

Preview

2004 United States Grand Prix

Round 9 of 18

by **Alex "Zander" Keep**
and Guest Writer **Steven "F4rhino" Serdikoff**



View from the Cockpit

I will be taking the course during the 2004 season using **EA's F1 Challenge '99-'02**. To make it more contemporary I will be applying Ralph Hummerich's excellent carset to it as soon as it is ready. I have chosen Ralph's carset as, in addition to him being a thoroughly top notch person, in my opinion his carsets are the best available and it is an honor for SimHQ to have an exclusive WIP version to be able to use for its screenshots. Many thanks Ralph! If you wish to try his 2003 add on please use [this link](#) to his page.



Clockwise at Indy

First and foremost, a lap at Indy crosses the famous bricks going the opposite direction as the cars run during the Indy 500. This is of very little note to most of the drivers, who have never run there before. What is of note, especially for those struggling with engine reliability, is the fact that Indy marks the longest single stretch of wide-

open throttle operation of any circuit in F1. Screaming down the oval section of the track, the cars stay wide-open for almost a half a minute (about 23 seconds), reaching speeds of over 210 MPH entering the braking zone into Turn One.

However, once entering the infield at Indy, the drivers find a mix of fast corners and very slow corners, meaning that the circuit has no essential defining characteristic. Pat Symonds, executive director of engineering at Mild Seven Renault calls Indy a “schizophrenic circuit,” noting that “with a layout comprising the longest flat-out section of the year...and some of the season’s slowest corners through the infield...[the track] effectively demands two contradictory sets of capabilities from the car.” This means that downforce must be drawn down the middle, essentially. Too much, and you lose ground around the oval section, too little, and you will be hunting for grip through the infield.

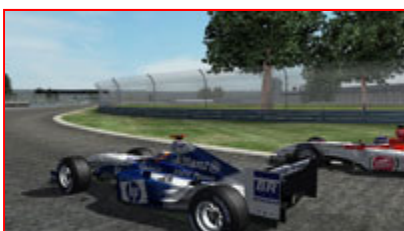
Of course the full throttle section presents a unique challenge in terms of heat dissipation. With a full 23 seconds of wide-open throttle operation, something for which F1 engines are not designed, those powerplants finicky about heat might suffer some spectacular failures, sending more than one car packing to the sound of Steve Matchett’s call of “game over.” But as Renault’s head of engine operations Denis Chevrier notes, the increase in demands placed on the engine during extended full throttle operation “is not linear: in other words, if you double the time spent at full throttle, this more than doubles the challenge [to engine reliability].” This is decidedly bad news for West McLaren Mercedes, who have had a great deal of difficulty keeping engine vitals from searing the cowling during some of Kimi Raikkonen’s seismic engine failures. Takuma Sato should similarly take note, especially considering that his team, Lucky Strike BAR Honda, have already quietly mused that the only identifiable common denominator in Taku’s numerous engine failures to this point in the season, has been, well...Taku himself.

So let’s take a lap the other way around Indy. Coming off the oval into Turn One is one of the best overtaking opportunities at Indy. The cars experience massive braking here, scrubbing off energy from 210 MPH down to only 70 MPH in a matter of seconds (amounting to 5 Gs).



Immediately following the first right turn, comes a long, relatively slow left, the site of JPM’s and Barrichello’s coming together at last year’s USGP— about which the marshal’s ultimately found JPM liable (insert crude, disbelieving expletive here). After this long left comes a decreasing radius right, where you must delicately brake and turn-in simultaneously. This places you on the entrance to the fastest corner on the track as you complete the right-hand sweeper into a left-hand sweeper. The left-hand portion of the corner tightens up considerably into a slow left-hand bend. Again, discretion and delicacy on the brakes is paramount through this section (Turns 5, 6, and 7).

There is only a very short blast out of Turn 6 before hooking a slow right at Turn 7 onto the back straight, which incorporates the existing infield road Hulman Boulevard. The cars will reach top gear briefly (around 180 MPH), before braking hard for the slowest section of the track, starting with the 90 degree left at Turn 8. Turn 8 represents another excellent passing opportunity, and while it remains consistently difficult to pass in F1, very little blame can be assessed to the circuit at Indy, which is far more generous than most tracks with chances for overtaking.



