

SUPPLEMENTAL/BID BULLETIN

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ADDENDUM NO. 2

This Supplemental Bid Bulletin No. 2 is being issued to further clarify, modify and amend items, specifications in the Bid Documents to address key issues for the **“PROCUREMENT OF ONE (1) LOT MILITARY CAMERA SYSTEM WITH ACCESSORIES”**

The following were submitted to the BAC for clarification.	
QUERY	ANSWER
<p>1. <u>Main Features</u> 1.05 Gyro Stabilization</p> <p>Gyro Stabilization for weapon systems optics is used when the camera is not attached to the gun. At which point the stabilization (3 or 4 axis usually) is required to keep proper bore sighting. If the optics rests or is attached to the gun it is using the same stabilization mechanism of the gun. In this case — the last thing you want is a separated axis system for the optics as it would mess up bore sighting. This would be redundant (as the gun is stabilized) and complicated the product a lot. It's not a common configuration.</p>	<p>1. Gyro Stabilization requirement of the EOS</p> <p>Based on NRTDC letter dated 27 Feb 2019 which was emailed to your office dated 28 Feb 2019, stated that the NSSC-PN agreed that the gyro-stabilizer requirement will no longer be included on the technical specifications of the EOS for the Project BUHAWI.</p> <p>Additionally, based on our pre-proc discussion last 11 March 2019, a dedicated gyroscope is required for the weapon station of the Project BUHAWI so that the weapon station will not utilize the ship's navigation gyroscope.</p>
<p>2. <u>Thermal Imaging Performance</u> 1.16 Optics</p> <p>The spec stipulates a 60mm / 19mm lens. This is contradictory to range requirements in pg.70: Detection 5km and recognition 3km. To calculate ranges of optics, one would use a Nyquist Johnson equation which allows us to get the geometrical range possible to see a target. NATO criteria define detection as</p>	<p>2. Thermal Imaging Performance</p> <p>Based on review of specifications, the given detection and recognition ranges of the EOS are the minimum requirements. Hence, if the proponent proposed EOS provides higher range capability then the better it would be because it will provide more readiness to the personnel operating the weapon system to</p>

seeing 2 pixels on target and recognition as 6 pixels on target. I'm assuming the target is a NATO vehicle (2.3x2.3).


If we apply the detector in the spec, and a 60mm lens — the farthest range for detection would be 4058m and the farthest range for recognition would be 1353m (assuming a 1711m detector). This is also a purely geometrically calculation. You also need to take into account the high humidity in the air common to naval and coastal applications which can limit visibility by up to 20-50%. Thus, a 60mm would fall short of the range requirements (11m not even talking about the 19mm lens which would be useless). The camera we proposed has a 45/135mm lens. The 135mm lens would detect the target in the above example at 9132m and recognize it at 3044m. Thus, even in a high humidity region we would still be able to meet the requirements while a 60mm lens would not.

We could potentially say we exceed the range, but since optics are done in cones — the longer the range the more narrow my FOV and a competitor could contest that while we exceed the range we fall short of the FOV.

conduct more investigation of the threat prior to engaging. Additionally, at higher range, the field of view of the camera would be affected.

This shall form an integral part of the Bidding Documents for the
“PROCUREMENT OF ONE (1) LOT MILITARY CAMERA SYSTEM WITH ACCESSORIES”

For the guidance and information of all concerned.


MS. AUREA T. MOTAS
BAC Chairman
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