

# Engine Room Manual

Updated July, 2004  
**TABLE of CONTENTS**

6	ADD WATER & EMPTY POOL	27	HISTORY OF THE POOL
7	AIR COMPRESSOR	29	MAIN ELECTRIC PUMP #1
18	ANTIQUÉ ENGINES	31	MAINTENANCE MAIN ELEC PUMP
8	ATTENTION GETTERS	10	MAIN FIRE PUMP (GASOLINE)
13	BATTERIES	40	MAINTENANCE OF THE POOL
12	CASTLE FIRE SYSTEM	50	MAINTENANCE GENERAL
13	CHLORINATION & pH OF POOL	49	MAINTENANCE PLUMBING
14	COMPARISON OF PUMPS	34	NORMAL SETTINGS,
19	ELECTICAL POWERS, PGE	37	OBSOLETE EQUIPMENT
35	ELECTRIC PUMP #3	41	POOL CLEANER PUMPS
46	NEWEST #3 JACUZZI FIRE PUMP	3	POOL CLEANERS
12	ENGINE ORDER TELEGRAPH	42	POWER IS OFF
20	ENGINE ORDERS	43	PRESSURE TANK AIR
5	FILTER BACKWASHING	11	PRIMING GASOLINE FIRE PUMP
2	FILTERING THE POOL	4	PRIMING GENERAL PATTON PUMP
38	FILTERS OF THE POOL	43	ROOF SPRINKLERS
17	FILTERS, WELL WATER	45	TROUBLE SHOOTING
17	FILTERS, GENERAL PATTON	47	VALVES, BY FUNCTIONAL ORDER
21	FIRE ALARMS	46	VALVES, SORTED NUMERICALLY
32	FIRE OPERATIONS	52	WATER FLOW CHARTS
23	FIRE SPRINKLERS	32	WELL, NEW (Upper) 250' DEEP
39	FOUNTAINS	36	WELL, OLD 60'
25	FREEZING WEATHER	37	WELL, SPRING
26	FRESH WATER SYSTEMS	53	WIRING DIAGR, ELECTRIC PUMP
28	GENERATOR		

## FILTERING THE POOL

TO FILTER WITH # 1 MAIN ELECTRIC PUMP:

Open Valves # 18, # 19, # 30 (intakes normally open)  
# 61, # 62, # 64, # 65, # 66 (normally open)

and-- # 8 (move it slowly to prevent pounding)

\*\*\*\* NOTE-- # 8 MUST BE CLOSED WHEN NOT FILTERING SO  
THAT FIRE SYSTEMS WILL HAVE MAX PRESS!

Close Valves # 10, # 16, # 17 (drains normally closed)

---> AH...NORMALLY, # 8 is the only valve to be changed when  
starting and stopping filtration.

Start # 1 Main Electric Pump

TO FILTER WITH #3 ELECTRIC FIRE PUMP:

Open Valves , # 28 (intake, normally open)  
# 61, # 62, # 64, # 65, # 66 (normally open)

and # 71 (move it slowly to prevent pounding)

Close Valve # 8 , # 26, # 60, [#26 allows suction from  
other intakes (special stuff)]

---> AH...NORMALLY, # 71 is the only valve to be changed when  
starting and stopping filtration.

Start # 3 Electric Fire Pump

## POOL CLEANER, GENERAL PATTON

TO OPERATE POOL CLEANER (General Patton):

WARNING!!! --- The General's PUMP MUST NOT BE ON IF VALVE # 67 IS CLOSED (That is the suction line between the pool filters and the redwood fence. (It will run dry and burn out!).

Open Valves # 9, # 73 (in pool fence corner).

Start the General Patton Pump. He has two switches that must be ON. One behind the redwood fence, at the end of the pool, and one in the engine room to the right of the door.

On General Patton's pump, on the floor beneath the shelf, is a shut off lever valve and an in line dirt filter. This filter must be cleaned weekly or more often if there has been an excessive amount of dirt in the pool. To clean it,

Stop General Patton.

Close the lever valve at the filter and close lever valve #68 to the right of the pump.

Remove the filter and wash it clean.

Return the clean filter, open the lever valves and you are ready for action.

## PRIMING GENERAL PATTON'S PUMP

General Patton has his own suction line and output line. The suction enters from the 40mm flexible intake on the South side of the pool.

### TO PRIME:

Stop the pump.

Attach a garden hose to a functional garden faucet.

Connect the male end of the garden hose to the hose bib located just above valve #68, with a double female hose adapter. (This should already be in place).

Open the hose bib and valves #68 and the filter valve on General Patton's filter.

Flush the line with fresh water from the garden hose. The line is primed when no more air bubbles emerge from the flexible intake pipe at the South side of the pool.

Close off the hose bibs, leave valve #68 and the filter valve open and start the pump with General Patton set up ready to roar.

Be sure he has about 60 psi on gauge. The pressure drops to about 50 psi when the general is backing up.

## BACK WASHING THE POOL FILTERS

### BACKWASHING THE FILTERS

THIS SHOULD BE DONE WHEN THE MAIN DISCHARGE GAUGE READS A BACK PRESSURE GREATER THAN 15 psi (otherwise you're not at full efficiency). Ant ve always vont vull efficiency! Don't ve?

The Best Backwashing is accomplished by using both Electric Pumps (1 & 3) simultaneously for maximum ROAR.

#### Start with the Pumps OFF

Open Valves #60 & #63 (Filters A & B Flush to Fence)

**WARNING!** If these valves (#60 & #63) are not opened, the lids will be blown off of the filter tanks!

Open Valve #8 (adds #1 Pump to the Filtering System)

Open Valve #71 (Adds #3 Pump to the Filtering System)

**WARNING!!! ... DO NOT OPERATE PLUNGER VALVES ON FILTER TANKS WHILE WATER IS FLOWING THROUGH THEM-- OR IT'S BAAAMMM!**

#### Prepare Filter A for backwashing:

Open valve #61 (Filter A input - if not already open)

Push Down and LOCK Filter A Plunger Valve A DOWN

Close Valve #62 (Filter B input)

#### Start the Pumps #1 and #3

Observe water discharging by fence until it is clear

#### Switch to Filter B backwashing:

Push down and LOCK Filter B Plunger Valve DOWN

Open Valve #62 (Filter B input)

Close Valve #61 (Filter A input)

Raise and Lock Filter A Plunger Valve A UP

Observe water discharging by fence until it is clear

#### Stop Pumps #1 & #3

#### Secure Filter B and Return Filter A to system:

Raise and Lock Filter B Plunger Valve B UP

Open Valve #61 (Filter A input)

#### Secure everything else:

Close Valves #60 & 63 (Filters A & B Flush to Fence)

Close Valve #71 (Removing Pump #3 from the filtering system)

Close Valve # 8 (If not proceeding with filtering)

The backwash is now complete and all is secured.

## ADDITION & SUBTRACTION OF WATER TO THE POOL

ADDITION OF WATER TO THE POOL:

FROM SPRING WELL

Start Spring Well Pump -- Push its button. (Located on Main Electrical Panel)

FROM SPRING WELL.

Lower a sump pump to the bottom of the spring well with a garden hose into the pool bottom.

FROM DEEP WELLS:

Use a garden hose from a hose bib. The flow must be slow to prevent pumping the wells down too low.

FROM REDWOOD TANK

Open Valves # 85 & # 82 (at Tank & at Spring Well)

IT REQUIRES ABOUT 5 to 6 DAYS TO FILL THE POOL FROM EMPTY

---> About #25 lbs of SODA ASH ARE NEEDED TO NEUTRALIZE THE WELL WATER to pH 7.

---> No stabilizer is needed if ChlorBright chlorine crystals are used. They have stabilizer built in.

