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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:17:53:25	File: xpert 300 wsm 130gr.dat	
Cartridge / Caliber	.300 WSM (CIP)	Bullet	.308, 130GR XPERT TARGET	
Maximum Average Pressure, allowed	64542 psi.	4450 bar (Piezo CIP)	with flatbase	
Groove Caliber	0.308 in.	7.82 mm	Bullet Weight	130.0 gr. 8.42 gm
Case Capacity, overflow	81.3 gr. H2O	5.279 cm ³	Bullet Length	1.236 in. 31.4 mm
Case Length	2.090 in.	53.09 mm	Bullet Seating Depth	0.531 in. 13.49 mm
Cartridge O.A. Length	2.795 in.	71.0 mm	Barrel/Tube Length	24.0 in. 609.6 mm
Shot Start / Init Pressure	3625 psi.	249.94 bar	Cross Section Area of Bore	0.0737 in. ² 0.4755 cm ²
Propellant type	Somchem S355			
Charge Weight	60.0 gr.	3.888 gm	Load Density	212.4 gr./in. ³ 0.840 gm/cm ³
Heat of Explosion, Potential	253.4 J/gr.	3910 J/gm	Energy Density of Charge	53815 J/in. ³ 3284 J/cm ³
Propellant Solid Density	404.63 gr./in. ³	1.6 gm/cm ³	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/cm ³

Calculated and Estimated Data:

Bullet Shank Seating Depth	0.531 in.	13.49 mm	Capacity Displaced by Seated Bullet	0.0397 in. ³ 0.65 cm ³
Useable Case Capacity	0.2825 in. ³	4.629 cm ³	Bullet Travel at Muzzle Exit	22.44 in. 570.0 mm
Loading Ratio("Density") / Filling	93.3 %		Charge Fraction Burnt at Shot Start	1.58 %

Predicted Data:

Maximum Chamber Pressure	48352 psi.	3334 bar	Bullet Travel at Pmax	2.22 in. 56.3 mm
at Muzzle Exit:				
Bullet Velocity	3130 fps.	953.9 m/s	Pressure at Muzzle	9470 psi. 653 bar
Bullet Energy	2827 ft.lbs.	3834 Joule	Bullet Barrel Time	1.148 ms
Propellant Burnt	98.6 %		Ballistic Efficiency	25.2 %

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.

