Directed Energy Directorate Overview Briefing For Industry

17-19 August 2015

Dr. David Hardy, SES
Director
Directed Energy Directorate
Air Force Research Laboratory
Kirtland AFB, New Mexico
AFRL/Directed Energy Directorate

Topic Outline

• Organization
• Core Technical Competencies
• Strategic Direction
• Contract Opportunities
FY15 Funding Break Out
Received Amounts with Customer Funding
AFRL/Directed Energy Directorate

Science and Technology 166.6M
Other Funding 53.4M
Total 220.0M

$220.0M
FY15 Funding
20 Jul 15

$ in Millions

*All funding is shown as Received. Direct Cite/Reimbursable figures were obtained from the CCaR Incoming Document Report. S&T Funding consists of Core 6.1, 6.2, & 6.3 amounts. (Does not Include JTO Pass Thru).
High Power Microwave Weapons
Summary Roadmap

<table>
<thead>
<tr>
<th>Near Term</th>
<th>Mid Term</th>
<th>Far Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>CALCM Class 2nd Gen H</td>
<td>JASSM-ER Class HPM</td>
<td>5th Gen Fighter &amp; UAV Class HPM</td>
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</tbody>
</table>

**Increasing Capability – Family of HPM weapons across air platforms**

**Evolve CHAMP Technology**
- Design, develop & test a multi-shot and multi-target HPM cruise missile

**HPEM S&T Disciplines**
- HPEM Sources
- Pulsed Power
- Numerical Analysis
- Target Effects

**Near Term**
- **• Design, develop & test a multi-shot and multi-target HPM cruise missile**

**Mid Term**
- **• Optimize waveforms for enhanced effectiveness**
- **• Improve source efficiency**
- **• Increase SWaP trade space for HPM sources**
- **• Develop HPM for both Air Force and Navy platforms**

**Advanced UAV**
- **F-35**
- **• Smart waveform HPM subsystems for SWaP on small re-useable platforms**
- **• Cooperative target engagement real time BDA**
- **• Enable Cyber/EW effects**

**Far Term**
# Directed Energy and Electro-Optics for Space Superiority (DEEOSS) Summary Roadmap

<table>
<thead>
<tr>
<th>Near Term</th>
<th>Mid Term</th>
<th>Far Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Space Threat Custody</td>
<td>Tactical Persistent Monitoring</td>
<td>Space Battle Management, Command &amp; Control</td>
</tr>
</tbody>
</table>

### Techniques & Tools to Increase Speed & Fidelity of Knowledge for SSA

- Provide Next-gen Space Catalog Maintenance
- Improve neighborhood Search around Deep Space Objects
- Improve closely-spaced object detection

- Provide GEO threat awareness using ground-based optical telescopes
- Extend high-resolution imaging of LEO objects to daylight & full-dark for improved timeliness
- Improve Satellite and Communication Protection

- Improve exquisite characterization
- Detect, track, and image dim objects and satellites in full-dark and daylight
- Apply signature modeling to space objects to derive indications of a threat
- High-Res GEO imaging from the Ground

### DEEOSS S&T Disciplines

- Atmospheric Characterization & Comp
- EO Phenomenology & Imaging
- Space Object Custody & Protection

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"DISTRIBUTION D – Distribution authorized to DoD and U.S. DoD contractors only.
Distribution D – Subject to Cover Page Limitations"
Weapon Modeling & Simulation (WM&S) Summary Roadmap

<table>
<thead>
<tr>
<th>Near Term</th>
<th>Mid Term</th>
<th>Far Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated (KE &amp;DE) Weapons Environment for Analysis</td>
<td>Integrated Space, Air &amp; Ground Mission Assessment</td>
<td>Enterprise (AFRL-Wide) Distributed &amp; Constructive</td>
</tr>
</tbody>
</table>

- Better understand collaborative kinetic and directed energy weapons synergies
- High Energy Laser for Future Air Dominance (HELFAD) Study informed SHiELD ATD

AFSIM MS&A Framework

- Assess mission-level effectiveness against air, ground, etc. threats
- Higher-fidelity mission environment including realistic KE & DE threat systems
- Interoperable constructive, virtual, and distributed mission assessment environment

Quantifying Mission-Level Military Utility of Emerging DE Capability Concepts

- Best-of-AFRL Technology Solutions based upon integrated multi-TD simulations
- Assess trade space synergy of autonomy, directed energy, hypersonics, cyber, etc.
- Allows study of multi-system trade

WM&S S&T Disciplines
- Analysis & Assessment
- Model & simulation Development

DISTRIBUTION D – Distribution authorized to DoD and U.S. DoD contractors only.

