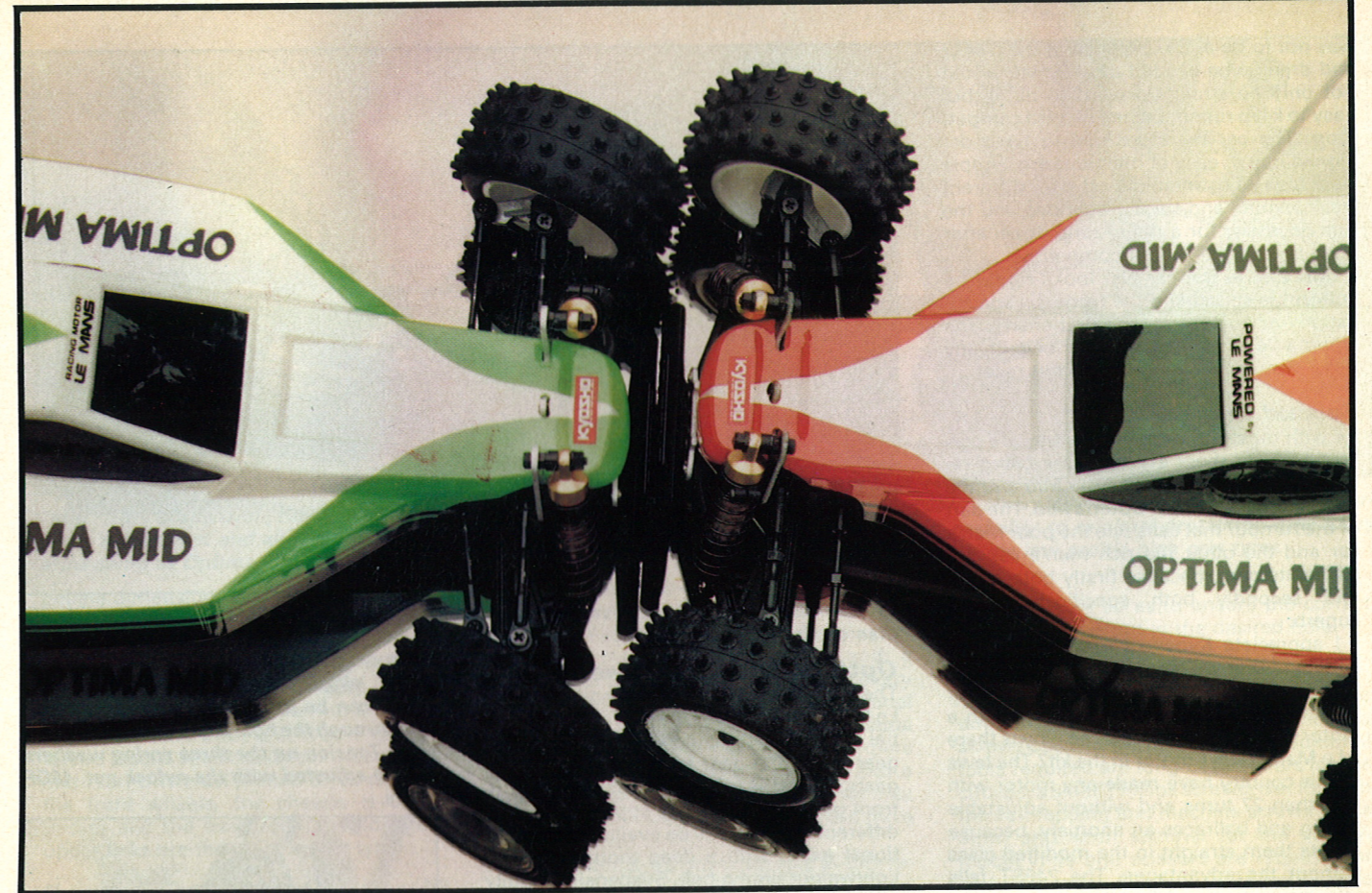




Le Mans 240ST motor comes standard on the 'Mid' with a three step mechanical speed controller.



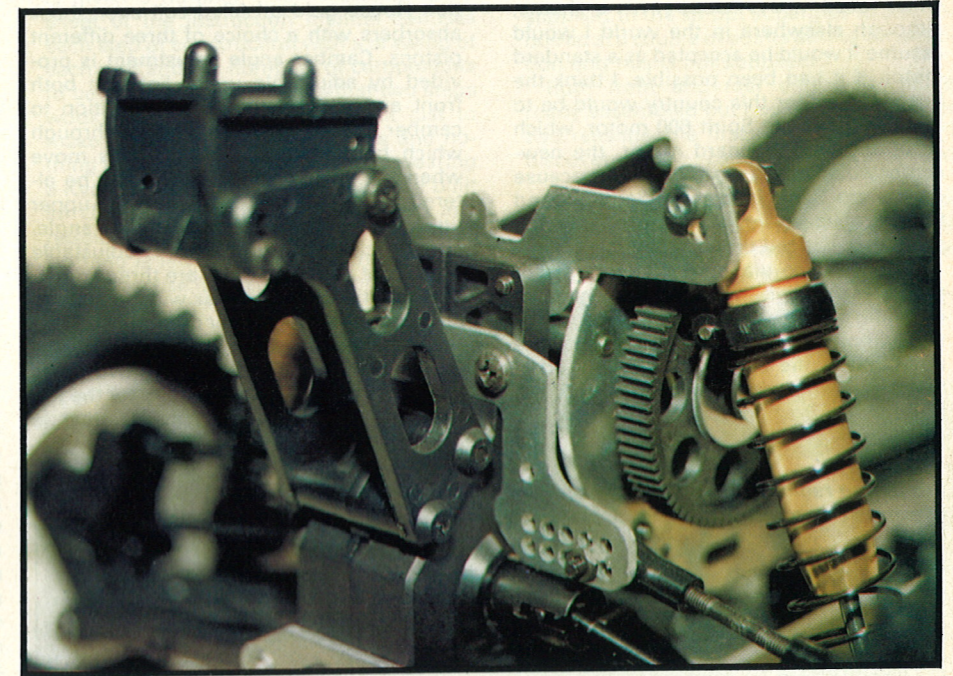
Above, head to head test with the 'Mid' on the left and the 'Turbo' on the right.

