April 6, 2012

Dear Team America Rocketry Challenge Contestant,

Congratulations! You are a finalist for the Team America Rocketry Challenge. Your team's local qualification flight has earned you one of the 100 invitations to attend the Team America Rocketry Challenge fly-offs the weekend of May 11-13, 2012 in The Plains, VA. 678 teams from 48 states entered this year's competition and your flight was one of the 100 best. You should be proud of your achievements in aerospace design and rocketry.

To accept your spot in the finals please fill out and return **ALL** forms in the Attendance Confirmation & Registration Materials package (Appendix A.) Please **fax a copy or email the confirmation form, w-9s,** form to us**. If we do not receive all forms from your team by Monday April 23, 2012, we will offer your spot to an alternate team.** If you will not be able to attend the fly-offs, please let us know as soon as possible so that we may offer your spot to one of these alternate teams.

The enclosed information should answer your questions about procedures, lodging, and other aspects of the fly-off. It also addresses many of the questions that we have been receiving from teams over the last several months concerning event rules, legal rocket designs, etc; please read the entire document carefully. In case of conflict, the official rules take precedence. Remember that the exact model you fly at the fly-off must have previously been test-flown successfully.

Please contact us at anne.ward@aia-aerospace.org if there are things that you need to know about registration that are not covered by this letter. Check our website www.rocketcontest.org and the NAR website www.nar.org for updates on this event. If you have questions, please ask them by posting a question at http://groups.yahoo.com/group/NARTARC (NAR/TARC Yahoo Group), our online forum. We check this every day, and would like to answer your questions publicly for everyone to benefit.

Please fax or email a copy of the confirmation page (in Appendix A) and forms

FAX: 703-358-1133 **Email: anne.ward@aia-aerospace.org**

We look forward to meeting you at the fly-offs!

Sincerely,

Anne Ward
TARC Manager
Aerospace Industries Association (AIA)

Trip Barber
President
National Association of Rocketry (NAR)

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2012 Team America Rocketry Challenge Finals

Attendance Confirmation Information

IMPORTANT TEAM AMERICA CONTESTANT INFORMATION

Attendance:

Teams that are selected to attend the fly-off must confirm their participation by returning the enclosed confirmation form to Team America Headquarters, so that we receive it no later than **Monday, April 23, 2012**. Alternate teams will be notified by Tuesday, April 24, 2012 if a team has declined their invitation. Occasionally a team will drop out after April 24th at this point we will contact alternate teams in the order to see if they would like the spot.

We ask that any team that attends do so with an adult chaperone, preferably the supervising teacher, and at least one of the students; it is not mandatory that every student team member attend, but the more the better.

Team Membership Changes:

You may not add team members after your initial qualification flight attempt. Please submit an add/drop form if you choose to drop team members. All team members who are registered as of the date of the fly-off (regardless of whether they attend the fly-off) will share equally in any prizes awarded to a winning team. All team members on the final team should have contributed to the designing, building, and/or launching of the team's entry.

T-Shirts:

Team America Rocketry Challenge T-shirts are available first come first serve, for advance-order only at a price of $15. If you wish to purchase T-shirts, please indicate the number (by size) on the confirmation form and enclose payment (payable to AIA) when you send this form in. Shirts that you order will be issued at the registration tables that will be set up at the contestants' pre-flight briefing on Friday evening (explained below) and at the flying site on Saturday.

Dinner Tickets:

An optional post award ceremony barbeque dinner is offered for teams, NAR and AIA range crew volunteers, and special guests, so everyone can mingle after a busy day of flying. Dinner is provided free for team members and the team supervisor/adult chaperone (one per team). Additional tickets can be purchased for dinner at $20 per-person. If you wish to purchase tickets for family members or other guests, please indicate on the confirmation form the number of additional tickets needed and include that amount in your team payment. Tickets will be included with your registration packet.

2012 Team America Rocketry Challenge Finals

Directions, Travel, and Lodging

DIRECTIONS

Local Transportation:

Teams must provide their own transportation (rental vehicle) to get from the motel to the launch site, and to/from any airport. The nearest major airport to the flying site and to the motels in Manassas is Washington Dulles (IAD), 17 miles away. Baltimore-Washington International (BWI) is 70 miles from the motels and Reagan National (DCA) is about 35 miles. In planning your travel, please keep in mind DC rush hour(s); I-66 westbound from the DC area to Manassas and beyond is very heavily congested and very slow-moving by 2 PM on Fridays.

