several apartments. Three very large men were sitting on the front porch. I walked up and asked them if they knew Tony Dawson.

The largest of the three replied by asking, "Who wants to know?"

I replied that I did and that I was a licensed private investigator working for Leslie Shay.

The man responded, "Shay has done more for the folks in this neighborhood than any person alive, I'll get Dawson for you."

With that, he went inside and returned very shortly with a person who said, "I'm Dawson, what can I do for you. Leslie Shay saved my life. I will do absolutely anything to help."

I explained the situation to Dawson and asked if Dawson would be willing to tell me about working at Lone Star Recycling (LSR) and particularly on April 18, 2015. Dawson agreed.

Dawson began by giving me some background information. Dawson was born and raised in Lone Star. Dawson graduated from Lone Star High School and went to trade school: first to learn how to be a bartender and then to learn how to weld. However, Dawson's first job out of school was as a roadie for a heavy metal band, most of who went on to form Metallica. The touring was grueling and Dawson got hooked on heroin. One night at a concert in Lone Star, Dawson overdosed on some very high-grade, nearly pure heroin he had purchased from his now-deceased dealer, Krazy 8. A buddy called an ambulance and Leslie Shay was the lead paramedic. When Dawson came to, about 24 hours later, Shay was at Dawson's bedside. They have been very close friends ever since. Dawson has not abused drugs or alcohol since the near-fatal overdose and credits Shay for Dawson's sobriety.

After Dawson completed rehab Dawson went to work as a contract welder and also invested in a bar, Molly's, which Dawson owns along with Chris the "Claw" Hermann. Dawson welds on projects during the day and tends bar at night.

Dawson is the "go-to" welder at LSR, meaning that if a welder is needed, Dawson is called in first. Dawson is not always available, so other welders work at LSR, but Dawson's understanding is that Dawson is to be called first.

Dawson remembers April 18, 2015 very clearly as the day Matthew Casey got hurt. Dawson said Shay has never really gotten over that incident. Dawson apparently is also a history buff, because Dawson mentioned that April 18 was the day of the great San Francisco Fire. Dawson was reading up on that event when the phone rang about 10 am. It was LSR asking him to come down and weld a broken part on the shredder.

Dawson jumped in the truck used for work and drove to LSR. Dawson drove through the front gates and back towards the shredder. Dawson was met by the morning shift maintenance man, Luke Calhoun, who told him there appeared to be a problem with one of the lower guards, as large pieces of material were being spit out the bottom of the shredder. Dawson could hear that the shredder was off. Before heading into the maintenance pit, Dawson checked to be sure that the ignition lock was in place and confirmed that all personnel had been removed from the shredder work area. Dawson put on a hard hat with a head lamp and went down into the pit to inspect the damage. Dawson said the lights on the ramp and down in the pit were all working, but out of force of habit Dawson wears a lighted helmet. Dawson inspected the guards at the bottom out-feed of the shredder and immediately noticed that a guard had been sheared off. Dawson confirmed that if a guard is sheared off large pieces of metal will escape the drum where

the metal is hammered into smaller pieces. Dawson also confirmed that the guard had to be welded in order to be repaired, nothing else would work.

I handed Dawson exhibit 4 (the drawing Andrew had received from Shay) and asked Dawson if the arrow pointed to the general area of the broken guard. Dawson replied that it did.

Dawson went on to say that Dawson walked back up the concrete ramp to the work truck, got the necessary welding equipment to make the repair and returned to the pit beneath the drum of the shredder. Dawson was able to locate the guard that had sheared off and welded the piece back on.

Dawson used oxy-acetylene welding equipment. It consists of two large tanks (one containing the oxygen and the other containing the acetylene), a regulator assembly at the top of each tank, a pair of hoses leading from the regulators to the torch handle and the torch handle itself. A picture of the machine is included to the right.

Dawson began by adjusting the line pressure, which is controlled by the large wing nut on the front of each regulator. He then used a No. 2 welding tip, created a small puddle of molten metal on the drum of the shredder, then put the end of a welding rod into the puddle. The rod melted. He then heated the guard piece with the torch and affixed it to the welding rod. Dawson remarked that enough heat to get the drum and the broken piece to puddle were essential, or the weld would not hold.

Dawson explained that no matter how you try, you cannot make a good weld unless you correctly adjust the torch. The flame you're after is the neutral flame which comes just as the acetylene feather of the carburizing flame disappears into the inner cone.

I confirmed that an open flame was indeed used by Dawson to make the repair on the morning of April 18, 2015.

I then inquired whether there was any gasoline in the pit when Dawson was making the repair. Dawson looked at me like I was crazy and said, "no way man, I would've been blown sky high."

I asked if Dawson noticed the slightest smell of gasoline, even if Dawson didn't see any gasoline.

Again the response was no.

I told Dawson that Matthew Casey said that there was gasoline in the pit and that the smell of gasoline in the pit was overwhelming.

Dawson responded, "Not when I was there, man. It would be suicide to weld in a pit with gasoline."

I asked whether Dawson had ever noticed any gasoline at LSR, Dawson responded, "only in the gas tanks of the vehicles." Dawson confirmed that he had been in the pit many, many times and had never seen or smelled gasoline in the maintenance pit.

I showed Dawson the maintenance log books for April 18, 2015 and asked if his initials were on the page. He confirmed that the initials next to the entry at 10:30 were indeed his. Dawson confirmed that Luke Calhoun, the morning maintenance man, had filled out the log book immediately after Dawson finished and asked Dawson to initial the entry. Dawson confirmed that this was done each time he repaired anything at LSR.

I thanked Dawson for speaking with me and began to walk back to my vehicle. The large man who had been so helpful stopped me and said that he would walk me back to my car, that it wasn't safe for me to go alone.

Adoption of Statement

I, Tony Dawson, having had full and fair opportunity to completely review the forgoing INTERVIEW OF TONY DAWSON BY ASHLEY HYMEL do hereby adopt and approve such statement. Such statement is an accurate and complete record of my interview with Investigator Hymel.

I further state and affirm that the foregoing Statement is a full and complete account of all matter relevant to the events of April 18, 2015, to the best of my memory and recollection. I have not omitted any important facts or details about the incident or about any of the participants.

Tony Dawson — March 4, 2016

FOR IMMEDIATE RELEASE
ENR
TUESDAY, FEBRUARY 2, 2016
(213)514-2008
WWW.USDOJ.GOV
TDD (213) 514-1888

LONE STAR RECYCLING FACILITY CHARGED WITH KNOWINGLY

ENDANGERING EMPLOYEES

LONE STAR RECYCLING, INC. a Lone Star scrap metal recycler, was charged today with knowingly endangering its employees by storing discarded gasoline in a pit without taking proper precautions, the Department of Justice and the U.S. Attorney for Lone Star announced today. An employee was injured when the gas caught fire.

"There is no excuse for knowingly endangering workers through illegal hazardous waste storage," said Joel Towner, Assistant Attorney General for Environment and Natural Resources. "Those who do so will be vigorously investigated and prosecuted."

As part of its scrap metal recycling business, LONE STAR RECYCLING took in crushed cars with gasoline still in the tanks. According to the one-count indictment handed up today in District Court in Lone Star, LONE STAR RECYCLING punctured the gasoline tanks, allowed the discarded gasoline to drain on its property and also disposed discarded gasoline near the pit. The alleged activity took place for at least two years. Federal law prohibits storing and disposing gasoline without a permit.

Employees were required to work in the pit exposed to liquid containing gasoline and gasoline fumes without proper protective equipment. According to the indictment, one employee was burned and/or scarred in a fire sparked by gas fumes in the pit. The employee was hospitalized.

Also charged with illegal storage and disposal of the discarded gasoline was Leslie Shay, Owner and President of LONE STAR RECYCLING.

According to U.S. Attorney for the District of Lone Star, Tim Williams, law enforcement authorities in Lone Star are aggressively pursuing individuals and businesses that mishandle hazardous wastes and that intentionally endanger workers.

If convicted, the company faces a maximum fine of up to $1 million dollars for the knowing endangerment and up to $50,000 per day of storage and disposal or $500,000 per count for the additional charges. The individual faces up to five years in prison and a fine of up to $50,000 per day of storage and disposal or $250,000 per count for the illegal storage and disposal charges.

The investigation was conducted by the Lone Star Environmental Protection Agency's Criminal Investigation Division and the Lone Star Bureau of Investigation. The case is being prosecuted by the Lone Star Justice Department's Environment and Natural Resources Division.

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16-383

OSHA
Occupational Safety
and Health Administration

Lone Star Occupational Safety and Health Administration
2222 East 22nd Street
Lone Star 80222
January 15, 2015

via email

Leslie Shay
Owner and President of Lone Star Recycling

Dear Ms. Shay:

Please note that the Lone Star Occupational Safety and Health Administration ("LSOSHA") received an anonymous tip that Lone Star Recycling ("LSR") is storing hazardous waste without a permit, specifically gasoline.

As a result of this anonymous tip, the LSOSHA is commencing, as of today's date noted above, an investigation into potential violations of 42 Lone Star Code 6928.

Should you have any questions, please have your attorney contact me at the number below.

Sincerely,

Madelyn Light
Deputy General Counsel
Lone Star Occupational Health and Safety Administration
216-987-6543
mlight@LSOSHA.com

OSHA
Occupational Safety
and Health Administration

Lone Star Occupational Safety and Health Administration
2222 East 22nd Street
Lone Star 80222
January 15, 2015

via email

Leslie Shay
Owner and President of Lone Star Recycling

Dear Ms. Shay:

Please note that the Lone Star Occupational Safety and Health Administration ("LSOSHA") has completed a thorough investigation of the premises of Lone Star Recycling. No violations of 42 Lone Star Code 6928 were detected.

Thank you for your extraordinary cooperation during the course of the investigation.

Sincerely,

Madelyn Light
Deputy General Counsel
Lone Star Occupational Health and Safety Administration
216-987-6543
mlight@LSOSHA.com

INSTRUCTION NO. 01

Before we begin the trial, I would like to tell you about what will be happening here. I want to describe how the trial will be conducted and explain what we will be doing.

The first step in the trial will be the opening statements. Either attorney may make an opening statement if he chooses to do so. Opening statements are not evidence. Their purpose is only to help you understand what the evidence will be.

Next the prosecution will offer evidence. Evidence consists of the sworn testimony of the witnesses, the exhibits received in evidence, and stipulated, admitted, or judicially noticed facts.

