

Chief Judge Electronics (CJE) & Chief Finish Judge (CFJ) Clinic

February 2017

Outline

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Introduction

- This clinic will contain a series of learning modules and two interactive quizzes,
 - one following the module on assigning an official time and
 - one questionnaire at the end of the clinic.
- A Canadian sanctioned meet is required to have a qualified Chief Judge Electronics or a qualified Chief Finish Judge assigned.

Introduction

- Meets using automatic timing equipment (touchpads) can use either a CJE or CFJ
- A meet relying on semi-automatic timing equipment (buttons, plungers) or manual timing (stopwatches) will require a CFJ
- 1 Judge (Official) must be determining the Official Times, either a CJE or CFJ.

Introduction

Prerequisite

- The CFJ and/or CJE are considered senior positions on the deck and as such should be filled by;
 - Officials that are experienced and have a good understanding of the operations of a swim meet.

Introduction

- Officials that enroll in the clinic
 - Shall have completed the Level I clinic and volunteered at a number of meets as a Timekeeper.
 - Should have completed the **Chief Timekeeper clinic** (recommended) and received a successful deck evaluations as a Chief Timekeeper
 - Should have an understanding of the *operations of the electronic timing equipment*.

Introduction

Key Terms

The following terms will be used in this clinic and are commonly used at the pool.

- **Primary Time** - The primary time is the time that is determined by the automatic officiating equipment (i.e. the primary time is the touchpad time).
- **Back-up time** - Back-up times are those times that are determined by the semi-automatic officiating equipment (i.e. button plunger times) or those times determined using watches.

Introduction

Key Terms

Manual time - The manual time is that time assigned to a swim in the event of a failure of the automatic officiating equipment. The manual time is assigned using the semi-automatic time or the watch times.

Automatic Officiating Equipment - is defined as any approved timing system that is started by the starter and stopped by the swimmer, most commonly touchpads.

Introduction

Key Terms

Semi-automatic Officiating Equipment - is defined as any approved timing system that is started by a starter and stopped by an official, most commonly, buttons or plungers.

Manual Officiating Equipment - is defined as any approved system that is started by an official and stopped by an official, most commonly watches.

Introduction

Key Terms

ARES 21 is the model of the most common electronic timing equipment, manufactured by Omega and used in Canada and internationally. The **QUANTUM** system is the upgrade from ARES.

- The software used to operate the equipment is referred to as ARES software.

Introduction

Key Terms



ARES 21 software and controller (including the power supply)

Introduction

Key Terms

OmniSport is the model of electronic timing equipment manufactured by Daktronics and in use at Canadian pools. The Omnisport equipment can be operated by using a console or computer interface.

Introduction



OmniSport®
2000 timing
console
OmniSport
Pro
software.

Chief Finish Judge or Chief Judge Electronics

At every swimming competition, one of the key roles of the officials is the assignment of an official time for each swim.

- This time must be assigned fairly and this time must be accurate.
- Rules have been established internationally and nationally that relate to how this official time is determined.

Chief Finish Judge or Chief Judge Electronics

Additionally, rules and process have been established internationally, nationally and provincially regarding the establishment of records.

- The official time is a key component of any record established in swimming.

A swim meet in Canada will use *either* a Chief Judge Electronics (CJE) or a Chief Finish Judge (CFJ) to assign the official time.

- All national meets will use a CJE.

Chief Judge Electronics (CJE)

A **Chief Judge Electronics** is used when automatic timing equipment (touchpads) is used and;

- That official can observe the finish of each race and,
- View the operations of the electronic timing equipment.
- The official time is assigned at the end of each race by the CJE located adjacent to the electronics operator.

Chief Judge Electronics (CJE)

- To determine the official time in the event of a system failure the CJE will use:
 - semi-automatic times (buttons or plungers)
 - or
 - manual times (watches)
- Primary system failures commonly seen are
 - Light Touch
 - No Primary recorded time

Chief Finish Judge (CFJ)

A **Chief Finish Judge (CFJ)** is used when automatic timing equipment (touchpads) are not available and;

- the official time is assigned solely by using manual times (watches)
- or
- semi- automatic times (buttons, plungers)
- The CFJ is often located off deck, in close proximity to where the results are processed.

CJE & CFJ

Officials are encouraged to gain experience as an electronics operator and assist the CFJ prior to completing this clinic.

