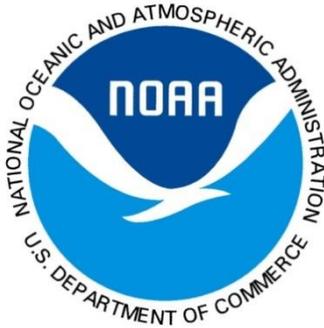


Advisory Committee on Commercial Remote Sensing (ACCRES)

Thursday, August 24, 2017 – 9:00 AM – 2:30 PM

Meeting Attendees

- **Herb Satterlee (Chair)**, Unaffiliated, formerly of McDonald, Dettwiler and Associates Information Systems, Inc., (U.S. Subsidiary)
- **John Fenwick**, Apple, Inc.
- **Joanne Gabrynowicz**, University of Mississippi School of Law (participated remotely)
- **David Langan**, Umbra Lab, LLC
- **Bhavya Lal**, Institute for Defense Analyses
- **Roberta Lenczowski**, AmericaView and American Society for Photogrammetry and Remote Sensing (participated remotely)
- **Keith Masback**, United States Geospatial Intelligence Foundation
- **Robert Schingler**, Planet Labs, Inc.
- **Walter Scott**, DigitalGlobe
- **Catherine Steele**, The Aerospace Corporation
- **David Turner**, Department of State
- **Brian Weeden**, Secure World Foundation
- **Stephen Volz**, Acting Assistant Secretary of Commerce for Environmental Observation and Prediction, NOAA
- **Mark Paese**, Deputy Assistant Administrator for Satellite and Information Services, NOAA
- **Tahara Dawkins**, Director of Commercial Remote Sensing Regulatory Affairs and Committee Designated Federal Official, NOAA
- **Glenn Tallia**, Office of General Counsel, NOAA



Meeting Minutes

22nd Meeting of the ACCRES Committee

ACCRES Introduction – Mark Paese

- Mark Paese welcomed the Committee back for the 22nd ACCRES meeting. Mark is currently the Deputy Assistant Administrator for Satellite and Information Services (NESDIS) at the National Oceanic and Atmospheric Administration (NOAA).
- Mark congratulated NOAA licensees who have recently had successful launches. Planet launched another 48 satellites, Tyvak and Astro Digital also launched 1 and 2 satellites, respectively, during that same launch, Spire has also successfully launched 12 satellites over the past few months. Teledyne Brown has successfully launched their satellite MUSES to the ISS as well.
- Additionally, NOAA looks forward to seeing 11 more licensees launch at the end of this year.
- Mark introduced Dr. Stephen Volz, who followed Mark with the opening remarks. Dr. Volz is the Acting Assistant Secretary of Commerce for Environmental Observation and Prediction and, the Assistant Administrator Satellite and Information Service Office (NESDIS).

Opening Remarks – Dr. Stephen Volz

- Dr. Volz welcomed the Committee back for the second meeting of this year.
- He acknowledged the stepping down of the Vice-Chair, Dr. Scott Pace, who has been appointed as Executive Secretary of the National Space Council. Dr. Pace has been a member of the Committee since 2012 and has brought with him a wealth of knowledge on space policy and commercial remote sensing through his extensive experience in academia, industry, and government. He graciously agreed to be Vice-Chair of the Committee in

2016, and since then has done an outstanding job coordinating the Committee and leading various task groups in providing NOAA with recommendations on its commercial remote sensing priorities.

- Dr. Volz also acknowledged the stepping down of John Charles of the National Geo-spatial Intelligence Agency, who has also moved positions.
- As the Acting Assistant Secretary, Dr. Volz sees more of the commercial space side than he did as Assistant Administrator for NESDIS. In this role, he has been helping the new administration in balancing commercial and government space initiatives. He noted the new administration wants to enhance U.S remote sensing capabilities.
- As the Assistant Administrator for NESDIS, he focuses primarily on NOAA's capabilities; however, he does have some insight in commercial space, specifically, his responsibility to sign off on all the NOAA licenses.
- Overall, Dr. Volz sees a real need to change the way commercial remote sensing is regulated, especially with the growing number of remote sensing satellites and capabilities. As such, he looks forward to hearing from the three working groups that were developed during the April 12th meeting on the following:
 - 1) Updating the current template of the data protection plan that is required from licensees, and improving the overall compliance process
 - 2) Providing an evaluation on the impacts of the new licensing standards
 - 3) Providing recommendations to evaluate and update the commercial remote sensing statute and regulations
- Dr. Volz thanked the Committee for all the work they have done in the working groups and looks forward to the recommendations that the Committee submits to NOAA.

