Bikeman Performance Arctic Cat ProCross 800/ 900cc trail big bore

BMP dealer/ installer/ engine & chassis tuner Boyd McGarry from Horseheads, NY (bmvenom01@yahoo.com) brought his 2012 Arctic Cat ProX 900 to DTR for Power Commander V cold air fine tuning, and assessing his engine performance. The Basic $1995 BMP Trail Big Bore consists boring, porting and renickasiling the stock cylinders and remachining the stock head for the larger bore size. German Wossner aluminum forged pistons are provided. Options include:

- Upgrade to Billet head: add $200 to kit price
- Y pipe $189
- Big Bore Fatazz single pipe $379
- 2.5 degree offset key $20
- 50mm throttle bodies $449
- Boyesen Rad Valves $299
- Power Commander V (preprogrammed) $379
- Lightweight canister muffler (TBA)

Boyd's sled has all the above-mentioned options except the can muffler. He's opting to stay with the quiet stock muffler for NY trail riding/ stealth lakeracing purposes. As we've seen in prior testing, the 2012 stock muffler is freer flowing than the 2011. As we would see during testing, the backpressure was conservative for even this high flowing (300 CFM+) big bore!

On his way here, Boyd purchased a tankful of 93 octane 10% ethanol gas. But as is too often the case, this batch was low on ethanol and measured here at 4%. Remember—wholesalers are required to add "up to" 10% [more expensive] ethanol to the pump gas. Ethanol is 102 octane so they only need to have about 91 octane base stock to get 93 after ethanol is mixed in (done while loading the wholesalers' tanker trucks). Or you need about 85 octane base stock mixed with 10% ethanol to end up with 87. If you get less ethanol you get less octane. That means if Boyd was lucky he got about 92 octane. And if he was unlucky, he got 86 octane. Regardless, when you buy pump gas today you roll the dice.

We tuned the BMP big bore to great power at 12.8/1 A/F ratio (max power usually occurs at a leaner 13/1) with BSFC just below .600 lb/hphr. We tune leaner than 13/1 through the midrange WOT to get heat into the pipe on acceleration. This is typical of how we can safely tune modern Arctic Cat engines with their excellent "reverse" cooling systems that route the coolant first through the head (where it's needed most to stave off deto) then through the cylinders and out the bottom of the engine (just like modern NASCAR and F1 engines). We listened for detonation during tuning, and heard none. During the tuning session, coolant temp was typically 110-120 degrees F. The BMP Fatazz big bore pipe was happiest at high center section temperature—1000F. Here's Boyd's BMP ProCross 900 final tune:

EngSpd RPM	STPPwr CHp	STPTrq Clb-ft	BSFCAB lb/hph	FulAB lbs/hr	AFRAB Ratio	ExhCS deg F	ExhPrs psig	Air_1c CFM
6500	133.1	107.5	0.594	75.6	13.26	786	1.9	222.7
6600	134.8	107.2	0.593	76.4	13.42	807	2.6	227.7
6700	140.2	109.9	0.572	76.8	13.59	834	2.2	231.7
6800	144.7	111.7	0.590	81.8	13.09	852	2.2	237.7
6900	148.3	112.8	0.591	83.8	13.15	861	2.3	244.6
7000	152.8	114.6	0.589	86.2	13.21	878	2.4	252.7
7100	156.7	115.9	0.595	89.2	13.03	895	2.6	258.2
7200	158.8	115.8	0.618	93.8	12.62	903	2.6	263.0
7300	161.6	116.2	0.634	98.1	12.35	912	2.7	268.9
7400	167.1	118.6	0.629	100.6	12.33	930	2.9	275.2
7500	172.3	120.7	0.611	100.7	12.53	952	2.4	280.2
7600	177.9	122.9	0.600	102.2	12.50	972	2.4	283.6
7700	182.7	124.6	0.599	104.6	12.38	987	2.9	287.6
7800	186.9	125.9	0.591	105.7	12.41	1006	3.2	291.5
7900	190.8	126.8	0.581	105.9	12.53	1028	3.2	295.0
8000	192.6	126.4	0.575	105.8	12.72	1048	3.2	299.2
8100	194.2	125.9	0.578	107.4	12.69	1059	3.2	303.0
8200	193.7	124.1	0.580	107.3	12.84	1068	3.4	306.1
8300	182.5	115.5	0.614	107.0	12.80	1068	3.1	304.8