

Colorado Operator Training

Potomac Valley Swimming

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Colorado Operator Certification Process

1. **Attend Colorado Operator Training Clinic**
 2. **Work 3 sessions under the guidance of certified Colorado Operator.**
 3. **Send in completed forms**
 4. **Signing up for Training Sessions at PVS meets:**
 1. Contact your Officials Chairman and request you be scheduled to work.
 2. Contact Meet Manager of the Meet and offer to help at their meet.
 3. Show up at any non-Championship Meet and ask the Referee if you can sit in for that session.
 5. **PVS Certification:**
 1. **Initial Certification Requirements:**
 1. **Attend Potomac Valley Swimming sponsored Colorado Operator Clinic.**
 2. **Perform routine Colorado Time System operations successfully under the supervision of a certified Colorado Operator at a minimum of three (3) sessions at Two (2) different non-championship meets.**
 3. **Experience must include:**
 1. Arrive at beginning of warm-up period;
 2. Review and Modify Colorado System Defaults and Set-Ups as directed by the Deck Referee, or designate;
 3. Enter Event Descriptions into Colorado System;
 4. Reset, Operate and Observe Colorado System during the conduct of half the Events/Heats conducted during each session noting Race # on Meet Sheet next to each Heat;
 5. Close out each Session by Turning the Pads Off (Misc soft key from main menu, then toggle power on/off to the pads), while leaving the Colorado System on until all times have been transferred to the Hy-Tek Computer System.
4. **Report and have authenticated by a Certified Colorado Operator, or Deck Referee your meet participation on a PVS Official's Certification Card.**
 2. **Continuing Education Requirement:**
 1. Work at least four (4) Sessions per Year as the Colorado Operator, or Instructor.
 2. Two (2) Sessions per Year as Hy-Tek Operator can be substituted for time on the Colorado System.
 3. A **PVS Officials Record card** can be used to record your Continuing Education sessions.
 3. **Recertification Requirement:**
 1. On the Job Experience and Sharing Experiences with other Colorado Operators will provide additional training.

Deck Organization

Assignments

- **Meet Manager** - Responsible for meet announcement, entries, fees, programs, organizing and set up for a Meet, handles entries, etc. Responsible for entire Meet, all sessions.
- **Meet Referee** - Used only at Championship Meets (JO's, Senior Champs, Maryland States, etc). Has overall responsibility for conduct of Meet and decisions that affect the entire Meet. Usually only 1 person assigned to this.
- **Administrative Referee** - Used at Championship Meets and heavily attended age group meets. Responsible for coordinating table and results activities. Anticipates problems and adjusts meet processes to avoid them. Researches and resolves problems.
- **Deck Referee** - Assigns available officials to roles equal to their experience and training. Is the final arbiter of all decisions concerning rules and problems at this session. Final say on deciding on timing problems. Usually one, sometimes two.
- **Starter** - Probably the most visible position. Responsible for giving swimmers a fair start. At least one, frequently two.
- **Chief Judge** - Reviews stroke and turn rules with Judges. Organizes and assigns Stroke and Turn Judges for their responsibilities. Manages end/side opposite deck referee during meet/session.
- **Stroke & Turn** - They observe the swimmers to be sure the swimmers obey the stroke & turn rules. At least 4 per session, no upper limit as to how many might be used
- **Chief Timer** - Recruits timers, appoints head lane timers, instructs timers in duties. Starts one or two extra watches in case a timer's watch fails to start or is late in starting. Gives watch to Timer to complete race, never substitutes own time for that of a lane timer. Collects and collates into Lane order Timer Lane Sheets at the end of each event.
- **Head Lane Timers** - Before each event/heat calls out swimmer's name; records "NS" on the Lane Timers Sheet if the swimmer does not report. Keeps alert to differences between watch times and times shown on scoreboard. Records watch times on Lane Timer Sheets. If at anytime unsure, gets the Chief Timer's and/or Deck Referee's attention to resolve the matter.
- **Timers** - We would like at least two timers per lane, preferably 3. They start a digital watch when the Start signal is given by the Starter, at finish they stop their watches when the swimmer contacts the finish end of the pool. They press a button at the same time as they stop their watches, this button is connected to the Colorado Timing System and serves as a backup to as well as confirmation that the pad time is correct.
- **Timing System Operator (Colorado)** - Operates the Colorado Timing system. Saves and prints the results of each heat. Normally positioned in-line with the finish end of the pool. Normally 1 person assigned to run the Colorado.
- **Timing Judge** - Positioned next to the Colorado Operator. Reviews the printed results of the race (heat); this is what the Colorado System prints. Reviews electronic pad and button times for instances where the pad times look suspicious. The Timing Judge decides whether pad times, button times, or watch times are used, with the concurrence of the Referee. Reviews Lane Timer Sheets (collected and delivered by the Chief Timer), DQ slips (from the Referee), re-seed sheets (from the Referee and Starter), organizes them and passes them on to the Results (HyTek) computer operator.
- **Results (HyTek) Operator** - handles any deck entries and meet sheet errors, processes positive check-in events, electronically transfers times from the Colorado Timing System, adjusts for any timing problems, records DQs, handles any re-seeds, prints Event results for posting, organizes event paperwork in a logical, chronological order.

Deck Organization

Functions

Logistics -- everyone who enters the meet swims; meet starts when scheduled.

Meet Manager

Responsible for meet announcement, entries, fees, programs, organizing and set up for a Meet, handles entries, etc. Responsible for entire Meet, all sessions.

Hospitality

Arranges for food, ice and beverages. Assigns parents to staff hospitality area.

Program Sales

Sells Meet Programs to spectators.

Marshals

Supervises warm-up and controls spectators.

Fairness -- swimmers who swim fairly get times.

Deck Referee

Ensures all swimmers compete within the stroke and turn rules. Makes sure every swimmer receives a time for every event.

Starter

Gives all swimmers a fair start. Ensures no swimmer achieves an unfair start. Identifies swimmers with

Meet Referee

Used only at Championship Meets (JO's, Senior Champs, Maryland States, etc). Has overall responsibility for conduct of Meet and decisions that affect the entire Meet. Usually only 1 person assigned to this role.

Administrative Referee

Used at Championship Meets and heavily attended age group meets, Responsible for coordinating deck and results activities. Anticipates problems and adjusts meet processes to avoid them. Researches and resolves problems.

visual, auditory and physical handicaps, and coordinates starting procedures with swimmer/coach/parent before meet.

Stroke & Turn

Ensures fairness for all swimmers by observing swimmers to be sure the swimmers obey the stroke & turn rules.

Results -- every fair swim receives an official time.

Chief Timer

Starts one or two extra watches in case a timer's watch fails to start or is late in starting. Gives watch to Timer to complete race, never substitutes own time for that of a lane timer. Collects and collates into Lane order Timer Lane Sheets at the end of each event.

Head Lane Timers

Before each event/heat calls out swimmer's name; records "NS" on the Lane Timers Sheet if the swimmer does not report.

Keeps alert to differences between watch times and times shown on scoreboard. Gets the Chief Timer's and/or Deck Referee's attention to resolve the matter.

Timers

Checks digital watch after start to be sure it is running. Obtains running watch from Chief Timer when watch does not start, or is started early or late.

Start watch when the Start signal, strobe or horn, is given by the Starter. Stops watches when any part of the swimmer contacts the finish end of the pool. Reads time to Head Lane Timer who records time on Lane Timer Sheet.

Timing System (Colorado) Operator

Before the meet: ensures Colorado is properly configured for pool, distance and events to be swum; ensures pads and buttons are working; and, system is producing results in the intended format.

Timing Judge

Sits beside the Colorado Operator. Reviews the printed results of the race (heat), this is what the Colorado System prints. Reviews electronic pad and button times for instances where the pad times look suspicious. Decides whether pad, button, or watch times are used, with the concurrence of the Referee. Reviews Lane Timer Sheets (collected and delivered by the Chief Timer), DQ slips (from the Referee), re-seed sheets (from the Referee and Starter), organizes them and passes them on to the Results (HyTek) computer operator for posting.

Results (HyTek) Operator

Verifies meet/session is loaded and available for session. Enters any deck entries and corrects any meet sheet errors. Verifies HyTek can electronically transfer times from the Colorado Timing System. Keeps alert to any overlooked timing errors, DQs, and re-seeds. Prints Event results for posting. Organizes and files event paperwork in a logical, chronological order.

