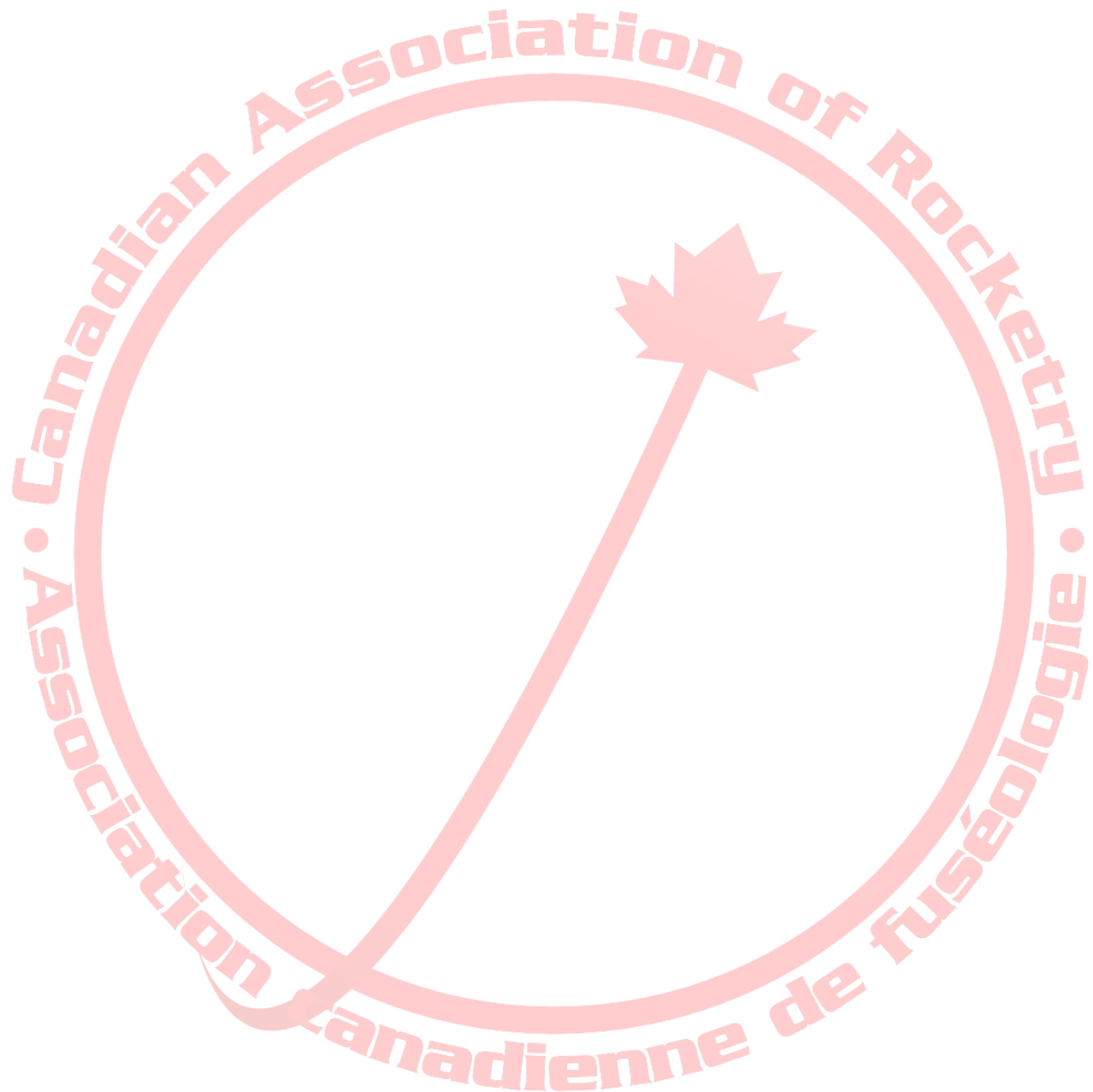


Canadian Association of Rocketry

Rocket Motor Certification



October 24 + 25, 2009 Session

Submitted to the CAR Executive November 8th, 2009

Introduction

A motor testing session was held at the Cesaroni Technology Incorporated facility in Gormley, Ontario on October 24th and 25th, 2009.

