

Department of Defense
Small Business Innovation Research
&
Small Business Technology Transfer Programs



Fiscal Year 2017 Annual Report Submission
on
Commercialization Readiness Program (CRP)

March 2018

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The Commercialization Readiness Program (CRP) is part of the SBIR and STTR Reauthorization Act of 2012 (P. L. 112-81, Section 5001) which extends the program through September 30, 2017. The purpose of the Commercialization Readiness Program (CRP) is to accelerate the transition of SBIR and STTR funded technologies to Phase III, especially those that lead to programs of record and fielded systems. This can be done through activities that enhance the connectivity among SBIR and STTR firms, prime contractors, and DoD science & technology and acquisition communities. It can also be accomplished by improving a SBIR or STTR firm's capability to provide the identified technology to the Department, directly or as a subcontractor.

3.2 Air Force Commercialization Readiness Program (CRP)

3.2.1 Air Force CRP Accounting of Funds

Air Force Admin Pilot CRP Allocation			
SBIR FY16 Budget	FY16 CRP Budget (1% of Total SBIR Budget)	FY16 CRP Obligations Made in FY16	FY16 CRP Obligations Made in FY17
\$292.85	\$2.92	\$2.92	\$17K
SBIR FY17 Budget	FY17 CRP Budget (1% of Total SBIR Budget)	FY17 CRP Obligations Made in FY16	FY17 CRP Commitments Planned in FY18
\$356.35	\$3.56	\$12K	\$3.53

3.2.2 Air Force CRP Funding Narrative

Air Force (AF) FY16 CRP funds were obligated to continue the Small Business Innovation Research (SBIR) Transition Support Contract with Peerless Technologies Corporation (\$17K). FY17 CRP funds were expended for Government personnel travel to support outreach, CRP meetings and other transition activities (\$12K). The remainder of the FY17 funding will be obligated in FY18.

3.2.3 Air Force CRP Program Initiatives and Activities

The Air Force CRP provides a strategically driven process that directly links Air Force centers to Air Force Research Laboratory (AFRL) Technical Points-of-Contact (TPOCs) to identify and evaluate Air Force needs and innovative solutions. Since its inception in 2006, the program has been improving technology transition outcomes by accelerating the transition of SBIR/STTR-developed technologies into real-world military and commercial applications. The Air Force CRP approach brings together key stakeholders utilizing Air Force CRP Technology Analysts (TAs) to 1) help focus SBIR/STTR topics on high-priority technology needs, and 2) work with small businesses, system program offices (SPOs), SBIR/STTR Program Managers, Technical Points of Contact (TPOCs), and industry technology integrators to identify and document

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transition objectives, tasks, timing, responsibilities, and funding sources in non-binding SBIR/STTR Technology Transition Plans (STTPs).

Air Force TAs are on location at various Air Force bases supporting Air Force partners, including PEOs, program offices, AFRL and others. The TAs work closely with these organizations to help implement the entire SBIR/STTR process, from topic generation to facilitating the transition of resulting technologies. This close working environment allows the TA to have a better understanding of the customer and their needs. The TAs work with the entire Air Force CRP team to increase the efficacy of the SBIR and STTR programs by aligning topics with stakeholder needs and promoting successful technology transitions and small business successes. The Air Force TAs are fully engaged as the program's boots on the ground supporting the Air Force Life Cycle Management Center (AFLCMC), Air Force Sustainment Center, Space and Missile Systems Center, Nuclear Weapons Center and the Air Force Test Center. Air Force TAs also support the Joint Strike Fighter program as well as the nine technology directorates (TD) within the Air Force Research Laboratory (AFRL). With changing leadership and policies, the TAs remain a constant resource for the PMs at these Centers/PEOs and TDs.

The Air Force CRP continues execution of it is one of a kind Air Force Small Business Industry Days (SBIDs). The Air Force CRP team leveraged their experience, continued to refine the process, and successfully executed another event co-hosted by the Air Force Test Center. This event had over 275 attendees from small businesses, MDCs, and multiple government organizations. Of the attendees, approximately 15% of the small business represented had never before worked with the Air Force. Also at the Test Center event, ten small businesses were selected by the Air Force to brief their capabilities, as well as another 37 firms that were specifically invited by the Air Force to participate. In addition, over 120 one-on-one meetings were conducted regarding upcoming BAAs and potential SBIR/STTR projects that could be transitioned into programs of record. The success and support for these events is evident given that the Air Force Sustainment Center requested to host their second SBID in FY18.

The Air Force CRP team also supports numerous outreach events to meet program goals, promote the Air Force SBIR/STTR CRP mission, provide assistance and conduct one-on-one meetings with current and potential SBIR/STTR companies. In FY17 the team participated in all SBA Road Tours focused on reaching small businesses and underserved communities, such as service-disabled and veteran-owned businesses. The Air Force CRP team participated in over a dozen national, regional and local events, conducting nearly five-hundred one-on-one engagements with current and potential SBIR/STTR firms. The Air Force CRP team continues to work closely with the other services to keep up with the changing climate and assist the warfighter through a presence at the Department of the Navy Forum for SBIR/STTR Transition in Arlington, VA; Beyond Phase II, in Chicago, IL; and by inviting the Navy and DARPA into the TIM and SBID processes.

The Air Force CRP leveraged these various opportunities throughout the year to continue its work on the development and marketing of program opportunities and successes. The Air Force CRP team designed and delivered relevant program messages to key stakeholders using a broad range of methods including printed publications like the Annual Achievements book, Year-in-Review and highly touted Phase III Desk Reference. Social Media outlets like Facebook and Twitter have been employed to expand the program's reach. Additionally in FY17 the CRP team has produced eighteen videos and have numerous other video projects being developed. These

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videos contain testimonials by small businesses and Air Force stakeholders to promote the goals of the program from Innovation to Transition, while demonstrating economic impact as a result of participation in the SBIR/STTR program.

The Air Force CRP continues to see the benefit of building relationships with Major Defense Contractors (MDC), encouraging small business participation, and bringing solutions to AF warfighters. By continuing to utilize tailored and unique technology meetings hosted at MDC facilities, these key stakeholders are brought together, integrating small business capabilities with the larger defense industries, assisting small businesses with visibility into new markets, and increasing return on investment opportunities for the Air Force. In FY17, Air Force CRP Industry Technology Interchange Meetings (TIMs) were conducted with 5 MDCs, Orbital ATK, The Boeing Company, Lockheed Martin, Raytheon SAS, and Northrop Grumman, which allowed for active engagement between 74 SBIR/STTR companies and these MDC partners. Through these events, the Air Force CRP team facilitated over 77 one-on-ones, targeting over 97 different SBIR/STTR projects.