Upon turning right at Turn 8, the drivers find themselves negotiating the slowest part of the track, and amongst the slowest set of corners in all of Formula One. Turns 9 and 10 are both tight, mirror-image 180-degree hairpins, first right and then left. Mechanical grip is crucial here, and it was this section of track more than any other that made obvious the clear advantage of the Bridgestone intermediates over the

Michelin tires in last year's USGP. Turn 10 deposits the drivers on a very short blast into the relatively fast sweeping Turn 11, which is a crucial corner, as it is the gateway to the oval section. A good drive into the final Turn 12 is absolutely essential if any drafting maneuvers are to be attempted. Even failing that, the braking zone into Turn One looms 23 engine busting seconds away, awaiting those brave on the brakes.

The track can be divided into the first oval section, the second fast sweeper section, and the third slow corner section — each section demanding entirely different handling characteristics from the car. In this way, Indy is the ultimate compromise track, with every setup tweak made to the car necessarily spoiling the handling priorities of the two remaining sections. This three-headed Hydra of handling favors, as always, cars with the best overall handling package. And, of course, in modern F1 terms, "best overall handling package" has been shortened to a much simpler term: "Ferrari."



If Herr Schumacher is correct, and Indy in 2003 was one of his greatest drives ever, it might then be notable for this year's race, given that his eventual championship in 2003 would spur him toward what now may well become his greatest season ever. Regardless, there is some irony in the fact that many of the greatest names ever to grace Indianapolis, the home of American motorsports, come from lands far from the American heartland.

Watch the USGP on Sunday and you will see yet another of those names race. I suppose the only thing that might surprise Jimmy Clark, were he alive today to watch Michael Schumacher race at Indy, would be the direction Schumacher's F2004 is pointing.

But then again, it only makes sense for Michael to run the same direction as the hands of a clock, because increasingly, one can set his watch by Schumi's race wins.

Race Name: United States Grand Prix

Circuit Name: Indianapolis Motor Speedway

Circuit Length: 2.607 miles

Race Length: 190.3 miles 73 laps

Lap Record: Michael Schumacher 1m11.473s

Record Pole: Michael Schumacher (Ferrari F2002), 1'10"790 (2002)

Last Year's Pole: Kimi Raikkonen (McLaren MP4/17D), 1'11"670 (2003)

Alex Wurz's View

"As you cross the famous yard of bricks at the Indianapolis Motor Speedway, you reach the fastest speed on the circuit, 320kph in seventh gear as you head down towards turn one. Braking dramatically, your speed drops to 120kph in third gear for the 90-degree right hander, which takes you off the oval and onto the infield section of the track. The circuit immediately flows into a sharper left-hander, which is negotiated at 115kph still in third gear.

Accelerating out of the corner, you sweep through the slight right hand curve, reaching 210kph in fourth gear that leads you into turn four. This long right hand corner is taken at 128kph, also in fourth gear. On the exit, a short burst on the throttle sees you reach 225kph on the approach to turn five. Dabbing the brakes, this left hander is taken at 168kph in fourth gear. Another short spurt of acceleration and you reach turn six. Braking hard to a speed of 120kph in third gear, this double left-hander sweeps you round 180-degrees and is immediately followed by the sharp right of turn seven, which is taken at 112kph in second gear.

Leading on to the back straight, you must take the right line out of the corner to be able to maximize your speed along the straight. Accelerating hard, you reach 296kph in sixth gear before dropping down the gears to take the 90-degree left-hander at the end of the straight, at 120kph in third. You then enter the tight s-bend complex of turns nine and ten. The tight right-hander of nine is taken at 75kph in first gear, with your speed increasing slightly to 80kph in second gear for the following left-hander. Accelerating away along another short straight, you reach 200kph in third gear before braking to 128kph for the right hand curve of turn 11.

As you accelerate out of the corner, your line is vital as it leads into turn 12, the point where you rejoin the oval, and the start of the fastest section of the track. You must maintain your speed as you take the sweeping right-hander, at 248kph in fourth gear. You then continue to power up through the gears as you negotiate the long right-hand banking of turn 13, reaching speeds of 305kph in seventh gear before the track flattens out for the long start-finish straight.

With full-throttle being maintained for up to 20 seconds, the longest full throttle time of any circuit on the calendar, you reach 320kph in seventh gear as you cross the finish line."

