Electrical Safety Awareness in the Workplace

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Safety BASICs™

Electrical Hazards

Shock

- Over 30,000 non-fatal electrical shock accidents occur each year
- Over 600 people die from electrocution each year
- Electrocution remains the fourth (4th) highest cause of industrial fatalities
- Most injuries and deaths could be avoided

10 Commonly Overlooked Electrical Hazards

- #10 -Lack of or, inadequate procedures
  - LOTO
    - No procedures
    - Procedures unworkable as written
    - Auditing of procedures
  - Voltage Testing
    - No procedure for establishing a “zero energy state”
  - Trouble shooting
    - Working on “live” equipment


NO. 169822
DATE
DANGER
DO NOT
OPERATE
REASON:
SIGNED

10 Commonly Overlooked Electrical Hazards

- #9 - Contractors
  - Not informed / unaware of Electrical Safety Rules
    - 1910.331-335
    - NFPA 70E
    - Multi - employer policy
  - Inadequate / lack of PPE
  - Causing exposure hazards for host employers employees

10 Commonly Overlooked Electrical Hazards

- #8 -Storage about Electrical Enclosures
  - Turn electrical rooms into storage locations
  - Clearance Requirements
    - 3 feet in front of enclosure
    - Minimum 30 inches wide
    - Minimum 6.5 feet high


8-25-93

10 Commonly Overlooked Electrical Hazards

- #7 - Access to areas containing Energized or High Voltage Equipment
  - Substations
    - Secure, warnings, clearances
  - Rooms/Vaults
    - Secure, Warnings
  - Unqualified persons accessing electrical equipment


DANGER
HIGH VOLTAGE
AUTHORIZED
PERSONNEL ONLY

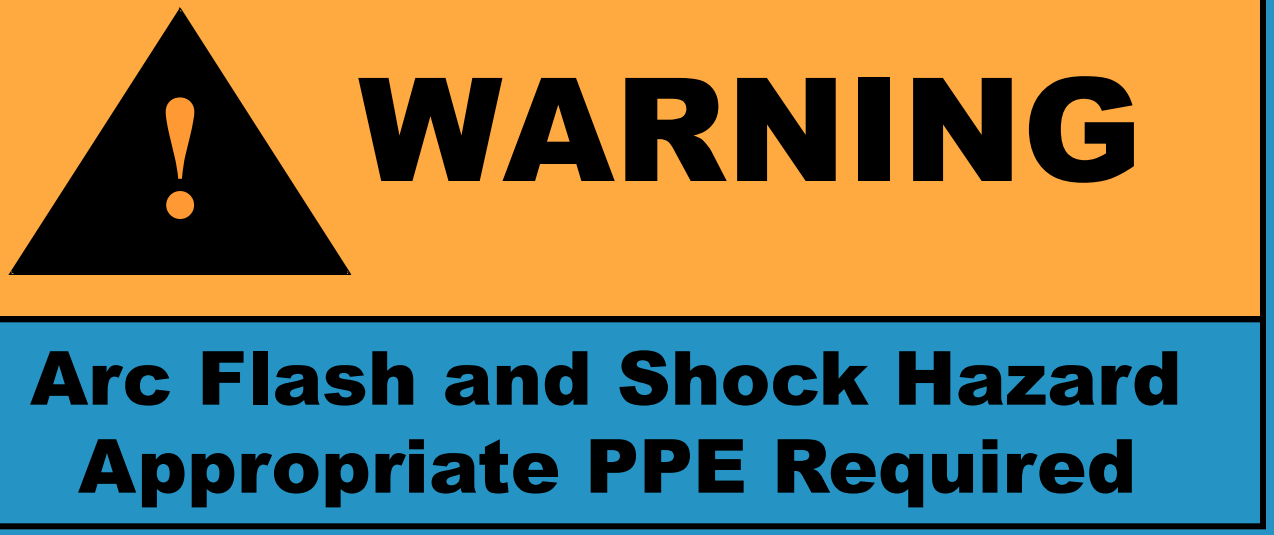
10 Commonly Overlooked Electrical Hazards

- #6 -Labeling of electrical interrupting devices
  - Breakers, disconnects, etc. not labeled as to load served
  - Panels not labeled
  - Panel Directories missing, incomplete, incorrect
  - How is LOTO being accomplished ?


