

# 38 – The Challenge of China

## SUMMARY

Because so much anxiety is expressed about losing the Moon to China, this chapter points out that, thanks mostly to the lead that the Starship fleet currently has, there is little basis for concern that China will be able to make a credible claim to anything on the Moon -- no one would accept any unreasonable claim and the Starship fleet will overwhelm lunar development anyhow.

## IS CHINA A COMPETITOR IN SPACE?

Very often within the space advocacy community China is held up as a reason for an aggressive space policy. The fear is that China is seeking to control space in a way that will block access by other countries, that it will control the "high ground" of cislunar space, and that China will develop the trillion-dollar economy in space.

These views are largely unrealistic for the following reasons:

- China is far behind the United States when it comes to a fleet of super heavy lift vehicles.
- In-space resources are expensive to develop, not tremendously valuable, and the market is relatively small.
- It would be difficult for any country, including China, to exclude other countries from accessing space resources including lunar polar resources.

That said, there is a race for national prestige between the United States and China, and it would do well for the US, as the leading free country in the world, to continue in the lead.

### Will China Take the Lead?

China's human spaceflight program has gone relatively slowly with only 15 missions since its first crewed mission in 2003. But, in terms of the Moon, it reasonably aims to land its taikonauts on the Moon by 2030. The United States has had an unsteady return to Moon program. As of now, it is more likely than not that the United States will return to the Moon before China first gets there. But this is not a certainty, and for the sake of US leadership, it is reasonable to be concerned about this matter and to take measures to accelerate America's lunar return program.

However, whoever gets back there first, it hardly matters. Just like the Soviets didn't win the space race because they placed the first person in orbit, likewise, it is not who places a person on the Moon next that matters. In the final analysis, what matters is who will establish humanity's first permanent base on the Moon, and which base will grow fastest and largest. And from that standpoint, SpaceX's Starship fleet is well ahead of China with China having little hope of catching up to SpaceX anytime soon.



*Whose values will be preeminent on the Moon?*

## **SEIZING CONTROL OF THE MOON**

Ye Peijian is the head of the China's Moon program. Much has been made of his statement that, "The universe is an ocean, the Moon is the Diaoyu Islands, Mars is Huangyan Island". Given that these "islands" are central in the territorial dispute in the South China Sea, the assumption is often made that this one statement implies that China's ultimate plan is to claim the Moon and Mars as their own. This seems like quite a logical stretch when the statement could just as easily be viewed as an analogy to distance.

Likewise, China has described their interest in developing space resources. Well, any intelligent space program would want to use in situ resources in support of their space program to reduce the shipping costs involved. Helium-3 is present on the Moon and could be used to power

fusion reactors. But the concentration is so low that one would need to process at least 67,000 tonnes of lunar regolith for every tonne of He-3. Considering the cost of doing so and the many alternatives to He-3 fusion, it is not clear this is an economically viable resource. Further, with He-3 spread all over the Moon, no one is going to prevent another country from accessing it.

Water for propellant is the most cited valuable resource. But the problem is that lunar-derived propellant for vehicles bound for Mars has no identified customers -- Elon has explicitly stated that SpaceX has no interest. And if one looks at the delta-Vs involved, one can see that physics and economics don't make sense.

### **The Real Value of Lunar Resources**

Besides the previously, very speculative lunar resources, there are a couple of resources on the Moon that could lead to competition.

#### **"Peaks of Eternal Light"**

There are only a finite set of the so-called "Peaks of Eternal Light" at the lunar poles. These are areas where one can get nearly continuous sunlight and they are conveniently located near permanently shadowed craters. One could imagine a scenario whereby a country such as China could rush to set up operations at those peaks and then claim the right to exclusively use those locations.

The problem with this scenario is severalfold. Unless China is secretly developing a rushed human lunar program, they are not scheduled to be able to establish operations at all the peaks at both poles before NASA, SpaceX, and Blue Origin are planning on sending crew to these same locations. Also, the regions of elevated sunlight (> 70% sunlit) are not small, especially if erecting tall solar panels. Any claim to exclusive control over such large regions would not be accepted by the other nations and would be difficult for China to enforce. Exclusive control over an area on the Moon would also tend to violate the Outer Space Treaty in that it would prevent free access to those locations by other nations. And having solar drapes and ice-harvesting telerobots a kilometer away from another country's operations cannot logically pose a threat to China's operations. China will not use force to control unreasonably large areas of the Moon thereby causing an incident potentially leading to war. The benefits of controlling large areas of the Moon are too small to justify risking war on Earth.

## **Lunar Polar Ice**

Similarly, lunar polar ice is spread out across many hundreds (perhaps thousands) of square kilometers at each lunar pole. Such broadly spread operations cannot be quickly developed.

## **THE REAL PRIZE**

The real prize for lunar development is two-fold:

- National prestige for that country which leads the rest of the world in opening space for human settlement.
- Establishing the "rules of the road" for how humanity will live off Earth.

Unlike how things have gone in the past, we really are approaching a tipping point where humanity will start spreading beyond Earth. These events will prove to be as historic as any other event in Earth's history. The country that leads out in this process will not only go down in history but will imprint their values on how humans live in the future. It is the position of the Space Development Network that America and not China should lead in the spreading of humanity beyond Earth, but that other countries and peoples will choose in what way that they do so. But if America sets the pattern, then the future of humanity beyond Earth will be one of liberty.

## **CONCLUSION**

In conclusion, we believe that the concerns about China spreading into and controlling space are largely hype. None-the-less, given the historic significance of what is about to happen, we think it prudent for America to boldly open space to humanity and not leave that role to China.