

# Colorado Timing System

Operator Training for Potomac Valley Swimming



# Online Training for Electronic Timing System Operators

- Training prepared by Potomac Valley Swimming Officials' Committee - Summer 2016, Updated Jan 2024
- Questions – email [officialscertification@pvswim.org](mailto:officialscertification@pvswim.org)
- Requirements for online training: Internet

# Instructions

- You may do this training in one session, but I suggest that you break it up into several sessions so that you can better absorb the information
- Read each slide carefully and thoughtfully
- Watch each video from beginning to end - You may pause videos, rerun videos, etc.
- After apprentice sessions, you may always return to the training/videos and review information

# Additional Instructions

This training includes many links for videos that are posted to YouTube. When you click on a link, your computer takes you to YouTube and you will lose your place in the training. There are several work-arounds that you can do.

1. If you are using Chrome or Firefox as your browser, you should be able to right-click on the links to open the videos in a new tab or window.
2. If you are using Internet Explorer, that trick won't work. You will need to download the training to your computer and then right-click on the links to watch videos.

# What is a Timing System Operator

**Timing Equipment Operator** — The Timing Equipment Operator shall be responsible for the automatic or semi-automatic timing equipment, including the electronic starting system and scoreboard (if used), and shall advise the Referee or Administrative Official of any system problems that might affect the accuracy of times or whenever the touchpad is observed to have failed to record the finish when the swimmer completed the race. The timing equipment should be placed so that the operator is able to observe the finish of each race.

# Why is Timing Important

- Swimmers are at the swim meet to swim for time
- It is the duty of the officials to ensure that the competition is conducted fairly and equitably
- According to USA Swimming rules: “No swimmer shall be required to reswim a race due to equipment failure which results in unrecorded or inaccurate time or place. 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 102.23.1.C”. [102.23.1.D]

# Swim Meet Officials

The ETS (Electronic Timing System) Operator is a member of the team of officials conducting the swim meet. This team includes:

Referees

Starters

Chief Judges

Stroke and Turn Judges

Administrative Official/Referee

Head Time

**Timing System Operator**

Timers

Hy-Tek Computer Operator

# Timing Information Flow at a Meet

- **Lane Timer Sheets** – completed by the lane timers and given to the Administrative Official/Administrative Referee (AO/AR)
- **Electronic Timing Results** generated from touch pads and buttons – captured by Colorado Timing System console which generates a printout of results – reviewed by the AO/AR
- AO/AR determines the **official time** using electronic timing information, lane timer sheets, and additional information as needed
- Hy-Tek Computer Operator – pulls results from the ETS into Meet Manager
- AO/AR provides direction to the Hy-Tek Computer operator who records the official time in the Hy-Tek Meet Manager program



# USA Swimming Timing Rules

*2024 USA Swimming Rules and Regulations* Section 102.23 covers the rules and procedures for Timing

Link to 2024 USA Swimming Rulebook:

[https://www.usaswimming.org/docs/default-source/governance/governance-lsc-website/rules\\_policies/rulebooks/2024-rulebook.pdf](https://www.usaswimming.org/docs/default-source/governance/governance-lsc-website/rules_policies/rulebooks/2024-rulebook.pdf)

# What are the 3 different timing systems?

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

**A. Automatic** — A timing system activated by a starting device and stopped at the finish by the swimmer touching the touchpad.

**B. Semi-Automatic** — A timing system activated by a starting device and stopped by buttons pushed by timers at the finish touch of the swimmer.

**C. Manual** — A timing system consisting of individual lane timers, each operating a manual watch that is both started and stopped by the timer as described in 102.16.3. Only hand-held, battery-powered, digital read-out type watches designed for timing purposes shall be used.

# Primary, Secondary and Tertiary Timing Systems

**102.23.3 Timing System Designation** — Timing systems shall be designated in the order in which results are used as follows:

**A Primary System** — The primary system shall determine the official time of each swimmer unless a comparison of the primary with secondary and/or tertiary system times indicates 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) or two (2) watches per lane, each operated by a separate timer.

**B 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) Back-up timing cameras recording a minimum of 100 images per second. The cameras must be fully integrated with the timing system.
- (2) Semi-Automatic with one (1), two (2), or three (3) buttons, each operated by a separate timer.
- (3) Manual with one (1), two (2) or three (3) watches per lane, each operated by a separate timer.

