

# HEAT EXCHANGER

Porsche Club of America, Shenandoah Region / APRIL 2010



**INSIDE:** The Porsche  
Museum in Germany



## **Diagnostically speaking, there is no substitute.**

The best equipment. And the best minds trained to use it. These are your Porsche certified technicians. Dedicated to Porsche vehicles above all else, they must complete over 80 hours a year training in the latest diagnostic technology and techniques. You'll also take comfort knowing all Porsche genuine parts are factory-backed for two years when installed by your authorized dealer. Better still, there is no substitute for having your vehicle serviced by professionals who not only know Porsche, but live Porsche every day.

## **Porsche Certified Service.**

**Euroclassics Porsche**  
**11900 Midlothian Turnpike**  
**Midlothian, VA 23113**  
**(804)-794-6868**  
**[euroclassics.porschedealer.com](http://euroclassics.porschedealer.com)**

Porsche recommends Mobil 1



**PORSCHE**



## **RPM RICHMOND PORSCHE MEET**

**JUNE 4-6, 2010 RICHMOND, VIRGINIA**

Shenandoah Region's 14<sup>th</sup> annual RPM should be the highlight of your PCA year. Plan to bring your family, your Porsche and yourself for a good, old-fashioned weekend with Porsche friends.



*Watch your mail for more information!*

*Register online at <http://shn.pca.org>*



# HEAT EXCHANGER

porsche club of america, shenandoah region

## IN THIS ISSUE

April 2010

### FEATURES

- 9, 14, 16..... 911 Rear Suspension Rebuild
- 10-12..... Pilgrimage to Mecca
- 13..... The Zone 2 DE at VIR
- 20, 22..... Porsches at Sebring

### NEWS & EVENTS

- 6..... Calendar of Events
- 7, 17..... Upcoming Events & Events in Review
- 18..... Shenandoah Web Forum

### DEPARTMENTS

- 4..... From the Editor
- 4..... Shenandoah Region Officers
- 5..... From The President
- 6..... Membership Report
- 17..... Heat Exchanger Mart
- 19..... Treasurer's Report



Shenandoah Region, PCA is an organization dedicated to the enjoyment of the Porsche automobile. The region's newsletter, "The Heat Exchanger," is published monthly with a production deadline of the 20th of the month prior to publication. The information in this newsletter is solicited from the membership of this region and other newsletters and may or may not be consistent with the beliefs or ideals of the Editor.

Reproduction of this newsletter is permitted only with written consent of the Newsletter Editor. Porsche and the Porsche crest are trademarked property of PCNA. Changes of address should be sent to the Membership Chairman and to PCA National offices in care of Diana Tringali at PO Box 5900 Springfield, VA 22150, 703-451-9000.

**WRITTEN CONTRIBUTIONS AND PHOTOGRAPHS ARE WELCOMED. Please e-mail submissions to [info@printsorceva.com](mailto:info@printsorceva.com), prior to the 20th of the month. Please make the subject line of your email "Heat Exchanger".** Publication of those submissions will be in the next available issue, based on space, timeliness, and appropriateness. A special thanks to all those who contribute and advertise in "The Heat Exchanger!"

Advertising rates: \$75/month full page inside front and back covers, \$60/month-full page interior, \$36/month-half page, \$24/month- quarter page/business card. We prefer ads to run for a minimum of six issues, preferably 12 (one year), and are due and payable in advance. All ads, except the inside covers, are in black and white and must be sent in a reproducible format such as Adobe PDF, JPEG or TIFF file. Please contact the Advertising Manager for ad sizes. Send all ads and inquiries to the ADVERTISING MANAGER, Johnny Johnson at [Johnny@aceautosports.com](mailto:Johnny@aceautosports.com), or call 434-981-0524.

Das Market ads for new and used Porsches and Porsche parts must be sent to the newsletter editor by the 20th of the month prior to publication. These classifieds are free of charge for Shenandoah Region PCA members and all Das Market ads will be purged after running. Das Market Ads also run for free in the web site's new Mart page. Send optional photos and copy by e-mail link to the webmaster. All others who want to run a classified ad in Das Market will be charged \$1.00/line.

### EDITOR

**Ben Briggs**  
**PrintSource**  
3315 Berkmar Drive  
Charlottesville, VA  
434.975.3000  
[info@printsorceva.com](mailto:info@printsorceva.com)

### ADVERTISING MANAGER

**Johnny Johnson**  
Charlottesville, VA  
434.981.0524  
[johnny@aceautosports.com](mailto:johnny@aceautosports.com)

### PRINTING & MAILING

**PrintSource**  
3315 Berkmar Dr  
Charlottesville, VA 22901  
434.975.3000

### CONTRIBUTORS

Bill Sanders  
Sherry Westfall  
Jim Condon  
Greg Glassner  
Bruce Russell

### ADVERTISERS

ACE Autosports  
Basil Mediterranean Bistro  
Concours  
Dan's Landscapades  
Euroclassics Porsche of Richmond  
Foreign Affairs  
Lufteknik  
Ovation Builders  
Photoworks Creative Group  
WD Sanders & Company, PC  
Werkstatt Charlottesville



Cover and back cover photos by Jim Condon of a Type 64, Porsche Museum, Stuttgart, Germany.

**SHN.PCA.ORG**

## Have you updated your email address with PCA lately?

We'd love to be able to contact you periodically by email to inform you of special club events. We'll never publish your email or use it more than just a few times a year. Please visit [www.pca.org](http://www.pca.org) under member services to ensure your email (and other contact information) is correct.

IMPORTANT NOTE: When you receive your membership renewal notice from the PCA national office, please give it a high priority and renew your membership promptly. If you fail to renew within 30 days, you will be dropped from the PCA roster and thus deleted from the Shenandoah Region records and mailing list. Avoid this tragedy by renewing online at <http://www.pca.org> (click on Member Services & Contacts). You may always renew by mail as well.

## from the EDITOR

Ben Briggs

The season is gearing up and our membership is responding with lots of articles with photos. If you've sent an article, but don't see it in this issue, don't worry! It will be in the next issue. We were fortunate to receive more articles than we had room to publish in this issue; it's a problem we'd like to have every month!

Keep those articles and photos coming – it makes for great reading!

