

## The British Steam Car Challenge



## British Steam Car News

### Latest News

The British Steam Car is to be featured in the next edition of "Ripley's Believe it or Not".

### **Sponsorship sought for transport logistics**

Following the success of the British Steam Car Team record achievements, the team is seeking sponsorship to cover transportation and associated costs, so that the vehicle can tour the UK. Since returning to the UK at the weekend we have been inundated with requests for the car to appear at national shows, universities and television programmes. If you are able to provide financial support or logistics please contact us. Corporate branding, plus media promotion will be available in return.

Eventageous PR have been shortlisted by the Chartered Institute for Public Relations for an award "Best Use of Media Relations" – the awards take place in November 2009. This is the third award that they have been short-listed for in the past week. It covers the work carried out for and on behalf of the Steam Car Team over the past 12 months during the various trials and tribulations.

### **Dateline Edwards: British Steam Car Challenge**

We have added a news clip by Edwards AFB to [Videos](#) for you to watch.

## Steam Car in Award Shortlist

The steam car has been shortlisted for "Racecar Engine of the Year" Award as voted by Race Engine Technology Magazine.

We will find out in October, I'll keep you posted.

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## British team sets another steam record

Edward's Air Force Base, California: Wednesday August 26th:

Yesterday at 8.22am (California time) Don Wales successfully set another land speed record for a steam powered car. The car set the record for a measured kilometre – achieving an average speed of **148.308mph** on two runs.

After Charles Burnett III's heroics on Tuesday in breaking the record for a measured mile, test driver Don Wales piloted the car for the attempt at the kilometre record and reached a peak speed over 155mph. Both new international records are subject to official confirmation by the FIA.

Don Wales said: "What a great feeling, the car felt better than ever today. We peaked over 150mph and the car was handling beautifully. The team has worked so hard over the last 10 years, especially over the last few weeks! Having set two FIA world records is an amazing achievement and no-more than the team deserve after their perseverance"

Project Manager Matt Candy said: "It's fantastic to set another record for the team and all that hard work has been worth it. After Charles broke the record for the measured mile on Tuesday, we decided to have one more run with the car and attempt the kilometre record. We took some of the inhibitors from the boilers for this run and it helped get a bit more speed out of the car. The weather was perfect today and the air temperature was just 62 degrees Fahrenheit, the team turned around the car in an amazing 30minutes which is their quickest ever! Don has worked so hard with the team, it's fantastic that he should go home with a record too."

## British team breaks oldest land speed record

Edward's Air Force Base, California: Tuesday August 25th:

Today at 8.19am (California time) Charles Burnett III successfully broke the land speed record for a steam powered car – which has stood for more than 100 years – achieving an average speed of **139.843mph** on two runs over a measured mile.

Driver Charles Burnett III piloted the car for both runs reaching a peak speed of 136.103mph on the first run and 151.085mph on the second. The new international record, which is subject to official confirmation by the FIA, breaks the previous official FIA record of 127mph set in 1906 by American, Fred Marriott, driving a Stanley steamer at Daytona Beach.

As he was congratulated by his jubilant crew, principal driver, Charles Burnett III said:

*"It was absolutely fantastic I enjoyed every moment of it. We reached nearly 140mph on the first run. All systems worked perfectly, it was a really good run. The second run went even better and we clocked a speed in excess of 150 mph. The car really did handle beautifully. The team has worked extremely hard over the last 10 years and overcome numerous problems. It is a privilege to be involved with such a talented crew, what we have achieved today is a true testament to British engineering, good teamwork and perseverance"*

Project Manager Matt Candy said:

*"The first run took place at 7.27am when the air temperature was a cool 63 degrees Fahrenheit, the team turned around the car in 52minutes (with just 8 minutes spare) in preparation for its return run. The British Steam Car takes 2.5 miles to accelerate and after the measured mile, a further 2.5 miles to decelerate – so each run was over 6.5 miles. The FIA requires that the return run takes place within 60 minutes. The times of the two runs are then averaged to obtain the official recorded speed. Compared to the testing we did in Britain, the British Steam Car ran 12 times the distance and twice the maximum speed – all within one hour. It's been a huge challenge for all."*

Pam Swanston wife of the late project manager Frank Swanston was overcome with emotion after seeing Charles power the supercar across the dry lake bed, she said:

*"If only Frank was here today, it was his vision that made it a reality. He would be incredibly proud of the team's achievements and always believed we would succeed. Today we celebrate this record for Frank"*

## **British Steam Car Team on Course for World Record Success!**

### Saturday 22nd August

The weather was stormy, and noticeably cooler. The team worked in earnest to rectify the electrical fault, but the part arrived two hours late. They carried out a static test, which was the best they have ever had running at 380degrees, demonstrating that the car now has more power. Typically on a 130mph run it is operating between 300-320, so this was good news.

However the static test detected a fault with the water bladder, which had been damaged by the flow of pressure being pushed through the flowmisers. There was little more that the team could do, time was ticking on, so it was decided that they would carry out the bladder repair (which typically take 2-3hours) on Monday. They would utilise this time to carry out maintenance, such as flushing through the flowmisers and mechanically setting them, and clearing the car of any contaminated water. The next run will be Tuesday.

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### Friday 21st August:

We arrived on the lakebed full of anticipation and optimism. The air was still, it was a beautiful sunrise and we were all on schedule. The first run peaked at 133.491 but picked up speed when exiting the measured mile. The measured mile was 128.628. The turnaround crew was on target at approximately 40 minutes in preparation for its return run. Whilst the car was being refilled there was pressure problem with the water rigs. The second run was aborted and we all returned to base. The temperature soared to over 104f, and over 40% humidity. Having tracked down the route of the problem to a minor electrical fault, the team continued to work and source spares to rectify it. Clouds began to roll in, a storm kicked up with over 45-50 mph gusts, we had had to rescue the marquee as things began to fly away. It became impractical and dangerous to work, the team battened down the hatches and called it a day. The weather forecast has predicted bad storms and lightening. It is really howling out there! The team will continue to work on the car tomorrow (Saturday) and carry out a static test for more runs on Monday, when I will bring you more news.

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### Edward's Air Force Base, California: Thursday 20th August

We had a successful first run today, peak speed 130mph, but unfortunately on the return pass the rear right hand side tyre suffered a slow puncture at 75mph - 4.2 miles in to the course. Back to the lakebed again tomorrow. I have to say these guys on the team are working their butts off to make this happen. Its not until you are here that you can appreciate the conditions. Six days a week, 14 hours a day in over 100 degrees.

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### Edward's Air Force Base, California: Wednesday 19th August

The team made the first official attempt at the world record today, but decided to abort the second run after a slight problem with the throttle was detected. It is understood that the throttle was letting water through the turbine rather than bypassing it. The team will investigate the problem this afternoon with the intention of attempting the record again tomorrow morning.

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### Edward's Air Force Base, California: Tuesday 18th August

The British Steam Car Team has now successfully carried out 5 test runs in excess of 100mph ahead of its bid to break the century-old world land speed record for steam-powered vehicles. After numerous setbacks last week, the team were jubilant on Saturday having unofficially beaten the Fred Marriott record. The teams own calibrated equipment measured the two way average at 137.14mph, and a 48min 52 second turn-around.

Tomorrow the British Steam Car Team will commence their attempts to achieve an official record. The current FIA record is 127mph previously set by American, Fred Marriott, driving a Stanley steam car in 1906

Project Manager Matt Candy said:" it was an enormous achievement on Saturday and one we hope to replicate now that the FIA timing officials have joined us today. The timing equipment is currently being set up cross the 6mile lake bed. When we left England we knew we had a tough challenge ahead, but we had carried out all the testing we could. Since arriving in the UK the team has had to do a lot of preparations to the car with the effects of heat, altitude and the surface conditions. Compared to UK testing at Thorney, Portsmouth, the goal has been to make the car travel twelve times the distance, at double the speed and twice in within one hour. Saturday was a milestone for the team in achieving this goal".

The FIA is the sanctioning body and now recognizes a land speed record as the average speed of two passes made across the same measured distance in opposing directions within 60 minutes of each other. The time of the two runs is then averaged to obtain the official recorded speed.

The record runs will commence at 6am (USA time). We will keep you posted with the team news!

### Notes to Editors:

Principle Driver Charles Burnett III was born in England in 1956 and educated in South Africa and America. As a legitimate tri-national - his mother was Canadian and his father American - he inherited a love for travel and all things mechanical from his father, who raced hydroplanes and restored Hudson automobiles.

A long-time powerboat enthusiast, Charles set up Vulture Ventures, a UK-based offshore racing team, which soon became known as the world's most successful team in the sport. During this time, Charles took a variety of world records using catamarans and monohulls powered by diesel, petrol and LPG. He was included in the Guinness Book of World Records in 1999 for an offshore water speed record of 137mph.