, OH 45433.
## Laser Weapon Summary

### Roadmap

<table>
<thead>
<tr>
<th>Near Term-2016</th>
<th>Mid Term-2022</th>
<th>Far Term-2029+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entry Level Capability</td>
<td>10s of kW CW/pulsed laser in POD</td>
<td>Mid Level Capability F-35/F22 /legacy with 100+ kW HEL</td>
</tr>
</tbody>
</table>

### Laser System S&T Disciplines
- Laser Sources
- Beam Control
- Acquisition Tracking & Pointing
- Power & Thermal Management
- Target Effects & Numerical Analysis

### Reducing SWaP and Increasing Capability for A2/AD Environment

- **A-A Missions:** Defeat IR missiles
- **Defeat sensors**
- **Soft ground target defeat**

- **A-A Missions:** Defeat A/A missile & aircraft at moderate range
- **A-G Missions:** Ultra-precise weapon against moderately hard targets

- **SAM - moderate salvo defeat**
- **Defeat A/C at 2X AIM-9 range**
- **Defeat hard targets in flight at range**
- **Hard ground target defeat**

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**Distribution D – Distribution authorized to DoD and U.S. DoD contractors only.**
**Self Protect High Energy Laser Demonstration (SHiELD) ATD**

**Description**
- Integrate complete Laser Weapon System into a fighter fuel tank
- Airborne flight test of a beam control subsystem in a transonic/supersonic (when maturity permits) airspeeds & High-G flight
- Demonstrates moderate power integrated LWS in relevant flight environments for defeat of EO/IR based threats
- Wind-tunnel demo of novel hybrid transonic/supersonic turret
- This ATD will feed into parallel AFRL efforts to improve LWS capability to meet F-X survivability/lethality requirements

**Benefits to the Warfighter**
- Decision-quality data for DE risk reduction for F-X program
- First step in meeting F-X survivability/lethality requirements
- Laser & Beam control scalable to higher power to increase range, number and type of targets engaged
- Potential multi-capable system for both defensive & offense use
- Modular LWS can be demo’d independent of test aircraft
- Exploit off-ramp capabilities as LWS continues to mature

**Technology**
- Technologies demonstration in relevant environment & aircraft
- Packaged/ruggedized LWS within fighter SWaP constraints
- Aero optics mitigation at subsonic - supersonic airspeeds
- Agile, compact, large aperture flight qualified beam director
- Acquisition, Tracking, Pointing for defeating dynamic missile targets

**Risk Reduction Products**
- Integrated LWS on legacy fighter demonstrating self-protect from EO/IR air-air and ground-air threats
  - Demonstrate laser propagation in transonic environment
  - Moderate power laser (pulsed or CW)
  - Integrated power and thermal management
  - Flight qualified integrated system
## AFRL/Directed Energy Directorate Near-Term R&D Contracts

<table>
<thead>
<tr>
<th>Program Title</th>
<th>Solicitation /Award Date</th>
<th>Total Value</th>
<th>POC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business and Technology Management Administration (BATMAN)</td>
<td>Sept. 2015 /1 Apr 2016</td>
<td>$45 M</td>
<td>Mr. Leslie (Robin) Ledbetter 505-853-4526 <a href="mailto:Leslie.ledbetter.1@us.af.mil">Leslie.ledbetter.1@us.af.mil</a></td>
</tr>
<tr>
<td>HPEM/CEMA Applications Services Task Order/OASIS Task Order, Kirtland AFB</td>
<td>4th Quarter FY 2015/1st Quarter FY 2016</td>
<td>$10 M</td>
<td>Lt. Nick Quartemont AFRL/RDHA 505-853-7204 <a href="mailto:Nicholas.quartemont.1@us.af.mil">Nicholas.quartemont.1@us.af.mil</a></td>
</tr>
<tr>
<td>Ultra Short Pulse Support Services Task Order/OASIS Task Order, Kirtland AFB</td>
<td>1st Quarter FY 2016/ 2nd Quarter FY 2016</td>
<td>$2 M</td>
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<tr>
<td>High Powered Electromagnetics Division BAA</td>
<td>May 2015/ TBD</td>
<td>$140 M</td>
<td>Mr. Tyrone Tran AFRL/RDHA 505-846-0299 <a href="mailto:Tyrone.tran@us.af.mil">Tyrone.tran@us.af.mil</a></td>
</tr>
<tr>
<td>HPEM-Transition/High Power Electromagnetics (HPEM) RDH-1, Call 1</td>
<td>1st Quarter FY 2016/ TBD</td>
<td>22M</td>
<td>Mr. Tyrone Tran/ AFRL/RDHA 505-846-0299 <a href="mailto:Tyrone.tran@us.af.mil">Tyrone.tran@us.af.mil</a></td>
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# Near-Term R&D Contracts