Happy motoring,

Ben

### SHENANDOAH REGION OFFICERS

#### PRESIDENT

**Bill Sanders**

Charlottesville, VA  
434.249.3359  
[billsanderscpa@aol.com](mailto:billsanderscpa@aol.com)

#### TREASURER

**Bob Duntley**

Goochland, VA  
[rduntley@comcast.net](mailto:rduntley@comcast.net)

#### SOCIAL Chair

**Sherry Westfall**

North Garden, VA  
434.293.6776  
[vscapes@cstone.net](mailto:vscapes@cstone.net)

#### WEBMASTER

**Jim Condon**

North Garden, VA  
434.293.6776  
[jcondon@nrao.edu](mailto:jcondon@nrao.edu)

#### VICE PRESIDENT

**Sherry Westfall**

North Garden, VA  
434.293.6776  
[vscapes@cstone.net](mailto:vscapes@cstone.net)

#### DRIVER EDUCATION Chair

**Rick Ebinger**

Vesuvius, VA  
540.377.5544  
[fle@rica.net](mailto:fle@rica.net)

#### MEMBERSHIP Chair

**Rhonda Dunbrack**

Home: 540.271.1436  
Cell: 540.289.9399  
[rmdunbrack@aol.com](mailto:rmdunbrack@aol.com)

#### PAST PRESIDENT

**Herb Distefano**

Bumpass, VA  
804.448.3448  
[herbd911@comcast.net](mailto:herbd911@comcast.net)

#### SECRETARY

**Pam Ebinger**

Vesuvius, VA  
540.377.5544  
[ebinger08@live.com](mailto:ebinger08@live.com)

#### SAFETY Chair

**Erik Boody**

Staunton, VA  
540.885.8504  
[erik73T@gmail.com](mailto:erik73T@gmail.com)

#### RPM (Richmond Porsche Meet)

**Alex Smith**

Richmond, VA  
804.741.9704  
[asmith@collegiate-va.org](mailto:asmith@collegiate-va.org)

#### ZONE 2 REPRESENTATIVE

**Tom Zaffarano**

[tzaffarano@gmail.com](mailto:tzaffarano@gmail.com)

# ACE

AIR COOLED EURO

## AUTOSPORTS

Helping you buy or sell your classic Porsche

**Johnny Johnson** (434) 981-0524 Charlottesville, VA  
[www.aceautosports.com](http://www.aceautosports.com) [johnny@aceautosports.com](mailto:johnny@aceautosports.com)

Spring is here and the cars run great! The battery tenders did their jobs.....both cars started right up after a long winter's nap and were ready to go for a ride. And surprise, surprise, there was no oil drippage beneath the 928! I had to check just to see if it was out of oil or not!.

We have a full calendar of events coming. Our first Pastrami and Porsche's of the year was held on March 7th at Durty Nelly's and was a great success. This was the one-year anniversary of this event and we look forward to many more. Thanks again to Gary Hagar, proprietor, for having us and providing some great food.

While pulling in the parking lot at Durty Nelly's, the 928 was almost backed into by a minivan whose driver couldn't see me because her view was blocked. Jill was horrified speechless and couldn't say a word so I just stood on the brakes, not having seen the errant minivan driver right away. As we all know, Porsche brakes are the best, but I found that I was also stepping on the edge of the gas pedal at the same time, so I was fully stopped, but felt a bit of rear tire slippage from a partially pressed accelerator pedal. I backed off the gas and brake and all was well....no damage and Jill finally was able to breathe.

The 928 has an accelerator cable, which is more of an oddity these days with so many cars having drive-by-wire systems. I got to thinking about these new electronic control systems as they have been in the news recently. I've also noticed that my gas pedal is fastened and hinged at the floor and won't be susceptible to floor mats holding it down either. We take some of these systems for granted, but I'd venture to say the engineers at Zuffenhausen have carefully considered real world

driving and have designed the physical and electronic controls so they won't fail.

My first car, a 1971 VW Super Beetle had an accelerator cable that ran from the gas pedal to the carburetor through a tube that ran through the interior hump. I remember that a spot-weld holding the tube in place broke and the tube itself would rise when the accelerator was pressed. I then remember the fun of trying to spot weld the tube back in place, keeping in mind that the fuel lines also ran nearby. And the electronic controls of that car! It had maybe 6 or eight fuses for its 12-volt system. There was no ABS, fuel injection or computers. Just ignition, lights and a radio. So simple to use and so simple to keep alive. The once-a-year carburetor rebuild, adjust the valve lash every three thousand miles. Ah the good old days!

Would I want to go back to that again? Not really. I like the new technology. Who could have imagined the possibility of the horsepower we have today with good fuel economy without electronic controls. And the computer systems we have in our cars now have more computing power than the first astronauts had in the Apollo program.

Don't forget to register for the 14th Annual Richmond Porsche Meet. RPM will again be held at the beautiful James River estate of Howard & LeeAnne Faunce on June 5th, followed by autocross on the 6th at Southside Speedway. Let's see if we can top last year's event that had 80 cars displayed. Go to our website and register online.

Go for a nice long drive and I'll see you at the next event!

*Bill Sanders*



FOREIGN AFFAIRS  
PUTTING PASSION AND  
ADRENALINE IN MOTION  
540-337-3676

[www.foreignaffairs.us](http://www.foreignaffairs.us)  
108 Kerry Lane, Staunton, VA 24401

# MEMBERSHIP

## Report

Rhonda Dunbrack

April 2010

Primary Members .....	192
Affiliate Members .....	149
Total Members .....	341

*Welcome to the following new members*

Karl Stoltzfus  
Weyers Cave, VA  
1987, 944



*Check it Out!*

Great Gift Ideas

<http://shnpca.webstore.us.com>

Men & Women's Apparel  
Kids Wear  
Racewear  
Luggage & Bags  
Accessories & More

## CALENDAR of Events

### April

- 03 Potomac Founders Region PCA High Performance Driving Clinic Summit Point, West Virginia
- 10-11 Mr. Jefferson's Journey Joint Driving Tour with the Blue Ridge Region PCA To Poplar Forest & Peaks of Otter Start: Crozet, VA
- 18 Autocross at Augusta Government Center Verona, VA
- 23-25 Bosch Engineering 250 Grand-Am Race at VIR Danville, VA
- 24 Central PA Region Porsche-only Swap Meet Hershey, PA

### May

- 02 Porsches & Pastrami Charlottesville, VA
- 02 11th Annual British & European Car Show Richmond, VA
- 08 Montpelier to Bavarian Chef Drive & Dine Montpelier Station, VA

- 15 Autocross at Augusta Government Center Verona, VA
- 18 Social/Business Dinner Meeting Richmond, VA Details Coming Soon
- 21-23 First Settlers Region PCA DE & PCA National Instructor Clinic at VIR Danville, VA

### June

- 4-6 Richmond Porsche Meet (RPM) Richmond, VA
- 25-27 Zone 2 PCA Club Race & Advanced DE at VIR Danville, VA

### July

- 3-9 Porsche Parade St. Charles, IL

visit [SHN.PCA.ORG](http://SHN.PCA.ORG) for details & updates

## Shenandoah's First Autocross of 2010

The Shenandoah Region PCA's first autocross of the 2010 season will start at 9:30 AM on Sunday, April 18 at the Augusta Government Center in Verona. Our autocrosses are open to Porsches and other brands of cars. Drivers and spectators do not need to be members of the Porsche Club. Loaner helmets and instruction for novice drivers is provided. There is a large open pavilion that provides shelter from sun and rain, and restrooms are available. Events are held rain or shine. On-line registration is open via [www.MotorsportReg.com](http://www.MotorsportReg.com). You can also register and pay at the event, but it will cost \$5 more.

See the autocross page on the Shenandoah web site at <http://shn.pca.org> for more information and driving directions to the Augusta Government Center.

