# The Sky Is The Limit

*A Book of Skyline Stuff*

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# Introduction

## *Legal Stuff*

All brands and trademarks are the property of their respective owners.

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Much of the contents have been compiled from many resources, conversations with people, posting made to message boards, and technical articles published on the internet.

My deepest respects and thanks to those who have posted helpful material on the SkylinesDownunder forum – it is a truly great resource!

## *Skyline history*

The Skyline name has been around for many years -- since 1955 in fact. This timeline and history is based on material from the Skylines Downunder web site, and other internet resources.

1955 The Prince Motor Company produced the Skyline ALSIS1 in either a four door sedan, or a five door wagon. It was powered by a 1484cc four cylinder engine producing 60 horsepower.

1957 The Skyline ALSI2 was released, with some cosmetic enhancements. Namely quad headlights, a new grill, and a new bonnet emblem.

1961 The Skyline Sport BLRA3 was released. It was an Italian design, and hand built, so production numbers were limited. This model was available as either a coupe or convertible. The engine was a 1862cc unit producing 83 horse power.

1961 The Skyline S50E series was released. It was powered by a 1484 cc four cylinder engine producing 70 horsepower. It was during the life of this model in 1966, that Prince Motor Company and Nissan were merged. Options included a three speed column change, or a four speed floor change with bucket seats. Again this model was available in either a four door sedan, or a five door wagon.

1965 The first sporty Skyline -- the Prince GT S54 was created to go racing. The body was based on a modified S50 with a lengthened nose section, and a 1988cc six cylinder engine with either triple 40DCOE18 Webber carburettors, or a lower compression version with a single carburettor producing 127 and 106 horsepower respectively. Features included a LSD, a five speed close ratio gearbox, front disc brakes with twin callipers, and finned drums on the rear.

1967 The Nissan Skyline 1500. Powered by a 1483cc four cylinder engine producing 94 horsepower. Available in either a four door sedan, or a five door wagon.

1969 The Nissan Skyline C10 series. Engines included a 1988cc six cylinder pushing 106 horsepower, a 1973cc L20 six cylinder engine with 109 horsepower, and the 1998cc DOHC S20 GTR engine producing 160 horsepower with triple Solex carburettors. The range was available in two and four door sedans, and five door wagons (except for the GTR which was limited to the sedan options) The GTR was nicknamed "Hakosuka"

1972 The Nissan Skyline C110 series. Again, a range of models and engine types. The interesting models included the 2000GTX powered by the 130 horsepower L20, the 2000GTR with the 160 horsepower S20. Other variants included 1600GT, 1800GT.

1977 Another new generation of Skylines. Models included 1600TI, 1800TIex, 2000GT. In 1980 the first turbo charged Skyline was released - the2000GTex with a 140 horsepower L20 engine.

1980 Nissan R30 Skyline. The Skyline was evolving into the shape we associate with modern Skylines with this release. Models were similar to the last generation with a few additions, 1800TI, 2000GTex, 2000GTex turbo, and 2800GT. The lightweight R30 2000 RS and R30 RS Turbo packed the new FJ20 two litre four cylinder engine in both naturally aspirated and turbo versions producing 145 and 190 horsepower respectively. 1983 saw a facelift for the RS series, now renamed the RSX and RSX Turbo. By 1984, the RSX Turbo C produced 205 horsepower, and was nicknamed "Te Ka Men" or Iron Mask. The RS Turbo formed the basis for Nissan's early Group A programme. Many of us can recall the Nissan's in Peter Jackson colours competing in the Australian Touring Car Championship, with George Fury and a young Glenn Seton.

1985 Nissan R31 Skyline. Another step in the evolution of the Skyline. New models included the GTSX, and the GTSR. The RB20DET was introduced, as was HICAS. The RB20DET engines in the R31 range are known as "Red Tops" after the colouring of their valve cover.

1989 Nissan R32 Skyline. Models included the GXI, GTE, GTS, GTST, GTS25, GTS4, and GTR. Engines included the CA18 for the GXI, and then the RB20E for the GTE, RB20DE for the GTS, 160kw RB20DET for the GTST and GTS4, RB25DE for the GTS25, and the 206kw RB26DETT for the top of the range GTR. The GTS4 and GT R models featured Nissan's new all wheel drive system. The valve cover colour for the RB20DET is now silver for the R32 series.

1993 Nissan R33 Skyline. This model was heavier than the very popular R32 series, and based on the Laurel platform. The models again are very similar to the previous generation, with GTS25T, GTS25, GTS4 (naturally aspirated only), and the GTR.

1998 The R34 Skyline series. A more aerodynamic design than the previous R33 series, and another boost in performance.

2000 The R-34 GT-R and GT-T go on sale in New Zealand from Nissan dealers.

# Specifications

## Engine

What are the specifications of the RB series engine? Nissan makes engine identification easy all those letters and numbers have meanings!

RB series of engine
20 / 25 / 26 capacity (20~1998cc / 25~2497cc / 26~2597cc)
D Double Overhead Cam (or DOHC)
E EFI (Electronic fuel injection)
T /TT Turbo / twin turbo

| | |
|---|---|
| RB20E | 97kw@5600rpm 172Nm@4400rpm |
| RB20DE | 116kw@6400rpm 184Nm@5200rpm |
| RB20DET (Red top) | 134kw@5600rpm 225Nm@4400rpm |
| RB20DET (Silver top) | 160kw@6400rpm 263Nm@3200rpm |
| RB25DE | 142kw@6400rpm 231Nm@4800rpm |
| RB25DET | 187kw@6400rpm 295Nm@4800rpm |
| RB26DETT | 208kw@6800rpm 368Nm@4400rpm |

## Basic R32 GT-R specifications

Gear ratios:

| | |
|---|---|
| 1st | 3.214:1 |
| 2nd | 1.925:1 |
| 3rd | 1.302:1 |
| 4th | 1.000:1 |
| 5th | 0.752:1 |
| Diff | 4.11:1 |

*Wheelbase* *2615mm*

| | |
|---|---|
| Front Track | 1480mm |
| Rear Track | 1480mm |
| Length | 4545mm |
| Width | 1755mm |
| Height | 1340mm |
| Ground Clearance | 135mm |
| Kerb Weight | 1430kg (there are many weights published) |
| Fuel Tank | 72 litres |

| | |
|---|---|
| Tyres | 225/50 R16 92V Bridgestone Potenza RE71 |
| Wheels | 8.0 x 16" Alloy (these have 8.0x16 cast into the rim) |

## Basic R32 specifications

| 2 Door Specification | | 4 Door Specification | |
|---|---|---|---|
| Front Track | 1460 mm | Front Track | 1460 mm |
| Rear Track | 1460 mm | Rear Track | 1460 mm |
| Length | 4530 mm | Length | 4580 mm |
| Width | 1695 mm | Width | 1695 mm |
| Height | 1325 mm | Height | 1340 mm |
| Ground Clearance | 145 mm | Ground Clearance | 145 mm |
| Fuel Tank | 60 litres | Fuel Tank | 60 litres |

## Vehicle weights

| | |
|---|---|
| R32 GTS | 1260 kg |
| R32 GTS25 | 1380 kg |
| R32 GTSt | 1280 kg |
| R32 GTS4 | 1480 kg |
| R32 GTR | 1480 kg |
| R33 GTS25T sedan | 1398 kg |

NB: these weights are unconfirmed.

## R32 Wheels

R32's are available with the following factory wheels:

| Size | Offset | OEM tyres |
|---|---|---|
| 14x5 ½ JJ | 40 mm offset | 165SR14<br>185/70R14 |
| 15x6 JJ | 40 mm offset | 185/70R14<br>205/60R15 |
| 16x6 ½ JJ | 40 mm offset | 205/55R16 |
| 16x8 JJ | 30 mm offset | 225/50R16 |

The 16x8 JJ are GT-R wheels are very hard to come by. The size of the wheel is stamped into the rim for identification purposes.

Upgrades to tyre size can be done with differing results. Some members have reported good results with 225 sized tyres on the GTS-t 16x6 rim, others have had excessive tire-wall flexing.

## Deciphering model serial numbers

On the R32 and R33 Skylines, there is a blue plate attached to the firewall on the driver's side. On the plate, there are a series of numbers and letters which make up the model and options of the car.

The R32 and R33 plate looks like this: *(italics are my inserts)*

| ***Nissan Motor Co LTD Japan*** | |
|---|---|
| | E-HCR32 |
| Chassis No | HCR32-016693 |
| Model | RCR32GASM AA |
| *Colour code* | KG1 G 130 |
| *Engine* | RB20DET 1998 cc |
| *Transmission / Axle* | RE4R01A RC43 |

### *Colour codes:*

| **R32** | **Colour** | **R33** | **Colour** |
|---|---|---|---|
| KG1 | Light grey | 1N4 | Light grey/silver |
| TG0 | Dark grey | 1N3 | Dark Blue |
| TH1 | Dark blue | AN0 | Burgundy |
| BJ0 | Light blue | KH3 | Black |
| AH3 | Red | QM1 | White |
| KH6 | Cream | KH2 | Dark Grey |
| 326 | White | DN0 | Aqua Blue |
| 732 | Black | BN6 | Awesome blue |

### *Transmissions:*

| | |
|---|---|
| RE4R01A | 4 speed auto |
| RE4R07A | 4 speed auto |
| RE5R01A | 5 speed auto |
| FS5R30A | 5 speed manual |
| FS5W7 | 5 speed manual GTS |

## Fuel

The Skyline's handbook recommends the use of premium unleaded for the RB20DET and RB26DETT. Do not use 91 octane in any Skyline. The fuel tank holds 60 litres in all models except for the GTR which has a 72 litre tank.

My own R32 GTSt is an auto, and returns the following figures:

| | km/l | L/100 km | MPG |
|---|---|---|---|
| Average | 9.93 | 10.08 | 28.04 |
| Best | 11.15 | 8.97 | 31.5 |
| Worst | 9.24 | 10.83 | 26.1 |

Fuel consumption can be worked out by totally filling your tank, resetting the trip meter, driving, refilling the tank, taking note of the litres taken to refill and the distance on the trip meter. Don't run the fuel tank to empty, as this may suck any rubbish in the tank through the fuel system.

### *Fuel consumption formula*

A = kilometres from the trip-meter
B = litres of petrol taken to refill the tank

C = A / B
D = 100 / C
E = (A / 1.609) / (B / 4.546)

Kilometres per litre = C
Litres per 100 kilometres = D
Miles per gallon (Imperial)= E

To calculate US miles per gallon, substitute 3.785 instead of 4.546 in the calculation for the variable E.

# Life is Like a Box of Chocolates: The Ultimate Track Test

Written by Kev.
Kindly reproduced from Kevin's DR-30 website.

http://homepages.tig.com.au/~robs/kevspage.htm

Did you know that Nissan was the first Japanese car maker with a production turbocharged engine?

In 1979, Nissan released the Skyline GT-ES as part of its blocky C211 series, and that car was powered by a 2.0 litre version of the L-Series six, and with fuel injection and a Garrett T3, the L20ET churned out 140 hp. Not too impressive perhaps in the context of an HKS modified 1000 hp R34 GT-R, but a telling indication of Nissan corporate direction in the years ahead. In 1981, the flagship Nissan racing machine was a Silhouette Formula Skyline DR30, a 500 hp flame spitting machine, with a motor called the LZ20B, a special Nismo-built twin cam turbo version of the L-Series four.

Turbochargers and intercoolers are a Nissan way of life, and its flagship performance models today, from the new Silvia/200SX, to the new R34 Skylines, to the Japan-only Stagea (a four door station wagon with GT-R drive-train and mechanicals), to other stuff we don't get here like the Gloria, Laurel, Cefiro, and 180SX, all rely on a hairdryer to pin your ears back and charge towards the horizon.

But the speed kings of the Nissan model range today, as ever, have Skyline badges on their rumps. To recount them is to list a proud lineage of turbocharged performance cars. 2000RS-Turbo, GTS-X, GTS-R, GTS-T, GTS25t, and of course, GT-R.

The ultimate opportunity to drive them all appeared on May 9th, at Wakefield Park Raceway, situated in rural NSW. The NSW SVD Club was invited to a track day with the Honda Car Club, and a quick inspection of the pits revealed a choice collection of turbo Skylines. This was an opportunity not to be missed.

What follows is a track test. There are no lap times, as each car was in varying stages of modification, condition and tune. The object of the exercise was to drive the cars hard, to experiment, prod, poke, and feel the flavour, fabric and character of each car. Each car has been given a rating out of 100 for Engine, Handling and Overall Balance. The emphasis is on fun and driveability, so a car may receive high marks for Engine and Handling even though it may lack outright pure grunt or grip. It is more of a rating of driver satisfaction.

Overall Balance is a fun-rating. Rather than an indication of outright speed around a racetrack, it is a subjective evaluation, based on the car's virtues as a whole package. It is also an indication of which set of keys I would go for if I had them all, and an empty racetrack in front of me.

So let out the cat, turn off that TV, put that mobile on voicemail, make yourself a nice cuppa, settle down into your favourite reading chair…. and hang on for the ride….

## *1981: DR30 2000RS-Turbo*

This car, of all the cars tested, is the odd one out in many ways, with a significantly different character to any of the other cars.

The 2000RS normally aspirated model, (powered by the then new FJ20DE engine), opened its account in November 1981. The R30 series already had a luxury sports model in the GT-ES, with a 2.0 litre turbo L-series, and so Nissan saw fit to position the 2000RS as a no frills, stripper sports model of the Skyline range. In went the taxi pack interior, and out went things like power windows, electric mirrors, and even the radio!

But Nissan's efforts were not in vain. A staggering 125 kg was stripped out of the GT-ES, and so the 2000RS rolled onto the road at a bantamweight 1130kg. A turbo edition, the 2000RS-Turbo, was introduced a year later, but the model had gained weight and equipment to the point where the last of the turbos weighed 1250kg.

The car tested here is a combination of an early normally aspirated body-shell, with a transplanted turbo heart. It weighs 1140kg, 200kg lighter than the next lightest car tested, the R32 GTS-T. Powered by the FJ20DET, a 190hp 2.0litre turbo 16 valve four, the 2000RS-Turbo moves off the line with a lightness that none of the others tested enjoys.

The lightness carries onto the way the car handles. Tip the car into a hard corner, and there is no feeling that the springs are struggling to keep the car flat. Likewise, the feel through the steering tells a tale of tyres that are gripping the road lightly. At eight tenths, the 2000RS-Turbo feels quick and flat, light on its feet and nimble.

There is, however, a downside. The gritty FJ20 lights up in the middle of a corner with all the subtlety of a New Year's Eve firecracker, and the chassis has no hesitation in immediately throwing the tail sideways. An occurrence that will scare the living daylights out of everyone in the car, no doubt.

Time the power delivery carefully, and the 2000RS-Turbo will squat, then thrust itself out of the corner with a fearsome ferocity. Devoid of four wheel steer or trick computer designed multilinks, the suspension is basically Datsun 1600 with longer control arms.

Can it handle the power of the FJ20? Well, sort of. But mostly no. Words like understeer, oversteer and neutrality lose their meaning in this car somewhat. The 2000RS-Turbo merely grips, and grips and grips until the turbo kicks in, whereupon it will squat, and fire out of the corner. Or it might go sideways and spin out.

The FJ20 is laggy, laggy, laggy, then….WHAM! The turbo comes in with a bang, and the motor revs like a demon all the way to its 7500rpm redline. It is a very top endy motor, with a somewhat uncultured power delivery. But it does make light work of pushing the flyweight 2000RS-Turbo along, the motor blasting the car out of corners and down short straights with diffident ease. Short of the GT-R, it feels the fastest in a straight line, a sensation accentuated in no small part by the surprise-birthday-party power delivery.

The handling is quick and light, which means that the 2000RS-Turbo can carry a great deal of speed into a corner. Get the power delivery right, and the car will simply grip and go, the

lightness of the car meaning that more of the tyres' grip is devoted to cornering. But once the grip runs out, you are in no doubt that you are on your own. Get the power delivery wrong, and you feel that the consequences would involve six or seven tank-slapping fishtails, a backwards exit off the track, flipping, rolling, and burning to death after the car bursts into flames…a 2000RS-Turbo does not need a lover with a slow hand….

But there is no doubt that it is fast, surprisingly faster than all the others tested today, except for the GT-R. It gives the biggest shove in the back when firing out of a corner, it turns in the most keenly, and holds its line with the greatest determination. Providing crude thrills for the G-force addict, a good, hard clean lap in a 2000RS-Turbo is a ride you'll not easily forget, and an object lesson in the benefits of light weight and quick handling.

But if you lost it, it would certainly be a most spectacular crash…

Engine: 75 Handling: 85 Overall Balance: 90

## *1986: R31 GTS-X*

I really wanted to like this car. An R31 is, of course, the birthplace of the RB series twin cam sixes, and other latter-day signature Skyline engineering cues like HICAS four wheel steering first found a home in the R31. Powered by the 2.0litre 24 valve twin cam six, the RB20DET rolled out of the factory with 180hp. The example I drove had somewhat more than that, due to the fitment of a larger turbo, raised boost and a three inch mandrel exhaust.

But of all the cars I drove at Wakefield that day, the R31s were the least willing to play, and to some extent, the only disappointment.

The chassis is tuned more for stability rather than response and this was evident on the tight twists of Wakefield, where the nose was found wanting in grip. This meant that corner entry speeds were lower than any of the others tested, which hampered lap times. Perhaps this phenomenon is due to the early generation HICAS 4WS being too eager to cut in.

What exacerbated the problem was that this early edition of the RB20DET was lacking in response and mid range torque. Although not especially laggy, the real power lurked up high in the rev range, and punching hard out of a corner would leave the engine gasping, which meant that I couldn't use the power to neutralise the understeer.

The GTS-X preferred a smooth style, brake early, ease the car into a corner just on the verge of its understeer, and then squeezing the loud pedal early to build up boost for the corner exit. Try any harder, and the nose would wash wide with understeer. Try a more aggressive turn in under brakes and you'd unsettle the grip and understeer would be the result again. And the lack of immediate kick from the motor ruled out the option of flicking out the tail with the power to ease the nose push.

Here was a car that wanted to go only so fast and not a skerrick faster. Benefits included a lovely crisp, six cylinder howl, and it is a great and stable cruiser car, but it's a bit lost in the confines of a tight racetrack.

The handling characteristics seem to stem from a fundamental problem, like weight balance, suspension roll-centres, or the interference of the HICAS, rather than any specific tuning malady with the suspension. To go faster, the handling would need to be addressed, and some way needs to be found to inject some torque into that motor.

The GTS-X is a case where the power characteristics of the engine are mismatched with the chassis' behaviour. Needing a slow-in, fast-out driving style, the HR31 cries out for a torquey, grunty motor to really dig the car out of a turn, as it isn't its style to carry a lot of speed up to the apex. Unfortunately the laggy and high strung RB20DET is not that motor, and is one of the reasons why the overall package didn't gel for me.

Engine: 60 Handling: 60 Overall Balance: 50

## *1986: R31 GTS-R*

Now here's something you don't see everyday. To homologate the HR31 for Group A racing, Nissan produced 800 GTS-R Skylines, which were cooking GTS-X's fitted with all the groovy bits needed to make the racecar a contender. Lift the bonnet, and you'll see a large turbo, fabulously fabricated tubular extractors, and a huge intercooler in front of the radiator. Nismo has been at work in this engine bay, and the RB20DET-R in the GTS-R is reputedly good for 220hp, up from the 180hp of the GTS-X. A rare bird indeed, full of interesting and unique engineering details.

The problem with some homologation specials, and sadly, in this case too, is that the racing parts are in the car to legalise them for Group A. The bits may not necessarily work all that well together, nor be suitable for a good road car.

Hoofing it out of the pits, the driver is faced with enormous lag. The huge turbo does not seem to kick in until the high side of 5300rpm. Changing up at the 7000rpm redline means that the powerband is woefully narrow. The promise of extra power is fulfilled, however, with a top end rush that makes the GTS-X's pale in comparison.

This particular GTS-R was fitted with an aftermarket HICAS controller, which seemed to provide it with a better handling balance than a cooking GTS-X, but the R31 trademarks were all there. Understeer raised its head relatively early in the corner, and due to the very peaky and laggy turbo, your right foot could not do that much about it.

Pre empting the lag and timing the power delivery so that it wagged the tail was difficult, as you'd have to hit the loud pedal quite early, and if the boost arrived too early in the corner, of if your entry speed was just a little bit too high for the front tyres' liking, strong understeer would inevitably be the result. In this respect a cooking GTS-X is an easier drive.

Driving the GTS-R fast is slow-in, fast-out, process, using the top end power to zap down the straights, and then take it easy through the corners. But the mismatch between the chassis and the motor was even more evident in this homologation special, and more disappointing given the quality of the base components.

But think about this: with all those hi-po bits under the bonnet, the ultimate potential of this motor would definitely be better than most…perhaps all it would take are a few tweaks and the GTS-R could be a very good thing indeed. But for now, the GTS-R feels more like a collection of cool racing parts needed for racing, rather than an integrated and cohesive road car.

Engine: 45 Handling: 65 Overall Balance: 40

## *1989: R32 GTS-T*

R32 GT-R's have always had a special aura. And it's an aura that the rest of the R32 range enjoys by association. Climbing into this 4door GTS-T, you can't help but feel like you are settling into a GT-R sedan. The dashboard and steering wheel all scream GT-R at you, to the point where you don't even notice the automatic shifter.

