US ARMY RDECOM CERDEC

NIGHT VISION ELECTRONICS SENSORS DIRECTORATE

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The Night Vision and Electronic Sensors Directorate (NVESD)

As Army employees we support the recommendations of the BRAC report but believe that in the case of NVESD these recommendations present certain challenges that the BRAC commission should understand in depth.

The Night Vision and Electronic Sensors Directorate (NVESD)

Bottom Line Up Front

519 Federal Employees to be moved to Aberdeen, MD

- NVESD's products have changed the way our forces fight and given them an unparalleled advantage in combat
- NVESD is DoD's recognized world-class center for EO/IR sensor system R&D
- NVESD possesses extraordinary human capital; a uniquely skilled, multi-disciplinary workforce (university training is not enough)
- The relocation of NVESD will cause serious, possibly irreparable harm to its capabilities – a long time to reconstitute
- We may lose our advantage in sensor technology
- This result may be contrary to BRAC Military Value Principles and the goals of the Department/Army Transformation

High Risk to Military Value

BRAC Challenges

NVESD View:

- The prolonged disruption of the NVESD RDT&E mission due to the loss of human capital will adversely affect the pace of technology innovation, to the detriment of the warfighter, and our ability to fight and win.

"Disrupts key advantage"

- There are no cost savings, only outlays in the sum of approximately $330M, associated with the realignment of NVESD

For the technology of NVESD, there is no current military value at Aberdeen, MD

NVESD Mission

- Research and Development in Advanced Sensors – Military Specific Technology

OWN THE NIGHT

EO/IR and Electronic Sensors/lasers for:
- Surveillance
- Targeting
- Countermine/Humanitarian Demining
- Night Pilotage/Driving
- CCD
- Force Protection / Perimeter Defense
- Counter Reconnaissance

Sensor Fusion

DOD CENTER FOR IR AND COUNTERMINE

6.2 + 6.3 +Transition Technology to PMs for Future Force

Technology to the Warfighter Quicker

NVESD Business Areas

Ground Combat Systems
Develop combat vehicle, soldier, UGS and UGV sensor systems to acquire and target enemy forces and for night fighting and driving

Air & Netted Sensors
Develop rotocraft and UAV sensor systems to acquire and target enemy forces and for pilotage

Fusion and ATR

Countermine
Develop systems to detect and neutralize mines, minefields, IED's and unexploded ordnance for military and humanitarian demining operations
Minefield breaching for military ops.

Modeling & Simulation
Develop models and simulations and perform sensor component and system performance analyses
EO/IR performance modeler for all DoD & industry

Science & Technology
Conduct research and foster maturation of EO/IR and countermine sensor components and of ATR / signal processing
FPAs, IR (SWIR, MWIR, LWIR), lasers
Distributed sensor networks

Special Products & Prototyping
Sensors for special ops forces, force protection /perimeter defense
MASINT sensors for intel
Develop, test, and calibrate EO sensors for signature collection in support of DOD intelligence

NVESD has primary responsibility for DoD Electro-Optic Sensors

NVESD Legacy – Changing the Way We Fight Wars

The US Now Prefers to Fight At Night To Utilize Our Night Vision Advantage

Image Intensifiers (I^2) – Vision sensors for a night maneuver force (soldiers, vehicles, helos)
>500,000 F Systems Fielded Gen I, II, III

The US Owns The Night

Thermal Systems (FLIRs) – Long range improved day/night target contrast and smoke/dust penetration
>70,000 FLIR Systems Fielded Gen I, II, Uncooled

Countermine – Detect buried landmines and IEDs for safe maneuver
>15,000 Systems Fielded

Greatest Ongoing Contribution Uncooled Infrared Imaging
Small / Cheap IR Everywhere Revolutionize Land Warfare

Tactical Lasers – Locate and designate targets for standoff engagement by precision weapons
>40,000 Systems Fielded

Also Firefighters

"Our night vision capability provided the single greatest mismatch of the war" - *MG Barry McCaffrey, CG 24th ID, Desert Storm*

