DYNO EVALUATION OF BLUE MARBLE OIL VS POLARIS OIL IN A STOCK 1997 POLARIS XLT600 Jim Czekala

Normally I'm not one to get too excited over lube comparisons on the dyno. I've done lots of them for customers, never saw much to be excited about. But last fall, Blue Marble distributor Sam Chinelli brought a stock ProX600 for comparison testing between Polaris oil and Blue Marble oil. Sam would pay for the dyno time, and whatever the results were they would be his private information. Sam initially dyno tested the sled with Polaris oil, then removed the sled from the dyno, and took it back to his shop for treating the cylinders with Blue Marble oil (soaking the cylinder walls overnight). Then he ran the sled for some hours on his track dyno with BM oil in the injector reservoir.

A week later Sam brought the sled back, and during this second session it made about two more HP at the power peak. That intrigued me enough to want to try that same test on my 97 monoblock XLT600, all stock except about a .020 head cut. The XLT was making about 98HP tuned the way I like on pump gas, and if merely switching oil brands could get me 100HP I would be thrilled and have something positive to report on oil for a change. After final jetting, I had about 5 baseline runs on the XLT, and it had repeated dandily within a few tenths of a HP on each run. Beginning each dyno run with block casting surface temperature of between 80 and 90 degrees F, the engine made 98.5, 98.1, 98.2, 98.1 and 97.9 HP respectively. The following test data is an average of five baseline runs on Polaris injector oil. In anticipation I saved a couple of gallons of the Mobil 93 octane gas I used for this test—sealed tightly and left in the cold so we could do Blue Marble testing later with exactly the same fuel.

BASELNAV

BASELNAV average of five tests with Polaris oil

EngSpd	STPTrq	STPPwr	FulA+B	Air1+2	Time-S	A/F	BSFC	AirTmp
RPM	Clb-ft	CHp	lb/hr	scfm	Second	Ratio	lb/hph	degF
6500	53.5	66.3	55.1	140.7	48.04	11.69	0.858	40
6600	54.9	69.1	56.1	144.1	48.34	11.77	0.836	39
6700	56.7	72.4	57.3	148.6	49.46	11.87	0.817	40
6800	57.2	74.1	58.1	152.2	49.78	11.99	0.809	39
6900	58.2	76.4	58.1	155.7	50.56	12.27	0.784	40
7000	59.4	79.2	59.4	159.9	51.31	12.32	0.774	40
7100	60.1	81.3	60.7	162.5	51.99	12.25	0.771	40
7200	61.5	84.3	61.9	165.1	52.47	12.21	0.758	40
7300	62.1	86.2	63.2	166.9	53.38	12.09	0.757	40
7400	62.4	88.1	63.2	168.1	53.94	12.18	0.741	40
7500	62.9	89.8	63.4	169.4	54.69	12.23	0.728	39
7600	63.1	91.3	64.5	170.6	55.33	12.11	0.728	39
7700	63.6	93.2	65.9	171.1	55.91	11.88	0.731	40
7800	63.4	94.1	66.4	171.9	56.71	11.85	0.728	40
7900	63.3	95.3	66.3	172.1	57.09	11.88	0.718	40
8000	63.4	96.5	65.7	172.2	58.17	12.01	0.703	40
8100	63.2	97.4	66.8	172.7	58.55	11.83	0.708	40
8200	62.8	98.1	65.5	173.3	59.51	12.11	0.691	40

8300	61.9	97.9	64.6	173.2	0.04	12.27	0.681	40
8400	61.1	97.8	64.6	173.2	0.81	12.27	0.682	40
8500	59.7	96.6	64.9	172.9	1.49	12.19	0.694	40

Those of you who've perused the early DynoTech pages would have seen the nightmare I had with Energy Release that, when used as directed cost me several HP on my 650 Indy Triple that I had fitted into an 87 Exciter chassis. I had to berry hone the cylinders to restore the lost power. Slick 50 two-stroke treatment was equally useless. But after seeing Sam's numbers I thought it would be a worthwhile experiment, especially with all of the Blue Marble talk on the internet.

After dyno tuning I drained the oil reservoir of the XLT, filled it with Blue Marble, then added a few ounces to each combustion chamber, rolled the engine a bit and let it soak overnight before driving the sled. Over a few months I managed to put nearly 100 miles of fast trail riding using the Blue Marble oil.