ACCRES Welcome & Introduction from the Chair – Herb Satterlee

- Herb also welcomed the Committee for this second meeting of the year and reviewed the agenda for the meeting.
- He introduced Tahara Dawkins, who is the Director of the Commercial Remote Sensing Regulatory Affairs (CRSRA) office and the Committee's Designated Federal Officer (DFO) to give the CRSRA update brief.

Commercial Remote Sensing Regulatory Affairs (CRSRA) Update – Tahara Dawkins, Director

- Tahara provided a summary of calendar year 2017 so far and updates on licensing and compliance since the last ACCRES meeting.
- In licensing, CRSRA has had 35 application inquiries so far this year. To provide a comparison, last year total CRSRA had 41 application inquiries. CRSRA expects to surpass that number this year. To provide context this is the number of people who have reached out to us for an initial determination of whether or not they need a license for their mission. 13 of the 35 have been told they need a license, and 22 have been told they do not need license, either due to US Government ownership, lack of operational control in the U.S, or no Earth-imaging capability.
- 10 new licenses have been issued in 2017, and of those, NOAA has welcomed 5 new licensees: Cornell University, Brigham Young University, University of Illinois, Northern Idaho Stem Charter Academy, and Chandah Space Technologies. All new licenses have taken an average of 96 days to issue. To provide context, in 2016, CRSRA issued 14 licenses that took an average of about 108 days to issue. NOAA expects to continue to improve process timing, and issue more licenses this year than last.
- CRSRA has processed or is in the middle of processing 38 actions so far this year. This includes everything from amending current licenses, reviewing waivers and foreign agreements, and issuing new licenses. To provide context, last year we processed 33 such actions, which means we've already surpassed last year. Currently, we have 35 licensees with 48 licensed missions.
- For compliance, Tahara pointed out that the number of ground stations is much higher than what was listed during the April meeting. This increase is reflects the total number of sites we have actually licensed. This even

includes a licensee that have over a hundred sites. Current sites that actively receive imagery has not changed since last meeting however. NOAA still has 108 operational sites that receive imagery and that are considered “inspectable”. There are 2 sites pending approval, 35 additional sites anticipated total by end of this year, 3 new countries have been added to inspections list.

- There are currently 215 satellites on orbit, so we have added 35 satellites since April when we have approximately 180 satellites. This is a net increase as there may have been satellites that are no longer in orbit, or active/failed upon launch.
- 2017 Licensing Activities:
 - Currently NOAA has 20 open actions for new licenses, amendments, foreign agreements, and waivers.
 - Additionally, CRSRA has moved offices. Please send all of applications and additional requests to:

Commercial Remote Sensing Regulatory Affairs, E/ACIO4
1335 East-West Highway, Suite G-101
Silver Spring, Maryland 20910
 - In terms of enhancements to the process, the Interagency recently signed into effect a new interagency memorandum of understanding (signed by Department of Commerce, Department of Defense, Department of Interior, and Department of State Secretaries in addition to Director of National Intelligence). This memorandum has been in effect for a couple months, and CRSRA believes it will help shorten the amount time it takes to process licensing actions. It also provides a path forward for escalation of any actions that need to be escalated.
 - Finally, as NOAA licensees may know, with the implementation of changes to the licenses to include new national security conditions, CRSRA has decided to update the license format to make it shorter and more straight-forward. CRSRA will be rolling out new licenses for all licensees once the new conditions are fully in effect.
- 2017 Compliance Activities:
 - They have processed 14 data protection plans, and since April completed FY17 Quarter 3 Audits and reviewed 34 annual audits. Compliance has also completed 26 inspections so far this year and expect 11 more to be completed by the end of CY 2017, meeting CRSRA’s goal to increase the number of inspections from last year.
 - Additionally, as Mark said earlier, CRSRA has also had some licensees successfully launch their missions since April: Astro Digital, Planet Labs, Spire, Teledyne Brown, and Tyvak. CRSRA is excited to see Teledyne Brown and Tyvak join other licensees on orbit after their first NOAA licensed missions this year.
 - Please note that all of the audit forms will be updated to correspond with the license changes CRSRA will be making in the fall of this year. CRSRA also looks forward to receiving recommendations from the Committee regarding changes to the Data Protection Plans. Once all of these forms/templates have been updated and changed, they will be posted on CRSRA’s website to use for future licensing and compliance actions and requests.
- Current Issues:
 - CRSRA has been undergoing a review to determine if licensees are capable of requesting to image Israel at a resolution better than 2 meters Ground Sample Distance (GSD):
 - 1) The Kyl-Bingaman Amendment as listed in the Nationals and Commercial Space Programs Act states that an agency of the United States may issue a license for the collection or dissemination of imagery of

Israel by a commercial entity only if the imagery is no more precise than satellite imagery of Israel available out there from other commercial foreign sources. [NOTE: Department of Commerce has implemented this condition for dissemination, but not collection. Licensees are currently able to collect imagery at their native resolution level regardless.]

2) NOAA currently limits imager over Israel to coarser than 2 meters GSD, but has been notified by licensees who have provided evidence that currently there may be imagery of Israel available from foreign commercial sources of better resolution than 2 m GSD. 2 companies have provided evidence. NOAA is currently undergoing review, and once that is complete, if the review is favorable and it is determined that the imagery is available, then NOAA will begin issuing license requests to image at the highest commercially available resolution or coarser.

o Finally, this issue of foreign engagements and partnerships is one that CRSRA has continued to deal with, since Tahara mentioned during the April CRSA update:

1) Operation of a remote sensing system by a person or entity subject to U.S. jurisdiction or those with substantial connection to the U.S. must have a NOAA Remote Sensing license, CFR 960.2.

2) Turn-Key Systems are defined as systems that are U.S. property at launch but at some point while on orbit ownership is transferred to a foreign owner. In addition to a NOAA License, applicants must seek export approvals. This requires direct consultation with the State Department and might require bi-lateral agreements between nations.

3) Dual Regulation: CRSRA wants to reduce the burden on industry, but this is a new environment that they are working to adapt to. A NOAA license does not waive the remote sensing laws in other nations if licensees choose to use ground stations or MCCs abroad.

4) Finally, please remember to provide both Licensing and Compliance with a list of all ground stations, and any changes to the list immediately. Especially, if one or more of the ground stations are foreign ground stations. NOAA would need to know if any foreign partners are touching any of the downlinked imagery, or if it's a bent pipe ground station.

2017 State of the Satellite Industry – Charity Weeden, Satellite Industry Association (SIA)

- Charity reviewed the current state of the satellite industry. Overall, there has been a 2% growth in the industry between 2015 and 2016, with the ground segment undergoing the greatest amount of growth at a 7% increase. Charity emphasized that though this is the case, it is important to remember that the commercial remote sensing sector affects these other segments and vice versa.
- The satellite industry makes up 77% of the space economy, which is further broken down in the categories of use - telecommunications, Earth observation, and science and national security. Earth Observation makes up 19% of the current 1,459 operation satellites with a double digit revenue growth between 2015 and 2016. Someone asked if the satellite total includes foreign satellites. Charity answered that yes, they included all international players in the sector.
- Charity looked at changes in the commercial remote sensing space, such as the sheer number of satellites in space, the range of capabilities and sensors, international competition, and more. Because of these changes she posits the following policy positions – for more predictability in licensing by shifting to a presumption of approval, keeping to the timeline and eliminating retro-active conditions that affect licensee business, making clear the rationale for denials or conditions and involving the applicant.
- For those reasons, Charity mentioned that SIA supports the commercial remote sensing positions in the American Space Commerce Free Enterprise Act of 2017.

