



# Thumpr Cam Development

## Goals, Methodology, & Results



Brian Reese  
Competition Cams



# How it Began

- The CUSTOMER requested it – *I want one of them cams that goes 'Thumpety-Thump'*
- The Sales guy sold it
- The Engineers figured out how to make it

The most successful line of cams in COMP  
Cams history!



# Thumpr Goals

- **Race Engine Sound!**
- Good drivability in near stock to moderately modified applications
- Similar performance to medium sized Xtreme Energy hydraulic rollers
- Vacuum for idle and accessories
- Work with standard carburetor tuning with proper Air/Fuel and exhaust temperatures
- Broad power band and excellent character!



# Engineering Disclaimer

The concept of the Thumpr cams started several years before development actually began, but at the time the goal was focused solely towards the Street Rod market. However, as we started designing these cams, the scope grew as did the application window. The final product now has a much broader appeal and the results are better than we ever really expected.



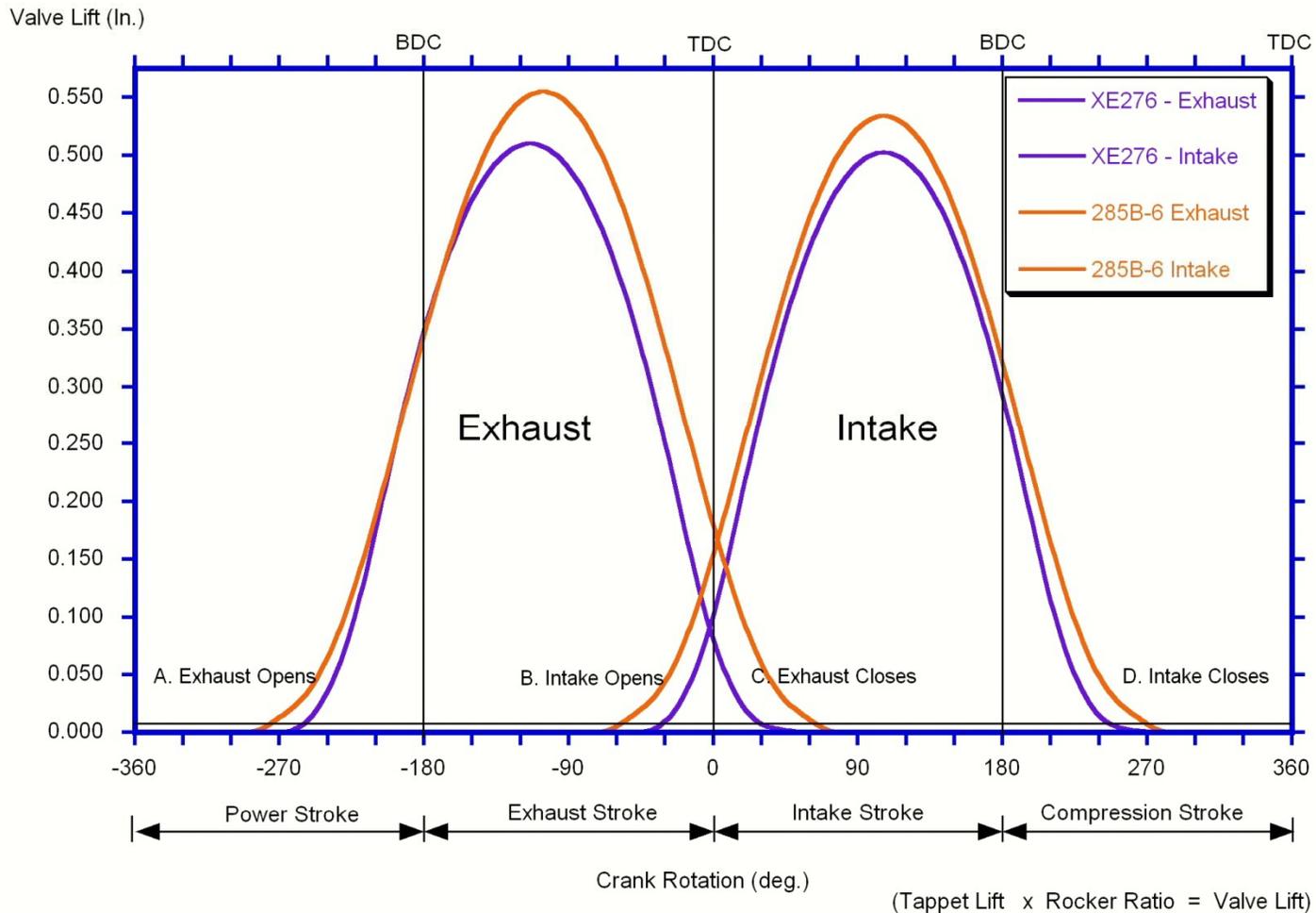
# Starting Point

- Performance like Xtreme Energy (XE276HR10)
- Sound like Solid Race 285B-6



## XE276 Hydraulic Roller and 286B-6 Solid Race Cam

### How do we make one run like the Purple and sound like the Orange?





# Question?

Ok, which valve events cause what characteristics? How can we use that understanding and manipulate those events to meet our goals? What would the resulting cam specs look like and how will they perform?



# Exhaust Opening - SOUND

- On race cams this event occurs **near the middle of the "Power Stroke"**
- Exhaust begins exiting the chamber and cylinder pressure drops rapidly
- **Some combustion is still occurring as the exhaust exits the chamber**
- Combustion pressure is now used to **force out exhaust**, not force down piston
- **The timing and speed of the exhaust valve opening point is key to the volume and tone of the exhaust note**



