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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> FY 2018 Navy	<b>Date:</b> May 2017
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<b>Appropriation/Budget Activity</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> / BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>					<b>R-1 Program Element (Number/Name)</b> PE 0603851M / <i>Joint Non-Lethal Weapons Testing</i>							
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2016</b>	<b>FY 2017</b>	<b>FY 2018 Base</b>	<b>FY 2018 OCO</b>	<b>FY 2018 Total</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	493.120	27.976	27.904	29.873	-	29.873	28.305	29.274	28.874	30.515	Continuing	Continuing
2319: <i>Non-Lethal Weapons</i>	493.120	27.976	27.904	29.873	-	29.873	28.305	29.274	28.874	30.515	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

The DoD Non-Lethal Weapons Program was established by the FY96 National Defense Authorization Act. The Office of the Secretary of Defense designated the Commandant of the Marine Corps (CMC) as the DoD NLW Executive Agent (EA). The EA exercises centralized responsibility for joint research and development of non-lethal weapons and technology through the Joint Non-Lethal Weapons Program (JNLWP). The Office of the Under Secretary of Defense for Acquisition, Technology and Logistics serves as the OSD Principal Staff Assistant and oversees, in consultation with the Under Secretary of Defense for Policy, the DoD NLW Executive Agent.

The efforts described in this Program Element (PE) reflect Joint Service research and development (R&D) investment decisions provided by the Joint Non-Lethal Weapons Integrated Product Team, a multi-service flag level corporate board that provides executive oversight and management of the JNLWP for the EA. Research conducted is based on the needs and capabilities of the Services, the Special Operations Command and the Coast Guard, as identified in JROC-approved Joint Non-Lethal Effects Initial Capabilities Documents. This coordinated joint R&D development approach addresses mutual capability gaps and assures the best non-lethal technologies, capabilities and equipment are provided to the operating forces while eliminating duplicative Service investment. Advanced Component Development and Prototypes initiatives provide non-lethal capabilities which directly support the three pillars of the current Quadrennial Defense Review and comprise a fundamental part of DoD's security cooperation efforts to build partner capacity. The resulting capabilities will facilitate a fully integrated non-lethal competency as a complement to lethal firepower, providing force application options for short-of-lethal scenarios.

This PE funds Joint Service research, development, test, and evaluation of non-lethal weapons, devices, munitions and technologies which provide a non-lethal capability to minimize significant injuries as well as undesired damage to property and the environment. Counter-personnel and counter-materiel capability investment areas include directed energy (lasers, millimeter wave and high power microwave), multi-sensory suppression/incapacitation initiatives (acoustics, optical, electro-muscular incapacitation), and other emergent technologies transitioning from coordinated JNLWP Science and Technology PE initiatives. Investments also focus on Joint and allied experimentation, exercise, demonstration and assessment of advanced component and prototype initiatives in order to assist transition of suitable and effective capabilities to both joint and allied operational applications.

The Joint Non-Lethal Weapons Directorate is designated as a R&D organization and was established by the EA to manage the day to day research and development activities of the DoD's JNLWP. Each Service is responsible for their procurement and operating support costs.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy				Date: May 2017	
Appropriation/Budget Activity		R-1 Program Element (Number/Name)			
1319: Research, Development, Test & Evaluation, Navy / BA 4: Advanced Component Development & Prototypes (ACD&P)		PE 0603851M / Joint Non-Lethal Weapons Testing			
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	29.444	27.904	29.698	-	29.698
Current President's Budget	27.976	27.904	29.873	-	29.873
Total Adjustments	-1.468	0.000	0.175	-	0.175
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.794	0.000			
• SBIR/STTR Transfer	-0.674	0.000			
• Program Adjustments	0.000	0.000	0.000	-	0.000
• Rate/Misc Adjustments	0.000	0.000	0.175	-	0.175
Change Summary Explanation					
The increase of \$1.969M is to support new initiatives in Counter-Materiel Advanced Component Development and Prototypes and Joint and Allied Exercise, Experimentation, Demonstration and Assessment.					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy										Date: May 2017		
Appropriation/Budget Activity 1319 / 4					R-1 Program Element (Number/Name) PE 0603851M / Joint Non-Lethal Weapons Testing				Project (Number/Name) 2319 / Non-Lethal Weapons			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2319: Non-Lethal Weapons	493.120	27.976	27.904	29.873	-	29.873	28.305	29.274	28.874	30.515	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
This project develops non-lethal weapon (NLW) capabilities that minimize fatal or permanent injuries and undesired damage to property and the environment. These capabilities are designed to stun, incapacitate, or hinder movement of individuals, crowds or equipment. The availability of NLW allows commanders less than lethal options, particularly in urban warfare and military operations other than war, i.e. peacekeeping, humanitarian assistance and disaster relief, as well as special operations. The increase of \$1.969M is to support new initiatives in Counter-Materiel Advanced Component Development and Prototypes and Joint and Allied Exercise, Experimentation, Demonstration and Assessment.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Counter-Personnel Advanced Component Development and Prototypes  Articles:								11.303	14.036	12.033	0.000	12.033
								-	-	-	-	-
FY 2016 Accomplishments: - Continued coordination and requirements development for Service counter-personnel (CP) prototyping initiatives within the JNLWP. This includes SOCOM and USCG. - Continued development and assessment of Service-led CP NL prototype initiatives. - Continued maturation of CP directed energy technologies to increase system efficiencies and reduce system size, weight and cost in preparation for transition to joint acquisition programs of record. - Continued the advanced development of CP emerging technologies to support Service capability gaps and priorities as they support the Combatant Commanders. - Continued technology maturation and risk reduction of competing approaches to inform decisions for Service capability development. - Continued prototype development and assessment of advanced payloads for technological capabilities relevant to emerging counter-personnel capability gaps.												