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<tbody>
<tr>
<td>High Powered Electromagnetics Cyber / Electronic Warfare Applications, RDH-1, Call 2</td>
<td>1st Quarter FY 2016/TBD</td>
<td>10M</td>
<td>Mr. Pete Finlay, AFRL/RDHA 505-846-8386</td>
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<tr>
<td></td>
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<td><a href="mailto:Peter.finlay@us.af.mil">Peter.finlay@us.af.mil</a></td>
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<td>High Powered Electromagnetics (HPEM) Effects Analysis RDH-1, Call 3</td>
<td>1st Quarter FY 2016/TBD</td>
<td>11M</td>
<td>Dr. Tim Clarke AFRL/RDHE 505-846-9107</td>
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<td></td>
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<td><a href="mailto:Timothy.clarke@us.af.mil">Timothy.clarke@us.af.mil</a></td>
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<tr>
<td>High Powered Electromagnetics Source Research, RDH-1, Call 6</td>
<td>2nd Quarter FY 2016/3rd Quarter FY 2016</td>
<td>$38M</td>
<td>Dr. Kyle Hendricks AFRL RDHP 505-853-3915</td>
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<td><a href="mailto:Kyle.hendricks@us.af.mil">Kyle.hendricks@us.af.mil</a></td>
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<tr>
<td>Numerical Simulation Program (NSP) RDH-1, Call 5</td>
<td>2nd Quarter FY 2016/3rd Quarter FY 2016</td>
<td>$6.3M</td>
<td>Dr. Andrew Greenwood AFRL/RDHEC 505-846-6642</td>
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<td><a href="mailto:Andrew.greenwood@us.af.mil">Andrew.greenwood@us.af.mil</a></td>
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<tr>
<td>Electromagnetic Weapons Technologies (EMWT) RDH-1, Call 4</td>
<td>1st Quarter FY 2016/2nd Quarter FY2016</td>
<td>$31M</td>
<td>Dr. Susan Heidger, AFRL/RDHP 505-853-4707</td>
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<td><a href="mailto:Susan.heidger@us.af.mil">Susan.heidger@us.af.mil</a></td>
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# AFRL/Directed Energy Directorate