## Porsches & Pastrami

To celebrate the first year of Porsches & Pastrami, Gary Hagar, owner of Dirty Nelly's Pub, treated about 30 Shenandoah members to a complimentary lunch of pulled pork and chicken BBQ with a wide variety of tasty side dishes and drinks. Because of the possibility of inclement weather, the original plan was to drive directly to Monticello to tour the Thomas Jefferson Visitor and Smith Education centers. However, the weather was warm and sunny, and the consensus was that the day was too perfectly spring-like not to have a jaunt through the countryside. Quick-thinking Johnny Johnson came up with a plan for a fun drive through southern Albemarle County that gave our Porsches some exercise after being cooped up all winter. After about 45 minutes of driving the back road hills and curves, our group of 15 cars arrived at Monticello. Some people went through the exhibits, but many people just stood out in the sunshine and reconnected with old friends or got to know new members.

Thanks, Gary, for the great food and pleasant afternoon of driving and socializing!

Note: No Porsches & Pastrami on Sunday, April 4th (Easter)

### Save the Date for the Next Porsches & Pastrami!

Date: Sunday, May 2, 2010  
Time: 1:00 p.m.  
Where: Dirty Nelly's Pub and Wayside Deli  
2200 Jefferson Park Avenue \* (434) 295-1278

*\*At the stoplight at the intersection of JPA and Fontaine Avenue*

We'll meet at the Pub for lunch at 1:00 p.m. Afterward, Shenandoah member Deane Parker plans to lead the troops on a driving tour to Pine Knot, the former country retreat of U.S. President Theodore Roosevelt.

Contact Gary at (434) 974-7050 or [ghagar52@gmail.com](mailto:ghagar52@gmail.com) or see the Shenandoah web site at <http://shn.pca.org/> for more information. If you are interested in putting together a short tour or a points of interest drive to lead after a Porsches & Pastrami lunch, let Gary know. He would love to have your help!

## Get Those Porsches Out And Have Some Fun!

Join the Blue Ridge and Shenandoah PCA regions for Mr. Jefferson's Journey, a driving tour that will follow some of the footsteps of Virginia's own Thomas Jefferson. We will start the tour in the Crozet area at Pesto Mediterranean Grill where we will be able to purchase refreshments and use the facilities. Shenandoah's Deane Parker will lead the group west through the winding roads of Albemarle County and then head south at Afton on the Blue Ridge Parkway and other scenic roads to Lynchburg's historic district for lunch at The Depot Grille. Menu items include a wide variety of appetizers, sandwiches, wraps, soups, salads, pastas, steak, chicken, and seafood entrees, and of course ... dessert!

Afterward, the Blue Ridge Region will lead the troops to Jefferson's more private and personal retreat, Poplar Forest. We will take a tour of our former U.S. president's home and have some time to walk around the grounds and visit the gift shop. Then, the Blue Ridgers will treat us to some great Porsche driving roads as we head south to the Peaks of Otter.

We will have dinner in a reserved room at the Lake View Restaurant at the Peaks of Otter Lodge. When dinner and socializing are over, we will have the options of returning home or staying overnight at the Lodge.

In the morning, those who stay will be able to have breakfast at the Lodge and yet more options. People can head home, hike the Peaks of Otter, fish in Abbott Lake, tour the D-Day War Memorial in Bedford, partake of wine tastings at local wineries, or visit nearby historic Roanoke and its numerous attractions. These include the Virginia Museum of Transportation (which has the largest collection of locomotives in the Southeast), the Taubman Art Gallery, the farmers market, and numerous shops that range from an architectural antiques dealer to a chocolatier and everything in between.

Date: Saturday-Sunday, April 10-11, 2010  
(*Rain or Shine*)

Time to Meet: 9:30 a.m.

First Car Off: 10:00 a.m.

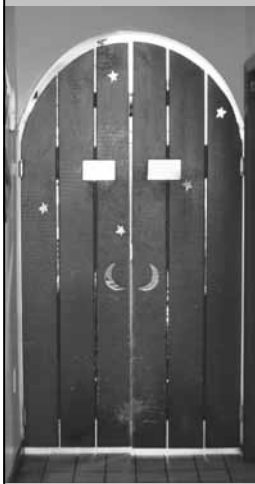
Start: Pesto Mediterranean Grill  
Clover Lawn Shopping Center  
375 Four Leaf Lane, Suite 101  
Charlottesville, VA 22903  
(434) 823-7080  
[www.pestomedgrill.com](http://www.pestomedgrill.com)  
For those traveling on I-64, take Exit #107, Crozet, and turn right (east) on US 250 (Rockfish Gap Turnpike). Pesto is located on the left off of US 250 across from Harris Teeter and Blue Ridge Builders Supply.

CONTINUED ON PG 17





Mezzas / Tapas  
 Over 7 pesto paninis,  
 Lebanese pita rollups, Turkish kabobs  
 Artisan pastas & seafood  
 Over 15 salads  
 50 of the world's best beer  
 Special healthy menu for the little palate  
**Lebanon, Israel, Turkey, Greece and Italy...**  
**all under one roof**



# basil



*mediterranean bistro*

109 14th Street NW • 977-5700  
 Free Delivery • Catering



# 911 REAR SUSPENSION REBUILD

by Bruce Russell

I recently rebuild the suspension on my 1984 911 Carrera Targa. I decided to start with the rear suspension since the rear had begun to "sag" a bit and I wanted to raise the rear suspension about 1/2". I would like to share my experience because this is a job most 911 owners with typical DIY skills can accomplish. I spread this job over a one-week period, but it could have been accomplished in a weekend of steady work.

The first decision was what type of new rear suspension bushings to install. You basically have three choices for the rear end of the older 911's. Your choices are poly-graphite bushings, poly-bronze bushings from Elephant Racing and Neatrix bushings. You notice I did not mention OEM rubber because the factory vulcanized the original rubber bushings to the spring plate and it is cost prohibitive for the average 911 owner to duplicate that process. Each of the three types of bushings has its "pros and cons", but in the end, I chose the Neatrix bushings because my car spends most of its life on the street. Neatrix is fairly close in composition to the original rubber bushings, but are a little harder and wear a little better. A set of four Neatrix bushings cost about \$65, which relative to the cost of most Porsche parts are a "deal". For the rear sway bar bushings, I chose the factory original rubber bushings and new factory drop links.

Before we dive into the actual work, let me mention some tools that I used. A standard set of metric wrenches and sockets is required. A floor jack and jack stands are essential. In addition, I also used a long 1/2" drive breaker bar, an angle finder, a shop vice attached to my workbench, a 22 mm allen wrench and a Propane gas torch. I will discuss their specific uses as we work through this project.

The night before I started the project I sprayed all the nuts/bolts that would be removed with Kroil penetrating oil. I have been using Kroil for years and have always been pleased with the results. There are other good penetrating oil products (i.e. PB Blaster) on the market, but I prefer Kroil. In addition, I also removed the lower rocker panels and removed the round torsion bar cover plates from the body.