Friday Evening Contestant Briefing & Registration:

The Friday evening all-contestant registration and briefing will start at 7:30 PM at Metz Middle School, 9950 Wellington Road, Manassas, VA 20110. This is 6 miles from I-66 exit 47 where most of the hotels are, and the streets are crowded on Friday evenings so plan your trip accordingly. You should plan to arrive no earlier than 6:15 PM and no later than 7:00 PM in order to pick up your registration materials before the briefing.

Saturday Launch Site:

The launch site is Great Meadow Field Events Center, just south of the tiny town of The Plains, Virginia. To get there, take I-66 exit 31 (which is 16 miles west of the Manassas motels, toward Front Royal), turn left on Highway 245 (away from the town of The Plains and toward Old Tavern) and follow the signs about 2 miles to Great Meadow, which will be on your left.

There is a huge amount of parking at the launch site, all of it close to the launch range. A local volunteer group will manage access to parking, which is free.

TRAVEL

Funding:

There are no additional event fees for those teams selected for the fly-offs, however travel expenses to attend and purchase of the optional T-shirts are the responsibility of each team. The entire team does not necessarily have to come to the fly-off, but for a team to compete at least one member plus the supervising teacher must attend.

Sponsorship:

We are working with the aerospace industry, encouraging them to sponsor teams and help defray their travel costs for attending the fly-offs. We will be providing the name and phone/e-mail of each team's teacher to these sponsors and they will make direct contact with the teams that they wish to sponsor. There is no guarantee that every team will be sponsored, so we recommend that teams solicit sponsorships from businesses in their communities. Remind your sponsors that they may get national media coverage if you win the contest.

LODGING

Food:

There are many restaurants within 2 blocks of any of the motels.

A free pastry breakfast will be available to team members of first-round teams on the flying field from 7:30 AM to 9:00 AM on the day of the fly-offs. All other teams should eat before coming to The Plains.

Student contestants and team supervisors with credential badges will receive a free lunch that will be available starting at 11 AM, and a free ice cream dessert at an "ice cream social" that will start at 2:30 PM. Punches will be made in TARC credential badges for each of these; there are no meal "tickets".

There will be a food and beverage vendor on the field for lunch and anyone else that wishes to purchase food. Free water will be available throughout the day at the NAR Information tent next to the entrance gate to the flying area of the field. Please do not bring cooking devices to the field, but coolers are OK – no glass bottles.

We will end the day on Saturday with a barbeque dinner after the award ceremony where teams, NAR and AIA range crew volunteers, and VIP's can relax together after a busy day of flying. Parents and other spectators can purchase tickets for this event for $20; please send payment for these tickets with your attendance confirmation form.

Motels:

The designated Team America Rocketry Challenge motels with our group reservations are mostly at I-66 exit 47 in Manassas, VA. Take Highway 234 (Sudley Road) at this exit. The motels are within the first two blocks after the exit, one to the north and three to the south. There is one hotel in Warrenton, VA, a small town about 6 miles from the launch site on US Highway 17.

Teams are responsible for making their own lodging arrangements. We have reserved blocks of rooms (mostly with two beds) at the following motels. These are reserved under the group name "Team America Rocketry Challenge" for the nights of Friday, May 11 and Saturday, May 12. Please call and book early, as **these rooms will be released on April 13 if not reserved by then**. Those needing rooms must call in and reserve using individual credit cards. Tax on rooms adds 10% to the rates below. All the Manassas motels are within two blocks of each other and are surrounded by restaurants and shopping. There are restaurants near the Warrenton hotel as well. If you wish to make hotel reservations at places other than those listed below, you should pick among the many hotels that are near I-66 exit 47 in Manassas.

At I-66 Exit 47A (Highway 234/Sudley Road South)in Manassas:

- Quality Inn Manassas - 10653 Balls Ford Road, Manassas, VA 20109 - (703) 368-2800
  34 rooms (8 of these with one king bed) - $71.99 + tax

- Red Roof Inn Manassas - 10610 Automotive Drive, Manassas, VA 20109 - (703) 335-9333
  40 rooms - $84.99 + tax

If these room blocks are filled there are three other motels also located at this exit: Comfort Suites (703)686-1100; Hampton Inn (703)369-1100; and Holiday Inn Manassas Battlefield (800)315-2621. There is also a Super 8 Motel at this exit, which should be avoided based on previous years' experience.

At I-66 Exit 47B (Highway 234 North) in Manassas:

- Fairfield Inn & Suites – 6950 Nova Way, Manassas, VA 20109 – (703) 393-9966
  30 rooms - $89.00 + tax (includes breakfast)

- Holiday Inn Express & Suites – 10810 Battleview Pkwy, Manassas, VA 20109 – (703) 393-9797
  15 rooms (2 beds) - $99.00 + tax; plus 10 suites (2 rooms, 3 beds) - $119.00 + tax
  (includes breakfast)

There are three other motels located at this exit, all somewhat more expensive than the four listed above, and all good: Courtyard by Marriott (703) 335-1300 (first alternate choice); Four Points by Sheraton (703)335-0000; and Country Inn & Suites by Carlson (703)393-9797.