After the prosecution's evidence, the defendant may present evidence in his own behalf, but he is not required to do so. I want to remind you that the defendant is presumed to be innocent. The prosecution must prove the guilt of the defendant beyond a reasonable doubt. The defendant does not have to prove his innocence or call any witnesses or introduce any evidence.

At the conclusion of the evidence I will tell you the rules of law which you are to use in reaching your verdict. I will read those rules of law to you and you will be allowed to take them with you to the jury room during your deliberations.

After you have heard all the evidence and the instructions, the prosecution and the defense may make their closing arguments. Like opening statements, closing arguments are not evidence. The prosecuting attorney will have the opportunity to reply to the closing argument made by the defense.

You will then go to the jury room to deliberate on a verdict. Your purpose as jurors is to decide what the facts are, and your decision must be based solely upon the evidence.

It is my job to decide what rules of law apply to the case. You must follow all of the rules as I explain them to you. You may not follow some and ignore others. Even if you disagree or do not understand the reasons for some of the rules, you must follow them. You will then apply these rules to the facts which you have determined from the evidence. In this way you will determine whether the prosecution has proven the guilt of the defendant beyond a reasonable doubt.

INSTRUCTION NO. 02

Every person charged with a crime is presumed innocent. This presumption of innocence remains with the defendant throughout the trial and should be given effect by you unless, after considering all of the evidence, you are then convinced that the defendant is guilty beyond a reasonable doubt.

The burden of proof is upon the prosecution to prove to the satisfaction of the jury beyond a reasonable doubt the existence of all of the elements necessary to constitute the crime charged.

Reasonable doubt means a doubt based upon reason and common sense which arises from a fair and rational consideration of all of the evidence, or the lack of evidence, in the case. It is a doubt which is not a vague, speculative or imaginary doubt, but such a doubt as would cause reasonable people to hesitate to act in matters of importance to themselves.

If you find from the evidence that each and every element has been proven beyond a reasonable doubt, you will find the defendant guilty. If you find from the evidence that the prosecution has failed to prove any one or more of the elements beyond a reasonable doubt you will find the defendant not guilty.

INSTRUCTION NO. 03

There are two types of evidence from which you may properly find the truth as to the facts of a case. One is direct evidence. The other is circumstantial evidence, that is, the proof of facts from which other facts may reasonably be inferred. The law makes no distinction between direct and circumstantial evidence.

INSTRUCTION NO. 04

You have heard witnesses who have testified as experts. You are not bound by the testimony of experts; their testimony is to be weighed as that of any other witness. It is entirely your decision to determine what weight shall be given their testimony.

INSTRUCTION NO. 05

The defendants are charged in count one with a violation of 42 Lone Star Code § 6928(e)

This law makes it a crime to knowingly store or dispose of a hazardous waste, specifically gasoline, without a permit and thereby place another person in imminent danger of death or serious bodily injury.

To find a defendant guilty of this crime you must be convinced that the government has proved each of the following beyond a reasonable doubt:

First: the defendant knowingly stored or disposed of a hazardous waste.

Second: without a permit;

Third: thereby placed another person in imminent danger of death or serious bodily injury.

Gasoline is a hazardous waste within the meaning of the law.

INSTRUCTION NO. 06

A crime is committed when the defendant has committed a voluntary act prohibited by law, together with a culpable state of mind.

"Voluntary act" means an act performed consciously as a result of effort or determination.

Proof of the voluntary act alone is insufficient to prove that the defendant had the required state of mind.

The culpable state of mind is as much an element of the crime as the act itself and must be proven beyond a reasonable doubt, either by direct or circumstantial evidence.

In this case, the applicable state of mind is explained in Instruction No. 7.

INSTRUCTION NO. 07

A person's state of mind is knowing with respect to—

1. his conduct, if he is aware of the nature of his conduct;

2. an existing circumstance, if he is aware or believes that the circumstance exists; or

3. a result of his conduct, if he is aware or believes that his conduct is substantially certain to cause danger of death or serious bodily injury.

INSTRUCTION NO. 08

In determining whether a defendant who is a natural person knew that his conduct placed another person in imminent danger of death or serious bodily injury—

1. the person is responsible only for actual awareness or actual belief that he possessed; and

2. knowledge possessed by a person other than the defendant but not by the defendant himself may not be attributed to the defendant; *Provided*, That in proving the defendant's possession of actual knowledge, circumstantial evidence may be used, including evidence that the defendant took affirmative steps to shield himself from relevant information.

INSTRUCTION NO. 09

It is an affirmative defense to a prosecution that the conduct charged was consented to by the person endangered and that the danger and conduct charged were reasonably foreseeable hazards of—

1. an occupation, a business, or a profession; or

2. medical treatment or medical or scientific experimentation conducted by professionally approved methods and such other person had been made aware of the risks involved prior to giving consent.

The defendant may establish an affirmative defense under this subsection by a preponderance of the evidence.

INSTRUCTION NO. 10

The term “organization” means a legal entity, other than a government, established, or organized for any purpose, and such term includes a corporation, company, association, firm, partnership, joint stock company, foundation, institution, trust, society, union, or any other association of persons.

INSTRUCTION NO. 11

The term “serious bodily injury” means—

1. bodily injury which involves a substantial risk of death;

2. unconsciousness

3. extreme physical pain;

4. protracted and obvious disfigurement; or

5. protracted loss or impairment of the function of a bodily member, organ, or mental faculty.

INSTRUCTION NO. 12

The bailiff will now escort you to the jury room. Upon reaching the jury room, you are to select one of your members to be the foreman of the jury. Your foreman will preside over your deliberations and shall sign whatever verdict you reach.

The verdict must represent the considered judgment of each juror. In order to return a verdict, it is necessary that each juror agree to it. Your verdict must be unanimous.

Only one verdict shall be returned signed for each count and it and the unsigned verdicts and these instructions shall remain in the possession of your foreman until such time as they are called for in open court. Upon reaching a verdict you will inform the bailiff of this Court, who in turn will notify the Court, and you will remain in your jury room until called into the Courtroom.

You will be provided with two forms of verdict. When you have unanimously agreed upon your verdicts you will select the forms which reflect your verdicts and the foreman will sign it as the Court has stated. The unsigned forms shall also be returned with no markings on them.

The forms of verdict you will receive read as follows: (read all verdict forms). You are further instructed that no inferences are to be drawn from the order in which the Court reads the verdicts.

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF LONE STAR
No. CR-17-3366

THE UNITED STATES OF LONE STAR, Plaintiff, v. 1. Lone Star Recycling 2. Leslie Shay Defendant.	§ § § § § § § § § § §	IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF LONE STAR

JURY VERDICT
COUNT 1: KNOWING ENDANGERMENT

I. We, the jury, find the defendant, Leslie Shay, NOT GUILTY of Count 1, Knowing Endangerment.

_____
FOREPERSON

II. We, the jury, find the defendant, Leslie Shay, GUILTY of Count 1, Knowing Endangerment.

_____
FOREPERSON

* The foreperson should only sign section I *or* section II above.

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF LONE STAR
No. CR-17-3366

THE UNITED STATES OF LONE STAR, Plaintiff, v. 1. Lone Star Recycling 2. Leslie Shay Defendant.	§ § § § § § § § § § §	IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF LONE STAR

JURY VERDICT
COUNT 1: KNOWING ENDANGERMENT

I. We, the jury, find the defendant, Lone Star Recycling, NOT GUILTY of Count 1, Knowing Endangerment.

_____
FOREPERSON

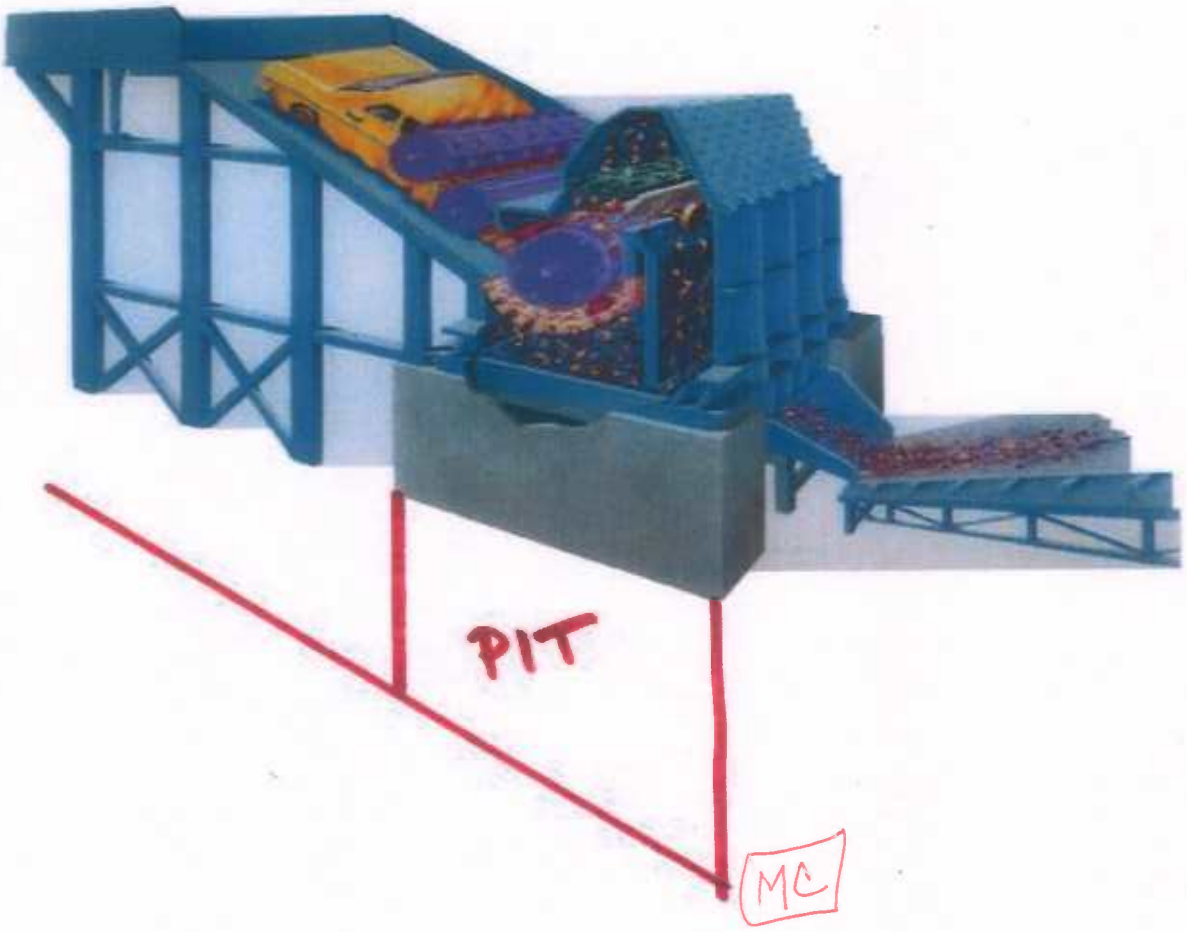
II. We, the jury, find the defendant, Lone Star Recycling, GUILTY of Count 1, Knowing Endangerment.