Jenson Button's View

"I approach the first corner at the maximum speed I reach on the circuit, which is around 325 km/h, obviously in top gear. The first right-hand corner is quite tight, and I have to brake very hard in order to get my speed down to around 115 km/h, and drop down to 2nd gear. I hold 2nd gear through turn 2, but am able to increase my speed to about 130 km/h. Turn 3 is actually taken flat and presents no problems: I will apex in 3rd gear at 190 km/h. Turn 4 is extremely difficult, as I will approach it in 4th gear at 240 km/h but need to brake deep into the corner with a lot of lateral acceleration on the car, getting down to 135 km/h in second gear. I need to be very careful not to lock the inside front wheel under braking for this corner.



Exiting turn 4, I can quite easily take turn 5 flat, at between 240 and 255 km/h in 4th gear. I actually reach 265 km/h, still in 4th gear, before approaching the very long turn 6. This is taken in 2nd gear at around 120 km/h, but it is an extremely long corner through which I will be experiencing over 2g lateral acceleration for around five seconds. Before turn 7, I will only just reach full throttle at approximately 170 km/h before braking again, and going through this turn at around 110 km/h. I will be looking for a clean exit onto the back straight, along which I will reach just over 300 km/h in 5th gear before going into the next, very tight part of the circuit.



At the end of the straight, I will need to drop down to around 105 km/h in 2nd gear for turn 8, and will briefly touch 150 km/h in second gear before turn 9. This is the tightest corner on the circuit, and I will take it in 1st gear, apexing at just 60 km/h. I can hold 1st gear right up to turn 10, reaching around 100 km/h and then dropping back to just under 70 km/h for the corner itself. The short straight leading to turn 11 will see me in 3rd gear, at around 210 km/h, before braking for the corner, which I will take in 2nd gear at 135 km/h.



The exit of turn 11 is the most critical part of the circuit, as it

leads back onto the speedway section, which although it contains two corners is taken flat out. The first of these I will take in 4th gear at 250 km/h and accelerate all the way through, exiting in 5th gear at 295 km/h.

The final corner, which is steeply banked, will see me in 6th gear at around 315 km/h before coming back to the pit straight. I am completely flat on the throttle from the exit of turn 11 right through to turn 1: this represents over 22 seconds of full-throttle running, which, along with the run from La Source to Les Combes at Spa, is the longest of any circuit we go to."



The Track's F1 History

Although this year's Grand Prix is seen as a big adventure though there have been 43 races staged in the US since the start of the World Championship (throughout the latter half of the seventies and early eighties there were two US Grand Prix, one on the West Coast and one on the East Coast!).

The last US Grand Prix happened in **1991** at Phoenix. Senna won both though Alesi was looking good both years in the Tyrell in **1990** and the Ferrari in **1991**. Before that Keke Rosberg won the previous US Grand Prix which was held in Dallas in **1984**. The race was famous for being run under such hot conditions that it was started early (by Larry Hagman aka J.R. Ewing!) and was run as the circuit literally melted under the car's wheels.

At the same time Detroit was holding races from **82-88** on what was quite a decent circuit. Before that a car park was the unlikely venue for the **1981** championship showdown in Las Vegas while Long Beach in California held West Coast races from **1976** to **1983**. Watkins Glen also staged races around the same time from **1961-1980** and these races became as firmly entrenched in the calendar as Spa, Silverstone or Hockenheim in their time. The first two races in the States happened in **1959** and **1960**.

In **1959** the circus went to Sebring, a famous sportscar circuit which is set in the middle of swampland, while in **1960** the organisers realized their mistake and set it at the Riverside circuit, a now closed race circuit on the edge of the desert.

Formula 1 returned to the U.S. in **2000**. That year's race was basically a Schumacher benefit gig. There was controversy before the start as Ferrari managed to get the grid moved back in order to stop the cars' wheels spinning over the bricks on the start/finish line. DC got a lead away from the line but he had jumped the start and his stop go penalty left him 5th. Hakkinen's engine blew while he was pressuring Schumacher and after that Schuey had an easy run to the flag (almost too easy in fact as he had a spin due to losing concentration!). Frentzen and Villeneuve had a ding dong battle for third (which Frentzen got eventually) while Button and Trulli had another coming together.