- The comfort level and experience gained establishing official time as a Chief Finish Judge is a critical skill for a competent Chief Judge Electronics.

A Chief Judge Electronics is expected to monitor information that is flowing quickly and a delay in the assignment of an official time may delay the progress of the meet or result in an inaccurate time being posted on the scoreboard or in the official results.

CJE & CFJ

The Chief Finish Judge position will allow you to perfect your accuracy and build your speed while the role of a CJE will challenge your ability to move more quickly and efficiently.

The Official Results

The Primary Time

Rule SW 11.1 clearly states that the "times recorded by the automatic officiating equipment shall have precedence over the decision of the timekeepers".

- That is to say the primary time will have precedence over any time determined using the back-up times unless
- It has been determined that the automatic officiating equipment has failed

The Official Results

The Primary Time

The CJE or operator can determine that the automatic officiating equipment has failed by observing the touch and listening too & reviewing the displayed status of the equipment.

- If by observing the operation of the automatic officiating equipment the CJE has determined that the automatic officiating equipment has failed to record a primary time correctly the CJE shall ensure that the back-up times are used to determine the official time for that swim.

The Official Results

The Primary Time

A guideline has been established that if each back-up time varies from the touchpad time recorded by greater than 3/10th of a second, the CJE may determine that a failure of the automatic officiating equipment has occurred.

The Official Results

The Primary Time

The CJE shall observe the actions of the timekeepers to ensure that when inattentive timekeepers record semi-automatic or watch times in error (that are more than 3/10th of a second slower then a good touchpad time), these times are not taken as an indication of a failure of the equipment.

Using back-up (semi-automatic or watch) times to determine an official time

1. If two or more times agree, that time shall be the official time.

Example 1

T1 (time 1) = 1:01.16

T2 (time 2) = 1:01.16

T3 (time 3) = 1:01.24

The Official time shall be 1:01.16

Using back-up (semi-automatic or watch) times to determine an official time

2. If three times are available and these times disagree the intermediate time shall be the official time.

Example 2

T1 (time 1) = 1:01.16

T2 (time 2) = 1:01.19

T3 (time 3) = 1:01.24

The Official time shall be 1:01.19

Using back-up (semi-automatic or watch) times to determine an official time

3. If two times are available the arithmetic average shall be the official time.

Example 3

T1 (time 1) = 1:01.16

T2 (time 2) = 1:01.19

The Official time shall be 1:01.17

$(.19 - .16)/2 = 0.175$, reported to the 1/100 second = 0.17

Note: rounding does not take place; the time is reported to the 1/100th of a second (truncated).

Placing

The order of finish is determined using the official time.

- If two or more swimmers in the same event have the same official time to the nearest 1/100th of a second, – the results shall indicate that the swimmers have tied.
- Event results shall include the results of the various heats in an event and report integrated placings based on the official times.

Placing

The order of finish is determined using the official time.

Swimmer	Official time	Placing
A	1:00.02	1
B	1:00.14	2
C	1:00.14	2
D	1:00.32	4
E	1:00.45	5
F	1:01.01	6
G	1:01.45	7
H	1:02.00	8

Placing

In preliminary heats where swimmers are to advance to an A or B final, a tie in the results may impact which swimmer advances.

- It may be necessary to have a swim off to determine which swimmer advances or could potentially advance.
- Swim offs are usually arranged by the other Officials (Recorder Scorer/Clerk of Course/Meet Manager)

The results of a swim-off are official results and the CFJ or CJE shall ensure that the results of any swim-off are determined correctly.

Official Time Quiz

- This is a quiz related to assigning an official time.
- Clinic participants are advised to complete the quiz
- It will use scenarios that use
 - No electronics, all manual digital watches
 - Semi-Automatic Times (plungers only) with backup digital watches
 - Automatic times with Semi-Automatic (plungers) and backup digital watch
 - Light Touches
 - No recorded Automatic Times
 - Failure of both Automatic and Semi-automatic times

CFJ - Key Responsibilities

The key responsibilities of the Chief Finish Judge are to maintain the accuracy and integrity of the official times assigned to EVERY swim.