New Licensing Conditions Status Update – Josef Koller, Department of Defense and LTC Mark Cobos, Joint Staff

- Josef and Mark introduced themselves. Josef has been working in the Office of the Under Secretary of Defense, where he has been working to develop evidence-based licensing conditions. His assignment is almost over, and has only 10 months left at the Department of Defense. Mark works for Joint Staff J5, where he is indirectly involved in the licensing process.
- Josef mentioned that during his time with the Department of Defense, they have been leading towards greater transparency, especially given that the commercial industry has been ahead of the national security community in terms of how rapidly technologies and capabilities have been changing.
- Mark reviewed the Geographic Exclusions List. He stated that over a period of 7 months the Office of the Secretary of Defense reviewed each location and sought to ensure that all the areas of the list were the most significant areas of military installations and very accurately captured on the list. There are 68 locations on the exclusions list for short-wave infrared imaging (SWIR) and 83 locations for night-time imaging (NTI). The locations overlap. These lists have been reviewed up the chain of command at the Department of Defense, approved by the Secretary and signed by the Deputy. Now that this list has been signed, they can move forward with implementation soon.
- Someone asked how often the list will be updated. Mark responded that the list will be reviewed at the minimum annually.
- Mark also mentioned that now that the Geographic Exclusions Lists have been approved, they will work with the Department of Commerce and NOAA to develop the conditions that will go in the license. Someone asked if these lists will function to limit imaging as well as dissemination or only dissemination of imagery collected of the exclusion areas? Josef and Mark personally would like to see the language limited to dissemination, but this is still something being discussed.
- Mark also mentioned that the Interagency is fuzzier on the conditions for NTI. There will be a presumption of approval for any NTI 30 meters resolution or coarser. For 30 meters or better, it will depend of light collection, aperture, inside area and outside area and resolution.
 - Charity asked which areas were included on the list, will these lists be shared? Josef mentioned that they understand that the lists cannot be made completely classified because entities planning on conducting SWIR imaging and NTI need to know. However, they will be marked “for official use only” and added to the licenses for those who have applied to do NTI or SWIR imaging. Josef stated that he cannot tell companies what to do with those lists, but he also hopes not to see them in SpaceNews either.
 - Roberta (Bobbi) asked about areas with no-fly-zones restrictions. Mark answered that the areas on the list do not include densely urban areas, but they had looked into other air restrictions over the locations.
 - Walter asked about temporal restrictions, and specifically how this list related to potential short term restrictions that can be applied whenever. Does the list include locations that are short term in duration that could go through the shutter control mechanism instead? Mark answered that other Joint Staff offices deal with requests that are short term in nature. The locations on this list are only ones that they knew would have military installations for at least a year.
 - Charity asked if Department of Defense is working with allies to determine if these exclusions should apply to them? Mark responded that while they work with allies on several space security cooperation issues, this issue has been difficult to communicate to allies, but are hoping to address it going forward. Josef mentioned also that they will work with the Department of State if need be.
 - Bobbi asked if there is still an opportunity for the government to buy imagery of the exclusion areas? Tahara mentioned that this is something they are looking to address in the licensing language, and is still being discussed.

- Walter asked if the SWIR restrictions will apply to LandSat? Tahara responded that the conditions only apply to U.S. non-governmental entities, and as LandSat is a government-owned satellite, the conditions do not apply.
- Walter additionally asked if SWIR and NTI exclusion areas are similar in size to those with aircraft flight restrictions? Mark answered that some are much larger, but many are about football field in size.
- Rich Leshner of Planet Labs asked if the development of these lists is a signal that entities could expect an influx of new shutter control requests? Mark responded that Secretary of Defense has had this authority for several years, and Joint Staff also has a developed mechanism that doesn't receive many requests. Part of the reason for this is because what becomes a threat and what doesn't in a couple months requires evaluation at the senior level. Josef doesn't see the amount of these requests changing.
- Rich also asked if the exclusion areas will be open to reform like the Kyl-Bingaman Amendment restrictions? Mark mentioned that they are studying other phenomenologies now so that they can be more reactive with commercial entities do come to them, so forums like ACCRES is very important. Josef added that transparency on the side of entities is also important. The pre-consultations with commercial entities are very important.
- Robbie mentioned the dialogue with CRSRA is good. He also believes that rotations in the government for people with technical capabilities is important, and is awaiting the guidelines for these conditions to come out.
- Dr. Volz agreed that an increased level of expertise and rotations are much needed.