## DRAINING THE POOL

Use a sump pump with a 40mm hose and poly pipe to drain the water into the woods behind the driveway. This area will absorb all the water without runoff.

IT REQUIRES ABOUT 10 HOURS TO EMPTY

THE HOMEMADE TWO CYLINDER--

Also Very Neat, and was acquired from Les Haber.

These Two Magnificent Engines are now temporarily operating on Compressed air while they are waiting for the restoration of The Boiler.

This Boiler should burn the ultimate fuel-- Junk Mail!

## AIR COMPRESSOR

The Air Compressor was given to the Boom by the Vacuum Cleaner salesman who sold us an Electrolux, because this sale earned him a trip to Hawaii.

Its original motor did conk out some years ago, and Bill Watson, a student, donated the present one. (This is the same Watson who, with Hans Thompson and Rick Emert did bring up a rototiller to start the Great Tunnel from Castle to Catacombs).

The Compressor maintains the air pressure from 40-60 psi. when set by the switch on the Electric Control Board or by the Laboratory remote switch via a relay above the Main Control Board in the Engine Room.

The Tank and its pressure switch are located in the overhead of the Engine Room.

Should air pressure not build up in the tank, as read on the gauge over the Engine Room shelf, the Laboratory gauge, or the Garage gauge;

Check the following:

Little lever on compressor cylinder, it should point toward the belt.  
Air Compressor Bleeder Cock, on Water and Oil Trap, behind compressor.

Air valves at Poolside.

Air faucet in Engine Room

Well Depth Sounder in Engine Room

Whistle valves in Engine Room

Steam valves in Laboratory

Air faucet in Garage

Air hose in Garage

Beulah's valve (Great Air Horn by Study Door).

### ~~DRAINING THE WATER AND OIL TRAP:~~

~~— This should be done three times per year. The more often done, the less mess!~~

~~— Start Compressor to build up pressure in the trap.~~

~~— Stop Compressor.~~

~~— Cover the Drain Cock with a dirty rag~~

~~— Open the Cock.~~

~~— LOOK OUT! Much GAK will blast out!~~

## ATTENTION GETTERS

### THE BELLS OF BOOMERIA--

The Chapel Royal Bell, cast by the Royal Dutch Bell Foundry. It swings in the Belfry of The Chapel Royal.

This Bell Rings for special occasions and sounds the hours of 0800, 1200, 1400, 2000.

The Antique Bus Bell. Given to the Boom as a kid by Mr. Karstead, the neat next-door neighbor.

It now is mounted in the Belfry of The Chapel Royal. Its use is unpredictable.

The Great Sanctus Gong. It Tolls for special event and Natural Philosophers Initiations. It hangs from a Fir Tree beside the Main Dungeon Entrance. It was made from a Chlorine Cylinder by Arthur and Jaime.

#### The Signal Bells:

These Solenoid Rung Bells are operated from buttons located on the Service Porch, and from

The Captains Control Board.

The Signals are-

The Boom.....two rings

Sir Alex.....three rings

Sir Laurence...four rings

Queen Sally....five rings

Sounding the signal twice means Telephone Call.

The bells are located as follows:

The Big Fir Tree on the Terrace (this was salvaged from Old San Jose High School (along with the Great Triple Pole Knife Switch in Eng Rm).

The Castle, second level. Made from a junk thing.

The Engine Room (pinball score bell).

The Chapel Royal (another pinball).

The Blower Room Hall (pinball again).

The Fire Bells are located in the stair hall, on the outside front wall of house, and in Engine Room.

The Burglar Alarm Bells are located, oh, oh, Classified Information.

The Ships Bell of P.H.Boomer (from his fishing boat), is found at the Station 3 entrance to the house. It's a door bell.

(Cont'd)



## ATTENTION GETTERS cont'd

The Bell of the House at Pleasure Point is the Back Door Bell

The Gate #1 Bell is found in the Blower Room and the Gate 1 Horn is under the study window.

Low Pressure Alarms Bells in Wine Cellar and Engine Room, warn of trouble with Fresh Water System.

### HORNS:

#### THE HORNS OF BOOMERIA—

The Gate 1 Horn is under the study window.

Tower #1 Attack Horn is located in Tower 1. Also called The Raspulator. It is sounded from the CIC Room, The Captain's Bedchamber, and Tower 1.

It is also sounded by the Sneak Alarm.

The Engine Room Horn, over the door, is sounded by the Sneak Alarm.

Tower #2 Engine Signal, is sounded from both Tower 2 and the Engine Room (behind the Internal Explosion Engine). It is located behind and above the Internal Explosion Engine.

Tower #6 Attack Horn is located on the Tower 6 wall and sounded from CIC and The Captains Bedchamber. It is also sounded by the Sneak Alarm.

Beulah, The Bull of Boomeria, located outside the Study Door, is a Naval Attack Horn donated by Richard Conger. WOW is it POWERFUL!

Burglar Alarm Horn, oooooohhh, Classified.

Gate #1 Horns are at study window, one a 120v Blaapper, and the other a 12v 60 cycle horn in the wine cellar.

The Great Klaxon, in the Engine Room, donated by Richard Conger. It is sounded from the Engine Room, Captains Quarters, Swingside Control, and CIC.

### SIREN:

The Big Conger Siren in the Engine Room, for fires, attacks and other occasions; sounded from Engine Room, CIC, Captains Quarters, Swingside Control, and Fire Systems.

STEAM WHISTLES: (Donated by Richard Conger in the Engine Room

## MAIN FIRE AND BATTLE GASOLINE DRIVEN PUMP

### THE PRIME MOVER:

The Gasoline Engine was acquired from Ted Rolff in Ben Lomond. It is a Hercules four-cylinder motor made for military power generation. It was brand new. (\$150.).

### THE PUMP:

The Transmission Drive Pump was acquired from George Wilson Plumbing for \$178., October 2, 1964. It is a Jacuzzi 15 hp centrifugal.

For a few years, the pump was triple B-belt driven by a pulley mounted on the forward shaft of the Engine. This was big trouble because the shaft was too short and vibrations periodically broke off the roll pin holding the pulley.

So, April 6, 1973 Kalar's Machine Shop mounted the Prime Mover to the Pump as straight transmission drive, and it has been trouble-free since.

Here is some Info. on this pump: (for more see manual in Engine Room Files.

### GASOLINE FIRE PUMP:

Jacuzzi transmission drive, 15 DL 15 hp  
155 gpm at 250' water head.

PUMPING RATE from Pool to Creek = 125 gpm, back pres.= 10 psi

### FIRE HOSES, 1.5":

1 hose 90 psi shoots 108'  
2 hoses 55 psi  
3 hoses 45 psi

ROOF SPRINKLERS run at 80 psi

## PRIMING THE BATTLE/FIRE GASOLINE DRIVEN PUMP

If this pump has lost prime, which would happen if the pool had been emptied, or its level had fallen below that of the Pump, then it must be re-primed. That is, the air must be displaced from the Pump.

**DO NOT RUN THIS GASOLINE ENGINE DRIVEN PUMP IF IT IS NOT PRIMED!**  
This pump supplies the cooling water to the gasoline engine.

HERE'S HOW TO PRIME IT:

- A. If the Main Electric Pump is primed (so water is already in the suction lines) STOP the electric pumps.  
Open the air bleeder cock on the Battle Pump with a small screwdriver.  
When the air is out of the Pump, close the cock.  
Test run the pump being sure that the cooling water is flowing from the pipe above the gasoline engine.
- B. If none of the pumps are primed it is best to prime the Main Electric Pump first and to A above. If you must prime the Gasoline Pump by itself...

Open Valve 30, and be sure the 75mm Suction Drain at East side of Pool is under water. If not, attach the Big Suction Hose to it and attach the Check Valve to the bottom end of the Big Suction Hose.