In Warrenton, VA, which is a small town 6 miles from the TARC Saturday flying site, 10 miles closer to that site than Manassas but about 20 miles farther from the Friday evening meeting site. This hotel is near the intersection of US highways 15, 17, and 29:

Howard Johnson's Inn – 6 Broadview Avenue, Warrenton, VA 20186 - (540) 347-4141
20 rooms - $69.95 + tax (includes breakfast)

2012 Team America Rocketry Challenge Finals

Fly-off Schedule

SCHEDULE

Friday Daytime:

The staff of Team America Rocketry Challenge will be out at the launch site at Great Meadow from 9 AM until 4 PM on Friday, setting up the flying range and making other preparations for the fly-off. Teams may come out to look the field over during this time, but NO TEST FLIGHTS can be supported and there are no other test-flying sites available locally.

U.S. Senator Jeanne Shaheen will be hosting a breakfast reception for TARC participants on Capitol Hill on Friday, May 11th. All teams are invited to bring their rockets and families for this event. We are still confirming the room locations and time, but as soon as we have those details we will circulate them. Please consider arriving in DC early enough to attend this event.

Friday Contestant Briefing:

Teams should plan to arrive in Manassas, Virginia on Friday, May 11, in time to be at the evening pre-flight briefing by 6:30 PM. The location of the Friday Contestant Briefing is Metz Middle School, 9950 Wellington Road, Manassas, VA 20110, six miles (20 minutes on Friday evenings) from the I-66 exit 47 where most of the hotels are located.

Event registration packets, rocket engine orders that were made in advance to the official TARC on-site vendor Hangar11 Hobbies, and rockets shipped ahead to Aurora Flight Sciences to be held for teams, will all be available for pickup at this event starting ninety minutes before the briefing, and will also be available on the flying site Saturday morning. We will make and announce the decision at the Friday contestant briefing if the weather forecast for Saturday is so unfavorable (heavy rain or wind above 20 miles per hour) that the fly-off must be postponed to Sunday.

Saturday Flying Schedule:

Teams assigned the first fly-off launch window time slot (6:30 AM check-in opening, 8:30-9:30 AM liftoffs) should plan to be at the flying field by 6:30 AM on the day that flying occurs (May 12). See the Time Management section for more explanation of these launch windows. Other teams may choose to arrive later than this, but each team should arrive at least an hour before its assigned rocket check-in time. All teams should plan to remain at the flying site until the conclusion of the award ceremony at 6 PM on fly-off day. The barbecue after the award ceremony will end before 8 PM Saturday. Teams should be flexible enough in their plans to be able to stay for a May 13 (Sunday) fly-off if bad weather on Saturday forces postponement of the planned flight day of May 12.

TEAM AMERICA ROCKETRY CHALLENGE 2012 TENTATIVE SCHEDULE

Friday, May 11

Friday Morning Breakfast Reception on Capitol Hill
9:00 AM - 4:00 PM Great Meadow NAR set-up for Saturday contest (no flights)
5:00 PM - 6:00 PM Metz Middle School Issue NAR uniform items to NAR range crew
6:00 PM - 9:45 PM Metz Middle School Contestant registration & rocket pickup
6:00 PM - 7:00 PM NAR range crew briefing (auditorium)
7:30 PM - 9:00 PM Contestant briefing (auditorium)

Saturday, May 12

6:15 AM - 7:00 AM	Great Meadow Launch range final set-up & staff breakfast
6:30 AM	Great Meadow Contestant registration & egg issue open
6:30 AM	Great Meadow Pre-flight check-in opens (1st 24 teams)
8:00 AM	Great Meadow Gates open for spectators
8:15 AM - 8:30 AM	Great Meadow Opening ceremony/National Anthem/ rocket demo
8:30 AM - 9:30 AM	Great Meadow 24 team 1st launches (Goddard 1 launch window)
9:30 AM - 10:30 AM	Great Meadow 18 team 1st launches (VonBraun 2 launch window)
10:30 AM - 11:30 AM	Great Meadow 22 team 1st launches (Goddard 3 launch window)
11:00 AM – 2:00 PM	Great Meadow Contestant and Staff Lunches Available
11:30 AM - 12:30 PM	Great Meadow 18 team 1st launches (VonBraun 4 launch window)
11:30 AM – 4:00 PM	Great Meadow Team Rocket-Building competition
12:30 PM - 1:30 PM	Great Meadow 18 team 1st launches (Goddard 5 launch window)
12:30 PM – 3:30 PM	Great Meadow Team Presentation competition

