CHAPTER 6

CAPE DORSET TRUCKFILL STATION

OPERATING PROCEDURES

CHAPTER 6
OPERATION

This chapter contains:

1. Start Up Procedures
2. Normal Operations Procedures
3. Trouble Shooting
4. Special Conditions

#101, 15334 - 123 Ave
Edmonton, Alberta T5V 1K8
Phone: (403) 452-0174
Fax: (403) 452-0175

WHIPONIC WELLPUTER LTD.

General Contracting - Electrical and Mechanical

P.O. Box 278
Norman Wells, N.W.T.
X0E 0V0
Fax: (403) 587-2821

START-UP PROCEDURES

GENERAL

These start-up procedures are based on all switches being in the "OFF" position with no water in the storage tank or boiler/circulation system. The outside fuel tank is to be filled to start.

STEP 1 Go to the main electrical service switch in the main room.
Open cover and verify fuses are installed and are the correct rating. The fuses should be 70 amp HRC-1 type J - Time Delay. Replace fuses if required.
Close cover of switch and turn operating handle to "ON".

STEP 2 Go to automatic power transfer switch.
Locate switch which reads "TEST - NORMAL".
Turn switch to "NORMAL".

STEP 3 Go to 30 amp disconnect switch labelled "PANEL A".
Open cover and verify fuses are installed and are correctly rated at 20 amps HRC-1 type J - Time Delay.
Close cover of switch and turn operating handle to "ON".

STEP 4 Go to panel A.
Turn all circuit breakers "ON" except do not turn on:
- system control panel
- pressure pump P-11

STEP 5 Go to disconnect switches feeding heat tracing transformer and MCC (motor control centre). Verify fuses as in Step 1. Heat tracing transformer disocnnect should be fused at 30A time delay and MCC should be fused at 50A time delay. Turn both switches "ON" now.

STEP 6 Verify fuel in outdoor fuel storage tank.

STEP 7 Fill day tank with fuel as follows:
Go to fuel pump control panel in generator room.
Turn on main power switch.
Turn all H.O.A. switches to "ON".
Confirm fuel flow into day tank by observing site glass.

STEP 8 Refer to Tag Directory.
Open or close all valves to normal operating mode.

STEP 9 Start boiler (refer to boiler start-up in boiler manufacturers' manual in Chapter 9).

STEP 10 Turn on power for domestic water transfer pumps P5 and P6.

STEP 11 Start filling outside water storage tank as follows:
Go to electrical panel A turn breaker for system control to "ON".
Go to system control panel and turn all H.O.A. switches to "AUTO".
Alarm should sound for: "Low Water Level", "Water Circulation", "2 Day Reserve", "Fire Reserve" and "Low Cutoff".
Push silence button to silence alarms.

STEP 12 Automatic tank fill system will fill tank. See sequence of events in Appendix (page 10 - 1).
Observe water level rise in tank by looking at tank level gauge.
If any further alarms take place refer to Trouble Shooting, (page 6 - 8).

STEP 13 When water level in tank reaches the "Fire Reserve Level", which will be indicated on the level gauge and by the alarm light for "Fire Reserve Level" going out, turn on water circulation pump P-3 as follows:
- go to Motor Control Centre
- locate starter for P-3
- locate "HAND-OFF-AUTO" switch on starter
- turn switch to "AUTO"

Do not turn on circ. pump P-4. P-3 and P-4 will be alternated manually once weekly.

STEP 14 When water level reaches the "STOP FILL" level (PS-5), the control system will stop the fill operation automatically. The pipeline heat tracing will remain on for up to two hours.
- confirm water level at level gauge
- if water level is not at top of tank, check for further alarms on alarm panel.

STEP 15 Start domestic water pressure pump P-11 by turning breaker "ON" and bleeding air from system.

STEP 16 Go to the system control panel and observe which green lights are on. It should look like this.

SYSTEM CONTROL PANEL

STORAGE TANK LEVEL

TRUCK FILL ENABLE

TWO DAY RESERVE ENABLE

FIRE RESERVE ENABLE

AMPS

UPPER HEAT TRACING

AMPS

LOWER HEAT TRACING

TANK FILL

OPERATION ON

START FILL CYCLE

TRACE HEAT LOWER

TRACE HEAT UPPER

LAKE PUMP

IMMERSION HEATER

TANK FILL ABORT

STORAGE TANK HEAT

NORMAL

WATER CIRCULATION

TRUCK FILL

CYCLE IN PROGRESS

PUMP P1 STATUS

RUN TIME HRS

PUMP P2 STATUS

RUN TIME HRS

PUMP SELECTOR

P1 P2

EMERGENCY GENERATOR

RUNNING

UH-1 FUEL FIRED UNIT HEATER

Refer to unit heater start-up in unit heater manufacturers' manual in Chapter 9.