- To perform the assignment of CFJ effectively you are encouraged to do the following:

CFJ - Before the session

1. Meet with the Referee and review what is expected of you and review any instructions unique to the pool or session. This meeting should address:
 - The approval (signature?) and flow of results
 - The information that the Referee expects to receive before, during and after the session

CFJ - Before the session

2. If the meeting with the Referee does not address the flow of incoming times and the flow of results you may need to address this with the Meet Manager.
 - Determine how the times will be communicated from the Timekeepers to you, how you will be made aware of "no shows".

CFJ - Before the session

3. Meet with the runners that will run times from the Timekeepers.
4. Meet with the Chief Timekeeper.
 - Ask the Chief Timekeeper to visit with you after the first few races are completed so you can provide feedback on the performance of the Timekeepers.
 - Are the Timekeepers recording the times correctly, are the Timekeepers taking the times correctly?

CFJ - Before the session

5. Assemble the necessary supplies,
 - visit with the office personnel or Desk Control and
 - organize your workspace.

NOTE: In most cases the club volunteers have established a process that usually works very well in that pool and with their meet(s). Do not try to change what works if at all possible.

CFJ - During the session

1. Process each set of results in a timely and consistent manner to ensure and accurate results.
2. Ensure that the results communicated to Desk Control or the meet manager software operator are accurate.

CFJ - After the session

1. Verify with the office that they have received all the results.
 - You may need to address any outstanding issues before you have completed your assignment as CFJ for this session.
2. Report to the Referee any concerns or outstanding issues.

Best Practices

- Find a quiet place to do your work.
- If possible, position your workspace in close proximity to Meet Management software operators (SPLASH or Hy-Tek).
 - Establish good communications.
- Be efficient but most importantly be accurate
- You should have a thorough knowledge of the rules of swimming

CFJ - Keys to success

- You will need to exercise excellent judgment.
 - If you have any questions or concerns, speak to the Referee
- Patience, you are a volunteer, working with other volunteers.
- You will need the ability to focus in an otherwise noisy and active work environment.

CJE - responsibilities

The key responsibilities of the Chief Judge Electronics are to maintain the accuracy and integrity of the official times assigned to EVERY swim.

- To perform the assignment of CJE effectively you are encouraged to do the following:

CJE - Before the session

1. Review the process with the electronic console operators:
 - Review the meet format
 - Review the set-up of the timing equipment, anticipated problems, and their resolution to minimize disruption of the meet
 - Agree on the decision-making process in the event of timing discrepancies, light or missed touches, or other timing issues.

CJE - Before the session

2. Determine how the Referee wishes to be involved in the decision process in the event of timing discrepancies
3. Remind the Referee of the importance of their order of finish for each heat
 - In the event of a failure of both timing systems or change in order dues to discrepancies, the sweeps will help to reach a final decision.

CJE - Before the session

4. Scoreboard is in use:
 - Determine if the scoreboard times will be used as official times (Referee approval) and
 - Agree on the procedure for the correction of a light touch or DQ initially displayed, prior to final approval
5. Clarify with the Starter and Referee the signal or scoreboard condition that will inform them that the timing equipment is ready for the start of a new race:
 - The resetting of the running time to zero
 - The clearing of all times from the scoreboard

CJE - Before the session

6. Review the flow of data and paperwork with the Referee, Recorder/Scorer and Clerk of Course plus the meaning of any symbols or warnings produced by the timing equipment.
7. Ensure the proper set up of the equipment
8. Ensure synchronization of the timing devices

CJE - Before the session

9. Ensure that a test of the start devices, touch pads, and plungers occurs
10. Test the outputs for the timing devices such as data to Recorder/Scorer and any scoreboards, and the paper output.

CJE - During the session

1. Best location:
 - Side of the pool with a clear view of all lanes and all touch pads
 - A secure room away from all disturbances by persons not directly involved in the operation of the electronics is ideal
 - You must be accessible to the Referee to resolve any timing problems.

CJE - During the session

2. Observe all touches to judge their quality.
3. Hear the Automatic Officiating Equipment record the touch (beep or tone).
4. When what you see does not match what you hear, check for failures of the equipment or incorrect operation. This must be done in consultation with the Referee when needed.
5. When a failure of the Automatic Officiating Equipment is observed, the CJE will oversee the correction of times by examining the results produced by the backup timing device and/or consult with the Referee.

CJE - Relay takeovers

- Electronic relay takeovers have proven to be a very effective method of judging relay takeovers.
- The most common FINA approved systems in use in Canada are manufactured by Omega or Daktronics.
- These systems measure and report the time difference between when the outgoing swimmer leaves the starting blocks and when the incoming swimmer touches the touchpads.

