

Lotus World

The official newspaper of Club Team Lotus and Lotus Cars Limited

Lotus Cars' exports in the first quarter of 1984 were 20% higher than forecast, the South African and Belgian markets proving particularly healthy. Representatives of the International Motor Company, our Belgian importers, visited us twice in March, bringing dealers and new customers with them. Our newly appointed importer for France had made a good start, while highly favourable comments were received from Saudi Arabia following sale of their December quota, a repeat order being made to satisfy new customers.

The Grand Prix in Rio saw Elio take pole position and third place in the race and in South Africa Nigel was on the second row of the grid both cars suffering from engine problems in the race. By early April our home-based Team crew had completed the fourth JPS 95T chassis in the record time of only ten days, the car going to Zolder for shake down running April 11/12th.

Race reports on Rio and Kyalami are on pages 4 & 8.

The Lotus stand at the Geneva Motor Show

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South African Grand Prix Report

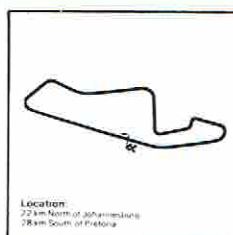
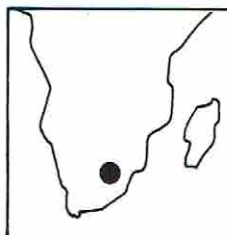
APRIL 7th
SOUTH AFRICA
Kyalami



WINNER:

Lauda

FASTEST LAP: Tambay 1.08.877



Location:
22 km North of Johannesburg
28 km South of Pretoria

SECOND ROUND

A severe delay in the charter flight carrying the cars and spares direct from Rio to Johannesburg resulted in the Teams being unable to start preparing the cars until the Tuesday morning of race week and with the race being run on the Saturday this meant only two days were available before practice opened and only hours before official scrutineering took place on the Wednesday.

We were particularly hard hit as Nigel's car had been quite extensively damaged in Rio, all the replacement body sections and chassis parts being made up in England and sent direct to South Africa. The only crates missing from the consignment delivered to our race garage on the Tuesday morning contained our mechanics' toolboxes and these did not put in an appearance until lunchtime; as any engineer will tell you his tools are definitely *his* tools and poor Bruno our Renault engine man had his general bonhomie put to the test as he found the one and only toolbox (*his*) surrounded by our mechanics anxious to get work under way. Perhaps his recent week long course in English helped in some measure to avoid him having a coronary on the spot.

When all said and done perhaps the enforced delay in starting work was a blessing in disguise; the race crews' Varig charter flight for the long hop from Rio to Jo'burg had been quite a riot, the on board bars being drunk dry only four hours after take off!

Engine Changes

Immediately after the Rio race the engines had come out as scheduled for a quick return to Renault. With bigger radiators shipped out for Kyalami this meant the newly fitted power units had to come out again. Fortunately the huge kit of parts from the factory was of such accuracy and quality each part could be fitted straight onto the cars with no additional alterations to delay our crew's now drastic timetable.

Scrutineering

As scrutineering time drew near on the Wednesday every-



It's all systems go at Elio's race pit stop. The back pack collects any overflow from the water tank vent.

one was still working under heavy pressure (South Africa 1984 will not go down as a relaxed meeting) and crates and boxes from our Norfolk H.Q. were still arriving on trucks ferrying in all the other teams' similar shipments from Jo'burg Airport. Then the large crate carrying a brand new body arrived and work stepped up as the body still on a car was hurriedly dismantled and packed into the same crate for instant return to England. The bodies to be used in the race were also subjected to considerable alteration as newly designed cooling orifices were cut in them, Wednesday evening and night carrying on into the early hours of Thursday morning as work continued. Final engine preparation was an even lengthier business for this race as engine fuel metering units were in short supply and as well as needing individual dressing of ancillary parts the tuning of the fuel cam was an even more delicate task.