3.2.3 Air Force CRP 2017 Achievements and Results

This year, 31 projects were approved for CRP (i.e. funded) - see Appendix A. Since inception of the pilot, 632 projects were initiated. The total SBIR/STTR funding on CRP projects since inception of pilot is \$1,721M and the total non-SBIR/STTR funding on CRP projects since inception is \$1,883M. SBIR/STTR funding includes Phase I, Phase II, and enhancements to CRP approved projects. Non-SBIR/STTR funding sources include industry's Independent Research and Development (IR&D), SBIR/STTR firm investment, Air Force Programs of Record, AFRL core budget, DoD transition funds, and state small business funds. Twenty-five major contractors participated in STTP/STMP projects.

During 2017 the following 27 were identified as meeting success milestones or having potential for meeting technology transition milestones. The benefits of these efforts are briefly described here:

STTP 2010-22, Picometrix, LLC, In-Process Cure Monitoring of Specialty Material Coatings, AF071-117. Provides real time monitoring of complex coating application critical for F-35's LO properties. Reduces time and expense by enabling inspection during the coating cure process and avoiding rework.

STTP 2011-12, Charles River Analytics, Inc., Perceptual Sensing and Information Displays (PERSEID), AF073-081. Improves operator's ability to collect and process ISR data based on Commander's intent and in support of current operations. PERSEID can reduce the time required for ISR operation planning from twenty hours to one hour.

STTP 2011-51, Advanced Fuel Research, Inc., High-Speed Thermal Imaging of In-Service TBC Blades, AF073-057. A functional high-speed, high resolution thermal imaging system for thermal barrier coating surface temperature mapping and condition monitoring during ground-based development testing of advanced gas turbine engines. Advanced Fuel Research, Inc. has teamed well with AEDC on multiple efforts, saving one customer over \$350,000 in engine testing cost.

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STTP 2012-06, Luna Innovations, Inc., Fastener Fill Material, AF081-039. Reduces fill application and skiving time resulting in significant manufacturing cost savings in labor alone. The F-35 has about 40,000 fasteners joining the composite and metal frame requiring fill material application.

STTP, 2012-13, Utopia Compression Corporation, Maneuverless Monocular Passive Ranging System - PARS2M, AF093-136. Enables remotely piloted aircraft to operate in civil airspace through sense and avoid technology to overcome regulatory barriers and satisfy small size, weight, and power requirements.

STTP 2012-57, Creare, Inc., Hole to Edge, AF112-122. Provides quick high fidelity, non-contact fastener inspection and measurement feature during F-35 manufacturing to ensure critical tolerances. Creare has commercialized the technology production and system support through a subsidiary.

STTP, 2013-13, Physical Sciences, Inc., Halo Lite, AF112-143. Provides a compact, efficient laser illuminator to support intelligence, surveillance and reconnaissance missions requiring 3-D imaging. The Aurora E520 is an off-the-shelf product of Physical Sciences Q-Peak subsidiary.

STTP 2013-18, Craft-Tech, High Speed Store Separation Data Acquisition Techniques, AF093-007. Delivers cost avoidance over the life of the F-35 by providing weapons separation test data and reducing costly flight drop tests required to certify missiles, bombs, and supporting hardware for internal storage.

STTP 2013-23, Picometrix, LLC, Panel Step/Gap Mismatch Measurement, AF082C-001. Provides non-destructive, non-contact, single-side inspection to determine subsurface step/gap dimensions on F-35 aircraft doors and panels including material suites, joint designs, and contours with applicability to other LO aircraft that use these coatings and boots.

STTP 2013-26, MAST Technologies, High Temperature Survivability Coating Materials, N101-041. Improve the temperature capability, toughness, and manufacturing friendly application over the baseline coatings by advancing the spray-on and roll-on highly specialized coating system for the F-35.

STTP 2013-27, Mikro Systems, Inc., Advanced Manufacturing Technologies for Casting Ceramic Turbine Blades, AF06-114. Reduces cost and enables new capability (high-speed engagement), provides technology for Long Range Stand-off (LRSO), reduces blade production time, and saves approximately \$170M in development and production of 1,000 engines for the Supersonic Turbine Engine for Long Range (STELR).

STTP 2013-32, Material Sciences Corporation, Novel Experimental and Analytical Methods for Designing Damage Tolerant Composite Structures, AF093-001. Provides an accepted standard test and analysis framework to lower the cost and time to design and certify composite structures for impact damage tolerance for the military and general aviation.

STTP 2013-33, Luna Innovations, Inc., Durable Rain Repellent Coatings for Aircraft Transparencies, N102-135. Provides a water shedding capability that is not available with current aircraft transparency coatings. Unlike current transparency polishes, the technology provides long-term hydrophobicity, increasing the reliability of the transparency surface treatment, and thus increase level of safety for the pilots and weapon systems. In addition to

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efforts with the Air Force, the technology has also transitioned to other government agencies by demonstrating improved corrosion resistance on metal substrates.

STTP 2013-37, Integument Technologies, Inc., Thin Film EMP Threat Protection for Radome Applications, AF05-273. Thin film applique coating technology incorporates a Frequency Selective Surface (FSS) topcoat for application on an integrated flat and compound curve corner surface, which will minimize potential EMP threats to high cost electronics and computer communication equipment housed inside the shelter.

STTP 2014-15, Linden Photonics, Inc., Development of Avionic Non-Kink Optical Cable (AVNOC), N08-115. Provides a more durable, reliable, affordable, and easily replaceable fiber backbone for current transmission protocols, minimizing signal degradation without modifications to maintenance and support equipment.

STTP 2014-21, ATA Engineering, Inc., Strain Sensor Calibration, N08-025. Reduces cost and improves readiness by adapting proven F-18 technology to the F-35 that self-monitors and reports maintenance requirements. Provides improved accuracy without the aircraft downtime associated with full-scale testing.

STTP, 2014-29, Physical Optics Corp., Digital Aircraft Data Storage System, AF132-001. Provides the F15 with an open systems architecture data transfer compatible with existing mission planning equipment and aircraft data recording. The modular design allows application to other aircraft interfaces (e.g. Fiber Channel, Ethernet, 1553).