TBD Great Meadow US Air Force flyover

2:00 PM	Great Meadow Announcement of top 24 teams from preliminary round
2:00 PM – 2:15 PM	Great Meadow NAR high power rocket demonstration (3 flights) (Stine Range)
2:30 PM – 4:00 PM	Great Meadow Ice Cream Social for teams
3:00 PM - 4:00 PM	Great Meadow 24 top team 2nd launches (Goddard 6 fly-off launch window)
4:00 PM - 4:15 PM	Great Meadow demonstration flights by 25th through 29th place Finals teams
4:15 PM – 4:30 PM	Great Meadow NAR high-power rocket demonstration (10 flights) (Stine Range)
4:30 PM	Great Meadow Deadline for returning eggs/altimeters post-flight
5:00 PM - 6:00 PM	Great Meadow Award ceremony (Stewards' Stand)
6:00 PM - 8:00 PM	Great Meadow BBQ dinner

2012 Team America Rocketry Challenge Finals

Additional Competitions: Special Awards, Presentation Competition, and Rocket-Building Competition

SPECIAL AWARDS

In addition to the prizes and places based on rocket flight performance, four teams will be selected by judges on the field at the Finals for the following awards:

- Best Rocket Craftsmanship
- Best-Dressed Team (uniform/costume)
- Spirit of TARC (combination of teamwork, sportsmanship, team spirit)
- Best Design (includes overall approach to mission)

Plaques for these categories will be given out at the awards ceremony.

TEAM PRESENTATION COMPETITION

Aerospace engineers must not only do good design, construction, and flight testing work, they must be able to communicate to others what they have done and how they did it. This year we are again offering an optional presentation competition to interested Finals teams. This competition will be limited to twelve finalist teams that will be selected from those that submit a draft presentation by May 1 as described below. Finalists will be announced no later than Monday, May 7. Presentations will be held between 12:30 PM and 3:30 PM Saturday during the Finals; any teams that are presenting but that also are likely to make the second (fly-off) round of the Finals will go first so they have time to also go fly.

Participating teams will be asked to give a six-minute presentation on their TARC rocketry project experience to a panel of judges and an audience of aerospace industry sponsors, then handle a 2-minute question and answer session with the judges. Judging will be based on the 4 criteria listed below. Presentations must have an electronic component (which will be the only component used for preliminary evaluation). PowerPoint is preferred; these may be converted to Adobe Acrobat files to reduce digital size for transmission.

Limitations:

Teams that volunteer for the presentation must have three or more members attending the Finals, and at least three different student members of the team must have a speaking role in the presentation.

Judging criteria:

The following equally-weighted criteria will be used by the judges:

- Design and construction process – How was the rocket designed? How were the dimensions, materials, and motors selected? How was the rocket built?
- Teamwork – How did each member of the team contribute to the rocket design, construction, flight testing, or other elements of the team's operation, and to the presentation?

- Flight testing process – How did the team use flight testing to refine the design and make adjustments that resulted in a great score?
- Lessons learned – What lessons did the team learn from their TARC experience about how to do an engineering design and construction project, and how would they change their approach for a future TARC entry?

Submitting:

Teams wishing to participate should submit their initial presentations electronically (only!) to narvp@nar.org by 5:00 PM (Eastern Time) Friday, April 27, 2012. The size of this submission must not exceed 1 megabyte. From these submissions, 12 finalists and two alternates will be notified by Monday, May 7, 2012. Teams may (and are encouraged to) revise their report up until the date of the finals.

ROCKET-BUILDING COMPETITION

All of the student teams who made it to the TARC Finals have developed good model rocket-building skills, so we have set up an event to let 32 of these teams compete to show off these skills. Each team that enters this "rocket building competition" will have an assigned 70-minute time slot between 11:00 AM and 4:00 PM to build a flight-worthy rocket out of a bag of rocket parts that is handed to them at the beginning of their 70 minutes. Every team will get an identical bag of parts (free of charge) and 8 teams will be building on adjacent tables during each of the four time slots. We will provide basic tools (yellow carpenter's glue, X-acto knives, sandpaper), but teams are free to augment these with their own tools and building supplies – but not with extra rocket parts.

The purpose of the competition is to build a creative, well-assembled rocket that has in it the required components to permit it to fly, such as an engine mount and recovery system, and that in the judgment of the event judges could probably fly stably. However, these rockets will not be actually flown at the TARC Finals. Teams may pick them at the end of the day after judging and go fly them elsewhere, though.

