User Data:

Date:8-Apr-2015 **Time:23:17:37** **File: xpert 270 weath mag 105gr.dat**

Cartridge / Caliber	**.270 Weath. Mag.**		**Bullet**	**.277, 105 gr, XPERT**	
Maximum Average Pressure, allowed	63817 psi.	4400 bar (Piezo CIP)		with flatbase	
Groove Caliber	0.277 in.	7.04 mm	Bullet Weight	105.0 gr.	6.8 gm
Case Capacity, overflow	82.0 gr. H2O	5.324 cm³	Bullet Length	1.189 in.	30.2 mm
Case Length	2.549 in.	64.74 mm	Bullet Seating Depth	0.549 in.	13.94 mm
Cartridge O.A. Length	3.189 in.	81.0 mm	Barrel/Tube Length	24.0 in.	609.6 mm
Shot Start / Init Pressure	3625 psi.	249.94 bar	Cross Section Area of Bore	0.05969 in.²	0.3851 cm²
Propellant type	**Somchem S365**				
Charge Weight	62.0 gr.	4.018 gm	Load Density	212.4 gr./in.³	0.840 gm/cm³
Heat of Explosion, Potential	238.8 J/gr.	3685 J/gm	Energy Density of Charge	50751 J/in.³	3097 J/cm³
Propellant Solid Density	404.63 gr./in.³	1.6 gm/cm³	Used Ratio of Specific Heats cp/cv	1.239	
Burning Rate Factor Ba	0.44 1/s		Weighting Factor	0.5	
Burning Function Limit Z1	0.605		Prog.-/ Degressivity Factor a0	1.715	
Factor b	2.271		Bulk Density	231.4 gr./in.³	0.915 gm/cm³

Calculated and Estimated Data:

Bullet Shank Seating Depth	0.549 in.	13.94 mm	Capacity Displaced by Seated Bullet	0.0331 in.³	0.543 cm³
Useable Case Capacity	0.2917 in.³	4.781 cm³	Bullet Travel at Muzzle Exit	22.0 in.	558.8 mm
Loading Ratio("Density") / Filling	91.8 %		Charge Fraction Burnt at Shot Start	1.60 %	
Predicted Data:					
Maximum Chamber Pressure	46666 psi.	3218 bar	Bullet Travel at Pmax	3.74 in.	95.0 mm
at Muzzle Exit:					
Bullet Velocity	3269 fps.	996.5 m/s	Pressure at Muzzle	11729 psi.	809 bar
Bullet Energy	2492 ft.lbs.	3379 Joule	Bullet Barrel Time	1.171 ms	
Propellant Burnt	99.9 %		Ballistic Efficiency	22.8 %	

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.