A total of thirty-one (31) motors were fired to certify eleven (11) new reloads. The certified list includes a G, an I, an L, six M's and two N motors. The propellants included **Blue Streak**, **Classic**, **Imax**, **White Thunder**, and **Skidmark**. Two new propellants, "**Pink**" and "**C-Star**" were introduced. The total fired impulse fired this session was 190,005.8 N-sec (16.0% R).

Two of these new motors are in the top of their impulse range:

- 9994-M3400- White Thunder (95.2% M)
- 20146-N5800- C-Star (96.7% N)

The ABC 4701-L1290-SK reload, designed for the AMW 76-6000 case, ships with single-use nozzle and requires the standard Pro75 CTI nozzle carrier to complete the assembly.

Testing of spacers continued this session, including spacers to accommodate Pro38-6GXL cases, the Pro54 family (including the 6GXL case). So there are now two spacers for each of the Pro38 and Pro54 lineups. The products will ship with instructions on proper use. The XL spacers are for use in XL cases only.

As a result of this and previous testing, 38mm, 54mm, 75mm and 98mm spacers (alone or stacked) and the Pro29 tapered closure form part of the certified motor systems from CTI. These spacers (38mm, 54mm, 75mm and 98mm) and optional closures (29mm) will continue to be included in upcoming tests to observe the effect of 'accelerated' usage.

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 eleven (11) 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. As time permits, photos from some of the firings will be posted as well.