## Near-Term R&D Contracts

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<tbody>
<tr>
<td>One Acquisition Solution for Integrated Services (OASIS) Laser Integration and Demonstration Program</td>
<td>Oct. 2015/ Mar. 2016</td>
<td>$10M</td>
<td>Lt. Austin Sheeley AFRL/RDLA 505-846-5742 <a href="mailto:Austin.sheeley.3@us.af.mil">Austin.sheeley.3@us.af.mil</a></td>
</tr>
<tr>
<td>Shield Turret Research in Aero-eFFeCts (STRAFE) BAA</td>
<td>Aug. 2015/Mar 2016</td>
<td>$48M</td>
<td>Lt. Joel Lau AFRL/RDLT 505-846-1728 <a href="mailto:Joel.lau.2@us.af.mil">Joel.lau.2@us.af.mil</a></td>
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<tbody>
<tr>
<td>Laser Pod Research and Development BAA</td>
<td>Dec. 2015/ July 2016</td>
<td>$61 M</td>
<td>Dr. Theodore Ortiz  AFRL/RDL</td>
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<td></td>
<td>505-846-9468</td>
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<td><a href="mailto:Theodore.ortiz@us.af.mil">Theodore.ortiz@us.af.mil</a></td>
</tr>
<tr>
<td>RDMW – Integrated Analysis Environment Advisory and Assistance Services Support</td>
<td>Sept. 2015/ Dec. 2015</td>
<td>$3.5 M</td>
<td>Captain Adrian Zinnerman AFRL Det8/RDMW</td>
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<td></td>
<td>505-846-6334</td>
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<tr>
<td></td>
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<td><a href="mailto:Adrian.zinnerman@us.af.mil">Adrian.zinnerman@us.af.mil</a></td>
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<tr>
<td>RDMW – Program for Analysis and Assessments (PANDA)</td>
<td>Aug. 2015/ Nov. 2015</td>
<td>$21.8 M</td>
<td>Captain Adrian Zinnerman AFRL Det8/RDMW</td>
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<td>505-846-6334</td>
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<td><a href="mailto:Adrian.zinnerman@us.af.mil">Adrian.zinnerman@us.af.mil</a></td>
</tr>
<tr>
<td>Space Control Research Assessments (SCRA) AFRL/RDST</td>
<td>Fall 2015/ Summer 2016</td>
<td>$45 M</td>
<td>Captain Max Lubitz  AFRL/RDST</td>
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<td>505-853-3261</td>
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<td><a href="mailto:Max.lubitz@us.af.mil">Max.lubitz@us.af.mil</a></td>
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*This is not intended to be a contract solicitation or formal announcement*
Business and Technology Management Administration (BATMAAn)
60 month, $45M

Joint AFRL/RV and AFRL/RD
Non-Advisory & Assistance Services

**Description:**
- Support for both the space vehicles & directed energy directorates
- Areas of Needed Support Expertise:
  - Business & Reporting
  - Management Administration
  - Operations Support
- Services take the form of on-site contractor support of day-to-day activities

**Estimated Schedule:**
- Estimated RFP Release: Sep 2015
- Proposals Due: Oct 2016
- Award Expected: 1 Apr 2016
- Contract Type: IDIQ w/Firm Fixed Price Task Orders

**Contact:**
- Contracting Officer Representative:
  Mr. Leslie (Robin) Ledbetter
  (505) 853-4526
  leslie.ledbetter.1@us.af.mil

- Contracting Officer:
  Ms. Paulette Windley
  (505) 846-0150
  paulette.windley@us.af.mil

*This is not intended to be a contract solicitation or formal announcement*
AFRL/RDHA

Description:
- OASIS Services Task Order
- Non-advisory support services for RDHA R&D activities
  - Systems Engineering Support
  - Operational Analyst Support
  - Technical Project Planning
  - Field Effects Support
  - General Laboratory Support
- 1 Base Year with 4 Option Years

Estimated Schedule:
Est Solicitation Release:
4th Quarter FY 2015
Est Award:
1st Quarter FY 2016

Technical POC:
Lt Nick Quartemont
AFRL/RDHA
(505) 853-7204
nicholas.quartemont.1@us.af.mil

Contracting Officer:
Ms. Pearl Solano
AFRL Det 8/RVKDP
(505) 853-6494
pearl.solano@us.af.mil

* This is not intended to be a contract solicitation or formal announcement
Ultra Short Pulse Laser Support Services Task Order
OASIS Task Order
Kirtland AFB, NM
60 Months, $5M

**AFRL/RDHP**

<table>
<thead>
<tr>
<th>Description:</th>
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<tbody>
<tr>
<td>• OASIS Services Task Order</td>
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<tr>
<td>• Non Advisory support services for experimental activities within RDH</td>
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<tr>
<td>- Direct Experimental Support</td>
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<tr>
<td>- Laboratory Maintenance Support</td>
</tr>
<tr>
<td>• 1 Base Year with 4 Option Years</td>
</tr>
</tbody>
</table>

**Estimated Schedule:**

- Est Solicitation Release: 1st Quarter FY 2016
- Est Award: 2nd Quarter FY 2016

**Technical POC:**

- Contracting Officer: Ms. Pearl Solano  
  AFRL Det 8/RVKDP  
  (505) 853-6494  
  pearl.solano@us.af.mil

* This is not intended to be a contract solicitation or formal announcement
High Powered Electromagnetics Division BAA (RDH-1)  
Kirtland AFB, NM  
60 months, $140M

Description:
• RDH-1 BAA is a division-wide solicitation
• Will support Basic to Advanced Level Research Activities
• Structured into six (6) Topic Areas
• Each Topic Area can have multiple Calls
• Each Call can have multiple awards