**C 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.

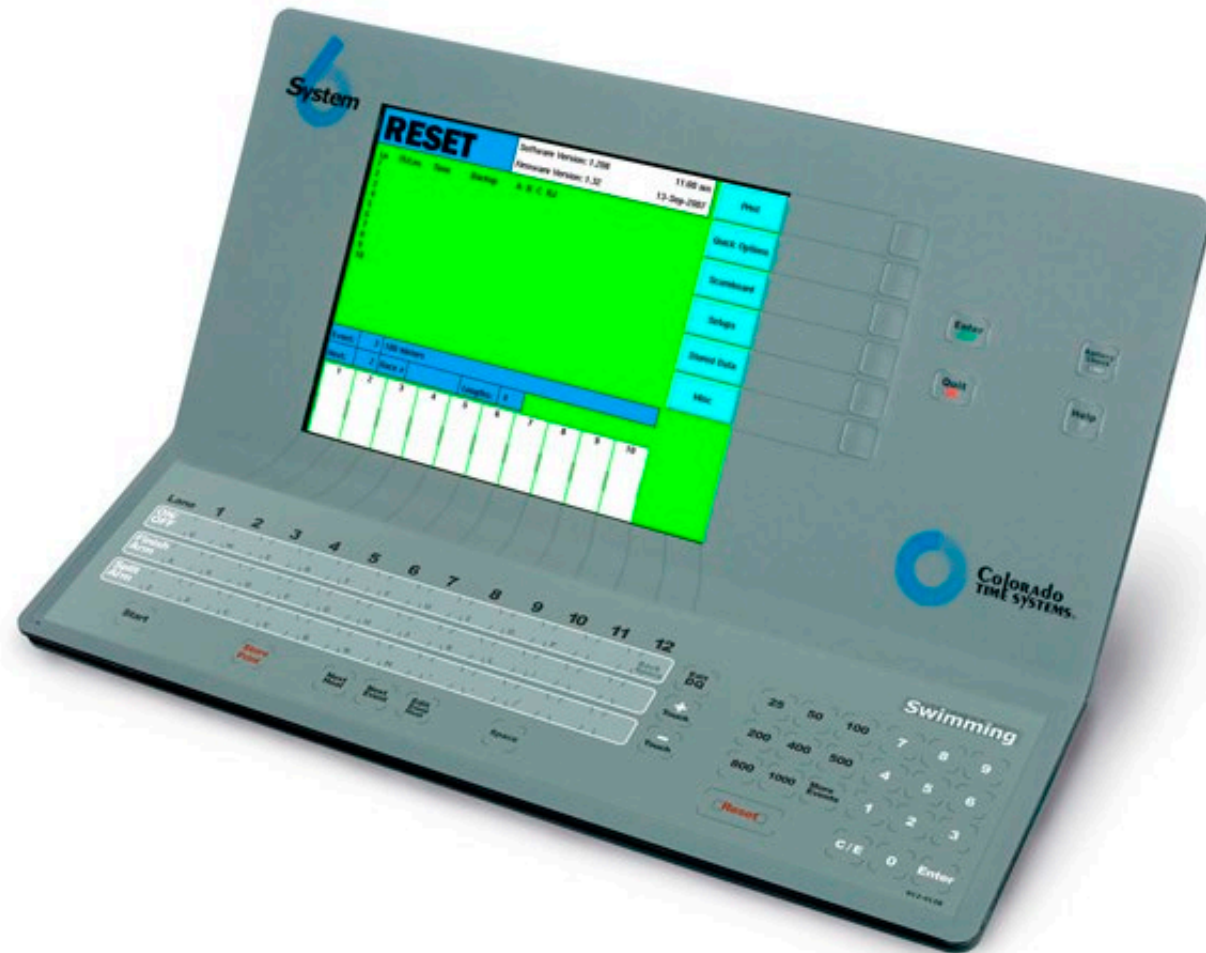
# Timing Resolution

**102.23.1B Timing Resolution** —All timing systems, including manual watches, shall have a resolution of one 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.

## **102.23.1C System Requirements for Specific Purposes**

- (1) Official times achieved using a timing system in accordance with 102.23.3 are valid for all entry time and recognition program purposes with the following exception: World, American, and U.S. Open Records can be established only when timed by an automatic timing system, a backup camera system, or semi-automatic system if the automatic system fails.
- (2) A backup time adjusted for timing system differences as described in 102.23.4 may be used as an official time.

