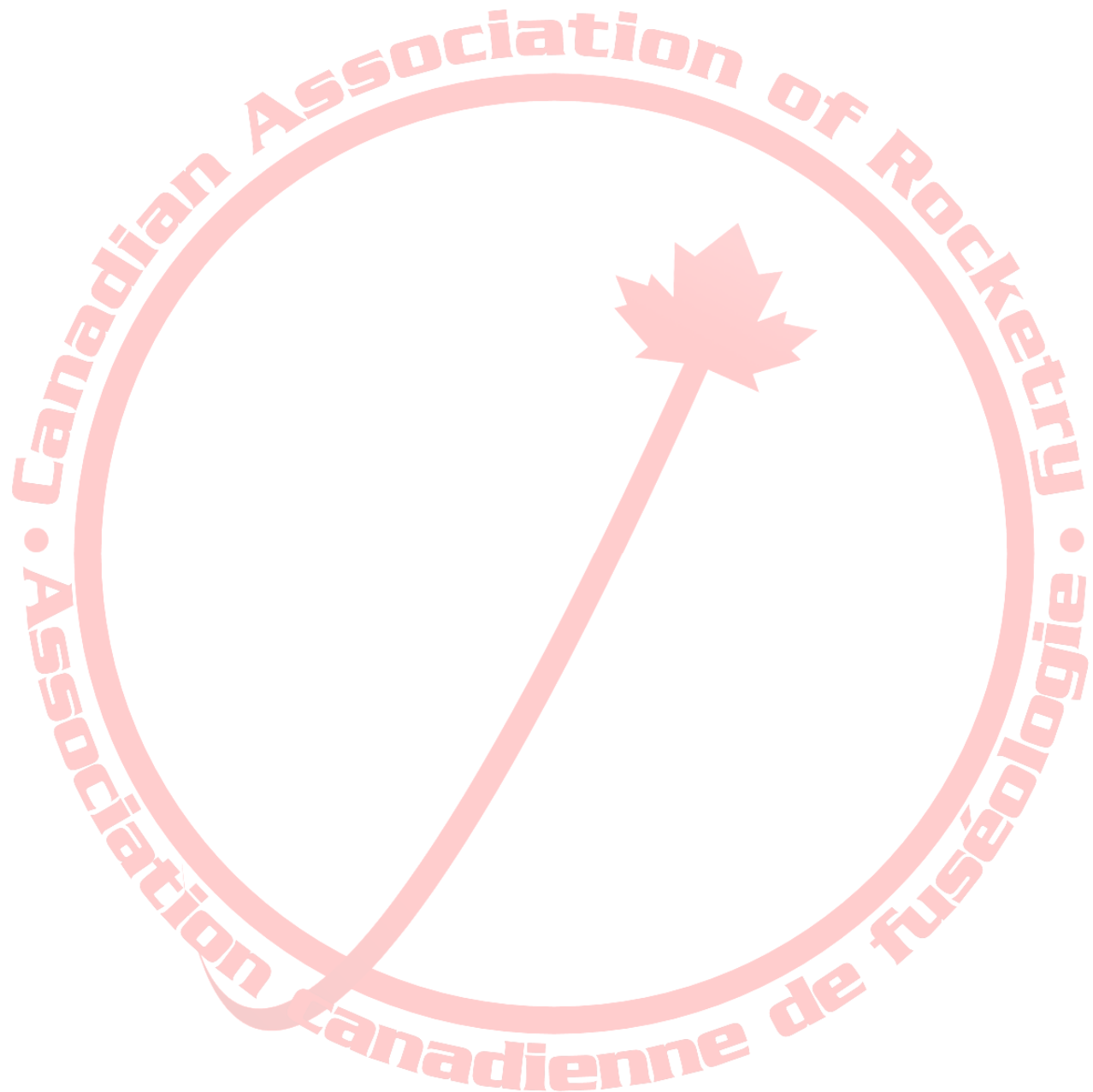


# Canadian Association of Rocketry

## *Rocket Motor Certification*



August 12, 2009 Session

Submitted to the CAR Executive August 25, 2009

## Introduction

A short motor testing session was held at the Cesaroni Technology Incorporated facility in Gormley, Ontario on August 12<sup>th</sup>, 2009. Thanks to Angelo Castellano (CAR Chairman) for supervising the testing session.