And the car doesn't disappoint. It is fitted with an RB20DET, just like the GTS-X and GTS-R before it, but it must have had a myriad of detail changes as the behaviour of the motor is completely different. Boost comes on in a hard step in the upper mid range, and unlike the R31, which feels as if the power wilts towards 6500rpm, the GTS-T pulls like a steam train all the way to the 7000rpm red paint. Outright kick is much more impressive than its predecessors, but more importantly, the power is there when you need it, with a considerably wider, more useable powerband.

Handling wise, it was as if Nissan knew about the shortcomings of the R31 and addressed them in the R32. The nose reacts sharply to the helm, and sticks stubbornly to your chosen line. The improvement in front end stick allows you to barrel into a corner much faster, where you can use the eager power of the motor to fire out of the corner at a very rapid rate. The power characteristics of the engine were very well suited to the responses of the chassis, and the overall package was a real delight as a result.

Compared to the R31s, power oversteer is easily available, and the wide, easy powerband of the RB20DET made holding long, smoking powerslides an absolute snack. The handling balance is neutral, and the quick reflexes of the steering and the ready power make it easy to trim your line with the right foot. Lively, without being twitchy, the motor has the exact amount of power to make the car fast but not a handful.

While the R31 takes a careful and precise hand to exploit, anyone can enjoy this car. It's an easy car to push to, and beyond, its limits as a result, simply because the chassis and the motor give you the tools you needed to keep the thing pointing in the right direction, and the power on the boil. Rush up to a corner, and you'd have the option to keep it fast and neat, or play rally-driver and get it completely sideways. That's what I like in a car.

Brake late, tip the car into a turn, ease on the power early, and then relax the loud pedal slightly as the boost builds up to cannon the car onto the next straight with just a hint of a powerslide. Just fantastic. Very classy. An exploitable and playful companion on the racetrack, the GTS-T is a cracking car, and one that was about 90% of the fun of a GT-R, and easier to pilot, too. Although the GT-R is obviously a faster, better car, the balance between handling and power in the GTS-T allow every ounce of the car's ability to be enjoyed. It does everything a GT-R does, just at a slower speed. The feeling is gratifyingly similar.

That's why this particular car gelled as a package for me. Better than the sum of its parts, and a bargain considering the pedigree and overall class of the package. Compared to something like a 200SX, the balance of the chassis was finer, the throttle control better, the bodyshell much stiffer. The GTS-T simply feels a better developed, and more expensive car than a 200SX. And a huge improvement over the R31.

Engine: 80 Handling: 80 Overall Balance: 90

## *1990: R32 GT-R*

Godzilla. What more can you say? As I slid behind the wheel, I remember thinking that I had been waiting for this moment for years. The engine was already idling, so I pushed in the heavy-ish clutch, slotted the big gearstick into first, and powered the car onto the track.

Boost arrives early at 3500rpm, but then builds, and builds and builds, with a rising crescendo of sheer power until you reach a howling 8000rpm. The power is so linear it feels like a good, normally aspirated motor. Response is immediate, lag minimal.

Second gear. Hard on the power. The corner looms up, hard on the brakes, the rear of the car squirms slightly with the effort, tip the car into the corner and pour on the power…. pushed into the seatbacks instantly, no lag…the tail squats slightly as the boost comes in, then arcs out in a smooth, gentle powerslide. Snap on a handful of opposite lock, squeeze the loud pedal all the way to the floor, and the GT-R hunkers down on all fours as it exits the corner in a bucking, screaming four wheel powerslide.

Next straight. Third gear…God, this has some grunt…back off for the next sweeper, ease the car onto the racing line, then back on the power. The nose is running slightly wide, so the loud pedal goes down a smidge. The chassis immediately reacts, firming its resolve and stepping the tail out perhaps six inches, and pointing the nose back into the apex. The hooligan in me then pushes the loud pedal a further smidge (or three), and we hold a smoking powerslide for the duration of the sweeper, on half throttle and a quarter turn of opposite lock.

Next corner, and we're still sideways. Dab the brakes a touch and the tail comes back into line, tip the steering left, and the GT-R tacks, then settles down like a prizefighter coming in for the killer jab. This is so stable, yet lively. Just like its little brother the GTS-T. Only faster. Much faster.

A few laps later, the tyres and brakes are starting to go off, and the chassis responses are starting to dull. It's times like this when the true class of a car comes into play. Reef the wheel into a corner, and the GT-R immediately flicks its tail out to settle into a four wheel drift….. jab the loud pedal and the chassis settles down, wind on some opposite lock, and floor it as the GT-R shifts its balance, then goes into a long, rally-car style powerslide that is at least 45 degrees to the road, and feels like it lasts forever.

The engine had enough power to overcome the grip of the tyres and control the attitude, and the steering still has enough bite to get you out of trouble should you have to bail out….but you don't have to bail out, because this is a GT-R….so you ride the powerslide right out to the last inch of the racetrack, then relax your right foot just a tad, no more than a centimetre, and the GT-R immediately composes itself, and fires down the next straight, hungry for the next corner….

Pure class. I had expected the 4WD system to be more intrusive, but no. The GT-R reacts just like a good RWD sports car should, powering out the tail, and allowing you to play tunes with the loud pedal. The only difference between the GT-R and a conventional RWD car was that the GT-R only got about 75% as sideways as it should have, and only ever needed about 75% of the opposite lock it should have needed, while you could give it 30% more loud pedal than you had any right to.

Meanwhile, the GT-R retained reserves of composure and balance that would flatter a lesser car at half the speed. The responses, the timing of the GT-R is identical to a RWD car, and so the driver's rhythm feels natural, and instinctive. The tail comes out when you expect it to, and so you don't have to recalibrate your senses for the fact that this car is a 4WD. If you are a fan of the classic, rear drive balance, you will love this car. It is a car that doesn't even raise a sweat even when it is travelling sideways like a rally car on dirt.

The RB26DETT is just wonderful. It is a well balanced motor, with enough compression and fast-spooling turbos such that the powerband is nice and linear, the response fierce but smooth. Some turbo engines deliver their power in a hard step, like shaking ketchup out of a brand new bottle (did someone say FJ20?), but an RB26DETT pours its power onto the tarmac like King Island double cream.

Sensational. Fantastic. Godzilla. What more can you say?

Engine: 100 Handling: 90 Overall balance: 97

## *1994: R33 GTS25t*

The R33 GTS25t, as the name suggests, comes packed with an updated, 2.5litre version of the RB series six. Still with a single turbo, it packs a cool 250hp through its factory fit intercooler. It's most directly comparable with its predecessor, the R32 GTS-T, but under its bulkier new lines, is an additional 100kg of weight. All dimensions are a little bigger, all though the tight dynamics of the car make it feel smaller than it is.

The first thing you notice is the extra shove of the 2.5 six. Compared to the silver-top RB20DET in the R32, off idle torque is much stronger, and the progression from no boost to full boost at about 3500rpm is smooth and linear, if not quite in the GT-R class. Like the R32, the GTS25t revs eagerly with a burgeoning power-curve right to its 7000rpm redline, emitting a lightly cultured howl befitting an upmarket car like it is.

The additional mass of the R33 means that it isn't a great deal quicker in a straight line than a R32 GTS-T, although the broad power-band is a pleasure to exploit. The overall package, however, is just not as sweet as the well-honed R32.

Turning hard into a corner, the GTS25t starts to feel its weight, and you need that little bit more steering lock, that little bit more trail braking, to get the sucker turned in and stuck on to the racing line. Mid corner, you are aware that a R33 is starting to ask harder questions of its suspension and tyres, and the balance is that little bit more fractious, a little less assured. Once on that racing line, a R33 is harder to keep on it. Mind you, I am only talking in terms of degrees, and the basic flavour of the R32 and R33 is reasonably similar. But there is no doubt that the R33 driver is working harder, and that the GTS25t needs greater precision to pilot neatly.

It is easier to overcook the entry to a corner, the tail arcing out into gentle oversteer, and judging your entry speed becomes more critical, if unwanted understeer is to be avoided. The grunty 2.5 six plays a willing partner in all of this, always providing a prodigious flow of easily controllable power to trim and tuck your line, you'll need it, because you'll be busy.

The weight of the car also gives the chassis a slightly more pitchy feeling, as the weight of the suspension shifts diagonally onto the outside front wheel during a corner. The LSD then has a harder time putting the power to the ground, as the inside rear wheel is lightly loaded, and the tail is prone to pushing out in this brief period of transition.

For me, there is just that little bit too much fight, too much edginess on the limit, that makes the R33 a little less of a satisfying drive than a R32. A little more dramatic, and a touch less assuring than ideal. Don't get me wrong, the R33 driver still gets a stonking drive, especially if you are a fan of classical rear wheel drive throttle steering, aka hanging the arse end out… the R33 is a ready and willing accomplice if you enjoy painting the tarmac with black lines, and the 2.5 six is an absolute treat, responsive and strong. But the overall deal is less honed, less refined, less taut, than a R32 GTS-T. Strip out 100kg from a R33 and it would be a good thing.

Or transplant the 2.5 six into a R32 GTS-T. Now THAT would be a hell of a car…

Engine: 88 Handling: 70 Overall Balance: 80

### *Verdict:*

1st: R32 GT-R – this shouldn't have been so much of a surprise, if you'd read the above. Some people have mentioned to me that they found a GT-R underwhelming, that it was competent, but not spectacular. Drive a GT-R at eight-tenths, and yes, it will seem like a pretty well sorted out road car with a nice engine, but you may be left wondering what all the Godzilla fuss is all about. Porsche 911s and Ferraris feel special the moment you slide behind the wheel….just sitting in them is an event. You get no such thrill from plonking yourself behind the wheel of a stationary GT-R. But to me that misses the point of it. A GT-R was devised as being the fastest way from one end of a racetrack to the other, pure and simple. And so unless you are driving it like you have just stolen it, it won't make sense, you won't even scratch the deep reserves of ability within. And no, you won't discover the meaning of life during a screaming, bucking, smoking third gear four-wheel powerslide. Bliss.

2nd Equal: DR30 2000RS-Turbo and R32 GTS-T – now this may be a surprise. How can two seemingly disparate cars get to the same result? Whether you go for the cultured and balanced responses of the GTS-T, or the crude back-slapping thrills of the 2000RS-Turbo, both ways you win. A GTS-T is a finely honed, exquisitely engineered sports sedan, while a 2000RS-Turbo is basically a big Datsun 1600 with an engine that's too powerful for its own good.

While the GT-R clone appeal of the GTS-T is obvious, the crude'n rude qualities of the 2000RS-Turbo would have a smaller audience, perhaps only the brave punter, who might relish the flyweight responsiveness and power, or simply might get a kick out of the speed. It is worth remembering that of all the RWD Skylines tested, the 2000RS-Turbo is the fastest across a racetrack by quite a margin, and is the only car capable of staying with the GT-R. For some, that's plenty reason to own one.

4th: R33 GTS25t – there's nothing at all wrong with this car, its merely that it isn't as good as the others. Highlights include the neutral handling, and not least the super power delivery of the blown 2.5 six. It is nevertheless a hugely enjoyable car, with easily controllable power and exploitable handling. Were it not for a minor lack of suspension refinement, it would have easily come second in this comparison.

5th: R31 GTS-X – an accomplished tourer, a track test does not put the R31 in the best light. It simply did not have the tools for a day of carving through a tight racetrack. Unfortunately the twin evils of a lazy front end and a peaky motor gang up on the driver and the GTS-X is a hard car to from which to extract its best. It is interesting to note that the Aussie SVD-fettled GTS's do not suffer from a lack of front end grip. A comparison between Japanese and Aussie R31s would be very interesting…

6th: R31 GTS-R – a disappointment. A rare and covetable possession, the GTS-R falls down as a cohesive package. It suffers from all the ills of the GTS-X, but the even peakier nature of the engine makes the GTS-R harder to drive.
The value of the GTS-R I think, lies in the hardware. There is some seriously trick gear in this car, and perhaps with the right amount of tweaks, it will one day be a weapon no matter what that bastard Kevin says. But as I have said before, for now it remains for me a collection of seriously cool racing parts…that just don't go well together like they should.

# Buying a Skyline

## *Points to watch*

We are fairly lucky that we have a wide range of Skylines available thanks to our second-hand car importing industry which has been going strong for over a decade. With so many cars on the market, there is no reason to buy a lemon.

Here are some points to watch for with Skylines.

The year of manufacture can be found by looking at the front seatbelts, near the floor mounting point. There is a fabric tag with the seatbelt specifications and the year of manufacture sewn onto the webbing.

Inspect the welded seams in the front door sills just below the plastic kick plate. This is where I have seen rust start to form on Skylines, especially the R32. The R33 has an identical seam, so these will also show in years to come.

Remove the rubber around the boot rim – this is a prime rust spot in any car. While you are in there, look in the side panels and make sure they are not full of water.

Feel inside the panels in the boot where the jack is – debris found here will tell a story. Watch for glass (broken rear window or tail lights at some point)

Inside the engine bay, look for crayon or chalk marks on components – this may indicate they have been replaced with second-hand parts.

Crawl under the car and inspect behind the front and rear bumpers for signs of collusion damage.

If you are keen, use a set of vernier callipers to measure the panel gaps especially on the doors.

Diagnostics – it's something the AA doesn't do or know about. Chances are the seller doesn't know about them either. Run them!

With the front wheels off the ground, check the play in the top end – any more than 5 mm and there could be expensive repairs needed.

Watch the oil pressure when the car is hot – Keep in mind the oil pressure sender is prone to failure. These are the factory specifications for oil pressure on the RB20DET:

1kg/cm$^2$ @ 600 rpm
3kg/cm$^2$ @ 2000 rpm
4kg/cm$^2$ @ 6000 rpm

## *Skyline Models and Options - R32*

With the Skyline being originally from Japan, and not marketed in this country, there is some confusion over exactly what models and options are available. This has been constructed from a Japanese Skyline sales brochure, so hopefully this can show us the low down on model availability.

| 2 Door | 4 Door |
|---|---|
| GTS | GXi |
| GTS Type S | GTE |
| GTS-t | GTS |
| GTS-t Type M | GTS Type S |
| GTS-4 | GTS-t |
| GT-R | GTS-t Type M |
| | GTS-4 |

The "Type" rears it's head at this point. This is a hotly contested issue as to what makes a particular car special. The following is what I have read from the sales brochure, and seems like a logical rule of thumb (I count the GTS-4 as a Type M for clarity reasons)

The Type S is based on the GTS, and has alloy wheels, HICAS, and the sport type steering wheel. The Type M is based on the GTS-t, and has the 16x6.5 alloy wheels,HICAS, and the sport type steering wheel. The Type M, Type S and GTS-t have HICAS, the regular models don't.

Normal Steering Wheel – Gxi, GTE, GTS, GTS-t

Sports Steering Wheel – Type S, Type M, GT-R

Options: Climate air conditioning, Electric front spoiler, Sunroof, Cruise control, Premium audio (Kenwood / Alpine / AddZest), Rear spoiler, "Bug eye" headlights, Alloy wheels, Premium brake package.

# After Purchase

As you may not know the history of the car, it is best to start with a full service.

Air filter – replace.

Fuel filter – replace. Run a bottle of injector cleaner through the system with the next tank of petrol.

Oil filter – replace, and change the oil. If there is a sludge problem do a hot oil change and repeat within 1,000 km. Don't use an engine flush treatment.

Automatic transmission – have the oil changed. The transmission cooler should also be flushed.

Spark plugs – replace. Make sure they are replaced with the platinum resister type.

Timing belt – inspect and replace. Nissan specify a 100,000 km life for these. Be safe and prevent the rain of valves.

Radiator – add plenty of anti-freeze. Without the protection of anti-freeze (corrosion inhibitor) there are parts that will corrode and eventually cause you grief. Check the condition of all the hoses while you are at it.

Battery – monitor and replace if needed. Japanese car batteries are smaller than the regular sized car battery, and it may be the factory fitted battery (over five or six years old)

ECU – reset it. Make it learn our driving conditions.

# Systems and Diagnostics

## *HICAS*

### What is HICAS? And do I have it?

Good question. HICAS is Nissan's version of four wheel steering. It is an acronym for High Capacity Actively Controlled Suspension. Unlike other Japanese car manufacturers 4WS (e.g. Honda's system) HICAS never exceeds +/ 1°. It is designed for high speed response rather than parking manoeuvres.

The system is electrohydraulic  the ECU in the boot directs a hydraulic actuator at the rear axle to steer the rear wheels using the rearmost suspension links. The result is usually no more than 0.4° of movement. HICAS gives a touch of counter steer before settling with the rear wheel pointing the same way as the front. (Maybe this explains why my Skyline feels so loose on high speed gravel) This results in sharp turn in, and enhanced stability at medium to high speeds.

Anyway, have a crawl under the rear of your Skyline and have a look. Watch for the hydraulic actuator mounted on the rear of the differential, with arms connected to the rearmost suspension links. The controller is mounted inside the boot, up on the underside of the parcel shelf in the boot.

R32 - Some HICAS models are powered by fluid drawn from the power steering system with a set of valves in the engine bay near to the bottom of the battery tray, while others have a separate system comprising of a pump and reservoir mostly contained behind the right hand side panel in the boot. R32 models with HICAS: GTS Type S, GTS-t, GTS-t Type M, GTS-4, GT- R.

The R32 GTST has the power steering powered system, and the R32 GTS-4 and R32 GT-R models have the self contained hydraulic systems.

The R33 model saw the introduction of electronic actuation, Nissan claimed a weight saving was behind this move.

## HICAS Diagnostic Mode

There is a HICAS warning light in the instrument cluster. If it comes, on it is indicative of a problem.

R32: Check the HICAS oil level (power steering reservoir in some models, or a remote reservoir accessible from the boot)

R32 and R33: Check all HICAS electrical connections, and if the light remains on, follow the diagnostic below.

> Note that having an aftermarket steering wheel fitted without the appropriate HICAS boss adaptor can also cause the HICAS system to show a fault. Advanced Imports in Auckland stock the HICAS Boss adaptor kits.

Procedure:

- Switch ignition off, transmission in neutral or auto in Park.
- Start engine
- Very quickly (with a couple of seconds), turn the steering wheel left and right about 20 degrees from centre five times, and then pump the brakes five times, then press the brake pedal once more this will enter diagnostic mode.
- Drive forwards or backwards about 5 metres at a speed less than 10km/hr, this will enter full diagnostic mode.
- The HICAS light in the instrument cluster will be flashing quickly (for normal) or will flash a code indicating any problems.
- Long flash = first digit, short flash = second digit.
- Diagnostics will return to normal after five minutes, or any speed over 10km/hr, or ignition is turned off.

### *HICAS Diagnostic Codes 19891993*

| | |
|---|---|
| 1 | HICAS solenoid right hand |
| 2 | HICAS solenoid left hand |
| 3 | Cut off valve |
| 4 | Power steering solenoid |
| 5 | Vehicle speed sensor |
| 6 | Steering angle sensor |
| 7 | Neutral position sensor |
| 8 | (Auto) Parking brake sensor,<br>(Manual) Clutch sensor |
| 9 | (Auto) Inhibitor switch,<br>(Manual) Neutral sensor |

### *HICAS Diagnostic Codes 19931999*

| | |
|---|---|
| 11 | HICAS control unit |
| 12 | HICAS motor power supply not present |
| 13 | HICAS motor output not present |
| 21 | Vehicle speed sensor not present |
| 22 | Steering angle sensor not present |
| 23 | Steering angle sensor neutral or not present |
| 24 | Rear main sensor input not present |
| 25 | Rear sub sensor input not present |
| 31 | Parking brake sensor input not present |
| 32 | (Auto) Inhibitor switch input not present<br>(Manual) Neutral switch input not present |
| 33 | Engine speed signal not present |

# ECU

## ECU Reset

This is a very good procedure to follow, especially after making any changes to the car, for example after fitting a new exhaust, or air filter, or just every couple of months as part of a service routine.

To reset the ECU, disconnect your car's battery for 24 hours. This will reset the ECU to the factory defaults.

I have also heard that this can be done more quickly by disconnecting the battery and pressing the brake pedal (discharging any residual power in the car's electrical system), and then reconnecting the battery.

> It has been recently posted that this technique can help if done prior to a run down a drag strip, with a fuel tank of octane boosted petrol or #1 racing fuel.
>
> Apparently when the car is started for the very first time, the factory ECU advances the timing by about two degrees, and monitors the knock sensor. If any detonation is detected, the ECU will retard the timing by three degrees. It will continue advancing and retarding by progressively smaller increments. After a time, the ECU is doing the advance / retard by only tenths of a degree, and any power gains resulting from a tank of #1 racing fuel for example will take a long time to show, and not be noticeable. Resetting the ECU will cause the ECU to very quickly re-map the ignition curves when the car is restarted. The poster advises disconnecting the battery, pressing the brake pedal, and reconnecting the battery prior to staging.
>
> I have watched my own car have this done on a chassis dyno – it is amazing to watch the ECU relearning.

Both a friend and I have done it to our GTSt Skylines with good results. My friend reports a smoother drive, and more free revving. First impressions on my car is that it starts quicker (not that it ever cranked for more than a second or two), feels smoother in the low rev range, and seems to have a little more torque in low speed acceleration. Possibly better fuel economy also, but I also had my catalytic converter gutted about a day or so after resetting the ECU.