_____
FOREPERSON

* The foreperson should only sign section I *or* section II above.


CAT

Shredder



Lone Star Recycling
Maintenance Log

This log is to be filled out upon every incident of routine maintenance or repair.
The person performing the work must initial the entry

NO EXCEPTIONS

DATE	REASON FOR ACTION	ACTION TAKEN	PERSON PERFORMING ACTION	INITIALS
April 16, 2015 5am	Routine Repair/ Maintenance	Sweep pit ramp; shavings on floor to absorb moisture; sweep	Luke Calhoun	LC
		Replace two hammers; inspect out flow guards		
Apnl 16, 2015 10 am	Repair; feed chain broke on intake conveyor	Feed chain broke; Welder called; chain welded	Mike Shaw	MS

Lone Star Recycling
Maintenance Log

This log is to be filled out upon every incident of routine maintenance or repair.
The person performing the work must initial the entry

NO EXCEPTIONS

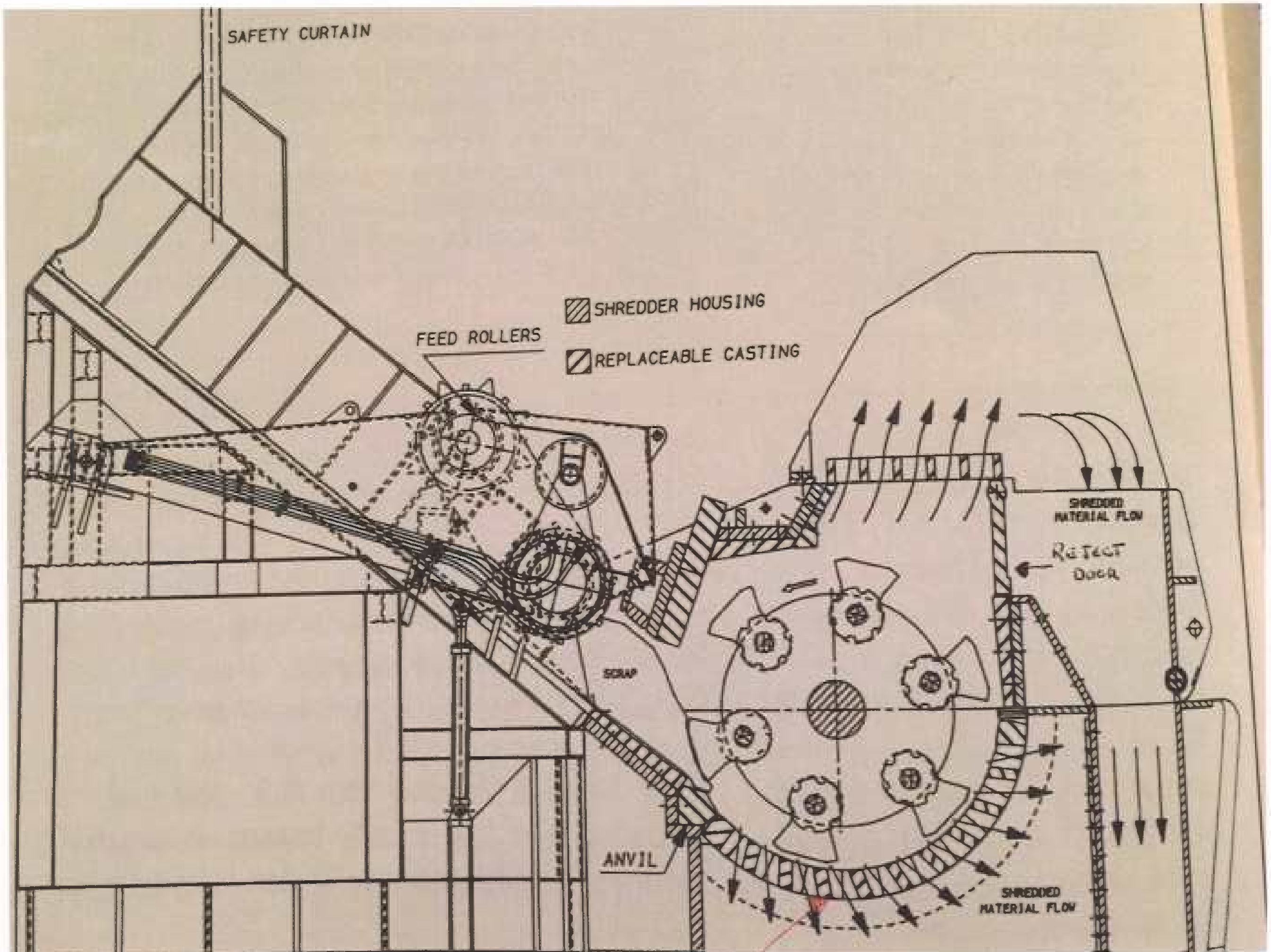
DATE	REASON FOR ACTION	ACTION TAKEN	PERSON PERFORMING ACTION	INITIALS
April 17, 2015 5am	Routine Maintenance	Toss shavings, sweep Inspect for loose chains or broken guards none found	Luke Calhoun	LC
April 17 2015 9:22 am	Jam	Shredder powered off Ignition lock in place Unshreddable removed	Luke Calhoun	LC
April 17 2015 3pm	Propane Tank Explades	Shredder inspected for damage- none found	M. Casey	MC
April 17 2015 5:16	Jam	Jam cleared	M. Casey	MC

Lone Star Recycling
Maintenance Log

This log is to be filled out upon every incident of routine maintenance or repair.
The person performing the work must initial the entry

NO EXCEPTIONS

DATE	REASON FOR ACTION	ACTION TAKEN	PERSON PERFORMING ACTION	INITIALS
April 18 2015 8:30am	Jam	Shredder inspected; Jam cleared	Luke Calhoun	LC
April 18 2015 9:58am	Air-bag cannister explodes	Inspection; no damage	Luke Calhoun	LC
April 18 2015 10:15	Jam	Jam cleared	Luke Calhoun	LC
April 18 2015 10:30	Guard in out-flow drum sheared	Welder called; Guard welded shredder powered off during repair	Tony Dawson	T.D.



guard sheared off.

Early morning trucks waiting to be unloaded

Types of scrap that will be shredded:

Lone Star Recycling Shredder

Shredded Metal

Shredded metal being deposited onto shred pile

Philip Marlowe

Principal Environmental Scientist & Engineer

Expertise	Environmental Engineering, Engineering Geology, Petrochemical Analyst
Education	Ph.D. (Engineering Geology), 1980, University of Lone Star M.S. (Environmental Sciences), 1975 M.S. (Petroleum Engineering), 1974 B.S. (Geology, with Honors), 1972, University of Lone Star
Registrations	Professional Geologist – Lone Star Environmental Manager – Lone Star
Professional Societies	Association of Environmental Engineers Geological Society of America (Executive Committee of the GSA Foundation)

Professional Experience

1989 - Present	*Environmental Consultants, Inc., Lone Star* *Principal Environmental Scientist and Engineer*
1974 – 1989	*Various positions as an Environmental Specialist in academic and consulting firms.*

Project Experience

Dr. Marlowe has over 30 years of experience in the field of Environmental Engineering. Over the past several years, he has been working on issues related to petrochemical contamination of soils and groundwater. Dr. Marlowe has conducted innumerable fluid investigations to assess the presence, quantity and source of the petrochemicals found in soil and groundwater.

Dr. Marlowe has extensive experience regarding the fate and transport of chemicals in soil and groundwater. He has worked extensively in the area of the movement of fluids in the vadose zone and on multi-phase fluid issues as well as the movement of fluids through fractures. He participated in and directed projects involving site assessments, quantitative analysis of fate and transport in soil and groundwater, the design, implementation and evaluation of waste remediation technologies in both the saturated and unsaturated zones.

He is the technical editor and a contributor to the Third Edition of *Identifying Contaminants in Soil and Water*, a standard reference in the environmental sciences.

Teaching: Dr. Marlowe has taught courses in hydrogeology, geologic engineering and contaminant transport at the University of Lone Star.

Philip Marlowe, PhD
Environmental Consultants, Inc.
100 Green Blvd, Suite 400
Lone Star
(546-8994)
wedoitright@environmentalconsultants.com

June 3, 2016
Defense Counsel
Not Going to Jail, PC
100 Freedom Blvd.
Lone Star

Dear Defense Counsel:

Scope of Work

On March 1, 2016, you requested that I, Dr. Philip Marlowe, collect soil samples from the Lone Star Recycling yard to test for the presence of petrochemicals, specifically gasoline, in the soil in the following locations:

1. Near the scales used to weigh the incoming trucks and product;
2. Near the scrap pile
3. Near the shredder at both the intake and the discharge

You informed us that time was of the essence as Lone Star Recycling had been closed and that the owner was attempting to sell the business. Thus, access might be limited in the near future.

Sampling and Testing

On March 15, 2016, I arrived at Lone Star Recycling with another technician. Leslie Shay was present to admit us to the property. The operations had been shut down, so we were the only people on the property.

The conditions were ideal for gathering soil samples. Using standard industry techniques, we gathered 10 soil samples in each of the three areas identified by you in the scope of work and verified by Leslie Shay.

Each of the samples was then field tested with the Petro FLAG Hydrocarbon Analysis System. The Petro FLAG test procedure was followed precisely. That procedure is attached hereto.

The Petro FLAG Hydrocarbon Analysis System is a handheld, portable, light-weight unit. Fifteen response factors, correlating to fuels as dense as heavy crude oil or as sparse as weathered gasoline, are programmed into the PetroFLAG Analyzer for use depending on the analyte of interest, in this instance, gasoline.

