

# Determining the Official Time: A Guide for the Referee and Timing Judge



**Rule 102.16.3.E - Timing Judge - Under the direction of the Referee, the Timing Judge shall determine the official time for each swimmer...**



It is the recommendation of Potomac Valley Swimming that, if staffing permits, the position of Timing Judge should be a separate assigned position, and not combined with other duties. This is especially critical when the meet includes dive-over starts, positive check-ins, relay events, inexperienced athletes, shorter race distances, and other elements that require additional attention by the timing console operator, the HyTek operator, and other timing personnel.

## Standards for Your Meet

For you to perform your Timing Judge duties fairly and consistently, you should obtain the following information **before** the beginning of your session:

- Whether Automatic timing system is being used; if so, is it CTS or Daktronics;
- Method by which timing adjustments are to be made, when necessary;
- Range of timing adjustments that you can make without consulting the Referee;
- Number of buttons and stopwatches per lane;
- Whether the timing system has been reliable in previous sessions of the meet;
- Any special instructions that are peculiar to the conditions of your meet.

## Types of Timing Systems

There are three types of timing systems that can be used at a meet:

- **Automatic:** Begins automatically with an electronic signal from the starting unit and ends automatically with an electronic signal from the finish pad.
- **Semi-Automatic:** Begins automatically with an electronic signal from the starting unit and ends manually when the timer pushes his/her button at the finish of the race.
- **Manual:** Begins manually and ends manually, as with stop watches.

Timing systems are also designated in the order in which their results are used as shown in the following table:

Timing System Designation	Type of Timing System		
	Pads, Buttons, Watches	Buttons, Watches	Watches Only
<b>Primary</b>	Automatic = pad times	Semi-Automatic = button times	Manual = watch times
<b>Secondary</b>	Semi-Automatic = button times	Manual = watch times	None
<b>Tertiary</b>	Manual = watch times	None	None

Although most meets sanctioned by Potomac Valley Swimming will have automatic timing as the primary timing system, this is not always the case.

The primary timing system is always used to determine the official time for a swimmer, unless you have judged that there was a failure of the primary timing system. Secondary and tertiary times are recorded. At least the secondary time should be used to corroborate the primary time. If the primary time can not be corroborated, the secondary and/or tertiary times should be used to determine the official time for the swim.

The Timing Judge should be aware at all times whether the timing equipment and the timers are functioning properly. If pads, buttons, or watches are repeatedly missing, or if their times widely disagree on a regular basis, this needs to be reported to the Referee and investigated.

**Timing System Resolution** - All timing systems should have a resolution of one one-hundredth (0.01) of a second. If the timing system records to thousandths (0.001) seconds, the digit representing thousandths is dropped with no rounding. For example, 30.499 becomes 30.49, not 30.50.

The official time may be used for the following purposes, only if timed by a timing system of at least the level required for that use:

<b>Primary Timing System</b>	<b>Use of Official Time</b>
<b>LEVEL 1</b> Automatic Timing for all purposes	- World, American and U.S. Open Records - Initial distance splits and relay lead-off times
<b>LEVEL 2</b> Semi-Automatic with 3 buttons	- NTVs for 50m distances in a 50m pool - National age group records - Top 16 reportable times
<b>LEVEL 3</b> Semi-Automatic w/ 2 buttons or Manual w/ 3 watches	- NTVs except for 50m distances in a 50m pool - LSC and other local records - Initial distance splits and relay lead-off times for age group time standards
<b>LEVEL 4</b> Manual with 2 watches	- Zone, Regional, or LSC sponsored meet standards (unless Level 3 is specified) - Age group time standards

A backup time adjusted for timing system differences (as per procedures described on pages 9-10) may be used as an official time equal to the level of the timing system for which it has been adjusted.

## **Semi-Automatic and Manual Timing**

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

- If two of the three button or watch times agree, that is the time for that timing system.
- If all three buttons or watches disagree, the time of the intermediate button or watch is the time for that timing system, assuming times are in close agreement. If times are not in close agreement, further investigation is required.
- If only two button or watch times are available, the time is the average of those two times, assuming times are in close agreement. If times are not in close agreement, further investigation is required. The digits representing thousands of a second are dropped with no rounding.
- If only one button or watch time is available, the time of that button or watch is the time for that timing system.

## Automatic Timing System

Automatic timing systems such as the Colorado Timing System (CTS) or Daktronics Timing System receive an automatic start signal from the starting unit on the pool deck and stop signals for each lane from the touchpad in the pool and from the buttons held by the lane timers.

