

NATO NAVAL ARMAMENTS GROUP Workshop on Counter Piracy Equipment and Technologies

**Shawn Miller
Capture Lead:
Raytheon Advanced Security &
Directed Energy Systems**

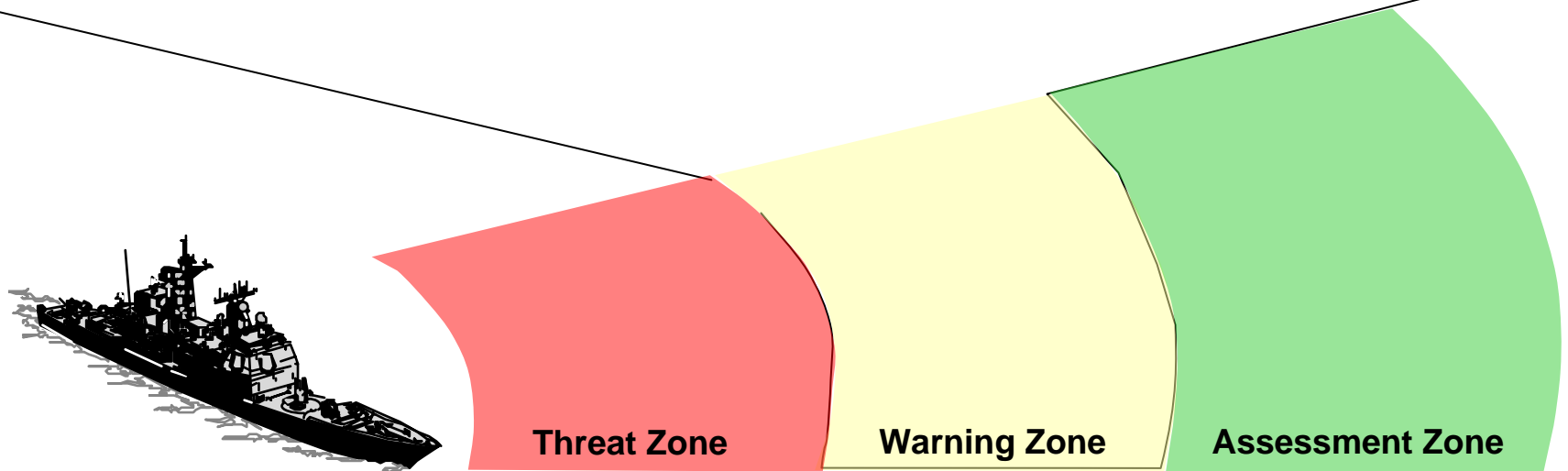
**George Svitak
Director
Raytheon Advanced Security &
Directed Energy Systems**

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Critical Issue: “Determining Intent” Pirate vs Fisherman?

- Are the existing Warning Zone Capabilities effective enough to support emerging maritime counter piracy tactics, techniques, and procedures?
- Can Active Denial provide a significant mission capability to effectively control the next maritime piracy engagement situation?



Leveraging technology to mitigate the next counter piracy situation

What is the Active Denial Protection System

- **Less-than-lethal Protection System**
 - provides repel effect against people
 - repel effect demonstrated safe and effective in over 11,000 lab and field engagements
- **Integrated sensors provide additional situational awareness capability**
- **Video display and joy stick control**
- **360° coverage**
- **Scaleable systems design**

