

Canadian Association of Rocketry

Rocket Motor Certification



April 30 to May 4, 2009 Session

Submitted to the CAR Executive May 13, 2009

Introduction

A motor testing session was held at the Cesaroni Technology Incorporated facility in Gormley, Ontario during the dates of April 30th to May 1st, 2009.

A total of 208 motors were fired in hardware ranging from the new 29mm diameter Pro29, up to the 162mm diameter Pro150. Impulses ranged from F to O and reloads were certified for use in hardware from CTI, AMW/ProX and Aerotech.

Ten propellants were fired, including Classic (CL), Smoky Sam (SS), Vmax (VM), White Thunder (WT), Blue Streak (BS), Skidmark (SK), Red Lightning (RL), Blue Baboon (BB), Wild Wolf (WW), and a new release – Imax (IM).

An interesting development during this round of testing was submission of two very similar reloads. Two versions of the Pro29-3G Blue Streak reloads were certified. The first was certified as an H133 (see p12) and the second as a G118 (see p21). The H- and G variants of this motor use different nozzles, but are otherwise the same.

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. With that in mind, several of these motors include notes that indicate they are considered high power under NFPA 1125.

I am very pleased to announce the certification of 52 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.

Respectfully submitted,

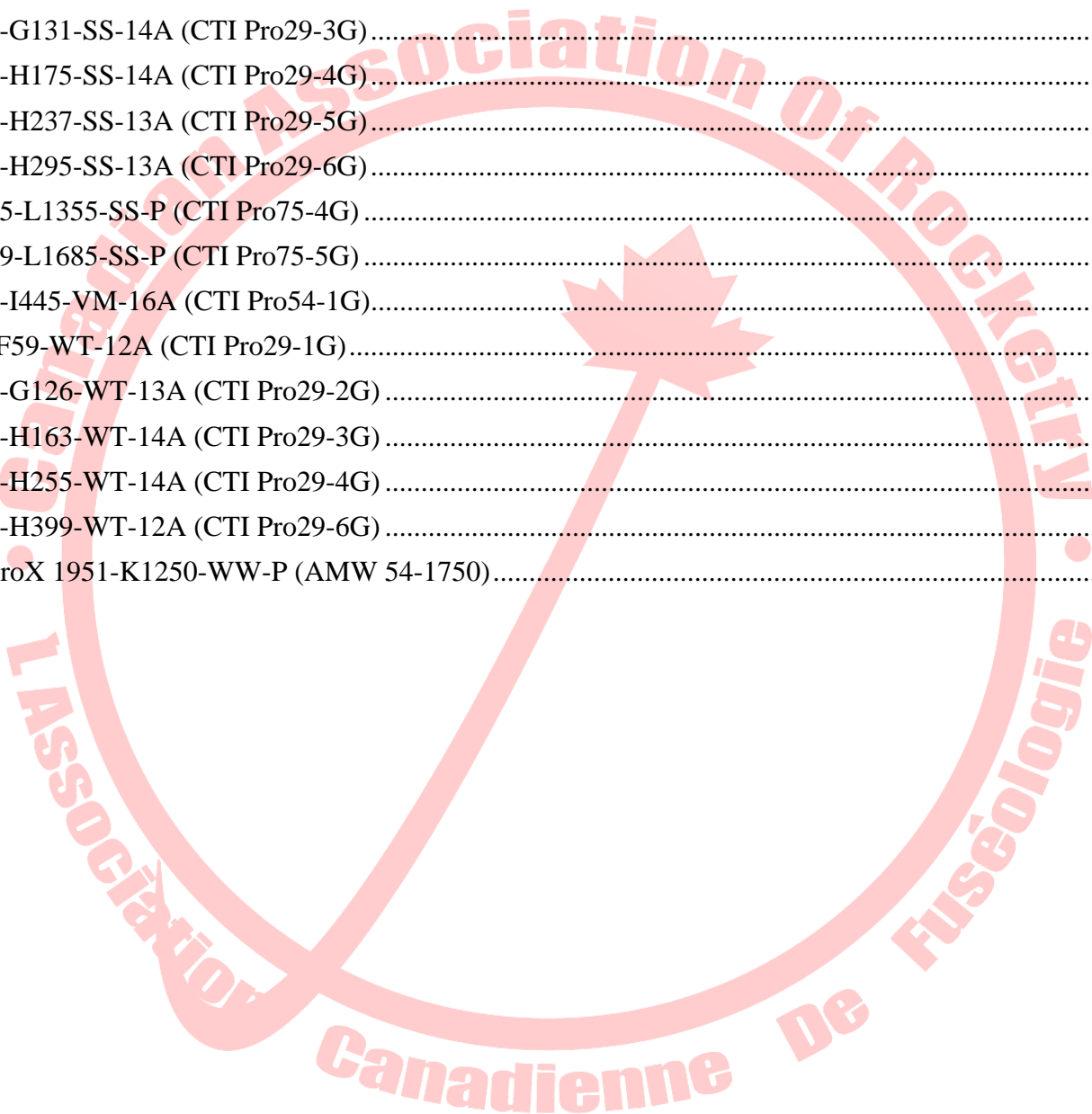
Thomas Raithby
Chair of CAR Motor Certification