### *ECU Diagnostics*

Usually you have to remove the computer from the mounts in the passenger foot-well, as the LED(s) you need to see is pointing away from you. Remove the plastic panel to gain access to the ECU.

> There are three different types of factory ECU available in Skylines.
>
> One type has two LEDs and five modes
>
> The second type has one LED and two modes
>
> The last type has no LEDs, the output is done with the engine check light in the instrument cluster. Acts as a single LED ECU.

- Switch on the ignition, but don't start. The LED on the ECU will be glowing.
- Turn the selector screw clockwise all the way (gently!)
- For two LED ECU's: the LED will flash once, pause, flash twice, pause... all the way up to five. This is the diagnostic mode. Mode 1 = one flash, mode 5 = five flashes. When you reach the right mode, turn the screw back counter clockwise. Mode 3 is what most people use.
- For single LED ECU's: wait a couple of seconds, and turn the screw back counter clockwise, the ECU is now in mode 2.
- The engine check light on the dash will mirror the LED on the computer.

The LED will flash out a code (or series of codes if there is more than one fault) The ECU will keep error codes in memory for 50 starts, so keep in mind if an error happened 51 starts ago, there will be no record of it in the ECU.

More recent ECU's have two LED's (red = first digit, green = second digit, for example, red 2x flash, green 1x flash = code 21)

The ECU's on most R32's have one LED, long flash = first digit, short flash = second digit, for example, long, long, short = code 21.

Note the ECU fitted to R31 Skylines has a smaller subset of the codes, and the code for all OK is 44 on the R31 ECU. The R30 Skyline has a totally different ECU.

## ECU Diagnostic Codes

| | |
|---|---|
| 11 | Crankshaft position sensor |
| 12 | MAF sensor circuit (air flow meter) |
| 13 | Coolant temperature circuit |
| 14 | Vehicle speed sensor circuit |
| 21 | Ignition circuit |
| 31 | ECU (ouch!) |
| 34 | Knock sensor |
| 43 | Throttle position circuit |
| 45 | Injector leak |
| 51 | Ignition circuit |
| 54 | Auto signal to ECU |
| 55 | All OK |

Turn the ignition off to put the ECU back to normal.

## $O^2$ sensor test procedure

There is also a $O^2$ sensor test in real time available.

- Do the same procedure as above to get the ECU into mode 2 (single LED ECU) or mode 1 (dual LED ECU's)
- Start the engine.
- Warm the engine, and then run under no load at 2000 rpm for the test.
- Single LEDs: on = lean, off = rich
- Dual LED's: green LED on = lean, green LED off = rich
- Go by the trend shown, e.g. mostly on = lean, mostly off = rich. The LED should be flashing between 510 times per 10 seconds under normal conditions.

## *Climate Control Diagnostics R32 and R33*

The climate control has a diagnostic mode.

Enter the diagnostic mode by pressing the OFF button for five seconds within ten seconds of turning the ignition on.

## Sensor check

Sensor check is selected by pressing HOT switch (the red triangle) while in diagnostic mode. The microcomputer detects whether each sensor input signal is within correct parameters. The results are displayed on the screen.

If normal, a "20" is displayed.

If abnormal the failed sensor number is displayed. The sensor numbers are as follows:

20 - all is normal
21 - outside air sensor
22 - Inside air sensor
23 - Water temperature sensor
24 - Intake temperature sensor
25 - Sunload sensor (small sensor on the left hand side of the dashboard near the windscreen)
26 - PBR
27 - Refrigerant temperature sensor

This should tell you if any of your sensors are faulty.

## Mode door position check

(This is probably not the cause of your problems but it is a nifty self check to play with). While in Sensor check, depress the HOT button again. This will operate the the mode door actuator, and checks the whether the position detection switch is operating. Again the results are displayed on the display.

If normal, a "30" is displayed.

If abnormal the number of the faulty mode is displayed as follows:

30: Normal
31: VENT
32: B/L (Bi level)
34: FOOT
35: DEFROST/FOOT
36: DEFROST

## Actuator operation check

By pressing the HOT button while in Mode Door Position check, you can actually send a signal to check the operation of the actuator manually. This is a bit complex, and will be expanded upon when a manual can viewed.

## Sensor recognition check

Press the HOT switch again and a "5" will be indicated in the display section. If you press the "AMB" button (R32) or the windscreen defroster button (R33) in this status, the display will show the temperature sensed by each sensor. This will give you an indication also of which (if any) are faulty.

Temperatures will be displayed in the following order (R32):

5 -> Outside air temp -> Inside air temp -> Suction temp -> Refrigerant temp

R33 seems to have a different selection, with three temperatures being displayed.

Obviously if any of these temps seem excessively different from actual temperatures you have a problem!

## Calibration

If you depress the fan switch during the Sensor Recognition check, you will go to Calibration in which you can set the difference between the indicated temperature and sensed temperature.

While in Calibration press the HOT or COLD buttons to change the display by plus or minus 3 degrees in .5 degree increments (R32) or 1 degree increments (R33).

## *R33 Fuse Box translation*

## Dashboard Fusebox

| Left Column, top to bottom: | Right Column, top to bottom |
|---|---|
| 10A – Rear Wiper | 10A – Shift lock |
| 10A – Anti-stop | 10A – A/T control |
| 10A – Starter Indicator | 10A – Air conditioner |
| 10A – Room lamp | 10A – Engine control |
| 10A – Stop lamp | 10A – Air bag |

| | |
|---|---|
| 10A – Electrics | 20A – Blower motor |
| 10A – Engine Control | 20A – Blower motor |
| 10A – Hazard lamp | 10A – Audio |
| 15A – Fog lamp | 15A – Cigarette lighter |
| 10A – Turn signal | 20A – Front wiper |
| 10A – Meters | 10A – Mirror de-fogger |
| 10A – Electrics | 20A – Rear de-fogger |

Note that the engine bay fuse / relay box has a fuse key printed on the inside of the cover in english.

## *Auto Transmission Diagnostics*

Enter the auto transmission diagnostics mode

- Have the car at normal temperature in Park with the overdrive on
- Start the engine  the power light will go out after 2 seconds
- Turn the ignition off
- Move the selector to Drive (you may have to use the push button release)
- Overdrive off
- Wait 2 seconds, and turn the ignition on
- Wait 2 seconds and move the selector to 2
- Overdrive on
- Move the selector to 1
- Overdrive Off
- Press the accelerator fully and release

## Auto transmission diagnostics codes

The error codes are flashed out using the Power light on the dashboard (R32) or the Power / Snow button (R33). The sequence starts with one long flash. If everything is OK, this will be followed by ten short flashes.

Errors are indicated by a long flash in the sequence of short flashes.

| | |
|---|---|
| 1st flash longer | Revolution sensor shorted or disconnected |
| 2nd flash longer | Speed sensor shorted or disconnected |
| 3rd flash longer | Throttle sensor shorted or disconnected |
| 4th flash longer | Shift solenoid A shorted or disconnected |
| 5th flash longer | Shift solenoid B shorted or disconnected |
| 6th flash longer | Overrun clutch solenoid shorted or disconnected |
| 7th flash longer | Lockup solenoid shorted or disconnected |
| 8th flash longer | Fluid temperature sensor is disconnected or the control unit power source is damaged |
| 9th flash longer | Engine revolution sensor shorted or disconnected |
| 10th flash longer | Line pressure solenoid shorted or disconnected |
| All flashes the same with no long start flash | Battery voltage low, has been recently disconnected or control unit has just been reconnected |

# Interior

## *Changing the steering wheel*

If you are going to replace your steering wheel with an aftermarket wheel, you need a HICAS boss adapter. Otherwise the HICAS will show an error for the steering angle sensor not found.

## *Cleaning a leather steering wheel*

This is something most people miss doing to their cars. Visit a saddlery (horse gear store) and buy a bottle of Saddle Soap. Dilute some into a bucket of warm water, and with a soft cloth wipe the wheel over. You will be supprised how much dirt comes off the leather wheel. Keep doing this until no more dirt come off in the cloth, you may need a couple of buckets of water. After doing this, the steering wheel will feel like new again. For some reason conventional cleaners don't do as good a job as saddle soap for leather.

## *Remove the rear seat*

The seat bottom (the part you sit on) can be removed by putting your hands under the seat for passenger door side (if a four door) or just behind where your feet are (if sitting in back seat) and pulling it up really hard. The seat is basically held there by some bent tabs which go into the cars body.

Once this seat comes out the back part is held by two bolts, one on either end at the bottom, and the seat top slides upwards as it is held at the top by three sliders.

Be very careful if you intend to make any modifications to the parcel shelf and seat back - the LTSA consider this a structural area, and may render your car unroadworthy.

## *Remove the surround from the climate control / stereo - R32*

Start by pulling out the ash tray. Behind the ash tray are two screws, remove these.

Reach into the space vacated by the ash tray, and press upwards on the auto shifter surround (which has the power / hold buttons) The surround should pop out.

The surround around the climate control and stereo can now be gently pried off. Gentle is the word here.

## *Remove the surround from the climate control / stereo – R33*

Remove the ash tray. Remove the two screws visible behind. Gently pry up the auto shifter surround at the back edge (hand-brake end). The shifter surround will now come off, lift over the shifter, and place to one side. This leaves another two screws visible holding the console surround on. Remove these. The plastic surround will now come away with a little bit of gentle work.

To help with removal, drop the steering wheel, and open the driver's side door. The auto shifter will have to be moved while you are doing this, so leave the ignition key in.

The stock stereo is mounted in a removable rack type mount together with the coin tray / oddments box.

## *Remove the dashboard – R33*

Pull out ashtray and remove two screws from behind.

Carefully pull up gear shift surround, remove cigarette lighter and light plugs, and move as far to one side as possible.

Remove 2 screws that were hidden by the gearshift surround.

Remove 6-7 screws (cant remember exactly how many) from underneath the steering wheel column, as you will need to remove the plastic surrounds in order to remove the dash.
Remove plastic surrounds around steering column.

CAREFULLY, and I mean carefully ie by levering up in the best places so it doesn't cause it stress, remove the dash and centre console. Its all in one piece, and you will have to unplug the demister switch, hazard lights switch, clock, air-con sensor and pipe, and electric mirror controls.

There should now be a further 4 screws that are holding the centre stereo and air-con bracket in place. These can be removed and the entire bracket removed.

## Fitting a band expander

These are dead easy to fit, the hardest part is getting into the centre console, and finding a live feed for the power supply.

Follow the instructions for removing the console, and if you can't find a live feed, piggyback the cigarette lighter feed – just add a longer wire to the usually very short band expander power wire. Before you settle on a power source, check it with the headlights on – you don't want a power source that is tied into the instrument light dimmer... unless you only want to listen to the stereo in daylight.

In an automatic, you will need to have the ignition on some of the time, as you have to move the auto shifter out of park when the console is removed. If you have an electric aerial don't have the radio on when you pull the aerial plug out the back of the stereo – the electric aerial will get a bit confused.

As a side note, don't buy the cheapest expander on the market – a low dollar version only picked up two FM stations on my R33 until I fitted one that cost $20 more. I get all the stations now, even miles from the city.

## Ignition Wiring

The main ignition wires are the following colour code. This goes into a plug, at which point the colours change, and then go via a smaller loom to the ignition barrel. I suspect the ignition wires change colours from year to year and or model range, but the colour code before the plug seems consistent.

| | |
|---|---|
| White | Constant 12V |
| Blue | Accessories |
| Black with Red Stripe | Ignition |
| Black with white Stripe | Starter |

When having fitted the alarm, immobiliser or turbo timer, I recommend unscrewing the single bolt that holds the fuse panel in place, and with the fuse panel aside, move the main loom up above the steering column and out of the way, as this will make hot-wiring or accessing the wires much more difficult. It also looks neater as the wiring can usually been seen hanging down on most Skylines.

## *R32 Wiring Code for Stereo*

When the factory radio is removed, you will notice two looms, with duplicate wires for the radio, these are the front and rear speakers. The rear speakers should be separate in their own smaller loom, while the front speakers are with the power cables.

First of all, ground to the chassis, and never off the ground in the loom. Using the factory loom is prone to engine noise, with alternator whine or similar problems. Also, some wires appear to be the ground, but actually go high (12V) when something like the lights is switched on.

The following wiring diagram seems true for the R32 range of all years and specifications that I have seen. Please note that some colours are same, eg, blue wire for the speaker is the same type and colour of wire for ignition. And both are at the end of the plug.

The rear speaker wiring goes to the middle of the back parcel tray, where it goes into a plug. If you have an "Active" system, then there will be an amplifier there. If not, like most GTS's and below, it will be a loop back connector on the end. Either way, it changes colours at this point. Its handy to note, for something like an amp on/off trigger, there's the same blue ignition wire to switch off the amp when the ignitions off. If fitting an after-market radio, be sure to unplug the factory amp. Removing the amp will also free up some more room, for the sub box perhaps.

**Small Loom (Back Speakers)**

| | |
|---|---|
| Brown with Silver Tracer | Righthand Positive |
| Black with Red Stripe | Righthand Negative |
| Blue with Silver Tracer | Lefthand Positive |
| Black with White Stripe | Lefthand Negative |

**Bigger Loom**

Speakers are same colour code as back speakers, with the additional wires:

| | |
|---|---|
| Yellow with Silver Tracer | Constant 12V. |
| Black with Red Stripe | Electric Aerial (if fitted). |
| Blue with Silver Tracer | Ignition 12V. |
| Red with Blue Stripe | 12V when lights on. |

# Controls and Instruments

## *Boost gauge -- how to read*

The stock Skyline turbo boost gauge is calibrated to the weird measurement of millimetres of mercury. This form of measurement is used in some engineering circles.

---

760mm HG = 1 bar = 14.6 PSI

| Gauge reading | PSI |
|---|---|
| 0 | 0 PSI |
| 1/4 | 3.36 PSI |
| 1/2 | 6.72 PSI |
| 3/4 | 9.1 PSI |
| Full (7) | 13.4 PSI |

---

## *Power and Hold buttons -- what do they do?*

Hold -- this will make the transmission hang onto 3 rd and 4th gears. When the car is accelerated away from a stop, the transmission starts off on 2nd gear to prevent slipping. Very useful for wet conditions. This is marked "Snow" in R33 models.

Power -- this changes the shift points further up the rev range.

If neither of these buttons is pressed, the transmission is in Auto mode. If your acceleration becomes spirited, it will change into the power mode.

## *Disabling the remote boot release*

Open the boot, and look for the opening about 10cm below the boot lip. There is a small lever inside the opening. Press the lever down to disable the remote boot release, pull up to re-enable.

The boot can only be opened by the square-headed ignition key if the remote release is disabled. The round-headed valet key will open the car, and start it, but will not undo the boot, nor the glovebox if locked.

## *Undocumented Climate Control trick – R32*

The climate control has a feature that isn't documented in the R32 owner's manual.

With the fan on, temperature set at 18 (the lowest it will go), press and hold the temperature down button for a couple of seconds. The climate control will show "FC", the air conditioning will come on in re-circulated mode. This must be a fast cool, as it sets the optimum setting for cooling the car quickly. The re-circulation mode can be turned off.

There is a "FH" mode also with the temperature set at 32 (the highest temperature). Press and hold the temperature up button to enter the FH (fast heat?) mode.

# Simple modifications

## *Cold air intake R32 (no bodywork cutting involved)*

The stock inlet to the air box, is located under the lefthand headlight with an opening at the radiator side of the headlight. Not the biggest inlet, or the best place for one.

Not wanting to cut a hole in the bodywork I decided to have a look at cutting another inlet into the bottom of the plastic inlet assembly. I made an interesting discovery it already had been done, but was blanked off.

Here follows the instructions:

1. Remove the left headlight, and remove the inlet assembly from underneath.
   After some feedback from a reader, here are the detailed instructions on how to remove the headlight.
   a) There are two bolts behind the indicator (remove the screw in the top of the indicator and pull gently towards the front of the car, indicator assembly should come out).
   b) There are another two nuts on the engine side of the headlight you will need a universal socket drive to get at these as they are obscured by the aircon lines and the carbon canister. There are actually four nuts in a vertical row, it is only the top and bottom ones you need to remove. I can't stress how difficult it is to remove these without a universal socket drive, it is also handy to have a long magnetic wand to pick up anything you drop.
2. You will also need to loosen the three expanding pins that hold the front spoiler in front of the radiator.
3. The headlight will come out with a bit of gentle pulling. Be careful when unplugging the connection for the driving light the connection on the bulb is easy to break, and the bulb hard to locate in a shop.
4. Remove the rivets holding the rubber and foam on the bottom of the plastic assembly.
5. Peel back the rubber and foam, under that will be a metal pressing with two openings. Remove the two rivets that hold this on. Either cut or fold the rubber and foam so it won't impede.
6. Revealed will be two 40mm diameter inlets. Who knows why they were there, only to be blanked off... Using a small saw, cut out the bottom of the inlet assembly, I made a large oval shape and smoothed the edges.
7. That's it! There is now a supply of cool air (from the same source that feeds the intercooler) for the intake. Optionally blank off the original inlet. Put everything back on the car.

As a bit of a postscript, a friend of mine started to do the same modification, but decided to bin the plastic inlet that sits underneath the headlight. No problems on either his car or mine after a year.

## Gutting the catalytic converter

*NB: Consider any legal implications before you do this. If you carry out this modification in California, you could be stung with a US$20,000 fine. This is currently a legal modification here in New Zealand.*

I had my cat gutted for $45 down at my local muffler shop. Gutting is something that can be done at home if I knew how simple it is I would have done it myself... besides I like taking things to pieces!

Basically the cat has a shield on the underside (remove), and flanges at both ends with bolts. Hard part is removing the bolts, plenty of CRC/WD40 does the trick. Undo the temperature probe, and drop the cat out. Put in a vice, and use a hammer and whatever to smack the guts out (looks like a ceramic honeycomb with heaps of metallic gauze in there)

The contents of my cat filled the best part of a household bucket. Put the shell back into the exhaust system, a little bit of sealer on the flanges, maybe some antiseize on the bolts, put the temperature probe back in. Shield back in place (optional)

If the catalytic converter has been removed, the temperature probe should be grounded to the car's body or replumbed into the exhaust system to prevent the exhaust warning light showing.

The car now seems to comes onto boost quicker, this may have also helped my fuel economy improve.

## Remove the 100 km/hr overspeed warning - R32

Sounds horrible doesn't it?

- Remove the plastic panels under the driver's side dashboard.
- Drop the steering column (using the height / reach adjustment)
- Remove the instrument cluster. The small aluminium box on a bracket behind the cluster is the noisemaker. Be very careful with the speedo cable – there is a plastic sleeve than is prone to splitting where the cable enters the back of the speedometer. It can be fixed with some heat shrink tubing or at a pinch some PVC tape.
- Disconnect the spade terminal, and remove the dingdong box. Peace at last.

## Aftermarket Boost Gauge -- where to plumb

Use either the brass plug near where the brake booster connects into the inlet manifold, or the small line with runs off to the MAP sensor on the right hand inner guard near the brake booster.

Do not tap into the hose which runs from the inlet manifold to the fuel pressure regulator, or the wastegate supply line. If you loose pressure in these two hoses due to crimping or the hose blowing off, you risk killing your engine.

## *Building an intercooler water sprayer*

It is a fact of physics that with air, the greater the temperature the less dense a given volume of air is. Remember the basic school science phrase hot air expands?

Air is also heated by compressing it. This is what the turbo does. Car manufactures have included intercoolers to help cool the air once it has been through the turbocharger. The intercooler on Skylines is on the passenger side, at the front of the car, just in front of the wheel arch. It looks like a radiator.

What we can do is enhance the cooling properties of the intercooler, thus giving us greater density in the air charge once it has left the turbocharger. This is done by spraying water onto the intercooler. The evaporating water pulls heat from the surface of the intercooler, reducing the temperature of the air passing though the intercooler. It is done on some WRC type production cars namely some WRX's, and Evolution Lancer's. There is also a range of after-market water sprayer kits around.

This project cost me a total of $70 or so plus my own unskilled labour. Don't hang around a performance shop, hit the garden centre!

## Parts list

| | | |
|---|---|---|
| A roll of 4 mm irrigation hose | | |
| A couple of spray heads 4 mm | | |
| T-branch 4 mm | about $14 | Local garden centre |
| A 12 volt pump (cat. P8900) | $12.95 | Dick Smith |
| A switch (cat. P7664) | $14.95 | Dick Smith |
| 6 metres of wire | about $8 | Dick Smith |
| A 20 litre tank | $14.95 | Payless Plastics |
| A packet of 100 x 200 mm cable ties | $2.95 | Payless Plastics |
| 2 x one way anti-siphon valves (for aquarium air pump, Uni-pet brand) | $4.00 | Pet Corner |

A more durable pump is available from Dick Smith, cat. P8905, $24.95.

## Assembly

I started by putting in the electrical parts first.

One of the most difficult parts is getting the power supply for the pump. I ran the wire from the boot, though behind the back seat on the passenger side, down under the carpet next to the existing rear window washer water line, up from the carpet under the dash where the ECU is, under the blower motor, and into the centre console piggybacked into the lighter power supply.

