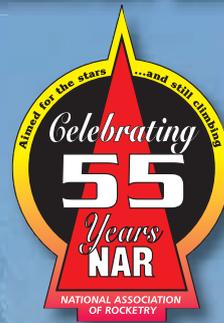


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**OFFICIAL JOURNAL OF THE  
NATIONAL ASSOCIATION OF ROCKETRY**

# SPORT ROCKETRY

**JANUARY/FEBRUARY 2013**



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# 19<sup>TH</sup> WORLD SPACE MODELING CHAMPIONSHIPS

by George Gassaway and U.S. Team members. Photos by Robert Alway, Trip Barber, George Gassaway, John Langford, Dave O'Bryan, and Jon Stenberg.

The 19th World Space Modeling Championships (WSMC) was held September 3-8, 2012, at Liptovský Mikuláš in Slovakia. Most of the U.S. team flew into Vienna, Austria. Those who arrived a day or two early, stayed in Vienna. Friday August 31, most everyone arrived and stayed at a hotel in Bratislava, Slovakia, spending time renewing acquaintances, seeing sights, and getting some supplies. Saturday morning most of the team took a charter bus to Liptovský Mikuláš the site of the WSMC.

This year's WSMC was unique in that the "hotel" used was the Tatrallandia Water Park, which had a lot of small cottages and small duplexes. They were nice, and provided more room than usual at a WSMC hotel. It was like a "rocket village" for the week. Also, the WSMC launch site was only about a half mile away, so no long drive to the field as usual.

The weather was pretty good for most of the events held at the WSMC. Monday was very calm, with S3A Parachute models that drifted very little, making it easy for the recovery crew. On some days, the wind did kick up in the later afternoon. Thursday was brutal though, with high winds and cold, but more on that later.

For the S1 Altitude, S3 Parachute, S6 Streamer, and S9 Copter events, the FAI Rules require a minimum diameter of 40mm and minimum length of 500mm (for at least 50% of model length). This is quite large for A-powered models. The models are usually built with a very lightweight fabrication method using fiberglass over a metal mandrel. The nose cones are often vacuformed, but sometimes are also fiberglass. The engines used were a variety of types made and sold in Europe, about 10mm in diameter. They are lighter, smaller diameter, and provide better performance than the black powder A engines available in the United States. The Czech Delta motors are no longer made, so many on the U.S. Team used motors from Germany or Slovakia.

Except for S7 Scale, which has two rounds of flights, all of the events are done in three rounds of flying. For the 2012 WSMC, the rounds were usually 80 minutes long, so three rounds of an event could be flown in 4 hours. This may sound like a lot of time, but 80 minutes means each flier has less than 27 minutes, on average, to fly, assuming



Ellis Langford launches his Ariane-44 Scale model in the Senior S7 event.



**Trip Barber, Terrill Willard, and Chris Kidwell about to fly their S3A Parachute models.**

they are ready to fly when the round starts. If a flier takes longer than the allotted time, then they eat into the time left for the other two teammates to fly. For the duration events, the time is even tighter because of trying to pick thermals, and thermals happen whenever they happen, not on a time schedule. Of course, in the mornings the thermals do not even get going for a while, so often in round one there is little to no thermal activity to help the model. Some fliers pick their own air, but there are also experts on the team who can help pick air, using various equipment to assist such as thermal poles (long thin streamers to indicate air patterns), digital thermometers, and also birds and looking at what other models are doing at the time.

Flying on a team at a WSMC is a unique experience. You have to be ready. You have to have your models ready. And even being ready, you are “on the clock” with a limited amount of time to fly in, which you are sharing with two other people, trying to fly when there is a thermal (if it is a duration event), and trying to avoid misfires and running short on time at the end of the round. You are responsible for flying your models, but you are on a team. You help the team, and the team helps you. When you are not flying your event, you help your fellow fliers. Even when you are flying your event, you help your fellow fliers, and they help you. It is not like any other flying that is done in rocketry.



## **S3A Parachute Duration**

S3A was the first event of the WSMC that the Junior Team flew. The event has a max flight time of 300 seconds. The surprise problem of the morning was getting the engine to ignite. Not just the U.S., there was a stretch where there were seven countdowns in a row, by seven countries, and all were misfires. Part of the problem was the batch of motors used by those countries had a little bit of clay powder dust on the propellant core, so the core needed to be scraped out to expose the propellant. The motor nozzle throats

are so small, that a normal igniter does not fit. Some on the team used nichrome wire coated with fingernail polish, some used Quest Q2 (MicroMaxx) igniters, and some used the Q2 igniters with a custom pyrogen added. Anyway, everyone on the Junior Team ended up learning from S3, but not without a number of misfires and one flight that didn't get launched before the round ended. The misfire bug also was a big issue for the Junior S1 Altitude team that afternoon. Nicholas Nowak had the best results on the Junior S3 team. His first flight was for 150 seconds, while his 2nd and 3rd flights caught some lift and got two 300 second maxes. He came in at 17th place. John Moses came in at 22nd place, and Magda Moses at 43rd. The Team came in 12th place. The Ukrainian Team took first place

The Senior Team flew S3A on Tuesday morning. The team overall would get six maxes and would be short of two more maxes by just 17 seconds in all. Terrill Willard was flying his first WSMC. Rather than Mylar, Terrill used a clear plastic chute that needed to be colored for visibility. His distinctive red and black pattern made it obvious on every flight which model was his (it is often very hard for the recovery crew to determine which of many Mylar-chuted models in the sky is the right one to chase after). Terrill's first flight ended up just 13 seconds short of a max. Trip Barber was only 4 seconds short of max. Trip and Ter-



Emma Kristal with her nicely done S1 Altitude models featuring unique "Emma" artwork.

## S1 Junior Altitude: 3-2-1-Launch... Not!

by Jenna Butler

I went to Slovakia this year to fly S1 on the U.S. team. I flew on Monday, so I prepped my rockets as much I could on Sunday night, wrapping streamers, putting in insulation, and clipping up Kevlar so that prepping would go faster the next day. Monday morning, I packed up all of my launch equipment, grabbed the box with all of my rockets in it, and went out to the field.

As soon as the round started, Cassidy and Emma (my two teammates) and I started prepping our rockets. In the first round, we got all of our rockets up, although my flight was disqualified due to not staging. Emma's altimeter didn't read out, and Cassidy's model was lost. When the second round started, we got our rockets prepped and ready to launch, but we had problems with the motors not igniting. It was really frustrating (like, really, *really* frustrating). Emma was the only one who was able to get a rocket off in that round, and, again, the altimeter didn't read out. In the third round, both Cassidy's and my rockets were disqualified because of problems with staging. Emma had a really good flight, but her altimeter read a low altitude, one obviously lower than she had gotten.

We ended up in 11th (last) place for the team medal, and I tied for 32nd individual.

I was disappointed that we weren't able to win a medal, but I still had a great time. I got to visit the Schönbrunn Palace, got emotional about a sloth at the oldest zoo in the world (yeah, I'm talkin' about you Emma), took a tour of a cave, and rode ski lifts to the top of a mountain. I also got to see some friends that I hadn't seen in a while and even make some new ones. It was a lot of fun.

rill went onto max their 2nd and 3rd flights. There were eleven fliers who maxed all three of their flight to go to the flyoffs; Trip was in 12th place, and Terrill was in 15th. Chris Kidwell maxed his first flight and third flight, but his second flight did not deploy, leaving him in 46th place. The winning Senior was Zoran Katanic of Serbia. The U.S. Team took 7th place, Serbia 1st.

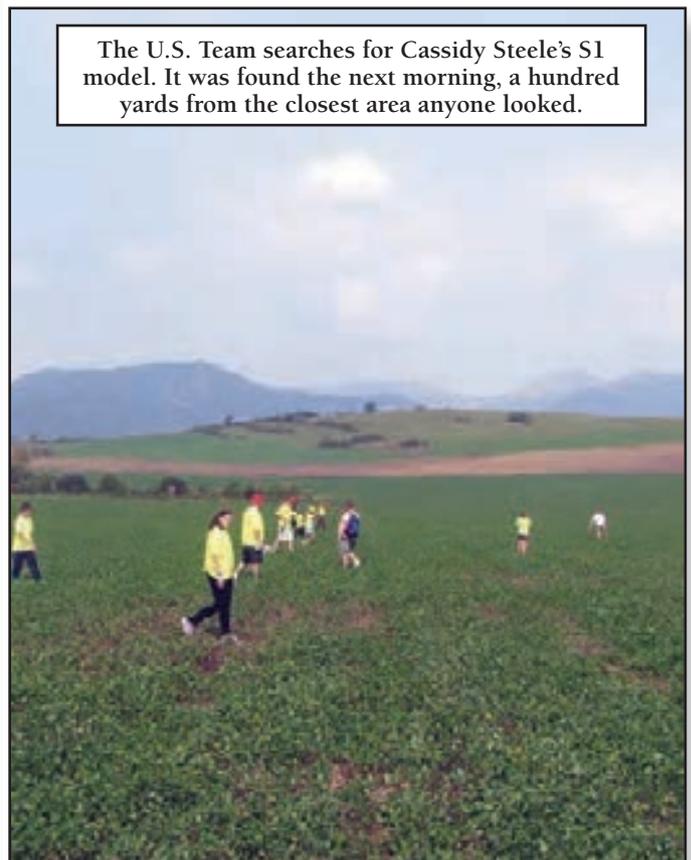
## S1 Altitude

In the S1 Altitude and S5 Scale Altitude events, the models all carry the same Altimeter type, a very small one (Adrel) which weighs about 3 grams. The altimeters (which have unique hard-coded serial numbers) are provided by the organizers, and are randomly allocated, so there is no chance of cheating. But there is only a 20 minute window from obtaining an altimeter to flying and returning it. And the altimeters are finicky, sometimes false-triggering a launch detect, requiring a trip back to the altimeter check-in table and a wait in line. BTW - if you lose or damage or destroy an altimeter...you bought it. All teams have to pay for the altimeters in advance, and get refunds for returning them.

