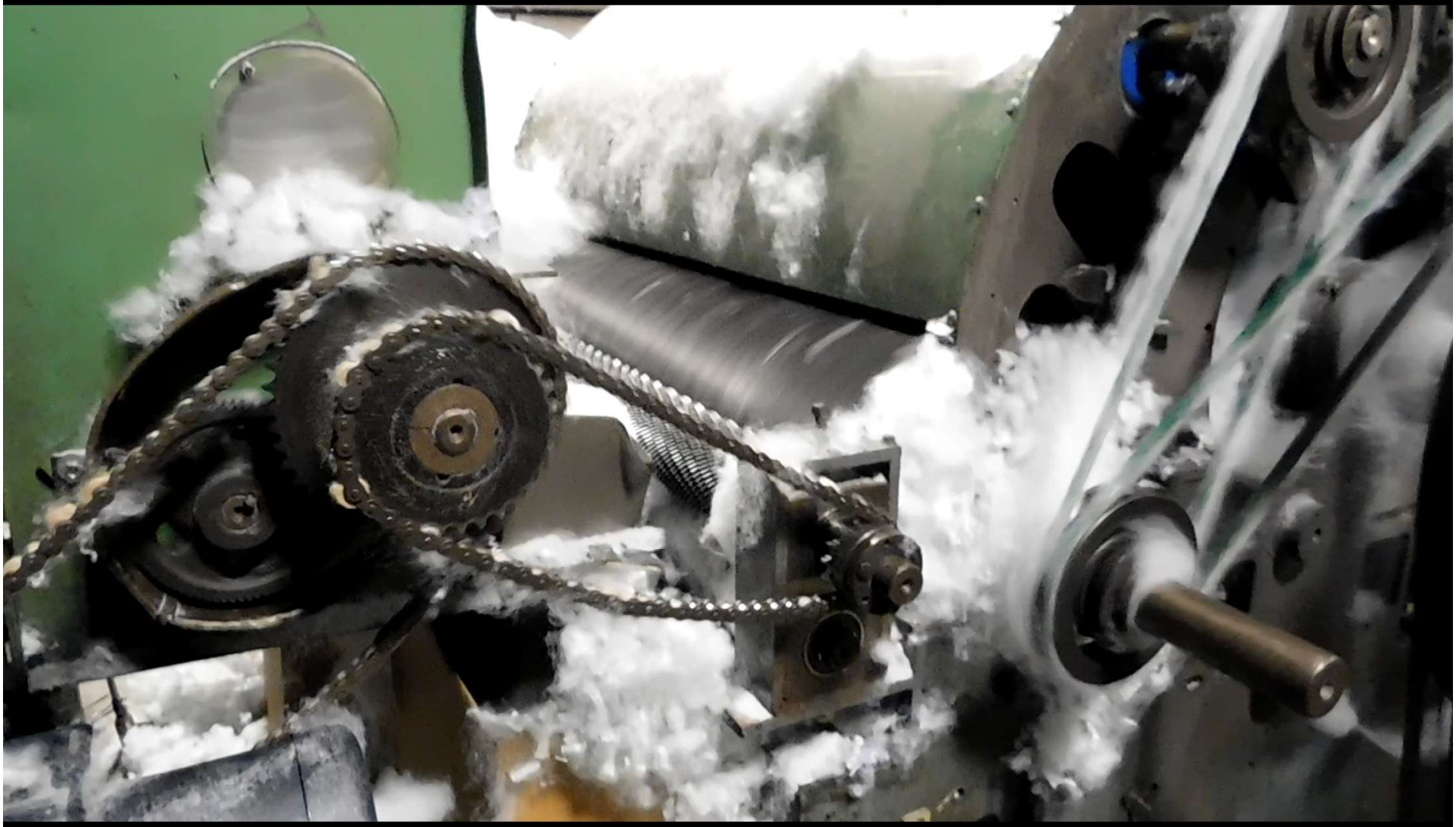
Machine Guarding

- ***The CSHO's Guide to Answering "There's No Way to Guard That"***

Presented by: Ted R. Hendrix, CSP

NCDOL N.C. Department of Labor
Occupational Safety & Health Division
Cherie Berry, Commissioner of Labor

Machine Guarding



The CSHO's Guide to Answering "There's No Way to Guard That"

Machinery and Machine Guarding

- **1910.211** – Definitions
- **1910.212** – General requirements for all machines
- **1910.213** – Woodworking machinery requirements
- **1910.215** – Abrasive wheel machinery
- **1910.217** – Mechanical power presses
- **1910.219** – Mech. power-transmission apparatus

Methods of Guarding

- Standard requires that machine guards be provided to protect employees from several identified hazards
  - Points of operation
  - Ingoing nip points
  - Rotating parts
  - Flying chips and sparks
- Standard does not specify the type of machine guard that must be used
- Several types of guards are acceptable, including barriers, tripping devices, and electronic safety devices
  - Employer makes the decision regarding which machine guard best suits the working conditions
- It's a "performance" standard

Methods of Guarding

- Guards
- Devices
- Location/distance
- Feed mechanisms
- Miscellaneous aids

Machine Guards

- Guards are barriers that prevent access to danger areas
  - *Fixed guards*
  - *Interlocks*
  - *Adjustable*
  - *Self-adjusting*

Fixed Guards (Pros and Cons)

- Can be constructed to suit many specific applications
- In-plant construction is often possible
- Can provide maximum protection
- Usually requires minimum maintenance
- Can be suitable to high production, repetitive operations
- May interfere with visibility
- Can be limited to specific operations
- Machine adjustment and repair often require its removal, thereby necessitating other means of protection for maintenance personnel

Interlocked Guards (Pros and Cons)

- Can provide maximum protection
- Allows access to the machine for removing jams without time consuming removal of the fixed guards
- Requires careful adjustment and maintenance
- May be easy to disengage

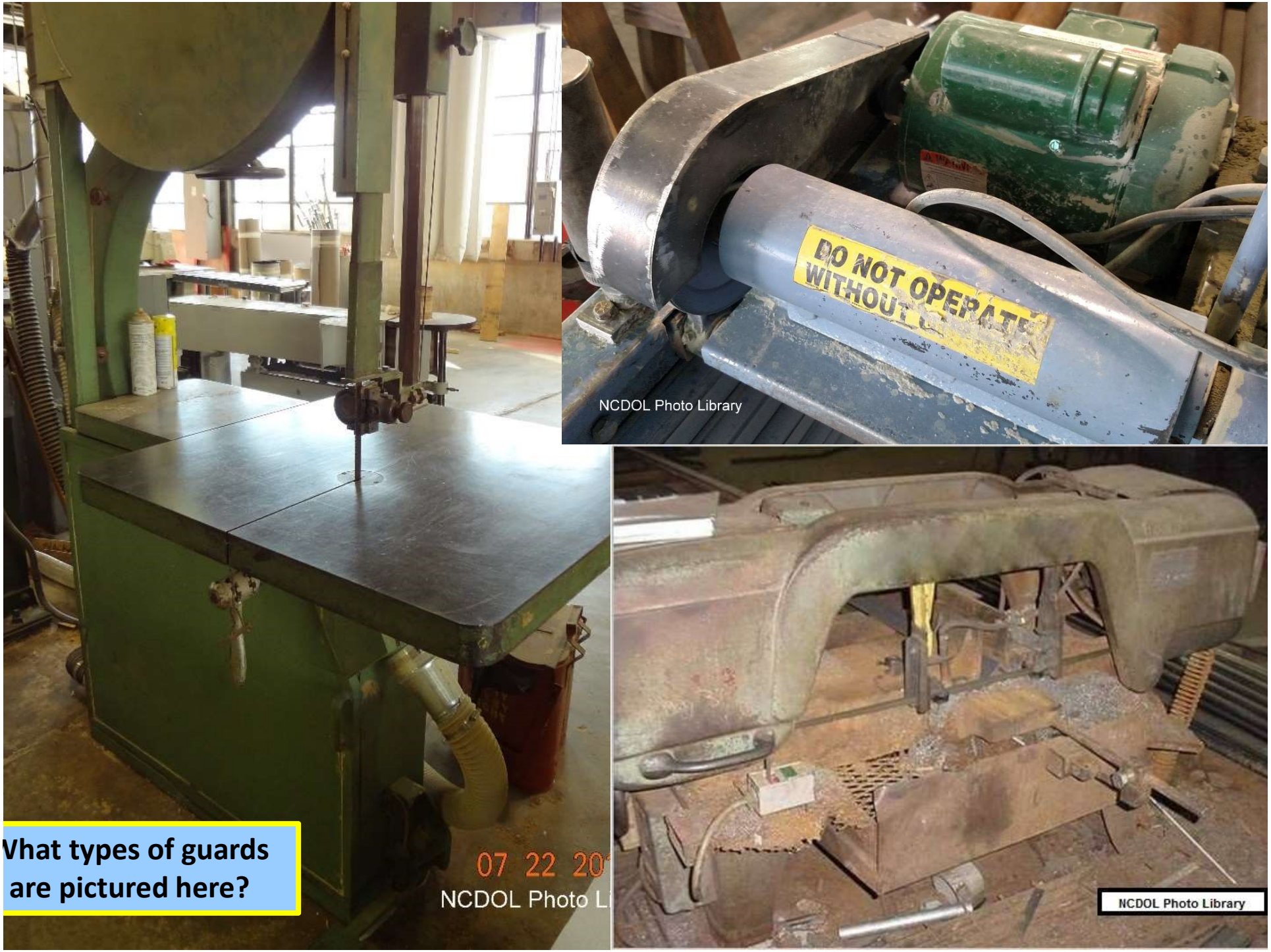
Adjustable Guards (Pros and Cons)

- Can be constructed to suit many specific applications
- Can be adjusted to admit varying sizes of stock
- Hands may enter danger area - protection may not be complete at all times
- May require frequent maintenance and/or adjustment
- The guard may be made ineffective by the operator
- May interfere with visibility

Self-Adjusting Guards (Pros and Cons)

- Off-the-shelf guards are often commercially available

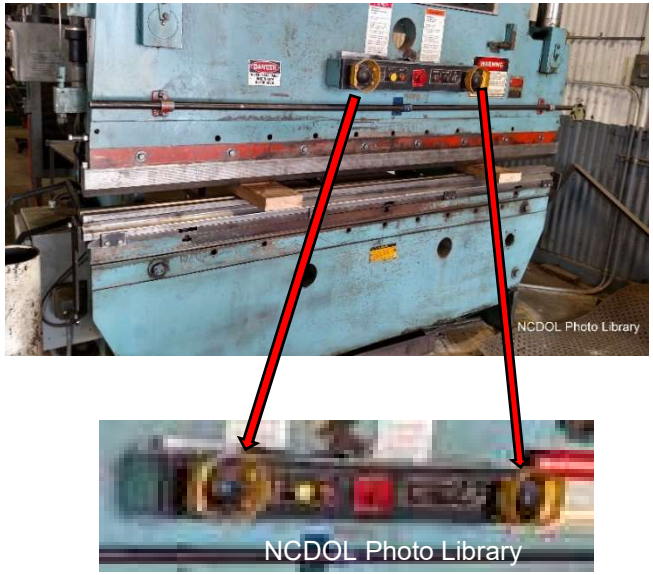
- Does not always provide maximum protection
- May interfere with visibility
- May require frequent maintenance and adjustment


DO NOT OPERATE
WITHOUT
NCDOL Photo Library
What types of guards are pictured here?
07 22 20
NCDOL Photo L
NCDOL Photo Library

What about here?

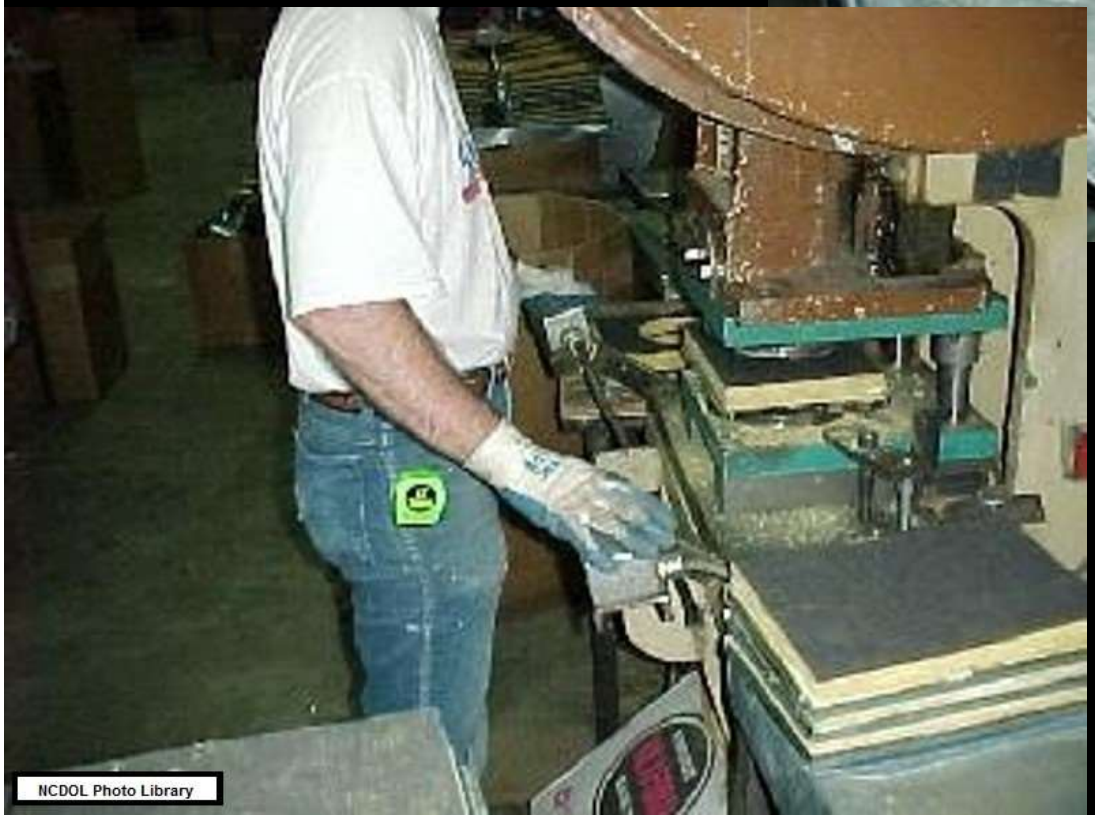
Safeguarding Devices

- Photoelectric presence-sensing
- Radiofrequency
- Electromechanical sensing device
- Pullbacks
- Restraints
- Safety trip controls
- Two-hand controls
- Two-hand trip
- Gates



Two Hand Control

What types of devices are pictured here?



Location/Distance

- Hazard analysis
- Hazards are not accessible
- Walls
- Fences
- Height
- Stock dimension
- Operator's station

Feed Mechanisms

- Automatic feeding
- Semi-automatic feed
- Automatic ejection
- Semi-automatic ejection
- Robots

Automatic

Semi-automatic

Robots

Miscellaneous Aids

- Awareness barriers
- Shields
- Holding tools
- Push stick or block

Safeguard Requirements

- Prevent contact
- Properly secured
- Protect from falling objects
- Create no hazards
- Create no interference (greater hazard)
- Allow safe lubrication (removal of guards)

General Requirements

1910.212(a)(2)

- Guards affixed to machine where possible
  - *Guard must not offer an accident hazard in itself*

General Requirements

1910.212(a)(3)

- Machine guarding for all machines
  - ***Point of operation*** *of machines whose operation exposes an employee to injury, shall be guarded*
  - *Special hand tools for placing and removing material must permit easy handling of material*
    - » Without the operator placing a hand in the danger zone

General Requirements

1910.212(a)(5)

- Exposure of blades
  - *Blades of fans less than 7 feet above floor or working level must be guarded*
  - *Guard openings must be no larger than ½ inch*

This fan does not comply with the requirement

Fan Blades Not Properly Guarded

- Corrective Action
  - *Install proper guard over fan blades with opening no larger than ½ inch*

These fans do not comply with the requirement

General Requirements

1910.212(a)(5)

Properly guarded fan

General Requirements

1910.212(b)

- Anchoring fixed machinery
  - *Machines designed for fixed location must be anchored to prevent walking or moving*

Woodworking Machinery

1910.213(b)(3)

- Machine controls and equipment
  - *Provision to prevent machines from automatically restarting upon restoration of power*

Woodworking Machinery 1910.213(c)(1)-(c)(3)

- Hand-fed ripsaw
  - *Provided with a hood guard*
  - *Provided with a spreader*
  - *Provided with non-kickback fingers or dogs*

Woodworking Machinery

1910.213(c)(1)

- Hand-fed ripsaw
  - *Hood guard must automatically adjust itself to thickness of material being cut*
    - » Remain in contact with material

Woodworking Machinery

1910.213(h)(1)

- Radial saws
  - *Upper hood must completely enclose upper portion of blade*
    - » Must include the end of the saw arbor

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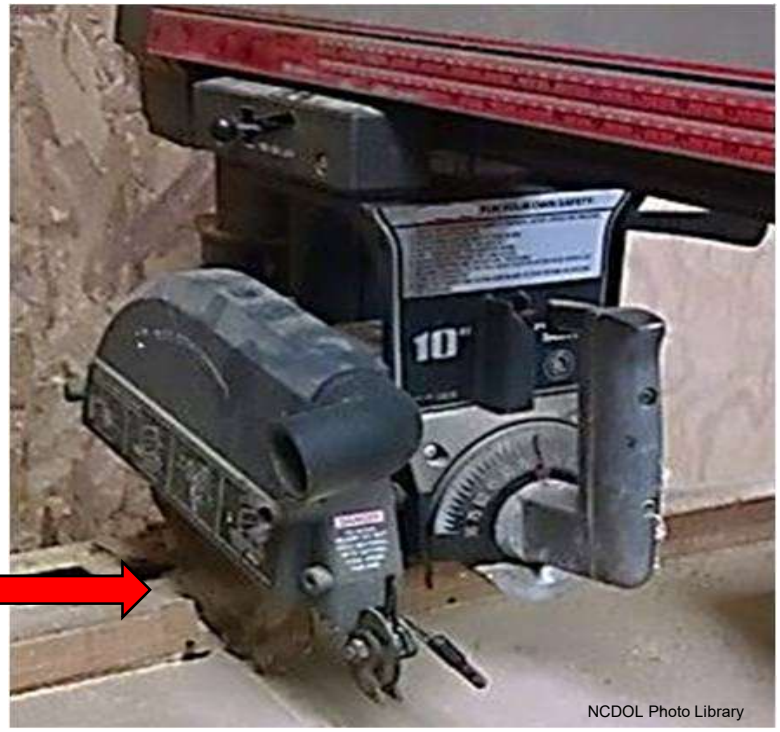
Woodworking Machinery

1910.213(h)(1)

- Radial saws
  - *Lower portion of blade must be guarded on both sides*
    - » Guarded to the full diameter of the blade
    - » Will adjust itself to the thickness of the stock

This saw does not comply with the requirement



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Woodworking Machinery

1910.213(h)(1)

This saw meets the requirement

Woodworking Machinery 1910.213(h)(2)–(h)(5)

- Radial saws
  - *Saw used for ripping provided with non-kickback fingers or dogs*
  - *Ripping must be against the direction which the saw turns*
  - *Adjustable stops preventing forward travel of blade beyond position necessary to complete cut*
  - *Cutting head must return to starting position when released*

Woodworking Machinery

1910.213(i)(1)

- Bandsaws and band resaws
  - *All portions of saw blade must be enclosed or guarded*
    - » **Except** working portion between guide rollers and the table

Woodworking Machinery

1910.213(p)(3)

- Disk sanding machine
  - *Exhaust hood or guard arranged to enclose revolving disk*
    - » **Except** portion above table

Woodworking Machinery

1910.213(p)(4)

- Belt sanding machines
  - *Guards provided at each nip point where sanding belt runs on to a pulley*

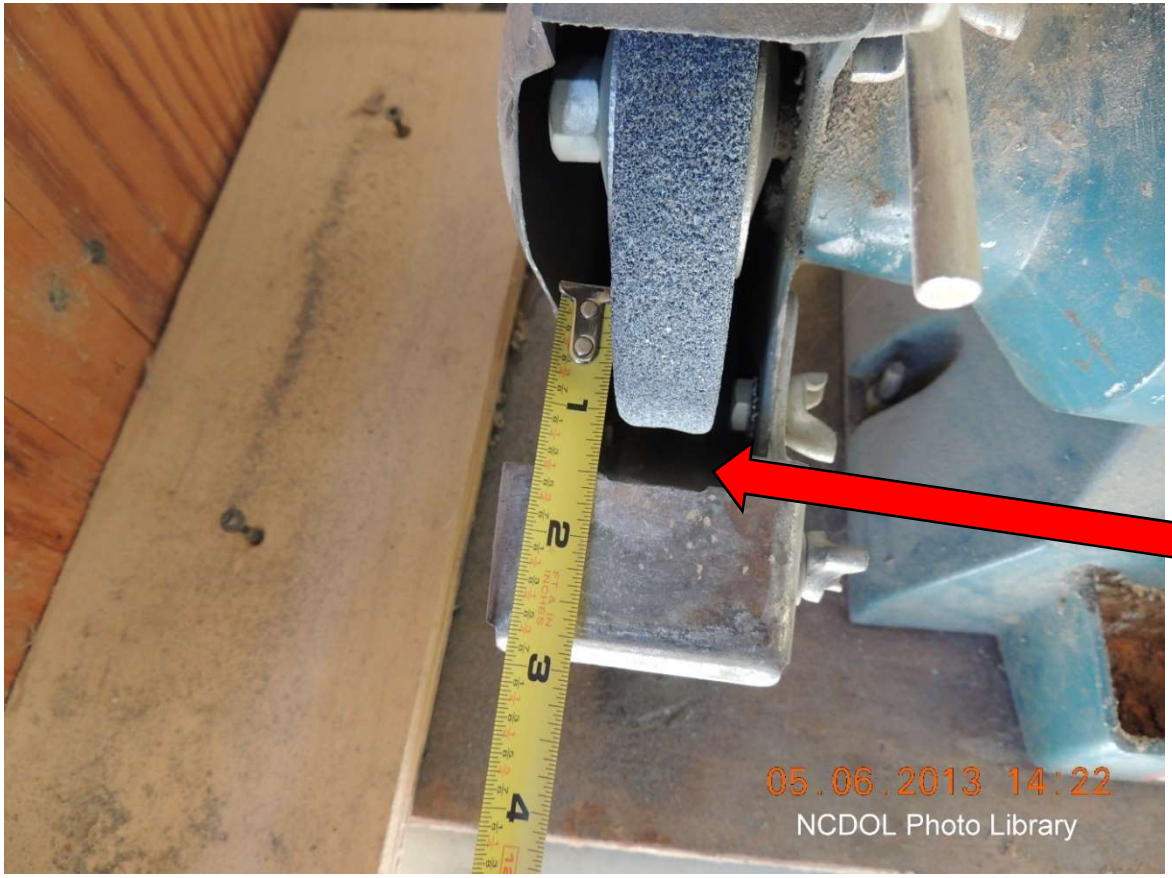
Abrasive Wheel Machinery

1910.215(a)(4)