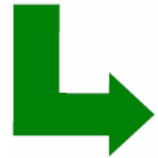


How ADS Technology Works: *From the targets perspective!*

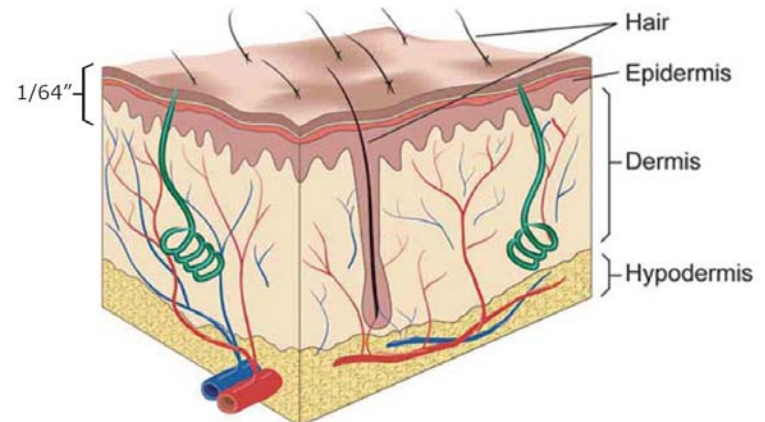
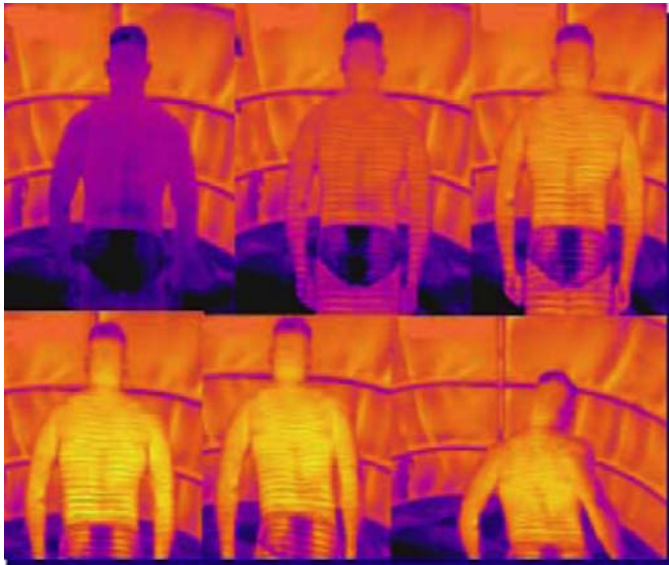
Activate ADS



Intolerable Pain



Skin Gets Hot



Penetrates 1/64th of an inch

There are no long term effects!

Active Denial System Trade Space

RF Source
Output Power

+

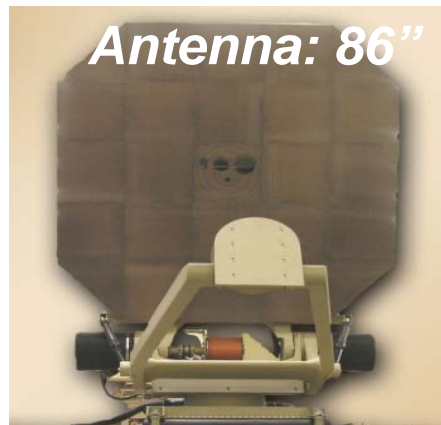
Antenna
Size

=

Effective Range
&
Spot Size



*30 KW Range = >250m
&
Spot Size = Approx 1/2 Body*



*100 KW Range = >750m
&
Spot Size = Approx Full Body*

Drives System Size, Power and Weight

Program History/Status

1993 - 1999



Thermal Damage Assessment



Initial Effectiveness Assessment



Eye Safety Assessment



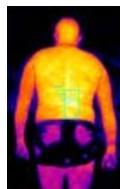
Cancer Impact Assessment

Desire for less than lethal effects capability

1999-2002



AF Force Protection Battle Lab Initiative



Full Body Exposure Assessment



Limited Military User Assessment

2003-2005



ACTD System 1



ACTD Military User Assessments (MUAs)



ACTD Extended User Evaluation (EUEs)



Raytheon Silent Guardian

2006-2007



ADS System 2

CURRENT STATUS

- Office of Secretary Defense Policy issued letter supporting acquisition of ADS and its employment by combat forces for reviewed missions
- **CENTCOM JUONS for system deployment to OIF/OEF**
- **U.S. AF and Army developing 2012 program plan**
- Silent Guardian mid-range system completed bio-effects performance assessment
- **Impending Direct Commercial Sale of Silent Guardian**