# Colorado Timing System 6



# Timing System Components

- CTS-6 (or other Electronic Timing System)
- Cable Harness (connects all the components together)
- Starting System
- Touchpads (one per lane)
- Buttons (two or three per lane)
- Printer
- Scoreboard

# Connecting Timing System Components

This video demonstrates how to connect the various cords/components to the Colorado 6 console

<https://youtu.be/5bUQD0T75Ps> (4 min)

# Connecting to Starting System

This video reviews how to connect the various components to the Starting System

<https://youtu.be/vDhDnK7j3tY> (2 min)



# Connecting pads and buttons to the harness

<https://youtu.be/8j3R0OtdjL8> (1.5 min)

# Colorado System 6 – System Overview

Turn on the POWER SWITCH on the rear panel. After the System 6 goes through a boot-up process, you are presented with a menu of options. This menu allows you to start a SPORTS PROGRAM, SHUT DOWN the timer, INSTALL new software or firmware, and do DIAGNOSTICS.

<https://www.youtube.com/watch?v=ZHdEuNEVLMs> (15 min)

- Note: the EDIT DQ soft-key has been eliminated
- If during the course of the race something unusual occurs (e.g. you need to do a manual start), please write that on the ETS print-out

# Colorado System Set-ups

Part 1:

<https://www.youtube.com/watch?v=tMO3zGFG-Xo&list=PLdYtHEUPIcPFjEzhE3FD9UQRHvbgwCKQY&index=2> (11 min)

Part 2:

<https://www.youtube.com/watch?v=Hlf7ukqHK08&list=PLdYtHEUPIcPFjEzhE3FD9UQRHvbgwCKQY&index=6> (15 min)

Part 3:

<https://www.youtube.com/watch?v=Nc2djbWQLwA&list=PLdYtHEUPIcPFjEzhE3FD9UQRHvbgwCKQY&index=1> (9 min)

# PVS Set-ups

The attached document outlines the Set-ups that are used in PVS. Please review this documents and **print it out** for reference.

- [http://www.pvswim.org/official/training/cts-6\\_setups.pdf](http://www.pvswim.org/official/training/cts-6_setups.pdf)

# Testing the System

- Testing should be done before every session, after you have verified the set-ups. Do not wait for the starter and timers to test the system.
- Set the CTS to an unused event number (e.g. 999) and set the length to a two-length event (e.g. 50Y for short course and 100M for long course)
- Use the Starting Unit to start the test.
- After the pad delay timeout period (usually approx. 15 sec), press both buttons and then the pad in each lane in sequence.
- Check connections and re-test if necessary.
- Alert facility staff or meet manager, and the referee, if it appears that any non-functioning hardware needs to be replaced
- After you have completed testing, set the CTS to the first event/heat number to be ready to start the session.
- See next slide for video demonstration

# Video Demonstrating Testing the System

[https://youtu.be/ZedWA2\\_KDts](https://youtu.be/ZedWA2_KDts) (3 min)

The following video demonstrates how to use the Colorado Tester to check whether or not the buttons (and pads) are functioning properly.

- <https://youtu.be/i9FVjyb3bNg> (2 min)

# Running the Meet

[https://www.youtube.com/watch?v=mvW3I9\\_AiOM&list=PLdYtHEUPIcPFjEzhE3FD9UQRHvbgwCKQY&index=5](https://www.youtube.com/watch?v=mvW3I9_AiOM&list=PLdYtHEUPIcPFjEzhE3FD9UQRHvbgwCKQY&index=5) (15 min)

Note: In PVS we DO NOT select back-up times in Colorado. The adjustment function is performed by the Administrative Official/Referee with the Hy-Tek Operator. The race will end if there is either a pad or button time or both.

# During the Race

- Once the race starts, write the “race number” from the console on your meet sheet
- Turn off any lanes that do not have swimmers and mark them on your meet sheet
- Note on your meet program any anomalies that you observe, such as missed pads or missed buttons, or a late start. Record that information on the ETS printout.



# CTS-6 Printout

## During the Race

(shows all the touches)

```
====> RACE HISTORY <=====> Race 0021
                                     Saturday 02-15-08 2:36.57 pm
:-----< Lane Number
: :-----< Lengths
: : :-----< Time
4) 02 29.92      5) 02 30.80      6) 02 33.00      7) 02 33.30      2) 02 34.08
8) 02 34.85      1) 02 35.05      1) EARLY .51     3) 02 35.27      4) 04 1:04.94
5) 04 1:07.65    7) 04 1:09.68    6) 04 1:10.07    2) 04 1:12.48    1) 04 1:13.73
3) 04 1:13.94    8) 04 1:14.91

Button          Lane 1    Lane 2    Lane 3    Lane 4    Lane 5    Lane 6    Lane 7    Lane 8
34.54       1:12.50  1:13.29  1:04.86  1:07.73  1:10.16  1:09.92  1:14.84
Button          1:13.78  1:12.43  1:13.25  1:04.90  1:07.78  1:10.04  1:09.93
BACKUP         .54.16  1:12.47  1:13.27  1:04.88  1:07.75  1:10.10  1:09.92

=====> Colorado Time Systems
```