DANGER
"Lights" 1+2/3
Chop Saw
Shop Lights
Shop Lights

10 Commonly Overlooked Electrical Hazards

- #5 - Arc Flash
  - Not aware of hazard
    - Allows inadvertent exposure
  - No training
  - Improper clothing
    - Synthetic fiber
  - Lack of FR Clothing / PPE
    - Not protected from flash
  - No Hazard Analysis (Voltage, Flash)



Courtesy E.I. du Pont de Nemours & Co.

WARNING

Arc Flash and Shock Hazard Appropriate PPE Required

24 inch Flash Hazard Boundary
3 cal/cm² Flash Hazard at 18 inches
1 PPE Level, 1 Layer 6 oz Nomex ®, Leather Gloves Faceshield
480 VAC Shock Hazard when Cover is removed
36 inch Limited Approach
12 inch Restricted Approach - 500 V Class 00 Gloves
1 inch Prohibited Approach - 500 V Class 00 Gloves

Equipment Name: Slurry Pump Starter

Courtesy E.I. du Pont de Nemours & Co.

Equipment Labeling

- At least one of the following:
  - Incident energy at identified working distance
  - Minimum arc rating of clothes
  - Required level of PPE
  - Highest HRC for the equipment
- Nominal system voltage
- Arc flash boundary
  - (method of calculation and supporting data must be documented)


75CAL/CM²


31 CAL/CM²

10 Commonly Overlooked Electrical Hazards

- #4 - Electrical PPE (Gloves)
  - Don't have any / don't know what is required
  - Wrong Class
    - Classes - 00, 0, 1, 2, 3, 4
  - Not tested
    - Prior to first Issue
    - Every 6 months
    - user checks prior to use


SALISBURY

10 Commonly Overlooked Electrical Hazards

- #3 -Tools and Meter Selection
  - Don't have any VR tools
  - Unable to recognize VR tools
  - Wrong Category of Meter for type of work being performed

10 Commonly Overlooked Electrical Hazards

- #2 -Unguarded / Exposed Conductors
  - Missing Panel Covers
  - Enclosures not secured
  - Lack of knowledge concerning safe clearance distances for the voltage involved