STTP, 2014-37, EDAdaptive Computing, Inc., Aircraft Survivability Toolset, AF06-202. Enables key Aircraft Survivability stakeholders to collaborate over an emulated classified network, share documents and comments, and run shared applications containing sensitive material for vulnerability assessments, voting and prioritization of identified vulnerabilities.

STTP, 2014-38, Frontier Technology, Inc., Decision Support Technologies for Weapon System Sustainment Processes and Life Cycle Investment, AF131-116. The Sustainment support analytical model developed by FTI supports wargaming initiatives and logistics analysis with a modeling capability that addresses the impact that the sustainment system has on the ability to conduct war time operations. The reality of modern combat was not modeled in current games, allowing those playing the game to have unrealistic expectations of weapon systems.

STTP 2014-47, Aerobotix, Inc., Automated Aircraft Inlet Coating, AF131-114. Robotic technology which reduces the hours aircraft maintainers are in confined spaces, improves consistency and overall quality of the applied coatings, and reduces the overall hours required to restore the inlets for the lifecycle of the aircraft.

STTP 2014-50, Securboration, Inc., Semantic Services for Enterprise Analytics (SSEA), AF121-050. Helps identify and synchronize DoD research and engineering planning activities in the Defense Technical Information Center (DTIC) NIPR and SIPR environments. DTIC is also exploring adding SSEA capabilities to its new DTIC Search interface.

STMP 2014-W, ThermAvant Technologies, LLC, Next-Generation Micro-chip Carrier for Cooling of Satellite Payload Electronics, AF112-057. Thin, lightweight microchip heat spreader with high thermal conductivity which provides advanced thermal management

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solutions for spacecraft electronics. Since its initial research project for the Air Force, the company has entered dozens of agreements to supply the solution for aerospace and defense applications.

STTP 2015-05, EDaptive Computing, Inc., Trust-Enhancing Monitor Blocking Malware Entry (TrEMBIE), OSD09-IA2. Ensures security of physical computing assets within DoD medical and Common Data Link networks by monitoring and tracking anomalous behavior, and quickly mitigating risks at a lower level than traditional virus scanners.

STTP 2015-20, Mechanical Solutions, Inc., Missile Attitude Determination Device (MADD) for the Joint Standard Instrumentation System (JSIS), AF083-254. Provides an off-board high-accuracy six-degree-of-freedom measurement capability to acquire high-confidence missile signature and trajectory information for use by missile warning system developers.

STTP 2015-21, Physical Sciences, Inc., Compact Efficient Emitter System for the Towed Optical Plume Simulator (TOPS), MDA08-033. Provides a compact efficient emitter system for the Towed Optical Plume Simulator to broaden its capability to include independent multi-band control for surface-to-air-missile plume simulation. This new technology provides the AF with new capability, improved performance, and cost savings.

STTP 2015-27, Dynamic Structures and Materials, LLC, Reliable Cryogenic Flow Controller, NASA X10.01. Developed a reliable cryogenic flow controller. The benefits of the new actuator are high reliability, zero power hold, and reduced cost in the areas of faster chamber cycle times, reduced thermal load, better temperature control, reduced chance of faults related to vacuum deposition, and reduced operator oversight.

STTP 2015-64, eSpin Technologies, Inc., AFSC Air Filtration, AF03-121. Nanofiber based HVAC air filter brings new capabilities of reduces energy use while capturing hazardous waste from OC-ALC depot operations. In addition to the AF SBIR success, eSpin has seen success with other federal agencies as well as commercially within the automotive industry.

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Small Business Innovation Research Commercialization Readiness Program FY17 Air Force Companies Approved for CRP

Company Name	Project Title	Contract #	Topic #	PEO	Investor, Customer, or Fielded System²
MetroLaser, Inc.	A Stereoscopic Laser-Scanner for Measuring Velocity, Pitch, and Yaw of Hypervelocity Projectiles	FA9101-08-C-0026	AF06-300		AEDC/TSTS
Management Systems, Inc.	Cognitive Monitoring System	FA8650-14-C-2432	AF121-170	ISR SOF	AFLCMC/WII
Physical Sciences, Inc.	Industrialization of Coatings for Ceramic Composite Production	N68335-10-C-0317	N08-148	Fighter Bomber	AFLCMC
Torch Technologies, Inc.	JFL Arena Fragment Scoring	FA8651-13-C-0153	AF121-096		780 TS/TSW
Karagozian & Case	Mobile Target Secondary Debris (MTSD) Tool for Joint Weaponing System (JWS)	FA8651-13-C-0152	AF121-095		AFLCMC/EZWC
MMA Design, LLC	A Modular High Power Solar Array for NanoSats	FA9453-12-C-0109	AF103-089	Space	SMC/ADSS
Polaris Sensor Technologies, Inc.	Mini-Cryo Broadband Spectrometer for AEDC 10V Test Chamber	FA9101-08-C-0037	AF071-340		AFTC/AEDC
(ES3) Engineering & Software System Solutions, Inc.	Wing Attachment Assessment	FA8222-11-C-0007	AF071-320		AFSC/EN
Lickenbrock Technologies, LLC	Fast Highly Resolving Computed Tomography Software for Nondestructive Testing	FA9300-13-C-2014	AF121-187		AFNWC
Triton Systems, Inc.	Rain Erosion/PSA Composite for Protection of Aircraft Leading Edges	FA8650-15-C-5600	AF093-114	Fighter Bomber	F-22
Knowledge Based Systems, Inc.	Echelon-Centric, Logistics integrated Planning, Scheduling, and Execution (ECLiPSE)	FA8117-14-C-0012	AF121-213		76 CMXG/QPA
Aptima, Inc.	Confined Space Monitoring System for a Safe & Efficient Depot: Atmospheric Data Network Capability	FA8650-14-C-6537	OSD12-HS2		402 AMXG
CFD Research Corporation	Computational Model for Electrode Erosion by High-Pressure Moving Arcs	FA9550-14-C-0026	AF11-BT25		AEDC/TSTY
Applied Signals Intelligence	SUAS HF/VHF/UHF RF Direction Finding	FA8650-14-C-1738	A11-121		AFLCMC/WINE
Physical Sciences, Inc.	Cost-effective Operationally Response Membrane Antenna (CORMA)	FA9453-14-C-0034	AF121-068		AFRL

