



FEDERATION INTERNATIONALE DE L'AUTOMOBILE

2006 BRITISH GRAND PRIX

PRESS CONFERENCE – Friday, June 9, 2006

Max MOSLEY, FIA President

I'd like to thank you all for taking the time to come and I'd like to talk a little bit about the future Formula One engine regulations. First of all, the regulations that have been published state very clearly that engines will be homologated for three years, in 2008, 2009 and 2010. There have been some discussions about whether the homologation should be relaxed to some degree, but in actual fact we've reached a situation where there are at least three and possibly more views on this.

Some teams think we should stick with completely homologated engines, with no changes at all. Some people like the so-called Maranello agreement and some would like a more liberal agreement than Maranello, but there is no consensus. Under those circumstances the 12 teams who have entered the championship from 2008 have done so under the regulations as published, so we intend to stick quite simply to the rules as they are, and as they were approved by the World Motorsport Council on March 22.

I would remind you that the reason for homologation was that we want to eliminate engine development costs where the major manufacturers are spending between 100 and 200 million euros per year. Indeed more than that in some cases – and that is quite clearly unsustainable when the outcome of all that expenditure is just to make the engines run 200-300rpm faster each year. It's not sustainable and can't continue.

For that reason we proposed the homologation and that will continue. I should point out that under the Maranello agreement, which is the slight relaxation, when the calculations were done the engines were still going to cost well over 15 million euros per year more than the completely static, homologated engine. On any count homologation seems a sensible thing to do. The engines are very good. They are running at 19,000rpm plus they are very reliable by any historic standards, and amazingly so when you consider they are all new this year. They are also, as I say, more than powerful enough, to the point that I think we've all been surprised by them.

So, the first point I wanted to make is that we will implement the homologation rule as published. That means we will be sealing a number of two-race engines – in fact we have already sealed some of them. We will be sealing more once they have done two races and those will be the spec engines. Each manufacturer will be required to supply us with a complete dossier on these engines so that we will know what the spec is.

That brings us to development and technology, what about them? What we wish to do, and at the moment it is only an idea rather than a regulation, and it need not be a regulation until the end of 2006 in order to be introduced in 2009, is to bring into Formula One a technology that two teams were working on in the mid-1990s, but which we prohibited at the time on the grounds of costs and safety – primarily safety. That was energy storage devices. At that time one team was working on, I believe, a hydraulic system and another on an inertia system. And since then of course there have been a number of electrical systems for storing energy. What it comes down to is this. In the next 30-50 years it is absolutely certain that every vehicle on the public road will be fitted with a device

that will enable it to recover all the energy released when the brakes are applied and store it and use it again to drive and accelerate the vehicle.

At the moment all the braking energy is dissipated through heat as is all the energy when you lift off and the car is simply driving the engine. The heat from that, of course, goes out through the cooling system. The only exception to that is when some of the energy is recovered in hybrid systems, but very little, and it is stored in a battery at a very low rate. One shouldn't confuse what I'm about to say with hybrid systems. It is a completely different basic technology and will be part of a more complex system eventually on road cars.

What we're talking about is really something quite simple, a simple principle, but I emphasise that this is not yet proposed as a regulation. We want to sit and talk to the teams and manufacturers about it to find the best solution. What we have in mind is this: that every car can be fitted with equipment, which must weigh no more than 20 kilos and will store energy when the car brakes and enable the energy to be used when the car accelerates again. The technology we would like in that 20-kilo piece of equipment will be completely free, so that people can choose whether they want a hydraulic, inertia or electrical system, or some other technology or branch of those technologies. It's completely free.

On the basis of what is known at the moment, this would enable a car to store about 400 kiloJoules – that's with currently available technology. That translates to 60bhp for about nine seconds. Now that would enable a car, having stored that energy, to have an extra 60bhp available for overtaking. The braking period for an F1 car is very short, so it would probably take a full lap to store enough energy for this overtaking manoeuvre. Depending on how well the systems was engineered, it would probably be available on every single lap. And of course it would be available to both the overtaker and the overtaken, which has all sorts of interesting implications.