In **2001** this race could well be billed as the race that no one wanted to go to. The teams were unhappy about running at Monza and Montoya's first win was the only vaguely bright spot in the most somber weekend since Imola in 1994. Apart from the grief and worry caused by the terrorist attacks in the US there was the near fatal accident to Alex Zanardi that ended up costing the popular Italian his legs in Germany. To cut a long story short no one wanted to race. When you consider that the news that double world champion Mika Hakkinen was opting out of Formula 1 was greeted with little more than a murmur.

2002 was a pretty boring affair with Ferrari dominating proceedings. The McLarens tried to do battle with Barrichello after the Williamses collided with each other putting themselves out of contention. In the end Schumacher tried to get a photo finish but instead gifted the race to Barrichello after Hakkinen's fighting drive was stymied by an engine failure. Last year's race was an altogether more exciting affair. With the championship so close Montoya was silly enough to make a ramming attack on Barrichello's Ferrari. Although his move was opportunist at best few thought that he deserved the subsequent drive through penalty meted out to him by the stewards. The ever improving BARs showed again that they were stepping up to the big time as Jenson Button led the race for several laps before being taken by eventual winner Michael Schumacher. Button's race would end shortly afterwards with an engine failure. Kimi Raikkonen finished behind Schumacher and was followed home by Heinz Harald Frentzen who demonstrated that he still had it in him with a fighting podium place. Further back Justin Wilson picked up his first (and so far only) point for Jaguar.

This race is going to be met with little more enthusiasm and many of the drivers are not happy about driving while so many more important things are happening elsewhere. This is a great pity and it seems that maybe Formula 1 ought to realize that, at the end of the day they are just boys with toys rather than serious news. The Grand Prix circuit at Indianapolis is made up of part of the famous oval course coupled with a tight and twisty new infield section. The circuit itself is a bit of a mixed bag as far as set-up goes. The infield section is almost like Monaco in its nature while almost half the course is made up of incredibly fast, banked turns. This year the date has been switched from the end of the season to being back to back with the Canadian Grand Prix in the mid season. Quite how this will effect the track temperature and other conditions is uncertain. It will also be interesting to see how the ticket sales are going now that the race has been here for a few years.



The Track

The motor speedway at Indianapolis is well and truly one of the most famous racetracks in the world. As the cars cross the start/finish line at Indy, they cross a thin strip of bricks, remnants of the track's former racing surface and the reason for the track's nickname "the Brickyard."

Unquestionably, Indianapolis is intertwined with motorsports history like few other racing venues in the world. Yet, how is it that this most historic of American tracks came to host the international Formula One circus? In order to understand how this famous oval circuit became home to cars dedicated to road racing only, you must first understand the turbulent history of the United States Grand Prix.

While the USGP may have spent much of its life as an orphan, it is clear that it had a happy childhood in upstate New York. For the glory years of Formula One in the 1960s, Watkins Glen was the host of the USGP. Situated amongst New York State's Finger Lakes region, Watkins Glen, despite its remote location, was amongst the most popular circuits on the F1 calendar. It often carried the largest purse and the race was always well attended. In fact, Watkins Glen became bound up in F1 history almost as much as many other well-known circuits on the F1 calendar, and the race remained there until 1980.

Throughout the 1970s, speculation arose that the circuit, with its fast, flowing nature, was becoming a safety liability as the speed of F1 cars increased. Starting in 1968, downforce had arrived, and as aerodynamics improved, the speed of F1 cars increased. When drivers no longer needed to go opposite-locking on the throttle through corners to log a quick time, cornering speeds began to rise steadily, and, eventually, the Glen was no longer considered a safe venue for F1.

While it is hardly worth debating that there was a great deal of truth in doubting the safety of the Glen, it is difficult, if not impossible to believe that Watkins Glen was judged unsafe to the same standard as Monaco, which sees F1 cars blast through a tunnel at over 150 MPH (this year, that number is closer to 180 MPH). What is clear,

however, is that Monaco, then as now, fairly drips with money and glamour — apparently both in sufficient quantities to negate any legitimate concerns over the circuit's suitability for hosting F1 cars. Watkins Glen, for all of its good qualities, simply hadn't the cache to compete with other F1 glamour spots, and, ultimately, whether stated or not, the circuit's safety issues were rendered secondary to the track's remote, bucolic locale, lack of hotels, and hoards of drunken fans.

