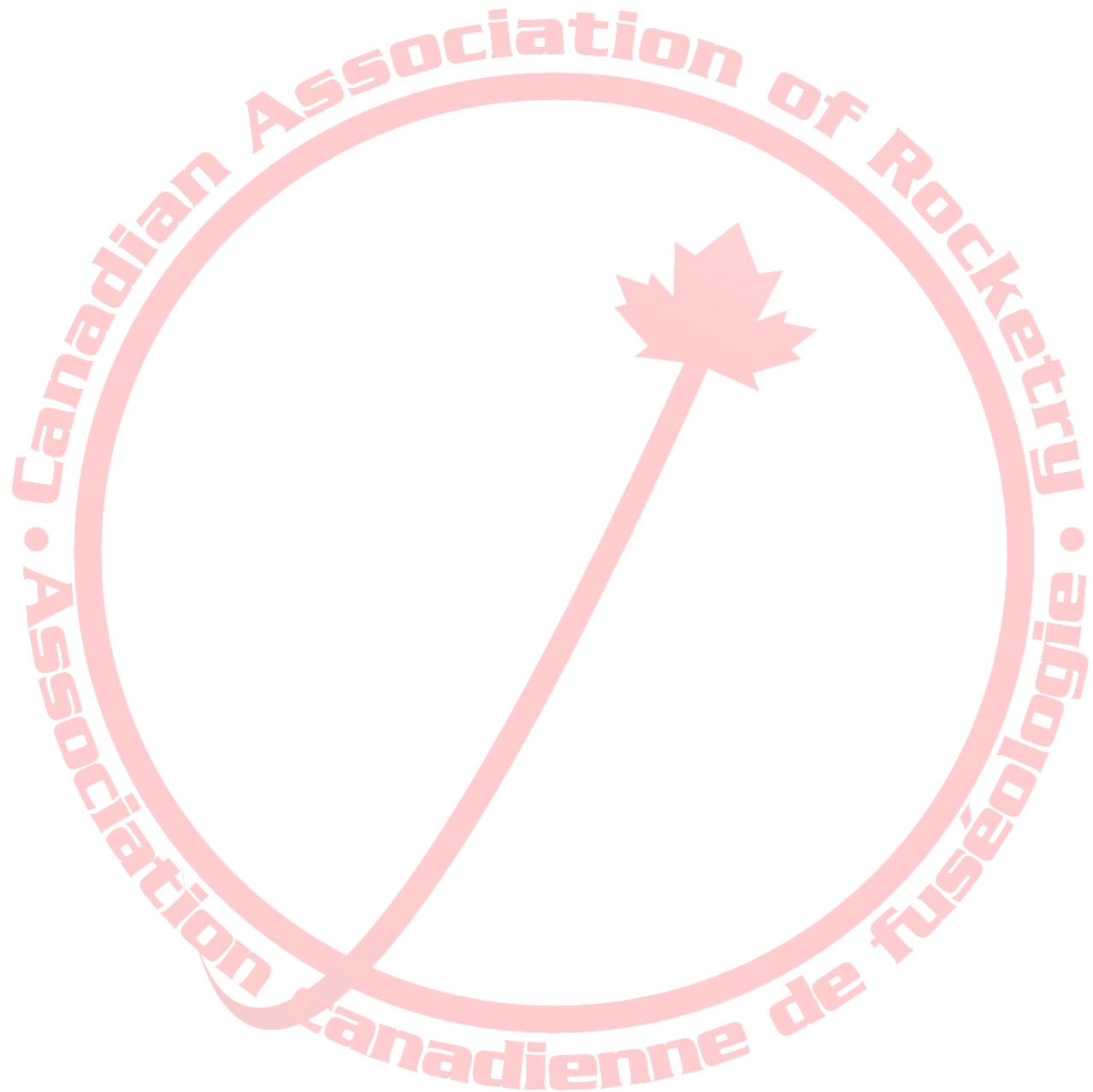


Canadian Association of Rocketry

Rocket Motor Certification



February 4th and 23rd, 2010 Sessions

Submitted to the CAR Executive March 1st, 2010

Introduction

Motor testing sessions were held at the Cesaroni Technology Incorporated facility in Gormley, Ontario on February 4th and February 23rd, 2010. Thanks to Angelo Castellano for attending the session and the folks at CTI for their perseverance in continuing to develop and test new products *in the snow*.