Open Primer Valves 23 & 29,

Open the air bleeder cock on the Battle Pump with a small screwdriver.

When the air is out of the Pump, close the cock, and the Primer Valves 23 & 24.

Test run the pump being sure that the cooling water is flowing from the pipe above the gasoline engine.

MAINTENANCE OF THE BATTLE PUMP:

Check its oil and keep the battery charged. When operating, cooling water must flow freely in the pipe above the engine in the corner.

## CASTLE FIRE SYSTEM

### THE FIRE SPRINKLERS

These are fed by one line:

The main 50mm FIRE/ BATTLE Line from the Engine Room via Valves #3 & #57.

### THE CATACOMB SUMP PUMP AND SIPHON

The sump in the lower catacombs contains a sump pump whose power comes from an extension cord plugged in under the study window.

Its hose discharges down the driveway. When water starts the pump with its float valve, the siphon is primed because the hose is way down the driveway.

### MAINTANANCE OF THE SUMP PUMP SIPHON:

In the summer, remove the grill from the sump and clean out the silt deposit around the pump. Lube the float mechanism with WD40. Secure the grill and it's ready to go next flood.

## ENGINE ORDER TELEGRAPH

This magnificent device communicates the orders from CIC to the Engineers in the Main Engine Room. Being mechanical, it is independent of electric power.

The Engine Order Telegraph was obtained at a closing out sale of a ship chandlery in San Francisco, in 1969.

It was installed in the Spring if 1969 (probably).

The cables run two in a conduit with two conduits from CIC to Engine Room.

May 6, 1973, the galvanized wire in a conduit rusted and parted. New wires were run. They are copper coated telephone line which was claimed from the old Eagle Rock Lookout Station.

## CHLORINATION OF THE POOL

In the past we have used Gaseous Chlorine --Cheap but dangerous; HTH, a calcium base crystal--more expensive and it gaks up the filters with insoluble residue.

So now we use a sodium base crystal, Leslies Chlor-Brite, which is expensive, but it is totally soluble. And it needs no stabilizer!

Follow the directions and use the Chemical Test Kit to maintain the proper Chlorine in the Pool. If you get lax, it's Algae City!

### ACIDITY:

Our water is very acid and must be neutralized to keep the pool's pH neutral.

Use the Chemical Test Kit to maintain the proper pH of the Pool water.

A failure to do so means the Chlorine is less effective and an acid condition will etch the pool plaster.

### CHANGING POOL WATER:

When the Pool water is changed, it requires 25 lbs of Soda Ash to neutralize the well water.

## BATTERIES

### FIVE 12-VOLT AUTO BATTERIES NEED REGULAR ATTENTION:

\*\*\* DO NOT NEGLECT THE BATTERIES, or YOU LOSE!

Maintain the distilled water levels, and charge.

Replace them when their warranties are up.

The Engine Room Battery, needs weekly charging and inspection.

The Crew's Quarters Alarm Battery needs weekly charging.

The Main Deck Battery, in study closet) has auto charge, but needs inspection.

The Below Decks Battery, located in the wine cellar, needs weekly charging and inspection.

The backup battery in the lab needs a monthly charge.

## COMPARISON OF PUMPS

THESE ARE ANCIENT MEASUREMENTS IN THE INFERIOR MEDIEVAL SYSTEM:  
and they were made before the Great Plumbing Revisions of 1985.  
Remember these measurements are made thru the friction of pipes.

GRAVITY FLOW from Pool to Creek = 38 gpm

MAIN ELECTRIC PUMP #1:

PUMPING RATE from Pool to Creek = 110 gpm, back press. = 5 psi

FIRE HOSES, 1.5":

1 hose 45 psi shoots 80'

2 hoses 35 psi

3 hoses 25 psi shoots over Chapel Royal

Full flow to pool = 100 gpm

ELECTRICAL RATINGS:

Power = 3 hp

Volts = 220

Amps = 11 no load

= 16 full load

Watts = 3840 (we had higher voltage)

OLD #3 ELECTRIC PUMP:

(Now out of service outside of Engine Room Door, a gift of Mr. Avenmarg, in 1976. We had it re-wound by John's Motors and then done over, Feb, 1977 as it drew 30 amps the first time! Very low efficiency. And it now needs a new gasket.

Recommend it be kept for looks.

Power = 3 hp

Volts = 220

Amps = 11 no load

= 19 full load

Watts = 4370 (we had higher voltage)

(Cont'd)

## COMPARISON OF TWO PUMPS cont'd

Number 1	Number 2
Runs coool 100 gpm	Runs very hot (bad) 50 gpm (ooooh bad for its high power)
Filtering 75 gpm at 35 psi	50 gpm at 18 psi (yuk)
Volume per current 6.25 gpm/amp	2.63 gpm/amp (Phuut)

### GASOLINE FIRE PUMP:

Jacuzzi transmission drive, 15 DL 15 hp  
155 gpm at 250' water head.

PUMPING RATE from Pool to Creek = 125 gpm, back pres.= 10 psi

### FIRE HOSES, 1.5":

1 hose 90 psi shoots 108'  
2 hoses 55 psi  
3 hoses 45 psi

ROOF SPRINKLERS run at 80 psi

### PUMP TESTS:

07/24/76 Number 1 Main Electric Pump and Number 3 Avenmarg  
Berkeley two stage maximum inefficiency pump.

### WIDE OPEN:

#1	#2	Together
140 gpm	68.3 gpm	230 gpm

NUMBER 3 Discharge into Pool through Fence Fountain

= 68.2 gpm

(Cont'd)

## COMPARISON OF TWO PUMPS cont'd

### NEW #3 ELECTRIC PUMP:

STA-RITE Pump, PRAA5G122L

Power = 1.5 hp	Volume = 105 gpm at 25 psi
Volts = 230	= 60 gpm at 41 psi
Amps = 14	Runs super hot!

### WATTHOUR METER TESTS:# (With new #3 Pump)

#1 8.2 kwh/127min/60min/hr	= 3.87 kw
#3 6.0 kwh/2hr	= 3.0 kw
R-2 Pool Sweep	= 1.33 kw
#1 + R-2 (filtering together)	= 5.2 kw

COST PER HOUR to run #1 + R-2 @ \$.05/kw-hr

5.2 kw X \$.05/kw-hr = \$.26 / hr

### MORE PUMP TESTS:

With the New STA-RITE DURALGLASS #3 Pump

03/24/79

Full flow thru 2" fountain	Through Filters
#1 150 gpm at 20 psi	#1 136 gpm at 25 psi
#3 100 gpm at 18 psi	#3 100 gpm at 18 psi
#1+#3 200 gpm at 35 psi	

Fence Fountain with #3 = 94 gpm at 25 psi



## FILTERS: WELL, PATTON, FOUNTAIN

### DEEP WELL:

The Deep Well Filters are located beside the Pressure Tank. There are six LIFEGUARD FILTERS. Four of them filter the Well Water before it enters the Pressure Tank. The other two filter it before it goes to the House.

These should be removed and washed frequently as much crud doth come forth from the Well.

To wash the filters:

Secure the Deep Well Pump Switch located above the freezer in the Blower Room.

Close Valve # 88 on the Pressure Tank

Open the relief faucet to the left of the filters

Remove the caps from the six filter cylinders

Remove each filter being careful not to lose the small cap at the top

Wash it clean with the hose provided and return it being careful of the small cap at the top

Replace the caps, hand tight only, being careful that the "O" rings are in place and clean.

Open Valve # 88, and allow the water to run out the relief faucet until clean and no more air escapes

Close the relief faucet

Return to Blower Room and Throw the Pump Switch.

### POOL CLEANER FILTERS (General Patton):

These should be cleaned weekly during the summer or whenever the efficiency of General Patton is reduced.

Start General Patton Pump located on the Engine Room floor beneath the shelf. He has two switches, one behind the board pool fence and the other at the right side of the engine room door when you are inside.

