The Following Report Pertains to a Fire/Explosion Incident that occurred at:

1680 East West Rd., Post 109, Honolulu, HI 96822

Fire Investigation Report Number: 2016HFD0015761

Lead Fire Investigator: FF3, J. Raphael, CFEI, CVFI
Date of Report: March 30, 2016

Technical Reviewer: Captain, J. Hooker, CFEI
Date of Review: March 30, 2016
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1 INVESTIGATION SUMMARY REPORT

General Details:
Occupant: Thea Ekins-Coward
Incident Address: 1680 East West Rd., Post 109, Honolulu, HI 96822
Date of Incident: March 16, 2016 Time of Alarm: 17:51 hours
Initial Fire Company On-scene: Ladder 29 / 2nd Platoon

Lead Fire Investigator: Fire Investigator, I. Raphael, CFEI, CVFI Lead Agency: Honolulu Fire Department
Fire Investigator, Captain J. Hooker, assisted with this investigation.

General Weather Conditions (based on local area weather station):
On-scene Observations: 10 - Clear (less than 1/10 cloud cover).
Air Temp (F): 73.9 Dew Point (F): 55.9 Humidity (%): 53
Wind Speed (mph): 19.6-24.2 Wind Direction: North Lightning: No Precipitation: No

Area of Origin: 31 - Laboratory Point of Origin: Portable gas cylinder

Related Casualty (injury/fatality): Injury

Explosion Details:
Source and Form of Heat of Ignition:
Source: Digital Pressure gauge
Form: Electrical Arc/Spark

First Material: Ferrous Cylinder
Item: Portable Cylinder- Speedaire 13 gallon Model: 2TW3

Factors Contributing to Ignition:
1) Digital pressure gauge not designed for the conditions it was installed.

Fire / Explosion Classification:
Based on the totality of this investigation to include but not limited to the physical examination of the incident scene, observed fire patterns, photographs, witness statements and the culmination of my training, education and experience, it is with a reasonable degree of fire investigative certainty that this incident was caused by an accidental explosive event.

This fire/explosion has been classified as ACCIDENTAL pending any further information.

Total Damage Estimate: $ Unable estimate loss.
2 WRITTEN CONSENT (COPY)

Honolulu Fire Department—Fire Investigation Report \\
# 2016HFDPC15761

WRITTEN CONSENT TO INVESTIGATE

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(name of owner/occupant)

Fire Department (HFD)  Isaac Raphael, CFEI
(Print name and rank of HFD personnel)

to my personal property described as: 1640 East West Rd
/license, location, address, apartment number, etc.

Honolulu, 808 222 6490

I understand that the HFD is conducting an investigation relating to the origin and cause of a fire/
exploding that occurred at the above mentioned location on 11/14/18
(Date)

I am fully aware that I have a constitutional right to be free from warrantless intrusions and that I
may refuse to allow this investigation; however, I waive this right.

I am fully aware that I have a right to consult with an attorney before allowing this investigation;
however, I waive this right.

I am fully aware that any evidence uncovered by this investigation may be used against me in a
court of law.

I am not under the influence of drugs or alcohol and am mentally capable of making decisions.

I voluntarily grant access to the above mentioned personal property and affirm that I am not being
threatened, coerced, or intimidated in any manner. I further confirm that no promises have been
made to me in return for my consent.

Witness:

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Consentee:

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Printed Name

Relationship to Consentee

Fire Investigator:

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Isaac Raphael, CFEI
(Print name)

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3  INCIDENT DETAILS

Incident Address: 1680 East West Rd., Post 109, Honolulu, HI 96822  Property TMIK: 2-8-023-003:000

General Weather Conditions (based on local area weather station):

On-scene Observations: 10 - Clear (less than 1/10 cloud cover).

Air Temp (F): 73.9  Dew Point (F): 55.9  Humidity (%): 53

Wind Speed (mph): 19.6-24.2  Wind Direction: North  Lightning: No  Precipitation: No

Laboratory Professor:

Name: Jian Yu, Ph.D.
DOB: [redacted]
Address: [redacted]
Home Phone: Unknown  Cell Phone: [redacted]  Work Phone: 808-956-5873
Comments: Refer to attached statement in Appendix A.

