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LOT-TO-LOT VARIATIONS OF POWDERS, PRIMER SUBSTITUTION AND COMPONENT CHANGE OFTEN RAISE PRESSURES TO UNSAFE LEVELS. THE USER MUST ASSUME THE ENTIRE RISK OF USING THIS DATA FOR LOADING PURPOSES.

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User Data:	Date:9-Apr-2015	Time:17:13:56	File: xpert 7mm wsm 108gr.dat	
Cartridge / Caliber	7 mm WSM	Bullet	.284, 108, XPERT TARGET M	
Maximum Average Pressure, allowed	64542 psi.	4450 bar (Piezo CIP)	with flatbase	
Groove Caliber	0.284 in.	7.21 mm	Bullet Weight	108.0 gr. 7.0 gm
Case Capacity, overflow	81.1 gr. H2O	5.266 cm ³	Bullet Length	1.189 in. 30.2 mm
Case Length	2.090 in.	53.09 mm	Bullet Seating Depth	0.523 in. 13.29 mm
Cartridge O.A. Length	2.756 in.	70.0 mm	Barrel/Tube Length	24.0 in. 609.6 mm
Shot Start / Init Pressure	3336 psi.	230.01 bar	Cross Section Area of Bore	0.0625 in. ² 0.4032 cm ²
Propellant type	Somchem S365			
Charge Weight	65.0 gr.	4.212 gm	Load Density	225.6 gr./in. ³ 0.892 gm/cm ³
Heat of Explosion, Potential	238.8 J/gr.	3685 J/gm	Energy Density of Charge	53864 J/in. ³ 3287 J/cm ³
Propellant Solid Density	404.63 gr./in. ³	1.6 gm/cm ³	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/cm ³

Calculated and Estimated Data:

Bullet Shank Seating Depth	0.523 in.	13.29 mm	Capacity Displaced by Seated Bullet	0.0332 in. ³	0.544 cm ³
Useable Case Capacity	0.2881 in. ³	4.722 cm ³	Bullet Travel at Muzzle Exit	22.43 in.	569.8 mm
Loading Ratio("Density") / Filling	97.5 %		Charge Fraction Burnt at Shot Start	1.30 %	

Predicted Data:

Maximum Chamber Pressure	50920 psi.	3511 bar	Bullet Travel at Pmax	3.40 in.	86.4 mm
at Muzzle Exit:					
Bullet Velocity	3387 fps.	1032.3 m/s	Pressure at Muzzle	11343 psi.	782 bar
Bullet Energy	2751 ft.lbs.	3729 Joule	Bullet Barrel Time	1.115 ms	
Propellant Burnt	100.0 %		Ballistic Efficiency	24.0 %	

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 reached before bullet's base passes muzzle.