ADS Port & Ship Applications



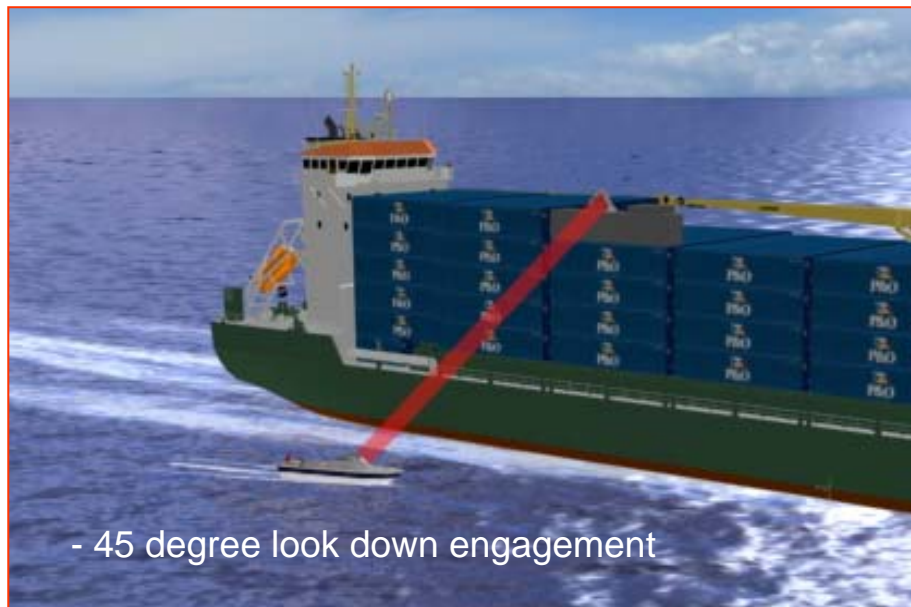
Homeland Security

- Port Checkpoints
- Port Protection
- Boarding Party Overwatch
- Ship Board Protection

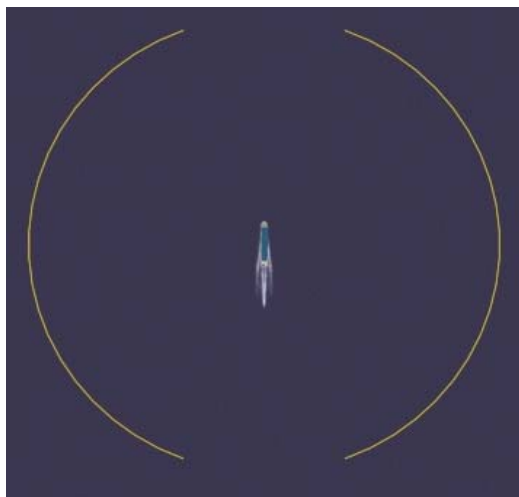
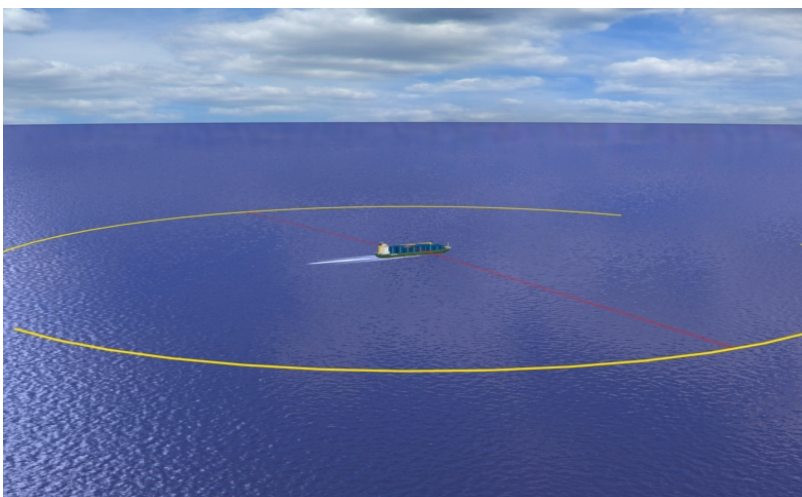