The first thing I did was measure the ride heights at all four corners and the body inclination or "sweep" angle. The official Porsche ride height measurement is fairly complex; I used the floor to fender lip method, which is close enough for me. With the angle finder, I measured the body sweep at the doorsill. Most experts recommend a 1-degree nose down sweep for a

street car; mine was flat and thus the reason to raise the rear end a bit. I should point out at this point that I had already lowered my car about five years ago when I installed larger (22mm/28 mm) torsion bars.

I jacked up the rear of the car and removed the rear wheels. I placed jack stands under the body pan just forward of the wheel well openings. I placed a piece of 1/2" plywood between the jack stand and the body pan to disperse the load. The final step before "surgery" was to mark the position of the toe and camber eccentrics so that you can get the rear alignment back to "ball park" settings upon reassembly. Make sure you mark the eccentric bolts and not the nuts! I used paint...YMMV.

I now needed to remove the swing plate from the car. I should point out that I did one side first, before starting on the other side. This way I could use the undisturbed side as a reference if needed. Placing your floor jack under the lower rear shock mounting point and raising the rear suspension a 1/2" will facilitate the disassembly process. First out was the lower shock bolt. I used my long breaker bar on this nut because it is torqued pretty tight. Once the bolt is out, just let the shock hang free but keep the jack in place. Next out are the two 19 mm trailing arm bolts and the toe and camber adjustment nuts and eccentric bolts (you already marked the position of the eccentric bolts, right?). I chose not to remove the height adjustment eccentric and tightening bolt because I had already set them in their center adjustment position several years ago. If you do remove these two nuts/bolts, be prepared for some heavy torque action (Hint – Kroil and the long breaker bar!). Finally, remove the lower rear bolt from the spring plate cover; leave the other three bolts in place for the time being. Note that the lower rear bolt has a spacer between the spring plate cover and the body...do not lose that spacer. I stored all hardware removed from the car in labeled Ziploc bags.

The spring plate is now free from the trailing arm. I now lowered the jack supporting the rear suspension. Let it down slowly because the spring plate is under torque pressure from the torsion bar. I scribed a line (i.e. felt tip pen) on the inside of the wheel well along the top edge of the spring plate. This is just a visual reference line that shows the beginning inclination angle of the spring plate. I next measured the angle of the free hanging spring plate and wrote that angle down in my notes; the angle was 17.5 degrees. At this point, I want to digress and talk about suspension angles. The height of your rear suspension is a function of the size of your rear torsion bar and the spring

CONTINUED ON PG 14

What's the fastest growing class in  
PCA Club Racing?

**SPBOX**

Build it. Buy it. Rent it...  
at WERKSTATT

Look for us at the 17th Annual 48 Hours at Sebring!



1117 C East Market Street Charlottesville, Virginia 22902  
T: 434.971.6700 F: 434.202.0316  
www.WERKSTATTCHARLOTTESVILLE.com



# Pilgrimage to Mecca

## Stuttgart & the Porsche Museum

by Jim Condon and Sherry Westfall



*Greetings from Germany*

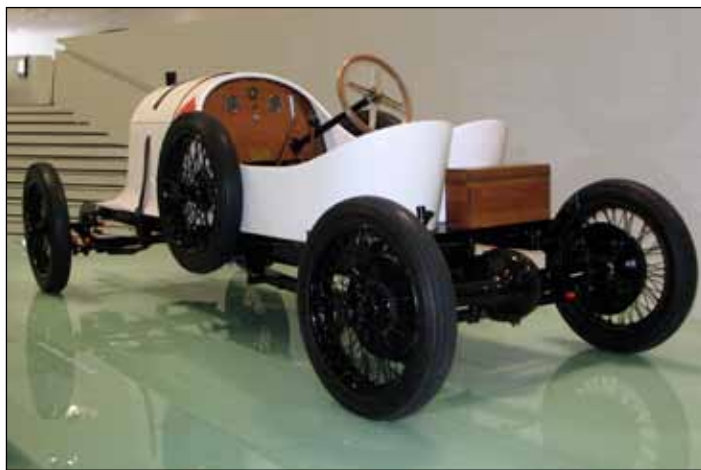
## PILGRIMAGE TO MECCA: STUTTGART AND THE PORSCHE MUSEUM

We were in Germany in February, so we went out of our way to spend four days in Stuttgart. Our primary goal there was to visit the new Porsche Museum and see the cars that we had only read about. The museum occupies a very modern building arranged to guide visitors through Porsche history. An escalator took us up from the entrance floor to a car prominently displayed all by itself, like the most holy relic in a cathedral. It is the first to bear the Porsche name, the Type 64 shown on the cover and below. Ferdinand Porsche designed it using Volkswagen running gear for a race that had to be canceled when World War II started. It was a light and streamlined two-seater that could be pushed to 140 km/h (87 mph) by only 33 horsepower. Porsche liked it so much he used one as his personal car throughout the war. It is clearly the granddaddy whose DNA is carried by today's Porsche sports cars; it could pass for a 1939 Cayman.



Type 64

Before 1939 Porsche had designed race cars for many customers, starting with the 1922 "Sascha" that won 43 races by virtue of its low weight, about 1300 pounds, and good handling.



"Sascha"

The museum has the very first production sports car built in 1948 by the company now called Dr. Ing. h.c. F. Porsche AG, the "Number 1" 356. It is a two-seat mid-engine aluminum-body roadster designed by Ferry Porsche in Gmünd, Austria. Later 356's have the more practical four-seat rear-engine configuration that was carried over into today's 911 series. Every 356 production model that you could ever want to see is on display in beautiful condition. The most direct descendent of Number 1 is the Boxster, as you see by comparing Number 1 with the original Boxster prototype pictured below it. This show car was a smash hit at the 1993 North American Automobile Show in Detroit, just what Porsche needed in a year when many people were speculating that Porsche would go bankrupt.



356 "Number 1"



Boxster prototype

Not all designs made it into production, and the "failures" on display are often just as interesting as the successes. At first glance, the Type 915 prototype shown below looks like a 1970 911S, but something is different: the wheelbase is 35 cm longer and there are two real seats in the back, not the vestigial 911 rear seats that are suitable only for carrying packages or punishing small children. The 915 was never put into production because Porsche management thought it was too good and

feared that it would compete with the 911 for sales. Even today the Boxster and Cayman are neutered to make sure they don't outperform the 911. At Porsche, the more things change, the more they stay the same.



Type 915

Some Porsche production cars are so rare that we had never seen them. The 959 supercar was the ultimate 911 in 1988, with all-wheel drive, a 450 horsepower 2.8 liter turbo, and a top speed of 315 km/h (196 mph). Only 292 were built, and none were allowed on US roads because they didn't meet DOT/EPA safety/emissions standards. The 959's all-wheel drive technology did carry over to the 1989 production model 964, however.



