Causes of Loss and Methods of Remediation for Electronics

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PHOENIX
EQUIPMENT RESTORATION

What Sets Electronic Losses Apart

- Electronic equipment is essential to a firm's production or commerce
- Electronic equipment contains a wide variety of materials
- Electronic equipment has reliability and perceived reliability issues

Types of Electronic Equipment Losses

Water

Fire

Smoke

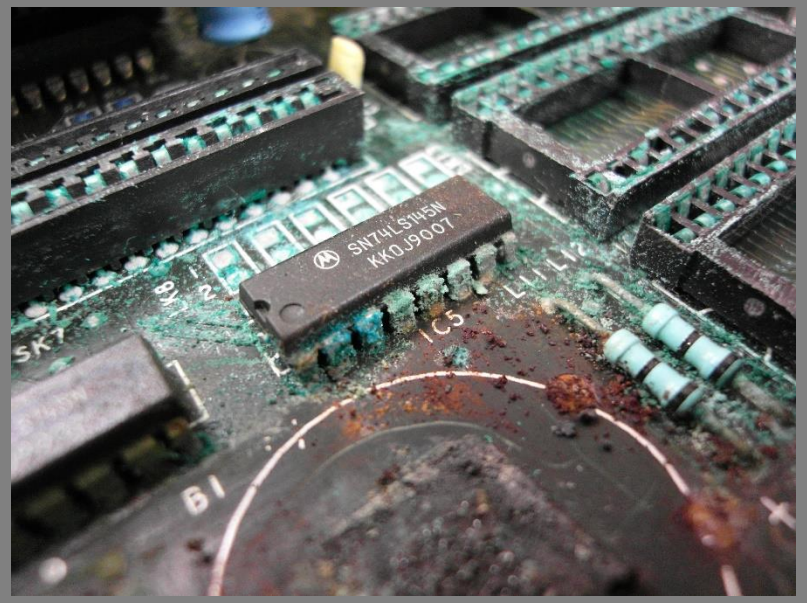
Lightning/Power Surge

What Sets Electronic Losses Apart

- A fire department responds to a fire alarm every 20 seconds
- Fire causes $11.5 billion of property damage every year

Effects of Smoke on Electronic Equipment

- Staining
- Corrosion
- Abrasive Effects
- Obstruction of Airflow Paths Which Results in Overheating



Science of Smoke

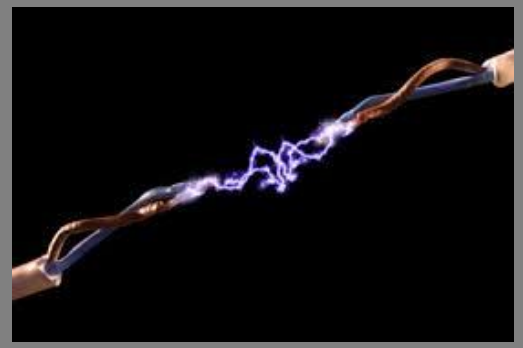
Sulfates (Sulfuric Acid)	Chlorides (Hydrochloric Acid)	Nitrates (Nitric Acid)
• Wood • Cardboard • Paper	• PVC Pipe • Plastics	• Drapes • Carpet • Nylon • Plastics

Water Damage

- #1 natural disaster in the US
- Over the last 5 years, all 50 states have experienced a flood
- Hurricane Sandy caused $62 Billion in damage

Effects of Water on Electronic Equipment

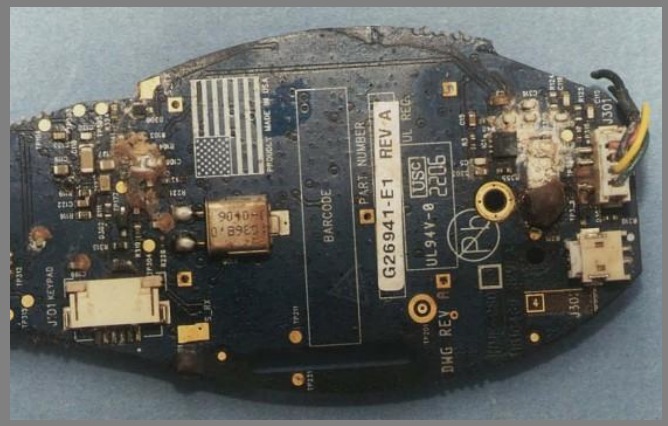
- Shorting
- Corrosion
- Overheating Due To Residue On Surface Of The Components



Water Contamination

Water Contains Impurities and These Impurities Can...