**Use the Primary Time as the Official Time unless you have reason to believe that the Primary Time for a specific lane and race is invalid. Pad times for every lane in every heat must be compared with button and/or watch times in order to verify their validity.**

In a given race, the Primary timing system may fail on a single lane (e.g., swimmer misses touchpad) or across all of the lanes (e.g., timing console does not receive automatic start signal, so timing system operator performs a “Manual Start”).

You receive the Primary and Secondary Times immediately after each race on a printout from the timing console. You **must** get a printout for each race unless the timing console operator informs you that the race was never stored in the console. Review each printout using the procedures described on page 6, and make any necessary notations.

The “clean” CTS printout, shown on the next page, has the following elements:

- A unique race number that is automatically assigned to each race. If you are missing a printout for a particular race, ask the CTS operator for a fresh printout of “Race #\_\_\_” at his/her earliest convenience. The HyTek Operator uses this race number to retrieve the times for the corresponding event/heat from the timing console.
- A “Race History” that records all pad touches in the order that they were made.
- The button time(s) recorded on each lane and the calculated button time (middle button or average button, depending on the number of buttons used).
- A “Sponsor’s Message” – usually blank, but could be the name of the meet or some other message.
- The event description, event number, and heat number. Occasionally, the CTS operator will write these in by hand (e.g., if he/she did not advance the CTS console to the next heat or event). If this information is missing, you should write them in yourself, after confirming the proper event/heat number with the timing console operator.
- A “Race Summary by Lane.” Use this summary area to indicate any changes to the times that the HyTek operator must enter into the meet management software.

# A "clean" Colorado Timing System console printout

Race History

Button Times (BACKUP is calculated from the individual buttons)

Race Number

====>RACE HISTORY<====>RACE 019

Saturday 07-12-03 2:37.57 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  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
    