Type 959

The museum had on display both the racing 911 GT1 that won at Le Mans in 1998 and the "street" version that cost about \$1,000,000, so you will probably never see one parked at the local Walmart. Examples of the most famous Porsche race

cars are in a separate area, starting with the 550 Spyder that won its class in the Carrera Panamericana race. This victory is memorialized by the designation "Carrera" on numerous 356 and 911 production models up to the present. Shown below the 550 Spyder is a 917 KH in Gulf Oil blue. Also on display was a bright yellow RS Spyder that has been very successful recently in American Le Mans Series (ALMS) racing.

There are more than 80 cars in the Porsche museum, so it is impossible to touch on more than a fraction in this short article. We enthusiastically recommend the museum as a "must see" if you are anywhere near Stuttgart, and you should allow at least a full day to see everything. We also spent a full day at the Mercedes museum near Stuttgart. Its collection is much larger and of greater historical significance, starting with the very first automobiles invented by Gottlieb Daimler and Karl Benz in 1886. For anybody but the most devoted Porsche acolyte, the Mercedes museum is an even bigger "must see" than the Porsche museum. But that's another story...



550 Spyder



917 KH

For PCA track junkies in Virginia, the Zone 2 DE at VIR is the first sign of spring each year. It may be cold and windy, or a three-day monsoon (last year), but it is the first chance to get back on track after the long winter layoff. Sherry Westfall and I hadn't driven at speed since last September, when we were sidelined by an intermediate shaft failure on our 1999 996. The first day (Friday, March 12) of this year's event featured on-and-off rain showers, so the track was alternately wet or dry, or even wet on one end and dry on the other. Even though we had prepared for a wet track by driving on street tires, during one particularly slippery session five cars in the white run group went off track. Unfortunately, I was driving one of them. I was on the gas at the apex of turn 6 when I hit the notorious slick spot, the rear end went wide, and I slid across the track onto the very wet and slippery grass, and didn't stop until I hit the Armco. Fortunately, I wasn't going very fast by then, so the only significant damage was to the right headlight and fender (and later to my wallet).

Scott Leopold of Werkstatt applied his experience with Boxsters to work on our 996 (whose front end is the same as a Boxster's) and quickly patched up the damage so we could continue driving for the rest of the weekend. At PCA it's not just the cars; it's the people! The photo below shows Sherry driving on Sunday, in sunny weather. Note the red duct tape and the green paint scraped off the Armco.



Scott drove the silver Spec Boxster number 46 and is shown here chasing another Spec Boxster around turn 3.



Zone 2 came up with a special event for Friday night. Everyone was invited to eat "Nuremburg Nachos" prepared by a PCA driver who is a professional chef. Later a band led by a VIR manager played very danceable music. Sherry and I found that swing dancing in driving shoes on a smooth concrete floor is almost as easy as in real dance sneakers on a wood floor. We hope they do this again next year!

Track speeds went up and spins were fewer as the weather improved and the track dried out on Saturday and Sunday. "Mad Mel" was there, as usual, adding yet more track miles on his reliable white 1989 C4, car number 91. Emmett Richardson and I both drove in the "white" run group. Emmett upgraded his dark gray 997 for track use over the winter, and it now has racing seats, harnesses, and a roll bar. The photo shows Emmett closing in on me (in the burgundy 996 with the red eye patch) going into turn 3. Mark Francis, now working with OG Racing, came to instruct but did not drive himself.

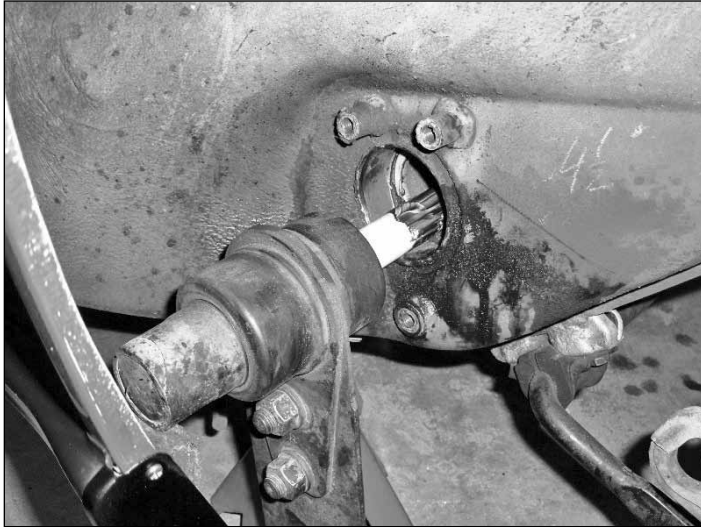


New Shenandoah Region member Hamisch Brookeman showed up with a black Cayman S (number 104) and a lot of green racer's tape. He drove in the "green" group and is shown here in NASCAR bend. By the end of the weekend, his instructor was out of the car and Hamisch was driving solo. Congratulations, Hamisch!



plate angle when measured from the horizontal. In my case, recall that the rear is up on jack stands and angled nose down. I measured the nose down angle from the lower doorsill and it was 4 degrees. I must add this body inclination angle to the measured spring plate angle to get the true (horizontal) spring plate angle of 21.5 degrees.

Now remove the remaining three spring plate cover bolts and pry the spring plate cover off the spring plate; the outer bushing is under this cover. Remove the spring plate from the body by wiggling it out of the body. In my case, the torsion bar came out with the spring plate. In other words, the outer end of the torsion bar remained seated in the splines of the spring plate, but the inner end of the t-bar had separated from the inside body splines. So far, so good!



SPRING PLATE REMOVAL

I needed to separate the spring plate from the t-bar in order to remove them from the wheel well. With the torsion bar exposed, I wrapped a thick rag around the t-bar and grasped the protected t-bar with a vice-grip. Holding the t-bar, vice-grip combination securely, I began wiggling the spring plate until I loosened its "grip" on the t-bar splines inside the spring plate. Once loosened, I separated the spring plate from the t-bar and removed both parts from the wheel well. The torsion bar will come out through the hole in the lower body where the cover plate was located. A couple of cautions about the torsion bar... First, the t-bar has an inner and outer end. I made a note of the markings on the outer end of the t-bar before setting it aside. In addition, the t-bar should have a protective paint coating over the entire bar (except for the splines) and should be covered with lithium grease. DO NOT damage that paint covering and replace any grease you rub off; handle your torsion bars with care.

I inspected the original spring plate bushings and found that the outer bushing did not look to bad, but the inner bushing was in pretty bad shape. Both bushings were showing their age and the rubber was distorted and showing signs of "flowing". I concluded that I had made the right decision to replace these 24-year-old bushings.

Now that everything is apart and out of the way, it is a good time to replace the sway bar bushings. I opted to purchase new OEM drop links that have the rubber bushings already press fit in place. I removed the drop link bolts and the bolts holding the bushing brackets to the body pan. Everything came apart easily with only a few bad words mumbled by yours truly. I cleaned up the brackets and bolts with a wire brush; I used black spray paint

on the cleaned brackets. I cleaned the sway bar with solvent on a rag, which removed the years of road dirt and crud. The two new rubber bushings that fit under the brackets are split and easily slip over the sway bar. I used Dow Corning 112 Silicone Grease on all contact points between the sway bar and the new rubber bushings. I got the sway bar, the brackets/new bushings and the new drop links positioned in place and then tightened all the bolts...viola!