Below, 'Mid'. There are ten positions to dial RISE on the 'Mid' alloy shock mounts. (There are five on the 'Turbo'.) The rear wing is mounted on the girder type plastic mount.



# MID ENGINE OPTIMAS

JIM CRABB reviews the longest-awaited car in the history of 1/10 racing



"Rumours" by Fleetwood Mac is one of the best selling albums of all time. Almost as many rumours about the mid-engined Optima have been banded about for the last 10 months as records sold, they have been especially rife since the World Championships where five of the 'A' finalists were mid-engined Optimas. Rumours at the time were that about 40 cars had been hand built at a cost of anything between £400 and £1,400 each (depends who is telling the story) and were

given to any top driver with one purpose in mind, and that was to win the World Championships. Part of the rumour was true, the cars were hand built simply because the production line was not in full swing and production cars would not have been available for the championships. History will tell us that a mid-engined Optima did not win but it did take second place driven by Katsunori Kondo with a further four mid-engined Optimas in the top 10 places.

Other rumours since Romsey have been that the car is too short and only good drivers will be able to drive it, it won't be released for another 12 months because it will stop sales of the ever popular "Optima", it won't be released at all because (a) it will be too expensive and (b) it would affect sales of the Optima, Pro Optima and the Turbo Rocky.

Two versions of the car will be produced, one for the poor man and one for the rich. The rich man's car would be similar to the

one used at Romsey and the poor man's one would have no carbon fibre or titanium parts and have lower specification shock absorbers. These are just the rumours I have heard, no doubt there are many others.

Back in February when I was fortunate enough to be asked to review the "Rocky" the most popular rumour was that Kyosho were going to revamp their range of cars and bring out a new model every six months. Part of that rumour was true as

they have added and revamped their range. A new car every six months? Without a calculator that is about two cars, so how do we account for the Optima Turbo, Salute, Optima Pro, Ultima, Rocky Turbo, Cosmo, Big Brute and Raider, which have been released since the Rocky reviews, so much for rumours!! Let's forget them as the car is now here so what do we get?

### We get the most eagerly awaited car of all time

I thought this accolade would go to the 4WD RC10 but that seems to have died a death with the continued production of their 2WD car.

### Car Concept

It was designed from the outset not as just a racer to win the 1987 World Championship for 4WD cars. Although winning the Championship was the prime objective it



was not to be at the expense of the owner and driver who needed a car which would not only be straightforward to build, but easy to keep running when used in competition. The car therefore had to have designed into it, easy of maintenance, simple track side adjustments to cater for different track layouts and track conditions and the non-necessity for a major strip down after each meeting to keep it competitive.

Impressive, the car just looks right, the concept is sound and the technical specification on paper is very comprehensive. The Optima Mid cannot be described in any other way than as an out and out racer.

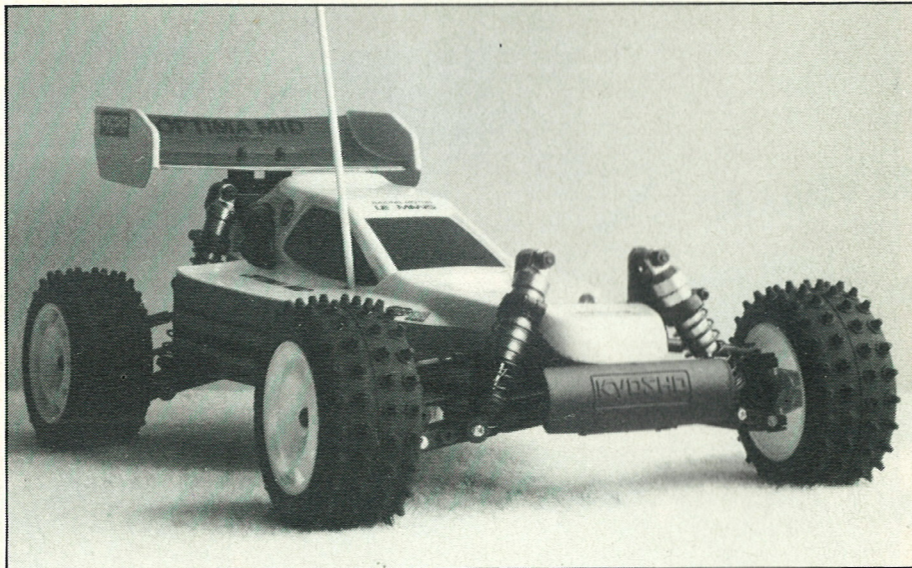
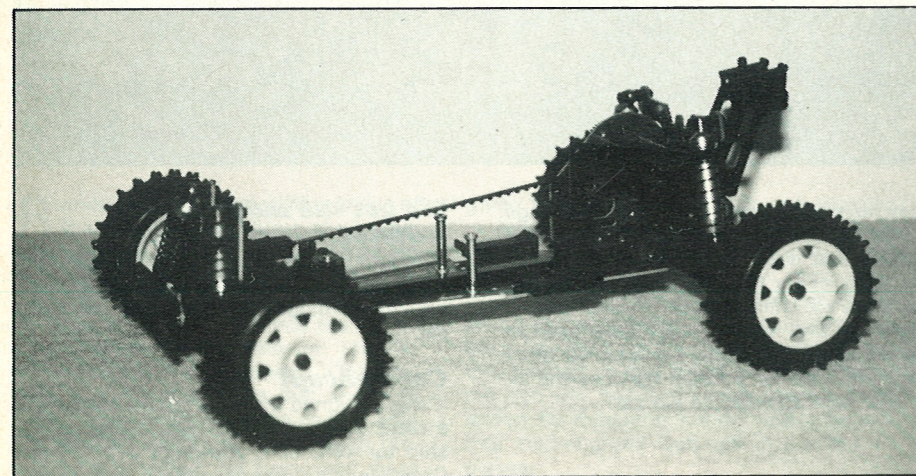
### Second thoughts

As with most rumours in part they are correct and yes there are two cars being released, one called the Optima Mid and the other called the Turbo Optima Mid. The part of the rumour that calls one the poor man's car and the other the rich man's car is a silly statement, because firstly both prices and secondly both specifications are superb.