# Intake Closing - RANGE

- This is the most important valve timing event
- When the intake valve closes, air stops flowing and pressure increases as the piston rises
- This point generally determines the power range
- Early intake closing tunes in the power earlier because it traps more air at low speed before it can turn around and exit back into the manifold
- Later intake closings allow more air to enter at high RPM when the momentum of the intake charge allows filling even as the piston rises

# Overlap - CHEAT

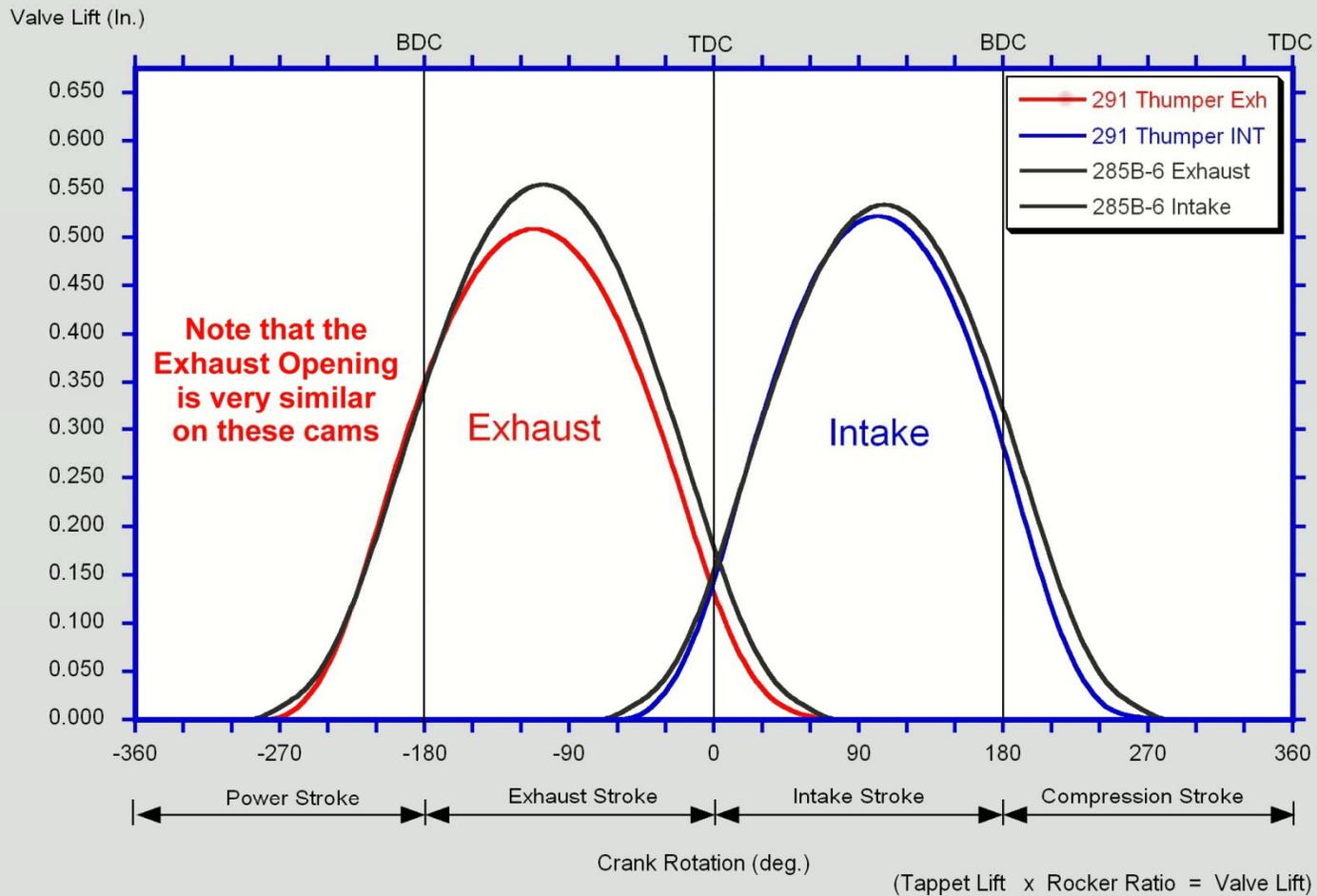
- During overlap both valves are open and this allows the intake and exhaust systems to link with one another and improve efficiency
- Too much overlap reduces the vacuum signal and causes excessive misfire at idle, but some gives a nice sounding lope
- The shape of the overlap can be more important than the duration or area
- By tailoring the exhaust closing ramp and the intake opening ramp we can optimize this shape
- This is where we cheat the 'race' out of the Thump