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017			
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603851M / Joint Non-Lethal Weapons Testing	Project (Number/Name) 2319 / Non-Lethal Weapons				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<div>- Continued prototype development and demonstration for the most promising technologies employing multisensory stimuli. Specifically, completed prototype development of the multi-bang flashbang grenade and the Distributed Sound and Light Array (DSLA).</div> <div>- Continued program management support for CP efforts.</div> <div>- Mission Payload Module (MPM) Engineer and Manufacturing Development contract terminated for convenience and returned to Technology Maturation and Risk Reduction acquisition phase.</div> <div>- Initiated munitions testing and acquisition documentation of NL capability to deny, move and suppress individuals at long ranges from currently fielded weapons systems.</div> <div>FY 2017 Plans:</div> <div>- Continue all efforts from FY 2016 except those noted as completed.</div> <div>FY 2018 Base Plans:</div> <div>- Continue all efforts from FY 2017 except those noted as completed.</div> <div>FY 2018 OCO Plans:</div> <div>N/A</div>						
<div>Title: Counter-Materiel Advanced Component Development and Prototypes</div> <div>Articles:</div> <div>FY 2016 Accomplishments:</div> <div>- Continued coordination and requirements development for Service counter-material (CM) prototyping initiatives within the JNLWP. This includes SOCOM and USCG.</div> <div>- Continued development and assessment of Service-led CM NL prototype initiatives.</div> <div>- Continued maturation of CM directed energy technologies to increase system efficiencies and reduce system size, weight and cost in preparation for transition to joint acquisition programs of record.</div> <div>- Continued the advanced development of Counter-Materiel emerging technologies to support Service capability gaps and priorities as they support the Combatant Commanders.</div> <div>- Continued technology maturation and risk reduction of competing approaches to inform decisions for Service capability</div>		10.545 -	9.883 -	11.336 -	0.000 -	11.336 -

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
development. - Continued prototype development and assessment of advanced payloads for technological capabilities relevant to emerging counter-materiel capability gaps. - Continued program management support for CM efforts. - Initiated development of the conceptual design of non-lethal Directed Energy (DE) vessel-stopping capability, including electro-magnetic and engagement modeling, platform feasibility and integration studies, and target characterization and validation.  <b>FY 2017 Plans:</b> - Continue all efforts from FY 2016 except those noted as completed. - Initiate production qualification testing of a Service-endorsed pre-emplaced, counter-materiel, counter vehicle stopping capability.  <b>FY 2018 Base Plans:</b> - Continue all efforts from FY 2017 except those noted as completed. - Initiate Critical Design Review for counter material: Radio Frequency vehicle stopper prototype capability  <b>FY 2018 OCO Plans:</b> N/A						
Title: Joint and Allied Exercise, Experimentation, Demonstration and Assessment		6.128	3.985	6.504	0.000	6.504
Articles:		-	-	-	-	-
FY 2016 Accomplishments: - Continued modeling and simulation (M&S) of NLWs in warfighter training/gaming models and performance effects data collection/population to demonstrate/analyze NL effects and support optimization of training. - Continued evaluation of NLWs by Service warfighting laboratories and Joint Staff, J7, Joint and Coalition Warfighting for direct user feedback of various non-lethal (NL) technologies and munitions to include policy and strategy and strategic communication. - Continued engagement with NATO on cooperative security efforts, to include providing input for Systems Analysis and Studies (SAS) Panels and NATO assessment of NLW in appropriate allied scenarios and exercises. Specifically, completed						