- ...leave behind a residue
- …prevent normal cooling
- …contain corrosive elements

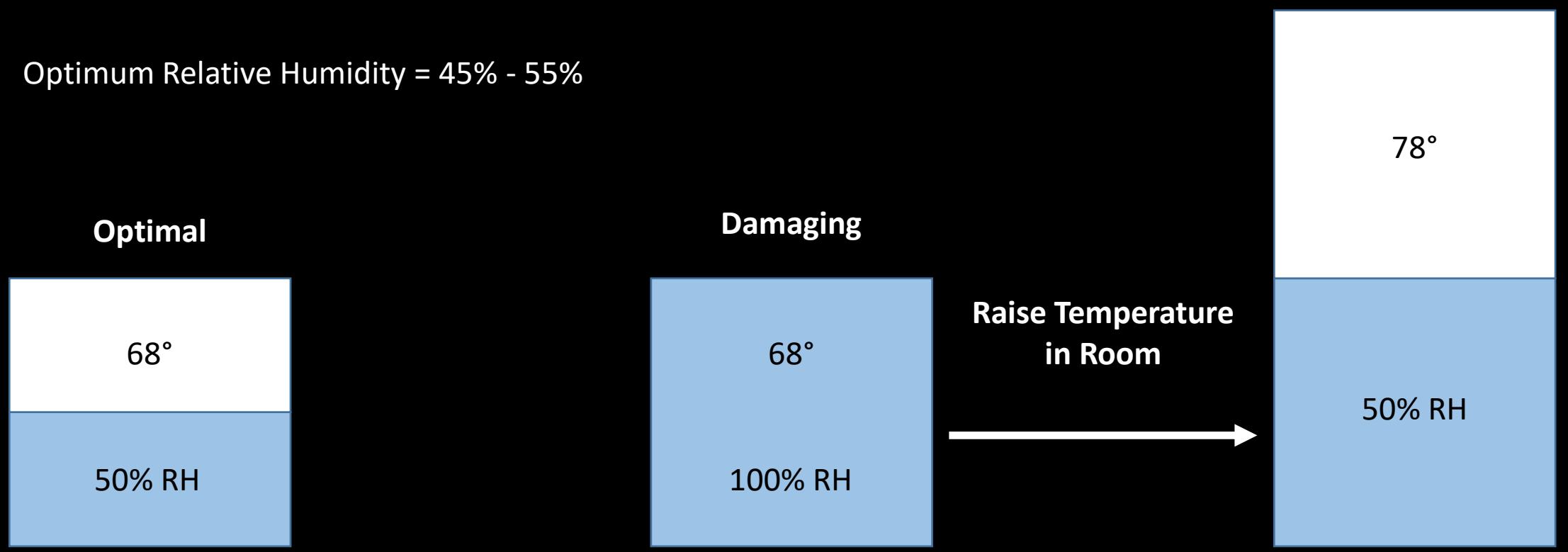


Typical Water Aftermath

Understanding Relative Humidity

$$\text{Relative Humidity} = \frac{\text{Amount of Moisture in the Air}}{\text{Maximum Amount of Moisture the Air Could Hold}}$$

Optimum Relative Humidity = 45% - 55%



Lightning/Power Surge

- 739 million in damage annually
- 29% had no lightning detected at time of loss
- Insurance industry left to determine origin of the damage

Types of Lightning Damage

Direct Strike

- Strike hits property, causing visible damage

Inductive Coupling

- The magnetic fields created by nearby lightning strikes induces a voltage in long cables which can damage components at the ends of the cables