Active Denial System Deployed on Small (~ 1000 teu) Container Ship

Systems can be used simultaneously



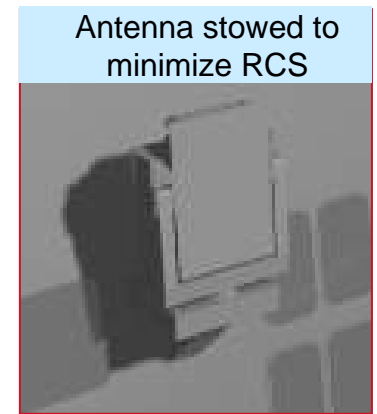
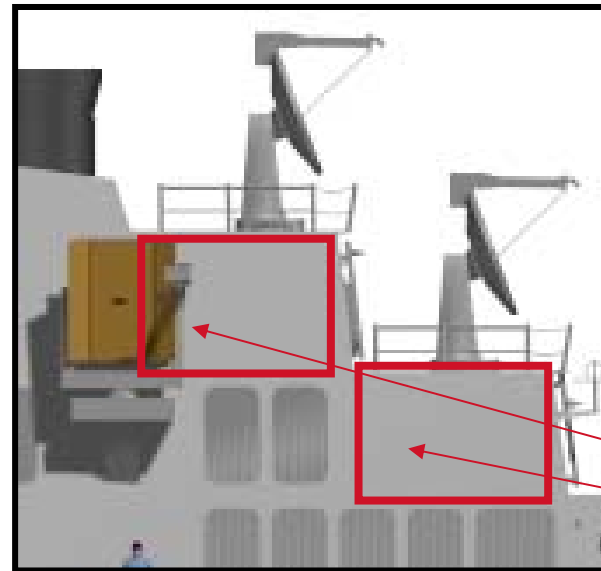
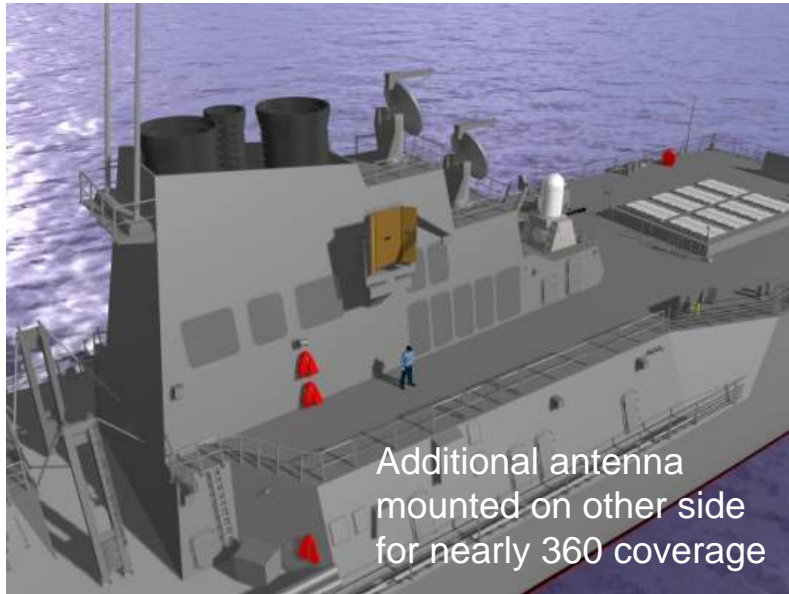
- 45 degree look down engagement



