

**Edward L. Burlew, LL.B.**

Barrister & Solicitor, Trademark Agent

16 John Street, Thornhill, Ontario L3T 1X8

Telephone: (905) 882-2422 Toll-Free: 1-888-486-5677 Fax: (905) 882-2431

May 13, 2020

**Via Email: [abernardo343@rogers.com](mailto:abernardo343@rogers.com)**

Canadian Shooting Sports Association

1143-204 Wentworth Street West

Oshawa, ON, L1J 8P7

**Attention: Mr. Tony Bernardo**

**RE: SOR/2020-96**

**Section 96, Capable of 10,000 Joules**

---

The Supreme Court of Canada in the *R.v.Hasselwander*, [1993] 2 S.C.R.398 held that in determining the characteristics of a firearm that the word “capable of” includes an aspect of potential capability. This was in a case of the process of conversion of a semi-automatic rifle to a fully automatic rifle. The firearm was initially semi-auto but had the “capability”, being the potential, of being a fully automatic rifle. In that case the firearm was a Mini-Uzi originally manufactured as semi-auto. Forensic experts had testified at the trial in the Provincial Court that they could easily alter the firearm and have it fire cartridges in a fully automatic manner. The owner, Mr. Hasselwander, had not modified the Mini-Uzi at all. In his possession it was semi-auto.

The Justices of the Supreme Court of Canada affirmed that because the semi-auto firearm could be easily converted to fully automatic that as a semi-auto it had the “capability of” being fully

automatic and therefore it would be categorized as a fully automatic firearm. Mr. Hasselwander did not have a license to possess fully automatic firearms and could not register the Mini-Uzi.

The principal of “capable of” has been followed in 237 reported cases in Canada. The definition of “capable of” is enshrined precedent in Canadian Law.

**SOR/2020-96** in paragraph 96 specifically states “any firearm *capable of* discharging a projectile with a muzzle energy greater than 10,000 joules is a prohibited class firearm.”

Breaking this down, the projectile is the bullet or shot of any description that is propelled down the barrel’s bore of a firearm to exit at the muzzle.

Muzzle Energy is the Kinetic Energy of a projectile (bullet or shot) as it exits the muzzle of a firearm barrel. The velocity of the projectile is multiplied by the mass of the bullet. The resultant energy is expressed typically in ft/lbs (foot pounds) or J (joules) of energy.

Section 96 sets 10,000 J as the threshold of categorization of a prohibited firearm. 10,000 joules (J) converts to 7,375 foot pounds (ft/lbs).

Certain facts and protocols must be considered in determining “capability of” achieving muzzle energy.

#### CARTRIDGES “CAPABLE OF” 10,000 JOULES OR MORE

The first factor is the cartridge that the firearm can discharge. The cartridge is typically unique to the chamber of the firearm to be examined. Some cartridges can be discharged in chambers and barrels not specifically designed for that cartridge, but I will not consider that in this opinion.

The “factory” or “original manufacturer” specifications for a cartridge is a safe muzzle energy. These safe muzzle energies are set by Scientific Forensic Standards in Europe by the Permanent International Commission (the C.I.P.) for the Proof of Small Arms.

To be able to manufacture a firearm it must meet strict technical standards. One critical standard is to be “Proof Tested”. Proof Testing is a forensic test that is regulated. In England the Rules, Regulations and Scales Applicable to Small Arms is set and maintained by the London Proof House and the Birmingham Proof House.

Proof testing is to determine what the firearm is “capable of”. This involves the use of a “Proof Load”, which means the load required to develop proof pressure on firing the firearm. In layman’s terms this is a more powerful cartridge load of more or different gun powder and heavier bullet projectile that exerts a higher pressure to the firearm barrel, bolt and receiver. To be proof tested the more powerful cartridge is fired from the firearm. The Proof House regulations refer to the “C.I.P.” Tables of Pressure. The Proof Loads are regulated to be thirty (30) percent higher than the Mean Service Pressure. The Mean Service Pressure is that standard the manufactured cartridge is held to for sale to the public.