- Work rests must be adjusted closely to the wheel with a *maximum opening of ⅛ inch*

Abrasive Wheel Machinery

1910.215(a)(4)



Work rest is out of adjustment

Abrasive Wheel Machinery 1910.215(b)(9)

- The distance between the wheel periphery and the adjustable tongue ***must not exceed ¼ inch***

Abrasive Wheel Machinery

1910.215(b)(9)

- Corrective Action
  - *Properly adjust the work rest and tongue guard to allowable openings*

Abrasive Wheel Machinery 1910.215(b)(3)

- Bench and floor stands
  - *The angular exposure of the grinding wheel periphery and sides for safety guards used on machines should not exceed **90 degrees or ¼ of the periphery***

Abrasive Wheel Machinery 1910.215(d)(1)

- Inspection
  - *All abrasive wheels must be closely **inspected and ring-tested** before mounting to ensure that they are free from cracks and defects*

Mechanical Power Presses 1910.217(b)(4)(i)

- **Foot pedals (treadle)**
  - Pedal mechanism shall be protected to prevent unintended operation
    - » From falling or moving objects
    - » Accidental stepping onto the pedal

Mechanical Power Presses

1910.217(c)(1), (c)(3)(iii)-(iii)(a)

- Safeguarding the point of operation
  - *Point of operation must be provided with guards or point of operation devices*
- Presence sensing point of operation device
  - *Must be interlocked into the control circuit to prevent or stop slide motion if part of operator's body is within sensing field during down stroke of press slide*
- Presence sensing point of operation device
  - *Presence sensing devices cannot be used on machines using full revolution clutches*

Mechanical Power Presses 910.217(c)(3)(iv)

- Pull-out device shall include attachments for each of operator's hands
  - *Connected to and operated only by press slide of upper die*
  - *Properly adjusted*
  - *Visually inspected and properly adjusted at start of each operator shift*

Mechanical Power Presses 910.217(c)(3)(vi)

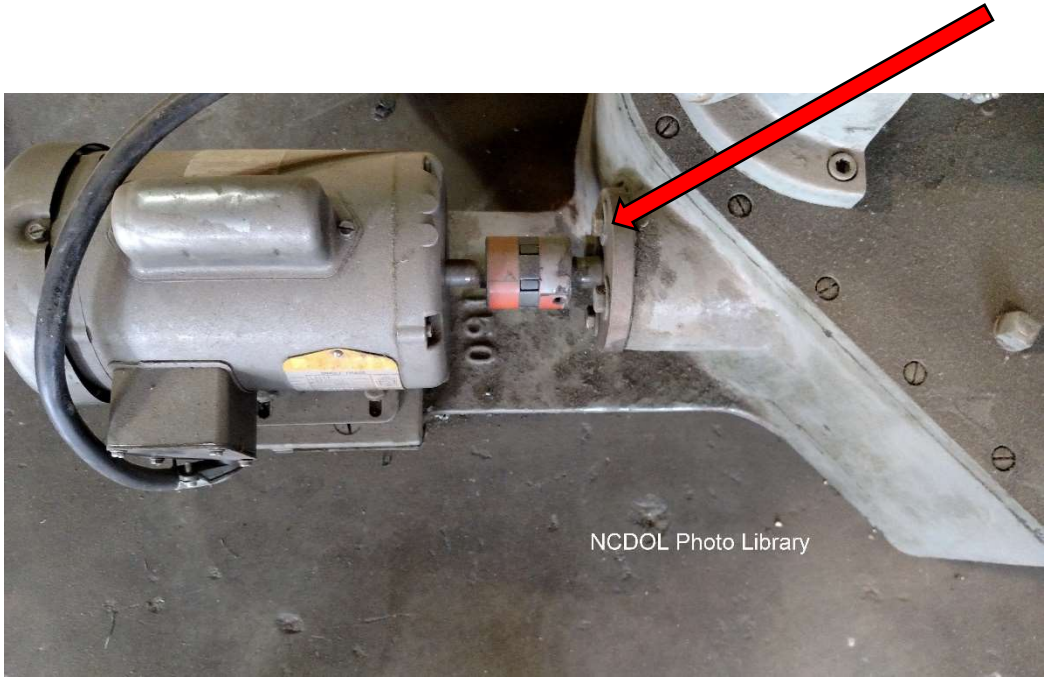
- Pull-out device and restraints shall include attachments for each of operator's hands
  - *Visually inspected and properly adjusted at start of each operator shift*

Pull-Out Devices

Restraints

Mechanical Power-Transmission Apparatus 1910.219(c)(2)(i)

- Shafting
  - *Exposed parts of horizontal shafting 7 feet or less from floor or working platform must be guarded*



Mechanical Power-Transmission Apparatus 1910.219(c)(4)(i)

- Projecting shaft ends
  - *Must not project more than ½ **the diameter** of the shaft*
    - » Unless guarded by non-rotating caps or safety sleeves

This does not comply with the requirement

Mechanical Power-Transmission Apparatus 1910.219(d)(1)

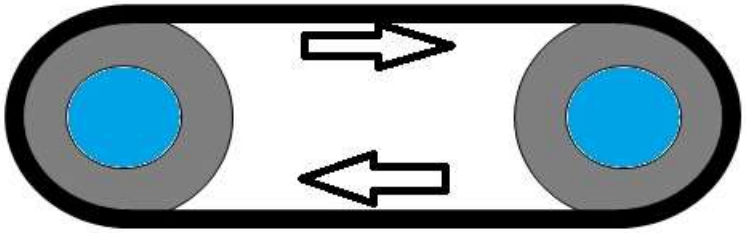
- Pulleys
  - *Any parts of pulleys which are 7 feet or less from floor or working platform must be guarded*

This does not comply with the requirement

Mechanical Power-Transmission Apparatus 1910.219(e)(1)(i)

- Where both runs of horizontal belts are ***7 feet or less*** from floor level
  - Guard must extend at least 15 inches above the belt
- Horizontal belt with both runs ***42 inches or less*** from floor must be fully enclosed

NCDOL Photo Library

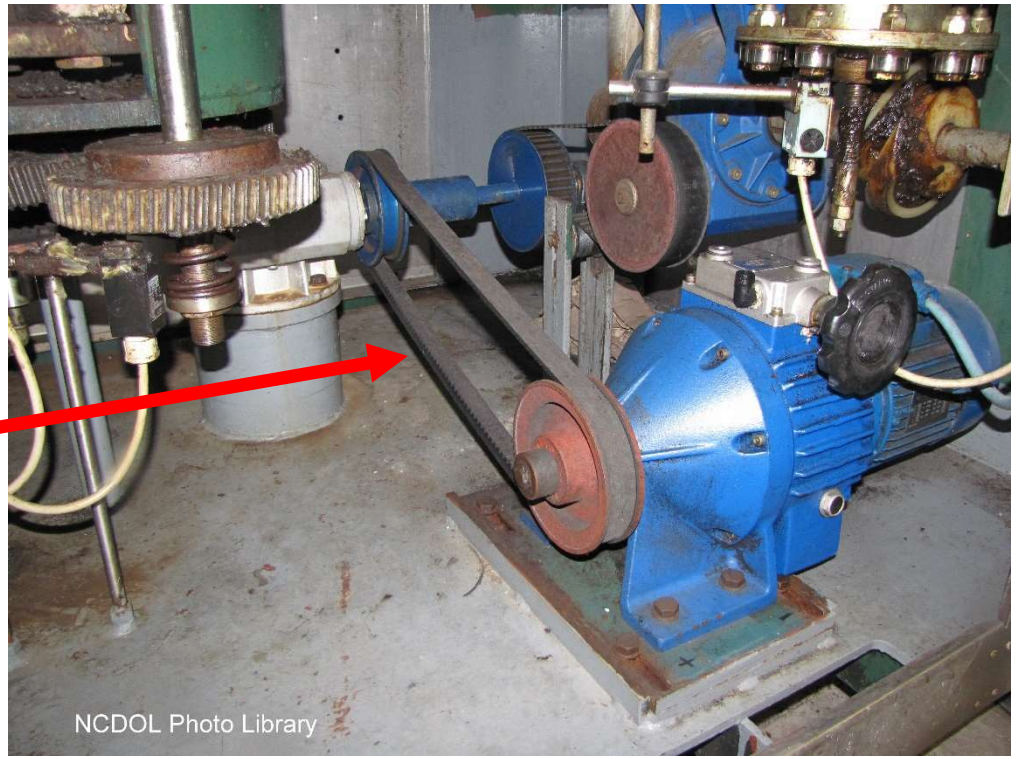


Belt Must be Guarded

Mechanical Power-Transmission Apparatus 1910.219(e)(3)(i)

- Vertical and inclined belts must be enclosed by a guard

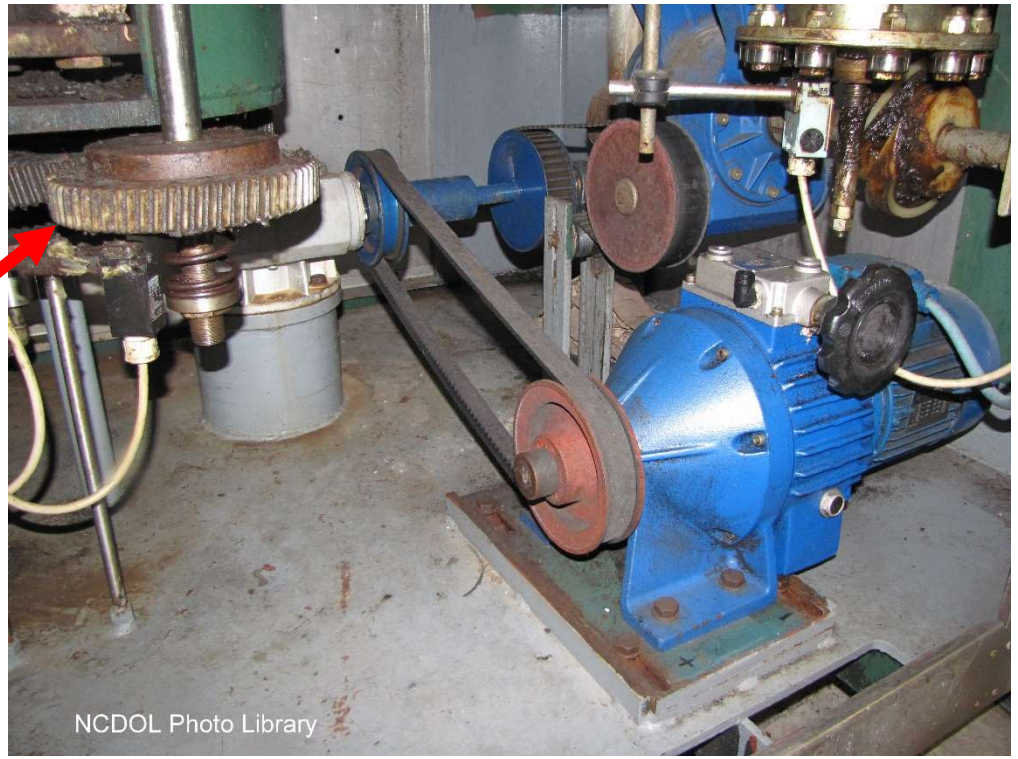
This does not comply with the requirement



Mechanical Power-Transmission Apparatus 1910.219(f)(1)

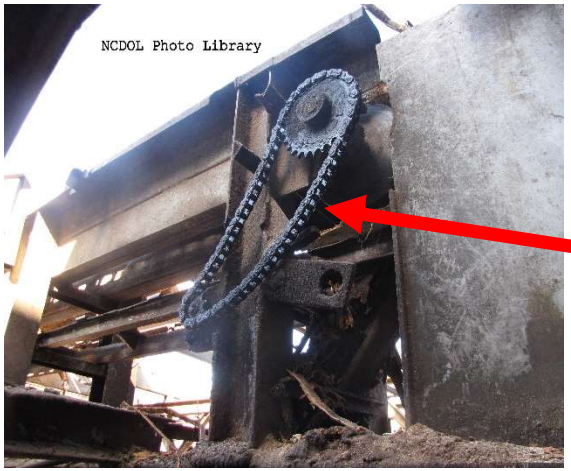
- Gears must be guarded by complete enclosures or standard guard

This does not comply with the requirement



Mechanical Power-Transmission Apparatus 1910.219(f)(3)

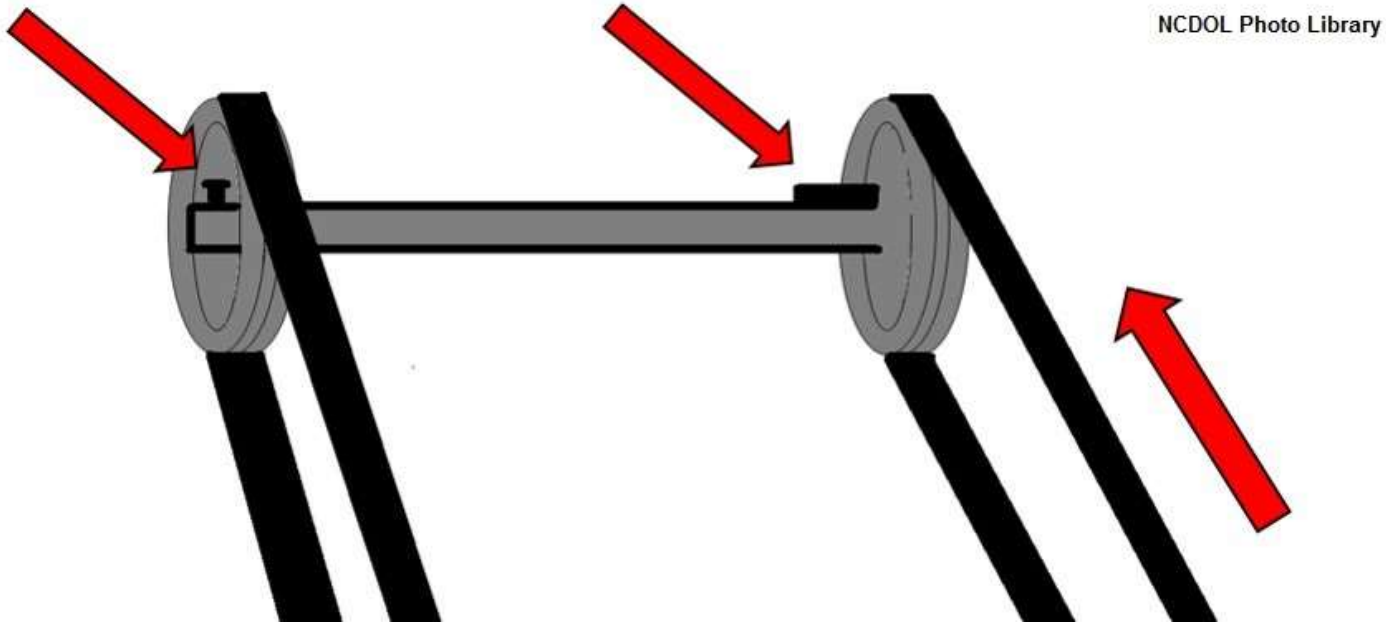
- Sprockets and chains
  - *Sprocket wheels and chains located **7 feet or less** above the floor or platform must be enclosed*



This does not comply with the requirement

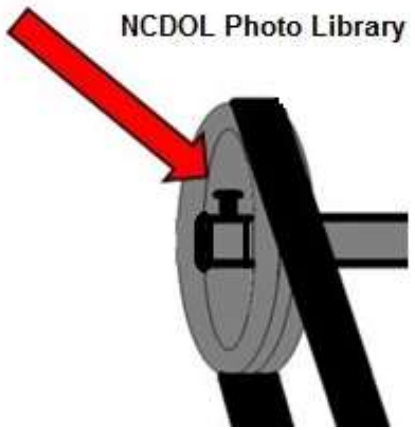
Mechanical Power-Transmission Apparatus 1910.219(h)(1)

- Keys, setscrews, and other projections
  - *Projecting keys, setscrews, and other projections in revolving parts must be removed, made flush, or guarded*



Mechanical Power-Transmission Apparatus 1910.219(i)(2)

- Shaft couplings must be constructed as to present no hazard from bolts, nuts, setscrews, or revolving surfaces
  - *Permitted where they are covered with safety sleeves or countersunk and do not extend beyond the flange of the coupling*




DANGER
DO NOT
ENTER


EXIT


CAUTION

Citation 02 Item 008 Type of Violation: **Repeat Serious**

29 CFR 1910.219(c)(2)(i): All exposed part(s) of horizontal shafting seven (7) feet or less from floor or working platform were not protected by stationary casing(s) enclosing shafting completely or by trough(s) enclosing sides and top or sides and bottom of shafting:

a) Garnett #1 – where numerous horizontal shafts located seven feet or less from the floor were not protected with stationary casing, enclosures or other means of guarding.

b) Garnett #2 – where numerous horizontal shafts located seven feet or less from the floor were not protected with stationary casing, enclosures or other means of guarding.

c) Garnett #4 – where numerous horizontal shafts located seven feet or less from the floor were not protected with stationary casing, enclosures or other means of guarding.

d) Garnett Line #3 – where the several horizontal shafts located seven feet or less from the floor on the Wise Industries pillow stuffing machine were not protected with stationary casing, enclosures or other means of guarding.

JS FIBER CO., INC. WAS PREVIOUSLY CITED FOR A VIOLATION OF THIS OCCUPATIONAL SAFETY AND HEALTH STANDARD, WHICH WAS CONTAINED IN OSH INSPECTION #318085941, CITATION 01, ITEM 007(A), ISSUED ON DECEMBER 2, 2016, WITH A FINAL ORDER DATE OF JANUARY 11, 2017.

Date By Which Violation Must Be Abated:	**3/11/2019**
Proposed Penalty:	**$8,400.00**

Citation 02 Item 009a Type of Violation: **Repeat Serious**

29 CFR 1910.219(d)(1): Pulley(s) with any part(s) seven (7) feet or less from the floor or work platform were not guarded in accordance with the standards specified in 29 CFR 1910.219(m) and (o):

a) Garnett #1 – where numerous rotating pulleys located seven feet or less from the floor were not enclosed by a guard.

b) Garnett #2 – where numerous rotating pulleys located seven feet or less from the floor were not enclosed by a guard.

c) Garnett #4 – where numerous rotating pulleys located seven feet or less from the floor were not enclosed by a guard.

d) Sewing stations, Line 2 – where rotating pulleys located seven feet or less from the floor were not enclosed by a guard.

JS FIBER CO., INC. WAS PREVIOUSLY CITED FOR A VIOLATION OF THIS OCCUPATIONAL SAFETY AND HEALTH STANDARD, WHICH WAS CONTAINED IN OSH INSPECTION #318085941, CITATION 01, ITEM 007(B), ISSUED ON DECEMBER 2, 2016, WITH A FINAL ORDER DATE OF JANUARY 11, 2017.

Date Bv Which Violation Must Be Abated:	**3/11/2019**
Proposed Penalty:	**$8,400.00**

Citation 02 Item 009b Type of Violation: **Repeat Serious**

29 CFR 1910.219(e)(3)(i): Vertical or inclined belts were not enclosed by guards conforming to the requirements specified at 29 CFR 1910.219(m) and (o):

a) Garnett #1 – where numerous vertical and inclined belts located seven feet or less from the floor were not enclosed by a guard.

b) Garnett #2 – where numerous vertical and inclined belts located seven feet or less from the floor were not enclosed by a guard.

c) Garnett #4 – where numerous vertical and inclined belts located seven feet or less from the floor were not enclosed by a guard.

d) Sewing stations, Line 2 – where vertical and inclined belts located seven feet or less from the floor were not enclosed by a guard.

JS FIBER CO., INC. WAS PREVIOUSLY CITED FOR A VIOLATION OF THIS OCCUPATIONAL SAFETY AND HEALTH STANDARD, WHICH WAS CONTAINED IN OSH INSPECTION #318085941, CITATION 01, ITEM 007(D), ISSUED ON DECEMBER 2, 2016, WITH A FINAL ORDER DATE OF JANUARY 11, 2017.

Date By Which Violation Must Be Abated:	**3/11/2019**
Proposed Penalty:	**$0.00**

Citation 02 Item 010 Type of Violation: **Repeat Serious**

29 CFR 1910.219(f)(1): Gear(s) were not guarded by a complete enclosure or by one of the methods specified in 29 CFR 1910.219(f)(1)(ii) and (f)(1)(iii):

a) Garnett #1 – where intermeshing gears were not enclosed by a guard.

b) Garnett #4 – where intermeshing gears were not enclosed by a guard.

JS FIBER CO., INC. WAS PREVIOUSLY CITED FOR A VIOLATION OF THIS OCCUPATIONAL SAFETY AND HEALTH STANDARD, WHICH WAS CONTAINED IN OSH INSPECTION #318085941, CITATION 01, ITEM 007(E), ISSUED ON DECEMBER 2, 2016, WITH A FINAL ORDER DATE OF JANUARY 11, 2017.