Compared for example with the suggestion of a push-to-pass button on an F1 engine as they are at the moment, if you allowed 1,000rpm for push-to-pass it would give about 40bhp for however long you allow the 20,000rpm.

We're talking about 60bhp for nine seconds. We believe that when fully developed this system will enable a car to have about 900 kiloJoules, enough for about 120bhp for about 10 seconds. To put that in perspective, 900kJ is a two-ton road car stopping from 108km/h and going all the way back up to 108km/h again without using any petrol.

This is quite clearly something that is and will be developed for the road and all the major manufacturers are working on different systems at this time. By allowing it in F1 we will be accelerating its introduction. We'd like to do that for 2009 but must sort out the detail of the regulation with the teams and manufacturers. This will be a technology that everyone can understand, the public can understand and it will be directly relevant to road cars and a technology for the future of road cars.

At end of the homologation period, that's to say the end of 2010 going into 2011, we would like to introduce a different engine formula where the limit on power was not through engine capacity, the traditional means, which is completely out of date and old-fashioned, but to limit power by the amount of energy consumed. There are all sorts of ways of doing that and this is precisely the area where all manufacturers are working with their road cars. Saving fuel and saving energy is absolutely fundamental to them. For that we would need the major road car manufacturers to propose the formula. Our only conditions would be, first, that it must be a racing engine as we all understand the term. It must sound and feel like a racing engine. Secondly, any research to improve that racing engine would have to be directly relevant to research to improve fuel efficiency in road cars. Those are the two conditions we would set for how it was done but other than that this new formula would be a matter for the manufacturers.

Then, quite suddenly, instead of spending fortunes trying to get another few horsepower out of a fixed capacity, which helps no one, leads nowhere and is completely sterile research, we'd be doing research that relates to fuel efficiency and is thus directly relevant to road cars. That would be for 2011 and that would be on a proposal from the manufacturers.

Should the manufacturers not be able to come up with a sensible proposal to achieve that, there would be nothing to prevent us extending the homologation for another year or two years or however long it took. It would be very simple to do that, but if we are going to have a very high-technology F1, which I think we'd all agree we have to have, then that technological research should be devoted to areas that are relevant to road cars and actually contribute something to society rather than yearly sterile research for another 200-300rpm from a fixed-capacity engine.

That briefly and I hope reasonably clearly is what we are proposing, in fact what we are going to do. The homologation is done, it's in the regulations and there will be no further discussion on the homologation point. Before the end of 2006, we need to agree a regulation for the energy recovery and storage device if we want to introduce it in 2009, because of agreements currently in force. Ideally, the fuel efficiency engine for 2011 should be done quickly, because that way manufacturers who have large teams of people doing engine research could keep those teams together. That's a matter for them, but we would like to see a proposal quite quickly. Whether they are willing and able to do that remains to be seen.

So there you are. I would now be happy to answer any questions you may have.

QUESTIONS FROM THE FLOOR

Q: (Alberto Antonini – Autosprint) Does the energy storage problem mean we are looking at twin-engined Formula One cars in future – with a combustion engine and an electrical engine?

Max Mosley: This would be energy that is entirely recovered under braking, even to the extent that we'd be quite happy for them to put the device at the front of the car and take the energy from the front wheels. All you would do is store the energy and that would be regulated by the ECU, then the driver would release the energy by pressing a button. The principle is simple but the device would be complex.

Q: (Alberto Antonini – Autosprint) The second question is, looking back to the first issue you had with the regulation thing for next year, the freeze on the engine, is Formula One prepared to face a future where some of the manufacturers may actually pull out, as Honda and Toyota have threatened to do in the past? Are you looking at that perspective? Can you afford that?