Thirteen (13) motors were fired to certify five (5) new reloads.

For use in CTI hardware, the new additions include two Pro29 Red Lightning reloads, a Pro75 Imax Dual Thrust reload and a Pro98-6GXL Red Lightning reload.

Designed for use in the AMW 75-7600 hardware, CTI has produced a Dual Thrust Tamed Tiger reload. This “Animal by Cesaroni” (ABC) reload will ship with a disposable nozzle and requires the Pro75 Nozzle Holder (CTI part number P75-NH) to assemble.

While these motors were certified in Canada, a reciprocal agreement between the Canadian Association of Rocketry, the Tripoli Rocketry Association and the National Association of Rocketry means they may be flown in many jurisdictions.

I am very pleased to announce the certification of these five (5) new reloads from Cesaroni Technology, Inc. Individual certification letters follow for each motor.

These letters and the accompanying thrust curves will be available on the official CAR website soon.

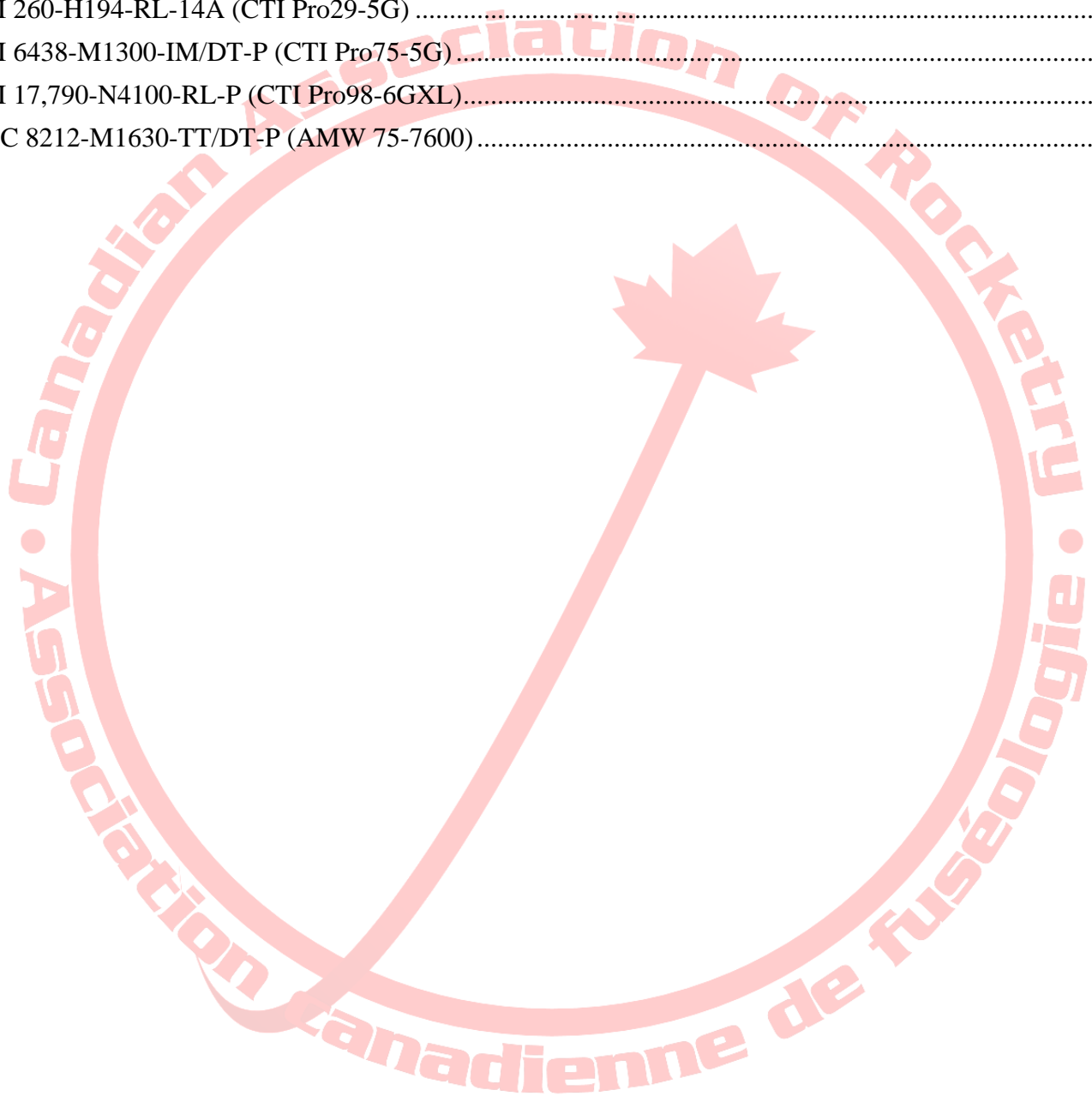
Respectfully submitted,

Thomas Raithby  
Chair of CAR Motor Certification

[www.CanadianRocketry.org](http://www.CanadianRocketry.org)

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## Certified Motors

### CTI 207-H151-RL-15A (CTI Pro29-4G)

Canadian Association of Rocketry  
 CAR Motor Certification  
 c/o 1518-3<sup>rd</sup> Ave. S.  
 Lethbridge, AB  
 T1J 0K8

August 25<sup>th</sup>, 2009

Cesaroni Technology Incorporated  
 2561 Stouffville Road  
 Gormley, Ontario  
 L0H 1G0

Dear Dr. Jeroen Louwers,

The **CTI 207-H151-RL-15A** rocket motor was tested August 12<sup>th</sup>, 2009 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR). The motor is hereby certified for hobby rocketry use by the members of CAR and any other rocketry associations with current reciprocal motor certification agreements in place with CAR.

|                                 |                            |                               |                          |
