ANNEX A.2k
FEDERATION AERONAUTIQUE INTERNATIONALE

NOMINATION FORM

THE FRANK EHLING DIPLOMA

(for outstanding accomplishment, by an organisation or individual, in connection with the promotion of aviation through the use of flying models

From NAC: Academy of Model Aeronautics_____ Date: 13 November 2015 _____

Address: 5161 E. Memorial Dr. _____ Country: United States of America

Muncie, Indiana 47302_____

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(Only one person from a country may be nominated annually by that candidate's National Airsport Control.)

Name of Nominee: National Association of Rocketry (NAR) & the Aerospace Industries Association (AIA)

Address: PO Box 407

Marion, Iowa 52302

United States of America

FULL INFORMATION ABOUT THE CANDIDATE'S ACTIVITIES UP TO 31st DECEMBER OF THE PRECEDING YEAR - Please Print

.....See Below

NAC Signature. _____

President or Secretary General of nominating FAI National Airsport Control

(must be submitted to the FAI Office by November 15)

International teams at 2014 Farnborough Air Show

US team with French PM Valls at 2015 Paris Air Show

Nomination:

The Academy of Model Aeronautics of the USA nominates the National Association of Rocketry (NAR) and the Aerospace Industries Association (AIA) for the FAI Frank Ehling Diploma for fourteen years of advancing aerospace-oriented science, technology, engineering and mathematics education through their joint creation, sponsorship, and dedicated sustainment of the International Youth Rocketry Challenge, the world's largest student rocketry competition and challenge program.

Proposed Citation:

The National Association of Rocketry and the Aerospace Industries Association of the US are recognized for partnering to create and sustain the International Youth Rocketry Challenge and for making it the world's largest rocketry-based student aerospace challenge and education program. This program, now in its fourteen year, annually enrolls well over 800 student teams, a total of over 5000 pre-university students from five nations, in an engineering design and flying challenge event using spacemodelling to teach principles of aerospace engineering and to inspire students toward aerospace careers. The final international championship is held each year at the world's largest international air show, alternately in Paris, France and in Farnborough, England, providing the highest possible level of positive international visibility to this aerosport discipline.

President Obama discusses rocketry with US teams at the 2013 and 2012 White House Science Fairs

Background. The International Youth Rocketry Challenge (IYRC) began in the US in 2002 as the Team America Rocketry Challenge (TARC) www.rocketcontest.org , a nation-wide rocketry-based challenge program for teams of three to ten 12 through 18-year old students. It is co-sponsored by the Aerospace Industries Association (AIA) www.aia-aerospace.org , the trade association for the US aerospace industry, and the National Association of Rocketry (NAR) www.nar.org , the US non-profit all-volunteer organization for rocketry hobbyists and educators and the US representatives to FAI spacemodelling. The event challenges students to work as a team through the academic year to design, build, and fly a complex model rocket carrying a fragile (raw egg) payload to a precise target altitude and return that payload to earth safely in a precise amount of time after liftoff. The winning team is the one that is closest to the target in both categories across two flights in a national final championship launch each spring.

Purpose. The goal of the program is to use the safe and fun activity of model rocketry in a structured year-long design-build-fly program that gives student teams the opportunity to learn basic aerospace sciences, hands-on craftsmanship skills, and how to work as a team on a technical project. The use of precise targets for flight performance goals forces students to fully understand the variables affecting rocket performance and learn how to trade off among them to adjust rocket flight altitude and duration onto the target through a program of carefully documented flight testing.

History. This challenge was intended to be a single-year US event in 2002-2003 to mark the 100th anniversary of manned flight. 873 teams of students, with over 6,000 members overall and representing all 50 US states, signed-up to compete that first year. The program's astonishing success in inspiring interest in rocketry-based educational activities in U.S. schools and motivating students toward aerospace careers led to great demand from schools and from the aerospace industry for its continuation. The AIA and NAR stepped up and made a sustained commitment to keeping it going, with AIA getting aerospace industry financial support to run the program and to provide its $100,000 in annual cash scholarship prizes, and with the NAR providing a nationwide network of 500 volunteer adult "mentors" to support teams locally. Over the first thirteen years of its operation (year number 14 is now in progress), TARC has enrolled 8,958 teams and over 60,000 students nationwide, an average of nearly 700 teams and 4,000 students each year, 25 percent of them female. In 2006, with support from the NAR, an identical program was begun in the UK, called the UK Youth Rocketry Challenge. In 2008 the US and UK began exchanging hosting the winning teams from their two nations in a face-to-face "Transatlantic Challenge" competition. In 2010 the French joined the program and the championship rocket fly-off was renamed the International Youth Rocketry Challenge and began being hosted at the Farnborough Air Show (in even-numbered years) and the Paris Air Show (odd-numbered years). That same year programs also began operating in Japan (the Japan Rocketry Challenge) and Australia (the Australian Youth Rocketry Challenge), all using the same rules as TARC. The US competition draws about 700 student teams (4,000 students) each year, the UK and French competitions about 40 teams each, and the Japanese and Australian about 25 teams each. This now-international program has become the world's largest rocketry competition.