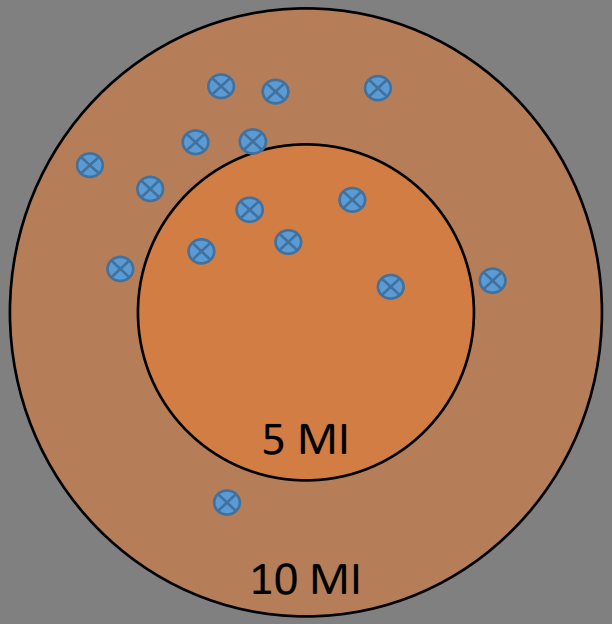
Lightning Detection Network

- Accurate to within .5 km
- Written verification available
- Approved as court evidence