I popped out one of the two blanks next to the steering wheel (one of these is used for the spoiler switch on some cars) Later I'll go to a wrecker and get another, but for now I made a plywood blank to mount the switch onto, and put it back in – a tight fit. I made the plywood blank black so it doesn't look dumb.

The water line goes from the pump and tank in the boot, out through one of the the small rubber plugs in the spare wheel well and up to the front of the car following the HICAS lines. I used plenty of cable ties to secure the line and keep it tidy. Up into the engine bay, past the battery, under the rubber shroud on the radiator support. I ended up taking out the indicator to make everything easier to install. I used a couple of cable ties to position the spray head.

It was quite a long job to route the water line – it would have been much quicker with the car on a hoist or ramps - I have neither. Lots of dirt in my eyes...

At the tank end - the outlet hose from the tank goes to the pump, from the pump into a one way valve (prevents the pump getting un-primed), to a T-splitter. The other side of the T goes to the spray head end of the hose. The centre feed from the T goes to a one way valve mounted higher than the tank, the valve is done so water will not come out, but air can go in to break the siphon. The T also serves as a handy point to prime the pump from.

## How does it go?

At this early stage, I seem to be getting higher boost. I find a ten second spray is enough to make difference. I think the project is worthwhile, as it has taught me a little more about my car, and seems to have a positive effect on performance.

## Possible additional related modifications

The pipes between the intercooler and the inlet can be lagged using insulated plumbing tape.

R32 – the ambient temperature sensor can be moved to the intercooler outlet pipe. The sensor is located on the bonnet catch support, just in front of the radiator. It's slightly smaller than a box of matches. Extend the existing wires to the new location.

A throttle position trigger can be added to the intercooler sprayer, so that full throttle (or near full throttle) will trigger a spray.

# Simple Tips

## *Cleaning tar from paintwork*

Don't use thinners to get rid of tar, you can use baby oil, vegetable oil or Vaseline. Use hand soap to remove the oil afterwards. Anything with a petroleum base will break down the tar. The trick is to use something that won't harm the paint finish.

## *Electric aerials*

Give the aerial a bit of a lubrication. Use CRC white lithium grease and shield the car's paint-work with a newspaper while you spray. The lithium grease will make the aerial much quieter when it is going up and down. Check that any water can drain away from under the electric aerial in the side panels.

## *Air Conditioning - looking after*

Make sure you run the air-conditioning at least once a fortnight, even during winter. This helps to keep the system healthy, remember it is basically a refrigerator.

When you are running the air-conditioning, plan ahead so that a couple of minutes out from your destination you can turn the AC off, and run the fan on high until you turn the engine off. This evaporates any moisture in the system, and prevents bacteria and fungus growing (which can cause rancid smells when the AC is run)

If your AC does smell rancid, you can buy some chemical preparation to spray down the vents and try to kill off the fungus and bacteria growing in there.

## *My Skyline seems sluggish sometimes: Fuel filter*

Interesting problem, and one I have had for a while. The car seemed to have a flat feeling to it sometimes, and drove normally the rest of the time.

What did the trick for me was changing the fuel filter. The old filter was quite heavy, and when shaken, heaps of sludge came out.

Back in my V8 days I always ran a glass fuel filter before the carburettor, and it was always interesting to see how much junk ended up in the filter.

Be prepared for a bit of labour to replace the filter, and remember to disconnect the battery when you do this, as the filter is quite near the starter in an R32. The fuel filter in the R33 is much easier to get at.

## *Oil pressure: Sender failure*

Like all normal vehicles, good oil pressure is essential. The sender itself is located by the oil filter on the left hand side of the block.

The following figures are the workshop manual specification for oil pressure on the RB20DET...

1kg/cm$^2$ @ 600 rpm
3kg/cm$^2$ @ 2000 rpm
4kg/cm$^2$ @ 6000 rpm

My own car has a oil pressure gauge that doesn't behave due to a fault somewhere, so I had a check done by running a remote gauge which gave the correct numbers... Whew! Update: the oil pressure switch replaced.

## *Oil pressure: Stuffed oil filter*

When an oil filter becomes clogged, a bypass valve opens this means the filter is offering zero protection to your motor. The Skyline handbook recommends a 5000 km service interval for turbo models. I get mine serviced every 10,000 km. With oil, you should stick with a quality brand and ensure you are using a oil with a good viscosity range. Brands I have used are Pennzoil, Quaker State, and Ampol. Keep the "Lubemart" 30/40 for the tractor.

If there is a sludge problem do a hot oil change and repeat within 1,000 km. Don't use an engine flush treatment.

## *Coils - R32*

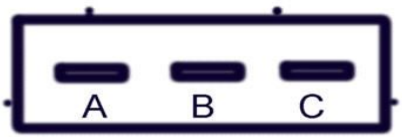
Most of the ignition system is hidden under the cover with "Nissan Twin Cam 24 Valve" embossed on it. Each platinum spark plug has an individual coil mounted on top.

These coils are fragile (so I'm told) and it may be a good idea to leave this one to the professionals. But if you have the skills, the cause is usually one of two things: either a coil failure or an amplifier (also known as the ignitor) failure.

The amplifier is the black box at the back of the block, which controls the coils. A faulty coil can be diagnosed by swapping the coil from the misfiring cylinder with another. If it still misses on the same cylinder, the problem is with the amplifier.

Update I now have had two coils fail. The good news is that the price of them is slowly dropping over time.

Another way of testing a coil is to measure the resistance between pins A and B on the coil pack. It should read 0.7 ohms for a healthy coil pack.




## *Air flow meter*

Most people seem to recommend borrowing and swapping in a known good air flow meter before rushing out and buying a new part.

If you are replacing an air filter element, give the element a blow out first especially if it appears to have a silicon treatment. This will contaminate the air flow meter and cause poor running otherwise.

When an air flow meter fails, the ECU will go into a limp home mode, where engine revs are limited to about 2500 RPM with an unstable high idle. Check all vacuum and pressure lines around the engine first before replacing the air flow meter, as a loose hose can cause similar symptoms.

The airflow meter can also become dirty, causing an unstable idle. Some owners have successfully cleaned their air flow meters using CRC Contact Cleaner. The AFM has a self cleaning facility where the wire is briefly heated more then normal when the engine is turned off.

# Articles

## *Measuring it*

It's all very easy to use pub talk to quantify modifications we perform to our cars. I'm certainly guilty of using some hoary rule of thumbs in the past (eg Hmmm that new paper filter element must be worth at least 5 kw over the old clogged one full of grasshoppers)

What we need is a testing system so any "improvement" can be measured against the before condition, with back to back runs.

A run on a dyno can show plenty of information, but sometimes a month between runs at the Torque Performance monthly dyno is too far apart (introduces variables like the different temperatures and atmospheric pressure)

Likewise a run down the drag strip can also show up performance enhancements, but unless you have a heap of runs, the statistics will be flawed.

I'm no maths whiz, but I can remember some basic statistics from 5th form. Averages should be used in the following fashion: average the best 60%, and discard the rest.

For example: Take 5 runs, discard the two worst results, and average the remaining three.

What measurements can we do ourselves?

The first, and major requirement is that everything is done legally. The Panmure roundabout isn't recommended. Neither is the suburbs. Driving in a dangerous manor doesn't bring rewards.

A stop watch can be used to get quite accurate results for timing. Usually the best idea is to plant someone in the back seat so they can look over your shoulder and work the stopwatch while you concentrate on driving.

Good performance measurements are:

- Standing start to 60 kph
- Rolling 40-70 kph
- Rolling 60-90 kph
- Find a nice straight road and measure your acceleration between two power poles.

These are all real world realistic performance measurements.

Other performance measurements we can use are electronic gizmos like the Apexi Rev / Speed Meter (which can calculate 0-100 times, and 400m times) and the G-Tech which can measure the same 0-100, 400m times, and measure rear wheel horse power if the weight of the car is known.

## *Wasted Youth - Maths and Stuff*

We all reckon our cars run much better on a cold day or at night. This is a given fact. But how?

First of all we need to get some basic information together. An engine has a given volume of air that it will consume at peak revs. How much? I suggest you plug in your PC and fire up a spreadsheet to work through these examples and experiment.

A = engine size in CC
A1 = A * 0.061
B = maximum boost in PSI (use 0 if naturally aspirated)
C1 = 0.85 base VE (I'll explain VE in a future article)
C = ((B+14.7)/14.7)-(1-C1)
D = peak power RPM

Cubic feet of air per minute = (A1 / 2) * (D / 1728) * C
Convert this to cubic meters by multiplying by 0.0283

So putting a RB25DET running 11 PSI @ 7,000 rpm through the formula, we see it needs 13.97 cubic meters of air per minute. A RB25DE @ 7,000 rpm will need 7.42 cubic meters of air per minute.

Here is the key to the power gain felt on a cold night: the density of air will change with temperature, altitude, weather, and to a lesser extent humidity. **So for that cubic meter of air, it may have up to 10% more weight by volume late at night than the middle of the day!**

TK = temperature C + 273
P = pressure in millibars / 100

Density $kg/m^3$ = P / (TK * 287)

TK is simply the temperature expressed in degrees Kelvin. 287 is the gas constant. The change due to humidity is very small and can be calculated, but my head hurts and it's safe to ignore.

The following table illustrates how the density of air varies for a given temperature and pressure. The units are grams per cubic meter.

| | Pressure (Mb) | | | | | |
|---|---|---|---|---|---|---|
| Temp (C) | 980 | 990 | 1000 | 1010 | 1020 | 1030 |
| 0° | 0.125 gm | 0.126 gm | 0.128 gm | 0.129 gm | 0.130 gm | 0.131 gm |
| 2° | 0.124 gm | 0.125 gm | 0.127 gm | 0.128 gm | 0.129 gm | 0.131 gm |
| 4° | 0.123 gm | 0.125 gm | 0.126 gm | 0.127 gm | 0.128 gm | 0.130 gm |
| 6° | 0.122 gm | 0.124 gm | 0.125 gm | 0.126 gm | 0.127 gm | 0.129 gm |
| 8° | 0.122 gm | 0.123 gm | 0.124 gm | 0.125 gm | 0.126 gm | 0.128 gm |
| 10° | 0.121 gm | 0.122 gm | 0.123 gm | 0.124 gm | 0.126 gm | 0.127 gm |
| 12° | 0.120 gm | 0.121 gm | 0.122 gm | 0.123 gm | 0.125 gm | 0.126 gm |
| 14° | 0.119 gm | 0.120 gm | 0.121 gm | 0.123 gm | 0.124 gm | 0.125 gm |
| 16° | 0.118 gm | 0.119 gm | 0.121 gm | 0.122 gm | 0.123 gm | 0.124 gm |
| 18° | 0.117 gm | 0.119 gm | 0.120 gm | 0.121 gm | 0.122 gm | 0.123 gm |
| 20° | 0.117 gm | 0.118 gm | 0.119 gm | 0.120 gm | 0.121 gm | 0.122 gm |
| 22° | 0.116 gm | 0.117 gm | 0.118 gm | 0.119 gm | 0.120 gm | 0.122 gm |
| 24° | 0.115 gm | 0.116 gm | 0.117 gm | 0.118 gm | 0.120 gm | 0.121 gm |
| 26° | 0.114 gm | 0.115 gm | 0.117 gm | 0.118 gm | 0.119 gm | 0.120 gm |
| 28° | 0.113 gm | 0.115 gm | 0.116 gm | 0.117 gm | 0.118 gm | 0.119 gm |
| 30° | 0.113 gm | 0.114 gm | 0.115 gm | 0.116 gm | 0.117 gm | 0.118 gm |
| 32° | 0.112 gm | 0.113 gm | 0.114 gm | 0.115 gm | 0.117 gm | 0.118 gm |
| 34° | 0.111 gm | 0.112 gm | 0.113 gm | 0.115 gm | 0.116 gm | 0.117 gm |
| 36° | 0.111 gm | 0.112 gm | 0.113 gm | 0.114 gm | 0.115 gm | 0.116 gm |
| 38° | 0.110 gm | 0.111 gm | 0.112 gm | 0.113 gm | 0.114 gm | 0.115 gm |
| 40° | 0.109 gm | 0.110 gm | 0.111 gm | 0.112 gm | 0.114 gm | 0.115 gm |

So back to our cars. It's the middle of summer and I'm driving home from work. The temperature is 28 degrees and the barometer is showing 1000 Mb. My RB25DET is sucking 13.97 cubic meters of air as I overtake a truck. The air that my engine consumes weighs 1.62 grams.

It's now 2am and I'm on the way back into town. The temperature has dropped to a chilly 14 degrees, and the barometer is still steady on 1000 Mb. I overtake another truck, the engine still consumes 13.97 cubic meters of air, but it weighs 1.7 grams. The air is 5% more dense than what it was when I drove home from work.

Turn the calendar and get to winter, the temperature is even colder, and the barometric pressure can reach higher levels. Lets try 4 degree mornings with a pressure of 1030 Mb.

A popular (and published) rule of thumb for this is: an increase of peak power by 1% for every 4 degree drop in temperature.

## *Obakemono Downunder*

This is a living work in progress to document the Skyline GT-R in competition in Australia during the early 1990's. Note that the rules and regulations change, especially weights and power outputs. Figures recorded are at the time of the original report.

## May 1989

Magazines preview the R32 model range. Even one month prior to release, the Australian press think the new model will share a v6 powerplant with the Infiniti range.

## July 1989

One month after the R32 launch in Japan. The GT-R is covered, and a Group A version is pondered, the Australian press not realising the first 500 GT-R's built are in fact the homologation build run.

## October 1989

Gibson Motorsport take delivery of four R32 GT-R road cars from Japan. Gibson Motorsport has been recognised by Nissan Japan for their efforts with the previous HR31 GTS-R Skylines. Gibson Motorsport are the only team outside of Japan to get GT-R's at such an early stage. Initial plans are to disable the HICAS 4 wheel steering system until the rest of the car is sorted. Due to homologation, they can run the cars either with HICAS or without.

The homologated weight is 1260kg, which is still heavier than the Ford RS500 Sierra at 1185kg. Gibson expects the first engines to have an output of 600hp – much more than the HR31 GTS-R's RB20DET-R which pushed out 460hp in 1989, and 370hp in 1988.

Fred Gibson flew to Japan in mid October with Nissan Motorsport Manager Paul Beranger, engineers Trevor Jones and Andrew Bartley to inspect the first GT-R race car built by Nissan Japan.

The Gibson team invest AU$300,000 - AU$400,000 in a sophisticated telemetry system in anticipation for the GT-R development programme.

Anders Olofsson (Swedish) becomes the first western driver to sample the Nissan GT-R prototype race cars. He reports that he has driven two GT-R race cars, the first has been around since May 1989 and has been a homologation development "mule", with the second being the prototype race car. The development car was built to test engines, transmissions, suspension, and cooling systems. It was equipped with sophisticated instruments. Both cars were trailed with Bridgestone and Dunlop tyres. As a side note, the Gibson Motorsport team were contracted with Yokohama.

## November 1989

Australian's see a burgundy GT-R used as the official pace car at the Australian Grand Prix in Adelaide.

## March 1990

The GT-R is officially homologated for Group A racing on 1 March.

## April 1990

Gibson Motorsport roll out their first GT-R for a shakedown at Winton raceway on 11 April. Engineers from Japan and England join the team for the shakedown. Mark Skaife does the driving duties, while Jim Richards drives the current HR31 GTS-R as a measuring stick. Gibson had pulled the car's debut back because of parts supply issues. Nissan Japan sent four engineers from their experimental department to help Gibson Motorsport build the first car. All the parts arrived in assemblies eg. front suspension, engine and gearbox.

At the Winton test, the engine used was a unit sent over from Japan. It used a Japanese management system which restricted boost to 1.3 bar and power was about 550hp. The Gibson Motorsport team intended to replace the Japanese management system with their own Electromotive system and run higher boost, around 1.5 bar for 580hp.

Hollinger are commissioned to design and build a 6 speed gearbox for the GT-R. Nissan Japan decided they would also use the Hollinger box and placed their order.

During the shakedown, the team experimented with different EPROMS in the 4WD system. They started out with 45% front bias, and have different EPROMS to deliver 10, 20, 30% splits. [I'm unsure if the system uses EPROMS, perhaps it's a bit of bogus information in the report]

Wheels magazine staffer Peter McKay joins the Gibson team at Mallala for a test session. McKay is lined up to have a drive of the prototype - but the car breaks two half shafts, and the team have to wait for spares to arrive from Japan. A later test session takes place at Calder. McKay reports the Electromotive management system is in place, as is the first of the Australian built engines – the power output is quoted at 520hp with 1.2 bar boost, and 576hp (429kw) / 410nm with 1.8 bar boost. Tyres are 11 inches wide, and run at about 5 degrees of negative camber. McKay reports the car is easy to drive, with a light clutch and a smooth power delivery (unlike the previous HR31 and DR30 that he has driven). The car has four electric coolers for the front diff, rear diff, transfer case, and the gearbox.

## June 1990

The GT-R race car has it's competition début at Mallala on 8 June 1990. Mark Skaife is the driver. The decision to use Mark Skaife was due to Jim Richards' points position in the Australian touring car championship – it was thought that having Jim début the new car would jeopardise him winning the championship if anything went wrong.

The GT-R used Japanese wheels that cost the Gibson team AU$2,000 each, and only last one race – this is just one example of how important it was to develop local content for the GT-R programme.

During unofficial practice on the Friday, Skaife was under the lap record by 2.4 seconds, and was 1 second quicker than the fastest Sierra (Brock). The reported power output was 585hp or 436kw.

Saturday qualifying saw the car was sidelined briefly when a left front hub failed, damaging an oil cooler, the brakes, and causing the wheel to depart. The car was quickly repaired, and Skaife was able to qualify third on the grid.

Skaife started out of the third grid position, and was able to get into the lead on the 10th lap. The car retired about lap 20 with another broken left front hub.

Jim Richards takes over the car at the next ATC round at Wanneroo (24 June 1990) – he had to finish in front of Dick Johnson to keep his title aspirations alive. Both he and Mark Skaife were cross entered in the GT-R and the GTS-R. The team were still fiddling with the 4WD splits, and an engine management problem that saw the motor to over-fuel and misfire during qualifying. Jim managed to qualify 4th on the grid. The GT-R had a new engine transplanted and all the electronics replaced after qualifying on the Saturday night.

At the start of the race, Jim launched into second place. The decision to put Jim in the GT-R was justified when Skaife broke a half shaft in the GTS-R on the startline. Jim was overtaken and pushed back to 4th on the road for most of the race, eventually finishing in 4th 50 minutes later. Dick Johnson meanwhile had crashed out with a broken brake calliper taking out the right front wheel.

## July 1990

Sansui come on board as a major sponsor for Gibson Motorsport, the money rumoured to be around AU$1,000,000.

George Fury (long time Gibson Motorsport driver) departs the team.

The final ATC round at Oran park (July 15 1990) saw Jim attempt to secure his ATC championship. The GT-R again proving troublesome during the qualifying sessions, needing a turbo downpipe replaced and a diff change that took 6 hours. Jim qualified first, a tenth of a second in front of Dick Johnson. At the start of the race, Jim lead with a couple of car lengths and soon drew it out to a 3 second margin back to second place by lap 2. By about lap 20, the gap was out to 20 seconds and building. Jim took the flag, still leading by a fair margin.

## August 1990

The Bathurst entry list is released. Nissan enter only one car – the pairing of Jim Richards and Mark Skaife, the second car couldn't be completed due to parts supply problems. As a side note, the name "Godzilla" is yet to surface – Gibson Motorsport and the press refer to the GT-R as "The Weapon"

## September 1990

Gibson Motorsport miss the Sandown 500 race. The rest of the entries to the race was slim, with most of the major teams entering only one car.

The Bathurst previews predict that the GT-R will be hampered by it's weight, stressing components like brakes and suspension. Only in Japan had GT-R's had any endurance testing, locally the GT-R was still an unknown as to how it would do over 1,000 km.

## October 1990 Bathurst

The GT-R debut at Bathurst.

The Gibson Motorsport team arrives at Bathurst with two GT-R's, four spare engines, four differentials (two front, two rear), spare gearboxes, 30 wheels, 150 tyres, and 20 team members. 10 members remained at the Melbourne base in case of emergency.

The GT-R destined for the race was brand new, it was still a bodyshell when the existing GT-R won at Oran park. The other GT-R was the championship winning car – it was to be used for testing to keep wear and tear on the new car to a minimum.

Early qualifying saw the GT-R hampered with bad brake problems. The team experimented with different wheel cylinder and master cylinder sizes, front to rear. Skaife had many spins off the track as the ideal balance was worked out. Jim Richards eventually qualified the car with a disappointing 2m 15.66 seconds for 11th on the grid – in two wheel drive mode! The electronics had packed a sad leaving the car with only the rears driving.

The race itself was a different picture – by the end of lap 1 the GT-R was up to 8th and in the second lap was a second faster than any other car in the field. Jim blasted by the leading Niedzwiedz Sierra going up Mountain straight on lap 10, waving as he went past. By lap 20, the GT-R had extended the lead to 20 seconds. By this time Fred Gibson was on the radio telling Jim to back off. Jim responded by going one second a lap quicker. When the lead was out to 32 seconds, the pace was relaxed to 2m 19s a lap.

