

ELECTRICAL ASSESSMENT REPORT



Facility: Sitka Community Hospital
Location: 209 Moller Avenue
Sitka, AK 99835

Year built: 1981

Site Visit: April 18, 2016
Report date: May 17, 2016

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ELECTRICAL DISTRIBUTION

The main electrical service switchboard is located on the ground floor main electrical room on north end of the building.

Switchboard Rating: 1600 Amp, 480/277V, 3ph, 4W
Main switch rating: 1600 Amp

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|-----------|----------|---|
| ▪ 600A-3p | Panel HF | Serves emergency loads: ATS-1E; ATS-2E; ATS-3E |
| ▪ 600A-3p | Panel HD | Serves normal loads and standby loads: ATS-4E |
| ▪ 600A-3p | MCCA | Normal loads: Air handling units, fans |
| ▪ 600A-3p | Spare | |

Equipment:

Manufacturer: G.E. PowerBreak



Condition:

The existing switchboard is old (35 years) but in **FAIR** condition. The lifespan of the existing equipment is estimated at around 50 years, so there is some useable life left in the equipment.

Code Violations:

- The working clearance does not appear to meet current code, (NEC 110.26), which requires two entrances at **either end** of the electrical room.
- Ground Fault Protection of the main switch, and second level overcurrent devices is not provided per NEC 517.17.

Recommendation:

No recommendation to replace at this time. Significant upgrades or modifications may trigger code required upgrades.

Replacement Cost:

Main Switchboard	\$225,000.00
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EMERGENCY SYSTEM

The Essential Electrical System (Type I EES) consists of the following branches served by 4-pole Automatic Transfer Switches:

▪ 100A-3p	Panel HA1E	Life Safety Branch	ATS 1E
▪ 200A-3p	Panel HA2E	Critical Branch	ATS 2E
▪ 600A-3p	Panel HA3E	Equipment Branch	ATS 3E
▪ 400A-3p	Panel HA4E	Standby Branch	ATS 4E

The above branches are backed up by an existing 400kW emergency generator, located in a separate room on the lower floor.

Equipment:

Panels: General Electric (G.E.)

ATS: Russ Electric, 4-pole

ATS Switch ATS 2E



ATS Switch ATS 2E



Condition:

The existing panels, similar to the main switchboard are old (35 years) but in **FAIR** condition. The lifespan of the existing equipment is estimated at around 50 years, so there is some useable life left in the equipment.

The existing Automatic Transfer Switches (ATS's) are old, and in **POOR** condition. The components and contacts within the switch are showing signs of age, and should be replaced. The level of reliability is low for continued operation during a normal power failure.

There is also a concern that **all** of the common area (i.e. corridor) lighting is not on emergency power. It appears **every other** light fixture is on normal power, and not backed up by the generator. This limits the functionality of the hospital during an emergency condition.

Code Violations:

- No apparent code violations.

Recommendations:

1. **Replace Automatic Transfer Switches:** Considering the ATS's condition, and are the weak point of failure of the overall emergency system, we would **recommend these be replaced with new.**

Replacement Cost:

100A-3p	ATS 1E	\$12,000.00
200A-3p	ATS 2E	\$15,000.00
600A-3p	ATS 3E	\$20,000.00
400A-3p	ATS 4E	\$18,000.00
Replacement of existing central control panel		<u>\$13,000.00</u>
Total		\$78,000.00

2. **Serve panel HD and MCCA from Generator:** Panel HD serves miscellaneous normal hospital loads like lighting, receptacles, and the old hospital wing. However this panel is not backed up by the 400kW generator. MCCA is the normal motor control center that serves non-essential supply fans, chiller, and other misc. exhaust fans, and also is not backed up by the generator.

The past year's utility company peak demand on the building indicates a peak load of 279kW (August, 2015). This means that the 400kW generator has the capacity to pick up the overall building.

To accomplish that, (2) additional automatic transfer switches need to be installed for Panel HD, and MCCA.

Estimated Cost:

New ATS-5E	600A-3p	Panel HD	\$20,000.00
New ATS-6E	600A-3p	MCCA	\$20,000.00
New conduit, feeders, installation			\$55,000.00
Modification/replacement of generator panel HGE			<u>\$24,000.00</u>
Total			\$119,000.00

EMERGENCY GENERATOR

The existing emergency is a 400kW, diesel generator located indoors on the lower floor of the hospital. It serves emergency and standby loads through a 600Amp panel HGE, serving **ATS-1E; ATS-2E; ATS-3E; and ATS-4E**

Equipment:

Manufacturer: Emerson G.M. Diesel Inc.



Condition:

The generator is old (1981) but in **GOOD** condition, and is well maintained.

Code Violations:

- No apparent code violations.

Recommendation:

No recommendation for replacement/upgrade at this time.

BRANCH PANELS/CIRCUITING

Various branch panels are located throughout the facility, serving miscellaneous lighting and power. They are located in spaces throughout the building, mainly in corridors, and closets.

Equipment:

Manufacturer: General Electric (G.E.)



Condition:

The branch panels are old but in **FAIR** condition. There is minimal spare breaker capacity in general. The existing panels appear to be adequate for present hospital needs. However if additional circuits are needed, we would recommend replacing panels with new panels that have more capacity (54, 66).

There are a few Isolated Power System panels serving Operating rooms that appear to be causing nuisance tripping/alarming at the Line Isolation Monitor (LIM). System replacement with newer IPS's is an option to mitigate nuisance tripping/alarming, or replacement with grounded system, pending further investigation of the type of procedure being done.

Code Violations:

- No apparent code violations.

Recommendation:

Recommend replacing IPS/LIM with newer updated systems, or removal and replacement with grounded systems, and utilizing GFCI for various required circuits. **Further investigation of OR room function is required to confirm removal of systems.**

Estimated Cost:

IPS system replacement (each location)	\$17,000.00
IPS system replacement with grounded system	TBD

LIGHTING

The lighting fixtures are made up of recessed fluorescent type, mainly 2'x 4' lensed troffers in the common areas. There are recessed fluorescent downlights in some common areas such as the main lobby. Some have been retrofitted with LED lamps.

Equipment:

Manufacturer: Varies



Condition:

The condition of the light fixtures are **FAIR**, and provide an adequate level of lighting for standard hospital use.

Code Violations:

- No apparent code violations.

Recommendation:

There is no recommendation for lighting replacement at this time. However, there may be opportunities to replace/retrofit existing fluorescent lighting with LED, and the local utility company may offer rebates to help pay for replacement cost. This has not been investigated.