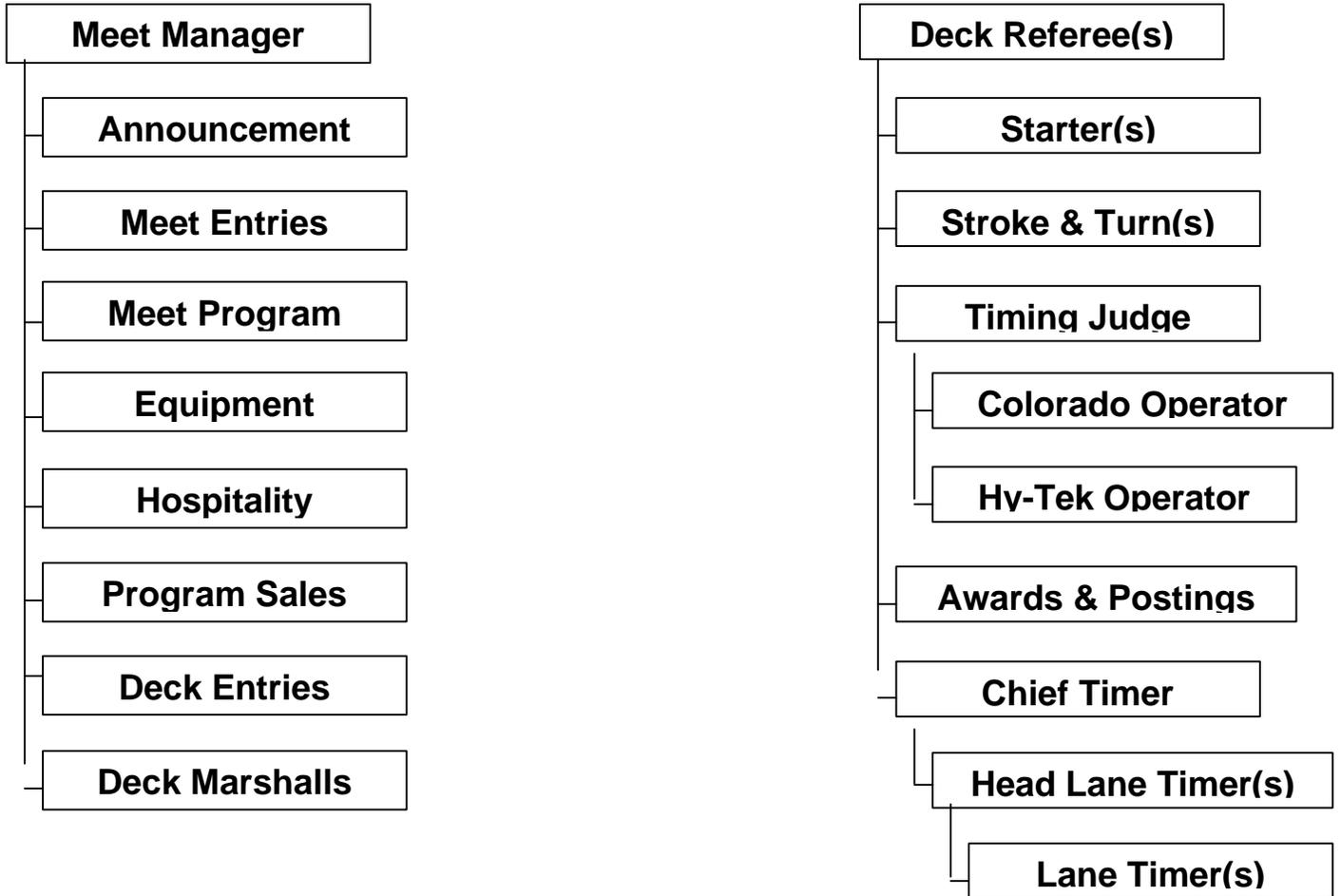
Functional Chart

Swim Meet Organization Individual Assignments

Before, During, and After Meet

<<< Responsibilities >>>

During each Session



Timing Rules and Procedures

Recording Event Results

Why are there swim meets? .. *To establish individual times for specific events.*

Why are there Officials? ***Observe swimmers establishing individual times under fair and equitable competitive conditions so no swimmer obtains an unfair advantage over another and to record and certify individual names as official.***

Rules and Procedures Recording

USS Rule 102

4. Official Time

No swimmer shall be required to reswim a race due to equipment failure, which results in unrecorded or inaccurate time or place.

1. Performance Requirements

1. An official time can be achieved only in USS sanctioned or USS approved competition, or in an observed swim in accordance with all applicable rules. It may be achieved in:
 1. *A preliminary or final heat.*
 2. *A swim-off held to determine qualifiers or alternates for consolidation or final heats.*
 3. *A leadoff leg in a relay.*
 4. *A split time recorded from the official start to the competition of an initial distance with a legal finish within a longer event, provided the swimmer completes the event or the lead-off portion of the relay in compliance with applicable rules.*
 5. *A time trial or a record attempt.*
2. An official time for an event or a stroke can be achieved only in that event or stroke, or in an initial distance of such event or stroke (e.g. a backstroke time must be achieved in a backstroke event or the backstroke leg of a medley relay). Regardless of the stroke(s) used, times achieved in freestyle events can be recorded only as freestyle times.

2. Timing Resolution

All timing systems, including manual watches, shall have a resolution of one-hundredth of a second (0.01 second). times from all systems shall be recorded to hundredths of a second.

The digits representing thousandths shall be dropped with no rounding.

Level I -- Automatic Timing

World, American and U.S. Open Records. Initial distance splits and relay leadoff times for all purposes. OVCs for 50M distances in a 50M pool;

Level 2 -- Semi-automatic:

Timing with 3 buttons

National age group records; National reportable times for 50m distances in a 50M pool. OVCs, except 50M distances in a 50M.

Level 3 -- Semi-automatic:

Timing with 2 buttons,

pool; National reportable times, except

Manual with 3 watches

50M distances in a 50M pool; LSC and other local records, unless prohibited by the LCS; Initial distance splits and relay lead-off times for age group time standards (A, B, C times, etc.)

Level 4 -- Manual, 2 watches

Manual, 2 watches
Zone, Regional, or LSC sponsored meet time standards, unless Timing System Level 3 is specified; Age group time standards (A, B, C times, etc.)

3. Requirements for Specific Purposes

1. The official time may be used for the purpose listed only if timed by a timing system of at least the level required for that use.
2. World records can be established only when timed by an automatic timing system, or a semi-automatic system if the automatic system malfunctions.
3. A backup timing adjustment for timing system differences may be used as an official time equal to the level of the timing system for which it has been adjusted.

4. Backup System Requirement

1. Except when the primary system consists of watches, backup timing shall be provided for all competitors.
2. **No swimmer shall be required to reswim a race due to equipment failure which results in unrecorded or inaccurate time or place.**
3. It is the meet director's responsibility to provide the proper timing systems so that swimmers can expect to achieve official times that will satisfy the requirements of Section 102.17.4C.

5. Determination of Official Time

1. Automatic Timing

When recorded by properly operating automatic timing equipment, the pad time shall be the official time.

2. Semi-Automatic and Manual Timing

Whenever semi-automatic or manual timing is used, the times shall be determined as follows:

1. *If two of the three button or watch times agree, that shall be the time for that timing system.*
2. *If all three buttons or watches disagree, the time of the **intermediate** button or watch shall be the time for that timing system.*
3. *If only two button or watch times are available, the time shall be the average of those two button or watch times. The digits representing thousandths of a second shall be dropped with no rounding.*
4. *If only one button or watch time is available, the time of that button or watch shall be the time for that timing system.*

3. Primary Timing System Malfunction

May have occurred if:

1. *The difference between the time obtained by the primary system and the back-up system(s) is .30 seconds or more.*
2. *A late or missed touch is reported by an official observing the finish.*

4. Timing System Differences

When the Referee, *or designate*, determines that there is a malfunction of the primary timing system, the back-up time(s) shall be adjusted for the timing system difference prior to integrating them with accurate primary times in establishing the official times and determining the order of finish. The adjustment for timing system difference may be incorporated into the automatic or semi-automatic system by design or may be determined by calculating the consistent average difference between the primary and back-up systems used at that meet.

5. Malfunction on a Lane Adjustment

When a malfunction is confirmed on a lane, the backup times for that lane shall be adjusted by calculating the average difference between valid primary and valid back-up times of the other lanes in that heat. This shall be done by adding, or subtracting when appropriate, that average difference to the valid back-up time of the lane where the malfunction occurred.

6. Malfunction Equally Affecting

When, because of an early or late start, or other equipment or operator malfunction, the time of the automatic or semi-automatic primary timing system is equally incorrect for all the lanes in a heat, but the order of finish and thus the absolute difference of time between the swimmers is accurate, the times of the primary system shall be adjusted by calculating the average difference between the primary times and the valid backup times and adding, or subtracting when appropriate, that difference to the primary times of every lane in that heat

1. Timing Systems Levels

Every race in a swimming competition shall be timed with one or more of the following systems, listed in their preferred order of use:

1. **Automatic Timing**
2. **Semi-Automatic with Three Buttons**
3. **Semi-Automatic with Two Buttons; or, Manual with 3 Watches**
4. **Manual with 2 Watches**

2. Timing System Designation

Timing systems shall be designated in the order in which results are used as follows:

1. **Primary System -- shall** determine the official time of each swimmer unless a comparison of the primary with secondary and/or tertiary system times indicated a malfunction of the primary system. A primary system shall always be in place and shall consist of one of the following, listed in their preferred order of use:
 1. **Automatic Timing.**
 2. **Semi-Automatic with Three (3) or Two (2) Buttons per Lane, each operated by a separate Timer.**
 3. **Manual with Three (3) and Two (2) Watches per Lane, each operated by a separate Timer.**
2. **Secondary System --** If manually operated watches are not the primary system, a secondary system of precedence equal to or

lower than the primary system must be used. The secondary system may be:

1. **Semi-Automatic with Three (3), Two (2), or One (1) Button(s) per Lane, each operated by a separate Timer.**
 2. **Manual with Three (3), Two (2), or One (1) Watches per Lane, each operated by a separate Timer.**
3. **Tertiary System --** Unless the primary system consists of manual watches or the secondary system includes at least one (1) manual watch per Lane, a tertiary system of at least one (1) manual watch per Lane shall be provided.

3. Time Collection and Recording Assignments

Accurately gathering, recording, and announcing each swimmer's event time is the goal of every swim competition. More than twenty volunteers are involved with the collection and posting of individual swimmer times at every swim meet.

Assignments involving Capturing Time Results include:

1. *Chief Timer*
2. *Head Lane Timer*
3. *Lane Timers*
4. *Colorado Operator*
5. *Timing Judge*
6. *Hy-Tek Operator*

"How to Time a Race"

1. You can prepare for the first race, after verifying set-ups.
2. Enter the event/heat into the console by pressing the "Event/Heat" key.
 1. Enter the Event # you want and press the "Enter" key.
 2. Enter the Heat # you want and press the "Enter" key.
 3. If you make an error, just repeat the entry.
3. If there is a **false start**:
 1. **Do not press the "RESET" key** until you have made sure every swimmer has been recalled, and has stopped swimming.
 2. If the race was not stopped within 10 seconds then the Event & Heat number will have been used. When you re-run the heat, the heat number will not print on the result printout. Write the event and heat number on the result printout where they would have normally been printed.
4. All races should be started automatically when the starter console sends a signal to the timing console via the cable harness.
 1. Once a race starts, review the field and turn off any lanes that have no swimmers by pressing the "LANE ON-OFF" key below the lane number.
 2. "Pad Armed: Finish/Split" lane indicators will flash when the last lap is swum.
 3. If a lane shows a finish before the swimmer had completed the race you can adjust the lane results by pressing the "-TOUCH" key once and then entering the lane to subtract a touch from.
 4. Place at finish # (1st, 2nd, 3rd, etc.) will appear above display lane box indicator.
5. When swimmers have finished, the "Place at Finish #" has appeared above active lanes. If timing problems occur, a timing correction screen lets you edit the results.
6. Press the "STORE/PRINT" key:
 1. The console will automatically send a race summary report to the printer.
 2. The console will be ready to record the next race **only** after you press reset.
7. Press "RESET" with two fingers to clear the display and prepare for the next race.
8. After resetting console, press either the "NEXT HEAT" or "NEXT EVENT" key:
 1. Make sure your Event and Heat numbers correspond with the next race. If not, press the Edit Event/Heat button and enter the correct Event and Heat numbers.
 2. After advancing to the next event check its distance.
 3. The "Event/Heat" indicator will blink during races if it has not been advanced after the

previous race was stored. This may happen after a false start if more than 10 seconds elapses before the Colorado is reset. It will also happen if you forget to advance the heat after a race.

