

## Natel Sponsors the National Association of Rocketry

By Jim Angeloni—September 2007

AIA and the National Association of Rocketry (NAR), in partnership with NASA, the Department of Defense, the American Association of Physics Teachers and the 39 AIA members (Natel is a member), are proud to sponsor the 2007 Team America Rocketry Challenge, a national model rocket competition for U.S. high school and middle school students. A grand prize pool of over \$60,000 in cash and savings bonds will be shared by the



winning teams.

Natel's 2006 team placed 3rd in the nation in this contest. The Natel team was **West Point Beemer Junior Senior High School**, located in West Point, Nebraska - a thriving agricultural community in Northeast Nebraska along the Elkhorn River. The location is very attractive to people of all ages and backgrounds as it is 30 minutes from Fremont, 45 minutes from Norfolk, 70 minutes from Omaha, and 90 minutes from Lincoln. West Point was originally named New Philadelphia by settlers who moved across the country from the East in search of a better way of life. Later, the name of the community was changed to West Point because the

community was the western most point along the Elkhorn Valley. West Point has many past and present "local heroes" who carry on the 'can do' spirit and the values of hard work and cooperation. West Point is proud of its heritage and the families that have been here for three and four generations. Recently, West Point received "The Outstanding Community" distinction from the Nebraska Department of Economic Development Diplomats.

Natel is proud of the young men and women who were part of the "Rocketry Challenge".

The Rocket competition is a competitive rocket and payload-building challenge designed for high school students. It requires an eight month commitment to successfully design, construct, test, launch, and recover a reusable rocket and science payload. The initiative is more than designing and building a rocket from a commercial kit. It involves diverse aspects such as: scheduling, purchasing, performing calculations, financing the project, coordinating logistics, arranging press coverage, and documenting impact made on education through reports and design reviews. Schools are encouraged to involve a diverse group of departments such as mathematics, science, technology, English, journalism, and art.

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The performance targets for the launch vehicle and payload are:

- Vehicle carries science payload (a raw egg that must be returned to earth without a scratch or crack)
- Vehicle designed to carry the science payload to an altitude of one mile (5,280 ft.) above ground level (For this competition the team must get as close to 800 ft as possibly in no more than 45 sec)
- Maximum total motor impulse can not exceed 2560 Newton Seconds (K class)
- Motor impulse applicable to combinations of single motor, clustered motors, or staged motors
- Vehicle and science payload designed to be recoverable and reusable
- Vehicle and payload preparation on day of launch can not exceed four hours
- Data from science payload will be collected, analyzed, and reported by the team following the scientific method
- Vehicle uses solid motor propulsion with commercially available ammonium perchlorate composite propellant (APCP) motors
- Vehicle and payload will be equipped with a tracking device allowing the rocket to be recovered after launch



acceleration was 448 ft/s/2 or about 14Gs. Maximum velocity was 681.4 ft/s or 464.3 mph. It should be noted that this is nearly 70mph slower than our test flight. Altitude on this flight was also almost exactly 800. Overall, the team was extremely pleased with the flight and would much rather have had these flights than one of the major failures seen during the day.

The finals were held at National Association of Rocketry rang in Plains, Virginia. The finals called "Flyoff Day", dawned on beautiful Northern Virginia spring morning: no rain, no extreme temperature and only moderate amounts of wind. The student contestants

began arriving early and began their respective set-ups. The first round of flying began at 9 AM. There was TV coverage on the CBS morning show which included an on camera interview with legendary astronaut Buzz Aldrin and two student contestants.

Additionally, there was a flyover by a pair of U.S. Marine Harrier Jets. There were 100 finalist teams. Each team had three chances to launch their rocket and log the best overall flight statistics.

Out of the 678 teams that started the competition early in the year 100 teams made it to the semi-finals and 10 teams made it to the finals and our team from West Point High School placed 3<sup>rd</sup> out of the 10 who made the finals. This is a remarkable accomplishment considering the task and the original 678 teams they had to compete against. Natel congratulates the school and its 5 team members on a job well done.



Our teams' rocket performed very well.

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