For the S1 event, the rules do not require two-stage models, but with the minimum diameter of 40mm for 50% of the model length, the only viable strategy is to fly two-staged. The rules require any S1 upper stage to be at least 18mm diameter at the base. This makes the event quite tricky to fly, particularly to do the staging since the upper stage is so far apart from the first stage.

See the sidebar by Jenna Butler for more information about Junior S1 flying, and see Dr. Bob Kreutz's report for details about the Senior flying. The winning Junior in S1 was T. Stanev of Bulgaria, with 447 meters. The winning S1 Junior team was the Ukraine. The winning Senior in S1 was Timofejev of Lithuania, at 790 meters. The winning S1 Senior team was Serbia.

The U.S. Team searches for Cassidy Steele's S1 model. It was found the next morning, a hundred yards from the closest area anyone looked.





## **S1B Senior Altitude**

by Bob Kreutz

It was a day like any other day: ham and cheese sandwiches, scrambled eggs, and kielbasa with sliced tomatoes for breakfast; of course, they were out of coffee by the time I got there. Only today, the second day of the WSMC, was S1B Senior Altitude competition. Model check was in the morning. I had two types of models to compete with, a classic one-piece straight body and a boatailed aeroshell design. My first check-in attempt failed: I needed to trim the motor tubes projecting from the booster. Due to the 18mm rule, we questioned whether boatailed designs would be acceptable. However, it became obvious after the British team breezed through their inspection that as long as the sustainer's aft reducer was covered when the stages were joined, it was acceptable. So, I needed to add about 1/2" of 18mm tube to the front...but I didn't have any. Despite the fact that you fly against your team members, this is where true team spirit comes to play, when Matt Steele produced exactly the part that I needed! Thanks Matt! With the modifications in place, my models passed inspection.

Trip Barber was well prepared to be the first one off the pad and straight and true for 568m. My previous efforts in 2002 were good enough for the Silver in S1, but I had radically changed designs to use lighter European booster motors. I relied upon Trip's experience with flash-tube staging. As the RSO approached I suddenly realized I had forgotten to give a heads up to the U.S. recovery team! A quick shout out to team manager John Langford got those not chasing down Trip's model at the ready. I was amazed how quickly it all came together. With a quick prayer ("Lord, don't let me screw up") a quick dedication to Ole Ed Pearson (who was ailing back home), and a quick push of the button, my first flight was up. It squirreled and corkscrewed out of the tower due to light booster body wall deforming. Straightening out as it flew, the model staged vertical and true and I knew I had done the best I could. The RSO lost sight of the sustainer, so did I, and never called the flight qualified. That required a return; it would be up to our recovery team. As luck had it, the sustainer landed on highway right next to Chris Kidwell, who did a snatch-n-grab to save it from an on-coming truck. With the flight qualified by the RSO, I headed off with Lucy, my "timer," (who now has my Team T-shirt among a number of other U.S. team memorabilia) to get the altimeter read—IF it had functioned properly. I pulled out the Adrel at the recording table—it had recorded! The bespeckled

Leszek Szwed from Adrel connected it to the computer. I saw his eyebrows lift above the glasses: "A very good altitude," he said in English, "632 meters." "Wow!" I said. Lucy smiled. The results board listed me currently in 3rd! I quickly reported the score to John Langford. Despite my joy, we looked at each other with signs of apprehension: "It won't hold..." I said, and we both knew it. There would be more work to do this day. Matt Steele's first round flight had a decent boost and the second stage ignited, but there was no stage separation! The motor thrust through booster destroying the bottom. DQ. Matt was down to one model and it was on to Round 2.

Trip's second round flight was good, but the altimeter had prematurely triggered, so he received a "no close" and was allowed to re-fly in the round: high pressure and dwindling time. Matt got off a good launch. We watched the sustainer as it disappeared during the delay ascent. We thought we heard the pop of the ejection but then—nothing. No streamer. No orange tracking powder. It just disappeared! Track Lost.

I had high expectations for my second model that Matt helped modify for check-in. I made sure recovery was ready. I switched to second stage motors that had inadvertently been placed in the Junior Team motor box and had to be transferred to our lane though John Langford's intervention with the judges. The flight also corkscrewed out of the tower then straightened for a clean staging. Presenting the model for altimeter reading, an internal pin on the altimeter bay broke and I couldn't get it out. There is a 20-minute limit on returns and I had no choice but to cut the altimeter out of the sustainer, destroying model #2. All for naught, since it read a disappointing 461 meters. Closing in on the end of the round, Trip was back in the tower for his reflight, but due to the altimeter glitching he decided to cancel the flight and prep for Round 3.

In the final round I used my #1 model, Matt using his #2 booster with his #1 sustainer, and Trip did a reprep on his model. Trip got off another clean flight, bettering his previous result to 581 meters, moving into 12th place. Matt kept having problems with the altimeter. Despite precautions against wind gusts, it kept tripping and needed to be returned to the station for a reset—3 times! I know how frustrating this must have been for Matt, not to mention the pressure and stress, which he weathered well. Well enough to get his third flight off in time, but staging problems again resulted in a lost sustainer and another Adrel planted in the potato field. I was on the pad towards the end of the round, feverishly attempting to fix a tangled recovery system. There are times when you should stop and reprep, competitors know when they reach that point and it's the advice I usually give others. But time ran out before I could and I settled for 10th place.

One note of vindication, I finally ended the argument of "who is tallest" with my friend Oleg Voronov from Russia, who bested me in Slovenia for the Gold. He came in a respectable 14th. So, for this year, I have an inch or two on him and I'm: just a little bit taller! I want to thank Trip and Matt for their help, and the U.S. recovery team for their diligence and incredible "never quit!" attitude. So, while this isn't a story about bringing home a gold medal, it is one of teamwork and teammates, both in the lane and on recovery. And it worked well to get me into the top 10, but it was all due to the combined "team" effort! Other competitors brought home "heavy metals" to remind them of their personal accomplishments this day, but my reward was being part of the intense and successful group effort, a team mentality, all focused on same goal: a "Band of Brothers" and sisters! We may have come up a little short but, we'll get 'em when we're back in 2014!



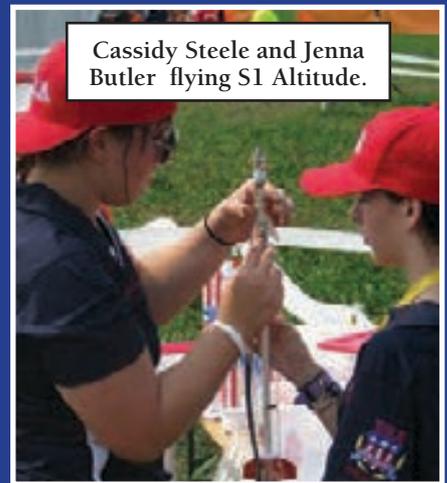
The U.S. Team,  
Juniors and Seniors.



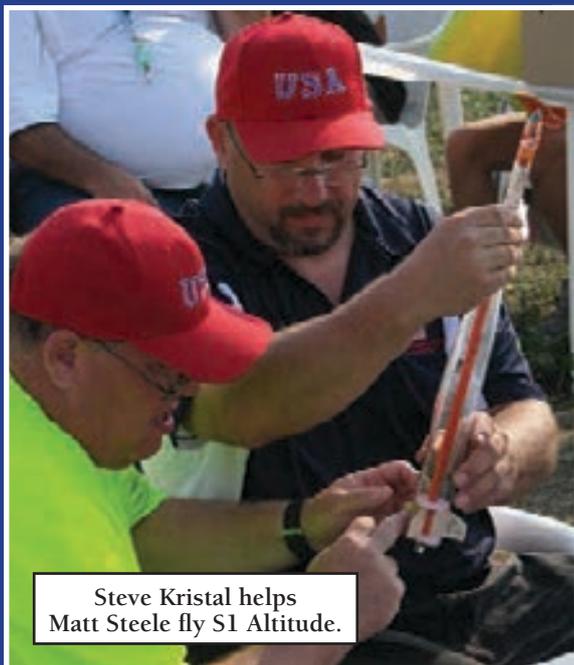
Emma Kristal loading her  
S1 Altitude model.



Dr. Bob Kreutz's  
S1 Altitude models.



Cassidy Steele and Jenna  
Butler flying S1 Altitude.