# How does the Thumper mimic the 285B-6 timing points?

- Note the similar exhaust opening point (**Race**)
- The overlap is less to give enough vacuum to operate vacuum accessories and run with standard torque converters (**Cheat**)
- The intake closing is earlier to tune in torque and power to the appropriate street operating range (**Range**)

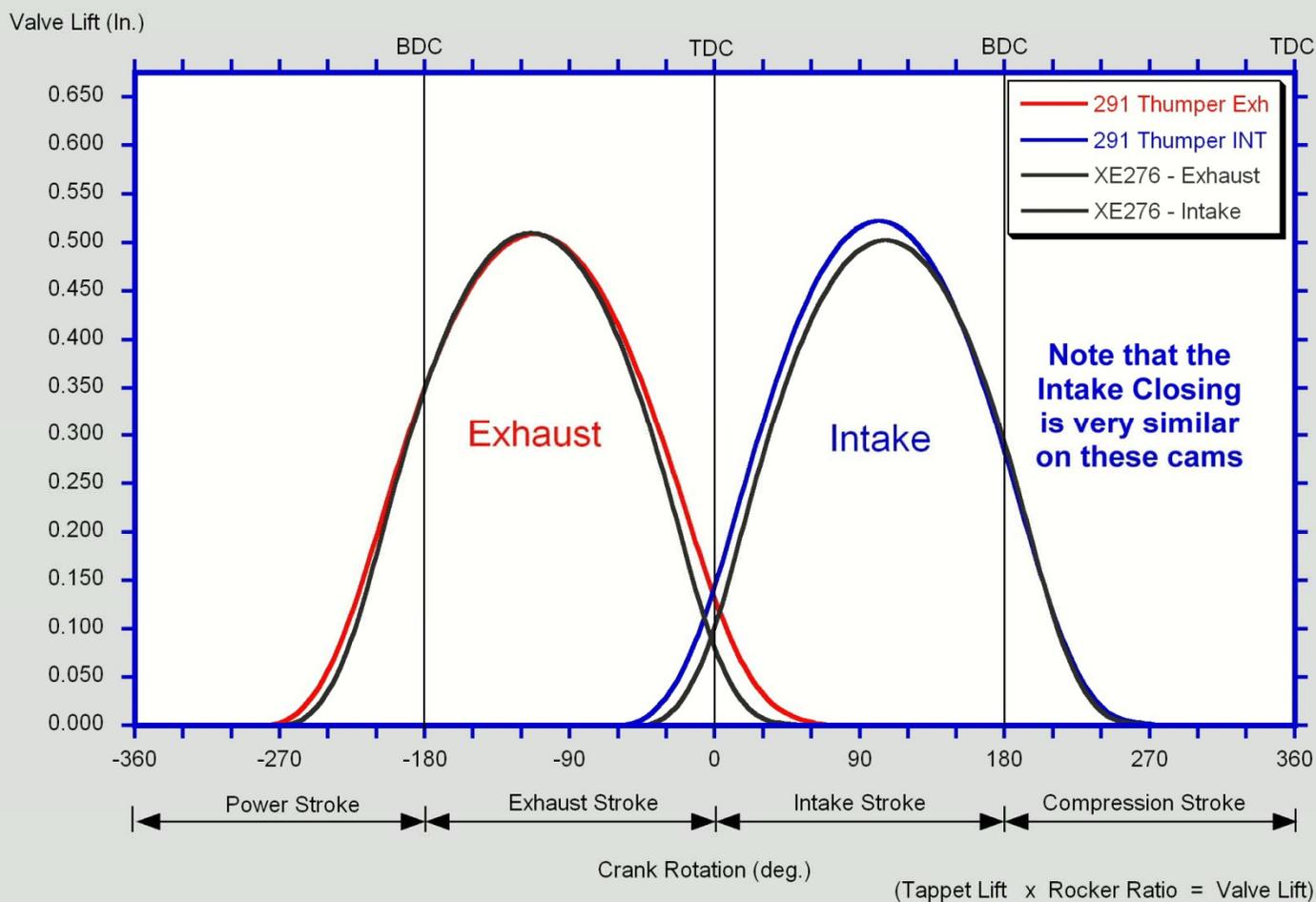
## Thumpr 291THR7 vs COMP 285B-6



## How does the Thumper mimic the XR276H-10 timing points?

- Note the similar intake closing point to provide a corresponding power range (**Range**)
- There is an increase in overlap, but it is far less than with a true race camshaft (**Cheat**)
- The exhaust opening is earlier to give an entirely different sound (**Race**)