(Cont'd)

## FILTERS, cont'd

Outside the board fence are the two filters.  
 Close the lever valve at the base of the filters.  
 Remove the caps from the two filter cylinders  
 Remove each filter being careful not to lose the small cap at the top  
 Wash them clean with the hose being careful of the small cap at the top  
 Replace the caps, hand tight only, being careful that the "O" rings are in place and clean.  
 Open the lever valve at the base of the filters.  
 General Patton should be running again with vigour.

### REDWOOD FENCE FOUNTAIN FILTERS:

These should be cleaned quarterly or whenever the efficiency of the flow is noticed.  
 Remove the caps from the four filter cylinders  
 Remove each filter being careful not to lose the small cap at the top  
 Wash it clean with a hose being careful of the small cap at the top  
 Replace the caps, hand tight only, being careful that the "O" rings are in place and clean.

WHEN THE FILTERS BECOME CLOGGED BEYOND WASHING, new filters must be purchased. These come from APPI Pool Supplies, or Leslie's Pool catalog. They are called *Lifeguard Filters*.

## ANTIQUÉ ENGINES

### STEAM ENGINES:

The Steam Engines are located in the Laboratory.  
 THE 1905 STANLEY Two Cylinder, 10 Hp  
 It's Very Neat! And was acquired from Charley Ward.

## ELECTRICAL POWER FOR THE ENGINE ROOM AND CHAPEL ROYAL

There are two PGE power supplies for the Engine Room and Chapel Royal:

(1) The PGE “Well” Service comes in via the drop line behind the Engine Room where the Meter and Main Circuit Breaker are located in the box on the wall.

(2) The PGE “House” Service for the Engine Room comes from the Engine Room Circuit Breaker in the Basement Panel Box underground to the Engine Room. If the Generator is in operation, then the Engine Room gets Generator power from the same circuit in the Basement.

To select which PGE power source to use, there is the great Transfer Switch mounted on the outside wall of the Engine Room on the pool side. When the Transfer Switch is UP, the Engine Room is on the PGE “Well” Service and is independent of the House Power. When the Transfer Switch is DOWN, the Engine Room is powered from the “House” Service.

The Engine Room supplies power to the Chapel Royal Heater, Christmas Lights, Organ Console, and the receptacles under the organ.

The Chapel inside Lights are on an old house circuit from the Basement Panel Box.

So, if we want to power the Chapel Royal from the Generator, we must power the Engine Room from the House Service. Hence the Transfer Switch must be in the DOWN position to get power from the House Supply.

The Main Switch and Fuses from Engine Room to Chapel Royal are located to the far left of the switch board in the Engine Room.

## *ENGINE ORDERS*

- AHEAD SLOW** -- Low Pressure (20-40)  
#1 Main Electric Pump ON filtering the pool through Valve #8.
- AHEAD HALF** -- Standard Pressure (50)  
#1 Main Electric Pump ON, Valve #8 closed.  
Main Battle Pump ON idling by special order from CIC.
- AHEAD FULL** -- Attack Pressure (80).  
#1 Main Electric Pump ON, Valve #8 closed.  
Main Battle Pump ON, engineer maintaining (80) with the throttle.
- STOP** -- Stop all pumps, remain at station awaiting further orders.
- STAND BY** -- Prepare for Battle. Set the Battle Lights.
- ASTERN FULL**-- Stair Air Compressor, maintain air pressure.
- ASTERN HALF** -- Communicate by CIC communicator or Battle Phone.
- ASTERN FULL** -- Start Spring Well Pump into Main Ammunition Bunker.
- FINSIHED WITH ENGINES** -- Secure Engine room, permission granted to leave station.

### BATTLE CONDITIONS

- CONDITON 1 (Green)** Long single blast on horns. ←-----→  
Passive Defense, Capture Insurgents.
- CONDITION 2 (Orange)** Two blasts on horns. ←--> ←--> ←-->  
Active Defense, Disable Enemy Com Lines.
- CONDITION 3 (Red)** Three blasts on horns. ←--> ←--> ←-->  
Central Emergency, Man Battle Stations, Set Battle Lights.

## THE FIRE ALARMS

The Siren--

Located in the Engine Room, it has a relay system that causes it to become intermittent after about ten seconds of ON.

The Big Bell on the wall of the West side of the House, Loud.

The Big Bell in the stair hall is in series with its Red Light.

The Big Bell in the Engine Room is in series with its Red Light

These alarms are sounded when:

Pressure in the Fire Sprinkler Line drops  
Pressure switches are located  
in Engine Room above the shelf  
in Blower Room behind and above the water heater

Alarm switches are activated.

Their locations are:

Quarter Deck by door  
Back porch behind outside door  
In Captains Closet on Control Board  
Beside Laboratory door in Blower Room

THESE ALARMS SHOULD BE PERIODICALLY TESTED

LOCATION OF THE UNDERGROUND FIRE SPRINKLER TEE

For future additions to the fire sprinkler line that runs to the castle, a 50mm PVC tee is installed.

It is located at the intersection of the arcs drawn from the Southwest corner of the Chapel Royal for 10 meters and from the Northwest corner of the House for 15 meters.

## FIRE OPERATIONS

### FIRE:

#### I. PUMPS:

- A. Start Main Electric Pump, #1
- B. Start #3 Electric Pump
- C. Start Gasoline Fire Pump
  - Ignition switch is on control board over the main electric pump.
  - Push the black START button until the engine gets going.

#### II. VALVES:

##### A. NORMAL VALVE SETTINGS:

\*\*\* RED VALVES ALWAYS OPEN \*\*\*

##### B. FOR FOREST FIRE:

OPEN VALVE #1, THE ROOF SPRINKLERS (orange  
on the floor by the door).

- D. Be sure Valve # 8 (Yellow Lever Valve)  
is CLOSED. (or pressure will be lost to pool)

#### III. CALL FIRE DEPARTMENT 911

#### IV. MAN THE HOSES

LARGE HOSE HYDRANTS, 40mm, at following locations:

- Gate 1
- Engine Room Door
- Half way between House and Castle
- At Back Door
- On Quarter Deck
- At Station 4 (top of driveway)

INDOOR HOSES, SMALL 18mm

- Basement by Water Heaters
- Attic Stairway

#### V. LOCATION OF LARGE HOSES:

- Engine Room
- Back Porch, left of Laundry
- Attic Stairway
- Quarterdeck
- Basement, beside Furnace
- Garage, on Chest of Drawers

## FIRE SPRINKLERS

THESE ARE THE HEAT OPERATED SPRINKLERS. SEE ROOF SPRINKLERS FOR OTHERS

The Fire Sprinkler System is under high pressure at all times. When a sprinkler is opened (at 70°C for most, and at 100°C for the attic ones), the pressure drops. When it reaches 37psi, the Engine Room pressure switch kicks in; at 40 psi, the Basement pressure switch also kicks in.

[Engine Room switch is above shelf, Basement one is on wall above water heater].

The Pressure Switches do the following:

- Start Both Electric Pumps
- Sound Siren and Bells

Fresh water is also admitted to the system from Valve #96 (high on wall behind Water Heaters).

WHEN ALL THE ACTION STARTS, DO NOT PANIC AND STOP THE SYSTEM!  
FIRST CHECK EVERYWHERE TO BE SURE THERE IS NO FIRE!!

WHEN YOU ARE READY TO STOP THE SYSTEM:

IF A SPRINKLER IS OPEN, GO TO THE APPROPRIATE VALVE, AND CLOSE IT.

FIRE SPRINKLER VALVES:

- Basement, #95 (in Blower Room Overhead)
- Chapel Royal #79 (in eaves left front corner)
- Engine Room #44 (below Engine Room shelf)
- Attic and Main Deck of House #103 (in attic stairway).

