

**South Africa awakens to Space Resources.** A. M. Neale, SASRA President, Hatch (Private Bag X20, Gallo Manor, 2052, South Africa), mneale@hatch.co.za



**Introduction:** A number of exciting things are developing around the world to improve the space faring capabilities of humanity, eg. space tourism through Virgin Galactic<sup>[1]</sup>, commercial cargo launches through Space-X<sup>[2]</sup>, Shackleton Energy Company's plans to retrieve water ice from the moon<sup>[3]</sup>, and many more. The development of space no longer solely relies on the governments of super-nations, but more and more depends on commercialization and the cooperation of multiple nations.

South Africa is a nation which would want to get involved. The South African National Space Agency (SANSA) was established at the end of 2010, and in February 2011, the South African Space Resources Association (SASRA) was founded. This presentation is about the latter.

**Founding of SASRA:** After presenting at the 2010 SRR/PTMSS<sup>[4]</sup>, the author presented on space resources at three other conferences<sup>[5] [6] [7]</sup> and published one magazine article<sup>[8]</sup>. These activities sparked interest amongst a number of people, who asked for more information and ways to get involved. It was decided to found a society as a vessel for space resources communication and involvement. On 19 February 2011 the SASRA constitution was signed by the founding members.

**SASRA:** SASRA has three general objectives, namely:

1. To improve the awareness of the global space resources industry and potential in South Africa
2. To encourage South Africans to contribute technically to the global space resources industry
3. To positively enhance the education attitude of the South African youth, through the use of space resources as a potential future involvement

At founding, SASRA set out milestone targets, some of which have been accomplished:

- The 20 member milestone has been met (currently 21). The milestone is now set to 100 members.
- The website is up and running: [www.sasra.co.za](http://www.sasra.co.za)

- First SASRA publication / presentation
- First SASRA research output

Of the current society of 21 members, 12 are mining engineering graduates with 3 more undergraduate mining engineering students. The remaining members' expertise includes geology, metallurgy, information technology and even psychology. Seven members hold post graduate degrees. Professor Webber-Youngman, the head of the Mining Engineering Department at the University of Pretoria, supports SASRA's endeavors and also became a founding member.

On top of the current 21 members, four space resources experts agreed to be extra-ordinary members, supporting SASRA with their knowledge of the industry. The members are: Dr. Angel Abbud-Madrid, Dr. Leslie Gertsch, Dr. Kris Zacny and Dale Boucher.

**Hatch:** To spread awareness of- and encourage technical contribution to space resources, the author presented on space resources at both South African branches of Hatch. Hatch is an international engineering firm, with over 1000 employees in South Africa, most of which are engineers. Their three areas of expertise are: energy, infrastructure, and mining and metals. Hatch expertise could contribute significantly to the space resources industry.

Following the presentations, the Hatch Space Resources Community of Practice was established. This is an online Hatch community where employees can find information and ask questions regarding space resources. It can also serve as an instrument to source the engineering skills required for space resources endeavors.

**Future plans:** In the next couple of years, SASRA intends to do the following technical work:

- Create structural lunar soil simulant for other experiments in South Africa
- Compete in the PISCES student design competition.
- Compete in the NASA Lunabotics
- Publish a journal paper on lunar mine design
- Publish a journal paper on the mining engineering evaluation of the pneumatic lunar soil excavator

**Conclusion:** Exciting things are happening in the world regarding space development, and South Africa should not be left behind. SASRA, with the help of Hatch Africa, is sowing the seeds of space resources in South Africa, with the ultimate goal of getting South Africans to contribute to the field.

**References:**

- [1] <http://www.virgingalactic.com/>
- [2] <http://www.spacex.com/>
- [3] <http://www.space.com/10619-mining-moon-water-bill-stone-110114.html>
- [4] Neale A. M. (2010) *Conceptual Mine Design proposals for Exploiting Lunar Water Ice*. SRR XI and PTMSS VII.
- [5] Neale A.M. (2010) *SA Involvement in Utilizing Space Resources*. Astronomical Society of South Africa Bi-annual Symposium.
- [6] Neale A.M. (2010) *What SACMA's money helped with*. SACMA regional meeting.
- [7] Neale A.M. (2010) *One giant leap for miner-kind*. Anglo American Young Mining Professionals Conference.
- [8] Neale A.M. (2010) *The Sky is the Limit, Unfortunately*. Innovate 5, 122-125.