

# Appendix 1

## The A7C Timing Team

### The evolution of time and its recording

The timing team was established for the first race meeting organised by the Club at Port Wakefield on 14 August 1960.

Club President, Max Bowden had been involved with timing races with the Sporting Car Club. As well as the cost of buying new stop watches, he also knew the problems people new to race timing would have using them. The answer came from member Bruce Ide, who constructed a large (1.1 metre square) clock with a matt black dial and yellow hands and figures, which timed to one second.

This was positioned at the start/finish line, angled towards the timing team who were set up in the top deck of a double-decked bus, along with dirt, dust and pigeon droppings. For the start of each race, the clock was set with 3 minutes to run and counted down the time until the start. Car numbers (generally 3-4 each) were allocated to the timekeepers who were then responsible for recording the running time, in minutes and seconds, on a timing sheet, as each allocated car crossed the finish line. By subtracting each previous time from the last, individual lap times to one-second accuracy were obtained. A good timekeeper required a good eye, the ability to recognise the cars quickly and an agile brain for the calculations.

A lap charter recorded the race order on a lap-by-lap running order. At the end of the race, the Chief Timekeeper collected the timing sheets, with their individual lap times, and lap chart. These were checked for accuracy and the race results were then hand-compiled after the meeting for the Race Secretary who, during the next weeks, had to have them printed and posted to all competitors.

For this first meeting, as Max Bowden was the Clerk of Course, his wife Jean was Chief Timekeeper, with support from Bruce Ide, Mr and Mrs Harris, Mrs Sickerdick, Glenda Grove and Joy Atkins.

After the success of this meeting, the Club was engaged by the Sporting Car Club to do the timing for all their race meetings from 4 December 1960. During 1961, Port Wakefield closed, Mallala opened and Barry Frost joined the team. When Max and Jean both retired at the end of 1961, Barry took over as the Chief Timekeeper from the 4 March 1962 meeting.

Typical results from a meeting of this era, before sponsorship and advertising, gave the race title, finishing order, the car and driver details with the individual lap times and race times.

#### EVENT 1 – Sports Cars up to 1500 cc scratch race - 3 laps

Pos	No	Driver	Car	Lap times	Race Time
1	31	A Jarrett	Elfin	2.16, <b>2.09</b> ,2.14	6.39
2	7	P Wilkinson	Elfin	2.18, <b>2.12</b> ,2.13	6.43
3	47	B Went	Elfin	2.21, <b>2.14</b> ,2.14	6.49
4	38	G West	A/H Sprite	2.25,2.19, <b>2.18</b>	7.02
5	5	P Brady	Peugeot Sp	2.31,2.23, <b>2.21</b>	7.15

For 1962, at the June 4 meeting, sponsors and entrants' names were included where appropriate and then from the Gold Star meeting on 8 October that year, results included a page showing the current lap records.

The timing team grew to meet the needs of increasing fields and included a lap charter, several lap spotters and up to 12 timekeepers. For Australian Gold Star Championship events, the timing accuracy needed to be to 1/10 second and for these meetings, the Longines agents in Melbourne airfreighted a Longines printing clock to Adelaide.

When using this equipment, the personnel changed, as we needed an operator for the Longines, a continuity spotter and a coordinator as well as the timekeepers and lap charter.

At the start of a race, the Longines operator pressed a button and started the clock. As each car crossed the finish line during the race, another button press printed its time onto a roll of paper; after approximately 10 cars had completed a lap, a strip was torn off the roll and passed to the coordinator.

The continuity spotter's job was to write the numbers of the cars as they crossed the finish line onto a strip of paper; at appropriate gaps in the field this strip was also passed to the coordinator who then wrote these numbers against the printed times eg 10 times matched to 10 car numbers. The strip of times was then passed along the line of timekeepers who copied the times of the cars that they had been previously allocated onto their timing sheet and calculated the lap times.

This continued until the end of the race when the sheets were collected, checked and results produced for the announcer. The official results still entailed the hand compilation of details for later typing onto a stencil, printing and issuing.

During 1962, the Club purchased split action stopwatches, with a 30 second face, which timed to 1/10 second. A good timekeeper now needed the ability to readily recognise his allocated cars, be accurate in reading the watch and computing the lap times, and was expected to time at least 3-4 cars using these watches. By 1965 the large clock was only used to indicate the three-minute count down for the starter. In 1967 CAMS introduced licences for officials and the timing team became officially recognised.