MM: I think we are completely prepared to face the possibility if somebody did want to pull out because the truth of it is that all we are doing is moving the research from a completely sterile area which serves no manufacturer any purpose, trying to make an engine run 19,500 instead of 19,200 or 19,800 instead of 19,500, completely sterile. No road car engine will ever run at those sort of speeds because it's not efficient. So what they would be doing is pulling out at exactly the moment when we are moving all the research effort and the technology of Formula One into an area which is directly relevant to an area where they are already doing research themselves, in the factory, independent of Formula One, in contrast to making the current engines run faster which is only for Formula One and has no other relevance. Now if they use the new rules as an excuse to pull out, I think one could only conclude that the true reason for pulling out would be something quite different. It wouldn't be because there was no technology.

Q: (Joe Saward – F1 Grand Prix Special) The manufacturers at the moment are spending billions and billions of dollars developing systems along the lines of what you're talking about. This is completely against any cost-cutting theories you've had in the past. What do you have to say about that and secondly, you talk about no consensus; the sporting working group voted eight in favour of rejecting engine homologation, which was a majority. How do you overcome that?

MM: Well, on the first point, manufacturers are not currently spending billions on these systems. They have research going on but not to any extent. If you talk to the CEO he will know that they are looking at these technologies but not in any detail. They are not really spending very much. What will happen, it will be exactly like what happened when we started Euro NCAP for road safety. A man in one particularly manufacturer was in charge of the safety of the vehicles and he was suddenly promoted, suddenly became more important – he told me this himself – was running

a big department and the manufacturer used what he was doing as a very major sales point and has done so with success. It will simply accelerate the introduction of these technologies and make those departments more effective.

I suspect that there are a number of people working in very small... in fact I know... in small companies developing these technologies on very modest budgets and it may well be that such companies may give the same sort of lessons to the manufacturers as Keith Duckworth did when he invented the four valve technology and made that work with the FVA and the DFV. But the small inventor may suddenly come into his own, and one or two of the teams may already be in touch with them.

On your point about the sporting working group, of the eight people you mention, one and possibly two did not want the Maranello agreement because they did not want to relax the homologation. If you're in any doubt about that, a few inquires around the paddock will show you that that's the case.

The truth of it is that some of the people who were against Maranello were against Maranello because they wanted more liberty, but some of the people who were against Maranello because they didn't want that much freedom, they didn't want to spend the 15 million a year that Maranello would have cost as opposed to a straightforward homologation.

Q: (Burkhard Nuppeney – All Media) When you have the homologation for 2008 until 2010, does it make any sense to run next year with developed engines instead of already running the engines which will be run from 2008 to 2010? Who is going to decide this question and how do you see this?

MM: The answer is that it would make no sense at all to run in 2007 developing the engines only to come back to the May 2006 spec in 2008 but we can't impose that, that has to be agreed by the Formula One Commission, but I would be very surprised if the Formula One Commission did not agree, having got the freeze for 2008, 2009, 2010, also to agree it for 2007, because it would save everybody a fortune and avoid a great deal of unnecessary expenditure.

Q: (Burkhard Nuppeney – All Media) Would you say that the chance that we would see the homologated engine next year already is pretty...

MM: It's not for me to say, it's a decision for the teams, but I would be surprised if they don't agree to do that.

Q: (Burkhard Nuppeney – All Media) When you say this new system from 2011 onwards, you say we need a decision which has to be made very quickly, what is in your mind when you talk of quickly? Is it within this year, within the next one and a half years, end of next year; what do you think about that?