UH-2 & 3 HOT WATER UNIT HEATER

STEP 1 Locate manual switch and thermostat on wall under unit heater.

STEP 2 Turn manual switch "ON". Set thermostat to 18° C.

TRUCK FILL

STEP 1 Truck fill pumps are alternated manually every week at the system control panel as follows:
- go to Motor Control Centre
- locate starter for P-1
- locate H.O.A. switch
- turn H.O.A. switch to "AUTO"
- locate starter for P-2

Start chlorine feed pump (see Page 6 -27).
The truck fill system is ready for operation. See page 6 - 5 for truck fill procedure.

STANDBY GENERATOR

STEP 1 Refer to Prestart Checklist in Operation Manual Chapter 9.

STEP 2 Go to generator control panel located on back of standby generator.
Turn master "RUN-OFF/RESET-AUTO" switch to "AUTO" position.

STEP 3 The generator ventilation system is operated automatically by a space thermostat which modulates fresh air and return air dampers. For a description of the operating see Appendix A in Chapter 10.

NORMAL OPERATING PROCEDURES

WATER STORAGE TANK FILL

The water level in the outdoor storage tank is regulated by the automatic control system which operates on pure pressure switches mounted on the main recirculation return line. For a description of the automatic control sequence, refer to Automatic control sequence in Appendix.

To observe the fill system in operation, it is possible to initiate the automatic fill sequence manually. This should be done periodically (every 3 months) to ensure all the steps are working.

To initiate the automatic fill sequence:

- Go to the water level gauge
- If the water level is between ?? and ??, the fill sequence may be initiated.
- If the water level is above ??, then the fill sequence will be too short. Wait until the water level drops.
- To initiate the fill sequence, push the button labelled "start fill cycle".
- the system Control Panel should be checked for green operating lights.
- if an alarm buzzer comes on at the system alarm panel refer to TROUBLE SHOOTING.

TRUCK FILL SYSTEM

The truck fill sequence is started at the truck fill control panel located in the weatherproof, heated enclosure next to the door on the outside of the building.

To fill a truck:

STEP 1 Go to the main system control panel located inside the building by the Main Entrance.
Locate the key switch "TRUCK FILL ENABLE".
Turn key switch to "ON".

STEP 2 Drive truck under loading arm and insert spout into truck water tank.

STEP 3 Go to the truck fill control panel on the outside of the building or the swtich at the end of truck fill arm. Locate the push button which reads "START FILL" and push the button.

STEP 4 The fill cycle can be stopped at the truck fill system control panel or at the truck fill arm by pushing the red stop pushbutton.

STEP 5 The fill cycle will automatically stop after ten minutes if it is not stopped manually.

STEP 6 If the filling sequence stops before the truck is full, the filling sequence can be started again by pushing the green start button on the loading arm. The operator should watch the level of the water rise in the tank to the truck and push the red stop pushbutton on the end of the loading arm when the tank is full. To see a description of the automatic truck fill sequence, see Appendix A - Chapter 10.
The fill pumps P-1 and P-2 should be alternated weekly by selecting P-1 or P-2 on the pump selector switch located on the main system control panel. A running time meter keeps track of the total hours each pump has run. These time meters should be kept approximately the same to balance the wear on the two fill pumps.

WATER HEATING AND CIRCULATION

When the temperature outside is below 2° C. It is very important that the water heating and circulation system stay in operation. Refer to Appendix A in Chapter 10 for explanation of automatic temperature control system. When the water tank and trucks are not being filled, check the control panel for the appropriate operating status lights.

The temperature of the water should be checked periodically (once per week minimum, daily if outside temperature drops below -15° C.) Check the thermostat located on the secondary water loop. It should read between 3° - 5°. If it is lower than 3° C.:

- check if boiler is working (see Boiler Manual in Chapter 9)
- check that either P-3 or P-4, circulation pump is running
- check alarm panel for alarms. See Alarm Point Legend Appendix C - Chapter 10.