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Company Name	Project Title	Contract #	Topic #	PEO	Investor, Customer, or Fielded System²
LSP Technologies, Inc.	Laser Bond Inspection (LBI) for Composite Aircraft	FA8650-08-C-5012	AF071-126		AFLCMC
Physical Sciences, Inc.	Characterization of Ultraviolet Propagation in the Atmosphere (CUPA) for the Joint Standard Instrumentation System (JSIS)	DE-SC0007539	DE-FOA-0000782 Topic 3g		AFMC
SciTec, Inc.	Instrument for the Characterization of Off-axis Direct and Ultraviolet Scatter (CODUS) for the Joint Standard Instrumentation System (JSIS)	W9113M-05-C-0176	MDA04-010		AEDC
Cybernet Systems Corporation	NDI Tracker for Mobile C-Scan Generation	NNX11CB59C	A1.02 (NASA SBIR 2009)		76 AMXG/MXDEN
MZA Associates Corporation	Directed Energy Wind Tunnel Test Methodology	FA9101-15-C-0009	AF131-180		AEDC
Physical Optics Corporation	Compton Scattering Three-Dimensional Imaging System for in-situ Nondestructive Inspection of Large Honeycomb Sandwich Structures and Other Aerospace Components (IMHOS)	FA8501-13-C-0028	AF103-253		AFLCMC/WLN (C-130)
JENTEK Sensors, Inc.	ET-Array NDT for Challenging Structures	FA8117-14-C-0013	AF121-214		F-15
Green Revolution Cooling	Improved Energy Conservation for Data Centers	FA8117-13-C-0010	AF112-205		AFSC/EN
Physical Sciences, Inc.	Rapid Manufacture of Affordable Robust Ceramic & carbon Composite Structures	N00178-07-C-3004	N05-T015		ACC
Cybernet Systems Corporation	Automated Data Cleaners (ADC) for Just-In-Time Maintenance Risk Discover	FA8501-14-C-0024	AF121-225		581 SMXS
Innoflight, Inc.	Gnome Space Secure Communications System Maturization & High-Assurance Certification	FA9453-14-C-0035	AF121-070		SMC/AD
The Design Knowledge Company, Inc.	Innovative Cyber/Infrastructure Threat Assessment Environment	FA8650-13-C-1705	OSD11-IA3		AFRL
Square One Systems Design, Inc.	A Cryo-Vacuum Compatible Positioning System	FA9101-14-C-0005	AF073-131		AEDC
Etegent Technologies, LLC	Cognitive System Accelerator of Knowledge Gain in Human-	FA8650-13-C-6385	AF112-026		NASIC

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Company Name	Project Title	Contract #	Topic #	PEO	Investor, Customer, or Fielded System²
	computation-sensor Analytic Systems				
Solid State Scientific Corporation	Platform-as-a-Service (PaaS) Authority to Operate (ATO) in Amazon Web Services (AWS) GovCloud	FA8750-15-C-0180	AF141-040		AFLCMC/HNII
EDaptive Computing, Inc.	Modeling and Algorithmic Methods for Behavior Anticipation (MAMBA)	N0001412C0225	OSD09-HS3		AFRL

Notes: ¹ Order listed is in numerical order by STTP/STMP Number and does not convey any prioritization of CRP projects.

² Additional information about Investor, Customer, or Fielded System is available on request.

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3.3 Army Commercialization Readiness Program (CRP)

3.2.1 Army CRP Accounting of Funds

Army SBIR Admin Pilot CRP Allocation			
SBIR FY16 Budget	FY16 CRP Budget (1% of Total SBIR Budget)	FY16 CRP Obligations Made in FY16	FY16 CRP Obligations Made in FY17
\$191,832,007	\$1,918,320	\$195K	\$205K
SBIR FY17 Budget	FY17 CRP Budget (1% of Total SBIR Budget)	FY17 CRP Obligations Made in FY17	FY17 CRP Commitments Planned in FY18
\$202,250,000	\$2,022,500	\$0	\$0

3.2.2 Army CRP Funding Narrative

Under the Army’s CRP approach, technical points of contact for all Phase II efforts are encouraged to work with relevant PEOs and the small businesses to identify opportunities where a promising technology has a strong transition potential if technical barriers to PEO adoption are met. Examples of such barriers are need for higher technical maturity, need for additional test articles, and minor specification changes to prototypes to meet PEO designs. These opportunities are vetted by the sponsoring organization and PM SBIR and must include: Technical Director concurrence, tangible investment from the transitioning PEO or other transition partner(s), Statement of Work and Cost Proposal. These requirements ensure that there is real transition opportunity, all stakeholders are in agreement with the approach and investments, and the opportunity can be addressed in a timely manner

3.2.4 Army CRP Program Initiatives and Activities

At the conclusion of the Army’s CPP support contract, it was decided to combine CRP support into the overall SBIR support contract. Administration of CRP has been managed within the provisions of the SBIR support contract effort since 2013.

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3.2.3 Army CRP 2017 Achievements and Results

In FY17, 15 companies were provided additional funding to address the technical barriers slowing adoption of their technologies by acquisition programs. They were provided a total of \$7.6M above the approximately \$18.6M provided under Phase I and Phase II funding for these efforts. An additional \$2.5M was provided from outside (i.e., non-SBIR) sources as initial investments in these CRP efforts. Since the initiation of the Army CRP approach, 130 companies have been provided additional funding. Overall the Army SBIR has provided \$77.3M toward CRP efforts with an additional outside investment of \$60.1M. While too early to provide specifics of success, Army SBIR expects at least a 5:1 return on investment (~\$250M) within the next five years.

SBIR Funding: all SBIR funding applied to each CRP project to include Phase I, Phase II, enhancements and modifications.

Non-SBIR Funding: all sales and investment from outside sources, please include Mission Funding in this total.

