



PEO-M Battery Charger Q&A Telecon Transcript

- 1. Will the host vehicle and submersible be submerged when charging?**
Yes, the charging system will have to work with the host submarine surfaced and submerged. Charging CONOPS also include the Submersible pier-side partially submerged and dry while on it stand in a land based facility.
- 2. For the CONOPS, if the vehicles are underway and submerged, is it expected that charging connections be broken and reattached underwater?**
No, the connection remains dry and is actually through the lock in lock out (LIO) hatch on the underside of the vessel. There is talk about there being a remote system, but at this point it is via a mateable connector through the LIO hatch. For the charging system, there is no wet mate connections required.
- 3. Is there access to power (hull access) on the host vehicle as well as on the submersible?**
The access is through a cable through the LIO hatch. There is no wet mate connection anticipated.
- 4. What is the A/h rating of the battery being charged and what is the desired charge time?**
This information is available in the RFI.
- 5. Is the charging connection submersed, when charging?**
Yes, but not exposed to water.
- 6. Reliability (Para 3.2.3.2): Is this a first article requirement or a production requirement?**
It's a production requirement.
- 7. Is this effort primarily development or production?**
The goal is a production solution to go on the host vessels. We cannot disclose the number of host vessels, but it's in the dozens+ category. It is a production effort, but, obviously, there would be a requirement to do a development unit(s) for validation and qualification prior to delivery of the production units.
- 8. What are the particular evaluation criteria for "design sustainability relative to global supply chain changes"?**
A previous version of this charging system was produced for the ASDS program and that design is no longer buildable. It is also not U.S. source able. Our requirement that we established in the RFI is that the design be sustainable for the life of the boats. I believe it's a thirty-year life cycle and that our global supply chain changes basically say this has to be U.S. sourced.
- 9. What requirements are there for battery management safety? Will the BMS system be on the battery side, or should the system consider BMS-type safety mechanisms?**
When you look at the RFI, there's mention of the standard control language and then there's some very specific requirements, regarding the input and output requirements for the overall system. However, to answer the question, aside from what's specifically in the RFI, the simple





answer would be, no. There will be a BMS with the battery system that does talk to this charging system or power supply, so the digital communications have to be there. Then the standard control language, and whatever startup/periodic Built-In-Test/Fault Detection capability you want to provide with the system. But there is no other specific BMS type, safety mechanisms that's requested or required for the power supply.

We will be providing a battery management solution as part of the integrated battery design. We put the data requirements in the RFI and you just have to be compliant with that.

10. How many units are being procured?

That number is classified, but it is in the dozens range.

11. What communications protocols need to be supported from the battery?

The specification of the standard or control language is in the RFI. The digital communication protocol (Ethernet, 232, 485, other) is open for the offeror to select.

12. Is this an International Traffic in Arms Regulations (ITAR) or Export Control Classification Number (ECCN) controlled product?

The version that we use will be ITAR and export controlled. That does not mean that any IP or an additional commercial version cannot be derived from it, but the version that we have on the host sub will be ITAR controlled.

13. Is this system associated with the posted battery project?

Yes, the battery project is broader by intent, it's to cover a broader range of PEO-M, both surface and undersea requirements. But they are not divorced from each other. They do support each other. The battery management system that would have to integrate with the posted battery project would need to be compatible with the solution here. They are fairly, intricately related, but they're not entirely dependent on each other.

14. Please confirm, communications with battery is "Standard Commands for Programmable Instruments (SCPI)" protocol?

Yes, that's what the RFI states that is the intent. I do understand that there's the standard set and then there's an extended set that are customizable. To that point, if you want to make a distinction between the two, feel free. However, it is a requirement to use the SCPI protocol.

15. Is the host a surface ship or submarine?

This pertains to the submersible charging system only. This would be the charging system that is resonant on the Virginia class submarine as a piece of flyaway equipment with the deployment of the DCS system. There is no intention for it to be duplicated for ground purposes except for testing, etc.

16. Is the input a hardwire (terminal Lug Connection)? I don't see a connector defined.

We have left that to the discretion of the designer.

17. Are the threshold and objective output currents the same over the full output voltage range?

We did not differentiate between the two, so the correct answer is yes. As part of the battery side, the charge profile does include constant current and constant voltage phases.





There's a purpose between the two numbers. The threshold requirement is the current charge rate or approximately the charge rate on the legacy ASDS interface to the Host submarine. We recognize that there may be a desire in the future for us to have higher capacity batteries and higher charge rates would be valuable for these types of missions. In the future, with the ability to replace cabling, it would be our objective to have higher current over time. But with the design that we want, we need to be compatible with the current blocks of the Virginia class. We want to have the ability to have better performance in the future when that cabling can be replaced as part of a ship alteration. That's why those two numbers are there.

18. What does the DCS acronym stand for?

Dry Combat Submersible. It is our family of dry, manned, submersible craft that are used by USSOCOM. With a quick web search, you can take a quick look and see the current DCS instantiation, the DCS Now. This design is to support the next generation of the DCS.