To determine the Proof Load forensic expertise must be applied and special Proof Ammunition Cartridges are used.

In the USA where many firearms and ammunition are manufactured SAAMI, Sporting Arms and Ammunition Manufactures Institute Inc., sets the standards for manufactured ammunition. Both SAAMI and C.I.P. co-ordinate their Standards. SAAMI sets out resources for Proof Ammunition Cartridges and their manufactures. These are not available to the general public. Their Proof Ammunition conforms to the C.I.P. Standards. Those then conform to the London and Birmingham Proof Houses regulations.

In examining the tables of C.I.P each cartridge has a specification and the joules of muzzle energy and are depicted as “EE”. To calculate the “Proof Load” which has been actually used to

prove what the firearm is “capable of” a simple multiplication of the “EE” by 1.3 times yields the joules of muzzle energy that a cartridge can produce and that the firearm for which it is chambered is “capable of” for the purpose of proof testing.

In this forensic endeavour, not ordinarily accessed by gun owners, the knowledge of the muzzle energy of manufactured ammunition that is available to consumers is not an indication of what the firearm is capable of. As an example the .460 Weatherby Magnum has a manufactured muzzle energy of 10,605 J., this is now in the prohibited category. The .416 Weatherby Magnum has a manufactured ammunition muzzle energy of 9,030 J which a layman would think represents the “capacity of” the firearm it is used in and not in the prohibited category. By applying the Proof Load requirements the firearm is “capable of” 11,739 J of muzzle energy. The result is that any firearm that can discharge a .416 Weatherby Magnum Cartridge is prohibited.

In checking facts I have been provided with “Quick Load” data calculations from experienced firearms people in the firearms industry. Their calculations show that four cartridges can be loaded to perform at muzzle energies much beyond the standard of manufactured ammunition. Actual discharge testing has not been performed. Their calculated data is as follows by cartridge, manufacturer standard, muzzle energy and quick load maximum load muzzle energy (M.E.):

- 375 Holland and Holland, Standard M.E. of 5915 J (4363 ft/lbs); Quick Load M.E. of 10,003 (7,378 ft/lbs);
- 375 Weatherby Magnum, Standard M.E. of 7,081 J (5,223 ft/lbs), Quick Load M.E. of 10,453 J (7,710 ft/lbs);
- 300 Weatherby Magnum, Standard M.E. of 5,725 J (4,223 ft/lbs) Quick Load M.E. of 10,008 J (7,382 ft/lbs);
- 338 Lapua Magnum, Standard M.E. of 7,045 J (5,196 ft/lbs), Quick Load M.E. of 10,398 J (7,670 ft/lbs).

These are a few examples of the many, as yet unidentified cartridges that can exceed 10,000 J when fired in a suitable firearm. Further Forensic Testing is required to determine what cartridges in what particular firearm is “capable of” 10,000 J of Muzzle Energy

The precision of the testing instruments required exceeds the reach and technical training of individuals. Trained forensic technicians with precisely calibrated scientific instruments are required to determine if a firearm is “capable of” 10,000 J or more muzzle energy.

To rely on the standard manufactured ammunition available to hunters and targets sports is insufficient to accurately provide information of the muzzle energy a firearm is “capable of”.

#### FIREARMS “CAPABLE OF” 10,000 JOULES OR MORE

In analyzing the phrase “capable of” another pertinent fact must be considered. That is the capability of a firearm to be easily adapted to discharge a cartridge that is “capable of” 10,000 J or more muzzle energy.

Many firearms have interchangeable barrels of various calibres that range from low energy cartridges to high energy cartridges. The change is easily done by exchanging the barrel and perhaps bolt and leaving the receiver action as is. The alternate barrel is a high energy cartridge that even with “factory” or “original manufacturer” ammunition, exceeds 10,000 J. Examples are the Blaser R8, Sauer 202 takedown, Holland and Holland double rifle. The Anderson Wheeler double rifle made famous in the James Bond movie “Skyfall” was such a rifle. Many common hinge action, bolt action and falling block actions have these interchangeable barrels. They were developed so that the hunter could have one gun with multiple calibre choices depending on the animal hunted. The other advantage is that when “takedown” the rifle transports it is in two or more parts to be more compact.