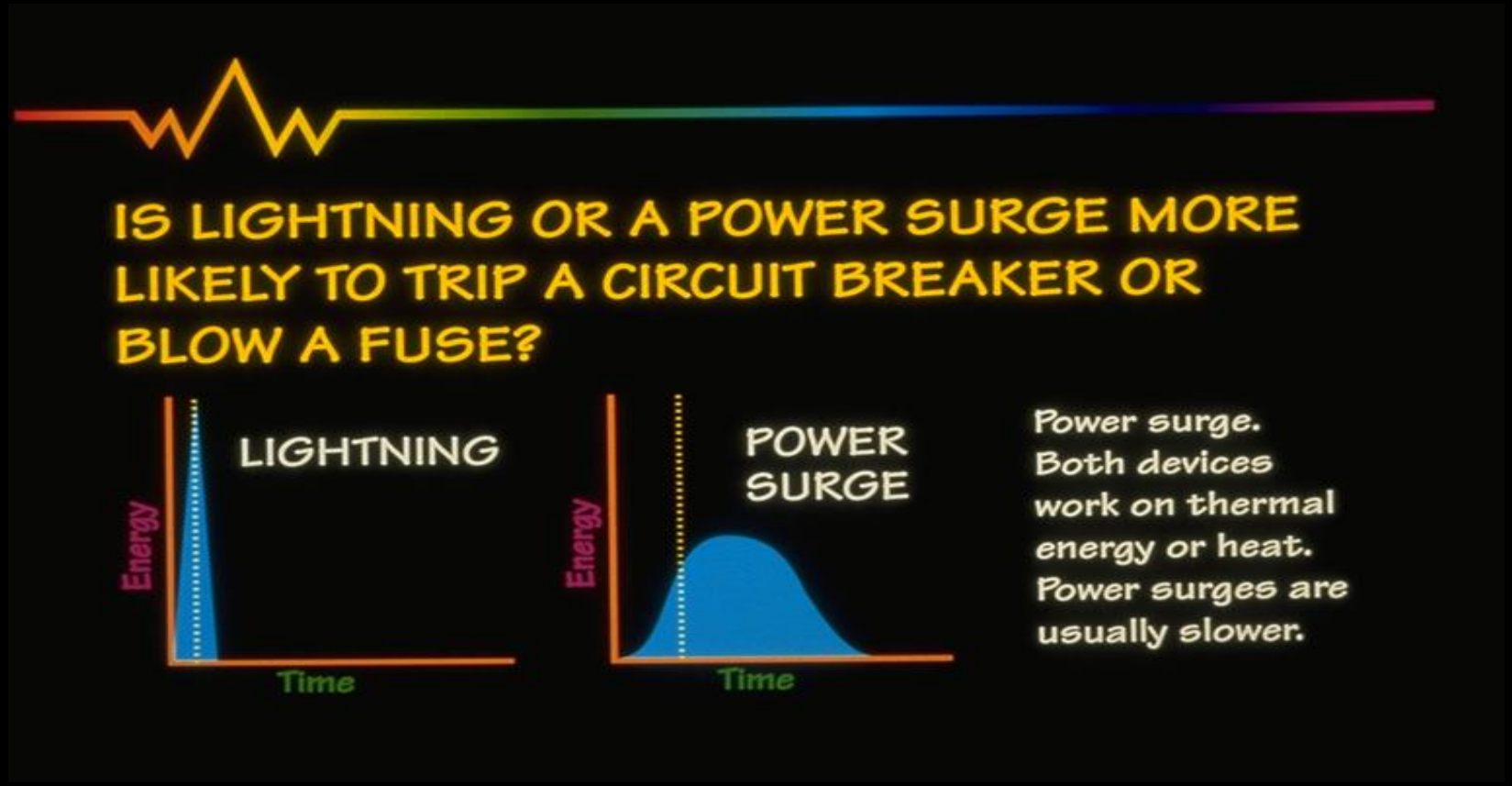
Lightning Verification Report

Report stating the number of strikes for a given date and time

5 mile or 10 mile radius around the location of the loss



Lightning Vs. Power Surge



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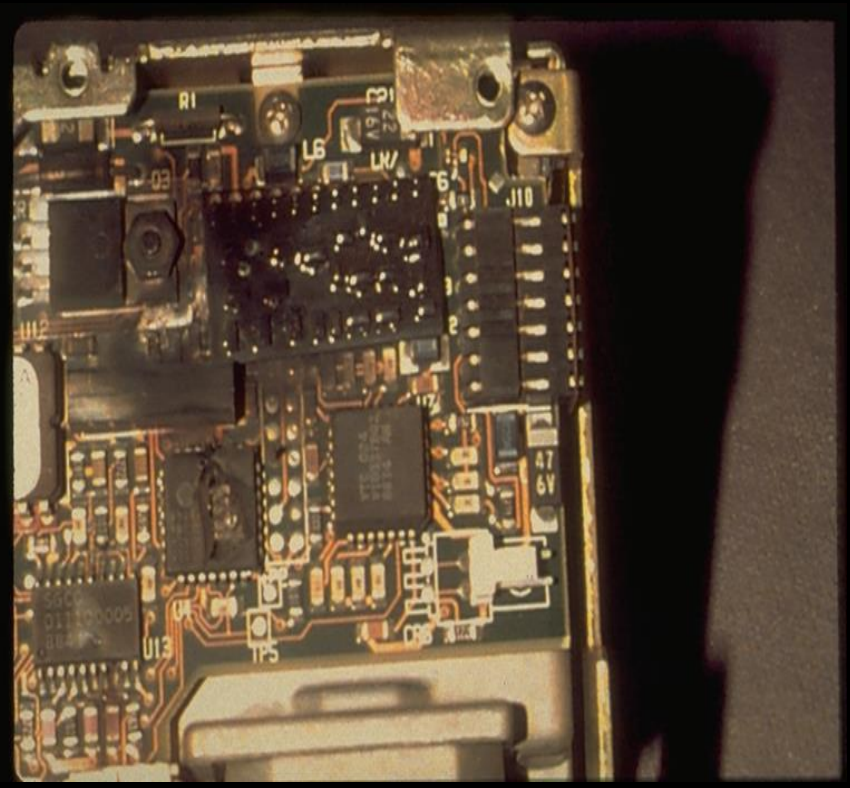