The team acknowledges the achievements of the "Barber-Nichols Team". Their vehicle 'Steaming' Demon' is currently the fastest steam car in the world. On 18th August 1985 The Barber-Nichols Team carried out three

successful passes and achieved an American National Record at 145.607mph. There was no attempt to establish an FIA record. However, the British Steam Car Challenge recognize this speed as the record to exceed.

For further information and team interviews, please contact:

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For photographs and footage of the British Steam Car Team record attempts please contact **[The Press Association](#)** or **[Associated Press](#)**. For further details, please contact the Picture Desk on 0207 963 7032. Email: [pictures@pa.press.net](mailto:pictures@pa.press.net)

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### Monday 17th August - Edwards Airforce Base

Don arrives with us tonight, therefore in the meantime I wanted to give you a quick update of the team news today. Its my first day at Edwards and I can see how incredibly hard it must be for the team to work in such extreme heat.

We arrived at the base at 5.00am, the security check process went smoothly and drove the 12 miles to where we are stationed on the lake bed just as the sun rose. It was beautiful. It was a chilly start, but soon heated up to 104f and at first even the car was cold and the gas wouldn't fill up. Around 7am it was all systems go, Charles made his first run reaching 148mph. The crew turned her around in less than 50 minutes (they have it to a fine art).

During the second pass Charles had to stop as one of the 139 sensors had shut the system down as a safety precaution. The sensor turned out to be faulty and has since been replaced. No big issue. The team also replaced a flowmiser, as it was stuck open and throwing wet steam in to the dry steam affecting the cars speed and performance.

The FIA have just joined us, and will be setting up the course tomorrow. Attempts will commence on Wednesday. Ironically the date coincides with both the Barber Nicholls run and when Don Wales achieved his Electric record. No pressure!

In the meantime the course is undergoing further "fodding" - 1 extra mile (7 miles in total). The car is peaking at 3.8miles, and as you are probably aware a land speed record is on a measured mile, 2-way pass with 1hr turn-around. At the moment the car is peaking slightly late, so this should balance it out. The speeds they are achieving are certainly record breaking, so now we just need the timings guys all set up and plenty of luck on our side!

Rebecca Nicholls  
Press Officer and Kitchen-hand

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## Friday 7th August

The British Steam Car Team carried out another successful test today, and reached speeds of 131mph. This is faster than the current world record, however as the FIA was not present, it is not officially recognized. The FIA will set up the course on Monday 17th August and record attempts will be made on the mornings (~6.30am to 10.30am USA time) from 18th August to 22nd August.

### ***The British Steam Car Team carries out successful runs but delay World Record Attempt***



After numerous technical problems, the British Steam Car team successfully carried out its first test run on US soil, yesterday. The team has been working tirelessly to get the car ready for the record attempts to break the century-old world land speed record for steam-powered vehicles.

The team was in position by 7.00am ready for their first run. Test Driver Don Wales was strapped into the 25ft-long car that he has nicknamed "the lean, green, mean machine" – because of the technical issues the team has had to overcome. The goal was to replicate the test programme that took place in April at Thorney Island. The throttle lag was approx 5-7 seconds but it seemed longer as the vehicle accelerated slowly away.

Project Manager Matt Candy said: "We reached 77mph over a very short distance of just 1km which was comparable to our tests at Thorney. We were due to do a high speed return run but the gas rig had trouble refueling and so we had to abort it. We will replace this gas pump tomorrow and resume the testing programme. The software has since confirmed that the vehicle produced more steam on the test run than in the UK, a bypass valve was open for approximately 1/5 of the test and the majority of the steam was wasted. This can be rectified, and knowing that it not performing to its full capacity is really encouraging news, as we can utilize the steam to generate more power than we thought we had.

Despite the successful test run, the team has taken the decision to delay the record attempt to the week commencing 17th August. Candy continued "It's important that the technical issues with the support rigs are resolved before an attempt is made, and these things can't be rushed. In addition, the FIA officials have to leave on the 4th August to attend Bonneville Speedweek. However the FIA are free from the 17th August after they have carried out their duties at Bonneville and can join the team at Edwards to calibrate and record the attempts"

The British Steam Car Team hopes to achieve the official FIA Land Speed Record for a steam-powered vehicle. The current official FIA record is 127mph previously set by American, Fred Marriott, driving a Stanley steam car in 1906.

### Notes to Editors:

The FIA is the sanctioning body and now recognizes a land speed record as the average speed of two passes made across the same measured distance in opposing directions within 60 minutes of each other.

The time of the two runs is then averaged to obtain the official recorded speed.

The team acknowledges the achievements of the "Barber-Nichols Team". Their vehicle 'Steamin' Demon' is currently the fastest steam car in the world. In 1985 The Barber-Nichols Team carried out three successful passes and achieved an American National Record at 145.607mph. There was no attempt to establish an FIA record. However, the British Steam Car Challenge recognized this speed as the record to exceed.

Video footage of the Edwards run has been uploaded and is now available to watch over on [Videos](#).

For further information, pictures or interviews please contact Tel: +44(0) 1452 260063.

Rebecca Nicholls Ext: 450 Email: [Rebecca Nicholls](#)

Or

Chris Wall Ext: 451 Email: [Chris Wall](#)

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### ***Latest update for world speed record attempt***

Following the arrival of the British Steam Car team at Edwards Air Force Base on 29 June, there has been a month of intense activity but, unfortunately, a number of setbacks.

The 'Base Camp' was established without much difficulty and initially it was thought that nothing on the British Steam Car had been affected in transit. However, this proved not the case and first a load sensor and then a faulty water filter had to be replaced.

Because of the extreme daytime heat at Edwards Air Force Base (well over 100°F, usually), the team is obliged to begin work at 5.00am; by 10.00am it can invariably be too hot for the car and team to continue.





One important milestone was passed successfully when the British Steam Car was inspected by representatives from the Southern Timing Association and the FIA (the international governing body of motor sport) and declared eligible to attempt the world steam car record.

However, the high temperatures brought further problems, including preventing the refuelling rigs from working properly. This took several days to overcome and it was not until 17 July that two static steam runs were carried out successfully. The team has since ordered dry ice and a huge air conditioning unit to cool the vehicle down.

Unfortunately, there was a further setback a few days later when two (of the 12) boilers failed and had to be replaced. Each time a delay such as this occurs the team is hampered by the rising air temperatures – when it becomes too hot to run the car anyway.





While all this activity has been taking place, test driver, Don Wales and fellow team members have spent many hours “fodding”, clearing foreign object debris from the track where the car will run. They have completed 2½ miles of the 6 miles stretch and will continue to do so.

The team is working tirelessly to get the British Steam Car ready for its attempt. The time keepers have been booked in from Wednesday 29th July – 4th August, before they depart to Bonneville for 10 days.

Reporting from Base Camp, Don Wales wrote (on 23 July): *We hope that the tests tomorrow will be successful and we can move onto the lake bed on for track and car evaluations. I can then hand over the wheel to Charles for the high speed record runs.*

### **Newest Team Member Arrives**


The entire team would like to send congratulations to Kirsty on the birth of her son, Archie, weighing in at 8lbs. Best wishes from everyone, both out in the US and those here in the UK. We look forward to raising a toast to our newest team member.

To find out the latest project news [click here](#)...

You can also check out the new [Team Diary](#), which is updated daily, direct from Edward's Airforce Base in California, USA.



Would you like an RSS feed for the site? If so, please add any of the following links to your favourite RSS reader:

For the entire site, use [this link](#). 

For just the the Team Diary, add [this link](#). 

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## *The British Steam Car Challenge*



## BSCC News

### Latest News as of April 2009

#### Successful Test



Following the two runs at Thorney Island on April 1st, the UK test program is now complete.

It is a sobering thought that the car now has to go twelve times as far, at double the speed, twice, in one hour to achieve the record.

We have much to learn, test and achieve on the Lakebed.

#### Packing

The car and all the ancillary equipment has been cleaned prepared and packed. The car, 6 support rigs, eight pallets of plastic boxes containing all the spares and essentials, including teabags, have found a home inside our two 40ft containers and the 20ft workshop container.

The car, on its trolley and trailer is a tight fit, but it has gone into the container.





## Videos

The car has attracted interest from all over the world and can be seen on a number of videos on the Internet. As well as those found over on our [Videos page](#), here are some others that are out there at the moment.

<http://www.youtube.com/watch?v=fLs78GsWWkM>

<http://www.autocar.co.uk/VideosWallpapers/Videos.aspx?AR=239355>

## Next Step

The team are waiting the final go ahead from Edwards AFB so that we can ship the car. The record attempt is likely to take place in June.



*Last updated 05 May 2009*

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# *The British Steam Car Challenge*



## **BSCC News**

### **Latest News as of February 2009**

#### **Spring Testing**



We have emerged from winter hibernation. The car has coped well with being inactive for a couple of months. This is encouraging news for the weeks that the car and equipment will spend inside containers when we ship to the United States.