STANDBY GENERATOR

The standby generator should be tested every week. Refer to the weekly testing and maintenance procedure in the manufacturers' maintenance manual in Chapter 9.

The standard weekly run test should be done without transferring the building load to the generator, by turning the "RUN-OFF/RESET-AUTO" switch on the generator control panel to "RUN".

The transfer switch should be checked for operation at least once per month at the same time as one of the weekly run tests as follows:

STEP 1 Perform weekly pre-test maintenance and inspections normally done. Leave the generator "RUN-OFF/RESET-AUTO" switch in the "AUTO" position.

STEP 2 Go to the automatic transfer switch near the main entrance electrical to Generator Room.
- locate the "TEST-NORMAL" selector switch on the front of the transfer switch
- turn the switch to "TEST".
- the generator should start and after six seconds the transfer switch should transfer to the emergency source. The red light indicating emergency source should light.

CAPE DORSET TRUCKFILL STATION

TROUBLE SHOOTING

All abnormal conditions are annunciated on the system alarm annunciator located in the main room next to the system control panel. Alarm annunciation consists of:

(a) a system alarm panel with labelled indicator lights and alarm buzzer.
(b) strobe lights on top of building.
(c) auto dialler which transmits prerecorded message to preselected telephone number.

Alarm points indicated on the system alarm panel are as follows:

(a) high level water storage tank
(b) two-day alarm water storage tank
(c) fire reserve water storage tank
(d) low level cut-off water storage
(e) low temperature recirc. water
(f) no flow recirc. water
(g) high temperature recirc. water
(h) boiler trouble
(i) glycol system trouble
(j) high level transfer tank
(k) normal power failure
(l) generator trouble
(m) generator switch "OFF"
(n) low level fuel oil
(o) low space temperature
(p) high space temperature
(q) high level fuel oil
(r) upper heat trace failure
(s) Tee Lake pump failure
(t) Tee Lake trace heat failure
(u) lower heat trace failure
(v) upper heat trace transmission failure
(w) Tee Lake pump transmission failure
(x) immersion heater transmission failure
(y) tank fill abort transmission failure

ALARM SEQUENCING

When an alarm signal is received from a field contact, the appropriate red indicating light will flash and the buzzer will sound at the system alarm panel.

STEP 1 Go to the system alarm panel to determine which alarm has been activated.

STEP 2 The alarm panel buzzer may be stopped by depressing the "SILENCE" button on the system alarm panel. The red indicating light will remain on until the alarm condition has been corrected.

STEP 3 If another alarm signal is reported before current alarm(s) have been corrected, the buzzer alarm will sound again, and, the appropriate indicating light will flash. Silence these alarms in the same manner as Step 2.

WATER STORAGE TANK HIGH LEVEL ALARM

STEP 1 Silence the alarm buzzer as outlined in "Alarm Silencing"

STEP 2 Go to the manual level gauge on the water circulation main header.
Read the water level off the gauge.

STEP 3 The High Level Alarm should only be activated when the tank reaches a level of 540 m^3. If the water level gauge shows less than this level, then manually check the level of the tank with a dip stick in the water storage tank.

STEP 4 If the water level gauge is showing that the tank is full, go to the system control panel.
Check to see if fill cycle is in progress. If green pilot lights next to "FILL CYCLE IN PROGRESS" and "TEE LAKE PUMP" is on, turn H.O.A. switch for Tee Lake Pump to "OFF".

STEP 5 Contact Honeywell to have control system checked.

STEP 6 Manually check water level in tank by using dip stick in manhole at top of tank.
If water level is full in tank, go back to system control panel and turn all remaining H.O.A. switches to "OFF".

TWO DAY RESERVE LEVEL

STEP 1 Silence the buzzer alarm as outlined in "Alarm Silencing".

STEP 2 Go to the water storage tank recirculation header. Read the manual level gauge to determine the volume of water in the water storage tank. The two day reserve level corresponds to 374 m^3.

STEP 3 If the water storage tank water level is near or below any of the points listed above, alarm will be activated. If this is the case, you must notify

NAME Mr. Jim Freeda
COMPANY Hamlet of Cape Dorset
ADDRESS Cape Dorest, N.W.T.
PHONE - WORK (819) 897-8981
- HOME (819) 897-8801

STEP 4 If the storage tank water level is above the level which is indicating by alarm condition then:

(a) Shut off the ball valve that feeds that particular level indicating device.