Cash prizes and trophies will be awarded to the team with the best rocket in each of two categories:

1. Best craftsmanship
2. Most creative design

Teams may sign up for available 70-minute time slots in one of the 4 Saturday rounds of building at the registration session on Friday night. They will only be permitted to sign up for a time slot after their team's assigned launch window time. Alternates will be signed up to take the place of any team that ends up making the fly-off round and is therefore unable to participate in the building competition during the time slot they signed up for.

2012 Team America Rocketry Challenge Finals

Rocket Engines, Fly-off Procedures, and Rocket Design and Construction

APPROVED ROCKET ENGINES

Your rocket must be powered only by commercially-made model rocket engines that are safety-certified by the NAR and listed on the **final** NAR Engine Certification List attached to this letter.

Engine Vendor Support:

Hangar11 Hobbies will be onsite at the fly-offs as a rocket engine vendor. They have both Estes engines of all types and most of the E and F engines that Aerotech and other manufacturers now have in production. **IF YOU CANNOT TRAVEL BY AUTO TO THE FINALS WITH YOUR ENGINES (see below) YOU SHOULD ORDER THEM IN ADVANCE FROM HANGAR11, FOR DELIVERY ON-SITE AT THE FLY-OFF.** Do not assume that Hangar11 will have engines in stock on the field that you did not order in advance. They will be the only on-site vendor. Hangar11 can be reached at:

Hangar11 Hobbies, Inc.
24 Hallock Drive Suite 1
Washingtonville, NY 10992
www.hangar11.com
bobbyb@hangar11.com
(845) 926-1959

Transport:

It is ILLEGAL to put model rocket engines, igniters, or other pyrotechnic materials in your baggage on an airplane, **DO NOT TRY THIS**. It is also illegal to ship a rocket motor by UPS or USPS without disclosing to the shipper what you are shipping, and these shippers will not accept motors for shipment by private individuals.

Shipping Rockets and Launch Equipment:

You may ship your model rockets and launching equipment to us and they will be given to you at the contestant briefing on May 11. A vendor with the proper license may also ship engines that you have ordered to this location. **Make sure you use a shipper that utilizes a tracking system to confirm delivery of your rocket.**

Trip Barber/Team America
c/o Aurora Flight Sciences Corporation
9950 Wakeman Dr.
Manassas VA 20110
Hold for Team America Team #_____, _____ High School

FLY-OFF PROCEDURES

Preparation Area:

There will be a marked-off area at the launch site close to the flying range that is designated for "teams only". This is where your team should go, and park, upon arrival on the field. There will be a row of tents with worktables available for your use in pre-launch rocket preparations, or you may operate out of your vehicle or a tent that you set up next to your vehicle.

Time Management:

Each team will be assigned a one-hour "launch window," preceded by a one hour "prep window". **These time assignments will be posted on our website www.rocketcontest.org no later than May 4, 2012, and are not negotiable. You must fly during your assigned window.** Between 18 and 24 teams will be assigned to each one-hour window period, and each may fly at any time during that period. You will not be allowed to set up your rocket or launch system on the flying range until your prep window time slot begins, the hour before the launch window. You should plan to be issued your egg and to present your rocket to us for pre-flight safety and rules-compliance inspection prior to this prep window. This means that you should plan to be on the flying field at minimum of an hour prior to your prep window (two hours prior to launch window) -- earlier if you still need to do registration on the field because you were not at the Friday evening contestants' meeting. The first launch window will open at 8:30 AM on the fly-off day (with a 7:30 AM prep window), so teams who get assigned this window should be prepared to be on the field by 6:30 AM on Saturday, May 12.

You must fly your rocket during the one hour launch window, and will be disqualified and must clear the pad if you fail to achieve liftoff during this window. Misfires are not an excuse for missing an assigned launch window -- so do not wait until the last moments of your window to fly.

The top 24 teams based on scores from first flights (all of which must be completed by 1:30 PM) will be asked to make a second flight during a final “fly-off” round to be held between 3:00 PM and 4:00 PM. These 24 will include the 5 teams who each had the best score in their respective initial flight round, plus the 19 next best teams overall. These 24 teams will be notified as soon as possible after 1:30 PM. The top 24 places in TARC 2012 will be awarded to these teams, ranked on the basis of the SUM of the scores from their two flights. Any team among the 24 that cannot make a second flight will be ranked behind all teams that do make a second flight. The remaining places below 24th will be ranked on the basis of first flights only.

We will invite the teams that finished 25th through 29th to make an unofficial second flight between 4 PM and 4:15 PM as a demonstration flight for the benefit of VIP visitors who may have arrived late in the afternoon for the award ceremony after the competition flights were completed.