The team have decided to develop the control software and work toward a super heated run in the UK.

Turnaround



The mono tube boiler design that we have adopted is susceptible to tube failure. We are managing to increase the life of the boilers but realise that damage has occurred as we moved from a manual to an automated control system. We do not have the time to develop the boiler design and so are constructing spare boiler cores.

### Thorney Island

Now the weather is improving we aim to make one last trip to Thorney Island before packing up and shipping.

### Edwards Air Force Base

We are making positive progress with our application to attempt the record at Edwards Air Force Base in California. The Air Force Base covers nearly 308,000 acres, Edwards is located in the Mojave Desert, adjacent to the largest dry lakebed in North America, Rogers Dry Lakebed. They have experienced a particularly wet winter and we could be waiting some time for the lakebed to dry.

*Last updated 21 March 2009*

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# *The British Steam Car Challenge*



## BSCC News

### Latest News as of December 2008

#### Runway Testing



The car has now completed 6 dynamic runs. Pictured here at Thorney Island the car is accelerating with full throttle. No steam is exiting via the by pass pipes; all spent steam is coming from the turbine.

The team were able to practice turning the car around, refuelling and starting the car against the clock.

The cold conditions did not make conditions easy for the car or the crew and we have decided that this probably as far as we can go with winter testing.



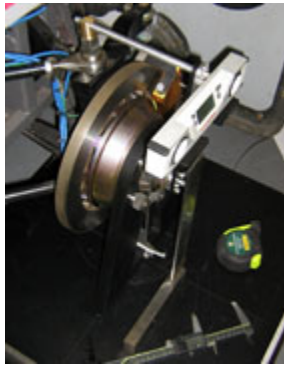




The car awaits recovery at the end of a run.

### Suspension Set Up

The car is back in the warm, dry, workshop and we are inspecting the suspension after its shake down, under full load conditions. This is the first opportunity we have had to use our corner weight and suspension set up kit.



### Winter Program

The car is being 'hibernated' for the winter months.

The boilers have been drained. The core team are inspecting and servicing the car and ancillary equipment.

### Video Footage

We have added a new page with several videos of the steamcar, including the initial posted in last month's news. We will update this page as more videos become available. See the videos [HERE](#).

*Last updated 19 January 2009*

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# *The British Steam Car Challenge*



## BSCC News

### Latest News as of November 2008

#### First Run



We have completed the first couple of dynamic runs of the steam car at Newtown Park.

You can check out a video of one of the first runs over on our new [Videos](#) page.

The team have had to learn new roles. A team of 6 people is involved in launching the car. The sequence of operations involved in checking, filling and starting the car requires coordination, timing and teamwork.

#### Turnaround



We have tested the oversize Go-Jack that will be used to turn around the car. The rear wheels are raised up into the air using the air jacks. The yellow Go-Jack is wheeled under the car and the rear wheels are chocked. With plenty of manpower applied to the push bars the car can be turned around the front wheels.

### Record Attempt

We have had a preliminary meeting with Edwards Air Force Base, in California, about the possibility of running the car on the dry lakebed, once it has dried out following winter rains.

During the trip to Los Angeles we were able to visit a number of potential suppliers. These included locating a source of demineralised water, liquid propane, communications, rental equipment and accommodation for the team.



We also caught up with key members of the S.C.T.A. Southern Californian Timing Association at the last El Mirage meeting of the year, who will be instrumental in helping us with course survey, layout and official timing.

### Logistics

We are reviewing our shipping options, and looking at how we can store the car over the winter.

### Next Steps

We are now planning to run at Thorney Island, near Portsmouth, as soon as we have suitable weather.

Once we have completed our UK testing we will look to store the car until we have a shipping date in the New Year.

*Last updated 03 December 2008*

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## BSCC News

### Latest News as of October 2008

#### Throttle Tests

We have temporarily disconnected the turbine in order to calibrate the throttle.



The car has two pneumatically actuated 2" steam valves that control the steam going to the exhaust and to the turbine. With the turbine disconnected we can vent steam through both valves while the car is stationary. This allows us to establish the valve travel required by the fly-by wire throttle, and the car controller.

#### Boiler Tests



The boiler test rig, which has been housed in the test cell at Newtown Park, has been converted into a mobile

unit that we can ship with us. This allows us to test individual boilers. This picture shows one of the recently repaired boilers under test.

### Weather and Breakages

The cold weather has given us a few problems with our testing. Some of the air regulator valves have been freezing; we have repositioned heat sinks to provide localised heating. We have purchased a couple of electric blankets to keep the LPG tanks warm in order to maintain the gas vapour pressure.

During the past few weeks we have also managed to damage or break one of the steam control valves, an inverter, a pressure regulator, a water tank bladder and also found several faulty main gas burner solenoids. These present challenges for the testing schedule, as well as our spares provision.

### Spares

The spares are itemised, packed and stock checked.

### Next Steps

The car has run independently of the support rigs and once the turbine is reconnected and lagged we will be in a position to run the car first at Newton Park and then at Thorney Island, near Portsmouth.

In the mean time the search goes on for a suitable venue to run the car in an FIA world record attempt.

*Last updated 11 November 2008*

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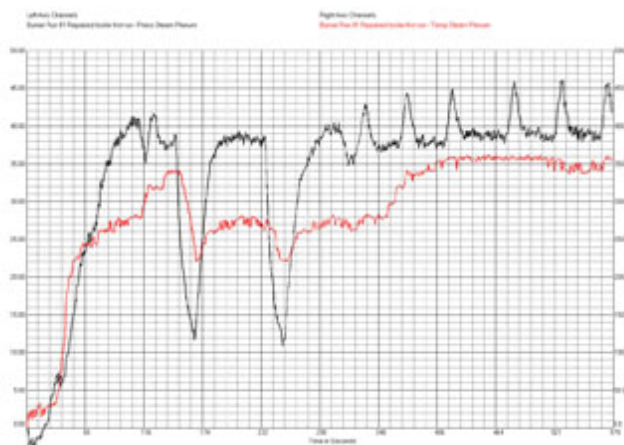
# The British Steam Car Challenge



## BSCC News

### Latest News as of September 2008

#### Automated Full Power



We have now managed a number of runs with the car computer control system managing all 12 boilers from start up into full power super heated steam.

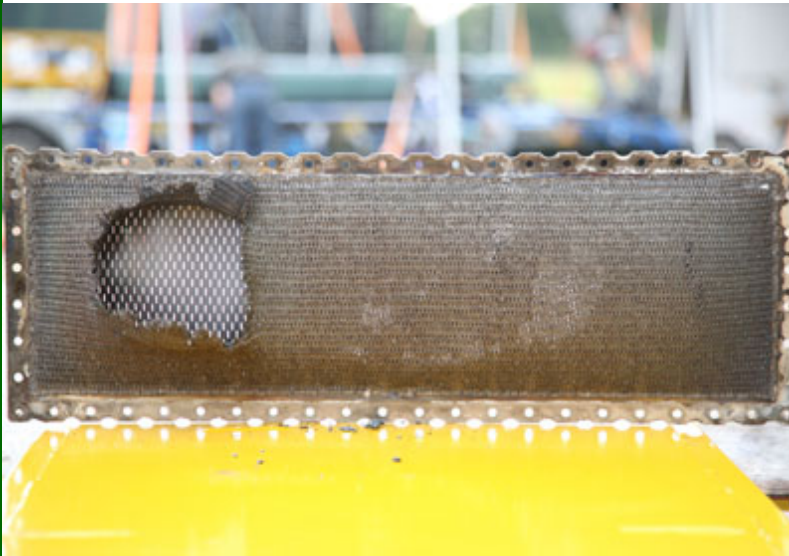
This graph shows a run with the steam plenum sitting stably at 360 degrees centigrade with ~40-bar pressure. This represents an increased supply of steam to that used during the turbine dynamometer tests at Slough power station when 356 hp was recorded on the drive shaft.

#### Boiler Failures

There have been a couple of boiler failures.



This is a burst core tube from a boiler matrix.