"The Army is using its advanced Night Vision sensors in Iraq and Afghanistan 24 hours a day, seven days a week. The capabilities of these critical combat tactical sensors are vital in the asymmetrical fight against terrorism." - *COL Curtis McCoy, US Army G8 Office*

NVESD: Contribution to Transformation

Technology	Warfighting Opportunity	NVESD Internal Involvement
High Performance Uncooled IR	Very low cost missile seekers & threat warning 360° distributed aperture sensors for urban ops; Lightweight IR imagers for the dismounted warfighter	Very High
Gen 3 Dual Band IR On Si Substrate	Low cost long range passive ID, wide area search with dual band ATR	Very High
Short Wave Infrared	Detection of camouflage, active imaging at very long ranges, future video replacement for direct view F devices	High
Lightweight Laser Range-Finder/Designator	3x weight reduction for hand held soldier and Class 2 UAV designators – critical enabler for future ops	Very High
On-the-Move Countermine Ground Penetrating Radar	Detection of buried plastic and metal mines and IEDs at reasonable rates of advance (10x today's rates)	High
Airborne IED Detection	Automated detection of IEDs and buried mines along convoy routes from airborne platforms	High

Aggressive NVESD research will reduce the cost of future warfighting opportunities

- Sensors are a key component of Network Centric Warfare -

With the Warfighter In Iraq Today

Examples of Quick Reaction Prototypes in use by the Warfighter in Iraq and Afghanistan

STORM Laser Rangefinder + Thermal Sight

Allows precise direct fire engagements with 105mm Howitzer

Laser Warning Light

Taken May 05 to Iraq by Gen Griffin, CG AMC

Gun mounted laser to determine intent and protect convoys from car bombs

Well Camera*& Remote Robotic Vehicle

**One of AMC's 10 greatest inventions*

Remotely inspect wells and tunnels for enemy troops and weapon cachets

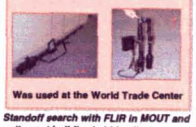
Change Detection Workstation

Detect IEDs from the air using existing EO/IR Sensors

SPIDER – Surveillance System

Mobile stabilized panoramic sight for force protection & surveillance

Hand Held Thermal Probe



Was used at the World Trade Center

Standoff search with FLIR in MOUT and collapsed building/rubble piles.

Over 20 quick reactions special projects fielded to OIF/OEF
Many more in the works…

Changing the Way Wars are Fought and Reducing Cost

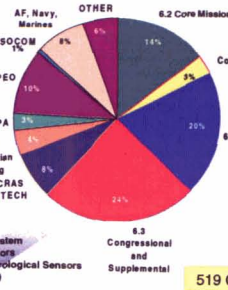
New Technical Warfighting Concepts That Have Recently Originated at NVESD and Transitioned to Industry

- **Monoblock Lasers** – smallest possible laser rangefinder and designators for individual soldiers and UAV's
- **Multi-Laser Warning Device** – reveals intent of suicide car bombers and RPG gunners
- **Cost Effective Targeting System** – provides much lower cost targeting sensor suite for vehicles
- **Well Camera** – help search wells and caves, highlighted in Army posture statement, one of AMC's 10 greatest inventions
- **Thermal Probes** – used in rescue operations in 9-11& in Iraq to search for threats without compromising soldiers
- **Wide Field of View I2 Goggles** – much improved situation awareness for pilots and infantry at no additional weight
- **WerWolf Mine Protected Vehicle Sensor Suite** – supports detection of IEDs at convoy speeds
- **Breakthrough Material Processing to Produce Small Detector Structures** – enable the world's first Gen 3 IR Sensors
- **Uncooled Reststrahlen Camera for Countermine** – detect buried mines and IEDs from small UAV ahead of convoys
- **Wichmann GPR** (some industry) – first reliable sensor to detect plastic landmines

"… Effectively place superior technology in the hands of the Warfighter"
(BRAC 2005 Policy Memorandum Two, Oct 14 2004)