As I mentioned earlier, the original spring plate bushings were vulcanized to the spring plate. There are several ways to remove the old bushings off, but I opted for heat to loosen the adhesion of the old bushing to the spring plate. Let me also mention that I actually used the bushing removal tool that comes with the Neatrix bushings. The tool looks like a putty knife with a curved blade. I used my Dremel Tool to sharpen the end of the tool to facilitate "carving" the old bushing off the spring plate.

Get your heavy work gloves and safety glasses for this exercise. I placed the spring plate in my bench vise and used my hand-held propane torch to heat the inside of the spring plate until wisps of smoke began to come from the old bushing. I then forced the carving tool in between the spring plate and the bushing. I then just "carved" my way around the circumference of the spring plate and pulled off the old bushing. Do one bushing at a time; once the old bushings are off, you need to remove the residual rubber that is still adhering to the spring plate. Again, I used the propane torch directly on the old rubber until it smoked and started to burn. I shut off the torch, got my handy cordless drill with a wire brush attachment, and began to clean all the residual rubber and crud off the entire spring plate right down to the bare metal.

I also cleaned the spring plate cover with the wire brush; this piece was really ugly when I started. You can buy new spring plate covers, but I opted for the clean and paint method. Finally, using a small wire-brush drill attachment, I cleaned the body opening where the inner bushing fits into the body of the car and cleaned the inside of the spring plate cover. There was residual rubber from the old bushings scored into these locations.



PAINTING PARTS

Next step was painting these two parts to make them look like new. I use automotive paints from Eastwood Company; I have used their various paints for years and never been disappointed. I used painters tape to mask off the bare metal areas where the new bushings would attach. I then sprayed a zinc-based primer

CONTINUED ON PG 16

# Concours DETAILING



**Paint Protection Film  
CERTIFIED INSTALLER**

8709 W. BROAD STREET  
RICHMOND, VA 23294  
804-747-0130

—◆—  
EXPERT AUTO DETAILING  
SINCE 1984  
—◆—



onto both the spring plate and the spring plate cover.

After letting the primer dry overnight, I painted the spring plate with Silver Cad spray paint. I used Gold Cad spray paint on the spring plate cover and then followed with a clear overspray. I was amazed; the two parts looked like new! I set the parts aside to dry.

Now we are getting to the real purpose of all this prep work... the installation of new bushings and setting the rear suspension height.

I placed the new bushings in my freezer to get them nice and "hard". The cold, hard rubber will slide easier when pressing them into position on the spring plate. While the bushings were cooling, I removed the tape from the spring plate and cleaned the bare metal areas with solvent. Now you are ready to glue the new bushings into position on the spring plate. There is some debate as to whether to use glue or not. The instructions that come with the new bushings say to glue them in place, so that is what I did. I used Loctite super glue, instead of the glue supplied by Neatrix. You do not need much and you do not want to get any glue on the outer surface of the new bushing. The new bushings are all the same size, so there is no chance of mixing them up. I did one side of the spring plate at a time; apply the glue and slide the new bushing into place. If you have resistance pressing the new bushing into position, you may want to use a small block of wood and a mallet to tap the bushing into position. You want to get the inside of the bushing flush up against the spring plate. Do the other bushing and set the "new" spring plate aside to let the glue dry.



ANGLE FINDER

It was now time to put it all back together and set my new rear suspension height. I used Wil Ferch's "911 Spring Plate Angle Calculator" that is located on this web site: [HYPERLINK "http://rennlight.com" http://rennlight.com](http://rennlight.com) This web site also has a tech article with pictures that describes much of the work featured in this article.

I have 28 mm rear torsion bars and I wanted to set the height to low "Euro" height. Using the calculator, my target spring plate angle was 24 degrees. If you recall, my car was resting at 4 degrees nose down, so I needed to set my measured spring plate angle at 20 degrees.

Before positioning the spring plate back into the car, I covered the exterior of the new bushings with Dow-Corning 112 silicone grease to facilitate re-assembly. I am not going to go into all

the gory details, but you first insert the torsion bar back into the body, slip the spring plate over the outer end of the t-bar, and set the spring plate at a 20-degree droop angle. After pushing the inner spring plate bushing into the body cavity and engaging both the inner and outer splines of the torsion bar, the spring plate should be firmly in position and have no vertical movement. Measure the spring plate's droop angle and adjust the angle as needed. Angle adjustments are made by indexing the spring plate relative to the position of the inner and/or outer torsion bar splines. This is really an easy process, but you need a good angle finder and a bit of patience.

Once I got the spring plate droop angle set, I installed the spring plate cover. The silicone grease will facilitate the re-assembly process because the new bushings will have a snug fit. I was able to hand press the spring plate cover into a position where I could get the original bolts to start threading into the body. Tightening at alternating corners, I installed the spring plate cover back into position. Do not forget the spacer that fits between the cover and the body on the lower rear bolt. If your cover's fit is really tight, you may need to get a couple of longer bolts to pull the cover into a position where you can then use the original bolts to snug it into place.

Use the floor jack to raise the trailing arm and spring plate; you will need to make small adjustments to the jack height as you re-install the hardware. Install the toe and camber eccentric bolts and their nuts; orient the bolts based on the markings you made during disassembly (the 22 mm allen wrench will help with this step). Install the two trailing arm bolts and finally the lower shock bolt. Make sure all nuts and bolts are torqued to Porsche specs...we do not like suspension parts falling off at speed!

At this point, I moved over and did the other side of the car. Follow the same steps; the process will go smoother and faster because you are now "experienced" at rebuilding rear suspensions.

THE END IS IN SIGHT! When both sides were done, it was time for the moment of truth. I re-installed the wheels, but left the rocker panels off for now. I let the car down from the jack stands and measured my ride height. I was a higher than I wanted, but I had not settled the suspension yet. I took the car out for a 30-minute spin in the country to settle everything. The rear end felt tight, rode like a dream and no squeaks! Back in the garage, I measured my new ride height and BINGO... it was right on the money. I had raised each side 2.5 degrees, which equates to roughly a 1/2" increase in rear ride height. Wil Ferch's angle calculator I mentioned earlier worked like a champ. Additionally, the car now has a 1-degree nose down sweep.

I jacked the car back up and re-checked the torque settings on all nuts/bolts. I re-installed the torsion bar cover plate and rocker panels and put the car back on the floor. I recommend having the car professionally aligned after performing any suspension "surgery".

It is now time for the frosty malted beverage of your choice. Sit back and admire your handy work. Feels good to know you did it yourself.

Let me close by saying this narrative is long. However, I wanted to write a detailed description of all the steps I went through for future reference and to share my experience with others. I also took pictures with my digital camera of the various steps described in this narrative; pictures also help if you do an "OOPS" and need to correct your error.

Happy Motoring!