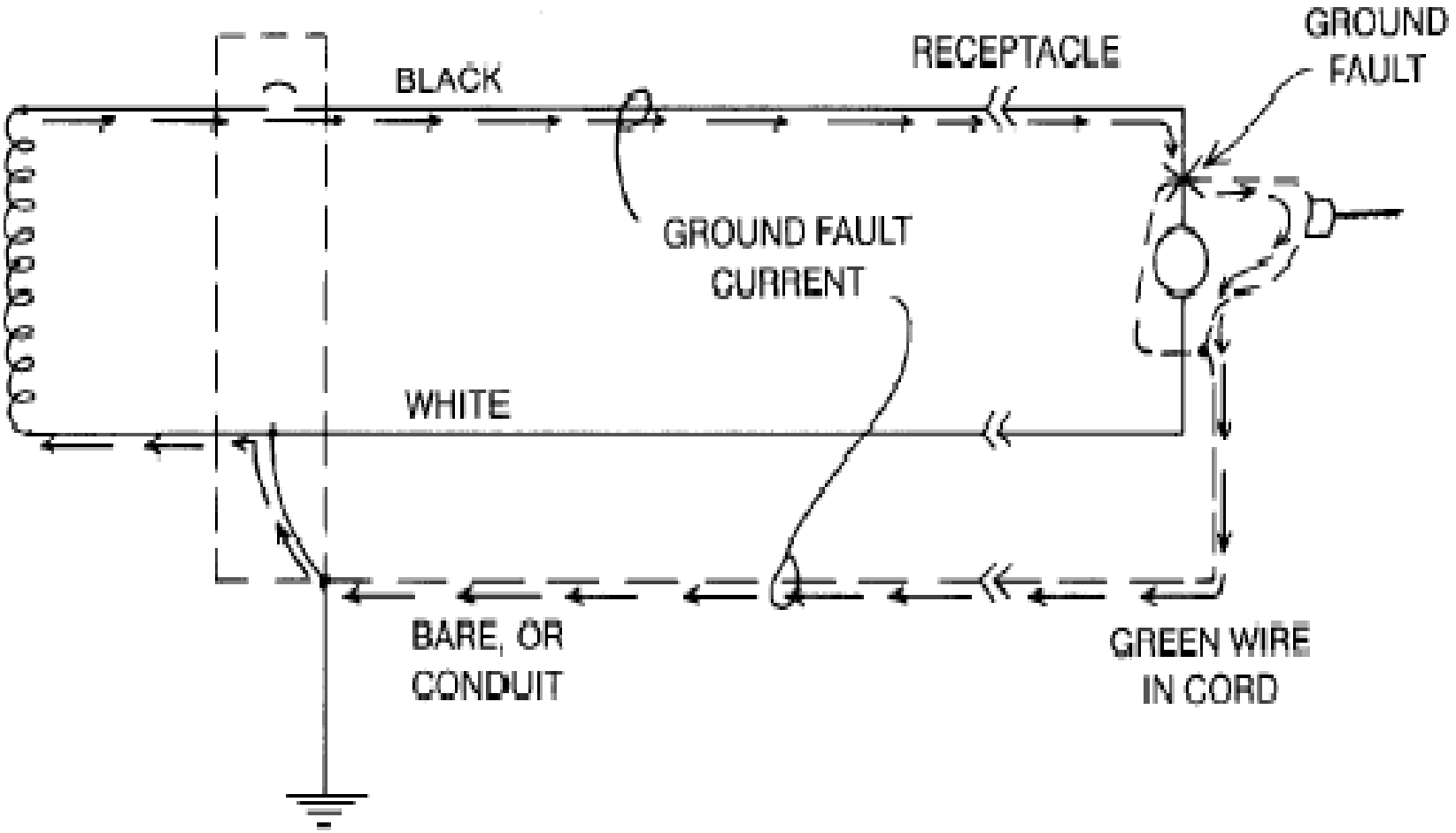

CENTERLINE® Motor Control Centers
ON I