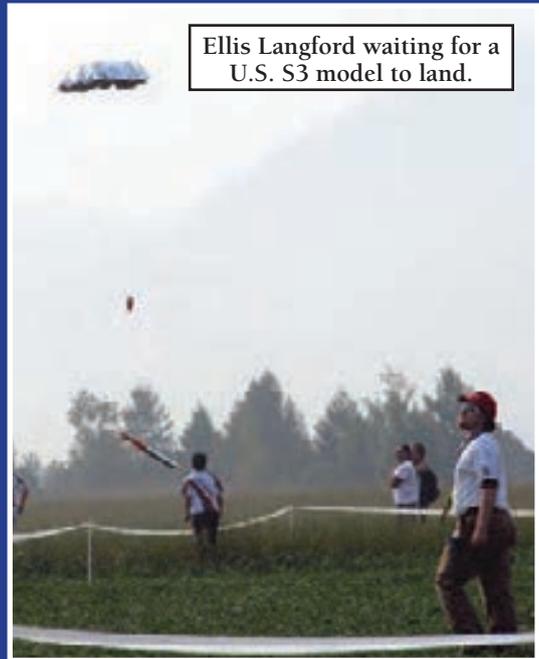
Steve Kristal helps  
Matt Steele fly S1 Altitude.



Randy Ringner watches Chris Kidwell  
prep his S6 Streamer model.



Terrill Willard loads the uniquely colored chute into his S3A model.



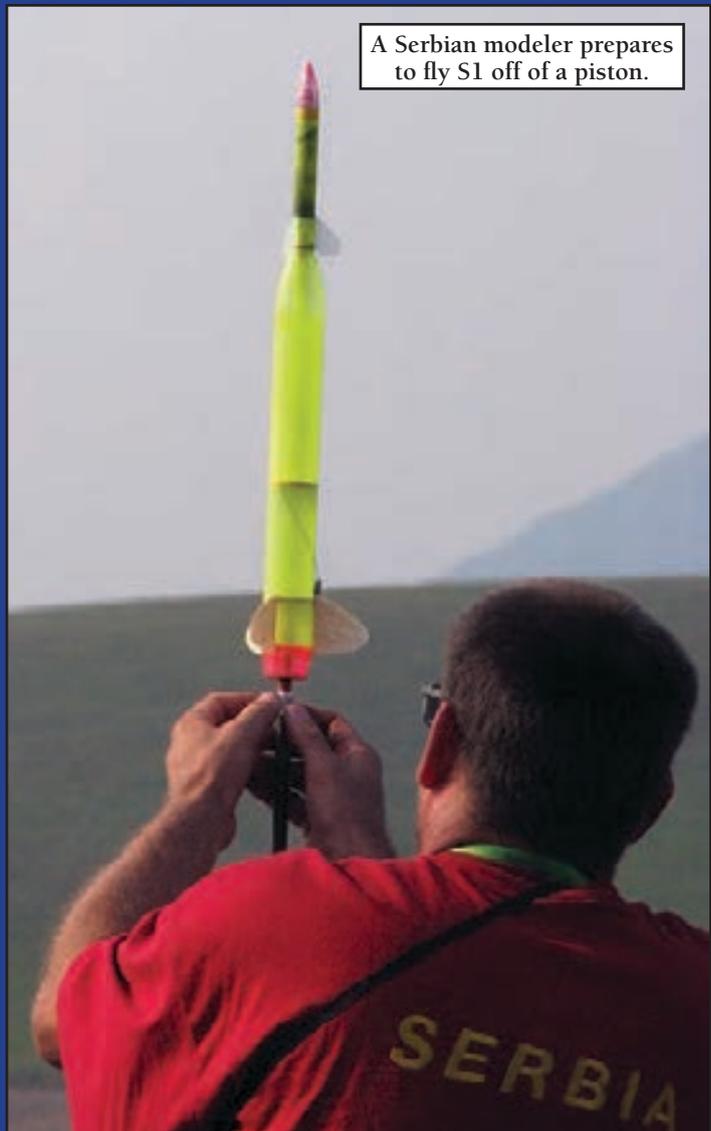
Ellis Langford waiting for a U.S. S3 model to land.



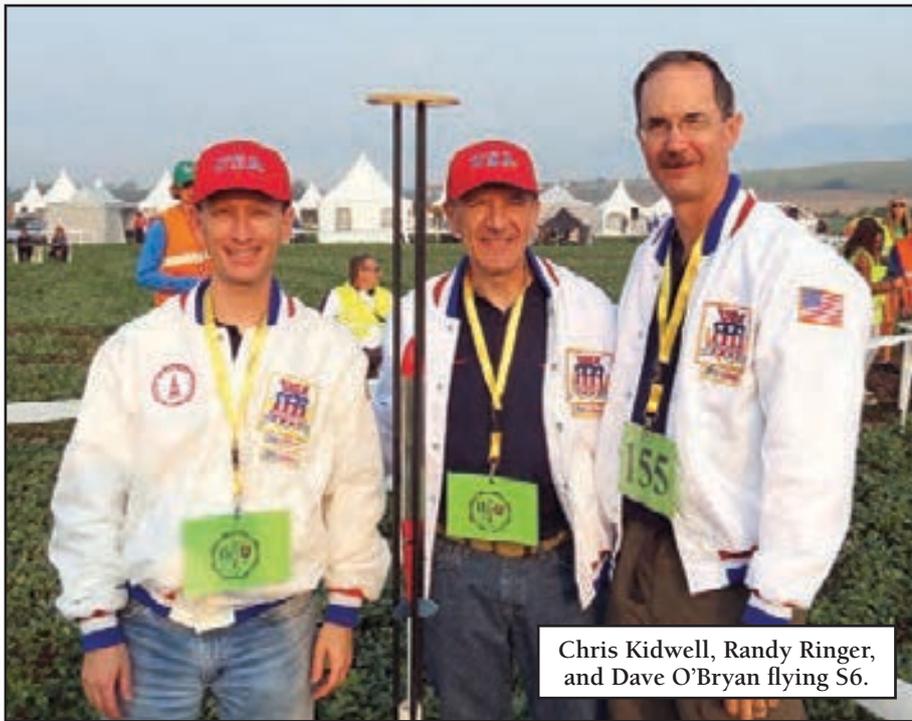
An S3 model descending over the contest range.



Dan and Magda Moses, before Magda flew S3 Parachute.



A Serbian modeler prepares to fly S1 off of a piston.



Chris Kidwell, Randy Ringer, and Dave O'Bryan flying S6.

The U.S. Team came in 5th with a total of 936 seconds, 80 seconds away from a Bronze medal.

## S4A Boost Glide

The S4 event, which had a max of 180 seconds, had undergone another rule change, this time to require the glider to weigh at least 18 grams in glide mode. Since many of the glider designs usually weighed 10-14 grams, that meant either adding weight, or revising designs. One approach was to keep the motor casing with the glider, flying as a rocket glider. This was the last year that true "boost glide" was held; the S4 rules from now on will require the model to be in one piece, so it will be effectively a free flight Rocket Glide event even though S4 will still be called "boost glide."

When the Juniors flew S4A on Thursday morning, it was cold and very windy after an overnight storm. John and Annika Moses used scissor flop wing models (see John's writeup). Alyssa Stenberg used a flying wing flop-wing designed by George Gassaway, that fit inside a 2" diameter tube

## S6A Streamer Duration

S6A Streamer Duration had a max of 180 seconds. On the Junior U.S. Team, Katherine Humphrey had three reasonable flights, but ended up in 28th place. Nicholas Nowak and Zackary Stenberg also flew but had troubles getting a good performance out of their models.

Senior S6A saw the return of two long-time veterans, flying in the WSMC for the first time in many years. Dave O'Bryan last flew a WSMC in 2002. Randy Ringner had not flown since the early 1980s. There was no strong lift, indeed only two maxes were

scored in the whole event. Randy Ringner had the top U.S. score with a total of 350 seconds, for 8th place. Chris Kidwell was 22nd with 296 seconds, and Dave O'Bryan a tie for 24th with 290 seconds.



Juniors Nicholas Nowak and Katherine Humphrey about to fly.

Senior S4A Boost Glide Team members Chris Flanigan, Steve Foster, and Rod Shafer watch one of their models flying.



for boost, and had a 28" span for glide. Her model flew OK, but in the high winds and poor air it did not fly up to its potential, for 26th place.

The Senior S4 team flew Monday afternoon, when the weather was calm with light lift. Chris Flanigan flew a very nice scissor-flop model. For the sake of reliability, Chris flew it using an Estes A10-3 rather than a European 10mm motor, because he could test and practice fly with the Estes motors all he wanted to at home. His boosts were only about 2/3 as high as similar scissor-flop models, but the model otherwise flew well. Chris had a couple of decent flights but his third failed to deploy properly, for a DQ. Steve Foster used a slide-wing rocket glider, which flew well but only enough for 31st place. Rod Shafer went with a heavier version of his old Hummingbird model, which flew OK but could not put up a big score. The U.S. Team took 14th place.

John Moses with his scissor-flop S4A model.



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## S4 Junior BIG: "That'll buff out"

by John Moses

The day for our boost gliders had terrible weather with cold and wind and rain. We got our models trimmed nicely the day before when the weather was great and they soared for miles (literally). During competition, we could not get a single glider to glide. We eventually realized the bare balsa tail surfaces had warped in the moisture, but there was too much wind to re-trim the models with test glides. Everyone was getting really tense when one of my models came back with the nose crushed in from another case of "This flight is not qualified." My comment was, "No problem, that'll buff out." Everyone cracked up at this and we got through the rest of the event.