The PetroFLAG System fills a gap in the hydrocarbons in soil testing process. Laboratory methods such as EPA 8015, in addition to expense and time, may omit heavier hydrocarbons such as fuel oil, motor oil, greases, and more. Method 418.1, previously the only broad-spectrum 'total petroleum hydrocarbon' soil field test, is highly inefficient for wet soil tests despite being quite accurate for dry soil samples. The PetroFLAG System, in addition to its convenience, speed, and low cost, is an excellent choice when working against such limitations.

It has been repeatedly proved that the Petro FLAG Hydrocarbon Analysis System achieves results comparable in reliability to those that are performed in the Lone Star Environmental Protection Agency laboratory.

The sampling and testing took approximately 10 hours.

RESULTS OF SOILS TESTING

All 30 soil samples were negative for gasoline.

Thank you for this most interesting project. If I can be of further assistance, please do not hesitate to call. In the meantime, if you could please forward payment in full of $15,000, it would be greatly appreciated.

Very truly yours,

Philip Marlowe, PhD

Table of Contents

Ver.1 Rev. 1 04/09

Introduction to the PetroFLAG® Hydrocarbon Analysis System

NOTE: PLEASE READ THE ENTIRE MANUAL BEFORE ATTEMPTING TO RUN THIS TEST

The PetroFLAG hydrocarbon analysis system is a broad spectrum field analytical tool suitable for any type of hydrocarbon contamination regardless of the source or state of degradation[1]. Unlike other field screening methods, the PetroFLAG system does not target specific compounds such as BTEX (Benzene, Toluene, Methylbenzene and Xylene) or PNAs (Poly-Nuclear Aromatics) that may be part of some hydrocarbon mixture. This makes the PetroFLAG system a very versatile analytical method that can be used on most hydrocarbon spills without prior knowledge of the BTEX or PNA content of the contaminant. The PetroFLAG system uses patented chemistry to respond to the broadest range of hydrocarbons possible. The PetroFLAG system is most sensitive to heavier hydrocarbons such as oils and greases and less sensitive to the lighter more volatile hydrocarbon fuels. The specially designed PetroFLAG analyzer allows the user to select, in the field, the response factor that is appropriate for the suspected contaminant at each site. The response factors for a number of contaminants are listed in Table 1. Using the selected response factor, the analyzer compensates for the relative response of each analyte and displays the correct concentration in ppm. The response curves for some typical hydrocarbon contaminants are plotted in Appendix A.

All chemical methods for hydrocarbon analysis in soil that are currently in use, whether they be field screening or laboratory methods, depend on solvent extraction to remove the hydrocarbons from the soil sample. The extraction efficiency for each method is a function of the solvent used and the extraction procedure. This efficiency is also dependent on many other factors such as the soil type, water content, pH, etc. Many EPA SW-846 methods use chlorinated solvents or Freon as extraction solvents. These solvents were originally chosen for their extraction efficiency of polar organic compounds and may not be appropriate for hydrocarbons. Furthermore, special measures need to be taken with these lab methods when the soil is wet.[2] The extraction efficiencies may be as low as 1%[3] in some cases.

The extraction solvent used in the PetroFLAG system has been carefully developed to give consistent extraction efficiencies over the range of soil types and conditions most commonly encountered in the field. The PetroFLAG solvent system contains no chlorofluorocarbons or chlorinated solvents. The extraction efficiency is unaffected by soil moisture and, in most cases, is up to 15%(w/w).[4]

Because the PetroFLAG system has such a broad response spectrum, there are situations where it will indicate a higher hydrocarbon concentration than other methods. This can be due to the higher extraction efficiency of the PetroFLAG extraction solution or the broader response range of the detection system. SW-846 method 8015B, for example, targets only a very narrow range of

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[1]Brake fluid, phosphate ester based hydraulic oil, and other soluble fluids, will not be detected by the PetroFLAG system.

[2]USEPA SW846 Method 3550A Ultrasonic Extraction Rev 1, November 1992

[3]Lee, W.E. III, Houchin, C.A. and Albergo, N., "TRPH Discrimination of Petroleum and Non-petroleum Organic Materials", *American Environmental Lab*, December 1993.

[4]The presence of water will cause a dilution effect resulting in a lower response. This effect can be corrected for, if the water content is known. (For a more complete discussion see "Using the PetroFLAG System: Effects of Soil Water Content on PetroFLAG Result")

hydrocarbons typically in the "Diesel" or "Gasoline" range (DRO or GRO). This method does not detect oils or greases unless the analyst changes the method and specifically looks for the heavier compounds. Requesting 8015B for diesel range hydrocarbons may result in under reporting of the actual total hydrocarbon contamination when oils or greases are present. Method 418.1 is a more general method and detects any Freon extractable compounds that contain a C-H bond. This method has relatively poor extraction efficiencies with many soil types. For a more complete discussion of the comparability of hydrocarbon methods see Appendix B.

Since the PetroFLAG system responds to the full range of hydrocarbons it will also detect some naturally occurring hydrocarbon-like compounds. (Method 418.1 uses a silica column to remove some of these compounds, but will still detect naturally occurring terpenes and creosotes, etc.) Therefore, in situations where high organic content is suspected, background levels outside the spill site should be determined. This will help to identify any naturally occurring sources of hydrocarbons that may cause a positive interference with the test. In cases where there exists a high natural organic background, a "Background Correction" can, in limited circumstances, be used to correct readings for this positive interference. Note: Because of the broad spectrum screening nature of the test, naturally occurring waxes and oils can cause high readings; however, false negatives or under-reported levels are very unlikely.

The PetroFLAG system is a valuable field analytical tool when used as part of a systematic sampling plan. As part of any site work, always have the hydrocarbon contamination characterized at some point during the project by for example, sending confirmation samples for closure to a certified laboratory. Since each laboratory method for petroleum hydrocarbons has a different target analyte and different response characteristics, use only appropriate methods for comparison. Furthermore, since the proficiency of laboratory methods for petroleum hydrocarbons varies from one laboratory to another; it is important to verify that the lab you use is proficient with the method you request. Always ask for QA/QC data and verify that the blanks, duplicates and spikes are within specification for the method. When using a lab that is new to you, send them proficiency samples of known concentrations and varying water content.

Lab results often contain one or more samples that are designated "ND" (none detected) without a qualifier. This type of reporting is misleading because information on the limit of quantification is not included. The designation "ND" never means zero ppm and should be followed by an indication of the detection limits of the method used to obtain the result, e.g., ND<40 ppm. In many cases the detection limits for a method will vary with sample size, dilution factors or extraction procedures and may not be the same for all samples in the sample batch. The detection limits for some of the common lab TPH methods are on the order of 40-50 ppm. Therefore, when comparing laboratory data it is important to know the realized detection limits implied in any "ND" results.

Using the PetroFLAG System

The PetroFLAG analyzer has been specifically designed to be used with the unique patented chemistry of the PetroFLAG system. The meter is shipped fully calibrated, preset with response factor 5. This calibration is sufficient to begin screening measurements; however, in order to achieve optimum performance we recommend that the analyzer be calibrated with each batch of samples, or at least daily. The PetroFLAG analyzer is easy to calibrate and a calibration standard is included with every refill pack.

The PetroFLAG analyzer stores two independent calibration equations in separate memory locations. Each calibration has a unique designation, "1C" or "2C". One way to effectively use this feature is to use one for a "low temp." calibration and one for a "high temp." calibration. This practice is very useful when working at field locations where the ambient temperature varies by more than 10°C over the course of the day. One calibration, run at the lower temperature in the morning, could be stored under "1C" and later as the temperature rises, triggering a temperature warning, a new calibration can be run and stored under "2C". (See below under "Temperature Effects")-

Table 1: Response Factors and Method Detection Limits for Common Hydrocarbons

Hydrocarbon Type	Method Detection Limit (ppm)	Response Setting
Transformer Oil	15	10
Grease	15	9
Hydraulic Fluid	10	8
Transmission Fluid	19	8
Motor Oil	19	7
#2 Fuel Oil	25	7
#6 Fuel Oil	18	6
Diesel Fuel	13	5
Gear Oil	22	5
Low Aromatic Diesel	27	4
Pennsylvania Crude Oil	20	4
Kerosene	28	4
Jet A	27	4
Weathered Gasoline	200*+	2

*See Appendix A
+Due to the non-linear response curve of Gasoline, quantification below 1000 ppm may underestimate the true contamination

Choosing the Correct Response Factor

The microprocessor in the PetroFLAG analyzer uses the calibration data to convert the optical reading into a preliminary concentration. The selected response factor is then used to calculate the correct concentration for the analyte of interest. Therefore, it is important to choose the response factor that is appropriate for the particular hydrocarbon or class of hydrocarbons present at the site. The response factor can be changed at any time without affecting the stored calibrations. (See "Analyzer Operation Examples: Standard Operation-Changing Response Factor Without Recalibrating")

If the contaminant is known or suspected, choose the appropriate response factor from Table 1 and set that response factor on the analyzer. (See "Analyzer Operation" below.) If there is a mixture of hydrocarbons, use the most conservative response factor (i.e. the lowest) for the contaminants known to be present. If the contaminants are unknown, choose a conservative response factor based on those hydrocarbons that are likely to be on the site. Examination of Table 1, indicates that the majority of typical contaminants are in response category 5 or above.

Analyzing High Concentration Samples

The PetroFLAG Hydrocarbon Analyzer is pre-programmed to warn the user of an over-range condition. If the over-range reading is outside of the linear range (±10 precision), but still within the quantifiable range (±20% precision), the reading will be displayed blinking. This reading can be used as an indication that the concentration in the sample is not less than the displayed value. Since the response curve for most analytes is non-linear at high concentrations, the concentration in the sample may be higher than the displayed value. If the over-range condition is outside of the quantifiable range of the meter, the display will show a blinking "EEEE". Either error indication can be cleared by simply inserting the next vial and pressing the <READ/ON> key.

Accurate results can be difficult to obtain when 10 gram soil samples with high contaminant concentrations are used since they may cause a over-range condition on the PetroFLAG analyzer. To quantify these high contaminant samples, extract fresh soil samples of 1 gram size and reanalyze. Then multiply the result by 10 to obtain the concentration in the sample. Using this procedure, it is possible to measure oils containing up to 50,000 ppm of light hydrocarbon contamination or 10,000 ppm of a heavier hydrocarbon. For readings at higher concentrations, a “high range kit” is available.