Before the Meet Starts

Colorado Time System, Inc. designated the timing console as Swimming IV or V, so those familiar with older versions knew they were getting the next generation system

Should you ever need assistance

Colorado Time System can be reached at 1-303-667-1000. Their shipping address is: Colorado Time System, Inc.; 5051 East 11th St.; Loveland, CO 80537.

Protect the system from the elements

Swimming IV or V has its own proprietary operating system and application software. Since it is a computer, shade it from the sun during hot summer days when outside temperatures are above 85°. Likewise, cover it if it rains.

Equipment check out

Someone must check out all the equipment to be sure everything is functioning. This involves being sure the Colorado Starting unit will actually start the Colorado Timing System, and that all the pads and buttons are functioning.

If at all possible have the pads in the water before warm-ups start. It is then easy to see if all the pads are functioning either by manually hitting each pad or letting the swimmers who are warming up trigger the pads.

To accomplish this,

1. Press Edit Event and Heat key and enter an Event you know you will not be used, i.e., Event 399, Heat 1 (Event 199 on the IV).
2. Set the distance at 50 by pressing the 50 button followed by the Quit button.
3. Start the Colorado by using the Starting Unit; or, Press the **Start** button on the Colorado, but this approach **does not ensure** that the connection to starting unit **is functioning**.
4. Pads will Finish Arm in about 10 seconds, indicating that the next touch will be a finish.
5. Now press the face of each touch pad, or let warmup swimmers activate them.
6. You should then visit each lane and press the backup button(s).
7. Return to the Colorado, press the soft key that reads **Display**, and you will see a little window that shows by lane the Pad time, and indicates which buttons were active. (Note: Buttons may not register if too much time elapses after the pad touch).

Referee should verify set up

To successfully capture swimmer times. the Colorado electronics must function smoothly. Toward this end, have the Deck Referee make

certain that everything is set up and working properly.

All PVS certified Referees will either help, or have someone verify everything is set up properly.

Print the Setups

Ask the Referee to verify that everything is the way they want it.

Power

The console power switch is located on the back. Swimming IV or V can be powered through a power transformer, which can be plugged into one of the pool's electric outlets and into the back of the console. Two battery back-up systems are built into Swimming IV, but only one in the V.

If the Power Source is running AC, meaning the Colorado is hooked up to its transformer, then you can run without any batteries, but beware if power is suddenly removed you will lose any race in progress and in memory

It is normally a good idea to power off the Colorado Timing Unit and then powers it back on sometime before a session starts. Restarting the Colorado clears the race number memory so the next race or test will be assigned the number # 1.

A warning though, before powering off make sure that any setup information and events entered in the User Defined events menu have been saved.

Colorado IV Differences

The On/Off Power switch is located on the back of the unit. Toggle this too off and then back on.

When the Colorado is back up again you will see the normal main screen used when you are running the meet.

Colorado V Differences

The On/Off Power switch is located on the back of the unit. Toggle this too off and then back on.

The Colorado V will now go through a series of self-checks. Once everything passes it will then ask you whether to run more diagnostics (Test/Program) or to go to the normal Swim & Dive Menu. Select the Normal Swim & Dive Menu (Swimming/Diving).

If there are problems during the self checks, the Colorado V will let you know about them. To continue on, tell the machine to ignore these problems, and then select the Swim & Dive Menu.

If you get errors you will need to decide if they are a problem or not, you may need consultation from other experienced Colorado operators, and also from the Referee and Meet Manager (this may be the time to get the back-up unit out).

Battery Power Checks

When you return to the Swim & Dive Menu, you should next check **Battery Status**, especially important if you are running the meet on batteries only. The battery condition will automatically show when the machine is powered up and you initially get to the Swim & Dive menu.

There is a console key (in the upper right hand area) that says Battery Check. Press this and the battery condition will be shown, as well as the current Primary source for power. If batteries are in the machine, then they should have at least enough time left on them to run one session (5 hours should be sufficient). This will be the left-hand display on the Colorado IV, and the right hand display on the Colorado V. If they do not, then get a fresh set of "D" cell batteries from the Meet Manager.

Swimming IV or V can be operated for 8-to-12 hours, using eight (8) "D" size alkaline batteries, and only on the IV a 9-volt back up battery. You can check primary and backup battery status by pressing the console button labeled "Battery Check." A power gauge graphic will appear on the console display. A spare set of "D" batteries should be kept in the console's carrying case.

The Colorado IV has a backup battery (a nine volt battery), who's status is displayed separately. When fresh it has about 15 minutes of battery life. If it has less than 5 minutes left, it should be replaced.

Remove the batteries from the console when it will not be used for several weeks. The battery compartment on the IV is accessible by loosening both compartment screws, using a "quarter." On the V just slide out the battery cover. When reinstalling or replacing batteries make sure battery polarity follows diagram found in the battery compartment. Test the console after battery installation by turning the console on and checking the battery life by pressing the "Battery Check" button.

Scoreboard

We suggest one of the first things you should do is display the time on the scoreboard. Post the time on the scoreboard by pressing the Score Board soft key, this will cause a small window to be displayed that will show the current scoreboard status. This will be either ON, BLANK, or TOTAL BLANK. **ON** is how the scoreboard will be when you run the meet, **BLANK** will display the time, **TOTAL BLANK** results in a blank scoreboard.

Connecting and Verifying Cables

Although **cables** should be set up and connected before you arrive, you need to check they are connected properly. We recommend you proceed to **check** that the **cables** are attached correctly **systematically**.

1. Check the cable harnesses connecting the touch pads, buttons and starting system first.

Three **cable harnesses** can be connected to the Colorado Timing System simultaneously:

1. **Primary Harness**- For the harness that has the Start signal, also goes to the touch pads and the "A" button.
2. **Backup Harness** - For the other harness, goes to the "B" and "C" buttons.
3. **Far End Split Harness** - For touch pads located at opposite end of pool. Usually reserved for PVS Championship level long course meets held at Oak Marr and Rockville pools.

Cable harness basics:

1. Plug the **Primary** cable harness into the "Primary Input" centronics port on the back of the console.
2. Plug the **Backup** cable harness into the "Backup Input" centronics port on the back of the console.
3. Plug the **Far End Split** cable harness into the "Far End Split Input" centronics port on the back of the console.

Lane Order basics:

1. **Normal** Lane Order (Lane 1 is the first lane the cable harness goes to) eight (8 or 10) connection cable.
2. **Reverse** Lane Order (Lane 1 is the last lane the cable harness goes to) eight (8 or 10) connection cable.

Pads and Buttons basics:

1. Plug the **pad cable into prime** and **button into "A"** on the **Primary** cable harness. If no pads (setups indicate only buttons), then button A plugs into Prime, B into Button A, etc.
 2. Plug the **buttons into "B" and "C" sockets** on the **Backup** cable harness.
 3. Plug the **Far End Split pad cable into prime** on the **Far End Split** cable harness.
2. Check for **Serial Cable** from **Computer Port 1** is collected to the HyTek computer's serial port (s1).
 3. Check for **Printer Cable** from the **Printer Port** to the printer for the listing the Colorado results.

4. Check for **Scoreboard Cable**, looks like an audio cable, from the **Scoreboard connection** to the scoreboard.
5. **External Power** provided through a separate transformer. Colorado operates on 8 "D" cell batteries.
6. Colorado IV only - **Reset Signal** connection to a little box containing a mechanical signal that indicates the Colorado has been **reset** for the next race (heat).
7. Starting Unit Cables:
 1. Check that the **Starting Cable** in the Colorado Starting unit is in the starting units **N.O. plug** socket, if plugged into the N.C. plug your times will be off **a variable amount**.
 2. Check the other end of the **Starting Cable** is plugged into the Start socket on the Colorado in the in Primary harness, if the cable is plugged into the **BACKUP START** position your times will be **0.25 seconds off**.

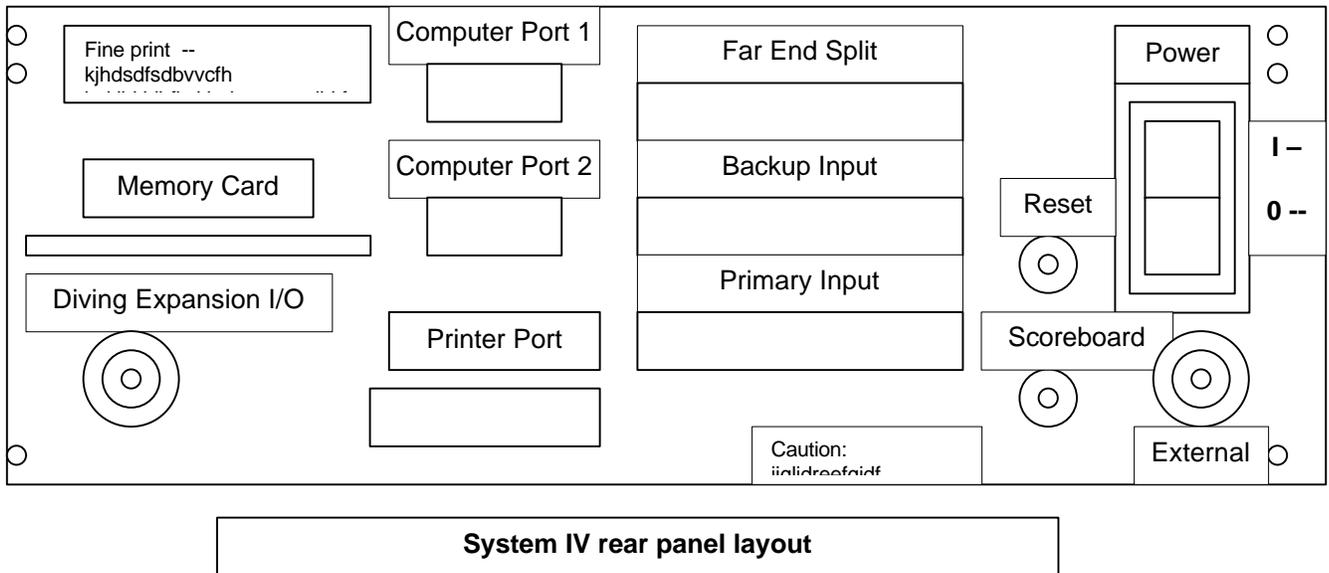


Figure 1 - Colorado IV -- Rear Panel Layout

For any non-functioning pad or buttons, go try them once more, and if they still are not functioning, check the connections. Be sure they are tight and that there is not excessive corrosion present. If corroded you may try cleaning it. If they still do not work, then that pad or button will probably need to be replaced. Until you gain experience and possibly even after you are experienced, you should **“consult with the Referee and Meet Manager before doing this.”**

