Department of Energy

Condition Assessment Survey **(CAS)** Program

Deficiency Standards & Inspections Methods Manual

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BOOK TWO

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Disconnects	GSS 0.09.01.02.03
Metering	GSS 0.09.01.02.04
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Busway..	GSNS 0.09.01.02.01
Conductors & Fittings..	GSNS 0.09.01.02.02
Disconnects	GSNS 0.09.01.02.03
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GUIDE SHEET CROSS REFERENCE TABLES

GUIDE SHEETS

The following Guide Sheets provide a general overview of the inspection methods and requirements used to provide a general inspection of the Low Voltage **Distribution** System.

Assembly/Component	Control Number
STANDARD	
Busway	GSS 0.09.01.02.01
Conductors & Fittings	GSS 0.09.01.02.02
Disconnects	GSS 0.09.01.02.03
Metering	GSS 0.09.01.02.04
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NON-STANDARD	
Busway	GSNS 0.09.01.02.01
Conductors & Fittings	GSNS 0.09.01.02.02
Disconnects	GSNS 0.09.01.02.03
Metering	GSNS 0.09.01.02.04
Motors	GSNS 0.09.01.02.05
Motor Control Center	GSNS 0.09.01.02.06
Panelboard Assembly	GSNS 0.09.01.02.07
Raceway & Fittings	GSNS 0.09.01.02.08
Switchboard	GSNS 0.09.01.02.09
Transfer Switches	GSNS 0.09.01.02.10
Transformers	GSNS 0.09.01.02.11

GUIDE SHEET CROSS REFERENCE TABLES

GUIDE SHEETS

The following Guide Sheets provide a general overview of the inspection methods and requirements used to provide a general inspection of the Medium Voltage Distribution System.

Assembly/Component	Control Number
STANDARD	
Busway	GSS 0.09.01.02.01
Conductors & Fittings	GSS 0.09.01.02.02
Disconnects	GSS 0.09.01.02.03
Metering	GSS 0.09.01.02.04
Motors	GSS 0.09.01.02.05
Motor Control Center	GSS 0.09.01.02.06
Raceway & Fittings	GSS 0.09.01.02.08
Switchboard	GSS 0.09.01.02.09
Transfer Switches	GSS 0.09.01.02.10
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Busway	GSNS 0.09.01.02.01
Conductors & Fittings	GSNS 0.09.01.02.02
Disconnects	GSNS 0.09.01.02.03
Metering	GSNS 0.09.01.02.04
Motors	GSNS 0.09.01.02.05
Motor Control Center	GSNS 0.09.01.02.06
Raceway & Fittings	GSNS 0.09.01.02.08
Switchboard	GSNS 0.09.01.02.09
Transfer Switches	GSNS 0.09.01.02.10
Transformers	GSNS 0.09.01.02.11

GUIDE SHEET CROSS REFERENCE TABLES

GUIDE SHEETS

The following Guide Sheets provide a general overview of the inspection methods and requirements used to provide a general inspection of the Lighting System.

Assembly/Component	Control Number
STANDARD	
Conductors & Fittings	GSS 0.09.01.02.02
Raceway & Fittings	GSS 0.09.01.02.08
Luminaire	GSS 0.09.02.01
NON-STANDARD	
Conductors & Fittings	GSNS 0.09.01.02.02
Raceway & Fittings	GSNS 0.09.01.02.08
Luminaire	GSNS 0.09.02.01

GUIDE SHEET CROSS REFERENCE TABLES

GUIDE SHEETS

The following Guide Sheets provide a general overview of the inspection methods and requirements used to provide a general inspection of Special Systems.

Assembly/Component	Control Number
STANDARD	
Cable Tray..	GSS 0.09.03.01
Communication Circuits	GSS 0.09.03.02
Control Units	GSS 0.09.03.03
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Generators, Standby/Emergency..	GSS 0.09.03.05
Health Care Facilities Electrical Equipment	GSS 0.09.03.06
Heating, Baseboard Radiation..	GSS 0.09.03.07
Lightning Protection & Surge Suppression..	GSS 0.09.03.08
Petroleum Dispensing Facilities Electrical Equip..	GSS 0.09.03.09
Signal Circuits	GSS 0.09.03.10
Uninterruptible Power Supplies..	GSS 0.09.03.11
NON-STANDARD	
Cable Tray..	GSNS 0.09.03.01
Communication Circuits	GSNS 0.09.03.02
Control Units	GSNS 0.09.03.03
Data Processing Electrical Equipment..	GSNS 0.09.03.04
Generators, Standby/Emergency..	GSNS 0.09.03.05
Health Care Facilities Electrical Equipment	GSNS 0.09.03.06
Heating, Baseboard Radiation..	GSNS 0.09.03.07
Lightning Protection & Surge Suppression..	GSNS 0.09.03.08
Petroleum Dispensing Facilities Electrical Equip	GSNS 0.09.03.09
Signal Circuits	GSNS 0.09.03.10
Uninterruptible Power Supplies..	GSNS 0.09.03.11

GUIDE SHEET CROSS REFERENCE TABLES

END OF SUBSECTION

INSPECTION METHODS . STANDARD

GUIDE SHEETS

Guide Sheets provide a general overview of the inspection methods and requirements used to provide a general component inspection. Sheets have been developed for each major assembly/component as shown in TABLE ONE below:

TABLE ONE

INSPECTION METHODS - STANDARD

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INSPECTION METHODS . STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: BUSWAY
CONTROL NUMBER: GSS 0.09.01.02.01

APPLICATION

This guide applies to busway used in low and medium Voltage distribution system assemblies.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.

CONCURRENT ACTIONS

Annual preventive maintenance tasks.

INSPECTION ACTIONS

Condition assessment and evaluation of low and medium Voltage busway systems provide an input to the analysis of functional and physical deficiencies of an electrical distribution system. Because the system exists and is not in a construction process, regulatory deficiencies associated with installation of a busway system are not addressed.

PHYSICAL DEFICIENCIES

1.0 BUSWAY ENCLOSURE
1.1 Inappropriate for application
1.2 Not adequately secured to mounting surface
1.3 Not secured within 3 feet of end of run or enclosure
1.4 Bent, crushed, ruptured
1.5 Unused openings not covered or plugged
1.6 No bushing or equivalent protection
1.7 Supported by other raceway
1.8 Exterior rusted, corroded, or other physical damage
1.9 Interior rusted, corroded, or other physical damage
1.10 Hanger rusted, corroded, or other physical damage
1.11 Hanger not adequately secured to structure
1.12 Not grounded properly
1.13 Ventilation not adequate
1.14 Ventilation perforations covered, clogged, or plugged
1.15 Not clean and moisture-free

2.0 FITTING
2.1 Missing, broken, cracked, or other damage
2.2 Insert broken, cracked, missing, or other damage
2.3 Improper fitting for application
2.4 Unused openings not covered or plugged
2.5 Elbow improperly installed and connected
2.6 Tee improperly installed and connected
2.7 Crossover improperly installed and connected
2.8 Cable-tap boxes improperly installed and connected
2.9 Bus plugs improperly installed, connected, and/or inadequate for application
2.10 Expansion joint improperly placed and installed
2.11 Switchboard flange connection improperly installed and connected

INSPECTION METHODS . STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: BUSWAY (Continued)
CONTROL NUMBER: GSS 0.09.01.02.01

PHYSICAL DEFICIENCIES

3.0 CONDUCTORS & FITTINGS
Conductors and fittings other than control wiring encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSS 0.09.01.02.02.

4.0 METERING
4.1 Calibration standard not established
4.2 Device broken or other physical defect
4.3 Tampering of device or circuit
4.4 Device inadequately sized
4.5 Device inoperative

5.0 DISCONNECT
5.1 Blades bent or not aligned
5.2 Handle broken, bent, or other physical deformity
5.3 Inadequate size
5.4 Blade clip bent, malaligned, or other physical deformity
5.5 Clips pitted, burned, or discolored
5.6 Blades pitted, burned, or discolored
5.7 Improperly wired
5.8 Not accessible
5.9 Improper application
5.10 Improperly sized
5.11 No engineering study to support adjustable settings
5.12 High conductor, circuit breaker lug temperature as measured in thermographic test

6.0 FUSE UNIT
6.1 Improperly sized
6.2 Improper fuse type used
6.3 Fuse clips bent, malaligned, discolored, or other physical damage
6.4 Poor fuse to clip contact as measured using thermographic test

7.0 INSTALLATION
7.1 Missing, broken, cracked, or other damage
7.2 Insert broken, cracked, missing, or other damage
7.3 Improper fitting for application
7.4 Unused openings not covered or plugged
7.5 Elbow improperly installed and connected
7.6 Tee improperly installed and connected
7.7 Cross improperly installed and connected
7.0 Wye improperly installed and connected
7.9 Reducer improperly installed and connected
7.10 Divider improperly installed and connected
7.11 Drop out improperly installed and connected
7.12 End cap improperly installed and connected
7.13 Covers inappropriate for application
7.14 Covers improperly installed
7.15 Expansion joint improperly placed and installed
7.16 Panel connector improperly installed and connected

INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: BUSWAY (Continued)
CONTROL NUMBER: GSS 0.09.01.02.01

PHYSICAL DEFICIENCIES

8.0 CONTACTOR
8.1 Control circuits improperly connected
8.2 Indicator lamps inoperative
8.3 indicator lens missing, cracked, or broken
8.4 Noisy
8.5 Missing, loose, broken, or corroded hardware
8.6 Rheostat ventilation impeded
8.7 Plugging relays dirty or other contamination
8.8 Pushbuttons not labeled
8.9 Improper size
8.10 Thermal trip device wrong size
8.11 No engineering study to support thermal trip device rating
8.12 Coil discolored, burned, or other signs of high temperature

9.0 BUSBAR
9.1 Dirty or other contamination
9.2 Loose joints as measured using thermographic test
9.3 Current limiting busway not used as required

10.0 BUSHING/INSULATOR
10.1 Tracked or carbonized
10.2 Missing, cracked, chipped, or other damage
10.3 Oil leak
10.4 Dirty, oily, greasy, or other surface contamination
10.5 Not adequately secured to mounting surface

11.0 HEATER
11.1 Inadequate temperature in device enclosure
11.2 Excessive temperature in device enclosure
11.3 Not adequately secured to mounting surface
11.4 Improper conductors from source

12.0 CONTROL WIRING
12.1 Inappropriate for application
12.2 Bundled and trained inappropriately
12.3 Terminal boards improperly installed
12.4 Insulation charred, burned, or discolored
12.5 Splices improperly insulated
12.6 Unauthorized splice
12.7 Insulation improperly removed from conductor
12.8 Bimetallic connectors not used as required

13.0 MARKING
13.1 Illegible
13.2 Damaged or missing dataplate

14.0 LIGHTNING PROTECTION & SURGE SUPPRESSION
Lightning protection devices or surge suppressors encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSS 0.09.03.08.

INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: BUSWAY (Continued)
CONTROL NUMBER: GSS 0.09.01.02.01

TOOLS & MATERIALS

1. Light, portable
2. Infrared camera
3. Stepladder

INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: CONDUCTORS & FITTINGS
CONTROL NUMBER: GSS 0.09.01.02.02

APPLICATION

This guide applies to conductors and fittings used in low and medium Voltage distribution system assemblies. This guide does not apply to control wiring used in devices such as motor control centers or metering.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.

CONCURRENT ACTIONS

Annual preventive maintenance tasks.

INSPECTION ACTIONS

Condition assessment and evaluation of conductors and fittings used in low and medium Voltage distribution system provides an input to the analysis of functional and physical deficiencies of an electrical system. Because the system exists and is not in a construction process, regulatory deficiencies associated with installation of raceway and fittings are not addressed.

PHYSICAL DEFICIENCIES

1.0 CABLE/CONDUCTOR
1.1 Inappropriate for application
1.2 Insulation burned, charred, or other damage
1.3 Splices improperly insulated
1.4 Unauthorized splice
1.5 Not properly connected to device
1.6 Insulation improperly removed from conductor
1.7 Bimetallic connectors not used as required
1.8 Not properly supported in vertical run
1.9 Not properly bundled or trained

2.0 FITTING
2.1 Missing, broken, cracked, or other damage
2.2 Insert broken, cracked, missing, or other damage
2.3 Improper fitting for application
2.4 Unused openings not covered or plugged

3.0 MARKING
3.1 Illegible
3.2 Damaged or missing dataplate

TOOLS & MATERIALS

1. Light, portable
2. Infrared camera
3. Stepladder

INSPECTION METHODS - STANDARD

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INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: DISCONNECTS
CONTROL NUMBER: GSS 0.09.01 .02.03

APPLICATION

This guide covers those disconnects (switches with or without fuse blocks and isolating switches) and circuit breakers employed as disconnects that are normally used in low and medium Voltage distribution systems as stand alone devices; that is, the device is not part of some larger assembly. A separate guide exists for transfer switches.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.

CONCURRENT ACTIONS

Preventive maintenance tasks,

INSPECTION ACTIONS

Condition assessment and evaluation of circuit breakers and disconnects provides input to an analysis of functional and physical deficiencies of an electrical system. Because the system exists and is not in a construction process, regulatory deficiencies associated with disconnects are not addressed.

PHYSICAL DEFICIENCIES

1.0 CONDUCTORS & FITTINGS
Conductors and fittings other than control wiring encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSS 0.09.01.02.02.

2.0 ENCLOSURE
2.1 Not adequate for application
2.2 Corroded, rusted, dented, or other physical damage
2.3 Not secured to mounting surface
2.4 Unused openings not covered or plugged
2.5 Not grounded properly
2.6 Pedestal mounting surface chipped, cracked, broken, or other physical damage
2.7 Not accessible
2.8 Vent defective/nonoperative
2.9 Oil leak
2.10 No curbing or berm for oil containment
2.11 Not clean and moisture-free

3.0 DISCONNECT
3.1 Blades bent or not aligned
3.2 Handle broken, bent, or other physical deformity
3.3 Inadequate size
3.4 Blade clip bent, malaligned, or other physical deformity
3.5 Clips pitted, burned, or discolored
3.6 Blades pitted, burned, or discolored
3.7 Improperly wired
3.8 Not accessible

INSPECTION METHODS . STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: DISCONNECTS (Continued)
CONTROL NUMBER: GSS 0.09.01.02.03

PHYSICAL DEFICIENCIES

3.0 DISCONNECT
3.9 Improper application
3.10 Improperly sized
3.11 No engineering study to support adjustable settings
3.12 High conductor, circuit breaker lug temperature as measured using thermographic test

4.0 BUSHING/INSULATOR
4.1 Tracked or carbonized
4.2 Missing, cracked, chipped, or other damage
4.3 Oil leak
4.4 Dirty, oily, greasy, or other surface contamination
4.5 Not adequately secured to mounting surface

5.0 FUSE UNIT
5.1 Improperly sized
5.2 Improper fuse type used
5.3 Fuse clips bent, malaligned, discolored, or other physical damage
5.4 Poor fuse to clip contact as measured using thermographic test

6.0 PRESSURE RELIEF
6.1 High internal pressure
6.2 No internal pressure

7.0 HEATER
7.1 Inadequate temperature in device enclosure
7.2 Excessive temperature in device enclosure
7.3 Not adequately secured to mounting surface
7.4 Improper conductors from source

8.0 CONTROL WIRING
8.1 Inappropriate for application
8.2 Bundled and trained inappropriately
8.3 Terminal boards improperly installed
8.4 Insulation charred, burned, or discolored
8.5 Splices improperly insulated
8.6 Unauthorized splice
8.7 Insulation improperly removed from conductor
8.8 Bimetallic connectors not used as required

9.0 MARKING
9.1 Illegible
9.2 Damaged or missing dataplate

10.0 INSULATING LIQUID
10.1 Low liquid level

TOOLS & MATERIALS

1. Light, portable
2. Infrared camera
3. Stepladder

INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: METERING
CONTROL NUMBER: GSS 0.09.01.02.04

APPLICATION

This guide applies to metering used in electrical system assemblies.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.

CONCURRENT ACTIONS

Annual preventive maintenance tasks.

INSPECTION ACTIONS

Condition assessment and evaluation of metering systems provides an input to the analysis of functional and physical deficiencies of an electrical system. Because the system exists and is not in a construction process, regulatory deficiencies associated with installation of a metering system are not addressed.

PHYSICAL DEFICIENCIES

1.0 METERING
1.1 Calibration standard not established
1.2 Device broken or other physical defect
1.3 Tampering of device or circuit
1.4 Device inadequately sized
1.5 Device inoperative

2.0 CONDUCTORS & FITTINGS
Conductors and fittings other than control wiring encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSS 0.09.01.02.02.

3.0 DISCONNECT
3.1 Blades bent or not aligned
3.2 Handle broken, bent, or other physical deformity
3.3 Inadequate size
3.4 Blade clip bent, malaligned, or other physical deformity
3.5 Clips pitted, burned, or discolored
3.6 Blades pitted, burned, or discolored
3.7 Improperly wired
3.6 Not accessible
3.9 Improper application
3.10 improperly sized
3.11 No engineering study to support adjustable settings
3.12 High conductor, circuit breaker lug temperature as measured using thermographic test

4.0 FUSE UNIT
4.1 Improperly sized
4.2 Improper fuse type used
4.3 Fuse clips bent, malaligned, discolored, or other physical damage

INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: METERING (Continued)
CONTROL NUMBER: GSS 0.09.01.02.04

PHYSICAL DEFICIENCIES

4.0 FUSE UNIT
4.4 Poor fuse to clip contact as measured using thermographic test

5.0 BUSBAR
5.1 Dirty or other contamination
5.2 Loose joints as measured using thermographic test
5.3 Current limiting busway not used as required

6.0 BUSHING/INSULATOR
6.1 Tracked or carbonized
6.2 Missing, cracked, chipped, or other damage
6.3 Oil leak
6.4 Dirty, oily, greasy, or other surface contamination
6.5 Not adequately secured to mounting surface

7.0 CONTROL WIRING
7.1 Inappropriate for application
7.2 Bundled and trained inappropriately
7.3 Terminal boards improperly installed
7.4 Insulation charred, burned, or discolored
7.5 Splices improperly insulated
7.6 Unauthorized splice
7.7 Insulation improperly removed from conductor
7.8 Bimetallic connectors not used as required

8.0 MARKING
8.1 Illegible
8.2 Damaged or missing dataplate

9.0 LIGHTING PROTECTION/SURGE PROTECTION DEVICES
Lightning protection devices or surge suppressors encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSS 0.09.03.08.

TOOLS & MATERIALS

1. Light, portable
2. Infrared camera
3. Stepladder

INSPECTION METHODS . STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: MOTORS
CONTROL NUMBER: GSS 0.09.01.02.05

APPLICATION

This guide applies to motors larger than 10 horsepower used in low and medium Voltage distribution system assemblies. This guide does not apply to motors of ten 10 horsepower and less; such motors are addressed as part of the system that employs the motor.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.

CONCURRENT ACTIONS

Annual preventive maintenance tasks.

INSPECTION ACTIONS

Condition assessment and evaluation of motors used in low and medium Voltage distribution system provides an input to the analysis of functional and physical deficiencies of an electrical system. Because the system exists and is not in a construction process, regulatory deficiencies associated with installation of motors are not addressed.

PHYSICAL DEFICIENCIES

1.0 CABLE/CONDUCTOR
1.1 Inappropriate for application
1.2 Insulation burned, charred, or other damage
1.3 Splice insulation unraveled, brittle, cracked, or other damage
1.4 Unauthorized splice
1.5 Not properly connected to device
1.6 Insulation improperly removed from conductor
1.7 Bimetallic connectors not used as required
1.8 Not properly bundled or trained

2.0 FITTING
2.1 Missing, broken, cracked, or other damage
2.2 Insert broken, cracked, missing, or other damage
2.3 Improper fitting for application
2.4 Unused openings not covered or plugged

3.0 BEARINGS
3.1 High bearing temperature as measured in thermographic test
3.2 Rough or irregular bearing during rotation as measured in vibration analysis
3.3 Leaking seals

4.0 ROTOR/STATOR
4.1 Not clean and moisture-free

5.0 MOUNT
5.1 Dirty or other internal or external surface contamination
5.2 Not properly secured to mounting structure
5.3 Mounting structure inadequate

INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: MOTORS (Continued)
CONTROL NUMBER: GSS 0.09.01.02.05

PHYSICAL DEFICIENCIES

5.0 MOUNT
5.4 Motor not adequately secured to mount

6.0 MOTOR APPLICATION
6.1 Inappropriate starting system
6.2 Improper motor size
6.3 Improper rotation as determined by stroboscope
6.4 Improper connection of bimetallic elements
6.5 Improper speed as measured with stroboscope

7.0 HEATER
7.1 Inadequate temperature in device enclosure
7.2 Excessive temperature in device enclosure
7.3 Not adequately secured to mounting surface
7.4 Improper conductors from source

8.0 MARKING
8.1 Illegible
8.2 Damaged or missing dataplate

9.0 LIGHTNING PROTECTION &SURGE SUPPRESSION
Lightning protection devices or surge suppressors encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSS 0.09.03.08.

TOOLS & MATERIALS

1. Light, portable
2. infrared camera
3. Stepladder

INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: MOTOR CONTROL CENTERS
CONTROL NUMBER: GSS 0.09.01.02.06

APPLICATION

This guide covers those devices normally used in an assembly of low and medium Voltage motor control centers.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.

CONCURRENT ACTIONS

Preventive maintenance tasks.

INSPECTION ACTIONS

Condition assessment and evaluation of low and medium Voltage motor control center assemblies provides input to an analysis of functional and physical deficiencies of low and medium Voltage distribution systems, Because the system exists and is not in a construction process, regulatory deficiencies associated with motor control centers are not addressed.

PHYSICAL DEFICIENCIES

1.0 CONDUCTORS & FITTINGS
Conductors and fittings other than control wiring encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSS 0.09.01.02.02.

2.0 ENCLOSURE
2.1 Not adequate for application
2.2 Corroded, rusted, dented, or other physical damage
2.3 Not secured to mounting surface
2.4 Unused openings not covered or plugged
2.5 Not grounded properly
2.6 Pedestal mounting surface chipped, cracked, broken, or other physical damage
2.7 Not accessible
2.8 Vent defective/nonoperative
2.9 Oil leak
2.10 No curbing or berm for oil containment
2.11 Not clean and moisture-free

3.0 DISCONNECT
3.1 Blades bent or not aligned
3.2 Handle broken, bent, or other physical deformity
3.3 Inadequate size
3.4 Blade clip bent, malaligned, or other physical deformity
3.5 Clips pitted, burned, or discolored
3.6 Blades pitted, burned, or discolored
3.7 Improperly wired
3.8 Not accessible
3.9 Improper application

INSPECTION METHODS . STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: MOTOR CONTROL CENTERS (Continued)
CONTROL NUMBER: GSS 0.09.01.02.06

PHYSICAL DEFICIENCIES

3.0 DISCONNECT
3.10 Improperly sized
3.11 No engineering study to support adjustable settings
3.12 High conductor, circuit breaker lug temperature as measured using thermographic test

4.0 FUSE UNIT
4.1 Improperly sized
4.2 Improper fuse type used
4.3 Fuse clips bent, malaligned, discolored, or other physical damage
4.4 Poor fuse to clip contact as measured using thermographic test

5.0 PRESSURE RELIEF
5.1 High internal pressure
5.2 No internal pressure

6.0 CONTACTOR
6.1 Control circuits improperly connected
6.2 Indicator lamps inoperative
6.3 Indicator lens missing, cracked, or broken
6.4 Noisy
6.5 Missing, loose, broken, or corroded hardware
6.6 Rheostat ventilation impeded
6.7 Plugging relays dirty or other contamination
6.8 Pushbuttons not labeled
6.9 Improper size
6.10 Thermal trip device wrong size
6.11 No engineering study to support thermal trip device rating
6.12 Coil discolored, burned, or other signs of high temperature

7.0 HEATER
7.1 Inadequate temperature in device enclosure
7.2 Excessive temperature in device enclosure
7.3 Not adequately secured to mounting surface
7.4 Improper conductors from source

8.0 BUSHING/INSULATOR
8.1 Tracked or carbonized
8.2 Missing, cracked, chipped, or other damage
8.3 Oil leak
8.4 Dirty, oily, greasy, or other surface contamination
8.5 Not adequately secured to mounting surface

9.0 CONTROL WIRING
9.1 Inappropriate for application
9.2 Bundled and trained inappropriately
9.3 Terminal boards improperly installed
9.4 Insulation charred, burned, or discolored
9.5 Splices improperly insulated
9.6 Unauthorized splice
9.7 Insulation improperly removed from conductor

INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: MOTOR CONTROL CENTERS (Continued)
CONTROL NUMBER: GSS 0.09.01.02.06

PHYSICAL DEFICIENCIES

9.0 CONTROL WIRING
9.8 Bimetallic connectors not used as required

10.0 BUS
10.1 Discolored, warped, or other signs of high temperature
10.2 Insulated connections unraveled, brittle, cracked, or other physical damage
10.3 Dirty or other contamination
10.4 Loose joints as measured using thermographic test

11.0 METERING
11.1 Calibration standard not established
11.2 Device broken or other physical defect
11.3 Tampering of device or circuit
11.4 Device inadequately sized
11.5 Device inoperative

12.0 EQUIPMENT PROTECTION
12.1 Improper or inadequate primary protection device
12.2 Improper or inadequate secondary protection device
12.3 Improper or inadequate differential protection device
12.4 No engineering study to support protection scheme

13.0 MARKING
13.1 Illegible
13.2 Damaged or missing dataplate

14.0 TRANSFORMERS
Transformers encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSS 0.09.01.02.11.

15.0 PANELBOARDS
Panelboards encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSS 0.09.01.02.07.

16.0 TRANSFER SWITCHES
Transfer switches encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSS 0.09.01.02.10.

17.0 INSULATING LIQUID
17.1 Low liquid level

18.0 LIGHTNING PROTECTION & SURGE SUPPRESSION
Lightning protection devices or surge suppressors encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSS 0.09.03.08.

TOOLS & MATERIALS

1. Light, portable
2. Infrared camera
3. Stepladder

INSPECTION METHODS . STANDARD

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INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: RACEWAY & FITTINGS
CONTROL NUMBER: GSS 0.09.01.02.08

APPLICATION

This guide applies to raceway and fittings used in low or medium Voltage distribution system assemblies.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.

CONCURRENT ACTIONS

Annual preventive maintenance tasks.

INSPECTION ACTIONS

Condition assessment and evaluation of raceway and fittings used in low and medium Voltage distribution system provides an input to the analysis of functional and physical deficiencies of an electrical system. Because the system exists and is not in a construction process, regulatory deficiencies associated with installation of raceway and fittings are not addressed.

PHYSICAL DEFICIENCIES

1.0 RACEWAY
1.1 Inappropriate for application
1.2 Not adequately secured to mounting surface
1.3 Not adequately secured to enclosure
1.4 Not secured within 3 feet of end of run or enclosure
1.5 More than 360 degrees of bend between pull points
1.6 Bent, crushed, ruptured
1.7 Unused openings not covered or plugged
1.8 No bushing or equivalent protection
1.9 Supported by other raceway
1.10 Exterior rusted, corroded, or other physical damage
1.11 Excessive run of flexible conduit
1.12 Interior rusted, corroded, or other physical damage
1.13 Hanger rusted, corroded, or other physical damage
1.14 Hanger not adequately secured to structure

2.0 FIll-ING
2.1 Missing, broken, cracked, or other damage
1.2 Insert broken, cracked, missing, or other damage
2.3 Improper fitting for application
2.4 Unused openings not covered or plugged

3.0 MARKING
3.1 Illegible
3.2 Damaged or missing dataplate

INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: RACEWAY & FITTINGS (Continued)
CONTROL NUMBER: GSS 0.09.01.02.08

TOOLS & MATERIALS

1. Light, portable
2. Infrared camera
3. Stepladder

INSPECTION METHODS . STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: SWITCHBOARD ASSEMBLY
CONTROL NUMBER: GSS 0.09.01.02.09

APPLICATION

This guide applies to switchboard assemblies used as part of a low and medium Voltage distribution systems. Switchboards used in medium Voltage systems are often referred to as switchgear.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.

CONCURRENT ACTIONS

Preventive maintenance tasks.

INSPECTION ACTIONS

Condition assessment and evaluation of switchboard assemblies used in low and medium Voltage distribution systems provide input to an analysis of functional and physical deficiencies of the low and medium Voltage distribution system. Because the system exists and is not in a construction process, regulatory deficiencies associated with switchboards are not addressed.

PHYSICAL DEFICIENCIES

1.0 CONDUCTORS & FITTINGS
Conductors and fittings other than control wiring encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSS 0.09.01.02.02.

2.0 BUS
2.1 Discolored, warped, or other signs of high temperature
2.2 Insulated connections unraveled, brittle, cracked, or other physical damage
2.3 Dirty or other contamination
2.4 Loose joints as measured using thermographic test

3.0 ENCLOSURE
3.1 Not adequate for application
3.2 Corroded, rusted, dented, or other physical damage
3.3 Not secured to mounting surface
3.4 Unused openings not covered or plugged
3.5 Not grounded properly
3.6 Pedestal mounting surface chipped, cracked, broken, or other physical damage
3.7 Not accessible
3.8 Vent defective/nonoperative
3.9 Oil leak
3.10 No curbing or berm for oil containment
3.11 Not clean and moisture-free

4.0 DISCONNECT
4.1 Blades bent or not aligned
4.2 Handle broken, bent, or other physical deformity
4.3 Inadequate size

INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: SWITCHBOARD ASSEMBLY (Continued)
CONTROL NUMBER: GSS 0.09.01.02.09

PHYSICAL DEFICIENCIES

4.0 DISCONNECT
4.4 Blade clip bent, malaligned, or other physical deformity
4.5 Clips pitted, burned, or discolored
4.6 Blades pitted, burned, or discolored
4.7 Improperly wired
4.8 Not accessible
4.9 Improper application
4.10 Improperly sized
4.11 No engineering study to support adjustable settings
4.12 High conductor, circuit breaker lug temperature as measured using thermographic test

5.0 FUSE UNIT
5.1 Improperly sized
5.2 Improper fuse type used
5.3 Fuse clips bent, malaligned, discolored, or other physical damage
5.4 Poor fuse to clip contact as measured using thermographic test

6.0 PRESSURE RELIEF
6.1 High internal pressure
6.2 No internal pressure

7.0 HEATER
7.1 Inadequate temperature in device enclosure
7.2 Excessive temperature in device enclosure
7.3 Not adequately secured to mounting surface
7.4 Improper conductors from source

8.0 BUSHING/INSULATOR
8.1 Tracked or carbonized
8.2 Missing, cracked, chipped, or other damage
8.3 Oil leak
8.4 Dirty, oily, greasy, or other surface contamination
8.5 Not adequately secured to mounting surface

9.0 CONTROL WIRING
9.1 Inappropriate for application
9.2 Bundled and trained inappropriately
9.3 Terminal boards improperly installed
9.4 Insulation charred, burned, or discolored
9.5 Splices improperly insulated
9.6 Unauthorized splice
9.7 Insulation improperly removed from conductor
9.8 Bimetallic connectors not used as required

10.0 METERING
10.1 Calibration standard not established
10.2 Device broken or other physical defect
10.3 Tampering of device or circuit
10.4 Device inadequately sized
10.5 Device inoperative

INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: SWITCHBOARD ASSEMBLY (Continued)
CONTROL NUMBER: GSS 0.09.01.02.09

PHYSICAL DEFICIENCIES

11.0 EQUIPMENT PROTECTION
11.1 Improper or inadequate primary protection device
11.2 Improper or inadequate secondary protection device
11.3 Improper or inadequate differential protection device
11.4 No engineering study to support protection scheme

12.0 MARKING
12.1 Illegible
12.2 Damaged or missing dataplate

13.0 TRANSFORMERS
Transformers encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSS 0.09.01.02.11.

14.0 PANELBOARDS
Panelboards encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSS 0.09.01.02.07.

15.0 INSULATING LIQUID
15.1 Low liquid level

16.0 LIGHTNING PROTECTION & SURGE SUPPRESSION
Lightning protection devices or surge suppressors encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSS 0.09.03.08.

TOOLS & MATERIALS

1. Light, portable
2. Infrared camera
3. Stepladder

INSPECTION METHODS - STANDARD

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INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: TRANSFER SWITCHES
CONTROL NUMBER: GSS 0.09.01.02.10

APPLICATION

This guide covers switches with or without automatic control circuits.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.

CONCURRENT ACTIONS

Preventive maintenance tasks.

INSPECTION ACTIONS

Condition assessment and evaluation of transfer switches provides input to an analysis of functional and physical deficiencies of the low and medium Voltage distribution system. Because the system exists and is not in a construction process, regulatory deficiencies associated with switches are not addressed.

PHYSICAL DEFICIENCIES

1.0 CONDUCTORS & FITTINGS
Conductors and fittings other than control wiring is encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSS 0.09.01.02.02.

2.0 ENCLOSURE
2.1 Not adequate for application
2.2 Corroded, rusted, dented, or other physical damage
2.3 Not secured to mounting surface
2.4 Unused openings not covered or plugged
2.5 Not grounded properly
2.6 Pedestal mounting surface chipped, cracked, broken, or other physical damage
2.7 Not accessible
2.8 Vent defective/nonoperative
2.9 Oil leak
2.10 No curbing or berm for oil containment
2.11 Not clean and moisture-free

3.0 DISCONNECT
3.1 Blades bent or not aligned
3.2 Handle broken, bent, or other physical deformity
3.3 Inadequate size
3.4 Blade clip bent, malaligned, or other physical deformity
3.5 Clips pitted, burned, or discolored
3.6 Blades pitted, burned, or discolored
3.7 Improperly wired
3.8 Not accessible
3.9 Improper application

INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: TRANSFER SWITCHES (Continued)
CONTROL NUMBER: GSS 0.09.01.02.10

PHYSICAL DEFICIENCIES

3.0 DISCONNECT
3.10 Improperly sized
3.11 No engineering study to support adjustable settings
3.12 High conductor-circuit breaker lug temperature as measured using thermographic test

4.0 BUSHING/INSULATOR
4.1 Tracked or carbonized
4.2 Missing, cracked, chipped, or other damage
4.3 Oil leak
4.4 Dirty, oily, greasy, or other surface contamination
4.5 Not adequately secured to mounting surface

5.0 SOLENOID
5.1 Fitting missing or inappropriate
5.2 Noisy
5.3 Missing, loose, broken, or corroded hardware
5.4 Relays dirty or other contamination
5.5 Improper size
5.6 Coil discolored, burned, or other signs of high temperature

6.0 CONTROL WIRING
6.1 Adjustable settings not in accordance with engineering study
6.2 Indicator lamps inoperative
6.3 Indicator lens missing, cracked, or broken
6.4 Bimetallic connectors not used as required
6.5 Inappropriate for application
6.6 insulation is charred, brittle, discolored
6.7 Incorrect fuse installed
6.8 No engineering study to support installed fuse
6.9 Inadequate fuse/connection tension
6.10 Control circuits improperly connected
6.11 Bundled and trained inappropriately
6.12 Terminal boards improperly installed
6.13 Splices improperly insulated
6.14 Unauthorized splice
6.15 Insulation improperly removed from conductor

7.0 HEATER
7.1 Inadequate temperature in device enclosure
7.2 Excessive temperature in device enclosure
7.3 Not adequately secured to mounting surface
7.4 Improper conductors from source

8.0 METERING
8.1 Calibration standard not established
8.2 Device broken or other physical defect
8.3 Tampering of device or circuit
8.4 Device inadequately sized
8.5 Device inoperative

INSPECTION METHODS ▪ STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: TRANSFER SWITCHES (Continued)
CONTROL NUMBER: GSS 0.09.01.02.10

PHYSICAL DEFICIENCIES

9.0 MARKING
9.1 Illegible
9.2 Damaged or missing dataplate

10.0 INSULATING LIQUID
10.1 Low liquid level

11.0 PRESSURE RELIEF
11.1 High internal pressure
11.2 No internal pressure

12.0 BUS
12.1 Discolored, warped, or other signs of high temperature
12.2 Insulated connections unraveled, brittle, cracked, or other physical damage
12.3 Dirty or other contamination
12.4 Loose joints as measured using thermographic test

13.0 LIGHTNING PROTECTION & SURGE SUPPRESSION
Lightning protection devices or surge suppressors encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSS 0.09.03.08.

