User Data:

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Cartridge / Caliber	**.270 SABI**		**Bullet**	**.277, 105 gr, XPERT**	
Maximum Average Pressure, allowed	60191 psi.	4150 bar (Piezo Wildcat)		with flatbase	
Groove Caliber	0.277 in.	7.04 mm	Bullet Weight	105.0 gr.	6.8 gm
Case Capacity, overflow	48.01 gr. H2O	3.117 cm³	Bullet Length	1.189 in.	30.2 mm
Case Length	2.000 in.	50.8 mm	Bullet Seating Depth	0.551 in.	14.0 mm
Cartridge O.A. Length	2.638 in.	67.0 mm	Barrel/Tube Length	24.0 in.	609.6 mm
Shot Start / Init Pressure	3625 psi.	249.94 bar	Cross Section Area of Bore	0.05971 in.²	0.3852 cm²
Propellant type	**Somchem S355**				
Charge Weight	37.0 gr.	2.398 gm	Load Density	235.7 gr./in.³	0.932 gm/cm³
Heat of Explosion, Potential	253.4 J/gr.	3910 J/gm	Energy Density of Charge	59731 J/in.³	3645 J/cm³
Propellant Solid Density	404.63 gr./in.³	1.6 gm/cm³	Used Ratio of Specific Heats cp/cv	1.2291	
Burning Rate Factor Ba	0.5 1/s		Weighting Factor	0.5	
Burning Function Limit Z1	0.39		Prog.-/ Degressivity Factor a0	2.36	
Factor b	1.774		Bulk Density	227.6 gr./in.³	0.900 gm/cm³

Calculated and Estimated Data:

Bullet Shank Seating Depth	0.551 in.	14.0 mm	Capacity Displaced by Seated Bullet	0.0333 in.³	0.545 cm³
Useable Case Capacity	0.1569 in.³	2.572 cm³	Bullet Travel at Muzzle Exit	22.55 in.	572.8 mm
Loading Ratio("Density") / Filling	103.6 % = compressed		Charge Fraction Burnt at Shot Start	1.25 %	
Predicted Data:					
Maximum Chamber Pressure	43065 psi.	2969 bar	Bullet Travel at Pmax	1.58 in.	40.1 mm
at Muzzle Exit:					
Bullet Velocity	2832 fps.	863.1 m/s	Pressure at Muzzle	7097 psi.	489 bar
Bullet Energy	1869 ft.lbs.	2535 Joule	Bullet Barrel Time	1.184 ms	
Propellant Burnt	93.7 %		Ballistic Efficiency	27.0 %	

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.