THE PRESSURE BUILD-UP SHOULD RESET THE SYSTEM, BUT YOU MUST STOP THE ELECTRIC PUMPS (they are on lock-in relays).

REPLACE THE OPENED SPRINKLERS IMMEDIATELY, AND RE-OPEN THE CLOSED VALVES.

(Spare sprinklers are in a drawer in the garage)

(Cont'd)

## FIRE SPRINKLERS cont'd

IF THE SYSTEM IS IN ACTION DUE TO A PRESSURE LOSS NOT CAUSED BY A SPRINKLER OPEN, THE PUMPS SHOULD RESTORE THE PRESSURE SWITCHES, SO

Go to Engine Room and stop the Electric Pumps as they are on lock-in relays.

Then, be sure that the pressure holds on the Fire Sprinkler Gauge. If it doesn't, you got a leak  
Find it and fix it (har har, in da middle of da night!)

07/01/81 Study Sprinkler installed.

07/07/81 Backup pressure switch added to Engine Room for starting the Pumps.

### TESTING:

06/18/66 Drained system and inspected a basement sprinkler-good condition, water clear.

08/28/79 Test pressure system, drain, air added at castle good condition.

07/01/81 Test Pressure System, drain. Water clear

00/00/83 Second Pressure Switch added at Engine Room as backup to the one in the basement.



## FREEZING WEATHER

### SEVERE COLD:

All water filled pumps and pipes must be protected, especially if freezing winds are blowing, as they will blow into the Engine Room, Towers, and Castle.

### OUTDOORS:

RUBBER FIRE HOSES: Disconnect them and remove the nozzle.

Use wet sacks, blankets, etc. to cover the pumps and pipes outdoors on the fresh water systems (filters, pipes, faucets, and Deep Well Pumps).

--- Keep pouring water on the covers, as freezing gives off heat, and ice is an insulator (remember the igloo).

### ROOF SPRINKLERS MUST BE DRAINED:

Go to Engine Room, open Roof Sprinkler Valve #1 (by door), Open Pool Filter Valve #8 for a minute while the sprinkler lines drain into the Pool.

Close Valves #1 and #8.

### THE ENGINE ROOM:

The Engine Room must be kept above freezing! Several years ago we had such a severe freeze, that water started to freeze in the pipes and pumps inside the Engine Room, and we lost two antique gauges that froze to death.

So start up an electric or kerosene heater inside. Close the air leaks under the mud sills beneath the shelf.

---Check on everything several times during the night (yuk)!

### CASTLE FIRE SPRINKLERS:

The best action to protect the Castle plumbing, is to put in the glass window panes and place a kerosene heater in the Great Hall.

The Castle Windows are kept in the BASEMENT behind something. There are enough to place in all the Castle Windows.

\*\*\* IT'S HARD TO GET OUT OF THAT SACK ON A FREEZING NIGHT,  
But THE DAMAGE OF FREEZING MAY BE ENORMOUS!

## FRESH WATER SYSTEMS

### WATER SUPPLIES:

See WELLS for details on the Three Wells

### PRESSURE TANK:

The Galvanized Steel Pressure Tank is the Second one here. The first rusted out after 20 years of service and was located in the Wine Cellar.

The Second one is located at the top of the driveway. Its capacity is rated at 300 gallons.

Air may have to be periodically added via the Well Sounding System and the air valve #45 beside the tank in order to prevent "water logging" as the air inside the Tank is dissolved into the water. The Air Compressor must be running to do this and supplying air at a pressure higher than the water pressure in the tank.

When the condition of too much water and not enough air exists, the Pump will start and stop too often.

Check on "water logging" by feeling the side of the Tank (preferably when the Sun is warming the Tank). It feels colder where the water is. It should be approximately half water and half air.

The Pressure Switch is located beside the Tank. When it switches on the pump, a light is ignited in the basement stair hall and in the Engine Room. Also a bell is rung in the Wine Cellar.

### LOW PRESSURE ALARM:

When pressure in tank falls too low, (about 18 psi) the pressure switch located in the Wine Cellar will sound a bell in the stair hall and another in the Engine Room. Causes of this might be a broken pipe, an open tap (sometimes a raccoon will step on a tap handle) or a failure of the Deep Well to refill the tank. It needs immediate investigation!

### THE REDWOOD TANK:

The Redwood Tank, 4000 liters, is located behind the Castle. This is for emergency household usages during power failures.

This Tank may be filled by either of the two Deep Wells or by the Spring Well by setting the valves properly. A float valve prevents overfilling the Tank. A check valve allows water to leave the bottom of the Tank to the House or Pool, but prevents water from entering the bottom of the Tank. Hence, the system may be set for automatic running for short periods because valves may leak.

## HISTORY OF THE POOL

THE MAIN AQUEOUS AMMUNITION BUNKER, Sometimes called "The Pool"-

Originally it was called the RESERVIOR.

HOLE DUG summer, 1962 by Dick Lundtoff for about \$100.

CONCRETE FOOTING and BLOCK WORK contracted by Charley Terpstra

September 19, 1962 for \$1097.68

Because of the hillside, we decided to do a 6' block wall, with Gunitted bottom and wall cover.

GUNITE done by Laine Gunitite Co., August 5, 1963, for \$475.00

FILTERS, VACUUM, SKIMMER, EQUIPMENT from Paddock Pools, Saratoga, for \$497.00

POOL PLASTERED, March, 1966, for \$700.

GAS CHLORINATOR installed, June, 1964, replacing the yukky HTH a three-year cylinder only \$21. Dangerous, though.

SIDEWALKS installed, Summer, 1965 by Jon Libby and Company.

SODIUM BASED CHLORINE replaces the Gas Chlorinator, 1969-70 (new regulations make it too expensive).

BRICKWORK done Summer, 1984, by Pete and Laurence \$2500.

AUXILIARY PUMP installed Jeff Avenmark's Berkeley Pump and fence fountain, for backup pump, with LIFEGUARD FILTERS, May 1, 1976.

SAND FILTERS installed to replace rusted diatomite ones July 14, 1976, and following year.

ARNESON POOL SWEEP installed, July, 1977 (Great!)

(cont'd)

## HISTORY OF THE POOL cont'd

NEW AUXILIARY PUMP, #3, 2.5 hp auxiliary pump, Mar. 25, 1979.

POLARIS VAC-SWEEP installed November 18, 1984 (Greater!)

LIFEGUARD FILTER added to Polaris Pool Cleaner, Dec. 26, 1984

HIGH PRESSURE HOSE added to General Patton's Pool Sweep pump for cleanup, etc. Dec. 14, 1984.

General Patton gets his own multistage high pressure pump -- GREAT!  
9/21/85.

Fire Sprinkler system re-done with its own 2" PVC pressure lines from engine room, April 11, 1990

New General Patton Pump acquired from Capitola Pump to replace the old Berkeley whose bearings cannot be replaced. April 15, 2003.

## GENERATOR

HOMELITE 7500 Watt Generator Purchased from Geo. Wilson's,  
January 8, 1982

Installed with 100 amp Double Throw Transfer Switch in Crews' Quarters for switching from PG&E Power to Generator.

It will operate a **single** large motor; such as the Organ Blower or Main Electric Pump, or #3 Pump, Deep Well Pump, and several small motors and numerous lights.

It has sufficient gasoline for about a two hour run.

It has been stenciled black with two Boomerian Eagles, and "RBAF" and marked, "BOOMER, 60 VERDE, SANTA CRUZ".

## MAIN ELECTRIC PUMP

### HISTORY:

Installed at P.H. Boomer's house, 1671 The Alameda, San Jose, in 1931. Here it served as irrigation and pool pump until 1959, when it was brought to Boomeria. Here it serves in the Main Engine Room as Pool, Fire, Irrigation, and Battle Pump.