Thus, Watkins Glen was lifted from the path of the F1 circus and the USGP became an orphan. As with most orphans, the USGP found foster care a mixed bag of adequate homes and truly horrendous homes. Brief stays in Long Beach, California were certainly more than acceptable, but stints in Dallas, Detroit, and Las Vegas were to become, speaking most charitably, debacles. In Dallas, the one-off track literally disintegrated in the heat, in Detroit, the tight turns slowed speed merchants like Senna and Prost to near taxicab pace, and in Las Vegas, the flower of Formula One's glorious history wilted in the harsh glow of unabashed avarice and consumerism—no mean feat in the age of Ecclestone.

And so, after several years without a Grand Prix on U.S. soil, the USGP's Annie turned to American Motorsport's Daddy Warbucks — Tony George of the Indianapolis Motor Speedway, and a permanent home was found. Perhaps Indy proves as much as anything that for location on F1's prestigious circuit of circuits, a facility need neither be inspired, nor inspiring, it needs only to serve its purpose ably and consistently. And if inspiration comes along with the package, so much the better. As it so happens, Indianapolis has indeed become a fine venue for F1 — the track has world-class facilities; for the fans, the crews, and the drivers. The racing surface is well maintained; the name is suitably historic to match those other lofty names it accompanies on the calendar, like Silverstone, Monza, Spa, and Nurburgring; and the event is well supported financially. And the fans have come to witness the event, relatively speaking. After all, a trip to Indianapolis allows fans of motorsports to witness not only the piercing scream of V10 engines, but also a famed track synonymous with American open wheel racing.



But there is even greater reason why it is fitting that Formula One and Indy should become intertwined, for it was those rear-engined F1 cars that made the Great American Race as it is today. When Colin Chapman brought Jimmy Clark, Dan Gurney, and three Ford Fairlane V8-powered Lotus 29s to Indy in 1963, they were regarded as a curiosity. Rear-engined open-wheel racing cars? A.J. Foyt was even quoted as saying that he would never drive such a vehicle, derisively called “funny cars” by many in the paddock, calling the Cooper Climax brought to Indy by Jack Brabham in 1961 “and bunch of tubes held together with chicken wire.”

In 1965, when Jimmy Clark won at Indy in Colin Chapman's Lotus 38, effectively leading from start to finish (and missing the Grand Prix of Monte Carlo for the privilege), there was an entirely other kind of curiosity brewing. Foyt had already stopped laughing and switched to a rear-engine “funny car” in 1964 (21 of the 61 entrants in the 1964 Indy 500 were rear-engined—and Clark hadn't even won the race by that time). Soon, the entire field at the Indy 500 was filled with rear-engined cars and the roadsters had become obsolete — permanently.

Further, more than a few of Formula One's luminaries have competed in the Indy 500: of course Jimmy Clark and Graham Hill (both while still competing in F1, winning the race back-to-back in 1965 and 1966), Nigel Mansell (after leaving F1), Jacques Villeneuve (before coming the F1) and current stars Juan Pablo Montoya and Christiano Da Matta (both before arriving on the F1 scene). Moreover, lest we forget, in the age of Clark and Hill, the Indy 500 paid points toward the Formula One World Championship.

So perhaps Indy and F1 belong together at long last. And since they would appear to be destined to remain together, this is a good thing. Just last year, in almost every quantifiable respect, the USGP at Indianapolis decided the championship in Formula One in a race that was very much a crucible for the wet weather performance of those drivers piloting cars shod with Bridgestone intermediates (yes of course I mean

Schumacher, you didn't think I was talking about the Jordans, did you?) But that was last year, when Indy was run as the penultimate round of the F1 Championship. What is store this year, the race now being run in June, scant weeks after the Indy 500?

Running the race in June may well be an unknown quantity, but the same cannot be said for Scuderia Ferrari Marlboro. Qualifying on the third row of the grid in Canada, and making no on-track passes, Ross Braun and Michael Schumacher again played their own game of vehicular chess, opting for two stops instead of three, and winning the race with authority. Realizing that their closest competitors were likely to struggle with brake issues, the Scuderia concocted another of its brilliant race strategies, allowing Williams and BAR to lead early in favor of Ferrari leading late. And did brakes play the role perhaps Ferrari had anticipated? Consider that both Williams' and Toyota's race results were disqualified for each team violating FIA rules on either brake ducting or permissible pad materials.