Date By Which Violation Must Be Abated:	**3/11/2019**
Proposed Penalty:	**$8,400.00**

Citation 02 Item 011 Type of Violation: **Repeat Serious**

29 CFR 1910.219(f)(3): Sprocket wheels and chains which were seven (7) feet or less above floors or platforms were not enclosed:

a) Garnett #1 – where numerous rotating chains and sprockets located seven feet or less from the floor were not enclosed by a guard.

b) Garnett #2 – where numerous rotating chains and sprockets located seven feet or less from the floor were not enclosed by a guard.

c) Garnett #4 – where numerous rotating chains and sprockets located seven feet or less from the floor were not enclosed by a guard.

JS FIBER CO., INC. WAS PREVIOUSLY CITED FOR A VIOLATION OF THIS OCCUPATIONAL SAFETY AND HEALTH STANDARD, WHICH WAS CONTAINED IN OSH INSPECTION #318085941, CITATION 01, ITEM 007(F), ISSUED ON DECEMBER 2, 2016, WITH A FINAL ORDER DATE OF JANUARY 11, 2017.

Date By Which Violation Must Be Abated:	**3/11/2019**
Proposed Penalty:	**$8,400.00**

Citation 02 Item 013 Type of Violation: **Repeat Serious**

29 CFR 1910.262(c)(5): The employer did not ensure that guards and other safety devices, including starting and stopping devices were properly maintained:

a) Garnett #3 – where the Schmersal AZM 161SK safety interlock device on the entrance door was disabled, exposing employees to moving machinery hazards.

b) Gribetz International quilting machine – where the safety interlock system was disabled, exposing employees to moving machinery hazards.

JS FIBER CO., INC. WAS PREVIOUSLY CITED FOR A VIOLATION OF THIS OCCUPATIONAL SAFETY AND HEALTH STANDARD, WHICH WAS CONTAINED IN OSH INSPECTION #318085941, CITATION 01, ITEM 007(G), ISSUED ON DECEMBER 2, 2016, WITH A FINAL ORDER DATE OF JANUARY 11, 2017.

Date By Which Violation Must Be Abated:	**3/11/2019**
Proposed Penalty:	**$8,400.00**

Citation 04 Item 005 Type of Violation: **Serious**

29 CFR 1910.219(c)(4)(i): Projecting shaft end(s) did not present a smooth edge and end and projected more than one half the diameter of the shaft and were not guarded by non-rotating caps or safety sleeves:

a) Garnett #1 – where numerous horizontal shafts projected more than one-half the diameter of the shafts and were not guarded by nonrotating caps or safety sleeves.

b) Garnett #2 – where numerous horizontal shafts projected more than one-half the diameter of the shafts and were not guarded by nonrotating caps or safety sleeves.

c) Garnett #4 – where numerous horizontal shafts projected more than one-half the diameter of the shafts and were not guarded by nonrotating caps or safety sleeves.

d) Garnett Line #3 – where the several horizontal shafts projected more than one-half the diameter of the shafts and were not guarded by nonrotating caps or safety sleeves.

Date By Which Violation Must Be Abated:	**3/11/2019**
Proposed Penalty:	**$4,200.00**

Citation 04 Item 006 Type of Violation: **Serious**

29 CFR 1910.262(d)(3): Garnett lickerins were not enclosed:

a) Garnett #1 – where the lickerin was not enclosed.

b) Garnett #2 – where the lickerin was not enclosed.

c) Garnett #4 – where the lickerin was not enclosed.

Date By Which Violation Must Be Abated:	**3/11/2019**
Proposed Penalty:	**$4,200.00**

Century Furniture

Marcus Bandy
#318125135
1910.213(m)(1)
December 8, 2017
Right index and middle fingers

L’invincibile R9 Router

L’invincibile R9 Router


Abatement Photo
A S2
Invincible
R9
11 16 2018

North Carolina Department of Labor
Occupational Safety and Health Division

Inspection Number: 318125135
Inspection Date(s): 12/8/2017 - 3/12/2018
Issuance Date: 3/14/2018

Citation and Notification of Penalty

Company Name: Century Furniture, LLC DBA Century Furniture Plant #1
Inspection Site: 420 12th Street NW, Hickory, NC 28603

Citation 01 Item 002 Type of Violation: **Serious**

29 CFR 1910.213(m)(1): The cutting heads of each wood shaper, hand-fed panel raiser, or other similar machine not automatically fed, were not enclosed with a cage or adjustable guard so designed as to keep the operator's hand away from the cutting edge:

a) Upholstery Cell, L'invincibile R9 router - where there was no guard in place to prevent employee contact with the cutting bit of the router. On or about 12/5/2017, an employee received injuries that resulted in the partial amputation of two fingers when their right hand came into contact with the unguarded cutting bit.

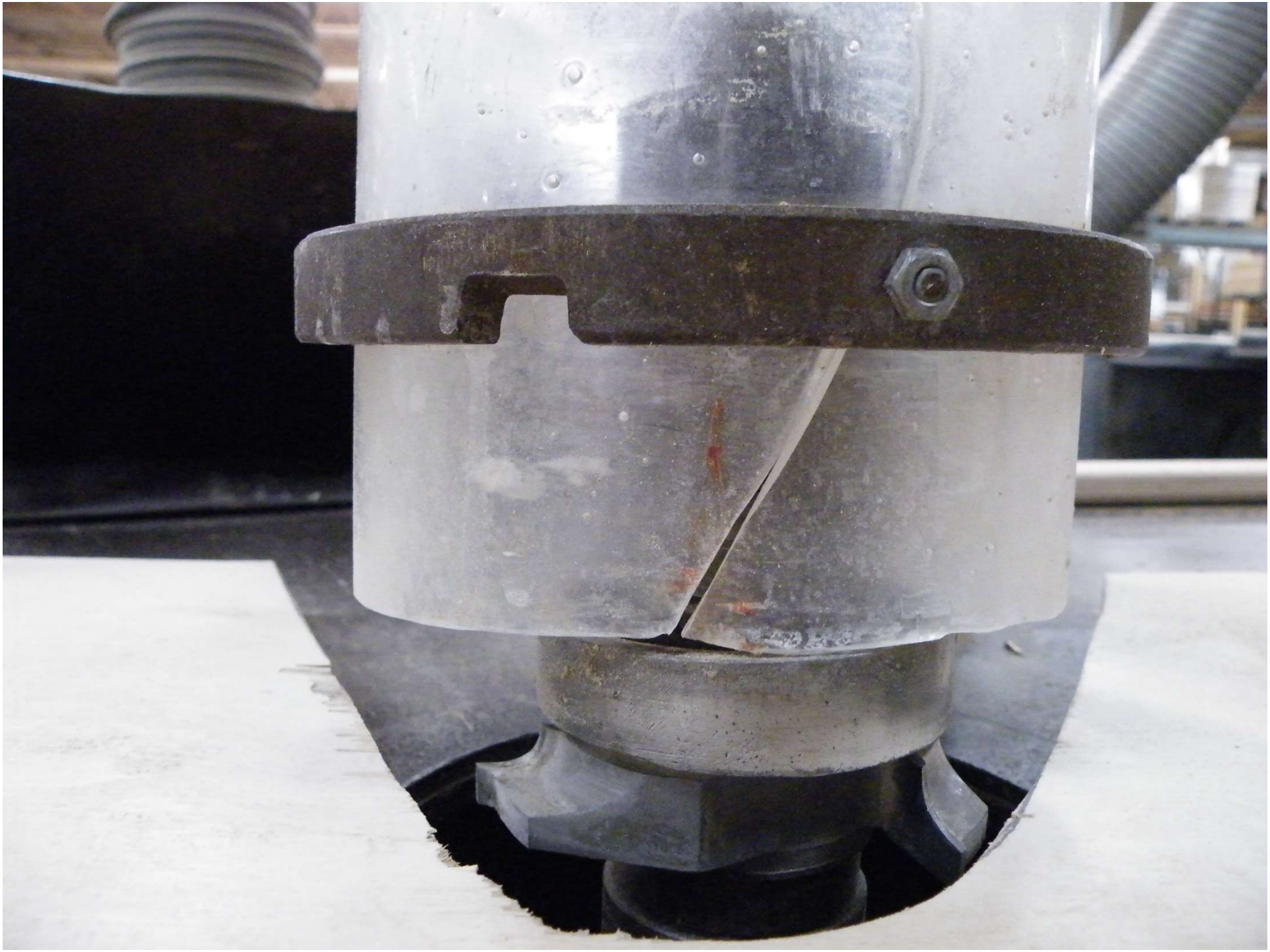
Date By Which Violation Must Be Abated: **Corrected During Inspection**
Proposed Penalty: **$5,000.00**

Bassett Furniture

George Calvery
#318134657
1910.213(m)(1)
April 19, 2018
Four fingers


Whitney Shaper
(Furniture Manufacturing)
Bassett


Whitney Shaper
(Furniture Manufacturing)



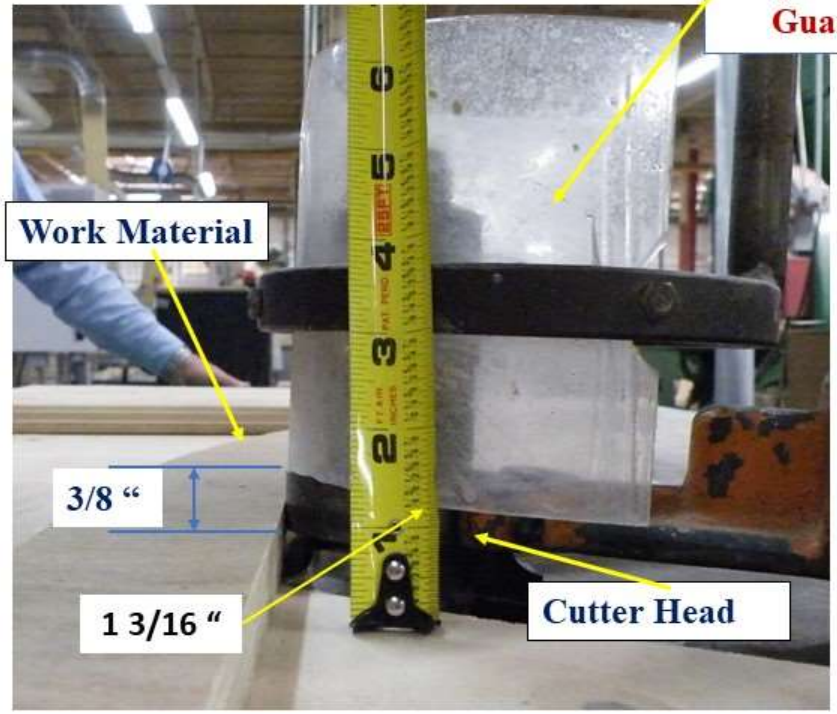


Photo DSCF 2520 – *Zoom In*

Citation 01-002
213(m)(1)

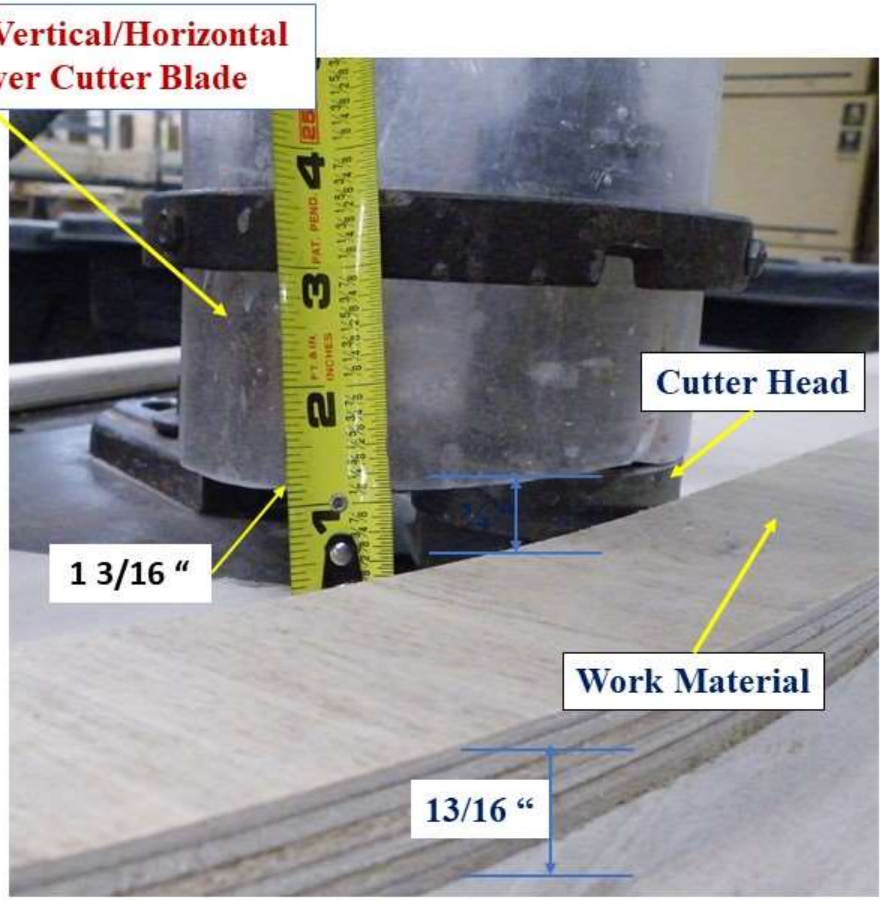


Photo DSCF 2521

Citation 01-002
213(m)(1)

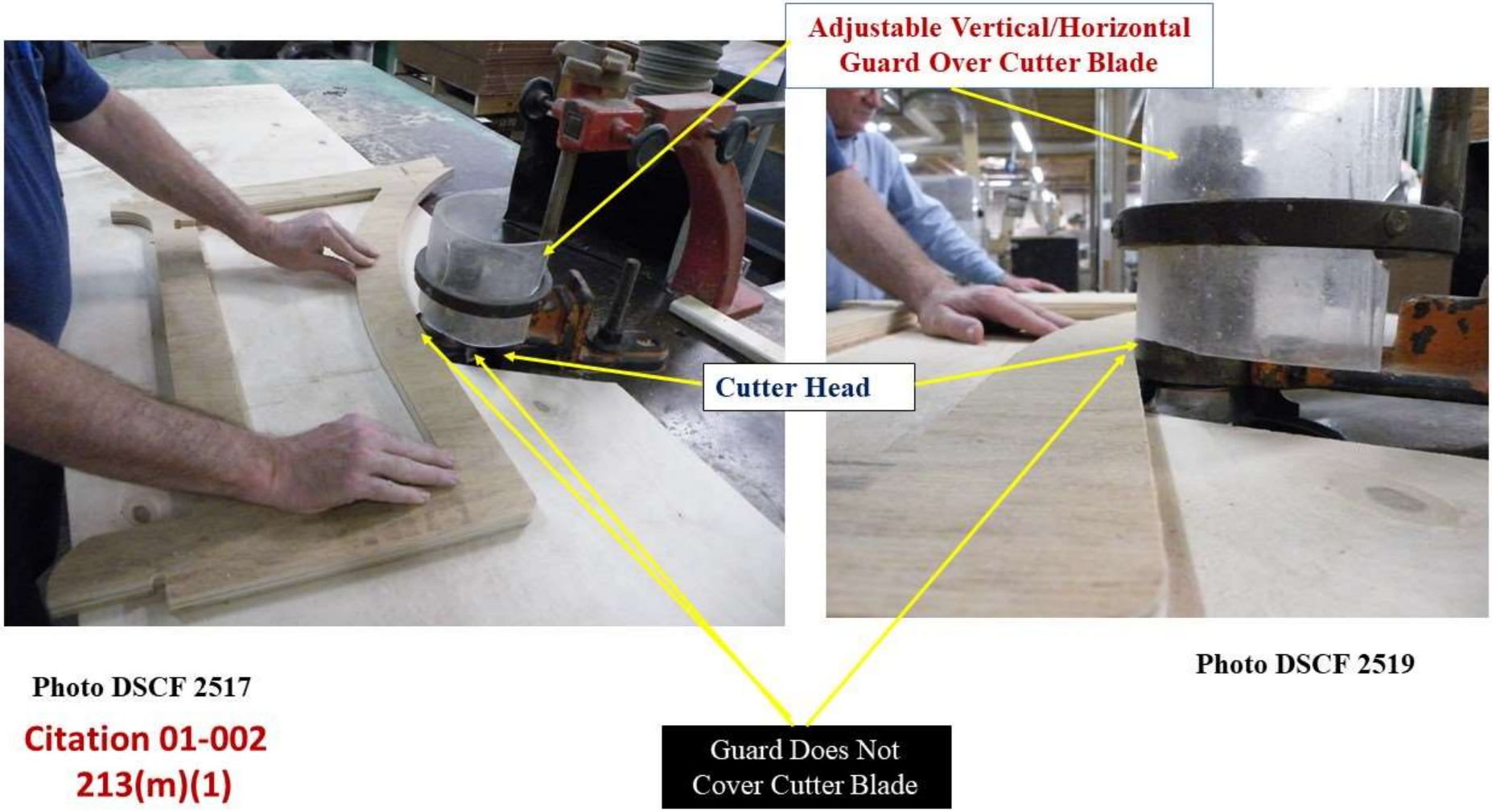


Photo DSCF 2517

Photo DSCF 2519

Citation 01-002
213(m)(1)

Under CPL 02-01-025, *Guidelines for Point of Operation Guarding of Power Press Brakes*, in section D-7, it states that OSHA recognizes ANSI B11.3-1982 as a National Consensus Standard. Under section 6.1.4.1, Point-of-Operation Guards, Illustration and Table 75 provide information for guard openings. Illustration and Table 75 of the ANSI B-11.3 match the Table O-10 table and illustration provided in 1910.217(f). Additionally, the OSHA Machine Guarding eTool states, “The basic regulation, in Section 1910.212, states that any machine that creates a hazard must be safeguarded to protect the operator and other employees. OSHA can also cite violations by referencing other standards such as the ANSI (American National Standards Institute) B11 series.” Therefore, although the Whitney wood shaper is not covered by 1910.217, the distances provided in that standard are taken directly from a National Consensus Standard, are referenced by OSHA in a compliance guidance document, and are generally accepted/used as a guide for determining acceptable spacing and openings in guards to prevent employee contact with a point of operation.

North Carolina Department of Labor
Occupational Safety and Health Division

Inspection Number: 318134657
Inspection Date(s): 4/19/2018
Issuance Date: 7/26/2018

Citation and Notification of Penalty

Company Name: Bassett Furniture Industries, Inc. DBA Bassett Newton Upholstery Division
Inspection Site: 1111 East 20th Street, Newton, NC 28658

Citation 01 Item 002 Type of Violation: **Serious**

29 CFR 1910.213(m)(1): Cutting heads of wood shaper(s) were not enclosed with a cage or adjustable guard so designed so as to keep the operator's hand away from the cutting edge:

a) Shaper Machine area: where the guard for the cutter blade was not adjusted properly on the Whitney (model 91, serial number 17969) hand fed wood shaper. On or about April 18, 2018 an employee had portions of four fingers amputated when his hand came into contact with the cutter head.