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Appropriation/Budget Activity 1319 / 4		R-1 Program Element (Number/Name) PE 0603851M / Joint Non-Lethal Weapons Testing	Project (Number/Name) 2319 / Non-Lethal Weapons		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)					
	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
the 2015 NATO Non-Lethal Technology Exercise - Maritime (NNTEX-15M). - Continued interaction with Combatant Commander staffs to evaluate emerging NLW capabilities and their utility in theater operations and Defense of the Homeland missions. - Continued effort to assess the utility, effect, and effectiveness of technologies for incapacitating personnel, clearing facilities, stopping vehicles and vessels, and denying enemy access to protected areas. - Continued to identify, test, and evaluate newly developed commercial products that may meet Joint service requirements for specific non-lethal capability set common items. Specifically, certified a two-way translation device for Service capability sets. - Continued program management support for Joint and Allied Exercise, Experimentation, Demonstration and Assessment efforts. - Initiated support of 3 Combatant Commanders (CCMD) with demonstrating and assessing NLW capabilities for port opening operations; Humanitarian Assistance and Disaster Relief (HA/DR) and Counter-Transnational Organized Crime (CTOC) operations; and harbor and in-transit security operations.  <b>FY 2017 Plans:</b> - Continue all efforts from FY 2016 except those noted as completed. - Complete demonstration and assessment of port opening operations and in-transit security operations. - Complete 2016 NATO Non-Lethal Technology Exercise - Land (NNTEX-16L) - Initiate support of two CCMDs with demonstrating and assessing NLW capabilities for vessel interdiction and counter-migration exercises.  <b>FY 2018 Base Plans:</b> - Continue all efforts from FY 2017 except those noted as completed. - Initiate Concept Development Assessment Game in support of the NATO Defense Against Terrorism 2017-18 Program of Work. - Initiate leadership of the NATO Special Area Study 133 (SAS-133) panel addressing NL effects against Unmanned Aerial Systems (UAS).  <b>FY 2018 OCO Plans:</b> N/A					
Accomplishments/Planned Programs Subtotals	27.976	27.904	29.873	0.000	29.873

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<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603851M / <i>Joint Non-Lethal Weapons Testing</i>	<b>Project (Number/Name)</b> 2319 / <i>Non-Lethal Weapons</i>	

**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u> <u>Base</u>	<u>FY 2018</u> <u>OCO</u>	<u>FY 2018</u> <u>Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• PE 0602651M: <i>Joint Non-Lethal Weapons Applied Research</i>	5.956	6.327	6.425	-	6.425	6.425	6.425	6.425	6.553	Continuing	Continuing
• PE 0603651M: <i>Joint Non-Lethal Weapons Advanced Technology Development</i>	12.374	13.117	13.448	-	13.448	13.387	13.387	13.387	13.655	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

The JNLW Program strategy is to continue to pursue the fielding of NLW systems through modifying Commercial-Off-The-Shelf (COTS) products for near term capabilities and the development of new technology NLW systems in various stages of acquisition. These are balanced with efforts in state-of-the-art technology investment, experimentation, and modeling and simulation. The acquisition strategy for each weapon system is largely Lead Service dependent. The JNLWP provides RDT&E funding while the Services are responsible for procurement and operations and maintenance funding. For complex development programs, such as directed energy research, JNLWP RDT&E funds will support each Service's RDT&E joint application efforts.

**E. Performance Metrics**

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy												Date: May 2017			
Appropriation/Budget Activity 1319 / 4						R-1 Program Element (Number/Name) PE 0603851M / Joint Non-Lethal Weapons Testing				Project (Number/Name) 2319 / Non-Lethal Weapons					
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
NLW Product Development	MIPR	ARDEC : Picatinny, NJ	53.647	1.085	Oct 2015	1.010	Oct 2016	1.129	Oct 2017	-		1.129	Continuing	Continuing	Continuing
NLW Product Development	MIPR	SOCOM : McDill AFB, FL	25.815	0.250	Oct 2015	0.275	Oct 2016	0.283	Oct 2017	-		0.283	Continuing	Continuing	Continuing
NLW Product Development	Various	NSWC : Various	37.334	4.930	Oct 2015	4.688	Oct 2016	4.829	Oct 2017	-		4.829	Continuing	Continuing	Continuing
NLW Product Development	MIPR	USAF : Ft. Sam Houston AFB, TX	57.509	0.707	Oct 2015	0.670	Oct 2016	0.690	Oct 2017	-		0.690	Continuing	Continuing	Continuing
NLW Product Development	Various	MCSC : Quantico, VA	31.033	1.254	Oct 2015	1.432	Oct 2016	1.475	Oct 2017	-		1.475	Continuing	Continuing	Continuing
NLW Product Development	Various	Uniformed Services : Various	156.649	10.993	Oct 2015	10.918	Oct 2016	12.442	Oct 2017	-		12.442	Continuing	Continuing	Continuing
Prior Year NLW Product Development	Various	Various : Various	65.401	0.000		0.000		0.000		-		0.000	0.000	65.401	-
Subtotal			427.388	19.219		18.993		20.848		-		20.848	-	-	-
Remarks															
Joint Program funds are distributed amongst the USA, USAF, USN, USMC, SOCOM, and USCG in support of NLW research and development efforts. Each Cost Category Item does not correlate to an individual project/effort. They fund multiple non-lethal projects/efforts that are incrementally funded throughout the fiscal year as each service identifies the project/effort requiring funding. October award dates reflect the start of incremental funding and does not indicate that the full amount will be awarded in October.															
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
NLW Support Cost	WR	NSWC : Dahlgren, VA	16.198	0.576	Oct 2015	0.600	Oct 2016	0.618	Oct 2017	-		0.618	Continuing	Continuing	Continuing
Subtotal			16.198	0.576		0.600		0.618		-		0.618	-	-	-