### PRIMING THE MAIN ELECTRIC PUMP WHEN POOL IS FULL:

Normally, the pump is primed inasmuch as it is below the water level of the Pool.

However, should air get into the pump, it will have to be replaced with water..

Here's how:

Open fresh water primer valves #20 & #23. This will admit water into the suction side of the pump.

Open the cock on top of the pump to let out the air.

Open the Filtering System, Valve #8 and the other valves associated with filtering the Pool.

Allow about 1 minute for the priming water to fill the lines that come from the pool (those big white jobs beside the engine room.

Start #1 Pump.

After quite a few seconds the Pump should catch prime as indicated by water flow, sounds, and gauge actions.

If prime is not maintained, stop the pump and repeat the above.

Close Primer Valves # 20 & #23.

(Cont'd)

## MAIN ELECTRIC PUMP cont'd

### **PRIMING THE MAIN ELECTRIC PUMP WHEN POOL IS LOW:**

Water pumps cannot pump air, and therefore their suction pipes must be filled with water before they can function.

If air has entered the suction lines (usually because the pool has been emptied), here is how to refill the suction lines:

Close Valve #26, the East Pool End Suction Line.

Remove and replace the bottom fitting (with the intake holes in it) of the 75mm white PVC pipe that goes down the side of the pool with the check valve fitting that is on the Engine Room shelf. (This is to prevent water from running into the pool during priming).

Open Valve # 108 (found in the pampas beside the pool fence under a white bucket) which will allow water from the big green water tank at Gate 1 to supply water to the pump piping.

Open Valve #8 and start the Main Electric Pump.

Water should be entering the pool. It will take some time before the last of the air clears out which will be apparent when the pump is running well.

Then slowly open Valve #26 to let it lose air and fill with water. This will prime the East Pool End Suction Line.

As soon as the prime is successful, close valve #108 (found in the pampas beside the pool fence under a white bucket). This will stop the flow of water from the big green tank.

If the above fails, cuss and try again. It takes patience!

Replace the check valve with the original fitting.

Refill the big green tank with a garden hose (preferably from the Spring Well).

## MAINTENANCE Of Main Electric Pump

### THE GREASE CUPS:

The two grease cups on the motor and the two grease cups on the pump should be given a turn monthly. When they are all the way down, refill them with the High Speed Ball Bearing Grease found upon the shelf. Be careful not to get any dirt in the grease.

### THE PACKING GLANDS:

Periodically, the packing around the Pump Shaft must be maintained. This is needed when much water leaks around the glands.

First, Stop #1 Pump, try **gently** tightening the glands. CAREFUL Not too tight... the shaft must be turnable by hand or it will bind!

If this fails, then remove old packing with a knife and wrap around some new packing, and tighten as above being careful not to bind the shaft.

### THE IMPELLER:

Should dirt get into the impeller or its packing lubricant tubes on the Pump, the Head must be pulled.

An indication of this is that even though the Filters are clean, the Suction Strainer is clean, and the Valve settings are correct; there is low flow of water into the Pool while filtering. (Also the gauges show low Suction and low pressure).

Remove the Head carefully to prevent damaging the gasket. Clean, CAREFULLY, the Impeller slots and the Lub. Tubes. Grease the gasket and snug down the bolts.

### OTHER MAINTENANCE:

July 4, 1985 Pump shaft breaks. Taken to PRECISION MACHINE SHOP, Scotts Valley. Also repaired left packing gland clamp.

July 12, 1985 Pump retrieved and placed back in operation. The old shaft was in a terrible worn and corroded condition. Joe, Machinist, did a fabulous job of machining a new shaft out of STAINLESS STEEL. It is beautiful and should last another century or more. (\$579)  
It now runs with smooth action.

July 26, 2002. Main electric pump gets new head gasket and packing at Capitola Pump. \$203.86.

## THE NEW UPPER 80 meter DEEP WELL

September 30, 1972

WELL DRILLED , 80 meters by Tony Landino, \$2310.

WATER TEMPERATURE = 12°C

DEPTH was 80 meters but sediment continued to enter.

PUMP, 2 hp, Berkeley, pipe, etc \$950.

AIR LINE for Well Depth Sounder and Low Level Shut off at 70 meters.

MAINTENANCE:

05/01/76 Stainless Steel Motor jammed, and Replaced \$400

05 01 76 Water table is at 10 meters.

05/01/76 One section of pipe is removed since well is filling with gravel. Pump is now at 66 meters.  
Air line is at 65 meters.

05/14/78 Pump clogged with iron deposit, then cleared next day. Tony recommends strong Chlorine treatment for 24 hours to dissolve the iron.

07/06/78 Chlorinated Well (15 scoops)

05/07/80 Pump clogged, Big Chlorine Job, for 24 hours. It cleared! But lasted only a few weeks until dirty again.

07/15/84 Stringer pipe develops corrosion HOLES in it!

09/10/84 Pump is shot, pipes full of holes, well is now 65 meters deep.

A 10 cm PVC casing installed to bottom, new 1 hp pump, B4AM19 19 impellers. Pump bottom screen removed to prevent clogging.

(Cont'd)



## THE NEW 80 meter WELL cont'd

### PUMP CHARACTERISTICS:

PSI	Liters/Hr
0	2800
40	2300
60	2000

First half hour of pumping gives very dirty water, then it's clean.

The foot valve has been stuck open from the beginning. We have a double check valve at top.

08/23/85 The water clarity has been much better for the past few months. The Boom suspects that the iron problem was rust from the old steel casing and the steel pipe. Now with a PVC system, there is only the old casing to corrode and that is out side and separated from the new by gravel.

WELL DEPTH is now 70 meters.

PUMP DEPTH is 65 meters.

AIR LINE is at top of pump

### WELL DEPTH SOUNDER

A 12mm poly pipe air line runs down the Pump pipe line. By charging it with compressed air, Valve # 45, one reads the pressure of the water above the pump, and can ascertain how much water is left for pumping.

## NORMAL SETTINGS

### VALVES:

THE VALVES SHOULD BE SET FOR AUTOMATIC FIRE SYSTEMS:

THIS MEANS ALL RED VALVES OPEN.

ORANGE VALVES OPTIONAL (#1 is Roof Sprinklers)

ALL BLACK VALVES CLOSED.

VALVE # 8, the Pool Filtering Main, should be CLOSED when Pool is NOT being filtered! (Otherwise pressure will be lost from Fire System to Pool).

Fire Hydrants and Red Faucets will be closed until placed in use.

### SWITCHES:

ELECTRIC SWITCHES SHOULD BE SET FOR AUTOMATIC FIRE ACTION:

THIS MEANS:

MAIN ELECTRIC PUMP -- MAIN SWITCH UP, AND  
MAIN ELECTRIC PUMP -- DOUBLE THROW SWITCH DOWN.

FIRE SPRINKLER PRESSURE SWITCHES UP:

Engine Room one is on wall over shelf.

Blower Room one is on wall above and behind water heater.

## ~~NUMBER 3 STA-RITE ELECTRIC PUMP~~

*This inefficient pump is replaced with a new Jacuzzi 5 Hp pump July 16, 2004. See Newest #3 Pump, pg 46*

IN 1977 The STA-RITE DURAGLASS 2.5 Hp pump was installed as a backup to the Pool and Fire system. It was acquired from APPI Pool Supply.

This pump is used for the Fountain on the Redwood Fence. (See Fountains).

It also supplies water into the Fire Lines.

It can be used to filter the pool if the Main Electric Pump is down.

And is used to boost the pressure during Filter Backwashing. (See Backwashing the Filters).

Here are some of its characteristics, for others see manual in Engine Room Files.

