**Memorandum**

**House Science, Space, and Technology Subcommittee on Space and Aeronautics Hearing: *Space Situational Awareness: Guiding the Transition to a Civil Capability***

May 12, 2022

**Members Participating**

Representative Don Beyer, (D-VA)*, House S&A Subcommittee Chairman*

Representative Brian Babin (R-AL)*, House S&A Subcommittee Ranking Member*

Representative Bill Posey (R-FL)

Representative Dan Webster (R-FL)

Representative Ed Perlmutter (D-CO)

Representative Donald Norcross (D-NJ)

**Witnesses**

Dr. Matthew Hejduk*, Senior Project Leader, The Aerospace Corporation*

Dr. Moriba Jah*, Associate Professor, Aerospace Engineering and Engineering Mechanics*

*Department, Mrs. Pearlie Dashiell Henderson Centennial Fellowship in Engineering, Oden*

*Institute for Computational Engineering and Sciences, The University of Texas at Austin*

Mr. Andrew D’Uva*, Senior Policy Advisor, Space Data Association*

Mr. Kevin M. O’Connell*, Founder, Space Economy Rising, LLC*

Dr. Mariel Borowitz*, Associate Professor, Sam Nunn School of International Affairs, Ivan Allen*

*College of Liberal Arts, Georgia Institute of Technology*

**Summary**

Hearing to examine the future of a commercial space situational awareness capability. Reviewed where authority lies, what should be funded, research priorities, and OSC’s role in development of a commercial civil capability.

**Opening Statements**

Dr. Hejduk – There is a need to transition US governmental support of SSA to a civil agency. The remaining question is what is the best way to do this? Using DOD algorithms and updated for modern technology would benefit. Providing basic conjunction screening services would be another opportunity for private industry. Availability of commercial SSA services should be embraced. Greatest need is to establish norms of behavior for safe satellite operation. Progress in this area cannot wait.

Dr. Jah – The number of operational satellites we have today has doubled in the past two years. There is lots of ambiguity by which to draw consistent interpretations. Transitioning to a civil entity is critical to sustain our way of life, support space commerce, and support space exploration.

Mr. D’Uva – SSA capabilities are foundation to managing shared risk. Since 2011, SDA has offered the world’s 1st private cooperative space data center (SDC) – developed without govt funds. SDC operators contribute data to share SSA information. Disappointed that OSC budget appears to have been shelled, perpetuating avoidable risks. Suggests establishing clear vision for DOC’s space traffic coordination capabilities.

Mr. O’Connell – US needs to create a civil SSA capability. There’s a need to leverage private industry and massive private investments. One of the greatest benefits is freeing up Space Force to focus more on national security issues. A civil SSA system must be adaptable. Federal agencies play a large role in leveraging commercial capability. International cooperation is key.

Dr. Borowitz – A decision needs to be made about which parts of the SSA mission will be taken on by civil agency. At the very least they need to be the main point of contact for SSA capabilities for the world. We could do more – generate data, space catalogue, etc. – and be more transparent than US military, which could strengthen US leadership. We could better leverage academia. This model has worked well in weather data. Government should focus on providing open data and analysis, commercial entities should provide data directly to customers.

**Questions**

Chairman Beyer: What role do you see for the Department of Space Commerce to conduct its own analysis when there are apparently numerous private entities conducting their own analyses?

* Dr. Borowitz: There are a lot of ways to structure this system. The key item is conjunction warnings need to be available without service fees. Transparency is another key item. We want to be careful about having a completely commercial system.

Chairman Beyer: How would you respond to the issue about openness of the data? Is there not a structure in which the federal govt could be paying for this to make it free for the public?

* Mr. D’Uva: Government should be seen as the provider of capability. There needs to be a single fusion center. Transparency is crucial with respect to national security.

Chairman Beyer: Who has responsibility for safety issues?

* Mr. D’Uva: Government should ensure products available for users.

Chairman Beyer: Is there a specific recommendation relevant to precision/accuracy?

* Dr. Jah: Dimensions of data quality (accuracy, uniqueness, etc.) are essential. Need to rid ambiguity in sources of data. We need to aggregate sources of information, remove ambiguity, and increase precision.

Representative Webster: What’s the specific research priorities federal government should invest in to advance SSA capabilities? How do we ensure this doesn’t do any harm to commercial opportunities? Can these items be separated out to make sure this all works?

* Dr. Borowitz: There were mentions in multiple testimonies about technical advancements. Algorithms can be improved upon. Social science work can be improved on. The US has an impressive SSA capability already, we need to just work closer with industry. Weather industry and remote sensing are key examples of good precedent. SSA will be separate from weather industry but coordination can be modeled like weather.