The first pitstop for the GT-R was on lap 34 when Jim bought the car in for new brake pads, fuel, tyres and Mark Skaife to take over the driving duties. The stop took 1m 30s, far longer than most of the other leading teams. By lap 40, the GT-R was back up to 6th place on the road. It was back in the lead by lap 58 thanks to some of the leading cars pitting.

Three hours into the race, the GT-R was still running, and still in the lead. Skaife bought the car into the pits on lap 72 for a scheduled stop for brake pads, fuel, Jim, and something that was pumped into the cooling system. The stop took 2m 22 seconds – another long stop. The car rejoined the race in 9th position.

On lap 95, the Nissan came in with a diff problem that sidelined the car for 25 minutes. It rejoined, but 13 laps later returned with a misfire – an electrode had "fallen off" one of the sparkplugs. After the stop, Mark Skaife set a new lap record of 2m 15.46 seconds. The car continued to the end of the race with no further problems, finishing 18th, 15 laps behind the winning Percy / Grice Commodore.

## November 1990

The Group A circus moves to Adelaide to support the GP. Skaife rolls one of the GT-R's and suffers bruising. [I'm missing details on this event]

The Eastern Creek raceway opens with the Nissan 500 endurance race for Group A cars. Most of the Bathurst teams enter. Qualifying was interesting as the track surface was "green" and some of the drivers found it difficult to master the new track.

The GT-R qualified on pole with a 1m 35.26 second lap. Skaife is scheduled to share the drive with Richards - but due to Skaife's bruised condition, Neil Crompton is pencilled in as a potential relief driver. The team experimented with spring and sway bar changes to get the best from the hard "S" compound Yokohama tyres.

In the race Richards sprinted away and had a 50 meter lead by turn two. The car lead strongly until lap 21 when it lost the left hand front wheel. Jim bought it into the pits, where another wheel was fitted. The car rejoined in 11th position. Lap 51 saw the GT-R back in the pits for a driver change to Skaife. The GT-R had lost all it's coolant due to a split bore or blown head gasket. Despite the teams attempts the engine wouldn't restart and the car was put away.

The major teams made the trip over to New Zealand for the Nissan Mobil 500 series at Wellington and Pukekohe.

Wellington [Missing details] won by a European BMW M3

Pukekohe got off to a slow start after Wellington – the track was still undergoing work being bought up to international standards, pushing the Friday practice session to Saturday morning. Overnight rain saw the conditions as wet (we bogged the Fairmont doing donuts in the car park). Skaife did the morning session, with the team mucking around with the suspension. My main memory of his session was the GT-R doing a huge backfire - leaving a smoking patch on the track.

First qualifying session

Skaife 62.28, 61.70
Richards 62.28

Second qualifying session

Skaife 61.35, 61.55

Race:

61.74, 61.56

Mark Skaife and Jim Richards qualified third on the grid behind Dick Johnson (who lost two engines on Saturday) and Brock, both in Sierra RS500's. In the race it took Skaife two laps to get past the Sierras. The Nissan game-plan called for the car to pull a 30 second lead, and then settle into a more relaxed pace. By lap 23, the GT-R's lead was out to 20 seconds over Brock.

We were entertained with the DJR RS500 blowing intercooler hoses off multiple times, and another Sierra smacking into a kerb.

The GT-R kept leading until lap 32 when Skaife reported a loss of power – one of the turbos had blown. The car was retired. The European BMW M3's also expired within a couple of laps, one with a blown engine, and the other with accident damage. The Brock Sierra cruised to the finish and took the flag.

There was a good interview with Fred Gibson published in Auto Action which gives some interesting insights: In Japan, the top GT-R teams are reported to have reached the 600hp mark in competition, up from 570hp that most of them have been running with. The main problem with the Australian developed GT-R's were brakes, the cylinder bore or block cracking and the turbos. For 1991 the rules were relaxed on brakes, so that problem could be more easily worked through. The blocks had been cracking due to a harmonic in the engine – up until Pukekohe the team had been using a block every race. New engine mounts were used to cure this. The turbo failures were blamed on quality control at Garret – the Gibson team invested in their own balancing machine so they could assemble their own turbos instead of buying complete units from Garret in Japan.

## January 1991

A bit of background is needed here as the 1993 rule change was essentially influenced by these events and conditions.

The CAMS motorsport body was in trouble. It was running out of money, and needed restructuring. To compound the issue, there was a general downturn in the economy. CAMS responded by charging large registration fees of AU$6,000 per car for the ATC, and tracks were charged AU$10,000 to host a round. In addition, because the Group A format was administered by FISA in Europe, the regulations were hard to work with. This had caused delays in getting the new VN Group A Commodore homologated for competition.

The rules were revised for the 1991 season aiming to keep the fields even. The Sierra's had 85kg removed from their minimum weight, bringing them down to 1,100kg. They also got a six speed gearbox. The Commodores also lost some weight – 75kg down to 1250kg, and a host of freedoms including the entire inlet system, the valves and ports were free, and the inner wheel guards could be modified to fit wider tyres. The BMW M3 was allowed to run similar freedoms as the Commodores, at a featherweight 960kg. The GT-R had it's minimum weight increased to 1360kg. [the reporting of weights is not consistent – the homologation weight of the GT-R was 1260kg, yet the press report an increase of 35kg from 1325kg. Go figure]

In April, the minimum weights are further revised with an across the board increase of 2.5% in all cars. This was done so the private teams didn't have to resort to expensive exotic materials to reach the same weights as the factory teams.

The season looked like being a difficult one – the entries were well down, with a core group of 12 cars contesting all rounds, and very small fields. Even at this stage there was talk of making a full grid at Bathurst by allowing the standard Group E production cars to join the Group A race.

## February 1991

The first round of the ATC at Sandown. Jim Richards qualified on pole, with Mark Skaife 0.04 seconds behind. Skaife was complaining of some problems. Behind them it was wall to wall Sierra's, now a little faster with their new 6 speed gearboxes and lighter minimum weight. The field was small, only 19 cars on the grid.

The race itself was over with a minute of it starting. Jim and Mark blasted off the start line and had a 20 meter lead over the next car on the track. On lap 2, Jim laid down a new lap record – 1m 15.70 seconds – quicker than the fastest of the Sierra's by 1.31 seconds. Ouch.
One interesting moment occurred at the three quarter mark in the race – the new BMW M3 of Tony Longhurst demonstrated it's future potential by out braking Skaife going into a corner while Skaife was attempting to lap the slower M3. The GT-R's crossed the finish line for a 1-2 result, Richards leading Skaife.

## March 1991

The second round of the ATC at Symmons Plains. Qualifying made for an interesting race – Jim qualified on pole by a huge margin of more than 2 seconds, helped by damp conditions. Mark had damaged his GT-R in practice and was at the back of the grid in 13th. The economy and stiff registration fees were having their impact on the size of the field – the privateers could no longer afford to compete in the ATC. Win Percy put his Commodore alongside the GT-R on the front row, the first time in 5 years that a Commodore has made the front row of a ATC grid.

By this time, there was a fairly unified plea from the other drivers to CAMS to slow the Skylines down – the results so far were crushing to say the least. CAMS sat on their hands for the moment. Some of the teams resorted to using non-homologated add-ons to their cars: huge brake cooling ducts, fins on wheels etc. The touring car entrants association moved to have a cleanup of the cars – the ducts disappeared from some of the Sierra's and the Nissan's had to raise the height of some coolers that protruded below the front spoiler.

The start of the race was cautions with a bit of pushing and barging at the front. Jim was able to establish a 4 second gap back to Johnson by lap 8. Skaife meantime was working his way through the field, and by lap 24 was behind Richards, making another Nissan 1-2 formation finish.

## April 1991

The third round of the ATC at Wanneroo April 14. The touring car circus made it's way over to Western Australia. Only 11 cars fronted for the race. Expecting to be humbled by the GT-R's again most teams had spent the time between Symmons Plains and Wanneroo testing and reducing weight in their cars.

Dick Johnson managed to qualify his Sierra on pole, with Win Percy's Commodore alongside. Jim Richards was one row back in third, suffering from understeer, which also afflicted Mark Skaife back in 6th position on the grid. 1.48 seconds separated the first and last cars on the grid after qualifying, even though the field was small - it was close. Some of the other teams assumed the Gibson team were sandbagging – to hide the potential of the cars. Jim explained "There are lots of high speed changes in direction here and with a full load of

fuel the car has inherent understeer characteristics". During qualifying, both cars had spins off into the sand, and were able to simply drive out thanks to their 4WD.

At the start, Dick launched his Sierra perfectly, Percy was slower and jumped in behind the fast starting Sierra – this blocked Jim in, leaving Skaife with an open track ahead. Skaife basted through and took up second position on the road. Johnson pulled out a 2 second lead back to Skaife, Percy and Richards. Skaife grabbed the lead when Johnson's Sierra lost water and power. On lap 10, Richards slipped past Percy to make another GT-R 1-2. By lap 30 they were 6 seconds clear of the cars behind them. Mark lead Jim across the line.

AMSCAR at Ameroo, April 21. The AMSCAR series is made up of short sprint races of 10 laps each, very different to the 50 minute ATC touring car rounds. The Gibson Motorsport team entered one GT-R for Mark Skaife. In qualifying, the GT-R struggled with understeer, but still claimed pole position - and still faster than any other Group A car had ever lapped Ameroo Park.

At the start, Skaife blasted away and set a blistering pace. By lap two he was 2 seconds clear of the second placed car, and claimed a new lap record of 51.16s. Skaife took the flag with a 16.3 second gap back to Tony Longhurst in the M3.

The second race start was a carbon copy of the first. Skaife got away to a good start – but was unable to extend his lead further than 1.7 seconds over Longhurst. Skaife lead until lap 5 when a bad misfire developed – Skaife said "I could have got out and run alongside, it was going so slow". The car made it back to the pits and retired.

Lakeside April 28 Round 4 of the ATC. The Lakeside track in Queensland is home track to several teams so it was anticipated there would be better competition for the Skylines. In qualifying Jim planted his GT-R on pole in front of Tony Longhurst. Skaife was back in row two in 3rd position.

At the start of the race Richards lead , and Skaife was up to second by the end of the first lap (yet another 1-2). Richard had lapped the entire field up to 5th position, behind him Skaife held a 9 second gap back to the third placed BMW M3 of Longhurst. This was the way they finished.

The name Godzilla is used in race reports – starting the widespread acceptance and use of the term.

## May 1991

Round 5 at Winton in rural Victoria. Qualifying was a repeat of earlier rounds with Jim putting the GT-R on pole. He revealed his secret "It's simple. You just go as fast as you can without slipping off the track". Skaife listened and ran off the track into the dirt many times in an effort to go faster. He ended up in 5th position on the grid.

At the start of the race Jim assumed the lead off the start line. Skaife decided to use the grass beside the track as an alternate route and pushed his way to 3rd giving Percy's Commodore a hit on the way. Some of the field were smothered in dust from Skaife's launch which caused them to hesitate and bunch up. Skaife made his way into second position on lap 12. The Nissan 1-2 continued to the flag, Richards leading Skaife over the line.

## June 1991

Round 6 Amaroo Park June 2. By now things were looking a bit glum for the ATC – The GT-R's had dominated the first 5 rounds and finishing in 1-2 formation at each. More work was needed to match the pace of the GT-R's.

Dick Johnson had some trick Japanese Dunlop tyres to try – the head of development from Dunlop Japan had flown in to watch. The tyres worked - Dick Johnson and John Bowe made the first all Sierra front row in a while. Skaife made 3rd on the grid trying harder tyres to counter the GT-R's tendency to understeer in and oversteer out of corners. In contrast, Jim ventilated his GT-R's block when a conrod bolt failed, forcing him to start from last position on the grid. "It will be fun" he commented.

At the start, both Sierra's got away to a good start side by side – preventing Skaife from getting past them. On the first lap, Richards passed 8 cars to move from 22nd to 14th on the road. Meanwhile Bowe was blocking Skaife while team boss Johnson pulled out a handy 2 second lead after 4 laps. After a while, Skaife was able to use his superior traction to get past Bowe's Sierra coming out of a sharp corner. By lap six the lead was cut to a second, two laps later Richards was up to 8th and carving through the field fast. On lap 10 Skaife was able to overtake Johnson and take the lead. Johnson was quickly taken as well by Tony Longhurst in the rapid M3.

Longhurst applied lots of pressure to Skaife from lap 15 to 28 when Tony was able to dive up the inside of the GT-R and take the lead. By lap 36 Richards was up to 4th on the road, loosing a little time with a huge powerslide. Jim was able to make it up to 3rd after overtaking Bowe whose tyres had expired. Skaife repeated the same powerslide mistake a couple of laps later - allowing Jim to slip into 2nd place. Jim set out with 5 laps remaining to catch the BMW. Richards got to within 1.6 seconds of the M3 – but Longhurst took the flag making the first car other than a GT-R to win a round of the ATC. Tony later confessed "The last 10 laps went on forever and when I realised it was Jim and not Mark in my mirrors, I shit myself"

Round 7 Mallala June 23 bought some interesting developments. The Gibson Motorsport team was still short of sponsorship, and at that stage they may have had to cut back to one car in 1992. Jim Richards was reportedly in discussion with TWR and Win Percy about a possible move to Holden at the end of the year. In response, Fred Gibson swapped Jim's faster car with Mark's – the official team line was that it was for testing and set-up purposes for the endurance races later in the year. Political darts.

Skaife qualified on pole, with Richards alongside. In the race, they both got clean starts and took off in typical GT-R style. By the fifth lap, the GT-R's were lapping one second quicker than any other car in the field. By lap 20 the gap was the full length of the back straight between Richards and the pursuing Glen Seton Sierra. The finish wasn't a formation – Skaife crossed the line 20 seconds ahead of Richards, and a further 3 seconds back to Longhurst.

Early June saw a series of options from the CAMS motor racing commission to hobble the GT-R for 1992. Among the recommendations were ideas such as forcing the cars to run in rear wheel drive only, to put restrictors in front of the turbos like the WRC cars, to reduce the tyre width (so the GT-R had the same amount of driven rubber on the road as a rear drive – making 5 ½" tyres all round!). Not surprisingly, Gibson Motorsport and Nissan threatened legal action. CAMS then asked Gibson to produce a counter proposal to bring the GT-R's performance back to the rest of the field.

According to reports at the time, Gibson had been testing the various options – at Wanneroo the air restrictors were in place for the qualifying, but not the race. They also tested the car in rear wheel drive mode with the front drive shafts removed. Lap times at Winton were 2 seconds slower with the 2WD. Fred Gibson points out the cars were built to meet the rules and should not be penalised for doing a good job.

## July 1991

Round 8 Lakeside July 14. This was quite a rare event – a circuit hosting two rounds of the ATC. The development work done to the cars was graphically illustrated by Mark Skaife claiming pole going 1 second faster than the lap record he set back in April. The team experimented with different compound Yokohamas as well as hard and soft suspension settings. The cars were quicker with a hard suspension despite Lakeside's bumpy surface.

There was some controversy when Skaife spun off the track blistering the soft tyres fitted. Gibson got the go-ahead from officials to replace the tyres with a new set, making some rivals unhappy [Shell series rules at that time were to qualify and race on one set of marked tyres]
Jim qualified third on the grid after a minor off during his hot lap.

During the race warm up, the GT-R's ran quite a few laps at race pace – and people were wondering about the durability of the soft compound tyres the team had chosen to use. At the race start the GT-R's used their proven 7,800 rpm clutch dumps to rocket off the line, Jim getting past Brock for second before the first corner. By the 4th lap Skaife and Richard were 2.36 seconds clear of Brock back in 3rd. The Sierra couldn't maintain the pace and began to drop back with a blistering rear tyre. By lap 12, the GT-R's were 7 seconds clear of Longhurst's BMW M3 who had just overtaken Brock. The BMW pushed hard and eventually got the gap to the leading GT-R's down to 3.81 seconds – making the Nissan's drive harder than intended. Skaife pulled into the pits for fresh rubber, rejoining in 6th. One lap later,

Longhurst drove around the outside of Jim's GT-R into a corner to take the lead. Richards pulled into the pits for new tyres, rejoining in 5th – Skaife was now 4th on the track. Both Skaife and Richards were able to pass Glen Seton's Sierra to make it into 3rd and 4th. Skaife claimed a new lap record 53.16, but soon began to slow with a misfire attributed to a fouled plug - Richards overtaking Skaife on lap 45. Longhurst and Alan Jones (both BMW M3's) crossed the line ahead of Richards and Skaife.

With a 3rd place, Jim had claimed the title in the slower of the two GT-R's. If Skaife had crossed the line in front – the title fight would have gone onto the next round. The rumours of Jim Richards leaving for Holden were put to rest when he signed with Gibson Motorsport for another two years pending sponsorship.

Thursday 25 July 1991 – The Bob Forbes owned GIO team take delivery of the first privateer GT-R. The car had been build by Gibson Motorsport as a customer car. One major issue that impacted the GIO GT-R was tyres. They were unable to get the Yokohamas that the factory GT-R's used, so were limited to using Japanese Dunlops. In Japan, there was a major tyre "war" going on with stiff competition in the Japanese Group A scene. As a result Dunlop Japan wouldn't supply their best tyres to the GIO team for fear that the GIO team's close ties to Gibson's team would see bitter rival Yokohama get their hands on the trick Dunlops!

The team were able to get about 50 laps of shakedown testing done before the final AMSCAR round at Amaroo, Mark Skaife helping to set the new car up. Gibbs commented that the Nissan people claimed it had no lag, but compared to his previous Group A VN Commodore, he could feel lag.

Longhurst grabbed pole, with Gibbs back in 3rd spot, still getting to grips with the new car.
The first race start was interesting: Gibbs making a demon start "I could not believe it, it just shot off the line. I was past Tony before he had even moved". He had been told to stand on the gas for maximum revs and dump the clutch. "I don't like working the engine like that, but that's what they told me, and that's what I did." By the first corner he was one second clear of the Longhurst M3. Mark Gibbs managed to hold the lead for the first lap, bit on the second was taken by Longhurst in an outbraking manoeuvre. Gibbs blasted past for the lead once more, but was again taken by Tony on lap 4. Over the next six laps the pair raced side by side, swapping the lead twice with Longhurst managing to take the flag by 0.2 of a second from Gibbs.

Race two saw a similar start for Gibbs, another launch from the second row and he was in the lead by the first corner. Gibbs kept the lead on lap two, with Longhurst nearly alongside. On lap 3 the BMW grabbed the lead for a few brief seconds before the Gibbs GT-R muscled past. Longhurst managed to get past on lap 7, and kept the lead up to the flag – winning by 0.36 of a second from Gibbs.

Overseas in Europe, the Nissan GT-R's dominate the Spa 24 hour classic. The Group A entry of Anders Olofsson / David Brabham / Naoki Hattori qualified on pole and lead the race from start to finish. The GT-R had a one minute lead before the end of the first hour. By the early morning - the GT-R was clear by three laps, eventually winning by a crushing 21 laps from the Porsche Carerra 2 in second. In the Group N class for standard production cars, the Nissan GT-R's finished 1-2. All three of the GT-R's crossed the finish line in formation.

## August 1991

The final ATC Round, Oran Park August 11. Skaife claimed pole – he was simply faster than any other car in all the practice and qualifying sessions. The car was badly affected with a "pig-routing" exit to one of the off camber corners, the shock absorber rebound getting the blame. Team manager Fred planned to return here to experiment with suspension in the near future. Jim was a little slower in 3rd spot on the grid after similar handling problems to Skaife – at one stage the car scraped a wall after it jumped sideways. 9th on the grid was the GIO GT-R, Gibbs commenting he needed more time in the car. During practice he was able to lower his lap times by 2.5 seconds as he got used to the GT-R.

Skaife demonstrated the GT-R's launching capability once again, leading off the line. Jim however was a little slower off the mark and kept his 3rd position. Gibbs was squeezed back to 11th on the track in the opening corner scrap. At the end of the first lap – Skaife was nearly three seconds clear of the second placed Sierra of Bowe. There was a huge battle between Bowe, Richards and Brock for the second position, Brock managing to get past Richards. The Commodore was doing quite well with some special Bridgestone tyres and a fresh race motor (it was the fastest car down the front straight all weekend).

Further back Gibbs was baulked when he was faced with a RS500 hatch falling from the sky – Johnson had clashed with Percy's Commodore and the complete rear hatch had been torn off and hurled skywards. Jim was able to make it back to 3rd after Bowe's car started to develop a misfire, both Brock and Richards got past the slowing Sierra. Jim overtook Brock for second place, but shortly afterwards the GT-R's engine expired leaving oil everywhere. Jim later explained that the engine had done 2,000 km, and the failure may have been caused by a cam follower or valve breaking.

By lap 15 Skaife was 8.46 seconds clear of Longhurst and Jones who had got past Brock. Gibbs was up to 6th. At the end of the race, Skaife took the flag by 23 seconds back to the Longhurst and Jones M3's, Mark Gibbs bringing the GIO GT-R in for 5th place.

The entry list for Bathurst is released – there is a full field of 57 entries without resorting to padding out the entry list with the Group E production cars. There is a media and test day at Bathurst – some of the leading teams appear including the Gibson team. Jim cleans up the test day with the fastest lap (2:14.95s) and reaching 299kph on Conrod Straight. Win Percy almost matches with 297kph in his Commodore.

## September 1991

The 1 September Sandown 500, again saw some of the major teams missing – the Gibson GT-R's and the Dick Johnson team didn't enter.