www.CanadianRocketry.org

Contents

| | |
|--|----|
| Introduction..... | 2 |
| AMW/ProX 1109-J440-BB-P (AMW 54-1050) | 5 |
| AMW/ProX 1233-J475-BB-P (AMW 54-1400) | 6 |
| AMW/ProX 1791-K710-BB-P (AMW 54-1750)..... | 7 |
| AMW/ProX 2551-K1130-BB-P (AMW 54-2550)..... | 8 |
| CTI 37,148-O4900-BS-P (CTI Pro150-40k)..... | 9 |
| CTI 51-F36-BS-14A (CTI Pro29-1G)..... | 10 |
| CTI 107-G83-BS-14A (CTI Pro29-2G)..... | 11 |
| CTI 163-H133-BS-14A (CTI Pro29-3G <i>H Variant</i>) | 12 |
| CTI 217-H170-BS-14A (CTI Pro29-4G)..... | 13 |
| CTI 261-H200-BS-14A (CTI Pro29-5G)..... | 14 |
| CTI 315-H255-BS-14A (CTI Pro29-6G)..... | 15 |
| CTI 2383-K820-BS-17A (CTI Pro54-6G)..... | 16 |
| CTI 2771-L990-BS-P (CTI Pro54 6GXL)..... | 17 |
| CTI 4895-L1395-BS-P (CTI Pro75-4G)..... | 18 |
| CTI 6026-M1670-BS-P (CTI Pro75-5G / AT 75-6400)..... | 19 |
| CTI 159-G118-BS-15A (CTI Pro29-3G <i>G-Variant</i>) | 20 |
| CTI 108-G57-CL-12A (CTI Pro29-2G) | 21 |
| CTI 164-H90-CL-12A (CTI Pro29-3G) | 22 |
| CTI 216-H118-CL-12A (CTI Pro29-4G) | 23 |
| CTI 268-H140-CL-11A (CTI Pro29-5G) | 24 |
| CTI 312-H160-CL-12A (CTI Pro29-6G) | 25 |
| CTI 1008-J420-CL-15A (CTI Pro38 6GXL)..... | 26 |
| CTI 1115-J530-IM-15A (CTI Pro29-6G)..... | 27 |
| CTI 1115-J530-IM-15A (CTI Pro38 6GXL)..... | 28 |
| CTI 2653-L585-IM-P (CTI Pro75-2G)..... | 29 |
| CTI 6819-M1540-IM-P (CTI Pro75-5G)..... | 30 |
| CTI 3618-L995-RL-P (CTI Pro75-3G) | 31 |
| CTI 6128-M1810-RL-P (CTI Pro75 5G / AT 75-6400)..... | 32 |
| AMW/ProX 1531-K610-SK-P (AMW 54-1750) | 33 |
| CTI 138-G106-SK-14A (CTI Pro29-3G) | 34 |
| CTI 176-H123-SK-12A (CTI Pro29-4G) | 35 |
| CTI 220-H160-SK-14A (CTI Pro29-5G) | 36 |
| CTI 258-H180-SK-14A (CTI Pro29-6G) | 37 |

| | |
|---|----|
| CTI 1364-K454-SK-19A (CTI Pro54-4G) | 38 |
| CTI 1654-K515-SK-16A (CTI Pro54-5G) | 39 |
| CTI 2010-K675-SK-18A (CTI Pro54-6G) | 40 |
| CTI 2304-K815-SK-P (CTI Pro54-6GXL)..... | 41 |
| CTI 41-F36-SS-11A (CTI Pro29-1G)..... | 42 |
| CTI 84-G88-SS-11A (CTI Pro29-2G)..... | 43 |
| CTI 125-G131-SS-14A (CTI Pro29-3G)..... | 44 |
| CTI 166-H175-SS-14A (CTI Pro29-4G)..... | 45 |
| CTI 206-H237-SS-13A (CTI Pro29-5G)..... | 46 |
| CTI 253-H295-SS-13A (CTI Pro29-6G)..... | 47 |
| CTI 4025-L1355-SS-P (CTI Pro75-4G)..... | 48 |
| CTI 5069-L1685-SS-P (CTI Pro75-5G)..... | 49 |
| CTI 475-I445-VM-16A (CTI Pro54-1G)..... | 50 |
| CTI 57-F59-WT-12A (CTI Pro29-1G)..... | 51 |
| CTI 116-G126-WT-13A (CTI Pro29-2G)..... | 52 |
| CTI 166-H163-WT-14A (CTI Pro29-3G)..... | 53 |
| CTI 229-H255-WT-14A (CTI Pro29-4G)..... | 54 |
| CTI 282-H399-WT-12A (CTI Pro29-6G)..... | 55 |
| AMW/ProX 1951-K1250-WW-P (AMW 54-1750)..... | 56 |



AMW/ProX 1109-J440-BB-P (AMW 54-1050)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **AMW/ProX 1109-J440-BB-P** rocket motor was tested April 30th to May 4th, 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 | 1109-J440-BB-P | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 1109-J440-P | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Blue Baboon</i> | Hardware | AMW 54-1050 |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 54mm x 326mm |
| Loaded Weight | 1229 g | Total Impulse | 1109 Ns |
| Burnout Weight | 693 g | Maximum Thrust | 662.1 N |
| Propellant Weight | 528.4 g | Average Thrust | 441.7 N |
| Delays Tested | plugged | Specific Impulse (Isp) | 214.02 s |
| Samples per second | 1000 | Burn time | 2.48 s |
| Notes: | 73% J | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

05040943.gra

AMW/ProX 1233-J475-BB-P (AMW 54-1400)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **AMW/ProX 1233-J475-BB-P** rocket motor was tested April 30th to May 4th, 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 | 1233-J475-BB-P | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 1233-J475-P | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Blue Baboon</i> | Hardware | AMW 54-1400 |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 54mm x 403mm |
| Loaded Weight | 1493 g | Total Impulse | 1233.4 Ns |
| Burnout Weight | 779 g | Maximum Thrust | 627.5 N |
| Propellant Weight | 704.5 g | Average Thrust | 475.4 N |
| Delays Tested | plugged | Specific Impulse (Isp) | 178.53 s |
| Samples per second | 1000 | Burn time | 2.60 s |
| Notes: | 93% J | | |

Respectfully submitted,

Thomas Raithby
Chairman, CAR Motor Certification

05040936.gra

AMW/ProX 1791-K710-BB-P (AMW 54-1750)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **AMW/ProX 1791-K710-BB-P** rocket motor was tested April 30th to May 4th, 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 | 1791-K710-BB-P | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 1791-K710-P | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Blue Baboon</i> | Hardware | AMW 54-1750 |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 54mm x 491mm |
| Loaded Weight | 1812 g | Total Impulse | 1791.4 Ns |
| Burnout Weight | 910 g | Maximum Thrust | 966.8 N |
| Propellant Weight | 880.7 g | Average Thrust | 712.2 N |
| Delays Tested | plugged | Specific Impulse (Isp) | 207.41 s |
| Samples per second | 1000 | Burn time | 2.51 s |
| Notes | 40% K | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