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## S5 Scale Altitude

S5 Scale Altitude is quite unusual because it combines a model's static score with its flight altitude. Due to the minimum diameter rules, the winning strategy is to fly two-staged. There are not many two-staged rocket prototypes to choose from that have a good ratio of large diameter first stage and small diameter second stage, with an upper stage that can also be stable and not too draggy. This is why prototypes like the Bumper-Wac are popular. See Rachel's, Daniel's, and Cassidy's sidebars for details about their 4th-place finish.

For the S5 Senior Scale Altitude team, it was: So...agonizingly...close. The dreaded 4th. The dreaded 5th. And the ever-dreaded...where is it? The Senior Team, all flying Bumper-Wacs, had static scores that had them in the running for medals individually and as a team. Matt Steele had 529 points, James Duffy 528 points, and Jim Filler 524 points. The first flight by James was to 509 meters, and Jim's flew to 528 meters. Matt Steele's first flight flew to...nobody knows. The recovery crew had a partial sighting of it at ejection but did not see



Rachel Clark, Cassidy Steele, and Daniel Kelton preparing to fly S5.

exactly where it landed. U.S. team members fanned out to look for it, but the time clicked away for the 20-minute window to return the altimeter for an official score. But it became much worse than that, because in S5 (and S7) the same model has



Matt Steele and Rachel Clark with their S5 models.

## S5 Junior Scale Altitude: Mission Accomplished

by Rachel Clark

As a first time Junior member on the team, I was a little nervous. I didn't know whether or not I would have any friends for the next 10 days while we were in Slovakia. I wasn't sure anyone would like me. But in only a day, most of us were already best friends. And not long after that it was almost as if our U.S. rocketry team was a second family. We had our jokes and fun times, but my teammates and I also worked together, encouraged one another, and helped each other when it was time to fly.

In my event, S5 Scale Altitude, it was critical that Cassidy Steele, Daniel Kelton, and I worked together. On launch day, it was a beautiful morning with almost no clouds and not much wind, and we were all excited. It took me the whole first round to prep my rocket, but Cassidy had an amazing flight that set the tone for the whole team. In the second round, I was ready for my first flight, and the team worked together to help me get everything connected on the tower. In the few moments before the countdown, so many thoughts ran through my head. Would it deploy? Had I left out any steps in the detailed preparation? Was the rocket in the correct position on the tower? But after liftoff, I saw the second stage deploy, and a huge smile spread across my face. Hearing the words of congratulations and seeing the happy faces of my Dad and teammates, and hearing the RSO say "OK" from the loudspeaker, I knew it had qualified. Then, once recovered, I was relieved that the altimeter had captured a reading.

But the work was not finished: With 30 seconds left in the third round, we all raced to help Daniel get his rocket into the air. In the final seconds he got continuity, and we all cheered for his successful flight. Altogether, our team finished 4th place in the world championships—something that could not have happened apart from teamwork.

In the end, I had nothing to be nervous about. My teammates were awesome, and we enjoyed and supported each other throughout the entire contest. With their help, I had a successful trip, and I think I contributed to theirs as well.

Mission Accomplished!

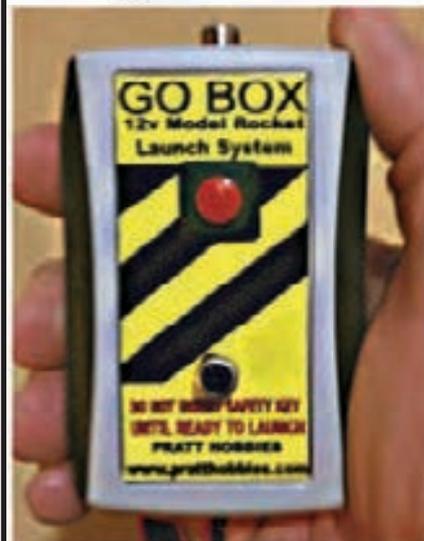
to make all of the flights, and it was never found. So without the upper stage, Matt could not fly round 2 or round 3. And unfortunately that is how it ended. There is a theory of why it could not be found but without proof it is only a theory.

Meanwhile, James and Jim continued on. James Duffy's third flight flew to 607 meters, the third highest of the contest, to take 5th place. Jim Filler's third flight flew 648 meters, the second highest of the contest, for 4th place. Even with no altitude score for Matt, the team came in at 4th place, and just 35 points out of 3rd. Had Matt's upper stage been found and flew at least 79 meters (a given, if the altimeter worked), the U.S. Team would have won the gold medal.

James Duffy and Jim Filler prepping S5 models.



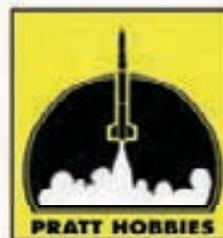
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## ***S5 Junior Scale Altitude: Last Minute***

by Daniel Kelton

I would say that my most memorable part of the WSMC was how our junior S5 team really pulled together at the end of the third round. We were low on time, I didn't yet have a qualified flight, and we were under a lot of pressure. The adults wanted me to go first to make sure I had time to get a flight off, but because we would have to switch the piston system for my rocket, either Cassidy or Rachel probably would not have time to fly. The three of us thought that if we launched them first, we would have time to fly everyone. So we launched their rockets, getting the next rocket on the pad even before the smoke cleared from the previous launch. When it was time for my flight, we ran into a problem: my clip whip was old and was starting to fail. When we hooked up my Bumper-WAC, we couldn't get any continuity at first, but with some work managed to get really spotty continuity. Because it uses two igniters, continuity issues presented a high chance of a DQ. However, we had one minute left, and all we could do was pray and hope for the best. We checked continuity again, called the RSO, and started the countdown.

This time, (almost) everything worked flawlessly, and I finally had a qualified flight! I said 'almost' because my flight did not go nearly as high as I predicted, and I puzzled over this for days before finally discovering the reason. My piston had jammed, and the lower stage essentially just flew out of a tower with no piston. If not for this, there is a good chance that we would have taken team bronze.

This was a really fun experience, and I will definitely be there in two years!

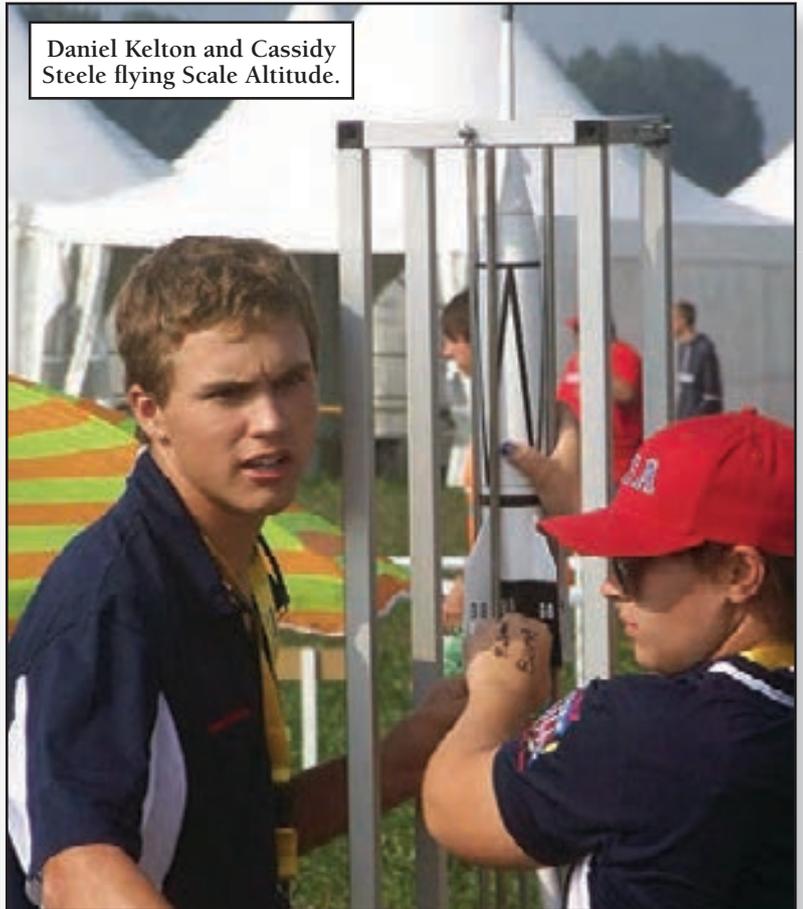
## S5 Junior Scale Altitude: Bittersweet 4th

by Cassidy Steele

Tension was riding high Tuesday night. The Junior S5 team had picked up their models and were getting ready for the stressful Scale Altitude competition the following day. We were all a bit disappointed—static points had not been as high as what we had expected them to be. I, personally, was not expecting Wednesday to be any better than our disaster of S1, but I knew I had to do my best, since it was my last event as a junior and the first event for either of my teammates.

We prepped the following day, and my model was the first off—a miraculous flight of over 400 meters. At the end of the first round I was in third, though I eventually dropped to eighth when the range closed. Daniel had some difficulties the first two rounds, and when we had less than five minutes left, he finally got off a qualified flight. We were ecstatic—there were rumors flying of us taking third, then second. We were thrilled to be in such high standing, so when it turned out we were in fourth, we were still happy. It was a bit bittersweet, though, to have done so well but be just short of a medal was a little hard to deal with.