Technology to the Warfighter Quicker

FY05 Funding



Our most important Customers

PEO/PM Customers:
- PEO Soldier
- PEO Aviation
- PM Unit of Action
- PM NV/RSTA
- PM Close Combat Systems
- PM Medium Tactical Vehicles
- PM Signal Warfare
- PEO Ground Combat Support System
- PM Robotic and Unmanned Sensors
- PM Target Identification & Meteorological Sensors
- PM Light Armor Vehicle (TACOM)
- PM Special Projects
- PM Intelligence & Effects
- PM Lower Tier (TACOM)
- PM MEP2
- PM Force Protection Systems
- PM FBCB2
- PEO STRICOM

R&D Partnerships/ Leveraging:
- ARO
- ARL TPAs/Fed Labs
- MURI
- Tri-Service DTOs
- CRADAs w/Industry
- DARPA

519 Government Personnel

Total FY05: $339,092M
76% to industry

Technology to the Warfighter Quicker

NVESD S&T Program Portfolio Success

- NVESD has 17% of the Army Approved S&T Programs (24 of 141 non-medical programs)
  - We're only 3% of the Army S&T Workforce
  - Our % of the total Army portfolio has been growing for the last 5 years
- NVESD has executed 3 Advanced Concept Technology Demonstrations in the last 4 years and has been a major contributor to others
  - Currently executing the Night Vision Cave & Urban Assault ACTD to support the War and Transformation – SOCOM Sponsor

Directly on the Path to Transformation

12 Technology Transition Agreements with PM FCS and 8 with PM CCS to support the Transformation

NVESD has more approved Army S&T programs than any other non-medical organization

Technology to the Warfighter Quicker

NVESD is the DoD Center of Mass for EO/IR Technologies

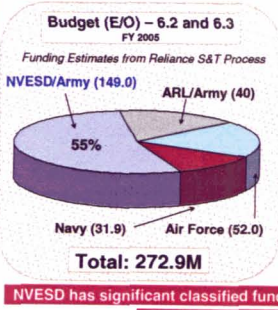
EO System Modelers for all of DOD and Industry

International Leadership:

NATO SET Panel, Army Member 5 of 7 Task Groups
NATO SCI Panel, Countermine Technology
TTCP – SEN Group, National Representative 3 of 7 Tech Panels 2 of 3 Action Group

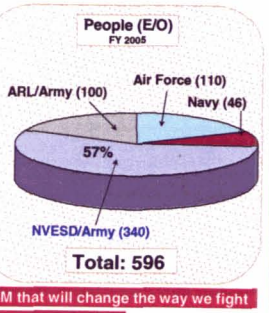
Budget (E/O) – 6.2 and 6.3
FY 2005

Funding Estimates from Reliance S&T Process



Total: 272.9M

People (E/O)
FY 2005



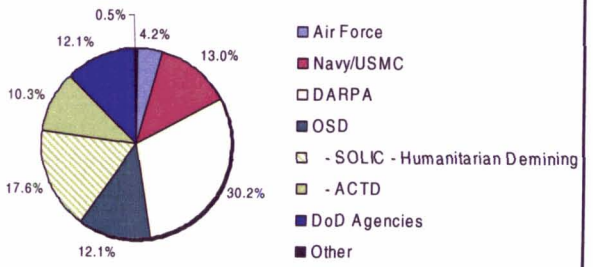
Total: 596

NVESD has significant classified funds $6M that will change the way we fight

Half the funds / Half the Experts of DoD

Technology to the Warfighter Quicker

NVESD Serves the DoD Community



NVESD FY04 Non Army Funding: $74M

Technology to the Warfighter Quicker

Testimonials

SOCOM

"SOCOM relies on the experienced, in-house expertise that only the Night Vision Electronic Sensors Directorate (NVESD) can provide... Infrared and Image Intensifier technologies, pioneered and developed by the personnel of NVESD, provide the technological edge required by SOCOM operations. SOCOM depends on NVESD's quick reaction capability to remedy immediate battlefield needs. It is imperative that SOCOM retain this mission critical support." – *J. Frank Wattenbarger, Director, Advanced Technology, US Special Operations Command*