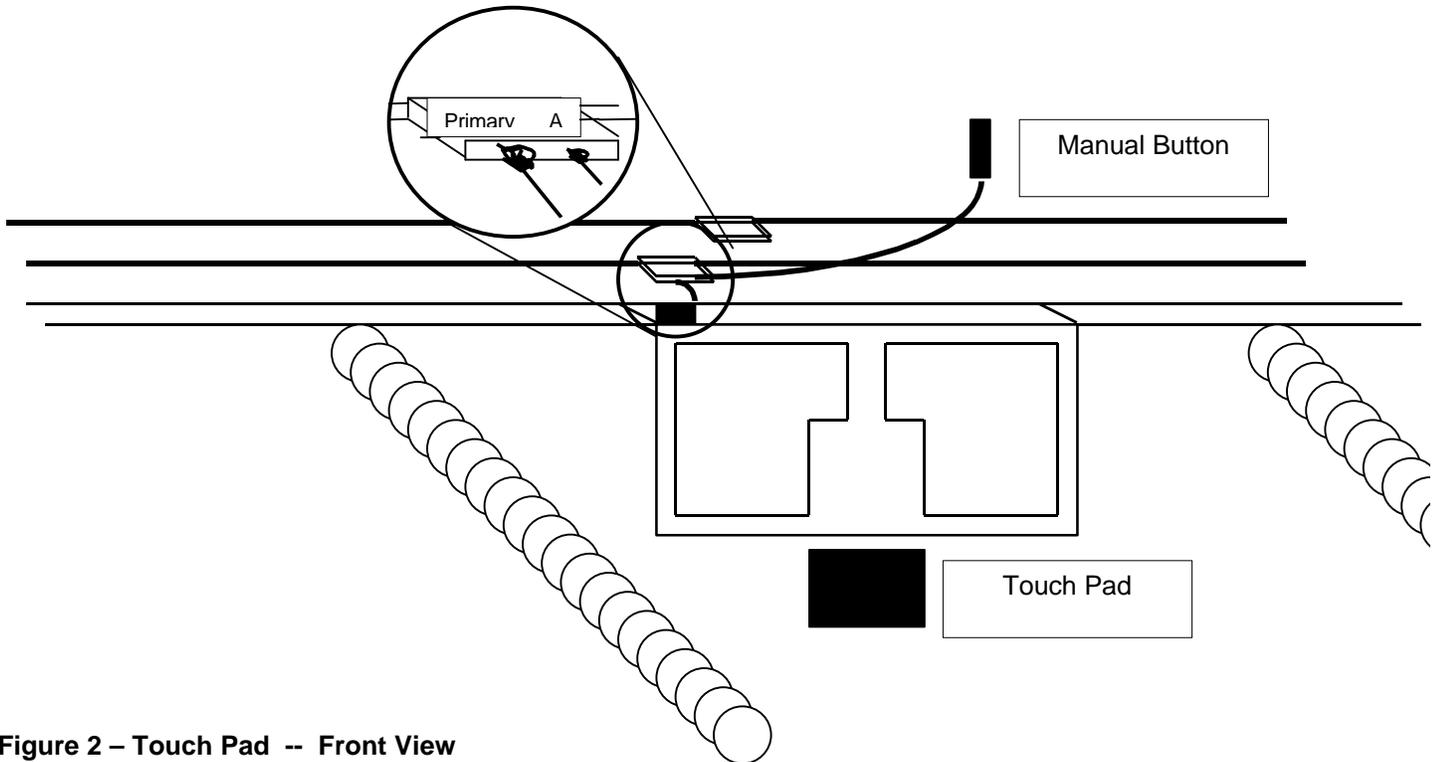


Figure 2 – Touch Pad -- Front View

Colorado IV Timing System Set-up

Procedure

1. Push the console power switch to the "ON" position.
2. Press the "Battery Check" button to determine remaining battery life.
3. Press "SET-UPS" soft button on console is play. The display will now show three soft buttons: "UP", "DOWN" and "RECORD SET-UPS."
 1. Press the "DOWN" soft button to display each set up option.
 2. Use the number keypad to select individual options.
4. First "SET-UP" directs the console to automatically pick up the starting signal from the starter system.

<u>SETUPS</u>	<u>CHOICE</u>	<u>OPTIONS</u>
>>> Start	> 1	Automatic
Finish/Buttons	2	Manual
Hardware		
Splits		
Timing		
Pool		

Start - select automatic to use starting signal from the starting unit.

5. Second "SET-UP" directs the console to pick up the finish signal from each lane's prime button.

<u>SETUPS</u>	<u>CHOICE</u>	<u>OPTIONS</u>
Start	> 1	Pad (Prime Finish)
>>> Finish/Buttons	2	One Button (Prime Finish)
Hardware	3	Two Buttons (Prime Finish)
Splits	4	Three Buttons (Prime Finish)
Timing	5	One Button (Backup Finish)
Pool	6	Two Buttons (Backup Finish)
Scoreboard	> 7	Three Buttons (Backup Finish)
Printer	8	Compare Button Early to Pad
Event Sequence	> 9	Compare Pad-Button Difference
Time/Date		

Finish/Buttons - usually select Pad (Prime) and Two or Three Buttons (Backup Finish). Also select Compare Pad-Button Difference. If you will be using three buttons, or some "B" button harness positions do not work and these buttons are moved to the "C" position, then select Three Buttons (Backup Finish).

If you are running button finish only **with no touch pads**, then select Two or Three Button (Prime Finish) and no other selections. In this case the "A" button is plugged into Prime (on the harness, this is where the pad is normally plugged into), the "B" button into "A" on the harness, etc.

6. Third "SET-UP" controls the console's audible signal volume. A "beep" is sounded each time a lane's prime button is pressed. It defaults to the loudest volume (3) for a noisy meet.

<u>SETUPS</u>	<u>CHOICE</u>	<u>OPTIONS</u>
Start	1	Speaker Volume (0 to 3) = 3
Finish/Buttons	2	Low Swimming I/O Voltage
>>> Hardware	3	Relay Judging using Buttons
Splits		
Timing		
Pool		
Scoreboard		
Printer		
Event Sequence		
Time/Date		

Hardware Setup - Set speaker volume to 3 (highest level). If too loud you can set lower. "Never select Low Swimming I/O Voltage."

7. Fourth **"SET-UP"** directs the console to store cumulative and lap splits for later printing.

<u>SETUPS</u>	<u>CHOICE</u>	<u>OPTIONS</u>
Start	> 1	Print Cumulative Splits
Finish/Buttons	> 2	Print Splits by Lap
Hardware		
>>> Splits		
Timing		
Pool		
Scoreboard		
Printer		
Event Sequence		
Time/Date		

Splits - Select both options. They are Print Cumulative Splits and Print Splits by Lap.

8. Fifth **"SET-UP"** directs the console to store times to 0.01 seconds.

<u>SETUPS</u>	<u>CHOICE</u>	<u>OPTIONS</u>
Start	> 1	Timing Accuracy = .01 sec.
Finish/Buttons	2	Timing Accuracy = .001 sec.
Hardware	3	Near-End Pad Split Delay = 15 Sec.
Splits	4	Far-End pad Split Delay = 15 Sec.
>>> Timing	> 5	Display Time Warning Messages
Pool	6	Pad Delay at Start = 3 sec.
Scoreboard	7	Scoreboard Length Count Down
Printer	8	Screen Length Count Down
Event Sequence		
Time/Date		

Timing - Select Timing Accuracy = .01 seconds, and display Time Warning messages. Check that the Near End pad split delay is set to 15 seconds. Select Display Time Warning Messages.

Near end pad split delay is normally set at 15 seconds, this can be raised higher for Relays if you desire, just make sure that it is not set so high that the pad will be dead when a swimmer is finishing their length.

Far end-split delay is normally at 15 seconds.

9. Sixth **"SET-UP"** tells the console about the pool: how many lanes are active, short or long course, yards or meters.

<u>SETUPS</u>	<u>CHOICE</u>	<u>OPTIONS</u>
Start	> 1	Lanes Normal (ex. 1 – 10)
Finish/Buttons	2	Lanes Reversed (ex. 10 – 1)
Hardware	3	Lanes in Pool = 8
Splits	4	Far-End Split
Timing	> 5	Short Course Pool
>>> Pool	6	Long Course Pool
Scoreboard	> 7	Race Distance Units - Yards
Printer	8	Race Distance Units - Meters
Event Sequence		
Time/Date		

Select either **Lanes Normal** or **Lanes Reversed**. Normal is used when the closest Lane to the Colorado Timing Unit is lane 1. If Lane 8 (or 10 for a ten-lane pool) is closest, then set up for Lanes Reversed. Set Lanes in Pool to the number of lanes that you have (8 or 10). Select either short (25 Yards or Meters) or long (50 Meters) course. Select race distance units in either Yards or Meters.

If you have far end pads for splits (currently only Rockville outdoors Long Course pool and Oak Marr) then select Far-End Splits. Note that if you are using this, and starts for 1 length events (25 in short course or 50 in long course), **and** the starts are at the far end of the pool (where the far end split pads are), then you will need to turn Far-End Splits **off for only the one length events** and then back on for the rest of the events.

If you forget to turn off far end splits for a single length event, you will hear beeps as the pads are touched and buttons pushed, but nothing will show on the console. If this happens, change the race distance from a 50 to a 100 (press 100 on the console), then press quit to not enter race type, etc. The pad and

button times should now be visible. Store/print this race, reset, and then fix the far end splits setup) turn off) and set the race distance back to 50.

10. Seventh "**SET-UP**" tells the console about the scoreboard: Ensure it is always set to High Speed and High Brightness.