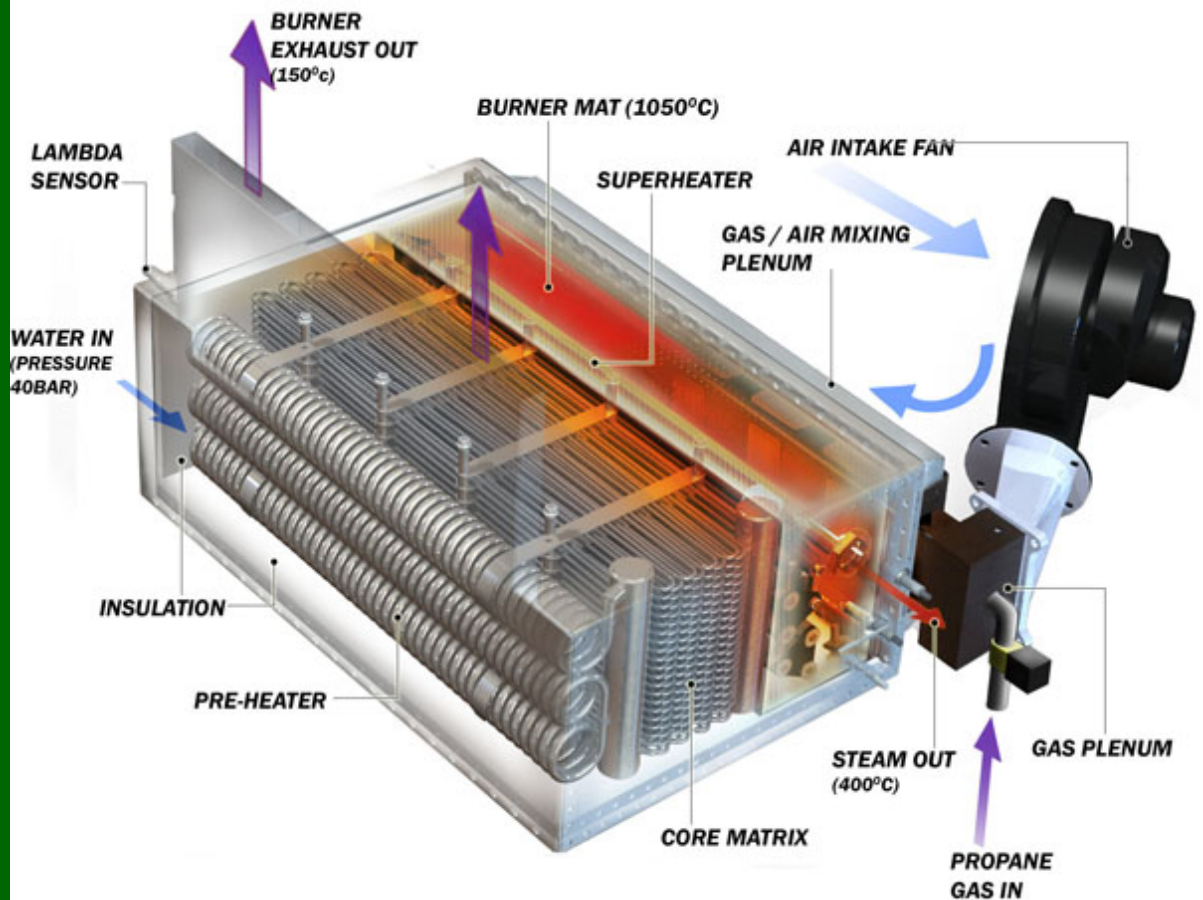


This is a blown burner mat. A faulty main gas burner solenoid valve allowed gas to get behind the burner mat in the boiler, when this ignited it blew a hole in the mat.

So far we have either had spares or have been able to repair the damage. All this extra activity costs the project time.

## Boiler Overview





This illustration helps to explain the inner workings of one, of the car 's 12 boilers.

### Timetable

We have now missed the season for the Bonneville Salt Flats this year. The team is focused on completing UK testing as soon as possible.

This means getting the car to run independently of the support rigs and then running dynamically both at Newtown Park and at Thorney Island.

In the mean time we are investigating alternative venues where we may be able to take the car in order to attempt an FIA world record.

*Last updated 07 October 2008*

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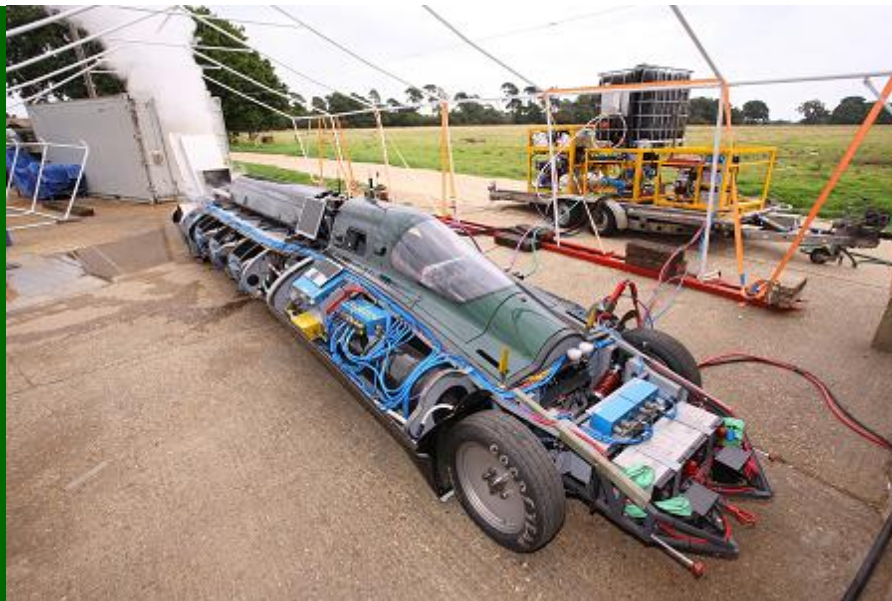
## BSCC News

### Latest News as of August 2008

#### Cloud Machine



12 boilers fully installed and in steam. We have been making clouds over Lymington and getting through thousands of litres of demineralised water.



The car is run from the support rigs. The power rig is supplying 175 amps at 24 volts. The water rig supplies water at 40-50 litres per minute at 40-bar pressure. The Gas and Air rig is used to supply liquid propane at ~14kg per minute. It is a complex process.

The team have been struggling to balance the 12 boilers in super heat. However after nearly 8 hours of running the car we appear to have a controllable system, delivering superheated steam. Having waited so long to see steam coming out of the car we are now making a colourless gas that is invisible but very very loud.

### Timetable

We have missed both the Speedweek and World of Speed events.

The Bonneville Salt Flats are normally available until mid October and we still have a chance of making a record attempt this year.

The spares, tools, workshop container and carnet, for shipping the car, are all prepared for when we are ready to pack and go.

### Next Stages

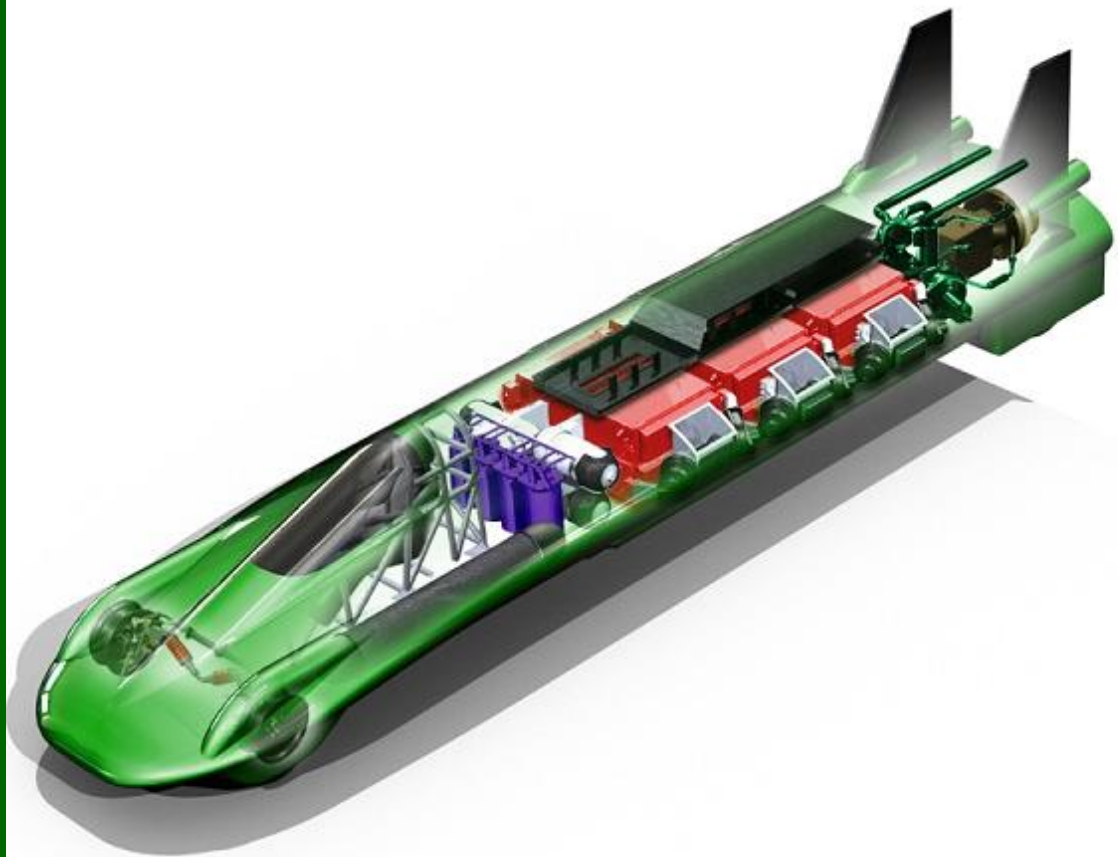
Now we have achieved super heat we can work toward running the turbine.