DARPA

"In these partnerships DARPA has relied on the unique in-house expertise resident at NVESD. If that expertise were to disappear, I do not know where I would turn to replace it." - *Tony Tether, Ph.D, DARPA Director*

NAVY/USMC

"...The Navy S&T community relies on NVESD expertise for technology development in the field of imaging infrared target acquisition sensors for personnel, ground vehicles and helicopters." - *Keith Krapels, Ph.D., Office of Naval Research, code 313*

WARFIGHTER SUPPORT - IRAQ

"The truth is, NVESD is already one of the most responsive labs in the RDECOM." - *LTC Ken Copeland, RDECOM Science, Technology and Acquisition CORPs advisor to multi-national force Iraq MNF-I*

TRANSFORMATION BATTLE LAB FOR THE ARMY (UAMBL)

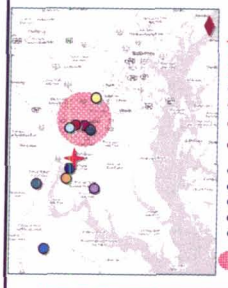
"With the Army currently at war and with the potential for world-wide commitment for the foreseeable future, it is imperative NVESD development must continue uninterrupted. The best minds... must be kept working on this critical capability. Without them we risk marginalizing the advantage we've worked hard to attain." - *Joe Hughes, BFD Director of Force Development*

Support for the Joint Warfighter

Technology to the Warfighter Quicker

A "Joint" Center of Excellence Already Exist in the Virginia and DC Area

- The concentration of ARL, NRL, USMC Quantico, DARPA, SO/LIC and NAVEOD within the Virginia/DC Area already provides a powerful synergy for NVESD in EO/IR and countermine sensor developments for the Warfighter
  - Local facilities at: Quantico, Indian Head, Ft. AP Hill, Blossom Point and Davison Army Airfield provide cooperative opportunities.



- NVESD
- Aberdeen Proving Grounds
- DARPA
- Naval Research Lab
- Army Research Lab
- Naval Explosive Ordnance Disposal Technology Ctr
- Special Operations / Low Intensity Conflict
- USMC Quantico
- Ft. AP Hill
- Blossom Point
- Indian Head
- Institute for Defense Analyses
- Beltway

- Defense Research Engineering Network (DREN) connectivity is like Network Centric Operations. NVESD now conducts distributed simulations and experimentation with Army Battle Labs and RDT&E partners.
- The integration of organizations without their people will not create a center of excellence.

Excellence is embodied in the people.

Note:
- Major customers or NVESD remain at Ft. Belvoir: PEO Soldier, PM Force Protection, REF, PM Special Programs, & INSCOM
- PM CCS (Countermine) only moves if NVL moves

Extensive Tri Service Synergy in EO/IR Technology in Northern VA, DC Area – Nothing near Aberdeen, MD

International Threat to US Technology Dominance

International view of the state of sensor technology (from DTRA)

- Over the last 10 years, the US has been losing its technological advantage in sensors due to intense overseas research and development and production efforts – **Gap is closing**.

Key Technology Areas: Uncooled & Cooled IR, Lasers, Image Intensifier, SWIR

Competing Nations

- France
- China
- Germany
- Israel
- Japan
- Netherlands

Will catch up if NVESD disrupted by BRAC relocation

Rest of the industrial world about 3-5 years behind US...

Problem: We do not control their export policies

If the championing of this technology by NVESD is disrupted, better technologies will be available on the world wide market than will be available from the US

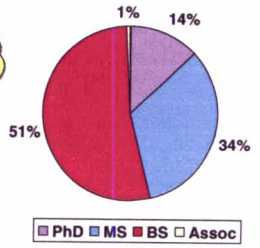
Any disruption caused by BRAC will erode US lead in EO/IR and level the playing field resulting in reduced night vision advantages for the war fighter.