<u>SETUPS</u>	<u>CHOICE</u>	<u>OPTIONS</u>
Start	> 1	High Speed (Data Transmission)
Finish/Buttons	2	Low Speed (Data Transmission)
Hardware	3	Define Module(s)
Splits	4	Blank Module(s)
Timing	5	Self Test
Pool	6	Times to Step One-Line Scb = 1
>>> Scoreboard	7	One-Line Scb Sequence Time = 5
Printer	8	One-Line Scb Sequence List
Event Sequence	> 9	Display Results in Lane Order
Time/Date	0	Display Results in Place Order

Time/Date Scoreboard - Always select High Speed (Data Transmission). The time to step a one-line scoreboard should be 1 second, one line scoreboard sequence time should be 3 to 5 seconds. The Display Results in Lane or Place Order should always be in Lane order. This setup determines whether the Lane number is displayed in the first position on the scoreboard with place second, or vice versa.

11. Eighth "**SET-UP**" tells the console how it should handle the printer: type sizes and print when "Store/Print" Key is pressed.

<u>SETUPS</u>	<u>CHOICE</u>	<u>OPTIONS</u>
Start	1	Default Printer
Finish/Buttons	2	User Defined Printer Control Codes
Hardware	3	Store/Print Format
Splits	4	View/Edit Sponsor's Messages
Timing	5	Page Length = 280mm 11in
Pool	> 6	Pica
Scoreboard	7	Elite
>>> Printer	8	Condensed
Event Sequence	9	Print 8 Lines per Inch
Time/Date	> 0	Always Print on Store/Print Key

Printer - Option 0 Always Print on Store/Print Key should be selected. For Type size, start with selecting number 6, Pica. Set the printer (if necessary) for 10 CPI (Characters per Inch). Select Print 6 Lines Per Inch. You can adjust these and the printer settings as needed to get correct print outs. Under Store/Print Format you should have Race Summary & Form Feed **ONLY**. Select the type of printer that you have for option 1, if your printer is not in the list then experiment until you find one that works) try Epson or IBM first).

12. Ninth "**SET-UP**" tells the console which meet schedule to choose. Check for prior User Defined meets under Option (#7):

<u>SETUPS</u>	<u>CHOICE</u>	<u>OPTIONS</u>
Start	1	None
Finish/Buttons	2	Boys High School
Hardware	3	Girls High School
Splits	4	Boys/Girls H.S.
Timing	5	NCAA 13 Event Prog.
Pool	6	NCAA 15 Event Prog.
Scoreboard	> 7	User Defined
Printer	8	View/Edit Selected Sequence
>>> Event Sequence		

Event Sequence - If there is not time to set up the events and distances in advance, or it has not already been done for you, then select Option 1 for None. I would recommend that you set up the events and distances beforehand if at all possible, so select User Defined (on the Colorado IV) or User Defined 1 or User Defined 2 (for the Colorado V), then the Option to Edit/Review the selected sequence. I will describe how to do this later in this document.

13. Last "**SET-UP**" tells the console the "date and time."

Time/Day - If the date and/or the time is not correct, these may be reset by using the options under this menu. Normally you will not have to change this.

<u>SETUPS</u>	<u>CHOICE</u>	<u>OPTIONS</u>
Start	1	Set Time of Day
Finish/Buttons	2	Set Day of Week
Hardware	3	Set Date
Splits	> 4	12 Hour Clock
Timing	5	24 Hour Clock
Pool		
Scoreboard		
Printer		
Event Sequence		
>>> Time/Date		

14. Record set-up by pressing the "**RECORD SET-UP**" soft key

15. To get out of set-up, press the "**QUIT**" key

Colorado V Timing System Set-up

Procedure

1. Push the console power switch to the "ON" position.
2. Press the "Battery Check" button to determine remaining battery life.
3. Press "SET-UPS" soft button on consoled is play. The display will now show three soft buttons: "UP", "DOWN" and "RECORD SET-UPS."
 1. Press the "DOWN" soft button to display each set up option.
 2. Use the number keypad to select individual options.
4. First "SET-UP" directs the console to automatically pick up the starting signal from the starter system.

<u>SETUPS</u>	<u>CHOICE</u>	<u>OPTIONS</u>
>>> Start	> 1	Automatic
Finish/Buttons	2	Manual
Hardware		
Splits		
Timing		
Pool		

Start - select automatic to use starting signal from the starting unit.

5. Second "SET-UP" directs the console to pick up the finish signal from each lane's prime button.

<u>SETUPS</u>	<u>CHOICE</u>	<u>OPTIONS</u>
Start	> 1	Pad (Prime Finish)
>>> Finish/Buttons	2	One Button (Prime Finish)
Hardware	3	Two Buttons (Prime Finish)
Splits	4	Three Buttons (Prime Finish)
Timing	5	One Button (Backup Finish)
Pool	6	Two Buttons (Backup Finish)
Scoreboard	> 7	Three Buttons (Backup Finish)
Printer	8	Compare Button Early to Pad
Event Sequence	> 9	Compare Pad-Button Difference
Time/Date		

Finish/Buttons - usually select Pad (Prime) and Two Buttons (Backup Finish). Also select Compare Button Early to Pad. If you will be using three buttons, or some "B" button harness positions do not work and these buttons are moved to the "C" position, then select Three Buttons (Backup Finish).

If you are running button finish only **with no touch pads**, then select Two or Three Button (Prime Finish) and no other selections. In this case the "A" button is plugged into Prime (on the harness, this is where the pad is normally plugged into), the "B" button into "A" on the harness, etc.

6. Third "SET-UP" controls the console's audible signal volume. A "beep" is sounded each time a lane's prime button is pressed. It defaults to the loudest volume (3) for a noisy meet.

<u>SETUPS</u>	<u>CHOICE</u>	<u>OPTIONS</u>
Start	1	Speaker Volume (0 to 3) = 3
Finish/Buttons	2	Low Swimming I/O Voltage
>>> Hardware	3	Allow Remote Setup
Splits	4	Relay Judging using Buttons
Timing		
Pool		
Scoreboard		
Printer		
Event Sequence		
Time/Date		

Hardware Setup - Set speaker volume to 3 (highest level). If too loud you can set lower. "Never select Low Swimming I/O Voltage."

7. Fourth "SET-UP" directs the console to store cumulative and lap splits for later printing.

<u>SETUPS</u>	<u>CHOICE</u>	<u>OPTIONS</u>
Start	> 1	Print Cumulative Splits
Finish/Buttons	> 2	Print Splits by Lap
Hardware		
>>> Splits		
Timing		
Pool		
Scoreboard		
Printer		
Event Sequence		
Time/Date		

Splits - Select both options. They are Print Cumulative Splits and Print Splits by Lap.

8. Fifth "SET-UP" directs the console to store times to 0.01 seconds.

<u>SETUPS</u>	<u>CHOICE</u>	<u>OPTIONS</u>
Start	> 1	Timing Accuracy = .01 sec.
Finish/Buttons	2	Timing Accuracy = .001 sec.
Hardware	3	Near-End Pad Split Delay = 15 Sec.
Splits	4	Far-End pad Split Delay = 15 Sec.
>>> Timing	> 5	Display Time Warning Messages
Pool	6	Pad Delay at Start = 3 sec.
Scoreboard	7	Scoreboard Length Count Down
Printer	8	Screen Length Count Down
Event Sequence		
Time/Date		

Timing - Select Timing Accuracy = .01 seconds, and display Time Warning messages. Check that the Near End pad split delay is set to 15 seconds. Select Display Time Warning Messages.

Near end pad split delay is normally set at 15 seconds, this can be raised higher for Relays if you desire, just make sure that it is not set so high that the pad will be dead when a swimmer is finishing their length.

Far end-split delay is normally at 15 seconds.

9. Sixth "SET-UP" tells the console about the pool: how many lanes are active, short or long course, yards or meters.

<u>SETUPS</u>	<u>CHOICE</u>	<u>OPTIONS</u>
Start	> 1	Lanes Normal (ex. 1 – 10)
Finish/Buttons	2	Lanes Reversed (ex. 10 – 1)
Hardware	3	Lanes in Pool = 8
Splits	4	Far-End Split
Timing	> 5	Short Course Pool
>>> Pool	6	Long Course Pool
Scoreboard	> 7	Race Distance Units - Yards
Printer	8	Race Distance Units - Meters
Event Sequence		
Time/Date		

Time/Date Pool - Select either **Lanes Normal** or **Lanes Reversed**. Normal is used when the closest Lane to the Colorado Timing Unit is lane 1. If Lane 8 (or 10 for a ten-lane pool) is closest, then set up for Lanes Reversed. Set Lanes in Pool to the number of lanes that you have (8 or 10). Select either short (25 Yards or Meters) or long (50 Meters) course. Select race distance units in either Yards or Meters. If you have far end pads for splits (currently only Rockville outdoors Long Course pool and Oak Marr) then select Far-End Splits. Note that if you are using this, and starts for 1 length events (25 in short course or 50 in long course), **and** the starts are at the far end of the pool (where the far end split pads are), then you will need to turn Far-End Splits **off for only the one length events** and then back on for the rest of the events.

If you forget to turn off far end splits for a single length event, you will hear beeps as the pads are touched and buttons pushed, but nothing will show on the console. If this happens, change the race distance from a 50 to a 100 (press 100 on the console), then press quit to not enter race type, etc. The pad and button times should now be visible. Store/print this race, reset, and then fix the far end splits setup (turn off) and set the race distance back to 50.

10. Seventh "**SET-UP**" tells the console about the scoreboard: Ensure it is always set to High Speed and High Brightness.

<u>SETUPS</u>	<u>CHOICE</u>	<u>OPTIONS</u>
Start	> 1	High Speed (Data Transmission)
Finish/Buttons	2	Self Test
Hardware	3	Define Module(s)
Splits	4	Blank Module(s)
Timing	5	Four-Line Scoreboard
Pool	6	Times to Step One-Line Scb = 1
>>> Scoreboard	7	One-Line Scb Sequence Time = 5
Printer	8	One-Line Scb Sequence List
Event Sequence	> 9	Display Results in Lane Order
Time/Date	0	Display Results in Place Order

Time/Date Scoreboard - Always select High Speed (Data Transmission). The time to step a one-line scoreboard should be 1 second, one line scoreboard sequence time should be 3 to 5 seconds. The Display Results in Lane or Place Order should always be in Lane order. This setup determines whether the Lane number is displayed in the first position on the scoreboard with place second, or vice versa.

