



**SBIR 24.4 R1 Q&A Telecon Transcript  
28 November 2023**

- SOCOM244-001: Small Unmanned Ground Robotic Systems
- SOCOM244-002: Thermal Reflex Sight

**SBIR Process Timeline**

21 Nov 2023: Topics issued for pre-release

05 Dec 2023: USSOCOM begins accepting proposals via DSIP

03 January 2024: DSIP Topics Q&A closes to new questions at 12:00 PM ET

SOCOM244-002: Thermal Reflex Sight

**1. How much funding is available and how many Phase 1 awards are planned?**

This is a technical Q&A and programmatic questions will not be answered.

**2. What is the schedule for award, execution, and preparation for phase 2?**

This is a technical Q&A and programmatic questions will not be answered.

**3. Does SOCOM have V50 range requirements for a man sized target? Clarification of "transmit on the side of..." is requested.**

Answer/Clarification:

To assist in system design criteria related to Detect, Recognize, and Identify a human target.

No less than 10° horizontal field of view.

Camera housing not including reflex sight shall weigh no more than 16oz including the battery.

TRS shall be no longer than 5 inches.

Detect: TRS LWIR camera shall be able to detect a human at 400 meters.

Recognize: TRS LWIR camera shall be able to recognize a human at 200 meters.

Identify: TRS LWIR Identify a human with a weapon (rifle or pistol) at 1 meter to 75 meters.

Reference "Rife or Pistol". If possible, we also want to see AK47 vs. M4 with 2cm resolution at 75m (+/-).

**NOTE:** The TRS DRI specifications as listed above are to be considered a guide in that, the TRS' primary use shall be for assaulters with short-barreled rifles in day and night situations, i.e., movement to target, urban and rural environments, and potentially close quarters battle scenarios. The TRS shall provide a stand-alone passive aiming solution and be able to resolve images better than the Fused Panoramic NVGS and Fused BINOS (ENVG-B) at approximately 27 degrees FOV for the LWIR channel. Thus, offerors should weigh in favor of a device that provides the widest field of view yet meets the said DRI specifications.





**4. How much system integration does SOCOM desire. Would SOCOM be interested in a new NVG that interfaces readily to the Thermal Reflex sight for night operations?**

I would say no to this being that we've already got night vision goggles already in the works and we're not looking to redo what the army did with FWSI. And we're also not trying to transmit the thermal image to the Goggle through like via UWB or something like that. We want this to be standalone first.

**5. Are there weight, power consumption and battery style/life goals?**

Yes, let me try to pull up those numbers for you. So, power consumption will be with two lithium batteries. We're not limiting it to AA or CR123's, but we're trying to reach a four-hour (4) runtime. I would also throw in there that I want to see options for rechargeables as an option if we could also use AA S and or CR123's. I know you can use 16650's and then swap out with CR123's. So, that should put you in the ballpark of what you're looking at. And then weight, 16 ounces, sights is no longer than 5 inches.

**6. What is the desired DRI ranges?**

Detection on a human 400 meters, recognition 200 meters, and identification 75 meters. And that's identify humans with a rifle or a pistol out to that distance (75m).

**7. it's \$175k**

Reference the USSOCOM instructions for NTE amount.

**8. How does the TRS differ from a current thermal weapon sight in terms functionality?**

So, the current thermal sights that we have are either one or the other. So, they're a clip-on version that mount in front of an existing magnified optic, usually mid to long range. And then there are some that are standalone thermal. All of them require you to have your night vision flipped up and be really deliberate in your use for that. So, it's very useful in mid to long range, but not so useful in a in a closer fight. So that the big difference with the thermal reflex sight can use with your nods down, meaning that you can glance under so that you can look at the display. So that either articulating display or a display that you could see, we know with a wide field of view would make this different from what's out there. Also, the inclusion of a reflex sight makes this a kind of a dual optic. I mean that was high level and maybe there's some other questions that'll come up that I can be more specific on that, but hopefully that gives you the intent of that. So, think one can use with a red dot mounted on it or similar to an ACOG with a red dot mounted on it. Only the difference is you'll have a thermal optic under there working for you.

**9. Is there a requirement for the thermal display to be daylight visible? Same brightness level as the reflex day optic.** Yes, the thermal display must be able to be used during the day too.