Technology to the Warfighter Quicker

FY05 NVESD Education Distribution

Engineers & Scientists Education Breakout

Plus 40 more E&S employees now pursing graduate degrees



Total 340

Technology to the Warfighter Quicker

NVESD Workforce Specialization

Non Unionized

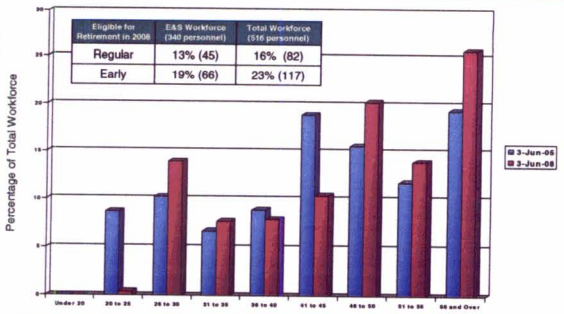
Workforce Specialization	Number of Employees
Focal Plane Arrays (FPA)	
Molecular Beam Epitaxy/Grower (Materials Scientist)	3
Detector Processor/Etching	5
FPA Device Design & Materials Testing	9
FPA Manufacturing	2
EO/IR Electronics Design & Modeling	47
Uncooled Camera/FPA and Devices	2
Cryogenic Coolers/Dewars	2
Sensor Protection	1
Read Out IC Development/Design and Test	1
Lasers	
Laser Source Design	22
Laser Radar Systems	6
Laser Rangefinder/Designator Design	17
Optics	
IR Sensor Optical Design	3
Miniature Display Design/Testing	5
Optical Design	1
Optical Testing	3
Image Intensification	
I2 Tube Design and Fabrication	7
I2 Device Engineering	16
I2 Technology and Testing	2
Signal Processing	
ATR Algorithm Evaluation	22
Real Time Image Signal Processing Engineering	20
Image Fusion Algorithms	11
Countermine	
Ground Penetrating Radar Engineer	19
Nuclear Quadrupole Resonance Expert	3
Explosive Detection Chemist	4
Explosive Neutralization Expert	28
CM Field Testing	1
Electro-magnetic Sensor Expert	3
High Power Microwave Expert	2
Countermine System Integration	5
Chemical Neutralization Expert	4
Modeling	
Radiometry/Atmospheric Propogation	6
Linear Systems Analysis	10
Psycophysics (Perception Testing)	14
Image Generation & Rendering	22
E-O Sensor Systems Engineer	
IR Sensor System Development	60
Hyperspectral System Development	21
Stabilization and Pointing Accuracy	4
Prototyping	
NV Systems Prototyping	36

Critical Mass of Technical/Scientific Expertise Consisting of Many Specialists

Technology to the Warfighter Quicker

NVESD Age Distribution

Eligible for Retirement in 2008	E&S Workforce (340 personnel)	Total Workforce (516 personnel)
Regular	13% (45)	16% (82)
Early	19% (66)	23% (117)



BRAC will likely be a catalyst for many early retirements among senior mentors who are needed to train and mature new talent

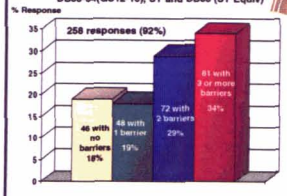
Technology to the Warfighter Quicker

NVESD Employee Survey

Survey: Do you anticipate any significant personal barriers to re-locating?