Date By Which Violation Must Be Abated: **8/9/2018**
Proposed Penalty: **$7,000.00**

JS Fiber

Ted Hendrix
#318148392
1910.212(a)(3)(ii)
October 22, 2018
No injuries


Pillow Press
10/23/2018 08:58


10/23/2018 09:00

Abatement Video

North Carolina Department of Labor
Occupational Safety and Health Division

Inspection Number: 318148392
Inspection Date(s): 10/22/2018 - 2/22/2019
Issuance Date: 2/25/2019

Citation and Notification of Penalty

Company Name: JS Fiber Co., Inc.
Inspection Site: 290 Marble Road, Statesville, NC 28625

Citation 04 Item 004 Type of Violation: **Serious**

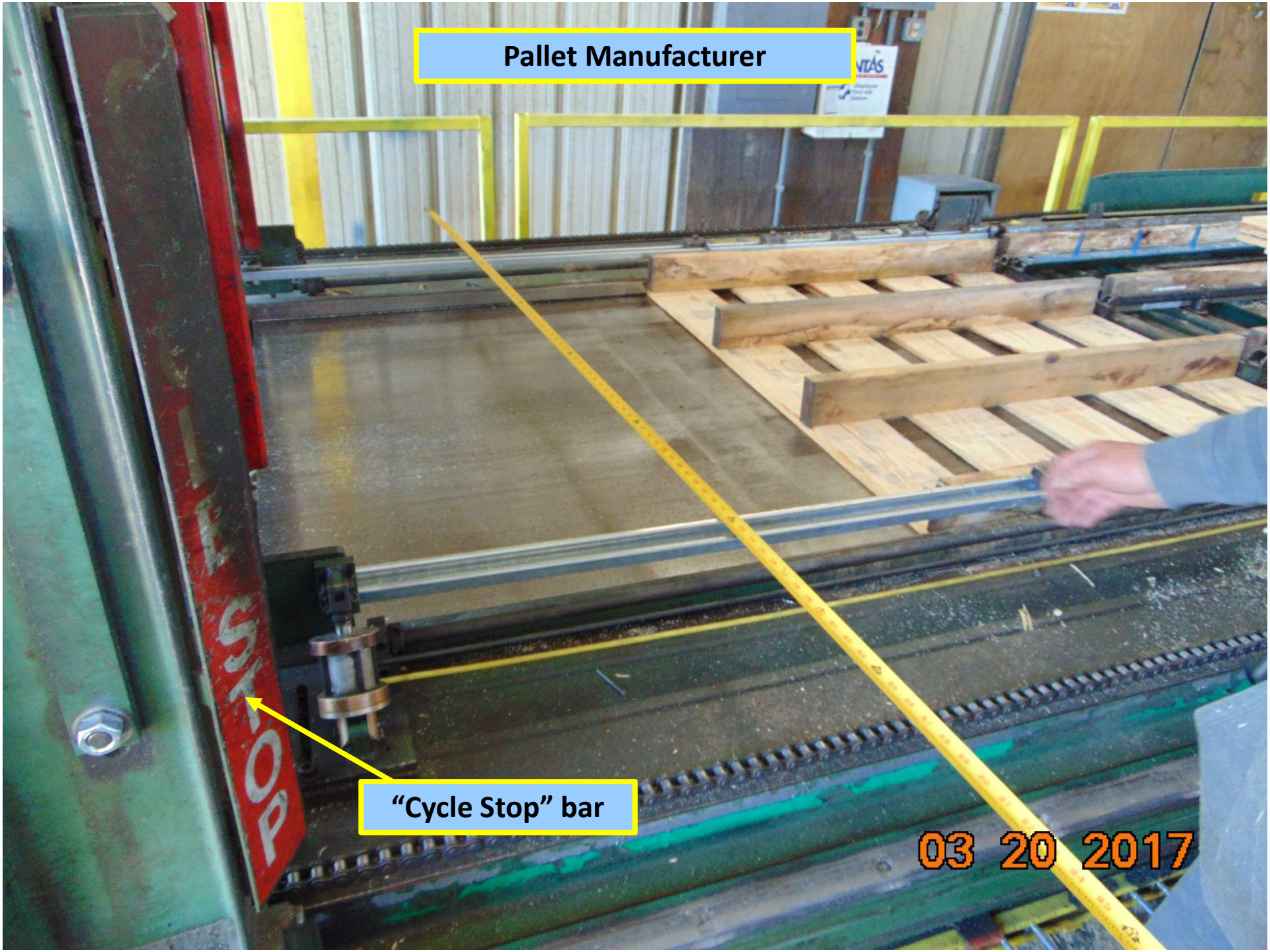
29 CFR 1910.212(a)(3)(ii): The point of operation of machines whose operation exposes an employee to injury was not guarded with a guarding device that conformed with any appropriate standards therefor, or, in the absence of applicable specific standards, was so designed and constructed as to prevent the operator from having any part of his body in the danger zone during the operating cycle:

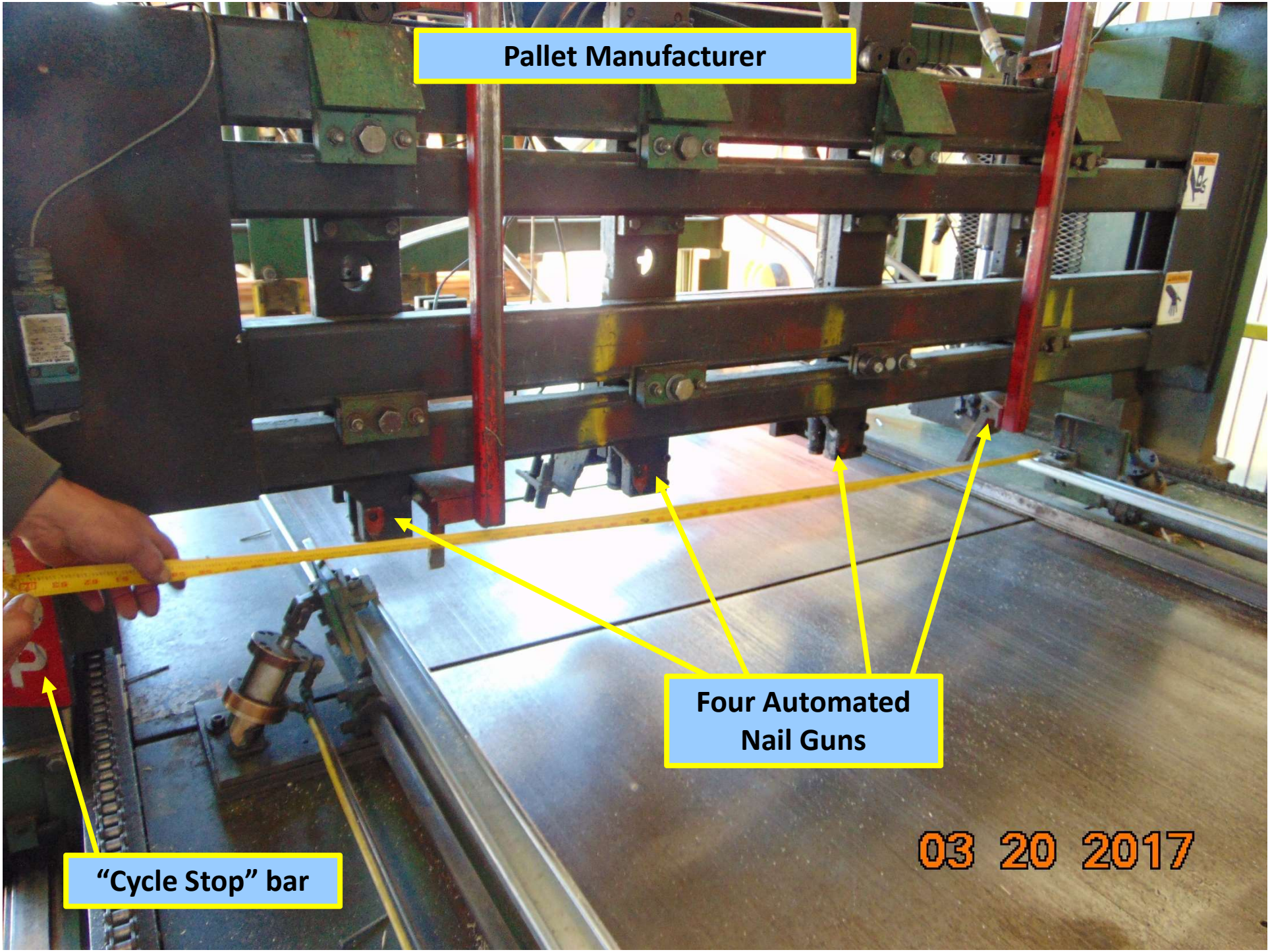
a) pillow presses – where the point of operation was not guarded, exposing employees to the hazard of being struck by and/or caught in the press.

Date By Which Violation Must Be Abated: **3/11/2019**
Proposed Penalty: **$1,800.00**

UFP Salisbury

Marcus Bandy
#318101664
1910.212(a)(1)
March 20, 2017
Left index finger


Pallet Manufacturer
“Cycle Stop” bar
03 20 2017


Pallet Manufacturer
Four Automated Nail Guns
"Cycle Stop" bar
03 20 2017


Abatement Photo
CYCLE STOP
04 01 2019

North Carolina Department of Labor
Occupational Safety and Health Division

Inspection Number: 318101664
Inspection Date(s): 3/20/2017
Issuance Date: 5/5/2017

Citation and Notification of Penalty

Company Name: UFP Salisbury, LLC
Inspection Site: 358 Woodmill Road, Salisbury, NC 28145

Citation 01 Item 001 Type of Violation: **Serious**

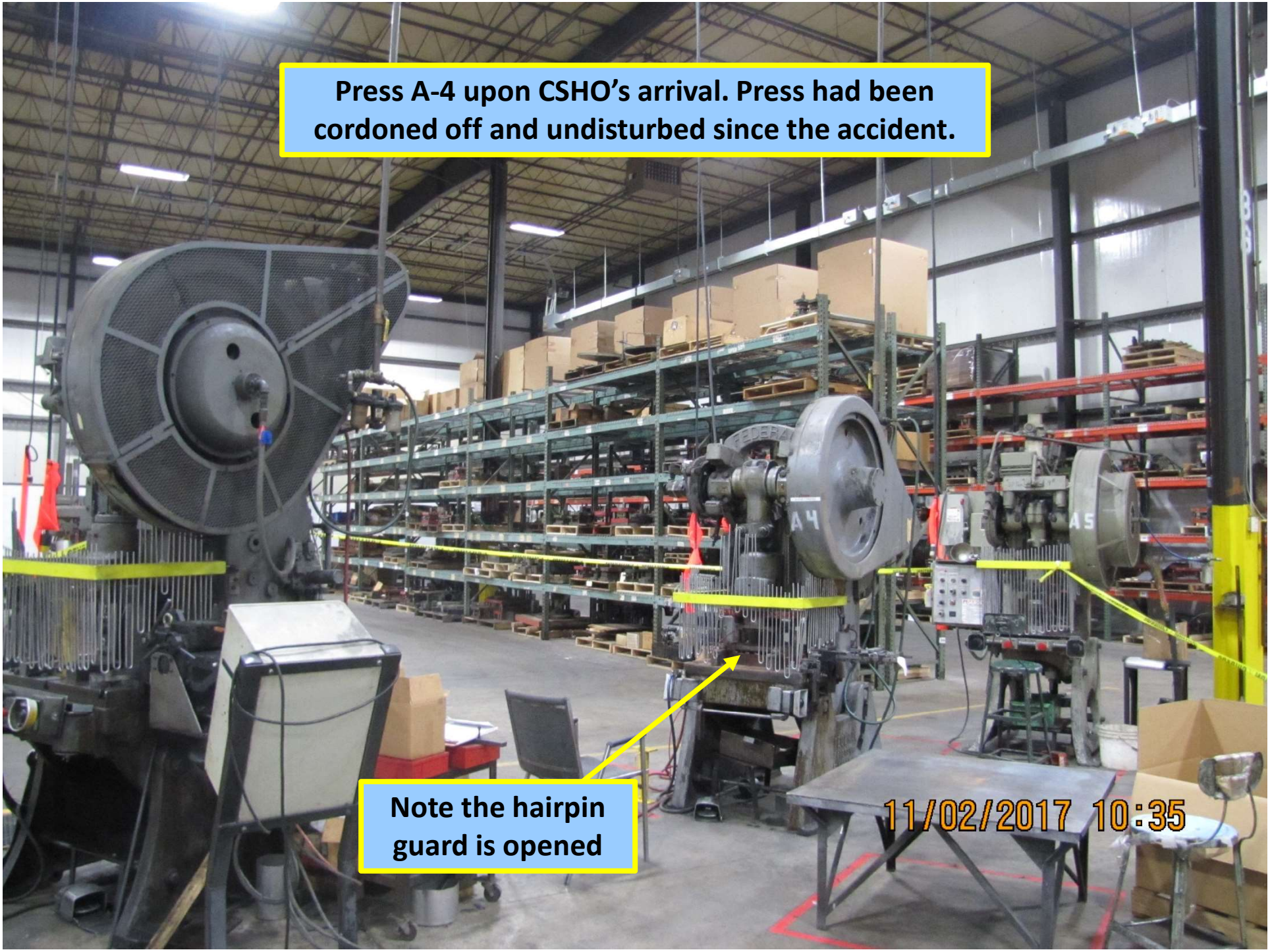
29 CFR 1910.212(a)(1): One or more methods of machine guarding was not provided to protect the operator and other employees in the machine area from hazards such as those created by point of operation, ingoing nip points, rotating parts, flying chips and sparks:

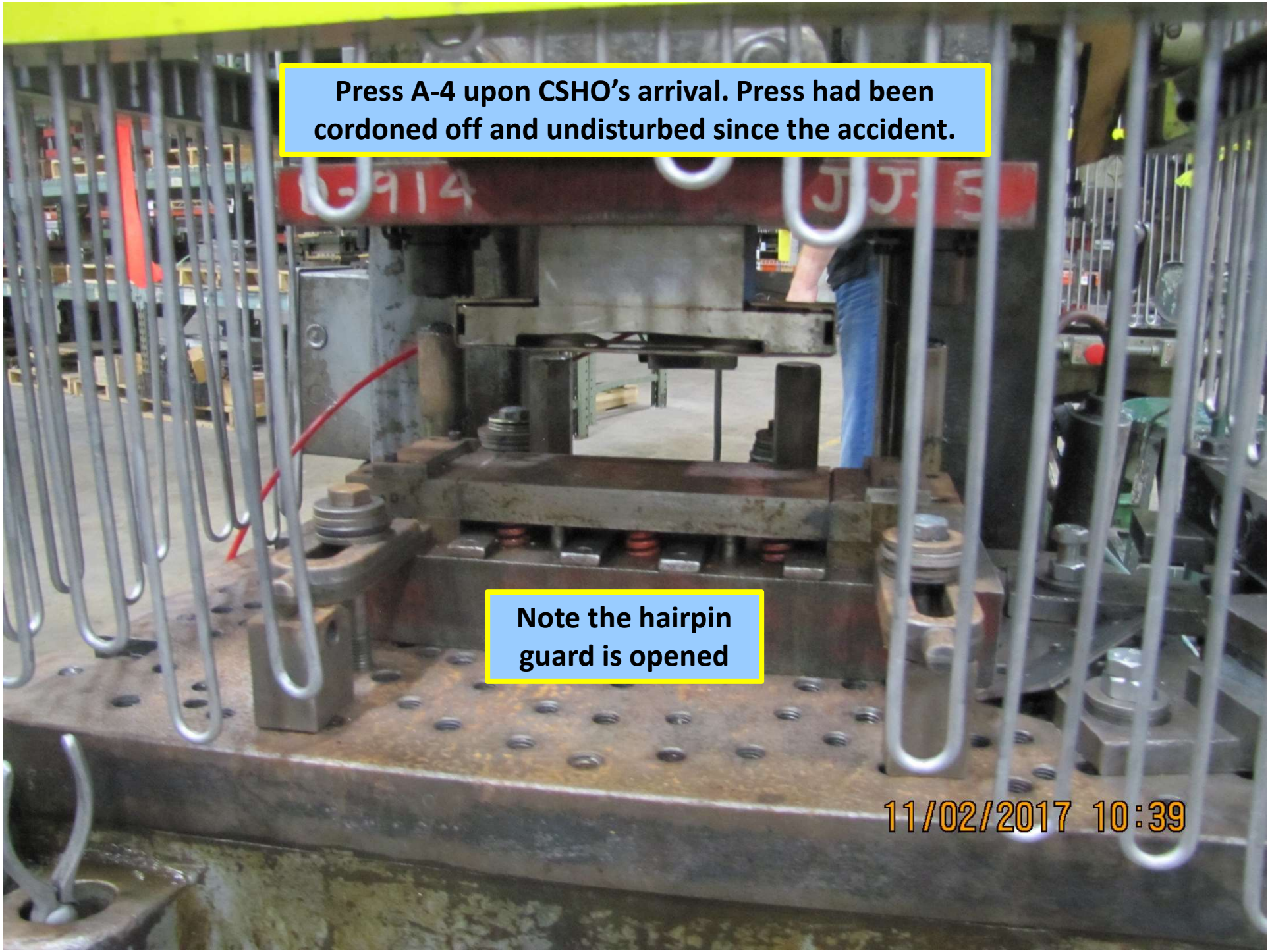
a) Pallet shop, Viking Champion (model 304 A) pallet machine - where there was a five inch opening between the bottom of the carriage frame and the top of a pallet, and no guard preventing an employee from contacting the point of operation, which resulted in a partial finger amputation.

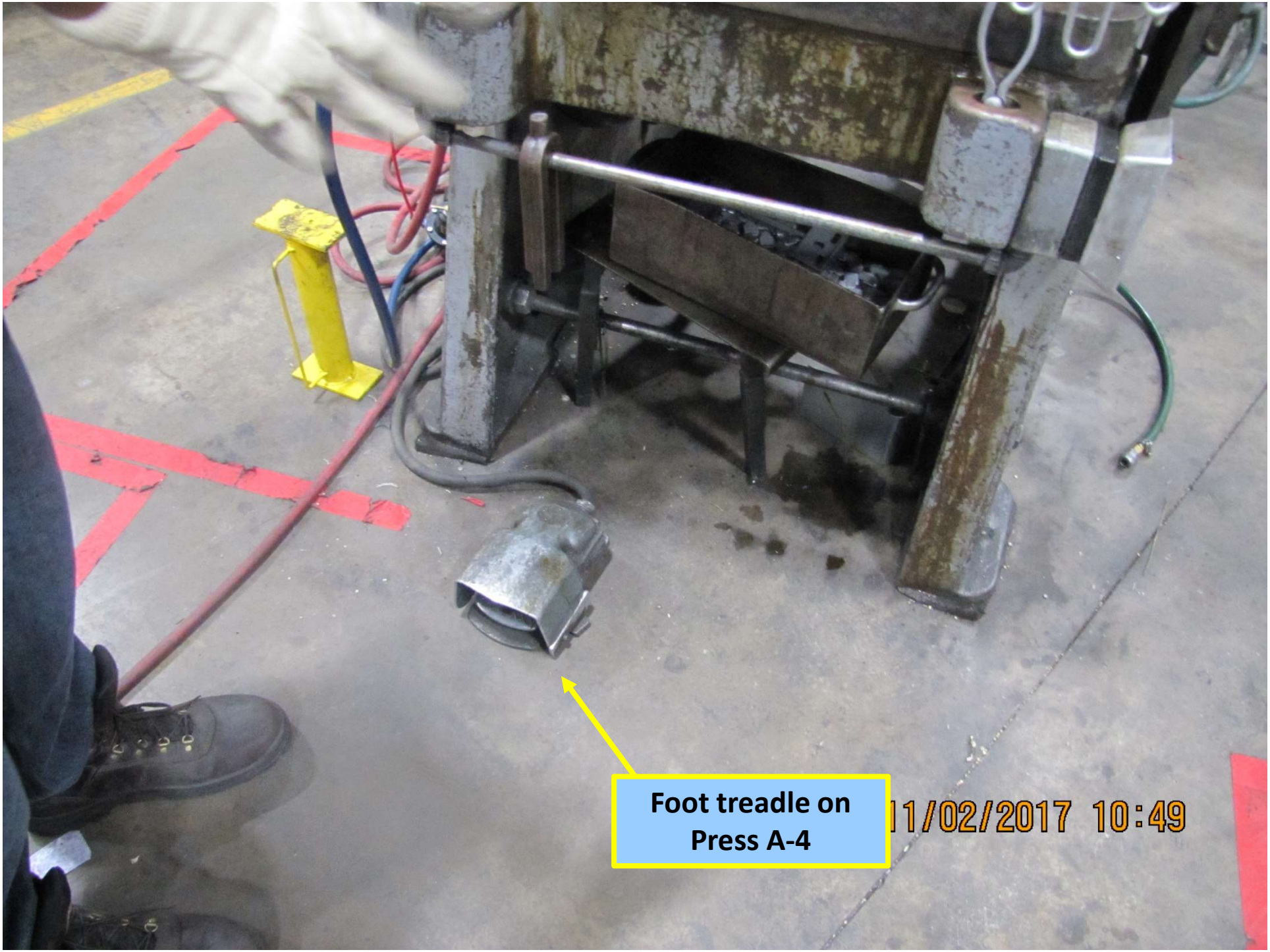
Date By Which Violation Must Be Abated: **5/12/2017**
Proposed Penalty: **$7,000.00**