**10. Follow-up question on brightness. Daylight visible in the brightest of daylight conditions? Or is there a threshold?**

Follow up question on brightness. Daylight visible in the brightest of daylight conditions or is there a threshold I don't have a specific number that I could give you on that. So, the red dot would need to be daylight bright in the brightest of conditions. The thermal sight and image that's displayed. There's probably a threshold somewhere that to where it's no longer practical or needed. I guess I was just kind of addressing in those daylight scenarios. It needs to be a, viable display that I can still use, but that's all dependent on the thermal scene.





**11. Field of view requirements? NV goggle angle range, reflex sight angle range, etc?**

Field of view requirements for the thermal, I'm assuming a minimum, of 10°. I would think would be the tightest. We'd want to constrict that so overall, meet those DRI requirements, but not to choke it down (FOV) further than 10°. We're trying to create a, you know, an unmagnified scene, a scene that's intuitive to look at and be able to engage targets with. So, the wider the field the view, the better. But keep in mind the DRI requirements, night vision, Google angle range. I don't, I don't have a number on this yet. This would I guess have to be defined. But so, with the TRS mounted on a rifle in a standard configuration and the operator shoulders it or kind of CQB shoulders it. So, it's a little bit lower maybe on the chest plate, on their body armor, their normal ability to have their head looking forward but their eyes look underneath the goggles and be able to view that. I don't know what that angle is and I'm not going to, you know so less than 90° for sure but so that one's probably open to a little bit of interpretation Reflex sight angle range. So, the reflex sight would be more for a guy uses it in the daytime where he's like a like a use the reflex sight. So, the use of that would be getting behind it is using like a normal red dot. As far as field of view on that, I don't, I don't know if I've answered that. That one would be just like a typical red dot that we'd see on the market right now.

**12. Will this be direct to Phase II SBIR?**

This is a Phase I, not a Direct to Phase II

**13. V50 Probability requirement for NVIPM, eg number of cycles on target. And Probability of desired eg. 70%?**

The DRI specifications will keep us in the box for what they're I believe what he's asking for, the V50, that person wants to follow up beyond that we can maybe address it. I think our DRI kind of puts that question into a box over.

**14. With a large display (reflex type optic), are you concerned about being back lite by the display?**

Part of that would be to have a remote feature to where you can turn the display on or off, but you leave the thermal on. Camera running in the background, so in a night scenario where you're using that a guy could turn it on or trigger it similar to how he would with his near IR lasers and floods and then with the. I'm assuming you're talking about the thermal. The actual red dot backlight would be addressed like it normally is by just turning it down.

Clarification: We want to have instant on in the LWIR. We feel that leaving the LWIR camera on and instantly turn on and off the display will be more operationally useful. Will also save battery life if we can toggle on and off the display. **Is a monochromatic display acceptable (red aim point and red thermal outline)?**

Monochromatic display? Yes. Is acceptable typically for the thermal portion, though I think white hot and black hot are the two that we would look for. On that we'll leave out the outline modes with white hot and black hot options.

**15. Are you utilizing NVTherm or NVIPM to evaluate DRI ranges? And at what percentage of probability?**

We have our own evaluation procedure, and we can expound upon that later, we do not valueate DRI based on percentage of probability, we're not necessarily using a percentage of probability on this. And I said, I think this can be addressed at a later time. Yeah, I mean to expand on that, especially the identify feature, they're all subjective at the user level, all of those categories are subjective. So, to be able to identify a guy with a weapon becomes pretty clear. I mean, when





you start, when you put it up there, it either is or it isn't. You got too big of a pixelated display and you're not going to be able to tell that anyways. The human eye is not going to be able to tell that. And I'm not looking for, you know some AI program running in the background to confirm or deny that. We're going to leave that up to the operator's eyeball to determine that.

**16. The topic references just has "Army Training Publication (ATP) 3-21.8". Is there a section of this pub that is specifically relevant?**

It's basically Squad and Platoon Tactics is what we referenced. There is no specific paragraph within that publication all.

