TOP TEN DEFICIENCIES & GENERATORS

STATE FIRE MARSHAL DIVISION
HEALTH CARE TEAM

MINNESOTA STATE FIRE MARSHAL DIVISION
445 Minnesota Street; Suite 145 Saint Paul, MN 55101
CITED 91 TIMES

- QUARTERLY DRAIN TESTS
  (PRV AND BACKFLOW PREVENTER)
- ANNUAL TESTS WITHIN 365 DAYS
- SUPPLY OF READY STOCK HEADS
  BASED ON TOTAL NUMBER
  INSTALLED, TEMPERATURE, AND
  RESPONSE TYPE.
FIRE SPRINKLER HEAD
CLEANLINESS AND CORROSION
K712  Fire Drills

Cited 79 Times
• Varied times and conditions
• Each shift must have:
  - 4 drills per year
  - 1 per quarter
• Documents filled out completely
• Acknowledge receipt of signal
• Name of who conducted the drill
MOST COMMONLY CITED PROBLEMS INCLUDE:

- Appliances plugged into power strips
- Multi-plug adaptors
- Extension cords
• **Question of the day:**
What is the regulation for testing the retention force on electrical outlets?

• According to section 6.3.3.2.4 of the NFPA 99-2012,
• Retention force of the grounding blade of the receptacle shall be not less than (4-oz).
• The physical integrity must be confirmed by a visual inspection;
• Verification grounding circuit
• The correct polarity of the hot and neutral connections of each receptacle must be confirmed.
• Hospital grade that are located at patient beds locations and in locations where deep sedation or general anesthesia is administered.
• Nursing homes do not have patients, they have residents.
CITED 48 TIMES

ALARM SYSTEM NEEDS TO BE TESTED SEMI-ANNUALLY

• YOU NEED A COPY OF THE MOST CURRENT FIRE ALARM TEST REPORT.

• YOU NEED A COPY OF THE LAST SENSITIVITY TEST THAT WAS COMPLETED.

• QUESTION IS, CAN YOU DISPOSE OF TESTING / INSPECTION DOCUMENTS OLDER THAN 3 YEARS?

- BEST PRACTICE TO RETAIN FOR LIFE OF THE SYSTEM.
K923  O2 CYLINDERS AND CONTAINMENT STORAGE

CITED 40 TIMES
**Annual Inspection of Swinging Fire Door Assemblies**

<table>
<thead>
<tr>
<th>Name of Property:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire Door Assembly Location:</td>
<td></td>
</tr>
<tr>
<td>Special Locking Arrangement:</td>
<td></td>
</tr>
<tr>
<td>Number of Leaves:</td>
<td>Fire Rating of Each Leaf:</td>
</tr>
<tr>
<td>Rating of Barrier:</td>
<td>Purpose of Rated Barrier:</td>
</tr>
<tr>
<td>Automatic or Manual Operator?:</td>
<td>Hold-open Device?:</td>
</tr>
<tr>
<td>Inspected By:</td>
<td>Affiliation:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Inspection Activity:</th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Is the door and frame free from holes and breaks in all surfaces?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Are all the glazing, vision light frames and glazing beads intact and securely fastened?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Are the doors, hinges, frame, hardware and threshold secure, aligned and in working order with no visible signs of damage?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Is the door free from missing or broken parts?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Is the clearance from the door edge to the frame no more than 1/8 inch?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Is the door undercut no more than ¾ inch?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Does the active door leaf completely close when operated from the full open position?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Does the inactive leaf close before the active leaf when a coordinator is used?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Does the latching hardware operate and secure the door in the closed position?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Is the door assembly free from any auxiliary hardware items which could interfere with its operation?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Is the door free from any modifications since it was originally installed?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>If gasketing and edge seals are installed, have they been verified for integrity and operation?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>Is 95% of the surface of the door free from signage?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

All "No" answers must be fully explained.

Source: NFPA 80, 2010 edition
K372  SMOKE BARRIERS

CITED 37 TIMES

FIRE STOPPING
K521 Fire Damper Testing

Cited 37 times

- 4 yrs. - Health Care Facilities
- 6 yrs. - Hospitals
K351 Fire Sprinkler System Installation

Cited 33 times
K918 ESSENTIAL ELECTRICAL SYSTEMS

CITED 48 TIMES
QUESTION:

Is it acceptable to use a flashlight as the emergency light?

NFPA 110-13  7.3.3* The intensity of illumination in the separate building or room housing the EPS equipment for Level 1 system shall be 32 lux (30 ft. candles), unless otherwise specified by the AHJ.
QUESTION - CONT.

