

## Elementary Welcomes Special Guest

Friday, September 25, Upper and Lower Elementary classes gathered to hear and participate in a special report on Outer Space given by one of our Tidewater parents. Mr. Walling's talk focused on giving students an idea of the *scale* of our solar system, a concept which is hard even for adults to grasp. He provided the students with balls to represent each planet -- to scale! At this scale (you have to begin to imagine this in your mind) the entire height, depth, and width of the Tidewater School would be our Sun. From there, the relative size of each planet was correctly portrayed.



B. F. began the scenario, by holding our Earth. The large parachute which you see tacked to the wall behind the students represents Jupiter. Notice that the Saturn representation even includes its rings! For that, we borrowed a hula hoop from the playground. As you browse the photos, you may notice some planets which may be unfamiliar to you. These are dwarf planets, a category to which Pluto has lately been relegated. The last three are all dwarf planets which have been discovered in the past few years, within the lifetime of our children! The final planet is notable for being in the shape of an egg. It is the only planet which is not a sphere.



Brian Walling demonstrates that all matter has empty space.



After this hands-on activity, Mr. Walling shared a map of Maryland where he conveyed the scale of the solar system again, this time showing the distance between each of the planets. If the Tidewater School, at the size it is now, represented the Sun and each of the planets were the balls which the children were holding, he explained, each planet would actually be located much farther away. Naturally, the planets are not all so close together that they would be lined up in our classroom. Keep reading and you will find out where these planets "reside" in our Tidewater family.



Here's a question for you to ponder (ask an Elementary student for the answer): At the scale described above, where the entirety of our solar system fits within the state of Maryland, where do you think the **next closest** star to our solar system would be located?

We enjoy sharing these photos and our new-found solar system knowledge with you and warmly thank Mr. Walling for his time and the incredible amount of research and preparation he undertook.

*Ms. Rhoda*

The Upper Elementary students chose to interview Mr. Walling after his initial discussion with all of the Elementary students and a shorter discussion within the UE class. The following questions came from the children themselves and they posed them to Brian in a thoughtful and respectful manner. What follows are the responses I scribed as quickly and accurately as possible. I should say, however, the conversation was flowing at a terrific pace, with follow-up questions and/or comments being fielded and discussed. Therefore, I apologize if I interpreted or wrote something incorrectly; in this case, the 'messenger/scribe' more than likely got it wrong! Thank you again, Brian, for your time and energy. It was a terrific morning!

*Ms. Karen*

### Upper Elementary Interviews Mr. Brian Walling

**Tidewater (TW):** How did your interest in space develop?

**Brian Walling (BW):** Like many of you, I became interested in space as a kid. I grew up during the Apollo Space Program and remember thinking how cool it all was and wanted to learn more. I really liked science and math when I was in school and knew I wanted to do something within those areas. When I was in high school, I learned about *aerospace engineering* and knew this was the field for me!



**TW:** How is this interest now related to your job?

**BW:** You could say that I turned my interest into my job. As I said, once I learned about what aerospace engineers do, I realized that I could have a career which held and dealt with subject areas I loved. Today, I work on satellites and keep them “healthy” so we can use them in the best possible way. My advice to you is if there is an area in life that you are drawn to and that you love, then stay with it. You may not know it right now, but there is a career out there which will allow you to bring your passion into a field of study, or career.

**TW:** Could you describe your experiences watching space shuttle and/or rocket launches?

**BW:** While in Florida, I worked on the *Titan-4* project. The *Titan-4* was an unmanned rocket used to launch satellites. It was 34 stories tall with two rocket boosters on either side of the core booster. The core liquid fuel booster was about 16 feet in diameter – about the size of this room. Our project’s office was located next to the launch pad and before a launch, we had to make sure everyone was safely out; two miles was the closest anyone could be to the launch. One of my jobs was to be the ‘last man out’ which meant I walked around the office and the surrounding launch pad with a security guard making sure everyone had left. One time, after the policeman and I did our security rounds, we went to his truck to leave for the safety zone and his truck wouldn’t start. We made the decision to leave the truck on the launch pad because we needed to get out of the area and replacing a truck would be easier to do versus staying! Actually, we were sort of curious as to what would happen to the truck! Well, the weather changed and the launch was scrubbed for that day. The truck was fixed and we rescheduled the launch.



At the actual launch, I first saw a light as bright as the day. I say this because we ended up launching the *Titan-4* at night. The sky was literally as bright as if we were in the middle of the day with the sun! Then, the sound came at us! It was a huge sound that was then followed by the ground shaking. It was such a strong vibration that I had to sit down. I remember thinking that it felt like an earthquake (which I’ve experienced). The *Titan-4* had 3.5 million pounds of thrust [energy] while the rocket itself only weighed 1 million pounds. It was a powerful feeling.



When we returned to our office, it was a mess! Ceiling tiles had fallen, books were on the floor, and there was dust everywhere. Even with all of the precautions we took such as placing plastic cloths over desks and shelves, placing items on the floor that we knew would fall, etc, the office was still a disaster.