(b) Remove the level transmitting device and check to see if the snubber is clogged with sediment.

(c) If the snubber is dirty, clean and re-install the level indicating device.

(d) If the snubber is clean, install a new snubber and a new level indicating device from stock install and calibrate.

STEP 5 If the alarm condition continues, contact person outlined in STEP 3.

STEP 6 When the water falls below the two day reserve level, the truck fill pumps are disabled. See Special Conditions - Truck Fill Two Day Reserve (page 21).

FIRE RESERVE LEVEL

STEP 1 Silence the buzzer alarm as outlined in "Alarm Silencing".

STEP 2 Go to the water storage tank recirculation header. Read the manual level gauge to determine the volume of water in the water storage tank. The fire reserve level corresponds to 54 m^3.

STEP 3 If the water storage tank water level is near or below any of the points listed above, alarm will be activated. If this is the case, you must notify

NAME Mr. Jim Freeda
COMPANY Hamlet of Cape Dorset
ADDRESS Cape Dorset, N.W.T.
PHONE - WORK (819) 897-8981
- HOME (819) 897-8801

STEP 4 If the storage tank water level is above the level which is indicating an alarm then:

(a) Shut off the ball valve that feeds that particular level indicating device.

(b) Remove the level transmitting device and check to see if the snubber is clogged with algae or sediment.

(c) If the snubber is dirty, clean and re-install the level indicating device.

(d) If the snubber is clean, install a new snubber and a new level indicating device from stock.

STEP 5 If the alarm condition continues, contact person outlined in STEP 3.

STEP 6 When water falls below Fire Reserve Level, truck fill pumps are turned off. To fill fire truck in emergency fire condition only: See Special Conditions - Fire Reserve (page 21).

LOW WATER CUTOFF LEVEL

STEP 1 Silence the buzzer alarm as outlined in "Alarm Silencing".

STEP 2 Go to the water storage tank recirculation header. Read the manual level gauge to determine the volume of water in the water storage tank. The low water cutoff level corresponds to less than 12 m^3.

STEP 3 If the water storage tank water level is near or below any of the points listed above, alarm will be activated. If this is the case, you must notify

NAME Mr. Jim Freeda
COMPANY Hamlet of Cape Dorset
ADDRESS Cape Dorset, N.W.T.
PHONE - WORK (819) 897-8981
- HOME (819) 897-8801

STEP 4 If the storage tank water level is above the level which is indicating an alarm then:

(a) Shut off the ball valve that feeds that particular level indicating device.

(b) Remove the level transmitting device and check to see if the snubber is clogged with algae or sediment.

(c) If the snubber is dirty, clean and re-install the level indicating device.

(d) If the snubber is clean, install a new snubber and a new level indicating device from stock.

STEP 5 If the alarm condition continues, contact person outlined in STEP 3.

STEP 6 When water level falls below Low Water Cutoff Level, the truck fill pumps and the water heating circulation pumps are automatically turned off. If system cannot be rectified within a few hours, the system may have to be drained. See Special Conditions - Draining System (page 24)

RECIRCULATION WATER LOW TEMPERATURE

STEP 1 Find out if the alarm was tripped by:

(a) Water temperatures below 5° C. by checking the thermometer at the inlet of the heat exchangers.

(b) No flow in pipeline by checking operation of pump(s).

STEP 2 If water is flowing but below 5° C., check:

(a) If boiler is operating.

(b) If heat exchangers are hot.

STEP 3 If all of above are fine, check valves on heat exchangers to see they are open.

RECIRCULATION WATER NOT FLOWING

STEP 1 Go to recirculation pumps P-3 and P-4, check if one pump is running.

STEP 2 If the pump is not running, go to MCC, check that "H.O.A." switch is in "AUTO" position.

STEP 3 If a pump is running, check that all valves in recirculation loop are as listed in Valve Directory.

STEP 4 Clean one pump strainer by:

(a) Turn selected pump "H.O.A" switch to "OFF".
(b) Shut off valve on suction and discharge side of selected pump.
(c) Open basket strainer and clean thoroughly.
(d) Turn pump "H.O.A." switch to "AUTO".
(e) Open shut off valves on suction and discharge of selected pump.

STEP 5 Clean alternate pump strainer by method outline in Step 4.

RECIRCULATION WATER HIGH TEMPERATURE

STEP 1 Check the thermometer at the inlet of the heat exchangers.