**17. "Articulating display" and looking under the NODS was mentioned. Are you expecting a HUD thermal overlaid on the reflex sight, or 2nd display outside the FOV?**

The articulating display is the thermal display for the thermal portion of the sight and then a separate you know secondary location for a Reflex sight was desired to be able to sight through in daytime conditions and not have the same kind of power consumption that the thermal would take in. So go back to like an Elcan or a Trijicon ACOG. So, you have a dual mounted or dual optic sight, that's what we're envisioning. I know we mentioned articulating. If there is another way to achieve that where you can you know view from underneath your nods and be able to see that as well as like shoulder it and look through it and see it in that format as well. Then I think we would be open to that HUD thermal HUD thermal overlaid on the Reflex sight. Good question on that. So, on this one, I don't think we're looking for the thermal image to be displayed over the reflex sight, the thermal image would have its own or the thermal display, would have its own reticle on there as well. Hopefully that answers that.

**18. Are there any requirements for external connectivity?**

Yes, power, I would say I would be open to that. For power, are we looking for? I guess follow up with that. Are you looking for anything else specific? No transceivers, OK.

**19. Please provide the link for SOCOM SBIR instructions. The link with PDF you posted in chat does not work.**

The link with PDF you posted in the chat does not work. You must copy all the way from extension down. So, I know the blue gave you that little thing from HTTPS but for some reason when you look on the website itself it starts with extension. So, start with that. Let me know how it works. Also, if that doesn't work, the instructions are on softworks.org. They advertise and they put everything together. I'll find it now and post it there as well so you can have everything canned in one place.

**20. So, with the NVG on you definitely want to see both the visible and LWIR? reflex combined output?**

No, not at the same time. So, let me clarify. So, with NVG's on, I'm looking under my NVG's, I'm looking into the display of the TRS, and I see the thermal display with a thermal digital reticle in in that display. So, I want to see those two together. The reflex sight that's like a COTS red dot would be separate and I'm going to transition it from a really dark scene into a lit scene, room or something like that, then the operator would go back to what he normally does. He could use his laser, or he could tilt his nods up, look under his nods and look at that sight or flip his nods up and use the red dot like it's supposed to. Maybe that or hopefully that answers that.

**21. External connectivity: streaming the thermal video out to other displays and/or Atak?**





I don't think we have that on there if as a requirement, but I wouldn't. I wouldn't dismiss that either like if that that's not a primary requirement but hooking it up to other displays potentially could be useful in the thermal display.

**22. Can the thermal display and reflex sighting system be co-aligned for the same cheek weld, same optical path? Or are two separate optical paths a requirement?**

I'm not sure what path you're looking at down this, but I guess I wouldn't dismiss it. I think it's a possibility. Andy, you got anything on that. Yeah, I think, I think coaxial coaxially aligning the red dot to where the digital display on the thermal imagery would be good. OK. Yeah, I mean to be good. It's. Point of any point of impact for your red dot, can the reflex sight be the same as your digital display or you could change it, or you can change it. They're independent, but they should be coaxially aligned for point of aim and point of impact. Two separate optical pass requirements. Yeah, just to be clear, it's they're there are two separate sighting systems on there and will be used as such. But if I got, yeah, I see what you're saying for if I adjust one, does it have to adjust the other? I don't think that's a requirement, but we do need to get them on the same like they need to be independently adjustable.

**23. Is there a target resolution for the thermal imager?**

This directly relates to DRI in my opinion. Yeah. I mean, chime in on that, Andy. I mean that's we're talking 2cm resolution at 75m (+/-), is that what we're asking? Yeah, I think the DRI as you as you called it out Gabe will address this. So again, it was 400 detect a human, 200 meters recognize human and then 75 meters identify human with a weapon.

**24. What rail mounted items will be installed forward of the sight? lasers, lights? (is there a height above bore req for thermal camera)**

There will be lasers mounted there. Lights are typical, so typical mounting considerations are lasers like the mini-Aiming Laser, PEC 15 for other folks the NGAL as well on the top rail be a consideration to clear that lights are typically mounted up to 45°. I think those would be less obtrusive and the user can position them to where they're not in the way right above bore. For the thermal camera I don't have the measurements, but that'll be to clear mini aiming laser and NGAL I. Think 1.5" above rail is a safe starting point. Yeah, I mean that's typically for the scopes.

**25. 4 hour runtime was mentioned. Is that for the thermal system running? Or is there a duty cycle envisioned within that 4 hours?**

Let me try and pull this up and, jump in if you can get the exact requirement that we had is 4 hours with the thermal running. Now that's that would be exponential for just I. Think that's you know that's four hours for the thermal. I mean our assumption is that a reflex sight, if it's a cot reflex sight that's going to run forever based off what battery it's got in it and that's in those cases, right and then? Yeah, so 4 hours, I would say that's four hours with the with the thermal.