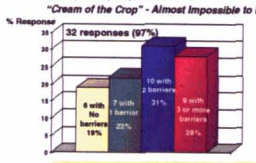
Survey Assumptions:
- Identical work environment in Aberdeen
- All relocation costs adequately covered

E&S - 5 to 40 yrs on-the-job training (excludes interns)
DB03-04(GS12-15), ST and DB05 (ST Equiv)



E&S "Technical Specialists" Subset
- SMEs, MIJs, ST, Band DB05

"Cream of the Crop" - Almost Impossible to Find



Significant Personal Barriers
151 – Local community or neighborhood involvement
132 – Spousal career
88 – Children in school
73 – Family ties to area
64 – Participation in Virginian Education or College Tuition Assistance Plans

Aberdeen, MD is an impossible commute

~ 80% of Specialized Workforce Has 2 or More Barriers to Relocation

Experience suggests only about 25% of the workforce will move

Historical Examples of Attrition

- Vint Hill, VA -
1993 BRAC relocated Signal Warfare Lab from Faquier, VA to Ft. Monmouth, NJ

Impact
- 18 of 463 moved to NJ – 4%
- Only 1 Division Chief (GS-15) and 1 Branch Chief (GS-14 Ops) relocated.
- No support infrastructure (Management/Program/Budget Analysts) relocated.

- St. Louis, MO -
1993 BRAC relocated Aviation Troop Command ATCOM to Huntsville, AL

Impact
- 37% Moved

Loss of personnel will start in September disrupting support to the war

Most of the people do not move

Technology to the Warfighter Quicker

Reconstitution Difficulties

Difficulty in Replacing Specialized NVESD Expertise

Active Recruiting Campaign (FY00-FY05) – generates about 11 experienced personnel hires/year
- Higher demo salaries from lab personnel demo program
- Attractiveness of VA-DC Metro area, a major plus

Can only hire US citizens eligible for clearance. Technical graduate programs often dominated (2/3) by foreign students

Impediments to reconstitution of expert workforce
- Bureaucracy associated with time required to make offers
- Inability to offer competitive salaries to senior technical experts and managers

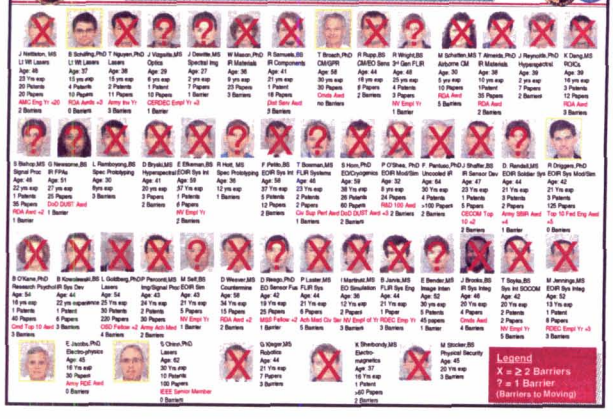
Even with lab demo and NSPS, civil service constraints are a major impediment to hiring

Will take **10 - 19 years** (19 years without sacrificing quality) to replace our expertise, compounded by:
- Mentors lost through early retirement (many one-of-a-kind)
- Disruption of on-going graduate studies due to relocation (40 employees)
- Universities don't teach EO/IR – need 5 years of on the job training

NVESD's expertise is "Developed" not Hired – Hard to replace

Technology to the Warfighter Quicker

Faces of NVESD Expertise



Legend
X = ≥ 2 Barriers
? = 1 Barrier
(Barriers to Moving)

Reconstitution Difficulties

Job Opportunities in the Virginia-DC Area for EO/IR Technologists

- NRL
- ARL
- TEC
- ONR
- DARPA
- DTRA
- DHS
- FBI
- CIA
- DIA
- NGA
- PEO Soldier
- IDA
- RAND
- SAIC
- Northrop-Grumman
- General Dynamics
- EO/IR
- DCS
- Fibertek
- Aerospace Corp
- Booze Allen Hamilton

Every single one of these organizations has recruited from NVESD

Tremendous Local Employment Opportunities for the Workforce

Technology to the Warfighter Quicker

In-House Technical Expertise is a Critical DoD Asset

Benefits of In-House Expertise:

The Warfighter: • Leads to new concepts and ideas through innovation, new products and quick reaction solutions - Enables both Transformation and immediate support in wartime – TTP's and technology are developed together, working with TRADOC