NOTE: The use of either smaller samples or “high range kits” will affect the precision and accuracy of the method as well as raise the MDL (Minimum Detection Limit) in proportion to the dilution factor.

Converting Response Factors for Data Already Collected

Collected data can be easily converted to the correct reading when it has been determined that the wrong response factor has been used. To make this conversion, multiply the measured value by the response factor initially used to make the measurement and divide by the new response factor.

Temperature Effects on Measurements

The PetroFLAG analyzer is equipped with an onboard temperature sensor to measure the ambient temperature while measurements are being made. The software uses the temperature readings to correct the optical readings for drift caused by the temperature fluctuations. The corrections have been determined for their effects on the turbidity development and the temperature drift of the electronics.

The PetroFLAG analyzer can be used at temperatures from 4ºC to 45ºC. The temperature corrections are valid for temperatures within 10ºC of the calibration temperature. If a calibration is run with each batch of samples, the temperature correction is not significant and measurements can be made at any temperature within the usable range of the instrument. However, if no calibration is run and the ambient temperature deviates from the calibration temperature by more than 10ºC, an error condition will result. The analyzer will display "Err4" which can only be cleared by pressing the <NEXT> key. Pressing of the <NEXT> key will clear the error and display the current reading. This reading can be recorded but it should be noted that the ambient temperature was outside of the acceptable 10ºC window. Any other samples remaining in the series can be read, however, the same error condition will most likely occur. The meter must be recalibrated to eliminate this error condition.

The ambient temperature should be checked before starting to avoid a temperature error when a calibration is not run with the samples,. This can be

done by taking a reading without inserting a vial into the meter. If a reading is displayed, the temperature is within range and additional readings can proceed. If an error is displayed, the meter must be recalibrated before proceeding.

As previously mentioned, the storage of two calibrations, each at a different temperature, will reduce the number of recalibrations necessary as the temperature changes. If the two calibrations are stored under "1C" and "2C" and are run at temperatures levels 20°C apart, the effective temperature range for measurements now becomes 40°C.

Effects of Soil Water Content on PetroFLAG Result

The presence of water in a soil sample will have a definite effect on the reporting value in the final PetroFLAG result. As with all field measurements, the PetroFLAG system result is calculated based on the sample weight "as received". If there is water present in the sample, this will produce a "wet weight" result causing an apparent under reporting by the PetroFLAG technique when compared to a laboratory reporting on a "dry weight" basis.

To correct for the difference between "wet weight" vs. "dry weight" results, simply divide the PetroFLAG value by the "fraction solids" (FS), where fraction solids is:

FS = Dry Weight/Wet Weight

or:

FS = (100 - %water)/100

Furthermore, when reporting the wet weight vs. dry weight results, the presence of water in a soil sample will cause a "dilution effect". Since the PetroFLAG solvent system is miscible with water, the water in the soil will be extracted into the solvent phase. The aliquot filtered into the developer vial will, therefore, be diluted by the presence of the water. To a first approximation, the correction for this "dilution effect" is made by multiplying the PetroFLAG result by one plus the "fraction water" in the sample, R'=R(1+FW), where fraction water (FW) is:

FW=(Wet Weight - Dry Weight)/Wet Weight

or:

FW = %water/100

The equation below can be used to achieve an overall correction that includes both the conversion of the PetroFLAG result to a "dry weight" value and the correction for the dilution effect:

$$R' = R((2/FS) - 1)$$

where:

R' = "Dry Weight" Corrected Result

R = Result displayed by PetroFLAG unit

FS = Fraction Solids

where:

FS = (100 - %water)/100

The above correction is applicable for typical soil types containing up to approximately 15% water by weight. For heavy clays or samples with higher water content, the effect of water content will vary with the analyte and should be determined specifically for each site.

In many cases, the effects of water content can be overcome by using a smaller sample size. This approach is the simplest and can be used effectively when a reduction in precision resulting from a smaller sample size still satisfies the overall data quality objective.

In some soils with high water content, the PetroFLAG response will be reduced both by the poor extraction efficiency of the analyte and a simple dilution. In these soils, the effect of water content on the extraction efficiency can sometimes be reduced by the addition of anhydrous sodium sulfate.

To treat such soils with sodium sulfate, weigh out the appropriate amount of soil sample (10 grams for a standard analysis) followed by the addition of up to 10 grams of anhydrous sodium sulfate. Mix the system thoroughly by stirring and/or shaking the sample until a free-flowing mixture is formed. Add the extraction solvent from a break-top ampule and then, follow the standard analysis procedure.

Treatment with sodium sulfate can improve the extraction efficiency, but will not correct for either the dilution effect or the wet weight/dry weight reporting error. The actual water content in the sample should be determined at some point so that the above corrections for wet weight and the dilution effect can be applied to the final result.

Sample Preparation

Each 10-pack of soil reagents contains reagents and supplies for 10 tests. In addition, one blank and one calibration standard are included. Samples can be run individually or by batch. For optimum performance and throughput, samples should be run in groups of 10 samples, once the meter has been calibrated with a blank and a standard. The meter does not need to be recalibrated, provided that the operating conditions and reaction times are maintained. Total time to analyze 10-15 samples is approximately 20-25 minutes.

Calibration

To insure accurate quantification and repeatable results, it is recommended that the PetroFLAG meter be recalibrated with each batch of 10 samples or, at least, daily. The meter is easily calibrated using an extraction solvent ampule as a blank and the calibration standard (supplied with each ten-pack of reagents).

After exiting the calibration mode, all additional readings made by the PetroFLAG analyzer will automatically incorporate the selected response factor. Therefore, rereading of the calibration standard will result in an incorrect reading unless the response factor being used is 10 and within the correct development time of the sample.

<u>NOTE</u>: Once the *blank* and *calibration standard* have been read, discard them. They will fade with time and cannot be reused; DO NOT USE THEM TO RECALIBRATE THE METER OR TO CHECK THE EXISTING CALIBRATION.

Preparing Blanks and Standards

The following description summarizes the procedure for preparing the blank and calibration standard. Read the step-by-step instructions below completely before beginning the calibration process.

To prepare a *blank* and a *calibration standard*, first label two soil tubes, one as the "blank" and the other as the "standard". Add to the *blank* tube the contents of a break-top ampule labeled “Extraction Solvent”. Add the contents of the break-top ampule labeled "Calibration Standard" to the *standard* soil tube. Process the blank and standard exactly as soil samples as described below. (See “The PetroFLAG Test Procedure”)

QA/QC

Performing periodic calibrations of the PetroFLAG meter is one of the most important quality control checks that can be made. In addition to calibrating the PetroFLAG meter, performance of periodic calibration also serves as a quality control check of the entire analysis system. Each time a calibration is performed the individual operator needs to prepare a fresh set of standards following the entire analysis procedure. To complete a valid calibration, the resulting test standards must meet the QC acceptance criteria stored in the meter. Each time a calibration is carried out, the meter verifies if the operator is performing the test correctly, e.g., following the correct order of steps in sample preparation, holding to the timing requirements, operating the meter correctly, etc. while the meter checks its basic operation. As each calibration is made, the intensity of the test solution is compared to the stored values for acceptance. If the optics have degraded or the electronics are out of specification the calibration will be flagged as an error.

The most important factor affecting the accuracy of PetroFLAG measurements is operator error followed by the ambient temperature determination. If the temperature varies by more than 10ºC from the calibration temperature, the accuracy of the resulting measurement will be affected. Therefore, during each measurement made by the meter, the current ambient temperature is compared to the temperature determined at calibration. If the difference is more than 10ºC, a warning is flashed alerting the operator of the temperature drift. This QC check is transparent to the user unless an error condition exists.

The internal check of the optical system is also transparent to the user. The PetroFLAG meter is designed with two independent optical channels. If, during a measurement, both channels do not agree, an error condition will be generated.

Along with these QC checks, which are performed automatically by the PetroFLAG meter, additional QA/QC procedures should be developed to provide assurances that the data quality objectives for each project are met. The most important part of any SOP (Standard Operating Procedure) should include provisions for ensuring that confirmatory samples are sent to a qualified lab for verification as to the type of hydrocarbon contamination present. This will also serve as a check of the response factor being used. When PetroFLAG meter results are determined to be either high or low when correlated to laboratory data, then a new response factor should be calculated and used. If the PetroFLAG results are not well correlated with the lab, then the field techniques should be examined to determine possible sources of error. A lack of correlation may be the result of inhomogeneous samples or may be due to splitting technique, etc.

A program of field QA/QC should be developed that is compatible with the competing requirements of each user. It should include, a minimum of periodic soil blanks, equipment blanks, soil spikes, and dupes. Other procedures should be implemented depending on the specific requirements of each site.

The PetroFLAG Test Procedure

1) Label the soil extraction tubes (plastic tubes with colored caps) and developer vials (small glass vials with black caps) with the appropriate sample ID. Use the self-adhesive labels to label the screw cap of the developer vial. Do not write in the center 1/3 of the developer vial as this may obscure the optical path when the readings are made

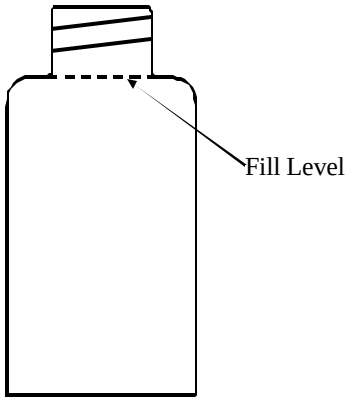
2) Weigh 10 grams (± 0.1 gram) samples of all unknown soils into each of the labeled color-capped polypropylene tubes.

3) Set timer for 5 minutes. Add one break-top ampule of extraction solvent (blue polypropylene top) to the first tube. Start 5 minute timer and shake for 15 seconds. A separate ampule of extraction solvent is added to each of the remaining sample tubes when additional samples are being analyzed. Shake each tube for 15 seconds ensuring that the soil samples are fully wet. Shake each tube intermittently for a total of 4 minutes, then allow each tube to stand for the remaining 1 minute.

4) Verify that the filter disk is firmly attached to the syringe barrel. Remove the cap from the first labeled developer vial. Carefully decant the liquid from the polypropylene soil tube into the syringe barrel minimizing the transfer of soil particles, as this may plug the filter. Insert the plunger into the syringe barrel. Discard the first few drops from the filter into a waste container by pressing the plunger. Next, add the soil extract drop-wise to the developer solution until the meniscus just enters the neck of the vial (see figure). Shake the vial for 10 seconds, start the 10 minute timer and proceed to the next sample. Read the samples as close to the 10 minute time period as possible. Record this reading. Do NOT attempt to reread the sample as sample variation will occur due to fading of the solution over time. Do not let the developer vials stand longer than 20 minutes before reading, as this may result in lower than actual values.