Significant standoff capability
and nearly 360 degrees of
coverage

DDG - Class Ships

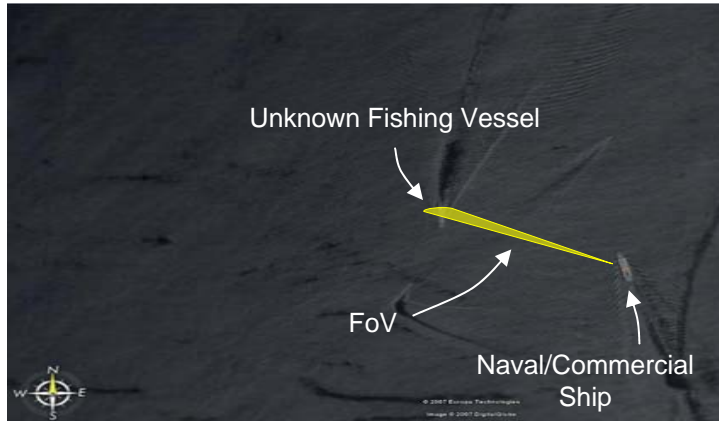
Antenna & Transmitter Location Concepts



Port side of Uptake #2 looking aft

Boarding Party Overwatch Operational Concept

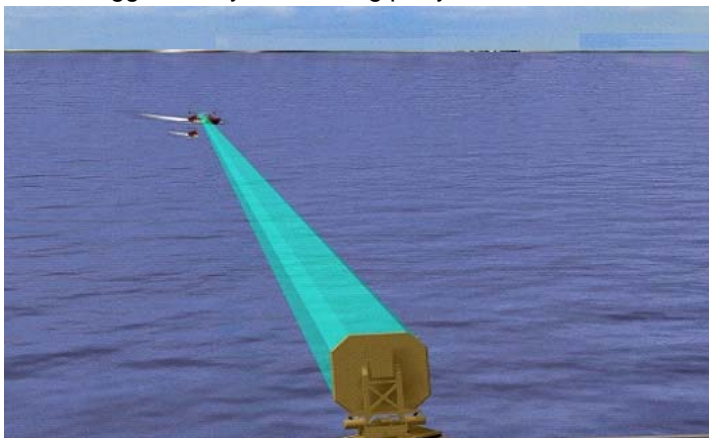
- 1 Leverage enhanced situational awareness capability from sensor assets to support vessel detection



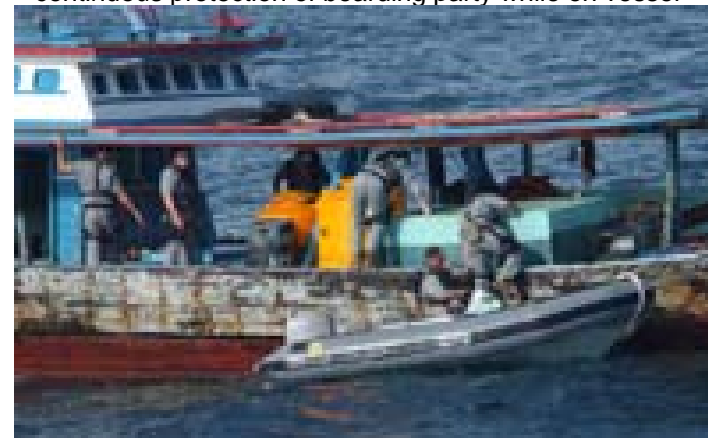
- 2 Dispatch boarding party to search vessel for illegal activities, take control of vessel, personnel if illegal



- 3 Provide stand-off less-lethal overwatch capability to maintain control of the situation if personnel on vessel act aggressively to boarding party



- 4 Provide shielded, protected area for boarding party to gain access to vessel. Maintain less-lethal overwatch to ensure continuous protection of boarding party while on vessel



“Active Denial Effect” Demonstrated in Multiple Scenarios