The GIO team bought their new GT-R out to play at Sandown. With a small field of 15 starters and a high attrition rate the GT-R driven by Mark Gibbs and Rohan Onslow won the race by 6 laps. It wasn't quite as easy as it sounds – Glen Seton had chased them very hard until his Sierra expired, and the GT-R was having some difficulties with the brakes. The Sandown 500 did demonstrate that the GT-R could last the distance in an endurance race. Roll on Bathurst!

The Gibson team reveal the drivers of the second GT-R – Drew Price and Garry Waldon.

## Bathurst October 1991

The first day of practice opened on Wednesday. The much fancied Shell 17 and 18 Sierras started off well with a split bore, and a detonated engine within the first couple of laps – the start of a disastrous Bathurst for the Johnson team. The Gibson team started bedding in brake pads on the #2 car. They felt it was a bit faster then the #1 car, so the team changed the lead car's specification to match the #2 entry. The ducts that had been removed earlier in the year showed up again on the GT-R's – the Gibson team figuring that Bathurst was very separate from the regular ATC rounds.

The GIO team GT-R was running well in the first practice sessions, they were pulling 2m 18 second laps without pushing hard. Mark Gibbs commenting he was more confident in the car with more time under his belt.

On the Thursday practice sessions Skaife turned in a lap of 2m 12.84 seconds, good enough for provisional pole. Richards was able to get within a second of that lap time on a full load of fuel. The team spent most of the practice sessions working with the brakes – last year had shown that the GT-R's were very hard on their brakes. Different combinations of pads were tried as well as different nozzles on the brake water spray.

The second GT-R was a little slower, both drivers spending time in the car getting used to it. Draw Price managed a best lap of 2m 20s. The GIO GT-R was also taking things quiet. The team thought their Dunlops may give them a little trouble – they had a smaller rolling diameter than the Gibson teams' Yokohamas. If anything the smaller Dunlops gave the GIO a fair bit of speed: 4 kph faster up Mountain straight than the Skaife car. Gibbs put in a best lap of 2m 15.45 seconds. The BMW's that had been close to the GT-R's during the ATC managed a best lap of 2m 17 seconds – thanks to a special screamer engine that was built with only one piston ring on each piston and a higher rev limit of 9,700 RPM. Not bad for a naturally aspirated 2.5 litre engine!

On the Thursday practice sessions – the GIO GT-R had some computer problems that caused it to run roughly. The Gibson motorsport team plugged in their laptop and solved the problem. GT-R's now held first, second, and third fasted qualifying times. Gibson claimed the cars were in full race trim. He also announced the team could change the brake pads quicker than dumping in a full load of fuel.

The Friday practice session allowed the GT-R based teams to work on their race setups while the other teams were still working at putting in a quick qualifying time. The GIO team practised changing the brake pads, as well as the disc rotors.

Saturday's top ten shootout saw the fastest 10 cars in the field have a single lap on a clear track to try and get the pole position. Drew Price cut a 2m 16.30 second lap for his run in the second Gibson GT-R. Mark Gibbs pulled a very clean and quick lap of 2m 13.88s. Mark Skaife drove a awesome lap and recorded a 2m 12.84s. Skaife later said "It was a pretty good lap, I got bit untidy in a couple of spots, but that is about as good as we could do."

The starting positions were settled: Skaife on pole (Richards would actually start the race), Gibbs in second, and Drew Price in 4th behind the Glen Seton Sierra. The top ten was made up of three GT-R's, four RS500 Sierra's, and three VN Commodore's.

The Saturday afternoon was spent with a little more practice changing the brake pads. The Gibson team were able to change the pads in about 35 seconds, the GIO team about 90 seconds. The reason for the difference in times was the Gibson cars were using 4 spot Nismo/Alcon calipers, while the GIO team had 6 spot calipers that took a bit longer to change the pads with.

Raceday – October 6 1991

The GIO team scored a prize before that start of the race – best presented race car. The race start was a different story – the GT-R's were expected to make their normal quick getaway, but Jim muffed the start and allowed the Gibbs car to lead into the first corner. By the end of the first lap Gibbs had a 2.75 second lead over John Bowe's Sierra. Jim Richards was able to out brake Bowe to claim second during lap 2. By the third lap Jim was in the lead.

The second GT-R of Drew Price had briefly scrapped for 5th place with a group of Commodores, but began to drop back with a very soft brake pedal. Price had to pump the brakes before each big corner.

Jim was lapping in the 2m 18s times, and by lap 6 had a seven second gap back to the GIO GT-R. Bowe was able to overtake the Gibbs GT-R shortly afterwards, claiming the fastest time down Conrod of 283 kph. Lap 10 had Jim leading Bowe by 11 seconds with Glen Seton back a further 2 seconds.

By lap 20 the lead was out to 13 seconds over Bowe, with Gibbs sitting in 5th place. Bowe pitted early allowing everyone to shuffle up one spot. On lap 29 the second Gibson team GT-R pitted for a 27 second pitstop – a fresh set of tyres and a load of fuel. The brake pads weren't changed as Drew Price had got used to the soggy brakes. The GIO team pitted on lap 32 for a front brake pad change – which was done in 1 minute. Rohan Onslow took over the driving and resumed in 8th place. The team examined the old pads to monitor the wear, they were only half worn but the team decided to change the pads at every stop anyway.

The second Gibson GT-R began to have troubles around this time. The first problem was a bad vibration and handling from the fresh tyres. Price bought the GT-R into the pits for fresh rubber and a check over. The vibration was gone. A couple of laps later a turbo hose blew off.

During the pitstop to rectify that problem, the team changed the brake pads. All these dramas saw the car drop to 32nd place, 15 minutes behind the leading Richards / Skaife GT-R.

Jim pulled the GT-R into the pits on lap 36 for tyres, fuel and Skaife. The stop was completed in 25 seconds, and dropped the car into second. Skaife pulled a blistering 2m 16s lap, more than 4 seconds faster then Dick Johnson who was currently leading. Dick pitted, handing the lead back to Skaife.

At lap 40 Skaife led the Seton Sierra by 37 seconds. The GIO GT-R was back in 9th position, with the Price / Waldon GT-R way back in 30th. The pace of the leading GT-R was such that it was lapping other cars in the top ten by the second hour.

The Price / Waldon GT-R pitted again on lap 45 for a quick diagnostic to work out why the car was off song. An intercooler hose was replaced, and Garry Waldon left the pits to find the car back at full health.

Skaife pulled into the pits with a lead of 2m 5 seconds over John Bowe. The stop took 50 seconds for a full load of fuel, tyres, a brake pad change and Jim Richards to take over driving. The GT-R resumed still in the lead. On lap 69 the GIO GT-R with Rohan Onslow pitted for a pad change, he resumed in 7th place after a 52 second stop. The Gibson team started planning a rear brake pad change – they had initially planned to change only the front pads, but got the pads ready for the next stop. The rear pads took much longer to change than the fronts. Out in front, Richards was in cruise mode. The gap back to Glen Seton was around the two minute mark. Seton was pushing his Sierra very hard, but Jim was able to respond easily matching the 2m 19's that Seton was pulling. Jim potentially could go 2 seconds a lap quicker if needed.

The GIO GT-R had a minor incident – it nudged a Commodore, breaking the left front headlight. Jim bought the leading GT-R into the pits on lap 95. The stop went to plan, the team changing brake pads on all four wheels, with Skaife back out in 55 seconds – still in the lead.

By lap 122, Skaife held a lead of 3m 22 seconds back to the Percy / Grice Commodore. Lap 123 and another pit stop for the GT-R. This time there was no pad change, and Jim Richards was back out with a fresh set of tyres and a full load of fuel, and still in the lead. Skaife put his helmet back on five minutes later and jumped into the second GT-R of Price / Waldon to try and bring it up into the top ten from 13th position. Skaife absolutely wrung the neck of the GT-R, recording the fastest lap of the race (2m 14.50s). He had set fastest lap in the lead car earlier (2m 16.60s) and was under that lap time for 15 of the 17 laps he did before the GT-R broke a rear half shaft and retired.

The GIO GT-R was up to third on the road by now, the leading Fords of Johnson and Seton had either expired or were close to expiring. The car came into the pits for it's final stop, no brake pad change this time, Gibbs staying in the car to the finish. The car rejoined in 3rd position. 14 laps before the end, Jim pitted the lead GT-R for the last time, taking tyres and fuel only. The pit crew cheered as he left the pits, starting the victory celebrations early.

On lap 156 the GIO GT-R developed a misfire – causing it to backfire up mountain straight. They still had a 1 minute lead over the 4th placed car behind them. The misfire got worse – the GIO team were in the pit next to the Gibson team – one pit was starting to celebrate, and the other were willing their ailing car on. Moffat gave his 4th placed car the instruction to attempt to overtake the GIO car. Gibbs was able to lap in the 2m 28s region, just enough to maintain his lead over the Moffat Sierra to the end of the race.

Jim took the flag – making the first outright victory for a Japanese car at Bathurst. Grice crossed the finish line 2 minutes 30 seconds later, in his speech on the podium he said "The Datsun was too good for us!" Mark Gibbs bought the misfiring GIO GT-R in for third place with the Moffat team Sierra in 4th (which was excluded after post race scrutinising)

In the background during the Bathurst race week, there were moves being made about the rules for 1993. Because of the economic situation and the ever increasing costs of running a Group A car, CAMS had moved to develop a new formula for Australia's leading category. The aim of the category was to provide close racing with a substantially lower cost than the current Group A scheme.

It was eventually decided that the new formula would revolve around the Holden Commodore and the Ford Falcon. At the time Australia lacked the technology to develop 2 litre engines like those used in the British Touring Car Championship, and it was decided that turbos were too costly for many teams to run. Both the Sierra RS500 and Skyline GT-R were costing around AU$500,000 for a competitive car. That kind of cost was well beyond most of the privateer teams. The v8 was the cheapest option to develop and race in Australia.

Holden and Ford took the unprecedented step of releasing a joint letter to CAMS during Bathurst – telling them to get their act together and set the rules for 1993, or Holden and Ford would consider other forms of racing (NASCAR / AUSCAR).

## Wellington Nissan Mobil December 1 1991.

The Group A scene in NZ traditionally came to life every summer with an influx of the European and Australian teams. Wellington was a street race, with the road being closed on Friday with stands and barriers being installed frantically.

The first session was Friday lunchtime, an un-timed practice session. Skaife was seen to be driving quite hard – sometimes launching the GT-R into the air over bumps in Cable St. Wellington was always a place which made the little BMW M3s shine – they always put on a strong performance, and Longhurst was there with his. Longhurst was unofficially timed at 1m 28.7s, with Skaife at 1m 29.07, 1m 29.34 for Pirro (Schnitzer European M3) and Peter Brock pulling a 1m 30.7s out of his Commodore. The word around the pits after the practice session was that the track was very bumpy especially on Cable St, with Mark Skaife claiming he had to back off the throttle half way down the straight - “All four wheels are coming off the ground. It's unbelievably bad for the car to be in the air so long.” Longhurst used the word “exciting” to describe the bumpy ride. The new chicane was singled out for some negative comment as it allowed no room for error.

The next practice session was Friday night. The organisers modified the chicane by moving some of the tyre barriers further out, making a bit more room to pass though.

The M3 of Pirro ventilated it's block only two laps into the session before it could lay down some quick laps. The modified chicane slowed the track down, with the GT-R recording a best time of 1m 30.33

Qualifying Saturday

The European M3 was back out on the track with a fresh engine and a need to do some quick times. Pirro laid down a 1m 29.01s lap compared to the GT-R's 1m 29.69s. Brock even climbed the time sheets with a 1m 28.35s lap. Tony Longhurst had damaged his M3 when something broke in the suspension sending him into a minor collusion with a wall. As the session progressed, the times got faster. Jim Richards predicted a 1m 26s or 1m 27s lap from the GT-R with Skaife driving on sticky tyres. Skaife cranked out a 1m 27.62s lap followed with a 1m 27.60s. Pirro wrung his M3 and produced a 1m 26.7s lap, showing the speed of the little M3 around the Wellington streets.

The Gibson team reckoned they would have no problem knocking off the M3 in the afternoon practice session, despite the full field being out on the track (the morning session was limited to the Group A cars above 1600cc) The afternoon session was cut short by an incident involving a Corolla, a Commodore and a Porsche bouncing off the walls and each other. The Nissan team only had one lap with their sticky tyres with Jim driving achieving a 1m 28.8s lap which disappointed the team as they were faster on normal race tyres. Longhurst produced his spare M3 and ran a fast 1m 27.99s lap which was good enough for 3rd of the grid.

Sunday Race Day

Overnight the Schnitzer team had slotted in their race engine. Unfortunately it had a bad misfire in the race warm-up, slowing the car by as much as 20s a lap. The team worked hard to fix a faulty sensor for the race start.

The lights went green and the race had dramas with the first 10 seconds. A NZ M3 spun and caused the 20 cars behind to baulk. A Corolla ended up in the wall, ending their race pretty quickly.

At the start of the second lap Skaife had pulled out a handy 3s lead over Pirro, Longhurst, and Brock. A Corolla burst into flame on the front straight, which bought out the pace car for the next 15 minutes. After the debris had been cleared the race resumed at full pace once more. Skaife was able to hold a 3 second lead over Pirro for three laps, the Italian driving the nuts off the M3. Skaife claimed a new lap record of 1m 28.39s, but wasn't able to pull away much.

Skaife reported back to the pits that the GT-R had a handling problem, perhaps a puncture. The GT-R pulled into the pits for new tyres and resumed in 5th place. The GT-R returned to the pits twice more over the following 15 minutes before the team diagnosed a broken front differential – and converted the car to 2 wheel drive for the remainder of the race.

Fred Gibson laid the blame squarely on the bumps in Cable St. “What it boils down to is with out car being so heavy, it's bouncing and crashing down again and it has broken the diff. When we're going so fast down there, in excess of 200km/h and your leaping off the ground like that somethings gonna break.”

Skaife managed to lightly side swiped Pirro's leading BMW when he exited pit lane, there was no major damage, just some paint swapping. Dick Johnson also had problems with the Cable St bumps - “I was only running down there with half throttle so we could keep the wheels on the ground without wheel spinning – but even that obviously didn't work.” he said as his car was being fixed.

Brock made it up to second place when Longhurst pitted with a flat spotted tyre. At the halfway point Pirro had built up a 1 minute buffer back to 2nd place, with nearly another minute back to 3rd. Skaife had managed to get the GT-R up to 7th place despite only having half the normal traction. Longhurst made it through to the lead when Pirro pitted for a driver change and fuel. He lead for one lap until he was caught out with a slower car on the track. Longhurst collided with the slower car sending them both into the wall. TV footage showed Tony's head coming out the widow and his helmet hitting the wall, smashing the chin guard. If he had been wearing his open faced helmet as he normally does, he would have been killed for sure.

Light rain started to fall on the track which made it very slippery. Most of the major teams opted to remain out on slicks until the rain made it difficult to continue, the leading Pirro M3 ducked into the pits for wets along with Brock who was having difficulty seeing out a badly fogged windscreen. By this stage Jim Richards was driving the GT-R and making people remember why he was known as the 'Rain Master'. He held the GT-R wheel spinning most of the way down the straight and clocked in a 1m 30.45s lap.

The race finished at the 4 hour mark with Pirro and Winkelhock taking the flag in the Schnitzer M3, followed by the Brock and Perkins Commodore 2 laps down, and then the GT-R of Skaife and Richards another 2 laps back. Onwards to Pukekohe next week.

## Pukekohe Nissan Mobil December 8 1991

Pukekohe had first seen the GT-R the previous year, this time the car was sorted and fast. The track had also seen some major track work with a resurface and the run onto the front straight cleaned up.

Pukekohe is somewhat of a home track for Jim Richards, he developed his race craft in a series of rapid Anglias, Escorts, and later his infamous Sidchrome Boss Mustang before he shifted to Australia to race full time.

Friday Testing

All the major teams had made it up to Pukekohe after the Wellington race. Only some of the smaller 1600cc Corollas failed to show. Tony Longhurst was back, his race car having been repaired (the car he crashed in practice at Wellington rather than the car that was destroyed during the race) he reported that he was OK apart from a sore rib-cage and neck.

Pukekohe is a much faster and open track compared to the Wellington streets, and the Commodre's and Sierra's were able to stretch their legs on the straights. The Nissan was fast, Mark Skaife clocking an unofficial 59.54s lap, about 2 seconds quicker than pole position last year. Jim was about another second slower, with the team calculating that with a light fuel load and sticky tyres they may be able to pull a 58 or 57 second lap. The team had virtually rebuilt the car since the Wellington race due to the extended period it had run in two wheel drive. The winning Schnitzer M3 from Wellington turned in a 61 second lap, with Longhurst 1 second slower (he admitted to feeling a little off colour at this stage)

Saturday Qualifying

Skaife reported the track to be more slippery than the previous day. As a result the times were not as good as anticipated. A couple of “balls out” attempts saw the GT-R pull some fairly quick laps; 58.86s, 59.19s, 59.10s, then the best of 58.69s. In contrast the Pirro M3 was able to pull a screamer lap of 59.91s. Brock managed a 61.17 lap to claim 3rd on the starting grid.

Sunday Race 8 December 1991.

Jim Richards started the race in the GT-R. It was a fairly slow start by GT-R standards and it was about two laps before he was able to open out a 2 second lead over the second placed Brock who was being hounded by the Schnitzer M3 driven by Pirro. Brock soon had to pit with a flat resulting from a damaged tyre valve which allowed the BMW through to second.

By lap 20, Jim Richards held a handy 20 second lead over Pirro, with 23 seconds back to Kevin Waldock's Sierra, closely followed by Alan Jones (M3) and Dick Johnson (Sierra). Johnson was soon out with a broken rear suspension, Dick quipping “A four wheel-steer Sierra wasn't easy to drive.”

Richards continued to extend his lead over Pirro for the next 20 minutes, at the rate of 1s a lap. Then, the GT-R was forced to pit with a puncture, which came back out onto the track in second place. What followed was a ripper of a drive from Jim Richards as he hunted down the M3 ahead of him. On lap 55 he claimed a new lap record of 59.84s, bettering the previous years GT-R lap record by 1.5s. The quick laps continued, Richards threading the GT-R between slower cars, pulling laps consistently quicker than the old lap record. Pirro was lapping in the 61 second region, attempting to nurse the BMW's brakes and tyres. Pirro eventually pitted to change over to Winkelhock, which allowed the GT-R to retain the lead, with 65 seconds over the second placed Brock, and Longhurst back in third.

Mark Skaife took over the leading GT-R and resumed 21 seconds ahead of Winkelhock, with Larry Perkins over a minute behind, with Longhurst 18 seconds further back. The race was into the last hour when a Corolla burst into flame on the front straight, which bought out the pace car.

After the pace car left the track, the restart was predictable, with Skaife motoring off into the distance, leaving Winkelhock under pressure from Longhurst. It didn't help that the Schnitzer M3 was the latest model and Longhurst's was last years. In turn Larry Perkins came under pressure from the two M3s, Winkelhock slipping past when the Commodore slid at the hairpin.

Skaife took the flag just under a minute ahead of the Winkelhock M3, with the Brock / Perkins Commodore back in 3rd, and the Longhurst / Jones M3 in 4th.

Post race Skaife was modest; “Jimmy did most of the work and I just finished it off”.

## January 1992

Rothmans announce they will be sponsoring the Nissan GT-R team under the Winfield colours for the next year. It was part of a Winfield 'superteam' concept which saw Winfield colours on the Nissan GT-Rs, the Tatnell Sprintcars, Jim Read's Top fuel drag car, and 500cc Superbikes. $5 million was committed for the entire super team.

The new year also bought in some changes to the Group A formula in Australia. CAMS modified the format of the ATC series; instead of a single 50 minute race, each round was made up of two heats, and three lap qualifying sprint for the fastest qualifiers to determine the grid positions for the first heat – the grid for the three lap dash was drawn out of a hat. The second heat's grid was based on the finishing order of the first. A complex points system combined the days results over the heats – it was biased in that it rewarded consistency rather than outright placing.

The Nissan GT-R had a new minimum weight of 1,400 kg, a boost restriction to 1.3 bar which was calculated to cut the power to 336kw down from 477kw, along with a limit on compression to 9.5:1. The Commodores and Sierras were given an extra 50kg an an electronic rev limit of 7,500 rpm. This was designed to cut costs as the top tier Commodore teams were using 8,500 rpm in an effort to keep up with the Sierras which resulted in many broken engines. In contrast, the BMW M3s copped an extra 60kg. A CAMS performance review panel was formed to make running changes to the regulations during the series.

## Winfield Triple Challenge, Eastern Creek January 1992

Friday Practice

This was the first outing of the Group A cars in their 1992 specification, except for the rev limiters which were not ready in time. Glen Seton in his Sierra was the quickest in the damp practice session, clocking in a 1m 39.05s lap, with Larry Perkins in an old VL Commodore slightly behind. Privateer Commodores filled out the rest of the time sheets, with names like Bob Pearson, and Terry Finnigan ahead of the Shells Sierras of Dick Johnson and John Bowe.

Qualifying

Jim Richards commented on the change in the GT-R compared to the 1991 specification; "Before it used to be a case of slowing for the corners and booting the car out, now without the power, we have to corner faster and go in quickly to get the pace onto the straights."

