NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

FIRST℠

HERNDON HIGH SCHOOL CHAIRMAN'S AWARD SUBMISSION

The Herndon Robotics Team represents an inspirational combination of youth and adult participants, drawing people of incredible diversity, who have combined to demonstrate an fanatical dedication and commitment to the process of designing and building the best possible robot--together.

EPSLON DELTA, TEAM #116

Epsilon Delta: a strong year-round team partnership effort--

Team #116, also known as Epsilon Delta (ED), is a year-round effort on many fronts. For example, during the summer preceding the current year the mobility base team worked on advancing new transmission concepts. The control system team also worked on developing new sensor techniques. In addition, the Team participated in the competition at the Maryland State Fair during Labor Day weekend. Whether as a whole team, specialized sub-group, or individually, ED has become a year-round activity.

As one example, David Tripp, our Faculty Advisor, has incorporated robotics into his summer activity. In the summer he works with the Early Identification Program (EIP) at George Mason University. This is a program for students from disadvantaged backgrounds, designed to increase their readiness for college. For the last two years the students have built small remote controlled platform ("robots"). In addition, in the summer some of the students from Team #116 came and talked to the EIP students about FIRST and demonstrated our robot.

FIRST has had a profound effect on the Herndon students, the school, and "the village"--

Alicia Wallenstein is a wonderful example of the impact of FIRST. Alicia was a member of Epsilon Delta while she attended Herndon High School. She graduated and then attended Virginia Tech. While attending Tech, she founded Team 401 and implemented a new FIRST program in the Montgomery County School System. After her graduation, she has moved back to the Herndon area where she is now an advisor to the current Team.

"FIRST broadens students' perspective, so they really understand what engineers do, and how science and math can be applied. This has the effect of increasing their motivation to learn these subjects. In addition the students learn specific skills and techniques that are useful in their own right, and also put other learning in a better context. To summarize, FIRST works on many different levels to help students integrate school subjects into their picture of possible future careers, and their picture of the world in general." **David Tripp, Faculty Advisor**

"I see that math and science are essential tot human progress and that problem solving is critical skill that makes the world move forward.' **Matt Haberland, Team Captain**

"This is my first experience with the Robotics group, and I've been very impressed with the level of effort shown by most of the kids, and by the tremendous support they get from the parents. The students are learning very valuable lessons - from theoretical math and physics to dealing with very practical scheduling and purchasing issues (like what to do when 3' of snow fall during your final build and ship sessions!) I expect that the lessons learned in 6 weeks of practical work will last a lot longer than 6 months of classroom learning. I've enjoyed watching and working with the students very much." **Neil Cohen, Parent**

"As a parent, I think that one of FIRST's most important aspects is that it provides kids with a practical demonstration why many of their school courses are relevant for real-world application. I also think that it can encourage kids to take higher-level courses in science and math because they understand the importance of these in pursuing engineering-related careers. The actual building of the robot, plus the invaluable interaction with the engineers, offer a leaning experience far beyond the high school walls." **Ellen O'Brien, Parent**

FIRST changes the lives of Team participants—

The impact of the Team has simply been to change the lives of many of these young women and men in a manner that will no-doubt result in life-long benefit. Just one example would be the fact that, on the final weekend of our build (just prior to the ship date) our area received over two feet of snow. The school facility was closed the four days before the scheduled ship date for the robot! In spite of

that, the Team members found a way to get together and work day and night to finish the robot. Many hours were spent together, working, shoveling, and bunking with the robot.

"Being involved in the FIRST program and the robot competition have been an amazing, incomparable experience for my daughter. She has gotten the opportunity to learn about a wide range of technologies and materials from dedicated, brilliant people. Furthermore, building the robot and preparing for the competition has all the attributes of a product development cycle so she is learning processes and people skills that will be of immense value to her in the future."

Vete Clements, Parent

"I wanted to become a programmer, now I want to become an electrical or mechanical engineer."

Kyle Witte, Student

"We all grow up on Legos and K'nex, and this was the next logical step!"

Devin Fletcher, Student

"I've learned enough about mechanics that I am confident that I can now teach other people."

David Romeo, Student

Team #116 outreach to the entire school, the community, and beyond--

Our team participates in many different types of outreach programs. We have visited elementary schools, volunteered at FIRST LEGO league matches, and have mentored other FIRST teams. We have also participated in summer competitions, as well as FIRST events at the United States Department of Commerce, the National Science Coalition, the National Science Foundation, and the National Academy of the Sciences (twice). Epsilon Delta has also brought attention to FIRST by being followed by NBC (99/00), a national cable channel (00/01), Fox TV (01/02) and has attracted the attention of local papers, national newspapers and magazines.