AFRL/RDH

Estimated Schedule:
BAA Posted: May 2015
Calls Posted: TBD

Technical POC:
Mr. Tyrone Tran
AFRL/RDHA
(505) 846-0299
tyrone.tran@us.af.mil

Contracting Officer:
Ms. Pearl Solano
AFRL Det 8/RVKDP
(505) 853-6494
pearl.solano@us.af.mil

* This is not intended to be a contract solicitation or formal announcement
**Description:**
- The HPEM Transition Program develops and demonstrates the potential for HPEM systems to provide game-changing capabilities.
- This effort seeks to investigate and develop forward-looking technologies, which enable the successful transition of HPEM technologies to the warfighter community.
- The effort will entail the development of transition-enabling components at brass board levels equivalent to Technology Readiness Levels 3-4.

**Estimated Schedule:**
- Est Solicitation Release: 1st Quarter FY 2016
- Est Award: TBD

**Technical POC:**
- Mr. Tyrone Tran
- AFRL/RDHA
- (505) 846-0299
- tyrone.tran@us.af.mil

**Contracting Officer:**
- Ms. Pearl Solano
- AFRL Det 8/RVKDP
- (505) 853-6494
- pearl.solano@us.af.mil

*This is not intended to be a contract solicitation or formal announcement.*
High Power Electromagnetics Cyber/ Electronic Warfare Applications
RDH-1, Call 2
Kirtland AFB, NM
60 months, $10M

AFRL/RDH

• Applications Branch
• Effects Branch
• Technologies Branch

Description:
• HPEM, cyber, and electronic warfare technical expertise required to advance the technology/optimize technical performance
• Software development/test facilities
• HPEM, cyber, and/or EW analysis experience
• Day-in-the-life scenario development
• High-level milestones (schedule)/high-level program costs at each milestone, high-level risk assessment

technical POC:
Mr. Pete Finlay
AFRL/RDHA
(505) 846-8386
peter.finlay@us.af.mil

Estimated Schedule:
Est Solicitation Release: 1st Quarter FY 2016
Est Award: TBD

Contracting Officer:
Ms. Pearl Solano
AFRL Det 8/RVKDP
(505) 853-6494
pearl.solano@us.af.mil

* This is not intended to be a contract solicitation or formal announcement
High-Powered Electromagnetics (HPEM) Effects Analysis
RDH-1, Call 3
Kirtland AFB, NM
60 months, $11M

**AFRL/RDH**

- Applications Branch
- Effects Branch
- Technologies Branch

**Description:**
- Testing of HPEM Waveforms against electronic systems and subsystems
- Testing of HPEM waveforms against electronic components
- Analyze and archive HPEM effects data
- Analyze how long an electronic system takes to recover from an HPEM attack
- Models to predict HPEM effects on digital and analog systems

**Estimated Schedule:**
- Est Solicitation Release: 1st Quarter FY 2016
- Est Award: TBD

**Technical POC:**
Dr. Tim Clarke
AFRL/RDHE
(505) 846-9107
timothy.clarke@us.af.mil

**Contracting Officer:**
Ms. Pearl Solano
AFRL Det 8/RVKDP
(505) 853-6494
pearl.solano@us.af.mil

* This is not intended to be a contract solicitation or formal announcement
High-Powered Electromagnetics Source Research
RDH-1, Call 6
Kirtland AFB, NM
60 months, $38M

**AFRL/RDHP**

- Technologies Branch

**Description:**
- Increase the frequency bandwidth of tunable HPEM Oscillators
- Broadband (>10%) HPEM Amplifiers
- Improve the efficiency (>50%) HPEM Sources
- Radiating structures for HPEM pulses
- Investigate new HPEM technologies including repetitive pulsed power, EMI, ionizing and nonionizing radiation

**Estimated Schedule:**
- Est Solicitation Release: 2nd Quarter FY 2016
- Est Award: 3rd Quarter FY 2016

**Technical POC:**
Dr. Kyle Hendricks
AFRL/RDHP
(505) 853-3915
kyle.hendricks@us.af.mil

**Contracting Officer:**
Ms. Pearl Solano
AFRL Det 8/RVKDP
(505) 853-6494
pearl.solano@us.af.mil

*This is not intended to be a contract solicitation or formal announcement*
**Description:**
- Automated testing for software validation and verification
- Directed Energy High Performance Computing Software Applications Institute (DE HSAI) development
- High power electromagnetic materials (HPEM) modeling development using Density Function Theorem (DFT); use of modeling codes to include SeqQuest, Octopus, and Quantum espresso