Post-Doctoral Fellow Researcher:

Name: Thea Ekins-Coward
DOB: [redacted]
Address: [redacted]
Home Phone: None  Cell Phone: [redacted]  Work Phone: None
Comments: Refer to attached statement in Appendix A.

Person Discovering the Incident:

Name: Unknown
DOB: n/a
Address: n/a
Home Phone: n/a  Cell Phone: n/a  Work Phone: n/a
Comments: n/a
Person Reporting the Incident:

Name: Unknown    DOB: n/a
Address: n/a
Home Phone: n/a    Cell Phone: n/a    Work Phone: n/a
Comments: n/a

Investigation Request:

Date of Request: March 16, 2016    Time of the Request: 20:10 hours
Agency Making the Request: Honolulu Fire Department    Contact Person: BN2/2nd Platoon, G. Chang
Request Received by: Honolulu Fire Department, Fire Dispatch    Contact Person: RC

General Arrival / Departure Information:

Arrival Date: March 16, 2016    Arrival Time: 20:29 hours
Scene Secured: Yes    Securing Agency: HFD/HPD    Manner of Security: Physical Presence and Barrier Tape
Authority to Enter Scene: Exigent Circumstances and Written Consent
Departure Date: March 16, 2016    Departure Time: 23:30 hours
Incident scene left in the custody of: Owner Representative

Assisting Agencies:

Secondary Fire Department: None    Report Number: n/a
Law Enforcement: Detective M. Tom (HPD)    Report Number: Unknown

Private Investigation Agency:

Eugene Ngai- Chemically Speaking LLC- Specialty Gas Technology, Safety and ER
Ken Smith- Executive Director Environment, Health and Safety Office of Risk Services University of California.
Imke Schroeder- Research Project Mgr, UC Center of Laboratory Safety
Craig A. Merlic- Center for Laboratory Safety
4 IMMEDIATELY DANGEROUS TO LIFE AND HEALTH (IDLH) EVALUATION

I performed a visual IDLH evaluation of the incident scene and did not observe any concerns that would prevent me from continuing my investigation into the Origin and Cause of this fire/explosion incident utilizing appropriate personal protection equipment (PPE).

5 OBSERVATIONS AT THE IDENTIFIED AND/OR PROBABLE POINT OF ORIGIN

The interior of the Structure was examined from the least damage to the greatest damage in consideration of ventilation, fuel load, witness statements and my overall observations.

Witness statements are noted in Appendix A while any supplemental documentation is noted in Appendix B. Digital photographs were taken at this incident and are being held in the case file.

The following observations are specific to the identified and/or probable Point of Origin:

Markings on the gauge do not indicate it's an intrinsically safe gauge as would be evidenced by having any of these markings below.

These photos were provided by Professor Jian Yu and is part of the apparatus.
Ashcroft 3.0" Industrial Digital Gauge. This is the circuit board to the gauge above. The body of the gauge went missing between Mar. 17, 2016-Mar. 21, 2016 and has not been recovered as of this writing.

Bulge in the tank end cap.

Horizontal tear across the weld of the tank.
Tank identification below.

Severed end cap.
Ashcroft 100 psi gauge previously used as per witness statement regarding an earlier incident.

Body of the gauge that is missing

Appears to be a battery used to operate this gauge.

Cleaning of Personal Protective Equipment (PPE) and Tools
All personal protective equipment and tools utilized during the course of this investigation were properly cleaned and decontaminated or disposed of at the conclusion of the on-site phase of this investigation.
6 HYPOTHESES CONSIDERED

Natural Fire/Explosion Cause:

- No severe weather activity was observed or reported in the area

Level of Certainty: No supporting evidence to indicate a natural fire cause

Accidental Fire/Explosion Cause:

- Accidental causes were considered and only one probable cause remained.

  The accidental cause of this explosion was caused by the detonation of compressed gasses to include: Hydrogen, Carbon Dioxide, and Oxygen within the air tank. A digital pressure gauge used to check the pressure within the tank was not rated or designed (not Intrinsically Safe) to be in a flammable gaseous atmosphere. When the OFF button was pressed, an electrical arc/spark created within the gauge detonated the flammable gas within the tank causing the explosion.

Level of Certainty: Probable, with a reasonable degree of fire investigative certainty.