Appendix A: Army Small Business Innovation Research Commercialization Pilot Program

FY 2017 Companies Approved for CRP

Company Name ¹	Project Title	Contract #	Topic #	PEO	Investor, Customer, or Fielded System ²
Dignitas Technologies, LLC	Urban Computer Generated Forces (CGF) Models	W900KK-15-C-0010	A13-056	PEO STRI	
Freedom Photonics, LLC	Eye-Safe, High Speed Laser Transceiver for Advanced Tactical Engagement Simulation System	W900KK-15-C-0013	A13-057	PEO STRI	PdM LTS
MaXentric Technologies	C2NET Robust Command and Control Networking	W15P7T-15-C-0003	A13-092	PEO C3T	PM Mission Command
Nanosyntex	Development of	W911QY-	A12-054		

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Company Name¹	Project Title	Contract #	Topic #	PEO	Investor, Customer, or Fielded System²
	Lightweight, Recyclable Low Cost, Nonwoven Cloth Duck Material	14-C-0026			
Nexceris (NexTech Materials, LTD.)	Sulfur Tolerant Solid Oxide Fuel Cell (SOFC) Stack	W56HZV-14-C-0053	A12-068		
Omnitek Partners, LLC	Innovative Polarized Navigation Reference	W15QKN-12-C-0036	A10-043		Northrop Grumman/DARPA
pH Matter, LLC	Innovative Nitrogen-doped Boron Propellants	W15QKN-12-C-0041	A10-044		
Physical Optics Corporation	Predistortion-based Amplifier Linearization Module	W56KGU-15-C-0014	A13-039		I2WD
Physical Optics Corporation	Ambient Energy Conversion System	W911QY-15-C-0012	A13-046		
Precision Combustion, Inc.	Multi-fuel Solution for Commercial Cooking Appliances in Battlefield Kitchens	W911QY-14-C-0099	A13-045		
PsiKick, Inc.	Ultra-Low-Power System-on-Chip (SOC) for Self-Powered Physiological Status Monitor-Enhancement for System Development	W81XWH-16-C-0021	A14-052		USARIEM-RT-PSM Program

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Company Name¹	Project Title	Contract #	Topic #	PEO	Investor, Customer, or Fielded System²
QorTek, Inc.	Warfighter Universal Power Converter (WUPC)	W91CRB-15-C-0030	A13-095	PEO Soldier	PM Soldier Warrior
SA Photonics	Adapting Smartphones for Ocular Diagnosis	W81XWH-13-C-0115	A12-117		PM Medical Devices
SunDanzer Development Incorporated	Solar-Powered High-Efficiency CO2 Refrigeration Technologies	W911QY-16-C-0075	A04-210		
Tethers Unlimited, Inc.	Nanosatellite to Standard Army Handheld Radio Communications System	W9113M-16-C-0008	A12-067		
Tool Inc.	MTBI Protective Mandibular Appliance	W91CRB-14-C-0044	A10-129	PEO Soldier	

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3.2 Navy Commercialization Readiness Program (CRP)

3.2.1 Navy CRP Accounting of Funds

Navy Admin Pilot CRP Allocation			
SBIR FY16 Budget	FY16 CRP Budget (1% of Total SBIR Budget)	FY16 CRP Obligations Made in FY16	FY16 CRP Obligations Made in FY17
\$306,593	\$3,167	\$1,680	\$1,487
SBIR FY17 Budget	FY17 CRP Budget (1% of Total SBIR Budget)	FY17 CRP Obligations Made in FY17	FY17 CRP Commitments Planned in FY18
\$310,677	\$3,107	\$0	\$3,107

3.2.2 Navy CRP Funding Narrative

DON CRP funds were obligated in FY17 (\$1.487 million) for CRP project management/execution including program office support, database management/reporting, contracting, acquisition office assistance, and outreach/prime contractor coordination. Leveraged contractor and government lab resources to provide testing, demonstration, and fleet experimentation for technology transition of CRP projects, with feedback provided to companies. CRP funds also supported firm assistance including due diligence, transition planning, risk reduction assessments and planning, manufacturing/production readiness assessments, technical readiness assessments, and market analysis..

3.2.3 Navy CRP Program Initiatives and Activities

One of the primary initiatives of the DON CRP remains the set-aside and application of approximately twenty percent of overall SBIR funding to selected CRP projects. The projects must meet a high-priority DON need and demonstrate potential for rapid transition into an acquisition Program of Record, fielded system, or future naval capability.

DON has ongoing initiatives and activities that CRP participants can leverage. The Navy SBIR/STTR Transition Program (STP) is available for new Phase II projects and provides market analysis, business planning, and development of marketing materials for a minimum of 12 projects annually. Participation in STP culminates with a technology showcase and presentation at the Forum for SBIR/STTR Transition (FST). This event enables DON to hold one-on-one meetings with Phase II firms to discuss CRP requirements and transition potential of the technologies. In FY 2017, the FST showcased 107 projects represented by 99 different companies.

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Additionally, CRP participants can leverage technical assistance services that include assessments in the areas of risk, manufacturing and production, technology transition, and engineering analysis. DON also offers an enhanced search capability to the public at www.navysbirsearch.com to provide access to information on thousands of SBIR/STTR-developed technologies for those looking to find proven technologies for solving existing problems as well as those looking to partner with firms whose expertise can assist in solving new problems. Additionally, the DON held the Primes Summit meeting which brought together senior DON leaders; S&T, T&E, and Acquisition PEO PMs; with DoD/DON major contractors to discuss integration/leveraging of SBIR/STTR.

3.2.4 Navy CRP 2017 Achievements and Results

The DON approved a total of 27 CRP projects in FY 2017 (see Appendix A), increasing the number of CRP projects to 350 since the inception of the program. Cumulatively, the DON has invested over \$624 million in SBIR funding and over \$111 million in concurrent matching funds to CRP projects, which includes funding for the acceleration of transition efforts on Phase I/II awards. Navy CRP Projects have received more than \$1 billion in Phase III government and non-government funding as reported in the DOD SBIR/STTR Company Commercialization Report.