05040929.gra

AMW/ProX 2551-K1130-BB-P (AMW 54-2550)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **AMW/ProX 2551-K1130-BB-P** rocket motor was tested April 30th to May 4th, 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 | 2551-K1130-BB-P | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 2551-K1130-P | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Blue Baboon</i> | Hardware | AMW 54-2550 |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 54mm x 728mm |
| Loaded Weight | 2574 g | Total Impulse | 2550.7 Ns |
| Burnout Weight | 1215 g | Maximum Thrust | 1548.5 N |
| Propellant Weight | 1334.0 g | Average Thrust | 1127.6 N |
| Delays Tested | plugged | Specific Impulse (Isp) | 194.97 s |
| Samples per second | 1000 | Burn time | 2.27 s |
| Notes | 99% K | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

05040938.gra

CTI 37,148-O4900-BS-P (CTI Pro150-40k)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 37,148-O4900-BS-P** rocket motor was tested April 30th to May 4th, 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 | 37,148-O4900-BS-P | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 37,148-O4900-P | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Blue Streak</i> | Hardware | Pro150-40K |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 161mm x 957mm |
| Loaded Weight | 32648 g | Total Impulse | 37,148.5 Ns |
| Burnout Weight | 13750 g | Maximum Thrust | 5586.5 N |
| Propellant Weight | 17700 g | Average Thrust | 4890.9 N |
| Delays Tested | plugged | Specific Impulse (Isp) | 214.02 s |
| Samples per second | 1000 | Burn time | 7.60 s |
| Notes | 81.3% O | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

05030901.gra

CTI 51-F36-BS-14A (CTI Pro29-1G)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 51-F36-BS-14A** rocket motor was tested April 30th to May 4th, 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 | 51-F36-BS-14A | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 51-F36-14A | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Blue Streak</i> | Hardware | Pro29-1G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 29mm x 98mm |
| Loaded Weight | 101 g | Total Impulse | 51.5 Ns |
| Burnout Weight | 69 g | Maximum Thrust | 46.3 N |
| Propellant Weight | 25.6 g | Average Thrust | 36.4 N |
| Delays Tested | 14 to 5, adjustable | Specific Impulse (Isp) | 205.09 s |
| Samples per second | 1000 | Burn time | 1.42 s |
| Notes | 29% F | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

05040914.gra

CTI 107-G83-BS-14A (CTI Pro29-2G)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 107-G83-BS-14A** rocket motor was tested April 30th to May 4th, 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 | 107-G83-BS-14A | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 107-G83-14A | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Blue Streak</i> | Hardware | Pro29-2G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 29mm x 142mm |
| Loaded Weight | 145 g | Total Impulse | 107.4 Ns |
| Burnout Weight | 87 g | Maximum Thrust | 99.0 N |
| Propellant Weight | 51.1 g | Average Thrust | 83.1 N |
| Delays Tested | 14 to 5, adjustable | Specific Impulse (Isp) | 214.35 s |
| Samples per second | 1000 | Burn time | 1.29 s |
| Notes | 34% G, NFPA HP due to average thrust over 80 N | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

05040921.gra

CTI 163-H133-BS-14A (CTI Pro29-3G H Variant)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 163-H133-BS-14A** rocket motor was tested April 30th to May 4th, 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 | 163-H133-BS-14A | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 163-H133-14A | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Blue Streak</i> | Hardware | Pro29-3G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 29mm x 187mm |
| Loaded Weight | 190 g | Total Impulse | 163.3 Ns |
| Burnout Weight | 105 g | Maximum Thrust | 191.1 N |
| Propellant Weight | 76.7 g | Average Thrust | 133.1 N |
| Delays Tested | 14 to 5, adjustable | Specific Impulse (Isp) | 217.13 s |
| Samples per second | 1000 | Burn time | 1.23 s |
| Notes | 2% H | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

04300924.gra

CTI 217-H170-BS-14A (CTI Pro29-4G)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 217-H170-BS-14A** rocket motor was tested April 30th to May 4th, 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 | 217-H170-BS-14A | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 217-H170-14A | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Blue Streak</i> | Hardware | Pro29-4G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 29mm x 231mm |
| Loaded Weight | 232 g | Total Impulse | 217.1 Ns |
| Burnout Weight | 121 g | Maximum Thrust | 243.8 N |
| Propellant Weight | 102.3 g | Average Thrust | 171.3 N |
| Delays Tested | 14 to 5, adjustable | Specific Impulse (Isp) | 216.42 s |
| Samples per second | 1000 | Burn time | 1.27 s |
| Notes | 36% H | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

04300928.gra

CTI 261-H200-BS-14A (CTI Pro29-5G)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 261-H200-BS-14A** rocket motor was tested April 30th to May 4th, 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 | 261-H200-BS-14A | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 261-H200-14A | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Blue Streak</i> | Hardware | Pro29-5G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 29mm x 276mm |
| Loaded Weight | 274 g | Total Impulse | 260.8 Ns |
| Burnout Weight | 138 g | Maximum Thrust | 303.2 N |
| Propellant Weight | 127.9 g | Average Thrust | 201.7 N |
| Delays Tested | 14 to 5, adjustable | Specific Impulse (Isp) | 207.94 s |
| Samples per second | 1000 | Burn time | 1.29 s |
| Notes | 63% H | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

04300933.gra

CTI 315-H255-BS-14A (CTI Pro29-6G)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 315-H255-BS-14A** rocket motor was tested April 30th to May 4th, 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 | 315-H255-BS-14A | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 315-H255-14A | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Blue Streak</i> | Hardware | Pro29-6G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 29mm x 320mm |
| Loaded Weight | 318 g | Total Impulse | 315.4 Ns |
| Burnout Weight | 156 g | Maximum Thrust | 411.1 N |
| Propellant Weight | 153.4 g | Average Thrust | 254.2 N |
| Delays Tested | 14 to 5, adjustable | Specific Impulse (Isp) | 209.65 s |
| Samples per second | 1000 | Burn time | 1.24 s |
| Notes | 97% H | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

04300935.gra

CTI 2383-K820-BS-17A (CTI Pro54-6G)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 2383-K820-BS-17A** rocket motor was tested April 30th to May 4th, 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 | 2383-K820-BS-17A | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 2383-K820-17A | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Blue Streak</i> | Hardware | Pro54-6G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 54mm x 572mm |
| Loaded Weight | 1982 g | Total Impulse | 2383.0 Ns |
| Burnout Weight | 750 g | Maximum Thrust | 1470.5 N |
| Propellant Weight | 1164.0 g | Average Thrust | 821.6 N |
| Delays Tested | 17 to 7, adjustable | Specific Impulse (Isp) | 208.76 s |
| Samples per second | 1000 | Burn time | 2.90 s |
| Notes | 86% K | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