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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy												Date: May 2017			
Appropriation/Budget Activity 1319 / 4						R-1 Program Element (Number/Name) PE 0603851M / Joint Non-Lethal Weapons Testing				Project (Number/Name) 2319 / Non-Lethal Weapons					
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
JNLW Management Support	Various	MCSC : Quantico, VA	8.813	8.181	Oct 2015	8.311	Oct 2016	8.407	Oct 2017	-		8.407	Continuing	Continuing	Continuing
Prior Year Management Services	Various	Various : Various	40.721	0.000		0.000		0.000		-		0.000	0.000	40.721	-
Subtotal			49.534	8.181		8.311		8.407		-		8.407	-	-	-
Remarks															
The JNLW Management Support was previously incorporated into the various cost categories instead of being displayed in the corresponding section of the R-3. The Management Services section of the R-3 now reflects the amounts for civilian salaries and contractor program management. The funding fluctuates across the R-2A categories based on the demand signals of the Services, USSOCOM, and the USCG.															
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			493.120	27.976		27.904		29.873		-		29.873	-	-	-
Remarks															
Joint Program funds are distributed amongst the USA, USAF, USN, USMC, SOCOM, and USCG in support of NLW research and development efforts. Each Cost Category Item does not correlate to an individual project/effort. They fund multiple non-lethal projects/efforts that are incrementally funded throughout the fiscal year as each service identifies the project/effort requiring funding. October award dates reflect the start of incremental funding and does not indicate that the full amount will be awarded in October.															

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy

Date: May 2017

Appropriation/Budget Activity

1319 / 4

R-1 Program Element (Number/Name)

PE 0603851M / Joint Non-Lethal Weapons Testing

Project (Number/Name)

2319 / Non-Lethal Weapons

Proj 2319	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Counter Vehicle: Radio Frequency Vehicle Stopping (RFVS) Technologies																												
		PDR												CDR														
																	ADM Dev											
Counter Vessel: Vessel Stopping Prototype (VSP) Technology Development																												
Millimeter Wave (mmW) Radio Frequency (RF): Active Denial Technologies (ADT)																												
		ADM Val																										
Counter Personnel: Long Range Suppression Prototype																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details: FY 2018 Navy</b>			<b>Date:</b> May 2017
<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603851M / <i>Joint Non-Lethal Weapons Testing</i>	<b>Project (Number/Name)</b> 2319 / <i>Non-Lethal Weapons</i>	

**Schedule Details**

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 2319</b>				
Counter Vehicle: Radio Frequency Vehicle Stopping (RFVS) Technologies: Preliminary Design Review	2	2016	2	2016
Counter Vehicle: Radio Frequency Vehicle Stopping (RFVS) Technologies: Critical Design Review	4	2018	2	2020
Counter Vehicle: Radio Frequency Vehicle Stopping (RFVS) Technologies: Advanced Demonstration Model (ADM) Development	1	2019	4	2021
Counter Vehicle: Radio Frequency Vehicle Stopping (RFVS) Technologies: Pre-planned Product Improvement	3	2021	4	2022
Counter Vessel: Vessel Stopping Prototype (VSP) Technology Development: Advanced Demonstration Model (ADM) Development	1	2016	1	2021
Millimeter Wave (mmW) Radio Frequency (RF): Active Denial Technologies (ADT): Advanced Demonstration Model (ADM) Validation	1	2016	3	2016
Millimeter Wave (mmW) Radio Frequency (RF): Active Denial Technologies (ADT): Size Weight Power and Cooling Improvements	4	2016	4	2018
Millimeter Wave (mmW) Radio Frequency (RF): Active Denial Technologies (ADT): ADM Military Utility Assessment (MUA)	4	2018	1	2020
Counter Personnel: Long Range Suppression Prototype: Marking Dye Integration; Ballistics and qualification testing	1	2017	3	2020