STEP 2 Check the temperature setting of the valve control temperature sensor (T-2). This temperature should be 5° C.

STEP 3 Check the temperature setting of the boiler discharge temperature setpoint. This setpoint temperature should be 170° C.

STEP 4 If setpoint temperatures are "O.K.", close inlet and outlet valves to one heat exchanger.

BOILER TROUBLE

STEP 1 Go to boiler alarm panel located on boiler.

STEP 2 Refer to manufacturers' literature to remedy problem.

GLYCOL SYSTEM TROUBLE

STEP 1 Go to glycol system alarm panel located near glycol system.

STEP 2 Refer to manufacturers' "TROUBLE SHOOTING" literature to remedy problem.

TRANSFER TANK HIGH LEVEL

STEP 1 Go to transfer tank, view sight glass along outside of tank to determine water level. Confirm that transfer pumps are in operation.

STEP 2 If water level appears to be above transfer tank high level alarm switch:

(a) close valve at CV-4 manually.

STEP 3 When transfer tank water level has dropped to "PUMP CUT-OFF SWITCH":

(a) open valve at CV-4 and continue draining fire piping.

GENERATOR ALARMS

STEP 1 Go to generator alarm panel located on generator.

STEP 2 Refer to manufacturers' "TROUBLE SHOOTING" literature to remedy problem (See Chapter 9).

FUEL OIL LOW LEVEL

STEP 1 Go to fuel oil day tank, check level using Levelmeter Bubbler.

STEP 2 If day tank fuel oil level is low, check level of fuel in outdoor storage tank.

STEP 3 If outdoor storage tank is "O.K." check fuel oil transfer pumps. (P9 & P10)

STEP 4 Check to see if both pumps are running. Check lead and lag operation of pumps.

STEP 5 If pumps are running, check that all shut off valves in fuel oil supply line are open.

STEP 6 Clean pump fuel filters by:

(a) Turn selected pump "H.O.A." switch to "OFF" at fuel transfer pump control panel.

(b) Shut off valve on suction and discharge side of selected pump.

(c) Remove both fuel filters and clean.

(d) Re-install fuel filters and open pump shut-off valves.

(e) Check for leaks in fule filter assembly.

(f) Turn pump "H.O.A" switch to "AUTO".

FUEL OIL HIGH LEVEL

STEP 1 Go to fuel oil day tank, check level on level indicating gauge.

STEP 2 Check to see if either of fuel oil transfer pumps (P9 & P10) are running.

STEP 3 If either pump is running, turn "H.O.A" switch to "OFF".

STEP 4 Refer to manufacturers literature to remedy problem with pumps or pump control.

LOW/HIGH SPACE TEMPERATURE

STEP 1 Go to the control thermostat for each of UH-1, UH-2 and UH-3.

STEP 2 Verify that each unit heater thermostat is set at 18° C.

STEP 3 If the oil fired unit heater (UH-1) is not operating properly, refer to manufacturers' "TROUBLE SHOOTING" literature to remedy problem.

STEP 4 If the glycol unit heaters (UH-2 or UH-3) are not operating properly then

(a) Check supply and return valves are open.

(b) Close supply and return valves to unit.

(c) Clean strainer.

(d) Re-install strainer and open supply and return valves.

HEAT TRACE FAIL - UPPER/LOWER

STEP 1 Check heat trace electrical connections at:

(a) Truck fill station building.

(b) Each insulated junction box along Tee Lake supply line.

(c) Tee Lake heater house.

STEP 2 Repair any faulty connections.

STEP 3 If alarm persists, contact a service technician.

TEE LAKE PUMP FAIL

STEP 1 Go to Tee Lake heater house.

STEP 2 Verify that Tee Lake pump "H.O.A." switch is at "AUTO" and that Tee Lake pump is running.

STEP 3 If pump is running check for a frozen discharge line.

STEP 4 If pump is not running, remove pump for servincing and notify Hamlet if extended distruption in service is expected.

TEE LAKE IMMERSION HEATER FAIL

STEP 1 Go to Tee Lake Heater House.
Check power connection to immersion heaters.

STEP 2 If immersion not operational, contact a serviceman to find problem.

TRANSMISSION LINE FAIL

STEP 1 Visually inspect outside telephone lines from truck fill station building to Tee Lake heater house.

STEP 2 Contact Northwest Telecommunications to repair communication cable(s).