05010940.gra

CTI 2771-L990-BS-P (CTI Pro54 6GXL)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 2771-L990-BS-P** rocket motor was tested April 30th to May 4th, 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 | 2771-L990-BS-P | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 2771-L990-P | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Blue Streak</i> | Hardware | Pro54-6GXL |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 54mm x 649mm |
| Loaded Weight | 2236 g | Total Impulse | 2771.0 Ns |
| Burnout Weight | 819 g | Maximum Thrust | 1702.7 N |
| Propellant Weight | 1369.4 g | Average Thrust | 991.0 N |
| Delays Tested | plugged | Specific Impulse (Isp) | 206.34 s |
| Samples per second | 1000 | Burn time | 2.80 s |
| Notes | 8% L | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

05020901.gra

CTI 4895-L1395-BS-P (CTI Pro75-4G)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 4895-L1395-BS-P** rocket motor was tested April 30th to May 4th, 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 | 4895-L1395-BS-P | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 4895-L1395-P | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Blue Streak</i> | Hardware | Pro75-4G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 75mm x 621mm |
| Loaded Weight | 4323 g | Total Impulse | 4895.4 Ns |
| Burnout Weight | 1848 g | Maximum Thrust | 1779.9 N |
| Propellant Weight | 2364.9 g | Average Thrust | 1395.7 N |
| Delays Tested | plugged | Specific Impulse (Isp) | 211.09 s |
| Samples per second | 1000 | Burn time | 3.51 s |
| Notes | 91% L | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

05030905.gra

CTI 6026-M1670-BS-P (CTI Pro75-5G / AT 75-6400)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 6026-M1670-BS-P** rocket motor was tested April 30th to May 4th, 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 | 6026-M1670-BS-P | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 6026-M1670-P | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Blue Streak</i> | Hardware | Pro75-5G / AT 75-6400 |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 75mm x 757mm / 801mm |
| Loaded Weight | CTI 5231g / AT 5322g | Total Impulse | 6041.7 Ns |
| Burnout Weight | CTI 2130g / AT 2244g | Maximum Thrust | 2232.1 N |
| Propellant Weight | 2956.1 g | Average Thrust | 1667.8 N |
| Delays Tested | Plugged | Specific Impulse (Isp) | 208.41 s |
| Samples per second | 1000 | Burn time | 3.63 s |
| Notes | 18% M, cross-certified in Aerotech hardware, figures for CTI / Aerotech | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

05020913.gra

CTI 159-G118-BS-15A (CTI Pro29-3G G-Variant)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 159-G118-BS-15A** rocket motor was tested April 30th to May 4th, 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 | 159-G118-BS-15A | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 159-G118-15A | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Blue Streak</i> | Hardware | Pro29-3G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 29mm x 187mm |
| Loaded Weight | 188 g | Total Impulse | 159.1 Ns |
| Propellant Weight | 105 g | Maximum Thrust | 157.3 N |
| Burnout Weight | 76.7 g | Average Thrust | 117.8 N |
| Delays Tested | 15 to 6, adjustable | Specific Impulse (Isp) | 211.58 s |
| Samples per second | 1000 | Burn time | 1.35 s |
| Notes | 99% G, NFPA HP due to average thrust over 80 N | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

05010901.gra

CTI 108-G57-CL-12A (CTI Pro29-2G)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 108-G57-CL-12A** rocket motor was tested April 30th to May 4th, 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 | 108-G57-CL-12A | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 108-G57-12A | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Classic</i> | Hardware | Pro29-2G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 29mm x 142mm |
| Loaded Weight | 146 g | Total Impulse | 107.8 Ns |
| Burnout Weight | 87 g | Maximum Thrust | 85.4 N |
| Propellant Weight | 51.4 g | Average Thrust | 57.2 N |
| Delays Tested | 12 to 3, adjustable | Specific Impulse (Isp) | 213.78 s |
| Samples per second | 1000 | Burn time | 1.89 s |
| Notes | 35% G | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

04300903.gra

CTI 164-H90-CL-12A (CTI Pro29-3G)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 164-H90-CL-12A** rocket motor was tested April 30th to May 4th, 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 | 164-H90-CL-12A | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 164-H90-12A | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Classic</i> | Hardware | Pro29-3G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 29mm x 187mm |
| Loaded Weight | 163 g | Total Impulse | 164.2 Ns |
| Burnout Weight | 106 g | Maximum Thrust | 154.1 N |
| Propellant Weight | 77.1 g | Average Thrust | 90.3 N |
| Delays Tested | 12 to 3, adjustable | Specific Impulse (Isp) | 217.15 s |
| Samples per second | 1000 | Burn time | 1.82 s |
| Notes | 3% H | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

04300905.gra

CTI 216-H118-CL-12A (CTI Pro29-4G)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 216-H118-CL-12A** rocket motor was tested April 30th to May 4th, 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 | 216-H118-CL-12A | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 216-H118-12A | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Classic</i> | Hardware | Pro29-4G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 29mm x 231mm |
| Loaded Weight | 232 g | Total Impulse | 216.2 Ns |
| Burnout Weight | 121 g | Maximum Thrust | 191.3 N |
| Propellant Weight | 102.8 g | Average Thrust | 118.4 N |
| Delays Tested | 12 to 3, adjustable | Specific Impulse (Isp) | 214.50 s |
| Samples per second | 1000 | Burn time | 1.83 s |
| Notes | 35% H | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

04300907.gra

CTI 268-H140-CL-11A (CTI Pro29-5G)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 268-H140-CL-11A** rocket motor was tested April 30th to May 4th, 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 | 268-H140-CL-11A | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 268-H140-11A | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Classic</i> | Hardware | Pro29-5G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 29mm x 276mm |
| Loaded Weight | 277 g | Total Impulse | 268.0 Ns |
| Burnout Weight | 138 g | Maximum Thrust | 247.8 N |
| Propellant Weight | 128.5 g | Average Thrust | 141.8 N |
| Delays Tested | 11 to 2, adjustable | Specific Impulse (Isp) | 212.65 s |
| Samples per second | 1000 | Burn time | 1.89 s |
| Notes | 67% H | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

