



**International Cooperative Engagement Program for Polar Research (ICE-PPR)  
U.S Delegation to ICE-PPR Situational Awareness Working Group (USSAWG)**

**ICE-PPR USAWG Teleconference notes from 31 July 2020 meeting**

Note: Chair of SA WG is Denmark, US Delegation Lead is Church Kee, Exec Director, Arctic Domain Awareness Center, University of Alaska Anchorage

***Participants:***

Paul Shigley – NIWC Pacific  
LCDR Stephen Winchell – ONR (Reservist, works for J. Wood)  
Dr. Holly Dockery, Sandia National Labs  
Greg Stihel, Sandia National Labs  
John Wood- ONR  
CDR Bill Wren, NAVEUR  
Dr. Phil McGillivary, USCG Pac Area  
Karin Messenger, HQ USCG CG926  
David McCarren, OPNAV  
Jason Roe, ADAC, UAA

***Discussion:***

John Wood:

Issues with Finland are OTHR and Comms  
Church will email Finns again and see if they have any new input

Holly Dockery:

One way of framing things that is important is to remember the environment we have to operate in requires both vertical and horizontal data, and data over time.

That is a science-based concern we have to try and ensure happens, even though this group is technically “operational”. So, the best way to do this is approach the effort as a “Mission-based” approach, which provides a mechanism for integration of various datasets, and allows for a ‘quick win’ as desired.

Phil McGillivary:

I have just noticed that the FIRESCOUT UAS system on Navy ships is having LINK16 installed. In terms of the second priority, comms, it might be useful to discuss how we can ensure that comms between UAS, ships, and aircraft be coordinated within and among the countries within ICE-PPR as part of a



mission. The UAS data would help address some of the time-space data SA issues that satellites and manned systems cannot.

CDR Bill Wren, NAV Europe/AFRICOM, in Future Plans:

My area includes the Arctic, and I have also been the person writing up Op Plans. I know that while Soren is the lead of SA WG, but the US wants newer tools. We are now in a solar minimum, but we are going into a solar maximum over the next couple years. All of the DoD tools to deal with this are dated. We need better modeling for space weather, and to figure out which models are the best. The existing models we have for space weather are all for low latitudes, not high latitudes. We need to update the models for both HF and SHF.

As regards LINK16, in the high north this is only line of sight (LoS) so not particularly useful in general, as it has little impact on environmental information beyond a range of 1-2 miles.

With a Northern EU partners we are all moving towards a LINK22 Alliance, which is UHF and HF (which the Europeans like). LINK 22 is a replacement for LINK11 which is @2 decades old. LINK22 provides only LoS, but HF at moderate bandwidths beyond line of sight (BLOS), while using the same bandwidths as LINK16. As of now the US doesn't have LINK22.

There are also to be considered the environmental impacts on the precision of navigation information and modeling information.

Finland and Sweden have better modeling tools than the US (for space wx). The US is waiting on Navy I-4 (=Navy Cyber Forces) to assist, but could use the European models in the meantime.

[Ukn]

I like the idea of moving forward with Mission oriented approach. We definitely need better MetOc data, and should use Finland and EU data.

Church:

The comms are a problem due to very little coverage in polar regions. The Nordic countries have put up new satellites so coverage may improve soon. But comms are especially bad below ice cover. As far as space weather models go, the Finnish models are great, but the Swedish models are also good. But the question is how best to handle comms.

McGillivray:

Great to move forward with EU space weather models, but wise to entrain the NOAA Space Weather folks so we don't end up with a disconnect.

Church:

I will reach out to the NOAA Space Weather folks. Not a problem since RDML Gallaudet now at NOAA is ex-Navy and will be happy to help.



At UAF we are now doing a 2km ice ridging model but will need to see how this information affects HF comms. Will work with Martin [?] on modeling.

McGillivray:

There is an option to also maybe address GPS-denied navigation using new diamond magnetometers; can provide some info on that. They don't drift which is one big advantage, and work at room temperature, with supposed 13m accuracy. Accuracy will probably depend on variance of ambient magnetic field, but we could test that.

CDR Wrenn, NAV EU:

Regarding topic 3 of the agenda, 'quick wins', we do need to be able to predict comms capabilities.

John Stastny could help work with the diamond magnetometers.

[UNK.]: Could we get the comms shortfall issues in writing?

A: [Wren]: Yes, that info is unclass.

Paul Shigley, NIWC:

John Stastny is working with someone who is already working on the diamond magnetometers, Dr. Audi Balserra (sp?)

McGillivray:

I know Stastny very well, will email him about this and get in touch with Dr. Balserra.

Church: Everyone please copy everyone on the email list with any comments so we can

all stay up to date with suggestions, please.

McGillivray: As regards information on improving MetOc data, there is a new Center for

Precision Meteorology being proposed by a large group of NOAA, NCAR and other university folks, specifically aimed at using UAS for met data. This should be funded in about a year, and would allow for cooperation during Mission ops to ingest the data to improve met models, especially for wind speed and direction, and data around ice leads and in the atmosphere that affects ducting of both radar data and comms.

Church: Item 4 is simply Admin tasks. We want to take a stone soup approach, and let

people bring what they can. The next discussion meeting will be end of August. Will send electronic invitations in advance.

CDR Wood: Re Admin comments, Yonus (sp?) is my counterpart in Finland, he reminds me that the WGs are really just supposed to be 'embryo factories' for PAs (Project Admin proposals). Information exchange is allowed with the MOU in place.



So we can now make requests for information under the MOU without having to have a PA in place.

Paul Shigley, NIWC: There is, however, an issue of transferring data...FMS [Fleet Management Software...I think]. Want to do co-development of algorithms to get to a new model, not just 'take' the model from someone else [and put it into the Fleet]. We cannot just donate AREPS [Advanced Refractive Effects Prediction System, see: <https://apps.dtic.mil/dtic/tr/fulltext/u2/a434242.pdf>] or APM [Antenna Pointing Management or Asset Performance Management or Automated Performance Measurement?] algorithms, or this causes FMS problems. So the co-development method would be one way to address this; question is what is the best way.

Church: re: next meeting end of August (planning for 31 August). Thanks to everyone.

*End of report.*