CJE - Relay takeovers

- The results of the electronic judging of a relay takeover will take precedence over the visual judging by the Referee or the Inspector of Turns.
- The Referee and the Inspectors of Turns are encouraged to observe relay takeovers and Inspectors of Turns are required to report infractions observed.
- The CJE shall observe the touches of the incoming swimmer or reviewed the semi-automatic (button times) to ensure that a light touch has not taken place.

Omega Relay takeovers

- The Omega relay takeovers work on a mechanical principle.
 - The starting platform has two components that are spring loaded.
 - These two components make contact when a swimmer is on the blocks.
 - When a swimmer dives off the platform the contact is broken, sending a signal to the ARES 21 (or QUANTUM).

Omega Relay takeovers

- The Omega system has an allowable tolerance of -0.03 seconds.
 - That is to say that a positive differential or a differential up to and including -0.03 is a legal takeover.
 - A takeover of -0.03 is legal and a differential of -0.04 or greater is illegal (indicating an early take-over).

Omega Relay takeovers

- The starting platforms are plugged into one of the contacts (T3) and the system is configured accordingly.
 - When connected and configured the system will report takeovers for relay races and reaction times off the blocks for all starts.
- The system can be checked before the start of the session by placing the ARES software in test mode and then grasping the front of the blocks and push down and pulling up quickly.

Daktronics relay takeovers

- The Daktronics relay takeover system works on the principle of measured impedance.
 - When the swimmer leaves the starting platform the impedance changes, sending a signal to the Daktronics controller.
 - The takeover platforms are plugged into one of the contacts and the system is configured accordingly.
 - Each starting platform requires batteries and these batteries will need to be replaced on a regular basis.

Daktronics relay takeovers

Caution #1 - A button can also be plugged into the same contact as the relay takeover sensor

- However, that button CANNOT be used to record a split time or finish time within a relay race.
- The button connected to the same contact as the relay takeover should be differentiated (possibly with coloured tape) from the other buttons in use.

Daktronics relay takeovers

The system can be checked before the start of the session by starting a test race,

- wait for the arm delay to elapse,
- place your hand flat on the top of the starting platform and then removing your hand.
- The platform will note the change in impedance and the controller should register a signal.

Daktronics relay takeovers

The Daktronics system has an allowable tolerance of -0.00 seconds.

- That is to say that a positive differential is a legal takeover and a negative differential is illegal.
- A takeover of 0.00 is legal and a differential of -0.01 or greater is illegal (indicating an early take-over).

Daktronics relay takeovers

Caution #2 - Care should be taken to ensure that other swimmers or officials DO NOT make contact with the top of the blocks during the takeover.

- Officials cannot steady themselves with the starting platform as they lean forward to take a time or judge a takeover.
- Swimmers cannot touch the top of the starting blocks when another swimmer is on the blocks preparing to enter the pool.

Daktronics relay takeovers

Caution #2

- Contact with the top of the blocks by another individual will result in a failure of the electronic relay takeover equipment.
- Daktronics relay takeovers WILL NOT function if a para-swimmer places a towel on the top of the starting blocks.

Reporting an early takeover

The CJE shall initiate the infraction report for presentation to the Referee in the event of an early takeover.

- If following a review of the electronic takeover information the CJE is confident of an early takeover the CJE shall;
 - report to the Referee that an illegal takeover has occurred,
 - indicate the heat, lane and swimmer
 - note that a light touch did not take place and
 - report the takeover differential

Reporting an early takeover

- For example — "**Lane 4, 3rd** swimmer left early, the backup times proves the touch was not a light touch and the takeover differential was **-0.07 seconds.**"

NOTE:

Early takeover equipment or reaction times cannot be used to support or dispute a false start.

After the session

1. Remain available to the Recorder/Scorer to analyze any problems with the results
2. Debrief the electronics operator to correct any problems during the meet
3. Discuss with the Referee and Meet Manager any difficulties that were encountered

What does the rule book say?

This module will address the relevant rules that must be considered to successfully perform the roles of CFJ and CJE in Canada.

- This clinic will not address those FINA rules that are not relevant to officiating in Canada.
- Rules beginning with the prefix "C" are Canadian rules and rules beginning with the prefix "S" are FINA rules that are also enforced in Canada.

What does the rule book say?