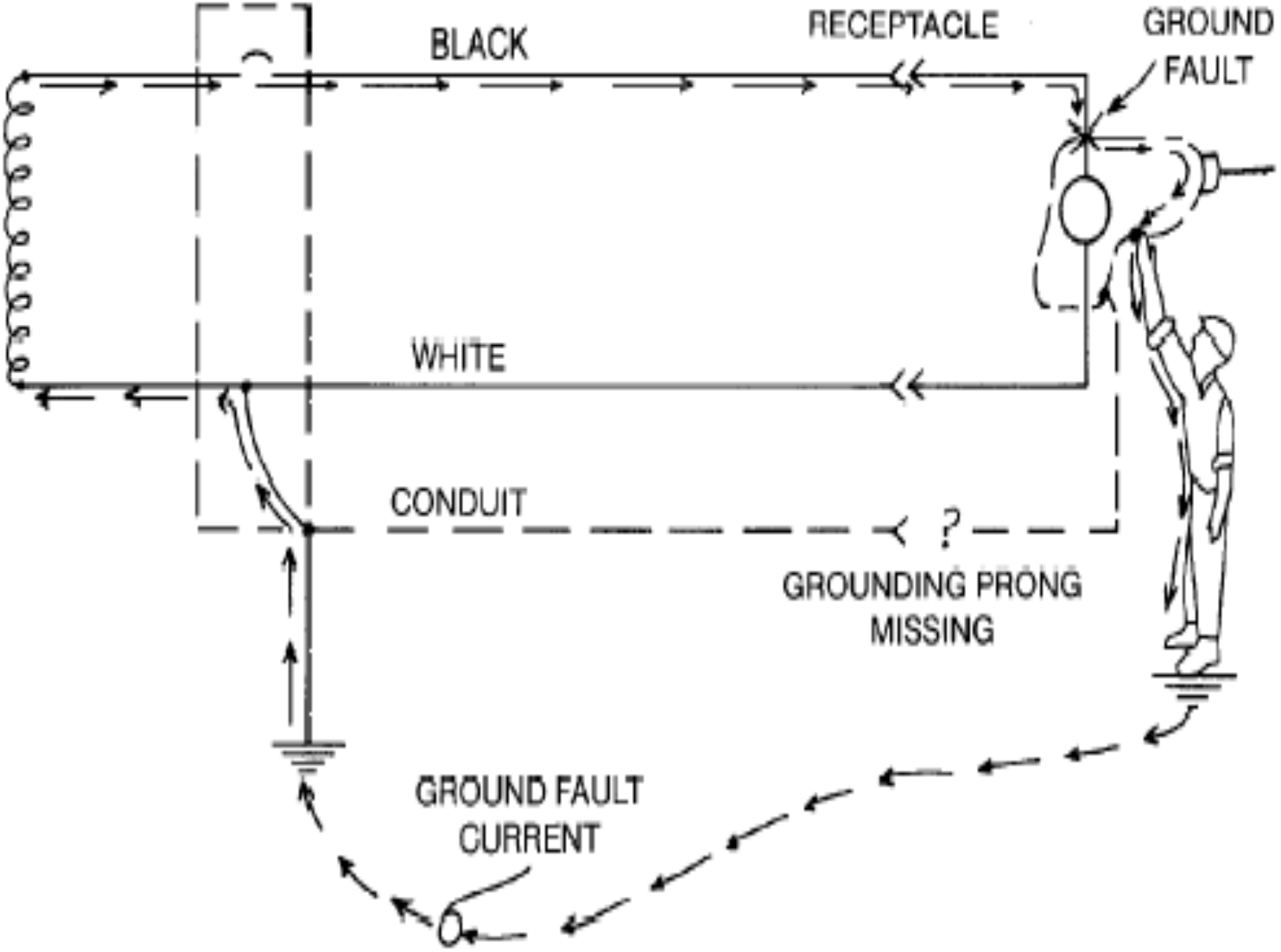
10 Commonly Overlooked Electrical Hazards