NEW #3 ELECTRIC PUMP:

STA-RITE Pump, PRAA5G122L

Power = 1.5 hp	Volume = 400 Lpm at 25 psi
Volts = 230	= 230 Lpm at 41 psi
Amps = 14	Runs super hot!

WATTHOUR METER TESTS: (With new #3 Pump)

#3 6.0 kwh/2hr = 3.0 kw

MORE PUMP TESTS

With the New STA-RITE DURALGLASS #3 Pump

03/24/79

Full flow thru 2" fountain		Through Filters	
#1	570 Lpm at 20 psi	#1	500 Lpm at 25 psi
	#3 380 Lpm at 18 psi	#3	380 Lpm at 18 psi
	#1+#3 750 Lpm at 35 psi		

Fence Fountain with #3 = 94 gpm at 25 p

## THE OLD 20 meter WELL

OR

THE BACK-UP DEEP WELL

Which was refurbished in 2003 by Tom's Well Service

- 04/02/60 WELL DUG with old type punch bit, by John Scott.  
Depth 21 meters, Steel casing for 12 meters, \$746.
- 04/28/60 Used Berkeley Jet Pump, 1.5 hp and 1000 Liter Pressure  
Tank installed by John Scott, \$368.
- 10/19/71 Well is filling with gravel, tried to bail it, couldn't  
by Capitola Pump Co. Depth now 16 metes.  
Water table 10 meters.  
Pump at 15 meters.
- 01/14/72 Freedom Pump tried to add casing, and blew it. \$540.

April 16, 2003, Tom's Well service installs 4.5" PVC casing and Gould 1/2 hp pump in old deep well (515 meter) \$1400. New DPDT switch installed for upper and lower wells. We alternate the Upper and Lower wells twice per week to keep the water clear and both pumps active.

### MAINTENANCE:

Old deep well:

- 07/16/80 Old deep well, Berkeley Jet Pump, NEW BEARINGS and SEALS.
- 7/22/81 A snake is jammed in the foot valve. The foot valve is  
decomposed (screen, spring, & screw).  
New 3/4" foot valve and 3/4" check valve installed, replacing  
the 1 & 1/4" foot valve.  
Well Chlorinated.  
Depth of Well now is 47'  
Depth to water is 20'  
Pump is at 42'

THIS SYSTEM IS NOW MAINTAINED FOR BACK-UP.

It can supply enough water to fill the Pressure Tank,

then needs a period of recuperation.

## THE SPRING WELL 7 meters

THE SPRING WELL was developed when we discovered a spring had arrived. It was dug by hand by many of us and students as a source of ammunition for the Main Aqueous Ammunition Bunker.

A special wooden bucket was filled by post hole digger and hoisted up and emptied through a trap door into a wheelbarrow.

It is seven meters deep and has served well for many years supplying the pool with water. It usually gets very low in the autumn if we have a hot, dry summer. And it usually is completely full after a good winter.

PANIC NOT if the stench of  $H_2S$  is emitted when the well hasn't been pumped for a while. It is the mineral action and NOT the neighbors septic system. The stink was around long before we had neighbors.

July 3, 1993 Spring Well re-build with 60 cm plastic culvert pipe finished with gravel-fill. The old boards were rotting. NO MORE STINK! And we no longer need to filter the water.  
GREAT ACTION!

## OBSOLETE EQUIPMENT

DIATOMACEOUS EARTH FILTERS

OLD SPRING WELL PUMP

SKIMMER SYSTEM

POOL VACUUM SYSTEM

## POOL FILTERS

The Main Pool Filters are two Sand filters. They are located beside the Engine Room.

They are PAC=FAB SUPER FLOW HI-RATE SAND FILTERS, P-100 from APPI.

The Pool-Side Fountain uses a four cylinder array of LIFE-GUARD filters with washable, replaceable, elements. These are located outside the Pool Redwood Fence, accessible through a door in the Redwood Fence.

The Filters for the Pool Cleaner are a two cylinder array of LIFE-GUARD filters with washable, replaceable, elements. These are located outside the Pool Redwood Fence, accessible through a door in the Redwood Fence.

The Spring Well Pump uses a two cylinder array of LIFE-GUARD filters with washable, replaceable, elements. These are located beside the Spring Well Pump.

LIFE-GUARD FILTERS SHOULD BE CLEANED WHEN THEIR BACK PRESSURES INCREASE A FEW PSI, OR THE WATER FLOW IS NOTICEABLY SLOWED.

SAND FILTERS SHOULD BE BACKWASHED WHEN THEIR BACK PRESSURES INCREASE A FEW PSI OR THE WATER FLOW IS NOTICEABLY SLOWED.

FOR OPERATION: see FILTERING POOL.

## POOL FOUNTAINS

### THE EAST REDWOOD FENCE FOUNTAIN

This Fountain is supplied by the Number 3 Electric Pump and re-circulates Pool Water through a four cylinder LIFE-GUARD filtering system.

#### TO OPERATE:

Start #3 Electric Pump (button beside Eng. Rm. Door).

Open lever Valve # 72 located outside Engine Room Door.

If this fountain does not shoot half way across the Pool in a few seconds of operation, Check:

that no fire hydrants or red faucets are open.

that the Fountain Filters are clean.

### THE NORTH FENCE FOUNTAIN

This fountain fills the Pool with fresh water from the Spring Well.

#### TO OPERATE:

Start Spring Well Pump (button on Main Electric Board).

## MAINTENANCE OF THE POOL

### CHANGING POOL WATER:

When the pool water is changed, it requires about eight to ten hours to empty it, and about a week to refill it. The water turns deep green on refilling, which may be the reaction of Chlorine on the Iron in the Water. The color filters out in a couple of days. Have 25 lbs of Soda Ash on hand for refilling, as you must neutralize the acidic well water to adjust the pH to 7.

1<sup>st</sup> 4 yrs: Pool was painted twice with ARMORCOAT cement paint. This was no good, it swept off. So we plastered it.

08/00/75 Repair pool inlet pipe, north-east corner.

06/12/78 For three days (early mornings, late evenings by flood light, for the intense reflection of the sun on the white walls was intolerable), sanded entire pool surface with disk sander (dangerous, 4000 rpm). Used 23 disks. Bottom fun to do, walls on ladder, NO! The plaster is too thin to sand again! Next time have it done professionally! (Sander too dangerous).

06/15/78 Changed from HTH, Calcium based, Chlorine, to Sodium based Chlorine. It doesn't make residue to clog the filters.

06/17/78 Pool Re-filled in 48 hours using both deep well and spring wells. LIFEGUARD FILTERS kept most of the well crud out, but the water was deep green. It cleared in a couple of days filtering.

06/18/78 Coping painted with rubber based paint. It's good.

12/00/84 Water changed as spilled mortar from brick deck installation messed up the pool chemistry.

Summer 85 Massive replumbing of Pool and Engine Room to replace corroded pipes of old.  
New plumbing is Schedule 80 PVC.



## POOL CLEANER PUMPS

ARNESON POOL SWEEP--"R-2" was installed July, 1977. It used a 3/4 hp Pump, called "R-2".

POLARIS VAC-SWEEP , "General Patton", was installed, Christmas, 1984, replacing R-2, but using the same pump.

September 21, 1985

Tony Landino acquires the magnificent 3/4 hp, high pressure multistage pump to make General Patton independent of the other pumps and give him high pressure to attack the algae on the upper walls.

It works great! And it is economical for long running periods.

The Pump is BERKELEY PBL-07 02-85 B58098 9 impellers.  
The Motor is "GOULD-GUARD POOL PUMP MOTOR"

It supplies 100 psi static pressure, and operates General Patton at 85 psi.

It is supplying 150 Liters at 80 psi.

It is controlled by a switch on the Pool Fence behind the Pool Filters, and Valves # 67 (intake from Pool) and # 68 (output from "General Patton" Pump in the Engine Room.