Daniel Kelton and Cassidy Steele flying Scale Altitude.



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Brendan O'Bryan,  
Magda Moses, and  
Katherine Humphrey.



## S9A Helicopter

S9A Helicopter had a max of 180 seconds. The Junior Team flew on Tuesday afternoon in nice weather. Katherine Humphrey had flights of 135 seconds, 128 seconds, and a max of 180. It was good flying, but only enough for 11th place. Magda Moses had flights of 172, 104, and 95 seconds, for 19th place. Brendan O'Bryan had a good first flight of 148 seconds. The second flight was late in deploying (a rubber band tension issue), flying for 86 sec-

onds. His third flight had the same sort of deployment problem as flight two but never opened at all, for a DQ. The Junior Team finished in 7th place.

The senior Team flew Thursday morning when it was very cold and windy. Rod Shafer had three good flights, 138, 148, and 115 seconds, for 13th place. Craig Vinyard had a DQ on his first flight, but flew well for the other two, 143 and 174 seconds, for 27th place. Steve Foster flew for 117, 72, and 64 seconds. The team came in at 9th place.



Rod Shafer waiting to  
fly his S9 Helicopter.



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S7 Scale models in the judging room. Steve Kristal's model is at left; Levekyh's winning Soyuz is in the corner.

## S7 Scale

The S7 Junior Scale team members were Rachel Nowak, Emma Kristal, and Campbell Duffy. They all flew Little Joe I models powered by a cluster of four C6 engines. Emma, Campbell, and Rachel tell the stories in their sidebars.

The Senior S7 team members were Chris Flanigan, Steve Kristal, and Ellis Langford. Ellis was a late replacement for Tony Reynolds. Ellis flew the same Ariane model that he had flown in 2002 on the Junior Team, winning a bronze medal then. It flew nicely at the 2012 WSMC, taking 14th place. See Steve's and Chris's reports for details.

The winning model was once again a stunning Soyuz by Alexandr Lievykh of Russia. It was clustered, dropped the strap-on boosters, staged, and separated the shroud and capsule. He had the third best flight score. But what really set his model apart from the rest (as usual) is the model's scale fidelity and detailing. His static score of 825 points was 57 points ahead of second place, and he won by 39 points. He is truly the best scale model rocket builder in the world.



## S7 Junior Scale: The Real Prize

by Emma Kristal

I'm Emma Kristal. I'm the one in the middle, getting hugged by my teammates.

Can you tell if I'm getting hugged because my rocket flew really well or if I'm getting hugged because my rocket just crashed? Can you tell if my teammates and I just won the Gold medal, or if we just came in last place?

No, you can't tell that from this picture. But what you *can* tell is how my teammates feel about me, and how I feel about them. And of everything anyone can tell you about being on the U.S. Spacemodeling team, *that's* the most important.

I've been in lots of rocket competitions, and lots of other competitions as well. But there is nothing in all of competition that beats being on the U.S. Spacemodeling team. Nothing else even comes close!

My dad always says that "you win by getting on the team; the prize is that you get to go to Europe and fly rockets."

But he's wrong.

The prize is what you see in this picture.

This picture is my gold medal, and I won at least a hundred more of them being on the team this year.

## S8E/P Senior Rocket Glide

S8E/P for Seniors was flown Wednesday in great weather with little wind. The U.S. Senior S8E/P Rocket Glide team members were Matthew Berk (member of the Junior gold medal team in 2010), Kevin Johnson (alternate who replaced Ryan Woebkensberg), and George Gassaway.

The S8E/P event is quite complex. The goal is to fly an exact 6-minute (360-second) flight, every second over or under 360 is deducted. There is also a "spot landing"



## S7 Junior Scale: Little Joes

by Campbell Duffy

2012 marked my first adventure as a member of the U.S. Spacemodeling team. After qualifying at the team selection in Cincinnati, I competed in the Junior S7 Scale event with my teammates Emma Kristal and Rachel Nowak. We each made models of the Little Joe LJ-1A, each one with unique and different details. Unfortunately, we did not win a medal but we still had an extraordinary experience. I met so many wonderful people from other countries and from my own team.

The base hotel for the Championships was at a water park resort called Tatalandia. The Juniors and I very much enjoyed going to the water park many times! The resort was beautiful, but it was not like American waterparks at all, as they had a pretty casual approach to safety. There were limited lifeguards and many times we came shooting off of waterslides face first! The Junior team was full of wonderful people whom I made great friends with, such as Rachel Clark, Jenna Butler, Katherine Humphrey, Daniel Kelton, Emma Kristal, Anna Moses, John Moses, Magda Moses, Nick Nowak, Rachel Nowak, Brendan O'Bryan, Cassidy Steele, Alyssa Stenberg and Zackary Stenberg. Bill Stine was our Junior team manager and Katie Steele was his assistant. All of us grew very close to each other, and it was sad when we had to leave because I felt like I had known them forever. I still email and text many of them daily, and I'm looking forward to seeing them all next year at NARAM for the 2014 Team Selection Event.

I started building my model in October of 2011. My father drew up the blueprints that Emma, Rachel, and I used. My body tube was fiberglass, handmade out of fabric fiberglass rolled onto a mandrel and coated with epoxy. After the epoxy cured, the tube was slid off of the mandrel and trimmed it to the correct size. My body tube is silver black and orange like the rest of the model. The Little Joe fins are made out of balsa covered in plastic sheet and painted silver, black, and orange. The painting was the longest step but it looked gorgeous when I was done. The building took about 300 hours over the course of ten months. When I finished I was very proud of my work. If you are working on your model and you hit a hard spot, keep going! It is very rewarding when you're done. Model rocketry is a wonderful hobby, and I can't wait to go to the 2014 World Championships in Bulgaria!



Campbell Duffy launching her Little Joe.

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Alexandr Levekyh's Soyuz model takes off on the way to winning a senior Gold Medal in S7.



## **S7 Junior Scale: My FAI Experience**

by Rachel Nowak

My week at the WSMC was certainly an unforgettable one. It all really started for me the day we got on the bus to get to Tatrallandia, our hotel, which was more like a little town. But even before the bus ride, all of us juniors were in the restaurant of the hotel we stayed in over night in Bratislava. We got to talk to each other and play some card games and just hang out. Knowing some of these people a little better made the bus ride so much more fun. I could already tell I had a great week ahead of me.

The day the actual competition started, I was on the recovery crew with my friends and we had a blast, but at the same time still worked and did what we were supposed to do. That lasted the whole week until Saturday when it was the day of my event, S7 Scale. My teammates and I were so excited and nervous to fly our Little Joes. We were told that everyone was going to be watching us, and they were. Emma went first and we were all cheering her on. Her flight was great, until her parachutes shredded and she got disqualified. But, that was okay, because we still had the second round later in the day. Next, it was my turn. I was extremely nervous now. They called off my number and started the count-down. My rocket went up, but curved and landed head first in

the ground right next to me. It didn't deploy or anything and the tower broke into pieces. I was lucky that people from a bunch of other countries helped and picked up all the pieces. It was devastating to see my rocket that I had worked so hard on fall to pieces, but I couldn't keep thinking about it. I went back to the tent and repaired my model. Sure, my rocket didn't look perfect or pretty or anything like that, but at this point it was just a matter of getting my engines to ignite. Only one ignited on the previous flight, and we couldn't figure out why that happened. Campbell's flight went great and she was done for the day.

In round 2, Emma and I were the first to fly. I went first and the flight went perfectly. Emma was next, and her flight went perfectly too, despite the RSO joking around with us and telling us, "Sorry, but this flight is . . .okay." We were all filled with joy that we all got qualified flights. We ended up in 5th place. But that didn't even matter to me. The best part, to me, was how close we had all come by the end of the week. Though none of us wanted to leave the field, the hotel, or even the waterpark, it was time to go. But not before the banquet. We got to talk to all of our friends from other countries. However, soon enough it was time to go back to the hotel and get on our bus that left at 1:00 A.M. Luckily, I can still keep in touch with all my friends from the U.S. team, and other teams, through social networking. Overall, I think I can safely say that my week at WSMC was one of the best of my life so far.



Katherine Humphrey launching Emma Kristal's Little Joe model.



U.S. Team Senior Manager John Langford, Steve Kristal, and Daniel Kelton, before Steve flew his PA-1 in S7.

## **S7 Senior Scale: S7 Can Be Fun!**

*by Steve Kristal*

For future readers I would like to mention that I had the next to lowest score of any senior entry that managed a qualified flight, but I had more fun than anyone else in S7. I was the only contestant who handed my model (an Apollo Pad Abort 1) to bystanders to hold and examine so we could talk about it. I was amazed at the number of people who came up to me to ask questions about my model, even though most of them spoke almost no English. It was fascinating to learn that “paper” and “fiberglass” are almost universally understood words. After my flight I spent the next hour posing for photographs with people from all over the world. A number of folks wanted their children photographed with my model, which was just very cool. It was huge fun flying a really unusual model for the WSMC crowd.

As I suspected going in, you don't have to beat Lievykh's Soyuz to come away a winner in S7. I know a number of great scale modelers who won't try out for the team because they figure there's little chance of winning a medal. But if you've built something cool, there is huge satisfaction flying it for such an appreciative audience.