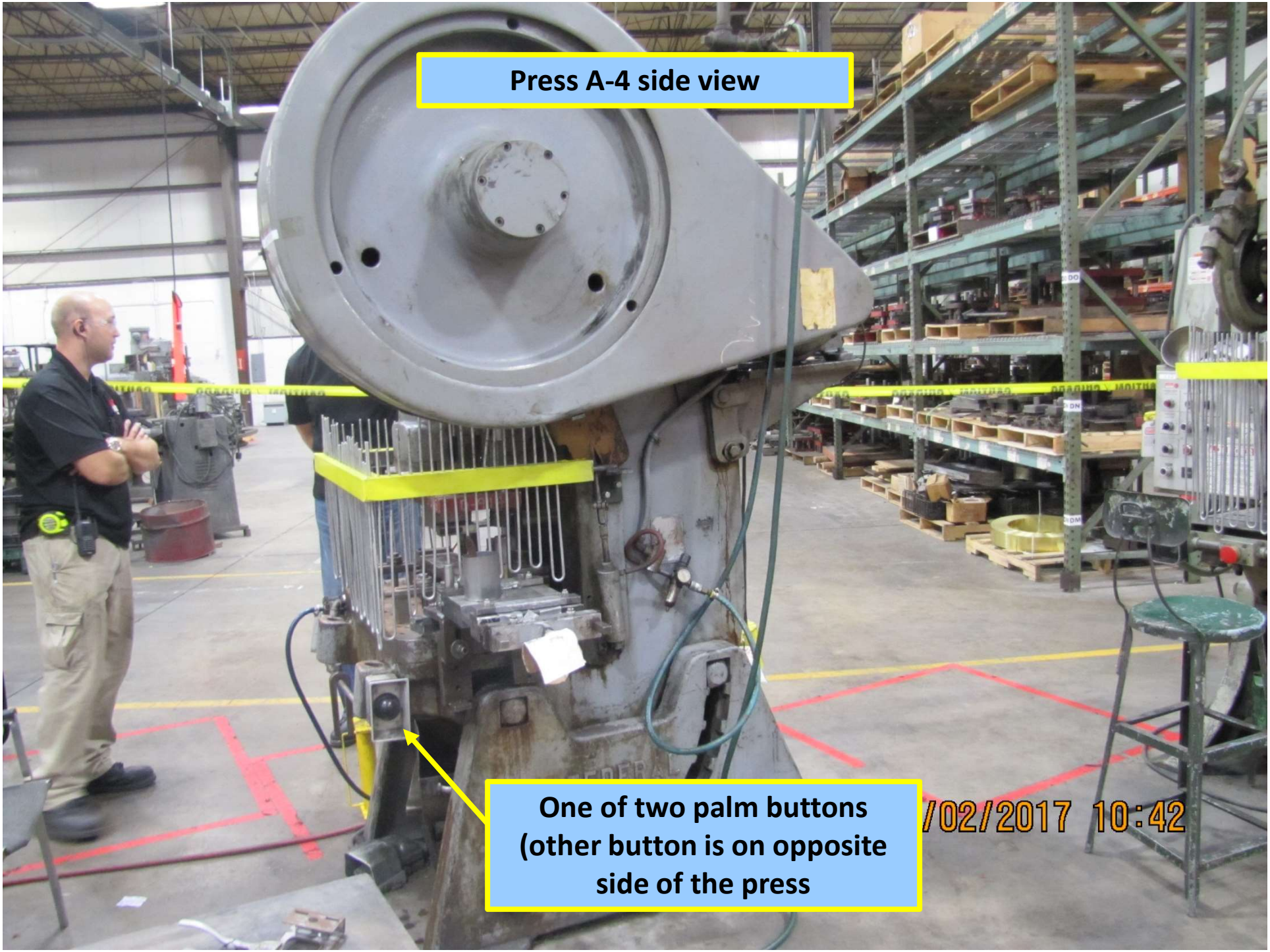
ABT Metals

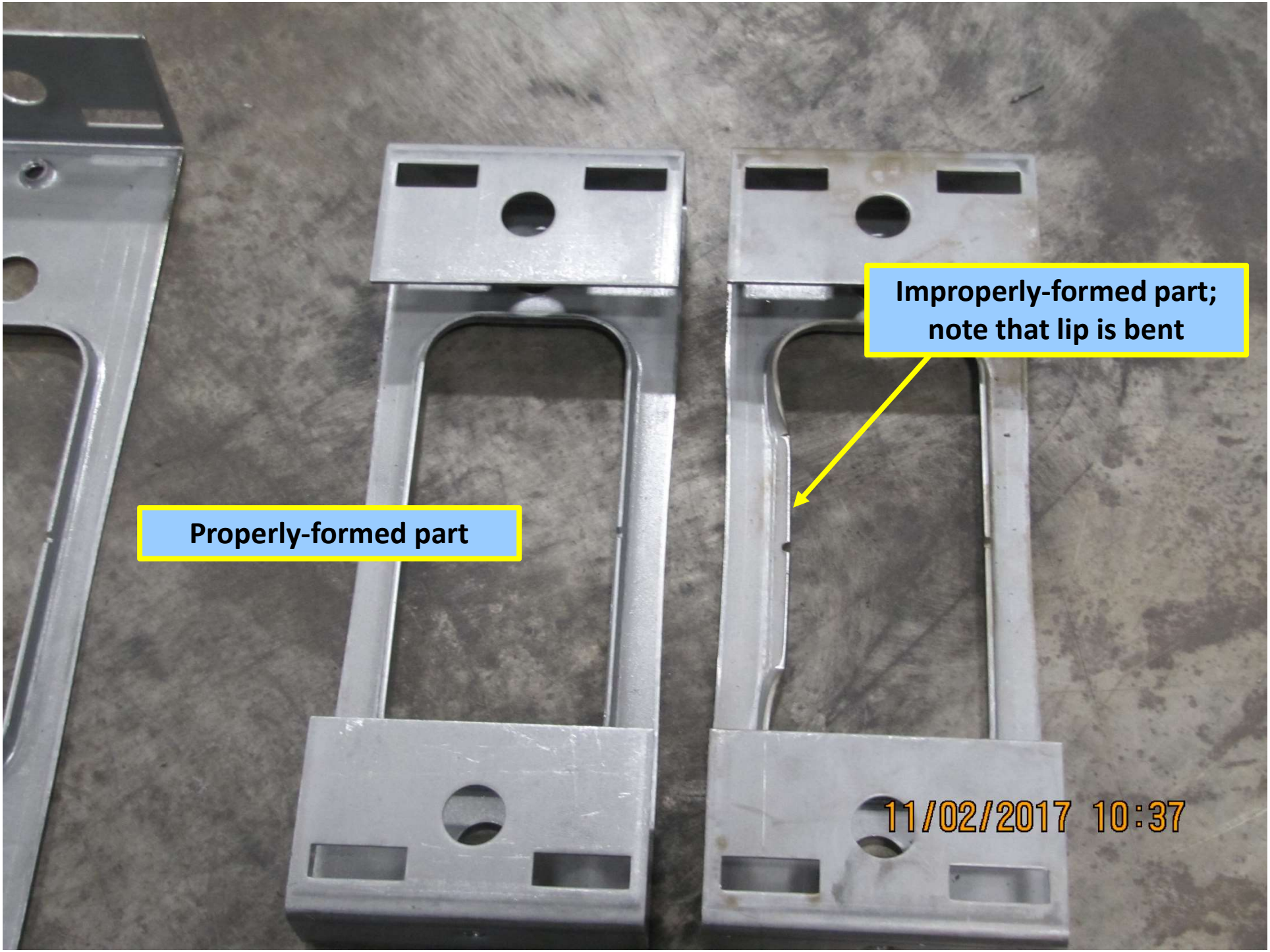
Ted Hendrix
#318122694
1910.217(c)(1)(i) Willful
1910.217(f)(2)
November 2, 2017
Left index finger; right index and middle fingers


Press A-4 upon CSHO's arrival. Press had been cordoned off and undisturbed since the accident.
Note the hairpin guard is opened
11/02/2017 10:35


Press A-4 upon CSHO's arrival. Press had been cordoned off and undisturbed since the accident.
Note the hairpin guard is opened
11/02/2017 10:39


Foot treadle on
Press A-4
11/02/2017 10:49


Press A-4 side view
One of two palm buttons (other button is on opposite side of the press
/02/2017 10:42

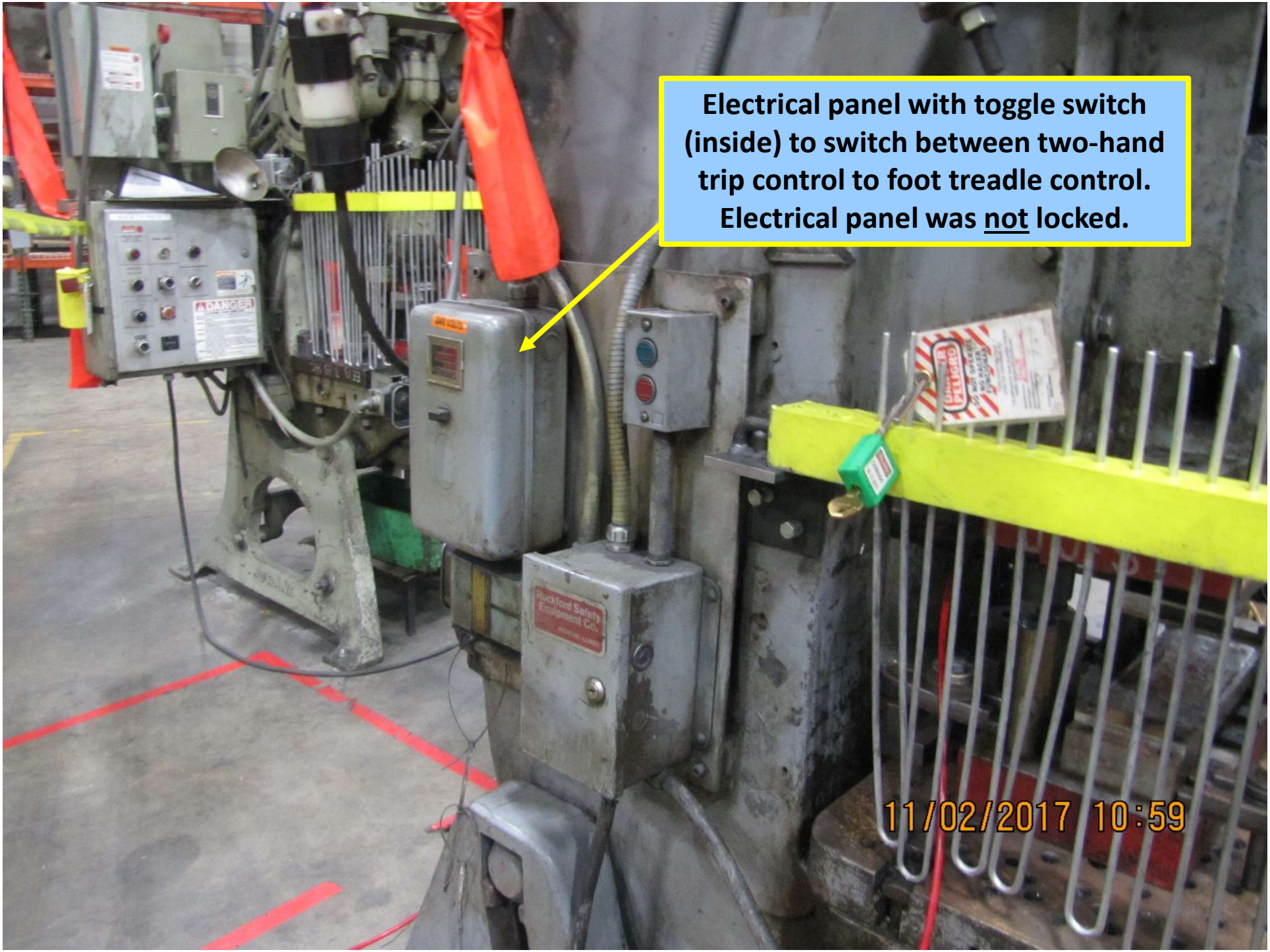

Improperly-formed part; note that lip is bent
Properly-formed part
11/02/2017 10:37


Kings of Creativity
Pain & Punishment


Employee immediately opened the hairpin guards further when he came to demonstrate the operation of the press.
11/02/2017 11:16


Size of typical hairpin guard opening, per Press Operator
11/02/2017 11:20


Size of typical hairpin guard opening, per Press Operator
11/02/2017 11:20


Electrical panel with toggle switch (inside) to switch between two-hand trip control to foot treadle control. Electrical panel was not locked.
DANGER
Rockford Safety Equipment Co.
11/02/2017 10:59


Toggle switch between two-hand trip control to foot treadle control
11/02/2017 11:29

North Carolina Department of Labor
Occupational Safety and Health Division

Inspection Number: 318122694
Inspection Date(s): 11/2/2017
Issuance Date: 2/1/2018

Citation and Notification of Penalty

Company Name: ABT Manufacturing LLC DBA ABT Metals Manufacturing
Inspection Site: 1903 Weinig Street, Statesville, NC 28677

Citation 01 Item 001 Type of Violation: **Willful Serious**

29 CFR 1910.217(c)(1)(i): The employer did not provide and ensure the usage of point of operation guards or properly applied point of operation devices on every operation performed on a mechanical power press:

a) Press #A-4 – where employees were not protected from the point of operation of the Federal Press Company, 60-ton full revolution mechanical power press. The opening of the hairpin guard measured 15" x 9" and did not prevent the entry of employees' hands and fingers into the point of operation and the two-hand trip-device was inoperable. On November 1, 2017 an employee suffered three amputated fingers when he reached into the point of operation during the press cycle.

Date By Which Violation Must Be Abated: **2/14/2018**
Proposed Penalty: **$49,000.00**

North Carolina Department of Labor
Occupational Safety and Health Division

Inspection Number: 318122694
Inspection Date(s): 11/2/2017
Issuance Date: 2/1/2018

Citation and Notification of Penalty

Company Name: ABT Manufacturing LLC DBA ABT Metals Manufacturing
Inspection Site: 1903 Weinig Street, Statesville, NC 28677

Citation 02 Item 001 Type of Violation: **Serious**

29 CFR 1910.217(f)(2): Operator(s) were not trained and instructed in the safe method of work before starting work on mechanical power press(es):

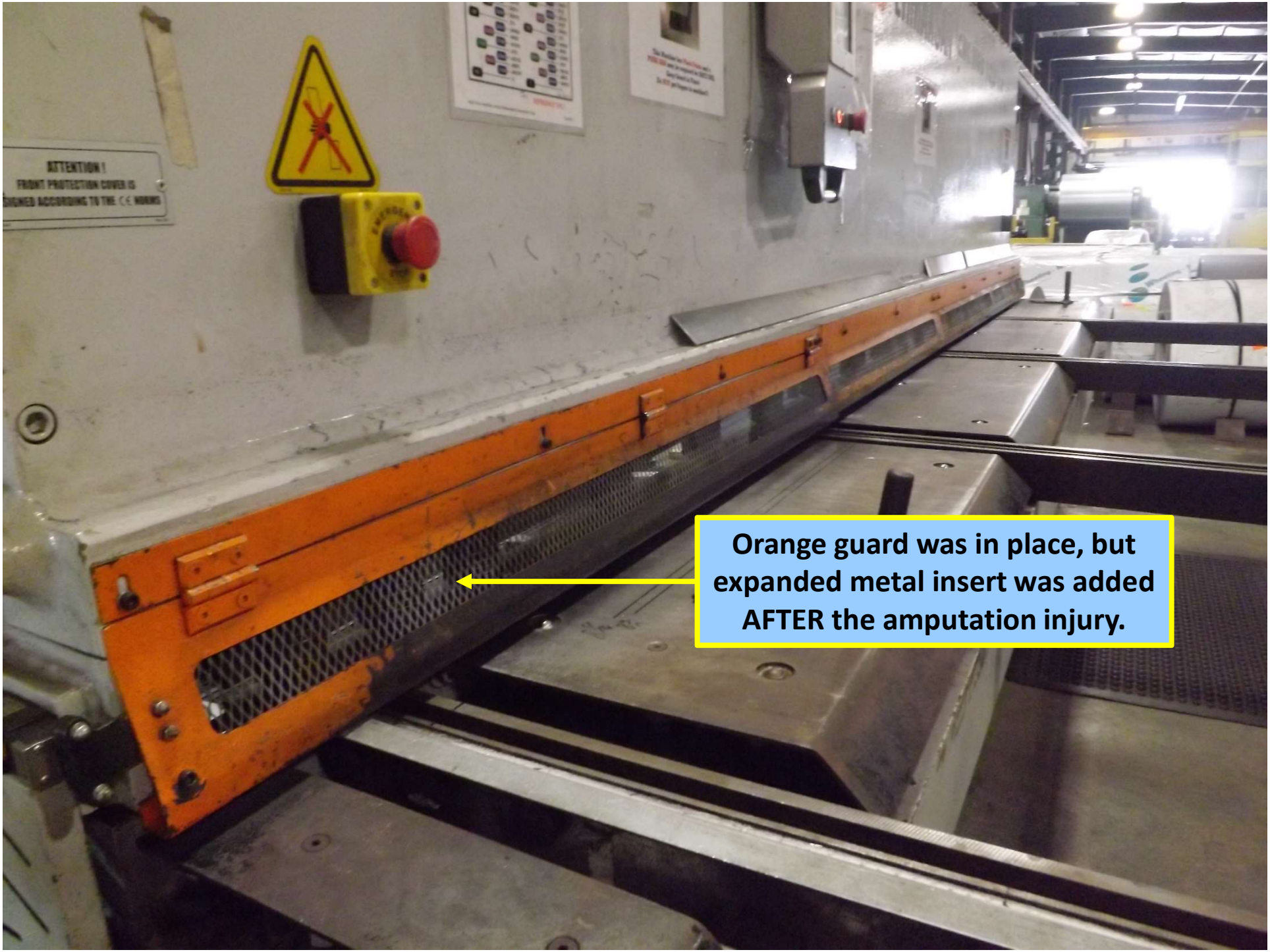
a) Press #A-4 – where a press operator was not provided with adequate training to ensure that safe operating procedures were being followed. On November 1, 2017 the operator suffered three amputated fingers when he reached into the point of operation during the press cycle.

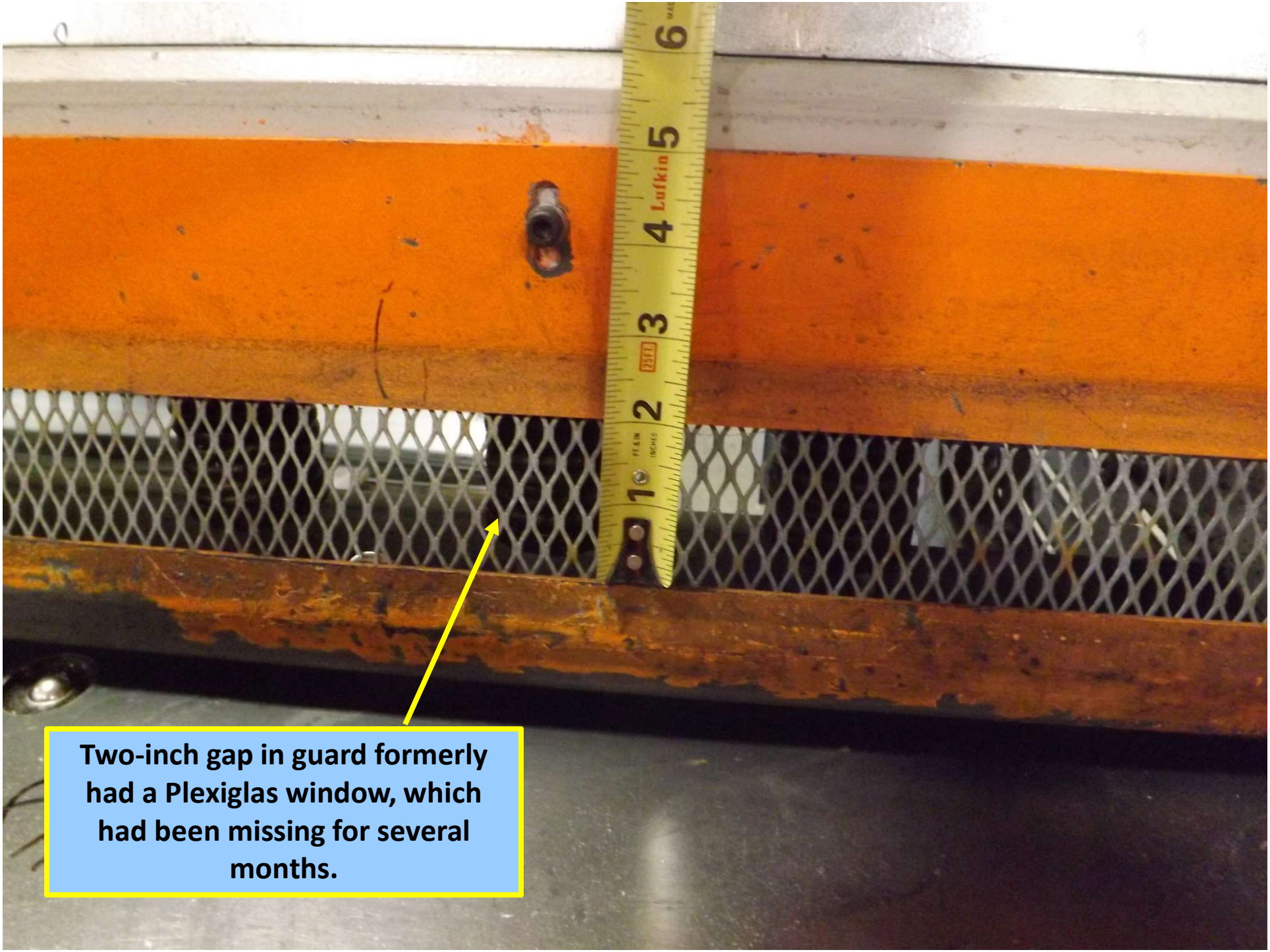
Date By Which Violation Must Be Abated: **2/27/2018**
Proposed Penalty: **$3,500.00**

Betco Inc.

Tara Payne
#318146388
1910.212(a)(3)(ii) Willful
September 21, 2018
Right middle, ring, and pinky fingers (partial)

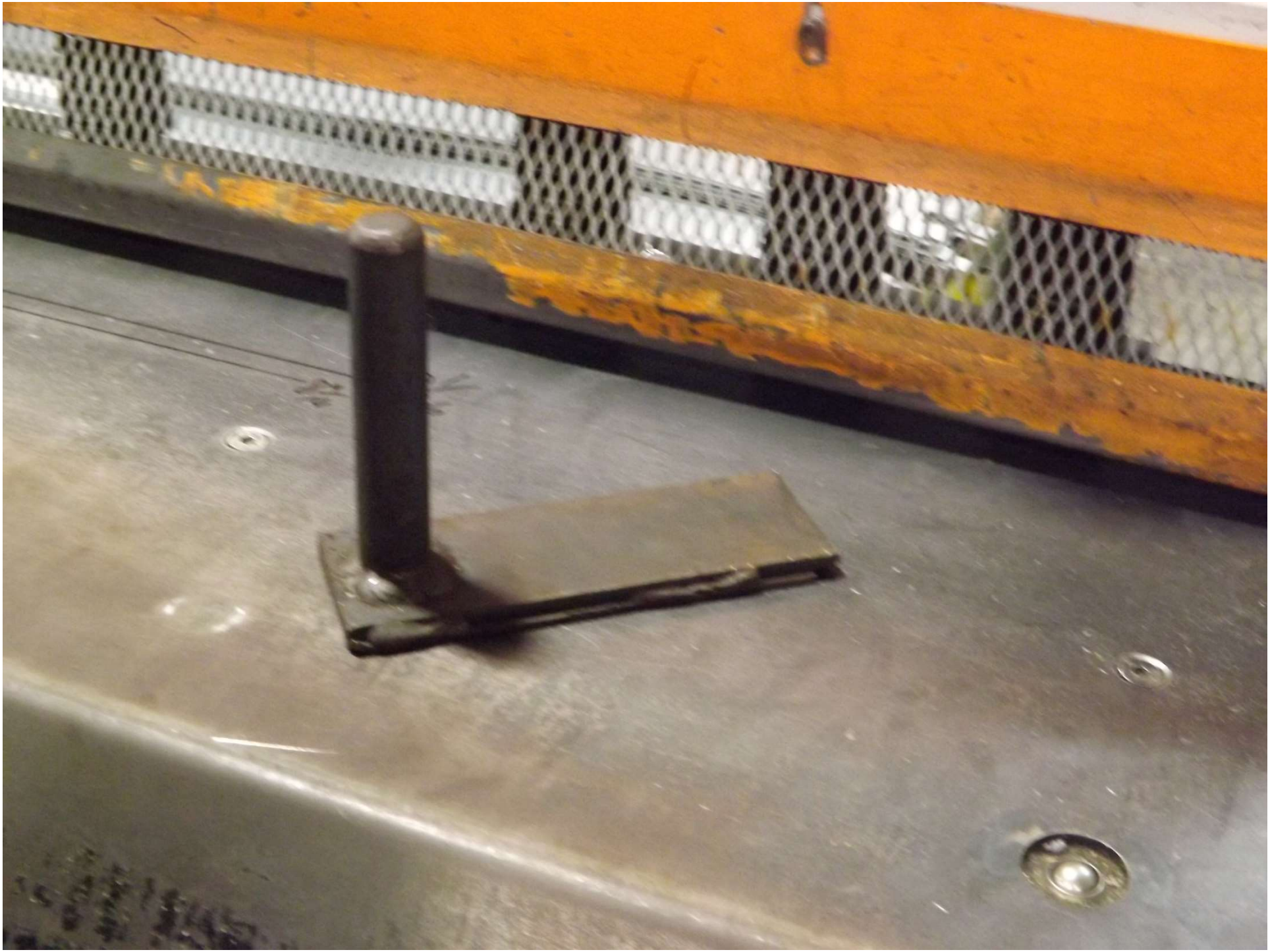
Ermaksan hydraulic shear press.
Two operators, one foot treadle.