New Licensing Conditions: Effects of Implementation – Task Group 2 Report Out, Brian Weeden

- Brian gave an overview of the task group's review of the licensing conditions as they had been presented during the April 12th meeting. Most of the focus of the report is on Non-Earth Imaging (NEI) conditions, as a discussion of the impacts Night-Time Imaging (NTI) conditions is still being held at the classified level among cleared stakeholders.
- Brian first reviewed the NEI conditions for consenting and non-consenting imaging operations. Consenting imaging operations have no resolution limit, must have written permission from the sensed object's owner/operator, and must provide 90-day notice to the U.S Government.
- Non-consenting imaging operations is limited to 3x3 pixel (roughly less than 0.5 meters resolution), entities cannot disseminate tracking data on uncorrelated objects without NOAA's permission, and they must purge uncorrelated data from systems.
- Brian reviewed the findings. The task group found that the time delay restriction would severely restrict commercial NEI from contributing to real-time events or resolving catalog errors. Josef clarified that the 90-day notice applies to rendezvous missions and was based on feedback received from licensees. Walter asked if the task group can provide language clarifications as this was not clear to them from the current language. Tahara responded that though the language for NEI has already been written, the Committee's feedback on implementation would be greatly appreciated. Josef also asked Brian to clarify the catalog error issue. Brian responded by saying that there are some things that are not on the national registry. Josef responded by saying that if an owner or operator cannot be identified, entities should reach out to NOAA.
- Brian also mentioned that the restrictions asking to strip metadata would strip the commercial value of the data, which affects business models and competitiveness.
- The working group recommends that shutter control used in very specific time and place with high level approval would have the least impact on the commercial industry. However, if licensing restrictions are required it would be helpful to have prior approval of a company's CONOPs rather than asking companies to

submit requests for each operation. Additionally, allow companies to retain all data and only restrict dissemination and prior consent for space objects identified as space debris or rocket bodies should be waved.

- Walter added that while DigitalGlobe is a 24/7 operation, not all entities would have that capability, and perhaps even the government might not be able to respond around the clock. It would be especially helpful to have something in the language that allows for emergency operations, where there is limited time to respond. Tahara responded by saying that there is always an exception for emergencies. Just let NOAA know in within a certain number of hours if an emergency occurs.
- Tahara also asked the task group what the issue was with purging the data was? Brian mentioned that the issue was that it's difficult to correlate with the space tracking catalog to determine if data needs to be purged or not. Josef responded by saying that the issue with releasing the data and purging were two separate things. The USG was striving to reach conditions to let universities post on Facebook without metadata.
- Walter asked in response to Tahara's question, what is being purged? The actual implementation of this restriction is more complex than it sounds. Can this be in the Data Protection Plan rather than a licensing condition? For example, in one case, say a company never makes a request to NOAA, the data stays within the company's archive, but they can't disseminate. In another case, they make the request and then they are told by NOAA to purge. This is why the restriction should be on dissemination rather than on purging of data.
- Tahara also asked about the calculation of 3x3 pixels, she wasn't sure if operators would know what that meant, did the task group have any finding on this? She was also interested in the commercial impact of requirements on archive and financial impact to encrypt the data at rest. She also mentioned that it's new to her that the metadata had commercial value, and would like to know more about that. Brian mentioned that metadata sharing is quickly growing for space situational awareness data.

Action: The task group will update the report based on feedback, and submit the report to the Committee. It would be helpful to have Josef participate in the last iteration of the task group report.

Public Comments – Morning Session

Russ Matijevich, Matijevich International Consulting LLC: Telescopes can outpace NEI images from satellites, which could affect the market for space situational awareness.