Our juniors proved the same thing, that you don't have to come home with a medal to have won in S7 at the WSMC. In Serbia we had no junior scale model entries. This time around, the evening of the flyoffs, the three Junior Dads met and set a goal of three cool models actually built by the kids, and three qualified flights. We worked together throughout the year to make it happen. The three qualified flights in Slovakia weren't easy to get, the kids had to really work as a team to make it happen. But I think all three came home with something way more important than medals: real pride in what *they* actually did individually and as a team.



A Saturn V stages and pops open its hidden second-stage fins.

## S7 Senior Scale: A Fantastic Journey

by Chris Flanigan

The flight of my 1:48 Saturn IB at the WSMC started nicely but, unfortunately, did not end well. At ignition, one of the eight motors in the first stage did not ignite. With only seven motors powering a large/heavy scale model, the acceleration was insufficient to trigger the electronic timers in stages 2 and 3. Stage 1 operated and recovered normally, but the unpowered upper assembly arced over and impacted. After the flight, some teammates came by to offer condolences. I very much appreciated the thought, but I wasn't really that sad or upset. I looked at the flight as another learning point along the wonderful journey of trying to build and fly a good scale model.

The path leading up to S7 at the 2012 WSMC was an interesting experience. At the 2010 WSMC, I flew a large model of the Russian N-1 launch vehicle (the Russian equivalent of the Saturn V). The N-1 got a lot of attention since that prototype had not been previously flown at a WSMC. However, the N-1 is not a competitive entry for a WSMC since, due to Cold War secrecy, the vehicle has no significant external lettering, flags, or other markings.

For 2012, I decided to enter a Saturn IB. I started with the Apogee kit (which is an excellent kit—highly recommended!). However, I decided to transition from the 1:70 Apogee model to a larger 1:48 model in order to fly a model with eight motors in Stage 1, complete with nozzles in the correct locations and orientations.

The journey since then has been fascinating. I met David Weeks, the incredible scale modeler and historian who did the remarkable drawings of the Saturn IB and other launch vehicles. His information, plus seeing his award-winning 1:48 plastic model of the Saturn IB, gave direction on how to proceed. I also received help and suggestions from Josh Tschirhart, Marc McReynolds, John Pursley, Jay Marsh, Dave Fitch, James Duffy, Matt Steele, Steve Kristal, Jim Filler, and more. Many thanks to all.

The Saturn IB is an amazing launch vehicle, and learning about it was a great part of the journey. The more you investigate each component, the more you find out how intricate the vehicle was. For example, the launch escape motor was not a single “crayon” but was three separate motors. The classic black-and-white fuel and LOX tanks were not simple cylinders but had electronics tunnels, fill/drain valves, umbilical panels, flight termination charges, and access doors. Most of the interstage and tank adapters were skin/stringer construction, not corrugation as implied by typical vac-formed wraps. The Service Module was extremely complex due to the segmented structural design and white thermal radiators. Learning of these detailed features gives you better appreciation of how much work went into the design and engineering of the original spaceships.

Building a flying a 1:48 scale model of the Saturn IB was also a great learning process. I started with a two-stage boilerplate model. Some initial flights had “whoop-de-do” staging incidents, leading to detailed flight photo interpretation to understand and resolve the issues. The boilerplate model was rebuilt into a three-stage configuration. To get additional score, the liftoff event was augmented with a scale model of the LC-34 launch pad, a pre-launch motor to simulate ignition prior to liftoff, and the original NASA audio of the Apollo 7 launch. Hearing the original NASA countdown brings back great memories of the Apollo days!

The lessons learned were applied to the 2012 WSMC model. There were some unexpected late “crisis” learning experiences, such as finding out that the 1:48 decals for the large “UNITED STATES” lettering on the black fuel tanks did *not* come with a white backing like the Apogee decals do. White trim Monokote to the rescue! Then the 2012 WSMC organizers announced on Friday that model turn-in had been moved to Saturday night instead of Sunday. One less day for last minute details! This resulted in some interesting working arrangements in hotel lobbies and foosball tables. Thanks to Trip Barber and Chris Kidwell for helping to get the model submitted with five minutes to spare.

S7 flight day was a great team experience. Steve Humphries had a tent stake that was a perfect fit to secure the launch pad. Terrill Willard handled the NASA countdown audio. Trip Barber helped with the prelaunch checklist and handled the pre-ignition motor. Petra (our liaison/interpreter) helped coordinate the NASA countdown with the RSO, who quickly understood the concept and rushed to place his microphone so that the audience could hear. George Gassaway took some nice photos of pre-launch and initial ascent of the model.





# Great White

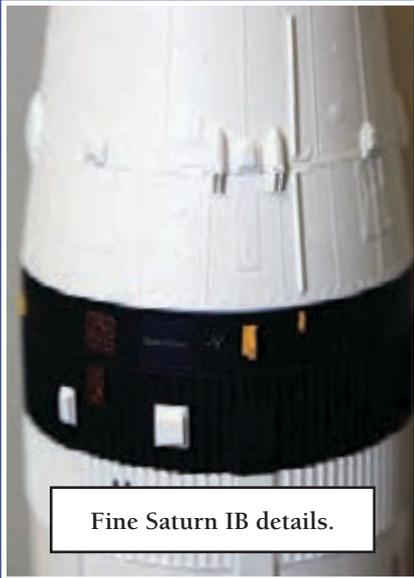


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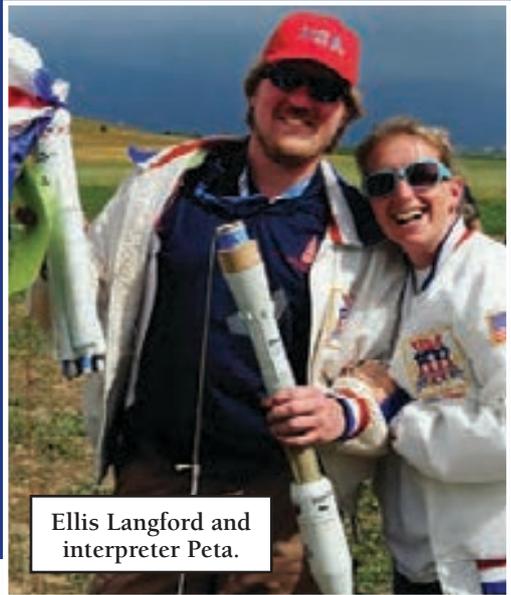
Fine Saturn IB details.



The S7 Junior ladies put final touches on their Little Joes.



Campbell Duffy, Rachel Nowak, and Emma Kristal with their Little Joes.



Ellis Langford and interpreter Peta.



Ellis Langford preparing to fly his Ariane, with James and Campbell Duffy.



Photos from the flight sequence of Levekyh's winning Soyuz.



A Polish Saturn-V flight.



Launch of Campbell Duffy's Little Joe



Members of the Bulgarian Team with their S8E/P models.

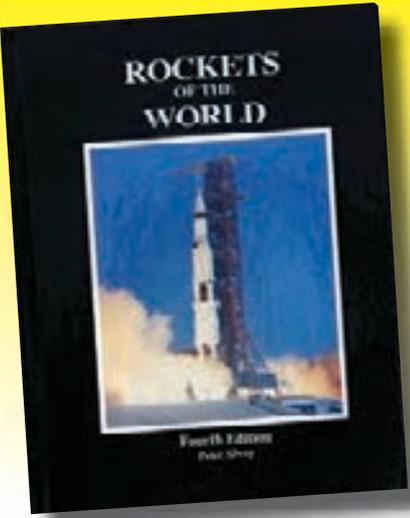
two to help with finding lift, seeing how their model is doing versus others in the air at the same time are doing, and counting down for the landing. Among the spotters were Keith Vinyard, Dave O'Bryan, and Matthew Berk's mom, Trish. Terrill Willard helped to keep track of the flying windows, time left to return the transmitter, and the correct flight group to fly in (other pilots have missed their flight group or returned their transmitter too late). Jim Filler

target, where the model gets 100 points for landing within 1 meter of the spot, with 10 points deducted for each meter away from the spot. Flights are made in assigned groups of six or seven fliers, who have a 14 minute flying window to get their transmitter, make the 6-minute flight, land, and return the transmitter to impound. So, it gets quite intense, especially if there are misfires. Since the weather (thermals, down air, wind) is different for each flight group, the raw scores are "normalized" so that the flier with the top score in the group gets 1000 points, and the rest of the raw scores of other fliers of that group are adjusted proportionally.

This event calls for a lot of teamwork in a limited area and limited time. The team member who is piloting uses a spotter or



Keith Vinyard and Trish Berk act as spotters and time keepers as Matthew Berk flies.



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and John Langford ran the pad area, made sure the timers were ready, and made sure the RSO had called for the U.S. to launch before the launch button was pressed by a U.S. Team member (yes, sometimes the wrong country has launched at the end of an RSO countdown and been DQed). And fliers Matthew, Kevin, and George helped each other out in various ways in between their own flying (pushing the launch button, igniter re-prep, etc).

Before leaving, Kevin had a problem in practice flying which left him short of models. He ended up flying his #3 model, which used a newly built fuselage and salvaged wing from another, never flown until arriving in Slovakia. Added to that, his model had no glide path control of any kind (Matthew's had spoilerons, and George's had a big flap).