MM: Just to be clear, the 2009 energy storage, that has to be done this year because of the agreements. The regulation has to be ready before the 31st of December. The fuel efficiency engine, if I can call it that, for 2011, the only urgency is that if the agreement were reached, the rules were agreed in the next month, for the sake of argument, then no manufacturer would feel tempted to re-deploy the engine experts that are currently working on developing existing engines. They could put them straight on to a long term programme to get a fuel efficiency engine in. And of course, if somebody came and said we'd like to have the fuel efficiency engine a year earlier, and everybody agreed, there would be no difficulty about that. So I think it would be a pity if they re-deploy the people that are currently working on the engines into other jobs and then start working on the fuel efficiency engine. That's why it would be urgent, but not for any other reason.

Q: (Burkhard Nuppeney – All Media) Is there any deadline by which this process has to be finished or started?

MM: No, none whatever: no deadline for 2011 because as far as we're concerned, if we arrive in 2010 and we still don't have a proposal, we will simply – it probably won't be me then, it will be somebody else – but the World Motor Sport Council will simply extend the homologation, I would guess.

Q: (Jonathan Gill – Auto Express) Max, what happens if a new manufacturer wants to come in with an engine; how do they have that homologated?

MM: We allow them in on what we call the 'fair and equitable' principle. There's a clause in the rule which says that new engines can come, or engines can come after June 2006, if it's fair and equitable. We would simply make sure that the engine, both from its duty cycle, its power and all its other characteristics, fell within the spectrum of the existing engines. Obviously you can't let somebody come with a miracle engine, it would be completely unfair, and I would not be at all surprised if we didn't get one or two. I think once we've got this... I would say... the nonsense that's going on at the moment, this huge expenditure stopped, I think we may well see at least one new manufacturer coming in. It's just that at the moment, it's difficult for people to justify coming in when they've got all sorts of problems in the company, if they're going to spend the sort of money that's being spent at the moment.

Q: (Michael Schmidt – Auto Motor und Sport) Both the energy storage system and fuel efficiency system will be quite expensive developments. How will you make sure that the private teams get them for a reasonable price?

MM: First of all, we may find that it won't be a major manufacturer, it might be quite a small company that comes up with the ace system and at quite modest cost, but that remains to be seen. But one of the suggestions that's being made about the rule, is that there should be a rule that anyone can purchase the system from anyone, for example, like a selling plate. You would say the system must not cost more than, for the sake of argument, two hundred and a fifty thousand dollars, just to take a figure, and that whoever is using the system, must be prepared to sell it to any other team for that figure. And that would do two things: it would make it available to the small team, it would also put a price cap on the cost of the unit. It would be quite difficult to spend several million on a unit if you have to sell it for, say, a quarter of a million. But that is the sort of point that will be discussed very much when we're finalising a rule for proposal to the World Motor Sport Council.

Q: (James Allen – ITV) You've always been very specific about the budgets and how crazy it is, so what budget levels are you working on? You've just mentioned about the energy storage and what it might cost in the short term, and what budgets are you working on for the fuel efficiency engine for 2011, and also in all of this, from a public point of view, how important is it that racing engines scream and make a really good noise?

MM: Well, on the last point, it's vital. I did say that one of the conditions is that it has to be a racing engine and a racing engine is not something which is incredibly efficient but only runs along at 300 rpm and is eight litres or whatever...it's got to be a racing engine and of course it's got to be relevant to what they're doing, but I think both those things are possible. On the budget for energy storage systems, people who are developing systems privately are working with tens of thousands of pounds a year. The major manufacturers – I don't know what they're spending, but I suspect they're not nearly as expensive as the engines because the problems with these things are that, if you've got a new piston, for example, you have to build an entire engine. You then have to run that engine for 1300 kilometres on the dynamometer, then you have to do all sorts of things to validate it, then you change another small part of the engine – something to do with the valve or whatever – and then you've got to repeat the entire process. Then you've got to put both of these components together and repeat the process again. That's why the development budget on these current engines...it varies a lot on what people spend, but they're spending between 100 and over 200 million euros whereas the actual engine costs about, depending on who you talk to, about 200,000 – 250,000 Euros a year. If you use 50 engines a year then you're doing well. Well, that's somewhere between 10 and 12 million a year. The other 100-200 million is all on development. If you stop the development then that money won't be spent. On just a fraction of that money you could do an awful lot of research into energy storage where we're talking about a relatively small 20 kilos with all the bits and pieces and devices.