TOOLS & MATERIALS

1. Light, portable
2. Infrared camera
3. Stepladder

INSPECTION METHODS - STANDARD

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INSPECTION METHODS . STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: TRANSFORMERS
CONTROL NUMBER: GSS 0.09.01.02.11

APPLICATION

This guide applies to transformers used to provide voltage at the required level in an electrical system.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.

CONCURRENT ACTIONS

Annual preventive maintenance tasks.

INSPECTION ACTIONS

Condition assessment and evaluation of transformers provide an input to the analysis of functional and physical deficiencies of an electrical distribution system. Because the system exists and is not in a construction process, regulatory deficiencies associated with installation of transformers are not addressed.

PHYSICAL DEFICIENCIES

1.0 CONDUCTORS & FITTINGS
Conductors and fittings other than control wiring encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSS 0.09.01.02.02.

2.0 TRANSFORMER
2.1 Ventilation obstructed
2.2 Improper guarding
2.3 Noisy
2.4 Unused taps not insulated
2.5 Inadequate rating
2.6 High operating temperature when measured in thermographic test
2.7 High cable termination temperature when measured in thermographic test
2.8 Location not adequately ventilated
2.9 Corona

3.0 ENCLOSURE
3.1 Not adequate for application
3.2 Corroded, rusted, dented, or other physical damage
3.3 Not secured to mounting surface
3.4 Unused openings not covered or plugged
3.5 Not grounded properly
3.6 Pedestal mounting surface chipped, cracked, broken, or other physical damage
3.7 Not accessible
3.8 Vent defective/nonoperative
3.9 Oil leak
3.10 No curbing or berm for oil containment
3.11 Not clean and moisture-free

INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: TRANSFORMERS (Continued)
CONTROL NUMBER: GSS 0.09.01.02.11

PHYSICAL DEFICIENCIES

4.0 HEATER
4.1 Inadequate temperature in device enclosure
4.2 Excessive temperature in device enclosure
4.3 Not adequately secured to mounting surface
4.4 Improper conductors from source
4.5 Not adequately secured to mounting surface

5.0 BUSHING/INSULATOR
5.1 Tracked or carbonized
5.2 Missing, cracked, chipped, or other damage
5.3 Oil leak
5.4 Dirty, oily, greasy, or other surface contamination

6.0 EQUIPMENT PROTECTION
6.1 No engineering study to support protection scheme

7.0 METERING
7.1 Calibration standard not established
7.2 Device broken or other physical defect
7.3 Tampering of device or circuit
7.4 Device inadequately sized
7.5 Device inoperative
7.6 Improper Display

8.0 CONTROL WIRING
8.1 Inappropriate for application
8.2 Bundled and trained inappropriately
8.3 Terminal boards improperly installed
8.4 Insulation charred, burned, or discolored
8.5 Splices improperly insulated
8.6 Unauthorized splice
8.7 Insulation improperly removed from conductor
8.8 Bimetallic connectors not used as required

9.0 MARKING
9.1 Illegible
9.2 Damaged or missing dataplate

10.0 INSULATING LIQUID
10.1 Low liquid level

11.0 PRESSURE RELIEF
11.1 High internal pressure
11.2 No internal pressure

12.0 VENTILATION
12.1 High operating temperature
12.2 Inlets clogged
12.3 Obstructed
12.4 Location not ventilated

INSPECTION METHODS ▪ STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: TRANSFORMERS (Continued)
CONTROL NUMBER: GSS 0.09.01.02.11

PHYSICAL DEFICIENCIES

13.0 LIGHTNING PROTECTION & SURGE SUPPRESSION
Lightning protection devices or surge suppressors encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSS 0.09.03.08.

14.0 DISCONNECTS
Disconnects encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSS 0.09.01.02.03.

TOOLS & MATERIALS

1. Light, portable
2. Infrared camera
3. Stepladder

INSPECTION METHODS - STANDARD

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INSPECTION METHODS ▪ STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: SERVICE ENTRANCE ASSEMBLY
CONTROL NUMBER: GSS 0.09.01 .01

APPLICATION

This guide applies to all service entrance assemblies.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.

CONCURRENT ACTIONS

Annual preventive maintenance tasks.

INSPECTION ACTIONS

Condition assessment and evaluation of service entrance assemblies provides an analysis of functional and physical deficiencies of an electrical service entrance system. Because the system exists and is not in a construction process, regulatory deficiencies associated with installation of service entrance assemblies are not addressed.

PHYSICAL DEFICIENCIES

1.0 BUSWAY
Busways encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSS 0.09.02.01.

2.0 CONDUCTORS & FITTINGS
Conductors and fittings other than control are encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSS 0.09.01.02.02.

3.0 DISCONNECTS
Disconnects encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSS 0.09.02.03.

4.0 METERING
Metering encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSS 0.09.02.04.

5.0 RACEWAY & FITTINGS
Raceway and fittings encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSS 0.09.02.08.

TOOLS & MATERIALS

1. Light, portable
2. Infrared camera
3. Stepladder

INSPECTION METHODS - STANDARD

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INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: LOW VOLTAGE DISTRIBUTION SYSTEM ASSEMBLY
CONTROL NUMBER: GSS 0.09.01.02

APPLICATION

This guide applies to all low Voltage Distribution System assemblies.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.

CONCURRENT ACTIONS

Annual preventive maintenance tasks.

INSPECTION ACTIONS

Condition assessment and evaluation of low Voltage distribution System assemblies provides an analysis of functional and physical deficiencies of an electrical system. Because the system exists and is not in a construction process, regulatory deficiencies associated with installation of the assembly are not addressed.

PHYSICAL DEFICIENCIES

1.0 BUSWAY
Busways encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSS 0.09.02.01.

2.0 CONDUCTORS & FITTINGS
Conductors and fittings other than control are encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSS 0.09.01.02.02.

3.0 DISCONNECTS
Disconnects encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSS 0.09.02.03.

4.0 METERING
Metering encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSS 0.09.02.04.

5.0 MOTORS
Motors encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSS 0.09.02.05.

6.0 MOTOR CONTROL CENTER
Motor control centers encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSS 0.09.02.06.

7.0 PANELBOARDS
Panelboards encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSS 0.09.02.07.

8.0 RACEWAY & FITTINGS
Raceway and fittings encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSS 0.09.02.08.

INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: LOW VOLTAGE DISTRIBUTION SYSTEM (Continued)
CONTROL NUMBER: GSS 0.09.01.02

PHYSICAL DEFICIENCIES

9.0 SWITCHBOARDS
Switchboards encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSS 0.09.02.09.

10.0 TRANSFER SWITCHES
Transfer switches encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSS 0.09.02.10.

11.0 TRANSFORMERS
Transformers encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSS 0.09.02.11.

TOOLS & MATERIALS

1. Light, portable
2. Infrared camera
3. Stepladder

INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: PANELBOARD ASSEMBLY
CONTROL NUMBER: GSS 0.09.01.02.07

APPLICATION

This guide applies to low Voltage panelboard assemblies as used in low Voltage distribution systems.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.

CONCURRENT ACTIONS

Preventive maintenance tasks.

INSPECTION ACTIONS

Condition assessment and evaluation of low Voltage panelboard assemblies provides input to an analysis of functional and physical deficiencies of the low Voltage distribution system. Because the system exists and is not in a construction process, regulatory deficiencies associated with panelboards are not addressed.

PHYSICAL DEFICIENCIES

1.0 CONDUCTORS & FITTINGS
Conductors and fittings other than control wiring is encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSS 0.09.01.02.02.

2.0 ENCLOSURE
2.1 Not adequate for application
2.2 Corroded, rusted, dented, or other physical damage
2.3 Not secured to mounting surface
2.4 Unused openings not covered or plugged
2.5 Not grounded properly
2.6 Pedestal mounting surface chipped, cracked, broken, or other physical damage
2.7 Not accessible
2.8 Vent defective/nonoperative
2.9 Oil leak
2.10 No curbing or berm for oil containment
2.11 Not clean and moisture-free

3.0 DISCONNECT
3.1 Blades bent or not aligned
3.2 Handle broken, bent, or other physical deformity
3.3 Inadequate size
3.4 Blade clip bent, malaligned, or other physical deformity
3.5 Clips pitted, burned, or discolored
3.6 Blades pitted, burned, or discolored
3.7 Improperly wired
3.8 Not accessible
3.9 Improper application

INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: PANELBOARD ASSEMBLY (Continued)
CONTROL NUMBER: GSS 0.09.01.02.07

PHYSICAL DEFICIENCIES

3.0 DISCONNECT
3.10 Improperly sized
3.11 No engineering study to support adjustable settings
3.12 High conductor, circuit breaker lug temperature as measured using thermographic test

4.0 FUSE UNIT
4.1 Improperly sized
4.2 Improper fuse type used
4.3 Fuse clips bent, malaligned, discolored, or other physical damage
4.4 Poor fuse to clip contact as measured using thermographic test

5.0 HEATER
5.1 Inadequate temperature in device enclosure
5.2 Excessive temperature in device enclosure
5.3 Not adequately secured to mounting surface
5.4 improper conductors from source

6.0 BUSHING/INSULATOR
6.1 Tracked or carbonized
6.2 Missing, cracked, chipped, or other damage
6.3 Oil leak
6.4 Dirty, oily, greasy, or other surface contamination
6.5 Not adequately secured to mounting surface

7.0 BUS
7.1 Discolored, warped, or other signs of high temperature
7.2 Insulated connections unraveled, brittle, cracked, or other physical damage
7.3 Dirty or other contamination
7.4 Loose joints as measured using thermographic test

8.0 METERING
8.1 Calibration standard not established
8.2 Device broken or other physical defect
8.3 Tampering of device or circuit
8.4 Device inadequately sized
8.5 Device inoperative

9.0 CONTROL WIRING
9.1 Inappropriate for application
9.2 Bundled and trained inappropriately
9.3 Terminal boards improperly installed
9.4 Insulation charred, burned, or discolored
9.5 Splices improperly insulated
9.6 Unauthorized splice
9.7 Insulation improperly removed from conductor
9.8 Bimetallic connectors not used as required

INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: PANELBOARD ASSEMBLY (Continued)
CONTROL NUMBER: GSS 0.09.01.02.07

PHYSICAL DEFICIENCIES

10.0 MARKING
10.1 Illegible
10.2 Damaged or missing dataplate

11.0 LIGHTNING PROTECTION & SURGE SUPPRESSION
Lightning protection devices or surge suppressors encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSS 0.09.03.08.

TOOLS & MATERIALS

1. Light, portable
2. Infrared camera
3. Stepladder

INSPECTION METHODS . STANDARD

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INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: MEDIUM VOLTAGE DISTRIBUTION SYSTEM ASSEMBLY
CONTROL NUMBER: GSS 0.09.01.03

APPLICATION

This guide applies to all Medium Voltage Distribution System assemblies.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.

CONCURRENT ACTIONS

Annual preventive maintenance tasks.

INSPECTION ACTIONS

Condition assessment and evaluation of medium Voltage distribution System assemblies provides an analysis of functional and physical deficiencies of an electrical system. Because the system exists and is not in a construction process, regulatory deficiencies associated with installation of the assembly are not addressed.

PHYSICAL DEFICIENCIES

1.0 BUSWAY
Busways encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSS 0.09.02.01.

2.0 CONDUCTORS & FITTINGS
Conductors and fittings other than control encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSS 0.09.01.02.02.

3.0 DISCONNECTS
Disconnects encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSS 0.09.02.03.

4.0 METERING
Metering encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSS 0.09.02.04.

5.0 MOTORS
Motors encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSS 0.09.02.05.

6.0 MOTOR CONTROL CENTER
Motor control centers encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSS 0.09.02.06.

7.0 RACEWAY & FITTINGS
Raceway and fittings encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSS 0.09.02.08.

INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: MEDIUM VOLTAGE DISTRIBUTION SYSTEM (Continued)
CONTROL NUMBER: GSS 0.09.01.03

PHYSICAL DEFICIENCIES

8.0 SWITCHBOARDS (SWITCHGEAR)
Switchboards/switchgear encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSS 0.09.02.09.

9.0 TRANSFER SWITCHES
Transfer switches encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSS 0.09.02.10.

10.0 TRANSFORMERS
Transformers encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSS 0.09.02.11.

TOOLS & MATERIALS

1. Light, portable
2. Infrared camera
3. Stepladder

INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: LUMINAIRES
CONTROL NUMBER: GSS 0.09.02.01

APPLICATION

This guide applies to luminaires used in a lighting system and connected to the low Voltage distribution system.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.

CONCURRENT ACTIONS

Annual preventive maintenance tasks.

INSPECTION ACTIONS

Condition assessment and evaluation of luminaires in a lighting system provides an input to the analysis of functional and physical deficiencies of an electrical system. Because the system exists and is not in a construction process, regulatory deficiencies associated with installation of luminaires are not addressed.

PHYSICAL DEFICIENCIES

1.0 CONDUCTORS & FITTINGS
Conductors and fittings other than fixture wiring encountered in the evaluation of this luminaire will be inspected in accordance with Guide Sheet GSS 0.09.01.02.02.

2.0 CONTROL UNITS
Control units encountered in the evaluation of this luminaire will be inspected in accordance with Guide Sheet GSS 0.09.03.03.

3.0 RACEWAY & FITTINGS
Raceway and fittings encountered in the evaluation of this luminaire will be inspected in accordance with Guide Sheet GSS 0.09.02.02.08.

4.0 HOUSING
4.1 Not clean and moisture-free
4.2 Not adequate for application or location
4.3 Corroded, rusted, dented, or other physical damage
4.4 Not secured to mounting surface
4.5 Unused openings not covered or plugged
4.6 Not accessible
4.7 Missing
4.8 Top, bottom, or side cover missing
4.9 Vent defective or nonoperative
4.10 Ventilation obstructed or clogged

5.0 BALLAST
5.1 Inoperative
5.2 Noisy

INSPECTION METHODS . STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: LUMINAIRES (Continued)
CONTROL NUMBER: GSS 0.09.02.01

PHYSICAL DEFICIENCIES

6.0 LAMP
6.1 Inappropriate for application
6.2 Inoperative
6.3 Dirty, oily, greasy, or other physical contamination
6.4 Low light output level
6.5 Missing, chipped, cracked, or other damage
6.6 Improper burning position

7.0 LENS
7.1 Dirty, oily, greasy, or other surface contamination
7.2 Not adequately secured
7.3 Missing, cracked, chipped, or other damage
7.4 Inappropriate for application

8.0 REFLECTOR
8.1 Dirty, oily, greasy, or other physical contamination
8.2 Not adequately secured
8.3 Missing, cracked, chipped, or other damage
8.4 Inappropriate for application

9.0 SOCKET
9.1 Dirty, oily, greasy, or other physical contamination
9.2 Not adequately secured
9.3 Missing, cracked, chipped, or other damage

10.0 FIXTURE WIRING
10.1 Bundled or trained inappropriately
10.2 Improperly spliced
10.3 Inadequately torqued at termination
10.4 Inappropriate application

11.0 GLOBE
11.1 Dirty, oily, greasy, or other physical contamination
11.2 Not adequately secured
11.3 Missing, cracked, chipped, or other damage
11.4 Inappropriate for application

12.0 SAFETY GUARD
12.2 Not adequately secured
12.2 Missing, broken, or other damage

13.0 FIXTURE HANGER
13.1 Inappropriate for application
13.2 Not adequately secured
13.3 Missing, broken, corroded, or other physical damage

14.0 MARKING
14.1 Illegible
14.2 Damaged or missing dataplate

INSPECTION METHODS . STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: LUMINAIRES (Continued)
CONTROL NUMBER: GSS 0.09.02.01

PHYSICAL DEFICIENCIES

15.0 BATTERY/APPLICATION
15.1 Inoperative
15.2 Ventilation obstructed or clogged
15.3 Flame arrestor missing or broken

16.0 BATTERY/CHARGER
16.1 Inoperative
16.2 Noisy
16.3 Indicator lamps inoperative
16.4 Indicator lamp missing, cracked, or broken
16.5 Indicator meter inoperative or missing
16.6 Test switch inoperative or missing

17.0 DIMMER SWITCH
17.1 Inoperative
17.2 Noisy
17.3 Not adequately secured to mounting surface
17.4 Missing, cracked, or broken components
17.5 Dirty, oily, greasy, or other surface contamination

TOOLS & MATERIALS

1. Light, portable
2. Light level meter
3. Stepladder
4. Light level meter
5. Infrared camera
6. MegOhmmeter
7. Multimeter

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INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: CABLE TRAY
CONTROL NUMBER: GSS 0.09.03.01

APPLICATION

This guide applies only to the unique facets of this system. Any part of the electrical system not unique to this system will be evaluated in accordance with the applicable method found elsewhere in this volume.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.

CONCURRENT ACTIONS

Annual preventive maintenance tasks.

INSPECTION ACTIONS

Condition Assessment Survey and evaluation of cable tray assemblies provide an analysis of functional and physical deficiencies of an electrical cable tray system as part of a facility electrical system. Because the system exists and is not in a construction process, regulatory deficiencies associated with installation are not addressed.

PHYSICAL DEFICIENCIES

1.0 CABLE TRAY
1.1 Inappropriate for application
1.2 Not adequately secured to mounting surface
1.3 Not secured within 3 feet of end of run or enclosure
1.4 Bent, crushed, ruptured
1.5 Unused openings not covered or plugged
1.6 No bushing or equivalent protection
1.7 Supported by other raceway
1.8 Exterior rusted, corroded, or other physical damage
1.9 Interior rusted, corroded, or other physical damage
1.10 Hanger rusted, corroded, or other physical damage
1.11 Hanger not adequately secured to structure
1.12 Not grounded properly
1.13 Ventilation not adequate
1.14 Ventilation perforations covered, clogged, or plugged
1.15 Not clean and moisture-free

2.0 INSTALLATION
2.1 Missing, broken, cracked, or other damage
2.2 insert broken, cracked, missing, or other damage
2.3 Improper fitting for application
2.4 Unused openings not covered or plugged
2.5 Elbow improperly installed and connected
2.6 Tee improperly installed and connected
2.7 Cross improperly installed and connected
2.8 Wye improperly installed and connected

INSPECTION METHODS . STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: CABLE TRAY (Continued)
CONTROL NUMBER: GSS 0.09.03.01

PHYSICAL DEFICIENCIES

2.0 INSTALLATION
2.9 Reducer improperly installed and connected
2.10 Divider improperly installed and connected
2.11 Drop out improperly installed and connected
2.12 End cap improperly installed and connected
2.13 Covers inappropriate for application
2.14 Covers improperly installed
2.15 Expansion joint improperly placed and installed
2.16 Panel connector improperly installed and connected

3.0 CONDUCTORS & FITTINGS
The conductors and fittings found in a cable tray assembly will be inspected in accordance with Guide Sheet GSS 0.09.01.02.02.

4.0 MARKING
4.1 Illegible
4.2 Damaged or missing dataplate

5.0 PENETRATION
5.1 Approved seals not used in boundaries.

6.0 RACEWAY & FITTINGS
Raceway and fittings encountered in the inspection of the cable tray assembly will be inspected in accordance with Guide Sheet GSS 0.09.01.02.08.

TOOLS & MATERIALS

1. Light, portable
2. Infrared camera
3. Stepladder

INSPECTION METHODS . STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: COMMUNICATION CIRCUITS
CONTROL NUMBER: GSS 0.09.03.02

APPLICATION

This guide applies to the communication systems and point-to-point wiring of the communication system used in association with electrical systems. The guide does not apply to communication devices.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.'
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.

CONCURRENT ACTIONS

Annual preventive maintenance tasks.

INSPECTION ACTIONS

Condition Assessment Survey and evaluation of electrical systems used in conjunction with communication systems are part of a facility electrical system assessment. Because the system exists and is not in a construction process, regulatory deficiencies associated with installation are not addressed.

PHYSICAL DEFICIENCIES

1.0 CABLE/CONDUCTOR
1.1 Not located below power conductors
1.2 Attached to crossarms with power conductors
1.3 Insufficient climbing space
1.4 Insufficient clearance from energized conductors
1.5 Insufficient clearance over structures
1.6 Not separated in underground application from power or light conductors
1.7 Unlisted or non-identified protector employed
1.8 Protectors unlisted, missing, or defective
1.9 Protector improperly located
1.10 Fused protector not used as required or improperly fused
1.11 Metal raceway or approved building penetration device missing or defective
1.12 Not listed for application
1.13 Improper for application or location
1.14 Less than 6 feet to lightning conductors
1.15 Not adequately protected
1.16 Insulation frayed, brittle or other physical damage
1.17 Not bundled, trained or secured
1.18 Splices improperly insulated
1.19 Unauthorized splice
1.20 Not properly connected to device
1.21 Insulation improperly removed from conductor
1.22 Not properly supported in vertical run
1.23 Metallic sheath grounding inadequate

INSPECTION METHODS ▪ STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: COMMUNICATION CIRCUITS (Continued)
CONTROL NUMBER: GSS 0.09.03.02

PHYSICAL DEFICIENCIES

2.0 FITTING
2.1 Missing, broken, cracked, or other damage
2.2 Insert broken, cracked, missing, or other damage
2.3 Improper fitting for application
2.4 Approved seal not used at boundaries

3.0 MARKING
3.1 Illegible
3.2 Damaged or missing dataplate

4.0 RACEWAY & FITTINGS
Raceway and fittings encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSS 0.09.01.02.08.

5.0 INSTALLATION
5.1 Missing, broken, cracked, or other damage
5.2 Insert broken, cracked, missing, or other damage
5.3 improper fitting for application
5.4 Unused openings not covered or plugged
5.5 Elbow improperly installed and connected
5.6 Tee improperly installed and connected
5.7 Cross improperly installed and connected
5.8 Wye improperly installed and connected
5.9 Reducer improperly installed and connected
5.10 Divider improperly installed and connected
5.11 Drop out improperly installed and connected
5.12 End cap improperly installed and connected
5.13 Covers inappropriate for application
5.14 Covers improperly installed
5.15 Expansion joint improperly placed and installed
5.16 Panel connector improperly installed and connected

6.0 PENETRATION
6.1 Approved seals not used in boundaries.

7.0 LIGHTNING PROTECTION &SURGE SUPPRESSION
Lightning protection devices or surge suppressors encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSS 0.09.03.08.

TOOLS & MATERIALS

1. Light, portable
2. Infrared camera
3. Stepladder

INSPECTION METHODS . STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: CONTROL UNITS
CONTROL NUMBER: GSS 0.09.03.03

APPLICATION

This guide applies only to the unique facets of this system. Any part of the electrical system not unique to this system will be evaluated in accordance with the applicable method found elsewhere in this volume.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.

CONCURRENT ACTIONS

Preventive maintenance tasks.

INSPECTION ACTIONS

Condition Assessment Survey and evaluation of control units or assemblies provide input to an analysis of functional and physical deficiencies of the facility electrical system. Because the system exists and is not in a construction process, regulatory deficiencies associated with control unit are not addressed.

PHYSICAL DEFICIENCIES

1.0 FITTING
1.1 Missing, broken, cracked, or other damage
1.2 Insert broken, cracked, missing, or other damage
1.3 Improper fitting for application
1.4 Unused openings not covered or plugged
1.5 Elbow improperly installed and connected
1.6 Tee improperly installed and connected
1.7 Crossover improperly installed and connected
1.8 Cable-tap boxes improperly installed and connected
1.9 Bus plugs improperly installed, connected, and/or inadequate for application
1.10 Expansion joint improperly placed and installed
1.11 Switchboard flange connection improperly installed and connected

2.0 ENCLOSURE
2.1 Not adequate for application
2.2 Corroded, rusted, dented, or other physical damage
2.3 Not secured to mounting surface
2.4 Unused openings not covered or plugged
2.5 Not grounded properly
2.6 Pedestal mounting surface chipped, cracked, broken, or other physical damage
2.7 Not accessible
2.8 Vent defective/nonoperative
2.9 Not clean and moisture-free

3.0 DISCONNECT
3.1 Improperly sized
3.2 No engineering study to support adjustable settings

INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: CONTROL UNITS (Continued)
CONTROL NUMBER: GSS 0.09.03.03

PHYSICAL DEFICIENCIES

3.0 DISCONNECT
3.3 High conductor - breaker lug temperature as measured in thermographic test
3.4 Blades bent or not aligned
3.5 Handle broken, bent, or other physical deformity
3.6 Inadequate size
3.7 Blade clip bent, malaligned, or other physical deformity
3.8 Clips pitted, burned, or discolored
3.9 Blades pitted, burned, or discolored
3.10 Improperly wired
3.11 Not accessible
3.12 Improper application

4.0 FUSE UNIT
4.1 improperly sized
4.2 Improper fuse type used
4.3 Fuse clips bent, malaligned, discolored, or other physical damage
4.4 Poor fuse to clip contact as measured using thermographic test

5.0 CABLE/CONDUCTOR
5.1 Not located below power conductors
5.2 Attached to crossarms with power conductors
5.3 Insufficient climbing space
5.4 Insufficient clearance from energized conductors
5.5 Insufficient clearance over structures
5.6 Not separated in underground application from power or light conductors
5.7 Unlisted or non-identified protector employed
5.8 Protectors unlisted, missing, or defective
5.9 Protector improperly located
5.10 Fused protector not used as required or improperly fused
5.11 Metal raceway or approved building penetration device missing or defective
5.12 Not listed for application
5.13 Improper for application or location
5.14 Less than 6 feet to lightning conductors
5.15 Not adequately protected
5.16 Insulation frayed, brittle or other physical damage
5.17 Not bundled, trained or secured
5.18 Splices improperly insulated
5.19 Unauthorized splice
5.20 Not properly connected to device
5.21 Insulation improperly removed from conductor
5.22 Not properly supported in vertical run
5.23 Metallic sheath grounding inadequate

6.0 CONTACTOR
6.1 Control circuits improperly connected
6.2 Indicator lamps inoperative
6.3 Indicator lens missing, cracked, or broken
6.4 Noisy
6.5 Missing, loose, broken, or corroded hardware

INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: CONTROL UNITS (Continued)
CONTROL NUMBER: GSS 0.09.03.03

PHYSICAL DEFICIENCIES

6.0 CONTACTOR
6.6 Rheostat ventilation impeded
6.7 Plugging relays dirty or other contamination
6.8 Pushbuttons not labeled
6.9 Improper size
6.10 Thermal trip device wrong size
6.11 No engineering study to support thermal trip device rating
6.12 Coil discolored, burned, or other signs of high temperature

7.0 HEATER
7.1 Inadequate temperature in device enclosure
7.2 Excessive temperature in device enclosure
7.3 Not adequately secured to mounting surface
7.4 Improper conductors from source

8.0 BUSHING/INSULATOR
8.1 Tracked or carbonized
8.2 Missing, cracked, chipped, or other damage
8.3 Dirty, oily, greasy, or other surface contamination
8.4 Not adequately secured to mounting surface

9.0 CONTROL WIRING
9.1 Inappropriate for application
9.2 Bundled and trained inappropriately
9.3 Terminal boards improperly installed
9.4 Insulation charred, burned, or discolored
9.5 Splices improperly insulated
9.6 Unauthorized splice
9.7 Insulation improperly removed from conductor
9.8 Bimetallic connectors not used as required

10.0 BUS
10.1 Discolored, warped, or other signs of high temperature
10.2 Insulated connections unraveled, brittle, cracked, or other physical damage
10.3 Dirty or other contamination
10.4 Loose joints as measured using thermographic test

11.0 EQUIPMENT PROTECTION
11.1 Improper or inadequate primary protection device
11.2 Improper or inadequate secondary protection device
11.3 Improper or inadequate differential protection device
11.4 No engineering study to support protection scheme

12.0 MARKING
12.1 Illegible
12.2 Damaged or missing dataplate

13.0 TRANSFORMERS
Transformers encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSS 0.09.01.02.11.

INSPECTION METHODS ▪ STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: CONTROL UNITS (Continued)
CONTROL NUMBER: GSS 0.09.03.03

PHYSICAL DEFICIENCIES

14.0 PANELBOARDS
Panelboards encountered will be inspected in accordance with Guide Sheet GSS 0.09.01.02.07.

15.0 TRANSFER SWITCHES
Transfer switches encountered will be inspected in accordance with Guide Sheet GSS 0.09.01.02.10.

16.0 LIGHTNING PROTECTION & SURGE SUPPRESSION
Lightning protection devices or surge suppressors encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSS 0.09.03.08.

17.0 PHOTOCELL
17.1 Inoperative
17.2 Not clean and moisture-free
17.3 Dirty, oily, greasy, or other surface contamination
17.4 Not adequately secured to mounting surface
17.5 Missing, chipped, cracked, or other damage
17.6 Inappropriate for application
17.7 Improper aiming direction
17.8 Inappropriate turn-off/turn-on ratio
17.9 Discolored, burned, or other signs of high temperature

TOOLS & MATERIALS

1. Light, portable
2. Infrared camera
3. Stepladder

INSPECTION METHODS ▪ STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: DATA PROCESSING ELECTRICAL EQUIPMENT
CONTROL NUMBER: GSS 0.09.03.04

APPLICATION

This guide applies to the electrical components, assemblies, or systems used in association with data processing equipment systems. The guide does not apply to the data processing equipment.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.

CONCURRENT ACTIONS

Annual preventive maintenance tasks.

INSPECTION ACTIONS

Condition Assessment Survey and evaluation of electrical components, assemblies, and systems used in conjunction with automatic data processing equipment are part of a facility electrical system assessment. This guide sheet focuses on the special or unique features of the electrical component, assembly, or system necessary to serve automatic data processing equipment and is to be used with other guides as appropriate. Because the system exists and is not in a construction process, regulatory deficiencies associated with installing the electrical component, assembly, or system are not addressed.

PHYSICAL DEFICIENCIES

1.0 FACILITY
1.1 Improper ground circuit
1.2 Not double insulated and ungrounded equipment employed
1.3 Metal parts of ADP equipment not grounded
1.4 No disconnect for all ADP equipment
1.5 No disconnect for HVAC equipment serving ADP area
1.6 Unlisted equipment installed
1.7 Unauthorized supplies and materials
1.8 Unauthorized personnel present
1.9 Fire-resistant-rated walls, ceilings, or floor not employed
1.10 Smoke and fire dampers missing
1.12 Conductor ampacity less than 125% of load
1.13 Cable and conductor penetrations defective or deficient

2.0 CABLE/CONDUCTOR
2.1 Not located below power conductors
2.2 Attached to crossarms with power conductors
2.3 insufficient climbing space
2.4 Insufficient clearance from energized conductors
2.5 Insufficient clearance over structures
2.6 Not separated in underground application from power or light conductors
2.7 Unlisted or non-identified protector employed
2.8 Protectors unlisted, missing, or defective

INSPECTION METHODS ▪ STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: DATA PROCESSING ELECTRICAL EQUIPMENT (Continued)
CONTROL NUMBER: GSS 0.09.03.04

PHYSICAL DEFICIENCIES

2.0 CABLE/CONDUCTOR
2.9 Protector improperly located
2.10 Fused protector not used as required or improperly fused
2.11 Metal raceway or approved building penetration device missing or defective
2.12 Not listed for application
2.13 Improper for application or location
2.14 Less than 6 feet to lightning conductors
2.15 Not adequately protected
2.16 Insulation frayed, brittle or other physical damage
2.17 Not bundled, trained or secured
2.18 Splices improperly insulated
2.19 Unauthorized splice
2.20 Not properly connected to device
2.21 Insulation improperly removed from conductor
2.22 Not properly supported in vertical run
2.23 Metallic sheath grounding inadequate

3.0 GROUND CIRCUIT
3.1 Metal parts not grounded
3.2 Multiple ground circuits

4.0 MALAPROPOS DISCONNECT
4.1 Disconnect not present

5.0 MARKING
5.1 Illegible
5.2 Damaged or missing dataplate

6.0 PENETRATION
6.1 Approved seals not used in boundaries.

7.0 BUSWAY
Busways encountered in the inspection of the automatic data processing equipment will be inspected in accordance with Guide Sheet GSS 0.09.01.02.01.

8.0 CONDUCTORS & FITTINGS
Conductors and fittings used in association with automatic data processing equipment will be inspected in accordance with Guide Sheet GSS 0.09.01.02.02.

9.0 DISCONNECTS
Disconnects encountered in the inspection of the automatic data processing equipment will be inspected in accordance with Guide Sheet GSS 0.09.01.02.03.

10.0 PANELBOARDS
Panelboards encountered in the inspection of the automatic data processing equipment will be inspected in accordance with Guide Sheet GSS 0.09.01.02.07.

11.0 RACEWAY & FITTINGS
Raceway and fittings encountered in the inspection of the automatic data processing equipment will be inspected in accordance with Guide Sheet GSS 0.09.01.02.08.

INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: DATA PROCESSING ELECTRICAL EQUIPMENT (Continued)
CONTROL NUMBER: GSS 0.09.03.04

PHYSICAL DEFICIENCIES

12.0 SWITCHBOARDS
Switchboards encountered in the inspection of the automatic data processing equipment will be inspected in accordance with Guide Sheet GSS 0.09.01.02.09.

13.0 TRANSFER SWITCHES
Transfer switches encountered in the inspection of the automatic data processing equipment will be inspected in accordance with Guide Sheet GSS 0.09.01.02.10.

14.0 TRANSFORMERS
Transformers encountered in the inspection of the automatic data processing equipment will be inspected in accordance with Guide Sheet GSS 0.09.01.02.11.

15.0 LIGHTNING PROTECTION & SURGE SUPPRESSION
Lightning protection devices or surge suppressors encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSS 0.09.03.08.

TOOLS & MATERIALS

1. Light, portable
2. Infrared camera
3. Stepladder

INSPECTION METHODS - STANDARD

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INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: GENERATORS, STANDBY/EMERGENCY
CONTROL NUMBER: GSS 0.09.03.05

APPLICATION

This guide applies to alternators or generators that are driven by electrical or mechanical means and the alternator or generator is used to provide electrical energy to an electrical system. This guide does not apply to alternators or generators that are a component part of an engine system where the alternator/generator is used only to charge batteries of the start system.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.

CONCURRENT ACTIONS

Annual preventive maintenance tasks.

INSPECTION ACTIONS

Condition Assessment Survey and evaluation of alternators or generators used in a standby or emergency generator package provide an input to the analysis of functional and physical deficiencies of that assembly. Since the assembly exists and is not in a construction process, regulatory deficiencies associated with installation of alternators are not addressed.

PHYSICAL DEFICIENCIES

1.0 CABLE/CONDUCTOR
1.1 Inappropriate for application
1.2 Insulation burned, charred, or other damage
1.3 Splice insulation unraveled, brittle, cracked, or other damage
1.4 Unauthorized splice
1.5 Not properly connected to device
1.6 Insulation improperly removed from conductor
1.7 Bimetallic connectors not used as required
1.8 Not properly bundled or trained

2.0 FITTING
2.1 Missing, broken, cracked, or other damage
2.2 Insert broken, cracked, missing, or other damage
2.3 Improper fitting for application
2.4 Unused openings not covered or plugged

3.0 BEARINGS
3.1 High bearing temperature as measured in thermographic test
3.2 Rough or irregular bearing during rotation as measured in vibration analysis
3.3 Leaking seals

4.0 ROTOR/STATOR
4.1 Not clean and moisture-free

5.0 MOUNT
5.1 Dirty or other internal or external surface contamination
5.2 Not properly secured to mounting structure

INSPECTION METHODS . STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: GENERATORS, STANDBY/EMERGENCY (Continued)
CONTROL NUMBER: GSS 0.09.03.05

PHYSICAL DEFICIENCIES

5.0 MOUNT
5.3 Mounting structure inadequate
5.4 Unit not adequately secured to mount

6.0 EXHAUST SYSTEM
6.1 Missing

7.0 HEATER
7.1 Inadequate temperature in device enclosure
7.2 Excessive temperature in device enclosure
7.3 Not adequately secured to mounting surface
7.4 Improper conductors from source

8.0 MARKING
8.1 Illegible
8.2 Damaged or missing dataplate

9.0 DISCONNECT
9.1 Blades bent or not aligned
9.2 Handle broken, bent, or other physical deformity
9.3 Inadequate size
9.4 Blade clip bent, malaligned, or other physical deformity
9.5 Clips pitted, burned, or discolored
9.6 Blades pitted, burned, or discolored
9.7 Improperly wired
9.8 Not accessible
9.9 Improper application
9.10 Improperly sized
9.11 No engineering study to support adjustable settings
9.12 High conductor-breaker lug temperature as measured in thermographic test

10.0 LIGHTNING PROTECTION & SURGE SUPPRESSION
Lightning protection devices or surge suppressors encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSS 0.09.03.08.