**Estimated Schedule:**
- Est Solicitation Release: 2nd Quarter FY 2016
- Est Award: 3rd Quarter FY 2016

**Technical POC:**
Dr. Andrew Greenwood  
AFRL/RDHEC  
(505) 846-6642  
andrew.greenwood@us.af.mil

**Contracting Officer:**
Ms. Pearl Solano  
AFRL Det 8/RVKDP  
(505) 853-6494  
pearl.solano@us.af.mil

* This is not intended to be a contract solicitation or formal announcement
Electromagnetic Weapons Technologies (EMWT)  
RDH-1, Call 4  
Kirtland AFB, NM  
60 months, $31M

<table>
<thead>
<tr>
<th>AFRL/RDHP</th>
<th>Description:</th>
</tr>
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</table>
| • Technologies Branch | • Repetitive Pulsed Power  
 • Ultra-short pulsed laser (USPL) concepts  
 • Millimeter wave interactions with High Temperature materials  
 • High Power microwave-driven plasmas  
 • High energy particle beam (HEPB) interactions |

**Estimated Schedule:**  
Est Solicitation Release: 1st Quarter FY 2016  
Est Award: 2nd Quarter FY 2016

**Technical POC:**  
Dr. Susan Heidger  
AFRL/RDHP  
(505) 853-4707  
susan.heidger@us.af.mil

**Contracting Officer:**  
Ms. Pearl Solano  
AFRL Det 8/RVKDP  
(505) 853-6494  
pearl.solano@us.af.mil

* This is not intended to be a contract solicitation or formal announcement
Laser Simulation, Analysis & Research (LSAR)  
Call 0002 – Advanced Laser Modeling and Simulation (ALMS)  
Kirtland AFB, NM  
60-month, $10M

AFRL/RDLEM

Description:
The Modeling and Simulation Section of the Directed Energy  
Directorate of the Air Force Research Laboratory  
(AFRL/RDLEM) is seeking

• Innovative techniques and approaches to develop high  
fidelity physics models for the individual stages of a laser  
system
• Understanding the interaction of these high fidelity models  
within the laser system chain is critical for organizing  
modeling efforts across the division
• Seeking solutions to integration challenges of linking these  
discrete physics models into a sequential and  
comprehensive, end-to-end system

Estimated Schedule:

Est Solicitation Release: Aug 2015
Est Award: TBD

Technical Contact:
Richard Berdine  
AFRL/RDLEM  
(505) 846-2782  
richard.berdine@us.af.mil

Contracting Officer:
Mrs. Susan Thorpe  
AFRL/RVKDL  
(505)846-3404  
susan.thorpe@us.af.mil

* This is not intended to be a contract solicitation or formal announcement
**Laser Simulation, Analysis & Research (LSAR)**
**Call 0003 – High Power Fiber Development and Beam Combination**
**Kirtland AFB, NM**
**60-month, $10M**

**AFRL/RDLT**

**Estimated Schedule:**
Est Solicitation Release: Dec 2015
Est Award: TBD

**Description:**
The Fiber laser and Beam Control (FLBC) program at AFRL/RDLT is pursuing research and development into technologies to

- Enable array based fiber laser weapon systems intended for integration onto a tactical airborne platform
- Solicit new efforts in beam control methods relevant to an array based system, enabling optical components and devices for such a system, and systems level integration and design work of an array based laser weapon system capable of being integrated onto a tactical airframe
- Both systems level integration and research into key optical components and enabling technologies are relevant to this effort

**Technical Contact:**
Arthur G. Hassall
AFRL/RDLTS
(505) 853-7939
arthur.hassall@us.af.mil

**Contracting Officer:**
Mrs. Susan Thorpe
AFRL/RVKDL
(505)846-3404
susan.thorpe@us.af.mil

* This is not intended to be a contract solicitation or formal announcement
One Acquisition Solution for Integrated Services (OASIS)
Systems Engineering and Modeling and Simulation Support for
Research and Development at AFRL/RD
Kirtland AFB, NM
60-month, $10M

AFRL/RDL

Description:
Air Force Research Laboratory (AFRL), Directed Energy
Directorate (RD) is seeking a qualified contractor with

- Strong program and project systems engineering expertise to support the development of directed energy systems, tailoring standard system engineering processes for laboratory research and development
- Developing and maintaining coordinated master schedules for multiple technical programs as well as performing critical path analysis on produced schedules.
- Further assistance will be required in running, maintaining, and analyzing data from computation models representing operational capabilities of the system.

