IHRA Rockingham Dragway - A Smooth Experience

by Bob Szabo

My first spectator experience at an IHRA event was the Rockingham Udderly SMOOth®, World Finals. It was on the first weekend that was rained out. In my curiosity to absorb as much IHRA karma as possible, I walked the racetrack in the rain and I saw vividly that Mother Nature identified how straight the track surface was. As I passed the starting line, I observed the flatness of the concrete launch pad that went out about 400 feet. The water droplets on that surface formed a uniform layer of wetness. It was not unevenly puddled in any spot on the pad in either the right or left lane.

I continued to walk the track beyond the concrete pad onto the pavement that made up the remainder of the quarter mile race surface. I observed a gentle mound formed on the center of the track. It was maybe one or two inches higher than the outside by the wall. Water was running off the mound to the outside. It ran to a shallow puddle about six feet wide to the wall. The other side had the same gentle drop towards the center of the track, between the lanes. A similar shallow puddle of water was about 6 feet from the center on that side also. Both the left and right lines had the same shallow puddles with the inside puddles from both lanes meeting in the center of the racetrack.

What impressed me was the width of the puddles was the same from the concrete pad to the finish line. I mean, the mound was the same on either side from the center of the lane. It was the same on either lane as if the racetrack was cast from a mold!

Subsequent conversation with one of the racers who had highway foundation experience revealed Rockingham weather is shielded by the Smokey Mountains. The weather is mild and severe weather change effects on the land are minimized. As a result, racetrack foundation movement from freezing and thawing are minimal.

I shared water run-off observation with Steve Earwood, the racetrack owner and operator. He said he watches for the same water runoff during the rain as I observed. Mr. Earwood further commented the amount of track level and straightness I saw is no accident. It is a result of an extensive effort.

I have raced on a dozen or so racetracks in my recent past. While I have not competed at Rockingham, it is probably better by a wide margin than any of the other tracks I have been on.

Many years ago, I raced on a drag strip with a dip at the 3/4 point. It was a real trip to stay on-the-throttle, over that dip. Seeing the Rockingham track with Mother Nature's water measurement of the absolute straightness and level made me appreciate the efforts from the track staff. The straightness and level of Rockingham is a boost to drag racecar performance.

The other noteworthy observation from Rockingham was from comments by many of the racers. The traction was superb. It was so much so that several of the racecars had tire shake, complaining of too much traction.

For the purposes of this brief discussion, tire traction on a powerful drag racer can be summed up into phases. We will call the first phase the hook up phase. This would be the typical traction from a street level of power and a typical street tire. Phase one tire traction would also apply to a drag slick on a stocker in high gear. When you accelerate, the tire hooks up and the car accelerates. This would be from a tire slippage of typically 0+% to (I am guessing) about 4 or 5%.

The next phase (phase two) can be called the max mode. This would be typical traction from a drag race slick that hooks up and has enough power to wheel-stand a racecar. The slippage would be typically 5 or 6% to 12 to 13% (again a guesstimate). The tire gets planted either through the racetrack surface friction and the sheer size of the tire, or it gets planted from chassis motion that drives the tire into the racetrack.

This is the goal of many moderate powered racecars that pull the wheels on the launch and then set them down on the run as the initial low gear power surge is finished.

The phase two traction is not the desired mode in a higher-powered rag racecar such as most that run seven second ET's or better. If this mode occurs, the racecar will wheel stand and could go over without wheelie bars. You have probably seen this in Top Fuelers that launched skyward, often during the run.

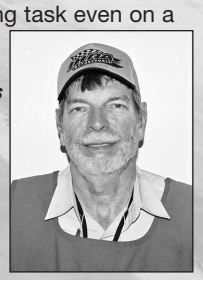
The third mode (phase three mode) is just beyond max mode. This is the mode that is the goal in higher-powered drag racecars. In this mode, the drag racecar often "black tracks." That is, it leaves two patches of rubber behind the slicks. In this mode, the racecar is set up with an appropriate excess of power to "black track" the tire (slip the tire) just beyond the max mode. It would be in the range of 12 to 13% to (I am guessing about 15 to 16%.

I do not have data to identify whether the second or third phase provide the most forward acceleration. However, a peculiarity can occur for the higher-powered cars normally set up to "black track." If the drag racecar loses power, it will wheel stand. That is, it is unable to sustain the "black track" mode. As a result, it hooks up or tire-shakes. Often experienced racecar setups count on a bit of slip from the racetrack to "black track." Without slip, these racecars may go into a wheel stand. The wheelie bars, if so equipped, will keep the front end down. Then the racecar will tire shake instead.

For setups at high traction racetracks such as IHRA Rockingham events, experienced racers will do adjustments. One adjustment is to put more low gear into the racecar for more launch power to "black track." Another adjustment is to take some power out of the racecar to launch easier. That is a move towards phase one traction. For 4-link rear suspension equipped racecars, the instant center of the 4-link rear suspension can be adjusted forward to reduce the chassis action and chassis induced traction. For racecars with front suspension, the adjustment is to tighten the front end to hold the front down lower during launch. This reduces the amount of weight transfer and the amount of traction.

One could surmise phase four traction is the application of too much power for the track surface applied in a sudden manner that induces tire shake. Phase five traction is the application of too much power for the track surface and the tire goes up in smoke. This would include the burnout. Racecar adjustments to move from one traction phase to another are often necessary for most IHRA drag race vehicles. In addition, one traction phase may be optimum for one class of drag racers and all wrong for another.

This brief explanation should provide better insight into the tuning task even on a superb racetrack such as IHRA Rockingham Dragway.•



Bob Szabo is a racecar book author. His new book "Fuel Injection Racing Secrets" is all about mechanical fuel injection that is used throughout IHRA drag racing. It is also supplier recommended. Bob is a lifetime student of technology and a Funnycar owner / driver. He will join the IHRA spectators at up-coming events to enjoy the finest drag racing in the world. Bob will share many of his experiences in this and future issues of DRM. For book ordering information, look on the Internet at http://www.racecarbook.com or call (707) 446 2917.