SPECIAL CONDITIONS

BUILT IN ALTERNATIVES

The following spare parts are located in the building and are labelled accordingly. Should a component fail where a spare part is available, isolate and drain that equipment and replace with spare. Maintain and inventory list of all spare parts on site.
Furnish spare parts in accordance with Sections 01250 and 15010 of specifications.

Pumps
- One set of packing or seal for each pump.
- One casing joint gasket for each size pump.
- One spare motor for each pair of pumps.

Valves:
- Valve Seats
- Valve Disks
- Stem Packing - Packaged
- Valve Handles - Two of each size
- Flange Gaskets

Strainers
- Two baskets for each type and size.

Jet pump pressure switch.

Transfer Tank
- Complete set of gauge glasses.
- One spare float switch
- Two dry contacts

Boilers
- Special tools for burners, manholes, handles
- Spare parts for one year of operation
- Spare gaskets
- Spare gauge glass inserts
- Probes and sealants for electronic indication
- Spare burner tips
- Spare burner gun
- Safety valve test gauge
- Transformer
- Operating Control
- Safety Valve
- Motor
- Fan Blower
- Motor Coupling
- Combustion Gauge
- Motor for hi/low

Oil System
- 4 spare filters
- 1 set gauge glasses
- Foot Valve - each type

Propylene Glycol
- Pump
- Operating Switch
- Low Level Switch
- One Set Auxiliary Contacts
- 340 Litres Glycol

Heat Exchangers
- Two gaskets per heat exchanger.

Fans
- One motor for each fan
- One set bearings for each fan

Controls
- Relays - one for each size and type
- Temperature sensors - one for each type
- Pressure switches - one for each type
- Flow switches - one for each type
- End switch - one for each type
- Audible alarm - one for each type
- Visual alarm - one for each type
- Level switches - one for each type
- Damper actuators - one for each type
- Valve actuators - one for each type
- Battery backup - one for each type

SPECIAL CONDITIONS

WATER STORAGE TANK MANUAL FILL (ALTERNATE METHOD)

STEP 1 Go to tank supply header, check level gauge to determine water level in outdoor storage tank.

STEP 2 Go to the system control panel and do the following:

(a) Turn immersion heater H.O.A. to "HAND".

(b) Turn pipe trace heat "H.O.A." switch to "HAND" and wait for one hour.

(c) Turn Tee Lake pump "H.O.A." switch to "HAND".

(d) Turn domestic water circulation pumps (P3 & P4) "H.O.A." switch to "HAND" when water has risen above intake piping.

STEP 3 Go to CV-4, close shut-off valves.

STEP 4 Go to CV-3, open shut-off valves.

STEP 5 Go to tank supply header, watch level gauge to approach level "PS-5-FILL STOP".

STEP 6 Go to the system control panel and do the following:

(a) Turn Tee Lake pump "H.O.A." switch to "AUTO" or to "OFF" to stay on manual.

(b) Turn immersion heater "H.O.A." switch to "AUTO" or to "OFF" to stay on manual.

STEP 7 All 10 - 15 minutes to drain line.

STEP 8 Go to CV-3, close shut-off valves.

STEP 9 Go to CV-4, open shut-off valves to start draining.

STEP 10 Go to the system control panel, turn the domestic water transfer pump (P-5) or (P-6) "H.O.A." switch to "HAND".

STEP 11 If the domestic water transfer tank water level approaches the "LAG PUMP START" level, go to the domestic transfer system control panel and turn the alternate domestic water transfer pump (P-6) "H.O.A." switch to "HAND".

STEP 12 When water stops flowing into the domestic water transfer tank from Tee Lake supply, go to the system control panel, turn the domestic water transfer pumps (P-5 & P-6) "H.O.A." switch to "AUTO" to "OFF" to remain on manual cycle.

STEP 13 After two hours have passed, go to the system control panel, turn the pipe trace heat "H.O.A." switch to "AUTO" or to "OFF" to remain on manual cycle.

TWO DAY RESERVE ACCESS

To operate the truck fill system after a Two Day Reserve alarm condition:

STEP 1 Go to system control panel.
Locate keyed switch labelled "TWO DAY RESERVE ENABLE".
Insert key and turn to "ON".

STEP 2 Proceed to fill trucks normally.

FIRE RESERVE ACCESS

To operate truck fill system after a Fire Reserve Level alarm condition:

STEP 1 Go to system control panel.
Locate keyed switch labelled "TWO DAY RESERVE ENABLE".
Insert key and turn to "ON".

