

## Fuel For Thought

with "Landspeed Louise" Ann Noeth

# The Anatomy of a Land Speed Record

The thing about land speed racing is that there is plenty of room for dreams to come true. Whether one has a daring grand plan to push past 400 MPH, or simply squeeze 100 MPH out of a ridiculously small amount of cubic inches, the elation that accompanies the triumph is the same, the satisfaction isn't enhanced by speed, but by achieving a goal -- sometimes set years and years ago.

The best part of this process, one of the main reasons that I remain fascinated with the sport, is its populous. The people give land speed racing such a vibrant, multi-idealistic personality, that it makes walking the staging lanes, or through the pits a discovery expedition. Everyone who makes the effort to attend a speed meet has the opportunity for interpretation, taking away from the experience his or her own snippet of understanding, amusement, shock and awe.

I sometimes struggle to comprehend why it has become popular for some folks to embrace the wholesale slaughter of others they have never met, bearing witness to the harmony in humanity that percolates up and out of land speed racing eases my heart and fortifies my spirit. No Pollyanna perspective here, there are



stinkers in the sport, but so very few.

Unlike most other forms of motorsports, where spectators are kept away from the racers by fences, walls and rope dividers, in land speed racing curiosity is your "full-access" pass. Of course there are safety controls in play that must be respected, but many a spectator has ended up on a pit crew because no speed record has ever been set by a "lone ranger." It takes a dedicated team of cooperative folks and the best reward is not the setting of a record but rather the life-long bond of friendship forged as you work together with others toward a common goal.

RB Motorsports, the high-speed heartthrob of Michigan resident Rick Byrnes, is a poster child for speed deeds. Starting with a four cylinder turbocharged Mercury Merkur XR4Ti, he and his jolly crew earned a 204.952 MPH class record in 1998 that included a one-way fastest mile of 208.389 MPH. Byrnes likes to point out this was done with "only half a motor" so

you've got to wonder what this character could do if they let him play with eight whole cylinders.

As driver, Byrnes also earned a lifetime membership in the 200MPH Club, but he is equally quick to note that none of his elation would have come to pass had it not been for his many sponsors, crew, family, friends and well wishers who provided the requisite financial, emotional and physical assistance.

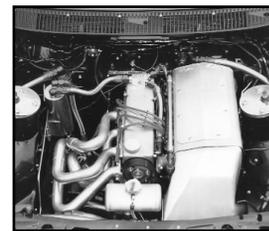
Let's go back to 1997 where Byrnes reactivated his retired '87 speeder when Garrett Turbochargers said it would support him with the latest technology available. Steadfast that any racing would have to be done without going into debt (read: family first) he parked the car when rain dashed all hope for the '97 season until Chicago Rawhide, Fel-Pro and BF Goodrich jumped on the sponsor wagon joining Watson Engineering, Reider Racing/Precision Gear, Centerforce, Autolite, and Bosch in the spring of '98.

Because Byrnes' day job was at Ford, his name and abilities were already well known to the future sponsors.

For the 1998 racing season, Byrnes completely rewired the XR4 and upgraded the engine control systems. He was lucky enough to have a pal who gave him a calibrated Accel DFI computer that had run on a very highly boosted 4-cylinder engine similar to his.

"I wanted every safety system to function just like production," said Byrnes, "John Paluch, an engineer with Cadillac Motor Car Co, and Brian Chomicz, an engineer with Borg Warner were responsible for the vehicle systems, while Brian Jones of Roush Technologies and I handled the DFI installation."

Next, Jones and Visteon calibration



engineer Kevin Flannery began looking at the calibration and fuel requirements because

Byrnes was fearful that his high flow Bosch fuel pump (230 LPH @ 10 Bar) would not be able to keep pace with flow demands at 200 miles-per-hour.

"Having nowhere to test this beast for sustained high speed, we



needed a dyno for developing the basic calibration and called Paul's High Performance in Jackson Michigan," explained Byrnes. Good thinking, because the fuel delivery choked when the rear wheels spun past 400HP. Moreover, this Byrnes fellow must be a real charmer because Paul and his wife Rhonda signed on as sponsors.

The solution would be to run a pair of pumps plumbed in parallel that provided 700 PPH plus of fuel flow. This also meant the whole fuel system had to be changed. After trading \$800 Washingtons for some stainless tubing and braided line he burnt lots of midnight oil replumbing.

"I will never, never, never go racing again without spending some time with Paul on his dyno," he gushed, then added seriously, "a chassis dyno is not the answer to everything, but you learn things you could never learn at the track, and like boost, if a little data is good, and more is better, then too much must be just right."

The next test session brought the great news that the car had 600 HP at 6500 RPM with 518 Lbs Ft of torque at 5500 RPM at the rear wheels. Also, the air cooling worked better than hoped, temperature in the intake manifold plenum was a mere 60 degrees Fahrenheit, with an ambient temp of 80 degrees F. The bad news was at those power levels the car was running out of fuel pump again.

A third pump was added inside the fuel cell -- all three plumbed in parallel and individually wired directly to one of the batteries through a high current solenoid -- with control through a production Ford inertia switch that will shut it all off in case

of an unwanted incident.

Julie Campbell and Lou Caira attended to the many detail items, tool and equipment organization, finishing construction of a "war wagon" so that hard to handle pit equipment can be pulled from the trailer easily.

The plan to leisurely drive across the country to the salt evaporated with sorting out the fuel system that now exceeded 900 HP. This included a set of Bosch 160 PPH injectors installed with base pressure set at 42 PSI. That's right 160 pounds per hour. EACH. These units were reportedly left over from the Buick Indy car days when flowing methanol was two times the volume for equal HP to gasoline, but the benefits such as much cooler exhaust gas temperature on a turbocharged engine are quite a benefit and less taxing on the fuel delivery system.

