

Space Junk

By Logan Scisco

Although space issues are a well researched area by extempers, who focus more on domestic politics and international situations such as those involving North Korea, they do arise in the later rounds of tournaments when question writers have exhausted all possible options for questions. The chance of drawing a question concerning space issues also increases at a national qualifying tournament or at national competitions when “science and technology” is an often used topic area, especially at CFL Nationals and as one of the thirteen topic areas for United States extemp at NFL.

Considering that nationals keeps creeping up and recent events surrounding the issue of space junk, such as the collision last month of a U.S. and Russian satellite over Siberia, and how the International Space Station (ISS) was almost struck by a piece of space junk last week, an issue that is followed by scientists has started to become an issue of public debate. As this debate grows and as “close calls” in space become more reported, extempers have a higher likelihood of getting a question on space junk.

This topic brief will provide some informational facts concerning space junk, the reason it is a concern for space programs, and its implications on future space policies.

FYI on Space Junk

The United States Air Force currently tracks 8,500 pieces of debris that are in Earth’s orbit. This debris is a mixture of dead satellites, pieces of old rocket boosters, and other pieces of old spacecrafts. The U.S. Air Force also tracks an additional 6,300 objects that it considers to be unknown and estimates that there are tens of millions of smaller objects in space that are less than one centimeter in size.

While these objects are small, one has to take into consideration that when they are pulled into Earth’s orbit and establish a pattern, they are orbiting the Earth at 17,500 miles per hour. NASA has argued that an object of one inch or more striking a space shuttle or other critical space objects could have a devastating impact on their performance. Last week, the ISS had to get its crews ready for an evacuation using a Russian Soyuz craft after there was a rising probability that a five inch piece of an old rocket motor, which scientists say helped launch a 1993 U.S. military global positioning satellite, could strike the station. Over the last several years, the ISS has had to be moved eight times to avoid collisions with space junk.

NASA is growing more concerned that space junk is increasingly posing a risk to astronauts, future space missions, and future space exploration and technology. It has estimated that there are 17,000 objects in space that are bigger than a grapefruit. Any of these striking a craft such as the ISS could have devastating consequences and could waste billions of taxpayer dollars that have been funneled into such missions over the years. This threat is exaggerated by the fact that many of the objects that are threatening such things as the ISS could be circling above the Earth for the next 10,000 years.

For an artist rendering of the space junk surrounding the Earth go to the following link:
<http://media.collegepublisher.com/media/paper420/stills/nj43373a.jpg>

Concern for Programs

The satellite collision over Siberia last month between a U.S. and Russian satellite illustrates how crowded space is becoming for objects vital to communication and military strategy. This collision, while attracting much international attention, is supposed to be rare because satellites are launched to go in a similar orbit with other satellites and go in traffic much like an interstate system. The more significant issue with the U.S.-Russian collision was that it created a horrible debris field above the Earth that will linger for thousands of years before all of its parts move into smaller orbits and eventually burn up upon re-entry into the Earth's atmosphere.

NASA has become more worried about space junk since early 2003 when the Columbia space shuttle disaster grounded the U.S. space shuttle program. The Columbia disaster saw foam insulation break off the shuttle, which doomed all seven astronauts on board when they re-entered Earth's atmosphere when their mission was completed. Even the smallest collision in space with a piece of space junk would cause a massive headache for NASA logistical planners on the ground, as they would need to inspect the craft to make sure no significant damage took place, messing with a mission's schedule. A collision that resulted in a loss of life might well doom the space shuttle program for an indefinite period of time and provide more bad press for NASA at a time when it is looking for something positive that will renew funding and support for the organization's endeavors.

Finally, space junk has the potential to complicate the development of successful space programs. NASA has announced that the field of space junk that is in the orbit of the Hubble Telescope is so bad that they may not be able to send a mission to fix it this year. More junk that does not allow this to be replaced will stall some of the discoveries scientists are making about the solar system, limiting the new knowledge that will be available about future galaxies. Therefore, the international community is starting to pay more attention, especially for methods to clear out space junk.

Implications

Of course, the major problem that exists with space junk is that there is not a good way to clear out the junk. All that scientists can currently do is monitor the junk that exists and try to stay out of its way. Proposals have been submitted to use orbital water guns to blast away the junk, but such ideas are not receiving a serious hearing at the current time.

In having to track the junk, there is a major economic implication for news agencies and consumers. If all that can be done with space junk is track it, and the amount of space objects keeps increasing as nations such as China and India want to develop their space programs, there is bound to be more clutter in space. With more clutter, more sophisticated monitoring will be necessary, potentially leading to a higher cost of services to deal with the space minefield created by space junk. This higher cost could lead to an increase for services that have to use satellite technology such as cell phones, weather forecasting, and television.

Overall, the international community has to evaluate what it wants to do concerning space junk. With more clutter emerging in space, the world may have to reconsider how it views space and whether it sees it as the next frontier where pollution from spacecrafts is allowed or whether an environmentally-friendly agenda needs to take hold where space is treated a national park and those who litter are punished with economic sanctions.