A MAG LIGHT WITH 2AA BATTERIES HAS 15.2 LUMEN AND 2952 PEAK CANDLE POWER (FROM WEB SITE)

THE AHJ IS CMS
• CMS IS REQUIRING BATTERY OPERATED LIGHTING

THE EXCEPTION TO THAT SECTION DOES NOT REQUIRE EMERGENCY LIGHTING OF THE GENSET IF IT IS OUTSIDE AND NON-OCCUPIABLE. (NFPA 110-12 7.3.1)
QUESTION:

• **Is the facility's transfer switch required to be lighted by battery operated emergency lighting?**

• **The transfer switch is considered EPSS.**

• **The EPS is required to have lighting - not the EPSS.**
NFPA 110

Routine maintenance and operational testing shall be based on:

- Manufacturer's recommended instructions
- Instruction manuals
- Minimum requirements of NFPA 110 Chapter 8
- The Authority Having Jurisdiction

Consideration shall be given to temporarily providing an alternate source when the emergency generator is out of service.
Generator Testing

- A SCHEDULED TEST UNDER LOAD AT LEAST MONTHLY
- SHALL INCLUDE A COMPLETE SIMULATED COLD START AND AUTOMATIC AND MANUAL TRANSFER OF EES
- THE TESTS SHALL BE CONDUCTED BY COMPETENT PERSONNEL
- THE TESTS ARE NEEDED TO KEEP THE MACHINES READY TO FUNCTION AND, IN ADDITION, SERVE TO DETECT CAUSES OF MALFUNCTION AND TO TRAIN PERSONNEL IN OPERATING PROCEDURES
WRITTEN RECORD

SHALL INCLUDE:

• THE DATE OF SERVICE
• THE NAME OF THE SERVICING TECHNICIAN
• A SUMMARY OF CONDITIONS NOTED
• A DETAILED DESCRIPTION OF ANY CONDITIONS REQUIRING CORRECTION AND WHAT CORRECTIVE ACTION WAS TAKEN
• TESTING OF ANY REPAIR AS RECOMMENDED BY MANUFACTURER
• RECORDS SHALL BE KEPT ON THE PREMISES
• BE AVAILABLE FOR INSPECTION BY THE FIRE CODE OFFICIAL
EMERGENCY GENERATOR INSPECTIONS (IN CODE APPENDIX)

- **Prime Mover (Engine)**
- **General Inspection**
- **Fuel**
- **Check Fuel Tank Level**
- **Inspect for and Remove Water in Fuel**
- **Inspect Float Switch**
- **Inspect Transfer Pump Operation**
- **Inspect Solenoid Valve Operation**
- **Inspect Flexible Hoses and Connections**
EMERGENCY GENERATOR INSPECTIONS

- Lubrication Oil
- Check Oil Level
- Check Oil Heater
- Cooling System
- Check Coolant Level
- Check Adequate Cooling Water to Heat Exchanger
- Check Adequate Fresh Air Through Radiator
- Inspect Water Pump
- Inspect Flexible Hoses and Connections
- Exhaust
- Inspect and Check for Leakage
- Check Drain Condensation (Trap)
EMERGENCY GENERATOR INSPECTIONS

• BATTERIES
• CHECK ELECTROLYTE LEVEL IF NOT MAINTENANCE FREE

• ELECTRICAL SYSTEM
• GENERAL INSPECTION

• INSPECT AND CLEAN GENERAL CONDITION OF EPSS
• CHECK FOR VIBRATION, LEAKAGE, NOISE, TEMPERATURE OR DETERIORATION

• INSPECT AND CLEAN SERVICE ROOM
• CHECK THAT SYSTEM IS IN AUTOMATIC CONDITION
STORAGE BATTERIES

• **Used in Level 1 and Level 2 systems shall be:**
  - **Inspected at intervals of not more than 7 days** (including electrolyte)
  - **Maintained in full compliance with manufacturer's specifications**
  - **Defective batteries shall be replaced immediately upon discovery of defects**
EMERGENCY GENERATOR INSPECTIONS

- Monthly in addition to weekly
- Inspect Fan Belt
- Inspect and Clean Battery Case
- Inspect Charge and Rate
- Inspect Equalize Charger
- Inspect Alternator Belt
- Inspect Governor Oil Level and Linkage
MONTHLY

• RUN AT LEAST 30 MINUTES UNDER LOAD

• UNDER OPERATING TEMPERATURE CONDITIONS AND NOT LESS THAN 30% OF THE EPS NAMEPLATE RATING OR (DIESEL)