Incendiary Fire/Explosion Cause:

- There were no observed or reported indications of an intentionally set fire.

Level of Certainty: No supporting evidence to indicate an intentional fire cause.

Undetermined Fire/Explosion Cause:

Refer to fire cause noted above

Level of Certainty: Refer to fire cause noted above

Recommendation:

It is my recommendation that all items of interest (tagged and un-tagged) in the area of fire origin, and/or at the identified/probable point of fire origin, be further examined by a certified forensics laboratory or other certified authority.

Referrals to Other Agencies:

1. HIOSH- Tin Shing Chao
2. Honolulu Police Department, Criminal Investigations Division
7  FIRE ORIGIN AND CAUSE

Description of Area of Origin:

31 - Laboratory

Description of probable Point of Origin:

The item of interest is an air tank on the floor near the south wall adjacent to the counter cabinets. This air tank was separated at two points. One end cap was completely severed from the tank and the weld that ran horizontally across the tank was split open. The opposite end cap remain intact but there was visual evidence of over pressurization as the end cap bulged outward.

There were 4 threaded holes in the tank; one was for the digital pressure gauge, one for the shut-off valve, one for the drain, and the last for the pressure relief valve. Only the pressure relief valve and drain valve remained intact and affixed to the tank. The pressure gauge and shut off valves were separated from the tank when the explosion occurred.

Explosion Cause:

Source and Form of Heat of Ignition:
  Source: Digital Pressure gauge
  Form: Electrical Arc/Spark

First Material: Ferrous Cylinder
  Item: Portable Cylinder- Speedaire 13 gallon Model: 2TWC3

Factors Contributing to Ignition:
  2) Digital pressure gauge not designed for the conditions it was installed.

Fire/Explosion Classification:

Based on the totality of this investigation to include but not limited to the physical examination of the incident scene, observed fire patterns, photographs, witness statements and the culmination of my training, education and experience, it is with a reasonable degree of fire investigative certainty that this incident was caused by an accidental explosive event.

This fire/explosion has been classified as ACCIDENTAL pending any further investigation.

Total Damage Estimate: $ Unable estimate loss.
8  EVIDENCE/ITEMS OF INTEREST

Item Number 1:
Description: *Speedaire- 13 gallon cylinder 2TW3*  
Removed by HFD Investigator: No  
Collected by HPD Officer/Investigator: No  
Collected by Private Investigator/Other: Unknown  
Tagged: Yes  
Current Location: Place of discovery  
Name: n/a

Item Number 2:
Description: n/a  
Removed by HFD Investigator: n/a  
Collected by HPD Officer/Investigator: n/a  
Collected by Private Investigator/Other: n/a  
Tagged: n/a  
Current Location: n/a  
Name: n/a

Item Number 3:
Description: n/a  
Removed by HFD Investigator: n/a  
Collected by HPD Officer/Investigator: n/a  
Collected by Private Investigator/Other: n/a  
Tagged: n/a  
Current Location: n/a  
Name: n/a

Item Number 4:
Description: n/a  
Removed by HFD Investigator: n/a  
Collected by HPD Officer/Investigator: n/a  
Collected by Private Investigator/Other: n/a  
Tagged: n/a  
Current Location: n/a  
Name: n/a
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9.1 Fire Crew Statement/Observations – Battalion Chief Geoffrey Chang

Name: G. Chang       Rank: Battalion Chief

Assigned Fire Company: L29/2nd

Role at Incident: Incident Command

Location of the Interview: Incident scene

The following was related by the named HFD Member above.

1 serious victim, lost arm possible.

Female victim oriented x’s 3. She was transported to Queens Hospital.

She was working in the basement lab when an explosion occurred. She was in the process of mixing gasses when the metal cylinder blew up.

A metal cylinder blew up.

Possible biological agents in the lab. Awaiting confirmation from Hazmat 1.

The building was evacuated.

Hazmat 1’s plan is to review the list of chemicals that were being used in the lab then re-evaluate mitigating actions.

It was later determined that there were no biological hazards. The building was deemed safe to continue the investigation.

University staff shut off gas to the building.

This page and 0 continuation pages were transcribed from my field interview with the stated Member above.