```

	Lane 1	Lane 2	Lane 3	Lane 4	Lane 5	Lane 6	Lane 7	Lane 8
Button	1:13.70	1:12.50	1:13.98	1:04.86	1:07.63	1:10.16	1:09.92	1:14.84
Button	1:13.78	1:12.43	1:13.96	1:04.90	1:07.78	1:10.04	1:09.93	1:14.74
BACKUP	1:13.74	1:12.47	1:13.97	1:04.88	1:07.71	1:10.10	1:09.92	1:14.79

====>Colorado Time Systems

====>RACE SUMMARY<====>RACE 019

Saturday 07-12-03 2:37.57 pm

Event Description

XYZ Winter Invitational  
100 YARDS 11-12 MEN'S INDIVIDUAL MEDLEY  
EVENT: 27 HEAT:2

Sponsor's Message

-----By Lane-----

Lane	Place	Time
1	6	1:13.73
2	5	1:12.48
3	7	1:13.94
4	1	1:04.94
5	2	1:07.65
6	4	1:10.07
7	3	1:09.88
8	8	1:14.91

-----By Place-----

Place	Lane	Time
1	4	1:04.94
2	5	1:07.65
3	7	1:09.88
4	6	1:10.07
5	2	1:12.48
6	1	1:13.73
7	3	1:13.94
8	8	1:14.91

Race Summary by Lane

Race Summary by Place

## Reviewing the Timing Console Printout

- Fill in the Event Description/Event Number/Heat Number, if necessary.
- Verify that the occupied/empty lanes match between the timing console printout and the matching heat's index cards or lane timer sheets. You may have to consult with the timing console operator and/or the Starter and/or the Referee. Notify the HyTek operator if there are any handwritten entries or name changes on the lane timer sheets.
  - If the touchpad and button times are missing for an occupied lane, confirm with the timing console operator that this was due to a malfunction (e.g. the swimmer missed the pad, or the pad failed).
  - If a touchpad and/or button times appear for an empty lane, confirm with the timing console operator that this was due to a malfunction (for instance, a swimmer or lane timer on deck activates the touchpad or button). Cross out such a time on the timing console printout and mark it as an empty lane.
- In the "Button Times" section, verify that the required number of button times appear for each occupied lane, and determine the validity of the times: Are all buttons functioning properly? Are the times in close agreement? Was a button pushed early or late?
- In the "Race Summary by Lane" section verify that a touchpad time appears for each occupied lane, and determine the validity of these Primary Times: Are the pad times within 0.30 second of button times? Is the timing system functioning properly? Has a late or missed touch been reported? Note that the CTS console has automatically compared the touchpad-button difference, and has indicated a discrepancy of more than 0.30 second by printing the backup time to the right of the touchpad time.
- For each occupied lane in the "Race Summary by Lane" section check that exactly one valid time appears. For emphasis, circle the valid time if anything other than the touchpad time is to be used as the Official Time.
- If you have received a DQ slip from the Referee, verify with the meet program and/or HyTek operator that the swimmer's name, team, event, heat, and lane are accurate, and check that at least one infraction has been marked and that the slip has the signatures of the deck official and the Referee. Resolve any issues with the Referee before recording the DQ. Put a line through the Official Time on the timing console printout and mark DQ to the right of the time. Staple the DQ slip to the timing console printout.
- Initial the timing console printout, then pass it along with the lane timer sheets to the HyTek operator.

A typical CTS timing console printout is illustrated on the next page. For an example of a Daktronics printout, see Daktronics training material at the PVS website.

# Timing Console Printout with Timing Judge's Notations:

====> 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

	Lane 1	Lane 2	Lane 3	Lane 4	Lane 5	Lane 6	Lane 7	Lane 8
Button	<del>34.54</del>	1:12.50		1:04.86	1:07.73	1:10.16	1:09.92	1:14.84
Button	1:13.78	1:12.43		1:04.90	1:07.78	1:10.04	1:09.93	
BACKUP	<del>54.16</del>	1:12.47		1:04.88	1:07.75	1:10.10	1:09.92	

=====> Colorado Time Systems

====> RACE SUMMARY <=====> Race 0021  
 Saturday 02-15-08 2:36.57

Colorado Time Systems  
 100 YARDS  
 EVENT: 27 HEAT: 2

----- By Lane -----				----- By Place -----			
Lane	Place	Time	ok	Place	Lane	Time	
1	6	1:13.73	<54.16>	1	4	1:04.94	
2	5	1:12.48		2	5	1:07.65	
3	7	<del>1:13.94</del>	1:13.27	3	7	1:09.88	
4	1	1:04.94		4	6	1:10.07	
5	2	1:07.65		5	2	1:12.48	
6	4	1:10.07		6	1	1:13.73	<54.16>
7	3	1:09.88		7	3	1:13.94	
8	8	1:14.91		8	8	1:14.91	