Q: Again, on the budgets, do you have any concerns about drivers just going around for ten minutes in qualifying just burning up fuel?

MM: Good point. A suggestion has been put about that we should chop five minutes off. If you take five minutes off, then if you think about it, a driver can do one run with his full tanks to get the feel of the car on its full tanks, then he can do one run with new tyres to try and get a time, and a third one, also on new tyres to try to get a time. Obviously you've got to change the tyres, but that can

all be done in 15 minutes. It would be 15 minutes of non-stop action. The original reason for the 20 minutes and the fuel is to make sure they ran. We didn't want any more to have the whole of the world watching and have an empty track, so we knew that by making them run that they would use the fuel, but what's emerged is that in the pattern of how the people do this is that we could do the whole thing in 15 minutes. It would be very tight – it would be absolutely marginal for all the teams and it would make mistakes possible – but it could be done in 15 minutes, but a very tight 15 minutes. Now, whether people would want to do that, I don't know. Ask the teams. It would have to be a unanimous agreement, but that's a suggestion that's been put forward. It could be done immediately if the teams agree but it requires unanimous agreement and experience indicates that it won't be that immediate. There are people who don't agree. Some of the promoters say 'no, it's fantastic having all the cars running round – it's part of the show, so even if all the teams agree, we might not get the Formula One Commission agreeing, so it could happen. Please don't take that as something that's going to happen – I was just saying that that was a suggestion and probably, if we were starting again now, we'd have just done the 15 minutes.

Q: (Paolo Ianieri – La Gazzetta dello Sport) A homologated engine – the ones who are at the back now will have no chance just to fill the gap. Next year, for the three years of the homologated engine, if they are behind now, they have no chance to make evolutions now.

MM: All they can do for next year is ask the Formula One Commission – you have to go through the procedures. If the Formula One Commission agrees that an homologated engine will be used next year. I think that all sense and reason says that is the thing to do – there's no sense in developing an engine for next year that isn't going to be used any more. All sense and reason says we should do that and I'm sure that the Formula One Commission will agree, but we first have to go to the Formula One Commission, then we have to go to the World Council and that will be done, and I would hope we could do that reasonably quickly because the sooner we have certainty about all these things, the sooner we stop spending, and the manufacturers stop spending collectively about 20 million Euros every week – that's what they're spending on engine development. The sooner they stop, the more money will be saved.

Q: (Declan Quigley – Setanta Sports) Max, can you tell us about your new rear wing? I hear it hasn't done well in the wind tunnel.

MM: The wing is currently being assessed by the aerodynamicists, but what seems to happen is this. It seems to be working as it is supposed to work – this is a very amateurish reply, but forgive me – the way its supposed to work is that it reduces the drag of the car behind and also, it gives it more downforce and greatly facilitates overtaking. If, on the other hand, it doesn't work as it should work, which happened, for example when they did the quarter-scale wind-tunnel test, it actually reduces the drag even more and the simulations indicate that it facilitates overtaking even more, so that you could even overtake – with cars being equal – on a straight as short as 500 metres, depending on the speed of the corner leading on to the straight, but it's a matter for the experts. Any change to the wing requires the unanimous agreement of the teams as its part of the Technical Regulations. All we're talking about is the correct way to achieve this, and it looks at the moment quite promising for the spilt wing, the CDG wing. We are absolutely open – all we want to see is two things; less downforce relative to the tyres because they can't have the downforce they've got now on the new, bigger 2008 tyres and we want to see overtaking – most importantly overtaking. My money would be on the CDG wing but clearly the aerodynamicists of the teams are going to decide.

That's it, thank you very much, and I appreciate your presence.