John Bowe claimed fastest lap with a 1m 36s lap, ahead of Glen Seton's best, 0.78s slower. The two Nissan GT-Rs were just behind. In the second qualifying session saw Dick Johnson and Glen Seton trading fast laps, Dick achieving a 1m 35.83s, and Glen 1m 35.44s. Bowe managed a 1m 35.99 and Larry Perkins wringing out the VL for a 1m 36.53s lap. The GT-Rs were close together in their times and qualified 5th and 6th on the grid, Jim going quicker with a 1m 36.74s with Mark's best being a 1m 1m 37.39s.

Race 1

The first race was a 15 lap event, which was started without a warm up lap prior. There was some confusion on the grid when Glen Seton noticed that Dick Johnson was in full race mode, and hurriedly put his car into first gear just as the flag dropped. Bowe, Perkins and Seton were left squabbling for the same piece of road. Skaife managed to pass Bowe at the first hairpin, while Jim was under pressure from the privateer Pro-Duct Commodore. Dick Johnson in the meantime had pulled out a 1.6 second lead over Perkins and Seton by the end of the first lap. Skaife was just ahead of Bowe. Second lap saw Mark squeeze past Seton, only to have the faster Sierra pass on the straight, Bowe also passed in the same move. Seton was then able to catch up with Larry Perkins and engage in a high speed battle for second. They swapped position several times before Larry got sideways exiting a turn and allowed Glen through. Larry lost oil pressure and dropped out, letting Bowe into 3rd with the two GT-Rs close behind. Glen Seton was able to haul in the leading Dick Johnson Sierra after it began to blister the right rear tyre. Lap 10 saw Seton take the lead, with Dick starting to drop back. Bowe spun his car allowing the two GT-Rs though which then began to stalk the Johnson Sierra ahead. Johnson managed to hold off the two GT-Rs until the last lap, where they both attacked. Jim Richards was able to get second, and Mark third.

Race 2

This race had a warm up lap unlike the first. Some of the teams had made changes between the races – Dick Johnson had changed to a softer spring in the rear to try to help the tyre blistering problem, while the Nissans opted for a slightly softer tyre on the rears.

With the rule changes, the Nissans could no longer blast off the start line like they had in 1991. Jim managed to stay level with Glen Seton until the first turn when the Sierra pulled ahead while Skaife was attached by the two Shell Sierras of Johnson and Bowe.

By lap 2, Seton lead, followed by Johnson who had got past Richards' GT-R, Bowe getting past the GT-R next lap. The top 5 cars remained in the same order for the rest of the race, lapping within 5 seconds. Seton took the win 1.1 seconds ahead of Johnson, 1.2 seconds further back to Bowe and similar gap back to the two Nissans.

Post race saw some developments – few of the teams were happy with the regulations for 1992. Larry Perkins withdrew from the series, claiming the Holdens were penalised in comparison to the Sierras and the GT-Rs. He also claimed that the changes made to the GT-Rs didn't add up: “Everyone is saying that the Nissan only has 450 horsepower but they could keep up with me down the straight at Eastern Creek and I have 540 horsepower!” The GIO GT-R team threatened to withdraw from the series as well. The BMW M3 team wrung their hands and cried foul over their additional 60kg.

Fred Gibson had some comments: “We did some testing last year with the pop-off valve at all different limits of boost, and we got 450 horsepower at 1.3 bar. The engine we had at Eastern Creek had that and you can see from the way the Sierras went by in the straight it's lost a fair bit of power.” He went on to say that in 1991 the compression ratio was varied according to the track. This year they may be able to find a lower optimum ratio. “At the Grand Prix we were probably running 8.5:1, but we were running heaps of boost there. It depends on what spec engine we are running.”

February 1992

The first round of the 1992 ATC was held at Amaroo. Now everyone had the 'official' 1992 spec cars – the rev limiters were fitted to the Commodores and Sierras, along with the additional weight everyone was carrying at Eastern Creek.

The change in the GT-Rs was quite dramatic – the lower power meant the cars had to be driven harder, which resulted in excessive under steer. Mark Gibbs in the GIO team claimed his GT-R had enough under steer for the whole field.

The Saturday qualifying saw some interesting happenings. Skaife clocked in a very fast, low 51 second lap which Gibson claimed was incorrect. Other teams then claimed to have timed him to that speed as well. Amaroo was fairly unique at that time in that there were noise restrictions that caused some cars to struggle to get under the limit. Dick Johnson's Sierras were pinged for being too loud, as was the Longhurst teams BMW M3s.

At the end of the qualifying, John Bowe had pole, with Mark Skaife slightly slower with a 51.32s lap, followed by Jim Richards (51.44s lap). The critics were already starting to point at the GT-R team. The GIO GT-R had a major problem when a fuel pump fault filled the cylinders and the intercooler with fuel – everything had to be checked out before the OK was given, lucky there was no fire.

In the three lap 'Dash for Cash', Bowe started badly, and lost out to Jim Richards and Peter Brock very quickly. Richards and Brock cross the line first and second to claim the front row for the first heat.

Heat 1

Jim Richards started slowly allowing Brock to boom into the lead. The GT-R was quickly shuffled back into third place. By lap three, Brock was well out in front, followed by Wayne Park (Peter Jackson Sierra), Glen Seton (Peter Jackson Sierra), and Trevor Ashby in his privateer Commodore. Further down the order the GT-Rs were able to pick off the Shell Sierras as the tyres started to wear on the rapid Fords, eventually moving into 3rd and 4th - Richards overtaking Johnson like he was standing still. Brock finished first followed by Glen Seton only 1 second behind. Skaife and Richards crossed next, they had been gaining on the first two cars but would have needed another 6 laps or so to have been in a position to take the lead. The GIO GT-R driven by Mark Gibbs came in 8th.

Heat 2

The rules this year meant that the teams were only able to change one tyre on a car between heats, otherwise their grid position was lost and a 10 second penalty imposed, so there was some intense inspection of the tyres between the heats. Some rain fell and caused another quandary – run with full wet tyres or slicks? It also gave the GT-R drivers opportunity to use their four wheel drive to full effect.

The start of the race was graphic. Brock and Seton sat on the grid with wheel spin, while the Winfield Nissans took off. Mark Gibbs made it up to 3rd from his starting position of 8th on the grid before the first corner such was his traction advantage. The three GT-Rs simply took off leaving the rest of the field slipping and sliding around. By lap 18 the circuit had started to dry out and quite a few of the cars were suffering from overheating tyres. Longhurst was able to catch up with the GIO GT-R and briefly take 3rd place until Gibbs was able to retake 3rd when Longhurst was black flagged for excessive noise. Skaife finished first, followed by Richards and Gibbs making a GT-R 1-2-3.

## March 1992

Sandown in Victoria hosted the second round of the ATC. The 1992 regulations continued to cause ructions among the teams. Many thought the Winfield GT-Rs had their true form hidden, and were running higher horsepower than CAMS had calculated. Skaife said “The car is surprisingly fast, it's fantastic the way the car stops. It's not easy to drive this car and do the times.”

Qualifying

John Bowe was fast, running some sticky Dunlops for a 1m 13.91s equal to the GT-R the previous year. Skaife and Richards were next, followed by Glen Seton and Dick Johnson. Mark Gibbs the the GIO GT-R was back in 7th, struggling with the boost restricted performance. Gibbs claimed he had almost no throttle response.

The 'Dash for cash' three lap event was notable for Mark Skaife jumping the rolling start and running away to a lead. He incurred a stop-go penalty and a $2,000 fine for his trouble. Bowe blew his engine which meant he would start from 6th for the race. Johnson claimed pole with Glen Seton and Wayne Park claimed the following two spots on the grid, with Richards and Skaife behind.

Heat 1

Richards blasted away from the second row to take the lead immediately, Skaife one row further back managed to make second place ahead of the slower starting rear wheel drive cars. Dick Johnson was in third and was able to pass Skaife after the first corner, the Sierra having a superior speed advantage. Bowe followed and overtook both Skaife and Johnson to be 2nd by the start of the second lap. Bowe overtook Jim Richards' GT-R to take the lead by the third lap. Richards fell back to Johnson who was able to overtake the GT-R on the straight. Bowe finished the race about 9 seconds in front of Johnson, with Skaife and Richards following. Mark Gibbs finished 8th in the GIO GT-R who had gearbox troubles during the race. The team slotted in a new gearbox in time for heat 2.

Heat 2

At the start of the second heat, Skaife made a bad start, but Jim Richards was able to take the lead ahead of Bowe. As in the first race, Bowe was able to cruise past Richards' GT-R on the straight, as did Johnson. At the end of the first lap it was Bowe from Johnson, Richards, Skaife and Gibbs who have made a very good start. By the 7th lap Johnson was having difficulty keeping the two GT-Rs behind him as the Sierra's tyres were starting to go off. Jim Richards made an attempt on lap 10, but the faster Sierra was able to accelerate away. Crossing the start / finish line he made another attempt, this time Johnson tried to close Richards out which resulted in the Sierra being nudged into a spin. Bowe finished in the lead, two seconds ahead of Skaife who had passed Richards on the last lap. Gibbs finished 4th, a fair way back but still 10 seconds ahead of the 5th and 6th placed Commodores of Brock and Crompton.

Symmons Plains in Tasmania hosted round 3 of the ATC. Meanwhile the CAMS performance review panel had seen fit to trim 20kg from the BMW M3, but nothing to slow down the rapid Sierras. The Friday practice session showed that there were now three fast Sierra teams, with Colin Bond setting the fastest time with a 56.08s lap, quicker than Bowe, Johnson, and both of the Winfield GT-Rs (Skaife and Richards set the same time).

Qualifying

Bond lost an engine which slowed him up a bit in the time stakes. Bowe continued his strong qualifying performance and claimed provisional pole with a 55.69s lap, Bond's was a little slower with a 55.75s lap, which was equalled by Glen Seton. Johnson was 4th fastest, followed by Mark Gibbs in the GIO GT-R. The Winfield team were struggling. Skaife was 1.2 seconds slower than pole which was good enough only for 8th of the grid. Jim was back in 11th. He conceded his lap of 57.34s "was about as good as a Nissan will do around here."

Heat 1

Seton won the start from Johnson, who was shuffled back by the fast starting GIO GT-R – it didn't last for long as Johnson and Bowe quickly overtook the GT-R on the next straight. Brock and Skaife moved closer the the GIO GT-R. Shortly Brock was able to take the GIO GT-R for 4th place on the straight, but started having brake problems when a brake bleed nipple leaked robbing him of brake pressure. Bowe managed to overtake Johnson for 2nd place, while Seton kept a consistent lead over them both. Skaife was able to overtake the Brock Commodore, two laps later it slid off the road thanks to it's brake problems.

Bowe continued to chase Seton for the lead, until lap 18 when Bowe spun in his own oil when his engine let go. Glen Seton won, about 4 seconds clear to Johnson, with Skaife a further 2 seconds back.

Heat 2

Dick Johnson's Sierra wasn't in the best of health after the first heat, it had terminal engine problems and had a new donk transplanted in before heat 2. As a result of a lack of time and spare engines, Bowe's car was withdrawn. At the start, Seton and Johnson managed to contain Skaife – they boxed him in which slowed him down a fair bit. Longhurst was right up there, looking for room around the outside of the Johnson Sierra. Longhurst was level with the Nissan down the back straight but Skaife used his position on the track to keep his inside line. Neil Crompton in the second of the Brock Commodores slipped by Longhurst. Longhurst then had another go down the outside only to find that Gibbs in the GIO GT-R had forced his way through, and left Longhurst level with Wayne Park in the second Seton Sierra.

On the second lap Seton had a good lead over Johnson and Skaife. Johnson's new engine wasn't producing the power he was used to so by lap 4 Skaife was able to pass the Sierra. Johnson then fell back and came under pressure from Crompton's Commodore. Colin Bond had stormed though the field from the rear of the grid – remember he didn't start heat 1so he had fresh tyres and a fresh engine. On lap 6 Bond passed both Crompton and Johnson in one move and set out after the second placed Skaife.

Bond eventually caught up with Skaife and out braked him to take second place. Seton finished with a 2 second break back to Bond, with Skaife another 3 seconds behind for 3rd. Wayne Park finished ahead of Richards who managed 5th. Mark Gibbs in the GIO GT-R ended up in 9th position.

April 1992

Round 4 of the ATC moved to Winton. Skaife led the points table followed by Jim (remember that the points rewarded consistency rather than outright placings). Still the critics were hounding the Gibson GT-R team. Brock thought they were downplaying their potential at Symmons Plains and they should win an acting award. Fingers were pointing at Fred Gibson saying he was hiding the performance of the cars. Gibson countered by saying that his drivers were having to drive harder, and their placings (and Mark and Jim's ATC points) were as a result of other cars failing.

Friday Practice

Skaife clocked up the quickest time, just ahead of Bowe. Skaife's time was 1m 01.10s which was half a second quicker than the pole time last year which was set by Richards in the GT-R.

Qualifying

Richards had some sticky Yohohama rubber help him to a 1m 00.70s lap. Skaife managed a 1m 01.00 lap to stitch up the provisional front row for the GT-Rs. Just a little slower was Larry Perkins who had withdrawn from the full series just to contest the local rounds. He explained his Commodore was well balanced which helped him to be a mere 0.03 seconds slower then Skaife. Gibbs qualified his GT-R 10th, with bad under steering issues.

The dash for cash run was a Skaife benefit. He ran away from the start and kept the lead. Richards finished 3rd, just behind Seton.

Heat 1

At the start it was another demonstration of the GT-Rs launching ability. They took off leaving Seton on the grid wheel spinning and going nowhere fast. By the end of the first lap, Skaife led Richards by 2.3 seconds with Seton on the rear bumper of Jim's GT-R. There was a freight train behind Seton, all the way back to position 15. By lap 5 the GIO GT-R made it up to 7th place and then applied pressure to Johnson. Up front Richards had pulled out a gap between himself and Seton, and had closed up a bit on Skaife.

The GIO GT-R spun on lap 10, the under steer problem spitting him off. The infield team GT-Rs swapped the lead between themselves before slowing down for the last few laps and letting Skaife take the flag. Seton was five seconds behind them, followed by a reasonably happy Larry Perkins.

Heat 2

As the starting positions for heat 2 are decided by the finishing positions of heat 1, the Winfield GT-Rs had the front row of the grid to themselves. Predictably they lead away from the start, and finished the race in a 1-2 formation with Skaife crossing for maximum points. Behind them was a trail of bent cars and damaged egos. Johnson had been pushed into a spin and had to pit for fresh tyres, Bowe and Alan Jones clashed leaving Jones with a bent steering arm, Longhurst broke his grill pounding the back of Bowe's Sierra. Seton clashed with Alan Jones as well, pushing him off the track to claim his place on the road. Longhurst gave Bowe a real shunt and pushed him off the track causing Bowe to spin. Gibbs claimed 8th.

Longhurst was fined $5,000 for 'a most unfair practice' and breach of Code of Diving Conduct, but he said it was worth every cent.

## May 1992

Round five of the ATC was at Lakeside in Queensland. The CAMS Performance review panel had been working hard since the previous round. They loaded the Sierras with an additional 50kg and punished the Skylines with 100kg of additional weight to carry around. The new weight penalty for the GT-Rs causing much wailing and gnashing of teeth. Mark Skaife claimed that the GT-R was now the heaviest touring car in the world, and that in endurance race trim (full load of fuel, water brakes etc.) the GT-R would weigh in at 1,700kg. Fred Gibson threatened to withdraw the cars from Bathurst, claiming the extra weight was making wheels crack. The GIO team went as far as to withdraw their GT-R and bring last years Commodore out from the chicken shed, as they were cracking wheels with their heavy GT-R and had to wait for some new stronger wheels to be made.

Qualifying

The Shell Sierras were running at their home trck so naturally they topped the time sheets. Dick Johnson recorded the best lap, 52.90s, just a few hundredths of a second faster then team mate Bowe. Longhurst was quick in the M3, he had lost 20kg from his cars weight, and the other cars had been penalised by comparison. He claimed third fastest with a 53.29s lap. Larry Perkins was also quick (the Commodores remaining status-quo in the weight) with a 4th fastest 53.37s. The best of the GT-Rs was Skaife, 10th fastest, 53.85s. The extra weight forcing the team to use a harder tyre.

There was some heated debate in the post qualifying press conference, Larry Perkins laying it on thick that the Winfield team were 'sandbagging'... “It was the greatest sham of all time...I don't think the weight makes any difference. The Nissan is a superior car, but lets not think it's uncompetitive.” Skaife bit and responded “You come and drive the car in the morning Superstar and see for yourself!”. Jim Richards also responded: “People may think we are fudging, but that's as fast as the car will go. We've still got a good car, but it's a lot tougher for us now.” Fred Gibson showed a print out of Skaife's gear change points as proof that they were slower than before.

Heat 1

Bowe lead away from the start, there was a fair amount of squeezing in the mid field with the GIO Commodore spinning and presenting mobile obstacle for the following cars. Perkins took it up to Bowe, with Longhurst in the rapid M3 right behind. Johnson dropped out with a broken half-shaft. On lap three Perkins snatched the lead from Bowe. (hmm it's 1992 and Larry is driving a VL Commodore – a five year old design, the Sierra RS500 was one year older than that). Skaife had made it up to 5th on the road, and was starting to catch up to Glen Seton ahead of him.

Longhurst eventually got past Bowe, and quickly gained on the leading Commodore of Perkins who was starting to suffer with his tyres going off. Larry was unable to hold back Longhurst. Further back Skaife had taken Seton for 4th, and was closing on Bowe rapidly. Bowe had ambitions on the ailing Perkins, and attempted to squeeze past, but Perkins moved back and Bowe had to back off or be hit, it was enough for Skaife to get past them both. Longhurst took the flag followed by Skaife about 4 second behind.

Heat 2

With the one tyre rule, many of the top cars from heat 1 had damaged tyres, so they started from the read of the grid. This group included Skaife and Perkins, who had blistered their tyres badly. This left some space on the grid and Jim Richards was on the second row so was in a very good position given the GT-Rs launching ability.

Richards' GT-R took off and lead for the first three laps with a small gap back to Bowe and Longhurst. On the fourth lap Skaife had moved up to 11th from the back of the grid. After 10 laps Richards was able to extend his lead over Bowe, who was being hassled by Longhurst. The M3 driver was being over cautious after the $5,000 sting from his actions last round o took his time to get past Bowe. Eventually he managed to do so when Bowe was boxed in by a lapped Supra. Longhurst set out to catch Richards up ahead. Unfortunately the extra weight in the GT-R caused Jim to make a small mistake at a sweeping corner and ran wide into the dirt, it was enough to let Longhurst through. Bowe once again got into a scrap with the Alan Jones M3 and was nudged into a spin. Longhurst claimed the flag, followed by Richards, and then the Jones and Morris BMW M3s, Bowe, Johnson and Skaife. Lakeside was very much a M3 benefit. But in the championship points table, Skaife led followed by Richards, and a very distant Seton.

Round 6 moved to the Eastern creek track. The Friday practice session was wet and didn't really lend itself to being a form guide – Mark Skaife was fastest, but many of the other top drivers didn't even get out on the track.

Qualifying

Bowe was fastest, following the qualifying trend he had set this year, 1m 35.21s. The HRT team had made a rare appearance which wasn't rewarded when Tomas Mezera wrote off the Commodore after sliding off the track into a wall. The good news was that Skaife was second quickest – 1m 35.24s, just 0.03s slower then Bowe. The extra weight they were running enabled the team to balance the GT-R with more corner weights. Perkins was right behind him with a 1m 35.41s. Johnson and Longhurst followed in the speed stakes. The Shell team had some interesting radar figures – Johnson was pulling 253km/h, Seton 252km/h, Perkins 258km/h, Brock 253km/h. Longhurst was faster than the GT-Rs, 244km/h compared to Skaife's 241km/h (the M3 was a 2.5 naturally aspirated engine, compared to the GT-Rs 2.6 litre twin turbo)

The GIO GT-R was back, and quicker than the works cars on the front straight – which was noted by the critics. Gibbs was quoted as saying "I'm never going to complain about this car again" after driving the previous years Commodore at the Lakeside round. He was 9th fastest with a 1m 37.07s lap. Jim Richards was back in 12th – he had a new GT-R with an engine that was slightly down on power. The older car he had been using all year had been sold to a Asian team.

Heat 1

Skaife used the open front straight to lead – leaving Bowe and Johnson behind. Further back were Perkins, Gibbs and Longhurst. In lap 3 Bowe slipped past Skaife. Johnson and Perkins tangled in a passing move when Perkins got sideways and punched the Sierra in the door, putting them both off into the dirt. Two laps later Longhurst out-braked the Skaife GT-R to take second place and set out chasing down Bowe 3.5 seconds ahead. The leaders finished in the same order, Bowe, Longhurst, Skaife – further back by 10 seconds, followed by Richards and Gibbs.

Heat 2

Skaife blasted off the line to lead away from the start, Bowe close behind, followed by Richards and Gibbs, who then slipped past Richards on the second turn. Johnson was once again hit and spun off the track, taking one of the faster Sierras out of the equation. Seton pounced on Richards and used his quicker acceleration to pass the GT-R. Bowe also tried to do the same thing to Skaife but didn't complete the pass. Next lap Seton took the GIO GT-R. Longhurst followed, pushing Gibbs and Richards one more place down. On lap 5 Bowe was able to pass Skaife for the lead when he ran wide onto the straight. The race finished with Bowe loading Skaife by 1 second, trailed by Longhurst, Seton, Jones and Richards.