This timing procedure was used for meetings until November 1971, when Mallala was sold and racing moved to Adelaide International Raceway. The trackside clock was pensioned off, as it was not suited to the AIR layout, and was eventually donated to the Birdwood Mill. Timing at AIR continued using the same system with the addition of a "caller", whose job was to call the cars' numbers for the continuity spotter, as they crossed the finish line. Mainly used for the long distance races with large fields, this enabled the spotters to concentrate on legibly writing the numbers.

AIR was one of the new style of tracks in Australia that had a permanent office at the track, from which operations were run. This had great benefits for competitors as the results could now be prepared at the end of each race and by the end of the meeting, the official results had been compiled, printed and were available.

From a timing point of view, this removed the need for hand-writing the results by the Chief Timekeeper, as an office typist now compiled them directly from the timing sheets, after the lap times had been checked for accuracy and the cars' placing had been added from the lap chart; entrant/sponsor and driver details were taken from the program.

In another first, AIR officials at all major meetings were provided with lunches in recognition of their contribution to the meeting.

By 1977, the split action watches had got to the stage of needing constant repairs and so we moved into the digital age, purchasing LED stopwatches, which read to 1/100 second.

Racing at AIR continued under Bill Pickett's management until May 1981, when Bob Jane bought the track. At the Jane-owned Calder track in Melbourne a computerised timing system had been developed and for the Australian Touring Car Championship round at AIR on 21 April 1985, this system was used in SA for the first time.

In pre-event preparation, all competitors' and race data was entered into the computer and at the end of a race, the results were printed in a few minutes ready for distribution.

The timing computer was linked to a printing clock so that as each car crossed the finish line, the button press inputted a time into both machines. The car numbers were keyed into the computer in order; the program matched their times and processed the data, producing lap and race times and a lap chart, which were sent to the printer. A continuity spotter and coordinator were still required but the need for timekeepers to write and subtract times was now removed. The printing timer was used as a back up to check for any errors, which could be corrected as the race progressed.

The Club timing team adapted to the new system so well that they were invited to work at all Calder's major meetings from then on.

During this period, as computers began to become an integral part of business and home life, there were attempts at tracks around Australia to get a computerised timing system operational - mostly with no success. Following a visit by Barry Frost to Sandown in December 1984 for the World Sports Car Championship meeting, an alliance was formed with *GP Timers* from Sydney, who were developing a timing system based on Commodore 64/128 home computers and printers.

The 1985 Australian Formula 1 Grand Prix exposed us to the then current pinnacle of race timing - the Longines/Olivetti timing system. Longines had invented the first quartz watch movement in 1954, which timed to 1/100 second with zero error in 24 hours, and by 1964 this accuracy was 1/1000 second. Their first trial of an electronic timing system was at the 1970 Monaco GP. The forerunner to the system used in Australia was tested at the US GP in 1978, made its race debut at the Monaco GP in May

1981 and was officially adopted by FOCA and FISA in 1982.

The system consisted of stand-alone timing units, linked to groups of computers, which recorded and processed timing data from on-track and in-car equipment, giving practice/race results for the teams via TV transmission, for race control, the press and television, in real time. The computers were Olivetti PCs: the 10-fold increase in the computing power of PCs between 1984 and 1985 had enabled the system to develop rapidly.

In-car transponders, in conjunction with a light beam at the finish line, automatically generated timing data to 1/1000 second. Car recognition came from the transponders; a manual back up was also incorporated into the system. In later years the graphics for TV became an increasingly important part of the operation.

The rebirth of Mallala occurred on 27 June 1982 where, as the main equipment, a Heuer printing timer supplied by the Sporting Car Club was used.

Developments and testing of the Commodore-based system had been progressing well. In 1986 we purchased the necessary computers and printer and our Commodore-based computer system became operational for the first time on 16 March and was used at Mallala and AIR from then on, with the exception of ATCC rounds at AIR, when the Calder computer was used.

Using a C64 computer, a button press entered the car's times and the numbers were keyed in as they crossed the finish line. Any keying errors could not be corrected until the race was finished when the file was transferred by floppy disc to a C128 computer for any amendment. Results were then sent to a dot matrix printer; however the program at this stage could not include drivers' names - these were added in the Race Secretary's office.

Developments continued over the ensuing years and the system became more sophisticated, echoing that used in F1, but to a lesser

degree. Drivers' details were incorporated in the results from 7 May 1989; the file transfer between the two computers was done via cable and generation of the top six placings for TV distribution followed. Mallala was the first Australian track to install a low-powered UHV TV transmitter that broadcast the timing data live to teams, race control and announcers.