Date: March 16, 2016

Time: 2035 hours
9.2 WITNESS STATEMENT/OBSERVATIONS – JIAN YU, PH.D.

Name: Jian Yu, Ph.D. DOB: Unknown

Involvement: Laboratory Professor

Home/Work Address: 1680 East West Rd. Post 109, Honolulu, HI 96822

Occupation: Researcher

Home Phone: Unknown Cellular Phone: [redacted] Work Phone: 808-956-5873

Location of the Interview: Incident address

The following was related to me by the named individual above:

The victim Thea Ekins-Coward was working as a Post-Doctoral Fellow trained in Marine Science and a Chemical Engineer.

She was hired by Dr. Yu October 2015 to conduct research in bioplastics and biofuels.

In response to my questions he related that:

The tank that failed was Ms. Ekins-Coward's design. She bought the equipment (tank, digital gauge, pressure relieve valve, and fittings) between November 2015 and January 2016. The tank was to have been rated at 10 bar or 150 psi. When the tank was assembled with its parts, a pressure test was done using the buildings air which produced 91.2 psi. Several leaks were detected. So the tank assembly was taken to the Universities maintenance for help in stopping the leaks.

This particular tank was used to contain a mixture of gases to include: 70% Hydrogen, 10% Carbon dioxide, and 20% Oxygen in that order and to a normal operating pressure of 50 psi.

The tank was not grounded and was normally moved from a stored location to areas where it could be filled. The tank would be moved approximately 3 feet to fill it with Hydrogen and Carbon Dioxide, then moved approximately 13’ so it can be filled with Oxygen.

They have a Bunsen burner but was not used at the time of the incident.

This page and 0 continuation pages were transcribed from my field interview with the stated Individual above.

Date: March 17, 2016

Time: 0930 Hours
9.3 WITNESS STATEMENT/OBSERVATIONS – THEA EKINS-COWARD

Name: Thea Ekins-Coward          DOB:

Involvement: Victim

Home/Work Address: ____________________________

Occupation: Post-Doctoral Fellow Researcher

Home Phone: None    Cellular Phone: ____________________________ Work Phone: None

Location of the Interview: Queens Medical Center, ____________________________

The following was related to me by the named individual above:

From our conversation I learned that:

The air tank and assembly that failed was purchased between November 2015 and January 2016. The parts were assembled and pressure tested with the building supplied air. This output of air was 91.2 psi which was sufficient enough to cause leaks at the connections so the tank assembly was taken to the Universities maintenance shop where they helped stop the leaks. The design of this tank assembly was that of Dr. Jian Yu. The tank was rated at 145 psi.

The air tank (13 gallon Speedaire- model: 2TWC3) was used to contain a mixture of gasses to include: 70% Hydrogen, 20% Oxygen, and 10% Carbon Dioxide. In doing her research, she needed to change the composition of the gasses to 70% Hydrogen, 25% Oxygen, and 5% Carbon Dioxide.

This premixed gas would then be connected to a reactor.

On this particular day, she moved and filled the tank with a set amount of gasses using the Ashcroft 300 psi digital gauge that is battery operated. This gauge is a push button type for ON and OFF. When she disconnected the hoses used to fill the tank, she checked the pressure in the tank to verify the amount to be 117 psi. She then pressed the OFF button and the tank exploded. Prior to the explosion, she did not hear any sounds of escaping or leaking gasses from any of the fittings or pressure relief valve.

She did not lose consciousness or hit her head; she was aware that she lost her arm in the explosion. She couldn't open the door to the lab, the door was stuck closed. A person by the name of Savannah was there to help get the door open and help her out of the lab.

She added that earlier in the week, she was conducting another experiment using a smaller one gallon size air tank assembly nearly as identical as the one that failed using similar components to include the Ashcroft 100 digital pressure gauge and the premixed gasses. The tank pressure was set to 27 psi. After reading the gauge, she pressed the OFF button and a small internal explosion occurred. She related to me that there was evidence of a soot and smoke stains.
Static shock also appeared to have been a problem as Ms. Ekins-Coward would get shocked on occasion when touching the tank.

She brought this information to the attention of Mr. Yu who she said told her don’t worry about it.