The turbine is in fixed drive with the wheels through a crown wheel and pinion. The car will be raised on its rear air jacks, so the rear wheels are free to turn, and a small amount of super heated steam will be fed on to the turbine. The driver will control the speed of the turbine by applying the brakes.

So far the car has been run using the supplies from the rig. Once the turbine has run, we will need to disconnect the car from the rigs for its first dynamic run.

### Project

The project has generated an enormous amount of interest and goodwill which is very encouraging to the whole team who have been putting in some very long hours to get through the necessary development required to get the car mobile.



*Last updated 16 September 2008*

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### Latest News as of June 2008

Steam!



We are in steam.

A real milestone, four boilers installed and in steam.

Press Day

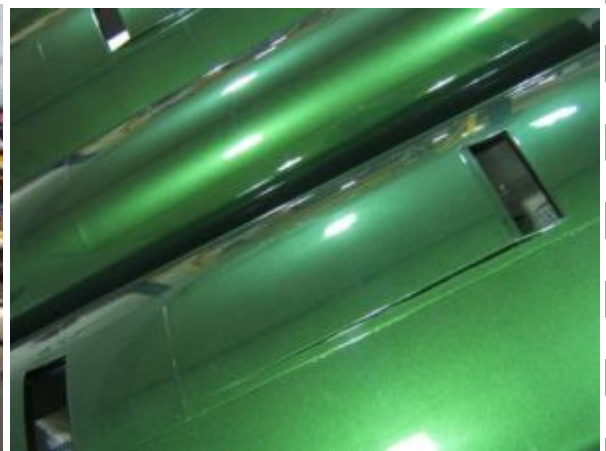


The team had a successful day at Thorney Island introducing the press to the car. Even though the car was not in steam on the day, we generated considerable interest from local and national press as well as the radio.



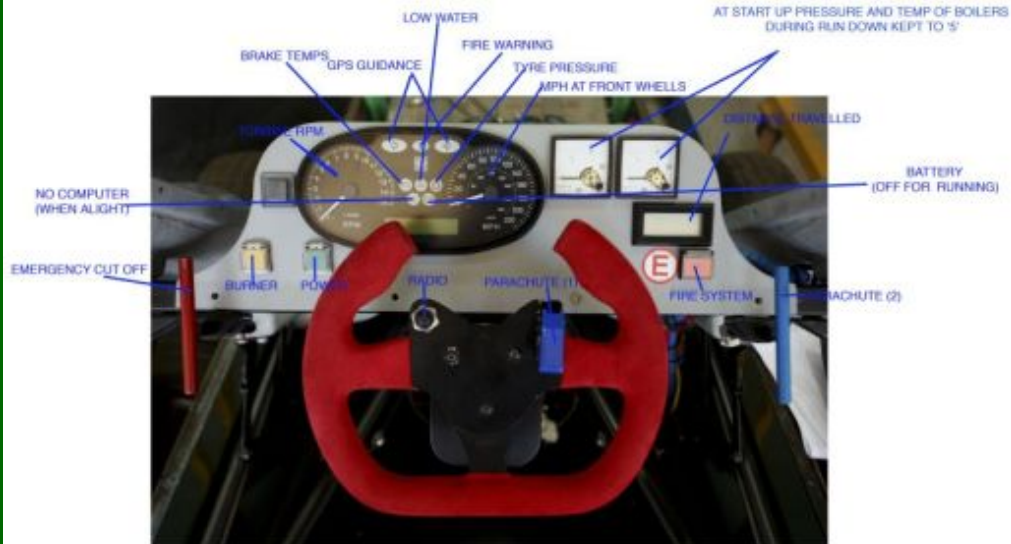
Film crews from across the world have been visiting to document the project. Here the Discovery channel is recording a boiler test.

## Bodywork



Mike Horne and Vintage Cars have put an enormous effort into finishing the bodywork and now the panels are coming back from the paint shop we are surrounded by a sea of green.

## Cockpit



The cockpit is going to be a busy place for the driver; the instrument panel is capable of reporting a wide range of information.

## Boilers

All 14 boilers are now built and tested. Twelve boilers will be fitted to the car and 2 will be kept as spares. One of the spare boilers is in the test cell, should we require any further individual testing. The boilers will be fitted in groups of four.



One of the last boiler builds.

## Open Day

The open day went successfully and there will be more news in the next update.

## Shipping

The shipping date has been put back because we are behind schedule. We hope to be at Thorney for dynamic testing of the car next week.





Bonneville this way.

*Last updated 19 July 2008*

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# *The British Steam Car Challenge*



## BSCC News

### Latest News as of May 2008

The car has finally made it into the outer workshop.



The car is on its wheels and a final fit of the first four boilers with hoses, plumbing and electrics is underway.

We have suffered delays with poorly fitting steam pipes, but are now making good progress fitting and installing ancillary components.

#### Wendover

Having made a preliminary visit to Salt Lake City and Wendover I can report that the salt is in good condition and that the courses have been prepared for the summer.

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The hanger at Wendover Airfield is ready to be occupied by the steam team.

### Car / Trolley / Trailer / Container

The car has been on the ground loading trolley. The hydraulic system on the trolley works. The trolley has been on the trailer. The trailer has been coupled to a truck and put in the container. It is all very tight but it all fits.



### Rigs

The rigs are being commissioned.  
After testing they are stripped down and sent for hot zinc plating and yellow powder coating.

This will hopefully provide some resistance against the corrosive salt.



This water rig is ready to go.

### Bodywork

The composite panels have all been sprayed and are being fitted to the car.

Vintage cars are fabricating the aluminium body panels.

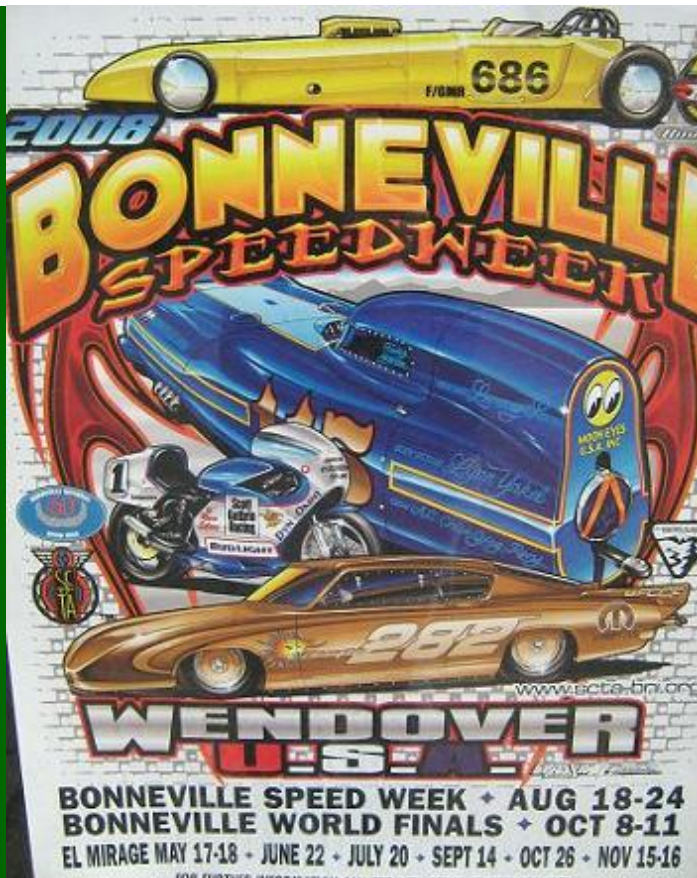
### Open Day

There will be an Open Day for the Steam Car on Sunday July 13th at Newtown Park 11.00am to 3.00pm, please see the website for details [www.steamcar.co.uk](http://www.steamcar.co.uk)

### Shipping Date

The shipping date is fast approaching and our testing time is now very reduced.  
We have slipped many weeks behind schedule.

We must run the car successfully during June.



The Bonneville Salt Flats are waiting for us.

*Last updated 13 June 2008*

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## BSCC News

### Timetable/Status as of April 2008

The days are going by quickly, we will soon have less than 50 working days until the shipping date.