I appreciate Kyosho's market is worldwide and that we have some peculiar laws in this country, and that also the newcomer to the hobby has to be catered for with a motor and speed controller, so why is there a Le Mans 240ST motor in the kit? The laws in this country have made any motor with less than 27 turns and without adjustable timing and ballraces an anomaly, because it puts them straight in the modified class without the advantages. The 240ST falls into this category, I first came across the motor in the "Rocky", it's a very quick 20 turn single and as good as it is, it will have to compete against fully blown modifieds when raced in this country. It's a shame, although elsewhere in the world I would assume it would be accepted as a standard motor. If it had been possible, I think the best solution for this country would be to have included the Spirit 600 motor, which is an accepted standard motor, the newcomer would then have a car which because of its motor is not in the modified class and therefore up against most probably the more experienced driver.

Option House platinum dampers are of the latest design, where the degree of damping can be altered with the damper in situ without changing damper oils, they are not fitted to the top of the range 'Turbo' which is a surprise especially as they are fitted to the 'Turbo Rocky'.

Bar before radio plate and spine fitted. Belt goes over top of motor.

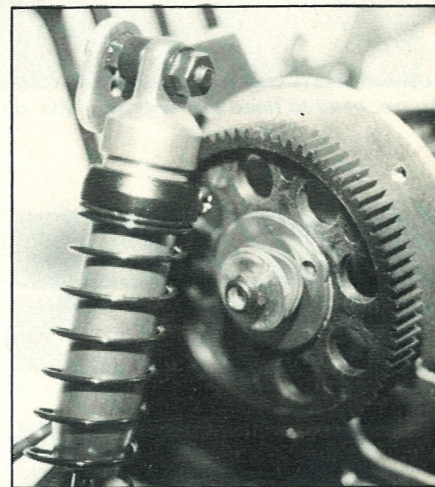


"Turbo" in its original paint scheme. The shock absorbers are mounted more vertically than on the original Optima.

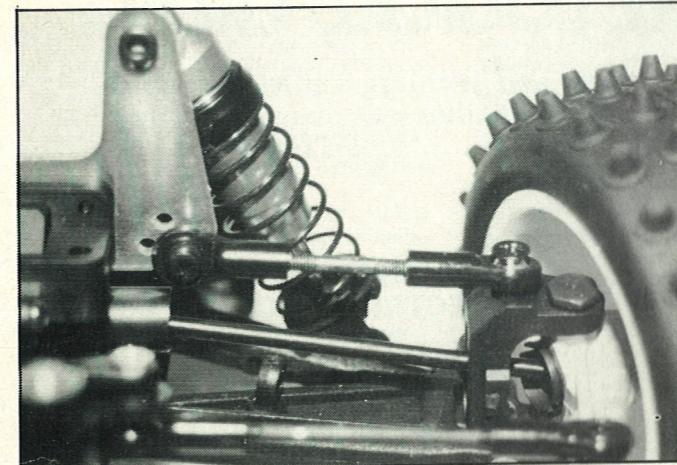
### Optima Mid, Tech Spec.

The mid mounted 20 turn single motor a Le Mans 240ST drives the rear gear differential via a slipping clutch arrangement and gear train. The gear train comprises 48DP gears. The rear gear differential drives the front gear differential (as opposed to a ball differential which will be available as an optional extra) with a deep toothed narrow lightweight timing belt. Suspension is fully independent with extra long single wishbones of glass-reinforced plastic (GRP) for both strength, lightweight and extra long wheel travel. Damping is provided by Option House gold oil filled coil over shock absorbers with a choice of three different pistons. Camber angle adjustment is provided by adjustable upper links on both front and rear wishbones. In addition to camber angle adjustment the arc through which both front and rear wheels move when the suspension operates can be altered by varying the position of the upper link whilst maintaining the camber angle. Ground clearance of the car is adjustable both front and rear, there are three adjustable positions on the rear wishbones and two on the front. A further minimum adjustment is possible on both front and rear dampers by using either of the two holes which provide the location point for the top of the damper. All the running gear is

"Mid" slipper clutch arrangement. The clutch can be locked up by fitting a small bolt through the hole in the clutch and drive gear. Tension on the three spring washers can be adjusted with the nylock nut. 48DP gears.



mounted on a flat aluminium-alloy plate chassis with a GRP radio plate for strength and rigidity. The battery is mounted transversely and has the choice of two positions with a movement of 8mm either backwards or forward, this can be altered at the discretion of the owner. Every bearing point is ballraced with a total of 18 being used. The differential outputs are four large 14mm OD x 8mm ID, two smaller 8mm OD x 4mm ID, two 8mm OD x 5mm ID and ten 8mm OD x 5mm ID races are used in the gearboxes and main wheel bearings. Speed control is the well proven three step forwards one reverse resistor controller used extensively in other Kyosho cars with the addition of a rubber balloon to keep it clean. The tyres are low profile high grip spikes fitted to a one piece lightweight hub. The body comes in two parts, the main shell with good looks and weather protection and a large rear aerofoil which can be adjusted to vary its angle of attack to the air which alters the down force on the rear wheels. Frontal protection is minimal with a very small Ultima style bumper. Ripmax are in negotiations with Kyosho to provide a bumper of ad-



"Mid" front suspension, three position location for top link camber angle adjustment and alloy shock mounts. King pins and knuckle arms same as Optima.

equate dimensions and to comply with the rules which govern racing in this country.

### Additional Technical Specification (Turbo Optima Mid)

Motor and speed controller *not* included.

Anti-roll bars front and rear. Fibre reinforced plastic shock absorber mounts front and rear. Universal jointed drive shafts for the front wheels, the chassis is 0.3mm thicker and the track rods and adjustable upper links are the quick adjust type.

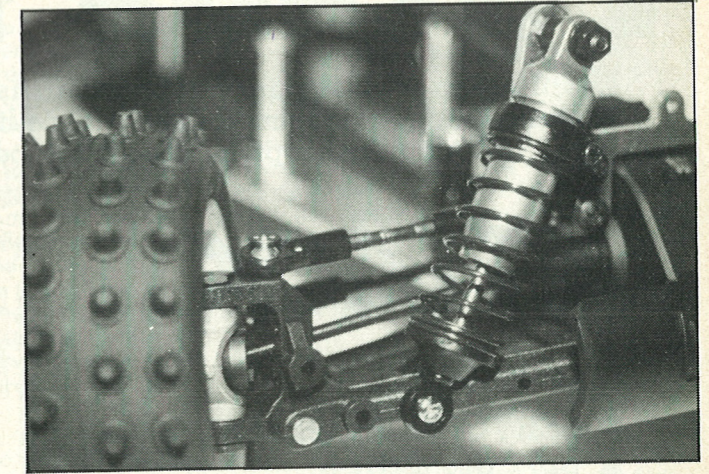
### Summary of Technical Specification

As the name of the car implies it has its motor mounted mid ships, it is also belt driven, four wheel drive, fully ballraced, has independent suspension with a damper on each corner and, depending which car you buy, a motor and speed controller.