I asked if they have been doing this type of experiment for a long time why now did this happen. She related to me that this is the first time the use of premixed gas in a portable tank to conduct experiments was being done. In the past, each individual gas would have a separate hose line and be premixed at the reactor eliminating the use of a portable tank.

She was alert and knew what was going on.
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10.1 STRUCTURE EXAMINATION

Type of Occupancy:

Property TMK: 2-8-023-003:000  Zoning: Residential  Occupancy Use: Educational

Estimated Year of Construction: Unknown  Number of Floors: 8 upper floors with a basement

Length: ~190  Width: ~150

Property Status:

Building Status: 02 - In normal use

Name of the last individual in the structure: Unknown

Date the individual was last in the structure: March 16, 2016  Time of departure: Time of alarm

Exited via which exit: Unknown

Building Construction:

Foundation Type: Basement  Foundation Material: Poured concrete

Exterior Material: Poured concrete  Roof Material: I was unable to view the roof

Type of Construction: Type II, Non-combustible

Main Floor (building footprint) Square Footage: ~28,500

Damaged Square Footage: ~800

Building Fire Protection / Security:

Presence of Automatic Fire Suppression System: 01- Present

Type of Automatic Fire Suppression System: UU - Undetermined

Operation of Automatic Fire Alarm System: 02 - System was present but did not alert occupants

Presence of Smoke Detectors: Undetermined  Power/Operation of Detectors: n/a

Presence of/and operation of Security Cameras: No security system was observed
FF3, I. Raphael, CFEI, CVFI
Fire Investigation Report: 2016HPD0015761

Condition of Doors and Windows:

Doors: **Undetermined**  Forced/Broken: **No**  Forced/Broken by: **n/a**
Windows: **n/a**  Forced/Broken: **n/a**  Forced/Broken by: **n/a**

First Arriving Fire Company's Observations:

First Arriving Fire Company: **Ladder 29/2nd Platoon**  Company Commander: **Capt. D. Dougan**

Observations: **A Statement was not taken from Captain David Dougan.**

Battalion Chief In-Charge of Incident: **BN2/2nd Platoon, G. Chang**

Observations: **Chief Chang was managing the incident scene on our arrival. See Witness statement**

Building Utilities:

- Electrical Service: **Yes**  Provider: **Hawaiian Electric Company**  Number: 808-548-7961
- Gas Service: **Undetermined**  Provider: **The Gas Company**  Number: 808-535-5933
- Water Service: **Yes**  Provider: **Board of Water Supply**  Number: 808-748-5010
- Telephone Service: **Undetermined**  Provider: **Undetermined**  Number: **n/a**

Loss Estimate Based on Square Footage of Observed Fire Damages:

- Loss Estimate to Structure ($125/$200/$400): $0
- Loss Estimate to Contents: $0
- Loss Estimate Other: $0
- Total Loss Estimate: **Cannot Estimate Loss**
10.1.1 **Exterior Structure Examination**

**Owner of the Structure/Property:**

Name: State of Hawaii/Hans Nielsen  
DOB: n/a

Home/Work Address: 1680 East West Rd., POST 109, Honolulu, HI 96822

Occupation: n/a

Home Phone: n/a  Cellular Phone: n/a  Work Phone: 808-956-5180

**General Impression of the Structure:**

Overall: No observed structural damage  
Incident Damage: No observed fire damage

**Aerial View of the Structure/Property:**

The perimeter of the building was photographed and determined not to be the origin of this incident.
10.1.2 Electrical Service/Panel Examination

Meter/Main Disconnect Location: Unknown  Main Size: Unknown
Meter Number: Unknown  Main Disconnect Turned Off: No
Turned Off by: n/a  Fire/Heat Damaged: n/a

General Comments:
- Electrical service to the building was remote to the building and secured.

