impala 300gn load, powder fitted from barnes Hodgdon data

WARNING: Since we have no control over equipment or data which may be used with this program, no responsibility is implied or assumed for results obtained through its use. Input data and results may be incorrect or wrong. Therefore the use of this data for loading ammunition can cause serious injury to personnell and material. The computer-results had to be checked against data available in current loading manuals.

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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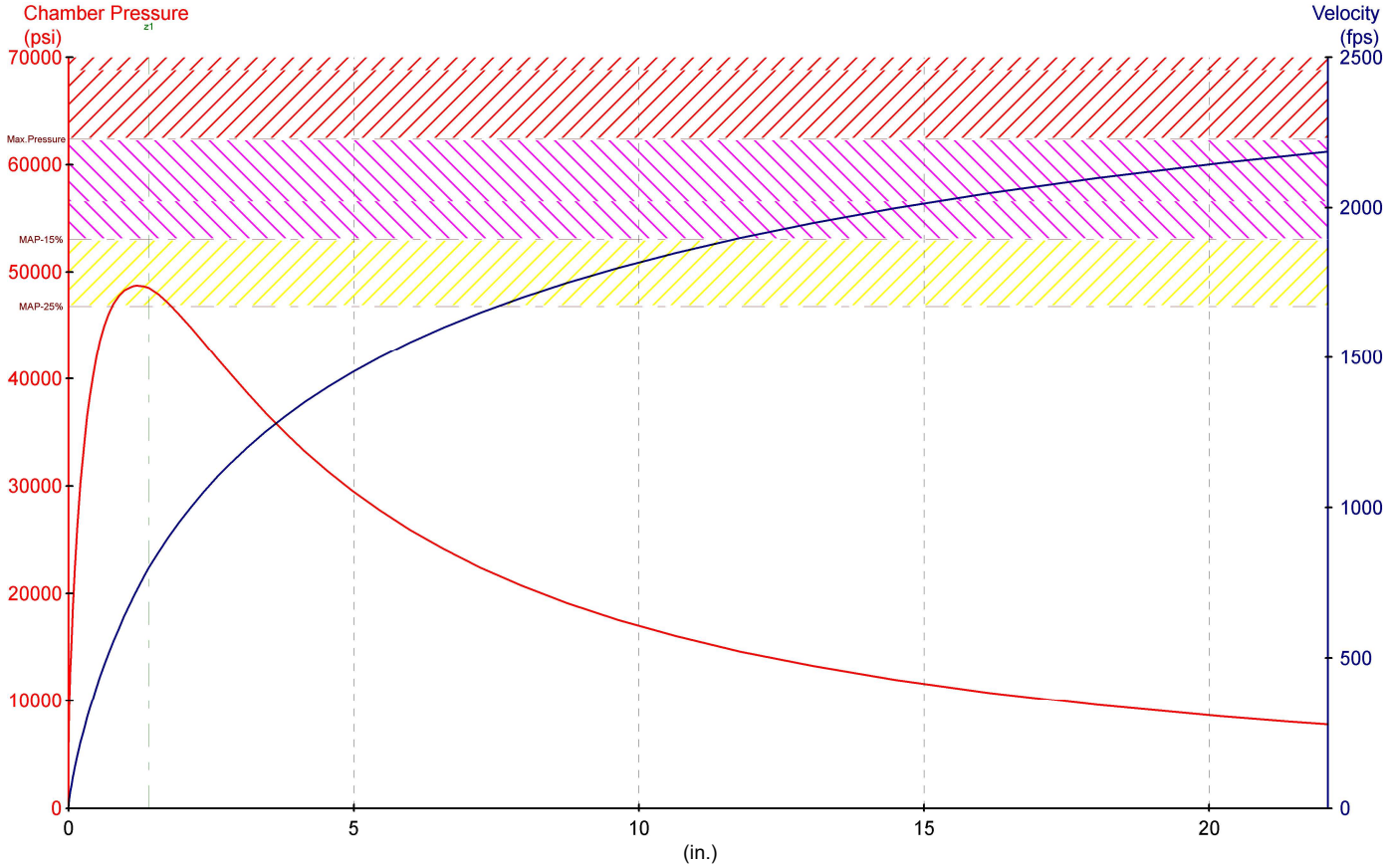
User Data:

Date:15-Oct-2024 **Time:09:53:06** **File: 375hh_imp300rnfp_imr4350fitminbar_24.173min.dat**

Comment	**hodgon data to model impala bullets**				
Cartridge / Caliber	**.375 H.& H. Mag.**		**Bullet**	**.375, 300, Impala RNFP Bullet**	
Maximum Average Pressure, allowed	62366 psi.	4300 bar (Piezo CIP)		with flatbase	
Groove Caliber	0.375 in.	9.53 mm	Bullet Weight	300.0 gr.	19.44 gm
Case Capacity, overflow	89.71 gr. H2O	5.825 cm³	Bullet Length	1.457 in.	37.01 mm
Case Length	2.841 in.	72.16 mm	Bullet Seating Depth	0.750 in.	19.05 mm
Cartridge O.A. Length	3.548 in.	90.12 mm	Barrel/Tube Length	24.173 in.	613.99 mm
Shot Start / Init Pressure	5076 psi.	349.98 bar	Cross Section Area of Bore	0.10875 in.²	0.7016 cm²
Propellant type	**IMR 4350 ?**				
Charge Weight	63.1 gr.	4.089 gm	Load Density	231.6 gr./in.³	0.916 gm/cm³
Heat of Explosion, Potential	243.6 J/gr.	3760 J/gm	Energy Density of Charge	56453 J/in.³	3445 J/cm³
Propellant Solid Density	409.68 gr./in.³	1.62 gm/cm³	Used Ratio of Specific Heats cp/cv	1.2403	
Burning Rate Factor Ba	0.489 1/s		Weighting Factor	1.16	
Burning Function Limit Z1	0.45		Prog.-/ Degressivity Factor a0	0.248	
Factor b	1.422		Bulk Density	231.4 gr./in.³	0.915 gm/cm³

Calculated and Estimated Data:

Bullet Shank Seating Depth	0.75 in.	19.05 mm	Capacity Displaced by Seated Bullet	0.0831 in.³	1.362 cm³
Useable Case Capacity	0.2724 in.³	4.463 cm³	Bullet Travel at Muzzle Exit	22.08 in.	560.88 mm
Loading Ratio("Density") / Filling	100.1 % = compressed		Charge Fraction Burnt at Shot Start	1.84 %	
Predicted Data:					
Maximum Chamber Pressure	48705 psi.	3358 bar	Bullet Travel at Pmax	1.22 in.	30.9 mm
at Muzzle Exit:					
Bullet Velocity	2187 fps.	666.5 m/s	Pressure at Muzzle	6252 psi.	431 bar
Bullet Energy	3185 ft.lbs.	4318 Joule	Bullet Barrel Time	1.431 ms	
Propellant Burnt	94.8 %		Ballistic Efficiency	28.1 %	

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.