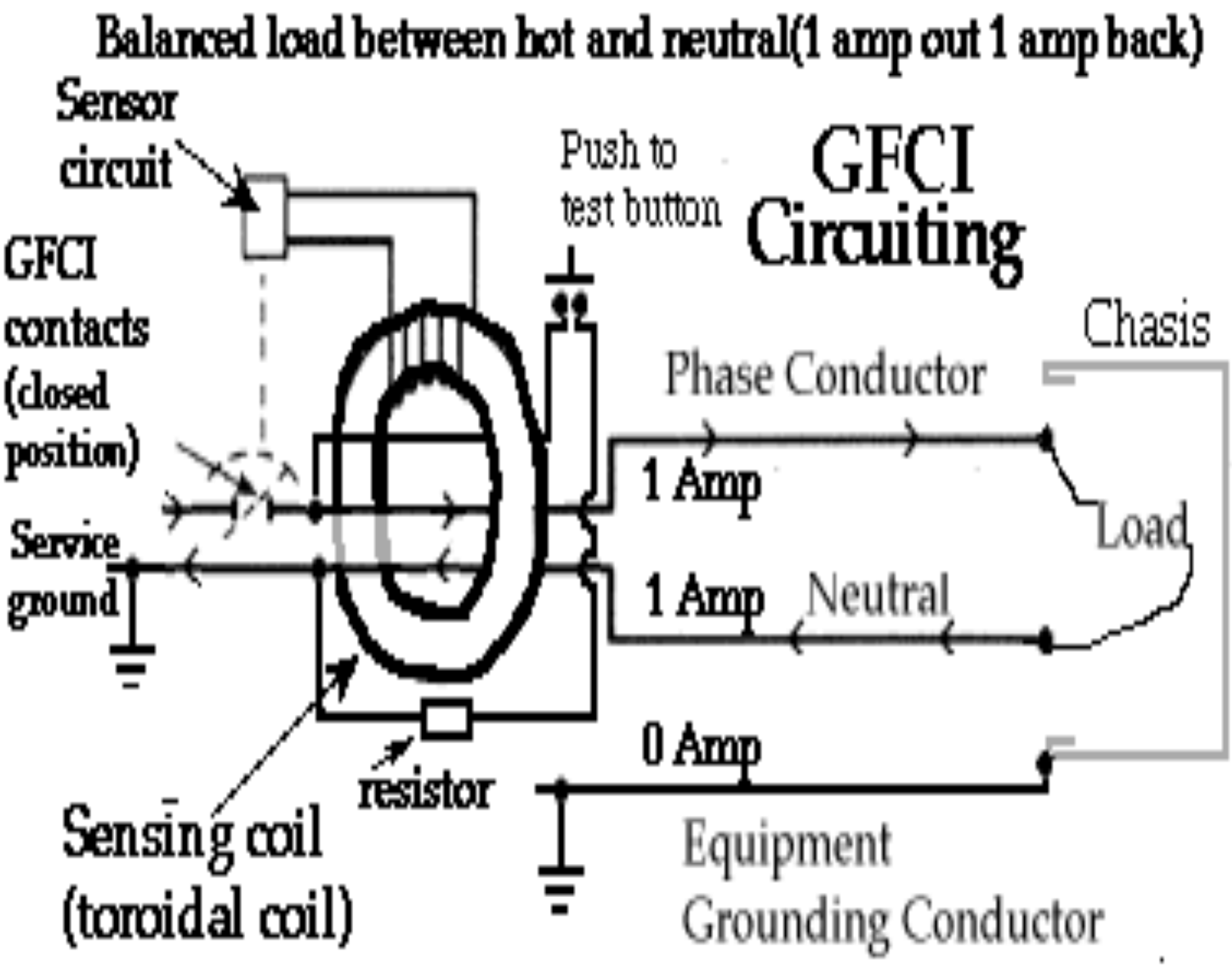
- #1 - Lack of Awareness/ Inspection / Recognition of Electrical Hazards
  - Inspection of electrical tools
  - Inspection of cords (type, gauge, damage)
  - GFCI usage / operation
  - Importance of grounds
- What voltage constitutes an Electrical Hazard ?