ATTENTION !
FRONT PROTECTION COVER IS
Orange guard was in place, but expanded metal insert was added AFTER the amputation injury.


Lufkin
Two-inch gap in guard formerly had a Plexiglas window, which had been missing for several months.

CAUTION

This Machine has Pinch Points and a
PUSH BAR may be required for SAFE USE.
Keep Guard in Place!
Do NOT put fingers in machine!!!



North Carolina Department of Labor
Occupational Safety and Health Division

Inspection Number: 318146388
Inspection Date(s): 9/21/2018
Issuance Date: 11/8/2018

Citation and Notification of Penalty

Company Name: BETCO INC.
Inspection Site: 228 Commerce Blvd., Statesville, NC 28625

Citation 01 Item 001 Type of Violation: **Willful Serious**

29 CFR 1910.212(a)(3)(ii): The point of operation of a machine whose operation exposes an employee to injury was not guarded:

a) press department - where a two-inch wide section, running the length of the Ermaksan CNC Hydraulic Swing Beam Shear (HGD), of the point of operation guard was missing. On or about 9/20/2018, an employee had portions of two fingers amputated while using the aforementioned shear.

Date By Which Violation Must Be Abated: **Corrected During Inspection**
Proposed Penalty: **$56,000.00**

L'Gael Manufacturing

Ted Hendrix
#316067545
1910.213(r)(4)
September 23, 2011
Left four fingers

Whirlwind Upcut Saw


Pneumatically-Operated Blade Guard
Blade “upcuts” from beneath the table
09/23/2011 08:36


STANLEY
BladeArmor
09/23/2011 09:02


Unprotected point of operation
(~4” x 8”)
09/23/2011 09:02

AVD/Variable Information:

29 CFR 1910.213(r)(4): Suitable guard(s) were not provided to reduce to a minimum the hazard due to the point of operation of woodworking machines not mentioned in paragrpahs (a) through (r) of this section:

a)resaw room - for the Whirlwind Model 212L chop saw #3, where the blade guard did not protect employees from all portions of the moving saw blade.

b)resaw room - for the Whirlwind Model 212L chop saw #2, where the blade guard did not protect employees from all parts of the moving saw blade.

Or, in the alternative:

29 CFR 1910.212(a)(3)(ii): Point(s) of operation of machinery were not guarded to prevent employee(s) from having any part of their body in the danger zone(s) during the operating cycle:

a)resaw room - for the Whirlwind Model 212L chop saw #3, where the blade guard did not protect employees from all portions of the moving saw blade.

b)resaw room - for the Whirlwind Model 212L chop saw #2, where the blade guard did not protect employees from all parts of the moving saw blade.

Century Furniture

Marcus Bandy
#318127719
1910.213(q)(5)
January 25, 2018
Right index and middle (partial)

SAVI Double Knife Veneer Guillotine

Abatement Video

North Carolina Department of Labor
Occupational Safety and Health Division

Inspection Number: 318127719
Inspection Date(s): 1/25/2018 - 4/10/2018
Issuance Date: 4/11/2018

Citation and Notification of Penalty

Company Name: Century Furniture, LLC DBA Century Furniture Plant #1
Inspection Site: 420 12th Street NW, Hickory, NC 28601

Citation 01 Item 001 Type of Violation: **Serious**

29 CFR 1910.213(q)(5): Power-driven guillotine veneer cutters, except continuous feed trimmers, were not equipped with starting devices or guards in accordance with 1910.213(q)(5)(i) and 1910.213(q)(5)(ii), respectively:

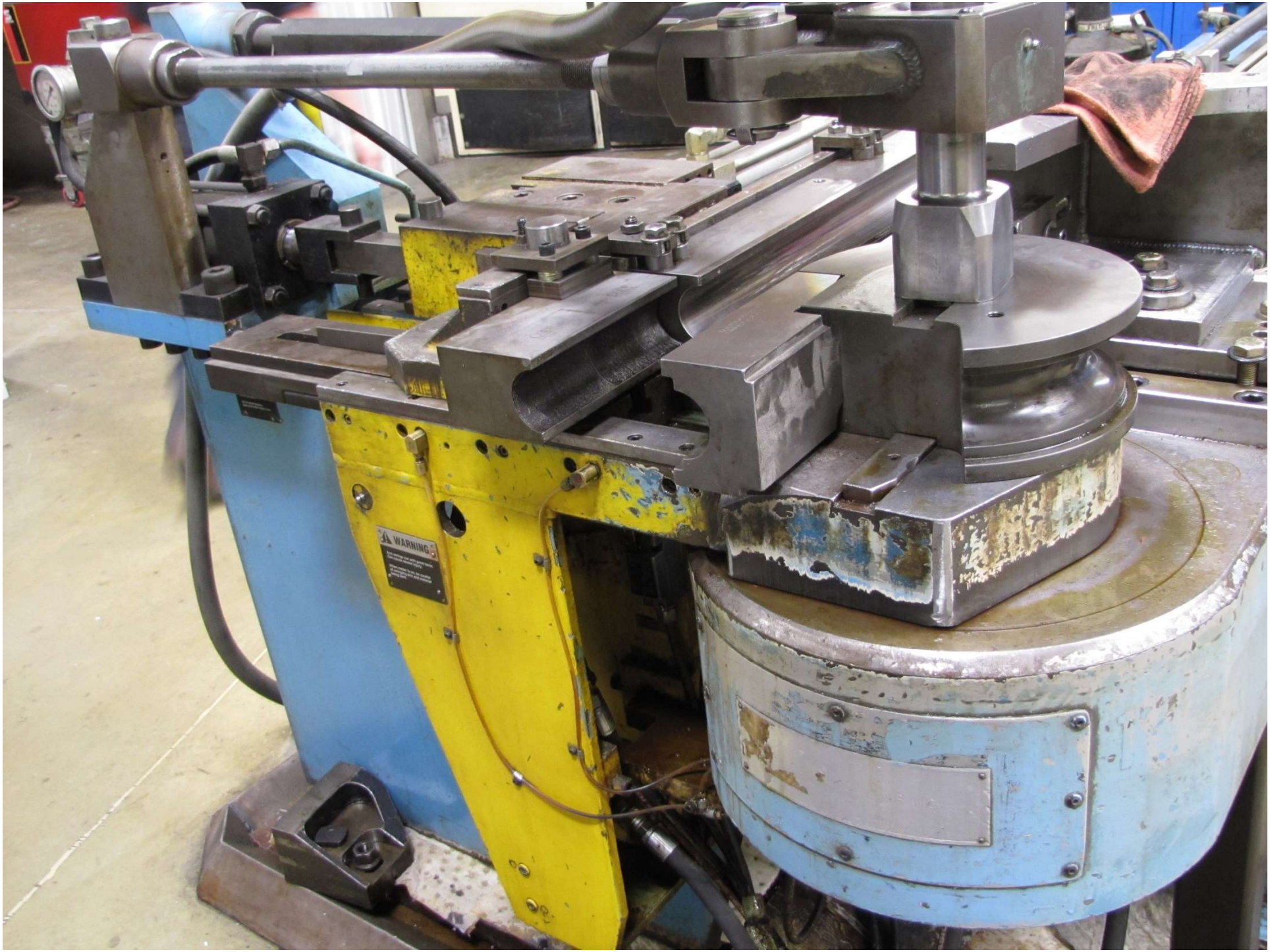
a) Veneer Room, SAVI Double Knife Veneer Guillotine Model D - where the power-driven guillotine veneer cutter was not equipped with a two-hand starting device or an automatic guard used in conjunction with a one-hand starting device which required two distinct movements. On or about 1/24/2018, an employee received injuries that resulted in the partial amputation of two fingers when their right hand came into contact with the cutting blade during the upward cycle of the pressure bar and the stationary cutting blade.

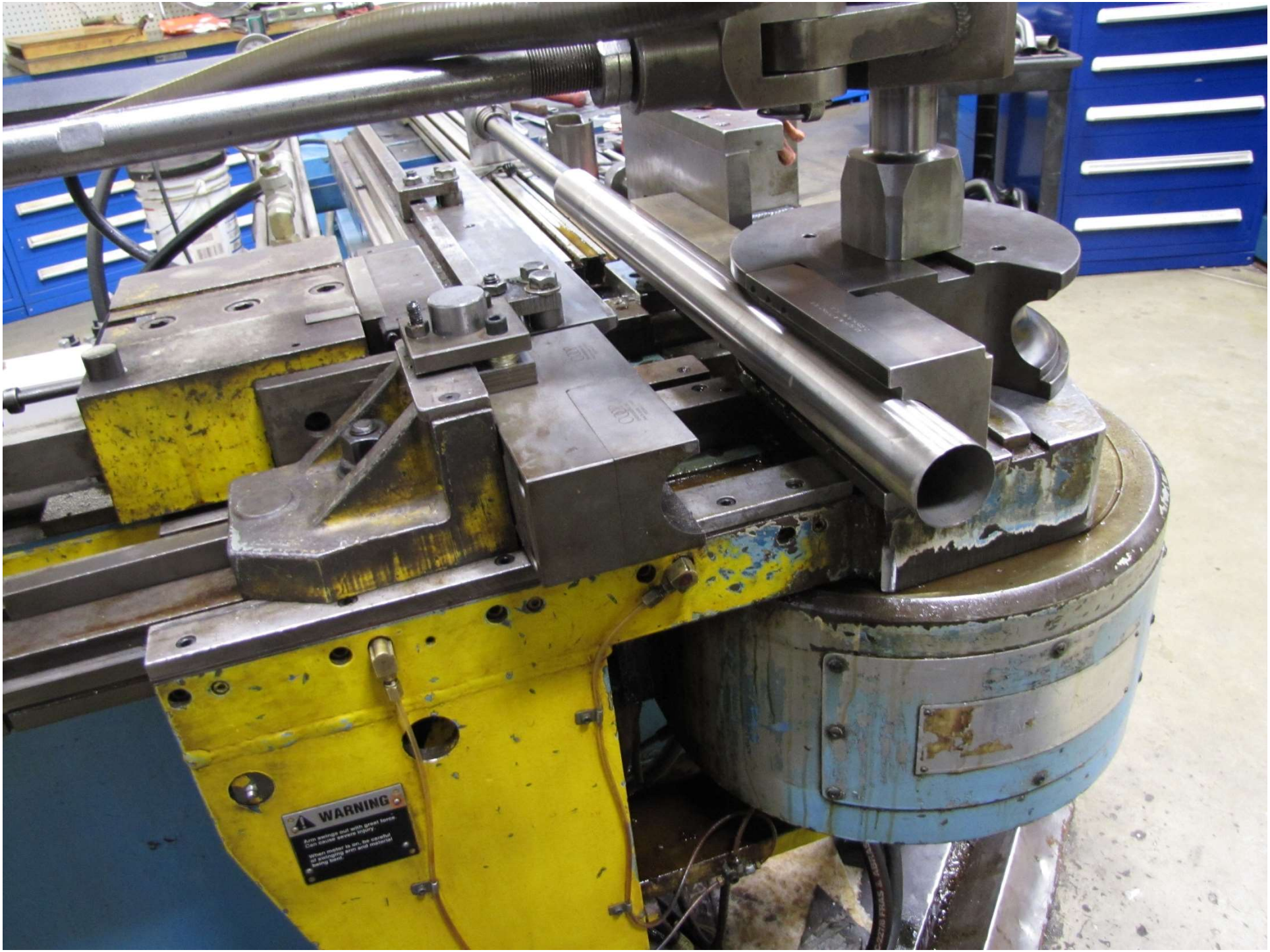
Date By Which Violation Must Be Abated: **Corrected During Inspection**
Proposed Penalty: **$6,300.00**

Pro-Fabrication

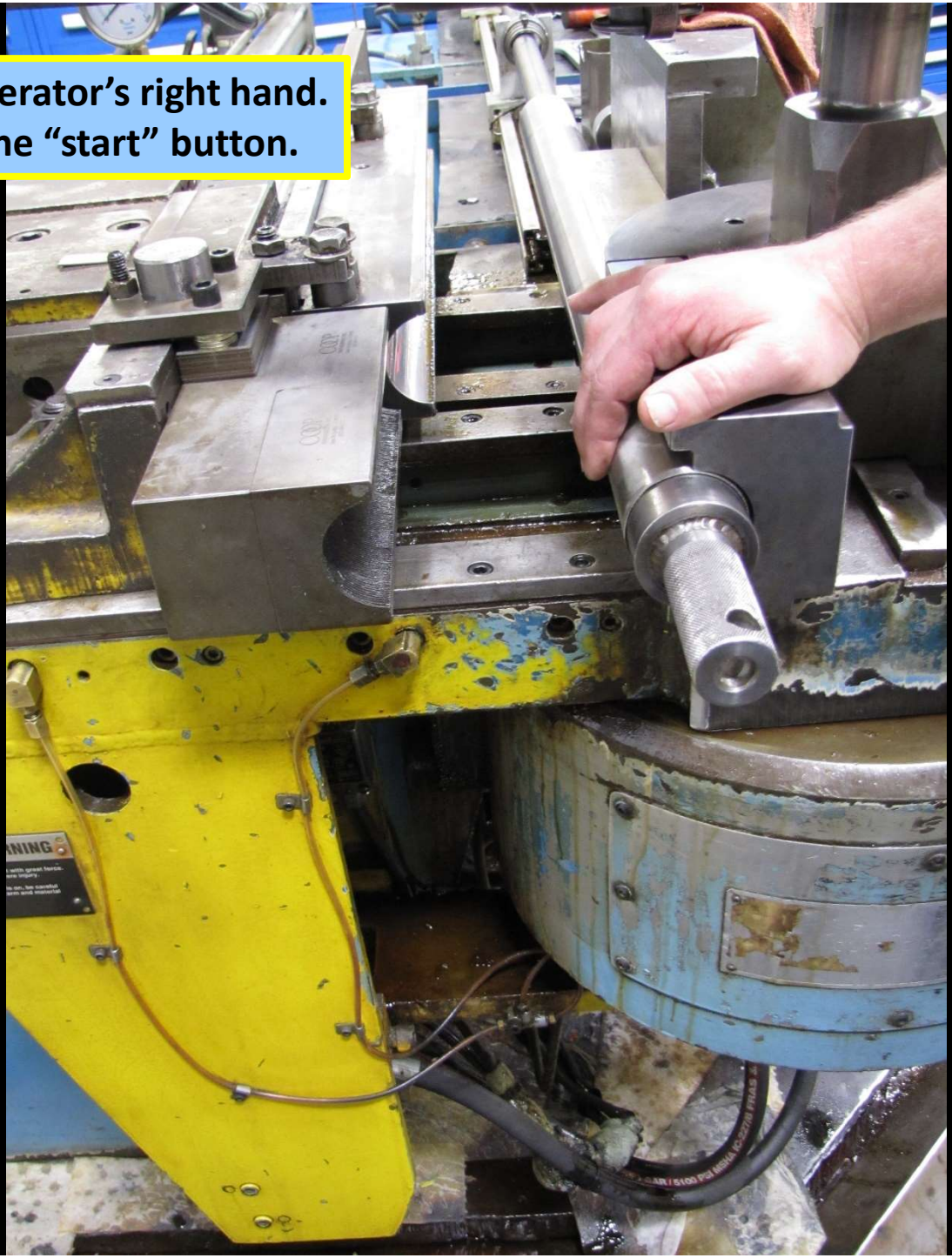
Tom Hardesty
#318054202
1910.212(a)(3)(ii)
March 4, 2016
Right index, middle, and ring fingers (partial)

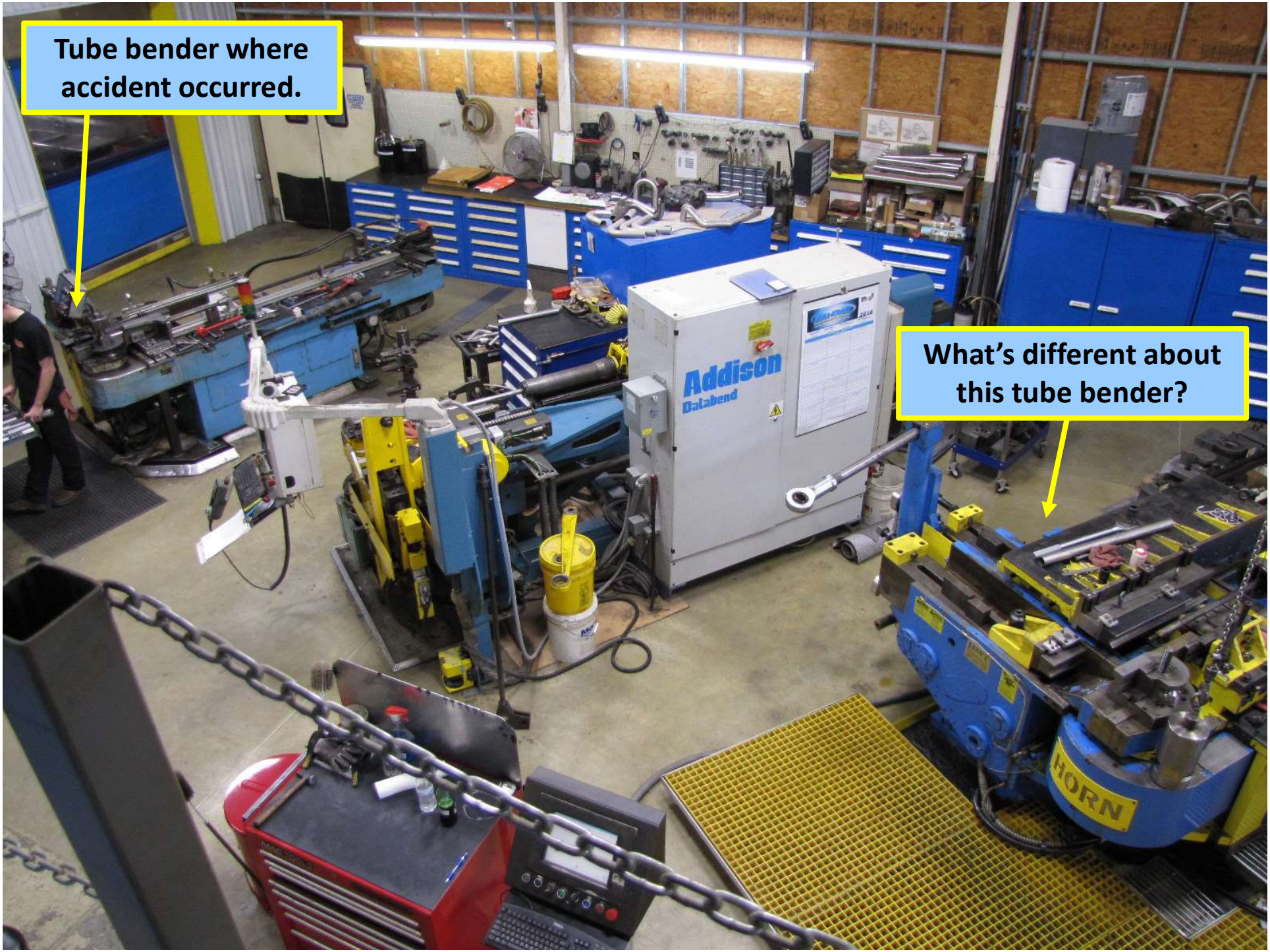

Tube bender for manufacturing exhaust pipes. Note the location of the control panel.
NOTICE
Don't use


WARNING


WARNING

Location of the operator's right hand.
Left hand is on the "start" button.




Tube bender where accident occurred.
What's different about this tube bender?
Addison
Databend
HORN

Citation and Notification of Penalty

Company Name: Pro-Fabrication, Inc.
Inspection Site: 4328 Triple Crown Drive, Concord, NC 28027

Citation 01 Item 005 Type of Violation: **Serious**

29 CFR 1910.212(a)(3)(ii): The points of operation of a machine whose operation exposes an employee to injury was not guarded:

a) facility, tube bending area, Clark Lewis hydraulic tube bender, model # CL300, serial # 0062 - where guarding was not provided to prevent employees from exposure to the point of operation. On or about March 3, 2016, an employee was holding a steel tube against the pressure die in preparation for bending when the bend cycle suddenly started. The employee's right index, middle and ring fingers were caught-between the tube and clamp die resulting in amputations of each finger at the first joint.

Or, in the alternative:

29 CFR 1910.212(a)(1): One or more methods of machine guarding was not provided to protect the operator and other employees in the machine area from hazards such as those created by point of operation, ingoing nip points, rotating parts, flying chips and sparks:

a) facility, tube bending area, Clark Lewis hydraulic tube bender, model # CL300, serial # 0062 - where guarding methods were not provided to prevent employee exposure to caught-between hazards. On or about March 3, 2016, an employee was holding a steel tube against the pressure die in preparation for bending when the bend cycle suddenly started. The employee's right index, middle and ring fingers were caught-between the tube and clamp die resulting in amputations of each finger at the first joint.