Years later while visiting my wife’s family in Coco Beach, I went to a Space Shuttle launch. It was very different! For one thing, I was further away in the general spectator’s area. This made a big difference because though I could see the light and hear the roar of the engines, the shuttle launch is MUCH faster than say, an Apollo rocket (the *Saturn-5* rockets). If you weren’t paying attention, then you might actually miss the shuttle launching into the atmosphere; it is that fast!

**TW:** What are some of the challenges that the space program has today?

**BW:** In my opinion, all of the challenges facing the space program can be summed up in one word: *direction*. Right now, every aspect of the program is being pulled into a different direction. The result is there is no clear path as it relates to the future and that is troubling.



There are three parts to the space program: 1) *Manned Programs*, which deal with astronauts and human beings exploring space; 2) *Robotic Programs*, which address satellites, probes, etc.; and 3) the *Military/Commercial Programs*, which look at the space program in terms of how it can help us as a society (whether militarily or for civilians/consumers). The first two programs are a part of what you know as NASA.

The problem is that it costs a lot of money to run a space program and it is unclear which the best direction to focus upon is. We clearly need better rockets; the space shuttle will be retiring soon. The question is do we build a newer, type of rocket? Do we make it an unmanned vehicle? Or do we continue to send astronauts up into space for exploration? If we send astronauts, where should we send them? What type of rocket will they need to get to this place/area of space? What do we do with all of the old satellites? A lot of money has already been spent and we are not ready to move forward, so it is a very difficult time to know *what is the right program or combination of programs that will keep our space program alive?*

**TW:** What is your favorite part of your job? Why?

**BW:** That is easy: my favorite part of my job is that I get to be one of those people who help to solve problems; I get to try to ‘fix’ it. Often times, this means that I have to fix it using a limited number of things or I might not have a lot of time. Either way, it is my favorite part of the job because it challenges me and I get to use a lot of different skills and knowledge.



**TW:** Our last question is about current investigations or programs that explore other life forms on other planets. Can you tell us anything about this?

**BW:** Well, there is a gentleman and his theory that I would like you to research. His idea is known as the Drake Equation, named after him. What he suggested was that there was a mathematical probability that relates to the possibility of life outside of our own planet. Drake was considered an intelligent and thoughtful astronomer in the 1950s when he began looking at this work. His entire theory is based on real calculations of proportions and fractions. If it is possible, Drake would wonder, then why haven't we heard from another life form? One simple reason may be that it just takes too long for it [the communication] to travel from their planet to ours. There are many people who wonder this, too.

I would like to say before I leave that it is really important to take what you love, are interested in and are passionate about and follow it. You never know where those interests will lead you. Right now, when I think of the future of the space program, I think of how one of you might hold the answer to some of the problems we are facing today. Think about it; that is pretty cool.

As part of his presentation, Mr. Walling demonstrated the relative size of the planets so the students might get both a visual and kinesthetic feel for their sizes. After allowing the students to experience the relative size of the planets (see the photos), Mr. Walling then gave us a lesson in the relative distance of the planets via a map of Southern Maryland! Enjoy the following comparisons...and thank you, Karen Walling, for taking the time to help out with this portion of the endeavor! It was a HUGE hit!

On the map, the yellow pushpin represents the *sun* and it is at The Tidewater School on Cox Road...

Sun	The Tidewater School
Mercury	7-11 (Cox Road and Rt. 4)
Venus	Huntingtown High School
Earth/Moon	Yamaha Store
Mars	(Huntingtown)
Ceres	(Huntingtown)
Jupiter	(Sunderland)
Saturn	(Prince Frederick)
Uranus	(Upper Marl)
Neptune	Rt. 4
Pluto	(Crofton/Gambrills)
Haumea	Tip of St. Mary's County South Baltimore

*Venus* would be at Huntingtown High School whereas the *Earth/Moon* would be slightly further south, off of Rt. 2/4 at the Yamaha store. The Huntingtown 7-11 represents *Mercury*. *Mars* would be located approximately where E. R. and her family resides while *Ceres* could be found at A. A.'s home. L. P. would house *Jupiter* in Sunderland while *Saturn* would be found at T. M.'s home in southern Prince Frederick. *Uranus* would find its way at the multi-generational home of I. W. and R. W. and D. Z. would welcome *Neptune* into his home. You would need to travel to the tip of St. Mary's county, near Point Lookout, to find *Pluto* and all the way to southern Baltimore to see the dwarf planet of *Haumea*. The next dwarf planet, *Makemake*, could be located in Rockville while our final dwarf planet, *Eris*, would make its home in Mt. Airy, not far from where our Tidewater friends, the Brim Family, recently moved!

Where then is the *next* nearest star? For that, you would need to don a space suit and travel beyond our earth's moon! Enjoy the photos! We will place the map used in the upstairs library for anyone interested in looking at the various planets/points.