Electrical Distribution Panel Location: Lab 30 - east wall  Circuit Protection Devices: Breakers
Breaker Turned Off: Yes  Turned Off by: Electrical maintenance - Bob Shinagawa
Interior Examination Conducted: No  Fire/Heat Damaged: No

General Comments:
- 100 amp service to Lab 30.
- The distribution panel for the lab was located against the east wall behind the entrance door (right side). No damage was observed at the panel or circuit breakers.
10.3 Interior Structure Examination

Post-Doctoral Fellow Researcher:

Name: Thea Ekins-Coward  DOB: [Redacted]

Home/Work Address: [Redacted]

Occupation: Dr. Fellow Research

Home Telephone: n/a  Cellular Phone: [Redacted]  Work Phone: n/a

General Impression of the Interior of the Structure:

Overall: Moderate observed structural damage  Fire Damage: Minor observed fire damage

Room Designation of Probable Fire Origin: Lab Room

Room Length (ft.): ~40  Room Width (ft.): ~20  Room Height (ft.): ~12

Ceiling Material: Other  Floor Material: Concrete

Sketch of the Room Floor plan:

[Diagram of the room with labels for stored oxygen cylinders, approximate location of the area origin, and normally stored tank moved to fill with various gases.]

Various stored gas cylinders (Hydrogen, Propylene, Carbon Dioxide, and Compressed Air)
Interior Wall Designation (corresponding exterior wall): **North**

Wall Covering Material: **Gypsum Board**

Number of Windows: **None**  Dimensions: **n/a**  Fire/Heat Damaged: **n/a**

Number of Doors: **None**  Dimensions: **n/a**  Fire/Heat Damaged: **n/a**

**Observed Electrical Receptacles:**

Electrical outlets were observed. No visible arcing or damage occurred to the outlets.

**Observed Ignition Sources:**

Electrical branch circuit(s), fixture(s) and appliance(s)

**Observed Fuels:**

Common combustibles (paper, plastic, wood, textiles other)

Did the explosion originate on or in the proximity of this wall? **No**

An island workbench separated the north and south wall. Assorted test equipment and electrical outlets were visually observed with no electrical arc or short noted. The explosion did not occur in this area.

Drop ceiling panels and florescent lamp fixtures fell from its location and was hanging by their respective wire conductors.

Fallen Petri dishes and test tubes was scattered throughout the floor and countertops.
Interior Wall Designation (corresponding exterior wall): West

Wall Covering Material: **Gypsum Board**

Number of Windows: **None**  Dimensions: n/a  Fire/Heat Damaged: n/a

Number of Doors: **None**  Dimensions: n/a  Fire/Heat Damaged: n/a

**Observed Electrical Receptacles:**

**Electrical outlets were observed. No visible arcing or damage occurred to the outlets.**

**Observed Ignition Sources:**

**Electrical branch circuit(s), fixture(s) and appliance(s)**

**Observed Fuels:**

**Common combustibles (paper, plastic, wood, textiles other)**

Did the explosion originate on or in the proximity of this wall? **No**

**Other Observations:**

**This photo is facing the south west wall.**

An island work bench on the right separated the north and south wall. Assorted test equipment and electrical outlets were observed. No electrical arc or short was observed in this area. The explosion did not occur did not occur against the west wall area.
Interior Wall Designation (corresponding exterior wall): South

Wall Covering Material: Gypsum Board

Number of Windows: None Dimensions: n/a Fire/Heat Damaged: n/a

Number of Doors: 1 Dimensions: (2)32" x 7' (approx) Fire/Heat Damaged: Moderate damage observed

Observed Electrical Receptacles:

Electrical outlets were observed. No visible arcing or damage occurred to the outlets.

Observed Ignition Sources:

Electrical branch circuit(s), fixture(s) and appliance(s)

Observed Fuels:

Common combustibles (paper, plastic, wood, textiles other), flammable/combustible gas (possible)

Did the explosion originate on or in the proximity of this wall? Yes

Other Observations:

An island work bench on the right separated the north and south wall. Assorted test equipment and electrical outlets were observed. No electrical arc or short was observed in this area. The explosion did occur approximately the center of the lab against the south work bench.
Interior Wall Designation (corresponding exterior wall): **East**

Wall Covering Material: **Gypsum Board**

Number of Windows: **None**  Dimensions: **n/a**  Fire/Heat Damaged: **n/a**

Number of Doors: **None**  Dimensions: **n/a**  Fire/Heat Damaged: **n/a**

**Observed Electrical Receptacles:**

Electrical distribution panel is located against this wall. No structural damage was observed. Electrical outlets were observed. No visible arcing or damage occurred to the outlets.