5) If meter is off, turn on the meter by pressing <READ/ON> key and calibrate (optional, see Analyzer Operation).

6) To read, wipe the vial, place into the meter and press the <READ/ON> key. Be sure that the outside of the vial is clean before reading. Record result on work sheet. Read vials in the same order as they were prepared.



6 mL Developer Vial

Analyzer Operation

The PetroFLAG analyzer is controlled by a low-power consumption micro-computer with a pre-loaded operating program which is stored in EEPROM memory. The program cannot be lost regardless of battery condition. The meter stores two calibration curves in separate memory locations. These calibration curves can be independently updated and the response factors can be changed without losing the calibrations.

The PetroFLAG meter is configured to allow easy access to the program modes. The currently active mode is indicated on the LCD display while a reading is in progress. The response factor and the active calibration can be changed from the MAIN MENU using the four keys on the keypad. The four keys are:

SCROLL	**Scrolls through menu choices.**
NEXT	**Exits the read mode or skips a menu option without changing or executing. (Also used to clear error conditions.)**
READ ON	**Turns the meter on and starts a reading.**
SELECT OFF	**Selects a menu choice. Manually turns meter off (only in the *read* mode).**

When the PetroFLAG analyzer is turned on, the unit will return to the last mode it was in prior to being shut down. Under normal operating conditions, the analyzer will power up in the *read* mode. When the analyzer powers up in the *read* mode, the screen will display the last measured value for two seconds, and then, display the currently selected calibration curve ("1C" or "2C") and response factor (1-15). The meter is now ready to resume measurement. Simply insert a new sample vial into the meter and push the <READ/ON> key. The display will initially indicate the calibration curve (either "1C" or "2C") and the response factor (1-15) that is currently selected. Next, the term "CALC" will flash on the screen and after 5 seconds, the measured concentration in ppm will be displayed.

NOTE: If the battery is disconnected and then reconnected, the meter will automatically return to the MAIN MENU. If the calibration curve and response factor displayed are the desired parameters, the MAIN MENU can be exited while retaining the calibration data by pushing the <NEXT> key. To return to the *read* mode, continue pressing the <NEXT> key until the display shows the calibration curve and the response factor continuously without blinking.

If you wish to exit the *read* mode, push the <NEXT> key and the operation is returned to the MAIN MENU. The <NEXT> key is also used to skip a step where a menu selection is required. To change a flashing menu option, push the <SCROLL> key while the option is flashing. To store the currently flashing menu choice, push the <SELECT> key. This stores the current choice and moves the flashing cursor to the next program mode.

Selecting a Calibration Curve

Either of the two calibration curves, identified as "1C" and "2C", can be selected from the MAIN MENU. From either calibration curve any response factor can be selected. To change the response factor or to re-calibrate the unit, use the <NEXT> key to enter the MAIN MENU screen. Immediately upon entering this menu three decimal points and the response factor are displayed. Next, the first two characters on the screen indicates the calibration curve that is currently selected ("1C" or "2C") is displayed. They will blink, indicating that a new curve may be selected. Use the <SCROLL> key to scroll to the next calibration curve. Push the <SELECT/OFF> key to select the curve.

The response factor will then blink. Use the <"SCROLL> key to scroll to the desired response factor for the target analyte and press the <SELECT/OFF> key.

Reading the Blank and Standard

After the response factor has been selected, the screen will read “CALC” for five seconds and then display the calibration temperature. This temperature will remain on the screen until either the <NEXT> key or the <READ/ON> key is pressed. The screen will then prompt you for the "blank" vial by displaying "-bL-". Insert the blank vial in the meter and press the <READ/ON> key (See "Preparing Blanks and Standards" under "Using the PetroFLAG Hydrocarbon Analysis System). After 5 seconds the screen display should read "0" for 2 seconds. The screen will then prompt for the calibration standard, "-CSd". Insert the calibration standard in the meter, press the <READ/ON> key and after 5 seconds, the calibration is complete. The meter will then re-read the calibration standard to verify a valid calibration and display "1000". If the concentration of the calibration standard is not correct using the newly calculated equation, an error message will flash until the <NEXT> key is pushed. If an error condition exists, the previously stored calibration constants will be retained until a valid calibration is completed (See Appendix C, Table 1: Error Conditions).

Taking a Reading

After calibration, the meter will then display the calibration curve in use (“1C” or “2C”) and the current response factor selected. The meter is ready to read the first sample by inserting the sample vial into the meter and pressing the <READ/ON> key. After reading the sample, the meter will display the concentration in parts per million (ppm) until either the <READ/ON> key or the <NEXT> key is pushed. If no key is pushed for a period of five minutes, the meter will turn off automatically. If the meter turns off automatically, the meter can be reactivated by pressing the <READ/ON> key and the unit will return to the operation mode last used. The meter can be turned off manually by using the <SELECT/OFF> key, while in the *read* mode only.

The optical system on the PetroFLAG analyzer is covered with a screw cap to keep out stray light. To remove this screw cap from the vial holder, simply unscrew it 1/4 of a turn counter-clockwise. To make a measurement, insert the developer vial into the unit, place the screw cap over the vial, and while pressing down on the cap (depressing the spring in the bottom of the vial holder), rotate the cap clockwise. Turn the cap until it is snug, but do not over-tighten.

Power Requirement

The PetroFLAG analyzer is powered by one 9V alkaline battery (included). This battery should last for several thousand readings. If a low battery condition exists "LP" will appear on the display.

Analyzer Operation Examples

Outlined below are step-by-step examples of how to use the PetroFLAG analyzer. Under normal operating conditions the meter will power up in the *read* mode. The examples given here categorized as "standard operation" assume that the meter was last operated in the *read* mode. If the meter was left in another mode for longer than five minutes or the batteries were removed, see below for special cases.

Standard Operation:

(Whenever the last operation mode was *read*, the calibration data is current and the last-used response factor is valid.)

1) Turn the meter on by pressing:

READ ON

The last reading will be displayed for 2 seconds. The display will show the calibration curve and response factor currently selected. The meter is now in the *read* mode.

2) Remove the screw cap, insert developer vial to be read and retighten cap.

3) To begin reading press:

READ ON

The display will show the calibration curve and response factor currently selected (blinking), the display will read "CALC" for 3 seconds, and the final result will be displayed.

4) The result will be displayed until the next reading is taken. To make the next reading: remove the vial and repeat steps 2 and 3 above.

Standard Operation/Changing Response Factor Without Recalibrating:

(Whenever the last operation mode was *read* and a different response factor is desired.)

1) Turn the meter on by pressing:

READ ON

The last reading will be displayed for 2 seconds. The display will show the calibration curve and response factor currently selected. The meter is now in the *read* mode.

2) Return the operation to the MAIN MENU by pressing:

NEXT

Three decimal points will be displayed along with the current response factor. The calibration curve designation will begin blinking.

3) The response factor entry mode is activated by pressing:

NEXT

The response factor will begin to blink indicating that it may be changed.

4) Scroll to the desired response factor by pressing:

SCROLL

The next response factor will be displayed. Continue pressing the < SCROLL > key until the desired response factor is displayed. (Response factors scroll in descending order, i.e., 15-1)

5) When the desired response factor is reached, select it by pressing:

SELECT
OFF

The new response factor has been selected. The meter will calculate and display the current temperature.

6) Move to the next screen by pressing:

NEXT

The meter will prompt for the blank to be entered and the calibration procedure to begin by displaying "-bL-".

7) Skip this calibration procedure and move directly to the *read* mode, saving the new response factor but not recalibrating, by pressing (This exits the calibration mode without affecting the current calibration data):

NEXT

The meter will display the current calibration curve and the selected response factor and is ready to read a sample using the new response factor.

8) Proceed with the reading of a sample by following the above procedure for "Standard Operation" beginning at step 2.

Standard Operation With Recalibration:

(Where the last operational mode was the *read* mode and the meter is to be recalibrated.)

Prior to performing this calibration procedure, prepare the *blank* and *standard* as described in the manual under "Using the PetroFLAG Hydrocarbon Analysis System - Preparing Blanks and Standards". They may also be prepared along with the unknown samples in order to save time.

1) Turn the meter on by pressing:

READ
ON

The last reading will be displayed for 2 seconds. The display will show the calibration curve and response factor currently selected. The meter is now in the *read* mode.

2) Return the operation to the MAIN MENU by pressing:

NEXT

Three decimal points will be displayed along with the current response factor. The calibration curve designation will begin blinking, indicating that it may be changed.

(If the displayed calibration curve is the one to be redetermined, skip directly to the response factor input by pressing the < NEXT> key.)

OTHERWISE

3) Scroll to the calibration curve that is to be redetermined by pressing:

SCROLL

The display will show the next calibration curve designation.

4) When the desired calibration curve is determined, select it by pressing:

SELECT
OFF

The calibration curve is selected and the meter will prompt for the input of the response factor.

5) If the response factor displayed is not the desired one, use the <SCROLL> key as described the previous section above under "Standard Operation - Changing Response Factor Without Recalibrating". If the response factor is correct, skip this step by pressing:

NEXT

The meter will calculate and display the current temperature.

6) Move to the next screen by pressing:

NEXT

The meter will prompt for the blank to be entered and the calibration procedure to begin by displaying "-bL-".

7) Remove the screw cap and insert the prepared blank vial, replace the cap and begin calibration by pressing:

READ
ON

The display will blink showing the selected calibration curve and response factor. The meter will display "0" for three seconds and prompt for the calibration standard by displaying "-CSd".

8) Remove the screw cap and blank vial and insert the calibration standard vial. Read the calibration standard by pressing:

READ
ON

The display will blink showing the selected calibration curve and response factor. The display will read "1000" for three seconds and display the currently selected calibration curve and response factor continuously. The meter is now in the read mode.

9) Proceed with reading the unknown samples by following the procedure for "Standard Operation" above, beginning with step 2.