Students Only:

All elements of rocket design, preparation, and flight are to be done by student members of teams. Only student team members -- no teachers, mentors, parents, or non-team members -- may go into the team check in area, onto the flying field, pad, or approach the pad which includes assisting with

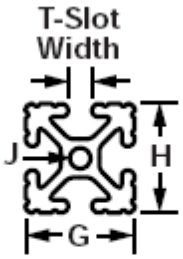
rocket preparations before flight. Anyone can help on recovery if the rocket drifts outside the main flying field area.

Primary and Backup Models:

We recommend that you bring two models to the fly-off, if possible. If your primary model's egg section lands in a tree, power line, or other dangerous place where it is visible to the judges but cannot be recovered safely, or if you experience a rocket engine catastrophic failure as judged by the Range Safety Officer (burst engine or complete failure of the ejection system, with the cap still retained in place on the ejection charge), or if you have an altimeter failure (an altitude reading of greater than zero but less than 50 feet after a normal qualified flight) the judges may allow you to have a second flight. Otherwise only one flight attempt is allowed. If a rocket clears the pad and becomes airborne, this is considered a "flight attempt". If there are any "backup" flights allowed, there will be a few time slots reserved for this purpose in the last first-flight launch window of the day (12:30-1:30 PM).

Equipment:

The launch system provided for contestant use will have individually-assigned, well-spaced sturdy three-legged pads with the team's choice of either a single, 6-foot-long, 1/4-inch diameter launch rod or a 6-foot-long "1010" (1 inch on a side, ¼ inch center slot) launch rail on an adjustable base (see photo below) and one pair of high-current 12-volt electrical igniter leads with a single pair of micro-clips at the end. These will provide 18 amperes from our launch system from a car battery through 60 feet of 16-gauge wire, which will light any igniter or cluster of up to 4 igniters. Teams are not required to use the launch system and rod or rail that we provide. They may bring their own launch pads, towers, rails, or other hardware, "clip whips" to light clusters of motors from our single pair of micro-clips on the ignition wires, and even their own electrical launch systems if they need anything different from what we provide. Such individual launch systems must comply with the NAR Safety Code requirements and will be subject to our safety check and approval. A minimum rod diameter of ¼ inch and rod/rail length of 6 feet is required.



Rail
(End View)

Returns:

All teams that have a safe and otherwise qualified flight must return the section of their model that contains the eggs and altimeter to the "Returns Table" for post-flight inspection of the eggs and recording of altimeter reading. This must be done no later than 2:00 PM for first flights, which is 30 minutes after the final "launch window" for the first-flight rounds closes; and it must be done by 4:30 PM for flights from the final fly-off round. We will have several 35-foot extendable poles available to assist teams in plucking rockets from trees if this unfortunate circumstance occurs.

NAR MEMBERSHIP AND INSURANCE

You are not required to be a member of the National Association of Rocketry to participate in this contest as a teacher or team member. But we certainly encourage membership, and you may need to become a member if you need insurance coverage for rocket flying in addition to whatever coverage may be provided by your personal insurance.

Your NAR membership includes personal liability insurance to cover YOU against liability claims from rocket activities conducted in strict accordance with the NAR Safety Code. This individual insurance does not cover others (such as your school or the owner of your launch site.)

If your school, school district, or other landowner of your rocket launch site requires liability insurance, your team can obtain "site owner insurance" coverage for this potential liability by having your teacher and at least three student members of the team members join the NAR and then having the teacher order "site owner insurance" from NAR Headquarters. This insurance is not available to provide personal coverage for school officials, only for the legal owner of launch sites. This additional coverage costs $15 per entity insured and requires filling out either an online form or a mail-in form, both available at the Team America section of the NAR website.

ROCKET DESIGN AND CONSTRUCTION

First and foremost, read the Model Rocket Safety Code of the NAR, and the Team America rules, very carefully. These answer many questions about what is allowable and what is not. We have been asked many questions of interpretation, and have provided answers both individually and via the FAQ on the website. If you are in doubt about your design's compliance with our rules, it is better to ask us early than to find out at the fly-off that what you did is not allowable. Remember that your rocket cannot weigh more than 650 grams at liftoff (with eggs and rocket engine or engines) or have more than 80 Newton-seconds of total impulse in all of its rocket engines put together.

Some of the common topics of questions we have been asked about rocket designs have been:

Design Changes:

You are free to change your team's design in any manner that you wish up until the moment you check in at the fly-off. You are not required to use the same design that you flew for your "qualification" flight. But if you plan to fly a new rocket design at the fly-offs, it must have been test flown before the fly-off. All rockets flown at the fly-off must have been test-flown previously.