|---------------------------------|----------------------------|-------------------------------|--------------------------|
| <b>CAR Designation</b>          | <b>CTI 207-H151-RL-15A</b> | <b>Test Date</b>              | August 12, 2009          |
| <b>Manufacturer Designation</b> | 207-H151-15A               | <b>Manufacturer</b>           | Cesaroni Technology Inc. |
| <b>Propellant</b>               | <i>Red Lightning</i>       | <b>Hardware</b>               | Pro29-4G                 |
| <b>Single-Use/Reload/Hybrid</b> | Reloadable                 | <b>Motor Dimensions</b>       | 29mm x 231mm             |
| <b>Loaded Weight</b>            | 238 g                      | <b>Total Impulse</b>          | 207.2 Ns (46.6 lb-f.s)   |
| <b>Burnout Weight</b>           | 120 g                      | <b>Maximum Thrust</b>         | 214.8 N (48.3 lb-f)      |
| <b>Propellant Weight</b>        | 109.1 g                    | <b>Average Thrust</b>         | 150.8 N (33.9 lb-f)      |
| <b>Delays Tested</b>            | 15-6 seconds, adjustable   | <b>Specific Impulse (Isp)</b> | 193.7 s                  |
| <b>Samples per second</b>       | 1000                       | <b>Burn time</b>              | 1.38 s                   |
| <b>Notes</b>                    | 29.5% H                    |                               |                          |

Respectfully submitted,

Thomas Raithby  
 Chairman, CAR Motor Certification

08120903.gra

## CTI 260-H194-RL-14A (CTI Pro29-5G)

Canadian Association of Rocketry  
 CAR Motor Certification  
 c/o 1518-3<sup>rd</sup> Ave. S.  
 Lethbridge, AB  
 T1J 0K8

August 25<sup>th</sup>, 2009

Cesaroni Technology Incorporated  
 2561 Stouffville Road  
 Gormley, Ontario  
 L0H 1G0

Dear Dr. Jeroen Louwers,

The **CTI 260-H194-RL-14A** rocket motor was tested August 12<sup>th</sup>, 2009 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR). The motor is hereby certified for hobby rocketry use by the members of CAR and any other rocketry associations with current reciprocal motor certification agreements in place with CAR.