Matthew Berk flew very well. In round 1 he had a 100-point landing, was only off by 1 second, and got a 998 flight score. In round 2, there was almost a disaster. He had a misfire. And another misfire. Time was down to 7 minutes or less left in the flight group. That might sound like a lot but given a 6 minute flight target time, that meant only about 1 minute left over

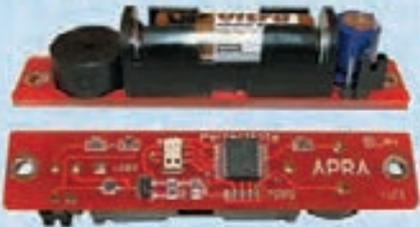


Judges measuring Matthew Berk's first landing that scored 100 points and landed exactly at 360 seconds.

to launch and after landing to return the transmitter in time. One more misfire, and Matthew would have to land earlier than 6 minutes in order to return the transmitter in time. Fortunately, the motor lit, and he

got in a great flight, for an exact 6-minute flight and 100 point landing, for a normalized score of 1000. At the end of round 2 he was in 5th place, so he had a good shot of making the final five-person flyoff. But

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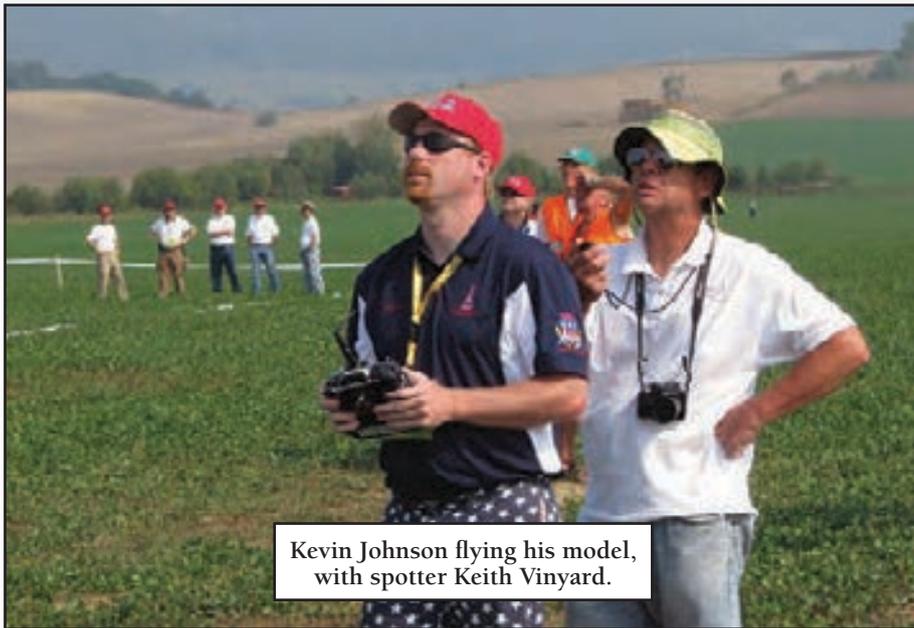
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Kevin Johnson flying his model, with spotter Keith Vinyard.

distance score. George took 15th place.

Now, a 10th and a 12th and a 15th might sound like another no medal for the team. But there were 39 fliers and 14 countries flying the event. The combined U.S. scores earned the U.S. Senior Team the Bronze Medal. This was quite exciting; finally the U.S. had taken a medal in an event for the week. It was great for Matthew, Kevin, George, and manager John Langford to make it onto the podium to get the team awards.

The Chinese Team took Gold with near-perfection, and the Russians Team

The U.S. S8E-P Team: Kevin Johnson, Matthew Berk, and George Gassaway.

## S8 & S4 Junior: My Experience at the WSMC

by Alyssa Stenberg

I enjoyed going to my second world championships in Slovakia. It was really pretty at the flying field, and we stayed right next to a water park! My brother and I practiced a lot for this year's championship, but I never expected what happened during the competition.

During the week, I enjoyed being with the other U.S. team members, and getting to meet people from all over the world, some of whom I'd met before in Serbia two years ago. I turned thirteen in Slovakia, and the U.S. team threw a surprise birthday party for me! I really enjoyed myself and I was grateful that they did this for me.

My brother Zackary and I flew S8D RC Rocket Glider. I had some problem with the radio in my rocket glider and no control at all in the first round. That was sad, but I then flew my backup model for the second and third rounds and did quite well. At the end of the third round, we found out that Zackary was going to win an individual bronze medal! I was really shocked and happy for him. My dad and I were so proud of him when he was on the podium receiving his medal and trophy. He is only eight and looked so small up there compared with those kids that were ten years older than he was!



his landing was a bit off on his last flight, so he ended in 10th place.

Kevin Johnson was flying on the S8 Team for the first time. His flights were good, especially for lacking any glide path control. For his third flight, he had the best score of his flight group, scoring 1000 points. Kevin took 12th place, which was incredible for a mostly new model with no glide path control.

George Gassaway had two good landings, a 90 and a 100, though the time was off by a few seconds. George's third flight had a high approach that led to a rushed steep landing that got a mediocre landing

the Silver. Chinese fliers took the top two places. Zhen Lu had four perfect landings for distance, and only missed duration by one second out of the four flights, for Silver. Shiqi Li simply was perfect, for all four flights, dead-on, for the gold. The Chinese models used six servos. The wings had four servos, for inboard flaps and outboard ailerons, and two servos for a V-tail for elevator and rudder. They used "crow" during landings, flaps down and ailerons up. Lauris Pompurs of Latvia also was one cool flier; he took the bronze medal by being two seconds off from perfect on one of his first three flights.



In S8E/P, the Russian Team won the Silver, China the Gold, and the U.S. Team won Bronze. U.S. Team members on the podium are Matthew Berk, Manger John Langford, George Gassaway, and Kevin Johnson.

## S8 & S6 Junior: Competing at the WSMC

by Zack Stenberg

This is my second time going to a World Championships. The first time was to Serbia but I was only 6 years old and just a supporter. This time I went as a competitor. I flew S6 Streamer Duration and S8D R/C Rocket Glider. I had to practice flying a lot for S8D because I originally wasn't supposed to be on the team. I only found out that I was competing in April when they agreed to let me be on the team.

When we got to Slovakia I practiced almost every day. On the day when I flew S8D, I was really, really nervous. The weather was really windy so I was glad I had done all that practice. After I flew the first round was glad that the round was over, it was hard to keep my glider pointed perfectly into the wind to get the longest time possible. I was so sad for my sister when she had a problem with her radio and her first flight crashed. I was not so nervous when I had to fly the second and third rounds. But I was still very happy that the flying was all over and I could relax! I was happy with the way that I flew and my dad said I could be in the top ten!

After all the flying was done, I was hanging around when they started yelling that I was going to win a bronze medal! Wow! When we left the U.S., I thought I would never win a medal. I think everyone there was shocked because I am only eight years old! I was so happy, I was crying happy tears. This is the best thing ever!

I like Slovakia. I like the country because it is so beautiful. The water park next door was awesome too. I had the best teammates ever. I was so happy to be on the medal stand and was so proud to see the American flag flying during the ceremony.

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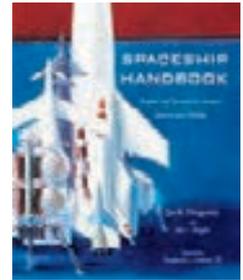
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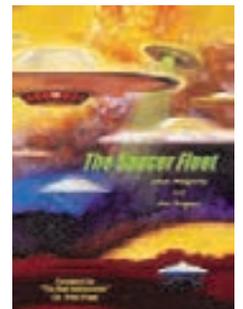
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## S8D Junior Rocket Glide

The Junior S8 event is not quite as intense as S8E/P is for Seniors: there are no assigned flight windows, no Spot Landing, and no target time. The goal is “simply” to try to make three maxes of 360 seconds (6 minutes), using models that only have half the engine power of the ones the Seniors fly. But flying Junior S8D is still intense, and a lot of pressure, to be flying any R/C rocket boosted glider at a WSMC, even more so when the fliers are really young.

2012 was a “rebuilding year” for the U.S. Junior S8D Rocket Glide Team. Matthew Berk and Craig Vinyard of the 2010 gold medal winning team moved on to the Senior Division. Alyssa Stenberg, who won the silver medal in 2010, was back, and would fly the event just days after her 13th birthday. For a while it looked like there might not be a full three-person Junior Team. Alyssa’s 8-year-old brother Zackary started to learn how to fly R/C in February. By early April, he made his first rocket boosts. He was added to the team in May.



Alyssa Stenberg lands her model after achieving a 6-minute max.

Also in May, Brendan O’Bryan (who would be 10 at the WSMC), was added. Brendan is the son of Dave O’Bryan, who was on many past U.S. Teams, flying various events including S8E.

The team flew Raven-10 models as de-

signed by Bob Parks and design-modified by Matthew Berk. They were powered by AeroTech D3 engines, which burn for 8 seconds. The models have to be actively piloted on boost, in order to keep from veering off course. It is the need for pilot-

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BACKGROUND IMAGE © STEVE JURVETSON

ing the rocket boost that makes the event even more difficult than just flying the R/C glide, and it's quite difficult to find Junior fliers that can get over that hump to fly the boost. The realistic hopes for the U.S. in S8D was that Alyssa might have a decent chance to win another individual medal, and that Zack and Brendan's flying might help the team to score a medal.