Appendix A: NAVY Small Business Innovation Research Commercialization Readiness Program

FY 2017 Companies Approved for CRP

Company Name ¹	Project Title	Contract #	Topic #	PEO	Investor, Customer, or Fielded System ²
Analytical Services, Inc.	Improved Stability of Double Base Propellants	N68335-17-C-0140	N092-109	PEO (U&W)	Navy Aircrew Common Ejection System (NACES) ejection seats in F/A-18 aircraft
Arete Associates	Automatic Target Recognition (ATR) Algorithm for Submarine Periscope Systems	N00024-17-C-4028	N08-044	PEO SUB	Virginia Class and Other Submarines
ATC - NY	Typhon	N68335-17-C-0601	N132-099	PEO (U&W)	Joint Mission Planning System
Boston Micromachines Corporation	Large Aperture Micro-Electro-Mechanical Modulating Retro-Reflector Development	N68335-17-C-0508	A06-T005	PEO(Space)	Space Integration Program Office
CFD Research Corporation	Prediction and Mitigation of Back Pain in Military Pilots and Vehicle	N68335-17-C-0088	N111-019	PEO(A)	Model and Evaluation Tool for Rotary/Fixed Wing Pilot and Crew

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Company Name¹	Project Title	Contract #	Topic #	PEO	Investor, Customer, or Fielded System²
	Occupants				Systems Seating
Charles River Analytics Inc.	Topside Optical Processing for Global Unmanned Navy (TOPGUN)	N68335-17-C-0154	OSD12-HS3	ONR	Ship Detection and Classification System for Deployment on Unmanned Surface Vessels
Charles River Analytics Inc.	Service-based Command and Control (C2) for the Forward Deployed Energy and Communications Outpost (C2-FDECO)	N68335-17-C-0169	N091-082	ONR	Resource Management System for Forward Deployed Energy and Communications Support to UUVs
FIRST RF CORPORATION	Thermal Management of Highly Integrated Radio Frequency (RF) Electronics	N68335-17-C-0270	N111-023	PEO(U&W)	MQ-4C Triton
Forward Photonics LLC	Ultra-High Brightness Mid-Infrared Laser Beam Fiber Combiner for Infrared Counter-Measures Applications	N68335-17-C-0147	N112-089	PEO(T)	AN/AAQ-45 Distributed Aperture Infrared Countermeasures (DAIRCM) systems for fixed wing aircraft
Global Engineering and Materials, Inc.	High-Fidelity Residual Strength and Life Prediction Tool for Adhesively Bonded Composite Structures	N68335-17-C-0636	N121-042	PEO(U&W)	MQ-4C Triton
GVD Corporation	Innovative Environmental Protection for Airborne Platforms	N68335-16-C-0272	N093-187	PEO(U&W)	MQ-4C Triton
Heat, Light, and Sound Research, Inc.	Fast Computation of Scattering from Elastic Targets	N00014-17-C-7041	N09-T026	ONR	Improved Detection of Underwater Buried Mines and Unexploded Ordnance
HYPRES. Inc.	Quantum Digital Technology for Wideband Signal Reception	N00014-17-C-2002	N092-154	ONR	Strategic and Tactical Military Satellite Communications
Intelligent Fiber Optic Systems Corporation	Multiplexed Fiber Optic Sensor System for SHM of Ships: Integration & Validation	N68335-17-C-0170	N101-095	ONR	LCS and other Surface Ships

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Company Name¹	Project Title	Contract #	Topic #	PEO	Investor, Customer, or Fielded System²
Kennon Products, Inc	Anti-Ballistic Cabin Liner System for V-22	N68335-17-C-0572	N06-016	PEO (A)	V-22 Osprey
Kinetic Protection	Advanced Ballistic Shielding for Crew Served Weapons Stations	N00024-14-C-4078	N122-132	PEO(Carrier)	CVN Aircraft Carrier & Other Surface Ships
Lambda Science, Inc.	Sensor Exploitation Management System	N68335-17-C-0288	N121-012	PEO(U&W)	Joint Mission Planning System
Lynntech, Inc.	Compact, Logistics Free Electrochemical Reduced Oxygen Breathing Device	N68335-17-C-0293	N132-093	AIR 1.0	Hypoxia Training System
Makai Ocean Engineering, Inc.	Auto-Docking Autonomous Burial Vehicle (AD-ABV)	N68335-17-C-0255	N11A-T017	ONR	Unmanned Underwater Vehicle with Autonomous Docking Capability to Forward Deployed Energy and Communications Support
Materials Research & Design	MULTI SCALE MODEL OF PIN-REINFORCED FOAM CORES	N68335-17-C-0066	N10B-T050	AIR 4.3	Design Tool model for predicting deformity and failure of reinforcing pins in Aerospace composite foam without correlation tests
Mikros Systems Corporation	ADEPT Distance Support Sensor Suite (ADSSS) for MK-99 FCS	N00178-17-C-2006	N02-039	PEO(Ships)	DDG-51 Arleigh Burke Glass Aegis Destroyers and Other Aegis Platforms
QmagiQ, LLC	Develop Advanced Quantum Structures for Large Format Focal Plane Arrays	N68335-17-C-0274	A13A-T014	PEO(T)	Aircraft Imaging Cameras/Sensors
Scalable Network Technologies Inc	Scalable Analysis Environment for Underwater Communication Networks	N68335-17-C-0161	A04-132	ONR	Networking Simulator for the Forward Deployed Energy and Communications Hardware/Software and Algorithm Development & Testing
SimVentions, Inc.	Modeling the Impact of Technology	N00024-17-C-4025	N05-053	PEO(LCS)	Littoral Combat Ship & Other

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Company Name¹	Project Title	Contract #	Topic #	PEO	Investor, Customer, or Fielded System²
	Transition on Ship Operational Capabilities				Surface Ships & Submarines
Soar Technology, Inc.	SBA APPROVAL TO EXCEED THE \$1.5M ON A PII CONTRACT (APPROVAL October 2017) Crew Role-player Enabled by Automated Technology Enhancements (CREATE) Ph II.5	N68335-17-C-0121	N142-090	PEO (A)	P3 & P8A Maritime Patrol Aircraft
Toyon Research Corp.	Distributed Satellite Communications (SATCOM) On-the-Move (OTM) Aperture	N68335-17-C-0516	A09-066	PEO(C4I)	Navy Multiband Terminal (NMT)
Yankee Environmental Systems, Inc.	Next-Generation Marine Atmosphere Observing Instrumentation	N68335-17-C-0073	N08-195	ONR	Improved Weather Forecasting in Support of Naval Aviation Operations at Sea

Notes: ¹ Order listed is alphabetical and does not convey any prioritization of CRP projects.

² Additional information about Investor, Customer, or Fielded System is available on request.

