



Navy SBIR/STTR Success

Wide Field-of-View Foveal-Night Vision Goggle Retrofit

Kent Optronics, Inc's Wide Field-of-View Foveal-Night Vision Goggle (WFOV F-NVG) retrofit, features an 80° field of view without compromising optical resolution, size, and weight, or increasing power consumption.



Standard NVG 40° FOV

Foveal NVG 80° FOV

Kent Optronics Inc

Founded 2000
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TOPIC NUMBER:
N08-161

SBIR INVESTMENT:
\$849,972

PHASE III FUNDING:
\$2,029,356

DON SAVINGS:
Projected **\$39M**
over six years

THE TECHNOLOGY

The WFOV F-NVG Retrofit consists of objective lenses, image intensifying tubes and eyepieces. This design introduces a spatial light modulator to reduce wave-front aberrations which enhances image quality in both the objective lens and eyepiece lens assemblies. The viewer sees high resolution images, which perfectly matches the human eye. When combined with high resolution image intensifying tubes, the WFOV F-NVG Retrofit maintains high on-axis resolution while providing a fivefold increase in field of regard from smartly doubling the full circular field of view (from 40° to 80°).

“Warfighters strongly supported the WFOV NVG 80° FOV and nominated this technology as a technology of Warfighter interest in terms of Warfighter utility”
(Army Technical Support & Operational Analysis (TSOA) Report)

THE CHALLENGE

The challenge is to significantly increase the functionality of night vision goggles by widening the field of view of existing models without increasing form, fit or power consumption profiles. Current night vision goggles, such as a standard AN/PVS-15 binocular, reduce mission effectiveness due to limitations in the field of view. The warfighter can be in danger if the threat is outside the vision of the current 40° circular field of view.

THE NAVAL BENEFIT

Installation of the Kent Optronics wide field of view upgrade kit effectively increased night vision situational awareness by 5.3 times over existing models while maintaining form, fit and power requirements. The increased field of view allows the warfighter to detect more threats, quicker, over a wider area to minimize battlefield casualties. Navy Expeditionary Combat Command units conducted assessment and evaluation of the retrofitted goggles with positive results. Reports documented improved tactical evasion and engagement, as well as threat mitigation. The measure of survivability verses time and efficiency were improved by at least 20%.

“The WFOV night vision goggles absolutely increase operator situation awareness across 90% of EOD operations.” (EOD Warfighter)

THE TRANSITION

Acquisition Sponsor: SEA 06 PMS 408 (Expeditionary Missions). The improved night vision goggles are a complete optical retrofit which has been fully matured and ready for deployment. The retrofitted WFOV NVGs are in production, and the plan is to retrofit 50 goggles per month--starting September 2016. A planned procurement of \$8.8M is projected for 1,250 retrofit units between FY16 and FY21. The estimated cost savings per retrofit unit is \$32K (based on avoiding new unit procurement). This results in an estimated savings of \$39M over the next six years-a Return on Investment of more than 13X based on an SBIR investment of \$849K. NAVSEA PMS 408 continues to work with service/warfighter groups to enable procurement, fielding, testing, and any specific designs or configuration requirements.

“The successful development and eventual fielding of the Wide Field of View Night Vision Goggle Retrofit is an exceptional example of the government (Navy) SBIR support and Kent Optronics technology innovation. The parallel development of retrofitting is highly cost-effective in upgrading existing optical systems.”

(Kent Optronics, Inc.)