Delegate: Julia Walsh

Delegation: Germany

Committee: UNOOSA-ICAO

Topic 1: The Environment and Space Activity

Germany is in favor of global cooperation in terms of finding ways to make space exploration sustainable. NASA, of the United States, has used several different types of rocket fuel, one being liquid hydrogen, which expands when exposed to high temperatures, and causes fuel tanks containing hydrogen to explode. This means the fuel must be well protected against heat from the sun and the rocket’s engine. It is an ideal fuel for rockets because it is the lightest fuel that still produces an extremely powerful force to propel rockets. (NASA, Liquid Hydrogen--the Fuel of Choice for Space Exploration, July 29, 2010) Another type of fuel, the High Performance Green Propulsion (HPGP) fuel, is more powerful than other rocket fuels and is less toxic to both humans and the environment. (Ecopedia, Finding a Cleaner Rocket Fuel: NASA Begins Testing Alternatives, 2013) Germany feels fuels such as the HPGP will increase productivity in the space industry. Other fuels include petroleum, a mixture of crude oil and hydrocarbons, and liquid methane, which is an ideal fuel as it is non-toxic, clean fuel. (Rocket and Space Technology, Basics of Space Flight, 2008)

Germany has been in favor of exploring alternative energy outlets, in order to limit CO 2 emissions and therefore black carbon. It is important to make any efforts to cut back on carbon emissions an international effort. Examples of this that can be modeled after are the Hydrosol and Hydrosol II projects. The projects are a way to lessen the gap between “research and market implementation,” in terms of sustainability, in this case, with the use of solar hydrogen production. While the process of using solar power and water-splitting to produce hydrogen was led by Greece, the close partnerships that Germany, the U.K., Spain and Denmark all had with the program shows a bright future in collaboration towards the use of alternative energy. (IPHE, March 2011) Germany would like to see continued efforts put forth to in making rockets and space crafts as safe and reusable as possible.

Topic 2: The militarization of space

The Space Race of the 1960’s sparked a global interest in space exploration, spearheaded by the United States and the Soviet Union. Germany was also a prominent figure in this push, with leading German scientists such as Hermann Oberth. The first manned spaceship to the moon and flight of satellites into the Earth’s orbit continued the push for space exploration. By the 1980’s, satellites revealed new images of outer space, as well as alarming looks at a hole in the ozone. Satellites were used in the Gulf War to provide insight on enemy locations, making space a tool for military advancement. This started the utilization of local space, and the Earth’s orbit, or military gain. Power and capabilities of satellite images has grown stronger with the advancing nature of technology, making the gains very possible from space without sending actual weaponry. (Aerospace, 2016)

Tensions between the US and the Soviet Union during the space race led to the US using a space shuttle for military and technological advances, until the crash of the Challenger led them to rethinking using space as such a clear option for military actions. Currently, there are more threats to satellites than to actual space stations and shuttles in terms of attacks. Satellites, coming from governments and private companies, have a militaristic nature beyond their projected uses. The threat of hackers from other nations is seen also as a larger threat, therefore more investments should be put into expanding technological research on satellites, rather than focusing on sending weapons into space. (Militarization and Weaponization of Outer Space, Global Issues, n.d.) Germany would like to continue to build upon international treaties to solidify regulations on how space exploration is used, in order to keep safety in mind.

Topic 3: The commercialization of space

The possibility of commercial space travel and increased space travel in general has been rapidly growing. Asteroid mining for water and precious metals has had a growing interest. “Near-Earth Asteroids” are estimated to be the richest in resources and are much easier to access than traveling to the Moon, which is why asteroid mining is a potential key in the commercialization of space. Many asteroids contain hydrogen and oxygen, main components for most rocket fuels; mining these resources would reduce the prices of traveling into outer space, and could act as refueling stations for space crafts and satellites in space. (Deep Space Industries, Asteroid Mining, 2015)

The increased involvement of private companies in space exploration has made the possibility of space commercialization more accessible. A well-known company doing so is SpaceX, based out of the United States, which has paved the way for private companies’ involvement in space activities. SpaceX was the first company to attach to the International Space Station and to launch then return a space craft from Earth’s orbit. (SpaceX, 2016) In Germany, companies have been linking aviation development and aerospace development. The German Aerospace Industries Association links private corporations, from the airline and space industry, in order for the companies to collaborate and advance together. Germany feels that creating international platforms to share advancements between companies will allow the sector to grow. (BDLI, 2016)

The German Aerospace Center (DLR) has a prominent role in the growing space industry, as seen in the German involvement in the European Space Agency (ESA). Mission control for the European Space Agency is in Germany, with DLR scientists leading operations. Having such an important role in the space sector of an agency with as many member nations as the ESA shows the focus Germany has on space. To advance the nation along, Germany has been focusing several domestic programs on young people and their interest in pursuing science and technology, allowing them to partake in competitions and workshops or camps on space related topics. Programs such as these as well as multinational programs such as at The Space Education Institute, where high-schoolers get to train as astronauts, are important steps to take for space exploration to continue. (Space Generation Advisory Council, 2016)

Bibliography:

A Brief History of Space Exploration. (2016). Retrieved November 09, 2016, from http://www.aerospace.org/education/stem-outreach/space-primer/a-brief-history-of-space-exploration/

Asteroid Mining | Deep Space Industries. (n.d.). Retrieved November 09, 2016, from https://deepspaceindustries.com/mining/

Braeunig, R. A. (2013). Orbital Mechanics. Retrieved November 09, 2016, from <http://www.braeunig.us/space/orbmech.htm>

Company. (n.d.). Retrieved November 09, 2016, from http://www.spacex.com/about

Dunbar, B. (2010, July 29). Liquid Hydrogen--the Fuel of Choice for Space Exploration. Retrieved November 09, 2016, from http://www.nasa.gov/topics/technology/hydrogen/hydrogen\_fuel\_of\_choice.html

HYDROSOL-II - IPHE. (2011). Retrieved November 9, 2016, from http://www.iphe.net/docs/Renew\_H2\_Hydrosol-II.pdf

Militarization and Weaponization of Outer Space. (n.d.). Retrieved November 09, 2016, from http://www.globalissues.org/article/69/militarization-and-weaponization-of-outer-space

NASA Office of Planetary Protection. (2016, September 9). Retrieved November 9, 2016, from https://planetaryprotection.nasa.gov/

Parker, A. (2013). Finding a Cleaner Rocket Fuel: Nasa Begins Testing Alternatives. Retrieved November 09, 2016, from http://www.ecopedia.com/technology/finding-cleaner-rocket-fuel-nasa-begins-testing-alternatives/

SGAC Germany. (2015). Retrieved November 08, 2016, from http://spacegeneration.org/sgac-regions/europe/germany.html

What we do. (2016). Retrieved November 09, 2016, from https://www.bdli.de/en/about-bdli/what-we-do