Engine Selection:

Make sure that you have or can get the rocket engines you plan to use with your design at the fly-off, or change your design to suit the engines that you can get. Many teams are having problems with very slow liftoffs that make their rocket vulnerable to tipping over in flight ("weathercocking") in windy conditions. This is the result of an inadequate thrust-to-weight ratio for the rocket. If the average thrust of your engine(s) in Newtons (the unit of measurement of thrust that is labeled on the engine) is not greater than 20 times the liftoff weight of the rocket in pounds, then your rocket is underpowered and may weathercock. For example if you are using 3 Estes D12 engines, the average thrust is 3 x 12 = 36 Newtons. 36 divided by 20 is 1.8, so this cluster of three engines should provide enough thrust for safe liftoff of a rocket weighing up to 1.8 pounds. One D12 cannot safely lift more than 0.6 pounds. This is a rough rule of thumb for your use in safe rocket design, not a rule that we will enforce at the fly-offs.

Staging:

Use of more than one stage is not permitted.

Commercial vs Custom Parts:

The flight vehicle must be made by the student team members. You may use commercially-available "off the shelf" component parts (body tubes, nose cones, egg capsules, etc.) and may adapt rocket kits for the event -- or you can scratch-build components if you prefer. If some company should release a kit specifically for this event or for the NAR "Eggloft" contest event you would not be allowed to use such a kit. Having a custom flight vehicle part fabricated by a composite or plastics company or custom wood machining company (even if it is to your design) does not constitute sale of a "standard off the-shelf product" and is not allowed. Having a mandrel fabricated to your specifications that you wrap fiberglass on to make your rocket body (for example) would be OK.

In this case the company is making a tool that you are using, but you are making the part that flies**.**

Metal Parts:

You may only use non-metal parts for the nose, body, and fins of your rocket, those parts that are the main structure of the vehicle. Fiberglass is OK. You may use miscellaneous metal hardware items such as screws, snap links, engine hooks, electronic circuit boards, and (if you wish) commercial re-loadable metal rocket engine casings.

Recovery:

Your rocket may be recovered in several separate sections if you wish. The part that contains the eggs and altimeter must use a parachute (and no other deployed recovery device) for recovery; other parts of the rocket may return separately and may use parachutes of any size, or streamers. Time will be recorded from the moment of liftoff to the moment that the first part of the portion of the rocket containing the eggs touches the ground, ceases its descent (e.g. lands in a tree), or disappears from the sight of the timers. We will ask a student team member to stand with our timers to identify which section of the descending rocket contains the eggs and should be timed. Each section or piece of the rocket must come down safely. A heavy piece (nose cone, body section, rocket engine casing, etc.) that falls to earth in a stable, non-tumbling/non-gliding mode at high speed without a recovery system of some kind at any point in its recovery phase is not safe, and flights that have this happen will be disqualified for being unsafe. Note in particular that having a rocket engine casing pop out of your rocket in flight and fall separately without a recovery system, or separating the entire recovery system from the rocket during flight will result in a disqualification. The only part that must be returned to the event officials after the flight is the part with the eggs, the altimeter, and the parachute.

Rockets may not be controlled by human intervention; radio control is prohibited. If your rocket communicates with a ground-based computer during flight this computer must be handed over for custody to a designated event official during the rocket's flight and cannot be touched by a team member during the flight. Flight control systems carried onboard the rocket such as electronic or other forms of timers, altimeters, etc. that control duration in some safe manner are permitted. They may not use pyrotechnic charges (black powder, pyrodex, or small rocket motors). If they are designed to sense acceleration or deceleration of the rocket as the basis for starting an ignition or ejection sequence through an igniter or other trigger, then there is a great risk that they can trigger on the ground or in your hands if you drop or jog the rocket while carrying it. Such systems must have a power switch, plug, or other disconnect mechanism that permits you to maintain them in a completely "safe" configuration until they are placed on the launching pad, and will not be allowed to fly if they do not.

The field for the fly-off is not huge (see the site map posted on the www.rocketcontest.org website), but with winds of 20 miles per hour or less (the NAR Safety Code limit) a rocket that stays up no more than 45 seconds will remain on the field. We will have some 35 foot poles to help pluck rockets out of the lower portions of trees, if you are unlucky on recovery.

Aerospace Industries Association
1000 Wilson Blvd. #1700
Arlington, VA 22209

MEMORANDUM FOR AIRLINES AND TRANSPORTATION SECURITY ADMINISTRATION

Subject: Traveling with Rocket Models

The Aerospace Industries Association, trade association for the U.S. aerospace industry, and the National Association of Rocketry, the nation's non-profit educational organization for hobby rocket consumers, are co-sponsoring a national model rocket contest for secondary school teams on May 12, 2012, in The Plains, VA, near Washington, DC. Other partners of this contest include NASA and numerous aerospace companies. This event, called the Team America Rocketry Challenge, is the largest model rocket contest ever held; it has involved over 6,000 secondary school students on 678 teams from schools in 48 states.