#### Chassis Progress

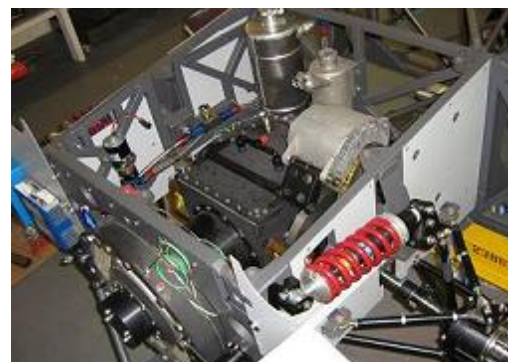
The chassis has been moved by our pair of lifting gantries from its welding jig rails onto its workshop trestles. The team now have good working access around the car.

The front section is in an advanced state of build. The roll cage modifications have been made. The water tanks are installed and the wiring is being fitted.

The rear fins are complete.

The central tank bay with the LPG and compressed air tanks are being fitted.

#### Turbine Installation



The turbine and final drive is installed. The oil system pipes and pumps are being fitted. Rear suspension is back on the car.

## Steam Pipes



One of the final large sub assemblies is under way at Rilmac Fabrications in Lincoln. The steam pipes running from the 12 boilers through the steam valves and onto the turbine or exhaust are substantial fabrications. In order to cope with the 40 bar pressure and 400 degree centigrade the stainless steel steam pipes have to be 11mm thick in places.

## Boilers

We have experienced some problems with the boiler insulation. The micro porous ceramic material has sintered in the region of the burner, showing that it has been up to 1200 degrees centigrade. This has made the material shrink and become brittle. Following discussions with the manufacturer we have decided to line the area around the burner with titanium sheet wrapped around high temperature cloth insulation, this should provide thermal protection up to 1600 degrees centigrade. We are currently making a prototype and hope to test it this week. Fortunately the materials are readily available and we hope to be able to upgrade all the boilers quickly.

## Trolley and Trailer



The trolley is complete and looking good with its white PVC cover. It has been tested with 3.5 tonnes of concrete blocks on board. Once we have taken delivery we will fit the trolley with a hydraulic system for raising the car.

The trailer is well under way, and should be ready to take the car to its first tests.

## Rigs





Rig construction continues, this picture shows the two electric rigs and the two water rigs. One of the gas /air rigs is finished and the second is currently in build. We hope to commission the rigs in the next few weeks.

The team are hoping to make similar progress in May and get the car off its trestles.

*Last updated 30 April 2008*

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# *The British Steam Car Challenge*



## BSCC News

### Timetable/Status as of March 2008

The whole eight and one-third yards

The Steam Team have put in another month's effort and the chassis has been joined back together.



Looking forward



Looking backward

These pictures show all the chassis frames welded and bolted into position, as well as the front four boiler boxes in position.

A combination of work from Delta Motorsport, subcontract laser cutters and fabricators has delivered parts and jigs to the project. Our fabricators have put some long days into completing the chassis structure.

The chassis has been inspected with a Faro arm and is accurate to within a few millimetres over its entire 7.6 metre length.

#### Boilers

Boilers No. 4,5 and 6 are in production.

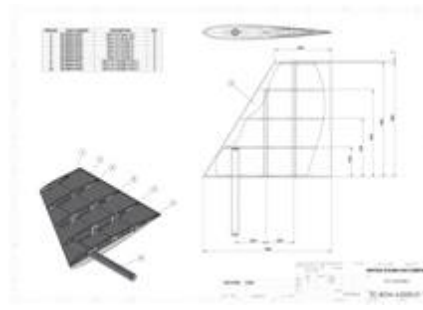
The first production boiler has been producing 3.7 litres of steam per minute, which is well above the design requirement of 3.3 litres per minute.

The new insulation appears to be working well in static testing. The burner temperature is 1035 degrees Centigrade and the exhaust 160 degrees, while the casing is remaining relatively cool. This is a promising start to the test program and shows the production boilers to be the most efficient the team have ever made.

#### Rear Fins

The striking, twin vertical, rear fins of the car are in construction. They have an aluminium core and carbon

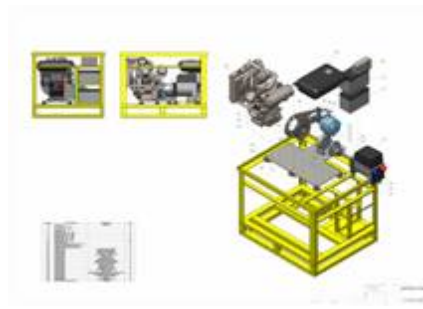
composite skins. The angle of attack can be adjusted to help in tuning the cars handling.



## Support Rigs

The power rigs will provide power to the car during start up. This is required to drive the burner fans, charge the batteries, and run the sensor and control equipment.

The two rigs are in an advanced stage of assembly.



## Fire Training

The team have had a preliminary visit from a fire safety and training officer. A program of training and risk assessment is being put together so that the start up and turn around crews can be given appropriate training as the team learn how to operate the car.

## BBC Filming

Provisional filming days have been booked in late May for the BBC's James May to visit the project and hopefully drive the car.

## April Steam?

During the next month we will populate the chassis with boilers, intakes and control boxes begin the task of plumbing and wiring all of the water, gas, air and electrical services. The April update will keep you informed of progress.

*Last updated 19 April 2008*

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# *The British Steam Car Challenge*



## BSCC News

### Timetable/Status as of 28 February 2008

Another productive month for the steam car team draws to a close

#### Boilers

All of the 3km of tube for the boiler cores has been formed and is being processed for the Vacuum brazing process, undertaken by Bodycote Heat Treatments Limited. After a slight hiccup with the first batch, we now appear to have developed technique for creating a successful joint between the fine tubes of the boiler matrix and the pre and super heaters.



This picture shows a selection of the 14 sets of stainless steel boiler components being assembled in the workshop.

We hope to test the first production boiler in the next week.

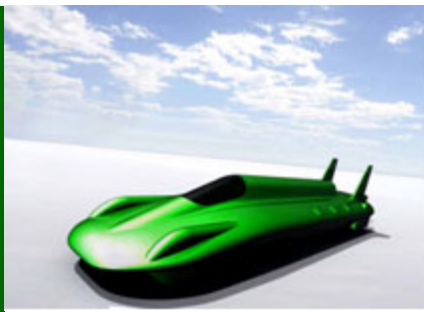
### Scutineer

The team has had a visit from Lee Kennedy.

Lee is the Technical Committee Co-Chair of the SCTA (Southern Californian Timing Association). The SCTA govern the cars running on the Bonneville Salt Flats. It is important that the car passes its scrutineering for Speed Week. This preliminary visit picked up a number of items on the car that require modification. The team will make sure that these are attended to before Lee's next visit when he wants to inspect a working car.

### Body Shape

The final CFD (Computerised Fluidic Dynamics) runs are being made. We have now fixed the shape of the car. This image shows how the car will look on the Salt.

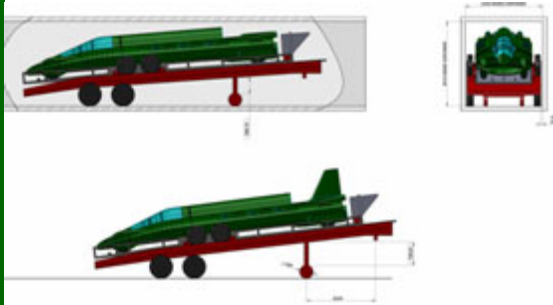


The car will have two large vertical rear fins, and very low profile intake ducts to feed the boilers

## Trailer and Trolley

The support equipment plays an important role in the project. We have commissioned RM Trailers to make a trolley and a trailer for the car.

The trolley will be used to transport the car on the salt. It will allow us to turn the car around for the record run, as well as providing a launching platform for the car. When the car is warming up it exhausts a dangerous amount of pressurised super heated steam. This must be ducted upward to protect the crew and onlookers. It is important that we do not contaminate the salt during the start procedure. The trolley will have a drip tray to capture any water that is exhausted during warm up.



The trailer will allow us to transport the car and trolley to UK testing as well as get the car to and from the salt from our base on Wendover Airfield in the US.

We have designed the trailer and trolley so that they pack into a 40ft-shipping container. It will be a tight fit and we will have to remove the rear fins but this gives us a convenient and cost effective shipping option.

## UK Testing

We have booked time at Thorney Island, near Portsmouth, and Elvington Airfield in Yorkshire for our UK tests.

The team are gearing up for a concentrated build effort over the next two months.

*Last updated 28 February 2008*

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# *The British Steam Car Challenge*



## BSCC News

### Timetable/Status as of 7 December 2007

Having developed a working boiler it is now possible to consider packaging 12 boilers and ancillary equipment into the car.

The front of the car is virtually complete and the rear of the car is well under way. The centre of the car remains to be designed and built.

Delta Motorsport have been commissioned to design the centre section of the car. The specification has been agreed.

Car Front Section



Car Rear Section



Behind the drivers bulkhead will be gas and air tanks, electrical inverters and fire extinguisher.