E46194 (O) (UL) AWG 12-3 SEOW 105 DEGREES C (-60 DEGREES C) 600 VO


10 5:51 PM


BLACK
RECEPTACLE
GROUND
FAULT
GROUND FAULT
CURRENT
WHITE
BARE, OR
CONDUIT
GREEN WIRE
IN CORD

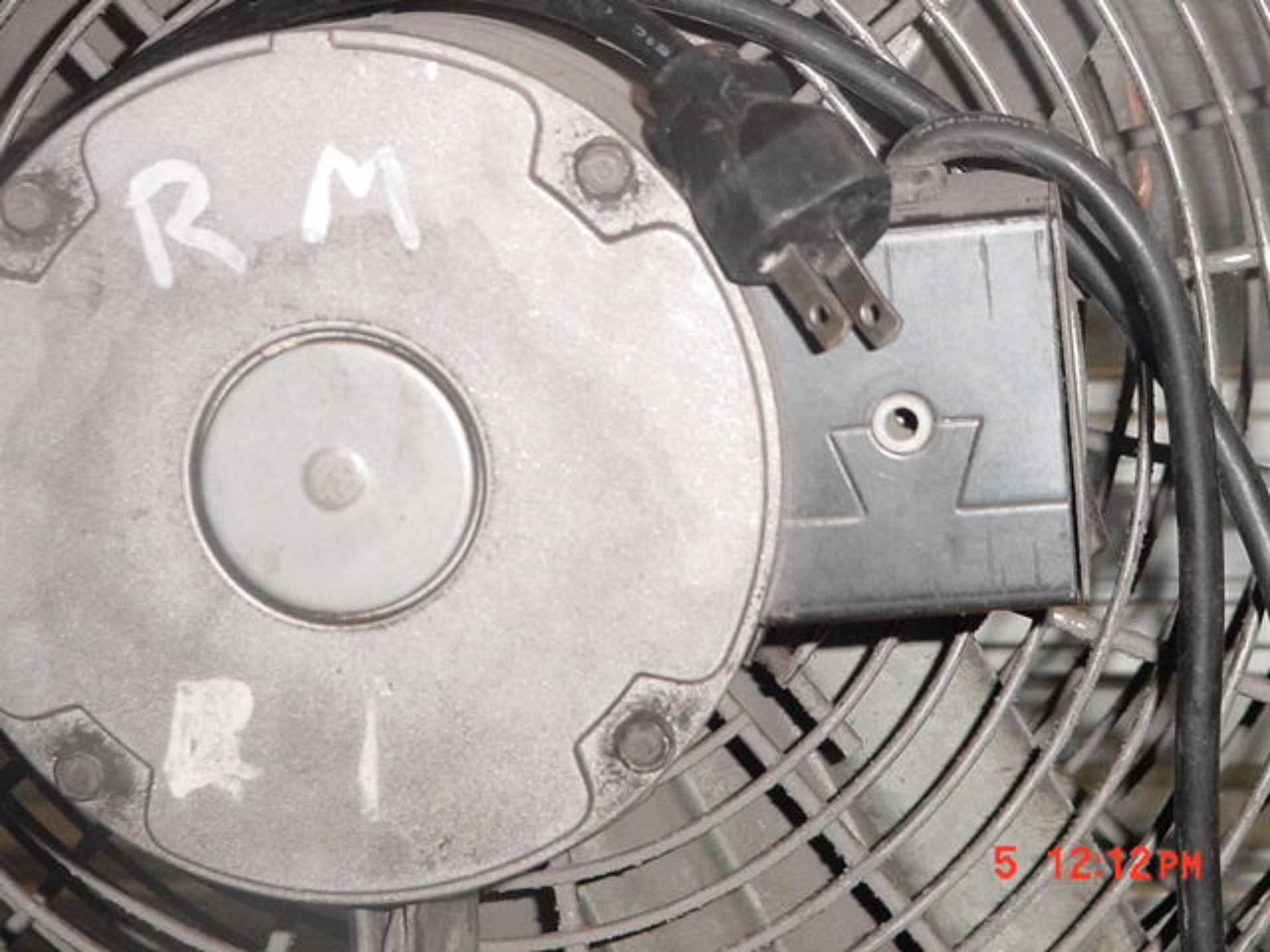

BLACK
RECEPTACLE
GROUND
FAULT
WHITE
CONDUIT
?
GROUNDING PRONG
MISSING
GROUND FAULT
CURRENT


Balanced load between hot and neutral(1 amp out 1 amp back)
Sensor circuit
Push to test button
GFCI Circuiting
GFCI contacts (closed position)
Chasis
Phase Conductor
1 Amp
Load
Service ground
1 Amp
Neutral
0 Amp
resistor
Sensing coil (toroidal coil)
Equipment Grounding Conductor