19. The charge connector will be known once the battery is complete?

Yes, the interface to the battery connector will be known. We will have an ICD that shows the interface to the charge connector as our design progresses. Just to reiterate, we're leaving those connector choices to the developer of the power supply.

20. Is any coolant supply available from the host or should that be considered with the charger?

There is not a cold plate in the current design. It does not have coolant. The objective is to stay as close to the Virginia class and to not have to do a significant ship alteration for this installation, so we would want to maintain that same air-cooled interface.

21. For the initial proposal, are you expecting preliminary design details such as mechanical drawings, electrical diagrams, etc.?

For the initial proposal, the white paper phase, the answer would be no. What we would like to have in the White Paper phase is your solution and your ability to comply with the requirements with the identification of any areas that are very high risk for compliance or you're unable to comply. We are assessing industry's capability and interest in supporting this development effort and we're looking for how close you can get to those requirements that are established in the RFI.

22. Is maintainability a LRU swap out or is there a need to replace internal components of the system?

Your maintenance philosophy to meet the maintenance requirement is open for your assessment. Maintenance while on the Host Submarine would be replacement of the full unit with a spare. Intermediate and Depot level repair should be addressed by the offeror.

23. Are the main gaps currently supply chain?

The broad answer to that question is, yes. It's really supply chain source that is our issue. We cannot have a foreign producer; it has to be made in America. It is supply chain related, but domestic sourcing is the primary concern in the white paper.

The ASDS material solution design is close to twenty years old, and it did not have the digital interface with that. From a gap perspective, yes, supply chain is just some of the problem, another challenge is having newer digital technology incorporated into the design. These





requirements are not simple either, so just getting everything into a small package as possible in delivering what we're asking for, is a challenge.

24. Is US sourcing strict? Or are EU/NATO/Israel/Japan acceptable?

We've established a requirement of U.S sourcing. Items that cannot be sourced in the United States, but can be sourced from primarily a coalition partner, if those were enumerated, that would help us make our down select decision. We understand that at some level, things are coming from other places in the United States. U.S. sourcing for active components is imperative and the engineering design, software, and any integration needs to be done in the United States. We recognize that components are going to come from other sources, it would just be part of your job to enumerate where those other sources would be. From China, Russia and North Korea are not acceptable sources.

25. Is this fault protection/power solution to be focused on small unmanned deep submergible vehicles or on the fleets of actual tactical/stealthy submarines?

This RFI is for USSOCOM manned undersea mobility systems.

26. Is this intended for use internal to the vehicle or external & plug through/swap-out replacements?

The charging system is integrated on the Host Submarine as part of a Temporary Installation.

27. I don't recall seeing a timeline for prototype demonstration. Is there one?

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28. How far down in the component design does the requirements for US-source go? Is it every IC, fastener, indicator, etc.?

Offeror at CDR or MRR would have to identify for each component in the system Bill of Material that it is from a domestic or foreign source, if foreign that it is not from China, Russia, Iran, or North Korea. Production requirements will likely leverage IPC-1791 (Trusted Electronic Designer, Fabricator and Assembler Requirements) and IPC-1782 (Standard for Manufacturing and Supply Chain Traceability of Electronic Products).

29. Are the main gaps currently supply chain?

Supply chain, integration of digital interface/control, and location of engineering design team and manufacturing.

30. I don't see an operation vibration specification in the RFI.

There is no requirement specified.

31. Are there electrical ride-through requirements? Will this be on a ship automatic bus transfer (SABT) bus?

Reference MIL-STD-1399-300 Table II for Emergency Conditions via the RFI. No electrical ride-through requirements. TBD if charging circuit will be on a submarines SABT bus.





32. For non-op pressure, are the cited pressures gauge or absolute?

Absolute.

33. In the RFI, when you say "single rack" are you referring to a single 4.5" bay or a 6"?

Standard 19" equipment rack.

34. What is the max height allocated in the 19" rack?

70.225".

35. Paragraph 3.2.1.2 (Output power) refers to paragraph 3.2.1.11.2 which is absent from the RFI. Paragraph 3.2.1.11 covers efficiency.

Correct reference is paragraph 3.2.1.12.2. The RFI on the webpage has been updated.

36. Since this is a submarine, is there a noise spec for the product? (i.e. fan noise, audible noise, etc.)

No, drawing 6395253 for the ASDS shipboard power supply did not specify that requirement.

37. Is the required control interface (Req 3.1c) required to be on the module or strictly a remote interface?

The control interface functionality should be part of the overall power supply. If the offeror wishes to propose a different approach it should be clearly defined in their white paper.

38. What would be the distance between host and submersible?

From SSGN Drawing 7329296, it looks like the charging cables were 28 feet long.

39. Can any part of the system be placed on the submersible e.g. comm board?

No.

40. Will the interfacing cable be submersed?

No.