|                                 |                          |                               |                          |
|---------------------------------|--------------------------|-------------------------------|--------------------------|
| <b>CAR Designation</b>          | <b>260-H194-RL-14A</b>   | <b>Test Date</b>              | August 12, 2009          |
| <b>Manufacturer Designation</b> | 260-H194-14A             | <b>Manufacturer</b>           | Cesaroni Technology Inc. |
| <b>Propellant</b>               | <i>Red Lightning</i>     | <b>Hardware</b>               | Pro29-5G                 |
| <b>Single-Use/Reload/Hybrid</b> | Reloadable               | <b>Motor Dimensions</b>       | 29mm x 276mm             |
| <b>Loaded Weight</b>            | 284 g                    | <b>Total Impulse</b>          | 260.3 Ns (58.5 lb-f.s)   |
| <b>Burnout Weight</b>           | 139 g                    | <b>Maximum Thrust</b>         | 292.0 N (65.6 lb-f)      |
| <b>Propellant Weight</b>        | 136.4 g                  | <b>Average Thrust</b>         | 194.3 N (43.7 lb-f)      |
| <b>Delays Tested</b>            | 14–5 seconds, adjustable | <b>Specific Impulse (Isp)</b> | 194.6 s                  |
| <b>Samples per second</b>       | 1000                     | <b>Burn time</b>              | 1.34 S                   |
| <b>Notes</b>                    | 62.7% H                  |                               |                          |

Respectfully submitted,

Thomas Raithby  
 Chairman, CAR Motor Certification

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## CTI 6438-M1300-IM/DT-P (CTI Pro75-5G)

Canadian Association of Rocketry  
 CAR Motor Certification  
 c/o 1518-3<sup>rd</sup> Ave. S.  
 Lethbridge, AB  
 T1J 0K8

August 25<sup>th</sup>, 2009

Cesaroni Technology Incorporated  
 2561 Stouffville Road  
 Gormley, Ontario  
 L0H 1G0

Dear Dr. Jeroen Louwers,

The **CTI 6438-M1300-IM/DT-P** rocket motor was tested August 12<sup>th</sup>, 2009 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR). The motor is hereby certified for hobby rocketry use by the members of CAR and any other rocketry associations with current reciprocal motor certification agreements in place with CAR.

|                                 |                           |                               |                           |
|---------------------------------|---------------------------|-------------------------------|---------------------------|
| <b>CAR Designation</b>          | <b>6438-M1300-IM/DT-P</b> | <b>Test Date</b>              | August 12, 2009           |
| <b>Manufacturer Designation</b> | 6438-M1300-P              | <b>Manufacturer</b>           | Cesaroni Technology Inc.  |
| <b>Propellant</b>               | <i>Imax / Dual Thrust</i> | <b>Hardware</b>               | Pro75-5G                  |
| <b>Single-Use/Reload/Hybrid</b> | Reloadable                | <b>Motor Dimensions</b>       | 75mm x 757mm              |
| <b>Loaded Weight</b>            | 5657 g                    | <b>Total Impulse</b>          | 6438.2 Ns (1447.4 lb-f.s) |
| <b>Burnout Weight</b>           | 2062 g                    | <b>Maximum Thrust</b>         | 2826.9 N (635.5 lb-f)     |
| <b>Propellant Weight</b>        | 3437 g                    | <b>Average Thrust</b>         | 1303.9 N (293.1 lb-f)     |
| <b>Delays Tested</b>            | plugged                   | <b>Specific Impulse (Isp)</b> | 191.0 s                   |
| <b>Samples per second</b>       | 1000                      | <b>Burn time</b>              | 4.94 s                    |
| <b>Notes</b>                    | 25.7% M                   |                               |                           |

Respectfully submitted,

Thomas Raithby  
 Chairman, CAR Motor Certification

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## CTI 17,790-N4100-RL-P (CTI Pro98-6GXL)

Canadian Association of Rocketry  
 CAR Motor Certification  
 c/o 1518-3<sup>rd</sup> Ave. S.  
 Lethbridge, AB  
 T1J 0K8

August 25<sup>th</sup>, 2009

Cesaroni Technology Incorporated  
 2561 Stouffville Road  
 Gormley, Ontario  
 L0H 1G0