So what of Indy circa 2004? Will there be yet another parade des voitures rouges? I wouldn't bet against it.



Strategy

Two stops was how most teams have ended to go over the last couple of years though this was at least partly to do with the fact that the track was drying resulting in the teams having to stop for dry tyres in 2000. This time round dry weather should mean that the teams will mix it up between one stop and two though a dry race will most likely see most teams opt for a single stop around lap 40 though a mixture of different strategies is likely. As the set up of the car cannot be changed between qualifying and the race different teams will try different setups (Indiannapolis is one of the few circuits where the set up is completely different for qualifying than it is or the race). This should lead to plenty of overtaking.

The Teams

This section will be updated in each race preview with the latest news and tidbits regarding the 2004 F1 Teams and their drivers.

Marlboro Ferrari *(Red with Marlboro graphics)*

Possible problems in ranks due to Todt's being headhunted by FIA, power strain on engine, tyres, different time of year means different weather conditions.

M. Schumacher - Schuey's dominance here, his not being allowed on the oval as no one knew who he was when tour was shown around.

Barrichello - Still no decent results?

BMW Williams F1 *(Dark Blue and White with Compaq and Allianz graphics)*

2nd wind tunnel up and running, revisions to be introduced.

Montoya - huge popularity in States after Indy 500 win.

R. Schumacher - Lack of formal announcement by Toyota — who else would have him if Toyota backed out?

West McLaren Mercedes *(Grey with West graphics)*

Old engine equals no finish. Aeroflow over sidepods leading to high speed stalling of rear wing which could lead to trouble on fast part of circuit!

Coulthard - Likely signing opportunities.

Raikkonen - Why Kimi can't get the car to go as fast as DC — allusion to Button and Fisichella at Benetton.

Mild Seven Renault *(Dark and Light Blue and Yellow with Mild Seven graphics)*

Pointy car may mean probs on last corner. Team most likely to draft each other down the final corner.

Trulli - Time spent in the States (has run New York marathon 2 times!), good chance of win.

Alonso- Popularity with team, who better in the team now?

BAR Honda *(White with Red Lucky Strike roundels)*

Engine strength around Indy, rigidity of chassis likely to help — good chance of win.

Button - Lead last year — more wants to win France or UK.

Sato - Likely to put pressure on Button.

Sauber Petronas *(Mid Blue with a yellow airbox, white nose and front wing with Credit Suisse Red Bull and*

Petronas graphics)

Ferrari engine + Bridgestone tyres = good result - Frentzen on podium last year.

Fisichella - Unlucky around here — chances for a drive other than Williams.

Massa - Wild and woolly beginning to subside and disciplined performances of late.

Jaguar (*Green with HSBC graphics*)

Lack of money, PR gaffes and potential restructures.

Webber - Last chance for team to get 6th in constructor's championship otherwise Webber goes.

Klein - Rumoured Red Bull buyout so Klein would stay on.

Panasonic Toyota (*Red and White with Toyota and Panasonic logo graphics*)

Lots of top designers, serious budget but still no car - why not even tested yet (unlike McLaren)?

Da Matta - Likes the States and coming back to Indy.

Panis - Talented and fast around Indy but car will let him down.

Jordan (*Yellow with BandH graphics*)

Jordan stepping in as Ford team if Jag goes?

Heidfeld - Jaguar driver?

Pantano - Why so slow? Likely to struggle where?

Wilux Minardi Cosworth (*Black, white and Wilux written in Light Blue on White on Sides and rear wing*)

Worth watching coming through last corner as lack of rear grip.

Bruni - Fun and games re-regulations?

Baumgartner - Will blow engine due to over-revving — how would he do in new simple formula to be used from 2008.

2004 United States Grand Prix Predictions

Alex

Qualifying

1. Michael Schumacher

Alex

Race

1. Michael Schumacher

Steven

Race

1. Michael Schumacher

2. Rubens Barrichello

2. Takuma Sato

2. Rubens Barrichello

3. Jenson Button

3. Rubens Barrichello

3. Jenson Button