## Timing Adjustments

When Automatic (pad) Timing is the primary timing system, the pad times should always be compared with the button or watch times to verify that the pad times are valid. If the automatic timing system is functioning properly and the backup times vary from the pad time by .30 seconds or less, the pad time must be used as the Official Time. When such a verification cannot be obtained (i.e., there is a difference of **more than .30 seconds**), the Timing Judge should review other available information in order to make an informed recommendation to the Referee. This information can include consistent backup times supporting a different time, reports that the swimmer missed the pad, touched the pad too lightly, the reliability of the pad in other heats, and/or a recorded order of finish. USA Swimming Rule 102.16.5D requires that timing adjustments be made to button or watch times before they are integrated with pad times to determine official times and final results. Officials should keep in mind that, when a pad malfunctions, the backup systems and the timing adjustment merely provide a method for making the best estimate possible of what the pad time would have been if the pad had operated properly. The Timing Judge and Referee must strive to make the most accurate estimate that is practical under the circumstances of the particular meet.

Under USA Swimming rules, it is the responsibility of the Referee to decide when a timing system malfunction has occurred and to determine the official time for the swimmer. In most cases, the Referee delegates these responsibilities to the Timing Judge, within certain parameters. If the Timing Judge is unsure of what to do, he/she should gather all the relevant information and let the Referee make the decision.

### Automatic Correction Made by the CTS

Most PVS-sanctioned meets are run using the Colorado Time Systems (CTS) System 5 or 6 timing consoles. These consoles adjust all button times internally by subtracting 0.15 seconds from the button time before it is printed on the CTS printout sheet or transmitted to the Recorder's computer. Colorado Timing Systems incorporated this correction into its consoles based on research that timers push their buttons an average of 0.15 seconds after the touchpad is activated. **Please note that the Daktronics Timing System records the button times without this adjustment. It is critical that proper adjustments be made to secondary timing systems when using Daktronics.**



## Making Adjustments

By rule, when recorded by properly operating automatic timing equipment, the pad time shall be the official time. As per USA Swimming Rule 102.16.5C, a malfunction of the primary timing system **may** have occurred if:

- The difference between the time obtained by the primary system and the back-up system is more than .30 second.
- A late or missed touch is reported by an official observing the finish.

### Adjustment for Malfunction on a Lane

This adjustment, described in Rule 102.16.5E and its accompanying Table 1, is used when a touchpad malfunction occurs on a particular lane. The adjustment is calculated for that lane using the average difference between valid pad and backup times of the other lanes in that heat, or if necessary, using times from heats immediately preceding and/or following the 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. This adjustment is often referred to as a “horizontal adjustment” because it is based on differences across the lanes in the same heat. **It is recommended that this adjustment be calculated within the Hytek program, using the procedure described on page 11.**

Lane	Primary Pad Time	Button A	Button B	Average of Two Buttons	Pad Minus Backup Time	Official Time
1	52.21	52.07	52.17	52.12	.09	52.21
2	52.18	52.11	51.91	52.01	.17	52.18
3	51.05	51.01	50.99	51.00	.05	51.05
4	51.04	50.79	50.97	50.88	.16	51.04
5	51.96	51.22	51.30	51.26	.70	51.37
6	51.65	51.60	51.54	51.57	.08	51.65
7	52.27	52.19	52.07	52.13	.14	52.27
8	51.87	51.68	51.82	51.75	.12	51.87
					.81 total	