11. Eighth "**SET-UP**" tells the console how it should handle the printer: type sizes and print when "Store/Print" Key is pressed.

<u>SETUPS</u>	<u>CHOICE</u>	<u>OPTIONS</u>
Start	1	Printer = User defined
Finish/Buttons	2	User Defined Printer Control Codes
Hardware	3	Store/Print Format
Splits	4	View/Edit Sponsor's Messages
Timing	5	Page Length = 280mm 11in
Pool	> 6	Pica
Scoreboard	7	Elite
>>> Printer	8	Condensed
Event Sequence	9	Print 8 Lines per Inch
Time/Date	> 0	Always Print on Store/Print Key

Printer - Option 0 Always Print on Store/Print Key should be selected. For Type size, start with selecting number 6, Pica. Set the printer (if necessary) for 10 CPI (Characters per Inch). Select Print 6 Lines Per Inch. You can adjust these and the printer settings as needed to get correct print outs. Under Store/Print Format you should have Race Summary & Form Feed **ONLY**. Select the type of printer that you have for option 1, if your printer is not in the list then experiment until you find one that works) try Epson or IBM first).

12. Ninth "**SET-UP**" tells the console which meet schedule to choose. Check for prior User Defined meets under Option (#7):

<u>SETUPS</u>	<u>CHOICE</u>	<u>OPTIONS</u>
Start	1	None
Finish/Buttons	2	Boys High School
Hardware	3	Girls High School
Splits	4	Boys/Girls H.S.
Timing	5	NCAA 13 Event Prog.
Pool	6	NCAA 15 Event Prog.
Scoreboard	> 7	NCAA 16 Event Prog.
Printer	8	User Defined 1
>>> Event Sequence	9	User Defined 2
Time/Date	0	View/Edit Selected Sequence

Event Sequence - If there is not time to set up the events and distances in advance, or it has not already been done for you, then select Option 1 for None. I would recommend that you set up the events and distances beforehand if at all possible, so select User Defined (on the Colorado IV) or User Defined 1 or User Defined 2 (for the Colorado V), then the Option to Edit/Review the selected sequence. I will describe how to do this later in this document.

13. Last **"SET-UP"** tells the console the "date and time."

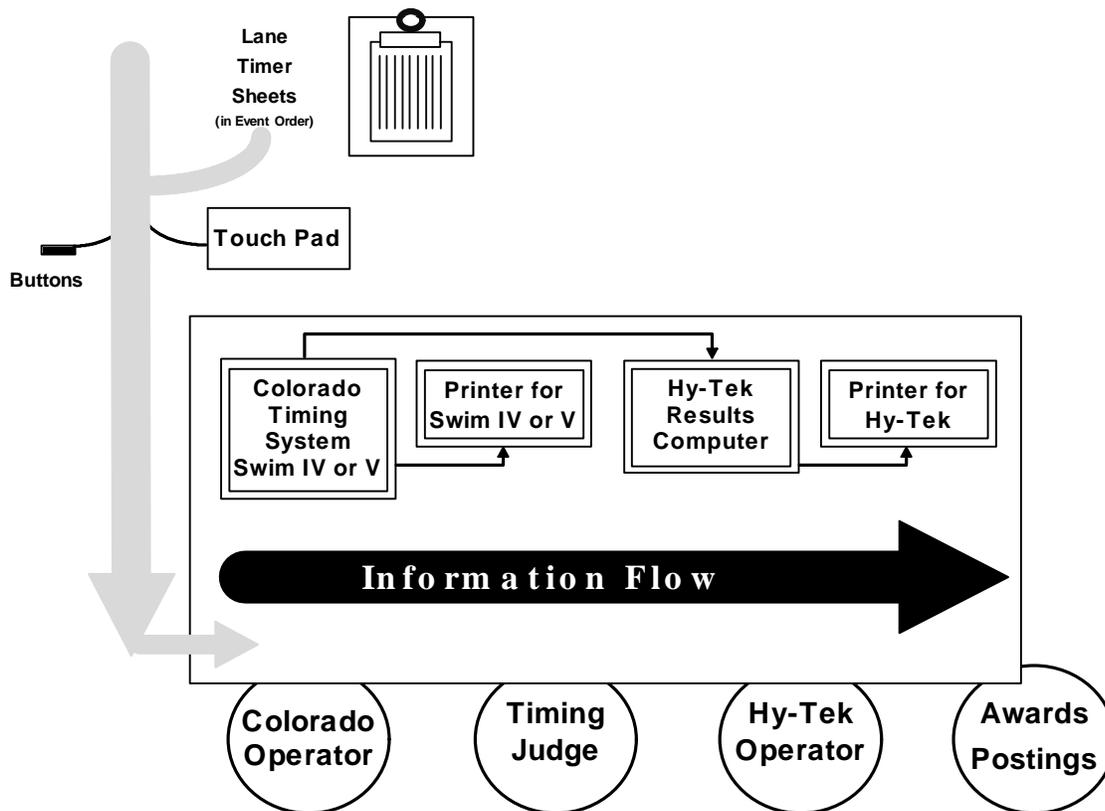
Time/Day - If the date and/or the time is not correct, these may be reset by using the options under this menu. Normally you will not have to change this.

<u>SETUPS</u>	<u>CHOICE</u>	<u>OPTIONS</u>
Start	1	Set Time of Day
Finish/Buttons	2	Set Day of Week
Hardware	3	Set Date
Splits	> 4	12 Hour Clock
Timing	5	24 Hour Clock
Pool		
Scoreboard		
Printer		
Event Sequence		
>>> Time/Date		

14. Record set-up by pressing the **"RECORD SET-UP"** soft key

16. To get out of set-up, press the **"QUIT"** key

Results Flow Chart



General Running Information

The upper position of the console has "soft keys". These are the touch sensitive keys just to the right of the display. The far right side of the display will always display what soft keys are currently available. On any display where you can move up and/or down, there will be appropriate soft keys that will show this.

To enter information you normally will key it in, and then press either Enter key. To not actually enter something you have keyed press Quit. You will also use the Quit key to exit from panels where you have made all the changes required (like the setup panels, or the scoreboard panel).

The Colorado internally assigns a Race Number to each heat that is swum (actually a new Race Number is assigned every time the Colorado receives a Start signal from the starter, and every time you press the Start key on the console. This number starts at 1 when the Colorado is turned on.

Entering Event Data

This will be described for the Colorado V, it is similar on the Colorado IV and I will try to point out the differences. Once you have done this, you should not have trouble doing it on either console.

- **Select SETUPS** from the Swim & Dive Menu using the appropriate soft key.
- **Select Event Sequence.**
- Be sure that the **proper User Defined 1 or 2 is selected** (only User Defined on the IV).
- **Select View/Edit Selected Sequence.** If you would rather print them out on paper to look at, then before doing this step select Print Sequence using the soft keys.
- You will now see a list of events (the first 10 will initially be shown). You can move around in the events by selecting UP or DOWN to move 1 event, or Page Up or Down to scroll 10 events.

You may **insert missing events or delete unwanted events** via the Insert and Delete soft keys (Colorado V only). Note that inserting or deleting an event will cause all the subsequent events to be re-numbered (probably not what you want). You cannot enter only Events 1, 3, 5, etc and not have the even numbered events present.

- You will see a right facing arrow on the far left of the display to indicate what event you are on. The Distance will be highlighted if you are currently on the distance portion, if you are in the event description portion, then you will see where the cursor is. The distance will display in Yards or Meters on the Colorado V, as number of lengths on the Colorado IV.
- When the Distance is selected (it will show in Reverse Video), you can enter it or pressing the appropriate distance key or keying in the distance on the keypad (Colorado V only). The distance must be keyed in on the Colorado IV in numbers of lengths (i.e. short course pool, 200 Yards would be 8 lengths).
- To advance to the event description simply press one of the Enter keys.
- If an event already has a description, the cursor will be positioned at the end of the description. To clear out the description and start over press C/E (Clear Entry) on the numeric keypad (this is the only choice on the Colorado IV). On the Colorado V there is a Delete soft key that deletes the item directly in front of the cursor.
- Once the entry is cleared you then enter Swimmer Type, Age Group, Event Type and any other information you need.
 - * This is done as follows **on the Colorado V:**
 - Select Swimmer Type, then choose the appropriate designation and press enter.
 - Select Age Group and do as above.
 - Select Event Type and do as above.
 - If the next Event is the same distance and type, but of the opposite sex (as most of our Events are), then do not press Enter to finish but press Copy/Opp Gender, and the next Event will be set up with the opposite sex in it, then press one of the Enter keys.
 - * **For the Colorado IV:**
 - Use the soft keys to directly select all the above information. This will require using the More key to find all the items you wish to select.
 - When you have the description entered, press either Enter key to move to the next event and continue until you are through.

Capturing Times

If you have not already done so, **record your Set-ups** so that they can not be lost. This is accomplished by getting into Setups and pressing the Record Setups soft key. You will then get a message to confirm that you actually want to do this (Record setups (yes or no)?). Simply press the Yes soft key and the setups will be saved. This is to protect you in case of losing all power or accidentally (or on purpose) turning the Colorado off.

There are three modes that the Colorado may be run in and are selected by pressing the Event Mode key:

- **Write-In Mode** - When the Colorado prints the results of a race only the internal Race Number is printed.
- **Print-In Mode** - The internal Race Number is printed as well as the Event and Heat Number. Use this mode unless you are running with pre-setup events.
- **Title Mode** - Using the pre-defined events you have entered, when the race is printed it will have the internal Race Number printed, the Event and Heat number, and the description of the event (that you entered). **This is the preferred mode to run in if at all possible.**

The Mode is selected by pressing the Event Mode key on the console, and then selecting the mode you want to run in. It is recommended that you use Title mode if at all possible, otherwise use Print-In Mode. If you do not use Title Mode then you will have to enter the distance for each new event.

The general sequence to actually run the meet is:

- **Start at first Event** of the session by pressing Edit Event/Heat, then enter the Event number to start with, press enter, enter the Heat number, press enter again. This should take you to that Event and Heat.
- **Turn On all the lanes.**
- **Check** that the proper **distance** is displayed, if not you can press the distance key and change it.
- **Wait for the Start signal.** If the Colorado does not start automatically (from the starting console), then you should do a manual start by pressing the start key. You should inform the Referee that this has occurred immediately. If it is a False start, then immediately press the Reset key (it takes two fingers to do this).
- **Record the Race number** on your heat sheet by the Event & Heat it belongs to.