## LOCATION OF THE TUNNEL ESCAPE HATCH

or

### THE MID-TUNNEL ACCESS HATCH

The shaft is covered with 50 mm redwood boards.

It is located at the intersection of the arcs drawn from the Northeast corner of the house (the study) for 5 meters and the Northeast corner of the quarterdeck for 12 meters.

## THE POWER IS OFF

MAIN DECK MOTION DETECTORS BATTERY SUPPLY (in study closet, the left switch just above the battery on the floor)--

Switch it OFF when at home, Switch it ON when alarms are to be set.

BACKUP WATER SUPPLY, THE REDWOOD TANK--

OPEN VALVE # 93, CLOSE VALVE # 94, (located beneath Galley Window).

ELECTRIC POWER GENERATOR (in garage)--

Before starting generator, be sure electric water heater is OFF. It consumes too much power for the generator.

Be sure gasoline tank is full. NEVER FILL TANK WHILE ENGINE IS RUNNING!!!

Set CHOKE lever to the right position.

Start Engine with pull cord. It takes several tries, don't have a heart attack.

As soon as engine starts, set CHOKE back to the left position.

BE SURE ELECTRIC WATER HEATER IS OFF! It consumes too much power for the generator.

Go to Crew's Quarters and set Electric Transfer Switch DOWN to "Generator" Position.

Switch ON the indicator switch (on top of the Transfer Switch) to let you know when PG&E is back on.

GAS WATER HEATER (located in garage)--

BE SURE BOTH VALVES on top of the Water Heater are OPEN.

Turn ON the gas main at the Propane Tank by the clothes line.

Turn ON the gas main beside the water heater tank (propane tank valves must also be ON).

Follow directions on the water heater tank.

CLOSE the output valve on the Electric Water Heater in the Blower Room.

## PRESSURE TANK AIR

Air has to be added occasionally via the Well Sounding System and the air valve #45 beside the tank, in order to prevent "water logging" as the air inside the Tank is dissolved into the water.

When the condition of too much water and not enough air exists, the Pump will start and stop too often. (This is noticed in the house by the frequent sounding of the Pump Gong in the Wine Cellar).

Check on "water logging" by feeling the side of the Tank (preferably when the Sun is warming the Tank). It feels colder where the water is. It should be approximately half water and half air.

### ADDITION OF AIR TO TANK:

When pressure in the Tank is down to about 40 psi,  
Start Air Compressor in Engine Room  
Open Well Sounder Valve # 45 (under shelf in Eng. Rm.)  
Open Tank Air Inlet Valve # 89 (beside Pressure Tank)  
Allow air to enter until Pressure on Tank Gauge reads 60 psi.

Close Valve # 89  
Stop the air compressor.

## ROOF SPRINKLERS

THE ROOF SPRINKLERS SHOULD BE TURNED ON WHEN FOREST FIRE ATTACKS

They not only keep the Roof Cool and Wet but keep the area around the house Damp!

### START THE ROOF SPRINKLERS

- A. Start all Pumps -- See FIRE OPERATIONS
- B. OPEN VALVE #1 (orange on the floor by the door of Engine Room).

# TROUBLE SHOOTING

WHAT TO DO IF:

FIRE ALARM SOUNDS--

WHEN ALL THE ACTION STARTS, DO NOT PANIC AND STOP THE SYSTEM!

FIRST CHECK EVERYWHERE TO BE SURE THERE IS NO FIRE!!

WHEN YOU ARE READY TO STOP THE SYSTEM:

IF A SPRINKLER IS OPEN, GO TO THE APPROPRIATE VALVE, AND  
CLOSE IT--

FIRE SPRINKLER VALVES:

Basement, #95 (in Blower Room Overhead)  
Chapel Royal #79 (in eaves left front corner)  
Engine Room #44 (below Engine Room shelf)  
Attic and Main Deck of House #103 (in attic stairway).

THE PRESSURE BUILD-UP SHOULD RESET THE SYSTEM, BUT YOU  
MUST STOP THE ELECTRIC PUMPS (they are on lock-in relays)  
REPLACE THE OPENED SPRINKLERS IMMEDIATELY, AND  
RE-OPEN THE CLOSED VALVES.

(Spare sprinklers are in a drawer in the garage).

IF THE SYSTEM IS IN ACTION DUE TO A PRESSURE LOSS NOT  
CAUSED BY A SPRINKLER OPEN, THE PUMPS SHOULD RESTORE  
THE PRESSURE SWITCHES, SO

Go to Engine Room and stop the Electric Pumps  
as they are on lock-in relays.

Then, be sure that the pressure holds on the Fire  
Sprinkler Gauge. If it doesn't, you got a leak

Find it and fix it (har har, in da middle of da night!).

(Cont'd)

## TROUBLE SHOOTING Cont'd

### LOW PRESSURE ALARM SOUNDS:

When pressure in tank falls too low, (about 18 psi) the pressure switch located in the Wine Cellar will sound a bell in the stair hall and another in the Engine Room.

Causes of this might be a broken pipe or a failure of the Deep Well to refill the tank. It needs immediate investigation!

To Stop the Bell, the switch is above the Wine Cellar Door.

The Deep Well Pump switch is above the Freezer, Blower Rm.

Check IMMEDIATELY for broken pipes as you may be losing water!

Start by closing Pressure Tank Valve # 88 to see if water is flowing. If so, trace system, valve by valve.

### DEEP WELL PUMP KEEPS CYCLING ON AND OFF WHEN NO WATER IS ON.

Pressure tank may be water logged. (See Pressure Tank).

### WATER LOSS IN FRESH WATER SYSTEM

Check the obvious: Water on somewhere-- leaky toilet, goose or duck water, drip system, drinking fountain, etc.

The procedure is to close a valve for a minute, then open it and listen for the rush of water. If it rushes, then you know that the leak is beyond that point. Then go to the next valve and do likewise until the leak line is isolated.

Start at the pressure tank with valve #88, then go to

#94 Line from tank to house is red valve to left of valve #88

#93 (redwood tank-- below kitchen window)

#98 (to engine room-- in CIC closet under stairs)

#92 (goose water-- at tank to left of filters)

#86 (deep well shut-off-- at deep well)

#87 (shallow well pump-- at tank)

Having isolated the line where the leak is, look for wet ground or other indications of the leak.

Or go back to bed and do it in the morning.

## NEWEST #3 ELECTRIC JACUZZI 5 HP PUMP

July 16, 2004. We install a Jacuzzi 5 Hp Multi-stage pump for added fire fighting and filtering power when needed. Purchased from Capitola Pump Co. Charley. \$1700.

Static pressure = 165 psi (from pump characteristics chart).  
 67 GPM at 80 psi (from pump characteristics chart).  
 2" suction, 2" discharge lines.

Boomeria performance:

100' of 1" Fire hose = 100 psi  
 1.5" adjustable nozzle 90 psi. It blew up an old plastic nozzle!  
 Filtering pool = 133 gpm @ 14 psi [#1 pump 200 gpm @ 20 psi].  
 Pool Fountain = 80 gpm @ 22 psi  
 Pressure ratio = 1.6. Volume ratio = 1.6.

We have added four permanently attached 25mm high pressure rubber fire hoses to Stations 1, 3, 4 and the Castle hydrant.

We can now start Number 3 electric fire pump from buttons installed at Stations 1, 4, and Chapel in addition to the Engine Room Start-Stop Buttons.

Jacuzzi Pump Serial Number BY 06-02

Part B 184282-01

Type CP FR Y145TC

Hz 60, RPM 3450

Volts 230, Amps 22.0

Frame cont, DP From KXB

Code G Class B Ambient temp 40°C

No Lube

Wiring: Brown + Blue is Line, Yellow + Red is Line **WRONG! It went backwards.**

To reverse: Interchange Blue and Yellow.