A late touch (and more than .30 second difference) is confirmed on lane 5. Since there are two buttons being used as the Secondary timing system, the backup time is the average of the two buttons. Subtracting the difference between the pad time and the backup time (excluding lane 5, the malfunctioning lane) gives a result of .81. Dividing this number by 7 (the number of functioning lanes) gives a result of .11571; the digits after hundreds are dropped, leaving a timing system difference of .11 seconds. This is added to the valid backup time for lane 5, making the official time 51.37 for that lane. The Timing Judge should mark this adjusted time on the timing system printout, and the HyTek operator should record this as the official time for lane 5.



### Malfunction Affecting Entire Heat (i.e., late manual start of CTS)

In this situation, the late start of the CTS makes the pad times inaccurate, but all pad times should be off by the same amount (the period between the actual start of the race and when the CTS began). Watch times are used to adjust the pad times as shown in the following table. Rule 102.16.5F specifies that an adjustment must be made using the pad-watch differential on all the lanes in the heat. This horizontal adjustment generally corrects for the late start of the CTS on the heat, however, this adjustment alone fails to account for the typical difference between pad and watch times that occurs in all heats due to the manual start and stop of the watches. In order to adjust the pad times most accurately, it is therefore preferable to make a second adjustment for the session-specific consistent average pad-watch differential. This second adjustment may require significant calculation and therefore may only be practical at certain high level meets with ample timing personnel.

Lane	Pad Time	Watch Time	Pad Time Minus Watch Time	Heat Adjustment	Official Time
1	52.12	55.14	3.02	+3.06	55.18
2	51.56	54.61	3.05	+3.06	54.62
3	51.09	54.18	3.09	+3.06	54.15
4	50.12	53.18	3.06	+3.06	53.18
5	49.78	52.90	3.12	+3.06	52.84
6	49.06	52.06	3.00	+3.06	52.12
7	52.21	55.30	3.09	+3.06	55.27
8	52.92	55.99	3.07	+3.06	55.98
			Sum = 24.50 (24.50 ÷ 8 = 3.0625 Truncate to 3.06		

HyTek Meet manager provides an automated method to enter watch times in this scenario and then calculate the adjusted times – see page 14, example 4.

### Complete Failure of Electronic Timing System

In this situation, watch times must be used to calculate the official time. Before integrating them with pad times from other heats, however, they should be adjusted using a session-specific average pad-watch differential.



# Hy-Tek's Heat Adjustment Capability

In the default Run screen from HyTek Meet Manager, backup times are not displayed. The touchpad time – shown here as “Finals Time” – is highlighted in yellow or blue if it is more than a 0.30 second difference from the hidden backup time calculated by HyTek (the average of two or the middle of three button times).

Evt #	Rnd	Status	Event Name	2
1	F	Seeded	Girls 15 & Over 100 Yard Butterfly	
2	F	Seeded	Boys 15 & Over 100 Yard Butterfly	
3	F	Seeded	Girls 15 & Over 100 Yard Backstroke	
4	F	Seeded	Boys 100 Yard Backstroke	2
6	F	Seeded	Boys 15 & Over 500 Yard Freestyle	2
7	F	Seeded	Girls 15 & Over 400 Yard Freestyle Relay	1

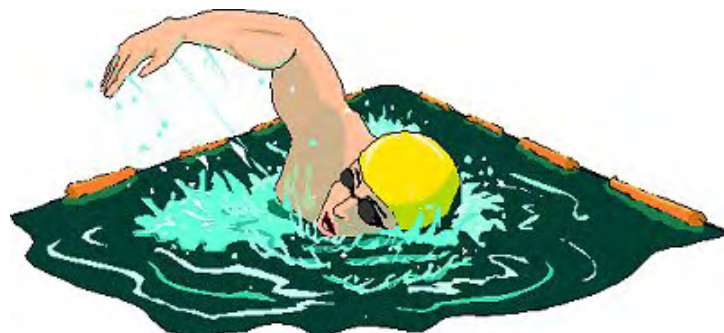
  

Rank	Gender	Score	Team

Lane	Athlete Name	Age	Team	Seed Time	Finals Time	DQ	Exh	DQcode	HPL	PL	Pts
1	Downe, Neil	19	PV SWIMMING-PV	1:19.11	1:21.48	<input type="checkbox"/>	<input type="checkbox"/>		7	7	
2	Pendant, Cody	18	PV SWIMMING-PV	1:16.11	1:15.92	<input type="checkbox"/>	<input type="checkbox"/>		4	4	
3	Walker, Jay	18	PV SWIMMING-PV	1:14.05	1:15.30	<input type="checkbox"/>	<input type="checkbox"/>		3	3	
4	Warm, Luke	17	PV SWIMMING-PV	1:08.66	1:07.55	<input type="checkbox"/>	<input type="checkbox"/>		1	1	
5	DeMann, Hugh	19	PV SWIMMING-PV	1:11.24	1:09.64	<input type="checkbox"/>	<input type="checkbox"/>		2	2	
6	O'Shea, Rick	17	PV SWIMMING-PV	1:15.04	1:17.26	<input type="checkbox"/>	<input type="checkbox"/>		6	6	
7	Peace, Warren	17	PV SWIMMING-PV	1:18.30	1:16.06	<input type="checkbox"/>	<input type="checkbox"/>		5	5	
8	Kleiner, Rick	19	PV SWIMMING-PV	1:19.12	1:22.40	<input type="checkbox"/>	<input type="checkbox"/>		8	8	

To see the backup and individual button times, the HyTek operator goes to **Preferences > Run Screen > Show Backup Times Columns**, leading to the alternate version of the Run screen (shown on the next page). In this alternate version of the Run screen, the touchpad time (“Finals Time”) and the individual button times (“Backup 1”, “Backup 2”, “Backup 3”) are visible for each lane. **It is recommended that the HyTek operator use this alternate version of the Run screen at all times.**