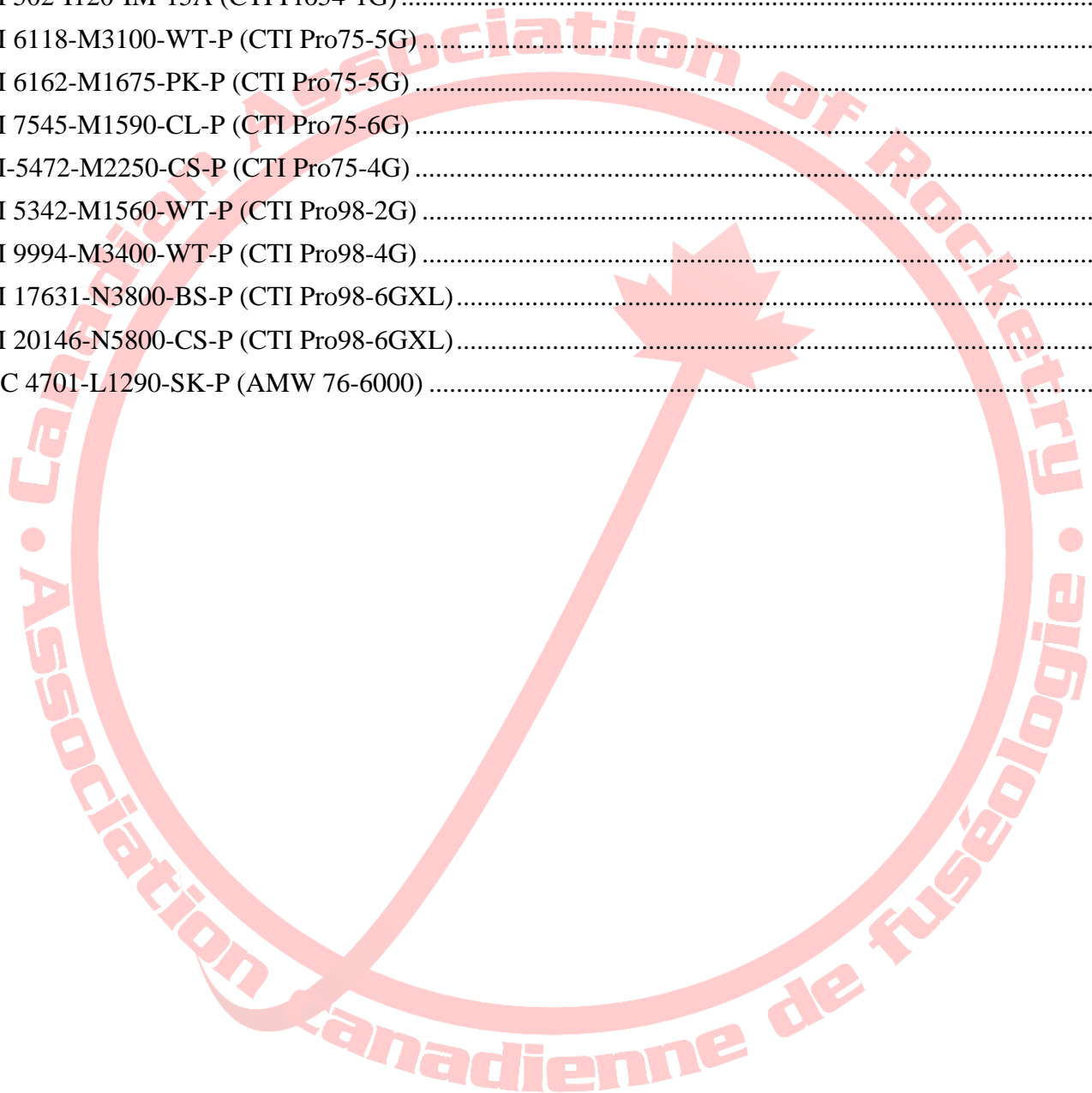
Respectfully submitted,

Thomas Raithby
Chair of CAR Motor Certification

www.CanadianRocketry.org

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Certified Motors

CTI 93-G80-SK-14A (CTI Pro29-2G)

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

November 8th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 93-G80-SK-14A** rocket motor was tested October 25th, 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.

CAR Designation	CTI 93-G80-SK-14A	Test Date	October 25, 2009
Manufacturer Designation	CTI 93-G80-14A	Manufacturer	Cesaroni Technology Inc.
Propellant	<i>Skidmark</i>	Hardware	Pro29-2G
Single-Use/Reload/Hybrid	Reloadable	Motor Dimensions	29mm x 142mm
Loaded Weight	143.2 g	Total Impulse	92.9 Ns (20.9 lb-s)
Burnout Weight	86.8 g	Maximum Thrust	112.2 N (25.2 lb)
Propellant Weight	50.0 g	Average Thrust	80.5 N (18.1 lb)
Delays Tested	14-5 seconds, adjustable	Specific Impulse (Isp)	189.40 s
Samples per second	1000	Burn time	1.15 s
Notes	17.3% G – Considered HP under NFPA due to high average thrust		

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

10250909.gra

CTI 502-I120-IM-15A (CTI Pro54-1G)

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

November 8th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 502-I120-IM-15A** rocket motor was tested October 24th, 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.

CAR Designation	CTI 502-I120-IM-15A	Test Date	October 24, 2009
Manufacturer Designation	CTI 502-I120-15A	Manufacturer	Cesaroni Technology Inc.
Propellant	<i>Imax</i>	Hardware	Pro54-1G
Single-Use/Reload/Hybrid	Reloadable	Motor Dimensions	54mm x 143mm
Loaded Weight	623.2 g	Total Impulse	501.8 Ns (112.8 lb-s)
Burnout Weight	323.2 g	Maximum Thrust	152.0 N (34.2 lb)
Propellant Weight	263.1 g	Average Thrust	122.2 N (27.5 lb)
Delays Tested	15–5 seconds, adjustable	Specific Impulse (Isp)	194.49 s
Samples per second	1000	Burn time	4.12 S
Notes	56.8% I		

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

10240903.gra

CTI 6118-M3100-WT-P (CTI Pro75-5G)

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

November 8th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 6118-M3100-WT-P** rocket motor was tested October 24th, 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.

CAR Designation	CTI 6118-M3100-WT-P	Test Date	October 24, 2009
Manufacturer Designation	CTI 6118-M3100-P	Manufacturer	Cesaroni Technology Inc.
Propellant	<i>White Thunder</i>	Hardware	Pro75-5G
Single-Use/Reload/Hybrid	Reloadable	Motor Dimensions	75mm x 757mm
Loaded Weight	5018 g	Total Impulse	6117.8 Ns (1375.3 lb-s)
Burnout Weight	2068 g	Maximum Thrust	3709.2 N (833.9 lb)
Propellant Weight	2903 g	Average Thrust	3075.0 N (691.3 lb)
Delays Tested	plugged	Specific Impulse (Isp)	214.93 s
Samples per second	1000	Burn time	1.99 s
Notes	19.5% M		

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

10240907.gra

CTI 6162-M1675-PK-P (CTI Pro75-5G)

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

November 8th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 6162-M1675-PK-P** rocket motor was tested October 24th, 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.