## Thumpr 291THR7 vs COMP XE276HR-10





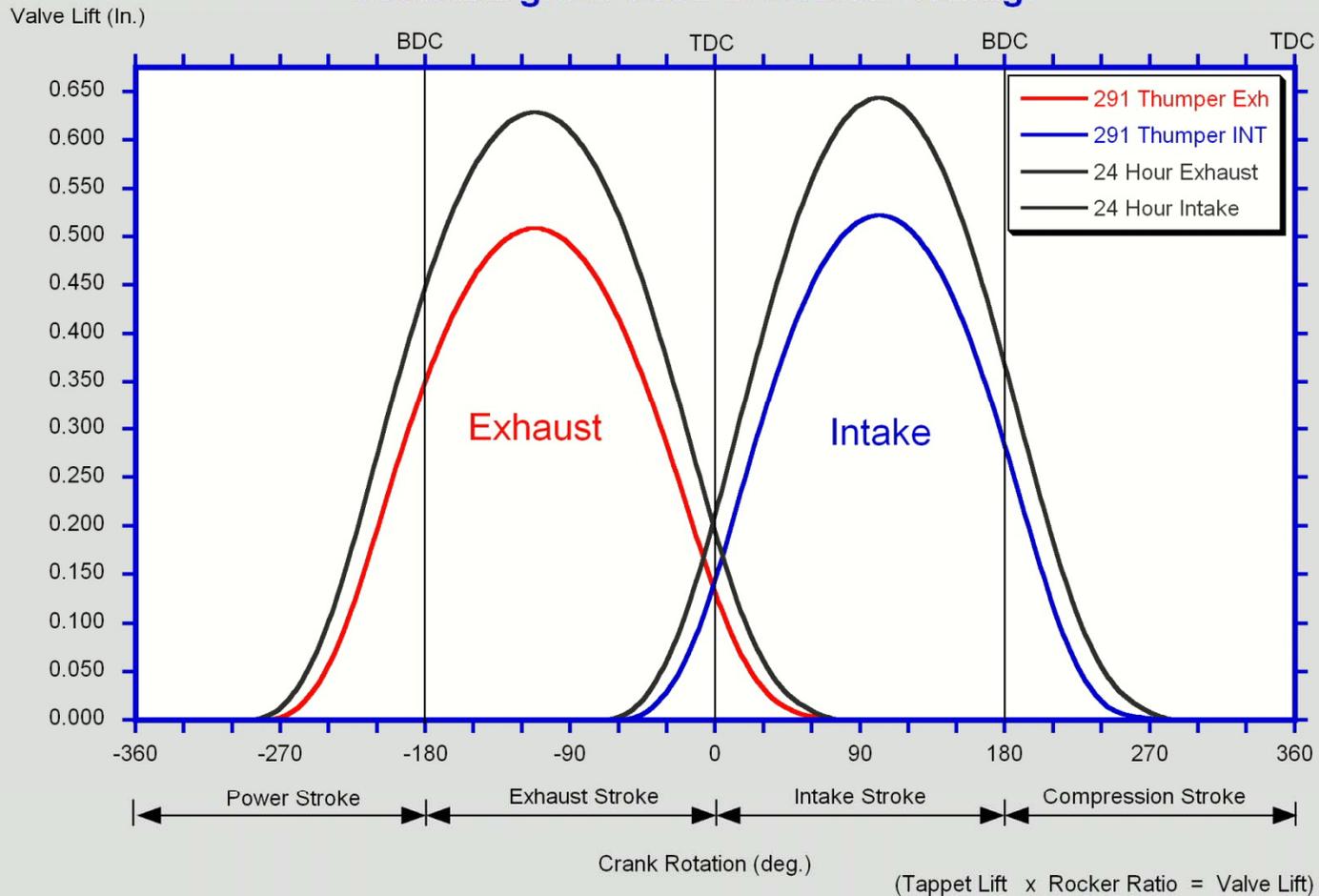
## Just for fun, what other cam is most "Thumpr Like"???

- There is an application with timing points very much like the Thumpr, only bigger
- In 24 Hr racing, drivers need a very wide power range to allow them to come out of corners a gear too high or hold a gear longer as they get very tired from shifting
- Achieving those goals requires very "Thumpr Like" timing points!

## **Part 2 – Engineering Disclaimer!**



Thumpr Race DNA! Note how closely the COMP Cams 291 Thumpr follows a common grind used in 24 hour racing.



