



**SBIR 23.2 Q&A Telecon Transcript**  
**SOCOM232-003: Higher Density Handheld Radio Batteries**  
**26 April 2023**

**SBIR Process Timeline**

19 April 2023: Topics issued for pre-release

17 May 2023: USSOCOM begins accepting proposals via DSIP

31 May 2023: DSIP Topics Q&A closes to new questions at 12:00 PM ET

14 June 2023: Deadline for receipt of proposals no later than 12:00 PM ET

**1. Is this topic exclusively considering battery technology, or would you consider a fuel based power source if it could meet all the specs?**

We're not against a fuel-based power source as long as it can meet all the density and weight requirements. Up to this point, we were unaware that there was a fuel base that could meet it, and also meet the safety requirements. So, we are not against any submissions for that.

**2. Will you consider an external fuel source tethered to a smaller size, higher power battery?**

I don't think we're against considering that. But we don't want to add anything much over the weight of the actual battery, so it would be dependent on the submission and the review of it. We're not against reviewing the submission if it meets very close to the form factor that we're talking about.

**SBIR Program Office:** What about the mobility? What about the noise level? What about the external factors of having something that produces a fuel source tethered to the battery or the fuel source, or whatever it is that's going to generate the electricity along the way?

**Stakeholder:** I think those are all considerations that would probably limit the ability to use, and I think noise would be a problem. Also, a tethering is not likely to be accepted easily, at least by our users. But outside of our user group, maybe there might be uses for it. So, I would definitely consider reviewing it, but we would probably not want it tethered, we would probably just want it as part of the radio as we normally connect the radio batteries. But that's just my user group, so I wouldn't be against looking at it, because there might be a use case support for some users.

**SBIR Program Office:** Ok. And what about day/night? If somebody wants to use any solar, would that be a limitation as well to the external fuel source, for example?

**Stakeholder:** Yeah, that would. I think it needs to be something that can be used in any situation, because you're going to go into buildings and all kinds of different scenarios that you don't want to have to rely on solar power for that. So I would say solar power would be out for what we're looking for.

**Additional notes from stakeholder:** I think this would easily transition to all other organizations. Most of the batteries are connected in a similar manner, but it would only be the interface that would change probably. So, currently we're using the same form





factor battery that we always have a small cell – that’s basically the number of round cells that you put into the actual battery. So, just alone we see savings that can be made in a different form factor for the actual cells, because there's space that's lost between the circular batteries that are in the actual battery case, so even a form factor change could improve performance. Just so everyone's aware – that’s some of the things we've looked at.

**3. Going from 6Ah to 16Ah battery represents a 2.7x increase in energy, a lot for mature technologies. How proposals will be evaluated relative to this goal?**

I think we're reaching over 6 amps in the form factors now. I think there are some that are 8 and up to 9 or 10Ah. So, I think we're closer to – it would be closer to 2x the density in the battery. It's basically going to be evaluated on the ability to provide higher density batteries. That's the whole goal is the same weight and more power for operations of the battery. So that is the main goal of what we are trying to get after, and the only other requirements are: it can be integrated and meet requirements for a military battery in the future. So, you have to meet the safety requirements and things like that.

**4. For newly proposed battery technologies, what TRL level would you expect to be achieved by end of Phase I and II?**

**SBIR Program Office:** So usually for Phase Is we're looking at about a TRL 3 or TRL 4. If you are advanced more than TRL 3 or TRL 4, then you're ahead. Propose as you see appropriate, and we'll still do the evaluation, because we do have our requirements. From the SOF/SOCOM perspective, we want to see that meeting those requirements in accordance with the topic description. Phase II is the prototyping phase. At the end of the Phase II, we would like to see it along the lines of TRL 6 or TRL 7, but anything more advanced than that, as long as it meets the “not to exceed” amount that’s going to be published to the Phase I awardees at the 4.5-month period of performance (PoP) or the start of the Phase I, then we’re ok with it. But that’s the general guidance. There are some exceptions and those can be discussed as we see proposals. But for the batteries, we have done a different one for a different technology in the past, and we’ve seen it in that TRL that I just stated.

**Stakeholder:** That's what we were expecting. And then understanding that when we move to actually a military standard battery, that includes additional costs that we have to work out. But I think if you just showed me where we're going to be at that point it would be easy to fund, because there are people that would step up to fund the military standard after we have the density requirements and the safety worked out. So I really don't think that's an issue, if we can get to through those two phases.

**5. Will you consider material improved Li-ion battery, or Li-air battery?**

No, we're not against that I've actually looked at some proposals in the past and changing the cathode and anode in the way they interact has been shown. There are multiple paths that people are pursuing in that so definitely we're not against it. We would have to read the proposal. And what performance you’d get by doing that.





**Additional Notes from Stakeholder:** Another thing is that this can also transition to multiple different other battery uses, because most a lot of the batteries they use in the smaller systems are based off of the cells. So when you put those cells into the handheld, they should also transition to other uses, such as UAV and things like that in the future as well. So I'll say this as a use case to improve density for a lot of different systems and military things that are in use.

**6. Do you expect awardees to have any test cells or prototypes being built and demonstrated by end of Phase I?**

**SBIR Program Office:** Phase I is a feasibility study. It's a final report that you present at the end of the 6 months from the PoP in accordance with one of our procedures/deliverables that we state in there. And that's what we expect you to have. If you have anything that you've been working on in your lab that's great, but that's not a deliverable for us. The prototype is when we expect to have a proof of concept, a prototype. At the end of the 6 months, you get the report. Back tracking a little bit, at 4.5 months, you have Contract Data Requirement List (CDRL) #5. If you're proposing, you'll see that in the list of requirements. And CDRL #5 is going to have 22 questions that you'll answer with the collaboration of the stakeholders, and then at 6 months you provide the report, and at 6.5 months you provide your proposal. Once your proposal is received, the team will evaluate and downselect from however many Phase I proposals are submitted. And then from there, we start the Phase II development for that prototype.

**7. How many Phase Is do you expect to award on this topic?**

Generally speaking, we award an average of three Phase Is per topic. We've done more, we've done fewer. I am extremely against awarding just one or even two Phase Is for a topic. But if we really don't find anything, like we've had an instance where if there's only one or two companies in the country that can do it, then so be it.

**8. Would you please share the exact battery type used today in these handheld radios?**

Here are some example current handheld radio batteries in use. Datasheets are included as well.

- Bren-Tronics, Inc. BT-70716Bx Series Battery see: <https://www.bren-tronics.com/amfile/file/download/file/449/product/1947>
- Example for AN/PRC-148 Battery see: <https://www.bren-tronics.com/amfile/file/download/file/244/product/1949/>
- Example the AN/PRC-163 Battery see: <https://www.epsilor.com/product/prc-152-prc-163/battery-for-prc-152-radios-eli-152/>