The first Vmax reloads are introduced to the Pro29 lineup, with reloads in 1G, 2G and 3G hardware. Due to the high thrust, the 56-F120-VM-14A and 110-G250-VM-14A motors are both considered high power under NFPA 1125. The 168-H410-VM-14A, like the Pro29-1G and -2G Vmax motors, has a burn time under ½ second.

Hardware: Stacks of three (3) spacers have been tested and approved for Pro29 motors.

A Skidmark was certified for the Pro54-1G case: 396-I140-SK-14A (23.6% I).

Green³ appears in two reloads this session:

- Pro54-4G 1597-K400-GR-14A (24.7% K)
- Pro98-6G 14272-N1975-GR-P (39.4% N)

A Longburn variant of Cesaroni Technology's Classic propellant appears in three Pro54 reloads (burn times are all over 8 seconds!):

- Pro54-4G 1526-K160-CL-6 (19.2% K) (delay is not adjustable)
- Pro54-6G 2285-K260-CL-P (78.5% K)
- Pro54-6GXL 2546-K300-CL-P (98.9% K) (uses a new threaded forward closure)

The 10347-N10000-VM-P was tested on February 23rd. With over a tonne of force, it will be interesting to see in flight!

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.

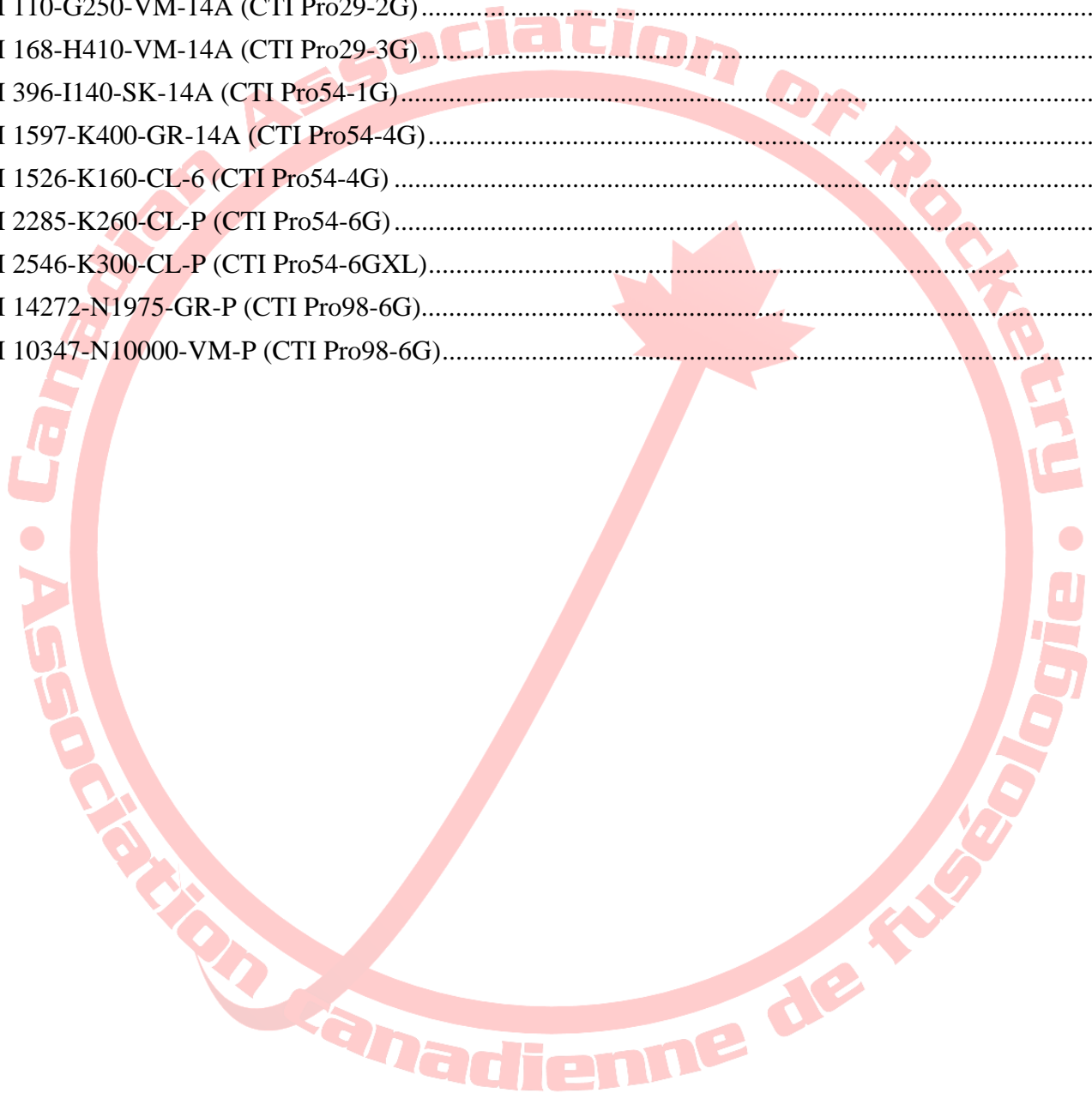
I am very pleased to announce the certification of these ten (10) new reloads from Cesaroni Technology, Inc. Individual certification letters follow for each motor. These letters and the accompanying thrust curves will be available on the official CAR website soon.