Practice Opens

As we had just one set of the bigger qualifying high boost

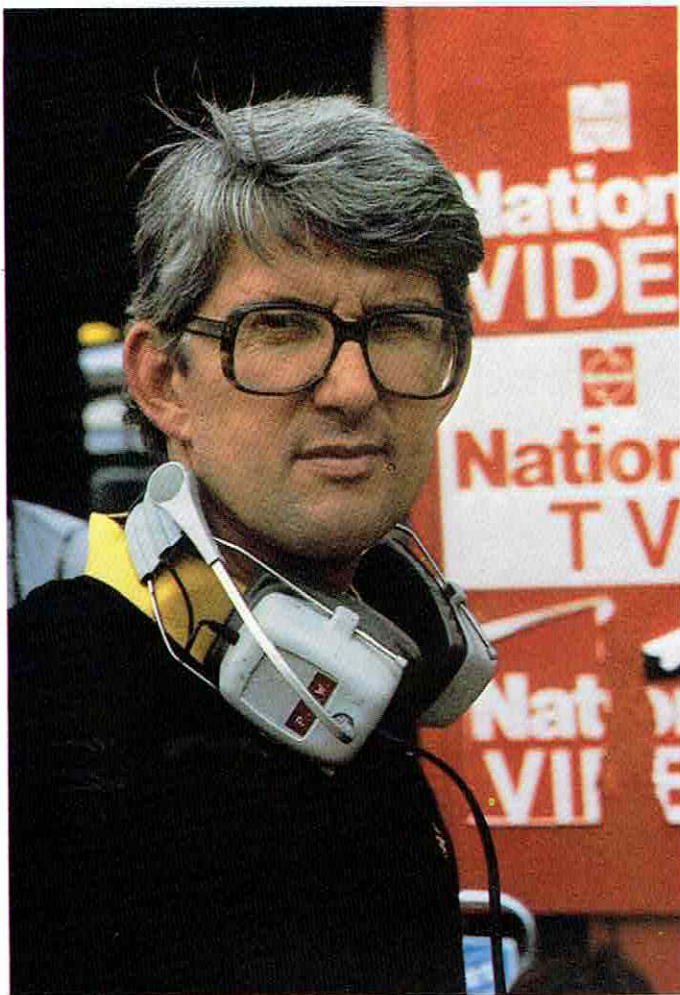
Garrett turbos (these were more advantageous for the higher altitude of South Africa) and Elio had used these in Rio Nigel now got the benefit of them. This obviously did not please Elio (who had the 1984 KKK units) and Peter Warr renewed his efforts to get a second pair from Renault.

Another item that required a decision early on concerned brakes. Consistency of the carbon fibre discs could not be relied on in certain conditions of temperature and grip and the combination only needed to sway slightly out of line one way or the other for an imbalance to set in. With the end of the straight approaching you at something in excess of 200 mph it was decided more development was needed and in the middle of the first practice session both cars were converted back to standard Brembo (the carbon fibre discs on the Williams cars overheated so badly in the race all the C.V. grease retainers melted). Nigel ran with full tanks in this session, Elio with half, the latter getting 0.2 bar less boost with his KKK's than the Garrett's on car No. 12.

New Turbos

It was then that Peter's persistent visits to our friends at Renault paid off and Bruno was able to stagger back to our pit carrying a second set of Garretts. It was typical of our consistently excellent relationship with everyone in the French camp that they were made available early on in proceedings. It was not, however, a quick bolt-on job with a couple of spanners as the task of changing primary pipes from two to one piece was also necessitated.

The commonly known "Rio-bug" had managed to survive the medicinal beverage on the flight over and the affliction had now struck home in a number of camps, not least our own where three mechanics were laid very low, Bernie Grant registering a temperature of 107. It comes as no surprise therefore that with a complicated work load and a decimated working strength it was half an hour into Thursday's qualifying period before our cars left the pits. Comparison with last October's Grand Prix facts and figures provided ample evidence of the success



Peter Warr looks suitably pensive before the race

of Renault's winter development work on their power units and although we were still lacking straight line speed, Nigel was fourth fastest and Elio eighth.