• LOADING THAT MAINTAINS THE MINIMUM EXHAUST TEMP. RECOMMENDED BY THE MANUFACTURER (DIESEL)

• DIESEL-POWERED EPS THAT CANNOT ACHIEVE 30% LOADS MONTHLY CAN CONDUCT AN ANNUAL LOAD TEST WHERE THEY MUST ACHIEVE 50% LOAD FOR 30 CONTINUOUS MINUTES AND 75% FOR 60 CONTINUOUS MINUTES, WITH NO LESS THAT 90 CONTINUOUS MINUTES.
EMERGENCY GENERATOR TESTING

- DOCUMENT
- DATE
- NAME OF STAFF CONDUCTING TEST
- START TIME
- TIME TO TAKE OVER LOAD (10 SECONDS MAX)
- GAUGE READINGS INCLUDING
  - ENGINE TEMP, OIL PRESSURE, AMPS
- STOP TIME
- TOTAL ELAPSED TIME
- PERCENT OF GENERATOR LOAD CAPACITY DURING OPERATION
  - THIS IS NOT THE PERCENTAGE OF BUILDING POWERED BY GENERATOR
EMERGENCY GENERATOR TESTING

• Question: there a standard that says we need to write the start and stop time on our monthly generator load test for 30 minutes?

• Answer: section 8.4.2 of NFPA 110-2010 states yes
• **SPECIAL TOOLS AND TESTING DEVICES FOR ROUTINE MAINTENANCE SHALL BE AVAILABLE**

• **REPLACEMENT PARTS IDENTIFIED BY EXPERIENCE AS HIGH MORTALITY ITEMS SHALL BE MAINTAINED IN A SECURE LOCATION(S) ON THE PREMISES**

• **CONSIDERATION SHALL BE GIVEN TO STOCKING SPARE PARTS, RECOMMENDED BY THE MANUFACTURER**
Transfer Switches

- Transfer switches shall be inspected, tested, and have a maintenance schedule.
- Transfer switches shall be maintained free from accumulated dust and dirt.
- Inspection shall include examination of the transfer switch contacts for evidence of deterioration.
TRANSFER SWITCHES - INSPECTIONS
NFPA 110  8.3.5

SHALL INCLUDE:

• CHECKING OF CONNECTIONS
• INSPECTION FOR EVIDENCE OF OVERHEATING
• INSPECTION FOR EVIDENCE OF EXCESSIVE CONTACT EROSION
• REMOVAL OF DUST AND DIRT
• REPLACEMENT OF CONTACTS WHEN REQUIRED
TRANSFER SWITCHES - TESTING

• TRANSFER SWITCHES SHALL BE OPERATED MONTHLY
• SWITCHES ELECTRICALLY OPERATED FROM AUTO TO ON AND BACK TO AUTO POSITIONS
• MAIN BREAKERS AND FEEDER BREAKERS TESTED ANNUALLY WITH EPS OFF
TWO SETS OF INSTRUCTION MANUALS SHALL BE SUPPLIED AND SHALL CONTAIN THE FOLLOWING:

• A DETAILED EXPLANATION OF THE EPSS’S OPERATION
• INSTRUCTIONS FOR ROUTINE MAINTENANCE
• INSTRUCTIONS FOR REPAIR OF THE EPS AND THE EPSS
• AN ILLUSTRATED PARTS LIST AND PART NUMBERS
• ILLUSTRATED AND SCHEMATIC DRAWINGS OF ELECTRICAL WIRING INCLUDING OPERATING AND SAFETY DEVICES, CONTROL PANELS, INSTRUMENTATION, AND ANNUNCIATORS
MANUALS

FOR LEVEL 1 SYSTEMS:

• INSTRUCTION MANUALS SHALL BE KEPT IN A SECURE, CONVENIENT LOCATION
• ONE SET NEAR THE EQUIPMENT
• THE OTHER IN A SEPARATE LOCATION
K918: Observation during the inspection revealed there is no emergency stop button located remotely from the prime mover.

• All installations shall have a remote manual stop station
  - To prevent inadvertent or unintentional operation located
  - Outside the room housing the prime mover, where so installed
  - Or elsewhere on the premises where the prime mover is located outside the building.
COVID 19 ISSUES

1. Testing of Fire Alarm and Fire Sprinkler systems
2. Fire drills
3. Confine area’s
Questions

Website: https://sfm.dps.mn.gov
Thank you

MINNESOTA STATE FIRE MARSHAL DIVISION
445 Minnesota Street; Suite 145 Saint Paul, MN 55101

Website: https://sfm.dps.mn.gov
Phone: (651) 201-7200