Respectfully submitted,

Thomas Raithby
Chair of CAR Motor Certification

Contents

Introduction.....	2
Certified Motors.....	4
CTI 56-F120-VM-14A (CTI Pro29-1G).....	4
CTI 110-G250-VM-14A (CTI Pro29-2G).....	5
CTI 168-H410-VM-14A (CTI Pro29-3G).....	6
CTI 396-I140-SK-14A (CTI Pro54-1G).....	7
CTI 1597-K400-GR-14A (CTI Pro54-4G).....	8
CTI 1526-K160-CL-6 (CTI Pro54-4G).....	9
CTI 2285-K260-CL-P (CTI Pro54-6G).....	10
CTI 2546-K300-CL-P (CTI Pro54-6GXL).....	11
CTI 14272-N1975-GR-P (CTI Pro98-6G).....	12
CTI 10347-N10000-VM-P (CTI Pro98-6G).....	13



Certified Motors

CTI 56-F120-VM-14A (CTI Pro29-1G)

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

March 1st, 2010

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

Dear Dr. Jeroen Louwers,

The **CTI 56-F120-VM-14A** rocket motor was tested February 4th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). The motor is hereby certified for hobby rocketry use by the members of CAR-ACF and any other rocketry associations with current reciprocal motor certification agreements in place with CAR-ACF.

CAR Designation	CTI 56-F120-VM-14A	Test Date	February 4 th , 2010
Manufacturer Designation	CTI 56-F120-14A	Manufacturer	Cesaroni Technology Inc.
Propellant	V-Max	Hardware	Pro29-1G
Single-Use/Reload/Hybrid	Reloadable	Motor Dimensions	29mm x 98mm
Loaded Weight	106.2 g	Total Impulse	56.0 Ns (12.6 lb-s)
Burnout Weight	74.8 g	Maximum Thrust	143.6 N (32.3 lb)
Propellant Weight	25.3 g	Average Thrust	123.4 N (27.7 lb)
Delays Tested	14-5 seconds, adjustable	Specific Impulse (Isp)	225.58s
Samples per second	1000	Burn time	0.45 s
Notes	39.9% F – Considered HP under NFPA due to average thrust > 80N		

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

CTI 110-G250-VM-14A (CTI Pro29-2G)

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

March 1st, 2010

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

Dear Dr. Jeroen Louwers,

The **CTI 110-G250-VM-14A** rocket motor was tested February 4th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). The motor is hereby certified for hobby rocketry use by the members of CAR-ACF and any other rocketry associations with current reciprocal motor certification agreements in place with CAR-ACF.

CAR Designation	CTI 110-G250-VM-14A	Test Date	February 4 th , 2010
Manufacturer Designation	CTI 110-G250- 14A	Manufacturer	Cesaroni Technology Inc.
Propellant	<i>V-Max</i>	Hardware	Pro29-2G
Single-Use/Reload/Hybrid	Reloadable	Motor Dimensions	29mm x 142mm
Loaded Weight	141.3 g	Total Impulse	110.0 Ns (24.7 lb-s)
Burnout Weight	83.8 g	Maximum Thrust	288.3 N (64.8 lb)
Propellant Weight	50.6 g	Average Thrust	243.7 N (54.8 lb)
Delays Tested	14–5 seconds, adjustable	Specific Impulse (Isp)	221.76 s
Samples per second	1000	Burn time	0.45 S
Notes	37.6% G Considered HP under NFPA due to average thrust > 80N		