11.0 CONTROL WIRING
11.1 Inappropriate for application
11.2 Bundled and trained inappropriately
11.3 Terminal boards improperly installed
11.4 Insulation charred, burned, or discolored
11.5 Splices improperly insulated
11.6 Unauthorized splice
11.7 Insulation improperly removed from conductor
11.8 Bimetallic connectors not used as required

12.0 BUSHING/INSULATOR
12.1 Tracked or carbonized
12.2 Missing, cracked, chipped, or other damage
12.3 Dirty, oily, greasy, or other surface contamination

INSPECTION METHODS . STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: GENERATORS, STANDBY/EMERGENCY (Continued)
CONTROL NUMBER: GSS 0.09.03.05

PHYSICAL DEFICIENCIES

13.0 ENGINE
13.1 Low crankcase oil level
13.2 Missing or dirty combustion air intake filter
13.3 Gauges missing or broken
13.4 Improperly set up for operation

14.0 METERING
14.1 Calibration standard not established
14.2 Device broken or other physical defect
14.3 Tampering of device or circuit
14.4 Device inadequately sized
14.5 Device inoperative

15.0 EXCITER/VOLTAGE REGULATOR
15.1 Improperly set up for operation

16.0 TRANSFER SWITCH
Transfer switches encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSS 0.09.01.02.10.

17.0 START SYSTEM
17.1 Air receivers discharged
17.2 Batteries discharged
17.3 Battery charger inoperative
17.4 Inoperative solenoid
17.5 Inoperative starter motor
17.6 Low air capacity

18.0 LOCAL FUEL SYSTEM
18.1 Control valves dysfunctional
18.2 Filters dirty, missing, wrong size
18.3 Fuel stale or old
18.4 Storage tank dented, rusted, or other damage
18.5 Water present

19.0 PENETRATION
19.1 Approved seals not used

20.0 ENCLOSURE
20.1 Not adequate for application
20.2 Corroded, rusted, dented, or other physical damage
20.3 Not secured to mounting surface
20.4 Unused openings not covered or plugged
20.5 Not grounded properly
20.6 Pedestal mounting surface chipped, cracked, broken, or other physical damage
20.7 Not accessible
20.8 Vent defective/nonoperative
20.9 Not clean and moisture-free

INSPECTION METHODS ▪ STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: GENERATORS, STANDBY/EMERGENCY (Continued)
CONTROL NUMBER: GSS 0.09.03.05

PHYSICAL DEFICIENCIES

21.0 FUSE UNIT
21.1 Improperly sized
21.2 Improper fuse type used
21.3 Fuse clips bent, malaligned, discolored, or other physical damage
21.4 Poor fuse to clip contact as measured using thermographic test

TOOLS & MATERIALS

1. Light, portable
2. Infrared camera
3. Stepladder
4. Stroboscope

INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: HEALTH CARE FACILITIES ELECTRICAL EQUIPMENT
CONTROL NUMBER: GSS 0.09.03.06

APPLICATION

This guide applies to the electrical components, devices, assemblies, or systems used in association with health care systems. The guide does not apply to the health care system equipment.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.

CONCURRENT ACTIONS

Annual preventive maintenance tasks.

INSPECTION ACTIONS

Condition Assessment Survey and evaluation of electrical components, devices, assemblies, and systems used in conjunction with health care systems equipment are part of a facility electrical system assessment. This guide sheet focuses on the special or unique features of the electrical component, device, assembly, or system necessary to serve health care equipment and is to be used with other guides as appropriate. Because the system exists and is not in a construction process, regulatory deficiencies associated with installation of the electrical component, assembly, or system are not addressed.

PHYSICAL DEFICIENCIES

1.0 LOCATION
1.1 Equipment and/or components not rated for Class 1 application
1.2 Metal raceway or approved cable not used
1.3 Storage device for flexible cord not provided
1.4 Two circuits are not present
1.5 One circuit does not originate in normal system
1.6 Four receptacles are not present

2.0 P E N E T R A T I O N
2.1 Approved seals not used in horizontal or vertical boundaries

3.0 ESSENTIAL SYSTEM
3.1 System not properly maintained or tested
3.2 Unauthorized loads connected to emergency system
3.3 Transfer switches are not used
3.4 Isolation of authorized systems not maintained as required
3.5 Metal raceway is not used where required
3.6 Two energy sources are not used
3.7 Receptacles not hospital grade
3.6 Receptacles not tamper resistant in pediatric areas

4.0 GROUNDING
4.1 Insulated copper conductor not used
4.2 Grounding conductor not appropriately sized

INSPECTION METHODS ▪ STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: HEALTH CARE FACILITIES ELECTRICAL EQUIPMENT (Continued)
CONTROL NUMBER: GSS 0.09.03.06

PHYSICAL DEFICIENCIES

4.0 GROUNDING
4.3 Metal raceway or appropriate cable not used
4.4 Panelboards not bonded together
4.5 Conductive surfaces have unacceptable potential difference

5.0 CABLE/CONDUCTOR
5.1 Inappropriate for application
5.2 Insulation burned, charred, or other damage
5.3 Splice insulation unraveled, brittle, cracked, or other damage
5.4 Unauthorized splice
5.5 Not properly connected to device
5.6 Insulation improperly removed from conductor
5.7 Bimetallic connectors not used as required
5.8 Not properly bundled or trained

6.0 MARKING
6.1 Illegible
6.2 Damaged or missing dataplate

7.0 INADEQUATE SERVICE
7.1 Four receptacles are not present
7.2 One circuit does not originate in normal system
7.3 Receptacles not hospital grade
7.4 Receptacles not tamper resistant in pediatric areas
7.5 Two circuits are not present

8.0 BUSWAY
Buswavs encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSS 0.09.01.02.01.

9.0 CONDUCTORS & FITTINGS
Conductors and fittings used in association with this equipment will be inspected in accordance with Guide Sheet GSS 0.09.01.02.02.

10.0 DISCONNECTS
Disconnects encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSS 0.09.01.02.03.

11.0 PAN ELBOARDS
Panelboards encountered in the inspection of this equipment then will be inspected in accordance with Guide Sheet GSS 0.09.01.02.07.

12.0 RACEWAY & FITTINGS
Raceway and fittings encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSS 0.09.01.02.08.

13.0 SWITCHBOARDS
Switchboards encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSS 0.09.01.02.09.

INSPECTION METHODS ▪ STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: HEALTH CARE FACILITIES ELECTRICAL EQUIPMENT (Continued)
CONTROL NUMBER: GSS 0.09.03.06

PHYSICAL DEFICIENCIES

14.0 TRANSFER SWITCHES

Transfer switches encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSS 0.09.01.02.10.

15.0 TRANSFORMERS

Transformers encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSS 0.09.01.02.11.

16.0 LIGHTNING PROTECTION & SURGE SUPPRESSION

Lightning protection devices or surge suppressors encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSS 0.09.03.08.

TOOLS & MATERIALS

1. Light, portable
2. Infrared camera
3. Stepladder
4. MegOhmmeter
5. Wheatstone bridge
6. Timer
7. Insulation materials

INSPECTION METHODS ▪ STANDARD

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INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: HEATING, BASEBOARD RADIATION
CONTROL NUMBER: GSS 0.09.03.07

APPLICATION

This guide applies only to the unique facets of this system. Any part of the electrical system not unique in this system will be evaluated in accordance with the applicable method found elsewhere in this volume.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.

CONCURRENT ACTIONS

Preventive maintenance tasks.

INSPECTION ACTIONS

Condition Assessment Survey and evaluation of baseboard radiation heating units or assemblies provide input to an analysis of functional and physical deficiencies of the facility electrical system. Because the system exists and is not in a construction process, regulatory deficiencies associated with baseboard radiation heating units are not addressed.

PHYSICAL DEFICIENCIES

1.0 CABLE/CONDUCTOR
1.1 Conductor not rated at 125% or greater of load rating
1.2 Not protected for installation
1.3 Penetrations defective or deficient

2.0 ENCLOSURE
2.1 Not adequate for application
2.2 Corroded, rusted, dented, or other physical damage
2.3 Not secured to mounting surface
2.4 Unused openings not covered or plugged
2.5 Not grounded properly
2.6 Pedestal mounting surface chipped, cracked, broken, or other physical damage
2.7 Not accessible
2.8 Vent defective/nonoperative
2.9 Not clean and moisture-free

3.0 DISCONNECT
3.1 Not grouped and identified for heating application
3.2 Not within sight of overcurrent protection
3.3 Improper application of unit switch as disconnect
3.4 Improper application of thermostat control device as disconnect
3.5 Improper application

4.0 CONTROL WIRING
4.1 Inappropriate for application
4.2 Bundled and trained inappropriately
4.3 Terminal boards improperly installed

INSPECTION **METHODS** - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: HEATING, BASEBOARD RADIATION (Continued)
CONTROL NUMBER: GSS 0.09.03.07

PHYSICAL DEFICIENCIES

4.0 CONTROL WIRING
4.4 Insulation charred, burned, or discolored
4.5 Splices improperly insulated
4.6 Unauthorized splice
4.7 Insulation improperly removed from conductor
4.8 Bimetallic connectors not used as required

5.0 EQUIPMENT PROTECTION
5.1 Improper or inadequate protection device
5.3 No engineering study to support protection scheme
5.4 Not physically protected from damage
5.5 Not isolated from combustible materials

6.0 MARKING
6.1 Illegible
6.2 Damaged or missing dataplate

7.0 INSTALLATION
7.1 Conductor or cable not appropriate for installation
7.2 Condustor or cable not listed
7.3 Hanger not adequately secured to structure
7.5 Inadequate grounding
7.6 Inadequate ventilation
7.7 Missing vertical run hardware
7.8 No bushing or equivalent protection
7.9 Not adequately protected from severe physical damage
7.10 Not adequately secured to mounting surface
7.11 Not appropriate for location
7.12 Not clearly and permanently marked where required
7.13 Not properly spaced from combustible materials
7.14 Not secured within three feet of end of run
7.15 Unauthorized conductor present
7.16 Unused openings not covered or plugged

TOOLS & MATERIALS

1. Light, portable
2. Infrared camera
3. Stepladder

INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: LIGHTNING PROTECTION &SURGE SUPPRESSION
CONTROL NUMBER: GSS 0.09.03.08

APPLICATION

This guide applies only to the unique facets of these devices. That part of the electrical system in support of these devices will be evaluated in accordance with the applicable method found elsewhere in this volume.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.

CONCURRENT ACTIONS

Preventive maintenance tasks.

INSPECTION ACTIONS

Condition Assessment Survey and evaluation of lightning protection/surge suppression devices provide an input to an analysis of functional and physical deficiencies of the facility electrical system. Because the system exists and is not in a construction process, regulatory deficiencies associated with lightning protection/surge suppression devices are not addressed.

PHYSICAL DEFICIENCIES

1.0 CABLE/CONDUCTOR

2.0 CONNECTION
2.1 Wrong wire size used
2.2 Not connected to authorized ground point
2.3 Metallic interconnection not used in grounding
2.4 Spark gap or listed device not used as required in grounding
2.5 Ground wire not bonded at ends of metal enclosures
2.6 Shield wire not properly grounded

3.0 LOCATION
3.1 Accessible to public
3.2 Does not protect all circuits
3.3 Unacceptable ground path length
3.4 Unacceptable number of bends in ground wire

4.0 PENETRATION
4.1 Approved seals not used in horizontal or vertical boundaries

5.0 RATING
5.1 Rating not adequate for operating circuit Voltage
5.2 Silicon carbide type not rated at 125% of applied voltage
5.3 Not appropriate for system
5.4 Spark gap or listed device under Voltage rated

6.0 DEVICE
6.1 Isolator has opened ground circuit
6.2 Air horns bent, malformed, or other physical damage

INSPECTION METHODS ▪ STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: LIGHTNING PROTECTION & SURGE SUPPRESSION (Continued)

CONTROL NUMBER: GSS 0.09.03.08

PHYSICAL DEFICIENCIES

6.0 DEVICE
6.3 Fiber tube destroyed
6.4 Thyrite discs broken, missing, or other physical damage
6.5 Device not secured to mount
6.6 Dirty, oily, greasy, or other surface contamination

7.0 MARKING
7.1 Illegible
7.2 Damaged or missing dataplate

TOOLS & MATERIALS

1. Light, portable
2. Infrared camera
3. Stepladder

INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: PETROLEUM DISPENSING FACILITIES ELECTRICAL EQUIPMENT
CONTROL NUMBER: GSS 0.09.03.09

APPLICATION

This guide applies to the electrical components, devices, assemblies, or systems used in association with petroleum dispensing station systems. The guide does not apply to the petroleum dispensing station system equipment.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.

CONCURRENT ACTIONS

Annual preventive maintenance tasks.

INSPECTION ACTIONS

Condition Assessment Survey and evaluation of electrical components, devices, assemblies, and systems used in conjunction with petroleum dispensing station systems equipment are part of a facility electrical system assessment. This guide sheet focuses on the special or unique features of the electrical component, device, assembly, or system necessary to serve petroleum dispensing facilities electrical equipment and is to be used with other guides as appropriate. Because the system exists and is not in a construction process, regulatory deficiencies associated with installation of the electrical component, assembly, or system are not addressed.

PHYSICAL DEFICIENCIES

1.0 DEVICE APPLICATION
1.1 Approved seals not used in horizontal or vertical boundary penetration
1.2 Seal in horizontal or vertical boundary missing or defective
1.3 Grounding conductor improperly sized or placed
1.4 Grounded conductor not copper or insulated
1.4 Heaters not listed for application
1.5 Devices not listed for application
1.6 Enclosure not properly rated for class one application
1.7 General purpose enclosure improperly used
1.8 Enclosure improperly or inadequately marked
1.9 Enclosure connection devices improper or inadequate for application
1.10 Drainage system missing or inadequate
1.11 Bonding jumpers missing, inadequate or improperly installed
1.12 Locations not properly bounded
1.13 Flammable liquids located in bounded location
1.14 Vaults missing or defective
1.15 Bounded location improperly or inadequately ventilated
1.16 Improper penetration of bounded location

2.0 CABLE/CONDUCTOR
2.1 Inappropriate for application
2.2 Insulation burned, charred, or other damage
2.3 Splice insulation unraveled, brittle, cracked, or other damage
2.4 Unauthorized splice

INSPECTION METHODS ▪ STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: PETROLEUM DISPENSING FACILITIES ELECTRICAL EQUIPMENT (Continued)

CONTROL NUMBER: GSS 0.09.03.09

PHYSICAL DEFICIENCIES

2.0 CABLE/CONDUCTOR
2.5 Not properly connected to device
2.6 Insulation improperly removed from conductor
2.7 Bimetallic connectors not used as required
2.8 Not properly bundled or trained

3.0 ENCLOSURE
3.1 Not adequate for application
3.2 Corroded, rusted, dented, or other physical damage
3.3 Not secured to mounting surface
3.4 Unused openings not covered or plugged
3.5 Not grounded properly
3.6 Pedestal mounting surface chipped, cracked, broken, or other physical damage
3.7 Not accessible
3.8 Vent defective/nonoperative
3.9 Oil leak
3.10 No curbing or berm for oil containment
3.11 Not clean and moisture-free

4.0 LOCATION
4.1 Accessible to public
4.2 Does not protect all circuits
4.3 Equipment and/or components not rated for class 1 application
4.4 Flammable liquids located in area
4.5 Inadequate ventilation
4.6 Location not properly bounded
4.7 Metal raceway or approved cable not used
4.8 Storage device for flexible cord not provided
4.9 Unauthorized penetration between vault and class 1 location
4.10 Unlisted components employed
4.11 Vault not used as required for transformer and/or capacitor

5.0 MARKING
5.1 Illegible
5.2 Damaged or missing dataplate

6.0 PENETRATION
6.1 Approved seals not used in boundaries.

7.0 SEAL
7.1 Leaking, missing, or damaged

8.0 UNDERGROUND WIRING
8.1 Improper insulation
8.2 Inappropriate cable
8.3 Inappropriate raceway

INSPECTION METHODS ▪ STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: PETROLEUM DISPENSING FACILITIES ELECTRICAL EQUIPMENT (Continued)

CONTROL NUMBER: GSS 0.09.03.09

PHYSICAL DEFICIENCIES

9.0 BUSWAY
Busways encountered in the inspection of the petroleum dispensing facilities electrical equipment will be inspected in accordance with Guide Sheet GSS 0.09.01.02.01.

10.0 CONDUCTORS & FITTINGS
Conductors and fittings used in association with petroleum dispensing station equipment will be inspected in accordance with Guide Sheet GSS 0.09.01.02.02.

11.0 DISCONNECTS
Disconnects encountered in the inspection of the petroleum dispensing station equipment will be inspected in accordance with Guide Sheet GSS 0.09.01.02.03.

12.0 PANELBOARDS
Panelboards encountered in the inspection of the petroleum dispensing station equipment then will be inspected in accordance with Guide Sheet GSS 0.09.01.02.07.

13.0 RACEWAY & FITTINGS
Raceway and fittings encountered in the inspection of the petroleum dispensing station equipment will be inspected in accordance with Guide Sheet GSS 0.09.01.02.08.

14.0 SWITCHBOARDS
Switchboards encountered in the inspection of the petroleum dispensing station equipment will be inspected in accordance with Guide Sheet GSS 0.09.01.02.09.

15.0 TRANSFER SWITCHES
Transfer switches encountered in the inspection of the petroleum dispensing station equipment will be inspected in accordance with Guide Sheet GSS 0.09.01.02.10.

16.0 TRANSFORMERS
Transformers encountered in the inspection of the petroleum dispensing station equipment will be inspected in accordance with Guide Sheet GSS 0.09.01.02.11.

TOOLS & MATERIALS

1. Light, portable
2. Infrared camera
3. Stepladder

INSPECTION METHODS . STANDARD

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INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: SIGNAL CIRCUITS
CONTROL NUMBER: GSS 0.09.03.10

APPLICATION

This guide applies to the signal circuits and point-to-point signal circuit wiring used in association with electrical systems. The guide does not apply to signal devices.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.

CONCURRENT ACTIONS

Annual preventive maintenance tasks.

INSPECTION ACTIONS

Condition Assessment Survey and evaluation of electrical systems used in conjunction with signal circuits are part of a facility electrical system assessment. Because the system exists and is not in a construction process, regulatory deficiencies associated with installation are not addressed.

PHYSICAL DEFICIENCIES

1.0 OVERCURRENT DEVICE

1.1 Not adequate for conductor size smaller than 14 AWG
1.2 Not located at conductor/source connection
1.3 Device permits overrating
1.4 Device rated in excess of 167% of source rating

2.0 RATING
2.1 Rated in excess of 20 Amperes
2.2 Unlisted supply connected in parallel
2.3 More than 30 Volts and 1000 Volt-Amperes available to load
2.4 More than 2500 Volt-Amperes available from non-transformer source

3.0 FITTING
3.1 Missing, broken, cracked, or other damage
3.2 Insert broken, cracked, missing, or other damage
3.3 Improper fitting for application
3.4 Unused openings not covered or plugged
3.5 Elbow improperly installed and connected
3.6 Tee improperly installed and connected
3.7 Crossover improperly installed and connected
3.8 Cable-tap boxes improperly installed and connected
3.9 Bus plugs improperly installed, connected, and/or inadequate for application
3.10 Expansion joint improperly placed and installed
3.11 Switchboard flange connection improperly installed and connected

4.0 MARKING
4.1 Illegible
4.2 Damaged or missing dataplate

INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: SIGNAL CIRCUITS (Continued)
CONTROL NUMBER: GSS 0.09.03.10

PHYSICAL DEFICIENCIES

5.0 RACEWAY & FITTINGS
Raceway and fittings encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSS 0.09.01.02.08.

6.0 LIGHTNING PROTECTION &SURGE SUPPRESSION
Lightning protection devices or surge suppressors encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSS 0.09.03.08.

7.0 CABLE/CONDUCTOR
7.1 inappropriate for application
7.2 Insulation burned, charred, or other damage
7.3 Splice insulation unraveled, brittle, cracked, or other damage
7.4 Unauthorized splice
7.5 Not properly connected to device
7.6 Insulation improperly removed from conductor
7.7 Bimetallic connectors not used as required
7.8 Not properly bundled or trained

8.0 PENETRATION
8.1 Approved seals not used in boundaries.

9.0 POWER SUPPLY
9.1 Class and rating not durably marked
9.2 Parallel connection of unmarked units

TOOLS & MATERIALS

1. Light, portable
2. Infrared camera
3. Stepladder

INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: UNINTERRUPTIBLE POWER SUPPLIES
CONTROL NUMBER: GSS 0.09.03.11

APPLICATION

This guide applies only to the unique facets of these devices. The electrical system components in support of these devices will be evaluated in accordance with the applicable method found elsewhere in this volume.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.

CONCURRENT ACTIONS

Preventive maintenance tasks.

INSPECTION ACTIONS

Condition Assessment Survey and evaluation of Uninterruptible Power Supplies provide an input to an analysis of functional and physical deficiencies of the facility electrical system. Because the system exists and is not in a construction process, regulatory deficiencies associated with Uninterruptible Power Supply are not addressed.

PHYSICAL DEFICIENCIES

1.0 BATTERY/APPLICATION
1.1 Inoperative or discharged
1.2 Improper liquid level
1.3 Corroded terminals
1.4 Cracked case
1.5 Electrolyte leakage or spills
1.6 Ventilation obstructed or clogged
1.7 Ampacity insufficient for load
1.8 Undercharged when measured with voltmeter
1.9 Overcharged when electrolyte sampled

2.0 CABLE/CONDUCTOR
2.1 Wrong wire size used
2.2 Improper termination on connector
2.3 Terminations not properly torqued

3.0 MOTOR APPLICATION
3.1 Inappropriate starting system
3.2 Improper size motor
3.3 Improper rotation
3.4 Improper speed
3.5 Improper connection of bitmetallic elements
3.6 Improper winding connections

4.0 MOTORS
Motors encountered in this inspection will be evaluated in accordance with Guide Sheet GSS 0.09.02.05.

INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: UNINTERRUPTIBLE POWER SUPPLIES (Continued)
CONTROL NUMBER: GSS 0.09.03.11

PHYSICAL DEFICIENCIES

5.0 BEARINGS
5.1 High temperature
5.2 Rough or irregular rotation
5.3 Leaking seals
5.4 Improper bearing

6.0 METERING
Metering encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSS 0.09.02.04.

7.0 MARKING
7.1 Illegible
7.2 Damaged or missing dataplate

8.0 BUSHING/INSULATOR
8.1 Tracked or carbonized
8.2 Missing, cracked, chipped, or other damage
8.3 Dirty, oily, greasy, or other surface contamination

9.0 CONTROL WIRING
9.1 Inappropriate for application
9.2 Bundled and trained inappropriately
9.3 Terminal boards improperly installed
9.4 Insulation charred, burned, or discolored
9.5 Splices improperly insulated
9.6 Unauthorized splice
9.7 Insulation improperly removed from conductor
9.8 Bimetallic onnetors not used as required

10.0 DEVICE APPLICATION
10.1 Boxes, box assemblies, or fittings not approved for use
10.2 Heaters not approved for application
10.3 Improper connection of bimetallic elements
10.4 Pendant devices improperly suspended
10.5 Signal, alarm, remote-control, and communication devices
10.6 Not approved for class 1 use

11.0 DISCONNECT
11.1 Blades bent or not aligned
11.2 handle broken, bent, or other physical deformity
11.3 Inadequate size
11.4 Blade clip bent, malaligned, or other physical deformity
11.5 Clips pitted, burned, or discolored
11.6 Blades pitted, burned, or discolored
11.7 Improperly wired
11.8 Not accessible
11.9 Improper application
11.10 Improperly sized
11.11 No engineering study to support adjustable settings
11.12 High conductor-breaker lug temperature as measured in thermographic test

INSPECTION METHODS • STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: UNINTERRUPTIBLE POWER SUPPLIES (Continued)
CONTROL NUMBER: GSS 0.09.03.11

PHYSICAL DEFICIENCIES

12.0 ENCLOSURE
12.1 Not grounded properly
12.2 Pedestal mounting surface chipped, cracked, broken, or other physical damage
12.3 Not accessible
12.4 Vent defective/nonoperative
12.5 Not clean and moisture-free

13.0 EXCITER/VOLTAGE REGULATOR
13.1 Improperly set up for operation

14.0 FITTING
14.1 Missing, broken, cracked, or other damage
14.2 insert broken, cracked, missing, or other damage
14.3 Improper fitting for application
14.4 Approved seal not used at boundaries

15.0 FUSE UNIT
15.1 Improperly sized
15.2 Improper fuse type used
15.3 Fuse clips bent, malaligned, discolored, or other physical damage
15.4 Poor fuse to clip contact as measured using thermographic test

16.0 HEATER
16.1 Inadequate temperature in device enclosure
16.2 Excessive temperature in device enclosure
16.3 Not adequately secured to mounting surface
16.4 Improper conductors from source

17.0 MOUNT
17.1 Dirty or other internal or external surface contamination
17.2 Not properly secured to mounting structure
17.3 Mounting structure inadequate
17.4 Unit not adequately secured to mount

18.0 RECTIFIER/INVERTER
18.1 Corroded, rusted, dented, or other physical damage
18.2 Inappropriate for application
18.3 Indicator lamps inoperative
18.4 Indicator lens missing, cracked, or broken
18.5 Indicator meter inoperative or missing
18.6 Inoperative
18.7 Noisy
18.8 Not adequately secured
18.9 Not clean and moisture-free
18.10 Test switch inoperative or missing
18.11 Top, bottom, or side cover missing

19.0 ROTOR/STATOR
19.1 Bent, scored, or other damage to rotor shaft
19.2 Burned, charred, or other signs of high temperature

INSPECTION METHODS - STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: UNINTERRUPTIBLE POWER SUPPLIES (Continued)
CONTROL NUMBER: GSS 0.09.03.11

PHYSICAL DEFICIENCIES

19.0 ROTOR/STATOR
19.3 Noisy laminations
19.4 Non-uniform air gap
19.5 Open turns or coils
19.6 Shorted turns or coils
19.7 Splice insulation unraveled, brittle, cracked, or other damage
19.8 Unbalanced rotor assembly

20.0 ALTERNATORS/GENERATORS
Alternators or generators encountered in this inspection will be evaluated using guide sheet GSS 0.09.03.05.

21.0 TRANSFER SWITCHES
Transfer switches encountered in this inspection will be evaluated using guide sheet GSS 0.09.01.02.10.

22.0 TRANSFORMERS
Transformers encountered in this inspection will be evaluated using guide sheet GSS 0.09.01.02.11.

23.0 DISCONNECTS
Disconnects encountered in this inspection will be evaluated using guide sheet GSS 0.09.01.02.03.

TOOLS & MATERIALS

1. Light, portable
2. Infrared camera
3. Stepladder

INSPECTION METHODS - NON-STANDARD

GUIDE SHEETS

Guide Sheets provide a general overview of the inspection methods and requirements used to provide a general component inspection. Sheets have been developed for each major assembly/component as shown in TABLE TWO below:

TABLE TWO

INSPECTION METHODS . NON-STANDARD

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INSPECTION METHODS - NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: BUSWAY
CONTROL NUMBER: GSNS 0.09.01.02.01

APPLICATION

This guide applies to all non-standard inspection procedures for busway used in low and medium Voltage distribution system assemblies and requires system deenergization.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.
4. The physical deficiencies require the system to be deenergized during the survey event.

CONCURRENT ACTIONS

Annual preventive maintenance tasks.

INSPECTION ACTIONS

Condition assessment and evaluation of busway provides an input to the analysis of functional and physical deficiencies of an electrical distribution system. Because the system exists and is not in a construction process, regulatory deficiencies associated with installation of distribution system are not addressed.

PHYSICAL DEFICIENCIES

1.0 BUSWAY ENCLOSURE
1.1 Interlock broken, missing, or inoperative as measured in protective device test

2.0 FITTING

3.0 CONDUCTORS & FITTINGS
Conductors and fittings other than control wiring encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.02.

4.0 METERING
4.1 Metering does not conform to calibration standard
4.2 Device or indicators broken or inoperative

5.0 DISCONNECT
5.1 Interlock broken, maladjusted, or inoperative as measured in protective device test
5.2 Low resistance between adjacent poles or from a pole to ground as measured in insulation resistance test
5.3 Individual pole resistance does not meet manufacturer's specifications as measured in contact resistance test
5.4 Arc suppression device broken, cracked, missing, tracked, chipped, or other physical damage
5.5 Contact pitted, burned, or discolored
5.6 Stationary contacts pitted, burned, or discolored
5.7 Phase barriers tracked, broken, cracked, missing, or other defect
5.8 Transfer time not in accordance with manufacturer's specifications as measured in time travel analysis test

INSPECTION METHODS - NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: BUSWAY (Continued)
CONTROL NUMBER: GSNS 0.09.01.02.01

PHYSICAL DEFICIENCIES

5.0 DISCONNECT
5.9 Terminals, contact blocks, bus bar, and connectors loose, burned, or discolored
5.10 Contacts not properly aligned
5.11 Interlock broken, missing, or inoperative as measured in protective device test
5.12 Mechanical trip broken, maladjusted, or inoperative as measured in protective device test
5.13 Contacts burned, pitted, discolored, or other physical damage as measured in protective device test
5.14 Adjustable settings maladjusted as measured in protective device test
5.15 Does not trip on overcurrent in accordance with NFPA 70B as measured in protective device test
5.16 UnderVoltage trip missing, broken, maladjusted, or inoperative as measured in protective device test
5.17 Resistance less than one megOhm per kilovolt of rating between poles and/or from poles to non-energized parts as measured in insulation resistance test
5.18 Individual pole resistance does not meet manufacturer's specifications as measured in contact resistance test
5.19 Time current characteristics not per manufacturer's specifications as measured in protective device test
5.20 Does not sustain rated current in accordance with NFPA 70B as measured in sustained current test
5.21 Shunt trip device missing, broken, or inoperative as measured in protective device test
5.22 Series trip device missing, broken, or inoperative as measured in protective device test
5.23 Arc suppression device broken, cracked, missing, tracked, chipped, or other physical damage

6.0 FUSE UNIT
6.1 Resistance less than one megOhm per kiloVolt of rating between poles and/or from poles to non-energized parts as measured in insulation resistance test

7.0 INSTALLATION

8.0 CONTACTOR
8.1 Coil inoperative at 85% of rated Voltage in Voltage pickup test
8.2 Contacts burned, pitted, or other physical damage
8.3 Contact pressure not in accordance with manufacturer's specifications as measured with spring scale
8.4 Contacts not properly aligned
8.5 Arc suppression components broken, eroded, cracked, or missing
8.6 Dash pot inoperative, broken, or missing
8.7 Improper fluid in dash pot as measured in insulating liquid analysis test
8.8 Device sticks magnetically
8.9 Broken strands in braided shunts
8.10 Terminals, contact blocks, bus bars, and connectors loose or discolored
8.11 Resistance less than one megOhm between poles and/or from poles to non-energized parts as measured in insulation resistance test
8.12 Rheostat contact surface corroded, oxidized, uneven, or other physical defect
8.13 Rheostat holding coil missing or inoperative
8.14 Improper rolling action of drum contacts

INSPECTION METHODS - NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: BUSWAY (Continued)
CONTROL NUMBER: GSNS 0.09.01.02.01

PHYSICAL DEFICIENCIES

8.0 CONTACTOR
8.15 Drum contacts inadequately torqued
8.16 Individual pole resistance does not meet manufacturer's specifications as measured in contact resistance test

9.0 BUSBAR
9.1 Resistance less than one megOhm per kiloVolt of rating between buses and/or from buses to other non-energized component when measured with insulation resistance test
9.2 Joints inadequately torqued
9.3 Discolored, warped, or other sign of high temperature
9.4 Inadequately torqued to insulators
9.5 Joints/splices inadequately insulated when required
9.6 Joint/splice insulation burned, discolored, unraveled

10.0 BUSHING/INSULATOR
10.1 Not adequately torqued to mounting surface

11.0 HEATER
11.1 Sensing device broken, missing, or inoperative
11.2 Sensing device malcalibrated
11.3 Inadequate heater resistance to ground when measured by insulation resistance test
11.5 Heater inoperative

12.0 CONTROL WIRING
12.1 Control wiring insulation less than one megOhm per kiloVolt of rating when measured by insulation resistance test
12.2 Inadequately torqued at termination

13.0 MARKING
13.1 Illegible
13.2 Damaged or missing dataplate

14.0 LIGHTNING PROTECTION & SURGE SUPPRESSION
Lightning protection devices or surge suppressors encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSNS 0.09.03.08

TOOLS & MATERIALS

1. Non-Standard Inspection Tools
2. As required for the test being performed.

INSPECTION METHODS - NON-STANDARD

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INSPECTION METHODS - NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: CONDUCTORS & FITTINGS
CONTROL NUMBER: GSNS 0.09.01.02.02

APPLICATION

This guide applies to all non-standard inspection procedures for conductors and fittings used in low and medium Voltage distribution system assemblies. This guide does not apply to control wiring used in devices such as motor control centers or metering.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.
4. Deenergize the systems served by the conductors to be inspected.

CONCURRENT ACTIONS

Annual preventive maintenance tasks.

INSPECTION ACTIONS

Condition assessment and evaluation of conductors and fittings used in low and medium Voltage distribution system provides an input to the analysis of functional and physical deficiencies of an electrical system. Because the system exists and is not in a construction process, regulatory deficiencies associated with installation of conductors and fittings are not addressed.

PHYSICAL DEFICIENCIES

1.0 CABLE/CONDUCTOR
1.1 Conductor resistance to ground or other non-energized component is less than one megOhm per kiloVolt of rating when measured by the insulation resistance test
1.2 Conductor not adequately torqued at device connection
1.3 High resistance splice connection as measured by thermographic inspection

2.0 FITTING

3.0 MARKING
3.1 Illegible
3.2 Damaged or missing dataplate

TOOLS & MATERIALS

1. Non-Standard Inspection Tools
2. As required for the test being performed.

INSPECTION METHODS . NON-STANDARD

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INSPECTION METHODS . NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: DISCONNECTS
CONTROL NUMBER: GSNS 0.09.01.02.03

APPLICATION

This guide applies to all non-standard inspection procedures for those circuit breakers and disconnects (switches with or without fuse blocks and isolating switches) normally used in low and medium Voltage distribution systems as stand alone devices; that is, the disconnect is not part of some larger assembly. A separate guide exists for transfer switches.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.
4. The physical deficiencies require the disconnect to be deenergized during the survey event.

CONCURRENT ACTIONS

Preventive maintenance tasks.

INSPECTION ACTIONS

Condition assessment and evaluation of circuit breakers and switches provide input to an analysis of functional and physical deficiencies of an electrical system. Because the system exists and is not in a construction process, regulatory deficiencies associated with disconnects are not addressed.

PHYSICAL DEFICIENCIES

1.0 CONDUCTORS & FITTINGS
Conductors and fittings other than control wiring encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.02.