Run the Meet									
Hy - Tek's MEET MANAGER Licensed to: HODGSON INCORPORATED									
EVENT LIST - All Events - Yards - (Session not selected)					Records				
Evt #	Rnd	Status	Event Name	Heats	Record	Time	Date	Record Holder	
1	F	Seeded	Girls 15 & Over 100 Yard Butterfly	2				None Available	
2	F	Seeded	Boys 15 & Over 100 Yard Butterfly	2					
3	F	Seeded	Girls 15 & Over 100 Yard Backstroke	2					
4	F	Seeded	Boys 100 Yard Backstroke	2					
6	F	Seeded	Boys 15 & Over 500 Yard Freestyle	2					
7	F	Seeded	Girls 15 & Over 400 Yard Freestyle Relay	1					

Team Scores			
Rank	Gender	Score	Team

Heat 2 of 2 == Finals == Event 4 Boys 100 Yard Backstroke														
Lane	Athlete Name	Age	Team	Seed Time	Finals Time	DQ	Exh	DQcode	Backup 1	Backup 2	Backup 3	HPL	PL	Pts
1	Downe, Neil	19	PV SWIMMING-PV	1:19.11	1:21.48	<input type="checkbox"/>	<input type="checkbox"/>		1:21.66	1:21.59		7	7	
2	Pendant, Cody	18	PV SWIMMING-PV	1:16.11	1:15.92	<input type="checkbox"/>	<input type="checkbox"/>		1:15.98	1:16.08		4	4	
3	Walker, Jay	18	PV SWIMMING-PV	1:14.05	1:15.30	<input type="checkbox"/>	<input type="checkbox"/>		1:14.86	1:15.38		3	3	
4	Warm, Luke	17	PV SWIMMING-PV	1:08.66	1:07.55	<input type="checkbox"/>	<input type="checkbox"/>		1:07.63	1:07.70		1	1	
5	DeMann, Hugh	19	PV SWIMMING-PV	1:11.24	1:09.64	<input type="checkbox"/>	<input type="checkbox"/>		1:09.76	1:09.69		2	2	
6	O'Shea, Rick	17	PV SWIMMING-PV	1:15.04	1:17.28	<input type="checkbox"/>	<input type="checkbox"/>		1:17.32	1:17.35		6	6	
7	Peace, Warren	17	PV SWIMMING-PV	1:18.30	1:16.06	<input type="checkbox"/>	<input type="checkbox"/>		1:16.20	1:16.14		5	5	
8	Kleiner, Rick	19	PV SWIMMING-PV	1:19.12	1:22.40	<input type="checkbox"/>	<input type="checkbox"/>		1:22.56	1:22.47		8	8	

If the HyTek operator clicks anywhere in the blank column to the right of **Pts**, or clicks the **Calc** button, or hits **Ctrl+K** on the keyboard, the Time Adjustment screen appears (see below), floating over the Run screen, showing the primary-secondary difference in addition to the pad and button times for each lane. The Average Differential is at the bottom of this screen. Invalid lanes (with difference greater than 0.30 second) are not included in the Average Differential; neither are lanes that the HyTek operator has unchecked in the "Use" column. The "Adjusted" time in the last column is either the touchpad time or the Average-Differential-shifted secondary time (for a yellow or blue highlighted lane).

Time Adjustment - #4 Boys 100 Yard Backstroke - Heat 2									
Use	Lane	Primary	Button 1	Button 2	Button 3	Button Calc	Difference	Adjusted	
<input checked="" type="checkbox"/>	1	1:21.48	1:21.66	1:21.59		1:21.62	-0.14	1:21.48	
<input checked="" type="checkbox"/>	2	1:15.92	1:15.98	1:16.08		1:16.03	-0.11	1:15.92	
<input checked="" type="checkbox"/>	3	1:15.30	1:14.86	1:14.78		1:14.82	0.48	1:14.71	y
<input type="checkbox"/>	4	1:07.55	1:08.13	1:08.10			0	1:07.55	b
<input checked="" type="checkbox"/>	5	1:09.64	1:09.76	1:09.69		1:09.72	-0.08	1:09.64	
<input checked="" type="checkbox"/>	6	1:17.26	1:17.32	1:18.35			0	1:17.26	g
<input checked="" type="checkbox"/>	7	1:16.06	1:16.20	1:16.14		1:16.17	-0.11	1:16.06	
<input checked="" type="checkbox"/>	8	1:22.40	1:22.56	1:22.47		1:22.51	-0.11	1:22.40	

If there is more than .30 seconds between the middle backup time and the primary time, calculate the average difference between the pad and intermediate times of the other lanes. Add this difference to the valid backup time of the problem lane(s).  
 Yellow = Backup time is more than .30 faster than the pad time.  
 Blue = Backup time is more than .30 slower than the pad time.  
 Green = Only two backups and one backup is within .30 and one is not.

Pad and Backup Differentials: Total = -0.55 and Average = -0.11.

Accept Adjusted    Reject Adjusted

Backup times that are 0.30 or more slower than a pad time are highlighted in blue and the letter **b** is displayed.

Backup times that are 0.30 or more faster than a pad time are highlighted in yellow and the letter **y** is displayed.

If there are two backup times and one is within 0.30 second of the pad time and one is more than 0.30 seconds from the pad time, then the lane is highlighted in green and the letter **g** is displayed. These lanes default to being unchecked for use since these times usually will not be adjusted due to the inaccuracy of the button time.