Thanks to Seton's poor run, Skaife climber higher on the points table.

The converted airfield Mallala was the venue for round 7. It was something of a special track for the Winfield team, the début of the GT-R had been here 2 years ago, and had won in convincing style last year.

In practice, Bowe once again claimed top lap time, the GT-Rs slightly slower suffering with under steer problems.

Qualifying

Jim Richards set the hot time with a 1m 08.80s lap that was quicker than last years GT-R pole (remember last year they were 100kg lighter and had no boost restrictions.) Skaife was second fastest with Bowe just a bit slower. Interestingly, Bowe was quicker than he was last year, despite the extra weight and the 7,500 rpm limit. Mark Gibbs qualified a strong fourth, despite having a sick engine. Bowe managed to claim pole in the dash for cash race, but had GT-Rs beside and immediately behind him on the grid.

Heat 1

As predicted the GT-Rs launched hard and Skaife lead into the first corner followed by Richards, Bowe and Gibbs. At the hairpin Gibbs attempted the inside line and pushed Bowe off the track, also managing to get past Richards before the end of the first lap. It was a GT-R 1-2-3. Skaife worded away and was able to develop a buffer between himself and the two car sandwich of Gibbs and Richards. Longhurst was working hard and got past Seton's Sierra to take up 4th place.

On lap 9 Richards GT-R was losing coolant and he retired with a blown head gasket. This gave Longhurst a free spot and he moved up to attack the GIO car. Longhurst passed Gibbs with two laps left but was unable to make a substantial dent in Skaife's lead. Skaife crossed three seconds ahead of Longhurst. Gibbs and Perkins followed. Bowe had been working hard to get past Perkins in the late stages of the race but it had come to nothing when an attempted shunt backfired and he lost 2 places.

Heat 2

The Gibson Winfield team worked hard between heats to replace Jim's engine with a fresh unit – the job normally took four hours but the crew managed to do it in two. He would start from the rear of the 15 car grid. Skaife made a nice start, leading the Longhurst M3 into the first corner. Gibbs powered though and pushed Longhurst back to third, it was another three laps before Longhurst was able to pass Gibbs to regain his second spot on the road.

By lap 10 Richard had managed to reach 5th place behind Bowe and slotted past to take 4th and set out to chase down the Gibbs GIO GT-R ahead. Richards got by Gibbs, and the race finished in that order; Skaife, Longhurst, Richards, Gibbs, and Bowe.

## June 1992

Waneroo in Western Australia was the destination for the 8th round of the ATC. Seton was the fastest Sierra in practice, heading Bowe, Johnson and Bond.

Qualifying

Bowe once again topped the time sheets with a quick 57.78s, Bowe saying it was about as close as a perfect lap could be. Johnson was slightly slower than his team mate, clocking in with a 58.39s lap. Seton was third fasted following an engine expiring in the morning. His team mate Wayne Park was 4th fastest, just enough to be ahead of Perkins. The Winfield Nissans were having a pretty bad time, Skaife had a dose of the flu and was substantially slower than Bowe, and sneezed his way to a 59.37s. Richards was having handling issues with his GT-R, they were swapping springs and changing the torque split front to read in an effort to dial out the excessive under steer he was finding in the GT-R. Gibbs had exactly the same issues and was 12th fastest.

Heat 1

The Sierras at the head of the field made a good start, though Richards was able to blast his way into 4th. Gibbs run up the rear of Colin Bond's Sierra, causing a heavily crunched front end but it was only cosmetic damage. The Shell team took off into the distance, followed by Park, Richards, Seton, Skaife and Longhurst. Richards was able to get past Park's Sierra and make up one place on the road, but Seton moved up to attack Richards. Seton was unable to get past Richards, the better traction of the GT-R helping it out of the corners better than the two wheel drive Ford. Bowe finished, followed by Johnson, Richards, Seton, and Longhurst. Skaife finished 7th, while Gibbs was well down thanks to a snapped tyre valve.

Heat 2

There was a bit of repair work needed to the GIO car between the heats, the bonnet had to be flattened back down and the front end bent back into shape. Richards had some softer springs put into his GT-R in an effort to help it handle better. At the start Bowe lead away, but Johnson was swamped by the rapidly starting Richards, with Skaife, Seton and Longhurst following. Skaife was able to zip past Johnson on the third lap, which meant the order was Bowe, Richards, Skaife and Johnson. Behind Johnson there was a pack of cars struggling for position, Longhurst and Seton rubbing guards. Longhurst and Jones slipped past the Sierra eventually who then went onto take on the slowing Dick Johnson. Seton managed to displace Johnson as well with a move that ended with the Shell Sierra spinning.

Richards was gaining on Bowe, and Skaife was still in third. But just a few laps from the end he broke third gear which caused him to spin, it took painfully long time for him to get back on the track where he finished in 11th place. Richards continued to challenge Bowe for the lead, making a couple of attempts down the inside of corners once pushing Bowe's car sideways, but Jim backed off to avoid ploughing into him and he trailed Bowe by 0.27 seconds at the finish. Longhurst, Jones, Perkins and Seton followed.

The points table left just Skaife and Richards with the championship, either of them could win it at the next round – there was nobody within range to challenge them.

Oran Park was the venue of the final round of the ATC for 1992. The series had been compressed to allow for the all important Channel 7 coverage of the Barcelona Olympics to go without interruption.

Jim Richards went into the final round as the defending Touring Car champion from last year. To win he needed Skaife to fail. Skaife just needed to finish to win the championship.

Friday practice showed Skaife was fastest, followed by Bowe, and Longhurst. Mark Gibbs broke a diff in his GT-R which slowed him down a fair bit in the practice session.

Qualifying

Bowe again pulled a quick lap out of the bag, it was a scorching 1m 09.97s. Skaife and Richards were fractionally slower with Longhurst, Gibbs and Perkins next. Gibbs had some strange electrical problems with his GT-R, at one stage it stopped and the team was unable to work out what was causing it.

Dash for Cash

Longhurst won the draw and had Perkins alongside him on the grid. Gibbs was right behind him and barged his way alongside Longhurst as the lights went green. They contacted a couple of times which pushed them both off into a spin and allowed Bowe, Skaife and Richards to finish ahead of Gibbs.

Heat 1

Skaife lead away Richards, Gibbs, Seton, Perkins and Bowe who had made a terrible start off pole. By lap two Skaife had a 2 second buffer over Richards and Gibbs who were scrapping over second place. Seton, Perkins and Bowe followed, though Bowe shortly smacked into a wall which removed him from the mix. Gibbs made it past Richards, but there was now a three second gap ahead to the leading Skaife GT-R. They continued on until lap 9 when Richards was able to get past Gibbs on a corner. Behind them Longhurst was moving up, he had managed to get past Perkins who had his tyres starting to go off the boil. The race finished with a GT-R 1-2-3 with Skaife, Richards and Gibbs taking the honours.

Heat 2

The finishing positions of heat 1 determine the grid for the heat 2, so there was an all GT-R front row. At the start the three GT-Rs had a clear gap of 50 meters over the other cars in the field. Skaife, Richards and Gibbs lead, with Seton, Perkins and Jones following. On lap seven, Richards had a handy five second gap back to Gibbs who was coming under some pressure from Jones and Seton. Perkins having dropped back, not able to continue his initial race pace.

Jones forced his way past Gibbs on lap 13, sending Gibbs spinning off the track, it was just a racing incident though rather than anything malicious from Jones. Skaife finished first, followed by Richards making a nice GT-R 1-2. Jones in his M3 was nearly 20 seconds further back followed by Longhurst. Bowe and Gibbs were next.

It was quite a good day for Mark Skaife, he had won the ATC (becoming the youngest winner

of the ATC to date) and also won the single seater Australian Drivers Championship at the same meeting, and become the youngest winner of the ATC to date.

It was a very interesting series, I guess it will never be known if the Gibson team were in fact sandbagging mid-series. Certainly their performance improvement in the later half of the series could be explained by luck, suspension development and hard driving. There still remains the wild-card question of the GIO GT-R which was faster at times, faster than the works cars. Anyway, debate is futile as the team had cleaned up the championship and had the points to prove it.

Fred Gibson then set about work to try and level the playing field for the Bathurst event. He made a submission to CAMS to have the weight and boost penalties removed, arguing that the cars would be highly stressed with the additional weight they were forced to carry. CAMS turned down his submission forcing Fred had to play tougher. He threatened legal action against CAMS under the trade Practices Act unless they reviewed the weight penalties, and also suggested the team not turn up to Bathurst (which was unlikely as it is the biggest event of the year.) Bob Forbes, the owner of the GIO team stood by Gibson in solidarity – he would also pull the team's GT-R from Bathurst if Gibson pulled his team out. CAMS called their bluff and no legal action occurred. The GT-Rs would race at Bathurst with their 1,500kg minimum weight and the 1.3 bar pop-off valve limiting boost.

## July 1992

The Bathurst entry list is to be expanded with a new class for the 1993 specification Falcon and Commodore. Seton and Johnson have Falcons being built, and a number of Holden teams are intending to enter, a 1993 car including HRT and Brock.

## August 1992

August had a media 'test day' at Bathurst, with many of the leading teams bringing their cars along. Fred Gibson was asked what specification his GT-Rs were running, he replied: “No comment.” Skaife cryptically admitted “We are not down at the Oran Park weight, but we're not down at last year's weight.” It was observed they were not running with the 1.3 bar pop-off installed.

Unofficial times were:

Skaife (GT-R) 2m 13.67s
Bowe (Sierra) 2m 13.71s
Richards (GT-R) 2m 14.88s
Johnson (EB Falcon) 2m 16.95s
Percy (VP Commodore) 2m 17.20s
Gibbs (GT-R) 2m 17.85s

After the Bathurst test day, there was the final AMSCAR round [I'm missing details of the first two AMSCAR rounds in 1992] . Nissan had won the AMSCAR title last year and were intending to do the same this year.

Qualifying

Gibson reported he had the GT-Rs back to their normal specification after the media day (so we can conclude that they were lighter than the CAMS weights during the test.) Skaife was fastest and got pole with a 50.88s lap, faster than the pole time back in the first round of the ATC – which was 51.32s. Richards was second fastest with a 51.02s followed by Longhurst who had done an unofficial 50.60s in testing. Mark Gibbs qualified 6th fastest, and had a fresh engine after the Bathurst test day.

Heat 1

Skaife had a bad start when the experimental clutch he was using slipped at the start. Richards and Gibbs lead Bond into the first corner. On the second lap Skaife was able to make 5th as he squeezed past the M3 of Paul Morris. Longhurst meanwhile had slipped past Bond and was making progress on the GIO G-R of Gibbs. Longhurst made it past Gibbs and set out after Richards, but Skaife by now had made it up through the field after his poor start was right behind him. Skaife took 2nd place from Longhurst on lap 6 and then the M3 was pushed back another spot when the GIO GT-R got past. That was the finishing order of the first heat.

Heat 2

The start was similar to the first, with Richards taking the lead while Skaife battled his slipping clutch. Gibbs and Longhurst were busy contesting 3rd place, Gibbs had lots of over steer and they contacted. Longhurst was pushed off the track for his trouble. Gibbs had damaged an oil cooler in the incident and had oil on his tyres which further enhanced his poor handling GT-R. Richards lead Skaife and Morris over the line at the finish – there was very little between them. Jim Richards claimed the AMSCAR title for 1992.

## September 1992

The Sandown 500 has traditionally been a part of the Bathurst build up, but recent years has seen the event fade with some of the teams opting to give it a miss. None of the GT-Rs showed, but there were some of the new 1993 specification cars out for the first time. Larry Perkins won in his VL Commodore (now two generation out of date) ahead of the newer Chev powered VP Commodores. Seton's Falcon was in trouble – breaking a tail shaft and having major brake problems.

Wheels Magazine got Jim Richards to do a back to back test of his race GT-R and a stock road going GT-R. The results were quite interesting. The road car was measured with a 5.4 second 0-100km/h, and 13.7 400 meter sprint. It's 0-60km/h time of 2.2 second was better than any Group A race car Wheels had tested (which included Johnson's Sierra and Perkins' Commodore.)

Jim's race GT-R turned in a 0-100km/h time of just 3.2 seconds and ran the 400 meters in 10.9 seconds. They used 8,000 rpm launches in the road car, and 8,200 rpm in the race car. The road car was able to pull cornering G's of 1.17, while the race car with it's better tyres and suspension could pull 1.46G. The magazine then went on to mention that of the 100 GT-Rs imported into Australia by Nissan for the domestic market, 37 of them remained unsold after a year.

## October 1992 Bathurst

And so it all began. The weekend before Bathurst arrives along with the first of the keen campers and the teams trickling into town. Everyone waits for the first session on the Wednesday to see who is going to be fastest, and who is going to last.

Wednesday practice showed the Nissans were the quick ones.

Qualifying

The official qualifying started on Thursday, the Skaife / Richards entry was under the 2m 15s mark. Johnson / Bowe, Mezera, and Longhurst were also fast in the morning session. In the afternoon Bowe was quickest, still fractionally slower than the GT-R had been during the morning.

The best times were:

Skaife / Richards (GT-R) 2m 13.82s
Perkins / Harrington (Commodore VL) 2m 14.08s
Johnson / Bowe (Sierra) 2m 14.56s
Niedzwiedz / Hansford (Sierra) 2m 14.98s
Longhurst / Cecotto (M3) 2m 15.26s
Seton / Jones (EB Falcon) 2m 15.53s
Mezera / Jones (VP Commodore) 2m 15.74s
Gibbs / Onslow (GT-R) 2m 15.75s
Brock / Reuter (VP Commodore) 2m 15.98s
Percy / Grice (VP Commodore) 2m 16.13s
Olofsson / Crompton (GT-R) 2m 16.17s – this was the second Gibson car.

Saturday Qualifying

The top ten run off on Saturday represented the last opportunity to improve the top drivers grid position. Dick Johnson grabbed pole with an awesomely quick lap of 2m 12.893s – the quickest a Sierra has every lapped the mountain, and only just fractionally slower than Skaife's pole time last year.

The GT-Rs were having a hard time with the extra weight they were carrying, and the boost restriction. The teams spent time carefully preparing the cars for the race on Sunday.

Sunday Race Day

A bit of rain was falling as the field took to the track for some warm-up laps. It went bottom up for Longhurst when his co-driver smacked into a wall and damaged the M3 – it was repaired in time for the race though with no lasting damage. Brock broke a tail shaft in his new Commodore, Unfortunately the team didn't have a spare VP shaft, but could make one up out of two VN shafts in time for the race.

At the start of the race, the field took off, except for Brock who had snapped his new tail shaft. Johnson managed to hold back Larry Perkins in the fast starting Commodore. Perkins then lost a heap of places when he grabbed 5th gear instead of 3rd. At the end of the first lap, Johnson lead Skaife, Gibbs, Mezera, Niedzwietz, and Perkins.

Skaife took Johnson at the end of lap 2 on the pit straight. Niedzwietz was able to make up a couple of places and took the Gibbs GT-R on lap 5. Gibbs started slowing and slid down the order until he was in 11th place. The problem was the GT-Rs windscreen was covered in oil, which the pit crew tried to get rid of by throwing buckets of soapy water at as it drove past the pits, the officials stopped them from that after a while.

After 10 laps Skaife had a handy lead of 5.2 seconds between the GT-R and the Dick Johnson Sierra. Another 10 seconds behind Johnson was Niedzwietz in another Sierra. By lap 20 the lead was out to 19 seconds, with Percy in the HRT VP Commodore now up into 3rd place.

At 11am the clouds got dark and the rain started. Nearly everyone dived into the pits for full wet weather tyres, except for the Nissan GT-Rs which remained out on the track, quite safe with the four wheel drive. This bought the Olofsson / Crompton GT-R up to second place. The Johnson / Bowe car was now more than 1 minute behind Skaife.

Much of the field were having difficulty with badly fogged windscreens (these days all the windscreens have heater elements in them), one team even smashing out their back window in an effort to clear the mist off the windows.

The lead Nissan pitted on schedule, and resumed with Richards driving, lapping four seconds a lap faster then the Johnson / Bowe car was able to. Not long after the 33rd lap, Denny Hulme passed away as his M3 drifted off the track and ran along the wall on Conrod straight. This bought out the pace car. Up until then Richards had almost managed to lap the Johnson / Bowe Sierra, but it all was lost when the pace car bunched the field.

When the pace car left the track, Richards lead Bowe by 6 seconds, one lap later it was 27 seconds. The leading GT-R managed a lap 15 seconds faster than Bowe. Crompton in the second GT-R was also lapping quickly in the rain. The rest of the field was 1 lap down.

In the early afternoon Gibbs picked up a large dent in the side of the GT-R when a Sierra had emerged from the spray on the track and was unable to avoid hitting Gibbs, the damage was only cosmetic.

At the 53rd lap point, the two Winfield Nissans were still leading, with Longhurst, Bowe and the GIO GT-R following. The pace car came back out on the track after Colin Bond's co-driver had clipped the back of a Commodore on Conrod, sending the Holden into the wall. Richards was just about to put Bowe a lap down when the pace car joined.

Richards used the pace car to pit for a load of fuel and a brake pad change. The rain was actually helping the GT-R conserve it's brakes. Skaife resumed the driving duties. The second car came in shortly afterwards for brake pads as well and a driver change with Olofsson returning to the wheel. Longhurst and Johnson where out there going for 3rd place, Longhurst had problems with his gear knob that had come off and was stabbing his hand with every gear change. Glen Seton gave an interesting account of the conditions: "You're just guessing down the straight, as soon as you get behind someone the heat from the car causes the windscreen to instantly fog. All you can do is to stick your head out the window and watch the white lines on the side of the track – that's how bad it is."

By lap 71, Skaife still lead Crompton by 20 seconds, with a gap of five seconds back to Johnson. The rain was now blowing in sideways in a strong wind, the pace car came out again only 25 minutes after it had last been out – a Commodore had crashed at Forrest Elbow. There was a little debate weather to red flag the race at this point – the flag marshals couldn't see each other, but a report from a nearby town said the rain was going to back off.

Onslow in the GIO GT-R ran into the side of another car and damaged an oil cooler in the accident, he was able to get round into the pits to have it bypassed. Quite a few of the teams pitted to change from the wet tyres to slicks in the improving conditions. Skaife and Crompton continued leading, both of them on wets which were starting to over heat in the drying conditions. Skaife dived in for a tyre change and resumed still in the lead. Crompton did the same shortly afterwards.

As the laps climbed into the 90's, the track dried out and Bowe was able to make some ground on the Nissans, this was the best opportunity as he couldn't match them in the wet, but the dry was a distinct advantage to the Sierra. On lap 93 he dived past the Olofsson GT-R for second place. Skaife pulled out a few faster laps to maintain a buffer of about 30 seconds between the GT-R and the Sierra of Bowe.

At the 113 lap mark the Olofsson GT-R pitted for brake pads, fuel, and a driver change. The pads were inspected and found to be only half worn so there was no need to do a full pad change in the lead car. Crompton resumed, and shortly afterwards Skaife pitted for a driver change to Richards and fuel – no need for pads. Bowe was briefly in the lead.

Jim Richards had some dramas though – "I had a rag which I was using to keep the screen clean, only it got hooked up in the extinguisher and set it off! I would down the windows and got rid of the stuff."

Bowe pitted on lap 117, for Johnson, pads, fuel, and a top up of oil. By 4pm Johnson was over a minute behind Richards, with the second GT-R about 50 seconds behind Johnson. A report came though of torrential rain and hail approaching.

On lap 144 Skaife was heard to exclaim “It's raining! Good stuff!” in the pits as he watched TV. Richards was out on slicks and it was hosing down. Over the top of the hill Richards had encountered a wall of water, the GT-R was uncontrollable and slid into the wall. The left front suspension was broken.

The track was in chaos – there was a large incident on top of the hill with three Commodores and a Corolla going into the walls. There was another Commodore in the wall near Forrest Elbow. After another two Commodores slid into the stricken car near Forrest Elbow, the GT-R limped onto the scene and aquaplaned into the mess. At that point the race was red-flagged.

The rules are quite clear – when a race is red-flagged and cannot be restarted, the results are taken from one lap previous. That meant that the lead Winfield GT-R had won. Richards said “I was going about half a mile an hour in low gear, then it accelerated off the track. I had no idea we had won. I expected a punch in the mouth when I got back but instead we won the race!” The second GT-R claimed 3rd place behind the Johnson / Bowe Sierra.

There was a very hostile reception on the podium that afternoon. The crowd was ugly, and Johnson wound them up in his second place acceptance speech. Jim was very upset when he took the podium “I'm just really stunned for words. I can't believe the reception. I thought Australian race fans had a lot more going than this. This is a bloody discrace.This is going to remain with me for a long time, you're a pack of arseholes!” he told the booing crowd. The corks remained in the champagne.

An upset Skaife later said in the post race press conference: “I just felt that what we got out there wasn't warranted. I feel sorry for Dick and John – their car was running at the end but rules are rules. Winners are grinners, and the rest can go to hell.”

And so closed a chapter in Australian motor racing history. The Group A formula had come to an end, the next year would bring a new series of Holden vs. Ford competition.