Data Protection Plan (DPP) Reform – Task Group 3 Report Out, David Langan

- David provided an overview of this task groups report. He began by stating that there were four issues that the task group identified.
 - Firstly, there currently there is no legislative requirement for a Data Protection Plan (DPP), therefore, part of the imperative of the DPP is to provide clear traceability of the law to the actual DPP.
 - Secondly, it sets mandates for specific encryption methods, when instead it should ask the licensee how it will accomplish encryption rather than specific items that should be implemented.
 - Thirdly, the DPP is currently one size fits all, however, different licensees may need different plans based on capability of the licensee and the amount of risk posed by the data they capture. Therefore, the working group recommends that the DPPs be tailored tiered approach.
 - Additionally, a separate DPP should be considered specifically for NEI operations.

- Walter described what the potential categories for the tiered DPPs would look like. The first tier would be 1) not going to worry about data protection for these operations 2) licensee should establish positive operational control 3) there should be limitations data that should be disseminated and collected.
- Tahara asked what about NEI and new licensing conditions, how will the Government know that data is still protected? Walter responded by saying that the third tier would have audit mechanisms. For example, there are certifications, such as NIST that can be used to verify data protection.
- Tahara also mentioned that it was important to integrate the escalation process/report back plans for each licensee in the data protection plan. NOAA would need to know how licensees will react when there is a breach or incident.
- Walter mentioned that cyber protection could have no end beyond what a reasonable DPP should include, especially considering what DigitalGlobe implemented 6 months ago is very different from what is implemented today. Tahara responded that not all companies are like DigitalGlobe, and their data protection methods don't automatically inspire confidence.
- Walter additionally mentioned that the Cloud, such as Amazon datacenters should be addressed in the DPPs as many entities are shifting to maintaining data in the Cloud.
- Tahara requested that the task group provide a potential roadmap DPP with a list of items that the Committee sees should be included in a DPP
- Robbie mentioned that it might help to start with just one standard DPP and layout the threat models, risks and mitigation guidelines. Brian added that there is already a lot of cyber security research out there, which can be used. No need to reinvent the wheel. Additionally, he stated that if there is to be a tiered approach, there should be a mechanism that allows for licensees trying to shift from a tier 2 to tier 3 entity to obtain security clearances. Tahara agreed with this.

Action: The task group will take their research from the report to also develop a roadmap DPP with a list of things that they believe should be included. This can be separated out by tier.

Legislative Reform of the Commercial Remote Sensing Statute – Task Group 1 Report Out, Walter Scott

- Walter began by reviewing the past legislation, specifically the Land Remote Sensing Policy Act of 1992, and shift to the task groups evaluation of current draft bill, the American Space Commerce Free Enterprise Act of 2017. The old act requires a lot of players to move to get to a "yes", and reaching that consensus in time-consuming and burdensome when remote sensing needs predictability and a presumption of approval.
- The task group supports the draft bill, specifically its ability to provide a presumption of approval, regulatory clarity and simplification of the process, single agency accountability (with the Department of Commerce alone with final say), and limits over-regulation.
- There are some aspects of the bill that still need clarity. For example, the actual set up of the new Office of Space Commerce, how would mission authorization be addressed for those doing remote authorization, and also the impacts of Sections 801 and 802 are not clear for small satellite operators.
- David Turner responded by saying that the Outer Space Treaty requires authorization and continuing supervision. A letter from the Department of Commerce stating that no license is needed could be interpreted as authorization.

Public Comments – Afternoon Session

- Karen Yasumura, DigitalGlobe: What is NOAA's stance on the current draft bill? Mark Paese responded that NOAA is still assessing the Act.

- Audience Member: What is NOAA doing to lower the time limits currently? Tahara responded that it recently established an Interagency Memorandum of Understanding, establishing more meetings with licensees, and more transparency even amongst agencies.
- Eve Douglas, Office of Space Commerce: A struggle that the U.S. government is currently dealing with is dual regulation. It would be helpful to get the Committee's feedback on this.

Closing

- Thank you to all that came.
- Reports should be updated based on feedback from this meeting the Monday after Labor Day, on September 11, 2017. The reports will then be submitted to the full Committee for consensus.
- NOAA welcomes recommendations from the Committee for future task groups.
- The Committee recommends that the next meeting take place end of February.