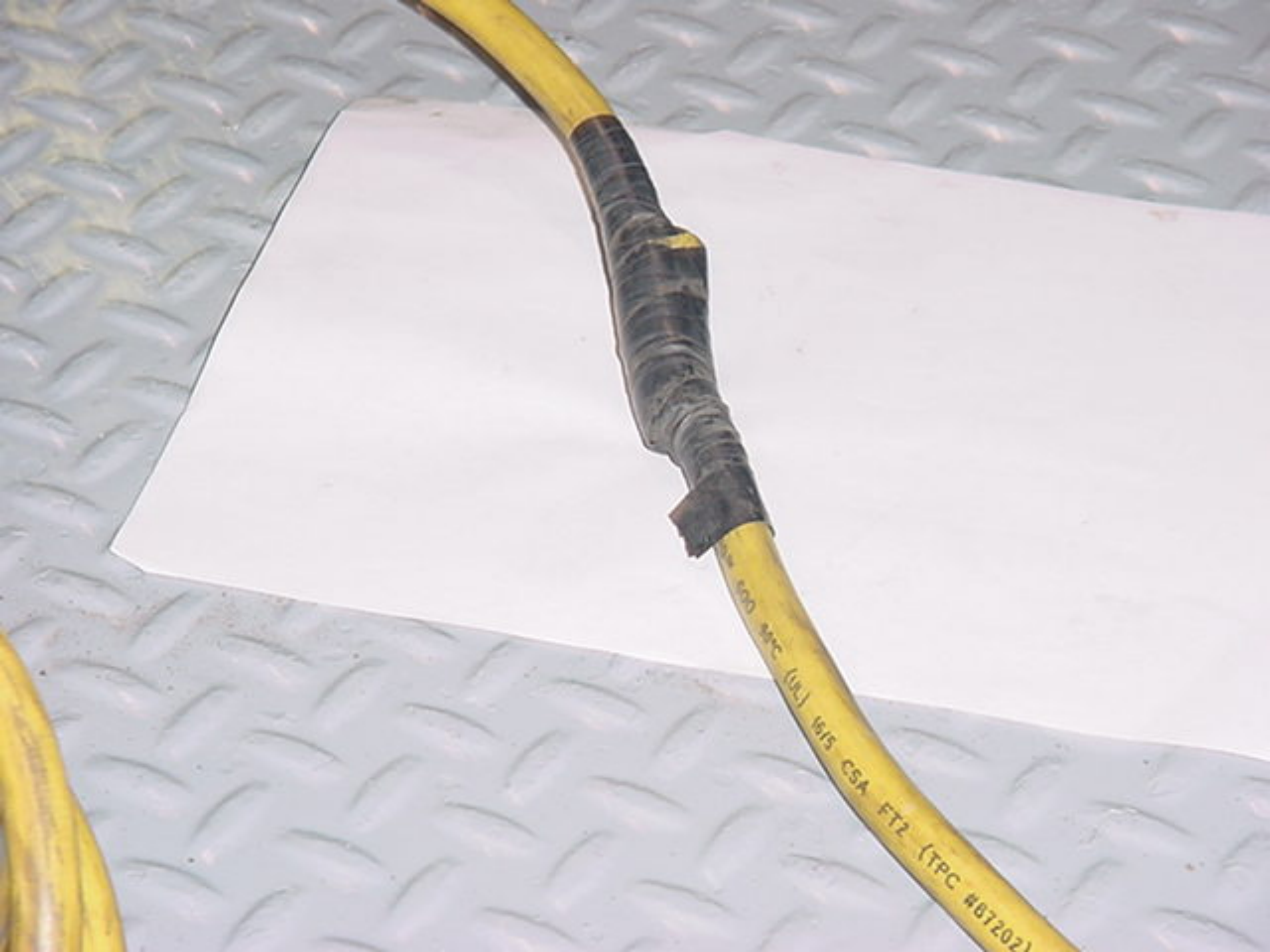

WET FLOOR
4 11:50AM


4 2:53 PM

5018016-03
4 3:33PM


RM
RI
5 12:12PM


Year 2000 Project
EQUIPMENT INVENTORIED
Date: June 15, 1998
By: Richard Cornell
Year 2000 Project
EQUIPMENT Y2K COMPLIANT
Date: June 15, 1998
By: Richard Cornell
ON
LUMA ELECTRIC CO.
VOLTS 50-60 HERTZ AC ONLY
MODEL NO.
AMPS.
SERIAL NO.


600 90°C (UL) 16/5 CSA FT2 (TPC #87202)


OFF

10 Commonly Overlooked Electrical Hazards

- This was just an overview of Common electrical workplace hazards.
- There are more, but addressing the items we have discussed is a good starting point.
- Thanks for your attention and participation

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