Special Operating Conditions:

Replacement of Battery:

NOTE: **Use ONLY 9V Alkaline or 9V Lithium battery. Use of carbon/zinc battery will cause the PetroFLAG meter to malfunction.**

Open the battery compartment by sliding the compartment door back (indicated by the arrow on the back of the unit). Lift out the old battery from the compartment and carefully unsnap the battery from the wire harness/connector. Replace with a fresh alkaline battery by snapping the wire harness/connector onto the new battery making sure the polarity is correct (The snaps will only go on one way). Reinsert the battery and connector into the compartment being careful not to twist/ damage the connector wires. Replace compartment door by sliding the door forward until the latch clicks.

Operation of the Meter After the Battery has been Disconnected:

When the battery has been disconnected the micro-processor will automatically return to the MAIN MENU once the battery has been reconnected. The meter, however, will not be in a *read* mode but is calibrated for use, unless other factors warrant recalibration. The operations to be performed will determine the exact steps to be followed. The steps to follow are described above in the various sections of "Analyzer Operation Examples."

Meter Left to Turn Off in Other Mode:

When the meter is left in any "screen" for five minutes the meter will shut off automatically. The meter will return to last active screen when the <READ/ON> key is pressed.

Helpful Suggestions and Safety Precautions

When PetroFLAG test results indicate no hydrocarbons are present, the sample can be sent in for certified laboratory confirmatory analysis. All environmental soil sampling used for final closure should be performed using methods that are approved by the local regulating agency.

Personal protection should be worn during soil sampling and testing. A minimum of latex gloves and goggles should be worn.

Decontamination stations should be set up using appropriate cleaners and rinsing solutions. Soil sampling equipment not supplied with the reagent pack should be decontaminated between sampling locations to prevent the possibility of cross contamination.

All reagents and sampling scoops supplied with the kit are single-use disposable items. Therefore, *do not* reuse spoons, tubes, filters, or vials. The electronic balance is *NOT* disposable.

Check ambient temperature BEFORE extracting soils, when a calibration procedure is not planned for the current batch of test samples.

Make sure the filter disks are screwed on tightly before adding the soil extract to a filter syringe.

Do not leave the PetroFLAG analyzer in direct sunlight when not in use. Store the instrument in the protective carrying case with the lid closed.

Make sure that the contamination at the site is characterized at some time during the investigation.

Avoid sampling organic matter. Scrape away organic material (leaves, sticks, etc.) before sampling.

Avoid sampling directly under pine, cedar, and fir trees unless the sample is collected below the organic layer. Do not collect samples from areas where tree roots have been encountered.

Avoid sampling directly beneath creosote bushes, sage brush and other oil bearing plants.

Commonly Asked Questions

What are the response factors?

A response factor (RF) is the relationship between the analyte of interest and the calibration standard. The turbidity formed in the development solution by the sample is compared to the calibration standard followed by a calculation which determines the correct concentration for your contaminant. For Example: Equal concentrations of diesel and mineral oil do not produce the same level of turbidity. A RF value of 10 for mineral oil divided by the RF value of 5 for diesel produces a result of 2. This means that mineral oil forms twice the turbidity of diesel at the same concentration. Stated another way, 250ppm mineral oil forms the same turbidity as 500 ppm diesel. For more information please see Appendix A in the Manual.

Why doesn't my calibration standard read 1000ppm when I re-read it after calibrating?

This is directly related to the first question. The calibration standard is 1000 ppm mineral oil, therefore, if you read it on any RF other than 10 you will get a different number.

How long are my samples good for after they develop for 10 minutes?

The PetroFLAG development process is a temporary reaction, therefore, readings should be taken right at the end of the 10 minute development period. The turbidity will continue to develop for period of time, after which the solution will begin to fade. Do NOT attempt to reread the sample as results may vary due to these changes in the solution. No measurements should be taken after 20 minutes. This means you must record your data as it is generated because you cannot save your sample vials for future analysis.

After I prepare a set of calibration solutions how long are they good for?

Since the PetroFLAG development chemistry fades over time they are only good for a single use and the 10 minute time window should be adhered to.

The screen is displaying an error code, what does it mean?

See the reference table in Appendix D for a list of "Error Conditions".

What can I do if my reading is over-range?

Process a new sample using a 1 gram soil sample and multiply the end result by 10. This sample dilution will allow you to read up to 10,000-15,000 ppm on most samples (1-1.5%).

The meter is "stuck" in the calibration program mode with the "1C" or "2C" characters flashing?

The meter will not allow normal calibration procedure or sample measurement when the <READ/ON> key is pressed, but returns to a flashing "1C" or "2C" screen. This is usually caused by use of a non-alkaline battery. Replacement with a fresh 9V Alkaline battery should eliminate the problem and the meter should return to normal operation.

Caution

When opening the break-top ampules *DO NOT* remove the plastic sleeve from the top. It is there for your protection. Removing it may result in personal injury.

The Extraction Solvent and Calibration Standards contain methanol and are Flammable and Poisonous.

Wear rubber gloves and safety glasses while performing tests.

Dispose of all used reagents and soil properly.

Read the Material Safety Data Sheet before performing test.

Manufacturer's Warranty

The reagents and supplies used in the PetroFLAG test are warranted to be free of defects in material and workmanship until the expiration date stamped on the box. Manufacturer's sole and exclusive liability under this warranty shall be limited to replacement of any materials that are proved to be defective. Manufacturer shall not be liable for any incidental or consequential damages.

Reliable test results are highly dependent upon the care with which the directions are followed and, consequently, cannot be guaranteed.

Appendix A: PetroFLAG Response Curves

Most fuels, lubes and greases are complex mixtures of various hydrocarbons having a broad range of physical and chemical properties. The PetroFLAG system will detect a majority of the ecologically important hydrocarbon mixtures. The PetroFLAG responses to some typical hydrocarbon contaminants are plotted in figure 1[5].

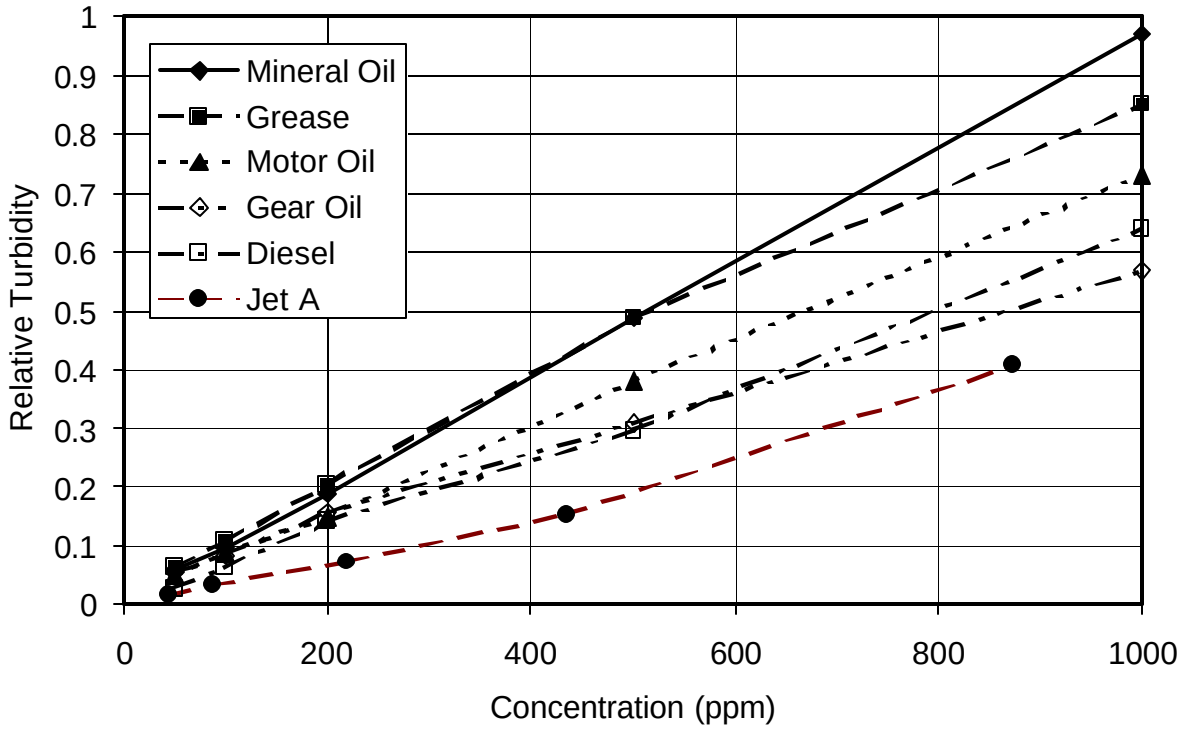


Figure 1: Relative Intensity Data for Common Analytes

[5]The lower limit of quantification, using a 10 gram sample size, is 1000 ppm for gasoline (linear range from 1000 ppm to 5,000 ppm). Brake fluid, phosphate ester based hydraulic oil, or other water soluble compounds will not be detected by the PetroFLAG system.

Appendix B: Comparison with Laboratory Methods

In field trials, the PetroFLAG system was used at sites contaminated with diesel fuel or with oil and grease. In both cases the PetroFLAG results correlated very well with EPA laboratory methods. Both EPA methods 8015B and 418.1 were used to analyze the samples from the diesel site. The resulting correlations were 89% and 92% respectively[6]. The samples from the oil and grease site were analyzed using EPA method 418.1 for soil. The lab results confirmed the PetroFLAG results with no false negatives and only 2 false positives (10%). When comparing the field results and the lab results for the field split samples, the correlation between the PetroFLAG data and EPA method 418.1 for the laboratory split samples was 90%[7].

When comparing the PetroFLAG field results with laboratory results using EPA methods it is important to keep in mind that EPA laboratory methods for TPH are known to have variable extraction efficiency. The extraction efficiency achieved using EPA laboratory methods varies with soil type and moisture content. In addition, the degree to which moisture affects the extraction is dependent on how the individual laboratory is implementing the method. It is, therefore, important to verify that the lab used for comparison is performing the method properly and that the recovery is known.

Another important factor affecting laboratory confirmation analysis is the inhomogeneous nature of soil samples. Whenever possible, homogenize samples using standard methods[8] before taking "splits" to send to the lab for confirmation.

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[6]Wright, Keith A., "Evaluation of a New Field Test Kit for Determining Total Petroleum Hydrocarbon Concentrations in Soil at a Site Contaminated by Diesel Fuel", Presented at the AEHS Conference on "Hydrocarbon Contaminated Soils", January 11-13, 1995, New Orleans, LA.