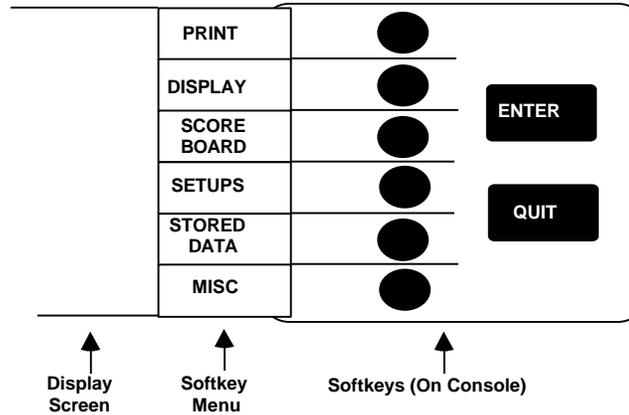
- The Referee and/or the Starter should inform you if there are any **empty lanes**. If there are you should record this on your heat sheet, and then turn off the empty lanes on the Colorado console. Each Lane has a switch that toggles the Lane on and off.
- **Observe each swimmers intermediate pad touches** (for races of more than two lengths). If any swimmer misses a pad, then you will have to manually add a touch (to compensate for the missing touch). This is accomplished by pressing the +Touch key, and then keying in the Lane number that needs the added touch.
- **At the Finish** of the race, **wait for all swimmers** to come in. Once they have finished, all the lanes should have pad times. If a pad has not been tripped, you can wait until the swimmer exits the pool, that will usually trip the pad. If the pad is still not tripped, on the Colorado IV or V:
 - * With 2 or 3 button setup (the way it is done in PVS), **you must get at least 2 buttons** in order to proceed without a pad touch. You can verify that this is the case by looking at the Display of pad and button indications (brought up by pressing the Display soft key) and/or by observing that the time in the upper left corner of the screen has stopped and is now blank. **If this is not the case, then the pad must be activated** before you Store/Print and reset, otherwise **there will be no times for that swimmer.**
 - * Assuming that the above was true, when you Store/Print you will get the display entitled "Race Results that need Investigating." The lanes with button/pad discrepancies will be displayed. You can now either accept the times for those lanes with no pad touch by pressing the appropriate soft key, or ignore this and simply press "OK to Print" soft key or "Quit." If you do not accept the backup times for the lane(s) with no pad touch, then the swimmers splits will be lost and the HyTek operator will have to key the correct time in (this is not a big deal).
 - * If you instead get the message that "Lane(s) not finished." Then at least one lane that is turned on did not get a pad touch, and either no buttons were pressed or only one button was pressed. If this is a lane with a swimmer, then the pad **must be activated or two buttons pressed** to at least get the times that are present.

- **Press the Store/Print key**, this should start printing the results of the race. If not all the pads were tripped you will get a display message that not all lanes have finished, you simply respond OK to this. You will also get a display if there were late (compared to the buttons) pad hits (i.e. the swimmer missed the pad at the finish, and later tripped it). Simply respond to this with the Quit key. If the race will not print (this would be Colorado IV only), then ask the Starter/Referee to hit the pads that were not tripped and then proceed normally.
- Once the printer starts printing, **press the Reset key** (takes two fingers). This signals the Referee that you are now ready for the next race. On most scoreboards this will turn on a Dot (Period) after the Lane number. If you have Reset but are not ready to move on to the next Heat, you **must** immediately get the Referee's attention and stop the meet until you are ready to proceed (this may seem drastic, but we must get every swimmers times). The Referee but they may ask you what the problem is so they can estimate how big a problem you are working.
- Now, either **presses the Next Heat key** to move to the next heat or the Next Event key to move to the next Event. If you pressed the Next Event key but meant to press the Next Heat key, simply press the Edit Event/Heat key, and then enter the appropriate Event & Heat number. This is not a reason to stop the meet, the next heat can be started while you are getting the correct Event & Heat entered. In fact, you can change Event & Heat numbers, length of race, turn lanes on or off, up until the time that you Store/Print the race, and everything will be fine. You can even turn off lanes that actually have swimmers in them and their times will still be recorded. There is very little that you can do that will cause anything to be lost with the exception of the Reset key, this will stop everything and throw away anything you have not Stored. **Do not press the Reset key until it really needs to be pushed.**

Softkey Menu Options

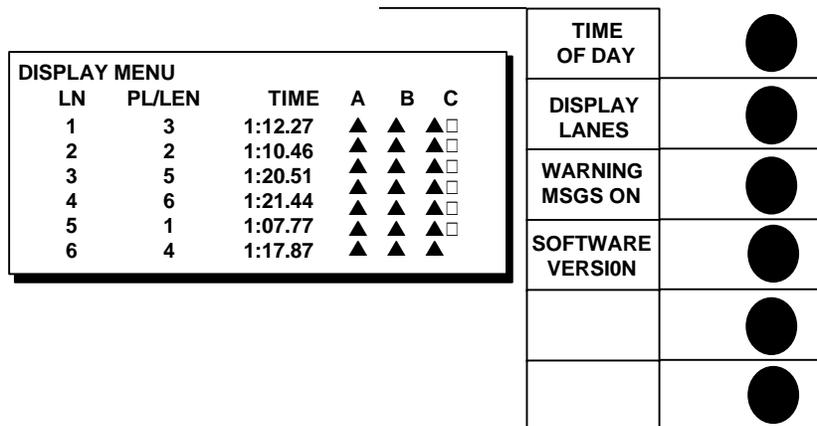
- **Finish Arm Key** - There is one of these for each Lane. When you press this that Lane is immediately set so that the next touch will be the last touch. You would use this if a touch was missed and rather than add a touch because the next touch will be the last (or maybe you forgot to add the touch). You might also use this if you have a longer distance entered than the race actually is, so for the last length you simply finish arm the lane(s).
- If you Finish Arm a Lane and it is not really the Finish, you can still subtract a touch and the timing for that Lane will continue.
- **Split Arm Key** - There is also one of these for each lane. The Split Arm key will subtract one touch from the lane and immediately re-arm the pad, **but only if the pad is not currently armed**. The pad is not armed after a touch for the time that you have used as a default in your setups (normally 15 seconds). You might use this in a Relay where a swimmer does not exit the pool soon enough and trips the pad. You could use the subtract a touch method instead of using this key.
- **Display Soft Key** - When running the Meet, most people will have this pressed so you can see the pads being hit at the Finish, and which buttons were pressed. Any time you are missing a button, or the pad never goes off, you should inform the Referee as there could be an equipment problem that needs to be addressed.
- **Pad Indicators** - These are displayed at the bottom of the display area, one per lane. There is a downward pointing triangle for each lane, this will disappear when you turn the lane off. It will also pulsate when the pad is being tripped. It will also signal short if the pad appears to be shorting out.
Above this will appear a black "blob" that will indicate whether that Lane is Finish Armed (i.e. the last touch is coming up) or Split Armed (the pad is now "live" and the next touch is not the last touch).

Set-ups to Remember

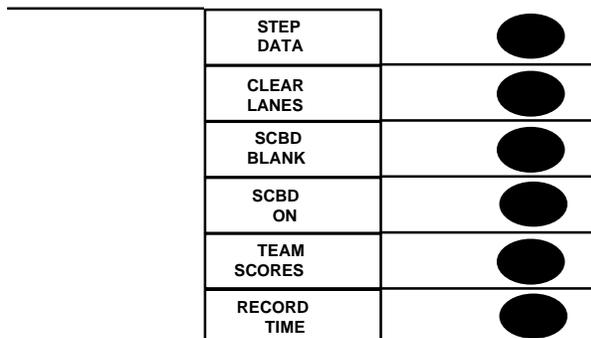


Event Display Options

1. If you would like to monitor the actual times that are swum you can view the current, last, or any past race results by pressing the "DISPLAY" soft key.
2. You may monitor the current race by choosing the "DISPLAY" soft key and the Lane Display Window below will be displayed:

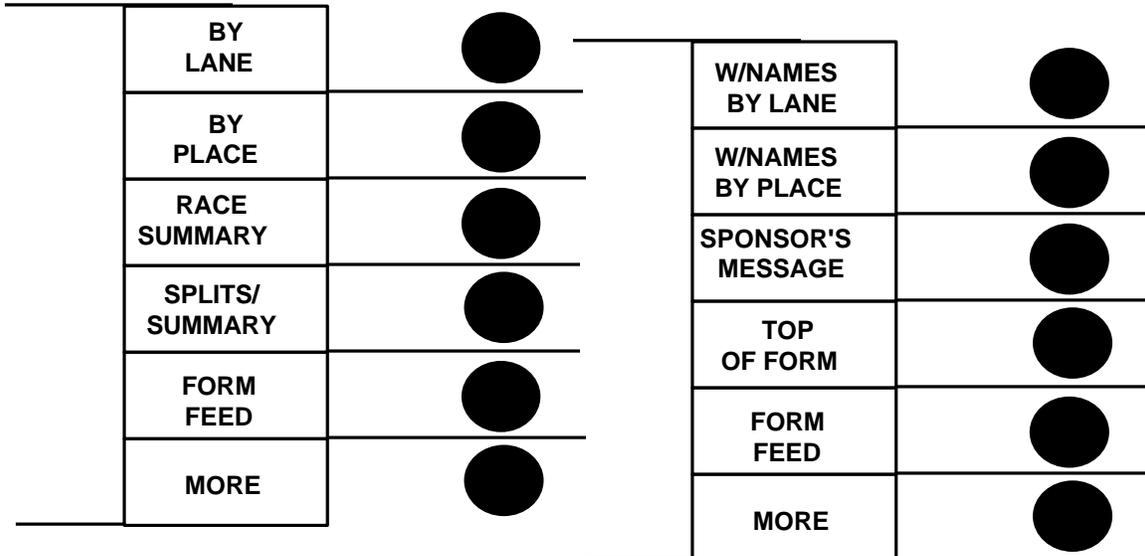


3. You may switch the score board between race results and the current time by pressing the "SCORE BOARD" soft key and then:
 1. Choosing "SCBD BLANK."
 2. Choosing "SCBD ON" returns the score board to race results.