The rules include:

CSW 2.13.1.2 Chief Judge Electronics

- a) Shall oversee the operation of any SNC approved Automatic Officiating Equipment.
- b) Shall determine if the Automatic Officiating Equipment is in error and advise the Referee of any malfunction or light touch.

What does the rule book say?

The rules include:

- c) Shall oversee the touches of all swimmers and note any cases in which the Automatic Officiating Equipment fails to properly record the touch.
- d) Shall be positioned with the Automatic Officiating Equipment near the finish end with an unobstructed view of the finish of each lane.

What does the rule book say?

- e) Shall be fully familiar with the rules of swimming and the operation of the Automatic Officiating Equipment.
- f) Shall ensure that the Automatic Officiating Equipment is activated manually to obtain placings when the system has failed to be activated by the starting signal.

What does the rule book say?

CSW 2.13.1.3 Electronics Operator

Shall operate or assist in the operation of any SNC approved Automatic Officiating Equipment.

SW 11 TIMING

SW 11.1 *The operation of Automatic Officiating Equipment shall be under the supervision of appointed officials.*

What does the rule book say?

SW 11.1

- Times recorded by Automatic Equipment shall be used to determine the winner, all placing and the time applicable to each lane.
- The placing and times so determined shall have precedence over the decisions of timekeepers.

What does the rule book say?

SW 11.1

- In the event that a break-down of the Automatic Equipment occurs or
- that it is clearly indicated that there has been a failure of the Equipment, or
- that a swimmer has failed to activate the Equipment, the recordings of the timekeepers shall be official (See SW 13.3).

What does the rule book say?

SW 11.2

When Automatic Equipment is used, the results shall be recorded only to 1/100 of a second.

- When timing to 1/1000 of a second is available, the third digit shall not be recorded or used to determine time or placement.

What does the rule book say?

SW 11.2

- In the event of equal times,
- all swimmers who have recorded the same time at 1/100 of a second shall be accorded the same placing.
- Times displayed on the electronic scoreboard should show only to 1/100 of a second.

What does the rule book say?

SW 11.3

- *Manual timing* shall be registered to 1/100 of a second. Where no Automatic Equipment is used, official manual times shall be determined as follows:

SW 11.3.1

If two (2) of the three (3) watches record the same time and the third disagrees,

- the two identical times shall be the official time.

What does the rule book say?

SW 11.3.2

If all three (3) watches disagree,

- the watch recording the intermediate time shall be the official time.

SW 11.3.3

With only two (2) out of three (3) watches working, the average time shall be the official time.

What does the rule book say?

SW 11.4

Should a swimmer be disqualified during or following an event, such disqualification should be recorded in the official results, but no time or place shall be recorded or announced.

What does the rule book say?

SW 11.5

In the case of a relay disqualification, legal splits up to the time of the disqualification shall be recorded in the official results.

SW 11.6

All 50 metre and 100 metre splits shall be recorded for lead-off swimmers during relays *and published in the official results.*

SW 12 WORLD RECORDS

SW 12.6

World Records will be accepted only when times are reported by Automatic Officiating Equipment or Semi-Automatic Officiating Equipment in case of Automatic Officiating Equipment system malfunction.

CSW 12.18.3

Records swim shall be timed and recorded by an Automatic Officiating Equipment system or by three (3) timekeepers.

SW 13 AUTOMATIC OFFICIATING PROCEDURE

SW 13.1

When Automatic Officiating Equipment (See FR 4) is used in any competition,

- *the placing and times so determined and relay take-offs judged by such Equipment shall have precedence over the timekeepers.*

SW 13.2

When the Automatic Equipment fails to record the place and/or time of one or more swimmers in a given race:

SW 13.2.1

Record all available Automatic Equipment times and places,

SW 13.2.2

Record all human times and places.

SW 13.2.3

The official place will be determined as follows:

SW 13.2.3.1

A swimmer with an Automatic Equipment time and place must retain his relative order when compared with the other swimmers having an Automatic Equipment time and place within that race.

SW 13.2.3.2

A swimmer not having an Automatic Equipment place but having an Automatic Equipment time will establish his relative order by comparing his Automatic Equipment time with the Automatic Equipment times of the other swimmers.

SW 13.2.3.3

A swimmer having neither an Automatic Equipment place nor an Automatic Equipment time shall establish his relative order by the time recorded by the Semi-Automatic Equipment or by three digital watches.