1st.	Rosberg	1.05.127
2nd.	Piquet	1.05.280
3rd.	Tambay	1.05.588
4th.	NIGEL	1.05.792
5th.	Fabi	1.05.923
6th.	ELIO	1.06.305

Friday

Thursday night had seen an engine change for Elio. Nigel's engine had performed perfectly so was left where it was. Another late night became even later when Elio's new unit refused to fire up and took three hours to remedy.

All through Friday the cars ran faultlessly. Running took place in all forms and configurations, from full to 1/2 full fuel tanks on all the Goodyear tyre compounds available and it was recorded as one of the most useful and best sessions in our history. After qualifying ended discussion centred on which of the turbos to fit to Elio's engine for the race and after all the evidence had been sifted we plumped for the type he had used in Rio instead of the Garrett 'high altitude' version. Piquet now pipped Rosberg for pole and Nigel went out to attack both of them but failed to improve on his previous time. Elio then cut over 3/10ths off his previous best and thus primed Nigel did a real blinder on his second run knocking over 6/10ths off his previous best pushing Tambay out of third spot on the

5th.	Prost	1.05.354
*6th.	ELIO	1.05.953

*7th on Start Grid

The Race

The failure of Prost's race McLaren on the race warm up lap caused a race grid muddle when a marshal who was obviously not fully acquainted with the regulations signalled him on to the back of the grid. Another lap was completed, Prost went to the pit road and the race was duly shortened by one lap. Ken Tyrrell was heard to remark this procedure was becoming so common it might be a ruse by someone in fuel consumption problems to get race distances reduced!

Our plan was for Nigel to run full race distance without a stop so he had an 'A' left rear and three 'B's, Elio wearing 'C's all round with a stop planned at half distance.

As it transpired if it hadn't been for the McLaren of Lauda strolling around in front of the field it would have been a great race, anything up to six cars forming a high speed train fighting for 2nd. spot with Elio right in amongst them. Nigel made a successful lighting avoidance of a stalled Piquet when the lights flashed green, but a gremlin in the shape of a fuel vapour lock (Bruno suspected) held him back and he was in twelfth spot at the end of lap one. Elio's pit stop lasted 11.5 seconds, but only one more lap was covered before he was back in again with a small linkage to a turbo broken. This had resulted in a neat fuel mixture on that bank of cylinders which caused flames from the exhaust to such an extent the undertray caught fire and needed putting out. An additional hazard was the fumes generated by the burning carbon fibre which halted everyone in their tracks as breathing became virtually impossible and the resulting delay cost us 5 laps. Once restarted Elio really flew going from 18th to 7th by

the finish but disappointingly just out of those all important points.

Nigel's non stop attempt came to nil for as he took 6th place his carbon fibre engine air intake box split and his engine's power output went from 750 to virtually zero instantaneously; so low in fact he only just managed to climb the hill to get back to the pits and retirement. Later it was noticed that Renault had reverted to all air intakes so this problem has obviously occurred previously.

1st.	Lauda
2nd.	Prost
3rd.	Warwick
4th.	Patrese
5th.	de Cesaris
6th.	Senna
Fastest Lap Tambay (Renault)	

Kyalami Notes

In the straight line speed stakes recorded on Saturday morning's race warm up we were 5th and 8th.

Speeds were:

		KPH	MPH
1st.	Fabi	305.30	190.81
2nd.	Piquet	304.29	190.18
3rd.	Prost	300.29	187.68
4th.	Tambay	299.14	186.96
5th.	NIGEL	295.76	184.85
	Arnoux	295.76	184.85
7th.	Rosberg	295.28	184.55
8th.	ELIO	294.49	184.05
9th.	Senna	292.60	182.87

(Lauda was 22nd with 270.93 kph, but then he won the race!)

Overheard at the swimming pool was the titbit the Porsche engines retained 750 hp throughout the race and still finished the race with ample fuel reserves.