The Merkur ran about 1700 to 1850 EGT, the comparable Methanol engine runs at 1200 to 1400. This set up ends up providing good flow and control at the high end, but at low engine speed the calibration is so very rich that the car was almost undrivable burbling pig below 3000 RPM.

Byrnes and wife/biggest fan Glenys made the 1,800-mile hard charge to the salt in a little over 48 hours to snag a pit spot on Friday morning. This was, after all, the 50th anniversary of the Bonneville Nationals, so space was tight. The crew arrived later in the day and the team flew through technical inspection

Sounds like these folks are organized and prepared, right? Calamity was waiting on the starting line. Byrnes' first pass was a shakedown pass mainly to check if that third fuel pump worked at Bonneville's 4300 feet altitude.

"I was trying to be patient, knowing that ultimately we were to be blindingly fast or just blow the bottom end out of the 2 bolt main bearing SVO cylinder block," confessed the man who had more horsepower than he ever dreamed of. The two 12mm studs are very special SPS studs, but there is a limit"

Despite good traction from the

drier course, the 4,230 'race ready' poundage with 865 pounds of ballast stalled the car 3 times and just before the second run while completing the safety checklist Byrnes noticed the remote water pump flange was leaking. Wonder of wonders, he had a spare, but when they got to the starting line for the third time, the engine refused to start.

The crew spent hours making many tedious adjustments so the engine would run, but now Byrnes had to "relearn" how to drive the car. Sigh. Breathe deep, get back in line and wait. He had learned the hard way why many salt racers push off the line.

On this attempt he fiddled with the boost while in 3rd gear and was treated to total wheel spin and complete lack of control, just like on snow or slush, yet calmly dialed back the boost and shifted into 4th. The car was hurtling hard, but at the end of the third mile it lost boost. The gremlin was a 3-inch diameter aluminum tube from the turbocharger compressor discharge to the intercooler connection that had come loose, bent the retaining brackets, and leaked air.

The next run saw him leave the line with LOTS of power kicking up salt until he shifted into 2nd gear and the carbon fiber clutch failed and two days passed until another could be shipped into the remote, saline laboratory.

Back in line by Wednesday (thank God this is SpeedWEEK) and this time he milks the boost control knob dry, slipping and sliding thru the 3rd mile enjoying a 650 HP short wheelbase wild ride until the pesky discharge tube lets go again.

The crew "McGuyvers" the tube in place by using a motorcycle tie-down ratchet strap and Byrnes managed his first full pass of the week. In a perfect world he would have run 213MPH but a 15 mph headwind meant he cranked out a disappointing 198 mph. A smile returned to Byrnes' sullen face framed by soggy helmet hair courtesy of the plus 100 daily temperatures.

Setting records at high speeds is

difficult because as you go faster traction becomes as big a variable as Horsepower and/or Aerodynamics. Although the car had settled down at speed, it was still drifting. Not fishtailing, or threatening to spin, but like it had a mind of its own – a common phenomenon of wheel spin at high speed.

Lightening struck the short course timing lights just before Byrnes ran again putting all 100 racecars onto the remaining operational course. After an elongated wait, he was flagged off for his 5-mile drag race. The car fishtailed in the second mile and went sideways before Byrnes had sense enough to back out of the throttle and thus avoid a spin. Reducing the boost he squeezed the loud pedal again, the car accelerated like never before and by the 5th mile the needle crossed 6700 rpm ending with a spectacular 208 mph.

At the time it was absolutely the fastest that any production 4 cylinder sedan had ever gone. Byrnes had qualified to make a return record run by exceeding the then current record of 199.03 MPH earning him a trip to the impound area where all vehicles qualifying on a record must park until the SCTA/BNI records are held the next morning when the record, or back up run is made. Both speeds are averaged and if it exceeds the current mark, a new record is established. It was the biggest event of Byrnes racing career and he admits to nearly crying.

"People greeted me with a new found acceptance. I was finally a real land speed racer," he recalled. Although he had eyewitness reports of serious oil smoke thru the 5 mile all instrument readings were normal and the car ran normally once it cooled off.

After some excruciating hours watching it rain with such a vengeance that it damaged the course to the point the race officials canceled the rest of the meet – with one vital exception -- record runs, if possible. The next morning brought multiple lightening strikes in the distant mountains about every 3 seconds, but no more rain fell on the course.



Wanting to warm the engine because making a pass on a cold engine invited rod failure, Byrnes allowed another car to go off before him, which took so long to leave he was staring an overheating situation in the face and didn't dare stall the 156 CID/2.59L engine, as it would not restart.

Off at last, the final pass was less eventful (or was Byrnes getting used to going real fast?), but he noted that the run was "Not scary fast, just very fast, and I was not sure the car went more than 200 MPH."

Safety sweep crew Ed and Chris Shearer arrived with the news that the 5th mile was at 201.516 MPH and after seven years of focusing on a goal he had not only broken a record, but joined the 200MPH Club completing the task with just HALF OF A MOTOR bumping up the record to 204.952 MPH /335.369 KPH

Back home, with his little red 200MPH Club hat perched proudly on his head, he was still puzzled about the 'missing' power and a leakdown check revealed the number 2, 3, and 4 holes had monstrous leak past the rings into the sump, the top rings had gone away. Byrnes figures the little Merkur has yet to hit its top speed – perhaps low 2 teens is possible.

"I very much enjoy the satisfaction of engineering, building, and presenting my creations," he ended wanting to get back to building his lakester. Yep, he's coming back and whatever records he's after is simply not safe from this man on a new mission. 🏎️ Another story of speed and a grand one indeed!

*Special Thanks to Neil Swanson and Rick Byrnes for the great photos*

*Louise*