**Observed Ignition Sources:**

Electrical branch circuit(s), fixture(s) and appliance(s)

**Observed Fuels:**

Common combustibles (paper, plastic, wood, textiles other), flammable/combustible gas (possible)

Did the Fire Originate on or in the Proximity of this wall?  **No**

**Other Observations:**

Gas cylinders are located opposite this photo against the island work bench.
Other Pertinent Information regarding the Interior of this Structure:

March 24, 2016 at approximately 1030, I met with Hans Neilsen at the incident location to gain access to LAB Rm. 30. Accompanying me was Inv. Edward Millerd, Hans Neilsen, and Nicholas Metivier.

The purpose of our re-examination was a follow up on my investigation. This was to include, closer photos of the failed air tank and its associated parts.

What was not found and is considered missing is the Ashcroft 300 digital gauge that is visible in my photos JH folder #253, 269, 288, 289 and # 20160209_084856 in folder Jian Yu photos.

March 28, 2016, at approximately 1100, I spoke with Nicholas Metivier UH Employee Facilities. He related that a cleanup company hired to decontaminate the lab worked from March 17-March 19, 2016. He took before pictures with his camera phone and it appeared the missing gauge was in one of the photos.
10.2 INCIDENT RELATED CASUALTY

General Information.

Name: Thea Ekins-Coward  DOB: [redacted]  Gender: Female
Address: [redacted]  Telephone: [redacted]

Occupation: Post Fellow  Address: University of Hawaii
Physical Identifiers: None

Casualty Treatment.

Treated at Scene: Yes  Initial Treatment By: Emergency Medical Services
Medical Care Transferred To: Emergency Medical Services
Transported: Yes  Where: Queens Medical Center

Injury Description.

Type of Injury: Trauma  Severity of Injury: Severe
Brief Description: [redacted]

Next of Kin.

Name: Amy Ekins-Coward  Telephone: [redacted]
Address: [redacted]  Relationship to Victim: Spouse
Notified: Yes  Date/Time of Notification: Unknown date and time

Victim Information.

Location victim was discovered: Science lab where Ms. Thea Ekins-Coward was working
Person who discovered victim: Unknown  Position of victim’s body: Able body
Significant blood present: Yes  Other Information: None
10.3 FIRE/EXPLOSION INVESTIGATION METHODOLOGY

Recognize the Need (Identify the Problem)

- Event ✗
- Assignment ✗
- Particular Role (Investigate the Origin/Cause) ✗
- Event Location ✗

Define the Problem

- Assess the Incident ✗
- Determine Equipment Needs ✗
- Understand Fire Service Actions and Response ✗
- Obtain Right of Entry ✗
- Conduct Scene Safety Inspection ✗
- Secure the Scene ✗
- Conduct a Preliminary Incident Inspection ✗

Collection of Data

- Conduct Interviews ✗
- Conduct Exterior Examination ✗
- Conduct Interior Examination ✗
- Document and Tag Physical Evidence (if needed) ✗
- Document and Tag Pertinent Documents (if needed) ✗
- Diagram the Scene ✗
- Photograph the Scene ✗
- Compile Field Notes ✗

Analyze Data Collected

- Examine Burn Patterns ✗
- Correlate Witness Statements ✗
- Develop TimeLine if Necessary ✗
- Examine Reasonable Potential Fire/Explosion Causes ✗
- Examine Necessary Documents ✗
- Reconstruct the Incident Scene ✗
Develop Hypothesis (Inductive Reasoning)

- Based on the data analysis, develop a hypothesis or hypotheses to explain the phenomena observed.
  - Origin ✗
  - Cause ✗
  - Fire Spread ✗
  - Responsibility ✗

Test Hypothesis (Deductive Reasoning)

- Consider all Reasonable Natural Fire/Explosion Causes ✗
- Consider all Reasonable Accidental Fire/Explosion Causes ✗
- Consider all Reasonable Incendiary Fire/Explosion Causes ✗
- Consider all Facts in Relation to the Hypothesis and Select Final Hypothesis ✗
- Test Hypothesis against Known Facts ✗
- Experiment and/or Model (as necessary) ✗

Select the final hypothesis

If the final hypothesis fails after consideration of all known facts, re-analyze the data. If the hypothesis stands-up to the known facts, consider it as the probable cause of this incident.