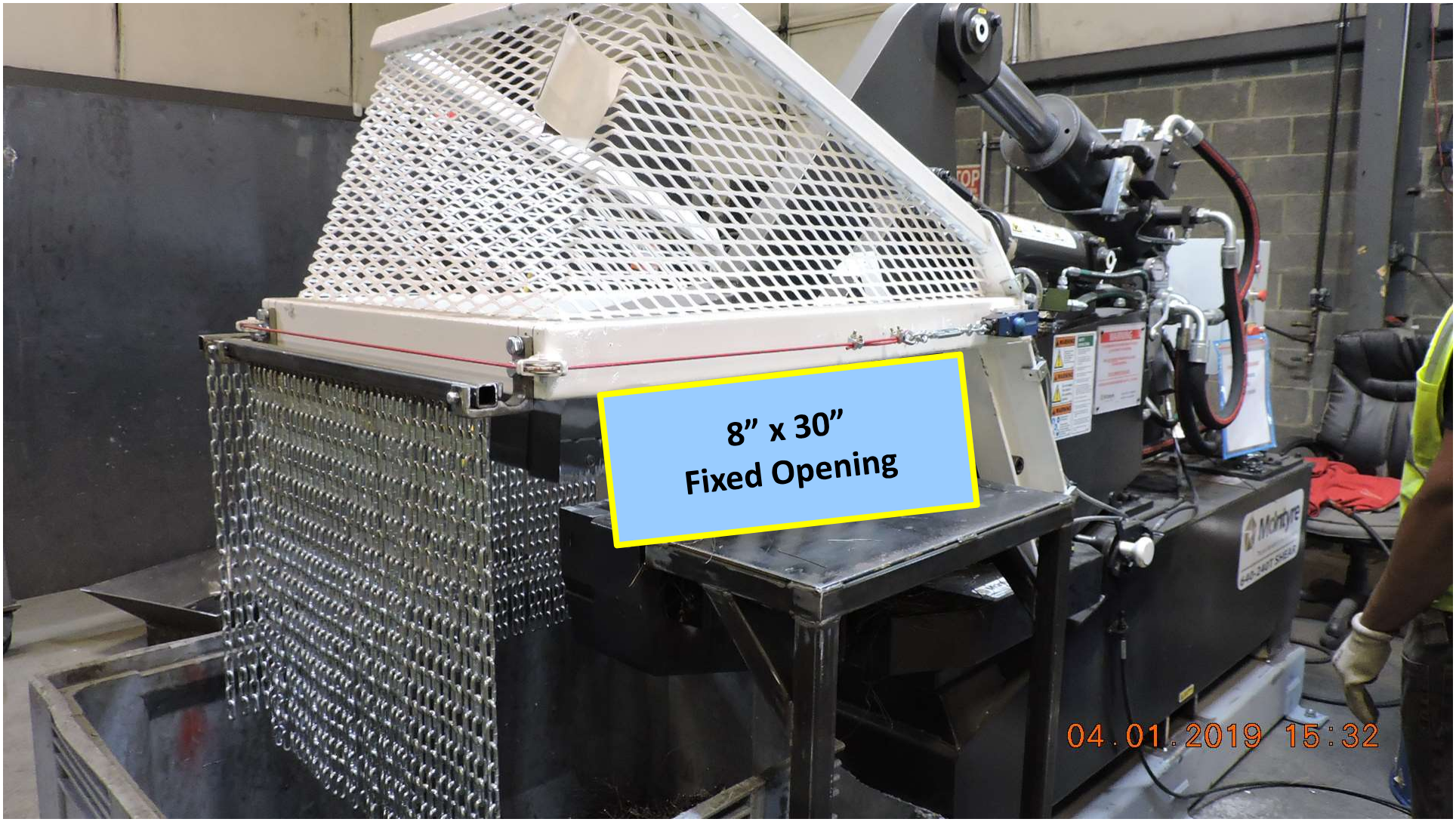
Date By Which Violation Must Be Abated:	**Corrected During Inspection**
Proposed Penalty:	**$3,500.00**

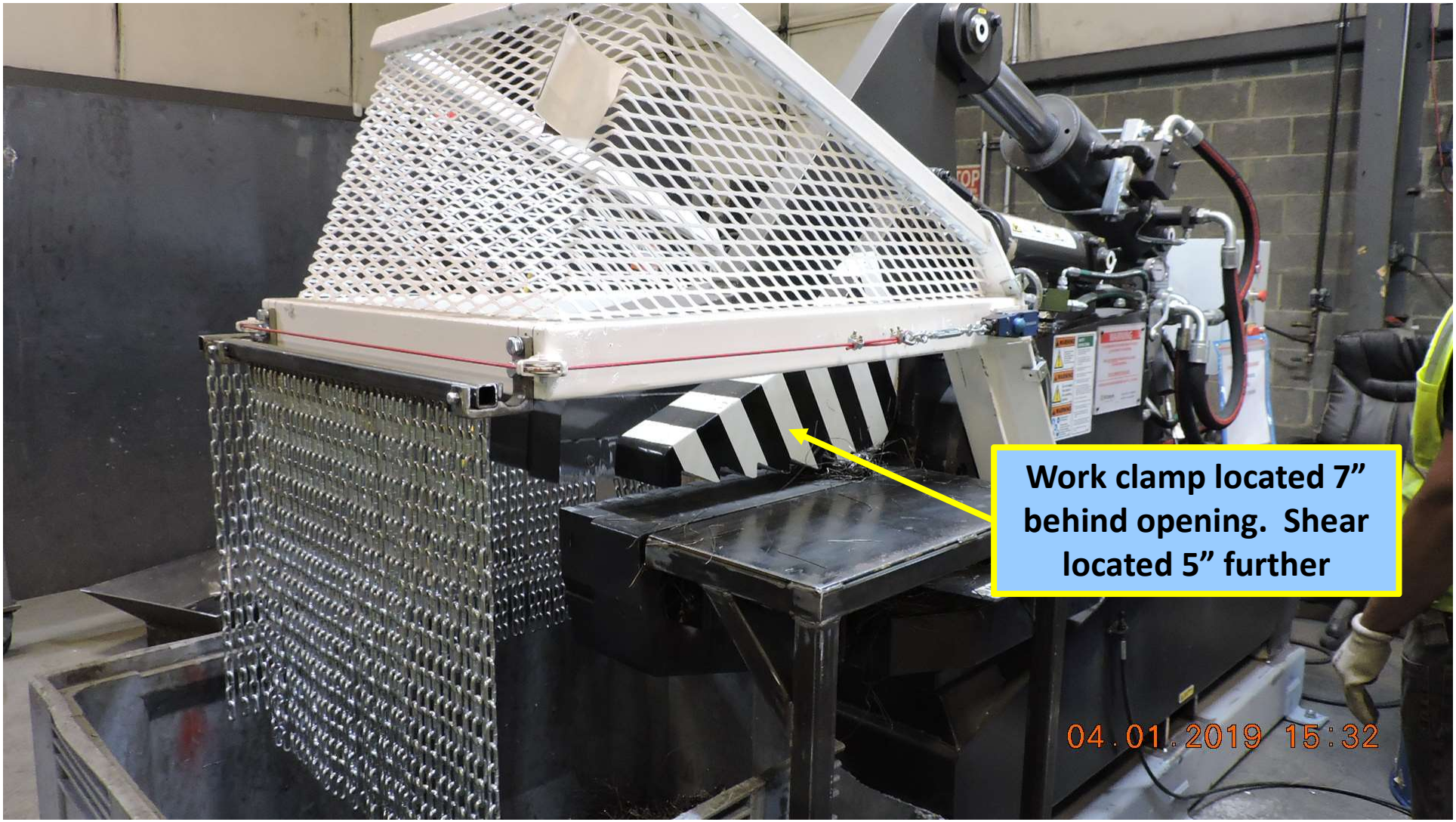
ICD Alloys and Metals

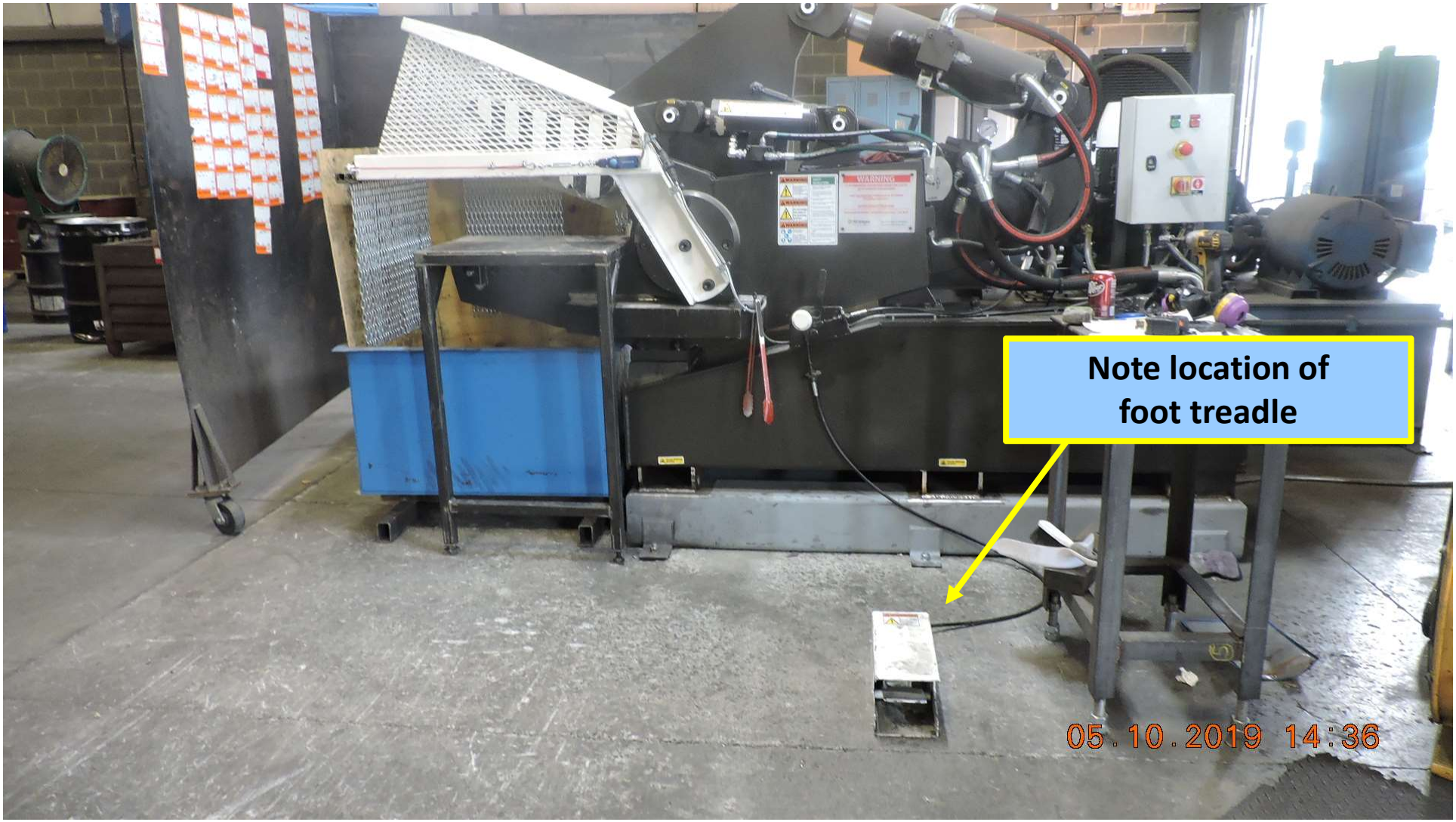
Sam Atassi
#318161569
1910.212(a)(1)
April 1, 2019
Left index and middle fingers (complete)

Alligator Shear


04.01.2019 15:32


8” x 30”
Fixed Opening
04.01.2019 15:32


Work clamp located 7” behind opening. Shear located 5” further
04.01.2019 15:32


Note location of
foot treadle
05.10.2019 14:36

North Carolina Department of Labor
Occupational Safety and Health Division

Inspection Number: 318161569
Inspection Date(s): 4/1/2019 - 7/16/2019
Issuance Date: 7/19/2019

Citation and Notification of Penalty

Company Name: ICD Alloys and Metals LLC
Inspection Site: 3946 Westpoint Blvd, Winston Salem, NC 27103

Citation 01 Item 001 Type of Violation: **Serious**

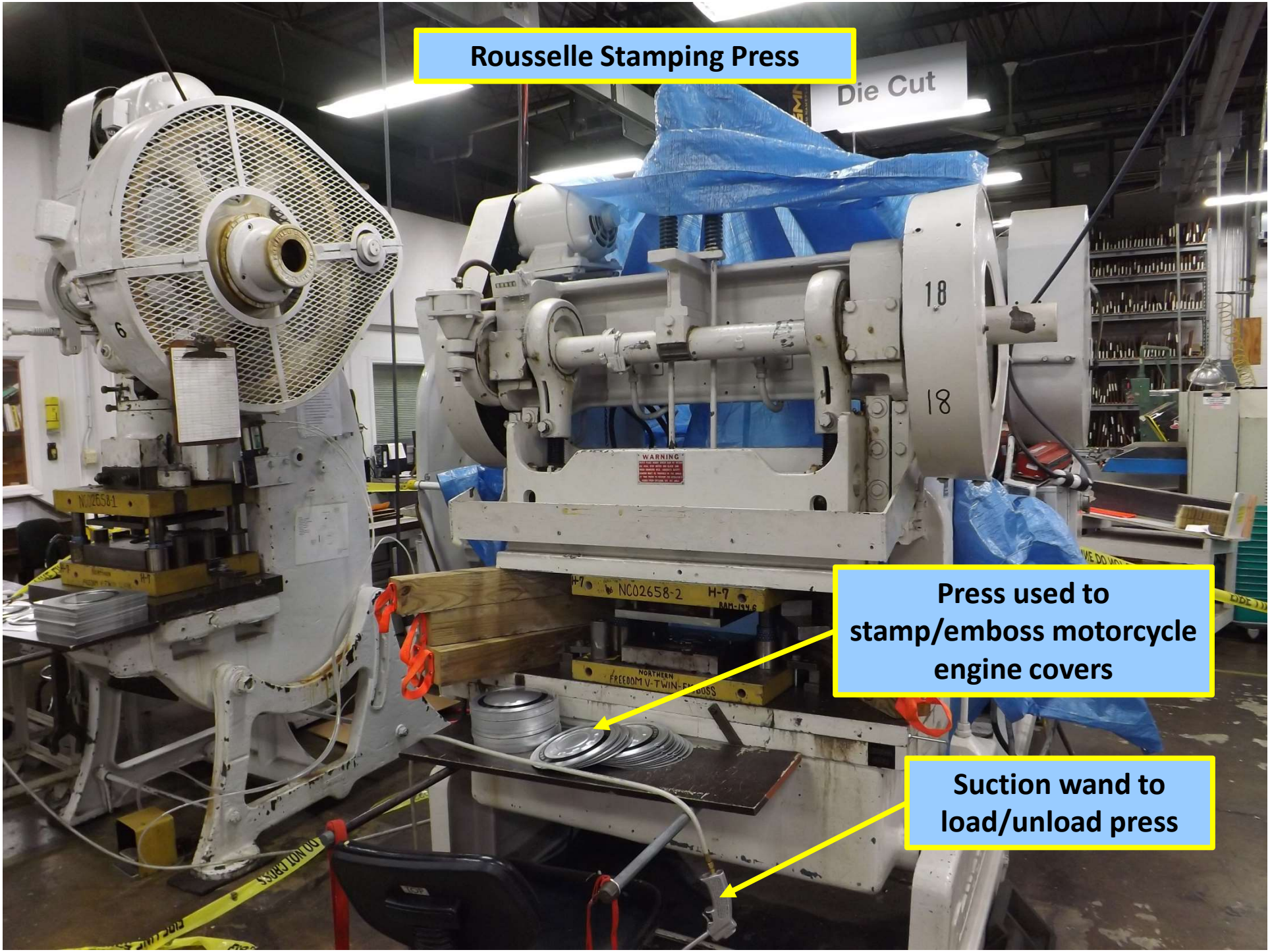
29 CFR 1910.212(a)(1): One or more methods of machine guarding was not provided to protect the operator and other employees in the machine area from hazards such as those created by point of operation, ingoing nip points, rotating parts, flying chips and sparks:

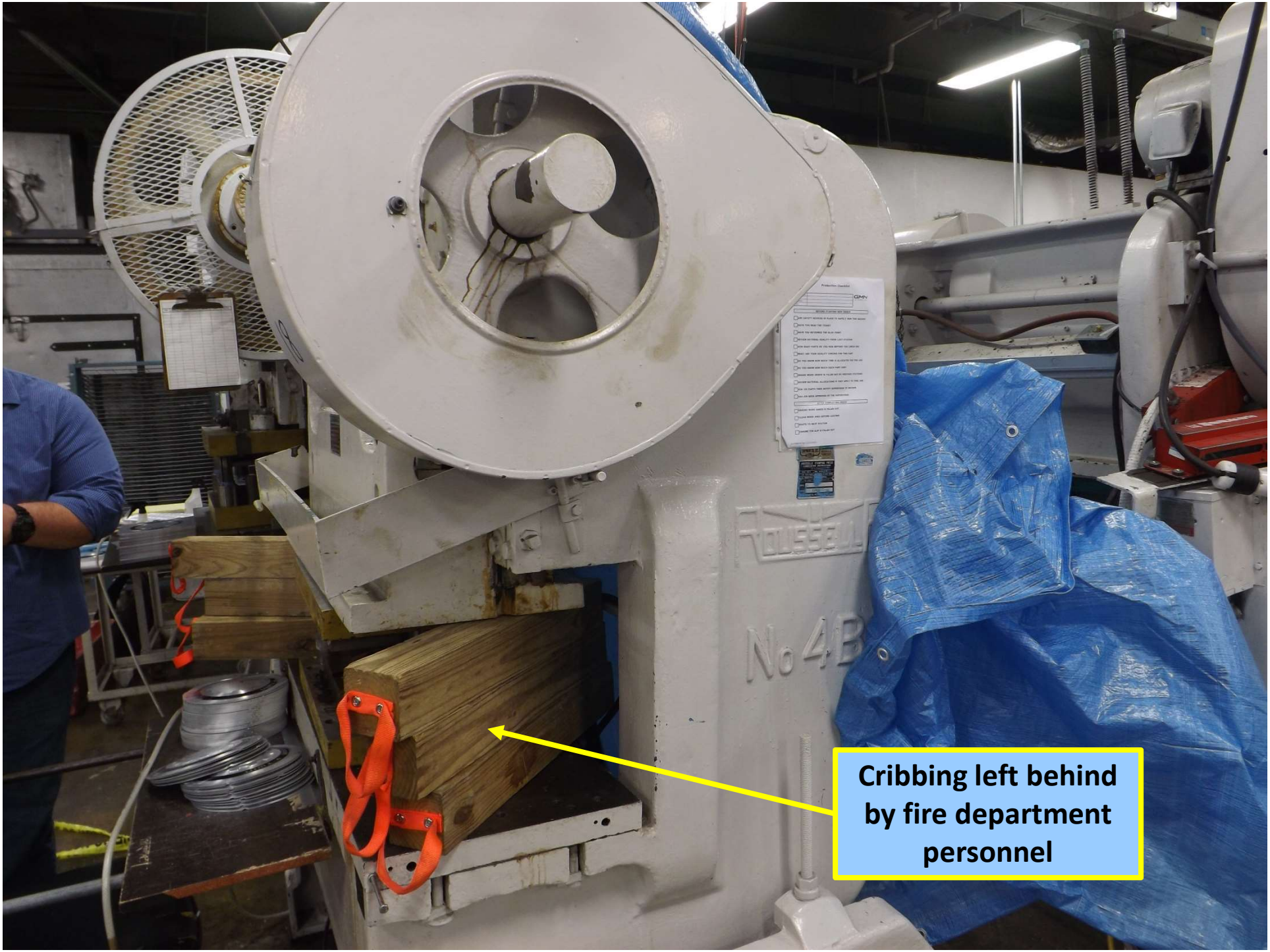
a) facility - where one or more methods of machine guarding was not provided to protect employees from the hazard created by the point of operation of the McIntyre Alligator Shear (model 640-240T, Serial# 449, 10HP, 440V). On or about March 30, 2019, an employee sustained amputations to his left middle and index fingers due to contacting the shear's blade.