**Race Number** (points to Race 0021)

**Start Time Of Heat** (points to Saturday 02-15-08 2:36.57 pm)

# CTS-6 Printout

## After Store/Print

(Race Summary)

Event/Heat  
Description

====> RACE SUMMARY <==== Race [0003] <=====  
Monday 17-Sep-07 10:23:52 am

200 Boys Medley Relay  
Event: 1 Heat: 3

----- BY LANE -----  
Lane Place Time Backup  
1 1 1:35.94  
2 2 1:36.68  
3 4 1:38.14  
4 3 1:37.63  
5 5 1:38.62  
6 6 1:39.10  
7 7 1:39.53  
8 8 1:39.95

Pad Times in Lane Order

----- BY PLACE -----  
Place Lane Time Backup  
1 1 1:35.94  
2 2 1:36.68  
3 4 1:37.63  
4 3 1:38.14  
5 5 1:38.62  
6 6 1:39.10  
7 7 1:39.53  
8 8 1:39.95

Pad Times in Place Order

# Registration Requirements to Become PVS Official

Registration Requirements:

<http://www.pvswim.org/official/certification.html>

- Register as non-athlete with USA Swimming
- Create an account on the USA Swimming website and link your ID to it (It may take several days for you to get your ID from the PVS registrar)
- Initiate your background check.
- Complete Athlete Protection Training
- Complete Concussion Training

All information necessary to complete the above requirements can be found on the link above.

# Recommendations to Become a PVS ETS Operator

- Register with USA Swimming and complete all requirements (see previous slide) before beginning on-deck mentoring sessions
- Age 18
- Complete Online Clinic
- Complete apprentice sessions: minimum of 5 and have your ETS Operator Apprentice Record and Evaluation form signed by the referee after each session. No test is required  
<http://www.pvswim.org/official/ETSEvaluationForm.pdf>
- Recommended time to complete training: one year after completing clinic
- Complete your final evaluation session
  - Evaluators: <http://www.pvswim.org/official/ev.html>
  - Evaluation form: <http://www.pvswim.org/official/ETSEvaluationForm.pdf> (as above)
- Record the completion of your training by completing the following form:  
<https://forms.gle/JJmtvWsnsiecdWhn7>

# What To Do Now?

- Review upcoming meets for possible apprentice sessions: <http://www.pvswim.org/schedule.html> - email the officials' coordinator for the meet at least a week or two before the meet and ask if you can do a mentoring session
- Print out an [Apprentice Record and Evaluation Form](#) (which will also be your evaluation form).
- Review training information
- Start training! Uniform for officials – white polo shirt, blue shorts/pants, white shoes.
- Ask your mentor to make sure you review the physical set-up of the equipment and all the set-ups for the meet. Use your reference material (next slide) – ask lots of questions!!! Use the Apprentice Record and Evaluation Form as a guide for necessary skills.

# Additional Resources

Recommend printing each of these resources, reviewing prior to first mentoring session, and bringing to meets to be used as a reference:

- PVS CTS Training Manual:  
[http://www.pvswim.org/official/training/CTS\\_Training\\_Manual.pdf](http://www.pvswim.org/official/training/CTS_Training_Manual.pdf)
- PVS Set-ups: [http://www.pvswim.org/official/training/cts-6\\_setups.pdf](http://www.pvswim.org/official/training/cts-6_setups.pdf)
- Configuring a printer for Colorado System 6:  
[http://www.pvswim.org/official/training/CTS-6\\_Printer.pdf](http://www.pvswim.org/official/training/CTS-6_Printer.pdf)

# Additional Resources

Do not recommend printing but these are excellent resources:

CTS Training Slides (used for in-person clinics):

<http://www.pvswim.org/official/training/cts2014.pdf>

Colorado 6 Swimming User Guide:

<http://www.pvswim.org/official/training/System6swim-man.pdf>

Colorado 6 Helpful Hints:

[http://www.pvswim.org/official/training/2011\\_CTS-6\\_Helpful\\_Hints.pdf](http://www.pvswim.org/official/training/2011_CTS-6_Helpful_Hints.pdf)

Colorado 6 Sports Loader Manual:

[http://www.pvswim.org/official/training/System6\\_Sportloader.pdf](http://www.pvswim.org/official/training/System6_Sportloader.pdf)

# Questions????

Email [officialscertification@pvswim.org](mailto:officialscertification@pvswim.org)