2.0 ENCLOSURE
2.1 Interlock broken, missing, or inoperative as measured in protective device test

3.0 DISCONNECT
3.1 Interlock broken, maladjusted, or inoperative as measured in protective device test
3.2 Low resistance between adjacent poles or from a pole to ground as measured in insulation resistance test
3.3 Individual pole resistance does not meet manufacturer's specifications as measured in contact resistance test
3.4 Arc suppression device broken, cracked, missing, tracked, chipped, or other physical damage
3.5 Contact pitted, burned, or discolored
3.6 Stationary contacts pitted, burned, or discolored
3.7 Phase barriers tracked, broken, cracked, missing, or other defect
3.8 Transfer time not in accordance with manufacturer's specifications as measured in time travel analysis test
3.9 Terminals, contact blocks, bus bar, and connectors loose, burned, or discolored
3.10 Contacts not properly aligned
3.11 Interlock broken, missing, or inoperative as measured in protective device test
3.12 Mechanical trip broken, maladjusted, or inoperative as measured in protective device test

INSPECTION METHODS - NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: DISCONNECTS (Continued)
CONTROL NUMBER: GSNS 0.09.01.02.03

PHYSICAL DEFICIENCIES

3.0 DISCONNECT
3.13 Contacts burned, pitted, discolored, or other physical damage as measured in protective device test
3.14 Adjustable settings maladjusted as measured in protective device test
3.15 Does not trip on overcurrent in accordance with NFPA 70B as measured in protective device test
3.16 UnderVoltage trip missing, broken, maladjusted, or inoperative as measured in protective device test
3.17 Resistance less than one megOhm between poles and/or from poles to non-energized parts as measured in insulation resistance test
3.18 Individual pole resistance does not meet manufacturer's specifications as measured in contact resistance test
3.19 Time current characteristics not per manufacturer's specifications as measured in protective device test
3.20 Does not sustain rated current in accordance with NFPA 70B as measured in sustained current test
3.21 Shunt trip device missing, broken, or inoperative as measured in protective device test
3.22 Series trip device missing, broken, or inoperative as measured in protective device test
3.23 Arc suppression device broken, cracked, missing, tracked, chipped, or other physical damage

4.0 BUSHING/INSULATOR
4.1 inadequately torqued to mounting surface or device

5.0 FUSE UNIT
5.1 Resistance less than one megOhm between poles and/or from poles to non-energized parts as measured in insulation resistance test

6.0 PRESSURE RELIEF
6.1 High internal pressure
6.2 No internal pressure

7.0 HEATER
7.1 Sensing device broken, missing, or inoperative
7.2 Sensing device malcalibrated
7.3 Inadequate heater resistance to ground when measured by insulation resistance test
7.4 Heater inoperative

8.0 CONTROL WIRING
8.1 Control wiring insulation less than one megOhm per kiloVolt of rating when measured by insulation resistance test
8.2 Inadequately torqued at termination

9.0 MARKING
9.1 Illegible
9.2 Damaged or missing dataplate

10.0 INSULATING LIQUID
10.1 Low liquid level
10.2 Liquid contaminated as measured in insulating liquid tests

INSPECTION METHODS ▪ NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: DISCONNECTS (Continued)
CONTROL NUMBER: GSNS 0.09.01.02.03

TOOLS & MATERIALS

1. Non-Standard Inspection Tools
2. As required for the test being performed.

INSPECTION METHODS - NON-STANDARD

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INSPECTION METHODS ▪ NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: METERING
CONTROL NUMBER: GSNS 0.09.01.02.04

APPLICATION

This guide applies to all non-standard inspection procedures for metering used in system assemblies.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.
4. The metering circuit must be deenergized during this inspection. Particular attention must be given to current transformer secondary circuits.

CONCURRENT ACTIONS

Annual preventive maintenance tasks.

INSPECTION ACTIONS

Condition assessment and evaluation of metering systems provide an input to the analysis of functional and physical deficiencies of an electrical system. Because the system exists and is not in a construction process, regulatory deficiencies associated with installation of a metering system are not addressed.

PHYSICAL DEFICIENCIES

1.0 METERING
1.1 Metering does not conform to calibration standard
1.2 Device or indicators broken or inoperative

2.0 CONDUCTORS & FITTINGS
Conductors and fittings other than control wiring encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.02.

3.0 DISCONNECT
3.1 Interlock broken, maladjusted, or inoperative as measured in protective device test
3.2 Low resistance between adjacent poles or from a pole to ground as measured in insulation resistance test
3.3 Individual pole resistance does not meet manufacturer's specifications as measured in contact resistance test
3.4 Arc suppression device broken, cracked, missing, tracked, chipped, or other physical damage
3.5 Contact pitted, burned, or discolored
3.6 Stationary contacts pitted, burned, or discolored
3.7 Phase barriers tracked, broken, cracked, missing, or other defect
3.8 Transfer time not in accordance with manufacturer's specifications as measured in time travel analysis test
3.9 Terminals, contact blocks, bus bar, and connectors loose, burned, or discolored
3.10 Contacts not properly aligned
3.11 Interlock broken, missing, or inoperative as measured in protective device test
3.12 Mechanical trip broken, maladjusted, or inoperative as measured in protective device test

INSPECTION METHODS - NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: METERING (Continued)
CONTROL NUMBER: GSNS 0.09.01.02.04

PHYSICAL DEFICIENCIES

3.0 DISCONNECT
3.13 Contacts burned, pitted, discolored, or other physical damage as measured in protective device test
3.14 Adjustable settings maladjusted as measured in protective device test
3.15 Does not trip on overcurrent in accordance with NFPA 70B as measured in protective device test
3.16 UnderVoltage trip missing, broken, maladjusted, or inoperative as measured in protective device test
3.17 Resistance less than one megOhm between poles and/or from poles to non-energized parts as measured in insulation resistance test
3.18 Individual pole resistance does not meet manufacturer's specifications as measured in contact resistance test
3.19 Time current characteristics not per manufacturer's specifications as measured in protective device test
3.20 Does not sustain rated current in accordance with NFPA 70B as measured in sustained current test
3.21 Shunt trip device missing, broken, or inoperative as measured in protective device test
3.22 Series trip device missing, broken, or inoperative as measured in protective device test
3.23 Arc suppression device broken, cracked, missing, tracked, chipped, or other physical damage

4.0 FUSE UNIT
4.1 Resistance less than one megOhm between poles and/or from poles to non-energized parts as measured in insulation resistance test

5.0 BUSBAR
5.1 Resistance less than one megOhm between buses and/or from buses to other non-energized component when measured with insulation resistance test
5.2 Joints inadequately torqued
5.3 Discolored, warped, or other sign of high temperature
5.4 Inadequately torqued to insulators
5.5 Joints/splices inadequately insulated when required
5.6 Joint/splice insulation burned, discolored, unraveled

6.0 BUSHING/INSULATOR
6.1 Not adequately torqued to mounting surface

7.0 CONTROL WIRING
7.1 Control wiring insulation less than one megOhm per kiloVolt of rating when measured by insulation resistance test
7.2 Inadequately torqued at termination

8.0 MARKING
8.1 Illegible
8.2 Damaged or missing dataplate

9.0 LIGHTNING PROTECTION &SURGE SUPPRESSION
Lightning protection devices or surge suppressors encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSNS 0.09.03.08

INSPECTION METHODS . NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: METERING (Continued)
CONTROL NUMBER: GSNS 0.09.01.02.04

TOOLS & MATERIALS

1. Non-Standard inspection Tools
2. As required for the test being performed.

INSPECTION METHODS - NON-STANDARD

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INSPECTION METHODS ▪ NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: MOTORS
CONTROL NUMBER: GSNS **0.09.01.02.05**

APPLICATION

This guide applies to all non-standard inspection procedures for motors larger than ten (10) horsepower used in low and medium Voltage distribution system assemblies. This guide does not apply to motors of ten (10) horsepower and less; such motors are addressed as part of the system that employs the motor.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.
4. The motor must be deenergized during this inspection.

CONCURRENT ACTIONS

Annual preventive maintenance tasks.

INSPECTION ACTIONS

Condition assessment and evaluation of motors used in low and medium Voltage distribution system provides an input to the analysis of functional and physical deficiencies of an electrical system. Because the system exists and is not in a construction process, regulatory deficiencies associated with installation of motors are not addressed.

PHYSICAL DEFICIENCIES

1.0 CABLE/CONDUCTOR
1.1 Conductor resistance to ground or other non-energized component is less than one megOhm per kiloVolt of rating when measured by the insulation resistance test
1.2 High resistance splice connection as measured by thermographic inspection
1.3 Not properly connected to device

2.0 FITTINGS

3.0 BEARINGS
3.1 Improper bearing

4.0 ROTOR/STATOR
4.1 Stator windings burned, charred, or other signs of high temperature
4.2 Rotor windings burned, charred, or other signs of high temperature
4.3 Shorted turns or coils in stator as determined in rotating machinery test
4.4 Shorted turns or coils in rotor as determined in rotating machinery test
4.5 Open turns or coils in stator as determined in rotating machinery test
4.6 Open turns or coils in rotor as determined in rotating machinery test
4.7 Noisy laminations in rotor or stator as measured in noise analysis test
4.8 Unbalanced rotor assembly as measured in vibration analysis test
4.9 Insulation is charred, brittle, discolored
4.10 Splice insulation unraveled, brittle, cracked, or other damage
4.11 Improper winding connections in rotor as determined in rotating machinery test
4.12 Improper winding connections in stator as determined in rotating machinery test
4.13 Non-uniform stator, rotor air gap as determined in rotating machinery test

INSPECTION METHODS . NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: MOTORS (Continued)
CONTROL NUMBER: GSNS 0.09.01.02.05

PHYSICAL DEFICIENCIES

4.0 ROTOR/STATOR
4.14 Bent, scored, or other damage to rotor shaft as determined in rotating machinery test
4.15 Insulation resistance less than one megOhm per each kiloVolt of rating as measured in insulation resistance test
4.16 Broken or inoperative brush rigging assembly in stator as determined in rotating machinery test
4.17 Commutator scored, bent, out-of-round, or other damage as determined in rotating machinery test
4.18 Improper connections to commutator segments as determined in rotating machinery test
4.19 Broken or inoperative centrifugal device in rotor as determined in rotating machinery test
4.20 Broken or inoperative centrifugal switch in stator as determined in rotating machinery test

5.0 MOUNT

6.0 MOTOR APPLICATION
6.1 Inappropriate starting system in stator as determined in rotating machinery test

7.0 HEATER
7.1 Sensing device broken, missing, or inoperative
7.2 Sensing device malcalibrated
7.3 Inadequate heater resistance to ground when measured by insulation resistance test
7.5 Heater inoperative

8.0 MARKING
8.1 Illegible
8.2 Damaged or missing dataplate

9.0 LIGHTNING PROTECTION &SURGE SUPPRESSION
Lightning protection devices or surge suppressors encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSNS 0.09.03.08

TOOLS & MATERIALS

1. Non-Standard Inspection Tools
2. As required for the test being performed.

INSPECTION METHODS - NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: MOTOR CONTROL CENTERS
CONTROL NUMBER: GSNS 0.09.01.02.06

APPLICATION

This guide applies to all non-standard inspection procedures for those devices normally used in assembly of low and medium Voltage motor control centers.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.
4. Physical deficiencies require the motor control center to be deenergized during the survey event.

CONCURRENT ACTIONS

Preventive maintenance tasks.

INSPECTION ACTIONS

Condition assessment and evaluation of low and medium Voltage motor control centers provide input to an analysis of functional and physical deficiencies of the low and medium Voltage distribution system. Because the system exists and is not in a construction process, regulatory deficiencies associated with motor control centers are not addressed.

PHYSICAL DEFICIENCIES

1.0 CONDUCTORS & FITTINGS
Conductors and fittings other than control wiring encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.02.

2.0 ENCLOSURE
2.1 Interlock broken, missing, or inoperative as measured in protective device test

3.0 DISCONNECT
3.1 Interlock broken, missing, or inoperative as measured in protective device test
3.2 Mechanical trip broken, maladjusted, or inoperative as measured in protective device test
3.3 Contacts burned, pitted, discolored, or other physical damage as measured in protective device test
3.4 Adjustable settings maladjusted as measured in protective device test
3.5 Does not trip on overcurrent in accordance with NFPA 70B as measured in protective device test
3.6 UnderVoltage trip missing, broken, maladjusted, or inoperative as measured in protective device test
3.7 Resistance less than one megOhm between poles and/or from poles to non-energized parts as measured in insulation resistance test
3.6 Individual pole resistance does not meet manufacturer's specifications as measured in contact resistance test
3.9 Time current characteristics not per manufacturer's specifications as measured in protective device test

INSPECTION METHODS • NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: MOTOR CONTROL CENTERS (Continued)
CONTROL NUMBER: GSNS 0.09.01.02.06

PHYSICAL DEFICIENCIES

3.0 DISCONNECT
3.10 Does not sustain rated current in accordance with NFPA 70B as measured in sustained current test
3.11 Shunt trip device missing, broken, or inoperative as measured in protective device test
3.12 Series trip device missing, broken, or inoperative as measured in protective device test
3.13 Arc suppression device broken, cracked, missing, tracked, chipped, or other physical damage
3.14 Interlock broken, maladjusted, or inoperative as measured in protective device test
3.15 Low resistance between adjacent poles or from a pole to ground as measured in insulation resistance test
3.16 Individual pole resistance does not meet manufacturer's specifications as measured in contact resistance test
3.17 Arc suppression device broken, cracked, missing, tracked, chipped, or other physical damage
3.18 Contact pitted, burned, or discolored
3.19 Stationary contacts pitted, burned, or discolored
3.20 Phase barriers tracked, broken, cracked, missing, or other defect
3.21 Transfer time not in accordance with manufacturer's specifications as measured in time travel analysis test
3.22 Terminals, contact blocks, bus bar, and connectors loose, burned, or discolored
3.23 Contacts not properly aligned

4.0 FUSE UNIT
4.1 Resistance less than one megOhm between poles and/or from poles to non-energized parts as measured in insulation resistance test

5.0 PRESSURE RELIEF
5.1 High internal pressure
5.2 No internal pressure

6.0 CONTACTOR
6.1 Coil inoperative at 85% of rated Voltage in Voltage pickup test
6.2 Contacts burned, pitted, or other physical damage
6.3 Contact pressure not in accordance with manufacturer's specifications as measured with spring scale
6.4 Contacts not properly aligned
6.5 Arc suppression components broken, eroded, cracked, or missing
6.6 Dash pot inoperative, broken, or missing
6.7 Improper fluid in dash pot as measured in insulating liquid analysis test
6.8 Device sticks magnetically
6.9 Broken strands in braided shunts
6.10 Terminals, contact blocks, bus bars, and connectors loose or discolored
6.11 Resistance less than one megOhm between poles and/or from poles to non-energized parts as measured in insulation resistance test
6.12 Rheostat contact surface corroded, oxidized, uneven, or other physical defect
6.13 Rheostat holding coil missing or inoperative
6.14 Improper rolling action of drum contacts
6.15 Drum contacts inadequately torqued

INSPECTION METHODS ▪ NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: MOTOR CONTROL CENTERS (Continued)
CONTROL NUMBER: GSNS 0.09.01.02.06

PHYSICAL DEFICIENCIES

6.0 CONTACTOR
6.16 Individual pole resistance does not meet manufacturer's specifications as measured in contact resistance test

7.0 HEATER
7.1 Sensing device broken, missing, or inoperative
7.2 Sensing device malcalibrated
7.3 Inadequate heater resistance to ground when measured by insulation resistance test
7.4 Heater inoperative

8.0 BUSHING/INSULATOR
8.1 Not adequately torqued to mounting surface

9.0 CONTROL WIRING
9.1 Control wiring insulation less than one megOhm per kiloVolt of rating when measured by insulation resistance test
9.2 Inadequately torqued at termination

10.0 BUS
10.1 Not properly torqued
10.2 Not adequately secured or braced
10.3 Resistance less than one megOhm between buses and/or from buses to non-energized parts as measured in insulation resistance test
10.4 Not adequately secured or braced

11.0 METERING
11.1 Metering does not conform to calibration standard
11.2 Device or indicators broken or inoperative

12.0 EQUIPMENT PROTECTION
12.1 Incorrect calibration of protective devices or sensors
12.2 Time delay suppression devices missing broken or inoperative

13.0 MARKING

14.0 TRANSFORMERS
Transformers encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.11.

15.0 PANELBOARDS
Panelboards encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.07.

16.0 TRANSFER SWITCHES
Transfer switches encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.10.

17.0 INSULATING LIQUID
17.1 Low liquid level
17.2 Liquid contaminated as measured in insulating liquid tests

INSPECTION METHODS - NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: MOTOR CONTROL CENTERS (Continued)
CONTROL NUMBER: GSNS 0.09.01.02.06

PHYSICAL DEFICIENCIES

18.0 LIGHTNING PROTECTION/SURGE PROTECTION DEVICES
Lightning protection devices or surge suppressors encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSNS 0.09.03.08

TOOLS & MATERIALS

1. Non-Standard Inspection Tools
2. As required for the test being performed.

INSPECTION METHODS ▪ NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: RACEWAY & FITTINGS
CONTROL NUMBER: GSNS 0.09.01.02.08

APPLICATION

This guide applies to all non-standard inspection procedures for raceway and fittings used in low or medium Voltage distribution system assemblies.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.

CONCURRENT ACTIONS

Annual preventive maintenance tasks.

INSPECTION ACTIONS

Condition assessment and evaluation of raceway and fittings used in distribution systems provide an input to the analysis of functional and physical deficiencies of an electrical system. Because the system exists and is not in a construction process, regulatory deficiencies associated with installation of raceway and fittings are not addressed.

FUNCTIONAL DEFICIENCIES

Conductor fill in raceway exceeds amount allowed by NFPA 70 (National electrical code).

PHYSICAL DEFICIENCIES

1.0 RACEWAY
1.1 Low conductivity when grounded conductor neutral test or equipment ground impedance test is performed

2.0 FITTING

3.0 MARKING
3.1 Illegible
3.2 Damaged or missing dataplate

TOOLS & MATERIALS

1. Non-Standard Inspection Tools
2. As required for the test being performed.

INSPECTION METHODS • NON-STANDARD

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INSPECTION METHODS - NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: SWITCHBOARD ASSEMBLY
CONTROL NUMBER: GSNS 0.09.01.02.09

APPLICATION

This guide applies to all non-standard inspection procedures for switchboard assemblies used as part of low and medium Voltage distribution systems. Switchboards used in medium Voltage systems are often referred to as switchgear.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.
4. The physical deficiencies require the switchboard to be deenergized during the survey event.

CONCURRENT ACTIONS

Preventive maintenance tasks.

INSPECTION ACTIONS

Condition assessment and evaluation of switchboard assemblies used in low and medium Voltage distribution systems provide input to an analysis of functional and physical deficiencies of the low and medium Voltage distribution system. Because the system exists and is not in a construction process, regulatory deficiencies associated with switchboards are not addressed.

PHYSICAL DEFICIENCIES

1.0 CONDUCTORS & FITTINGS
Conductors and fittings other than control wiring encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.02.

2.0 BUS
2.1 Joints not properly torqued
2.2 Not adequately secured or braced
2.3 Resistance less than one megOhm between buses and/or from buses to non-energized parts as measured in insulation resistance test
2.4 Not adequately secured or braced

3.0 ENCLOSURE
3.1 Interlock broken, missing, or inoperative as measured in protective device test

4.0 DISCONNECT
4.1 interlock broken, missing, or inoperative as measured in protective device test
4.2 Mechanical trip broken, maladjusted, or inoperative as measured in protective device test
4.3 Contacts burned, pitted, discolored, or other physical damage as measured in protective device test
4.4 Adjustable settings maladjusted as measured in protective device test
4.5 Does not trip on overcurrent in accordance with NFPA 70B as measured in protective device test
4.6 UnderVoltage trip missing, broken, maladjusted, or inoperative as measured in protective device test
4.7 Resistance less than one megOhm between poles and/or from poles to non-energized parts as measured in insulation resistance test

INSPECTION METHODS ▪ NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: SWITCHBOARD ASSEMBLY (Continued)
CONTROL NUMBER: GSNS 0.09.01.02.09

PHYSICAL DEFICIENCIES

4.0 DISCONNECT
4.8 Individual pole resistance does not meet manufacturer's specifications as measured in contact resistance test
4.9 Time current characteristics not per manufacturer's specifications as measured in protective device test
4.10 Does not sustain rated current in accordance with NFPA 70B as measured in sustained current test
4.11 Shunt trip device missing, broken, or inoperative as measured in protective device test
4.12 Series trip device missing, broken, or inoperative as measured in protective device test
4.13 Arc suppression device broken, cracked, missing, tracked, chipped, or other physical damage
4.14 Interlock broken, maladjusted, or inoperative as measured in protective device test
4.15 Low resistance between adjacent poles or from a pole to ground as measured in insulation resistance test
4.16 Individual pole resistance does not meet manufacturer's specifications as measured in contact resistance test
4.17 Arc suppression device broken, cracked, missing, tracked, chipped, or other physical damage
4.18 Contact pitted, burned, or discolored
4.19 Stationary contacts pitted, burned, or discolored
4.20 Phase barriers tracked, broken, cracked, missing, or other defect
4.21 Transfer time not in accordance with manufacturer's specifications as measured in time travel analysis test
4.22 Terminals, contact blocks, bus bar, and connectors loose, burned, or discolored
4.23 Contacts not properly aligned

5.0 FUSE UNIT
5.1 Resistance less than one megOhm between poles and/or from poles to non-energized parts as measured in insulation resistance test

6.0 PRESSURE RELIEF
6.1 High internal pressure
6.2 No internal pressure

7.0 HEATER
7.1 Sensing device broken, missing, or inoperative
7.2 Sensing device malcalibrated
7.3 Inadequate heater resistance to ground when measured by insulation resistance test
7.4 Heater inoperative

8.0 BUSHING/INSULATOR
8.1 Not adequately torqued to, mounting surface

9.0 CONTROL WIRING
9.1 Control wiring insulation less than one megOhm per kiloVolt of rating when measured by insulation resistance test
9.2 Inadequately torqued at termination

INSPECTION METHODS - NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: SWITCHBOARD ASSEMBLY (Continued)
CONTROL NUMBER: GSNS 0.09.01.02.09

PHYSICAL DEFICIENCIES

10.0 METERING
10.1 Metering does not conform to calibration standard
10.2 Device or indicators broken or inoperative

11.0 EQUIPMENT PROTECTION
11.1 Incorrect calibration of protective devices or sensors
11.2 Time delay suppression devices missing broken or inoperative

12.0 MARKING
12.1 Illegible
12.2 Damaged or missing dataplate

13.0 TRANSFORMERS
Transformers encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.11.

14.0 PANELBOARDS
Panelboards encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.07.

15.0 INSULATING LIQUID
15.1 Low liquid level
15.2 Liquid contaminated as measured in insulating liquid tests

16.0 LIGHTNING PROTECTION & SURGE SUPPRESSION
Lightning protection devices or surge suppressors encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSNS 0.09.03.08

TOOLS & MATERIALS

1. Non-Standard Inspection Tools
2. As required for the test being performed.

INSPECTION METHODS - NON-STANDARD

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INSPECTION METHODS - NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: TRANSFER SWITCHES
CONTROL NUMBER: GSNS 0.09.01.02.10

APPLICATION

This guide applies to all non-standard inspection procedures for switches with or without automatic control circuits.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.
4. The physical deficiencies require the switch to be deenergized during the survey event.

CONCURRENT ACTIONS

Preventive maintenance tasks.

INSPECTION ACTIONS

Condition assessment and evaluation of low and medium Voltage transfer switches provide input to an analysis of functional and physical deficiencies of the low and medium Voltage distribution system. Because the system exists and is not in a construction process, regulatory deficiencies associated with switches are not addressed.

FUNCTIONAL DEFICIENCIES

Transfer switch transition is not appropriate for load.

PHYSICAL DEFICIENCIES

1.0 CONDUCTORS & FITTINGS
Conductors and fittings other than control wiring encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.02.

2.0 ENCLOSURE
2.1 Interlock broken, missing, or inoperative as measured in protective device test

3.0 DISCONNECT
3.1 Interlock broken, maladjusted, or inoperative as measured in protective device test
3.2 Low resistance between adjacent poles or from a pole to ground as measured in insulation resistance test
3.3 Individual pole resistance does not meet manufacturer's specifications as measured in contact resistance test
3.4 Arc suppression device broken, cracked, missing, tracked, chipped, or other physical damage
3.5 Contact pitted, burned, or discolored
3.6 Stationary contacts pitted, burned, or discolored
3.7 Phase barriers tracked, broken, cracked, missing, or other defect
3.8 Transfer time not in accordance with manufacturer's specifications as measured in time travel analysis test
3.9 Terminals, contact blocks, bus bar, and connectors loose, burned, or discolored
3.10 Contacts not properly aligned

INSPECTION METHODS ▪ NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: TRANSFER SWITCHES (Continued)
CONTROL NUMBER: GSNS 0.09.01.02.10

PHYSICAL DEFICIENCIES

4.0 BUSHING/INSULATOR
4.1 Inadequately torqued to mounting surface or device

5.0 SOLENOID
5.1 Coil inoperative at 85% of rated Voltage
5.2 Device sticks magnetically
5.3 Conductor or control wiring terminations not adequately torqued

6.0 CONTROL WIRING
6.1 Inoperative
6.2 Less than one megOhm resistance to ground as measured in insulation resistance test
6.3 Time delays not consistent with requirements as measured with timer
6.4 Improper sensor pickup or drop out point as measured with current test set
6.5 Inadequately torqued at termination

7.0 HEATER
7.1 Sensing device broken, missing, or inoperative
7.2 Sensing device malcalibrated
7.3 Inadequate heater resistance to ground when measured by insulation resistance test
7.4 Heater inoperative

8.0 METERING
8.1 Metering does not conform to calibration standard
8.2 Device or indicators broken or inoperative

9.0 MARKING
9.1 Illegible
9.2 Damaged or missing dataplate

10.0 INSULATING LIQUID
10.1 Low liquid level
10.2 Liquid contaminated as measured in insulating liquid tests

11.0 PRESSURE RELIEF
11.1 High internal pressure
11.2 No internal pressure

12.0 BUS
12.1 Not properly torque
12.2 Not adequately secured or braced
12.3 Resistance less than one megOhm between buses and/or from buses to non-energized parts as measured in insulation resistance test
12.4 Not adequately secured or braced

13.0 LIGHTNING PROTECTION &SURGE SUPPRESSION
Lightning protection devices or surge suppressors encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSNS 0.09.03.08

TOOLS & MATERIALS

1. Non-Standard Inspection Tools
2. As required for the test being performed.

INSPECTION METHODS - NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: TRANSFORMERS
CONTROL NUMBER: GSNS 0.09.01.02.11

APPLICATION

This guide applies to all non-standard inspection procedures for power and distribution transformers.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.
4. Physical deficiencies require the transformer to be deenergized during the survey event.

CONCURRENT ACTIONS

Annual preventive maintenance tasks.

INSPECTION ACTIONS

Condition assessment and evaluation of transformers provide an input to the analysis of functional and physical deficiencies of an electrical system. Because the system exists and is not in a construction process, regulatory deficiencies associated with installation of transformers are not addressed.

FUNCTIONAL DEFICIENCIES

1. Review historical records for frequency of circuit breaker trip reset operations or fuse replacement caused by overcurrent of unknown origin(s). Replacement or reset has occurred with frequency of:
   - One or more instances in last 3 months.
   - One or more instances in last month.
2. Excessive operational temperature.
3. Transformer is not appropriate for the load being served.

PHYSICAL DEFICIENCIES

1.0 CONDUCTORS & FITTINGS
Conductors and fittings other than control wiring encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.02.

2.0 TRANSFORMER
2.1 Contaminated coils and core
2.2 Loose cable connections
2.3 Insulation less than one megOhm per kiloVolt of rating when measured by insulation resistance test
2.4 Ventilation vents dirty, clogged, or other contamination
2.5 Open relief valve
2.6 Inoperative relief valve
2.7 Cooling fans inoperative
2.8 Tap changer inoperative
2.9 Pressure leaks as measured in pressure leak test

3.0 ENCLOSURE
3.1 Interlock broken, missing, or inoperative as measured in protective device test

INSPECTION METHODS ▪ NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: TRANSFORMERS (Continued)
CONTROL NUMBER: GSNS 0.09.01.02.11

PHYSICAL DEFICIENCIES

4.0 HEATER
4.1 Sensing device broken, missing, or inoperative
4.2 Sensing device malcalibrated
4.3 Heater resistance less than one megOhm per kiloVolt of rating when measured in insulation resistance test
4.4 Heater inoperative

5.0 BUSHING/INSULATOR
5.1 Not adequately torqued to mounting surface

6.0 EQUIPMENT PROTECTION
6.1 Improper or inadequate primary protection device
6.2 Improper or inadequate secondary protection device
6.3 Improper or inadequate differential protection device
6.4 Incorrect calibration of protective devices or sensors
6.5 Time delay suppression devices missing broken or inoperative

7.0 METERING
7.1 Metering does not conform to calibration standard
7.2 Device or indicators broken or inoperative

8.0 CONTROL WIRING
8.1 Control wiring insulation less than one megOhm per kiloVolt of rating when measured by insulation resistance test
8.2 Inadequately torqued at termination

9.0 MARKING
9.1 Illegible
9.2 Damaged or missing dataplate

10.0 INSULATING LIQUID
10.1 Low liquid level
10.2 Liquid contaminated as measured in insulating liquid tests

11.0 PRESSURE RELIEF
11.1 High internal pressure
11.2 No internal pressure

12.0 VENTILATION
12.1 High operating temperature
12.2 Inlets clogged
12.3 Obstructed
12.4 Location not ventilated

13.0 LIGHTNING PROTECTION & SURGE SUPPRESSION
Lightning protection devices or surge suppressors encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSNS 0.09.03.08

14.0 DISCONNECTS
Disconnects encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.03.

INSPECTION METHODS • NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: TRANSFORMERS (Continued)
CONTROL NUMBER: GSNS 0.09.01.02.11

TOOLS & MATERIALS

1. Non-Standard Inspection Tools
2. As required for the test being performed.

INSPECTION METHODS - NON-STANDARD

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INSPECTION METHODS - NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: SERVICE ENTRANCE ASSEMBLY
CONTROL NUMBER: GSNS 0.09.01 .01

APPLICATION

This guide applies to ail non-standard inspection procedures for all service entrance assemblies.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.

CONCURRENT ACTIONS

Annual preventive maintenance tasks.

INSPECTION ACTIONS

Condition assessment and evaluation of service entrance assemblies provides an analysis of functional and physical deficiencies of an electrical service entrance system. Because the system exists and is not in a construction process, regulatory deficiencies associated with installation of service entrance assemblies are not addressed.

PHYSICAL DEFICIENCIES

1.0 BUSWAY
Busways encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSNS 0.09.02.01.

2.0 CONDUCTORS & FITTINGS
Conductors and fittings other than control are encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.02.

3.0 DISCONNECTS
Disconnects encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSNS 0.09.02.03.

4.0 METERING
Metering encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSNS 0.09.02.04.

5.0 RACEWAY & FITTINGS
Raceway and fittings encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSNS 0.09.02.08.

TOOLS & MATERIALS

1. Non-Standard Inspection Tools
2. As required for the test being performed.

INSPECTION METHODS - NON-STANDARD

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INSPECTION METHODS . NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: LOW VOLTAGE DISTRIBUTION SYSTEM ASSEMBLY
CONTROL NUMBER: GSNS 0.09.01.02

APPLICATION

This guide applies to all non-standard inspection procedures for all low Voltage Distribution System assemblies.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.

CONCURRENT ACTIONS

Annual preventive maintenance tasks.

INSPECTION ACTIONS

Condition assessment and evaluation of low Voltage distribution System assemblies provides an analysis of functional and physical deficiencies of an electrical system. Because the system exists and is not in a construction process, regulatory deficiencies associated with installation of the assembly are not addressed.

PHYSICAL DEFICIENCIES

1.0 BUSWAY
Busways encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSNS 0.09.02.01.

2.0 CONDUCTORS & FITTINGS
Conductors and fittings other than control are encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.02.

3.0 DISCONNECTS
Disconnects encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSNS 0.09.02.03.

4.0 METERING
Metering encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSNS 0.09.02.04.

5.0 MOTORS
Motors encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSNS 0.09.02.05.

6.0 MOTOR CONTROL CENTER
Motor control centers encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSNS 0.09.02.06.

7.0 PANELBOARDS
Panelboards encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSNS 0.09.02.07.

INSPECTION METHODS . NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: LOW VOLTAGE DISTRIBUTION SYSTEM ASSEMBLY (Continued)
CONTROL NUMBER: GSNS 0.09.01.02

PHYSICAL DEFICIENCIES

8.0 RACEWAY & FITTINGS
Raceway and fittings encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSNS 0.09.02.08.

9.0 SWITCHBOARDS
Switchboards encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSNS 0.09.02.09.

10.0 TRANSFER SWITCHES
Transfer switches encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSNS 0.09.02.10.

11 .O TRANSFORMERS
Transformers encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSNS 0.09.02.11.

TOOLS & MATERIALS

1. Non-Standard Inspection Tools
2. As required for the test being performed.

INSPECTION METHODS ▪ NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: PANELBOARD ASSEMBLY

CONTROL NUMBER: GSNS 0.09.01.02.07

APPLICATION

This guide applies to all non-standard inspection procedures for low Voltage panelboard assemblies as used in low Voltage distribution systems.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.
4. Physical deficiencies require the panelboard to be deenergized during the survey event.

CONCURRENT ACTIONS

Preventive maintenance tasks.

INSPECTION ACTIONS

Condition assessment and evaluation of low Voltage panelboard assemblies provides input to an analysis of functional and physical deficiencies of the low Voltage distribution system. Because the system exists and is not in a construction process, regulatory deficiencies associated with panelboards are not addressed.

PHYSICAL DEFICIENCIES

1.0 CONDUCTORS & FITTINGS
Conductors and fittings other than control wiring encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.02.