4. You can alter the race result prints outs by choosing "PRINT."
 1. Choosing "BY LANE" prints an additional copy of race results sorted by lane.
 2. Choosing "BY PLACE" prints an additional copy of race results sorted by place.

3. Choosing "RACE SUMMARY" prints an additional copy of the results of the last stored race sorted by lane and by place.
4. Choosing "FORM FEED" advances the paper to the top of the next page and provides page breaks between pages of the race information. Press this key at the point in the print sequence where you want to end a page. Any information printed after a form feed begins at the top of the next page.
5. Choosing "MORE" toggles between the two print Softkey menus.



6. Choosing "W/NAMES BY LANE" prints an additional copy of race results sorted by lane with a line for you to write in the swimmers' names.
7. Choosing "W/NAMES BY PLACE" prints an additional copy of race results sorted by place with a line for you to write in the swimmers' names.
8. Choosing "SPONSOR'S MESSAGE" prints the sponsor's message on the race printout.
9. Choosing "TOP OF FORM" resets the paper in your printer to the top of a new page.

Set-Ups to Remember

- If you need to **re-print a previous race**, this is easily done:
 - * Press Stored Data soft key.
 - * Now use the soft keys to go back (or forward) one race (heat) at a time, or one Event at a time.
 - * When you get the race (Event/Heat) that you need to re-print press the Print Race soft key.
 - * This will display a Printer Menu (with nothing in it) and asks you to Select option with soft keys.
 - * I would recommend that you press in this order:
 - SPLITS/SUMMARY (will print all split times by lap & lane).
 - RACE SUMMARY.
 - You will be asked whether to print backups, select Yes (will print pad times by lane & place, then backup button times by lane).
 - --MORE-- (to get additional print options).
 - FORM FEED (to get to top of next page).
- To **print the Setups**:
 - * From Main Menu press SETUPS soft key.
 - * Move selection to the Printer Setup Menu (go down two).
 - * Press soft key for PRINT SETUPS.
- To **set Colorado up for single length event**

This procedure only applies to single length events where far end splits are being utilized. In Potomac Valley this currently only happens at Maryland States and summer Senior Championships during 50M (single length) events.

 - * The following should ensure that the Colorado is properly set up:
 - Advance to the 50M event (Next Event key or Edit Event/Heat key).
 - Go to Setups – Pool (this will be the first screen you see in Setup).
 - Turn off Far-End splits (option 4 on Colorado V).
 - * To test that the Colorado is properly set up and that all the connections are working:
 - Do a test start from the far end (using the Colorado Starting unit).
 - Make sure that the Colorado IV/V starts automatically.
 - Hit at least one touch pad at the finish end to make sure the Colorado stops.
 - Run the heats.
 - * **Just In Case Someone Messed Up.**

The indication that this has happened will be that the swimmers have touched, you've heard beeps from the Colorado indicating pad touches and buttons, but the Colorado has not stopped.

 - The indication that this has happened will be that the swimmers have touched, you've heard beeps from the Colorado indicating pad touches and buttons, but the Colorado has not stopped.
 - **Don't panic.**
 - In the Events section of the Colorado Console keyboard press 100 (indicating a 100 Meter Event).
 - A pop-up screen will appear to let you enter more information about the race, press quit.
 - This action will now accept the pad and buttons from the finish and close off the heat.
 - Now press Store/Print (note that the event will print indicating it is a 100-Meter event, cross out the 100 and write in 50).
 - You can now either leave the Colorado like this, but I would recommend that you now go into setups, remove far end splits, then set the distance back to a 50.

- To **enter swim records** so they display on the scoreboard (applies to multi-lane scoreboards).
 - * Press SCORE BOARD soft key.
 - * The Score Board Menu will display.
 - * Press RECORD TIME soft key.
 - * Enter time from keypad, 4 digits for Seconds/Hundredths (SS.HH), 5 digits for Minute/Second/Hundredth (M:SS.HH), and 6 digits for MM:SS.HH.
 - * Press either Enter key.
- To **display time & date**
 - * Press DISPLAY soft key.
 - * Press TIME of DAY soft key.
 - * To change if needed:
 - Press SETUPS soft key from Main Menu.
 - Select Time/Date menu (bottom of list).
 - Key in number to select setting the time or date.
 - Key in the time and press either Enter key.
 - Press Quit to exit Setups.

Colorado Time System Quick Reference Card

Feature	What it Does
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Keyboard

<i>Clear Entry</i>	Clears an existing entry or error from a prompt.
<i>Edit/DQ</i>	Allows you to edit times or DQ/un-DQ swimmers.
<i>Edit Event/Heat</i>	Allows you to edit the event and heat numbers.
<i>Enter#</i>	Enters numeric or other keyboard data
<i>Events Keypad</i>	Allows you to enter the race distance.
<i>Event/Heat Mode</i>	Allows you to select the operating mode -- <i>write-in, print-in or title</i> .
<i>Finish Arm</i>	Arms a lane for a finish touch.
<i>Lane On/Off</i>	Turns a lane on or off.
<i>- Touch</i>	Subtracts a pad touch from the total in a lane.
<i>Next Event</i>	Advances the event counter by one.
<i>Next Heat</i>	Advances the heat counter by one.
<i>Numeric Keypad</i>	Allows you to enter numbers in response to prompts.
<i>+ Touch</i>	Adds a pad touch from the total in a lane.
<i>Reset</i>	Clears the Swimming IV race display and prepares it for the next race.
<i>Split Arm</i>	Arms a lane for a split touch. Must be pressed during pad split delay time.
<i>Start</i>	Final backup start. Do not press <i>start</i> before the primary start system has sounded.
<i>Store/Print</i>	Stores the race just completed and prints the results.

Console Keys

<i>Battery Check</i>	Displays the estimated operating time left on both battery sources.
<i>Enter</i>	Enters numeric or other keyboard data (see <i>Enter#</i>).
<i>Help</i>	Displays context-sensitive help information.
<i>Quit</i>	Exits prompts without saving data entered if pressed before <i>enter</i> .

Softkeys

<i>Display</i>	Displays race and other information on the LCD display screen.
<i>Misc</i>	Accesses the pad power on/off feather.
<i>Print</i>	Prints additional race printouts organized as you choose.
<i>Scoreboard</i>	Accesses special scoreboard control and display features.
<i>Setups</i>	Allows you to customize the Swimming IV software. Refer to the <i>User Guide</i> for instructions.
<i>Stored Data</i>	Allows you to display, print and edit race data from current and previous meets.

Troubleshooting

This section helps you solve common Swimming IV and V system problems quickly. Locate the difficulty you are experiencing in the Symptom column and then follow the recommendations in the Action column one at a time, in the order they appear. If the problem you are experiencing is not listed or the recommended remedies do not have the desired effect, write a summary of the problem and all steps you have taken to correct it and call Colorado Time Systems' customer service department toll-free at 1-800-CTS-0653, Monday through Friday, 9:00 AM to 7:00 PM eastern time.

Symptom	Action	Notes
<p>Nothing Works Two problems may arise: First, no electricity; and, second, no battery backup</p>	<ol style="list-style-type: none"> 1. Check power On/Off switch. 2. Is Power Strip On? 3. If yes, and there is no power, check Colorado transformer. 4. If No, is extension cord power ON? 	<p>If power switch is On: Is it plugged in Colorado? Is it plugged into Power Strip?</p>
<p>Batteries Discharged</p>	<ol style="list-style-type: none"> 1. Press "Battery Check" button. 2. Check to see if there are batteries: Are there batteries? Are batteries installed in correct direction? 3. Replace dead batteries: 	<p>If no charge: Turn Colorado system upside down. Using a coin, turn the two black slot bolts, and take the lid off. Colorado requires: eight (8) "D" Cell Size; one (1) 9-volt battery (IV only).</p>
<p>Starting Console does not cause Colorado to start timing race.</p>	<ol style="list-style-type: none"> 1. Check Starter Cable is between Starting Console and Harness. 2. Examine Cable plugs: 3. Replace Cable. 	<p>Is cable present? Is cable plugged into socked marked "Start?" Is cable plugged into "NC" socket in starting console? Is one broken? Is corrosion on plugs? Scrap corrosion off.</p>
<p>Forgot to Store/Print before resetting CTS and another race has started.</p>	<ol style="list-style-type: none"> 1. Proceed with current race. 2. Have HyTek operator pull race results data. 	<p>Data should be stored when you hit reset (a nice Colorado feature). If race data is not Available, use manual watch time(s).</p>

Symptom	Action	Notes
Did not advance CTS to next heat.	<ol style="list-style-type: none"> 1. If next race has not yet been Store/Print, then advance to next heat. 2. Otherwise write the correct Event & Heat on Colorado print out. 	You should have noticed the console blinking the Event & Heat.
Did not advance CTS to next event.	<ol style="list-style-type: none"> 1. If next race has not yet been Store/Print, then advance to next event 2. Otherwise write the correct Event & Heat on Colorado print out. 	There is no need to panic!
Next event was/is a different distance.	<ol style="list-style-type: none"> 1. Advance to next event or edit Event/Heat to get to proper event. or 2. Press proper distance on console. After race is finished get to proper Event/Heat. 	So long as you have not stored the race yet, you may still perform all of these actions.
I forgot to turn empty lanes off before pressing Store/Print.	<ol style="list-style-type: none"> 1. If there are empty lanes you will get a warning message, just go ahead with the save. 2. See next situation. 	Lane On/Off does not actually make the lane ignore pad & buttons, it simply means that when you Store/Print it is OK to have no results for this lane.
I forgot to turn lanes on for next race.	<ol style="list-style-type: none"> 1. If there were swimmers in those lane(s), their times will be stored. 	
Swimmer missed, or did not touch pad firmly during turn.	<ol style="list-style-type: none"> 1. Press +Touch, then key in lane number of the missed pad touch. 2. If it is the last touch before finishing, press Finish Arm for that lane. 	
Someone or thing causes another touch to be recorded for a lane.	<ol style="list-style-type: none"> 1. Press –Touch, then key in lane number of the extra pad touch. 2. You could press Split Arm for that lane, this will remove one touch and immediately re-arm the pad. 	This can be useful for relays, but the Split Arm key will only work if the pad is currently not armed.
360° Strobe light begins to blink.	<ol style="list-style-type: none"> 1. The starter has been turned off and the strobe is still turned on. Turn the strobe off. 2. Batteries in the strobe are getting weak. 	