Ferrari's enthusiasm for the new fuel restrictions seem to have turned sour on him following Alboreto's retirement due to an empty fuel tank.

Ghinzani was a very lucky man to escape the horrendous shunt shown on television. When the car split in two leaving the engine in the road the tub (with driver inside) continued

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A stirring head-on shot of Nigel taken at Kyalami.

ELF'S BRITISH ATTACK

Elf's British counterpart held a reception in London recently to emphasise the potential strength of their two pronged attack on this year's World Championship with both the Renault team and ourselves. Stars of the event were Derek Warwick and our own Nigel Mansell (Nigel is just nineteen days older than his compatriot) and the quality of both drivers' extended on-stage interview and their answers (both serious and light hearted) to questioning by the press was ample proof they are excellent ambassadors for the sport.

Focus was centred on the new regulation that restricts the maximum fuel tank capacity to 220 litres and at the time this goes to print it appears some of the drivers and team managers have a serious problem on their hands. Digital read outs in the cockpit indicating the amount of fuel left were said to be accurate to 1%; remembering the conditions these instruments will be working in this is quite impressive, although perhaps now that Rio and South Africa have come and gone we should talk to Mr. Tambay on this subject.

Pit signals are used to tell the drivers what *should* be left in their tanks, so comparisons can be made by the driver and boost turned up or down accordingly. The opening races on the calendar would pose no problem (it was said!) but as the season progresses these calculations and remedies could be most crucial.

The point of the reception was to emphasise that we in Britain now have two highly competent contenders for the World Championship honours in 1984.

The friendly banter between both stars augured well for them both. In reply to the media's suggestions in the past that Nigel and Derek had a bit of a needle match going, both made it clear there were a lot of drivers racing and they were more interested in beating all of them rather than just each other. Nigel and Derek had been hidden behind the scenery for some time prior to the call for them to come on - stage and no doubt the sound of saws in action, falling timber and the rocking



Nigel and Derek seen on stage at the Elf reception in London.

back-cloth was evidence the call came not a moment too soon!

Note: Jean Sage, the Renault Team Manager, said last year the Renault-Elf V6 had been using close to 65 litres per 100 kilometres but improvements

since then had indicated consumption would improve to nearer 60 litres per 100 kilometres.

ELF IN BRITAIN

It was in 1976 Elf appeared as a petrol brand name on service stations throughout the UK after its acquisition of the Occidental Oil mark VIP. Its arrival on the British scene was brought about by an overnight operation transforming more than 500 service stations to the clean sharp image which has become so well known today. Elf now has a 3.5 per cent share of the petrol market in this country.

Elf operates a policy of continually upgrading and improving the image of its network so as to provide the best possible service and facilities for its customers. This policy has resulted in the highest average sales per site of any Company in Britain.

The quality of Elf lubricants is evidenced by their successes with high performance engines in Formula 1 and other gruelling competitive motor sports.

Elf made its entry into the aviation industry in 1981 installing its modern refuelling system at Heathrow Airport now used by Air France, British Airways and Air Lingus, to name but three.

Exploration and Production

Elf has been involved in Britain for some twenty years now acquiring offshore licences covering over 6000 square kilometres and participating in 76 wells of which 51 encountered oil and/or gas. Recently Elf has become involved in onshore exploration and now has access to licences covering more than 7000 square kilometres.

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down the road. Thinking the incident was over he lifted his visor and took off his gloves so as to unclip his seat belts. It was then the flames following the trail of fuel from his engine to the tub caught up with him. It was a quick thinking fire Marshal who directed extinguishing powder around his helmet and face but he received burns to his hands.