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

CTI 168-H410-VM-14A (CTI Pro29-3G)

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

March 1st, 2010

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

Dear Dr. Jeroen Louwers,

The **CTI 168-H410-VM-14A** rocket motor was tested February 4th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). 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 168-H410-VM-14A	Test Date	February 4 th , 2010
Manufacturer Designation	CTI 168-H410-14A	Manufacturer	Cesaroni Technology Inc.
Propellant	<i>V-Max</i>	Hardware	Pro29-3G
Single-Use/Reload/Hybrid	Reloadable	Motor Dimensions	29mm x 187mm
Loaded Weight	182.5 g	Total Impulse	167.7 Ns (37.7 lb-s)
Burnout Weight	98.0 g	Maximum Thrust	522.8 N (117.5 lb)
Propellant Weight	75.9 g	Average Thrust	409.0 N (91.9 lb)
Delays Tested	14-5 seconds, adjustable	Specific Impulse (Isp)	225.27 s
Samples per second	1000	Burn time	0.41 s
Notes	4.8% H		

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

CTI 396-I140-SK-14A (CTI Pro54-1G)

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

March 1st, 2010

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

Dear Dr. Jeroen Louwers,

The **CTI 396-I140-SK-14A** rocket motor was tested February 4th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). 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 396-I140-SK-14A	Test Date	February 4 th , 2010
Manufacturer Designation	CTI 396-I140- 14A	Manufacturer	Cesaroni Technology Inc.
Propellant	<i>Skidmark</i>	Hardware	Pro54-1G
Single-Use/Reload/Hybrid	Reloadable	Motor Dimensions	54x143mm
Loaded Weight	564.3 g	Total Impulse	395.6 Ns (88.9 lb-s)
Burnout Weight	325.1 g	Maximum Thrust	164.0 N (36.9 lb)
Propellant Weight	210.4 g	Average Thrust	137.1 N (30.8 lb)
Delays Tested	14 to 4 seconds	Specific Impulse (Isp)	191.79 s
Samples per second	1000	Burn time	2.89 s
Notes	23.6% I		

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

CTI 1597-K400-GR-14A (CTI Pro54-4G)

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

March 1st, 2010

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

Dear Dr. Jeroen Louwers,

The **CTI 1597-K400-GR-14A** rocket motor was tested February 4th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). 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 1597-K400-GR-14A	Test Date	February 4 th , 2010
Manufacturer Designation	CTI 1597-K400-14A	Manufacturer	Cesaroni Technology Inc.
Propellant	<i>Green³</i>	Hardware	CTI Pro54-4G
Single-Use/Reload/Hybrid	Reloadable	Motor Dimensions	54mm x 404mm
Loaded Weight	1551.3 g	Total Impulse	1596.7 Ns (359.0 lb-s)
Burnout Weight	582.3 g	Maximum Thrust	484.5 N (108.9 lb)
Propellant Weight	924.3 g	Average Thrust	398.6 N (89.6 lb)
Delays Tested	14 to 4 seconds	Specific Impulse (Isp)	176.15 s
Samples per second	1000	Burn time	4.01 s
Notes	24.7% K		

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

CTI 1526-K160-CL-6 (CTI Pro54-4G)

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

March 1st, 2010

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

Dear Dr. Jeroen Louwers,

The **CTI 1526-K160-CL-6** rocket motor was tested February 4th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). 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 1526-K160-CL-6	Test Date	February 4 th , 2010
Manufacturer Designation	CTI 1526-K160-6	Manufacturer	Cesaroni Technology Inc.
Propellant	<i>Classic (Longburn)</i>	Hardware	CTI Pro54-4G
Single-Use/Reload/Hybrid	Reloadable	Motor Dimensions	54mm x 404mm
Loaded Weight	1472.0 g	Total Impulse	1525.5 Ns (343.0 lb-s)
Burnout Weight	624.0 g	Maximum Thrust	282.5 N (63.5 lb)
Propellant Weight	772.0 g	Average Thrust	157.9 N (35.5 lb)
Delays Tested	6 seconds, not adjustable	Specific Impulse (Isp)	201.50 s
Samples per second	1000	Burn time	9.66 s
Notes	19.2% K		