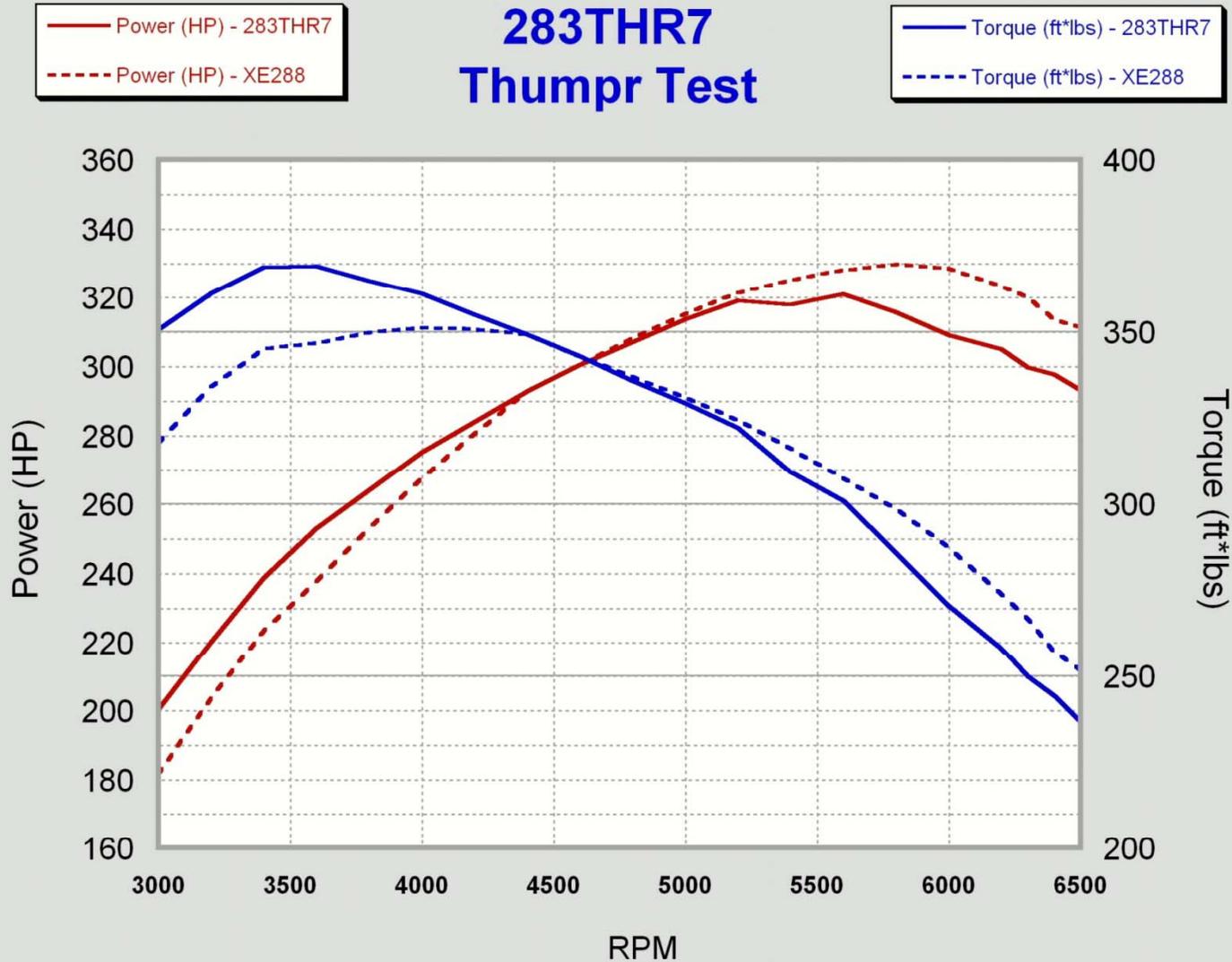


# What About Performance?

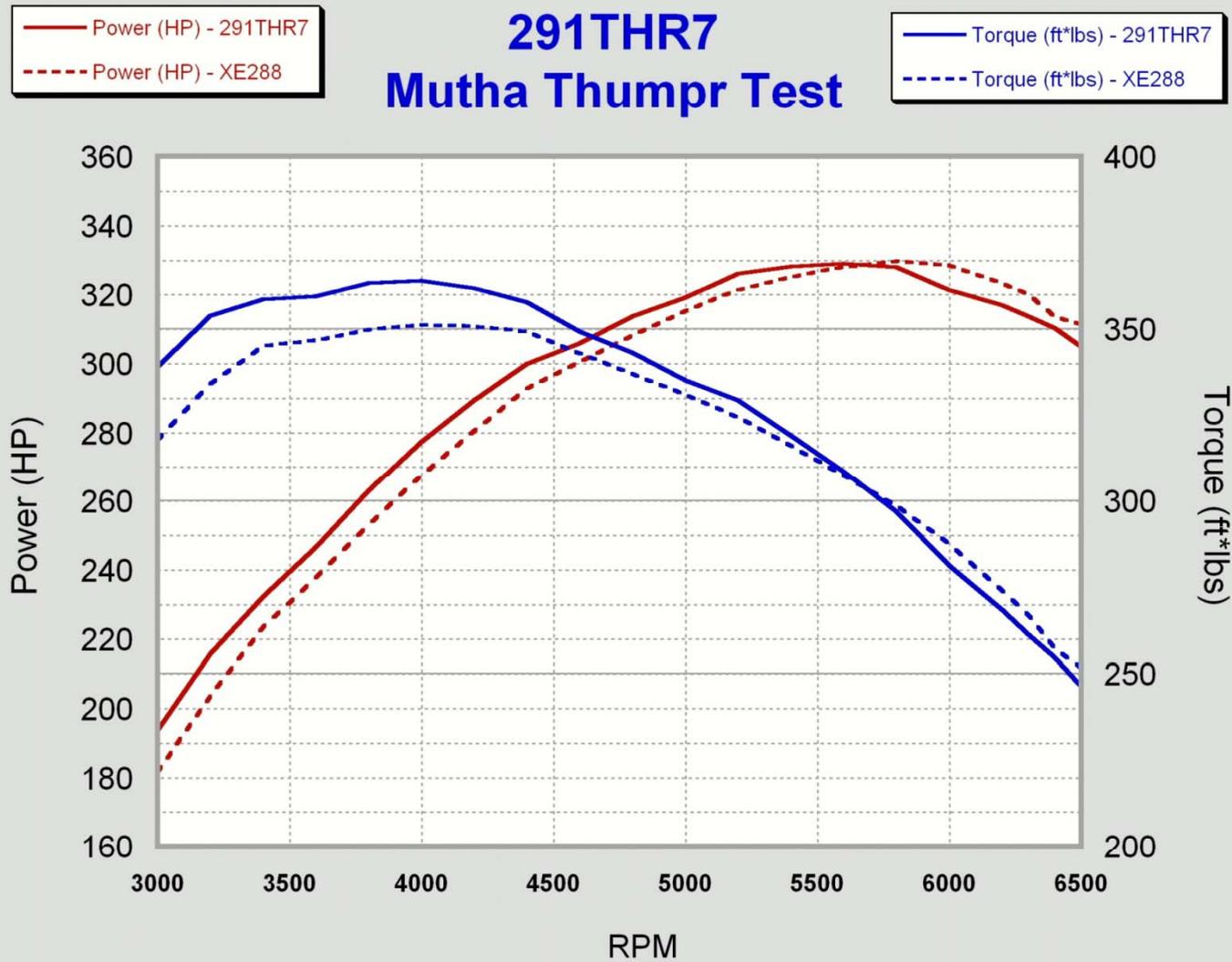
This all sounds fine, but how well does it run!

- To find out about tuning, idle, power and drive-ability we installed the Thumpr cams along with a few baselines in a 350 Chevy in a Camaro
- We tested with a couple of carburetors and typical street components
- The sound was great, vacuum was acceptable, and power was very close to the Xtreme Energy
- Our biggest surprise was how much fun the car was to drive with the early peak in the torque curve resulting in a car that acts faster than it is!