Representative Perlmutter: What are the most critical actions that need to be taken to transition towards civil SSA capability? What can Congress do?

* Dr. Jah: Recognizing that OSC isn’t the “one entity to rule them all”. Other parts of government need to coalesce. Lend an ear to the community. We have no place to point people to get information from national security sector. Commerce could be project manager, but other line elements have to come from different agencies.

Ranking Member Babin: The DOC recent budget requests propose acquiring SSA capability, similar to DOD capabilities. What can Congress do to make sure we don’t have to reinvent the wheel?

* Mr. O’Connell: Congress should mandate maximum use of commercial capabilities. We are not going to simply replicate DOD abilities. As space rapidly evolves, we need an SSA capability that can evolve.

Ranking Member Babin: What are some of the strengths of private sector organizations in coordinating data sharing developing best practices?

* Mr. D’Uva: Many don’t know limitations of current SSA capabilities. Very important that we leverage capabilities that exist to provide information to everyone.

Ranking Member Babin: How the government leverage the insurance industry to influence safe operations without regulations?

* Mr. O’Connell: Insurance industry does not have enough data to inform risk models. They would benefit from this civil data to be able to better characterize risk. There is also large amounts of economic and financial research that needs to be done.

Representative Norcross: How do we ensure the accuracy of information?

* Dr. Jah: How do you know you have the most accurate clock? Because we have atomic clocks all around the world. We can do similar things in space. We can aggregate opinions, look at statistical consistency of opinions, and judge the center. We know how to do this we just need to implement it.
* Mr. O’Connell: DOC needs a lead role in this. To help evaluate standards is a very important government role.
* Dr. Hejduk: Validation is difficult. If we provide something of the same look and feel and terrific quality of DOD we should be good.

Representative Posey: How can the private sector provide ongoing data to better improve space situational awareness?

* Mr. O’Connell: There are a lot of people that recognize gaps in our current coverage. Another reason why we need to push commercial industry forward.

Representative Posey: How can NASA and DOD better engage with the academic community?

* Dr. Jah: We need better measurements; we don’t have enough eyes on the sky. Very frustrated by the lack of funding for this issue – the Air Force is the only entity that funds this research. He has to turn away US students that want to work on this issue because there’s no research support.

Chairman Beyer: In draft legislation we have, we call for mandate for maximum use of civilian capabilities. How do you suggest we do this?

* Dr. Hejduk: Give us a springboard to move towards an almost entirely commercial capability. If we emulate what the DOD is doing, we can run that parallel to commercial entities to show how they run against DOD baseline. We do need a much longer transition time.

Chairman Beyer: Do you see our potential legislation conflicting with any concerns you have?

* Dr. Borowitz: We want to leverage commercial industry. There are lots of ways to do this. If it’s done in a way that allows for transparency while still leveraging commercial entities, this shouldn’t conflict.

Chairman Beyer: No commercial space based SSA. Is that coming from the NDC or others?

* Mr. D’Uva: We can make pretty quick gains just by including more data. We can get a long way by bringing modern analytic processing capabilities.

Ranking Member Babin: On April 15, 2022, NOAA published order of intent to work on LEO data with LeoLabs. Are you aware of OSC’s requirements for open-architecture repository? Are they publicly available? OSC asked for $88 million in FY23, how did this get derived?

* Mr. O’Connell: I don’t know, encourage reaching out to NOAA. I don’t know about the budget estimate.

Representative Perlmutter: Since 2018/2019, how has elevating OSC been going? Is it capable of taking on a management role for SSA?

* Mr. O’Connell: The job is as much about economic innovation. We wish Richard DalBello success in that role. It has the ability to be the convener as long as its able to tap into the department.

Representative Perlmutter: I share a concern on open-source elements of information. Could there be proprietary problems?

* Mr. O’Connell: The extent to which the government can define what it will give away would be very important to let commercial industry know what the distinction is. It’s an area where we still need to do some work.
* Dr. Borowitz: We need to allow freely available information & increase transparency. It can be done well with cooperation with the commercial sector.

Representative Norcross: When we talk about OSC, we’re making a tremendous investment. Are we able to adequately incorporate this in a one-year time frame? We need certain ground rules, the enforcement of standards is difficult, how do we punish those who don’t play by the rules?

* Dr. Borowitz: I haven’t investigated the budget in detail. There is a huge community that has been thinking about this for years, there is a strong desire to get this off the ground. Enforcements will be hard, but the US will have a leadership role in these capabilities.
* Mr. D’Uva: In order to participate, operators have to communicate moves prior to action. By bringing commercial sensors into the mix, we are building the foundation.