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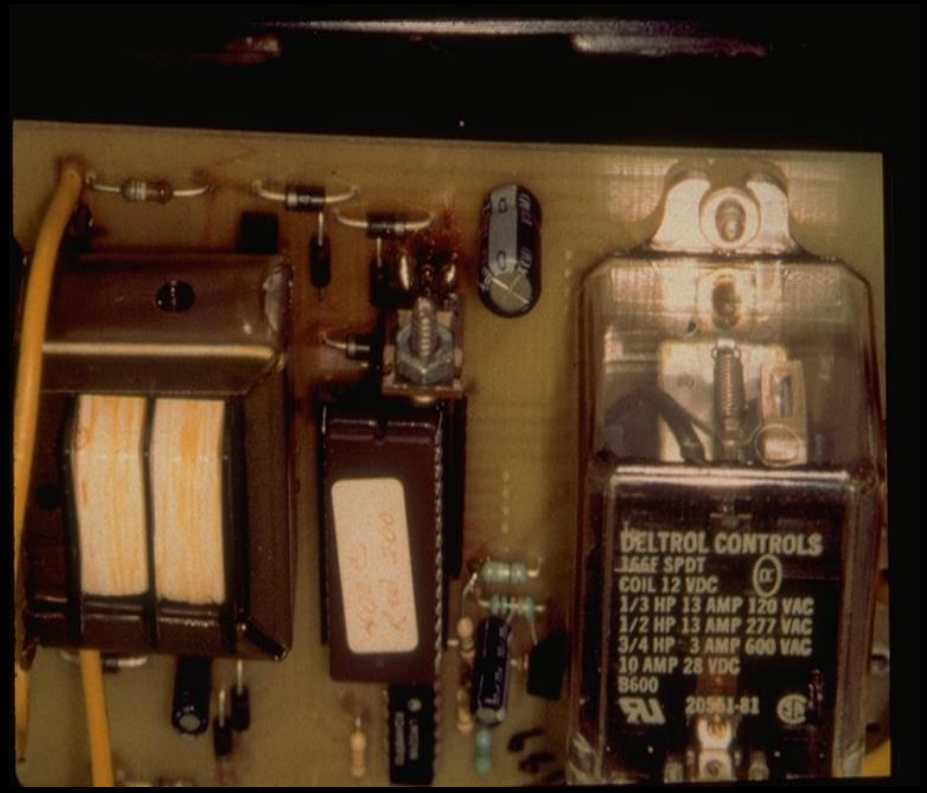