DoD: • Makes DoD a smart customer – Example: NVESD is the EO/IR system performance prediction modeler for all of DoD and industry

Industry: • Provides an honest broker – Encourages use of the best technology from multiple companies – no monopoly, equipment evaluations are fair with standardized test procedures developed by NVESD

The Taxpayer: • Fosters cost reduction – Through informed competition of ideas across industry and NVESD pressure on contractors to use low cost approaches

The Community: • DoD assets can be instantly redirected in the event of a crisis
- More flexible responses than industry e.g. NVESD support after 9/11

Other Partners: • Provides interface to Government service agencies, foreign nations – NVESD dominates TTCP SEN and NATO SET– Only a DoD organization has such access

The Department must attract, develop and retain… civilian and contractor personnel who are highly skilled and educated… - *BRAC 2005 Policy Memorandum Two, Oct 14, 2004*

Industrial Testimonials

DRS

"The team at NVESD has provided the capability and guidance to the Electro-Optical Infrared (EO/IR) military and industrial community required to develop the many night vision devices and other electronic sensors so vital to our ground, sea and air forces."

"I'm very disturbed to hear that the NVESD is in the BRAC plan to be moved to Aberdeen, MD. This will, I am sure you'll agree, result in the loss of many very good and talented people. So many, I fear, that your organization will be severely damaged and become dysfunctional. This should be unacceptable to the Department of Defense, the U.S. Army, and the taxpayers of America!"
– Fred L. Marion, President of DRS Technologies

NVESD developes EO/IR models used by all US industry

ITT

"The technical personnel in NVESD are critical to the success of the Army's Night Vision programs and has been instrumental in resolving problems related to both technical and management issues in a timely manner allowing the Army to always have the capability to own the night."
- Larry Curfiss, Vice President and Director Business Development, ITT Industries Night Vision

RAYTHEON

"The collaboration with NVESD helped Raytheon Vision Systems achieve significant reductions of detector leakage current in a timely manner. NVESD continues to be a critical resource for advancements both in fundamental research and manufacturing technology for infrared focal plane arrays." *– John J. Thornburg, Raytheon Vision Systems, R6s Expert / General Manager*

NVESD Expertise Essential to Industry

Technology to the Warfighter Quicker

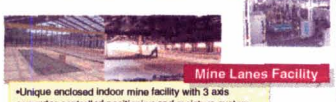
NVESD In House Major and Unique Laboratories – Facilities - Ranges

S&T Component Development Labs

FPA Micro Lab — Laser Lab

- One of a kind MBE and laser facilities
- Development for transition to industry

System Prototyping, Fabrication and Integration Facilities

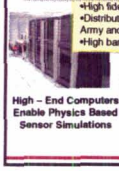


Mine Lanes Facility

- Unique enclosed indoor mine facility with 3 axis computer-controlled positioning and moisture system
- Six representative unique soil types spanning mineralized soils to road bed materials
- Green house portion is the only facility in the world that is enclosed that allows solar loading and moisture experimentation

Virtual Prototyping and Simulation Facility

- High fidelity sensor simulation
- Distributed exercises including Intra-Army and Joint exercises
- High bandwidth secure networks



High – End Computers Enable Physics Based Sensor Simulations

Classified Simulation Area

Field Testing and Demonstrations

- Unique instrumented range for EO sensors with 5 km line of sight
- Live calibrated minefields
- Certified 5km laser range for eye damaging lasers
- Light-controlled firing range

Indoor Firing Range

Technology to the Warfighter Quicker

NVESD Relocation Costs

22 BUILDINGS = 429,000 SQUARE FEET BUILDING SPACE = $85M TO RECONSTRUCT

45 MAJOR & UNIQUE RDAT&E FACILITIES/LABORATORIES/RANGES WITH A TOTAL REPLACEMENT COST OF OVER $185M (does not include freight costs for shipping equipment)