SW 13.3

The official time will be determined as follows:

SW 13.3.1

The official time for all swimmers having an Automatic Equipment time will be that time.

SW 13.3.2

The official time for all swimmers not having an Automatic Equipment time will be the three digital watches or the Semi-Automatic Equipment time.

SW 13.4

To determine the relative order of finish for the combined heats of an event, proceed as follows:

SW 13.4.1

The relative order of all swimmers will be established by comparing their official times.

SW 13.4.2

If a swimmer has an official time which is tied with the official time(s) of one or more swimmers,

- *all swimmers having that time shall be tied in their relative order of finish in that event.*

The Swimming Canada rule book contains a detailed set of specifications (see Appendix B, FINA Facilities Rules) related to the automatic officiating equipment.

CJE - References

FINA Rule Book

<http://www.fina.org/sites/default/files/rules-print-pdf/7440.pdf>

Swimming Canada Rule Book

<https://www.swimming.ca/SwimmingRules>

Omega ARES 21 Training Power Point - Intro

<http://www.mglweb.com/swimming/ares/ARES%2021%20Training.ppt>

Daktronics

<http://www.daktronics.com/Web%20Documents/Custom-Service-Manuals/ED13312.pdf>

Colorado

http://www.coloradotime.com/manuals/System_6_Swimming_Manual_F890.pdf

Questionnaire

- It will just take a few minutes
- There could be more than one correct answer
- Please let us know if you find anything that should be updated or changed

CONGRATULATIONS

You have now completed the Level II CJE and CFJ Clinic

- Your next task is to obtain deck experience
- You will be required to mentor in this role before requesting deck evaluations
- You should be comfortable in making decisions before requesting the deck evaluations
- To be certified as a CFJ and CJE you must complete two on deck evaluations one of which should be as a CFJ
- The session referee must be informed prior to the session that you are requesting a deck evaluation.
- At the end of the session, the session referee will sign your officials card if the evaluation was successful.
- Make sure to keep your Club Officials Chair informed of your deck evaluations

On-deck Assessment - CFJ and CJE

Best practices for a deck evaluation

- Typically you will not be able to receive two on-deck evaluations for the same position in the same meet.
 - You are however able to receive two on-deck evaluations for two different positions at two different sessions in the same meet should you feel you have acquired the appropriate amount of experience in each of these positions.
- You are encouraged to officiate at a particular position two or more sessions before requesting an on-deck evaluation.
 - You are encouraged to receive evaluations as a Chief Finish Judge and as Chief Judge Electronics.

On-deck Assessment - CFJ and CJE

- Electronic equipment operator experience or working a session as an equipment operator is not a replacement for the CJE/CFJ clinic and proper deck evaluations.
- Once you feel comfortable with either or both positions
 - Ask the Referee for your on-deck evaluation
 - For CJE you may want to arrange this well before the session with Meet Management.
- After the session, make sure to get your Officials Certification Card signed by the session referee.

Self-Assessment - Chief Finish Judge

1. I have worked as a Chief Finish Judge in the past. ____
2. I arrived on time and reported to the officials' room. ____
3. I met with the Referee and Chief Timekeeper prior to the session? ____
4. I attended the officials briefing ____
5. I remained focused on my duties and did not get distracted ____
6. I am confident that all official times were recorded accurately. ____
7. I established good communications with the Meet Management software operator. ____
8. I provided appropriate feedback and information to the Chief Timekeeper when required. i.e. missed times, inconsistent times, etc. ____

Self-Assessment - Chief Judge Electronics

1. I have worked as Chief Judge Electronics in the past. ____
2. I arrived on time and reported to the officials' room. ____
3. I met with the Referee, equipment operator and Chief Timekeeper prior to the session? ____
4. I attended the officials briefing ____
5. I provided appropriate feedback and information to the Chief Timekeeper when required. i.e. missed times, inconsistent times, etc. ____
6. I am comfortable with the operations of the automatic officiating equipment ____
7. I remained focused on my duties and did not get distracted. ____
8. I was comfortable in my ability to observe touches and monitor the operation of the equipment ____
9. I am confident that all official times were recorded accurately. ____
10. I established good communications with the automatic timing equipment operator. ____



Thank you

Swim Ontario would like to thank Swim Alberta and Swimming Canada for the initial work done on this powerpoint presentation.