

High School Offshore and Technology Stars Challenge on the Gridiron

By Tiffany Gray, BSEE Public Affairs Specialist

A team of high schoolers marches onto the football field at the University of Houston's TDECU Stadium for the main event, briefly shielding their eyes as they step into the bright afternoon sun. The voice of the announcer booms over the loudspeaker as they line up, arranging themselves around their captain on the fifty yard line. Each teammate wears a black and white jersey and a determined expression, as well as protective goggles and a shiny hardhat. Yes, that's *hardhat*, not helmet.

These high schoolers are not football players. They are participants in the first annual High School Offshore and Technology Stars Challenge, co-presented by the Bureau of Safety and Environmental Enforcement (BSEE) and the Ocean Energy Safety Institute (OESI). They have earned their place on the field by learning the basics of electrical engineering and building a circuit to capture the energy generated by movement and vibration, which has charged up the battery of a remote control helicopter. Now it's time to see if they can fly.



Student pilots head out onto the University of Houston TDECU Stadium field for pre-flight training and practice flights at the High School Offshore and Technology Stars Challenge on March 4, 2016.



A group of students from Westside High School in Houston dons hardhats for the helicopter flight competition at the High School Offshore and Technology Stars Challenge on March 4, 2016.

The crowd in the stands is composed of teachers, classmates, and fellow competitors, as well as the small army of staff who made the Technology Challenge possible. There are the graduate students who have volunteered as mentors, the University staff who have facilitated the day's activities, the industry professionals – among them a commercial airline pilot and a NASA astronaut – who have come to teach and cheer on the students, and of course the BSEE and OESI coordinators. Some of them have spent months preparing for this moment. But it all began back in Washington, D.C., where a few federal employees were discussing the future of

offshore oil and gas production. The children, as the saying goes, are our future.

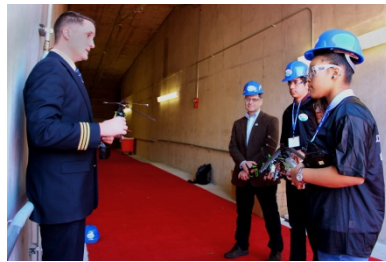
BSEE, as part of the U.S. Department of the Interior (DOI), participates in the youth engagement initiative introduced by President Obama and Secretary of the Interior Sally Jewell to engage children in play, learning, service, and work. While other agencies within DOI have national parks and wildlife

around which to base their engagement efforts, BSEE has had to get more creative to find safe and interesting ways to connect with young people. The offshore environment where our work is focused can be dangerous, and “kids on rigs” was just not feasible. However, there are many innovative technologies employed by the offshore industry, and they present an opportunity to help illustrate the connections between the science, technology, engineering, and math (STEM) skills students learn in school, and the careers that they may have someday.

“I think this is all so interesting because I can relate it to other things in my real life. Like, for example, I have an irregular heartbeat and when the mentors came to my school to show us the circuit technology, it reminded me of the heart monitor that the doctors use when I go for checkups,” explained Jade Lopez, a junior at Young Women’s Preparatory Academy in Houston and a competitor in the Tech Challenge. “Stuff like that is why I want to be an electrical engineer someday. I learned a lot today, from this whole experience.”



Jade Lopez and her teammates from Young Women’s Preparatory Academy in Houston connect pieces of a piezoelectric circuit that will charge the battery of their remote-controlled helicopter.



Clockwise from top left: (1) Students from Energy Institute High School work on constructing a circuit under the watchful eye of their mentor. (2)United Airlines pilot Brady Maddox, delivers pre-flight instructions to Tech Challenge competitors while BSEE Director Brian Salerno looks on. (3) Students from Young Women’s Preparatory Academy concentrate as their team’s pilot propels a helicopter across the field. (4) Jack Foreman, a neuroscientist and one of the volunteer “preflight champions,” explains the helicopter controls prior to the student pilots’ test flights.

Throughout the day as students worked on their circuits, quiz questions flashed on the giant screens overhead, giving the teams chances to score challenge points for recalling information about electricity and conductivity.

Representatives from each team participated in timed individual wiring challenges, while the designated “pilots” underwent pre-flight training and practice runs with the helicopters. By the afternoon, when it was time for the helicopters

to take off for real, the excitement in the air was palpable. Each team had their turn to fly back and forth from helipads placed at the fifty yard line and in the end zone of the football field, simulating the trip

between shore and an offshore oil platform. The goal was to make as many successful trips as possible in an eight-minute window.

With many stellar performances throughout the day, it was an incredibly close race for first place. The winning team, who called themselves “The Underdogs” and hail from Westside High School, wound up flying their helicopter a total of 750 yards, or almost eight round trips from “shore” to “the platform” and back. This distance, combined with the scores from the earlier quizzes and challenges, was enough to put them just ahead of the rest of the pack. They took home the \$2,500 grand prize and won a \$1,500 educational grant for their school.



A remote-controlled helicopter hovers above the football field at the University of Houston's TDECU Stadium, while its pilot directs it from the sidelines and competing teams watch from the stands.



Winners of the High School Offshore and Technology Stars Challenge 2016, “The Underdogs” from Westside High School in Houston, receive the \$2,500 first prize check from Michael Farber, Senior Advisor to the Director at BSEE, and OESI Director of Operations Jim Pettigrew.

When all was said and done, feedback on the Tech Challenge from the students was overwhelmingly positive. Nicolas Gutierrez, a junior at Westside High School and member of The Underdogs, said “The whole day was really good – it really tested your teamwork. Because even though at first we didn’t start off strong, we still encouraged the team to go on full speed. And it worked!”

The event’s co-host, OESI, is an organization funded by BSEE and led by academic experts from Texas A&M, the University of Houston, and the University of Texas. The selection of experts from various academic institutions to assist in managing OESI’s operations ensures that government oversight and decision-making related to the offshore industry is rooted in evidence-based research, and demonstrates our shared commitment to advancing safety offshore through continued research and education. The OESI staff was instrumental in the planning and coordination of the Tech Challenge, leveraging their connections to Texas universities and proximity to the participating high schools to bring everyone together, in addition to identifying and selecting the piezoelectric technology around which the competition was based. The Independent Petroleum Association of America (IPAA) and the Petroleum Equipment & Services Association (PESA) also generously contributed to the success of the event.

Similar to the way that it required teamwork from the students, volunteers, the University of Houston, BSEE, OESI, IPAA, and PESA to make the Tech Challenge a success, it takes cooperation and coordination from regulators and the industry to make offshore energy production safe and successful. Hopefully the lessons from the event will reverberate far beyond the walls of the football stadium. With teamwork, we can make great things happen.



Teachers, staff, volunteers, and the 120 competitors at the conclusion of the first annual High School Offshore and Technology Stars Challenge in Houston, TX on March 4, 2016.