2.0 ENCLOSURE
2.1 Interlock broken, missing, or inoperative as measured in protective device test

3.0 DISCONNECT
3.1 Interlock broken, missing, or inoperative as measured in protective device test
3.2 Mechanical trip broken, maladjusted, or inoperative as measured in protective device test
3.3 Contacts burned, pitted, discolored, or other physical damage as measured in protective device test
3.4 Adjustable settings maladjusted as measured in protective device test
3.5 Does not trip on overcurrent in accordance with NFPA 70B as measured in protective device test
3.6 UnderVoltage trip missing, broken, maladjusted, or inoperative as measured in protective device test
3.7 Resistance less than one megOhm between poles and/or from poles to non-energized parts as measured in insulation resistance test
3.8 Individual pole resistance does not meet manufacturer's specifications as measured in contact resistance test
3.9 Time current characteristics not per manufacturer's specifications as measured in protective device test
3.10 Does not sustain rated current in accordance with NFPA 70B as measured in sustained current test
3.11 Shunt trip device missing, broken, or inoperative as measured in protective device test

INSPECTION METHODS ▪ NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: PANELBOARD ASSEMBLY (Continued)
CONTROL NUMBER: GSNS 0.09.01.02.07

PHYSICAL DEFICIENCIES

3.0 DISCONNECT
3.12 Series trip device missing, broken, or inoperative as measured in protective device test
3.13 Arc suppression device broken, cracked, missing, tracked, chipped, or other physical damage
3.14 Interlock broken, maladjusted, or inoperative as measured in protective device test
3.15 Low resistance between adjacent poles or from a pole to ground as measured in insulation resistance test
3.16 Individual pole resistance does not meet manufacturer's specifications as measured in contact resistance test
3.17 Arc suppression device broken, cracked, missing, tracked, chipped, or other physical damage
3.18 Contact pitted, burned, or discolored
3.19 Stationary contacts pitted, burned, or discolored
3.20 Phase barriers tracked, broken, cracked, missing, or other defect
3.21 Transfer time not in accordance with manufacturer's specifications as measured in time travel analysis test
3.22 Terminals, contact blocks, bus bar, and connectors loose, burned, or discolored
3.23 Contacts not properly aligned

4.0 FUSE UNIT
4.1 Resistance less than one megOhm between poles and/or from poles to non-energized parts as measured in insulation resistance test

5.0 HEATER
5.1 Sensing device broken, missing, or inoperative
5.2 Sensing device malcalibrated
5.3 Inadequate heater resistance to ground when measured by insulation resistance test
5.4 Heater inoperative

6.0 BUSHING/INSULATOR
6.1 Not adequately torqued to mounting surface

7.0 BUS
7.1 Not properly torqued
7.2 Resistance less than one megOhm between poles and/or from buses to non-energized parts as measured in insulation resistance test
7.3 Discolored, warped, or other signs of high temperature
7.4 Not adequately secured or braced

8.0 METERING
8.1 Metering does not conform to calibration standard
8.2 Device or indicators broken or inoperative

9.0 CONTROL WIRING
9.1 Control wiring insulation less than one megOhm per kiloVolt of rating when measured by insulation resistance test
9.2 Inadequately torqued at termination

10.0 MARKING

INSPECTION METHODS - NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: PANELBOARD ASSEMBLY (Continued)
CONTROL NUMBER: GSNS 0.09.01.02.07

PHYSICAL DEFICIENCIES

11.0 LIGHTNING PROTECTION & SURGE SUPPRESSION
Lightning protection devices or surge suppressors encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSNS 0.09.03.08

TOOLS & MATERIALS

1. Non-Standard Inspection Tools
2. As required for the test being performed.

INSPECTION METHODS - NON-STANDARD

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INSPECTION METHODS . NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: MEDIUM VOLTAGE DISTRIBUTION SYSTEM ASSEMBLY
CONTROL NUMBER: GSNS 0.09.01.03

APPLICATION

This guide applies to all non-standard inspection procedures for all Medium Voltage Distribution System Assemblies.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.

CONCURRENT ACTIONS

Annual preventive maintenance tasks.

INSPECTION ACTIONS

Condition assessment and evaluation of medium Voltage distribution System assemblies provides an analysis of functional and physical deficiencies of an electrical system. Because the system exists and is not in a construction process, regulatory deficiencies associated with installation of the assembly are not addressed.

PHYSICAL DEFICIENCIES

1.0 BUSWAY
Busways encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSNS 0.09.02.01.

2.0 CONDUCTORS & FITTINGS
Conductors and fittings other than control are encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.02.

3.0 DISCONNECTS
Disconnects encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSNS 0.09.02.03.

4.0 METERING
Metering encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSNS 0.09.02.04.

5.0 MOTORS
Motors encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSNS 0.09.02.05.

6.0 MOTOR CONTROL CENTER
Motor control centers encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSNS 0.09.02.06.

7.0 RACEWAY & FITTINGS
Raceway and fittings encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSNS 0.09.02.08.

INSPECTION METHODS - NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: MEDIUM VOLTAGE DISTRIBUTION SYSTEM ASSEMBLY (Continued)

CONTROL NUMBER: GSNS 0.09.01.03

PHYSICAL DEFICIENCIES

8.0 SWITCHBOARDS (SWITCHGEAR)
Switchboards/switchgear encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSNS 0.09.02.09.

9.0 TRANSFER SWITCHES
Transfer switches encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSNS 0.09.02.10.

10.0 TRANSFORMERS
Transformers encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSNS 0.09.02.11.

TOOLS & MATERIALS

1. Non-Standard Inspection Tools
2. As required for the test being performed.

INSPECTION METHODS ▪ NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: LUMINAIRES
CONTROL NUMBER: GSNS 0.09.02.01

APPLICATION

This guide applies to all non-standard inspection procedures for luminaires used in a lighting system and connected to the low Voltage distribution system.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.
4. The luminaire must be deenergized during this inspection.

CONCURRENT ACTIONS

Annual preventive maintenance tasks.

INSPECTION ACTIONS

Condition assessment and evaluation of luminaires in a lighting system provides an input to the analysis of functional and physical deficiencies of an electrical system. Because the system exists and is not in a construction process, regulatory deficiencies associated with installation of luminaires are not addressed.

PHYSICAL DEFICIENCIES

1.0 CONDUCTORS & FITTINGS
Conductors and Fittings, other than fixture wiring, encountered in the evaluation of this luminaire will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.02.

2.0 CONTROL UNITS
Control Units encountered in the evaluation of this luminaire will be inspected in accordance with Guide Sheet GSNS 0.09.03.03.

3.0 RACEWAY & FITTINGS
Raceway and Fittings encountered in the evaluation of this luminaire will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.08.

4.0 HOUSING
4.1 Not properly grounded

5.0 BALLAST
5.1 Inappropriate for application
5.2 Defective capacitor
5.3 Not adequately secured
5.4 Oil leakage
5.5 Dirty, oily, greasy, or other surface contamination
5.6 Transformer coils discolored, burned, or other signs of high temperature
5.7 Corroded, rusted, dented, or other physical damage
5.8 Not properly grounded
5.9 Missing
5.10 Improper and/or inadequate line Voltage
5.11 Inoperative thermal protector

INSPECTION METHODS ▪ NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: LUMINAIRES (Continued)
CONTROL NUMBER: GSNS 0.09.02.01

PHYSICAL DEFICIENCIES

6.0 LAMP
6.1 inadequate base to socket contact pressure
6.2 Ignitor inoperative
6.3 Ignitor inappropriate for application
6.4 Blackening at end of arc tube
6.5 Broken or cracked arc tube

7.0 LENS

8.0 REFLECTOR

9.0 SOCKET
9.1 Inadequate socket contact pressure
9.2 Pitted, burned, or discolored
9.3 Inadequate termination

10.0 FIXTURE WIRING
10.1 Inappropriate for application
10.2 Bundled or trained inappropriately
10.3 Inadequately torqued at termination
10.4 Unauthorized splice
10.5 Splice(s) improperly insulated
10.6 Improper splice
10.7 Insulation improperly removed from conductor
10.8 Insulation charred, burned, or discolored
10.9 insulation nicked, cut, cracked, or other physical damage
10.10 Insulation resistance less than one megOhm per kiloVolt of rating when measured by insulation resistance test

11.0 GLOBE
11.1 Dirty, oily, greasy, or other physical contamination
11.2 Not adequately secured
11.3 Missing, cracked, chipped, or other damage
11.4 inappropriate for application

12.0 SAFETY GUARD
12.2 Not adequately secured
12.2 Missing, broken, or other damage

13.0 FIXTURE HANGER
13.1 Inappropriate for application
13.2 Mot adequately secured
13.3 Missing, broken, corroded, or other physical damage

14.0 MARKING
14.1 Illegible
14.2 Damaged or missing dataplate

INSPECTION METHODS . NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: LUMINAIRES (Continued)
CONTROL NUMBER: GSNS 0.09.02.01

PHYSICAL DEFICIENCIES

15.0 BATTERY/APPLICATION
15.1 Improper liquid level
15.2 Corroded terminals
15.3 Low capacity
15.4 Cracked case
15.5 Leakage of electrolyte
15.6 Insufficient ampacity
15.7 Undercharged
15.8 Overcharged
15.9 Pressure release vent inoperative

16.0 BATTERY/CHARGER
16.1 Inappropriate for application
16.2 Not adequately secured
16.3 Not clean or moisture-free
16.4 Corroded, rusted, dented, or other physical damage
16.5 Top, bottom, or side covering missing
16.6 Abnormal output

17.0 DIMMER SWITCH
17.1 Discolored, burned, or other signs of high temperature
17.2 Not properly grounded
17.3 Inadequate capacity

TOOLS & MATERIALS

1. Non-Standard Inspection Tools
2. As required for the test being performed.

INSPECTION METHODS - NON-STANDARD

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INSPECTION METHODS . NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: CABLE TRAY
CONTROL NUMBER: GSNS 0.09.03.01

APPLICATION

This guide applies to all non-standard inspection procedures for all cable tray assemblies.

SPECIAL INSTRUCTIONS

1. The surveyor will accomplish the standard methods survey in conjunction with this survey.
2. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
3. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
4. Review all operating history documentation prior to inspection.

CONCURRENT ACTIONS

1. Annual preventive maintenance tasks.
2. Accomplish standard method inspection.

INSPECTION ACTIONS

Analysis of functional and physical deficiencies of an electrical system. Because the system exists and is not in a construction process, regulatory deficiencies associated with installation are not addressed.

PHYSICAL DEFICIENCIES

1.0 CABLE TRAY

2.0 INSTALLATION

3.0 CONDUCTORS & FITTINGS
Conductors and fittings other than control wiring encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.02.

4.0 MARKING

5.0 PENETRATION

6.0 RACEWAY & FITTINGS
Raceway and fittings encountered in the inspection of the cable tray assembly will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.08.

TOOLS & MATERIALS

1. Non-Standard Inspection Tools
2. As required for the test being performed.

INSPECTION METHODS - NON-STANDARD

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INSPECTION METHODS - NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: COMMUNICATION CIRCUITS
CONTROL NUMBER: GSNS 0.09.03.02

APPLICATION

This guide applies to all non-standard inspection procedures for communication systems and point-to-point communication systems wiring used in association with electrical systems. This guide does not apply to communication devices.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.
4. Deenergize the systems served by the conductors to be inspected.

CONCURRENT ACTIONS

Annual preventive maintenance tasks.

INSPECTION ACTIONS

Condition Assessment Survey and evaluation of electrical systems used in conjunction with communication systems are part of a facility electrical system assessment. Because the system exists and is not in a construction process, regulatory deficiencies associated with installation are not addressed.

PHYSICAL DEFICIENCIES

1.0 CABLE/CONDUCTOR
1.1 Conductor not adequately torqued at device connection
1.2 Metallic sheath grounding inadequate as measured in equipment ground impedance test

2.0 FITTING

3.0 MARKING
3.1 Illegible
3.2 Damaged or missing dataplate

4.0 RACEWAY
Raceway will be inspected in accordance with Guide Sheet GSNS 0.09.03.02.

5.0 INSTALLATION

6.0 PENETRATION

7.0 LIGHTNING PROTECTION &SURGE SUPPRESSION
Lightning protection devices or surge suppressors encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSNS 0.09.03.08.

TOOLS & MATERIALS

1. Non-Standard Inspection Tools
2. As required for the test being performed.

INSPECTION METHODS . NON-STANDARD

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INSPECTION METHODS . NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: CONTROL UNITS
CONTROL NUMBER: GSNS 0.09.03.03

APPLICATION

This guide applies to non-standard inspection procedures for control units. It applies only to the unique facets of this system. Any part of the electrical system not unique to this system will be evaluated in accordance with the applicable method found elsewhere in this volume.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.
4. The physical deficiencies require the system to be deenergized during the survey event.

CONCURRENT ACTIONS

Preventive maintenance tasks.

INSPECTION ACTIONS

Condition Assessment Survey and evaluation of control units or assemblies provide input to an analysis of functional and physical deficiencies of the facility electrical system. Because the system exists and is not in a construction process, regulatory deficiencies associated with control unit are not addressed.

PHYSICAL DEFICIENCIES

1.0 FITTING

2.0 ENCLOSURE
2.1 Interlock broken, missing, or inoperative as measured in protective device test

3.0 DISCONNECT
3.1 Interlock broken, missing, or inoperative as measured in protective device test
3.2 Mechanical trip broken, maladjusted, or inoperative as measured in protective device test
3.3 Contacts burned, pitted, discolored, or other physical damage as measured in protective device test
3.4 Adjustable settings maladjusted as measured in protective device test
3.5 Does not trip on overcurrent in accordance with NFPA 70B as measured in protective device test
3.6 UnderVoltage trip missing, broken, maladjusted, or inoperative as measured in protective device test
3.7 Resistance less than one megOhm between poles and/or from poles to non-energized parts as measured in insulation resistance test
3.8 Individual pole resistance does not meet manufacturer's specifications as measured in contact resistance test
3.9 Time current characteristics not per manufacturer's specifications as measured in protective device test
3.10 Does not sustain rated current in accordance with NFPA 70B as measured in sustained current test
3.11 Shunt trip device missing, broken, or inoperative as measured in protective device test
3.12 Series trip device missing, broken, or inoperative as measured in protective device test

INSPECTION METHODS . NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: CONTROL UNITS (Continued)
CONTROL NUMBER: GSNS 0.09.03.03

PHYSICAL DEFICIENCIES

3.0 DISCONNECT
3.13 Arc suppression device broken, cracked, missing, tracked, chipped, or other physical damage
3.14 Interlock broken, maladjusted, or inoperative as measured in protective device test
3.15 Low resistance between adjacent poles or from a pole to ground as measured in insulation resistance test
3.16 Individual pole resistance does not meet manufacturer's specifications as measured in contact resistance test
3.17 Arc suppression device broken, cracked, missing, tracked, chipped, or other physical damage
3.18 Contact pitted, burned, or discolored
3.19 Stationary contacts pitted, burned, or discolored
3.20 Phase barriers tracked, broken, cracked, missing, or other defect
3.21 Transfer time not in accordance with manufacturer's specifications as measured in time travel analysis test
3.22 Terminals, contact blocks, bus bar, and connectors loose, burned, or discolored
3.23 Contacts not properly aligned

4.0 FUSE UNIT
4.1 Resistance less than one megOhm between poles and/or from poles to non-energized parts as measured in insulation resistance test

5.0 CABLE/CONDUCTOR

6.0 CONTACTOR
6.1 Coil inoperative at 85% of rated Voltage in Voltage pickup test
6.2 Contacts burned, pitted, or other physical damage
6.3 Contact pressure not in accordance with manufacturer's specifications as measured with spring scale
6.4 Contacts not properly aligned
6.5 Arc suppression components broken, eroded, cracked, or missing
6.6 Dash pot inoperative, broken, or missing
6.7 Improper fluid in dash pot as measured in insulating liquid analysis test
6.8 Device sticks magnetically
6.9 Broken strands in braided shunts
6.10 Terminals, contact blocks, bus bars, and connectors loose or discolored
6.11 Resistance less than one megOhm between poles and/or from poles to non-energized parts as measured in insulation resistance test
6.12 Rheostat contact surface corroded, oxidized, uneven, or other physical defect
6.13 Rheostat holding coil missing or inoperative
6.14 Improper rolling action of drum contacts
6.15 Drum contacts inadequately torqued
6.16 Individual pole resistance does not meet manufacturer's specifications as measured in contact resistance test

7.0 HEATER
7.1 Sensing device broken, missing, or inoperative
7.2 Sensing device malcalibrated
7.3 Inadequate heater resistance to ground when measured by insulation resistance test

INSPECTION METHODS . NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: CONTROL UNITS (Continued)
CONTROL NUMBER: GSNS 0.09.03.03

PHYSICAL DEFICIENCIES

7.0 HEATER
7.4 Heater inoperative

8.0 BUSHING/INSULATOR
8.1 Not adequately torqued to mounting surface

9.0 CONTROL WIRING
9.1 Control wiring insulation less than one megOhm per kiloVolt of rating when measured by insulation resistance test
9.2 Inadequately torqued at termination

10.0 BUS
10.1 Not properly torqued
10.2 Not adequately secured or braced
10.3 Resistance less than one megOhm between buses and/or from buses to non-energized parts as measured in insulation resistance test
10.4 Not adequately secured or braced

11.0 EQUIPMENT PROTECTION
11.1 Incorrect calibration of protective devices or sensors
11.2 Time delay suppression devices missing broken or inoperative

12.0 MARKING
12.1 Illegible
12.2 Damaged or missing dataplate

13.0 TRANSFORMERS
Transformers encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.11.

14.0 PANELBOARDS
Panelboards encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.07.

15.0 TRANSFER SWITCHES
Transfer switches encountered in the inspection of this device will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.10.

16.0 LIGHTNING PROTECTION & SURGE SUPPRESSION
Lightning protection devices or surge suppressors encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSNS 0.09.03.08.

17.0 PHOTOCELL
17.1 Inoperative
17.2 Not clean and moisture-free
17.3 Inappropriate turn-off/turn-on ratio
17.4 Discolored, burned, or other signs of high temperature

TOOLS & MATERIALS

1. Non-Standard Inspection Tools
2. As required for the test being performed.

INSPECTION METHODS ▪ NON-STANDARD

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INSPECTION METHODS ▪ NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: DATA PROCESSING ELECTRICAL EQUIPMENT
CONTROL NUMBER: GSNS 0.09.03.04

APPLICATION

This guide applies to all non-standard inspection procedures for electrical components, assemblies, or systems used in association with data processing equipment systems. This guide does not apply to the data processing equipment.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.

CONCURRENT ACTIONS

Annual preventive maintenance tasks.

INSPECTION ACTIONS

Condition Assessment Survey and evaluation of electrical components, assemblies and systems used in conjunction with automatic data processing equipment are part of a facility electrical system assessment. This guide sheet focuses on the special or unique features of the electrical component, assembly, or system necessary to serve automatic data processing equipment and is to be used with other guides as appropriate. Because the system exists and is not in a construction process, regulatory deficiencies associated with installation are not addressed.

PHYSICAL DEFICIENCIES

1.0 FACILITY
1.1 Smoke and fire dampers, inoperative

2.0 CABLE/CONDUCTOR
2.1 Inappropriate for application
2.2 Insulation burned, charred, or other damage
2.3 Splice insulation unraveled, brittle, cracked, or other damage
2.4 Unauthorized splice
2.5 Not properly connected to device
2.6 Insulation improperly removed from conductor
2.7 Bimetallic connectors not used as required
2.8 Not properly bundled or trained

3.0 GROUND CIRCUIT

4.0 MALAPROPOS DISCONNECT

5.0 MARKING
5.1 Illegible
5.2 Damaged or missing datapiate

6.0 PENETRATION
6.1 Approved seals not used in boundaries.

7.0 BUSWAY
Busways encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.01.

INSPECTION METHODS . NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: CONDENSING UNITS (Continued)
CONTROL NUMBER: GSNS 0.08.04.04

INSPECTION ACTIONS

Shutdown Inspection:

18. Note any inoperative motor starters.
19. Check conduit, control housings, and panels for corrosion, leakage.
20. Check wiring for loose connections. frayed or broken insulation.
21. Check electric controls for worn or pitted contacts, improper safety devices (heaters. fuses)

Return to Service:

22. Ensure that all tools, equipment and materials used for inspection have been removed from the unit.
23. Ensure that all parts, guards and covers have been reinstalled.
24. Notify affected personnel and obtain permission to place unit back in service.
25. Restore valving to normal oosition.
26. Remove lockout on disconnect and restore unit to service.
27. Remove tags from all devices

TOOL6 & MATERIALS

1. Non-Standard Inspection Tools - Mechanical
2. As required for the test being performed.

INSPECTION METHODS . NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: COOLING TOWERS
CONTROL NUMBER: GSNS 0.08.04.05

APPLICATION

This guide applies to all non-standard procedures for cooling towers and related components (fittings, valves, strainers, hangers, insulation. etc.) installed in HVAC Cooling Service and Distribution Systems.

SPECIAL INSTRUCTIONS

1. Review mechanical and electrical plans to determine systems and areas affected by equipment/system outage.
2. Review manufacturer's or installer's rnstructrons.
3. Inspection should be scheduled when system is not in use.
4. Notify affected personnel and obtain oermission to take unit out-of-service.
5. Obtain necessary tools, equipment, and materials.

CONCURRENT ACTIONS

Inspect associated:
- Pipes & Accessories
- Pumps
- Condensers

INSPECTION ACTIONS

Condition Assessment Survey of Cooling Subsystems includes visual survey, examination of building records and analysis. Points include:

Prior to Shutdown:

1. Run unit through a complete operation cycle to identify malfunctioning components.

Unit Shutdown:

2. Power down the unit consistent with department procedure.
3. Isolate and lock out disconnects.
4. Tag out all electrical devices.
5. Isolate unit mechanically by securing water lines.
6. Tag out all secured valves.

Shutdown Inspection:

7. Drain tower thoroughly.
8. Remove access plates (tower should be thoroughly cleaned prior to inspection).
9. Inspect access plates. Note cracks, pitting, defective seals.
10. Check tower interior for corrosion, scale buildup.
11. Check screens, louvers, fill, and eliminators for erosion, corrosion, loose or broken fasteners.
12. Inspect fan assembly for loose or missing fasteners, blading distortion, imbalance.
13. Inspect drive reducer for loose or missing fasteners, leakage, worn gears.
14. Inspect drive shaft for loose or missing fasteners, worn bearings.
15. Check belt sheaves for wear, damage.
16. Inspect basin heating elements. Check for scaling, open elements,
17. Cycle all valves (manual and regulating). Check for smooth operation and positive seating.
18. Check wiring for loose connections, frayed or broken insulation.
19. Check electric controls for worn or pitted contacts, improper safety devices (heaters, fuses).

INSPECTION METHODS - NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: GENERATORS, STANDBY/EMERGENCY (Continued)
CONTROL NUMBER: GSNS 0.09.03.05

PHYSICAL DEFICIENCIES

4.0 ROTOR/STATOR
4.8 Shorted turns or coils in rotor as determined in rotating machinery test
4.9 Open turns or coils in stator as determined in rotating machinery test
4.10 Open turns or coils in rotor as determined in rotating machinery test
4.11 Noisy laminations in rotor or stator as measured in noise analysis test
4.12 Unbalanced rotor assembly as measured in vibration analysis test
4.13 Splice insulation is charred, brittle, discolored
4.14 Splice insulation unraveled, brittle, cracked, or other damage
4.15 Improper winding connections in rotor as determined in rotating machinery test
4.16 Improper winding connections in stator as determined in rotating machinery test
4.17 Non-uniform stator-rotor air gap as determined in rotating machinery test
4.18 Bent, scored, or other damage to rotor shaft as determined in rotating machinery test
4.19 Insulation resistance less than one megOhm per each kiloVolt of rating as measured in insulation resistance test
4.20 Broken or inoperative brush rigging assembly in stator as determined in rotating machinery test
4.21 Slip rings scored, bent, out-of-round, or other damage as determined in rotating machinery test
4.22 Improper connections to slip rings as determined in rotating machinery test
4.23 Commutator scored, bent, out-of-round, or other damage as determined in rotating machinery test
4.24 Improper connections to commutator as determined in rotating machinery test
4.25 Solid state device in rotor field circuit is open or shorted in resistance test
4.26 Solid state device in rotor field is not properly secured to mount

5.0 MOUNT
5.1 Bent or misshapen

6.0 EXHAUST SYSTEM

7.0 HEATER
7.1 Sensing device broken, missing, or inoperative
7.2 Sensing device malcalibrated when measured against standard
7.3 Inadequate heater resistance to ground when measured by insulation resistance test
7.4 Heater inoperative

8.0 MARKING
8.1 Illegible
8.2 Damaged or missing dataplate

9.0 DISCONNECT
9.1 Interlock broken, missing, or inoperative as measured in protective device test
9.2 Mechanical trip broken, maladjusted, or inoperative as measured in protective device test
9.3 Contacts burned, pitted, discolored, or other physical damage as measured in protective device test
9.4 Adjustable settings maladjusted as measured in protective device test
9.5 Does not trip on overcurrent in accordance with NFPA 70B as measured in protective device test
9.6 UnderVoltage trip missing, broken, maladjusted, or inoperative as measured in protective device test

INSPECTION METHODS - NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: GENERATORS, STANDBY/EMERGENCY (Continued)
CONTROL NUMBER: GSNS 0.09.03.05

PHYSICAL DEFICIENCIES

9.0 DISCONNECT
9.7 Resistance less than one megOhm between poles and/or from poles to non-energized parts as measured in insulation resistance test
9.8 Individual pole resistance does not meet manufacturer's specifications as measured in contact resistance test
9.9 Time current characteristics not per manufacturer's specifications as measured in protective device test
9.10 Does not sustain rated current in accordance with NFPA 70B as measured in sustained current test
9.11 Shunt trip device missing, broken, or inoperative as measured in protective device test
9.12 Series trip device missing, broken, or inoperative as measured in protective device test
9.13 Arc suppression device broken, cracked, missing, tracked, chipped, or other physical damage

10.0 LIGHTNING PROTECTION &SURGE SUPPRESSION
Lightning protection devices or surge suppressors encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSNS 0.09.03.08.

11.0 CONTROL WIRING
11.1 Control wiring insulation less than one megOhm per kiloVolt of rating when measured by insulation resistance test
11.2 Inadequately torqued at termination
11.3 Time delays inconsistent when measured with timer
11.4 Improper sensor pickup or dropout value when measured against standard
11.5 Interlock inoperative

12.0 BUSHING/INSULATOR
12.1 Not adequately torqued to mounting surface

13.0 ENGINE
13.1 Low compression in any cylinder when measured with compression gauge
13.2 Defective injector spray pattern when measured in test unit
13.3 Overheats under full load
13.4 Does not reach operating temperature under full load at one hour
13.5 Low oil pressure after one hour at full load
13.6 Combustion air filter missing, defective, or dirty
13.7 Lube oil filter contaminated or dirty
13.8 Fuel filter missing, dirty, or wrong size or type
13.9 Lube oil does not meet specifications as determined in oil analysis
13.10 Engine coolant does not meet specifications as measured in laboratory analysis
13.11 Engine-alternator/generator alignment improper
13.12 Overspeed trip device missing or defective
13.13 Emergency shutdown device missing or defective

14.0 METERING
14.1 Calibration standard not established
14.2 Device broken or other physical defect
14.3 Tampering of device or circuit
14.4 Device inadequately sized

INSPECTION METHODS - NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: GENERATORS, STANDBY/EMERGENCY (Continued)
CONTROL NUMBER: GSNS 0.09.03.05

PHYSICAL DEFICIENCIES

14.0 METERING
14.5 Device inoperative

15.0 EXCITER/VOLTAGE REGULATOR
15.1 Will not flash field
75.2 Will not establish rated Voltage
15.3 Will not maintain rated Voltage under no-load to full-load
15.4 Will not adjust output Voltage manually
15.5 Non-linear across load rating
15.6 Response fast, slow or atypical when subjected to step load change

16.0 TRANSFER SWITCH
If transfer switches are encountered in the inspection of this device then the transfer switch will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.10.

17.0 START SYSTEM
17.1 Air receivers discharged
17.2 Batteries discharged
17.3 Battery charger inoperative
17.4 Inoperative solenoid
17.5 Inoperative starter motor
17.6 Low air capacity

18.0 LOCAL FUEL SYSTEM
18.1 Control valves dysfunctional
18.2 Filters dirty, missing, wrong size
18.3 Fuel stale or old
18.4 Storage tank dented, rusted, or other damage
18.5 Water present

19.0 PENETRATION
19.1 Approved seals not used

20.0 ENCLOSURE
20.1 Interlock broken, missing, or inoperative as measured in protective test

21.0 FUSE UNIT
21.1 Resistance less than one megOhm between poles and/or from poles to non-energized parts as measured in insulation resistance test

TOOLS & MATERIALS

1. Non-Standard Inspection Tools
2. As required for the test being performed.

INSPECTION METHODS - NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: HEALTH CARE FACILITIES ELECTRICAL EQUIPMENT
CONTROL NUMBER: GSNS 0.09.03.06

APPLICATION

This guide applies to all non-standard inspection procedures for electrical components, devices, assemblies, or systems used in association with health care systems. The guide does not apply to the health care system equipment.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.

CONCURRENT ACTIONS

Annual preventive maintenance tasks.

INSPECTION ACTIONS

Condition Assessment Survey and evaluation of electrical components, devices, assemblies and systems used in conjunction with health care systems equipment are part of a facility electrical system assessment. This guide sheet focuses on the special or unique features of the electrical component, device, assembly, or system necessary to serve health care equipment and is to be used with other guides as appropriate. Because the system exists and is not in a construction process, regulatory deficiencies associated with installation are not addressed.

PHYSICAL DEFICIENCIES

1.0 LOCATION
1.1 Components not properly rated for location
1.2 Storage device for flexible cable missing or defective
1.3 Panelboard bonding not used or defective
1.4 Transfer switches not present or adequate for essential service
1.5 Essential system not adequately tested or maintained
1.6 Potential difference between conductive surfaces exceeds 500 milliVolt in general care area when frequency is less than one kiloHertz as measured across a 1,000 Ohm resistance
1.7 Potential difference between conductive surfaces exceeds 40 milliVolt in critical care area when frequency is less than one kiloHertz as measured across a 1,000 Ohm resistance

2.0 PENETRATION

3.0 ESSENTIAL SYSTEMS
3.1 System will not operate when tested
3.2 Unauthorized loads connected to emergency system

4.0 GROUNDING
4.1 Panelboards not bonded together

5.0 CABLE/CONDUCTOR
5.1 Inappropriate for application
5.2 Insulation burned, charred, or other damage
5.3 Splice insulation unraveled, brittle, cracked, or other damage
5.4 Unauthorized splice
5.5 Not properly connected to device

INSPECTION METHODS - NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: HEALTH CARE FACILITIES ELECTRICAL EQUIPMENT (Continued)
CONTROL NUMBER: GSNS 0.09.03.06

PHYSICAL DEFICIENCIES

5.0 CABLE/CONDUCTOR
5.6 Insulation improperly removed from conductor
5.7 Bimetallic connectors not used as required
5.8 Not properly bundled or trained

6.0 MARKING
6.1 Illegible
6.2 Damaged or missing dataplate

7.0 INADEQUATE SERVICE

8.0 BUSWAY
Busways encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.01.

9.0 CONDUCTORS & FITTINGS
Conductors and fittings used in association with this equipment will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.02.

10.0 DISCONNECTS
Disconnects encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.03.

11.0 PANELBOARDS
Panelboards encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.07.

12.0 RACEWAY & FITTINGS
Raceway and fittings encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.08.

13.0 SWITCHBOARDS
Switchboards encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.09.

14.0 TRANSFER SWITCHES
Transfer switches encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.10.

15.0 TRANSFORMERS
Transformers encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.11.

16.0 LIGHTNING PROTECTION & SURGE SUPPRESSION
Lightning protection devices or surge suppressors encountered in the inspection of this equipment will be inspected in accordance with Guide Sheet GSNS 0.09.03.08.

TOOLS & MATERIALS

1. Non-Standard Inspection Tools
2. As required for the test being performed.

INSPECTION METHODS - NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: HEATING, BASEBOARD RADIATION
CONTROL NUMBER: GSNS 0.09.03.07

APPLICATION

This guide applies to non-standard inspection procedures for heating, baseboard radiation. It applies only to the unique facets of this system. Any part of the electrical system not unique in this system will be evaluated in accordance with the applicable method found elsewhere in this volume.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.
4. The physical deficiencies require the system to be deenergized during the survey event.

CONCURRENT ACTIONS

Preventive maintenance tasks.

INSPECTION ACTIONS

Condition Assessment Survey and evaluation of baseboard radiation heating units or assemblies provide input to an analysis of functional and physical deficiencies of the facility electrical system. Because the system exists and is not in a construction process, regulatory deficiencies associated with baseboard radiation heating units are not addressed.

PHYSICAL DEFICIENCIES

1.0 CABLE/CONDUCTOR
1.1 Inappropriate for application
1.2 Insulation burned, charred, or other damage
1.3 Splice insulation unraveled, brittle, cracked, or other damage
1.4 Unauthorized splice
1.5 Not properly connected to device
1.6 Insulation improperly removed from conductor
1.7 Bimetallic connectors not used as required
1.8 Not properly bundled or trained

2.0 ENCLOSURE
2.1 Not grounded properly when measured equipment ground test

3.0 DISCONNECT
3.1 Mechanical trip broken, maladjusted, or inoperative as measured in protective device test
3.2 Contacts burned, pitted, discolored, or other physical damage as measured in protective device test
3.3 Adjustable settings maladjusted as measured in protective device test
3.4 Does not trip on overcurrent in accordance with NFPA 70B as measured in protective device test
3.5 UnderVoltage trip missing, broken, maladjusted, or inoperative as measured in protective device test
3.6 Resistance less than one megOhm between poles and/or from poles to non-energized parts as measured in insulation resistance test

INSPECTION METHODS ▪ NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: HEATING, BASEBOARD RADIATION (Continued)
CONTROL NUMBER: GSNS 0.09.03.07

PHYSICAL DEFICIENCIES

3.0 DISCONNECT
3.7 Individual pole resistance does not meet manufacturer's specifications as measured in contact resistance test
3.8 Time current characteristics not per manufacturer's specifications as measured in protective device test
3.9 Does not sustain rated current in accordance with NFPA 70B as measured in sustained current test
3.10 Shunt trip device missing, broken, or inoperative as measured in protective device test
3.11 Series trip device missing, broken, or inoperative as measured in protective device test
3.12 Arc suppression device broken, cracked, missing, tracked, chipped, or other physical damage
3.13 Interlock broken, maladjusted, missing, or inoperative as measured in protective device test
3.14 Low resistance between adjacent poles or from a pole to ground as measured in insulation resistance test
3.15 Individual pole resistance does not meet manufacturer's specifications as measured in contact resistance test
3.16 Stationary contacts pitted, burned, or discolored
3.17 Phase barriers tracked, broken, cracked, missing, or other defect
3.18 Transfer time not in accordance with manufacturer's specifications as measured in time travel analysis test
3.19 Terminals, contact blocks, bus bar, and connectors loose, burned, or discolored
3.20 Contacts not properly aligned

4.0 CONTROL WIRING
4.1 Control wiring insulation less than one megOhm per kiloVolt of rating when measured by insulation resistance test
4.2 Inadequately torqued at termination

5.0 EQUIPMENT PROTECTION
5.1 Improper or inadequate protection device when measured in protective device test

6.0 MARKING
6.1 Illegible
6.2 Damaged or missing dataplate

7.0 INSTALLATION
7.1 Conductor or cable not appropriate for installation
7.2 Condustor or cable not listed
7.3 Hanger not adequately secured to structure
7.5 Inadequate grounding
7.6 Inadequate ventilation
7.7 Missing vertical run hardware
7.8 No bushing or equivalent protection
7.9 Not adequately protected from severe physical damage
7.10 Not adequately secured to mounting surface
7.11 Not appropriate for location
7.12 Not clearly and permanently marked where required
7.13 Not properly spaced from combustible materials

INSPECTION METHODS . NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: HEATING, BASEBOARD RADIATION (Continued)
CONTROL NUMBER: GSNS 0.09.03.07

PHYSICAL DEFICIENCIES

7.0 INSTALLATION
7.14 Not secured within three feet of end of run
7.15 Unauthorized conductor present
7.16 Unused openings not covered or plugged

TOOLS & MATERIALS

1. Non-Standard Inspection Tools
2. As required for the test being performed.

INSPECTION METHODS - NON-STANDARD

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INSPECTION METHODS - NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: LIGHTNING PROTECTION &SURGE SUPPRESSION
CONTROL NUMBER: GSNS 0.09.03.08

APPLICATION

This guide applies to non-standard inspection procedures for lightning protection & surge suppression. It applies only to the unique facets of these devices. The part of the electrical system in support of these devices will be evaluated in accordance with the applicable method found elsewhere in this volume.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.
4. The physical deficiencies require the system to be deenergized during the survey event.

CONCURRENT ACTIONS

Preventive maintenance tasks.

INSPECTION ACTIONS

Condition Assessment Survey and evaluation of lightning protection/surge suppression devices provide an input to an analysis of functional and physical deficiencies of the facility electrical system. Because the system exists and is not in a construction process, regulatory deficiencies associated with lightning protection/surge suppression devices are not addressed.