### Differences Explained

Basically both cars are identical and the differences in specification do not affect construction, even the instruction manuals have the same number of pages, so what more (or in some aspects less) do you get for your money when you purchase the Turbo.

Neither the 240ST motor or Optima type speed controller are included in the kit. The aluminium alloy plate chassis is 2.3mm thick an increase of 0.3mm, this means all the screws on the bottom can be countersunk which gives a completely flat bottom and a claimed extra 9% increase in strength and rigidity. The chassis is finished in anodised gold. Both front and rear shock absorber mounts are made of black fibre reinforced plastic, as opposed to aluminium alloy which gives a claimed 25% increase in strength. Front and rear suspension is supplied with anti-roll bars similar to the Option House stabiliser set available for the Ultima. Front Universal jointed drive shafts replace the normal dog bone type of drive shaft which is retained in the back axle. The adjustable links which adjust the camber angle and also the two track rods on the front suspension are replaced with the "Turnbuckle" type which has a left handed thread one end and a right handed thread the other so the length can be altered in situ without removing the component from the car. Cosmetic changes have been made to the bodies which are barely discernable with the turbo's rear wing being squarer in shape.



"Mid" front suspension, vulnerable front damper which broke during testing due most probably to minimal protection offered by the very small bumper. Wide low profile high grip tyres.

### Open the box

The presentation is as expected from Kyosho: First Class. A comprehensive instruction manual of 23 pages and a supplementary sheet. The sheet lists every part used in the kit plus a list of optional extras and bolt on goodies, they include incidentally the drive shafts, the dampers mentioned in previous paragraphs and a front and rear anti roll bar kit which we may discover when we test the car should have been included in the original kit.

The instructions are three fold in this respect that each part is put in a numbered bag and each item on the instruction is listed as to which bag contains the part. Each step of construction, and there are 40, is given a number 1-40. A second loose sheet of the instruction manual itemises each step of construction with a drawing of each part and the numbers of components to be used in each step. The first two steps would be sufficient for most but just to make sure there are no mistakes and nothing is left to chance, the little boy wearing a Kyosho hat I first discovered when I built an Ultima is used again to point out any possible pitfalls the builder may encounter. Nothing is left to chance and there can be no real excuse for incorrect assembly, there

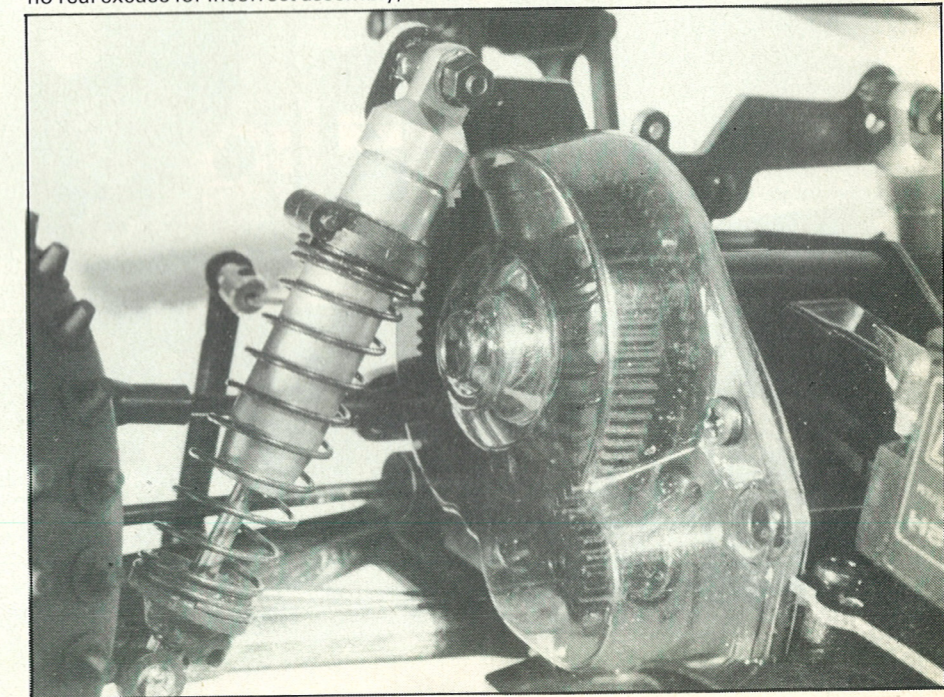
is even a rule so as to ensure the correct length screw is put in the desired hole.

### Construction

The only tools supplied with the kit are three different size Allen keys for the cap headed screws used during construction, additional tools required are long-nosed pliers for the circlips, a small Phillips screwdriver for both the self-tapping and machine screws and a 3mm and 4mm spanner for the nuts. A model knife and scissors are required for body trimming. All of the tools required are essential for a model car owner so if you do not possess them already the investment on any new tool will not be wasted. Both thread lock and silicone grease are supplied in the kit but superglue is also required at a couple of points during construction and this is not supplied.

Both front and rear differential come ready assembled but I opened them up for two reasons, the first was just nosiness. I discovered the construction comprised

"Turbo" gold tinted gearbox cover and slipping clutch arrangement. Note rear anti-roll bar, black fibre shock mounts and receiver mounted vertically on centre spine.





metal gears with two large side gears for the power take off and two bevelled pinion gears. The internals looked identical to that of the Ultima. The second reason was to pack them with silicone grease to give some characteristics of limited slip. When assembled in Japan there had been a generous quantity already added.