Estimated Schedule:

Est Solicitation Release: Oct 2015
Est Award: Mar 2016

Technical Contact:
Dr. Theodore Ortiz
AFRL/RDL
(505) 846-9468
theodore.ortiz@us.af.mil

Contracting Officer:
Mrs. Susan Thorpe
AFRL/RVKDL
(505)846-3404
susan.thorpe@us.af.mil

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DISTRIBUTION STATEMENT D
The Laser Integration and Demonstration program at AFRL/RDLA requires a qualified contractor staff to support:

- Research and development (R&D), design, and engineering activities as well as provide facility or range operations support.
- Support activities described at the top level as directed energy system design, optical system design, system integration, laboratory and facility design, mechanical engineering, electrical engineering, structural engineering, test engineering, range safety planning, safety engineering, test operations, design documentation, data collection, hardware fabrication and support, data analysis, experimental and test reports, materials testing, laser damage testing, and laser vulnerability testing.

**Estimated Schedule:**

- Est Award: Mar 2016

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In order to reduce risk for laser systems on transonic and supersonic airborne platforms, the Air Force Research Laboratory, Directed Energy Directorate (AFRL/RD) seeks to:

- Develop, demonstrate, and assess the operational utility of a beam control system (BCS) capable of effectively propagating a moderate power laser in the transonic regime.
- AFRL/RD seeks to use the same BCS to characterize aero-optical and aero-mechanical disturbances in the supersonic regime.
- This effort is being accomplished as part of the Shield Advanced Technology Demonstration (ATD) led by the Directed Energy Directorate’s Laser Division (AFRL/RDL), at Kirtland AFB, New Mexico.

Estimated Schedule:

Est Solicitation Release: Aug 2015
Est Award: Mar 2016

Description:

Technical Contact:
Lt. Joel Lau
AFRL/RDLT
(505) 846-1728
joel.lau.2@us.af.mil

Contracting Officer:
Mrs. Susan Thorpe
AFRL/RVKDL
(505) 846-3404
susan.thorpe@us.af.mil

* This is not intended to be a contract solicitation or formal announcement
## Laser Pod Research and Development BAA
### Kirtland AFB, NM
### 60-month, $61M

### Description:
The Air Force Research Laboratory (AFRL), Directed Energy Directorate (RD) is seeking the technical capabilities available to

- Assist in developing and integrating laser technologies on supersonic tactical platforms for the purpose of addressing/retiring technical challenges associated with development and demonstration of an airborne laser weapon system.
- This effort will include the development of an aerodynamic integrating structure capable of flying up to supersonic speeds, power and thermal subsystems, and system control software/hardware to include interface with platform and operator.
- In addition, amalgamation of the individual components and component sub-systems (e.g. power & thermal, laser, system control, beam control) into integrating structure, and onto supersonic tactical platforms for flight tests.

### Estimated Schedule:

**Est Solicitation Release:** Dec 2015  
**Est Award:** July 2016

### Technical Contact:

**Dr. Theodore Ortiz**  
AFRL/RDL  
(505) 846-9468  
theodore.ortiz@us.af.mil

### Contracting Officer:

**Mrs. Susan Thorpe**  
AFRL/RVKDL  
(505)846-3404  
susan.thorpe@us.af.mil

* This is not intended to be a contract solicitation or formal announcement
**RDMW – Integrated Analysis Environment Advisory and Assistance Services Support**  
60 month, $3.5M