Impact. Google *Team America Rocketry Challenge* and you will get over 7 million results. Browse the related site offerings and you will find a host of rocketry curriculum packages, student team websites, internships and scholarship opportunities that clearly illustrate the contribution that the program has provided to aerospace education in the United States. There are now rocketry clubs or activity groups in hundreds more secondary schools across the U.S. than there were prior to 2003, giving young students opportunities that they did not have before to engage in challenging and fun hands-on aerospace activities.

Reports from teachers and parents in the US indicate that the effect of the TARC experience of a mixture of fun (rocket flying captures the imagination!) and engineering has motivated many young people to pursue aerospace or technical majors in college who were not inclined in this direction prior to TARC. Two surveys of TARC participants have documented the program's impact:

- A survey in 2010 showed that 80% of students said participating in TARC had a positive impact on their decision of what to study in college and that they planned to pursue a STEM major.
- A survey in 2014 showed almost identical results concerning STEM majors, and further illustrated another dimension of the value of TARC: over 90% of students reported that the TARC program experience taught them valuable lessons in teamwork, problem-solving, and time management.

Examples. Below are four examples that illustrate the positive impact this event has had on students. A 3-minute YouTube video produced by AIA in 2012 has many more in-person stories; see it at:

https://www.youtube.com/watch?v=n3oxw3p5Hok&index=2&list=PLVIvr7qojo_FkS1GQCIdQtVX4JFb2ZtlM

- Janice Gong, a junior at University of Michigan studying aerospace engineering and former US participant, wrote in her blog "I consider myself part of a generation of young women actively transforming STEM statistics regarding woman. Much like those before me, I feel a strong responsibility in inspiring other students into STEM-field. In 2005, I stepped onto the field at the *Team America Rocketry Challenge* for the first time. I was in 7th grade. After a full year of working with my team of students and mentors, designing, testing and tweaking our rocket, we landed a third place finish - building a near perfect rocket and a lasting thrill that has maintained my enthusiasm over the years. So much so, that I competed throughout the rest of middle school and high-school. I went on to pursue my degree in Aerospace Engineering at the University of Michigan
- "TARC caused our school to form a rocketry/aerospace club, and the younger students are becoming more interested. Also, three other members of my team now plan to have a job in the aerospace field in the future because of TARC." -- 12th grade student, Texas, in 2010 TARC survey.
- "The planning, problem solving and construction skills learned and practiced by the students have given them the confidence that they can tackle more technical jobs than most had previously considered. Several students, both male and female, are considering entering the engineering fields because of TARC." -- Science teacher, Pennsylvania, in 2010 survey.
- 2012 TARC finalist Tashi Atruktsang recently put into words the impact the TARC program can have saying, "This is life changing. I think this has significantly changed my career choice. Before I wanted to be a doctor, but for sure now I want to be an aeronautic engineer."

Additional IYRC Facts.

- The US component of this event (TARC) won the Aviation Week Laureate Award for workforce in 2013, the US National Aeronautic Association Brewer Trophy in 2014, and the US National Coalition of Aerospace Educator Strickler Award in 2015
- TARC teacher Jeff Charbonneau was named 2013 US National Teacher of the Year
- TARC teacher Shella Condino received the 2012 Women in Aerospace Aerospace Educator Award

Summary. Over the last fourteen years the NAR/AIA co-sponsored International Youth Rocketry Challenge has emerged as a major new positive and highly visible force in the field of aerospace education programs, becoming the largest rocketry-based program in the world and demonstrating a high degree of success in motivating pre-university students toward aerospace careers. The program's success makes it a deserving candidate for the recognition of the FAI Frank Ehling Diploma.

The launch range for the US National Finals

NASA Administrator Bolden with the 2013 US winners