Dear Dr. Jeroen Louwers,

The **CTI 17,790-N4100-RL-P** rocket motor was tested August 12<sup>th</sup>, 2009 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR). The motor is hereby certified for hobby rocketry use by the members of CAR and any other rocketry associations with current reciprocal motor certification agreements in place with CAR.

|                                 |                          |                               |                             |
|---------------------------------|--------------------------|-------------------------------|-----------------------------|
| <b>CAR Designation</b>          | <b>17,790-N4100-RL-P</b> | <b>Test Date</b>              | August 12, 2009             |
| <b>Manufacturer Designation</b> | 17,790-N4100-P           | <b>Manufacturer</b>           | Cesaroni Technology Inc.    |
| <b>Propellant</b>               | <i>Red Lightning</i>     | <b>Hardware</b>               | Pro98-6GXL                  |
| <b>Single-Use/Reload/Hybrid</b> | Reloadable               | <b>Motor Dimensions</b>       | 98mm x 1239mm               |
| <b>Loaded Weight</b>            | 14,748 g                 | <b>Total Impulse</b>          | 17,790.3 Ns (3999.4 lb-f.s) |
| <b>Burnout Weight</b>           | 5,368 g                  | <b>Maximum Thrust</b>         | 4797.0 N (1078.4 lb-f)      |
| <b>Propellant Weight</b>        | 9,101 g                  | <b>Average Thrust</b>         | 4127.0 N (927.8 lb-f)       |
| <b>Delays Tested</b>            | plugged                  | <b>Specific Impulse (Isp)</b> | 199.3 s                     |
| <b>Samples per second</b>       | 1000                     | <b>Burn time</b>              | 4.31 s                      |
| <b>Notes</b>                    | 73.7% N                  |                               |                             |

Respectfully submitted,

Thomas Raithby  
 Chairman, CAR Motor Certification

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## ABC 8212-M1630-TT/DT-P (AMW 75-7600)

Canadian Association of Rocketry  
 CAR Motor Certification  
 c/o 1518-3<sup>rd</sup> Ave. S.  
 Lethbridge, AB  
 T1J 0K8

August 25<sup>th</sup>, 2009

Cesaroni Technology Incorporated  
 2561 Stouffville Road  
 Gormley, Ontario  
 L0H 1G0

Dear Dr. Jeroen Louwers,

The **ABC 8212-M1630-TT/DT-P** rocket motor was tested August 12<sup>th</sup>, 2009 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR). The motor is hereby certified for hobby rocketry use by the members of CAR and any other rocketry associations with current reciprocal motor certification agreements in place with CAR.

|                                 |  |                               |                          |
|---------------------------------|--|-------------------------------|--------------------------|
| <b>CAR Designation</b>          | <b>8212-M1630-TT/DT-P</b>  | <b>Test Date</b>              | August 12, 2009          |
| <b>Manufacturer Designation</b> | 8212-M1630-P   | <b>Manufacturer</b>           | Cesaroni Technology Inc. |
| <b>Propellant</b>               | <i>Tamed Tiger / Dual-Thrust</i>   | <b>Hardware</b>               | AMW 75-7600              |
| <b>Single-Use/Reload/Hybrid</b> | Reloadable   | <b>Motor Dimensions</b>       | 75mm x 1039mm            |
| <b>Loaded Weight</b>            | 7237 g   | <b>Total Impulse</b>          | 8212.1 Ns (1846.2lb-f.s) |
| <b>Burnout Weight</b>           | 2888 g   | <b>Maximum Thrust</b>         | 6805.2 N (1529.9 lb-f)   |
| <b>Propellant Weight</b>        | 3948 g   | <b>Average Thrust</b>         | 1633.2 N (367.2 lb-f)    |
| <b>Delays Tested</b>            | plugged  | <b>Specific Impulse (Isp)</b> | 212.1 s                  |
| <b>Samples per second</b>       | 1000   | <b>Burn time</b>              | 5.03 s                   |
| <b>Notes</b>                    | 60.4% M. The reload ships with a single-use nozzle, but requires the CTI Pro75 Nozzle Holder for assembly. |                               |                          |

Respectfully submitted,

Thomas Raithby  
 Chairman, CAR Motor Certification

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