

CAT Controller Courier # 21

June 2008

"This Controller Doesn't Work... Or Does It?"

Understanding Proper Water Balance

85% of inbound troubleshooting calls to CAT are water chemistry related. We all know that every pool has a different water chemistry makeup dependent on the pool surface material and age, piping material, fill-water chemistry, sanitizer and pH maintenance products, etc. What many customers do not understand is that maintaining proper water balance is critical to achieving successful pH/ORP automation. Attention to the following key elements of water balance will allow your controllers to maintain optimal water chemistry.

pH

Properly balanced pH is the most important part of your water make up. An ideal pH 7.4 - 7.6 will help to make sure that your chlorine is working at its full potential; your pool equipment is not in danger of corrosion or scaling and insures bather comfort.

- *Regarding Controllers* Make sure pH is at an ideal level because your ORP reading depends on whether or not you have a balanced pH. High pH = lower ORP. Low pH = higher ORP.

Free Available Chlorine (FAC)

Maintaining free chlorine at the proper level is very important for the safety and hygiene of bathers as well as the pool surface & equipment. FAC is the active disinfectant in the pool and needs to be maintained as specified by Health Department standards. Industry ideal PPM of FAC is 2-4 ppm for pools and 3-5 ppm for spas (depending on your sanitation method).

- *Regarding Controllers* - Make sure your chlorine level is where you would like it to be at the time that you select your ORP Setpoint. There is no direct correlation between FAC and ORP. The controller (if your water is balanced correctly) will attempt to hold your FAC level by feeding the proper amount of balancing chemicals to maintain the ORP and pH setpoints which in turn will hold your FAC level.

Total Alkalinity (TA)

Maintaining proper TA in your pool/spa is more important than many people understand. Consider TA to be a measure of the waters ability to provide a pH buffer. Failure to maintain TA within the ideal ranges of 80-120 ppm can allow dramatic swings in pH.

- *Regarding Controllers* - If TA is below 80 ppm you may start to see drastic fluctuations in pH and you will not have the ability to steady it out. If your TA is too high your controller will not be able to change the pH no matter how much acid it feeds. Be sure to keep the ideal level of TA so that your controller can balance your pH accordingly.

Total Dissolved Solids (TDS)

TDS is a factor that is quite frequently ignored. High TDS may lessen the disinfectants ability to oxidize contaminants. We need to be sure that we keep our TDS below the suggested 1500 ppm above your start up/fill water. Once we start getting into higher levels you may see problems in water chemistry.

- *Regarding Controllers* - The higher your TDS the lower your ORP will be. If there is a lot of extra matter in the pool the chlorine activity will slow. Remember "FREE" "ACTIVE" the less matter in the water to have to attempt to oxidize the more effective it will be, resulting in a higher ORP.

Cyanuric Acid (CYA)

Though this chemical can only be introduced manually by us, we must be sure to keep it under control. The use of Cyanuric acid is very much important to outdoor pools that receive a lot of sun to help keep the disinfectant in the water. However, if we add too much Cyanuric Acid we will decrease the activity of our disinfectant. It is important that we are sure to keep our CYA below 50 ppm in our pool at any one time.

- *Regarding Controllers* - Any amount of Cyanuric acid will decrease your disinfectant's ability to oxidize dramatically during the day, in turn giving you a lower ORP. We must be sure to keep our levels of Cyanuric down so we can keep a high enough ORP reading so that we know our water is safe.

Remember folks there are many other things that will affect your water chemistry and your controller's ability to work correctly. Please contact Robert Legaspi at 1-800-657-2287 with any questions or concerns you may have about your water chemistry or your controllers. For more information on any of these subjects talked about in this article please contact Troy McGinty.

What Else Should We Know About Filtration?

When MOST people think of water filtration, they think about water passing through some type of filter media and that media trapping or suspending all of the contaminants and particle matter that finds its way into our water. Well that statement is almost correct. The word "all" is the problem with that sentence. Filters are designed to help remove most contaminants and particles from the water. Different types of media not only have different filter media rates (the rate of flow of water through a filter during a set period of time expressed in U.S. gallons per minute per square foot of effective filter area) but they have different abilities to suspend different sizes of particles. The most common type of

filter media that we use in the commercial pool industry is High Rate Sand, which will remove particles that are 25 microns and larger. Cartridge Filters are designed to remove particles 15 microns and larger. D.E. Filters are designed to remove particles 4 microns and larger.