To better match timing entry data and manual records, the main continuity spotter now used a printed sheet with numbered squares to record the car numbers so that times and numbers could be quickly matched for corrections. The caller now used a microphone with a set of headphones to reduce the background noise and ensure that both the continuity spotter and the keyboard operator entered the same numbers – it also reduced the strain on the caller's voice!

This system served us well until April 1994 when the next technological leap forward took place.

Bob Jane's passion for American NASCAR racing led him to build the Calder Park Thunderdome, which opened on 28 February 1988. Dorian Industries had developed, in conjunction with Calder, the *Dorian Data 1* in-car automatic timing system that timed to 1/10000 second, which was used in addition to the NASCAR style of race recording. Using in-car transmitters operating on unique frequencies, the cars' times and numbers were recognised by the computer program and race results etc. were generated. This relied on every transmitter working correctly for the whole race: manual input was possible for malfunctioning transmitters, so a manual continuity backup was vital.

**A7C Timing Team, January 2003.**

*Standing, L to R:* Richard Davey, Pam Tunn, Garry Tunn, Fran Williams, Rae Frost, Ian Alexander, Lawrie O'Connell.  
*Kneeling, L to R:* Barry Frost, Helen Grimsley, Tony Morgan, Bruce Went, Gerry Petrus  
*Absent:* Bob and Cindy Frost

The manual race scoring system introduced at Calder by the visiting NASCAR officials had been developed over many years to cope with large fields (up to 33 car) for races over 500 laps on tracks where the lap times were less than 30 seconds. Each team was required to supply one person to the scoring team: this person recorded the running time of each lap for his team car, read from a large central digital clock reading in seconds only, onto a pre-printed card with large numbered squares for each time – no lap times were extracted. As each car completed ten laps, the scorer held up his card so that the officials behind could read its number, which was written in large bold numbers on the back. These officials then compiled a lap order from these cards as they were raised. At the end of the race, the results were manually compiled. This manual back-up was used in conjunction with the automatic system until 1995, when it was dispensed with as the Dorian had proven to be very reliable.

As the Australian Touring Car Championship became more and more professional and competitive, a need for a better timing system became apparent and from 1994 the Dorian system was adopted as the standard. This meant that we had to upgrade our computers to Pentium PCs and with the assistance of *NATSOFT* for the program and

Chris Smerdon of *Protech Computers* for the PCs, the Shell ATCC race at Mallala on 26 June 1994 was the first that we timed using automatic equipment.

When timing a race in automatic mode, the timing computer receives its data and car number recognition from the in-car transmitter via aerial loops in the track at the finish line. The operator generates a manual time pulse for backup/checking purposes while a continuity spotter, caller and lap charter compile the manual information used to check the final results, which are generated from the system computer, and printer via an inkjet printer.

For races timed manually, to 1/100 second, the operator presses the timing button as the cars cross the finish line and the car numbers are keyed in. Any errors can be corrected during the race. The race information is generated for TV distribution by a third computer.

The *NATSOFT* program enabled meeting results (race/practice/qualifying) to be sent to the Internet as required, depending on the need of the organisers. The 15 November 1997 twilight meeting was the first where this was done.

One of *AVESCO's* requirements was that all V8 touring car results had to be sent to the Internet at the end of each race. Beginning with the first *Clipsal 500* meeting, in April 1999, race results





**The timing team at Phillip Island for the first 500cc World Motorcycle Grand Prix on 6-9 April, 1989.**

From left: Brian Jericho, Bob and Cindy Frost, Pam Tunn, Barry and Rae Frost, Bruce Went and Tony Morgan. Barry is holding the winning trophy.

were sent every 20 minutes during the race and from 2002 the timing data has been available live during all events. Another Australian first for the timing team was when race-timing data was sent live during *The Race of 1000 Years*, the Asia Pacific LeMans Series at Adelaide Parklands on 31 December 2000.

Continual upgrades to the computer program in response to changes in rules and operating regulations from AVESCO required our computers to be improved in operating speed and platform. To this end, in July 2003 we moved to a Windows-based program, using mini-pcs and flat lcd monitors; this took us again to the forefront of timing in Australia.

In the 40 years that the team has been timing, much has changed - yet some things still remain the same! There is still the need to recognise and record car numbers; callers and spotters still do this the same way. What has changed is the need for manual calculations - this is now the computer's task - and keyboard skills are now needed as well as operational familiarity with the timing program. Pre-event preparation is now an integral part of a race meeting but all the work after a meeting has now gone.