Chapter 4 BUILDING MECHANICAL SYSTEM OPERATION

4.1 Sump pump and Waste water pit

During service sink use, filter change, and floor cleaning, waste water is drained to the waste water pit. Integrated in the sump pump is a control float operating directly at 120 volts in the supply line of the sump pump. That pump expels excess waste water level to the waste water holding tank.

The 120-volt chlorine room sump pump's individual package returns to the 15,000-Liter tank inlet water coming from both analysers located in the chlorination room and at the loading arm free chlorine analyser.

Depending on isolation valve position water can also be returned to pipe casing water intake

4.2 Waste water tank and signal

Under high waste water conditions in tank, two actions are taking place:

1. Red outside indicating lamp is on (high waste water level in storage tank)
2. Domestic pump is blocked and not operating

Pump out is required to resume normal operation.

4.3 Domestic Water Tank

This tank is filled with the treated water circulating loop.

4.4 Domestic Water Pump

Domestic water pump is interlocked where found operating as per spec. (pump stop if drinkable water tank low and or waste water tank full). Domestic water pump is set at 40 PSI of pressure.

The domestic water pump is a self-contained automatic pump. When water is demanded, it maintains water pressure for service sink, cleaning hose, chlorine tank filling, etc.

The following conditions stop operation of pump:

1. Potable water tank is empty
2. Pump pressure outlet is satisfied and pump motor stop.
3. Waste water tank full thus preventing pump operation.

4.5 FUEL SYSTEM

4.5.1 General Operation

Fuel Control Panel has a strobe to horn in case of failure. The fuel control panel is located near the daily fuel tank. When this problem occurs, the operator must find the problem immediately.

4.5.2 Fuel Storage Tank

The purpose of this system is to provide fuel oil to the furnace and the back-up generator. The furnace, primary source of heating, runs all the time with fuel oil. Without fuel oil, the back-up unit heater will take on the heating with electrical input. Otherwise, the building and the pipes will freeze.

4.5.3 Description

Fuel is stored in a 4546 liter (1000 imp. Gal.) storage tank outside the building. When full, this tank holds enough fuel to run the building heating system.

A second, smaller tank 227Liters (50 Gallon imp.) is located near the boiler and holds enough fuel to supply the furnace and the back-up generator.

Refer to Chapter 25 & Chapter 26 for more information.

4.6 FUEL PUMPS

4.6.1 Description

Fuel pumps located in the building automatically draw fuel from the larger tank to fill the smaller tank. Fuel Control Panel (FCP) use Float switches in the smaller tank automatically turn on the pumps when the fuel level is low (40%) and shut the pumps off when the small tank is nearly full near (90%). The operator can manually fill up the day tank using the FCP panel and select ‘’HAND’’ mode. Important: after the operation move back the selector in AUTO mode.

If the level in the small tank gets too low or too high, a "fuel alarm" will show on the interface. If this happens, go to the "trouble shooting" Chapter 7.

4.6.2 Operation

- Every 4 days check the fuel level in the large storage tank outside by reading the gauge of the main tank. Located beside the fuel control panel.
- If the fuel level is low, phone the supplier for more fuel.
- The rest of the system is automatic. No operation should be required. If the system fails to operate properly, go to Chapter 7, "trouble shooting".

Refer to Chapter 25 & Chapter 26 for more information.

4.7 HVAC

4.7.1 General Description

Heating for the building is provided by an Oil-Fired Furnace.

For safety consideration there is a fan (EF-1) in Chlorination Room. This Fan is running constantly, and the Furnace Heating fan assures a negative pressure in chlorination room.

The entire system is self-directed. In case of building low temperature, the systems automatically dial-up the operator.

If any part of the system fails to work, go to the "trouble shooting" **Chapter 7.**

4.8 HEATING FURNACE

4.8.1 Description

The Oil Furnace sucks the fuel from fuel day tank. The Oil furnace supplied hot air to the three rooms via a series of air ducts: Chlorination Room, Generator Room & Filter Room. An independent Thermostat located in filter room is controlling the furnace. Refer to Olsen Chapter for more information about the furnace.

4.8.2 Operation

- Every day check if the Furnace is functioning properly.
- Furnace Fan must:

The rest of the system is automatic. No operation should be required. If the system fails to operate properly, go to **Chapter 7.** "Trouble shooting".

Refer to Chapter 25 for more information.

4.9 UNIT HEATERS (UH-1…)

4.9.1 Description

The Electrical Unit Heaters are only for Emergency Purpose. They kick-off only under low temperature set-point. Electrical Unit Heaters are suspended from the ceiling. Each Unit has their own internal thermostat. Refer to Chapter 27 for more information about the Unit Heater.

4.9.2 Operation

- Every day check if the Thermostat is set around 10°C.
- Every day check if there is no apparent malfunction.

The rest of the system is automatic. No operation should be required. If the system fails to operate properly, go to **Chapter 27**, "trouble shooting".