The rear gearbox is built up first and it is here that a flange for the belt drive has to be superglued on and the rear differential (the one with the gear teeth on it) fitted in situ. Attached to the outside of the rear gear box is the motor plate through which protrudes the gear box drive shaft. A slipping clutch arrangement is fitted to this shaft. Clutch tension is provided by three wavy spring steel washers which is adjusted by a 3mm nylock nut. In each thrust plate and friction pad and also in the driven gear wheel is a small hole which I can only assume is there to give the driver, should he wish, the facility to lock the clutch up. It would be a simple operation to put a small diameter bolt (about 8BA) through the holes thus preventing any slippage. I will certainly try this device but I can imagine a lot of drivers who like a "bullet proof" car dispensing with the clutch arrangement and locking everything solid.

The front differential is fitted around the drive belt and the two gear boxes connected by the belt are fitted to the aluminium-alloy plate chassis. The position of both gearboxes is fixed and therefore means there is no provision for belt adjustment.

The belt is a deep tooth type which unlike the square section low profile type should not need adjustment. Viewed sideways the belt configuration is triangular as it runs over an idler in the rear gearbox so it can clear the motor which is mid mounted and not fitted on the side where it has to be if the belt drive is a straight loop between the rear and front differential.

With both gearboxes attached to the chassis the shock absorber mounts can be fitted to them. Hung from the gearboxes are the four wishbones and their respective adjustable upper links. Both the wishbones and the knuckle arms pivot on steel shafts, which are kept in position with circlips.

A translucent spine is stuck on the chassis with two sided tape, this protects the belt from debris ingress.

Two types of ball joint are used in the car differentiated by their colour. The black balls have either a hole, which will accept

a 2.6mm bolt, or have a 2.6mm threaded screw on them. The silver balls have either a 3mm hole or a 3mm threaded screw, make sure the correct ball is used. For example the adjustable upper links have one of each type fitted to either end.

Chassis furniture has to be fitted next, it comprises uprights for the servosaver, top deck mounting posts and the drive battery holder which has the choice of two positions (the rearmost is shown in the instructions). Two lugs have to be removed from the servosaver prior to fitting (failure to do this reduces steering lock and suspension travel) the geometry of the servosaver is of the type that keeps bump steer to a minimum.

Superb Option House gold shock absorbers provide the springing and damping, the units come unassembled. Assembly of the short (front) and long (rear) dampers is identical except that different pistons are used, two port pistons in the rear and a single port piston in the front. Once the dampers were in position I could not resist fitting the wheels to try out the damping, although not at racing weight the car could be dropped from about 18 inches and it landed with a dull thud much the same as a pet cat when it jumps onto a carpet.

The wheels are similar to those used on the Raider which, in turn, are of the Hotshot/PB type where the tyres are pulled over the hub, but unlike them in the respect that they have to be glued as the grip is insufficient to stop the tyre rotating on the hub.

**On the downhill slope now**

It was at this point in construction we decided to take some photographs so it gave a break from building and writing and an opportunity to see the differences. Construction had been a pleasure with no problems apart from fitting too small a washer to the outside of each differential main bearing, this was only discovered when fitting the wheels and that the four remaining washers were obviously incorrect, the mistake was soon rectified and was the fault of the builder not the instructions.

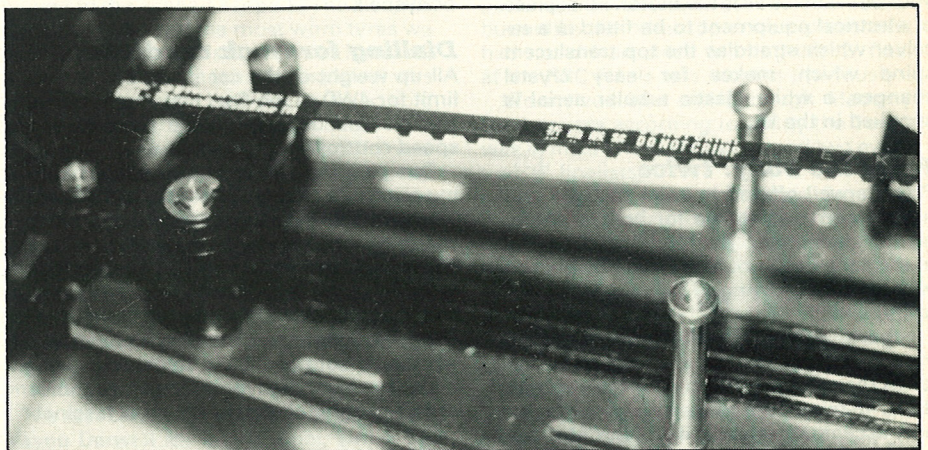
**Final completion**

Once the steering had been installed the radio plate was fitted. It was at this point I realised that there was provision for belt adjustment as the front two screw holes could be slotted, thus moving the top of the front gearbox to adjust the tension in the belt. A second translucent spine is fitted above the radio plate with two smaller pieces attached below it to totally enclose the belt.

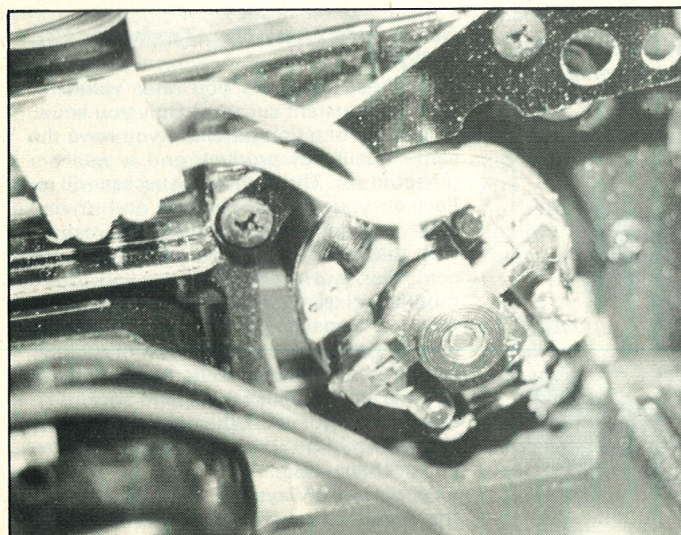
I elected to use the kit motor in the 'Mid' so as to race it straight from the box and fit a Le Mans 240WS motor which is a 18 turn double in the Turbo.