04300911.gra

CTI 312-H160-CL-12A (CTI Pro29-6G)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 312-H160-CL-12A** rocket motor was tested April 30th to May 4th, 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 | 312-H160-CL-12A | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 312-H160-12A | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Classic</i> | Hardware | Pro29-6G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 29mm x 320mm |
| Loaded Weight | 319 g | Total Impulse | 311.7 Ns |
| Burnout Weight | 153 g | Maximum Thrust | 334.8 N |
| Propellant Weight | 154.2 g | Average Thrust | 161.5 N |
| Delays Tested | 12 to 3, adjustable | Specific Impulse (Isp) | 206.1 s |
| Samples per second | 1000 | Burn time | 1.93 s |
| Notes | 95% H | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

04300914.gra

CTI 1008-J420-CL-15A (CTI Pro38 6GXL)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 1008-J420-CL-15A** rocket motor was tested April 30th to May 4th, 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 | 1008-J420-CL-15A | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 1008-J420-15A | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Classic</i> | Hardware | Pro38-6GXL |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 38mm x 500mm |
| Loaded Weight | 874 g | Total Impulse | 1007.8 Ns |
| Burnout Weight | 352 g | Maximum Thrust | 783.1 N |
| Propellant Weight | 479.6 g | Average Thrust | 419.9 N |
| Delays Tested | 15 to 6, adjustable | Specific Impulse (Isp) | 214.27 s |
| Samples per second | 1000 | Burn time | 2.40 s |
| Notes | 57% J | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

05010910.gra

CTI 1115-J530-IM-15A (CTI Pro29-6G)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 348-I204-IM-13A** rocket motor was tested April 30th to May 4th, 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 | 348-I204-IM-13A | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 348-I204-13A | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Imax</i> | Hardware | Pro29-6G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 29mm x 320mm |
| Loaded Weight | 349 g | Total Impulse | 347.7 Ns |
| Burnout Weight | 155 g | Maximum Thrust | 356.8 N |
| Propellant Weight | 185.4 g | Average Thrust | 204.2 N |
| Delays Tested | 13 to 4, adjustable | Specific Impulse (Isp) | 191.26 s |
| Samples per second | 1000 | Burn time | 1.70 s |
| Notes | 9% I | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

05010906.gra

CTI 1115-J530-IM-15A (CTI Pro38 6GXL)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 1115-J530-IM-15A** rocket motor was tested April 30th to May 4th, 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 | 1115-J530-IM-15A | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 1115-J530-15A | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Imax</i> | Hardware | Pro38-6GXL |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 38mm x 500mm |
| Loaded Weight | 977 g | Total Impulse | 1115.5 Ns |
| Burnout Weight | 352 g | Maximum Thrust | 828.8 N |
| Propellant Weight | 576.5 g | Average Thrust | 531.2 N |
| Delays Tested | 15 to 6, adjustable | Specific Impulse (Isp) | 197.30 s |
| Samples per second | 1000 | Burn time | 2.10 s |
| Notes | 74% J | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

05010915.gra

CTI 2653-L585-IM-P (CTI Pro75-2G)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 2653-L585-IM-P** rocket motor was tested April 30th to May 4th, 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 | 2653-L585-IM-P | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 2653-L585-P | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Imax</i> | Hardware | Pro75-2G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 75mm x 350mm |
| Loaded Weight | 2784 g | Total Impulse | 2653.4 Ns |
| Burnout Weight | 1260 g | Maximum Thrust | 679.8 N |
| Propellant Weight | 1449.8 g | Average Thrust | 583.8 N |
| Delays Tested | plugged | Specific Impulse (Isp) | 186.63 s |
| Samples per second | 1000 | Burn time | 4.55 s |
| Notes | 4% L | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

05020919.gra

CTI 6819-M1540-IM-P (CTI Pro75-5G)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 6819-M1540-IM-P** rocket motor was tested April 30th to May 4th, 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 | 6819-M1540-IM-P | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 6819-M1540-P | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Imax</i> | Hardware | Pro75-5G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 75mm x 757mm |
| Loaded Weight | 5906 g | Total Impulse | 6819.4 Ns |
| Burnout Weight | 2128 g | Maximum Thrust | 2328.8 N |
| Propellant Weight | 3624.4 g | Average Thrust | 1537.1 N |
| Delays Tested | plugged | Specific Impulse (Isp) | 191.86 s |
| Samples per second | 1000 | Burn time | 4.44 s |
| Notes | 33% M | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

05020917.gra

CTI 3618-L995-RL-P (CTI Pro75-3G)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 3618-L995-RL-P** rocket motor was tested April 30th to May 4th, 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 | 3618-L995-RL-P | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 3618-L995-P | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Red Lightning</i> | Hardware | Pro75-3G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 75mm x 486mm |
| Loaded Weight | 3591 g | Total Impulse | 3618.0 Ns |
| Burnout Weight | 1595 g | Maximum Thrust | 1404.5 N |
| Propellant Weight | 1912.5 g | Average Thrust | 996.5 N |
| Delays Tested | plugged | Specific Impulse (Isp) | 192.90 s |
| Samples per second | 1000 | Burn time | 3.63 s |
| Notes | 41% L | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

05020902.gra

CTI 6128-M1810-RL-P (CTI Pro75 5G / AT 75-6400)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 6128-M1810-RL-P** rocket motor was tested April 30th to May 4th, 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 | 6128-M1810-RL-P | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 6128-M1810-P | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Red Lightning</i> | Hardware | Pro75-5G / AT 75-6400 |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 75mm x 757mm / 801mm |
| Loaded Weight | CTI 5416g / AT 5553g | Total Impulse | 6132.0 Ns |
| Burnout Weight | CTI 2119g / AT 2263g | Maximum Thrust | 2158.6 N |
| Propellant Weight | 3196.0 g | Average Thrust | 1811.3 N |
| Delays Tested | plugged | Specific Impulse (Isp) | 195.65 s |
| Samples per second | 1000 | Burn time | 3.39 s |
| Notes | 20% M, cross-certified in Aerotech hardware, figures for CTI / Aerotech | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