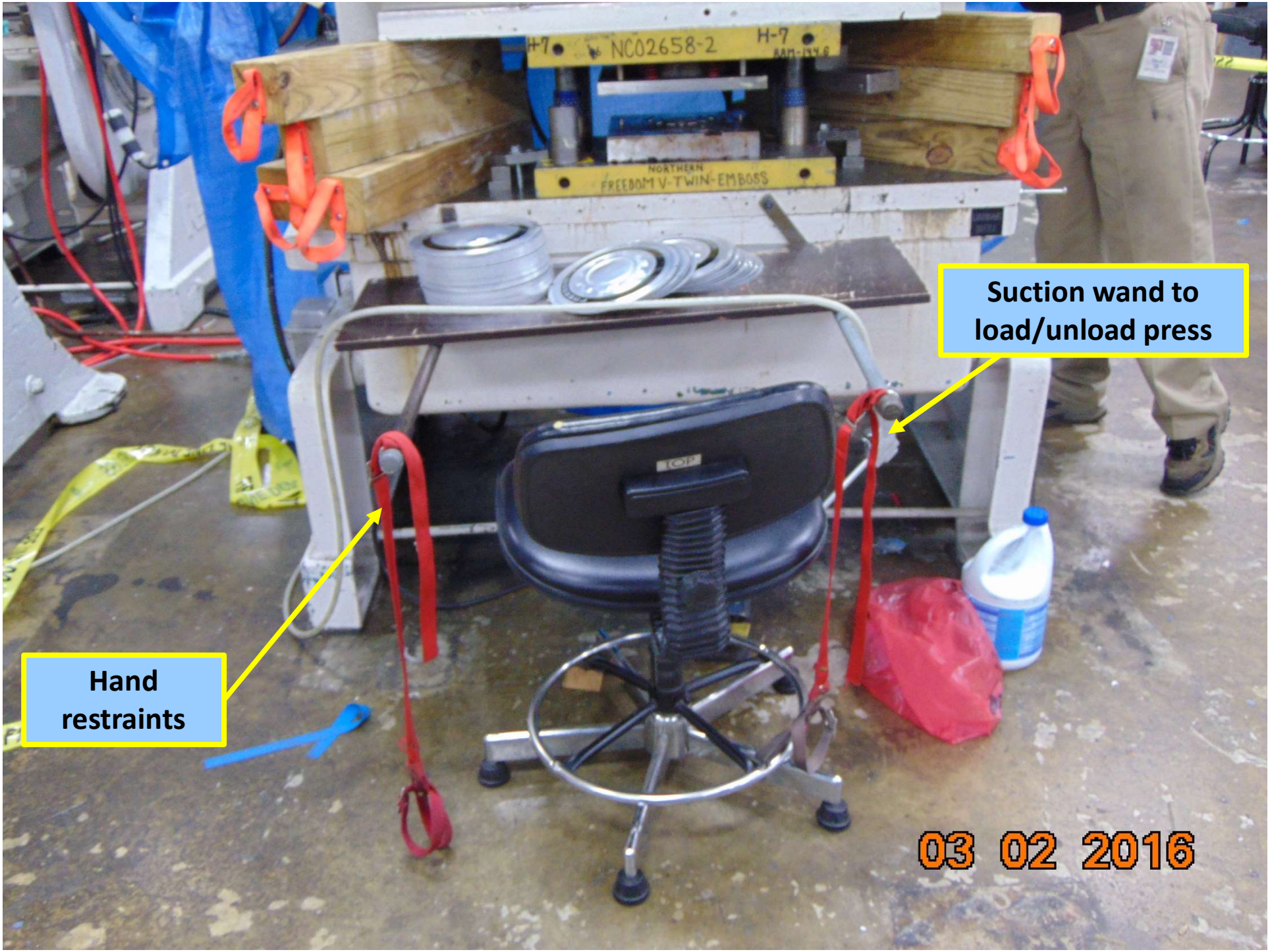
Date By Which Violation Must Be Abated: **Corrected During Inspection**
Proposed Penalty: **$4,200.00**

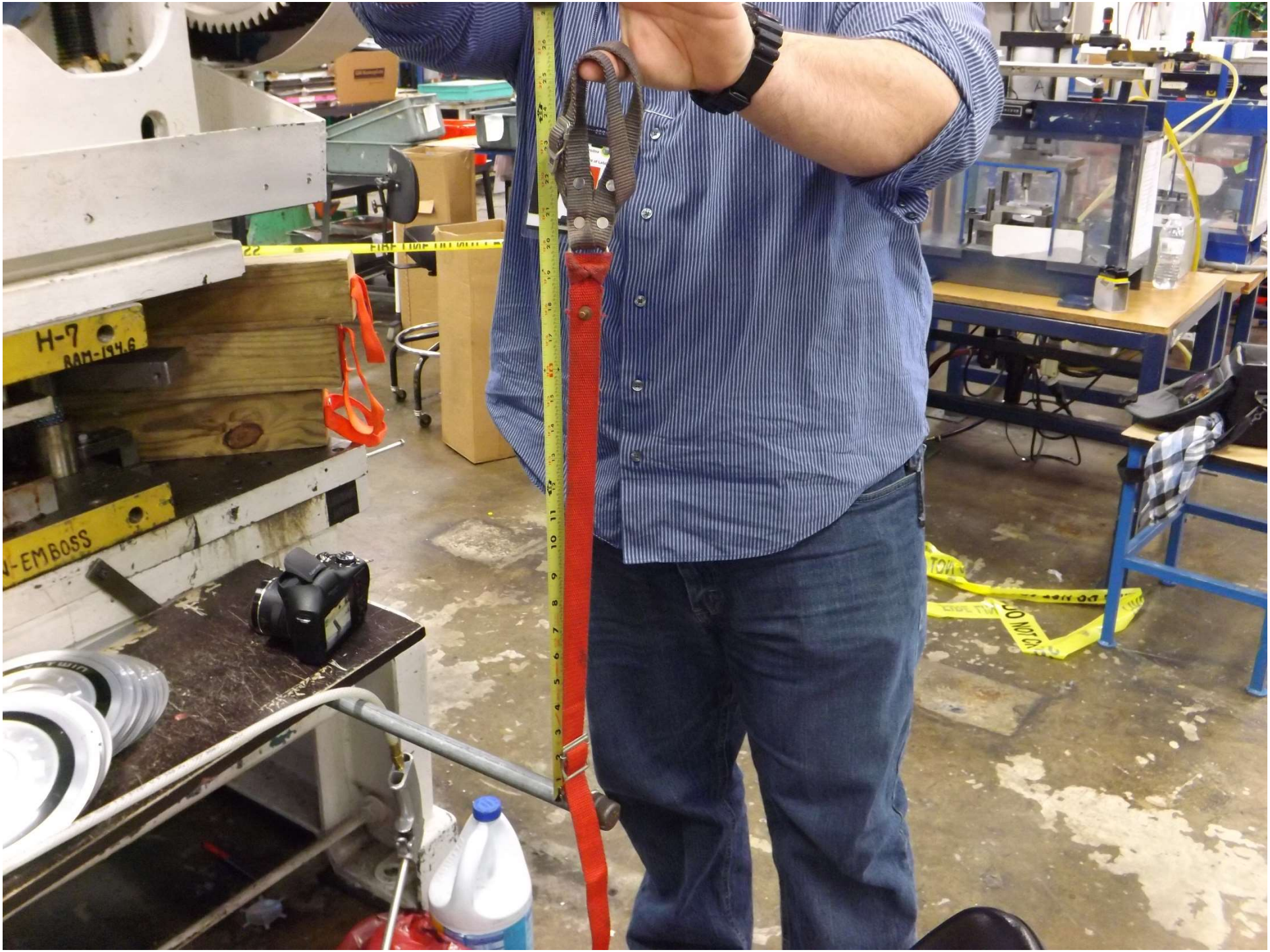
GM Nameplate

Tara Payne
#318053360
1910.217(c)(3)(vi) and 217(e)(1)(ii)
March 2, 2016
Entire right hand


Rousselle Stamping Press
Die Cut
Press used to stamp/emboss motorcycle engine covers
Suction wand to load/unload press


Cribbing left behind by fire department personnel


H-7 NC02658-2 H-7
NORTHERN
FREEDOM V-TWIN-EMBOSS
Suction wand to load/unload press
Hand restraints
03 02 2016


H-7
AAM-194.6
N-EMBOSS


Can the Operator
Reach the Press?

North Carolina Department of Labor
Occupational Safety and Health Division

Inspection Number: 318053360
Inspection Date(s): 3/2/2016 - 3/4/2016
Issuance Date: 4/26/2016

Citation and Notification of Penalty

Company Name: GM Nameplate, Inc.
Inspection Site: 300 Acme Drive, Monroe, NC 28112

Citation 01 Item 002 Type of Violation: **Serious**

29 CFR 1910.217(c)(3)(vi): Holdout or restraint device(s) used on mechanical power press(es) did not protect the operator by preventing him from inadvertently reaching into the point of operation:

a) facility, production area- where hand restraint devices were not adjusted to a length that would prevent an employee from reaching into the point of operation on a Rousselle stamping press.

Date By Which Violation Must Be Abated: **5/2/2016**
Proposed Penalty: **$7,000.00**

North Carolina Department of Labor
Occupational Safety and Health Division

Inspection Number: 318053360
Inspection Date(s): 3/2/2016 - 3/4/2016
Issuance Date: 4/26/2016

Citation and Notification of Penalty

Company Name: GM Nameplate, Inc.
Inspection Site: 300 Acme Drive, Monroe, NC 28112

Citation 01 Item 003 Type of Violation: **Serious**

29 CFR 1910.217(e)(1)(ii)(A): Each press was not inspected and tested at least once a week to determine the condition of the clutch/brake mechanism, antirepeat feature, and single stroke mechanism:

a) facility, where weekly inspections were not conducted on the two Rouselle mechanical power presses to determine the condition of the clutch/brake mechanism and antirepeat feature.

Date By Which Violation Must Be Abated: **5/2/2016**
Proposed Penalty: **$4,500.00**

Monroe Metal

Ted Hendrix
#316337724
1910.212(a)(3)(ii)
February 7, 2012
No injuries


Barcorp Press Brake
barcorp
02/06/2012 14:38


02/06/2012 14:39


02/06/2012 14:41

Citation Information (Worksheet) from previous inspection (#307592436; March 2004)

b) No point-of-operation was provided on the 2 Roto-die hydraulic press brakes. The press brakes are used to bend metal for duct fabrication. On March 4, 2004 HCOs observed Robert Crowder and another employee operating one the the press brakes. The employees were bending a 1/4-inch tabs on the duct. Employees had to line up the tab and then one employee activated the foot pedal. The employee's hands were within 1-inch of the point-of-operation. The potential exists that employees could accidently activate the machine while

Abatement for Citation 3, Item 2 (b), 29 CFR 1910.212(a)(3)(ii)

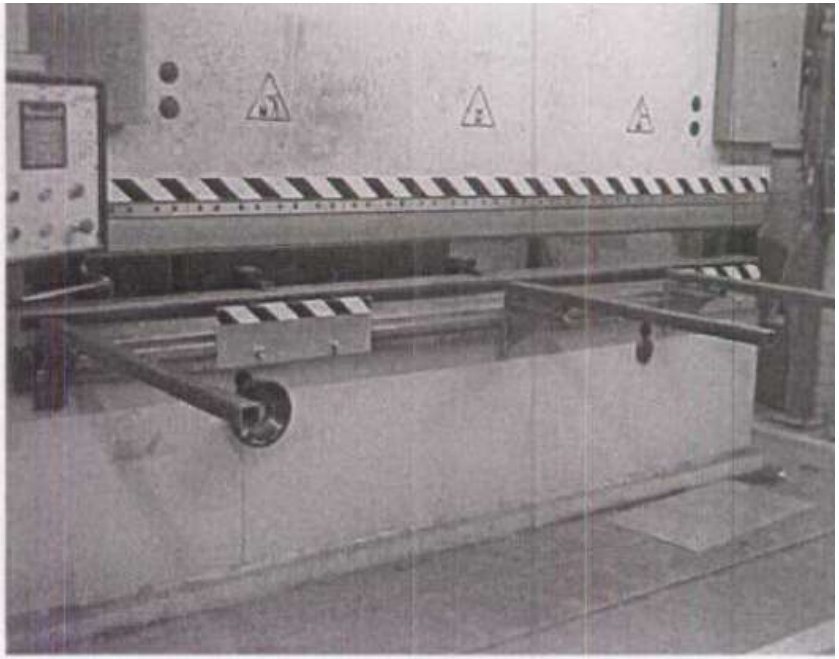
Point of Operation Guarding (for press brakes)

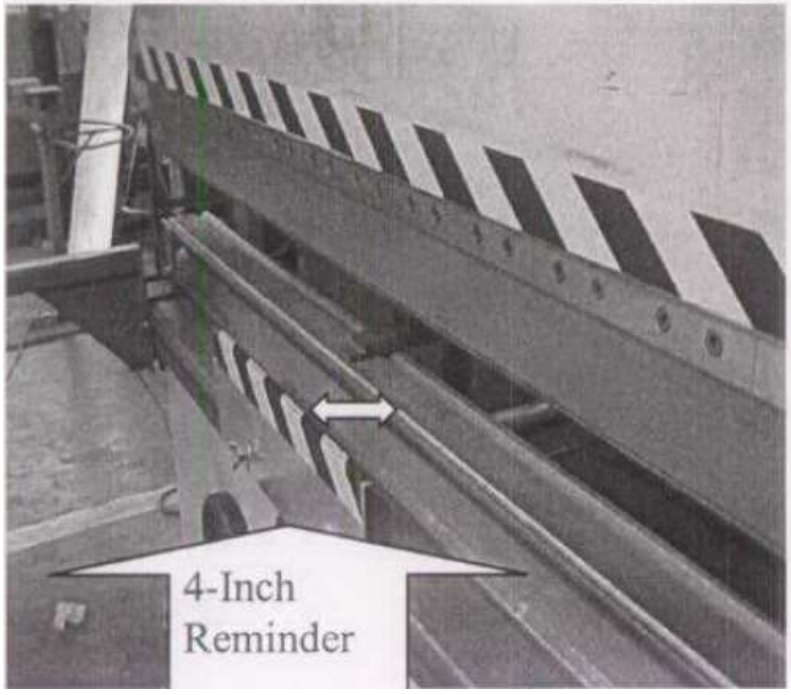
Monroe Metal Mfg. Inc. has chosen to adopt the Safe-distance method for guarding the point of operation on our press brakes.

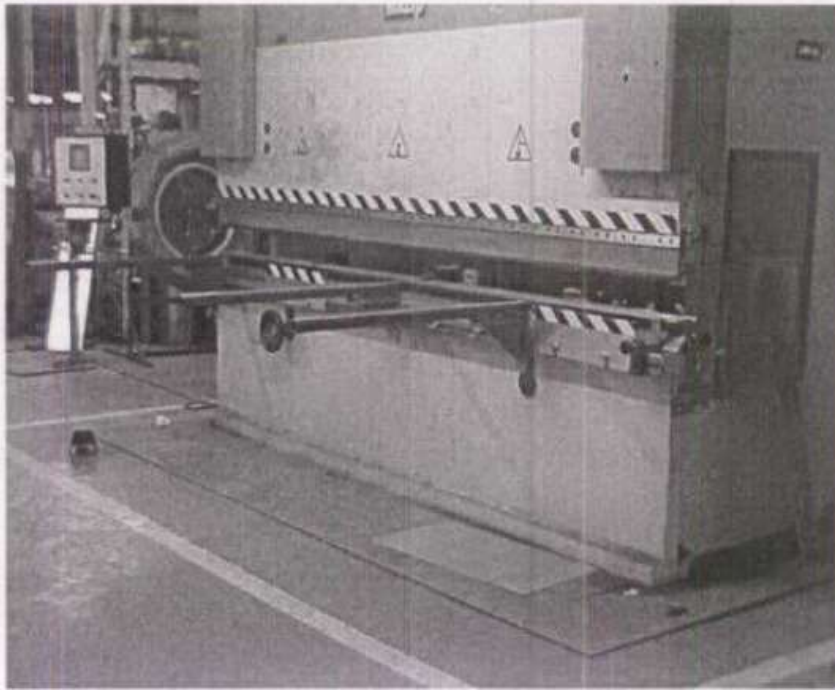
We have done the following to fully meet the requirements of this method:

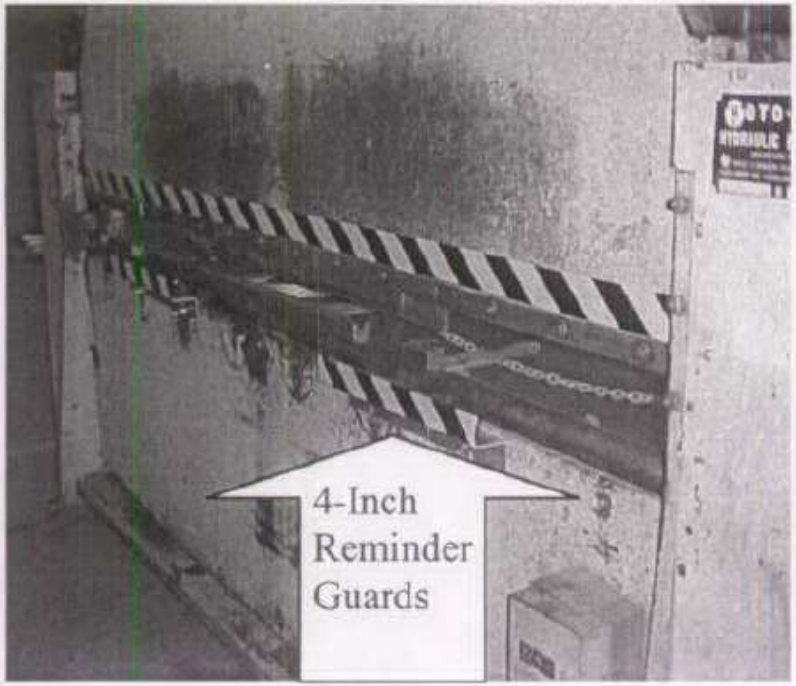
1. All employees using press-brakes were required to watch a video provided by SMACNA about press brake safety, and specifically the safe-distance method.
2. The shop foreman gave a brief discussion about press brake safety
3. All press brake operators have signed a form stating they viewed the safety video, and understand the correct procedures for the Safe-distance method
4. Reminder guards have been placed on all press brakes. They identify to the operator where the 4-inch safe-distance is.
5. Safety chains, or barriers have been installed on the back of all press brakes
6. Yellow lines have been painted on the floor identifying the danger area of press brakes
7. Safety tape has been placed on all press brake rams, just above the die.

Attached are photos of these actions:

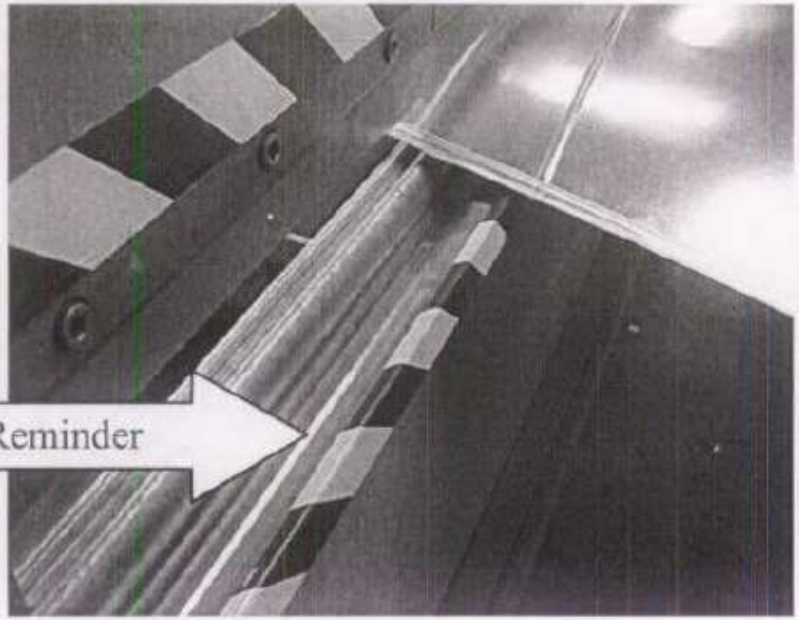



4-Inch
Reminder




4-Inch
Reminder
Guards


Safety
Tape
Installed
on Ram


4 Inch Reminder


Safety
Chains
Installed
on back

AVD/Variable Information:

29 CFR 1910.212(a)(3)(ii): Point(s) of operation of machinery were not guarded to prevent employee(s) from having any part of their body in the danger zone(s) during operating cycle(s):

a)ironworker area - where no point-of-operation guarding was provided for the punch presses on the Edwards 55-ton and 75-ton ironworkers.

b)throughout the facility - where no point-of-operation guarding was provided on the press brakes including, but not limited to, the Barcorp press brake and the Engel press brake.

Current Worksheet (2012)

b) CSHO observed several hydraulic press brakes including, but not limited to, a Barcorp press brake and an Engel press brake. Point-of-operation guards were not installed on the machines.

The employer was cited for lack of point-of-operation guards on the press brakes during a previous inspection (#307592436). To abate the hazard, the employer demonstrated the infeasibility of installing protective guards and/or devices on the press brakes, and instead implemented a "safe distance" method of protecting its employees.

The employer implemented a Press Brake Safety Program, which included a) a prohibition on placing any part of the body within four inches of the point of operation, b) employee training (both classroom and demonstration), and c) reminder guards, to include barriers, painted lines on the floor, and safety tape at the point of operation.

However, during interviews with Mr. Ernie Carraway, Plant Manager, and Mrs. Janice Pope, Vice President, it was determined that no part of the program has been reviewed since its implementation in 2004.

Now CPL 02-01-025

Per CPL 2-1.25, *Guidelines for Point of Operation Guarding of Power Press Brakes* (See Attachment 5), "An employer who adopts "safe distance" protection must have (and be prepared to demonstrate to OSHA) an effective program." Both Mr. Carraway and Mrs. Pope were unable to describe any parts of the program, other than that their employees had been trained (once, in 2004).

Furthermore, the CPL requires that the employer "conduct a periodic inspection of the "safe distance" exposure prevention procedure at least annually to ensure that the procedure and other provisions in this instruction are being followed." Mr. Carraway stated that no such inspections were being performed.

When asked about their "safe distance" program, Mrs. Pope stated that – other than the fact that employees were trained on the procedure in 2004 – she didn't know anything about the program or where it was located. Mrs. Pope stated that the previous maintenance manager, Dell Jordan, had left the company approximately five years ago and that it may be located in "his file cabinet" out in the production building. CSHO advised Mrs. Pope that Mr. Carraway and Mr. Scott Threatt, Maintenance, stated that the program was not located in that area.

Mrs. Pope stated that she may have a copy of the program on her computer. However, Mrs. Pope stated that, several years ago, they switched servers and she didn't have access to any of the old information. Mrs. Pope stated that she had a computer specialist coming to the facility later in the week, and that she would have him try to access the old files. Subsequent to the inspection, Mrs. Pope sent a copy of their Press Brake Safety Program to CSHO.

Guarding is NOT an Option

- Any machine that creates a hazard must be safeguarded to protect the operator and other employees.
- Multiple Options:
  - Machine Guards
    - » Fixed
    - » Interlocked
    - » Adjustable
    - » Self-adjusting
  - Safeguarding Devices
    - » Presence-sensing
    - » Restraints/pullbacks
    - » Two-hand trips/controls
  - Location/Distance
  - Feed Mechanisms