The 12 boilers will be in 3 rows of 4. The boilers will exhaust into a central channel long the car. The inlets and other cool parts of the boiler assembly will be down the two sides of the car.

An inspection of the hard points of the car has been carried out using a Faro arm. This will enable the design of the centre section to be carried out off site using a 3 CAD package.

### Faro Arm Inspection



In order to start and refuel the car, three rigs are required to provide water, LPG, compressed air and electrical power.

To complete an FIA sanctioned World record the car has to complete the first timed run, be turned around, refuelled, started and finish the second timed run within one hour.

This means that the rig design and operation play an important part in the success of a record attempt.

### LPG & Air Rig



Six rigs will be required on the Bonneville Salt Flats. Three rigs at the start line and three at the turn around point six miles away.

Work has begun to test and commission the existing rigs and to design the remaining support equipment.

*Last updated 18 December 2007*

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## BSCC News



### SPECIAL ANNOUNCEMENT

#### **Project Manager Frank Swanston Crosses Final Finish Line**

Lymington, England - It is with profound sadness, that we announce the sudden passing of Frank Swanston, Project Manager for the British Steam Car Team, who died unexpectedly on Wednesday 1 August 2007 from complications of lung cancer.

"He was taken so suddenly," said Team Administrator Lynne Angel, "he will be sorely missed. Frank was a dear friend as well as work colleague. When he arrived we all came together; he was the father figure of the team. We relied on him so much."

Team owner / driver Charles Burnett III, still stunned by the news, remarked, "Frank was such a font of wisdom; he seems to have driven every kind of race car under the sun. He was a huge resource of experience and knowledge for our land speed record project. This is a heavy hit for all of us."

Frank Swanston was a consulting engineer well known in motor racing circles; his four-decade long professional engineering background was firmly rooted in race car design, vehicle development and build programs including prototype work.

From rally to touring cars, historics to Formula One, he was also a track test driver and top-notch fabricator - impeccable credentials to lead the final phases of the vehicle build, testing, development of the steam car record attempt.

His past postings included: Race Engineer at Hexagon, Technical Director at Turbo Tork, Chief Engineer / Race Engineer at Janspeed Motorsport, Technical Engineer at Janspeed Engineering and Consulting Engineer at Powertrain Developments. Further information can be located at: [www.frankswanston.co.uk](http://www.frankswanston.co.uk)

Peter Candy, engineering consultant to the team, friend and colleague of Frank's since the late 1980's, reflected, "Anyone who worked with him benefited from the experience, I could trust whatever he told me. When Frank was Director of Janspeed, they pioneered turbo-charging conversions long before the OEMs woke up to power boost potential for engines. He also prepared dozens of MGF sports cars for a race series and helped develop a London taxicab prototype to run on propane that passed all applicable emission tests in force at the time. Frank also campaigned such iconic racing machines as the Lister Jaguar and Birdcage Maserati."

Team mate Peter Prove, who also worked with him at Janspeed, shared his observations, "Frank brought credibility to our steam project; he had earned such immense respect from everyone who knew him and worked with him in motorsport. People knew if Frank were involved, it was a serious project."

Peter continued "He was good engineer, good person and good friend. Frank created a comfortable working environment, one where you could come to him with problems and not feel you were going to be in trouble. Frank had an engineer's analytical mind and could sort out problems properly without fuss or drama. You knew where the lines were drawn yet he trusted you to do whatever job he assigned you. His management style was that of mutual trust."

Frank Swanston spent so many years leading many racing teams that he could sense when things were off kilter with people. Peter concluded with this insight: "He had the ability to help you through rough patches in your personal life and had wide shoulders that you could lean on if you wanted to."

Perhaps the words of Pam Swanston, Frank's wife, sum up how the team felt when the news slammed home earlier yesterday, "Why do they always take the most kind and generous of this world?"

The Steam Car Team mourns Frank Swanston's passing and extend the deepest sympathies to his entire family.

The Funeral was held at Beaulieu Abbey, Beaulieu, Hampshire on Wednesday, 15 August 2007. The family has requested that donations be made instead of flowers to: The Oakhaven Hospice. Donations can be sent to the funeral directors, F.W. House & Sons, 33-34 St Thomas Street, Lymington, Hampshire, SO41 9NE (cheques payable to: The Oakhaven Hospice)

For further information contact: Lynne Angel on 0845 0700844 or by email: [lynne@ecoengine.co.uk](mailto:lynne@ecoengine.co.uk)

A [Book of Condolence](#) has been set up for people to record their messages. If you would like to send a message of condolence, please send an email to [steamcar@harlequinhouse.com](mailto:steamcar@harlequinhouse.com)



## Timetable/Status as of 2 August 2007

### British Steam Car Appeal

A new website - [www.britishsteamcarappeal.co.uk](http://www.britishsteamcarappeal.co.uk) - supporting the project has been launched.

Visit this website to find out how you can be part of history. By donating £1.00 you can buy a square on the Union Jack displayed on the car. The Union Jack will eventually be transposed onto 'Inspiration' and when she rests in Beaulieu Motor Museum the public can look through a magnifying glass and see their name. It can be said that those people placing their names on the car will go also be making the attempt at the Steam Record. You can read the press release about the project [here](#).

### Project Update

The British Steam Car Challenge – which will attempt to set British and World Land Speed Records in excess of 200mph – received a considerable boost recently when Slough Heat & Power in Berkshire provided some steam from a purpose-built gantry to assist the team in their initial trials. [Click here](#) to read full text of press release.

The Project also received a big boost when the Challenge was featured in the Motoring section of the Daily Telegraph (21 October 2006).

### News from our Sponsors

[Bodycote International](#) has joined the sponsors list. Bodycote is the world leader in the provision of testing and thermal processing services to a wide range of industries, operating from over 290 facilities in 28 countries, and has been able to help the project with the new boilers.



## Team Inspiration

The next Open Day will be held on Sunday 11 March 2007. To book for this event, simply complete the [booking form](#) and return to the Club Office. Reports of all the [club days](#) are available on the website.

Sales of the Team Inspiration Merchandise are going well, so if you haven't bought your limited edition items, don't forget that it is only available through the Project Office. To view the lines still available, click [here](#).

Team Inspiration Members are thrilled to learn that their fund-raising activities are being put to good use. The money raised by Club Members is being used to pay for the front end, the nose, of Inspiration to be designed and manufactured. It is the aim of the fund to raise £5,000 and to find out how much is currently in the fund [click on this link](#) to the Inspiration Nose Fund. The Team Inspiration Office would like to send a big thank you to Mr David Bartrop, one of Team Inspiration's founder members, has recently sent a cheque for £250 towards the nose cone fund.

## Boilers

The Steam car boilers are now able to supply a stable, continuous, controlled flow of superheated steam at the correct pressure and temperature. However, the boiler testing has shown a limit in total steam flow. Modifications are being carried out to the boiler designed to increase its capacity. The boiler test program will continue over the next few weeks until our flow rate requirement is met.

## Turbines

The turbine rotors and spin test adaptors were balanced by Jim Watson of Schenck at the Rotech Spindle Services facility in Slinfold, West Sussex, early this year.

After balancing the adaptors and turbine rotors were assembled and taken to Qinetiq for spin testing. Successful spin tests up to 15,000 rpm were carried out on both the first and second stage turbines.

The turbine rotors have now been fitted into their housings., which in turn have been attached to the final drive unit.

## Brakes

[PDS](#) are continuing their sponsorship of the project by manufacturing the purpose designed brake calipers and associated fittings. The special brake discs and their mounting bells are being manufactured.

## Bodywork

[Vintage Cars](#) has almost completed the rear aluminium body section. However, we have put it on hold at the moment in case the final modifications to the boiler design result in minor bodywork changes.

## Dashboard

SPA has produced a dedicated electronic instrument panel complete with speedometer, rev-counter and warning lights as well as a programmable multi-function digital panel.

## Powertrain

The turbine/final drive assembly has now been mounted onto a dynamometer and connected to a test boiler, ready to commence the running in and power test programme.

## Pressure Vessels

All of the pressure vessels are now completed and proof tested with the exception of the water tanks, which are being manufactured by [CTG](#).

## Chassis and suspension

The rolling chassis is complete and ready to begin the installation of all of the ancillary parts. The rollover safety cage and main chassis frame are prepared and will be completed with the installation of the last boiler and powertrain mounting components, once the boiler testing and dyno tests are completed.

*Last updated 15 August 2007*

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## BSCC News



## Timetable/Status as of July 2007

\*\*\* STOP PRESS \*\*\*

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*Last updated 09 July 2007*





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## BSCC News



## Timetable/Status as of February 2007

\*\*\* STOP PRESS \*\*\*

Team Inspiration is thrilled to announce that Louise Ann Noeth, otherwise known as Landspeed Louise, will be the guest speaker at the forthcoming Open Day on Sunday, 11 March 2007 at the Project Base. Louise will be giving a talk about Speed Week at Bonneville and will also be on hand afterwards to sign copies of her book "Bonneville Salt Flats".