We had a cold front come through last weekend, with air temperature and barometric pressure very similar to the day I dyno tuned the XLT last winter. Last Friday I fitted the XLT back on the dyno for testing Sat AM while temperature was expected to be in the high 30's. Overnight, I did another "soaking" of each combustion cylinder with a few ounces of Blue Marble oil.

Paying very careful attention to engine coolant temp, on Saturday AM I began a series of acceleration tests identical to the previous baseline tuning acceleration tests I made on Polaris oil. I was disappointed to see the freshly soaked with BM oil XLT engine make only 95-96 HP but as I did repeat runs with ample cooldown time between runs, the HP began to creep up. Finally, it settled in at about 96-97 HP; over six final dyno tests it made 96.4, 95.9, 96.4, 96.9, 97.1 and 96.9 HP respectively. The following test data is the average of the Blue Marble acceleration tests.

BLUMRBAV

BLUMRBAV average of six dyno tests with Blue Marble oil

EngSpd	STPTrq	STPPwr	FulA+B	Air1+2	Time-S	A/F	BSFC	AirTmp
RPM	Clb-ft	CHp	lb/hr	scfm	Second	Ratio	lb/hph	degF
6300	49.7	59.6	54.2	135.4	9.42	11.44	0.941	40
6400	50.8	61.9	54.2	137.1	9.75	11.58	0.906	40
6500	52.8	65.3	54.8	140.7	10.11	11.75	0.868	40
6600	54.3	68.2	56.1	143.9	10.83	11.76	0.851	41
6700	55.9	71.4	57.9	148.3	12.07	11.72	0.841	41
6800	56.7	73.4	59.5	152.1	12.45	11.71	0.839	40
6900	57.7	75.8	60.1	155.7	13.15	11.88	0.819	40
7000	58.9	78.5	60.8	159.3	13.73	11.99	0.802	40
7100	60.1	81.1	62.8	162.5	14.39	11.84	0.801	40
7200	60.8	83.4	63.7	165.1	14.99	11.86	0.791	40
7300	61.3	85.3	64.6	166.8	15.73	11.82	0.784	40
7400	62.1	87.5	65.5	168.2	16.37	11.75	0.775	40

7500	62.6	89.4	65.5	169.7	16.97	11.86	0.758	40
7600	62.7	90.7	65.3	170.9	17.67	11.98	0.745	40
7700	62.8	92.1	65.9	170.9	18.28	11.87	0.741	40
7800	62.8	93.3	67.7	171.3	18.85	11.58	0.751	40
7900	62.9	94.6	68.4	172.1	19.69	11.51	0.748	40
8000	62.9	95.8	67.1	171.9	20.15	11.73	0.725	40
8100	62.4	96.2	67.1	172.5	20.96	11.77	0.722	40
8200	61.9	96.6	66.9	172.6	21.54	11.81	0.717	40
8300	60.9	96.2	66.4	173.2	22.22	11.94	0.715	40
8400	60.1	95.9	66.3	172.8	23.07	11.93	0.716	40
8500	59.1	95.6	65.8	172.3	23.61	11.99	0.713	41
8600	58.1	95.1	66.1	171.8	24.28	11.92	0.721	41

Why did my XLT600 engine lose 1.5 HP when Sam's ProX600 picked up a couple? Was more than oil changed on that engine between baseline and the BM test session? Did Sam add some oil to the gas he used, effectively leaning out the mixture? Could the XLT have some malady like a crank bearing getting tight? To try to find the answer I siphoned the Blue Marble oil out of the injector tank and refilled it again with Polaris oil.

Sunday AM we still were blessed with cold weather, and I began making more identical acceleration tests, knowing that it would take several minutes run time at WOT before the Blue Marble oil remaining in the oil lines and pump was completely displaced with Polaris oil.

Gradually and fortunately the missing HP came back. Back to pure original Polaris oil, I was delighted to see the XLT engine make 98.7, 98.0, 98.0, 98.2, and 98.2 HP respectively. No berry-honing would be needed here. The average peak was again 98.1 HP.

So with this more controlled by me experiment the XLT600 lost HP with Blue Marble, mostly at the top of the power curve where friction is highest (friction HP increases as the square of engine speed). Now in reality, no one would probably notice one or one and a half HP change. That's the beauty of the dyno to be able to determine within a few tenths of a HP what really is going on here. The fact that we were able to match our original 98 HP baseline after going back to the Polaris oil makes me confident that the Blue Marble oil caused this engine's power to suffer.