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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2020 The Joint Staff **Date:** March 2019

<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 6: RDT&amp;E Management Support</i>	<b>R-1 Program Element (Number/Name)</b> PE 0303166J <i>I Support to Information Operations (IO) Capabilities</i>
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COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
Total Program Element	35.136	0.673	0.652	0.553	-	0.553	0.641	0.641	0.641	0.641	Continuing	Continuing
001: <i>Joint Information Operations Range</i>	35.136	0.673	0.652	0.553	-	0.553	0.641	0.641	0.641	0.641	Continuing	Continuing

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

The Joint Information Operations Range (JIOR) provides DoD with a closed-loop network that forms a global live-fire information operations range complex. JIOR uses encrypted tunneling over existing transport networks to conduct mission rehearsal, training, testing, concept development and experimentation in support of Information Operations (IO), Electronic Warfare (EW), Offensive Cyber Operations (OCO), Defensive Cyber Operations (DCO), Spectrum Warfare, Space Operations, and Special Operations Forces mission areas in a realistic threat representative environment. JIOR provides the capability to train and certify Cyber Mission Forces on the full spectrum of cyber weapons/capabilities without risk of observation or fratricide. JIOR is unique within the Department of Defense and is accredited by DIA for operations at Unclassified through Top Secret-Special Compartment Information (TS-SCI) in a Multiple Independent Levels of Security (MILS) environment. JIOR is approved for use by Special Access Programs (SAP), Special Access Required Programs (SAR), and for Special Technical Operations (STO). JIOR provides Combatant Commands, Services and Agencies (C/S/A's) and key allied partners the ability to test deployment and collaboratively gain insights into advanced cyberspace and Electronic Warfare (EW) capabilities under current and future operational environments. JIOR integrates available cyberspace ranges with the training/test audience providing access to low density/high demand test and training resources including critical infrastructure, cyber targets, internet traffic, and opposing forces. JIOR supports Presidential policy and CJCS mandates for training, certification, and recertification of 6000+ cyber mission forces and DoD/Interagency cyber vulnerability assessments. C/S/A's conduct hundreds of mission rehearsal, training, testing, and experimentation events on the JIOR annually.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>
Previous President's Budget	0.673	0.652	0.650	-	0.650
Current President's Budget	0.673	0.652	0.553	-	0.553
Total Adjustments	0.000	0.000	-0.097	-	-0.097
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Program adjustment	-	-	-0.097	-	-0.097

**Change Summary Explanation**

Project level funding reflects minor program adjustment to maintain balance at the program level.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2020 The Joint Staff										<b>Date:</b> March 2019		
<b>Appropriation/Budget Activity</b> 0400 / 6					<b>R-1 Program Element (Number/Name)</b> PE 0303166J / Support to Information Operations (IO) Capabilities				<b>Project (Number/Name)</b> 001 / Joint Information Operations Range			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
001: Joint Information Operations Range	35.136	0.673	0.652	0.553	-	0.553	0.641	0.641	0.641	0.641	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

The Joint Information Operations Range (JIOR) provides DoD with a closed-loop network that forms a global live-fire information operations range complex. JIOR uses encrypted tunneling over existing transport networks to conduct mission rehearsal, training, testing, concept development and experimentation in support of Information Operations (IO), Electronic Warfare (EW), Offensive Cyber Operations (OCO), Defensive Cyber Operations (DCO), Spectrum Warfare, Space Operations, and Special Operations Forces mission areas in a realistic threat representative environment. JIOR provides the capability to train and certify Cyber Mission Forces on the full spectrum of cyber weapons/capabilities without risk of observation or fratricide. JIOR is unique within the Department of Defense and is accredited by DIA for operations at Unclassified through Top Secret-Special Compartment Information (TS-SCI) in a Multiple Independent Levels of Security (MILS) environment. JIOR is approved for use by Special Access Programs (SAP), Special Access Required Programs (SAR), and for Special Technical Operations (STO). JIOR provides C/S/A's and key allied partners the ability to test deployment and collaboratively gain insights into advanced cyberspace and Electronic Warfare (EW) capabilities under current and future operational environments. JIOR integrates available cyberspace ranges with the training/test audience providing access to low density/high demand test and training resources including critical infrastructure, cyber targets, internet traffic, and opposing forces. JIOR supports Presidential policy and CJCS mandates for training, certification, and recertification of 6000+ cyber mission forces and DoD/Interagency cyber vulnerability assessments. C/S/A's conduct hundreds of mission rehearsal, training, testing, and experimentation events on the JIOR annually.

**B. Accomplishments/Planned Programs (\$ in Millions)**

	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>
<b>Title:</b> Joint Information Operations Range	0.673	0.652	0.553
<b>Description:</b> The Joint Information Operations Range (JIOR) is a closed-loop network that forms a live-fire, distributed range utilizing encrypted tunneling to conduct training, testing, and experimentation in a threat representative environment to support Cyberspace and Electronic Warfare mission areas. This project is 100 percent cyber.			
<b>FY 2019 Plans:</b> Operate and sustain JIOR developmental baseline network (the TICnet) and Joint Test & Integration Lab (JTIL). These assets are used to test & integrate new networking technologies/hardware/software that will be used on the JIOR. The assets are also used for off-net troubleshooting and test of new JIOR network configurations in support of configuration control and cybersecurity prior to being deployed on the operational JIOR.			
<b>FY 2020 Plans:</b>			

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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>
Continue testing and evaluating new, cutting edge technologies and refining networking configurations for optimization of the JIOR. Refine network automation strategy.				
<b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> FY 2020 project level funding decrease reflects minor program adjustment to maintain balance at the program level.				
<b>Accomplishments/Planned Programs Subtotals</b>		0.673	0.652	0.553
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A				
<b>Remarks</b>				
<b>D. Acquisition Strategy</b> N/A				
<b>E. Performance Metrics</b> The metrics below reflect JIOR research and development goals to test newly available hardware and software (including automation software) that supports selection of a modernized network architecture for the future JIOR.				
<ol style="list-style-type: none"> <li>1. Reduction in network configuration/reconfiguration time for use/reuse of DoD designated cyber ranges and available capability providers due to JIOR modernization and technology insertion.</li> <li>2. Estimated man-hours saved due to transforming manual integration of ranges, capability providers and users to automated integration.</li> <li>3. Sufficient capacity &amp; agility to support Cyber Mission Forces force development and systems cybersecurity assessments &amp; testing (outcomes).</li> <li>4. Improved rapid response for short-notice mission rehearsal requirements from days to on-demand (outcomes).</li> </ol>				