User Data:

Date:9-Apr-2015 **Time:18:36:06** **File: xpert 303 epps 133gr.dat**

Cartridge / Caliber	**.303 Epps Imp.**		**Bullet**	**.312, 133GR XPERT TARGET**	
Maximum Average Pressure, allowed	49000 psi.	3378 bar (Wildcat)		with flatbase	
Groove Caliber	0.312 in.	7.92 mm	Bullet Weight	133.0 gr.	8.62 gm
Case Capacity, overflow	63.01 gr. H2O	4.091 cm³	Bullet Length	1.236 in.	31.39 mm
Case Length	2.160 in.	54.86 mm	Bullet Seating Depth	0.522 in.	13.25 mm
Cartridge O.A. Length	2.874 in.	73.0 mm	Barrel/Tube Length	24.0 in.	609.6 mm
Shot Start / Init Pressure	3625 psi.	249.94 bar	Cross Section Area of Bore	0.07451 in.²	0.4807 cm²
Propellant type	**Somchem S321**				
Charge Weight	44.0 gr.	2.851 gm	Load Density	209.9 gr./in.³	0.830 gm/cm³
Heat of Explosion, Potential	259.8 J/gr.	4010 J/gm	Energy Density of Charge	54503 J/in.³	3326 J/cm³
Propellant Solid Density	409.68 gr./in.³	1.62 gm/cm³	Used Ratio of Specific Heats cp/cv	1.221	
Burning Rate Factor Ba	0.56 1/s		Weighting Factor	0.5	
Burning Function Limit Z1	0.39		Prog.-/ Degressivity Factor a0	1.649	
Factor b	1.641		Bulk Density	250.4 gr./in.³	0.990 gm/cm³

Calculated and Estimated Data:

Bullet Shank Seating Depth	0.522 in.	13.25 mm	Capacity Displaced by Seated Bullet	0.0399 in.³	0.654 cm³
Useable Case Capacity	0.2097 in.³	3.437 cm³	Bullet Travel at Muzzle Exit	22.36 in.	567.99 mm
Loading Ratio("Density") / Filling	83.8 %		Charge Fraction Burnt at Shot Start	1.66 %	
Predicted Data:					
Maximum Chamber Pressure	37290 psi.	2571 bar	Bullet Travel at Pmax	1.71 in.	43.3 mm
at Muzzle Exit:					
Bullet Velocity	2699 fps.	822.6 m/s	Pressure at Muzzle	6987 psi.	482 bar
Bullet Energy	2151 ft.lbs.	2916 Joule	Bullet Barrel Time	1.272 ms	
Propellant Burnt	94.1 %		Ballistic Efficiency	25.5 %	

Check Loading Manuals for Safe Minimum Charge Weight to Avoid Hazardous Ignition Conditions like Secondary Explosion Effects !
Real maximum (peak) of pressure is reached while bullet moves within barrel.
End of combustion occurs after the bullet's base passes muzzle.