- 13 MAJOR & UNIQUE RDAT&E FACILITIES
  - VIRTUAL PROTOTYPING & SIMULATION FACILITY
  - DETECTOR FABRICATION & INTEGRATION FACILITY
  - IMAGE INTENSIFIER TEST FACILITY
  - ADVANCED SENSOR EVALUATION FACILITY
  - AVIATION TEST FACILITY
  - HIGH BAY INTEGRATION/NIGHT VISION DEVICE REPAIR FACILITY
  - AUTOMATED SENSOR & PROCESSOR EVALUATION CENTER (AUTOSPEC) FACILITY
  - IR DETECTOR MICROFACTORY
  - CLEANROOM
  - MINE LANES FACILITY
  - LASER TEST TUNNEL
  - PENTHOUSE TESTING FACILITY
  - DISTRIBUTED SENSORS INTEGRATION FACILITY (DSIF)

$330M to rebuild, refit, and relocate NVESD

- 15 MAJOR & UNIQUE RDAT&E LABORATORIES
  - SYSTEMS ENGINEERING, ANALYSIS & INTEGRATION LAB (SEAIL)
  - PROTOTYPE IR FPA & IR CHARACTERIZATION LAB
  - CYRO-COOLER LAB/AUTOMATED COOLER TEST FACILITY (ACTF)
  - ELECTRIC MOBILITY TRANSPORT CHARACTERIZATION LAB
  - COUNTERMINE CHEMICAL SENSOR LAB
  - COUNTERMINE RADAR & EMI LAB
  - UNMANNED AERIAL VEHICLE (UAV) LAB
  - NEAR/SHORT-WAVE INFRARED SENSOR PERFORMANCE CHARACTERIZATION LAB
  - DISPLAY AND IMAGE FUSION LAB
  - HUMAN TEST & PERCEPTION LAB
  - OPTICS LAB
  - LASER LAB
  - COUNTERMINE SYSTEMS LAB
  - COUNTERMINE ACOUSTIC LAB
  - DETECTOR EVALUATION LAB

BRAC Committee only considered costs of single laboratory buildings exceeding $3M (that is why BRAC costs are lower)

- 4 MAJOR & UNIQUE RDAT&E RANGES
  - INDOOR FIRING/PHOTOMETRIC RANGE
  - DROP ZONE OBSERVATION RANGE
  - 5km LINE OF SIGHT – SECURE LASER RANGE (FOR EYE DAMAGING LASERS – BIGGEST ON ENTIRE EAST COAST)
  - RANGE 71 (COUNTERMINE/UUXOCO)

WORKFORCE RELOCATION COSTS $60M

Technology to the Warfighter Quicker

Facilities we will probably never be able to replicate at APG

- In vacuum, IR detector microfactory – delicate MBE
- Live (but inoperable) minefields with controlled dielectric soils
- Mine lanes facility with controlled climate and no metal in construction below ground level (foundation, retaining walls, etc…)
- Fully instrumented, secure 5km laser range for eye damaging lasers (fenced off)
- Instrumented EO test range with large search area and long lines of sight – NVESD needs uninterrupted access
- Airspace to overfly 80+ square miles of land and roads plus UAV testing – not available at APG

Vibration from gun firings at APG may impact laser labs

Nighttime Light Levels: AP Hill, VA 1x10-4 ftL; Aberdeen, MD 5x10-4 ftL

Time to AP Hill: Ft. Belvoir - 2 hr; APG - 4 hr

No local travel to AP Hill from APG

APG, MD nighttime light level is 5X brighter than Fort AP Hill – Can not measure night vision goggle or camera performance under true starlight conditions, due to light pollution from populated areas

r Quicker

Conclusion

"The purpose of transformation is to extend key advantages and reduce vulnerabilities."
– BRAC Volume I, page 6

Care should be taken to preserve the NVESD culture:

innovation, work ethic, and service…

Avoid disrupting support to the Warfighter

or we will squander our advantage and create vulnerabilities

Issue is loss of human capital at no savings to the taxpayer and at no long term advantage
- Center of mass for sensors is in Northern VA – no reason to move -