Going to a second fact in determining what a rifle is “capable of” and recognizing that at law in Canada the rifle is the receiver, this list of rifles expands tremendously. Since 1898 when Mauser perfected the bolt action rifle for the dual purpose of equipping armies and hunters, the main components of the bolt action rifle are the receiver, the barrel and the bolt. The receiver is made to allow different barrels chambered for different cartridges to be screwed into the receiver. The bolt is the component inside the receiver that holds the cartridges in the chamber of the barrel. Although the rifle may come from the factory with a barrel chambered for a low energy cartridge that barrel can be unscrewed and a barrel with a higher energy cartridge can be screwed on. This is easily achieved with a Weatherby Mark V receiver (9 Lug) which is common to the .257 Weatherby cartridge and up to the .460 Weatherby cartridge. Although this is most safely done by a gunsmith it can be done by any gun owner who has a vice to hold the receiver and a pipe wrench to unscrew the low energy barrel and screw in the high energy barrel. Simple hand files can be used to alter the bolt face for the high energy cartridge. This will not be “pretty” in that the receiver and barrel will have tool marks on them and the bolt may be rough to operate, but the newly manufactured rifle will effectively work and discharge the high energy cartridge that exceeds 10,000 J.

A third step is to recognize that a barrel attached or taken off a receiver can be modified with hand tools to accept a high energy cartridge. This process is termed “rechambering”

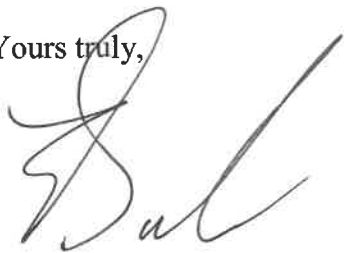
The tool to do this is a “chamber reamer”. These are available from firearms stores and suppliers. These are tools and are made in Canada or imported as tools, not as firearms, no license is required to purchase or possess chamber reamers. No license is needed for a gun owner to rechamber their own rifle to a higher energy cartridge. Many of the chamber reamers are for a cartridge that are “capable of” exceeding 10,000 J. The bore of the rifle barrel need not be changed. It is important to note that SOR/2020-96 does not prohibit the importing, manufacture or possession of ammunition cartridges that exceed 10,000 J.

A fourth step would be to discuss the effect of “wildcatting” a rifle and cartridge. That is where unique reamers, which can be large drill bits from a hardware store, or precision custom tools are used to enlarge the chamber of a rifle barrel to experiment with new cartridge configurations. This is done for improving accuracy and for higher energy cartridge development. Wildcatting can be done by any gun owner who has simple skills, a vice, drills, files and an inquisitive experimental nature. That is how many of the high energy cartridges of over 10,000 J were in fact first developed. As their popularity grew the rifle and ammunition manufactures have adopted some of them. Very high energy cartridges such as the .577 Tyrannosaur developed by A-Square ammunition is a custom made cartridge developing 13,800 Joules of energy. Review of popular public sources of technical data will reveal many such custom “Wildcat Cartridges”.

The wording of Section 96 being “black letter” law, leaves the hunter and target sports in the dark and at risk of possessing and using a firearm that is at law prohibited. This creates a high risk of committing a serious criminal offense under sections 91, 92, 93, 94 and 95 of the Criminal Code.

The figures of energy in Joules and foot pounds are taken from the C.I.P. tables and Quick Load calculations given to me by people experienced in the firearms industry. The conversion factor for Joules to foot pounds used is .737562 and from foot pounds to Joules is 1.3558.

Yours truly,

A handwritten signature in black ink, appearing to read 'E. Burlew', with a long, sweeping horizontal stroke extending to the right.

EDWARD L. BURLEW, LL.B.

ELB/bkh

E. & O. E.