Automobile Workshop

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Lotus



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A GREAT START

MARCH 25th

BRAZIL

Jacarepagua



WINNER:

Prost

FASTEST LAP: Prost 1.36.499



Location: 30 km West of Rio de Janeiro town centre

The very first day of the brand new 1984 motor racing season saw both our JPS cars way out in front of the opposition, Nigel taking an excellent pole position with Elio close behind him. Qualifying for the race grid the following day saw Elio outperform everyone in masterly fashion, taking pole position with a time over 8 seconds quicker than the previous all out record time. Nigel meanwhile was intent on holding onto his number one position and in his final qualifying run certainly gave the impression his time was to be a real sizzler; regrettably two slower cars got in his way and his manoeuvre in trying to pass them led him into a spin that put paid to any improvement and saw him back to fifth spot for the start.

The FOCA airfreight, once again entrusted to Varig Airlines, left London Airport spot on schedule on March 16—our crew following them two and three days later. On board the plane were three JPS 95T's, our home based staff building up the fourth chassis in our Ketteringham Hall workshop headquarters in the relative calm of the race team's absence.

Friday

The first practice session (unofficial) got underway with our team anxious to obtain as much data as possible during the ninety minutes of running. Although professing to be perfectly happy with the Brembo/SEP carbon fibre disc brakes at Ricard, Elio now asked to go back to standard discs in Rio; Nigel was initially worried the change would affect him also but he liked the new arrangement and kept his SEP discs, which although giving an overall improvement have the disadvantage of a marked lack of 'feel'.

Each driver tried different tyre compounds with varying loads of fuel, with qualifiers being tried towards the end of the session. Elio's engine had Garrett turbochargers and Nigel the KKK versions. Initially we were troubled with understeer; we were on the same tyres used in the January test but this new characteristic gave both drivers' problems, Elio reporting he had lost balance in the car and that the front of the car was "going light". Nigel coasted in with a dead engine as the end of the session neared, reporting a turbo had expired, but Bruno our Renault engine man found an electrical short had caused a fuse to blow. However his spate of work held up our crew's attempt to set up the car to qualifying specification and the chequered flag marking the end of running came before we

could get out again. Times showed the field's general pace had been two seconds down, Alboreto holding pole with a 1.31.445 over a second ahead of Prost (1.32.622). Nigel was ninth (1.35.562) and Elio 13th (1.36.244).

Qualifying

In the interval before all-important qualifying took place, our engineers who could not be sure a shock absorber might have expired on Elio's car decided to switch springs and dampers from our spare car to Elio's chassis, as well as replacing the Ricard aerodynamic body-work with the older style shape; his turbos were also replaced so there was a lot of work to be completed before the green light flashed on again. Just changing a car from 'standard' to 'qualifying' trim is an involved procedure; first the car is pushed to the weighing area, weighed and pushed back to the pits. Excess fuel and water is then pumped out and measured amounts of cold water and fuel put in—the driver gets in, the car is started and you keep your fingers crossed the pumps will continue to function properly on their cold diet. Then after the run is complete it is back to the pits and the same but reversed procedure takes place. Such a work load on this occasion found Nigel still waiting to go out half an hour into the one hour session.

Times Quicken

Now boosts were being turned up; first a Ferrari did a thirty something (same as our January runs) then Elio stamped his mark on proceedings by being the first to get under the 30 band (with a 29.6). Then Alboreto recorded a 29.9 followed by Lauda (same). By now Nigel was ready to go and almost immediately recorded a 29.5 followed by a 29.364 which sat everyone bolt upright! The labourious change to qualifying trim centred on Elio's car as he readied himself for a final spurt but as he flashed past the pits on his all-can-do run the chequered flag came out (one and a half minutes early!) and his attempt was thwarted. First day, new season and we were a glorious FIRST and SECOND. But Peter Warr was fuming.

1st.	NIGEL	1.29.364
2nd.	ELIO	1.29.625
3rd.	Prost	1.29.823
4th.	Alboreto	1.29.950
5th.	Lauda	1.29.951
6th.	Tambay	1.30.719

Timer Error

An outwardly composed but inwardly agitated Peter Warr rushed off to the officials to protest the loss of the all important



Elio has a relaxed smile after tucking pole position under his belt.

ninety seconds. It transpired the Steward in charge had banged his starting gong spot on time but the chap on the pit road lights had been one of the last to find out and only flashed to green one and a half minutes late. This lapse had not been reported to the steward in charge and so he merely stopped running at the appointed time (on his clock) thereby aborting Elio's final attempt at pole.