What do these filter media descriptions mean to you? Let us take a look at why these descriptions are so important. The average grain of table salt is 100 microns, the average strand of human hair is 70 microns, the lower limit of visibility (naked eye) is 40 microns, the average white blood cell is 25 microns, talcum powder is 10 microns, the average red blood cell is 8 microns, the average oocyst of *Cryptosporidium* is 4-6 microns, and the average bacteria is 1-2 microns. Think about that!

Now let's get into making sure our water gets filtered. When the average person thinks of turnover rate they state the exact definition - "The amount of time it takes the circulation system of the pool/spa to move the number of gallons equal to the volume of water in the pool through the filtration equipment." And by definition this statement is perfect, however we must pay attention to the detail in the definition: "number of gallons equal to the pool volume" not all of the water in the pool. It takes a well designed pool with a properly operating circulation system, 4 complete turnovers to filter about 98% of the pool water. Why? Dead spots, splash out, fill water, clogged hair and lint strainers, clogged skimmers, bathers, etc. We must be careful that we keep clean filters and proper flow rates to make sure that we do turn our pool over in at least 4 turnovers or we will not have a properly filtered pool which we all know can be dangerous and can also result in poor water clarity.

Good water clarity is important and is mainly provided by the quality in which we are filtering our water. However, I think that we should all be aware that though water clarity is important, our ability to remove harmful contaminants from our water is also important. I am not saying that one type of filtration is better than another; I am simply saying we need to be aware of how important good filtration is and what it is really accomplishing. Now that you better understand what is going on with our filter media you may better understand the makeup of your water.

Activate Your CAT Controller and "SAVE ON GAS"

Now come on Troy enough is enough! How am I possibly going to save on gas by activating my controller? How many times has your customer called you and said I don't have any chlorine in my pool and I don't know why? Why is my pH so high my controller is calling for feed and it just won't come down? Something is wrong can you please come out here to take a look? And how many times did you get out there and your customer's chemical vat was empty and all they had to do was fill it up. Or maybe the controller was in no flow alarm because they closed the flow cell valves and because of that the controller wasn't feeding. All things that the owner or maintenance man could have taken care of only if you would have known a head of time.

Stop making useless trips to your facilities, save yourself the time and the money; make sure that all of your CAT 4000's and CAT 5000's in the field are activated. It is that time of year, be sure to start utilizing

the wireless, web-based communications of our communicating controllers. The Poolcomm website is there for you, the pool professional, to take full advantage of its helpful benefits. For the flat monthly rates, seasonal pre pays, or annual prepay rates, per your CAT 4000 or CAT 5000 controller.

- Hourly logs of your pH/ORP water chemistry.
- Graphs of your water chemistry.
- Feed Times
- Temperature
- Flow Rates
- Tank Level Sensing
- Outbound alarm notifications to your e- mail or mobile phone.
- The ability to change alarm settings and set points from any Internet based PC in the world.
- The ability to assign read-only accounts to your clients for their benefit.
- Twenty-four hour a day connection.

Please contact me, Troy McGinty, to activate your controllers and get them registered to the Poolcomm website. I will also be able to help you check your wireless coverage areas, help you troubleshoot specific applications, assist with installations, as well as consult with you regarding your company's own water quality management program. If you have any questions, concerns, or ideas please contact me as soon as possible at 800-657-2287 or e-mail me at mtmcginty@chemauto.com.

CAT Wireless Controllers have made quite an impact on our industry. We here at CAT would like to thank you for supporting our efforts to continue pioneering and improving the water quality management industry. We hope you take advantage of the CAT 4000 and CAT 5000 benefits and continue to do business with CAT Controllers in the future. Join our Mailing List!

CAT Controllers would like to thank those of you who participated in the 1 Stop Shop Special this past month We also wanted to express a special thanks and congratulations to those of you who became new dealers this past month. CAT Controllers appreciates all of your business and please feel free to contact us with any questions, concerns, and/or ideas. We wish you all the best of luck this Summer!

Sincerely,
Troy McGinty and CAT Controllers, Inc.