## Concours Car Show Judges Needed

Dave Lasch is coordinating two teams to judge the concours car show at the 2010 Richmond Porsche Meet (RPM). This part of the event will be held Saturday morning on June 5th at the Faunces' home on the James River in Richmond. You don't need to have previous judging experience but will need to be committed to the judging activities for several hours that morning. Don't worry! Dave will tell you everything you need to know to become a great judge.

For more information, contact Dave at (434) 296-3229 or [dlasch00@hotmail.com](mailto:dlasch00@hotmail.com). To get more details about RPM, visit our web site at <http://shn.pca.org/>.

## Montpelier to Bavarian Chef Drive and Dine

Date: Saturday, May 8, 2010  
 Time: 11:30 a.m.  
 Where: Montpelier  
 1395 Constitution Highway  
 Montpelier Station, VA 22957  
[www.montpelier.org/](http://www.montpelier.org/)  
 Costs: Montpelier:  
 \$14.00 per person (group rate\*)  
 Reduced rate for children 6-14  
 Free for children under 6  
 Bavarian Chef:  
 \$31.00 per person, taxes & gratuity included  
 (group rate\*)

Join us for a visit to President James Madison's home "**Montpelier**," experience some great Porsche driving roads in and around Orange, Culpeper, Rappahannock & Madison Counties and finish up with dinner at the Bavarian Chef.

Individuals wishing to tour Montpelier should plan to arrive by 11:30 AM at the latest. A guided tour of the Montpelier home will start at 11:50 AM. The house tour length is one hour and fifteen minutes. Lite lunch fare is available at Montpelier, but if you eat, make sure to save some room for the Bavarian Chef!

The driving tour will depart Montpelier at 2:00 PM. We will arrive at the Bavarian Chef around 4:30 PM. The maximum group size that can be accommodated at the Bavarian Chef is thirty-five.

All members, children, and guests will be required to sign PCA waivers. Waivers for children can be found on the Shenandoah web site at <http://shn.pca.org>. Go to "Library," then "Documents," and finally click on "Waivers ... for Minors in Restricted Areas, Riding or Driving." Forms must be printed in color and signed by both parents or guardians where applicable. Waiver forms for adults and children will also be available at the event.

RSVP no later than May 1, 2010 to Dan Graff at [horrido05@gmail.com](mailto:horrido05@gmail.com) or (434) 996-9040. For additional information, updates, maps, and menu options, please visit the Shenandoah web site.

*\* To qualify for group rates, we need twenty participants.*

## HEAT EXCHANGER MART

**FOR SALE: 1991 Carrera 2 (964).** Cabriolet Body Type. White Exterior with Blue Interior. Extremely clean, very well cared for, always inside, gets lot of up thumbs. Leather sport seats with power, car cover, cotton cockpit cover, certificate of authenticity, after market AM/FM/CD (original, too), 5-CD changer, same owner last nine years. 65,000 Miles. \$23,900. Contact: Herb Distefano (804) 448-3448 [herbd911@comcast.net](mailto:herbd911@comcast.net)

**Bonus: \$1,000 to any Shenandoah member who directly deals with me!**



**For Sale: Set of 4 alloy Cup 16" wheels** from a 94 Porsche 968 with Dunlop 245X45X16 tires (good condition) and 205X55X16 Riken Raptor tires. \$950. Call Gary Hagar at 434-974-7050.

# DAN'S LANDSCAPADES

Integrity Since 1977

Member Piedmont Landscape Association  
Interlocking Concrete Paving Institute Certified Installer

Since 1977, we have been enhancing landscapes in the Virginias. We would love the opportunity to undertake that special project that you have wanted to do for years, or just a little something to dress up the place. Please contact us for a FREE one-hour consultation, available for PCA members.

We look forward to hearing from you soon... Dan Ehrman,  
'02 Boxster

- Hardscaping: paver patios, walkways & retaining walls
- Restoration of old or overgrown landscapes
- Planting additions to existing landscapes
- Drainage/erosion control issues
- Water features: ponds, waterfalls, etc.

(434) 973-8399 (540) 456-8116  
[www.danslandscapades.com](http://www.danslandscapades.com)

**Shenandoah Region WEB FORUM:** A regional web forum should make it easier for small groups to organize and coordinate Porsche-related activities quickly without requiring a flurry of emails and phone calls among the participants.

If you would like to join the group, go to the LINKS page, click on "Shenandoah Region Forum," and then click on "Sign in and apply for membership," click on "create an account", and fill in the blanks. Google will send me an email with your request, which Jim Condon will approve if you are a member the Shenandoah Region PCA. After you have become a group member, you can log in to read or post messages at any time by clicking on the "Shenandoah Region Forum" link.

Thanks to Jeffrey Elmore for suggesting the forum, which we hope will help our members get together for small impromptu events. If you have any questions or comments about the forum, send Jim an email at [jcondon@nrao.edu](mailto:jcondon@nrao.edu). THANKS JIM!

## **WD SANDERS & COMPANY PC** CERTIFIED PUBLIC ACCOUNTING

- **Income tax planning and preparation**  
- Business and individuals
- **New business startup consulting**
- **Accounting system consulting**
- **Cash flow projections**

Bill Sanders, CPA (434) 975-1120  
703 E. Jefferson St., Charlottesville, VA 22902  
[www.WDSandersCPA.com](http://www.WDSandersCPA.com)

# TREASURER'S Report

by Bob Duntley

**Cash Flow:** 1/1/2010 through 2/28/2010

## OPENING BALANCES

Checking Account	\$6473.76	
Sweep Account	\$1489.05	
Total Opening Balance		\$7962.81

## INFLOWS

Goody Store	\$66.44	
HE Advertising	\$1,692.00	
Refund PCA National	\$742.00	
TOTAL INFLOWS		\$2,500.44

## OUTFLOWS

Biz Taxes		
Federal	\$227.00	
State	\$ 92.00	
TOTAL Biz Taxes	\$319.00	
Donation	\$300.00	
HE Printing & Mailing	\$1,537.16	
TOTAL OUTFLOWS		\$2,156.16
OVERALL DIFFERENCE		\$344.28

**Total Cash Balance 2/28/2010**

\$8307.09

*Now Offering*  
**FABRIC  
PRINTING**



**Let Us Supply  
ALL Your  
Exhibit Needs!**

- Trade Show Graphics
- Permanent Displays
- Multiple fabric types available up to 8' wide by virtually any length
- Installation Available

**Photoworks**  
Creative Group 

800.829.4562 • 434.973.4562  
[www.photoworksgroup.com](http://www.photoworksgroup.com)



KENNY SHREVES AND CAR

Preparing a two-car team for a major event such as the 12 Hours of Sebring American Le Mans Series (ALMS) event is a massive undertaking.

Thanks to Kenny Shreves of Werkstatt in Charlottesville, fellow Shenandoah Region PCA member Keith Welty and I got a peek behind the scenes of the Flying Lizard Porsche team the day before the race.

As if he doesn't have enough to do with his Charlottesville Porsche repair and race prep business, Shreves has spun

wrenches for the Flying Lizards since shortly after Seth Neiman founded the team in 2003. Although the Lizards have a handful of full-time mechanics and technicians, Shreves is one of the senior contract mechanics who flies in for race weekends, when the payroll swells to more than 30.