05020902.gra

AMW/ProX 1531-K610-SK-P (AMW 54-1750)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **AMW/ProX 1531-K610-SK-P** rocket motor was tested April 30th to May 4th, 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 | 1531-K610-SK-P | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 1531-K610-P | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Skidmark</i> | Hardware | AMW 54-1750 |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 54mm x 491mm |
| Loaded Weight | 1765 g | Total Impulse | 1531.0 Ns |
| Burnout Weight | 899 g | Maximum Thrust | 730.6 N |
| Propellant Weight | 861.0 g | Average Thrust | 612.1 N |
| Delays Tested | plugged | Specific Impulse (Isp) | 181.32 s |
| Samples per second | 1000 | Burn time | 2.50 s |
| Notes | 20% K | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

05040939.gra

CTI 138-G106-SK-14A (CTI Pro29-3G)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 138-G106-SK-14A** rocket motor was tested April 30th to May 4th, 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 | 138-G106-SK-14A | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 138-G106-14A | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Skidmark</i> | Hardware | Pro29-3G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 29mm x 187mm |
| Loaded Weight | 187 g | Total Impulse | 138.3 Ns |
| Burnout Weight | 106 g | Maximum Thrust | 128.7 N |
| Propellant Weight | 75.0 g | Average Thrust | 106.0 N |
| Delays Tested | 14 to 5, adjustable | Specific Impulse (Isp) | 187.99 s |
| Samples per second | 1000 | Burn time | 1.31 s |
| Notes | 73% G, NFPA HP due to average thrust over 80 N | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

04300942.gra

CTI 176-H123-SK-12A (CTI Pro29-4G)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 176-H123-SK-12A** rocket motor was tested April 30th to May 4th, 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 | 176-H123-SK-12A | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 176-H123-12A | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Skidmark</i> | Hardware | Pro29-4G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 29mm x 231mm |
| Loaded Weight | 228 g | Total Impulse | 176.5 Ns |
| Burnout Weight | 122 g | Maximum Thrust | 149.8 N |
| Propellant Weight | 100.0 g | Average Thrust | 123.0 N |
| Delays Tested | 12 to 3, adjustable | Specific Impulse (Isp) | 179.97 s |
| Samples per second | 1000 | Burn time | 1.44 s |
| Notes | 10% H | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

04300944.gra

CTI 220-H160-SK-14A (CTI Pro29-5G)

Canadian Association of Rocketry
 CAR Motor Certification
 c/o 1518-3rd Ave. S.
 Lethbridge, AB
 T1J 0K8
 May 12th, 2009
 Cesaroni Technology Incorporated
 2561 Stouffville Road
 Gormley, Ontario
 L0H 1G0

Dear Dr. Jeroen Louwers,

The **CTI 220-H160-SK-14A** rocket motor was tested April 30th to May 4th, 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 | 220-H160-SK-14A | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 220-H160-14A | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Skidmark</i> | Hardware | Pro29-5G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 29mm x 276mm |
| Loaded Weight | 272 g | Total Impulse | 220.5 Ns |
| Burnout Weight | 140 g | Maximum Thrust | 191.9 N |
| Propellant Weight | 125.0 g | Average Thrust | 159.0 N |
| Delays Tested | 14 to 5, adjustable | Specific Impulse (Isp) | 179.85 s |
| Samples per second | 1000 | Burn time | 1.40 s |
| Notes | 38% H | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

04300948.gra

CTI 258-H180-SK-14A (CTI Pro29-6G)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 258-H180-SK-14A** rocket motor was tested April 30th to May 4th, 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 | 258-H180-SK-14A | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 258-H180-14A | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Skidmark</i> | Hardware | Pro29-6G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 29mm x 320mm |
| Loaded Weight | 314 g | Total Impulse | 258.0 Ns |
| Burnout Weight | 156 g | Maximum Thrust | 266.1 N |
| Propellant Weight | 150.0 g | Average Thrust | 179.6 N |
| Delays Tested | 14 to 9, adjustable | Specific Impulse (Isp) | 175.36 s |
| Samples per second | 1000 | Burn time | 1.44 s |
| Notes | 61% H | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

04300950.gra

CTI 1364-K454-SK-19A (CTI Pro54-4G)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 1364-K454-SK-19A** rocket motor was tested April 30th to May 4th, 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 | 1364-K454-SK-19A | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 1364-K454-19A | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Skidmark</i> | Hardware | Pro54-4G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 54mm x 404mm |
| Loaded Weight | 1391 g | Total Impulse | 1363.7 Ns |
| Burnout Weight | 570 g | Maximum Thrust | 620.0 N |
| Propellant Weight | 769.2 | Average Thrust | 454.1 N |
| Delays Tested | 19 to 10, adjustable | Specific Impulse (Isp) | 180.78 s |
| Samples per second | 1000 | Burn time | 3.00 s |
| Notes | 7% K | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

05010919.gra

CTI 1654-K515-SK-16A (CTI Pro54-5G)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 1654-K515-SK-16A** rocket motor was tested April 30th to May 4th, 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 | 1654-K515-SK-16A | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 1654-K515-16A | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Skidmark</i> | Hardware | Pro54-5G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 38mm x 500mm |
| Loaded Weight | 1654 g | Total Impulse | 1653.9 Ns |
| Burnout Weight | 641 g | Maximum Thrust | 718.5 N |
| Propellant Weight | 961.5 g | Average Thrust | 513.4 N |
| Delays Tested | 16 to 6, adjustable | Specific Impulse (Isp) | 175.41 s |
| Samples per second | 1000 | Burn time | 3.22 s |
| Notes | 29% K | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

05010922.gra

CTI 2010-K675-SK-18A (CTI Pro54-6G)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 2010-K675-SK-18A** rocket motor was tested April 30th to May 4th, 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 | 2010-K675-SK-18A | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 2010-K675-18A | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Skidmark</i> | Hardware | Pro54-6G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 54mm x 572mm |
| Loaded Weight | 1940 g | Total Impulse | 2009.6 Ns |
| Burnout Weight | 740 g | Maximum Thrust | 991.6 N |
| Propellant Weight | 1140.8 g | Average Thrust | 673.8 N |
| Delays Tested | 18 to 8, adjustable | Specific Impulse (Isp) | 179.63 s |
| Samples per second | 1000 | Burn time | 2.98 s |
| Notes | 57% K | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