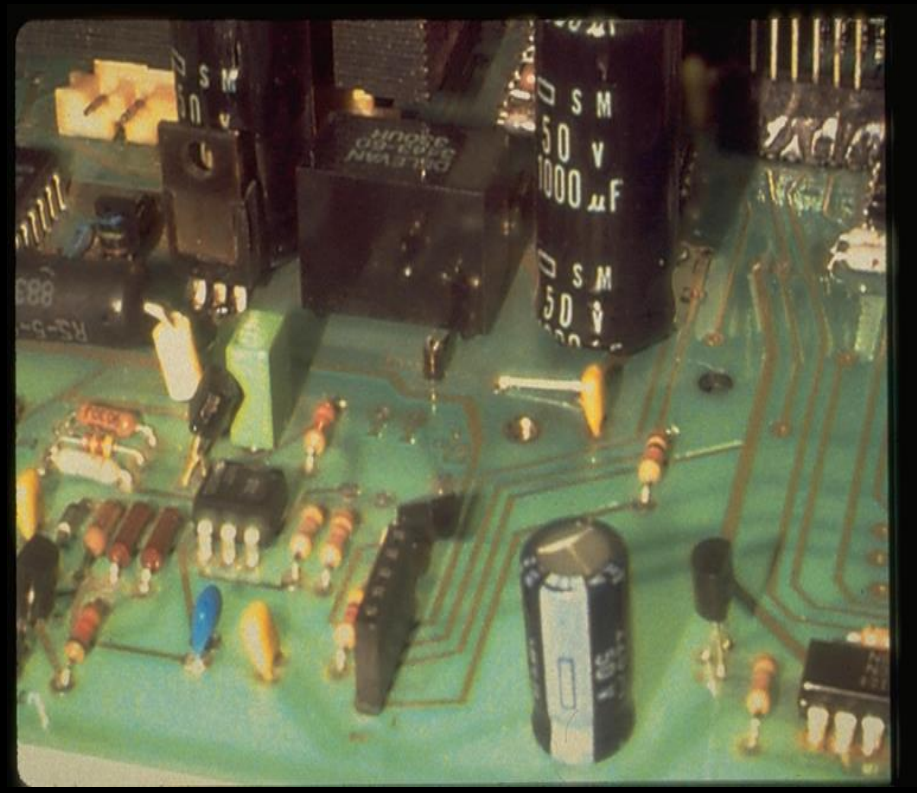

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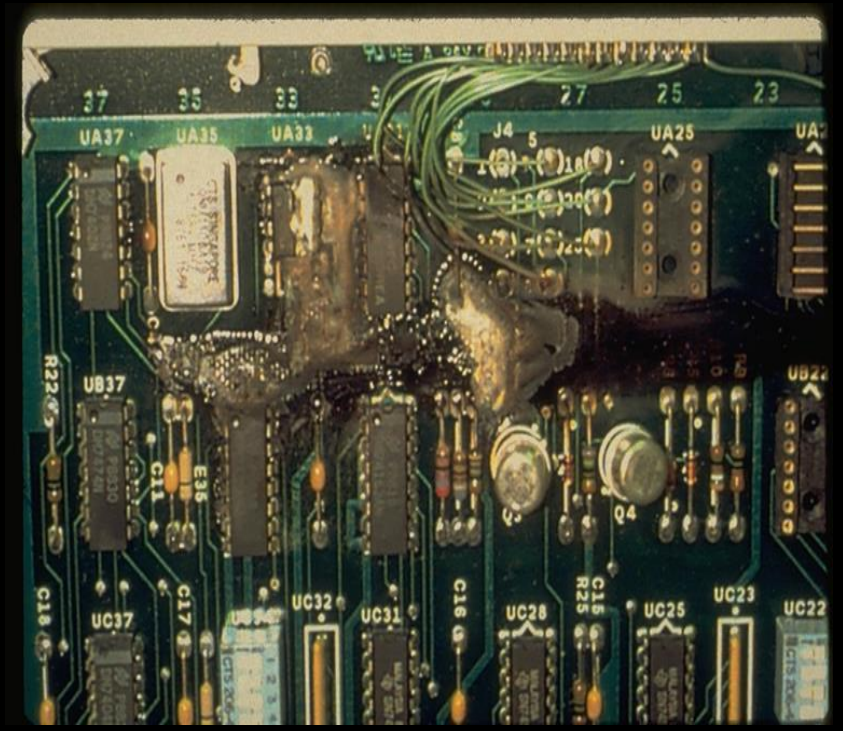
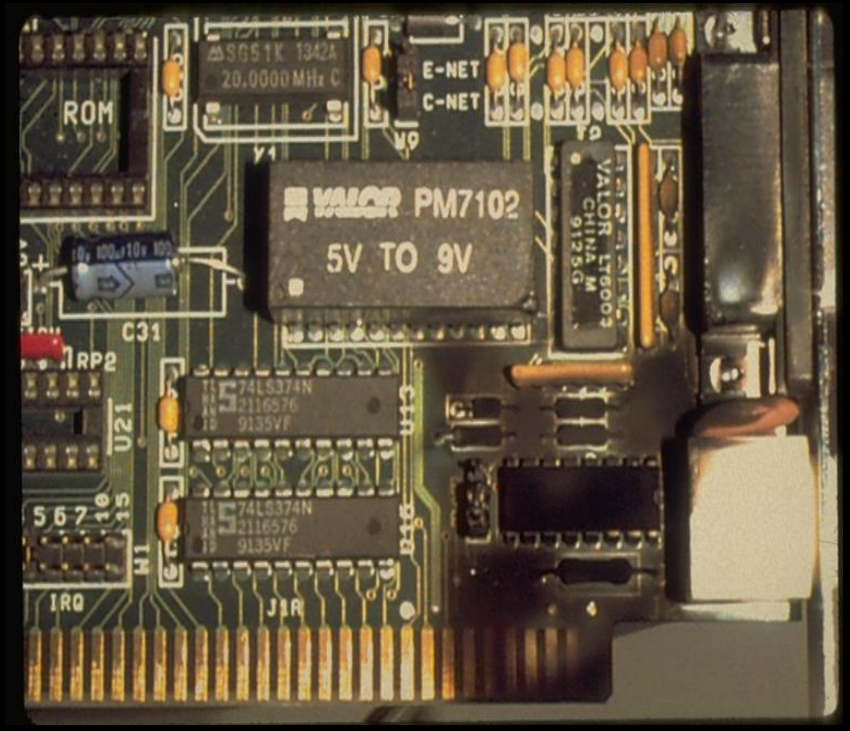
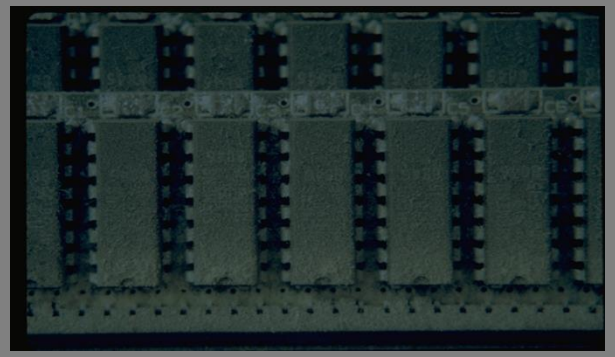
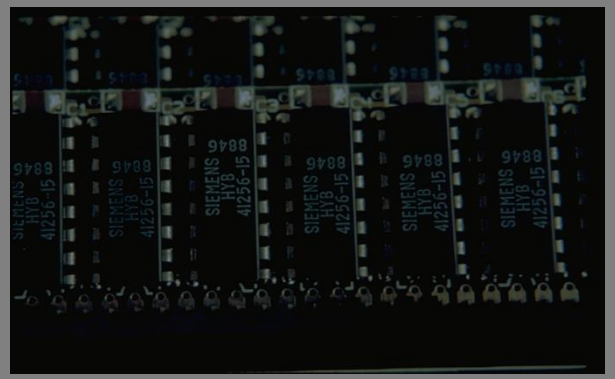