STEP 2 Proceed to fill trucks using normal operating procedure.

NOTE: FIRE RESERVE WATER SHOULD ONLY BE USED FOR EMERGENCY.

MANUAL TRUCKFILL CYCLE

STEP 1 Close central valve CV6.

STEP 2 Open control valve CV5.

STEP 3 Manually start P1 or Pump P2.

STEP 4 Start chlorine pump manually.

STEP 5 Stop chlorine pump prior to STEP 6.

STEP 6 Shut off pump P1 or P2 when truck is near full.

STEP 7 Close control vavle CV5.

STEP 8 Open control vavle CV6 to drain truckfill arm and piping. Ensure domestic transfer pumps are operational on automatic or operate manually.

CHLORINATION SYSTEM OPERATION

STEP 1 In separate chemical mixing tank dilute calcium hypochlorite into water as indicated on the chemical containers.

STEP 2 After 24 hours drain top portion of chemical mixing tank into chemical feed tank. Ensure foot valve is installed and confirm discharge piping is connected to truckfill arm piping.

STEP 3 Go to Panel A and confirm breaker is turned on for chemical feed pump. Pump will operate automatically when truckfill arm is in use. Observe one cycle or truckfill to ensure proper operation.

NOTE: Chlorine injection into water system is dependant on water quality. Operator is to conduct jar test to determine initial chemical injection rates. See Appendix "B" for further information on chlorination and disinfection.

CALIBRATION OF TANK LEVEL PRESSURE SWITCHES

GENERAL

Pressure switches mounted on the Tempered Domestic Water Return Line provide the level sensing of water in the water storage tank.

The pressure switches are designed to function with one Domestic Circulation Pump (P3 or P4) in operation. One pump must be operational to enable correct tank level sensing.

If the tank levels are not being correctly indicated (as confirmed by measuring into the water storage tank with a dip stick) the pressure snubbers installed at the pressure switches may require cleaning or changing.

If snubbers have been cleaned and problems with level sensing persist check calibration of pressure switches.

The following table summarizes the pressure switch settings.

PRESSURE SWITCH	WATER LEVEL IN WATER STORAGE TANK	PRESSURE SETTING MEASURED AT BUILDING HEADER	USEABLE STORAGE VALUE	DESCRIPTION
PS1	200 mm	0.0 psi	0	Low Level Shut Down Bottom of Fire Reserve
PS2	1120 mm	1.5 psi	54 m^3 Fire Reserve	Fire Reserve Key Top of Fire Reserve
PS3	6270 mm	8.8 psi	320 m^3 Two Day Emergency Storage	Two Day Reserve Key Top of Two Day Reserve
PS4	6500 mm	9.1 psi	N/A	Start of Fill Cycle
PS5	8835 mm	12.5 psi	160 m^3 Day Storage	Stop of Fill Cycle
PS6	8925 mm	12.6 psi	N/A	High Level Alarm

NOTE: PS5 is set at 8835 mm to allow for 50 mm water transfer from Tee Lane fill line.

The following steps are to be repeated for each of the pressure switches that require setting.

STEP 1: Ensure that automatic fill cycle has been disabled to avoid pressure switch adjustment from operating automatic fill operations.

STEP 2: Fill or drain the water level in the tank to the level indicated in the preceding table for the pressure switch that requires setting (i.e. The stop fill cycle is PS5 and the water level in the tank is set to 8840 mm). The filling or draining can be done manually as outlined in special operating procedures. The pressure switches should not be adjusted for at least 5 minutes following the setting of the tank level to allow the pressure at the pressure switch to completely stabilize due to the effects of the pressure snubbers.

STEP 3: Remove the enclosure for the pressure switch that requires setting. As the pressure switches are doubled up it is critical that the correct switch within the pressure switch enclosure be selected for adjustment (i.e. pressure switch PS6 is in the same pressure switch enclosure as PS5). The switches are labelled on the enclosure.

STEP 4: Ensure one domestic water circulation pump is operational.

STEP 5: With the water level set in step 2 adjust the pressure switch calibration screw; first counterclockwise then clockwise until the switch engages and disengages. This switch engaging and disengaging can be heard or the switch can be tested with a continuity tester.

STEP 6: Replace the pressure switch enclosure.

STEP 7: Return the system to an automatic mode and observe one full cycle of operation to ensure pressure switches are set properly.