Motor attachment and adjustment is interesting as two slotted holes are used unlike the conventional single pivot hole and one slotted hole. The motor and external gearing is protected by a rubber boot fitted with a filter and a translucent cover respectively. Another non conventional fitting of

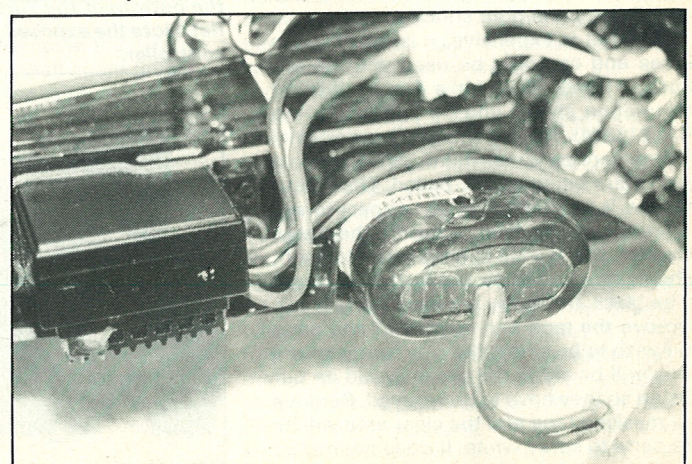
**"Do Not Crimp" is the very obvious advice on the deep toothed belt.**



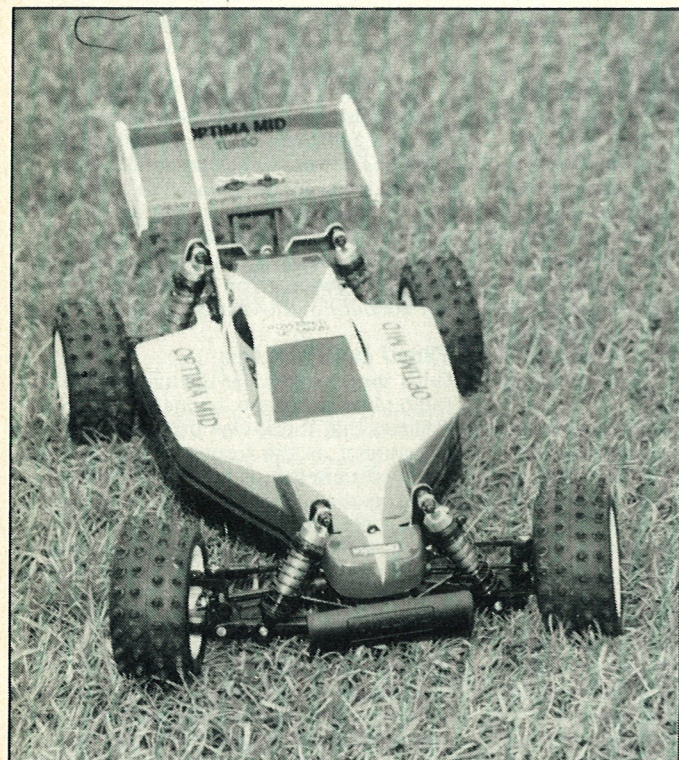
**Brush gear maintenance of motor in situ is possible with care.**



**Transverse mounted battery with electronic speed controller mounted in position which would be occupied by servo if manual speed controller was used. Note how spine reduces places to mount radio and speed control equipment.**







The "Turbo".



The "Mid".

a component is used for the supplied speed controller which is mounted vertically, the Turbo is fitted with a speed controller of your own choice as is the motor. Final piece of electrical equipment to be fitted is a receiver which straddles the top translucent spine which makes for easy crystal changes, a white plastic tubular aerial is supplied in the kit.

#### Paint the body: twice

Pete Darwell offered to paint the cars and have a common theme for both of them, his task was made doubly difficult as one of the cars was to be test driven by his son without him knowing of its existence prior to the event.

I have noticed in the past how the younger drivers like to paint their cars similar to the review cars, so with the younger driver in mind Pete chose a paint job to not only accentuate the low line of the 'Mid' but be easy to copy. The white paint is not white but a pearl 'flip flop' paint which gives a hologram effect when viewed in different light conditions. The paint has a gold tinge under the different light conditions and compliments the gold shock absorbers.

The paint is expensive, it is made in the States and can only be used with an airbrush, it costs £5.50 for a 4oz tin (further information should you be interested ring 0474 813574). The red and green are normal fluorescent spray can paints as is the black, all of them being acrylic based. The colour scheme is very effective so I expect to see variations on the theme around the tracks this year. If you wish to have a similar paint scheme mask off all parts which do not want to be black and spray the clear parts black. Remove the tape and remask all the parts you wish to be white, the clear parts on the body will be either the green or red on our design so they have to be sprayed. Remove the masking tape and the clear area will be the parts to spray white. It does not matter

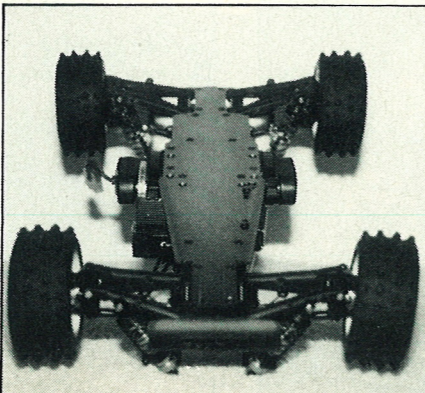
if the white goes on the black or red. I may be stating the obvious but all the masking and spraying is done on the inside of the bodyshell.

#### Dialling for track conditions

All up weight of the car is about the new limit for 4WD of 3lb 8oz, how much above you go will depend on the receiver and speed controller you elect to use.

Damping changes can be made by changing pistons (a choice of three) or by different viscosity oils. Ride height can be altered by changing the position of the top of the damper or by using some of the various location points available on the wishbones, so for suspension and damping there is nothing revolutionary. Down force on the rear wheels is supplied by a large rear wing which has two height positions and a choice of three angles of attack. The most fascinat-

"Turbo" counter sunk screws distinguish the bottom of the Turbo as it is completely flat. Note the exposed position of the speed controller.



ing adjustment choice is with the camber angle, most cars have camber angle adjustment and if you dial in some negative angle, top of the wheels closer together than the bottom, to make the back of the car slide on corners on a high grip surface, you also get less grip on the straight.

Although my instructions were in Japanese they showed that by adjusting the upper link by up to 4mm on the back and 6mm on the front and then relocating the position of the link on the body, the arc through which the wheels move when the suspension is raised can be altered. This means you can have 0° of camber on the straight with a choice of negative camber if required on corners: very novel indeed. This is known as RISE (roll induced steering effect) yet another piece of jargon to add to the list that appeared in last month's RRC. If you do not wish to use this facility or it proves to be a gimmick then normal upper link adjustment of camber angle can always be used.