### Example 1:

Time Adjustment - #4 Boys 100 Yard Backstroke - Heat 2

Create Report

Show Heat Malfunction

Lane Adjustment Using Backup Times								
Use	Lane	Primary	Button 1	Button 2	Button 3	Button Calc	Difference	Adjusted
<input checked="" type="checkbox"/>	1	1:21.48	1:21.66	1:21.59		1:21.62	-0.14	1:21.48
<input checked="" type="checkbox"/>	2	1:15.92	1:15.98	1:16.08		1:16.03	-0.11	1:15.92
<input checked="" type="checkbox"/>	3	1:15.30	1:14.86	1:14.78		1:14.82	0.48	y 1:14.72
<input checked="" type="checkbox"/>	4	1:07.55	1:07.63	1:07.70		1:07.66	-0.11	1:07.55
<input checked="" type="checkbox"/>	5	1:09.64	1:09.76	1:09.69		1:09.72	-0.08	1:09.64
<input checked="" type="checkbox"/>	6	1:17.26	1:17.32	1:17.35		1:17.33	-0.07	1:17.26
<input checked="" type="checkbox"/>	7	1:16.06	1:16.20	1:16.14		1:16.17	-0.11	1:16.06
<input checked="" type="checkbox"/>	8	1:22.40	1:22.56	1:22.47		1:22.51	-0.11	1:22.40

If there is more than .30 seconds between the middle backup time and the primary time, calculate the average difference between the pad and intermediate times of the other lanes. Add this difference to the valid backup time of the problem lane(s).  
 Yellow = Backup time is more than .30 faster than the pad time.  
 Blue = Backup time is more than .30 slower than the pad time.  
 Green = Only two backups and one backup is within .30 and one is not.

Pad and Backup Differentials: Total = -0.73 and Average = -0.1.

Accept Adjusted    Reject Adjusted

In this example, lane 3's difference exceeds .30 second. A late touch was reported and both buttons and watches are in relative agreement. The HyTek operator should click "Accept Adjusted" to replace lane 3's Primary Adjusted" to replace lane 3's Primary time with the adjusted time. Other lane times are unchanged.

### Example 2:

Time Adjustment - #1 Girls 15 & Over 100 Yard Butterfly - Heat 2

Create Report

Show Heat Malfunction

Lane Adjustment Using Backup Times								
Use	Lane	Primary	Button 1	Button 2	Button 3	Button Calc	Difference	Adjusted
<input checked="" type="checkbox"/>	1	1:19.40	1:19.45	1:19.40		1:19.42	-0.02	1:19.40
<input checked="" type="checkbox"/>	2	1:08.22	1:08.23	1:08.27		1:08.25	-0.03	1:08.22
<input checked="" type="checkbox"/>	3	1:10.04	1:10.08	1:11.15		1:10.61	-0.57	g 1:10.57
<input checked="" type="checkbox"/>	4	1:09.71	1:09.74	1:09.76		1:09.75	-0.04	1:09.71
<input checked="" type="checkbox"/>	5	1:07.85	1:07.97	1:07.92		1:07.94	-0.09	1:07.85
<input checked="" type="checkbox"/>	6	1:15.56	1:15.67	1:15.60		1:15.63	-0.07	1:15.56
<input checked="" type="checkbox"/>	7	1:16.33	1:15.26	1:15.34		1:15.30	1.03	y 1:15.26
<input checked="" type="checkbox"/>	8	1:27.19	1:27.23	1:27.21		1:27.22	-0.03	1:27.19

If there is more than .30 seconds between the middle backup time and the primary time, calculate the average difference between the pad and intermediate times of the other lanes. Add this difference to the valid backup time of the problem lane(s).  
 Yellow = Backup time is more than .30 faster than the pad time.  
 Blue = Backup time is more than .30 slower than the pad time.  
 Green = Only two backups and one backup is within .30 and one is not.

Pad and Backup Differentials: Total = -0.28 and Average = -0.04.

Accept Adjusted    Reject Adjusted

In this example, lanes 3 and 7 both exceed a .30 second difference. A late touch is reported in lane 7. After reviewing watch times, button 2 in lane 3 is clearly out of line with all the other times; a late button is suspected.

The HyTek operator has removed the check mark from the "Use" column of lane 3, since its calculation time is judged invalid. Lane 3's invalid backup time will not be used to calculate the adjusted time. The HyTek operator should click "Accept Adjusted" to replace lane 7's primary time with the adjusted time. The primary (pad) time is valid for lane 3.

Time Adjustment - #1 Girls 15 & Over 100 Yard Butterfly - Heat 2

Create Report

Show Heat Malfunction

Lane Adjustment Using Backup Times								
Use	Lane	Primary	Button 1	Button 2	Button 3	Button Calc	Difference	Adjusted
<input checked="" type="checkbox"/>	1	1:19.40	1:19.45	1:19.40		1:19.42	-0.02	1:19.40
<input checked="" type="checkbox"/>	2	1:08.22	1:08.23	1:08.27		1:08.25	-0.03	1:08.22
<input type="checkbox"/>	3	1:10.04	1:10.08	1:11.15			0	1:10.04
<input checked="" type="checkbox"/>	4	1:09.71	1:09.74	1:09.76		1:09.75	-0.04	1:09.71