PHYSICAL DEFICIENCIES

1.0 CABLE/CONDUCTOR
1.1 Inappropriate for application
1.2 Insulation burned, charred, or other damage
1.3 Splice insulation unraveled, brittle, cracked, or other damage
1.4 Unauthorized splice
1.5 Not properly connected to device
1.6 Insulation improperly removed from conductor
1.7 Bimetallic connectors not used as required
1.8 Not properly bundled or trained

2.0 CONNECTION
2.1 Not connected to authorized ground point
2.2 Metallic interconnection not used in grounding

3.0 LOCATION

4.0 PENETRATION

5.0 RATING

6.0 DEVICE
6.1 Isolator has opened ground circuit
6.2 Air horns bent, malformed, or other physical damage
6.3 Fiber tube destroyed
6.4 Thyrite discs broken, missing, or other physical damage
6.5 Device not secured to mount

INSPECTION METHODS ▪ NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: LIGHTNING PROTECTION & SURGE SUPPRESSION (Continued)

CONTROL NUMBER: GSNS 0.09.03.08

PHYSICAL DEFICIENCIES

6.0 DEVICE
6.6 Dirty, oily, greasy, or other surface contamination

7.0 MARKING
7.1 Illegible
7.2 Damaged or missing dataplate

TOOLS & MATERIALS

1. Non-Standard Inspection Tools
2. As required for the test being performed.

INSPECTION METHODS - NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: PETROLEUM DISPENSING FACILITIES ELECTRICAL EQUIPMENT
CONTROL NUMBER: GSNS 0.09.03.09

APPLICATION

This guide applies to all non-standard inspection procedures for electrical components, devices, assemblies, or **systems used** in association with petroleum dispensing station systems. This guide does not apply to the petroleum dispensing station system equipment.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.

CONCURRENT ACTIONS

Annual preventive maintenance tasks.

INSPECTION ACTIONS

Condition Assessment Survey and evaluation of electrical components, devices, assemblies and systems used in conjunction with petroleum dispensing station systems equipment are part of a facility electrical system assessment. This guide sheet focuses on the special or unique features of the electrical component, device, assembly, or system necessary to serve petroleum dispensing facilities electrical equipment and is to be used with other guides as appropriate. Because the system exists and is not in a construction process, regulatory deficiencies associated with installation are not addressed.

PHYSICAL DEFICIENCIES

1.0 DEVICE APPLICATION

2.0 CABLE/CONDUCTOR
2.1 Inappropriate for application
2.2 Insulation burned, charred, or other damage
2.3 Splice insulation unraveled, brittle, cracked, or other damage
2.4 Unauthorized splice
2.5 Not properly connected to device
2.6 Insulation improperly removed from conductor
2.7 Bimetallic connectors not used as required
2.8 Not properly bundled or trained

3.0 ENCLOSURE
3.1 Not adequate for application
3.2 Corroded, rusted, dented, or other physical damage
3.3 Not secured to mounting surface
3.4 Unused openings **not covered or plugged**
3.5 **Not grounded properly**
3.6 **Pedestal mounting surface chipped, cracked, broken, or other physical damage**
3.7 **Not accessible**
3.8 **Vent defective/nonoperative**
3.9 **Oil leak**
3.10 **No curbing or berm for oil containment**
3.11 **Not clean and moisture-free**

INSPECTION METHODS - NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: PETROLEUM DISPENSING FACILITIES ELECTRICAL EQUIPMENT (Continued)

CONTROL NUMBER: GSNS 0.09.03.09

PHYSICAL DEFICIENCIES

4.0 LOCATION

5.0 MARKING
5.1 Illegible
5.2 Damaged or missing dataplate

6.0 PENETRATION

7.0 SEAL

8.0 UNDERGROUND WIRING

9.0 BUSWAY
Busways encountered in the inspection of the Petroleum Dispensing Facilities Electrical Equipment will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.01.

10.0 CONDUCTORS & FITTINGS
Conductors and fittings used in association with Petroleum Dispensing Facilities Electrical Equipment will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.02.

11.0 DISCONNECTS
Disconnects encountered in the inspection will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.03.

12.0 PANELBOARDS
Panelboards encountered in the inspection be inspected in accordance with Guide Sheet GSNS 0.09.01.02.07.

13.0 RACEWAY & FITTINGS
Raceway and fittings encountered in the inspection will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.08.

14.0 SWITCHBOARDS
Switchboards encountered in the inspection will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.09.

15.0 TRANSFER SWITCHES
Transfer switches encountered in the inspection will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.10.

16.0 TRANSFORMERS
Transformers encountered in the inspection will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.11.

TOOLS & MATERIALS

1. Non-Standard Inspection Tools
2. As required for the test being performed.

INSPECTION METHODS - NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: SIGNAL CIRCUITS
CONTROL NUMBER: GSNS 0.09.03.10

APPLICATION

This guide applies to all non-standard inspection procedures for signal circuits and point-to-point wiring of the signal circuit used in association with electrical systems. This guide does not apply to the connected equipment.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize circuit interruption and downtime.
3. Review all operating history documentation prior to inspection.

CONCURRENT ACTIONS

Annual preventive maintenance tasks.

INSPECTION ACTIONS

Condition Assessment Survey and evaluation of electrical systems used in conjunction with signal circuits are part of a facility electrical system assessment. Since the circuit exists and is not in a construction process, regulatory deficiencies associated with installation are not addressed.

PHYSICAL DEFICIENCIES

1.0 OVERCURRENT DEVICE
1.1 Conductors less than 14 AWG not properly protected when measured by protective device test
1.2 Improperly sized at more than 167% of source when measured by protective device test

2.0 RATING
2.1 More than 20 Amperes available at full load test with load bank
2.2 System rating exceeds 30 Volts and 1000 Volt-Amperes available to load when measured at load bank
2.3 Non-transformer source rating exceeds 2500 Volt-Amperes when measured with load bank

3.0 FITTING

4.0 MARKING

5.0 RACEWAY & FITTINGS
Raceway and fittings encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSNS 0.09.01.02.08.

6.0 LIGHTNING PROTECTION & SURGE SUPPRESSION
Lightning protection devices or surge suppressors encountered in the inspection of this system will be inspected in accordance with Guide Sheet GSNS 0.09.03.08.

7.0 CABLE/CONDUCTOR
7.1 Inappropriate for application
7.2 Insulation burned, charred, or other damage
7.3 Splice insulation unraveled, brittle, cracked, or other damage
7.4 Unauthorized splice
7.5 Not properly connected to device
7.6 insulation improperly removed from conductor

INSPECTION METHODS - NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: SIGNAL CIRCUITS
CONTROL NUMBER: GSNS 0.09.03.10

PHYSICAL DEFICIENCIES

7.0 CABLE/CONDUCTOR
7.7 Bimetallic connectors not used as required
7.8 Not properly bundled or trained

8.0 PENETRATION

9.0 POWER SUPPLY

TOOLS & MATERIALS

1. Non-Standard Inspection Tools
2. As required for the test being performed.

INSPECTION METHODS - NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: UNINTERRUPTIBLE POWER SUPPLIES
CONTROL NUMBER: GSNS 0.09.03.11

APPLICATION

This guide applies to non-standard inspection procedures for uninterruptible power supplies. It applies only to the unique facets of these devices. The part of the electrical system in support of these devices will be evaluated in accordance with the applicable method found elsewhere in this volume.

SPECIAL INSTRUCTIONS

1. Review as-builts and other documentation to ensure that all interlocks are known prior to initiating the inspection process.
2. Schedule this inspection to coincide with programmed maintenance activities to minimize system interruption and downtime.
3. Review all operating history documentation prior to inspection.

CONCURRENT ACTIONS

Preventive maintenance tasks.

INSPECTION ACTIONS

Condition Assessment Survey and evaluation of Uninterruptible Power Supplies provide an input to an analysis of functional and physical deficiencies of the facility electrical system. Because the system exists and is not in a construction process, regulatory deficiencies associated with Uninterruptible Power Supplies are not addressed.

PHYSICAL DEFICIENCIES

1.0 BATTERY/APPLICATION
1.1 Low capacity when time tested with load bank
1.2 Corroded terminals when connectors are removed

2.0 CABLE/CONDUCTOR
2.1 Terminations not properly torqued

3.0 MOTOR APPLICATION

4.0 MOTORS
Motors encountered in this inspection will be evaluated in accordance with guide sheet GSNS 0.09.02.05.

5.0 BEARINGS

6.0 METERING
6.1 Calibration standard not established
6.2 Device broken or other physical defect
6.3 Tampering of device or circuit
6.4 Device inadequately sized
6.5 Device inoperative

7.0 MARKING
Metering will be inspected in accorance with Guide Sheet GSNS 0.09.01.02.04.

8.0 BUSHING/INSULATOR
8.1 Not adequately torqued to mounting surface

INSPECTION METHODS - NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: UNINTERRUPTIBLE POWER SUPPLIES (Continued)
CONTROL NUMBER: GSNS 0.09.03.11

PHYSICAL DEFICIENCIES

9.0 CONTROL WIRING
9.1 Control wiring insulation less than one megOhm per kiloVolt of rating when measured by insulation resistance test
9.2 Inadequately torqued at termination

10.0 DEVICE APPLICATION

11.0 DISCONNECT
11.1 Mechanical trip broken, maladjusted, or inoperative as measured in protective device test
11.2 Contacts burned, pitted, discolored, or other physical damage as measured in protective device test
11.3 Adjustable settings maladjusted as measured in protective device test
11.4 Does not trip on overcurrent in accordance with NFPA 70B as measured in protective device test
11.5 UnderVoltage trip missing, broken, maladjusted, or inoperative as measured in protective device test
11.6 Resistance less than one megOhm between poles and/or from poles to non-energized parts as measured in insulation resistance test
11.7 Individual pole resistance does not meet manufacturer's specifications as measured in contact resistance test
11.8 Time current characteristics not per manufacturer's specifications as measured in protective device test
11.9 Does not sustain rated current in accordance with NFPA 70B as measured in sustained current test
11.10 Shunt trip device missing, broken, or inoperative as measured in protective device test
11.11 Series trip device missing, broken, or inoperative as measured in protective device test
11.12 Arc suppression device broken, cracked, missing, tracked, chipped, or other physical damage
11.13 Interlock broken, maladjusted, missing, or inoperative as measured in protective device test
11.14 Low resistance between adjacent poles or from a pole to ground as measured in insulation resistance test
11.15 Individual pole resistance does not meet manufacturer's specifications as measured in contact resistance test
11.16 Stationary contacts pitted, burned, or discolored
11.17 Phase barriers tracked, broken, cracked, missing, or other defect
11.18 Transfer time not in accordance with manufacturer's specifications as measured in time travel analysis test
11.19 Terminals, contact blocks, bus bar, and connectors loose, burned, or discolored
11.20 Contacts not properly aligned

12.0 ENCLOSURE

13.0 EXCITER/VOLTAGE REGULATOR

14.0 FITTING

15.0 FUSE UNIT

INSPECTION METHODS ▪ NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: UNINTERRUPTIBLE POWER SUPPLIES (Continued)
CONTROL NUMBER: GSNS 0.09.03.11

PHYSICAL DEFICIENCIES

16.0 HEATER
16.1 Sensing device broken, missing, or inoperative
16.2 Sensing device malcalibrated
16.3 Inadequate heater resistance to ground when measured by insulation resistance test
16.4 Heater inoperative

17.0 MOUNT
17.1 Bent or misshapen

18.0 RECTIFIER/INVERTER

19.0 ROTOR/STATOR
19.1 Not clean and moisture-free
19.2 Bent shaft
19.3 Parted laminations
19.4 Scored shaft
19.5 Stator windings burned, charred, or other signs of high temperature
19.6 Rotor windings burned, charred, or other signs of high temperature
19.7 Shorted turns or coils in stator as determined in rotating machinery test
19.8 Shorted turns or coils in rotor as determined in rotating machinery test
19.8 Open turns or coils in stator as determined in rotating machinery test
19.10 Open turns or coils in rotor as determined in rotating machinery test
19.11 Noisy laminations in rotor or stator as measured in noise analysis test
19.12 Unbalanced rotor assembly as measured in vibration analysis test
19.13 Splice insulation is charred, brittle, discolored
19.14 Splice insulation unraveled, brittle, cracked, or other damage
19.15 Improper winding connections in rotor as determined in rotating machinery test
19.16 Improper winding connections in stator as determined in rotating machinery test
19.17 Non-uniform stator-rotor air gap as determined in rotating machinery test
19.18 Bent, scored, or other damage to rotor shaft as determined in rotating machinery test
19.19 Insulation resistance less than one megOhm per each kiloVolt of rating as measured in insulation resistance test
19.20 Broken or inoperative brush rigging assembly in stator as determined in rotating machinery test
19.21 Slip rings scored, bent, out-of-round, or other damage as determined in rotating machinery test
19.22 Improper connections to slip rings as determined in rotating machinery test
19.23 Commutator scored, bent, out-of-round, or other damage as determined in rotating machinery test
19.24 Improper connections to commutator as determined in rotating machinery test
19.25 Solid state device in rotor field circuit is open or shorted in resistance test
19.26 Solid state device in rotor field is not properly secured to mount

20.0 ALTERNATORS/GENERATORS
Alternators or generators encountered in this inspection will be evaluated using guide sheet GSNS 0.09.03.05.

21.0 TRANSFER SWITCHES
Transfer switches encountered in this inspection will be evaluated using guide sheet GSNS 0.09.01.02.10.

INSPECTION METHODS - NON-STANDARD

GUIDE SHEET

SYSTEM/COMPONENT: UNINTERRUPTIBLE POWER SUPPLIES (Continued)
CONTROL NUMBER: GSNS 0.09.03.11

PHYSICAL DEFICIENCIES

22.0 TRANSFORMERS
Transformers encountered in this inspection will be evaluated using guide sheet GSNS 0.09.01.02.11.

23.0 DISCONNECTS
Disconnects encountered in this inspection will be evaluated using guide sheet GSNS 0.09.01 .02.03.

TOOLS & MATERIALS

1. Non-Standard Inspection Tools
2. As required for the test being performed

END OF SUBSECTION

DATA COLLECTION METHODS

GENERAL

The heart of the CAS System is built around the hand-held data collection device and the CAIS software that supports it. As discussed in the Introduction, this is a "new way" of seeing and recording specific standardized information. Several phases are involved in the CAS inspection process. They include:

PHASE I PRESURVEY

- Facility managers review assets and assign each an Asset Determinant Factor (ADF) to define the level and type of inspection to be accomplished (see Subsection 1 .1 for definition).
- Facility managers assign specific assets to CAS inspectors.
- The CAS Inspector reviews existing asset data (including as-builts and past repair reports) and the Work Breakdown Structure (WBS) systems requiring inspection, which are then subdivided as necessary. (For example, a large roof may be subdivided into four (4) WBS items such as North, South, East and West sections.)
- The inspector establishes the Inspection Units (IU) to be surveyed based on the WBS (or multiple WBS). IUs may also be added in the field.
- Facility manager and/or staff downloads asset data into the hand-held data collection device.

PHASE 2 SURVEY

- Conduct CAS inspection.
- Upload data into PC-based CAIS.
- Review raw data "universal" reports.

PHASE 3 POSTSURVEY

- Correct data, as necessary, issue final "universal" report, and create other required reports for facility managers.
- Data and reports are created and issued through DOE hierarchy (see Introduction).

ENTERING DATA: DATA COLLECTION MENU

SURVEY STEP: **LOGIN** SCREEN 1.0

The screen contains identification data including the inspector's name, ID number, and discipline to be inspected. This data may be input or preloaded. From this screen, several information and help pop-up aids can be accessed. Help functions would provide screen-specific instructions, and information functions would list special management instructions and/or schedules specifically for the inspector.

SURVEY STEP: ASSET IDENTIFICATION SCREEN 2.0

Asset identification including class, type, ADF number (see subsection 1.1 for ADF description), and asset ID numbers are captured on this screen. Pop-up screens with preformatted picklists (for type and class) are provided for the inspector's review and selection. Additional support screens include ASSET DIMENSIONS indicating key elements required for inspection (such as asset gross square footage, perimeter, height, etc.); and ASSET DESCRIPTION for recording asset name and address. Such information would be entered (or verified) by the inspector prior to the actual asset CAS inspection.

SURVEY STEP: WBS SELECTION SCREEN 3.0

This screen displays the preselected systems and WBS listings based on the ADF selected for the particular asset. Although all WBS assemblies for a system will be listed, the inspector selects only assemblies applicable to the specific asset. For example, although all system 0.05 Roof WBS categories are listed, the inspector would eliminate all non-applicable categories by "de-selecting" non-applicable items. Once this process is complete, the inspector can re-sort the included WBS items. Columns are also provided that indicate the survey status for each WBS item.

At this point, the inspector can subdivide the WBS. For example, the inspector may elect to split a large roof into four sections, each as a separate WBS, or isolate a pump from a WBS containing several pumps. This feature will allow the inspector to logically build his survey based on the unique properties and requirements of each asset.

Finally, while most WBS structuring will be accomplished prior to the CAS inspection, WBS subdivision can also be done in the field.

DATA COLLECTION METHODS

ENTERING **DATA:** DATA **COLLECTION** MENU (Continued)

SURVEY STEP: INSPECTION **UNIT (IU)** SELECTION SCREEN 4.0

While screen 3.0 defines the WBS structure, screen 4.0 concerns selecting the IU for each WBS category. In the CAIS software, the base CAS (see subsection 1.1 for definition) is preset at the assembly level for all systems. For example, a WBS Roof System, Built-up Membrane Roofing (0.05.01), is set at the assembly level. At this point the inspector would select the type of assembly based on a preselected picklist. (Such a picklist at the assembly level might include various roof assembly groupings; eg., 3 to 5-ply asphalt with gravel coating and composite insulation.) If a more detailed inspection is required, the inspector would "de-select" the base CAS assembly level by crossing through the LVL Box "Assy." This action would bring up the next level "component." In our roof example, this would mean that the inspector would now assess the membrane, flashing, and insulation as separate components. As with the assembly level, the inspector would choose a type from a selected picklist for each component. Although IUs are usually determined prior to the survey, multiple IUs may also be developed during the inspection. For example, a WBS of the south quadrant built-up roof may be divided into two IUs (eg., sw corner and remaining roof) if the inspector chooses to highlight and isolate some abnormal conditions from the main IU.

Additional information developed on this screen would include the percentage of WBS served by the IU, the estimated quantity (this figure will also be independently generated by CAIS status (see subsection 1.1), estimated life remaining useful without repair (WOR), and estimated age.

SURVEY STEP: DEFICIENCY ASSESSMENT SCREEN 4.1

With the WBS and IU established, the inspector now conducts the CAS inspection for each WBS IU. As the inspector surveys the asset, a preformatted picklist containing all deficiencies that may affect the particular WBS IU is reviewed. The default setting shows a zero in each coverage block, indicating no deficiencies. As the survey proceeds, the inspector "de-selects" this normal setting by entering a percentage of coverage under condition categories listed (light, moderate, severe, and fail). For example, inspector entries for WBS roofing, IU built-up membrane, deficiency "splitting" of 10% light, 0% moderate, 0% severe, 0% fail, would be interpreted by CAIS software as 90% normal, and light splitting occurring over 10% of the membrane. If the inspector cannot determine the condition using standard inspection methods, he can indicate the need for a non-standard inspection (NSIP) by de-selecting the "NO" in the NSIP column. To complete the inspection, the aforementioned procedures would be carried out for each deficiency noted by the inspector.

DATA COLLECTION METHODS

ENTERING DATA: DATA COLLECTION MENU (Continued)

SURVEY STEP: SUMMARY CONDITION ASSESSMENT SCREEN 5.0

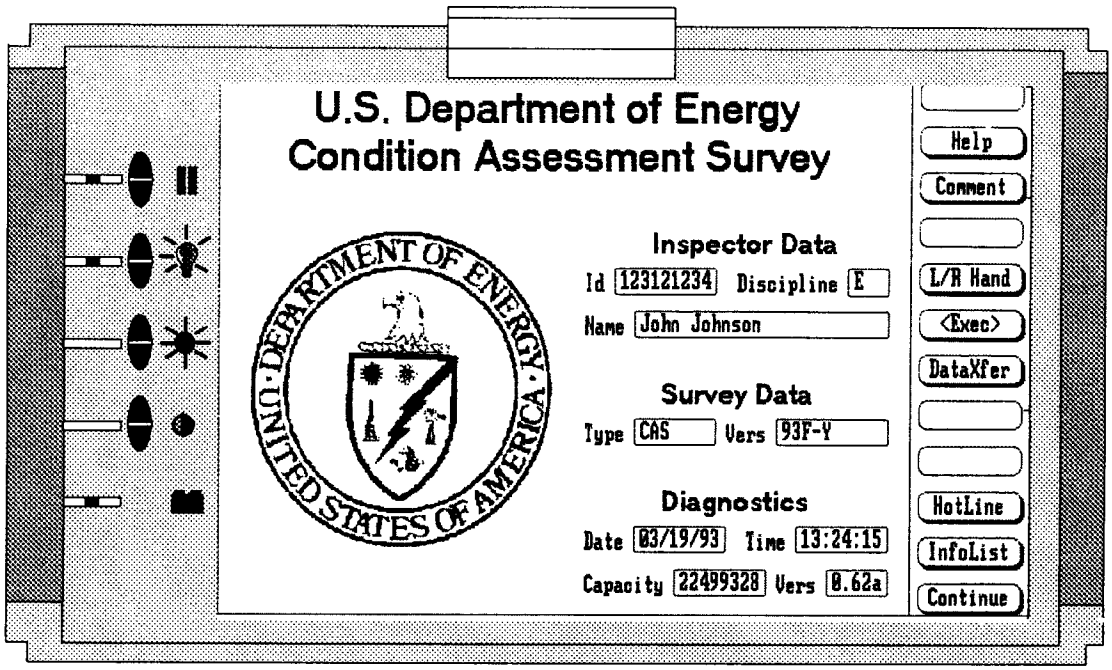
This final screen summarizes the WBS IU in three major categories: urgency, purpose, and condition. In each category, the inspector will call up a picklist and select the category he feels is most appropriate for the WBS IU surveyed. (For the purpose category, the inspector may select multiple headings.) Additionally, the inspector may elect to enter an estimated cost and/or quantity. (This is optional as CAIS will generate these data based on the inspector's survey information.) The inspector will also enter an estimated remaining life post-repair. As an option, a work order may be generated based on the CAS survey information. This option is generated by selecting the WORK ORDER function key and filling out pertinent data. Finally, the inspector may choose to describe the repair more fully by selecting the REPAIR CHARACTER key.

After completing all WBS IUs, the CAS inspection for the system is complete. This procedure is repeated for each applicable system. Once all systems for the asset are complete, the information is uploaded to the PC-based CAIS program for data analysis and report generation.

In the remainder of this subsection, actual data screens, as they will appear to the inspector, are displayed to illustrate a typical inspection. As previously noted, five main screens are used in the system supported by numerous "pop-up" lists, information, comment, and other auxiliary screens. In our examples, main screens are numbered 1.0 - 5.0; secondary screens are labeled 1.1, 1.2, etc.; and general support screens use the series 99.0. Key inspector actions on each screen are highlighted. Support function keys are listed below these main functions.

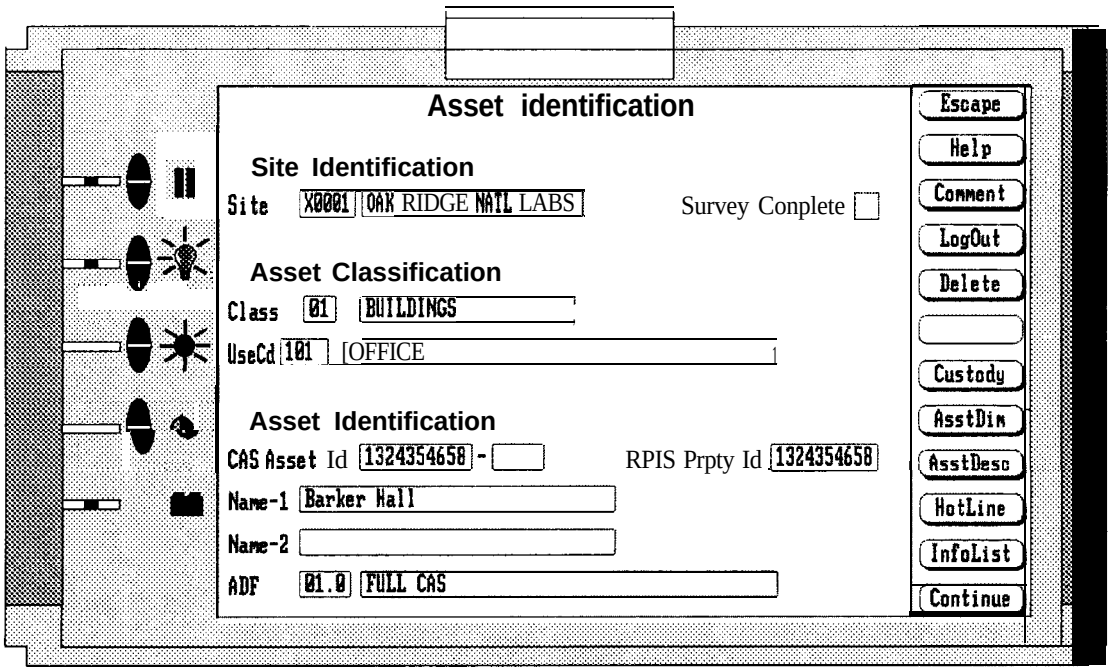
SURVEY STEP LOGIN

Screen 1.0



SCREEN	ACTION	COMMENT
1.0	1. Enter Name and Employee Id #	May be preloaded for security
	2. Tap "Discipline" title for picklist, cursor select or enter by pen	Picklist preformatted A=Arch, C=Site/Civil, E=Elec, M=Mech
	3. Tap "Type" and "Vers" title under Survey Data for picklist cursor select or enter by pen	Picklist preformatted for type of survey to be performed and version date for record
	4. Diagnostics data is system generated and for information purposes only	N/A
	5. Press (Continue) to go to Screen 2.0	By pressing (Continue) information is verified, corrections made by crossing through data and entering new information.
(Help)	Press to bring up screen help	Screen 99.1
(Comment)	Press to bring up screen for entering inspector comments	Screen 99.2
(LH/RH)	Press to change screen between Left or Right Hand use	N/A
(<Exec>)	Press to exit to the Grid System Menu	This option can be password protected
(DataXfer)	Press to transfer data to site computer	Used for data upload/download procedures
(Hotline)	Press for important contacts and telephone numbers	Screen 99.3
(InfoList)	Press to bring up information/directions preloaded for inspector	Screen 99.4

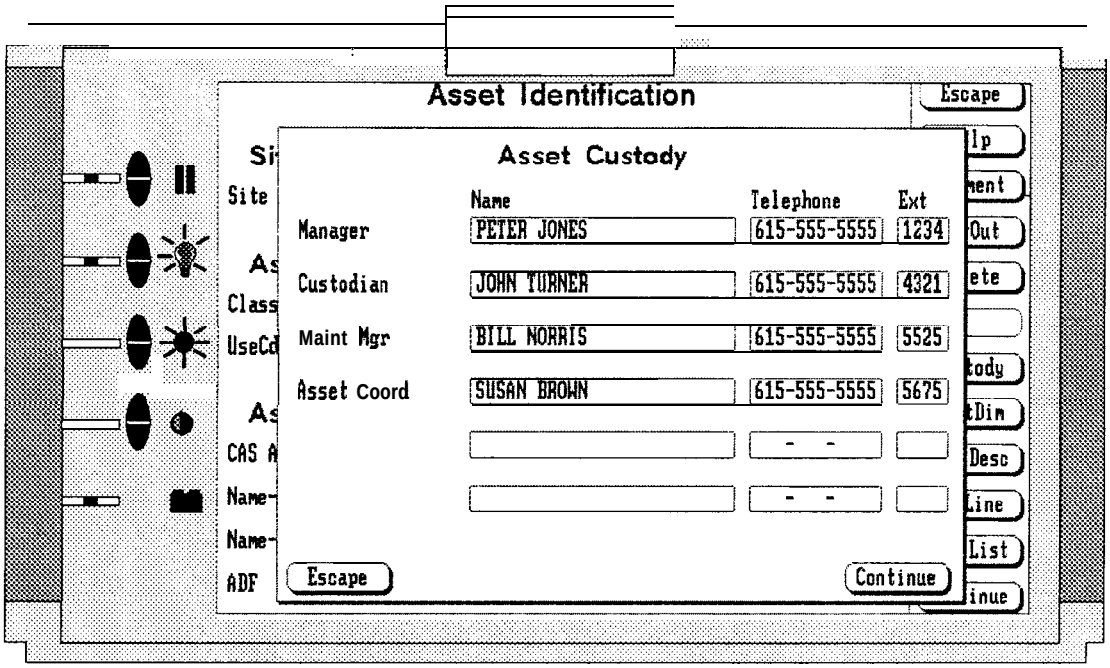
SURVEY STEP ASSET IDENTIFICATION **Screen 2.0**



SCREEN	ACTION	COMMENT
2.0	1. Tap "Site" title for picklist Cursor select or enter by pen	Picklist can be preloaded, site code appears automatically to match name selected
	2. Tap "Class" title for picklist Cursor select or enter by pen or skip to item 4	Picklist preformatted based on RPIS categories
	3. Tap "Use Cd" title for picklist Cursor select or enter by pen or skip to item 4	Picklist preformatted based on RPIS categories
	4. Enter Asset Identification information by selecting "CAS Asset Id" corresponding "RPIS Prpty Id" and "Name-1 or Name-2" will be generated	This data can be preloaded
	5. Enter a Split Asset by creating an extension to "CAS Asset ID" and selecting a new name	This data can be preloaded or created by inspector
	6. Enter Asset Determinant Factor "ADF" provided by Site Mgr.	Determined by Site Manager prior to survey
	7. Press box next to Survey Complete upon completion of Asset Survey	N/A
	8. Press (Continue) to go to Screen 3.0	By pressing (Continue) information is verified; corrections made by crossing through data and entering new information
(Escape)	Press to return to Screen 1.0	By pressing (Escape) information is not verified and any changes made are lost
(Help)	Press to bring up screen help	Screen 99.1
(Comment)	Press to bring up screen for entering inspector comments	Screen 99.2
(Logout)	Press to save all data entered and leave survey	N/A
(Custody)	Press to bring up asset contact names	Screen 2.1 This data can be preloaded
(AssetDim)	Press to bring up screen for entering or verifying key asset dimensions	Sawn 2.2 This data can be preloaded
(AssetDes)	Press to bring up screen for entering or verifying asset name, address and descriptions	Screen 2.3 This data can be preloaded
(HotLine)	Press for important contacts and telephone numbers	Sawn 99.3
(InfoList)	Press to bring up information/directions preloaded for inspector	Sawn 99.4

SURVEY STEP ASSET CUSTODY SCREEN

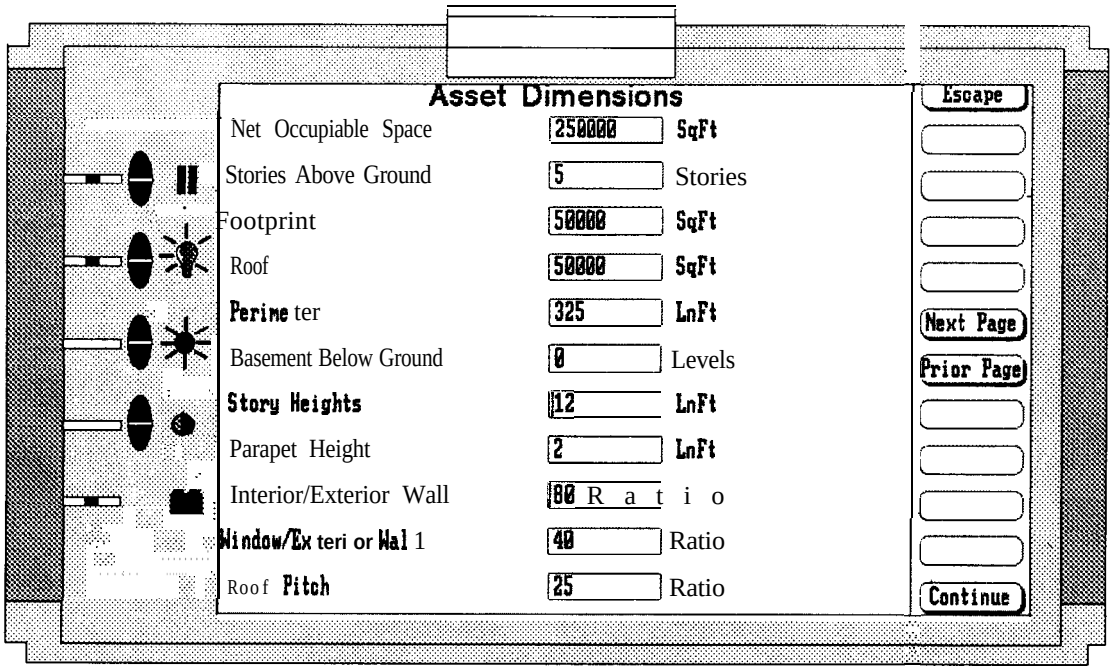
Screen 2.1



SCREEN	ACTION	COMMENT
2.1	1. Pop up window displays important names and numbers for asset. Cross through data and make any changes	Data can be either preloaded or inspector generated.
	2. Press Continue to return to Screen 2.0	By pressing Continue information is verified; corrections made by crossing through data and entering new information.
Escape	Press to return to Screen 2.0	By pressing Escape information is not verified and any changes made are lost.

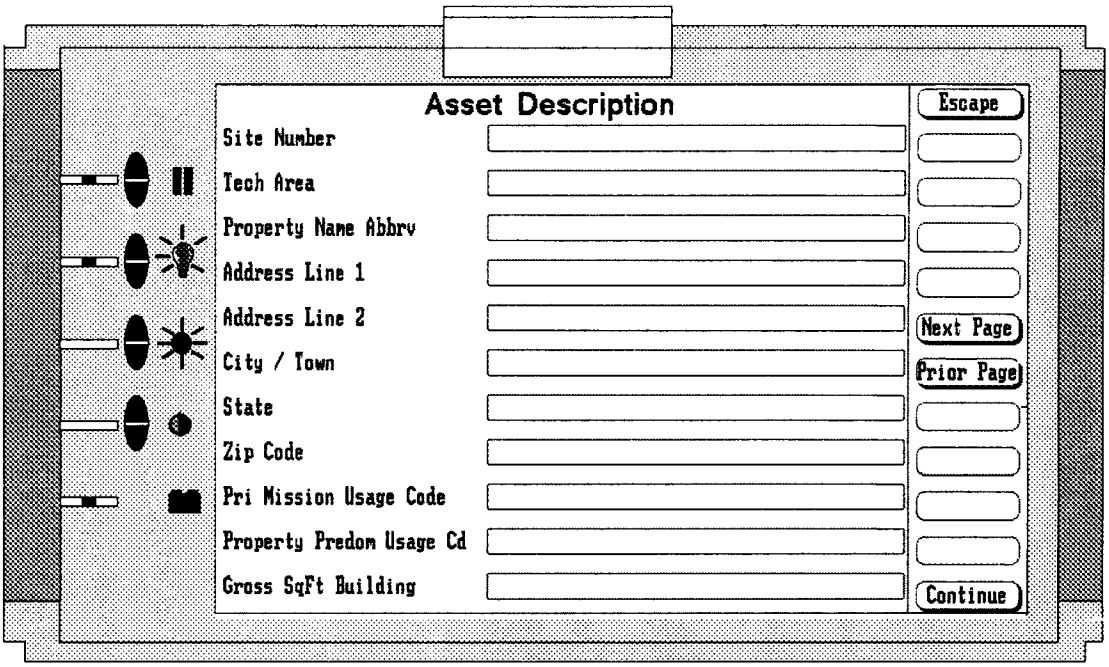
SURVEY STEP ASSET DIMENSIONS

Screen 2.2



SCREEN	ACTION	COMMENT
2.2	1. Screen displays important dimension related to the asset verify data or cross through data and make any changes	Data can be either preloaded or inspector generated.
	2. Press (Continue) to return to Screen 2.0	By pressing (Continue) information is verified; corrections made by crossing through data and entering new information.
(Escape)	Press to return to Screen 2.0	By pressing (Escape) information is not verified and any changes made am lost.
(NextPage)	Press to bring up next screen of important dimensions	Data can be either preloaded or inspector generated.
(PriorPage)	Press to return to previous asset dimension screen	Data can be either preloaded or inspector generated.