Debriefing

A multitude of items came under the spotlight at post practice debriefing, one of the major decisions being whether we should run 'old' or new bodies the following day and what the basic aim of Saturday's running should be. Eventually both drivers elected to stay as they were and Saturday was to be spent concentrating on the trim for the race, both drivers scheduled to do long uninterrupted runs on full tanks.

Data

Elio soon grew bored with his programme when Saturday running opened as an intermittent misfire stopped him putting together consistent laps and after completing only five he had to stop for adjustments to be made but Nigel badgered away and produced a pile of useful information. At this stage everyone in the pit lane was looking over their shoulders at the Brabham team; Nelson had been down in 10th spot the previous day, his best time 2 seconds adrift of the front runners and it was felt Gordon Murray was playing the watching game with a trump card still to play. McLaren had suddenly produced top form and with the sports' most experienced turbo engineers in their camp they were now a very serious force to be reckoned with. Car weights were interesting, the Brabham being (mysteriously?) high at 581 kilos to Ferrari's 553 (first

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Champion darts player John Lowe takes delivery of his new Lotus Excel from Mike Lester (right), Sales Manager of Peter Smith Sports Cars of Hatton, Derbyshire. John Lowe, who is sponsored by British Car Auctions, was handed the keys at a ceremony attended by local press and invited guests.

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day), the same as Elio's car, and 542 kilos the second day. Nigel's weighed in at 549 and the Renaults at 545. The Tyrrell was ultra light in its bid to quell the turbo brigade - as someone in our crew said, when you see a car being pushed down the paddock with the touch of a finger "it ain't heavy!"

Frozen Fuel

The methods used by the Team's to cool their fuel to around -30° (thereby squeezing more valuable litres on board) were fascinating and will no doubt become even more complex as time goes on. We used simple insulated boxes packed with dry ice, into which six churns of fuel were placed early each morning. Renault employed what we soon nicknamed the "Pacific Locomotive"; this was a huge cooling container around 12 feet x 5 x 5 feet powered by mains electricity and assisted by 2 generators working throughout the night. Ligier's was a huge tank containing neat fuel with liquid nitrogen blowing through it! This steaming edifice was quite obviously viewed as lethal, but fortunately it broke down early on. For quicker delivery of water we constructed a dexion tower on top of which sat the pressurised water container, with a ladder for Bob Dance to use in order to refill it. The contraption had a definite air of the final sentence, so much so that a wag soon fastened a length of rope complete with noose to it.

Elio Breaks 28's

Now Nigel decided that the perfect balance reported by Elio was for him as well and so his car was changed to "old style" bodywork.

When the final session of running opened Derek Warwick was first to hit the headlines with a 1.29.25 which bumped both



our cars off the front row. Nigel then went out, firstly to get some running with the "new" body-style and then to set about Warwick's new time. With a 1.30.182 under his belt he returned to the pits for Bruno to make adjustments to his turbos. It was then that Prost emphasised the McLaren threat by turning in a 29.330 that pushed our drivers back to the second row and Elio quickly joined the fray to re-establish our earlier superiority. This he did in fine style breaking into the 28's handsomely with first a 1.28.46 and then a scorching 1.28.392 that was to put his regained pole position out of everyone's reach. In the meantime, new Ferrari boy Alboreto recorded a 28.950 which displaced both Warwick and Prost from the front row, Nigel now finding himself back in fifth spot but raring to put the record straight on his second run. As Nigel prepared for this the whole Ferrari team, in it's desire to get back out front again, was seen crowded round their engines obviously doing their utmost to turn the boost wick up as far as it would

go - it transpired they turned it up a little too far, for as Arnoux got under way there was a flame out flash from his turbo as it expired in a big way.