<input checked="" type="checkbox"/>	5	1:07.85	1:07.97	1:07.92		1:07.94	-0.09	1:07.85
<input checked="" type="checkbox"/>	6	1:15.56	1:15.67	1:15.60		1:15.63	-0.07	1:15.56
<input checked="" type="checkbox"/>	7	1:16.33	1:15.26	1:15.34		1:15.30	1.03	y 1:15.26
<input checked="" type="checkbox"/>	8	1:27.19	1:27.23	1:27.21		1:27.22	-0.03	1:27.19

If there is more than .30 seconds between the middle backup time and the primary time, calculate the average difference between the pad and intermediate times of the other lanes. Add this difference to the valid backup time of the problem lane(s).  
 Yellow = Backup time is more than .30 faster than the pad time.  
 Blue = Backup time is more than .30 slower than the pad time.  
 Green = Only two backups and one backup is within .30 and one is not.

Pad and Backup Differentials: Total = -0.28 and Average = -0.04.

Accept Adjusted    Reject Adjusted

### Example 3:

Use	Lane	Primary	Button 1	Button 2	Button 3	Button Calc	Difference	Adjusted
<input checked="" type="checkbox"/>	1	1:21.48	1:21.66	1:21.59		1:21.62	-0.14	1:21.48
<input checked="" type="checkbox"/>	2	1:15.92	1:15.98	1:17.48		1:16.73	-0.81	g 1:16.64
<input checked="" type="checkbox"/>	3	1:14.80	1:14.86	1:14.78		1:14.82	-0.02	1:14.80
<input checked="" type="checkbox"/>	4	1:07.55	1:07.63	1:07.70		1:07.66	-0.11	1:07.55
<input checked="" type="checkbox"/>	5	1:09.64	1:09.76	1:09.69		1:09.72	-0.08	1:09.64
<input checked="" type="checkbox"/>	6	1:17.26	1:17.32	1:17.35		1:17.33	-0.07	1:17.26
<input checked="" type="checkbox"/>	7	1:16.06	1:16.20	1:16.14		1:16.17	-0.11	1:16.06
<input checked="" type="checkbox"/>	8	1:22.40	1:22.56	1:22.47		1:22.51	-0.11	1:22.40

If there is more than .30 seconds between the middle backup time and the primary time, calculate the average difference between the pad and intermediate times of the other lanes. Add this difference to the valid backup time of the problem lane(s).  
 Yellow = Backup time is more than .30 faster than the pad time.  
 Blue = Backup time is more than .30 slower than the pad time.  
 Green = Only two backups and one backup is within .30 and one is not.

**Pad and Backup Differentials: Total = -0.64 and Average = -0.09.**

Accept Adjusted    Reject Adjusted

In this example, lane 2 has one button that varies greatly from the pad time as well as the other button. It is determined that the timer pushed the button late. The HyTek operator should click “Reject Adjusted,” since the pad time should not be altered by an invalid button.

### Example 4:

Use	Lane	Primary	Watch	Difference	Adjusted
<input checked="" type="checkbox"/>	1	2:07.43	2:15.50	8.07	2:15.46
<input checked="" type="checkbox"/>	2	2:05.06	2:13.26	8.20	2:13.09
<input checked="" type="checkbox"/>	3	2:01.99	2:10.11	8.12	2:10.02
<input checked="" type="checkbox"/>	4	2:01.46	2:09.39	7.93	2:09.49
<input checked="" type="checkbox"/>	5	2:04.83	2:12.87	8.04	2:12.86
<input checked="" type="checkbox"/>	6	2:03.70	2:11.68	7.98	2:11.73
<input checked="" type="checkbox"/>	7	2:05.89	2:13.97	8.08	2:13.92
<input checked="" type="checkbox"/>	8	2:05.29	2:13.18	7.89	2:13.32

If there is a late manual start, calculate the average difference between the pads and the watch times of all lanes. Add this difference to the late start pad time of each lane. Key in the watch times to make the adjustment or to just see the average differential.

**Pad and Watch Differentials: Total = 64.31 and Average = 8.03**

Accept Adjusted    Reject Adjusted

In this example, there was a late manual start of the electronic timing system and the times from the pads are equally incorrect for all the lanes in the heat. The order of finish and the absolute difference of the times between the swimmers are believed to be accurate.

The HyTek operator displays the Time Adjustment window and then clicks “Show Heat Malfunction.” He/she enters the watch times; average difference from pad times in this case is 8.03 seconds. Timing system operator agrees that the manual start occurred approximately 8 seconds after the start. HyTek operator clicks “Accept Adjusted.” The following dialog box appears:

Hy-Tek's MEET MANAGER 2.0 Pro

By Accepting Adjusted for this Heat Malfunction, the pad times, the backup times, AND the splits will be adjusted by 8.03 seconds.

Continue ?

Yes    No

The HyTek operator clicks **Yes**, and all times are adjusted by 8.03 seconds.