05010928.gra

CTI 2304-K815-SK-P (CTI Pro54-6GXL)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 2304-K815-SK-P** rocket motor was tested April 30th to May 4th, 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 | 2304-K815-SK-P | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 2304-K815-P | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Skidmark</i> | Hardware | Pro54-6GXL |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 54mm x 649mm |
| Loaded Weight | 2197 g | Total Impulse | 2303.7 Ns |
| Burnout Weight | 826 g | Maximum Thrust | 1246.5 N |
| Propellant Weight | 1342.1 g | Average Thrust | 814.9 N |
| Delays Tested | plugged | Specific Impulse (Isp) | 175.03 s |
| Samples per second | 1000 | Burn time | 2.83 s |
| Notes | 80% K | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

05010931.gra

CTI 41-F36-SS-11A (CTI Pro29-1G)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 41-F36-SS-11A** rocket motor was tested April 30th to May 4th, 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 | 41-F36-SS-11A | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 41-F36-11A | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Smoky Sam</i> | Hardware | Pro29-1G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 29mm x 98mm |
| Loaded Weight | 104 g | Total Impulse | 41.2 Ns |
| Burnout Weight | 69 g | Maximum Thrust | 72.7 N |
| Propellant Weight | 29.5 g | Average Thrust | 38.5 N |
| Delays Tested | 11 to 2, adjustable | Specific Impulse (Isp) | 142.32 s |
| Samples per second | 1000 | Burn time | 1.07 s |
| Notes | 3% F | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

05040919.gra

CTI 84-G88-SS-11A (CTI Pro29-2G)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 84-G88-SS-11A** rocket motor was tested April 30th to May 4th, 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 | 84-G88-SS-11A | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 84-G88-11A | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Smoky Sam</i> | Hardware | Pro29-2G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 29mm x 142mm |
| Loaded Weight | 152 g | Total Impulse | 84.3 Ns |
| Burnout Weight | 88 g | Maximum Thrust | 123.6 N |
| Propellant Weight | 59.0 g | Average Thrust | 87.8 N |
| Delays Tested | 11 to 2, adjustable | Specific Impulse (Isp) | 145.74 s |
| Samples per second | 1000 | Burn time | 0.96 s |
| Notes | 5% G, NFPA HP due to average thrust over 80 N | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

04300975.gra

CTI 125-G131-SS-14A (CTI Pro29-3G)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 125-G131-SS-14A** rocket motor was tested April 30th to May 4th, 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 | 125-G131-SS-14A | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 125-G131-14A | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Smoky Sam</i> | Hardware | Pro29-3G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 29mm x 187mm |
| Loaded Weight | 200 g | Total Impulse | 125.2 Ns |
| Burnout Weight | 106 g | Maximum Thrust | 182.6 N |
| Propellant Weight | 88.6 g | Average Thrust | 130.8 N |
| Delays Tested | 14 to 5, adjustable | Specific Impulse (Isp) | 144.06 s |
| Samples per second | 1000 | Burn time | 0.96 s |
| Notes | 56% G, NFPA HP due to average thrust over 80 N | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

04300979.gra

CTI 166-H175-SS-14A (CTI Pro29-4G)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 166-H175-SS-14A** rocket motor was tested April 30th to May 4th, 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 | 166-H175-SS-14A | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 166-H175-14A | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Smoky Sam</i> | Hardware | Pro29-4G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 29mm x 231mm |
| Loaded Weight | 247 g | Total Impulse | 166.0 Ns |
| Burnout Weight | 125 g | Maximum Thrust | 221.6 N |
| Propellant Weight | 118.1 g | Average Thrust | 175.1 N |
| Delays Tested | 14 to 5, adjustable | Specific Impulse (Isp) | 143.32 s |
| Samples per second | 1000 | Burn time | 0.95 s |
| Notes | 4% H | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

04300982.gra

CTI 206-H237-SS-13A (CTI Pro29-5G)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 206-H237-SS-13A** rocket motor was tested April 30th to May 4th, 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 | 206-H237-SS-13A | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 206-H237-13A | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Smoky Sam</i> | Hardware | Pro29-5G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 29mm x 276mm |
| Loaded Weight | 294 g | Total Impulse | 206.2 Ns |
| Burnout Weight | 143 g | Maximum Thrust | 295.9 N |
| Propellant Weight | 147.6 g | Average Thrust | 237.2 N |
| Delays Tested | 13 to 4, adjustable | Specific Impulse (Isp) | 142.46 s |
| Samples per second | 1000 | Burn time | 0.88 s |
| Notes | 29% H | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

04300984.gra

CTI 253-H295-SS-13A (CTI Pro29-6G)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 253-H295-SS-13A** rocket motor was tested April 30th to May 4th, 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 | 253-H295-SS-13A | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 253-H295-13A | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Smoky Sam</i> | Hardware | Pro29-6G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 29mm x 320mm |
| Loaded Weight | 342 g | Total Impulse | 252.7 Ns |
| Burnout Weight | 161 g | Maximum Thrust | 359.5 N |
| Propellant Weight | 177.1 | Average Thrust | 296.0 N |
| Delays Tested | 13 to 4, adjustable | Specific Impulse (Isp) | 145.51 s |
| Samples per second | 1000 | Burn time | 0.85 s |
| Notes | 58% H | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

04300988.gra

CTI 4025-L1355-SS-P (CTI Pro75-4G)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 4025-L1355-SS-P** rocket motor was tested April 30th to May 4th, 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 | 4025-L1355-SS-P | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 4025-L1355-P | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Smoky Sam</i> | Hardware | Pro75-4G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 75mm x 621mm |
| Loaded Weight | 4962 g | Total Impulse | 4025.5 Ns |
| Burnout Weight | 1886 g | Maximum Thrust | 1792.2 N |
| Propellant Weight | 3012.4 g | Average Thrust | 1355.7 N |
| Delays Tested | plugged | Specific Impulse (Isp) | 136.26 s |
| Samples per second | 1000 | Burn time | 2.97 s |
| Notes | 57% L | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

