

Physical Security Controls Environmental

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❖ Power Protection

- **Controlled Access to**
 - **Power Distribution Panels**
 - **Master Circuit Breakers**
 - **Transformers**
 - **Feeder Cables**
- **Dedicated Circuits**
- **Emergency Power Off Controls**
- **Voltage Monitoring/Recording**
- **Surge Protection**
- **Power Supply**
 - **Alternate Feeders**
 - Power line conditioners
 - Backup power sources
 - Uses AC line to charge a bank of batteries
 - Uses an inverter to convert DC from battery bank to AC
 - **Uninterruptible Power Supply**
 - Hydrogen Gas Hazard
 - Maintenance/Testing
 - Standby UPS Uses sensors
 - **Emergency Power Generator**
 - Fuel Consideration
 - Maintenance/Testing
 - Costs
- **Electrical Power**
 - **Blackout**
 - Complete loss of power
 - (We were hit by a nasty ICE storm)
 - **Brownout**
 - Prolonged Period of Below Normal Voltage
 - (Hell I cannot even run my small light)
 - **Sag**
 - Short Period of Low Voltage
 - Momentary low voltage
 - (wait a bit the power will come to normal)
 - **Noise**
 - Random Disturbance that Interferes with a Device
 - Steady interference

- Common type of noise
 - ◆ EMI
 - ◆ RFI
- Protective measures
 - ◆ Power Line Conditioning
 - ◆ Proper Grounding
 - ◆ Cable shielding
 - ◆ Limiting Exposure to Electric motors
 - ◆ Limiting Exposure to heaters
 - ◆ Limiting Exposure to fluorescent lights
 - ◆ Limiting Exposure to magnets
- **Transient**
 - Line Noise/Disturbance at Normal Voltage
 - Short duration of line noise
- **Surge**
 - Prolonged High Voltage
- **Spike**
 - Momentary High Voltage
- **BBS NT Slow Server**
- **Protecting Wiring**
 - **Optical Fiber**
 - **Copper Wire**
 - **Certifying the Wiring and Cabling**
 - **Controlling Access to Closets and Riser Rooms**
- **Electrical Terms**
 - **Primary power source - provides electricity for day-to-day operations**
 - **Alternate power source - used in the event of failure of the primary power source**
 - **Ground - pathway to the earth to allow excessive voltage to dissipate**
 - **Noise - electromagnetic or frequency interference that disrupts the power flow**
 - **Transient noise - short duration of power line disruption**
 - **Clean power - power that does not fluctuate**

❖ **Fire Suppression / Detection**

- **Fire Elements**
 - **Fuel**
 - **Oxygen**
 - **Temperature**
 - OK 70 to 74 F for a Room
- **Temperatures Damage**
 - **Magnetic Media: 100 F**
 - **Disks: 150 F**
 - **Computer Equipment: 175 F**
 - **Paper Products: 350 F**
- **Fire Detection**
 - **Manual**
 - **Heat sensing**
 - **Flame Actuated**

- **Smoke Actuated**
- **Alarms**
 - Manual & Automated Activation
 - Visual & Audible Indication
 - Local & Remote Annunciation
- **Detectors Location**
 - Inside Equipment Cabinets/Vaults
 - On Ceilings
 - Above Suspended Ceilings
 - Beneath Raised Floors
 - Return Air Ducts
 - Cross-Zoning

➤ **Fire Suppression**

- **Portable Extinguishers**
 - Commonly located at exits
 - Clearly marked with their fire types
 - Checked regularly by licensed personnel
- **Water Sprinkler**
 - Wet Pipe
 - ◆ Sprinkler always contain water
 - ◆ At 165 ° F - fusible link in nozzle melts
 - ◆ Most reliable
 - ◆ Works to Lower Temperature
 - ◆ Subject to leaking and freezing
 - ◆ Conventional Systems
 - Dry Pipe
 - ◆ No water standing in the pipe
 - ◆ Air is blown out and water is released
 - ◆ Time delay can allow systems to power down
 - ◆ “Dry Pipe” Systems: Less Risk of Leakage
 - ◆ Employ in Throughout Building and in all Spaces
 - Deluge
 - ◆ Dry pipe system
 - ◆ Preferred over Wet pipe
 - ◆ Large Volume of Water
 - ◆ Most Damaging to Equipment
 - Preaction
 - ◆ Most recommended for computer room
 - ◆ Combines wet and dry
 - ◆ Charges pipe when heat is detected
 - ◆ Releases water when - fusible link in nozzle melts
- **Carbon Dioxide (CO₂)**
 - Colorless and odorless gas
 - Removes oxygen and can be lethal
 - Delayed-Activation in Manned Facilities
 - Best for Unattended Facilities
 - Used in unmanned facilities
- **Halon**
 - Concentrations <10% are Safe
 - Not harmful to equipment

- Becomes Toxic at 900o
- Depletes Ozone (CFCs)
- Spreads extremely fast
- Montreal Protocol (1987)
- Halon 1211: Self-Pressurization (portable extinguishers)
- Halon 1301: Requires Pressurization
- Federal law prohibits production of Halon
- Common EPA replacements
 - ♦ FM-200
 - ♦ CEA-410
 - ♦ NAF-S-III
 - ♦ FE-13
 - ♦ Argon
 - ♦ Inergen
 - ♦ Low Pressure Water Mists
- **Contamination and damage**
 - SMOKE, HEAT, WATER, HALON or CO2.
- **Fire Classes**
 - A: Common Combustibles (use Water/Soda Acid)
 - B: Liquid (CO2/Soda Acid/Halon)
 - C: Electrical (CO2/Halon)
 - D: Combustible metals (Dry powder)
- **Causes Of Computer Center Fires**
 - #1: Electrical Distribution Systems
 - #2: Equipment

❖ HVAC

- IT manager Know who is responsible for HVAC
- Should Maintain temperature and humidity levels
- Should provide POSITIVE pressurization and ventilation

❖ Other Considerations

- Training
- Testing
- National Fire Prevention Association
- Local Fire Codes
- Drainage