Spin

Nigel's effort was unfortunately doomed; it was obvious to everyone as they clocked him during the opening stages of his all out attempt his time would be a real flyer but round the back of the circuit he came up on Prost and Palmer who were not cruising but not exactly setting the world alight. In an effort to pass them he dived inside both cars but his manoeuvre took him into a spin and that was that. A great shame.

It was before Saturday's session that our Mechanic Chris Dinnage badly gashed his hand during a practice wheel change and our second Team casualty of 1984 had to be rushed off to the circuit doctor for attention and for stitches to be put in the wound. The result of this injury was to have dire consequences for us in the race itself.

Starting Grid

1st.	ELIO	1.28.392
2nd.	Alboreto	1.28.898
3rd.	Warwick	1.29.025
4th.	Prost	1.29.330
5th.	NIGEL	*1.29.364
6th.	Lauda	1.29.854

* Previous day's time

At this stage Jonathan Palmer was a non starter, but a fracas between the ATS Team Manager and the Stewards of the race ensued after practice was over and the latter saw to it Winkelhock's car was excluded from the race thereby allowing the last of the four British drivers onto the grid.

Engine Changes

Both cars had new engines installed on the night before the race - the units coming out had each covered around 200 miles and as some of these had been in high boost conditions it was

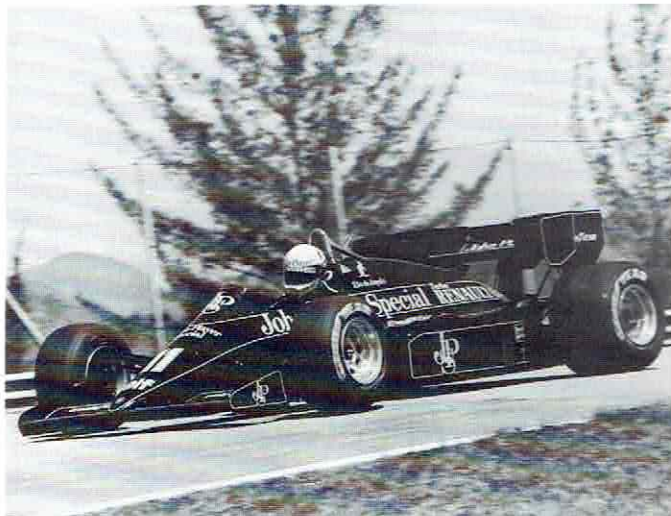
felt best to change them. It is interesting to note Renault's engine consignment for Rio and S. Africa saw 40 race engines being shipped out. Their reliability factor was very good as in Brazil only one engine gave trouble (a Ligier unit). Such a large number of units on hand proved a disadvantage in one way in as much as each still needed 'dressing' with ancillaries when changes came about and work times in excess of five hours had to be allowed for.

The Brembo SEP carbon fibre disc brake system had originally been planned for use in practice only but Nigel was by now keen to use them in the race itself. To give them race life they needed special titanium shields and high temperature pistons fitted to the callipers; these had not been delivered by the time we had left for Rio and until Gerard had, by dint of some diplomacy, borrowed some from another Team there was a good chance Nigel might be disappointed. On the tyre front Elio elected to go for a B/C combination for the first half of the race, Nigel going for "Bs" all round.

Countdown

With frozen fuel and cold water requirements added to pre-race preparation the start countdown now had to be run to military precision, all the various functions and operations being timetabled to precise minutes in the forty minute lead-up to the cars leaving the pits. Cold fuel churns have to be filled to the brim to prevent the hazards of vapourisation and the action of pouring these into funnels, however large, brings it's own problems. To ensure maximum safety a Brazilian fireman complete with a huge powder extinguisher was called into the garage, but his enthusiasm took over and he fired it off inadvertently! To cover his embarrassment, coupled with his desire to put things

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Elio putting the cat amongst the pigeons on the Jacarepagua circuit.