Restoration of Electronic Equipment

- Removal of Corrosive Contamination
- Arresting and Inhibiting Corrosion
- Elimination of Particulate That Is Abrasive
- Elimination of Particulate That Blocks Airflow
- Cleaning Away the Cosmetic Staining
- Deodorization





Restoration Methods

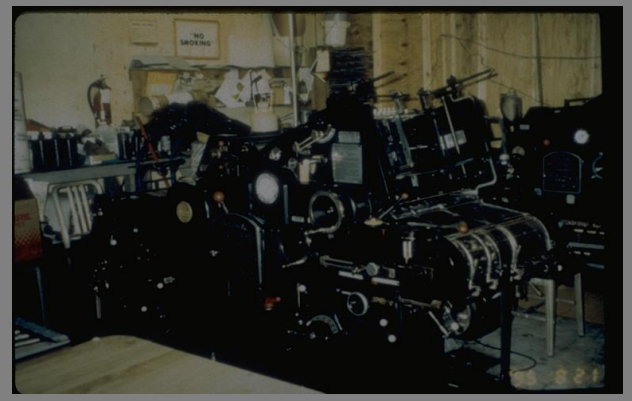
- Water-Based Solvents Spraying
  - Uses Chemicals and Agitation To Clean
- Ultrasonic Cleaning
  - 1 in 10 Electronic Items Is Damaged By This Method And Is Not Recommended

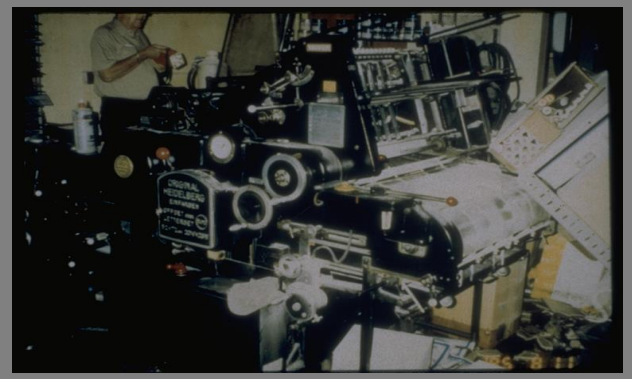
Restoration Reliability

- Restoration Is Proven To Be A Very Reliable Option In Adjusting Electronic Equipment Losses
- Perceived Reliability Issues Can Be Addressed Through Warranty and Contract Replacement
- Restored Equipment That Fails 1 Year Later May Be Due To Other Causes Such As Normal Failures

Why Restoration?

- Reduced Business Interruption and Extra Expense
  - Lead Time For Replacement Equipment Can Be Extensive (9 Months Or Longer)
- Eliminates Retraining
  - Can Be Expensive And Time Consuming
- More Cost-Effective
  - Restoration Can Be As Low As 10% Of The Cost Of Replacing The Equipment





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