After several days which included some great practice flying, on Thursday afternoon the S8D (D R/C Rocket Glide) event was held. It was cold and very windy, at least 15 mph with gusts even higher during in round 1. Some models got into trouble on launch due to the high winds, some crashing, and others not crashing but getting DQed for a unsafe boost. Brendan O'Bryan put in three solid flights, very good for how recently he'd come up to speed to fly S8, and for extreme winds that he had not experienced before. Alyssa had a bad first flight when her model had a radio problem on boost, was uncontrollable, and crashed. She had a max in round 2, riding some wave lift detected by Keith Vinyard, and a nice 265 second flight for round three.

As it would turn out, the Junior Team



The individual medalists in S8D: Kashkin of Russia (Silver), Byrtek of Poland (Gold), and Zackary Stenberg of the United States (Bronze).

would end up in 4th place, 7 seconds short of a Bronze medal. But story does not end there.

In round one, Zackary Stenberg had a great boost, and flew the high winds by flying his model steady at its normal glide

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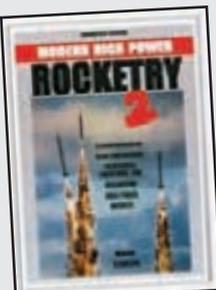
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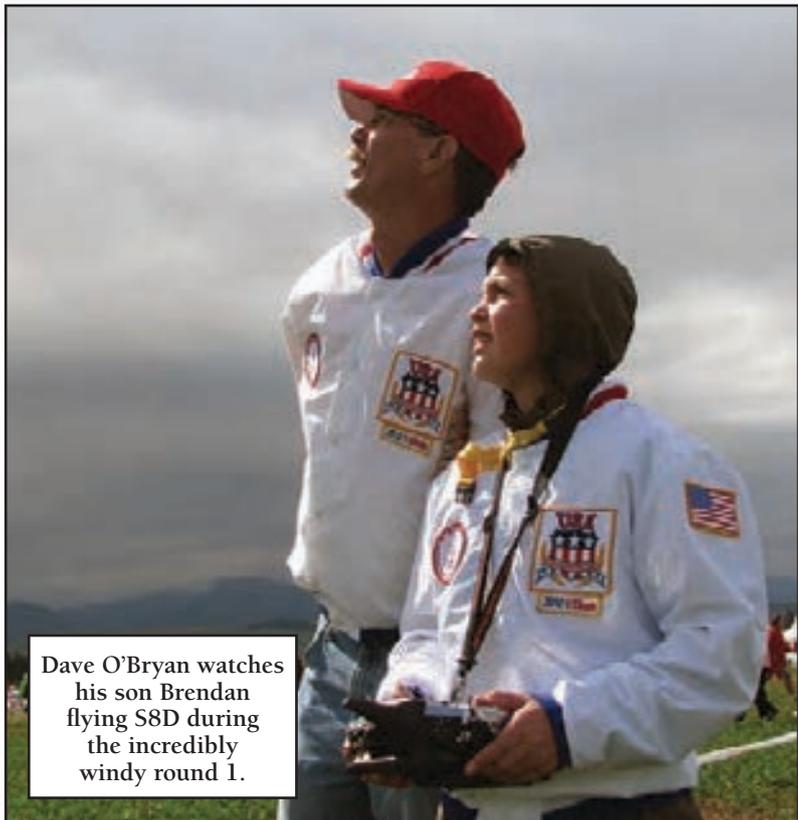
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speed, which was a slower speed than the wind. So, while pointed to glide dead ahead into the wind, the model slowly drifted tail-first downwind. He kept making tiny corrections to keep it pointed into the wind, which is not easy to do in turbulent conditions like that. It continued to drift farther downwind. It drifted over a road and was in danger of landing in a lake, so he had to switch back to "boost" trim to make it glide faster and not land in the lake. There was minor damage on landing, but otherwise it was good for the rest of the rounds. Zack actually had the top score in that very windy round, at 217 seconds, 27 seconds more than anyone else. However, we did not realize that he had done better than anyone else at the time, and there was the rush to move on to the next U.S. Junior flier's flight.

The winds were not quite as bad in the rounds 2 and 3, still windy but usually the wind speed was a bit less than glide speed. His second flight was for 295 seconds, and third flight for 254 seconds. Given the winds, it was hard for anyone to max, but a few did max (6 minutes).

Zack had flown early in the final round, so while he was listed among the top early, it was likely that later results would push him down the result list (too often we have seen team members listed as 2nd or 3rd in an event early in the round, then drop to say 4th



Dave O'Bryan watches his son Brendan flying S8D during the incredibly windy round 1.

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## ***S8D Junior: Learning How to Fly S8D in Two Weeks***

*by Brendan O'Bryan*

Before I practiced on an S8D model, I practiced on a flight simulator (Reallflight6) and a small RC plane (Parkzone Ember2). I flew those for two months, even taking the flight simulator on vacations.

When I got home I got to do my first S8 boosts. That were two weeks before we left for Slovakia. The boosts were kind of easy if the model was trimmed. But if the model was not trimmed the boosts were harder to control. Before we left for Slovakia I had about 30 boosts, only six or eight on a full D engine.

In Slovakia I practiced with my new models and they were pretty good. During the S8D contest I felt nervous because of the high winds. My boosts were difficult but I kept control somewhat. I did get three qualified flights.

When it was done I said 'Boo-yah!'

or 8th. Jim Filler in Senior S5 had been one of those examples). After Alyssa flew, I went over to look at the electronic scoring board, trying to see if the team might have a shot at a team medal. There were still several scores not entered in the results yet. But it looked like the highest scores of the fliers with only two scores in yet, could not catch Zack even with a max. I was trying to double check the math when Mike Nowak pointed out the same thing; nobody could knock Zack out of 3rd. We realized later that other countries had used the same strategic choice; their top contenders had already flown early.

One of the happiest moments of my life was going to Zack and telling him he had won the bronze medal. There was a lot of celebrating then, and also later when he got his medal. I had helped teach him to fly, and I was happier for him winning the Bronze medal than I have ever been for the medals I've won. I didn't cry when I won any of my medals but many of us (including his dad Jon and sister Alyssa of course) were crying happy tears for Zack.

Some might not believe someone his age could fly S8 that well, but he showed them. He earned the respect of a lot of competitors at the WSMC, and it was great to see. On the medal platform, there were the two Silver and Gold medal winners, Kashkin of Russia and Byrtek of Poland, tall guys in their late teens, and little Zack

at 8 years old with the Bronze medal. It was one of the most incredible and happy moments in U.S. Team history.

## Conclusion

Before the trip ended, there had been an off-day, in case of bad weather. Many made use of that day to see some of the local sights. One of the most impressive were the Tatra mountains, accessed via a series of ski lifts.

The WSMC ended with the banquet Saturday night. A last chance to see other people from the other countries, and even some dancing! Afterwards, team members took charter buses to get to the Vienna to fly back to the U.S., though a few stayed on for awhile longer to visit other parts of Europe.

The flyoffs for selecting the next U.S. Team will be held the weekend before NARAM-55. If you are interested in trying out for the team, check out the <<http://NARAM.org>> web site for flyoffs updates, and also the NAR website at <<http://www.nar.org/internats/>>.

It is also recommended that you visit the <<http://WSMClive.com>> Web site, run by Chris Taylor. It has some day-by-day reporting, full results, and many photographs there is not room for in this article.

## 2013 Events

Event: NARCON  
Date: February 22-24, 2013  
Location: Santa Clara, California  
Sponsor: LUNAR  
Contact: David Raimondi  
Notes: [www.narcon.org](http://www.narcon.org)

Event: National Sport Launch  
Date: May 25-27, 2013  
Location: Pueblo, Colorado  
Sponsor: SCORE  
Contact: Jason Unwin  
Notes: TBA

Event: NARAM-55  
Date: July 20-26, 2013  
Location: Aurora, Ohio  
Contest Events: 1/8A PD (MR), 1/4A HD, 1/2A ALT, A PAYLOAD ALT, A RG, B SD, C DEG ALT, SCALE, R&D  
Sponsor: MTMA  
Contact: Bob Ferrante  
Notes: <http://naram.mtma.rocketry.org>

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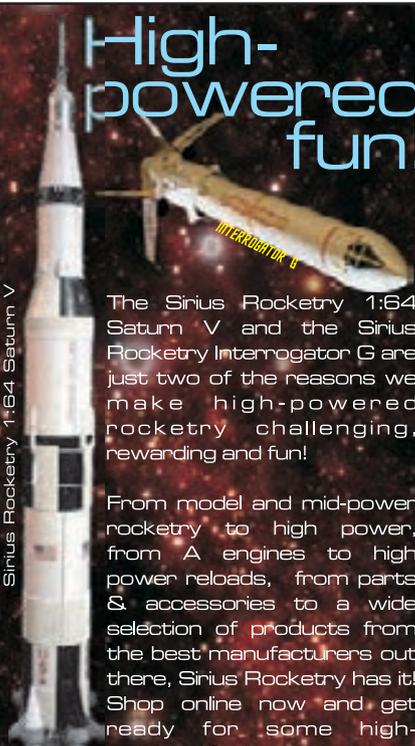
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