## 283THR7 Thumpr Test



## 291THR7 Mutha Thumpr Test



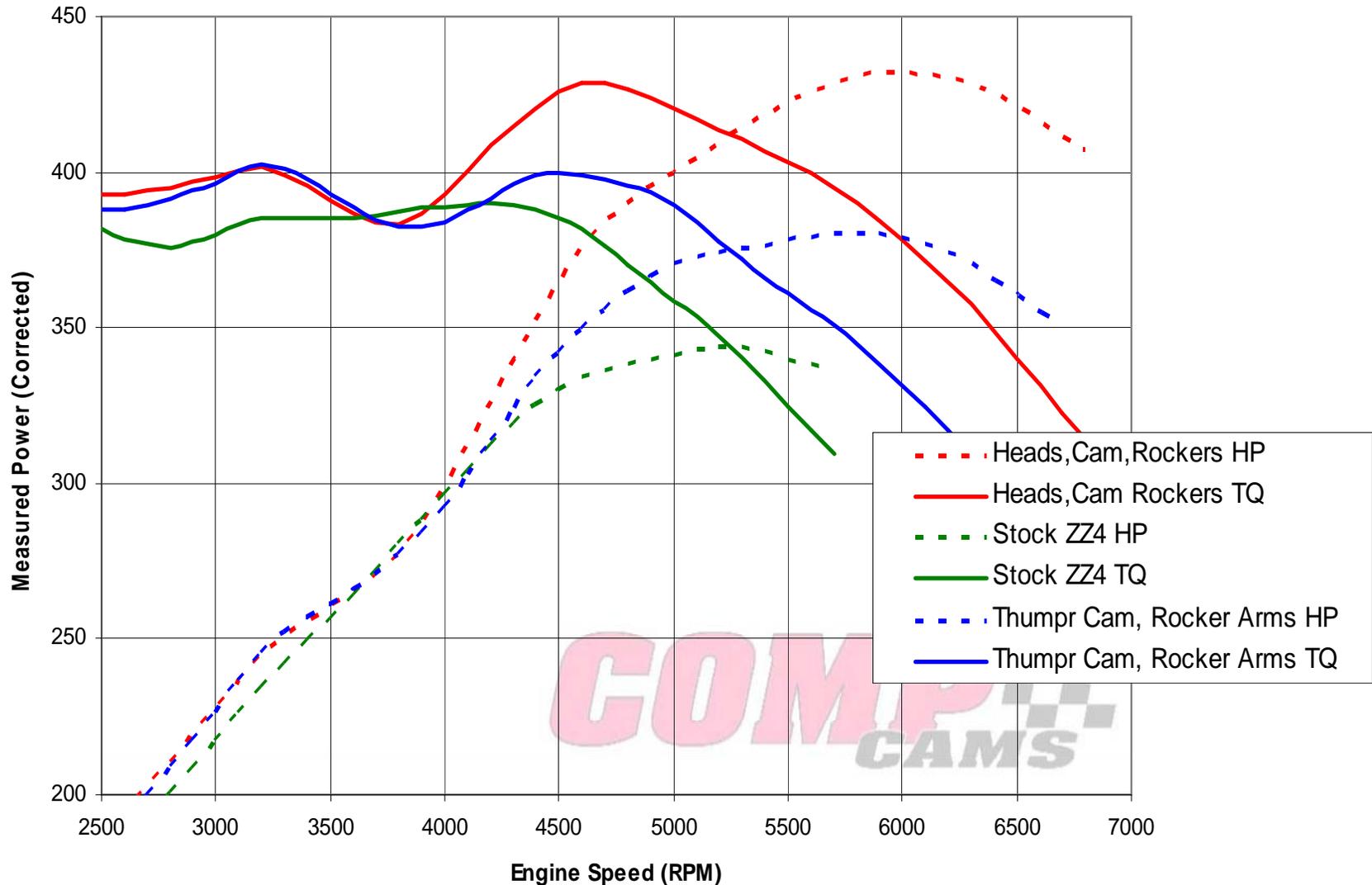


# Results

- The Thumpr 287THR7 made +20 ft\*lbs but lost 10 HP compared to the XE288HR-10
- The Mutha Thumpr 291THR7 made +10 ft\*lbs and was close to the same power
- The XE288HR-10 made more power in the 5500-6500 RPM range and would be faster for drag racing with the proper gearing & converter
- The Big Mutha Thumpr 299THR7 was too big for the 350 test engine



## Results with Other Parts?





# Selecting Thumpr Cams

- Levels
  - Thumpr
    - Stock cubic inch, great street manners, strong vacuum
  - Mutha' Thumpr
    - Stock to modest oversized cubic inch, all around performer, good vacuum
  - Big Mutha' Thumpr
    - Large cubic inch, closest to Xtreme Energy with sound awesome enough to call it a BIG MUTHA THUMPR!



# Classic Thump'r Cams

- Buick Nailhead 1957-1966
- Chevrolet 409 1958-1965
- Chrysler 392 Hemi 1957-1958
- Ford Flathead 1949-1953
- Ford Y-Block 1955-1962
- Ford FE (early) 1958-1962

- NEW cam cores
- New unique lobes, specific to engine
- Nitriding optional
- New lifters available



# Pulse Plasma Nitriding

- Surface hardening process
- Premium flat tappet protection
- Supplements proper oil
- Does not compromise ductility of core
- Highly controllable and accurate



**INSURANCE POLICY!**



Brian Reese  
Vice President  
Engineering & Business Development  
COMP Performance Group

[breese@compcams.com](mailto:breese@compcams.com)