To apply for tickets, please complete the [booking form](#) and post to the Team Inspiration office as soon as possible.

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All of the pressure vessels are now completed and proof tested with the exception of the water tanks, which are being manufactured by [CTG](#).

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The rolling chassis is complete and ready to begin the installation of all of the ancillary parts. The rollover safety cage and main chassis frame are prepared and will be completed with the installation of the last boiler and powertrain mounting components, once the boiler testing and dyno tests are completed.

*Last updated 20 February 2007*





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## BSCC News



## Timetable/Status as of January 2007

\*\*\* STOP PRESS \*\*\*

Team Inspiration will be holding an Open Day on Sunday, 11 March 2007 at the Project Base. To apply for tickets, please complete the [booking form](#) and post to the Team Inspiration office as soon as possible.

## Project Update

The British Steam Car Challenge – which will attempt to set British and World Land Speed Records in excess of 200mph – received a considerable boost recently when Slough Heat & Power in Berkshire provided some steam from a purpose-built gantry to assist the team in their initial trials. [Click here](#) to read full text of press release.

The Project also received a big boost when the Challenge was featured in the Motoring section of the Daily Telegraph (21 October 2006).

## News from our Sponsors

[Mitutoyo UK](#) has recently joined the list of sponsors of the British Steam Car Challenge. The company's

involvement came as a precursor to the testing of the turbines at Slough Heat & Power, a power station, when the BSCC approached Mitutoyo UK Ltd to measure and record the profile across the face of the turbine wheels.

## Team Inspiration

The next Open Day will be held on Sunday 11 March 2007. To book for this event, simply complete the [booking form](#) and return to the Club Office. Reports of all the [club days](#) are available on the website.

Sales of the Team Inspiration Merchandise are going well, so if you haven't bought your limited edition items, don't forget that it is only available through the Project Office. To view the lines still available, click [here](#).

Team Inspiration Members are thrilled to learn that their fund-raising activities are being put to good use. The money raised by Club Members is being used to pay for the front end, the nose, of Inspiration to be designed and manufactured. It is the aim of the fund to raise £5,000 and to find out how much is currently in the fund [click on this link](#) to the Inspiration Nose Fund. The Team Inspiration Office would like to send a big thank you to Mr David Bartrop, one of Team Inspiration's founder members, has recently sent a cheque for £250 towards the nose cone fund.

## Boilers

The Steam car boilers are now able to supply a stable, continuous, controlled flow of superheated steam at the correct pressure and temperature. However, the boiler testing has shown a limit in total steam flow. Modifications are being carried out to the boiler designed to increase its capacity. The boiler test program will continue over the next few weeks until our flow rate requirement is met.

## Turbines

The turbine rotors and spin test adaptors were balanced by Jim Watson of Schenck at the Rotech Spindle Services facility in Slinfold, West Sussex, early this year.

After balancing the adaptors and turbine rotors were assembled and taken to Qinetiq for spin testing. Successful spin tests up to 15,000 rpm were carried out on both the first and second stage turbines.

The turbine rotors have now been fitted into their housings., which in turn have been attached to the final drive unit.

## Brakes

[PDS](#) are continuing their sponsorship of the project by manufacturing the purpose designed brake calipers and associated fittings. The special brake discs and their mounting bells are being manufactured.

## Bodywork

[Vintage Cars](#) has almost completed the rear aluminium body section. However, we have put it on hold at the moment in case the final modifications to the boiler design result in minor bodywork changes.

## Dashboard

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*Last updated 27 January 2007*

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## BSCC News



## Timetable/Status as of 5 November 2007

### Project Update

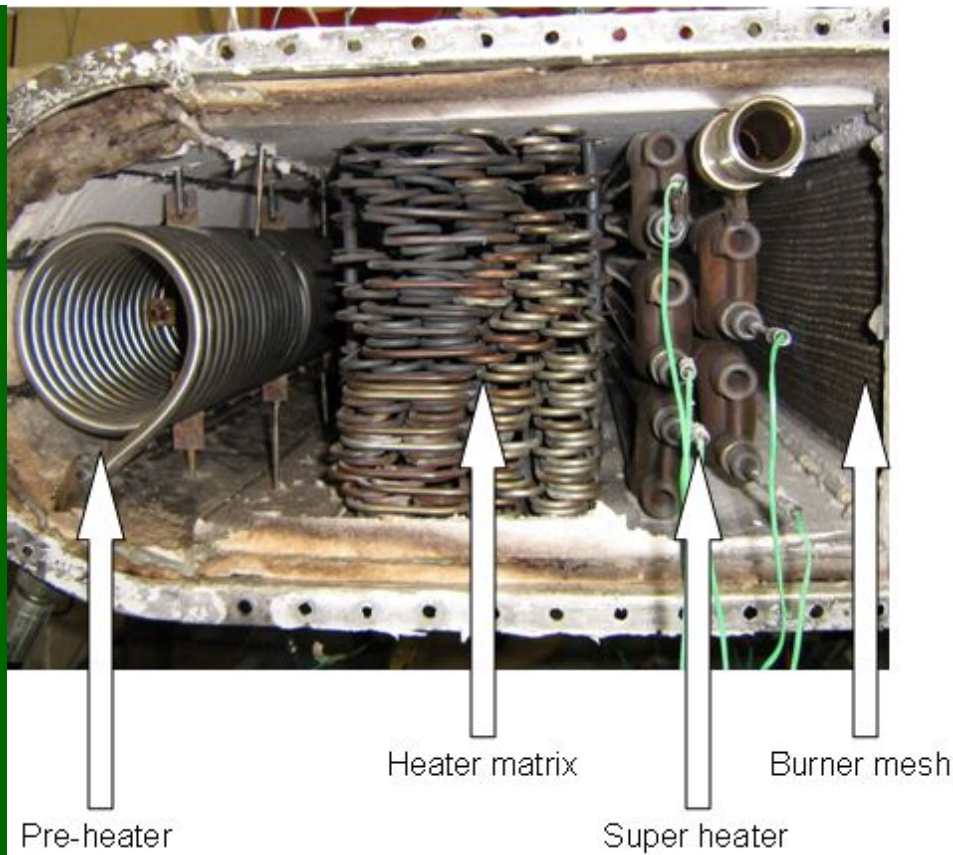
The technical side of the project has taken a major step forward with the development of the first boiler cassette to perform above its required output.

The engine of the steam car is a two-stage turbine, the target is to produce 360 hp. In order to achieve this power output, the turbine must be fed with steam from the boilers at a rate of 40Kg per minute. The latest boiler lay out uses 12 identical boiler cassettes. Each boiler cassette is similar in size to a large suitcase.

In order to work efficiently the boiler has to transfer as much of the heat from the burner into the water as possible. Heat that is not transferred into the water is lost through the burner exhaust. In order to keep the size of the car to a minimum the boilers also need to be as compact as possible, so the heat transfer must take place in a small volume.

The latest tests recorded a burner temperature of 1100 °C and an exhaust temperature of under 300°C. This demonstrates a substantial heat transfer in a small package.

### Development Boiler Cassette



The water enters the boiler through the pre heater, this is the first heating stage. The water then passes through the small pipes of the heater matrix where the conversion into steam takes place. Before exiting the boiler the steam passes through the super heater where it is conditioned into good quality dry steam.

Achieving such a substantial temperature drop is the result of many hours of thought, testing and analysis by the team. The engineers have to deal with a large number of variables including:

- The sizes and lengths of tubes
- Materials
- Flow rates and pressures
- Layouts and packaging

This design will use over 3.0 Km of boiler tubing.

Now the team have a boiler concept that is capable of producing sufficient steam, work can begin on a layout for the central section of the car.

*Last updated 05 November 2007*

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## BSCC News



## Timetable/Status as of 19 September 2007

### British Steam Car Appeal

A new website - [www.britishsteamcarappeal.co.uk](http://www.britishsteamcarappeal.co.uk) - supporting the project has been launched.

Visit this website to find out how you can be part of history. By donating £1.00 you can buy a square on the Union Jack displayed on the car. The Union Jack will eventually be transposed onto 'Inspiration' and when she rests in Beaulieu Motor Museum the public can look through a magnifying glass and see their name. It can be said that those people placing their names on the car will go also be making the attempt at the Steam Record. You can read the press release about the project [here](#).

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## News from our Sponsors

[Micro Movements](#) has joined the sponsors list. Micro Movements has a worldwide reputation for its expertise in Data Acquisition, Signal Conditioning, Recording and Analysis products and their application. The company has instrumented, measured, recorded and finally analysed the results for customers on projects from large structures such as bridges and power pylons through to aircraft structures and jet engines in addition to many different automotive tests. Although based in the United Kingdom, we have distribution outlets in Europe, the Far East and the United States.

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