We stopped by the Flying Lizard encampment just after drivers Patrick Long and Jörg Bergmeister had qualified the team's number 45 Porsche second in the huge GT class (They were moved to pole when the lead Rahal-Letterman BMW failed tech inspection). Even though it was a bustling place on the eve of the season's first race, Shreves graciously took the time to give us a personal tour. He explained that at 38, he leaves the heavy lifting of pit stops "to the younger guys," and had already wrapped up much of his prep work on the team cars. He arrived Tuesday and by Friday had already put in several 12-hour days with the crew.

When we interrupted Shreves, he was applying heat reflective foil to the carbon fiber undertray that smooths and channels air under the \$600,000 racers. When I mentioned that it resembled some of the stuff we had seen earlier in the week on a tour of the Kennedy Space Center, Shreves said a lot of what NASA develops finds its way into ALMS cars. They resemble regular Porsches, but carbon fiber has replaced much of the metal.

The Flying Lizard Compound consisted of two big tractor-trailer rigs flanking a work area under a canopy. The cars and spare parts are hauled in one trailer and the other is a complete machine shop/tool room/kitchen, with an attic for spare engines

CONTINUED ON PG 22

## OVATION BUILDERS L.L.C.

**ALL PORSCHE OWNERS RECOGNIZE THE PRECISION & CRAFTSMANSHIP  
THAT'S BUILT INTO EVERY PORSCHE- WHETHER IT'S A '57 356A OR A '07  
CARRERA GT**

**WE APPLY THE SAME STANDARDS IN EVERY PROJECT WE BUILD-  
WHETHER LARGE OR SMALL.**

**FINE CUSTOM HOMEBUILDING REMODELING ADDITIONS**

**1204 E. MARKET STREET. CHARLOTTESVILLE, VA 22902 434. 295. 6555**

[www.ovationbuildersllc.com](http://www.ovationbuildersllc.com)



# Don't let it come to this.

A poor service or tune-up or repair job  
can drive a Porsche owner to consider  
the unthinkable. Consider Lufteknik instead.  
We do it right the first time.



*Parts, Service, Restoration & Motorsport  
for the Porsche Owner*

**804-359-9393    [www.lufteknik.com](http://www.lufteknik.com)**

©2006 Lufteknik LLC has no affiliation with Porsche AG. Porsche is a registered trademark of Dr. Ing.h.c.F. Porsche AG

and transmissions. The pop-up canopy allows the team to work on the cars in rain and shine and protects a complete set of spare wheels, doors, fenders, fairings, wings anything else that can break off or get damaged during 12 hours of hard racing on the bumpiest track on the ALMS circuit. (The 3.7 mile Sebring track was once a WWII bomber base.)

The one area off limits was a large air-conditioned shipping container with no windows. "The 'Germans' are in there," Shreves said. (The Flying Lizards are Porsche's "unofficial factory team" in ALMS GT. One suspects the visiting talent from Stuttgart kept busy in their lab gathering and analyzing data all weekend.)

Long and Bergmeister are Porsche contract drivers, and have numerous race wins and championships to their credit. They were teamed with German Marc Lieb for the race.

Shreves also showed us around the Number 44 Porsche, which would be driven the next day by Neiman, Darren Law and Austrian Richard Lietz.

Shreves said that in addition to prepping their own cars, the well-equipped Lizards were able to lend a helping hand to the Peugeot P-1 (prototype) team, (which would win overall) and to Greg Pickett's P-2 Porsche Spyder (which would take the P-2 class win and finish fourth overall).

After the tour, we returned to the other side of the pit straight when Long, Bergmeister and Flying Lizard officials, Team Manager Eric Ingraham and Chief Strategist Thomas Blam, talked and answered questions at the PCA's Porscheplatz. They explained that Sebring was particularly important to them because it was the first and longest race on the ALMS schedule and paid more points. The team has finished in the top three in the ALMS GT team and drivers' championship every year since 2004 and swept both titles in 2008 and 2009.

The Porscheplatz was situated outside the final corner and was a great place from which to view the race the next day. The cold drinks and big screen TV made it the most comfortable Sebring race in my four visits.

The Flying Lizards finished fourth and fifth in GT. A freak incident not of their doing prevented a higher placing for the No. 45 car,

which was closing in on the class leader before spending four frustrating laps in the pits. Don't count them out for another Championship, however.

For more on Kenny Shreves go to [www.WERKSTATTVILLE.com](http://www.WERKSTATTVILLE.com). For information on the team, go to [www.lizardms.com](http://www.lizardms.com)



KENNY SHREVES' TRAILER



LIZ 44



45 IN RACE



KENNY SHREVES



Heat Exchanger Newsletter  
 Editor, Shenandoah Region  
 C/O PrintSource  
 3315 Berkmar Drive  
 Charlottesville, VA 22901  
*Return Service Requested*

PRSRT STD  
 US POSTAGE  
**PAID**  
 CHARLOTTESVILLE, VA  
 PERMIT 536

# FERDINAND PORSCHE

## Vita 1875 - 1951

- 1875 Ausarbeitung der ersten Patente  
 1876 Gründung der Porsche-Werke in Stuttgart
- 1878 Erfindung des ersten Automobils  
 1881 Erfindung des ersten Automobils mit Benzinmotor
- 1884 Erfindung des ersten Automobils mit Benzinmotor
- 1887 Erfindung des ersten Automobils mit Benzinmotor
- 1890 Erfindung des ersten Automobils mit Benzinmotor
- 1893 Erfindung des ersten Automobils mit Benzinmotor
- 1896 Erfindung des ersten Automobils mit Benzinmotor
- 1899 Erfindung des ersten Automobils mit Benzinmotor
- 1902 Erfindung des ersten Automobils mit Benzinmotor
- 1905 Erfindung des ersten Automobils mit Benzinmotor
- 1908 Erfindung des ersten Automobils mit Benzinmotor
- 1911 Erfindung des ersten Automobils mit Benzinmotor
- 1914 Erfindung des ersten Automobils mit Benzinmotor
- 1917 Erfindung des ersten Automobils mit Benzinmotor
- 1920 Erfindung des ersten Automobils mit Benzinmotor
- 1923 Erfindung des ersten Automobils mit Benzinmotor
- 1926 Erfindung des ersten Automobils mit Benzinmotor
- 1929 Erfindung des ersten Automobils mit Benzinmotor
- 1932 Erfindung des ersten Automobils mit Benzinmotor
- 1935 Erfindung des ersten Automobils mit Benzinmotor
- 1938 Erfindung des ersten Automobils mit Benzinmotor
- 1941 Erfindung des ersten Automobils mit Benzinmotor
- 1944 Erfindung des ersten Automobils mit Benzinmotor
- 1947 Erfindung des ersten Automobils mit Benzinmotor
- 1950 Erfindung des ersten Automobils mit Benzinmotor
- 1951 Erfindung des ersten Automobils mit Benzinmotor