#### So should I buy the 'Turbo' or the 'Mid'?

With these cars, are you after value for money or instant success? Only you know, whichever one you purchase you have the same quality of product, and a well engineered car. The degree of success will reflect on your car preparation and driving ability. Value for money, that's interesting, with the 'Mid' you get a motor and speed controller, but the motor puts you in the modified class. The Turbo does not have a motor or a speed controller and one would expect that if one offset the cost of a 240ST against the universal drive shafts, and the anti-roll bars against the speed controller, the Turbo with the other small improvements would not be appreciably more expensive, but it is.

People will always buy the best they can afford and some will always buy the most

expensive. These cars are a classic "you pay the money you take your choice". Whichever car you choose (and you cannot go wrong with either) you will have a car that compares very favourably in price and technology with the opposition, has a proven pedigree (the Optima is going to be a hard act to follow) and should be simple to maintain both at and between meetings.

#### 64,000 Question. Will it beat the Opposition?

To be the car of champions or the champion car, there are several outstanding cars it has to beat and one of those is the English Cat, so how does this Oriental challenger compare on paper? The comparison is in physical dimensions only and I do not intend to compare any two cars directly with each other either in this report or future ones. The reasons are many, I will report what I find and the reader must make up his mind if the product is suitable for him. Different drivers have different criterion, some for example have limited resources and wish to race with a minimum of breakages, some like myself are short of time and need a car that is reliable and does not need too much attention between meetings, others have limitless time and money but what we all like to do is compete, be it at various levels, so different cars suit different drivers requirements.

#### Specification Check

Car	Cat	Mid-Optima
Type	1/10 4WD	1/10 4WD
Differentials	1 Limited Slip	2 Gear Type
Length	345mm	350mm
Front Track	236mm	240mm
Rear Track	236mm	242mm
Wheel Base	250mm	255mm
Ground clearance	30mm	35mm
Front tyre	85 x 32mm	85 x 37mm
Rear tyre	85 x 40mm	85 x 37mm
Bearings	14	18
Motor	Not included	Le Mans 240ST
Speed Controller	Not included	3 step resistor with reverse
Weight	1500gm	1600gm

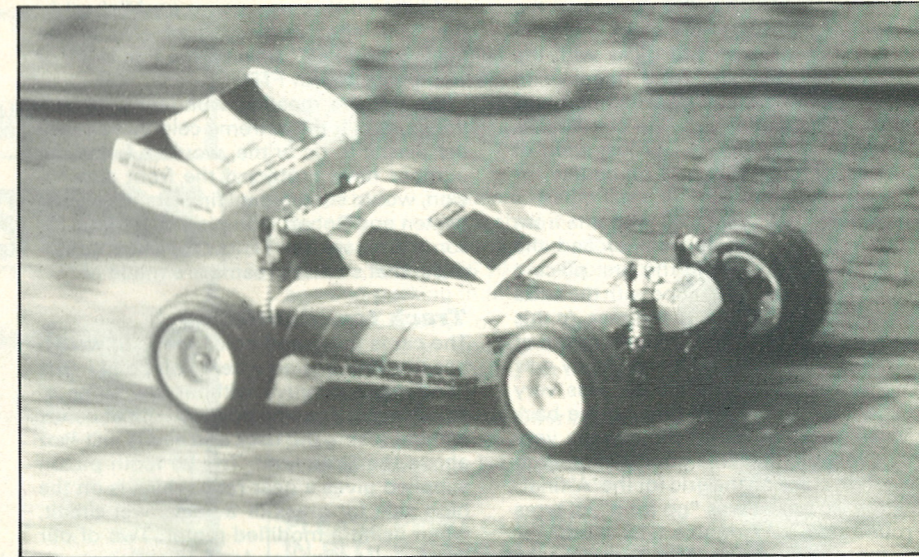
On paper there is little significant difference between the two cars so as we all really know the track is where the real comparison will take place and it's where the Mid-Optima will have to prove itself.

#### Track testing the 'Mid'

With a car so eagerly awaited as this, it would be easy to give it to a "Super Star" to test, he would most probably win even if he was driving a radio controlled wheelbarrow, a "rave review" would then be written proving nothing. I decided to go the opposite way.

The first run was with the 'Mid Optima' at a Maidstone outdoor meeting, the car being driven by Michael Tuson, who at 9 years of age is Medway's youngest driver. The weather conditions were as poor as the attendance of only 24 persons, it was cold, wet and slippery. The track was quite long bumpy grass with bare slippery non-grassed areas.

The story of the meeting was simple, the 'Mid' was the quickest car on the track and also one of the most stable. Partway through the meeting Cat tyres on Hotshot hubs were tried with plastic wheel adapters, they fitted the 'Mid' and coped equally as well as the standard tyres. The Cat tyres were left on as we decided to keep the kit



tyres for 'best'. Michael took not only FTD but also won the 'A' final.

The second test took place a week later at Grain where Round 3 of this year's RRC took place, although weather conditions could not have been more different with a sea fog and a ground frost evident.

The meeting was bigger, with two drivers present (P. Whittaker, B. Ralls) who had represented the SE of England in the regional finals, both drivers were in the top 14 in the country that day, one of them finishing third: competition indeed. Conditions were so bad on the grass that the track was moved to the asphalt car park. The kit tyres were removed and the most worn tyres we had fitted and the car's suspension lowered, damping (not that much was required) was almost non-existent because it was so cold with even the 'thinnest' of oils 'thick'.

Story of the day was simple the 'Mid' was the quickest car on the track yet again, and Michael driving-in on the corners 'where angels fear to tread'. Managed fourth fastest time of the day for his first ever 'A' final at Medway. As the day went on times got slower but Michael got quicker, a combination of him getting used to the car and its ability to cope better than most with the slippery conditions. Michael's comments on the subject were 'it's like driving on rails'.

The test car was then given to pole man Wayne Darwell for the 'B' final, which he won with comparative ease with second FTD. His comments were 'it's quick, it goes where you point it and the back does not hop out on the corners'. There appears to be no need under cold conditions for anti-roll bars.