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

CTI 2285-K260-CL-P (CTI Pro54-6G)

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

March 1st, 2010

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

Dear Dr. Jeroen Louwers,

The **CTI 2285-K260-CL-P** rocket motor was tested February 4th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). 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 2285-K260-CL-P	Test Date	February 4 th , 2010
Manufacturer Designation	CTI 2285-K260-P	Manufacturer	Cesaroni Technology Inc.
Propellant	<i>Classic (Longburn)</i>	Hardware	CTI Pro54-6G
Single-Use/Reload/Hybrid	Reloadable	Motor Dimensions	54mm x 572mm
Loaded Weight	2047.5 g	Total Impulse	2285.1 Ns (513.7 lb-s)
Burnout Weight	806.2 g	Maximum Thrust	438.1 N (98.5 lb)
Propellant Weight	1149.3 g	Average Thrust	263.3 N (59.2 lb)
Delays Tested	plugged	Specific Impulse (Isp)	202.75 s
Samples per second	1000	Burn time	8.68 s
Notes	78.5% K		

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

CTI 2546-K300-CL-P (CTI Pro54-6GXL)

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

March 1st, 2010

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

Dear Dr. Jeroen Louwers,

The **CTI 2546-K300-CL-P** rocket motor was tested February 4th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). 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 2546-K300-CL-P	Test Date	February 4 th , 2010
Manufacturer Designation	CTI 2546-K300-P	Manufacturer	Cesaroni Technology Inc.
Propellant	<i>Classic (Longburn)</i>	Hardware	CTI Pro54-6GXL
Single-Use/Reload/Hybrid	Reloadable	Motor Dimensions	54mm x 649mm
Loaded Weight	2270.0 g	Total Impulse	2546.0 Ns (572.4 lb-s)
Burnout Weight	892.4 g	Maximum Thrust	561.8 N (126.3 lb)
Propellant Weight	1265.7 g	Average Thrust	304.0 N (68.3 lb)
Delays Tested	plugged	Specific Impulse (Isp)	205.12 s
Samples per second	1000	Burn time	8.38 s
Notes	98.9% K		

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

CTI 14272-N1975-GR-P (CTI Pro98-6G)

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

March 1st, 2010

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

Dear Dr. Jeroen Louwers,

The **CTI 14272-N1975-GR-P** rocket motor was tested February 4th, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). 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 14272-N1975-GR-P	Test Date	February 4 th , 2010
Manufacturer Designation	CTI 14272-N1975-P	Manufacturer	Cesaroni Technology Inc.
Propellant	<i>Green</i> ³	Hardware	CTI Pro98-6G
Single-Use/Reload/Hybrid	Reloadable	Motor Dimensions	98mm x 1010mm
Loaded Weight	13247.5 g	Total Impulse	14271.6 Ns (3208.4 lb-s)
Burnout Weight	4663.5 g	Maximum Thrust	2567.8 N (577.3 lb)
Propellant Weight	8560 g	Average Thrust	1974.5 N (443.9 lb)
Delays Tested	plugged	Specific Impulse (Isp)	170.01 s
Samples per second	1000	Burn time	7.23 s
Notes	39.4% N		

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

CTI 10347-N10000-VM-P (CTI Pro98-6G)

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

March 1st, 2010

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

Dear Dr. Jeroen Louwers,

The **CTI CTI 10347-N10000-VM-P** rocket motor was tested February 23rd, 2010 and is in compliance with the certification requirements and standards of the Canadian Association of Rocketry (CAR-ACF). 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 10347-N10000-VM-P	Test Date	February 23 rd , 2010
Manufacturer Designation	CTI 10347-N10000-P	Manufacturer	Cesaroni Technology Inc.
Propellant	<i>Vmax</i>	Hardware	CTI Pro98-6G
Single-Use/Reload/Hybrid	Reloadable	Motor Dimensions	98mm x 1010mm
Loaded Weight	9918.5 g	Total Impulse	10347.0 Ns (2326.1 lb-s)
Burnout Weight	4583.5 g	Maximum Thrust	11564.5 N (2599.8 lb)
Propellant Weight	5200 g	Average Thrust	10219.3 N (2297.4 lb)
Delays Tested	plugged	Specific Impulse (Isp)	202.90 s
Samples per second	1000	Burn time	1.01 s
Notes	1.0% N		

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