**26. What is the battery life (T) and (O)? Does the day sight need to have a separate power source or can they be combined?**

They can be combined. I think the T&O for the reflex sight will be not an issue with whatever power source is chosen actually. Strike that, hold on, I might be wrong on that. They need to be separate power source. I mean it. It depends, right? If. If yeah. Integral as a reflex, and that's going to be it's going to draw from the what the camera's drawing off too, right? Or if it's a COTS item, the reflex sight will draw off of its own power source. I think if the I don't have the TNO for the so the battery life threshold is 4 hours for the thermal. Again, if the reflex sight is drawing off





of the same power source as the thermal, there would have to be some sort of a kind of reserve set for the reflex sight. Worst case scenario you run the thermal down but then you still have power for your reflex sight unless those two are separate. For example, if you did use a COTS item and it just needed a CR123 battery separate from the thermal, I think that would be acceptable.

Conversational pause, this commentary was added by a SOCOM representative.

Just as kind of an alibi on our part for the V 50 question, whoever asked that, if you're still on I. We're not we're not trying to be dismissive of doing thermal modeling and whatnot. What Gabe is calling out now is based off what we have in the inventory now from thermal weapon sights whether it's a small handheld thermal weapon sight or if it's an inline weapon sight. Like I said we're not trying to be dismissive of that, reference to the DRI component to this. But we understand because you're trying to figure out if we have, we missed the mark on what we're calling out for essentially the size, saying the lens diameter and the lens focal length and all that. So I think we're open to what Gabe is saying no less than you know 10° field of view, recognize a human at 400 meters. I understand how that all ties into, the V50 component to this, but I don't think we're off too far in what we're asking. Keep this thing relatively small on the gun. But again, if there's something that we've missed on this, please, if you know when you guys address this in your proposal, we're more than open to, you know, again it's a phase one to look at all the options.

**27. "Look under" was mentioned several times in regard to the NVG. Does the thermal display not need to be viewable looking through the NVG?**

Looking through the NVG, it does not. So, we're not looking for a HUD in the NVG like the FWSI. This is a physical you're looking at it with your eyeballs straight to the display. That's where you know the recall out articulating display. If you could have a traditional display and you rotate it upwards, you know say 45° or 40° or whatever it is to where I could see it looking underneath my nods. The problem with the current like so sig. Made I think the E3 or something like that as a thermal, you know, reflex sight interesting in concept because it had such a big display on it but poor thermal performance. Company XXXXX makes the XXXXX, which again a very cool device, but it requires the user to flip up their nods. So, in a dynamic environment where you're keep, we're trying to keep the nods on and be able to use this device and be able to go back and forth from near IR to you know a thermal image quickly. Also having a device that outperforms the thermal imaging in our fused Panos and fused bino night vision goggles that we have. So, the best-case scenario is we locate something of interest with fused Panos or fused bino's on, but then we can resolve it slightly better and then take appropriate action.

**28. Is this envisioned as a add on device to a COTS day sight or a fully integrated CCO with a thermal channel?**

No, have a where a guy's got, you know Romeo 4 red dot on and then he takes that off and then puts this on for nighttime or he's running a one to six, you know, scope on top and then put this in front of it. We're trying to get away from this. So, this would be, you know, the short-range assaulter dual sight day and night.

Clarification: This is a standalone thermal weapons sight with a reflex sight that stays on the gun both day and night.





**29. Are you OK with a red dot Delta Point Pro, RMR, etc being mounted to the sight or is it desired to have a larger viewing area / custom reflex design?**

Actually, the preference would be a variant of that to have an enclosed red dot, but in that same vein. So, an enclosed red dot meaning that it's more durable to environmental conditions. So, rain and dust can really start to shut down those sights. So, there's a but there are some enclosed red dot systems that are out there cots available. But yeah, I think you're on the right track. So that size is perfectly acceptable.

**30. Is there a requirement for the thermal display to be daylight visible? Same brightness level as the reflex day optic?**

Yes, this would be primarily for nighttime use, but it does need to be bright enough to be able to use in the day.