A fresh set of cells were put in the car for the 'A' final, the car went well again finishing two seconds behind the third placed car and one lap behind the two regional finalists, who were both slower on the straight. Their comments were similar both saying, "we know what our next car will be".

#### Why not test your cars elsewhere!

A father of one of our younger members said, as much as he liked to see a review car tested, he wished I would do it elsewhere especially at Christmas time, as last year when I tested a 'Rocky' that's what his son wanted for Christmas and that history had just been repeated as now he wanted an Optima Mid.

#### Track testing the 'Turbo'

Venue Grain, a week after the second test on the 'Mid'. Weather conditions were good if you were an Eskimo, a bright blue sky with a freezing wind. Grain is situated on the coast about 200 yards from the sea with the next stop Scandinavia. The temperature in my car with windows shut was 4.8°C, so with the chill effect of the wind it was below zero. The grass this time was frozen so it was back to the car park. There were 48 drivers present, six in the past having represented the SE of England in regional championships. Robert, my son, a very experienced driver was to use the 'Mid Turbo' but unlike the other top drivers present he had not driven since winning the 'E' final at the RRC Finals two months previously.

We arrived late and although Medway seed drivers according to ability the Turbo was in mixed heat of novices and two eventual 'B' finalists.

The car had been completed Saturday morning and taken to Allan Bond to photograph so it had not been run. I was concerned that the 20T pinion giving a gear ratio of 9.78:1 would be too high for a modified double or triple wind, so I put in a Spa 480WT motor which is a 25 turn quad eight minute motor.

I could not bring myself to put on the new kit tyres on the asphalt surface so I put on a very well worn set of Mardave 3 x 2's on the old style (non low profile) Optima hubs. I did not take into account the smaller diameter of the wheels which lowered the gear ratio. The car was quick out of the corners but had no top speed. After the first round it was ninth FTD. With a slow 17, the best being a very fast 18 just two seconds short of 19. The only change for the next round was to fit a triple wind STS 17 turn motor which has a smooth power curve. One of the problems (or is it a joy) of testing a review car is the interest it creates, and this car created plenty. The problem is that every one wants to see it, hold it and ask questions so in between heats when you should be checking over the car, it is in the hands of other drivers. When I put the car on the line for the second heat the offside wheel had a funny camber angle: the bottom king pin was missing. I wanted to pull out of the heat fearing the strain on one king pin could break the knuckle arm and finish our day's racing, Robert, optimistic as ever, wanted to race. I am only the



mechanic and he being the driver had the final say. The car was very quick this time but on the corners proved tricky with the offside wheel changing from negative to positive camber depending whether it was a left or right hand bend. The car won its heat again with a very fast 17 just short of 18 to put it eighth FTD and on course for the 'A' final.

The king pin was replaced with one from an Optima (they are the same) and the motor I intended to fit in the first place a Spa 240WS fitted, and to cope with the extra power fitted the kit tyres to the rear. At this point it had got so cold the fourth round of heats were abandoned but everybody was put in a final. This time the car was very quick and with the extra grip on the back could be powered out of the corners very hard, it won again with a good 18 lapper to give it sixth place on the grid for the 'A' final.

For the 'A' final it was "go for it" kit tyres all round and a 17 double STS motor for even more punch. The 'Mid Turbo's' race was short but very exciting. The car was off the line like a rocket taking fourth placed man on the grid on the inside and holding that line to take third placed man on the outside to be in third place by the first bend. The end of lap three had the 'Turbo' in second place but radio interference was causing a problem at the same place on the track (one of the finalists was affected so badly he pulled off) and although the car was quicker than the leader the advantage was being lost. Driving with a transmitter held high above your head is not the best driving position and Robert paid the price and broke the plastic end off one of the front shock absorbers when he hit a track marker: end of race.

Whilst all this was going on Michael in the 'Mid' after electrical problems in the heats won the 'C' final with a fine drive of 19 laps for fourth FTD.

We left the meeting wondering several things, was it the extreme cold that caused the plastic to be brittle, would a full width bumper have protected the front suspension, would six regional finalists have been beaten and Robert won his first 'A' final for some time, we don't know we can only surmise, that's what dreams are made of.

#### Track test debriefing

The car is quick and holds the road well. It has the ability to go where you point it, the handling is positive without any signs of twitchiness, it can be powered out of bends without losing the back end and is just  $\frac{3}{4}$ oz above the  $3\frac{1}{2}$ lb limit. The 20 tooth pinion supplied gives a gear ratio which is on the high side for grass or a heavy wet circuit, when using a modified motor. Two of our motors got very hot, I would anticipate an 18 tooth pinion giving a ratio of 10.87:1 would be more suitable. The 20 tooth pinion proved ideal when used on asphalt.

Our breakage and the lost component we suffered in the test were not so disastrous as we first thought, as both parts are the same as used on the Optima which means spares will be easily obtainable. Any Optima owners considering changing their car who have Optima spares in their kit box may wish to bear this in mind.

A test on the transmission system measuring the no load current of the motor and then connecting it to drive the transmission showed an increase of only 0.5 amps, this is very low and shows what an efficient drive system the car has.

#### Can it be improved

The perfect car has not yet been built although the 'Mid' takes us a step closer for reasons already expressed. It needs a wider bumper as we found to our cost (Ripmax have this in hand). A problem is the centre spine which means there is not a lot of room to fit the radio gear and the larger type of electronic speed controller. I fitted a Futaba 112B which is the same size as a servo, it fits where the speed control servo should go when the mechanical speed controller is used. Although the position of the controller is perfect for balance and access it is in a very exposed position low down at the front of the car.

#### Summary

Every good property of the original Optima is retained, beautiful handling, ease of maintenance both on and off the track but with the bonus of lighter weight and higher top speed.

An excellent car in all aspects, it looks right and it is right. It fulfils the properties asked for in its concept. A winner for Mr Kyosho and a winner for the owner, all you have to decide is whether it's to be the 'Mid' or the 'Turbo' the long wait for the car has been worthwhile, so what shall we do for 'rumours' now?

#### Final comment

I can say without fear of contradiction I have been fortunate to review a car which will not only give a lot of pleasure to drivers and spectators alike, but carry off a lot of major honours in 1988, it may well prove to be the champions champion!

My special thanks to Allan Bond, Pete Darwell and Amanda Jane Smith for their assistance in the preparation of this report.

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