[7]Wright, Keith A. and Jermstad, David B., "Evaluation of a Rapid Field Analytical Test Kit for Assessing Hydrocarbon Soil Contamination", Presented at the "Third International Conference On-Site Analysis", January 22-25, 1995 Houston, TX.

[8]See for example: Pitard, Francis F. , Pierre Gy's Sampling Theory and Sampling Practice, Volumes 1 and 2, CRC Press, Inc., Boca Raton, FL, 1992).

Appendix C: Determining the Response Factor for Hydrocarbons Not Listed in Table 1

The response factors listed in Table 1 are calculated from response curves similar to those in Figure 1 in Appendix A. The response factor is equal to the slope of the response curve multiplied by 10. The slope of the response curve for the analyte is calculated from the response of the specific analyte relative to the response of the calibration standard. The calibration standard has a slope of one and a response factor of 10 on the PetroFLAG meter. Multiplying the slope of a specific analyte's response curve by 10 yields the appropriate response factor for that analyte.

When a suspected contaminant is not listed in Table 1, there are a few methods that may be used to determine the response factor. The method used is determined by the information and facilities available. The most accurate method would be to replicate the data in Figure 1 for the specific analyte, and then calculate the response factor from the slope of the response curve.

Initially, prepare soil standards from a single homogeneous batch of clean soil spiked at a minimum of 5 different concentrations between 100 and 1000 ppm. (For light hydrocarbons, a higher concentration range can be used.) Next, analyze the soil standards in triplicate using a calibrated PetroFLAG meter set to a response factor of 10. Plot the results with the true spiked concentrations on the "X" axis and the meter readings on the "Y" axis. The slope of the regression line (least squares line) through the data points multiplied by 10 is the response factor that should be used for this analyte. To avoid a low bias and false negatives, round the resulting number down to the nearest whole number when selecting the response factor for the meter. This method can be used if either the contaminant is known or a sample of the neat product is available.

NOTE: When the soil used to prepare the spiked soil standards is not actually clean but contains some hydrocarbons, the curve will have a positive intercept. This result should not affect the calculated response factor provided that the highest spiked standard does not read higher than 1000 ppm on the PetroFLAG meter.

When the contaminant is unknown and a sample of the pure product is not available, then an alternative method can be used. The PetroFLAG results, with the meter set to response factor 10, can be compared with laboratory results from split samples analyzed in triplicate. This method requires extreme care in the homogenizing of the bulk material and also, the preparation of the split samples. Improper sample preparation can result in errors of 100 to 200% or greater. To minimize the effects of this sample variation, as many samples as possible should be analyzed (greater than 20) and the concentrations used should be evenly distributed over the range of 100 to 1000 ppm. Once the data has been collected, plot the data as described above using the laboratory reference method results as the known concentration. The slope of the regression line multiplied by 10 is then the response factor.

NOTE: This method is not as precise as the spike method and any bias in the laboratory method will result in an error in determining this response factor. It is important to check both the laboratory method and the lab performing the analysis thoroughly before using it as the reference method. (See Appendix B)

If the facilities are not available to perform these tests contact Dexsil for advice.

Appendix D: Error Conditions

Table 2: Error Conditions

Message	Cause	Solution
Flashing Concentration Reading [Applies to Unknown Measurements]	Over range condition. Sample concentration outside of linear range.	Use smaller sample (1 gram recommended) and rerun.
Flashing "EEEE" [Applies to Unknown Measurements]	Sensor over range condition. Sample concentration too high.	Use smaller sample (1 gram recommended) and rerun.
"Err0" [Applies to Calibration Mode]	Blank and Calibration Standard vials mixed up. Blank or Calibration Standard outside of QC window (bL too high or CSd too low).	Check calibration vials. Rerun and/or make up new ones.
"Err1" [Applies to All Modes]	Readings from the two optical channels do not agree.	Check vial and reread. If error remains, rerun using another vial.
"Err2" [Applies to Unknown Measurements]	Sample is reading lower than the blank, e.g., Calibration Blank soil unusually high background or not zero.	Recalibrate using true Blank soil.
"Err3" [Applies to Calibration Mode]	Blank or Calibration Standard outside of QC window (bL too low or CSd too high).	Recalibrate using fresh calibration solutions.
"Err4" [Applies to Unknown Measurements]	Absolute temperature difference between calibration and reading exceeds 10°C.	Recalibrate at current temperature.
"Err5" [Applies to All Modes]	Ambient temperature outside of operating range. (4°C - 45°C)	Remove meter and reagents to climate controlled environment to recalibrate/rerun.
"LP"	Low Power	Replace battery.

Appendix E: Meter Specifications

A/D Resolution:	0.5 ppm
Display Resolution:	1 ppm
Precision:	Analyte Dependent From MDL to Max Linear Range (MLR) ±10% +5 ppm From Max Linear Range to Max Quantifiable Range (MQR) ± 20%
Measurement Range:	10-10,000 ppm (linear range analyte dependent)
Operating Temperature:	4ºC to 45ºC

Quantification Limit:

Analyte Dependent Response Factor	Approx. MLR (ppm)*	Approx. MQR (ppm)*
15	730	1,460
10	1,000	2,000
5	2,000	4,000
2	5,000	10,000

*Actual limits realized in the field are temperature and device dependent. PetroFLAG meter automatically warns user when each limit has been reached.

Program Storage:	EEPROM
Calibration Storage:	EEPROM
Display:	4 digit ½ inch seven segment LCD
Batteries:	One 9V Alkaline (included) [Use only Alkaline or Lithium type]
Battery Life:	Approx. 4000 measurements or 1 year (using a 550 mAh alkaline battery)
Dimensions:	length=5.75" width=3.5" height=2"
Weight:	9.85 oz (280 g)

UPDATE: Fulton County Recycling owner avoids jail, but offers no apology for actions

UPDATE: Fulton County Recycling owner avoids jail, but offers no apology for actions

Authorities Raid Fulton County Recycling

Andrew Colegrove LIVE at 5pm

Fulton County Recycling Name in 200-Count indictment

By *Fulton County News Staff-Posted: Mon. 2:44* PM, Jul 11, 2016-Updated: Mon 7:53 PM, Jul 11, 2016

UPDATE 7/11/15 @ 4:35 p.m.

Fulton County -- The first person ever convicted in Fulton County of organized crime has avoided prison.

Prosecutors say William “Bill” Shay bought enough scrap metal from drug addicts to buy 1,600 doses of heroin. But it took the right theft for investigators to prove a case they had suspected for more than a decade. Shay plead guilty earlier this year in May.

"But for your age and your illness, you'd be going to prison," said Judge Paul Farrell.

Shay, 80, needed help making it to the defense table.

His old business, Fulton County Recycling, is closed for good. It's the first to ever be shut down under state laws prohibiting organized crime.

Assistant Prosecutor Joe Fincham said Fulton County heroin addicts would steal metal, knowing they could easily sell it to Shay's business to buy their next fix.

"When I ran the numbers, it was staggering," Fincham said.

As he prepared the case, he said he added up for one addict how much money was spent on the drugs.

“The damage that it did to his body and to our community, there aren’t words to describe it,” Fincham said.

In court, Shay apologized for missing his sentencing last month when he confused the time. But that was his only apology.

"Are you sorry sir for the many, many years that you received stolen property that cost people hundreds of thousands of dollars?" asked Judge Farrell.

Shay responded with, “Your honor” and a loud sigh, before saying he had been too ill during the last several years to make it to his business very often.

"I don't think that he's shown any remorse today or throughout this process,” Fincham said. “He even asked to take a Alford plea instead of a guilty plea because he wasn't willing to admit what he did was a crime."

Fincham provided one other staggering number in court. There used to be an average of more than 20 metal thefts a month around town, most untraceable for investigators. But since Fulton County Recycling was closed, there's been an average of less than one a month.

Shay faced up to a decade in prison Monday. He instead got a suspended sentence of three years, with two years of probation and restitution of $200,000. In a separate case, Fulton County Recycling was sentenced to pay $12,500.

Fincham said Shay paid $75,000 of restitution Monday. The plea agreement calls for $25,000 to be paid in the next six months and the last $100,000 within 18 months.

“We are pleased with the results obviously,” Fincham said. “We secured the conviction of the first organized crime in the history of Fulton County."

Prosecutors tell us police suspected Shay and Fulton County Recycling of buying stolen property for years, but it wasn't until 22,000 pounds of rare nickel was stolen from the Special Metals facility in Fulton County that they could make their case.

Fincham said it was important to prosecute people who help provide the economic conditions that make drugs possible.

“With this type of problem, you have to have a systemic approach because it’s a systemic problem,” Fincham said.

He adds he hopes this case sends a message that if any business or person, whether recycling company or pawn shop, knowingly buys stolen property, they will be prosecuted.

(Breaking) Jury Awards $29+ Million against Fulton County Recycling for Worker Burned to Death

VERDICT UPDATE: The jury found for the estate of Erik Hilario in the amount of $8.25 million for pain and suffering and for his parents in the amount of $21 million for his wrongful death, for a total compensatory verdict of $29.25 million. The jury also determined that Erik Hilario was solely the employee of Fulton County Recycling, LLC at the time of his death. The jury also found for plaintiffs on the grounds of product liability for both negligent design and failure to warn. The jury determined that plaintiffs were also entitled to punitive damages. The parties entered into a post-verdict confidential settlement before the jury heard evidence on punitive damages. CVN will continue to report on the case as it develops.)

Fulton County —The tragic death of a 19-year-old worker in an industrial fire at a recycling plant has become the subject of a heated trial currently underway in Fulton County State Court.

Fulton County Recycling is one of the southeast Lone Star's leading scrap metal processors. Among the operations at its headquarters facility in Fulton County, the company uses industrial shredders to shred and process automobiles and other scrap metal for resale. According to documents filed in the case and other information, on May 2, 2015, Erik Hilario was working at the Fulton County facility. At approximately 11:00 p.m. that night, Hilario was operating a front end loader, removing scrap metal from the yard when the loader caught fire. Hilario was badly burned and died shortly thereafter. The photograph of a loader accompanying this article is for illustrative purposes and is not intended as an accurate depiction of the actual loader in this case.

After Hilario's death, his parents and the administrator of his estate filed suit, naming several corporate entities and individuals including William "Bill" Shay and Leslie Shay. The individual defendants had moved for summary judgment based on the theory that the deceased was employed by Fulton County Recycling. That motion was granted and the trial had proceeded against only the corporate defendant.