05020903.gra

CTI 5069-L1685-SS-P (CTI Pro75-5G)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 5069-L1685-SS-P** rocket motor was tested April 30th to May 4th, 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 | 5069-L1685-SS-P | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 5069-L1685-P | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Smoky Sam</i> | Hardware | Pro75-5G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 75mm x 757mm |
| Loaded Weight | 6051 g | Total Impulse | 5069.3 Ns |
| Burnout Weight | 2221 g | Maximum Thrust | 2569.9 N |
| Propellant Weight | 3773.1 g | Average Thrust | 1685.8 N |
| Delays Tested | plugged | Specific Impulse (Isp) | 137.00 s |
| Samples per second | 1000 | Burn time | 3.01 s |
| Notes | 98% L | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

05020910.gra

CTI 475-I445-VM-16A (CTI Pro54-1G)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 475-I445-VM-16A** rocket motor was tested April 30th to May 4th, 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 | 475-I445-VM-16A | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 475-I445-16A | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>Vmax</i> | Hardware | Pro54-1G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 54mm x 143mm |
| Loaded Weight | 575 g | Total Impulse | 474.9 Ns |
| Burnout Weight | 333 g | Maximum Thrust | 526.2 N |
| Propellant Weight | 212.7 g | Average Thrust | 442.7 N |
| Delays Tested | 16 to 6, adjustable | Specific Impulse (Isp) | 227.66 s |
| Samples per second | 1000 | Burn time | 1.07 s |
| Notes | 48% I | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

05010918.gra

CTI 57-F59-WT-12A (CTI Pro29-1G)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 57-F59-WT-12A** rocket motor was tested April 30th to May 4th, 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 | 57-F59-WT-12A | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 57-F59-12A | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>White Thunder</i> | Hardware | Pro29-1G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 29mm x 98mm |
| Loaded Weight | 99 g | Total Impulse | 57.0 Ns |
| Burnout Weight | 68 g | Maximum Thrust | 70.9 N |
| Propellant Weight | 26.1 g | Average Thrust | 58.9 N |
| Delays Tested | 12 to 3, adjustable | Specific Impulse (Isp) | 222.72 s |
| Samples per second | 1000 | Burn time | 0.96 s |
| Notes | 43% F | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

05040905.gra

CTI 116-G126-WT-13A (CTI Pro29-2G)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 116-G126-WT-13A** rocket motor was tested April 30th to May 4th, 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 | 116-G126-WT-13A | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 116-G126-13A | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>White Thunder</i> | Hardware | Pro29-2G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 29mm x 142mm |
| Loaded Weight | 145 g | Total Impulse | 116.0 Ns |
| Burnout Weight | 86 g | Maximum Thrust | 167.4 N |
| Propellant Weight | 52.1 g | Average Thrust | 125.8 N |
| Delays Tested | 13 to 4, adjustable | Specific Impulse (Isp) | 227.03 s |
| Samples per second | 1000 | Burn time | 0.93 s |
| Notes | 45% G, NFPA HP due to average thrust over 80 N | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

04300958.gra

CTI 166-H163-WT-14A (CTI Pro29-3G)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 166-H163-WT-14A** rocket motor was tested April 30th to May 4th, 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 | 166-H163-WT-14A | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 166-H163-14A | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>White Thunder</i> | Hardware | Pro29-3G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 29mm x 187mm |
| Loaded Weight | 187 g | Total Impulse | 166.3 Ns |
| Burnout Weight | 101 g | Maximum Thrust | 216.9 N |
| Propellant Weight | 78.2 g | Average Thrust | 162.7 N |
| Delays Tested | 14 to 5, adjustable | Specific Impulse (Isp) | 216.86 s |
| Samples per second | 1000 | Burn time | 1.02 s |
| Notes | 4% H | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

04300962.gra

CTI 229-H255-WT-14A (CTI Pro29-4G)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 229-H255-WT-14A** rocket motor was tested April 30th to May 4th, 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 | 229-H255-WT-14A | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 229-H255-14A | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>White Thunder</i> | Hardware | Pro29-4G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 29mm x 231mm |
| Loaded Weight | 232 g | Total Impulse | 229.3 Ns |
| Burnout Weight | 119 g | Maximum Thrust | 363.0 N |
| Propellant Weight | 104.3 g | Average Thrust | 254.3 N |
| Delays Tested | 14 to 5, adjustable | Specific Impulse (Isp) | 224.14 s |
| Samples per second | 1000 | Burn time | 0.90 s |
| Notes | 43% H | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

04300964.gra

CTI 282-H399-WT-12A (CTI Pro29-6G)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **CTI 282-H399-WT-12A** rocket motor was tested April 30th to May 4th, 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 | 282-H399-WT-12A | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 282-H399-12A | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>White Thunder</i> | Hardware | Pro29-6G |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 29mm x 320mm |
| Loaded Weight | 294 g | Total Impulse | 282.2 Ns |
| Burnout Weight | 154 g | Maximum Thrust | 545.8 N |
| Propellant Weight | 132.6 g | Average Thrust | 399.3 N |
| Delays Tested | 12 to 3, adjustable | Specific Impulse (Isp) | 217.02 s |
| Samples per second | 1000 | Burn time | 0.71 s |
| Notes | 76% H | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

04300966.gra

AMW/ProX 1951-K1250-WW-P (AMW 54-1750)

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

May 12th, 2009

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

Dear Dr. Jeroen Louwers,

The **AMW/ProX 1951-K1250-WW-P** rocket motor was tested April 30th to May 4th, 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 | 1951-K1250-WW-P | Test Date | April 30 - May 4, 2009 |
| Manufacturer Designation | 1951-K1250-P | Manufacturer | Cesaroni Technology Inc. |
| Propellant | <i>White Wolf</i> | Hardware | AMW 54-1750 |
| Single-Use/Reload/Hybrid | Reloadable | Motor Dimensions | 54mm x 491mm |
| Loaded Weight | 1815 g | Total Impulse | 1950.9 Ns |
| Burnout Weight | 890 g | Maximum Thrust | 1660.9 N |
| Propellant Weight | 915.0 | Average Thrust | 1251.9 N |
| Delays Tested | plugged | Specific Impulse (Isp) | 217.42 s |
| Samples per second | 1000 | Burn time | 1.56 s |
| Notes | 52% K | | |

Respectfully submitted,

Thomas Raithby
 Chairman, CAR Motor Certification

05040945.gra