CAR Designation	CTI 6162-M1675-PK-P	Test Date	October 24, 2009
Manufacturer Designation	CTI 6162-M1675-P	Manufacturer	Cesaroni Technology Inc.
Propellant	<i>Pink</i>	Hardware	Pro75-5G
Single-Use/Reload/Hybrid	Reloadable	Motor Dimensions	75x757mm
Loaded Weight	5223 g	Total Impulse	6162.0 Ns (1385.3 lb-s)
Burnout Weight	2064 g	Maximum Thrust	2185.9 N (491.4 lb)
Propellant Weight	3019 g	Average Thrust	1674.1 N (376.4 lb)
Delays Tested	plugged	Specific Impulse (Isp)	208.16 s
Samples per second	1000	Burn time	3.68 s
Notes	20.4% M		

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

10240909.gra

CTI 7545-M1590-CL-P (CTI Pro75-6G)

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

November 8th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 7545-M1590-CL-P** rocket motor was tested October 24th, 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.

CAR Designation	CTI 7545-M1590-CL-P	Test Date	October 24, 2009
Manufacturer Designation	CTI 7545-M1590-P	Manufacturer	Cesaroni Technology Inc.
Propellant	<i>Classic</i>	Hardware	CTI Pro75-6G
Single-Use/Reload/Hybrid	Reloadable	Motor Dimensions	75mm x 893mm
Loaded Weight	6076 g	Total Impulse	7544.6 Ns (1696.1 lb-s)
Burnout Weight	2316 g	Maximum Thrust	2499.2 N (561.8 lb)
Propellant Weight	3590 g	Average Thrust	1592.4 N (358.0 lb)
Delays Tested	plugged	Specific Impulse (Isp)	214.28 s
Samples per second	1000	Burn time	4.74 s
Notes	47.4% M		

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

10240905.gra

CTI-5472-M2250-CS-P (CTI Pro75-4G)

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

November 8th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI-5472-M2250-CS-P** rocket motor was tested October 24th, 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.

CAR Designation	CTI-5472-M2250-CS-P	Test Date	October 24, 2009
Manufacturer Designation	CTI-5472-M2250-P	Manufacturer	Cesaroni Technology Inc.
Propellant	C-Star	Hardware	CTI Pro75-4G
Single-Use/Reload/Hybrid	Reloadable	Motor Dimensions	75mm x 621mm
Loaded Weight	4415 g	Total Impulse	5472.2 Ns (1230.2 lb-s)
Burnout Weight	1787 g	Maximum Thrust	2960.2 N (665.5 lb)
Propellant Weight	2489 g	Average Thrust	2267.5 N (509.8 lb)
Delays Tested	plugged	Specific Impulse (Isp)	224.17 s
Samples per second	1000	Burn time	2.41 s
Notes	6.9% M		

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

10240912.gra

CTI 5342-M1560-WT-P (CTI Pro98-2G)

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

November 8th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 5342-M1560-WT-P** rocket motor was tested October 24th, 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.

CAR Designation	CTI 5342-M1560-WT-P	Test Date	October 24, 2009
Manufacturer Designation	CTI 5342-M1560-P	Manufacturer	Cesaroni Technology Inc.
Propellant	<i>White Thunder</i>	Hardware	CTI Pro98-2G
Single-Use/Reload/Hybrid	Reloadable	Motor Dimensions	98mm x 394mm
Loaded Weight	4977 g	Total Impulse	5342.0 Ns (1200.9 lb-s)
Burnout Weight	2394 g	Maximum Thrust	1805.2 N (405.8 lb)
Propellant Weight	2452 g	Average Thrust	1562.0 N (351.2 lb)
Delays Tested	plugged	Specific Impulse (Isp)	222.15 s
Samples per second	1000	Burn time	3.42 s
Notes	4.3% M		

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

10240914.gra

CTI 9994-M3400-WT-P (CTI Pro98-4G)

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

November 8th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 9994-M3400-WT-P** rocket motor was tested October 24th, 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.