Team innovation in spreading the message of FIRST--

Team 116 has undertaken local initiatives, such as articles in the Washington Post, outreach to local schools, and awarding plaques to local businesses that have supported the Team (much like our sister sports teams at Herndon High School). In addition, Team 116 was covered for one year by the A&E cable channel, and most recently our principal engineer, Mr. David Lavery was featured in an issue of Esquire magazine as one of the "Best & Brightest" for his work at NASA and for his support of FIRST.

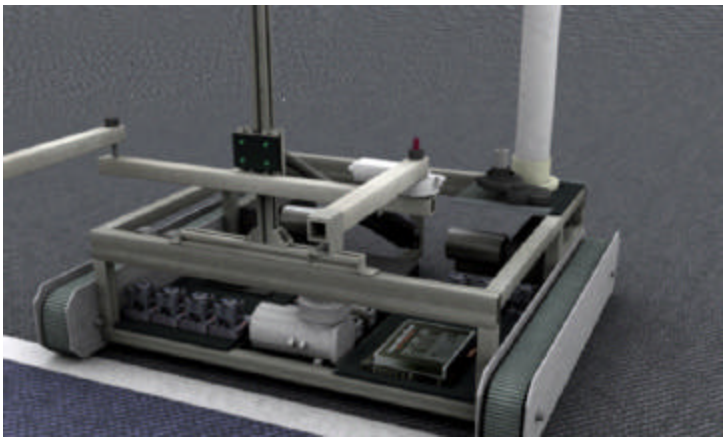
Epsilon Delta as a role model for other teams --

Team 116 has developed several valuable attributes that other teams will benefit from. First, our teachers and engineers prepare and present both theoretical and practical educational sessions that are held during the early part of the season, which are a great way to enhance the educational value of the experience. Second, the Team has implemented a structured member participation tracking system. This system starts with an agreement among Team members regarding the definition of what the minimum acceptable standards are for students in order to qualify as members, retain that status, and attend the competitions. Third, we have also identified a comprehensive list of all of the administrative

and support roles that the parents must play on the Team. This has resulted in well-organized team, and much greater and effective parent involvement. Epsilon Delta has also overcome substantial challenges in that the Team does not have a dedicated facility. The Team shares the current classroom and laboratory space with the Herndon High School Drama Club. We have also had to beg, borrow, and steal (not quite) the laboratory and shop equipment. This is a lesson for other teams that would like to organize, but do not have a formal shop or fabrication facility readily available.

Team #116 knows the true meaning of FIRST--

The Herndon High School Robotics Team started at South Lakes High School (in Reston, Virginia) for the 1995/96 season. The Team moved to Herndon prior to the 1998/99 season, and has grown each year to involve more and more of the student body, parents, and the local community. In keeping with the meaning of FIRST Epsilon Delta has participated in regional competitions, the FIRST LEGO League, national competitions, and has also judged the KISS bot-ball competitions.



Team #116 is responsible for directly or indirectly mentoring and founding twenty-eight (28) other FIRST teams. The Team has an open -shop policy, whereby other area teams are free to use our equipment and share our design concepts and brainstorming sessions. For example, Epsilon Delta has worked with a local FIRST team this season assisting them with their design, and last season we hosted and mentored a FIRST team comprised of home-schooled young men and women. This included providing design consultation, training their members, and even manufacturing of parts for their competing robot.

Another example of the spirit of FIRST is a shared interest in advancing the knowledge of all participants. This season Team #116 has developed an innovative transmission design. This design has been shared with many other teams, and posted to the 'White Papers' section on the Chief Delphi discussion forums, and as of this date has been downloaded by 907 FIRST participants. It is not yet known just how many teams will be using this shared design in the competition this year.

In what may be the best example, on the final weekend of our build (just prior to the ship date), the Herndon area received over two feet of snow. The school facility was closed the four days before the scheduled ship date for the robot!

As the heavy snow was forecast in advance, we left the school building that last night with the robot and critical components in our possession. When the announcement was made early the next morning closing all school facilities, it was agreed that the Team would meet in one of our engineer's garage (unheated) and continue work there. The snowfall continued unabated. Neighbors agreed to let Team members sleep at their houses, and parents had to fight through the snow to deliver food.

In spite of this incredible hardship, the Team members came together and worked day and night to finish the robot—sixty-five hours of work over that long weekend in a cold garage (temperatures as low as 22°F). Many hours were spent working, shoveling, eating, and sleeping together. The power of the Team, working together to overcome these obstacles, truly reflects the spirit and true meaning of FIRST!