The 100 best of the 678 rocketry teams from around the U.S. have been invited to travel and bring their rockets their rockets to compete in the final fly-off for selecting the national winners of the Team America Rocketry Challenge on May 12. The fly-off will be attended by senior NASA executives, Members of Congress, and the national media.

In order to attend the fly-off, many of the high school teams must fly to airports near Washington, DC. They must travel carrying the model rockets that they have worked so hard over the last year to design, build, and flight test. Their rockets are made of non-metallic materials: paper, plastic, and balsa wood. They are non-explosive and completely inert. The expendable single-use commercially-made model rocket engines that power them (which contain the only flammable materials in the rocket when it flies) are being provided upon their arrival. These cannot be shipped on aircraft.

Model rockets not containing engines are perfectly safe and inert, and bringing them onboard an aircraft does not violate any Federal regulations. If you have questions, please contact Anne Ward at the Aerospace Industries Association during business hours at (703) 358-1033.

2012 Team America Rocketry Challenge Finals

Press Release Instructions

INSTRUCTIONS FOR FILLING OUT THE PRESS RELEASE

Congratulations on making the Team America Rocketry Challenge finals! We are looking forward to working with you to help generate support for your team's trip to compete in the final fly-off. A great way to spread the word about how you'll be representing your hometown at the finals on May 12 is to reach out to your local newspapers, television and radio stations.

A **press release** is enclosed to complete and send to your local media. You may want to assign one student on your team to be the **Team Press Liaison**, who will be responsible for filling out and distributing the release, and making arrangements for local press to come and interview your team. Contact information for submitting news is typically available online at the newspaper or station's Web site.

You may want to include quotes from team members, add a photograph of the team at work on its model rocket, or invite the media to a classroom work session or test launch. AIA is reaching out to national media outlets about the TARC finals, but we need your help keeping your local media and school newspaper informed about your team's progress.

See the following example on the next page for the press release. The highlighted words need to be changed to reflect your town, high school and team names. Please send us any articles or other media coverage.

Team America Rocketry Challenge Contact:

Anne Ward, anne.ward@aia-aerospace.org, 703-358-1033

Sample News Release

FOR IMMEDIATE RELEASE
April XX, 2012

Contact: [Mentor Teacher/Student Name]
[Mentor Teacher/Student E-mail, Phone]

***Great Visuals and Photo Opportunities Available**

Students at [School/Organization Name] Qualify for World's Largest Rocket Contest National Finals

[TARC Team Name] of [School/Organization Name] Named Among Top 100 Teams To Compete in Team America Rocketry Challenge National Finals on May 12 Outside of Washington, DC

[City, State]—[TARC Team Name] at [Organization/School Name] will compete in the National Finals of the world's largest rocket contest after qualifying among the top 100 teams in April, beating out the scores of 678 other participating student teams from across the country. The team will now travel to compete in the final fly-off of the Team America Rocketry Challenge (TARC) on Saturday, May 12, outside of Washington, DC.

The contest challenges middle and high school students across the country to design and build a rocket that will climb to 800 feet and stay aloft for between 43 and 47 seconds using a parachute for a recovery device. Teams must also transport a payload of two raw eggs in their rocket and return them unbroken. Students compete for $60,000 in prizes and scholarships, as well as a chance to compete nationally at the finals held at Great Meadow in The Plains, Va. (near Washington, D.C.). The winning team also earns the chance to attend the International Air Show in Paris, France.

[Include information about your organization's history with the contest - how many years has a team participated? Have any of the teams made it to the final fly-offs? Won the competition?]

About 6,000 students from across the country took part in the contest in this, its tenth year. Since TARC's first contest in 2003, over 50,000 students have participated in the challenge. The Aerospace Industries Association sponsors the contest with the National Association of Rocketry, NASA, the U.S. Department of Defense, the American Association of Physics Teachers and AIA member companies.

"TARC is a great way for students to get real aerospace engineering experience, and it's also a lot of fun," said Marion Blakey, president and CEO of the Aerospace Industries Association. "We are delighted [TARC Team Name] has joined this important effort."

TARC is aimed at attracting students to science, math and technology education and, ultimately, careers in the aerospace industry. With nearly 60 percent of the aerospace workforce over the age of 50, AIA and other industry leaders hope to spark the interest of future aerospace engineers with programs like TARC. For more information about the Team America Rocketry Challenge visit www.rocketcontest.org.

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[Organization/School's "About Us" Statement]