<table>
<thead>
<tr>
<th><strong>AFRL/RDMW</strong></th>
<th><strong>Description: Advisory and Assistance Services (A&amp;AS) for IWEA</strong></th>
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</table>
| Integrated Weapons Environment for Analysis (IWEA) Program | • Maintenance and support of software  
• Model construction  
• Software verification and validation  
• Oversight of program security  
• Support of program management and system engineering  
• Establishing and maintaining a repository of various software elements |

| **Estimated Schedule:** | **Technical POC:**  
|-------------------------|-------------------------------------------------------------------------------------------------|
| **Solicitation Release:** Sep 2015 | Captain Adrian Zinnerman  
| **Proposals Due:** Oct 2015 | AFRL Det 8/RDMW  
| **Award Expected:** Dec 2015 | (505) 846-6334  
| **Contract Type:** A&AS Through OASIS-SB | Adrian.zinnerman@us.af.mil |

* This is not intended to be a contract solicitation or formal announcement
RDMW – Program for Analysis & Assessments (PANDA)
60 month, $21.8M

AFRL/RDMW
Analysis & Assessments Program

Description:
• Conduct military utility studies to support the development and refinement of RD system concepts, addressing both red & blue directed energy (DE) capabilities
• Maintain the ability to conduct independent analyses and assessments of DE programs for the Air Force Analytical Community
• Provide services to enable RDMW to conduct and support wargames & exercises in both independent and joint simulation environments

Estimated Schedule:
Solicitation Release: Aug 2015
Proposals Due: Sep 2015
Award Expected: Nov 2015
Contract Type: A&AS Through OASIS-SB

Technical POC:
Captain Adrian Zinnerman
AFRL Det 8/RDMW
(505) 846-6334
Adrian.zinnerman@us.af.mil

Contracting Officer:
Mr. David Romo-Garza
AFRL Det 8/RVKDT
(505) 846-8244
david.romogarza.4@us.af.mil

* This is not intended to be a contract solicitation or formal announcement
AFRL/RDMW

- Integrated Weapons Environment for Analysis (IWEA) Program
- Analysis & Assessment Program
- Defeat Speed of Light Weapons Program

Description: Multiple Applications

- (IWEA) Create an analysis environment capable of supporting a unified AFRL Weapons R&D strategy
- (A&A) Conduct engagement-level and mission-level analyses and conduct military utility studies to support analyses of alternatives for Blue DE capabilities against Red systems
- (DSOLW) Accurately characterizing and modeling Red threat capabilities and employment concepts

Estimated Schedule:

Solicitation Release: Sept 2015
Proposals Due: Oct 2015
Award Expected: Feb 2016
Contract Type: ID/IQ

Technical POC:
Captain Adrian Zinnerman
AFRL Det 8/RDMW
(505) 846-6334
Adrian.zinnerman@us.af.mil

Contracting Officer:
Ms. Paulette Windley
AFRL Det 8/RVKDT
(505) 846-0150
paulette.windley@kirtland.af.mil

* This is not intended to be a contract solicitation or formal announcement
**SPACE CONTROL RESEARCH ASSESSMENTS (SCRA)**
AFRL/RDST
Kirtland AFB, NM
60-month, $35 - $45M

<table>
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<tbody>
<tr>
<td>• Assisting the Satellite Assessment Center with protecting satellites from directed energy threats</td>
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<td>• Research satellites; generate CAD and functional satellite and component models</td>
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<td>• Spearhead novel image analysis methods</td>
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<td>• Software development to aid Defensive Space Control and Space Situational Awareness</td>
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<td>• Laser predictive avoidance analysis and other safety and vulnerability approaches</td>
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<td>FBO Announcement: Fall 2015</td>
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<tr>
<td>Proposals Due: Spring 2016</td>
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<td>Award Expected: Summer 2016</td>
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<td>Solicitation Type: RFP</td>
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<tr>
<th>Technical Contact:</th>
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<tbody>
<tr>
<td>Capt Max Lubitz</td>
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<tr>
<td>AFRL/RDST</td>
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<tr>
<td>(505) 853-3261</td>
</tr>
<tr>
<td><a href="mailto:max.lubitz.1@us.af.mil">max.lubitz.1@us.af.mil</a></td>
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<tr>
<th>Contracting Officer:</th>
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<tbody>
<tr>
<td>Ms. Susan Alley</td>
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<tr>
<td>AFRL/RVKDB</td>
</tr>
<tr>
<td>(505) 846-6877</td>
</tr>
<tr>
<td><a href="mailto:susan.alley@us.af.mil">susan.alley@us.af.mil</a></td>
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referred to AFRL/RDS 3550 Aberdeen Ave SE Kirtland AFB, NM 87117-5776.