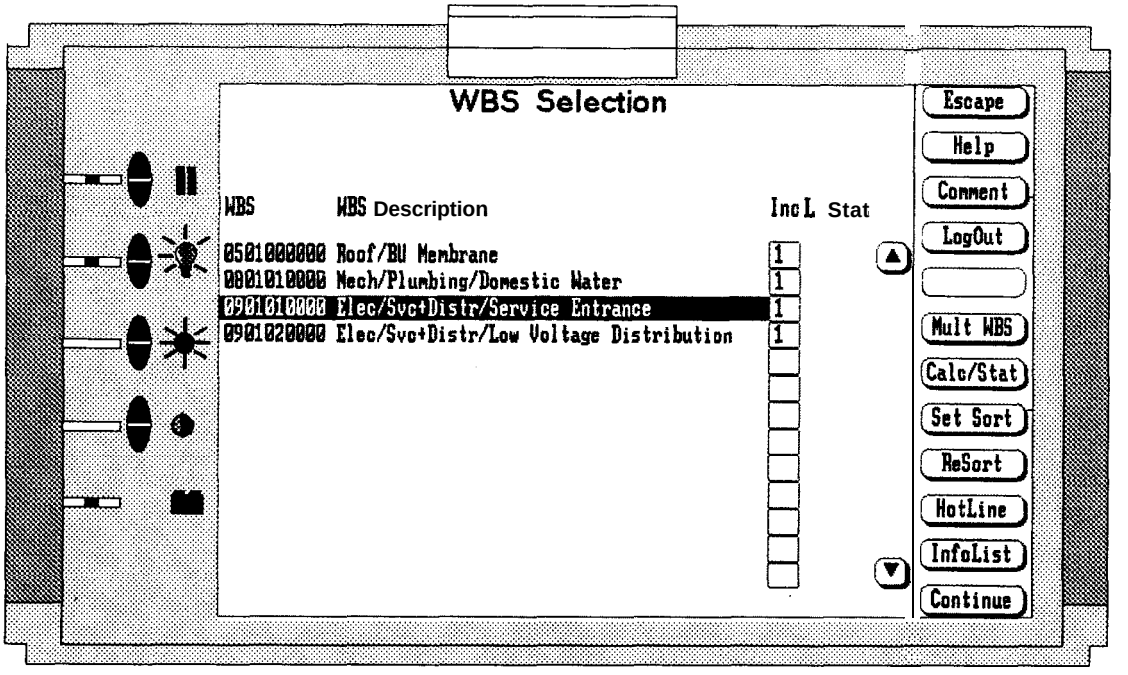
SURVEY STEP ASSET DESCRIPTION Screen 2.3



SCREEN	ACTION	COMMENT
2.3	1. Screen displays important asset description information verify data or cross through and make changes	Data can be either preloaded or inspector generated
	2. Press (Continue) to return to Screen 2.0	By pressing (Continue) information is verified; corrections made by crossing through data and entering new information
(Escape)	Press to return to Screen 2.0	By pressing (Escape) information is not verified and any changes made are lost
(NextPage)	Press to bring up next screen of important descriptions	Data can be either preloaded or inspector generated
(PriorPage)	Press to return to previous asset description screen	Data can be either preloaded or inspector generated

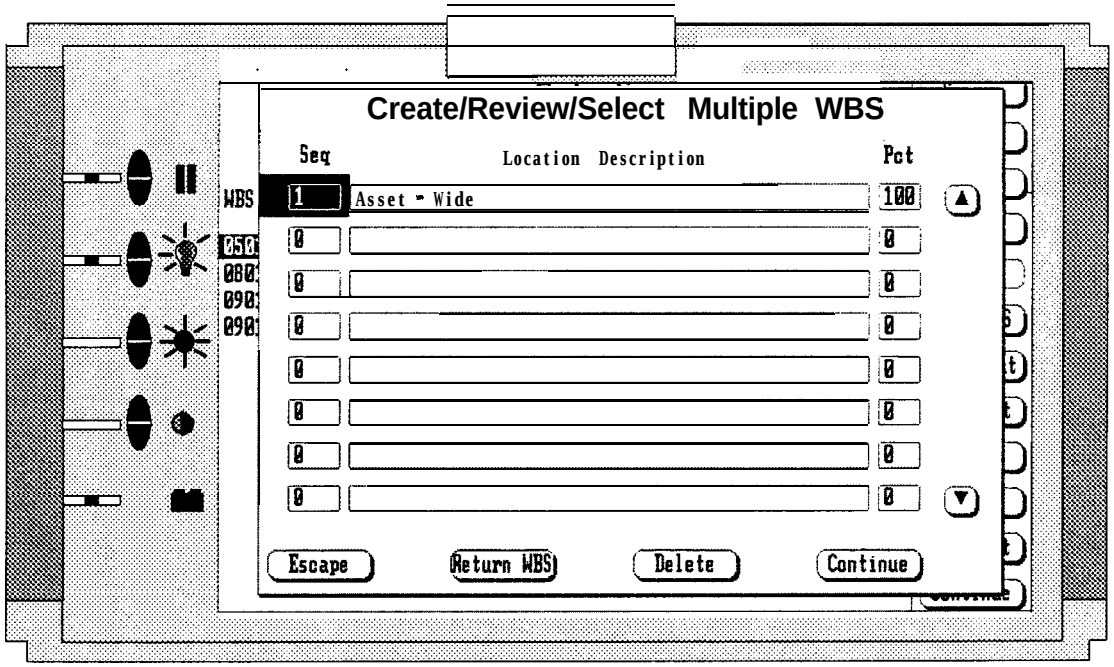
SURVEY STEP WBS SELECTION

Screen 3.0



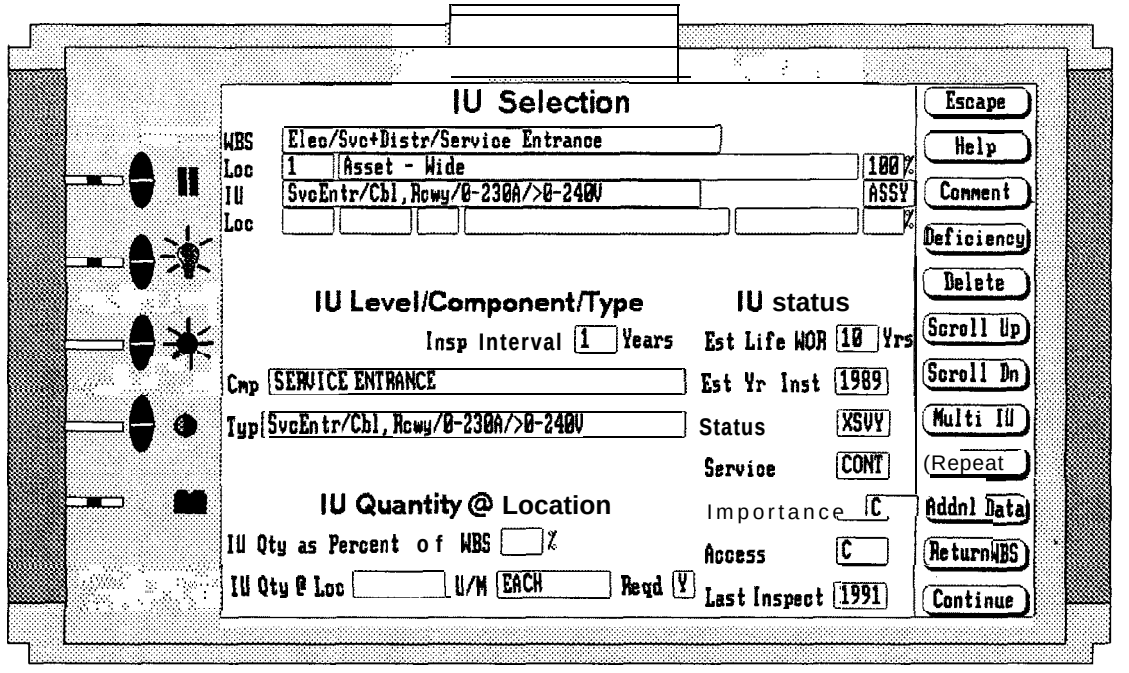
SCREEN	ACTION	COMMENT
3.0	1. Select WBS item to inspect from picklist	Picklist preformatted and is presorted by ADF numbers. Columns at end of WBS list show; "inc" (included) by sort order 1,2,3...; "M" (multiple items); and "Stat" (Status) (In Progress, Complete, or Not Started [*])
	2. All WBS for ADF included on screen; cross through number in "Inc" column to deselect	By crossing through "inc" number, WBS item is deselected
	3. Press (Continue) to go to Screen 4.0	By pressing (Continue) information is verified and inspections units under the selected WBS are loaded
(Escape)	Press to return to Screen 2.0	By pressing (Escape) information is not verifii and any changes made are lost.
(Help)	Press to bring up screen help	screen 99.1
(Comment)	Press to bring up screen for entering inspector comments	Screen 99.2
(Logout)	Press to save all data entered and leave survey	N/A
(Multi WBS)	Press to create, view or select multiple WBS and locations	Screen 3.1
(CalcSort)	Press to re-calculate the status of or number of multiple locations	N/A
(SetSort)	Resets the sort sequence of systems, etc. by accessing a pop-up window	N/A
(Resort)	Press to resort list in order of priority of WBS items selected	N/A
(HotLine)	Press for important contacts and telephone numbers	Screen 99.3
(InfoList)	Press to bring up information/directions preloaded for inspector	sawn 99.4
▲	Press Scroll Up button	Used to scroll up through information.
▼	Press Scroll Down button	used to scroll down through information.

SURVEY STEP CREATE/REVIEW/SELECT MULTIPLE WBS **Screen 3.1**



SCREEN	ACTION	COMMENT
3.1	1. Define locations of multiple WBS. Could be multiple systems or multiple parts of single system.	Inspector developed
	2. Define percentage of Asset serviced by WBS section	Inspector developed
	3. Press (Continue) after selecting multiple WBS locations from list and continue to Screen 4.0 to select Inspection Unit (IU).	By pressing (Continue) information is verified; corrections made by crossing through data and entering new information or selecting another item
(Escape)	Press to return to Screen 3.0	By pressing (Escape) information is not verified and any changes made are lost
(RtrnWBS)	Press to return to WBS selection screen to make additional selections	N/A
(Delete)	Press to delete a highlighted entry on screen	N/A
▲	Press scroll up button	Used to scroll up through information.
▼	Press scroll down button	Used to scroll down through information.

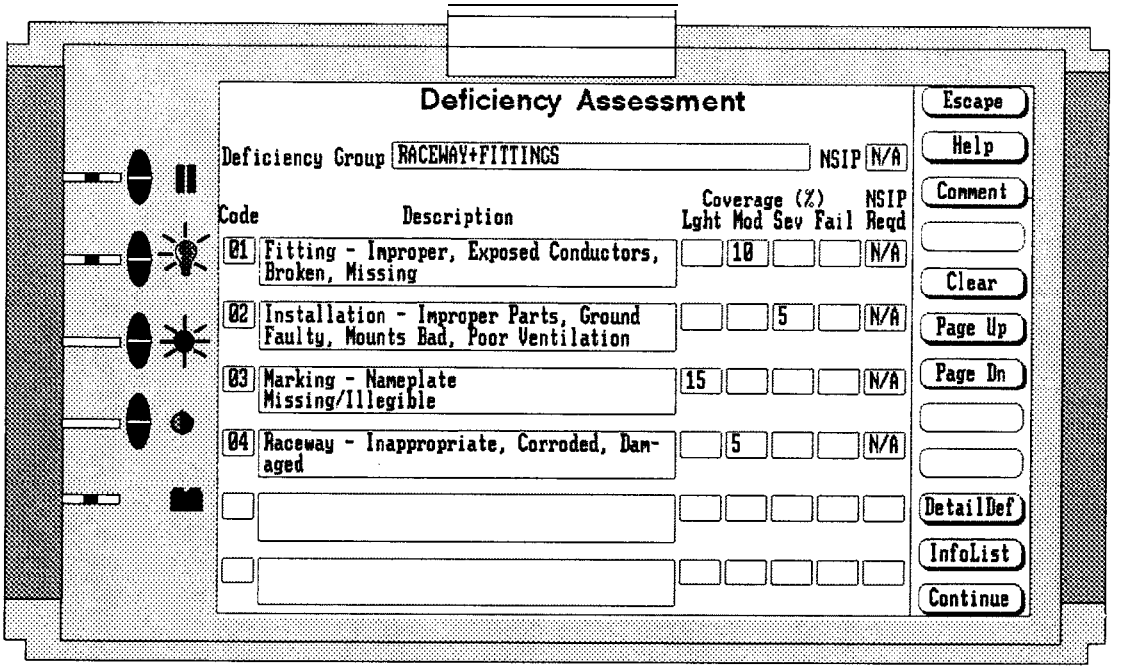
SURVEY STEP IU SELECTION Screen 4.0



SCREEN	ACTION	COMMENT
4.0	1. Tap "Cmp" title for component picklist Cursor select or enter by pen	Picklist is preformatted
	2. Tap "Typ" title for type of component picklist Cursor select or enter by pen	Picklist is preformatted
	3. Press (Deficiency) to bring up deficiency assessment screen	Screen 4.1 brings up deficiency picklist for WBS IU
	4. Enter estimated life without repair	Inspector generated
	5. Enter estimated year "IU" installed	Inspector generated
	6. Tap "Status" title for picklist Cursor select or enter by pen	Picklist is preformatted
	7. Tap "Service" title for picklist Cursor select or enter by pen	Picklist is preformatted
	8. Tap "Importance" title for picklist	Picklist is preformatted
	9. Tap "Access" title for picklist Cursor select or enter by pen	Picklist is preformatted
	10. Enter year "IU" last inspected	Inspector generated
	11. Enter percentage of WBS served by inspection unit	Inspector generated
	12. Enter quantity of inspection unit at location as required	Inspector generated
	13. Press (Continue) to go to Screen 5.0	By pressing (Continue) information is verified, corrections made by crossing through data and entering new information
(Escape)	Press to **return to Screen 3.0**	By pressing (Escape) **information** is not verified; and any changes made **are** lost
(Help)	**Press** to bring up screen help	Screen 99.1
(Comment)	Press to bring up screen for entering inspector comments	**Screen** 99.2
(Delete)	Press to delete an inspection unit **record**	**N/A**
(Scroll Up)	Press to scroll up **thru** inspection units selected	**N/A**
(Scroll Dn)	Press to scroll down **thru** inspection units selected	**N/A**
(Multi IU)	Press to create, view, or select **multiple IU's** and locations	Screen 4.2
(Repeat)	Press to repeat or copy inspection unit selection data as a new entry	W A
(AddnlData)	Press to bring up Additional Data screen and enter boiler plate information	**Screen** 4.3 - Inspector generated
(RtrnWBS)	Press to save data **entered** and go to Screen 3.0 for **next** selection	By pressing (RtrnWBS) information is verified; corrections made **by** crossing through data and entering **new** information

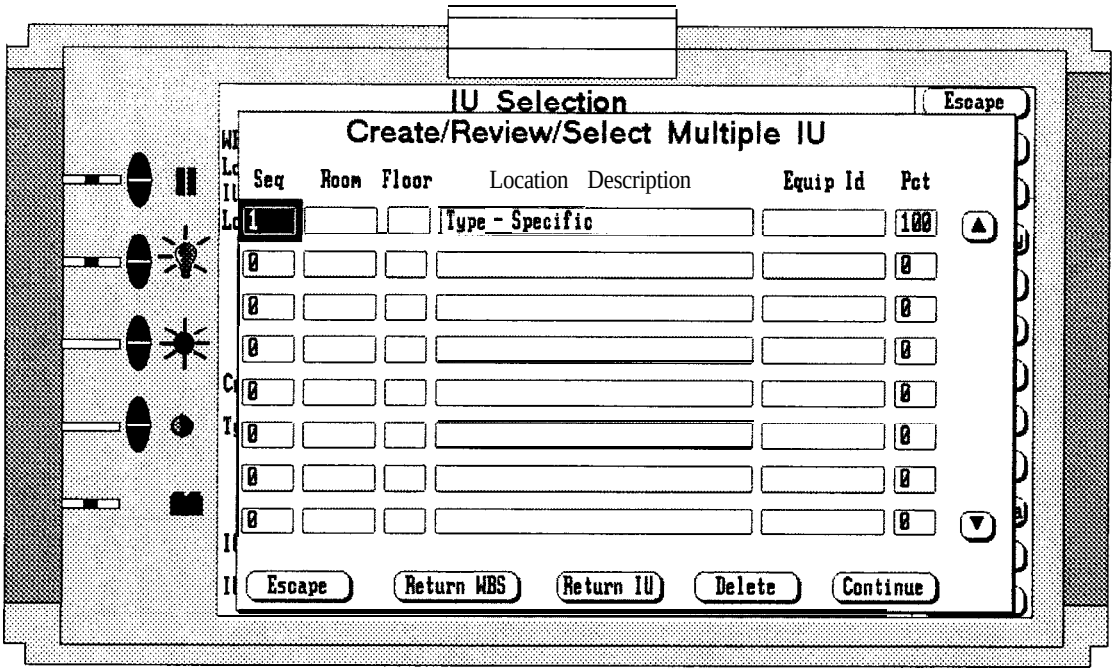
SURVEY STEP DEFICIENCY ASSESSMENT

Screen 4.1



SCREEN	ACTION	COMMENT
4.1	1. Select deficiency from list	Picklist preformatted
	2. Select degree of severity of deficiency	Inspector developed
	3. Enter percentage of coverage under selected severity	Inspector developed
	4. Indicate whether non-standard inspection/test procedures are required or recommended	Inspector choice, preset at "No": line through to deselect
	5. Press (Continue) to go to Screen 5.0	By pressing (Continue) information is verified; corrections made by crossing through data and entering new information
(Escape)	Press to return to Screen 4.0	By pressing (Escape) information is not verified and any changes made are lost
(Help)	Press to bring up screen help	Screen 99.1
(Comment)	Press to bring up screen for entering inspector comments	Screen 99.2
(Clear)	Press to unselect a deficiency	N/A
(Page Up)	Press to scroll up though data by page	WA
(Page Dn)	Press to scroll down through data by page	N/A
(Detail Def)	Press to bring up long description of selected deficiency	N/A
(InfoList)	Press to bring up information/directions preloaded for inspector	Screen 99.4

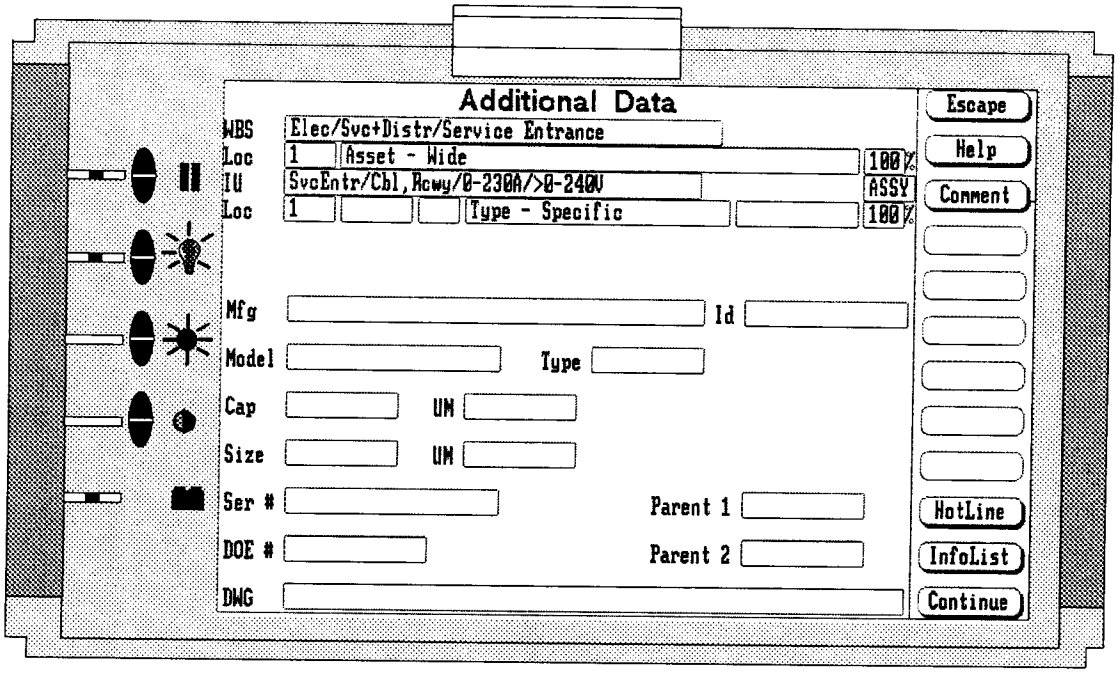
SURVEY STEP CREATE/REVIEW/SELECT MULTIPLE IU Screen 4.2



SCREEN	ACTION	COMMENT
4.2	1. Define locations of Multiple IU's by room, floor and/or location description - optional equipment identification number can be added	Inspector developed
	2. Define percentage of Asset or WBS serviced by IU	Inspector developed
	3. Press (Continue) after selecting Multiple IU location from list and continue to Screen 4.1 to select deficiencies	By pressing (Continue) information is verified; corrections made by crossing thru data and entering new information or selecting another item
(Escape)	Press to return to Screen 4.0	By pressing (Escape) information is not verified and any changes made are lost
(RtrnWBS)	Press to return to Screen 3.0	N/A
(RtrnIU)	Press to return to Screen 4.0	N/A
(Delete)	Press to delete a highlighted entry on screen	N/A
▲	Press scroll up button	Used to scroll up through information
▼	Press scroll down button	Used to scroll down through information

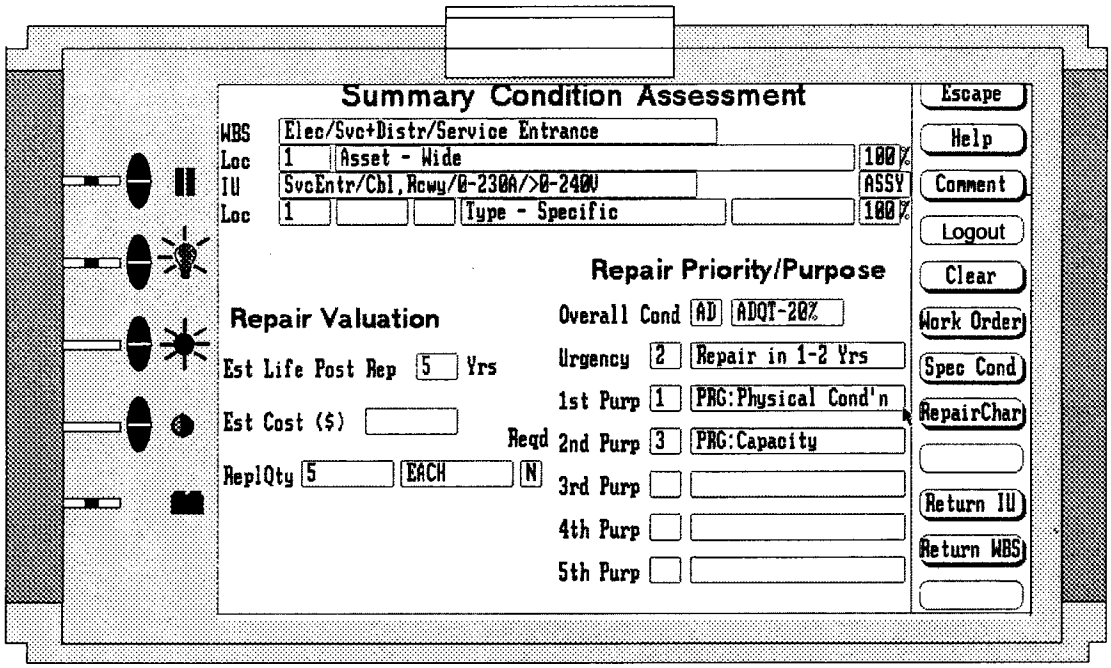
SURVEY STEP ADDITIONAL DATA

Screen 4.3



SCREEN	ACTION	COMMENT
4.3	1. Enter boiler plate data about component being inspected	Inspector generated from data on the component, drawing specifications or determined in the field. This data can be used for inventorying inspection units
	2. Press (Continue) to go to Screen 4.0	By pressing (Continue) information is verified; corrections made by crossing through data and entering new information
(Escape)	Press to return to Screen 4.0	By pressing (Escape) information is not verified; and any changes made are lost
(Help)	Press to bring up screen help	Screen 99.1
(Comments)	Press to bring up screen for entering inspector comments	Screen 99.2
(Hotline)	Press for important contacts and telephone numbers	Screen 99.3
(InfoList)	Press to bring up information/directions preloaded for inspector	Screen 99.4

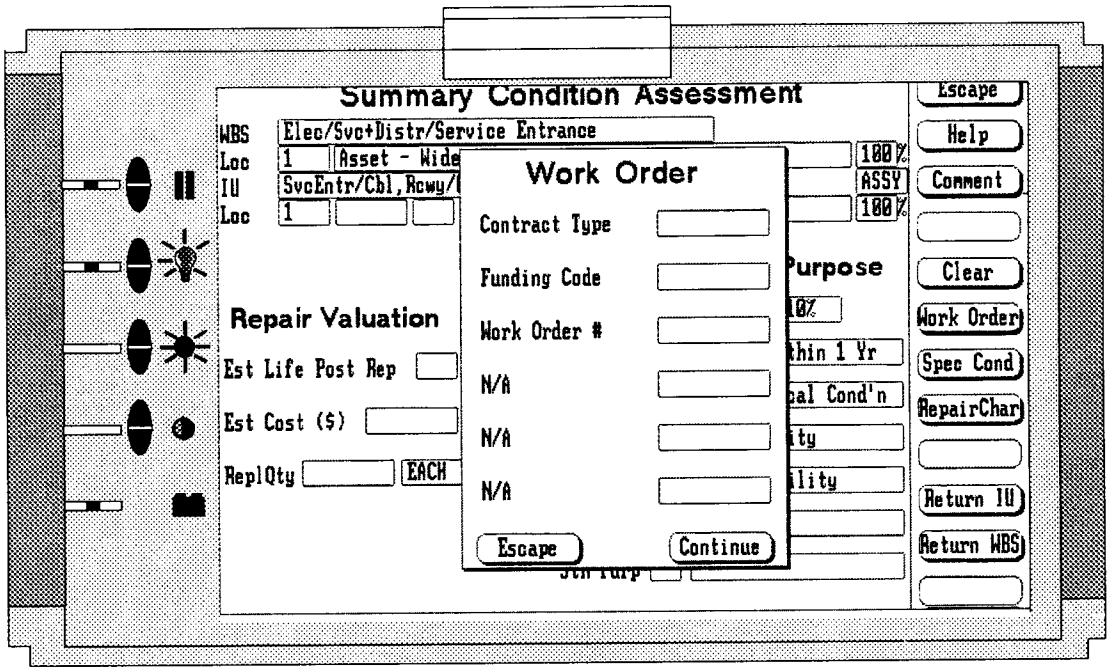
SURVEY STEP SUMMARY CONDITION ASSESSMENT Screen 5.0



SCREEN	ACTION	COMMENT
5.0	1. Tap "Overall Condition" title for picklist Cursor select or select by pen	Picklist preformatted, inspector determined
	2. Tap "Urgency" title for picklist Cursor select or enter by pen	Picklist preformatted, inspector determined
	3. Tap "Purp" title for picklist Cursor select or enter by pen Multiple purposes can be specified	Picklist preformatted inspector determined
	4. Enter estimated life of IU after repairs in years	Inspector determined
	5. Enter an estimated cost for repairs (optional)	Inspector determined
	6. Enter repair quantity as required	Inspector determined
	7. Press to save data entered and go to Screen 4.0 for next selection	By pressing (ReturnIU) information is verified; corrections made by crossing through data and entering new information
	8. Press to save data entered and go to Screen 3.0 for next selection	By pressing (ReturnWBS) information is verified; corrections made by crossing through data and entering new information
(Escape)	Press to return to Screen 4.0	By pressing (Escape) information is not verified and any changes made are lost
(Help)	Press to bring up screen help	Screen 99.1
(Comment)	Press to bring up screen for entering inspector comments	Screen 99.2
(Logout)	Press to save all data entered and leave survey	N/A
(Clear)	Press to clear or delete an entry	N/A
(Work Order)	Press to bring up work order screen pop-up	Screen 5.1
(Spec Cond)	Press to bring up special condition screen pop-up	Screen 5.2
(Repair Char)	Press to bring up special repair characteristics screen pop-up	Screen 5.3

SURVEY STEP WORK ORDER GENERATION

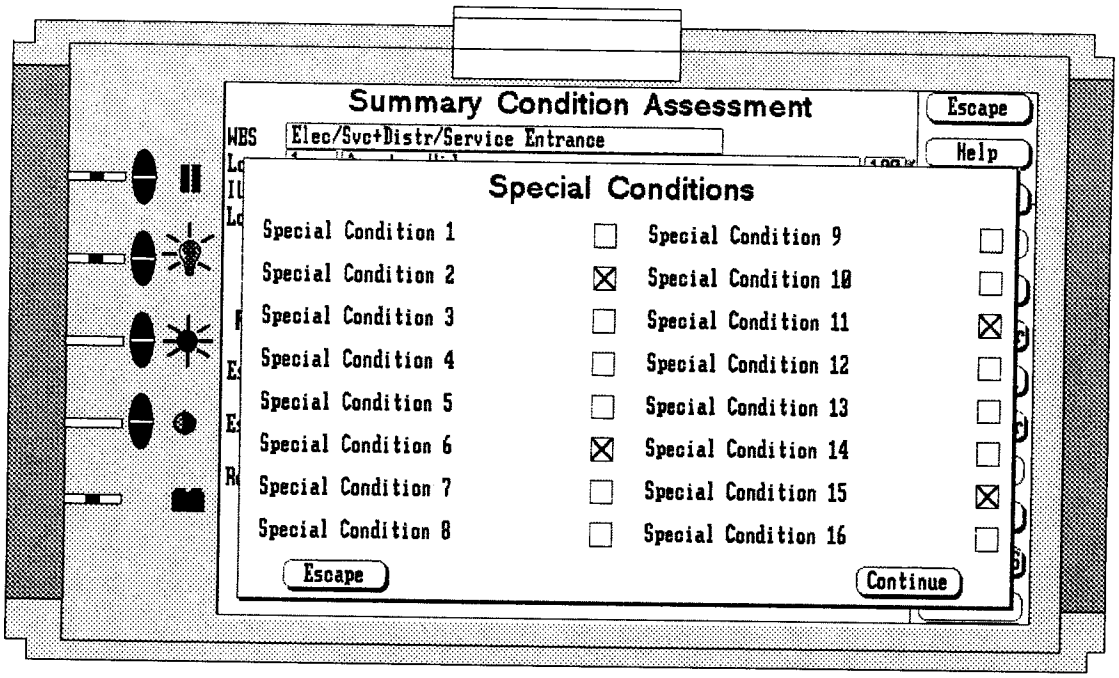
Screen 5.1



SCREEN	ACTION	COMMENT
5.1	1. Enter data to define Work Order number to tag repair to create a job estimate for repairs	Inspector generated as determined by Site Manager prior to survey
	2. Press (Continue) to go to Screen 5.0	By pressing (Continue) information is verified; corrections made by crossing through data and entering new information
	3. Press (Escape) to return to Screen 5.0	By pressing (Escape) information is not verified; and any changes made are lost

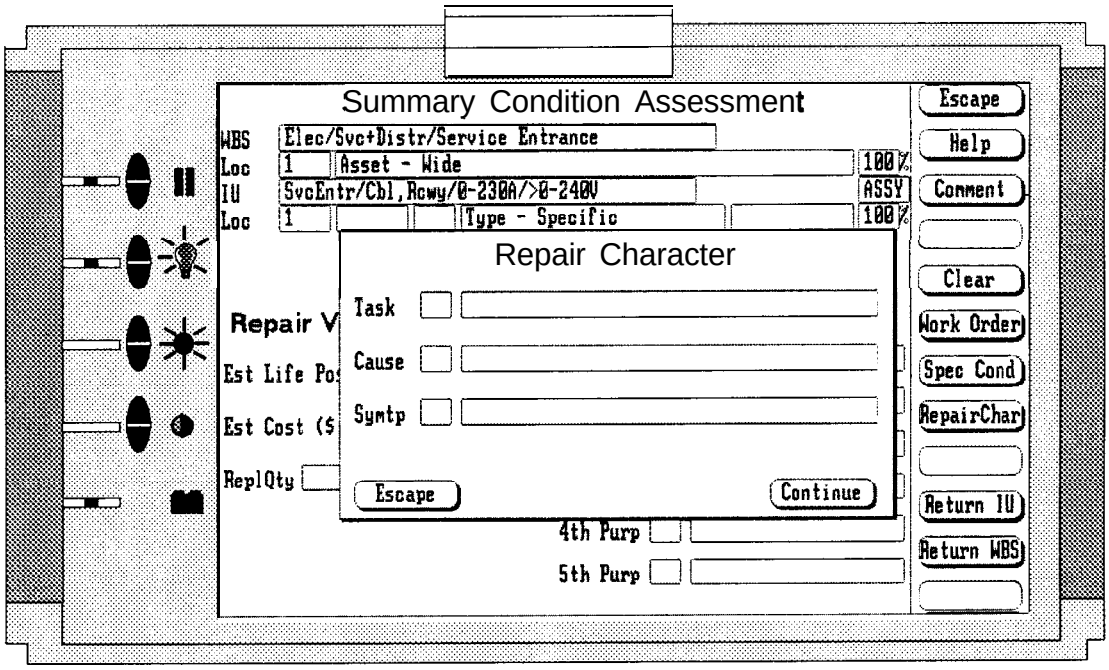
SURVEY STEP SPECIAL CONDITIONS SELECTION

Screen 5.2



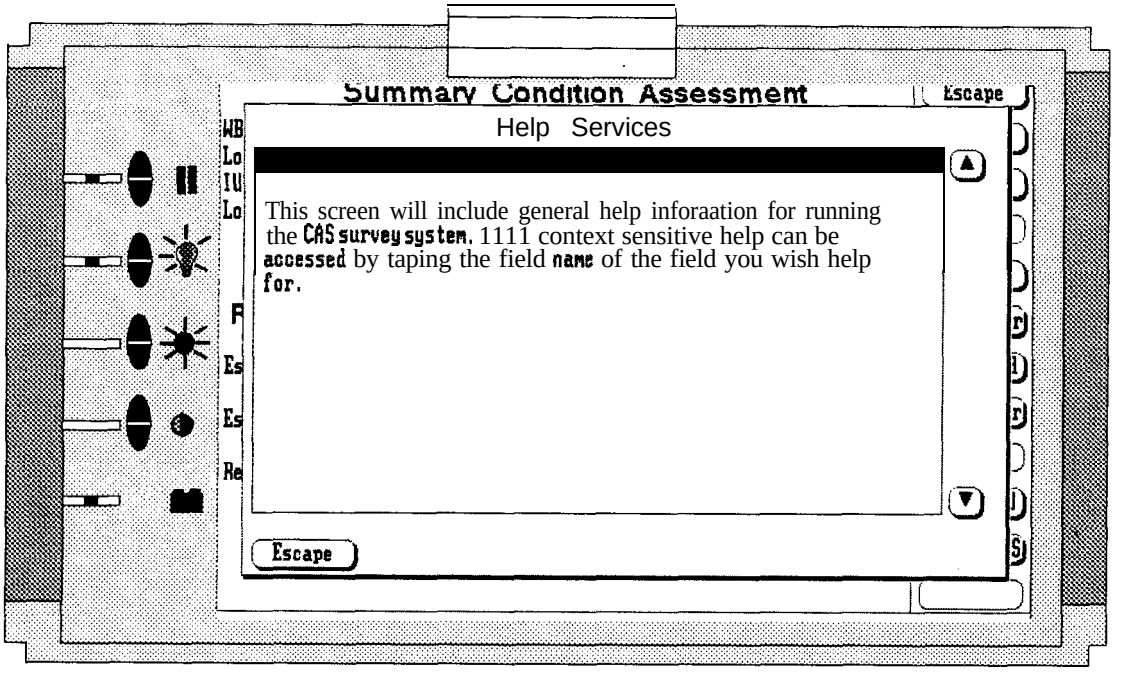
SCREEN	ACTION	COMMENT
5.2	1. Press box next to special condition to select	Picklist is preloaded by site. Selections determined by Site Manager prior to survey
	2. Press (Continue) to go to Screen 5.0	By pressing (Continue) information is verified; corrections made by crossing through data and entering new information
	3. Press (Escape) to return to Screen 5.0	By pressing (Escape) information is not verified; and any changes made are lost