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3.2 MDA Commercialization Readiness Program (CRP)

3.2.1 MDA CRP Accounting of Funds

MDA Admin Pilot CRP Allocation			
SBIR FY16 Budget	FY16 CRP Budget (1% of Total SBIR Budget)	FY16 CRP Obligations Made in FY16	FY16 CRP Obligations Made in FY17
\$0	\$0	\$0	\$0
SBIR FY17 Budget	FY17 CRP Budget (1% of Total SBIR Budget)	FY17 CRP Obligations Made in FY17	FY17 CRP Commitments Planned in FY18
\$73.230	\$.732	\$.732	\$0

3.2.2 MDA CRP Funding Narrative

\$.695 MDA FY17 CRP funds were obligated to the Agency’s Technical, Engineering, Advisory, and Management Support (TEAMS) contract in support of MDA’s Small Business Innovation Research (SBIR) Program office. .037 MDA FY17 CRP funds were obligated toward a Government Civilian billet to manage MDAs CRP.

3.2.3 MDA CRP Program Initiatives and Activities

The vision of MDAs CRP is to provide the Warfighter with an incomparable technological advantage in the arena of Ballistic Missile Defense. The corresponding mission statement is to, “Improve the transition rate of SBIR/STTR developed technologies through outreach, collaboration, and acquisition assistance.” To accomplish the programs mission in FY17, MDA’s CRP focused on the improvement of data collection on transitioning technologies, engagement with prime contractors, business development, business outreach and commercialization support to each of MDA’s research areas.

Improvement of data collection: MDA seeks to improve the method for acquiring program metrics related to the SBIR/STTR Program. Efficient data mining will allow the program to better track characteristics and tendencies the lead to successful transitions and Phase III contracts within the program.

Prime Contractor Engagement: Collaboration with prime contractors is critical to technology insertion into the Ballistic Missile Defense System (BMDS). MDA will coordinate topic ideas and SBIR/STTR portfolio information in pursuit of common areas of interest. MDA will also seek to co-host Technical Interchange Meetings (TIMs) with prime contractors and seek to bridge any communication gaps with the small business community.

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Business Development & Outreach: MDA will participate in outreach events to promote the SBIR/STTR program to the small business community. Participating in one-on-one meetings with small businesses to educate them on the MDA SBIR/STTR process. Increasing the portfolio of small businesses that work with MDA helps to ensure we are capturing state of the art technology. Interacting with the small business community also helps MDA capitalize on technology initiatives outside of the BMDS.

Transition Assistance to MDA Programs: Transition assistance will be provided to SBIR/STTR efforts MDA deems most likely to transition. Assistance will include distribution and marketing of key performance objectives and company accomplishments to programs of record within the BMDS and with prime contractors. CRP analysts will also coordinate acquisition documentation for all Phase III contracts.

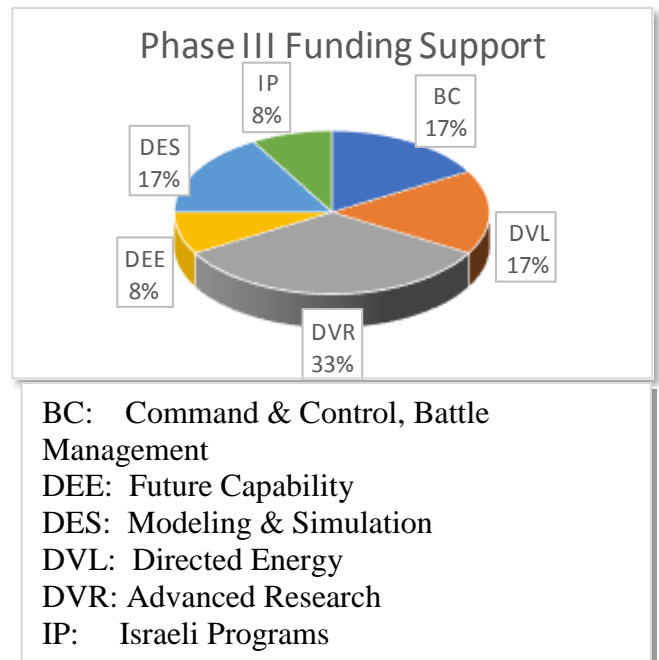
3.2.4 MDA CRP 2017 Achievements and Results

This year, 12 projects were funded through the MDA commercialization readiness program (CRP). All 12 of the projects were SBIR efforts. The total amount awarded for these efforts was \$9,188,929 of non-SBIR funding. All of the non-SBIR funding came from MDA Programs of Record continuing the technological development started in Phase I and Phase II of the SBIR program. In FY17 a total of eight small business were funded with some firms receiving multiple Phase III awards.

Since the inception of the MDA Commercialization Readiness Program, the team has worked hard on outreach with multiple primes to increase the exposure of Phase I and Phase II technologies. The purpose behind MDAs decision to implement a CRP in FY17 was to increase the transition rates of Phase II projects. Over the last few months, multiple primes have shown interest in meetings with the MDA CRP to discuss potential Phase III transitions. FY18 will be the first full year of the MDA CRP. Correspondingly the success of these initiatives will be better measured in the FY18 report.

Related to our specific FY17 goals outlined in section 3.2.3 of this report, the CRP achieved the following accomplishments:

Improvement of data collection: The CRP implemented and new Contract Deliverable to improve data collection and provide baseline metrics for Phase II recipients. Upon contract completion, SBIR and STTR contractors submit a final summary chart to the CRP. Data from the chart is populated into a database for analysis in assessing commercialization and transition potential for each technology. The CRP expects to start collecting its first summary chart data in the third and fourth quarters of FY18.



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Prime Contractor Engagement: The CRP co-hosted two Technical Interchange Meetings (TIMs) with Prime Contractors in FY17. Northrop Grumman sponsored the first TIM in August and was a joint MDA and Air Force SBIR collaboration and networking event bringing together 30 SBIR firms. Orbital ATK sponsored the second collaboration event and brought together 17 SBIR firms. Both events occurred late in FY17 and will be monitored closely in FY18 for corresponding technology transitions.

Business Development & Outreach: The CRP supported the following outreach events in FY17 (listed chronologically): Navy FST (National Harbor, MD), SBIR Spring National Conference (National Harbor, MD), Raytheon Industry Day (Dulles, VA), National Symposium on Missile Materials in Space (Palm Springs, CA), MDA Small Business Breakfast with the Primes (Huntsville, AL), Space and Missile Defense Symposium (Huntsville, AL), 2017 SBA West Road-Tour (California), National Fall Defense Innovation Summit (Tampa, FL).