CAR Designation	CTI 9994-M3400-WT-P	Test Date	October 24, 2009
Manufacturer Designation	CTI 9994-M3400-P	Manufacturer	Cesaroni Technology Inc.
Propellant	<i>White Thunder</i>	Hardware	CTI Pro98-4G
Single-Use/Reload/Hybrid	Reloadable	Motor Dimensions	98mm x 702mm
Loaded Weight	8108 g	Total Impulse	9994.5 Ns (2246.8 lb-s)
Burnout Weight	3342 g	Maximum Thrust	3983.0 N (895.4 lb)
Propellant Weight	4452 g	Average Thrust	3421.1 N (769.1 lb)
Delays Tested	plugged	Specific Impulse (Isp)	228.92 s
Samples per second	1000	Burn time	2.92 s
Notes	95.2% M		

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

10240915.gra

CTI 17631-N3800-BS-P (CTI Pro98-6GXL)

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

November 8th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 17631-N3787-BS-P** rocket motor was tested October 24 and 25th, 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.

CAR Designation	CTI 17631-N3800-BS-P	Test Date	October 24/25, 2009
Manufacturer Designation	CTI 17631-N3800-P	Manufacturer	Cesaroni Technology Inc.
Propellant	<i>Blue Streak</i>	Hardware	CTI Pro98-6GXL
Single-Use/Reload/Hybrid	Reloadable	Motor Dimensions	98mm x 1239mm
Loaded Weight	14261 g	Total Impulse	17631.7 Ns (3963.8 lb-s)
Burnout Weight	5551 g	Maximum Thrust	5097.2 N (1145.9 lb)
Propellant Weight	8449 g	Average Thrust	3786.9 N (851.3 lb)
Delays Tested	plugged	Specific Impulse (Isp)	212.80 s
Samples per second	1000	Burn time	4.65 s
Notes	72.2% N		

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

10250901.gra

CTI 20146-N5800-CS-P (CTI Pro98-6GXL)

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

November 8th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 20146-N5800-CS-P** rocket motor was tested October 24th and 25th, 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.

CAR Designation	CTI 20146-N5800-CS-P	Test Date	October 24/25, 2009
Manufacturer Designation	CTI 20146-N5800-P	Manufacturer	Cesaroni Technology Inc.
Propellant	<i>C-Star</i>	Hardware	CTI Pro98-6GXL
Single-Use/Reload/Hybrid	Reloadable	Motor Dimensions	98mm x 1239mm
Loaded Weight	14826 g	Total Impulse	20145.7 Ns (4528.9 lb-s)
Burnout Weight	5401 g	Maximum Thrust	8034.6 N (1806.2 lb)
Propellant Weight	9021 g	Average Thrust	5774.1 N (1298.1 lb)
Delays Tested	plugged	Specific Impulse (Isp)	227.73 s
Samples per second	1000	Burn time	3.49 s
Notes	96.7% N		

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

10250903.gra

ABC 4701-L1290-SK-P (AMW 76-6000)

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

November 8th, 2009

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

Dear Dr. Jeroen Louwers,

The **ABC 4701-L1290-SK-P** rocket motor was tested October 25th, 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.

CAR Designation	ABC 4701-L1290-SK-P	Test Date	October 25, 2009
Manufacturer Designation	ABC 4701-L1290-P	Manufacturer	Cesaroni Technology Inc.
Propellant	<i>Skidmark</i>	Hardware	AMW 76-6000
Single-Use/Reload/Hybrid	Reloadable	Motor Dimensions	76mm x785mm
Loaded Weight	5399 g	Total Impulse	4701.1 Ns (1056.8 lb-s)
Burnout Weight	2352 g	Maximum Thrust	1587.9 N (357.0 lb)
Propellant Weight	2705 g	Average Thrust	1291.4 N (290.3 lb)
Delays Tested	plugged	Specific Impulse (Isp)	177.20 s
Samples per second	1000	Burn time	3.64 s
Notes	83.6% L		

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

10250913.gra