SURVEY STEP REPAIR CHARACTER DOCUMENTATION Screen 5.3



SCREEN	ACTION	COMMENT
5.3	1. Enter repair characteristics for tracking related deficiencies	Inspector generated from input of asset users to document what is deficient, what caused deficiency and any symptoms. Picklist can be preformatted
	2. Press (Continue) to go to Screen 5.0	By pressing (Continue) information Is verified; corrections made by crossing through data and entering new information
	3. Press-to return to Screen 5.0	By pressing (Escape) information is not verified; and any changes made are lost

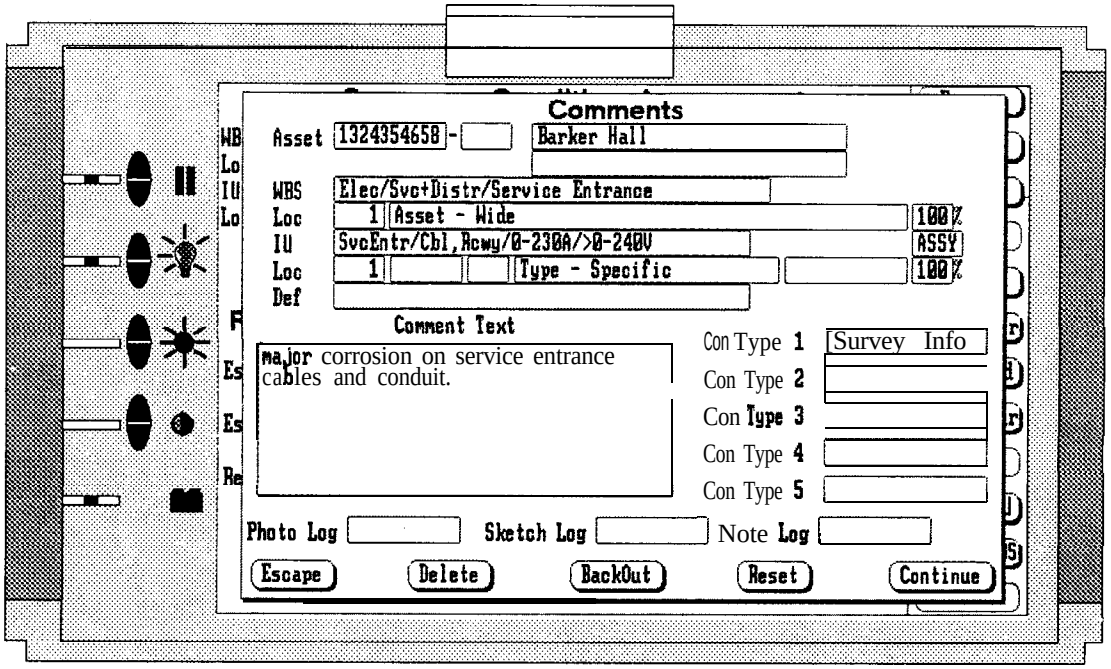
SURVEY STEP HELP Screen 99.1



SCREEN	ACTION	COMMENT
99.1	N/A	Screen pop-up help information Dynamic help for locations selected Screen data cannot be changed
Escape	Press to exit Help Screen and return to previous screen	N/A
▲	Press scroll up button	Used to scroll up through information
▼	Press scroll down button	Used to scroll down through informatiin

SURVEY STEP COMMENT SCREEN

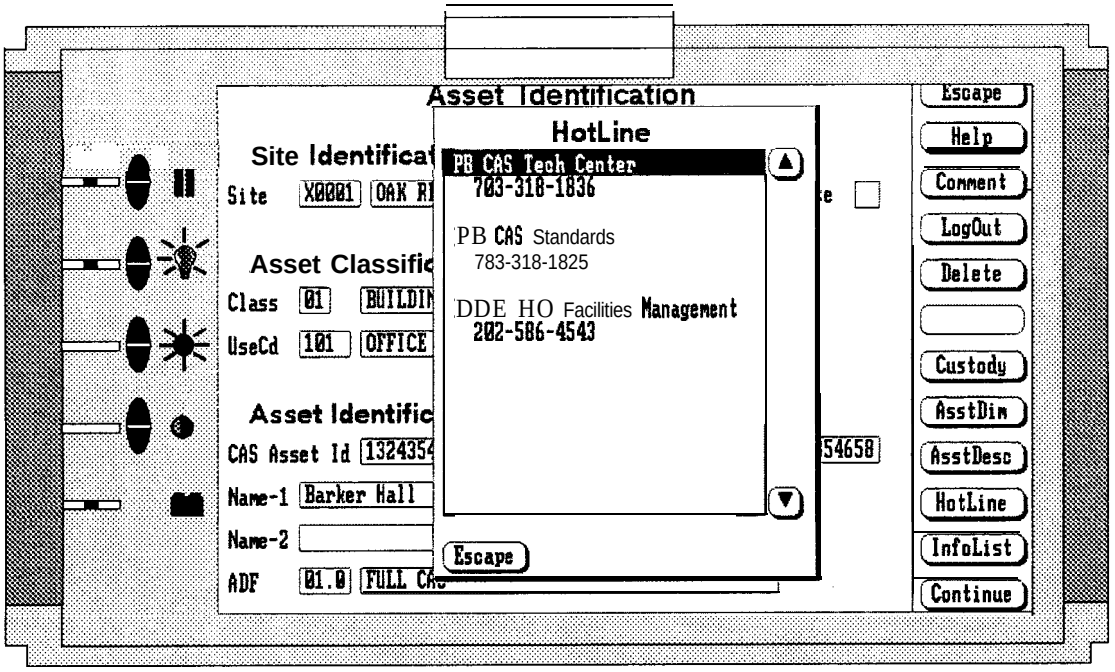
Screen **99.2**



SCREEN	ACTION	COMMENT
99.2	1. Select a Comment Type Selection	Picklist preformatted
	2. Enter Comment inside comment text field (QWERTY keyboard can be called in to use)	Text field expands as required
	3. Enter a Photo, Sketch, or Note Log tag number	Can be standardized or inspector generated
	4. Press (Continue) to return to previous screen	By pressing (Continue) information is verified; corrections made by crossing thru data and entering new information
(Escape)	Press to exit comment screen and return to **previous** screen	By pressing- information is not verified and any changes made are lost
(Delete)	Press to delete a selected comment	N/A
(Backout)	Press to move backwards through the navigation screen at top	This option allows an inspector to move **backwards** to enter or change a comment tagged to a previous screen
(Reset)	Press to move **forward** through the navigation screen at top	This option allows an inspector to move forward after entering a comment on a previous screen to continue the inspection

SURVEY STEP HOTLINE SCREEN

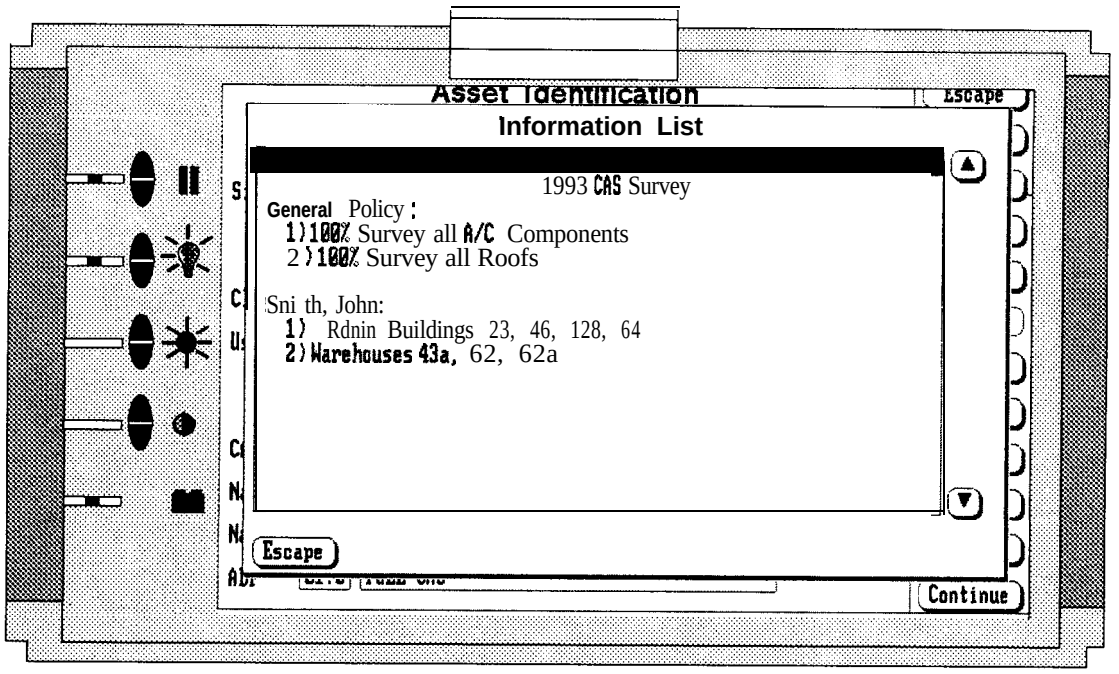
Screen 99.3



SCREEN	ACTION	COMMENT
99.3	N/A	Screen pop-up for important contacts and telephone numbers. Preformatted and adjusted by Site Manager. Screen data cannot be changed by inspector.
Escape	Press to exit Hotline screen and return to previous screen	N/A
▲	Press scroll up button	Used to scroll up through information
▼	Press scroll down button	Used to scroll down through information

SURVEY STEP INFO SCREEN

Screen 99.4



SCREEN	ACTION	COMMENT
99.4	1. CAS inspection parameters & schedules as inputted by site manager	Cannot be changed by inspector
Escape	Press to exit InfoList screen and return to previous screen	N/A
▲	Press scroll up button	Used to scroll up through information
▼	Press scroll down button	Used to scroll down through information

DATA COLLECTION METHODS

END OF SUBSECTION

FEDERAL SPECIFICATIONS

FEDERAL SPECIFICATION	TITLE
US Department of Energy Design Criteria	DOE 6430.1A Dtd 4-6-89

FEDERAL SPECIFICATIONS

END OF SUBSECTION

NATIONAL STANDARDS

AMERICAN SOCIETY FOR TESTING & MATERIALS (ASTM)

ASTM D 877-87	Test Method for Dielectric Breakdown Voltage of Insulating Liquids Using Disk Electrodes
ASTM D 924-65	Test method for A-C Loss Characteristics and Relative Permittivity (Dielectric Constant) of Electrical Insulating Liquids
ASTM D 971-82	Test Method for Interfacial Tension of Oil Against Water by the Ring Method
ASTM D 974-87	Test Method for Acid and Base Number by Color-Indicator Titration
ASTM D 1500-87	Test Method for ASTM Color of Petroleum Products (ASTM Color Scale)
ASTM D 1524-U	Test Method for Visual Examination of Used Electrical Insulating Oils of Petroleum Origin in the Field

NATIONAL STANDARDS

END OF SUBSECTION

INDUSTRY PUBLICATIONS

PUBLICATION	PUBLISHER
Westinghouse Maintenance Hints	HB 6001 -R
National Fire Protection Assn	National Electrical Code NFPA 70, 1990 Edition Recommended Practice for Electrical Equipment Maintenance NFPA 70B, 1990 edition

INDUSTRY PUBLICATIONS

END OF SUBSECTION

OTHERRELATEDREFERENCES

Other Pertinent
Reference Sources
As Applicable

OTHER RELATED REFERENCES

END OF SUBSECTION

APPENDIX A

ABBREVIATIONS

A, Amp	Ampere, Area
A/E	Architect-Engineer
AA	Aluminum Association
AABC	Associated Air Balance Council
AAMA	American Architectural Manufacturers Association
AASHTO	American Association of State Highway and Transportation Officials
ABMA	American Boiler Manufacturers Association
ABS	Acrylonitrile-Butadiene-Styrene
AC	Alternating Current, Air Conditioning
ACFM	Actual Cubic Feet per Minute
ACGIH	American Conference of Governmental Industrial Hygienists
ACI	American Concrete Institute
ACSM	American Congress on Surveying and Mapping
ADF	Asset Determinant Factor
ADJ	Adjustable
ADM	Action Description Memorandum
ADP	Automated Data Processing
AEC	U.S. Atomic Energy Commission
AFM	U.S. Air Force Manual
AFR	U.S. Air Force Regulation
AFWL	U.S. Air Force Weapons
AGA	American Gas Association
AHU	Air Handling Unit
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ALARA	As Low as Reasonably Achievable
Allow	Allowance
Amb	Ambient
AMC	U.S. Army Materiel Command
AMCA	Air Movement Contractors Association
AMC-R	Army Materiel Command Regulation
Amp	Ampere
ANS	American Nuclear Society
ANSI	American National Standards Institute
API	American Petroleum Institute
Approx.	Approximately
AR	U.S. Army Regulation
AREA	American Railway Engineering Association
ARI	American Refrigeration Institute
ARMA	Asphalt Roofing Manufacturers Association
ASBC	American Standard Building Code
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigeration & Air-Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATM	Atmosphere
AVG	Average
AVLIS	Atomic Vapor Laser Isotope Separation
AWG	American Wire Gauge
AWS	American Welding Society

APPENDIX A

AWWA	American Water Works Association
BAT	Best Available Technology
BATEA	Best Available Technology Economically Achievable
BCPCT	Best Conventional Pollutant Control Technology
BESEP	Base Electronic System Engineering Plan
BHP	Brake Horsepower
BI	Black Iron
BIA	Brick Institute of America
BIL	Basic Impulse Insulation Level
BKRS	Breakers
BLDG	Building
BOCA	Building Official Code Association
BOD	Biochemical Oxygen Demand
	Building Research Advisory Board (now Building Research Board)
BRB	Building Research Board
BRG	Bearing
BTU	British Thermal Unit
°C	Degrees Centigrade (Celsius)
C&GS	U.S. Coast and Geodetic Survey (now National Geodetic Survey)
C M	Clean Air Act
CAMS	Continuous Air Monitoring System
CAS	Condition Assessment Survey
c c w	Closed Circuit Television
CDR	Conceptual Design Report
CEM	Continuous Emissions Monitoring
CERC	U.S. Army Coastal Engineering Research Center
CERCLA	Comprehensive Environmental Response, Compensation, & Liability Act
CF	Cubic Feet
CFC	Chlorofluorocarbon
CFM	Cubic Feet per Minute
CFR	Code of Federal Regulations
CGA	Compressed Gas Association
CHW	Chilled Water
CI	Cast Iron
CIP	Cast-in-Place, Cast Iron Pipe
CISCA	Ceiling and Interior Systems Contractors Association
CISPI	Cast Iron Soil Pipe Institute
CMP	Corrugated Metal Pipe
CO_2	Carbon Dioxide
COE	U.S. Army Corps of Engineers
COMPR	Compressor
COP	Coefficient of Performance
CP	Concrete Pipe
CPLG	Coupling
CPSC	Consumer Product Safety Commission
CPVC	Chlorinated Polyvinyl Chloride
CRI	Carpet and Rug Institute
CRT	Cathode Ray Tube
C_v	Flow coefficient
c w	Cold Water
CWA	Clean Water Act
CYL	Cylinder
DAC	Derived Air Concentration

APPENDIX A

DARCOM	U.S. Army Development, Acquisition and Readiness Command
DB	Dry Bulb, Decibel
DBA	Design Basis Accident
DBE	Design Basis Earthquake
DBF	Design Basis Fire
DBFL	Design Basis Flood
DBG	Distance Between Guides
DBT	Design Basis Tornado
DBW	Design Basis Wind
DC	Direct Current
DCG	Derived Concentration Guide
DCPA	Defense Civil Preparedness Agency
DL	Dead Load
DM	NAVFAC Design Manual
DOD	U.S. Department of Defense
DOE	U.S. Department of Energy
DOP	Dioctylphthalate
DOT	U.S. Department of Transportation
DP	Differential Pressure
DP-1	Assistant Secretary for Defense Programs
DP-34	Director of Safeguards and Security Agreement
DPDT	Double-Pole Double-Throw
DSC	Differential Scanning Calorimetry
DTA	Differential Thermal Analysis
DWT	Double Wrap Traction
DWV	Drain, Waste &Vent
DX	Direct Expansion
DYN	Dyne
EA	Each
ECC	Emergency Control Center
ECP	Entry Control Point
EMCS	Energy Monitoring and Control System
ECS	Emergency Control Station
EDE	Effective Dose Equivalent
EED	Electroexplosive Device
EIA	Electronics Industries Association
EIFS	Exterior Insulation and Finish System
EIMA	Exterior Insulation Manufacturers Association
EIS	Environmental Impact Statement
Elev	Elevator
EM	U.S. Army Engineering Manual
EMS	Energy Management System
EMT	Electrical Metallic Tubing
EO	Executive Order
EOC	Emergency Operating Center
EPA	U.S. Environmental Protection Agency
EPS	Emergency Power System
Equip	Equipment
ERDA	Energy Research and Development Administration (precursor to DOE)
ESF	Engineered Safety Feature
Est	Estimated
Ext	Exterior
°F	Degrees Fahrenheit

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F M	Federal Aviation Administration
FAI	Fauske and Associates, Inc.
FAR	Federal Acquisition Regulation
FCC	Federal Construction Council
FEMA	Federal Emergency Management Agency
FGA	Flat Glass Marketing Association
FGCC	Federal Geodetic Control Committee
FGD	Flue Gas Desulphurization
FHWA	Federal Highway Administration
FHDA	Fir and Hemlock Door Association
Fig	Figure
FIPS	Federal information Processing Standards
Fixt	Fixture
Flr	Floor
FM	Factory Mutual
Fndtn	Foundation
FPM	Feet Per Minute
FPT	Female Pipe Thread
FR	Federal Register
fr	Frame
FS	Federal Specifications
FSAR	Final Safety Analysis Report
Ft	Foot, feet
Ft/lb	Foot-Pound
FWPCA	Federal Water Pollution Control Act
fy	Yield strength
G	Gauss
g	Gram
GA	Gypsum Association
ga	Gauge
Gal	Gallon
Galv	Galvanized
GDC	General Design Criteria, DOE 6430.1A
GPD	Gallon Per Day
GPH	Gallon Per Hour
GPM	Gallons Per Minute
GSA	General Services Administration
HE	High Explosives
HE-Pu	High Explosives-Plutonium
HF	High Frequency, Hydrogen Fluoride
HI	Hydraulic Institute
HID	High Intensity Discharge
HLW	High-Level Waste
HOA	Hand-Off-Automatic
HP	Horsepower
HR	Hour
Htg	Heating
Htr	Heater
HTW	High Temperature Water
HVAC	Heating, Ventilating, and Air-Conditioning
Hvy	Heavy
HW	Hot Water
Hyd	Hydraulic

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HX	Heat Exchanger
HZ	Hertz, frequency
IAPMO	International Association of Plumbing and Mechanical Officials
IAS	Intrusion Alarm System
ICBO	International Conference of Building Officials
ICRP	International Commission on Radiological Protection
ID	Inside Diameter
IDA	Intrusion Detection and Assessment
IDS	Intrusion Detection System
IEEE	Institute of Electrical and Electronic Engineers
IES	Illumination Engineering Society
IFM	Irradiated Fissile Material
IFMSF	Irradiated Fissile Material Storage Facility
IHE	Insensitive High Explosives
IMC	Intermediate Metal Conduit
In	Inch
Incl	Installed, Including
Inst	Installation
Insul	Insullation
IP	Iron Pipe
IPS	Iron Pipe Size
IPT	Iron Pipe Threaded
ISDSI	Insulated Steel Door Systems Institute
IU	Inspection Unit
IUEC	International Union of Elevator Contractors
J	Joule
°K	Degrees Kelvin
K	Subgrade modulus, Thousand, heavy wall copper tubing
Kg	Kilogram
kHz	Kilohertz
Kip	1000 pounds
Km	Kilometer
kPa	kilo Pascal
KV	Kilovolt
kVA	kiloVolt Ampere
kW	kilowatt
kWh	kilowatt hour
lb	Pound
lb/hr	Pounds Per Hour
lbf	Pounds Per Foot
LCC	Life-Cycle Cost
LCD	Liquid Crystal Display
LF	Linear Feet
LL	Live load psf - pounds per square foot
LLW	Low-Level Waste
LP	Liquid Petroleum, Low Pressure
LPG	Liquified Petroleum Gas
Lt	Light
LV	Low Voltage
MA	Management and Administration (U.S. DOE)
mA	milliAmpre
MAA	Material Access Area
Mach	Machine

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Maint	Maintenance
MAWP	Maximum Allowable Working Pressure
MBA	Material Balance Area
MBH	Thousand BTUs per Hour
MBMA	Metal Building Manufacturers' Association
MC&A	Material Control and Accountability
MCF	Thousand Cubic Feet
Mfg	Manufacturing
Mfr	Manufacturer
MCC	Motor Control Center
mg	Milligram
mg/l	Milligrams per liter
MGPH	Thousand Gallons Per Hour
Mhz	Megahertz
MI	Miles, total level route
MIL-HDBK	U.S. DOD military handbook
MIN	Minute
mln	Minimum
Misc	Miscellaneous
ml	Millileter
ML/SFA	Metal Lath/Steel Framing Association
mm	Millimeter
M&O	Management and Operations
MPH	Miles Per Hour
MPT	Male Pipe Thread
mr/h	milli roentgen/hour
mrad/h	milli roentgen, absorbed dose/hour
mrem	milli roentgen equivalent man
MSSA	Master Safeguards and Security Agreement
Mtng	Mounting
MVA	Million-Volt-Amps
N_2	Nitrogen
N/A	Not Applicable
NAAMM	National Association of Architectural Metal Manufacturers
NACE	National Association of Corrosion Engineers
NAD	North American Datum
NAEC	National Association of Elevator Contractors
NAESA	National Association of Elevator Safety Authorities
NAPHCC	National Association of Plumbing-Heating-Cooling Contractors
NASA	National Aeronautics and Space Administration
NAVFAC	Naval Facilities Engineering Command
NBC	National Building Code
NBS	National Bureau of Standards
NC	Noise Criteria
NCEL	Naval Civil Engineering Laboratory (references listed under NAVFAC)
NCMA	National Concrete Masonry Association
NDA	Non-Destructive Assay
NEC	National Electrical Code
NEII	National Elevator Industry Incorporated
NEMA	National Electrical Manufacturers Association
NEMI	National Elevator Manufacturing Industry, Inc. (now NEII)
NEPA	National Environmental Policy Act
NFGS	Naval Facilities Guide Specification (references listed under NAVFAC)

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NFPA	National Fire Protection Association
NGS	National Geodetic Survey (formerly U.S.Coast and Geodetic Survey)
NGVD	National Geodetic Vertical Datum
NHPA	National Historic Preservation Act
NIJ	National Institute of Justice
NIST	National Institute of Standards and Technology (see NBS)
N O M	National Oceanic and Atmospheric Administration
NO	Normally Open
NO_x	Oxides of Nitrogen
NPDES	National Pollutant Discharge Elimination System
NPDWS	National Primary Drinking Water Standards
NPSH	Net Positive Suction Head
NPT	National Pipe Thread
NRC	Nuclear Regulatory Commission
NRCA	National Roofing Contractors Association
NRTA	Near-Real-Time Accountancy
NRTL	Nationally Recognized Testing Laboratory
NSA	National Security Agency
NSPC	National Standard Plumbing Code
NSPS	New Source Performance Standards
NTIA	National Telecommunications and Information Administration
NTMA	National Terrazzo and Mosaic Association
NUREG	Nuclear Regulatory Commission-produced reference document
NWWDA	National Wood Window and Door Association
OA	Outside Air
OBA	Operating Basis Accident
OBE	Operating Basis Earthquake
o c	On Center
o c s	Office of Computer Services (U.S. DOE)
OD	Outside Dimension
ODH	Oxygen Deficiency Hazards
O & M	Operations and Maintenance
OMB	Office of Management and Budget
OP AMP	Operational Amplifier
Oper	Operator
OPFM	Office of Project and Facilities Management (US. DOE)
OS&Y	Outside Screw and Yoke
OSHA	Occupational Safety and Health Administration
OSR	Operational Safety Requirement
o s s	Office of Safeguards and Security (U.S. DOE)
OSTI	Office of Scientific and Technical Information (U.S. DOE)
OWG	Oil, Water, or Gas
Oz	Ounce
p	Minimum reinforcing ratio
PA	Protected area
PB	Polybutylene
PCB	Polychlorinated biphenyls
PCI	Prestressed Concrete Institute
PEL	Permissible Exposure Limit
PF	Protection Factor
Ph	Phase
PI	Point of Intersection, Proportional-plus Integral
PIV	Post Indicator Valve

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PLF	Pounds per Linear Foot
Pkg	Package
PMFL	Probable Maximum Flood
POL	Petroleum, Oil, and Lubricants
POTW	Publicly-Owned Treatment Works
PPHF	Plutonium Processing and Handling Facility
PPM	Parts Per Million
PRV	Pressure Regulating Valve
PSAR	Preliminary Safety Analysis Report
PSF	Plutonium Storage Facility, Pound-force per square foot
PSI	Pound-force per square inch
PSIA	Pounds per square inch absolute
PSIG	Pound-force per square inch gauge
PTI	Post Tensioning Institute
Pu	Plutonium
PUBN	Publication
PURPA	Public Utility Regulatory Policy Act
PVC	Polyvinyl Chloride
QA	Quality Assurance
Qty	Quantity
R	Resistance
R12, R22	Refigerant (12,22, etc.)
°R	Degrees Rankine
RCP	Reinforced Concrete Pipe
RCRA	Resource Conservation and Recovery Act
RDF	Refuse-Derived Fuel
REM	Roentgen Equivalent Man
Reqd	Required
RFCI	Resilient Floor Covering Institute
RG	Regulatory Guide
RLWF	Radioactive Liquid Waste Facility
RPFM	Real Property and Facilities Management (U.S. DOE)
RPIS	Real Property Inventory System (U.S. DOE)
RPM	Revolutions Per Minute
RSWF	Radioactive Solid Waste Facility
RTD	Resistance Temperature Detector
S&S	Safeguards and Security
SAR	Safety Analysis Report
SARS	Safety Analysis and Review System
SAS	Secondary Alarm Station
SC	Safety Class
SCFM	Standard Cubic Feet per Minute
SCR	Sillicon Control Rectifier
SCS	U.S. Department of Agriculture, Soil Conservation Service
SDI	Steel Deck Institute, Steel Door Institute
SDWA	Safe Drinking Water Act
SF	Safety Factor
SGFT	Structural Glazed Facing Tile
SISL	Special Isotope Separation Laser
SJI	Steel Joist Institute
SMA	Screen Manufacturers Association
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
SNG	Supplementary Natural Gas

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SNM	Special Nuclear Materials
SO_2	Sulfur dioxide
SOP	Standard Operating Procedure
SP	Special Publication (of the American Concrete Association)
SPCC	Spill Prevention Control and Countermeasure
SPDT	Single-Pole Double-Throw
SPRI	Single Ply Roofing Institute
SPST	Single-Pole Single-Throw
ssco	Single Speed Center-Opening
SQFT	Square foot
SSE	Safe Shutdown Earthquake
SSFI	Scaffolding, Shoring, and Framing Institute
SSSP	Site Safeguards and Security Plan
SSPC	Steel Structures Painting Council.
ssss	Single Speed Side-Sliding
STC	Sound Transmission Classification
Std	Standard
STP	Standard Temperature and Pressure
Sys	System
SWI	Steel Window Institute
SWP	Safe Working Pressure
SWT	Single Wrap Traction
T	Ton, Temperature
TCA	Tile Council of America, Inc.
TCDD	Tetrachlorodibenzo-p-dioxin
TDS	Total Dissolved Solids
TEC	Total Estimated Cost
TID	Tamper Indicating Device
TIMA	Thermal Insulation Manufacturers Association
TLV	Threshold Limit Value
TM	U.S. Army technical manual
tot	Total
TR	DOD technical report
Transf	Transformer
TRU	Transuranic
TSCA	Toxic Substances Control Act
TSD	Treatment, Storage and Disposal
Tstat	Thermostat
TYP	Typical
N	Television
U value	Overall heat transfer coefficient value
UBC	Uniform Building Code
UCRF	Uranium Conversion and Recovery Facility
UEF	Uranium Enrichment Facility
UEU	Unirradiated Enriched Uranium
UEUSF	Unirradiated Enriched Uranium Storage Facility
UF_4	Uranium tetrafluoride
UF_6	Uranium hexafluoride
UFAS	Uniform Federal Accessibility Standards
UHF	Ultra High Frequency
UL	Underwriters Laboratory
UMC	Uniform Mechanical Code
UO_2	Uranium dioxide

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UO_3	Uranium trioxide
"PA	Unit Process Area
UPC	Uniform Plumbing Code
UPHF	Uranium Processing and Handling Facility
UPS	Uninterruptible Power Supply
"RF	Uranium Recovery Facility
USC	U.S. Code
USCE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey
USPHS	U.S. Public Health Service
USPS	U.S. Postal Service
V	Volt
VA	Volt-Ampere
Vac	Vacuum
VAV	Variable Air Volume
VCT	Vinyl Composition Floor Tile
Vel	Velocity
Vent	Ventilating
VHF	Very High Frequency
Vol	Volume
W	Watt
WB	Wet Bulb
WBT	Wet Bulb Temperature
WC	Water Column
WG	Water Gauge
WB	Wet Bulb
WBS	Work Breakdown Structure
WPCF	Water Pollution Control Federation
WRC	Water Resources Council
Yd	Yard
Yr	Year

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SYMBOLS

°R'	Degrees Rankine
°K	Degrees Kelvin
°F	Degrees Fahrenheit
°C	Degrees Centigrade (Celcius)
>	Greater Than
<	Less Than
≥	Greater Than or Equal To
≤	Less Than or Equal To
%	Percent
#	Pound, Number
α, A	Alpha
β, B	Beta
ϕ, Φ	Theta
λ, Λ	Lambda
μ, M	Mu
π, Π	Pi
σ, Σ	Sigma
ω, Ω	Omega

APPENDIX A

END OF SUBSECTION

APPENDIX B

GLOSSARY

Accessible:	Capable of being removed or exposed without damaging the building structure or finish, or not permanently closed in by the structure or finish of the building (as applied to wiring methods).
Accessible:	Admitting close approach; not guarded by locked doors, elevation or other effective means (as applied to equipment).
Ancillary Equipment:	Selected equipment such as but not limited to meters, instrument transformers and surge arrestors. Specifically, items of equipment installed or in place only as augmentation to another device.
Branch Circuit:	The circuit conductors between the final overcurrent device and the outlet(s).
Circuit Breaker:	A device designed to open and close a circuit by nonautomatic means and to open the circuit automatically on a predetermined overcurrent without damage to itself when properly applied within its rating.
Device:	A unit of an electrical system which is intended to carry but not utilize electric energy.
Enclosure:	The case or housing of apparatus, or the fence, or walls which will prevent persons from accidentally contacting energized parts.
Equipment:	A general term including material, fittings, devices, appliances, fixtures, apparatus, and the like used as a part of, or in connection with, an electrical installation.
Feeder:	All circuit conductors between the service equipment or the source of a separately derived system and the final branch-circuit overcurrent device.
Fitting:	An accessory such as a locknut, bushing, or other part of a wiring system that is intended primarily to perform a mechanical rather than an electrical function.
Overcurrent:	Any current in excess of the rated current of equipment or the ampacity of a conductor. It may result from overload, short circuit, or ground fault.
Overload:	Operation of equipment in excess of normal, full-load rating, or of a conductor in excess of rated ampacity which, when it persists for a sufficient length of time, would cause damage or dangerous overheating. A fault, such as a short circuit or ground fault is not an overload.
Panelboard:	A single panel or group of panel units designed for assembly in the form of a single panel; including bases, automatic overcurrent devices, and with or without switched for the control of light, heat, or power circuits; designed to be placed in a cabinet or cutout box placed in or against a wall of partition and accessible only from the front.

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Raceway:	An enclosed channel designed expressly for holding wires, cable, or busbars, with additional functions as permitted. Raceways may be of metal or insulating material, and the term includes rigid metal conduit, rigid nonmetallic conduit, intermediate metal conduit, liquid tight flexible conduit, flexible metallic conduit, electrical nonmetallic conduit, electrical metallic conduit, underfloor raceways, cellular concrete floor raceways, cellular metal floor raceways, surface raceways, wireways, and busways.
Service Drop:	The overhead conductors that extend from the last pole or other aerial support to and including the splices, if any, connecting to the service-entrance conductors at the building or other structure.
Service Entrance Conductors:	The service conductors between the terminals of the service equipment and a point usually outside the building, clear of building walls, where joined by tap or splice to the service drop or the service conductors between the terminals of the service equipment and the point of connection to the service lateral. The service conductors may be individual insulated conductors or in the form of a cable. The insulation will be appropriate to the environmental application.
Service Entrance Equipment:	The necessary equipment, usually consisting of a circuit breaker or switch and fuses, and their accessories, located near the point of entrance of supply conductors to a building or other structure, or an otherwise defined area, and intended to constitute the main control and means of cutoff of the supply.
Service **Lateral:**	The underground service conductors between the street main, including any risers at a pole or other structure or from transformers, and the first point of connection to the service-entrance conductors in a terminal box or meter or other enclosure with adequate space, inside or outside the building wall. Where there is no terminal box, meter, or other enclosure with adequate space, the point of connection will be considered to be the point of entrance of the service conductors into the building.
Switchboard:	A large single panel, frame, or assembly of panels on which are mounted, on the face or back or both, switches, overcurrent and other protective devices, buses, and usually instruments. Switchboards are generally accessible from the rear as well as from the front and are not intended to be installed in cabinets.
Utilization Equipment:	Equipment which utilizes electric energy for mechanical, chemical, heating, lighting, or similar purposes.

END OF SUBSECTION

APPENDIX C

TECHNICAL BULLETINS/UPDATES/ADVISORIES

Index of Bulletins/Advisories
followed by Bulletins/Advisories
as developed

APPENDIX C

TECHNICAL ADVISORY **T0501-** 1

DATE: 10/91
SYSTEM: Roofing (CSI 07000)
ASSEMBLY: Built-Up (CSI 07510)
SUBJECT: Roof Top Lighting and Insect Damage

"In March, 1988 a professional roofing magazine article described a bizarre but apparently avoidable, phenomenon. In about a dozen documented cases ranging from Washington State to Florida, beetles have bored through roof membranes, causing leaks. It was determined that the beetles are attracted to lights (especially mercury vapor) mounted on, over, or near roof surfaces, including nearby billboard lighting. Falling to the roof, they burrow into the roof substrate, seeking protection from the sun during the day. The types of roof membrane affected were asphaltic BUR, modified bitumen, and single-ply roofing. Evidently, no instance has yet been found among coal tar BUR. It is advisable to exercise care in the selection of roof membranes where billboards may exist adjacent to a planned roof installation, or when rooftop lighting is required. The roof specifier should discuss the types of luminaire to be used with project electrical engineers before mercury vapor fixtures are specified."

Source: Roofing Design Criteria Options. **R.D. Herbert** II

EXAMPLE: TECHNICAL ADVISORY BULLETIN

END OF SUBSECTION

APPENDIX D

REVISIONS SUMMARY

AT A GLANCE SUMMARY OF ALL

REVISIONS UP TO LATEST REVISION DATE

APPENDIX D

END OF SUBSECTION