Transition Assistance to MDA Programs: The CRP developed and processed acquisition packets for all Phase III contracts in FY17. Acquisition packets include all required documentation for contract award by the contracting officer. Completing a packet requires extensive coordination with the Contracting Officer, Research Area Lead, Budget Analyst, Cost Estimator, Security, and often the Small Business. The CRP completed the following packets in FY17:

Welkin Sciences, Configurable Link Test Set, C2BMC

Configurable Link Test Sets (CoLTS-LC), which provided hardware-in-the-loop (HWIL) real time emulation of nuclear scintillation in accordance with DTRA's fading channel models.

Fifth Gait, Alternate Inertial Measurement Unit, Directed Energy

The MDA Mirror Hardness Verification series of experiments determined optical mirror technology verification for the Missile Defense Agency (MDA) mirror technology selection to support the MDA Redesigned Exo-atmospheric Kill Vehicle (RKV) and Multi-Object Kill Vehicle (MOKV) program.

Fifth Gait, Radiation Survivability Testing, Directed Energy

The MDA Hardened IMU technology was developed to support the MDA Redesigned Exo-atmospheric Kill Vehicle (RKV) and Multi-Object Kill Vehicle (MOKV) programs.

Fifth Gait, MDA Telescope Technology Hardness Verification, Advanced Research

The MDA Mirror Hardness Verification series of experiments determined optical mirror technology verification for the Missile Defense Agency (MDA) mirror technology selection to support the MDA Redesigned Exo-atmospheric Kill Vehicle (RKV) and Multi-Object Kill Vehicle (MOKV) program.

Corvid Technologies, Hypervelocity Intercept Modeling, C2BMC

Expanded the capabilities of the Velodyne Intercept Debris Engagement interpolator specifically the application to more massive interceptors (THAAD and EKV), the quantification of uncertainty in the debris model predictions to support Monte-Carlo analyses and the initial development of simulation framework for debris-related BMDS performance assessments.

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Corvid Technologies, Future Capability Hypervelocity Impact Modeling, Future Capability

Corvid further populated the Impact and Intercept Database (IID) to include the following data sources (at a minimum): RD/CNWDI test data to include NMD and GMD Light Gas Gun (LGG) tests, hydrocode simulation results used to support development of the PEELS lethality code, MDA flight test data (RF and EO/IR), PAC-3 and THAAD data located in the SMDC bunker, archival test data from development interceptor designs (LMI and MMI), and SMDC phenomenology data.

Corvid Technologies, Arrow Program Safety Analysis, Israeli Program

Corvid Technologies performed high fidelity analysis using its physics based tools (Velodyne and RavenCFD) to assess flight safety requirements for the MDA/IP Arrow missions. The flight safety analysis consisted of aerodynamic stability analysis of the potential FTS events using the AIA debris catalog, and hazards to aircraft and marine craft after an intercept event.

People Tec, Modeling and Simulation

People Tec developed advanced modeling and simulation capability supporting the Agency's Director of Engineering.

Modus Operandi, Intelligent Adaptive Needs for M&S Systems Engineering, Advanced Research

Modus Operandi, Inc. developed an initial software capability under the Missile Defense Agency's (MDA) Small Business Innovation Research (SBIR) Program. The technology allows users to search Small Business Administration databases for duplicative work within proposal abstracts.

Spectral Sciences, RF Modeling within OSF, Modeling and Simulation

Empirical Wind Model for OSF. Scintillation has been identified as a first-order RF effect and wind will be one of its driving inputs. Spectral proposed porting the empirical Horizontal Wind Model (HWM) to be used as a tool within OSF to provide both tropospheric and thermospheric winds.

Plasma Processes, Thermal Isolation of Solid Rocket Motor Exit Cone, Advanced Research

Plasma increased thermal management capability in nozzle assembly of upper stage aluminized SRMs and investigated alternatives to legacy fibrous insulators in nozzle assembly with non-eroding throats.

Applied Radar, Digital Receiver/Exciter (DREX), Advanced Research

Applied Radar developed Digital Receiver/Exciter (DREX) technology and provided DREX subject matter expertise to USASMDC Reagan Test Site (RTS) in support of the Ground Based Radar-Kwajalein (GBR-K) Improvement and Modernization (I&M) Program.

Appendix A: NAVY Small Business Innovation Research Commercialization Readiness Program

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FY 2017 Companies Approved for CRP

Company Name¹	Project Title	Contract #	Topic #	PEO	Investor, Customer, or Fielded System²
Welkin Sciences	Configurable Link Test Set	HQ0147-17-C-7001	MDA10-003	MDA SBIR PMO	MDA/BC
Fifth Gait	Alternate Inertial Measurement Unit	HQ0147-15-D-7006		MDA SBIR PMO	MDA/DVL
Fifth Gait	Radiation Survivability Testing	HQ0147-17-F-0058		MDA SBIR PMO	MDA/DVL
Fifth Gait	MDA Telescope Technology Hardness Verification	HQ0147-17-F-0059		MDA SBIR PMO	MDA/DVR
Corvid Technologies, Inc.	Hypervelocity Intercept Modeling	HQ0147-14-C-7006	MDA07-019	MDA SBIR PMO	MDA/BC
Corvid Technologies, Inc.	Future Capability Hypervelocity Impact Modeling	HQ0147-14-D-7002		MDA SBIR PMO	MDA/DEE
Corvid Technologies, Inc.	Arrow Program Safety Analysis	HQ0147-15-C-7058	MDA12-009	MDA SBIR PMO	MDA/IP
People Tec, Inc.		HQ0147-15-D-7008		MDA SBIR PMO	MDA/M&S
Modus Operandi	Intelligent Adaptive Needs for M&S Systems Engineering	HQ0147-13-C-7621	MDA11-030	MDA SBIR PMO	MDA/DVR
Spectral Sciences	RF Modeling within OSF	HQ0147-14-C-7045	MDA12-020	MDA SBIR PMO	MDA/DES
Plasma Process	Thermal Isolation of Solid Rocket Motor Exit Cone	HQ0147-14-C-7031	MDA12-027	MDA SBIR PMO	MDA/DVR

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Applied Radar	Digital Receiver/Exciter (DREX)	HQ0147- 15-C- 7202	MDA08- 028	MDA SBIR PMO	MDA/DVR
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Notes:

¹ Order does not convey any prioritization of CRP projects.

² Additional information about Investor, Customer, or Fielded System is available on request.