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Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Air Force										Date: February 2019		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development					R-1 Program Element (Number/Name) PE 0207573F I National Technical Nuclear Forensics							
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	-	2.307	1.788	1.788	0.000	1.788	0.397	0.000	0.000	0.000	0.000	6.280
674881: Prompt Diagnostics	-	2.307	1.788	1.788	0.000	1.788	0.397	0.000	0.000	0.000	0.000	6.280
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

National Technical Nuclear Forensics (NTNF) is the collection, analysis and evaluation of pre- and post-detonation radiological and nuclear materials, devices, and debris as well as the immediate effects created by a nuclear detonation. This program element may include necessary civilian pay expenses required to manage, execute, and deliver National Technical Nuclear Forensics. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, 0605898F, and 0605833F.

As directed in the FY 2018 NDAA, Sec 825, amendment to PL 114-92 FY 2016 NDAA, Sec 828 Penalty for Cost Overruns, the FY 2018 Air Force penalty total is \$14.373M. The calculated percentage reduction to each research, development, test and evaluation and procurement account will be allocated proportionally from all programs, projects, or activities under such account.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

<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	2.307	1.788	1.788	0.000	1.788
Current President's Budget	2.307	1.788	1.788	0.000	1.788
Total Adjustments	0.000	0.000	0.000	0.000	0.000
• 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			
• Other Adjustments	0.000	0.000	0.000	0.000	0.000

## **Change Summary Explanation**

FY 2019 funds include \$0.004 million withhold pending final determination of Penalty for Cost Overruns in accordance with PL 114-92 as amended by PL 115-91 section 825(a).

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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>								<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	
<b>Title:</b> Nuclear Forensics - Prompt Diagnostics  <b>Description:</b> Develop diagnostic detection systems to immediately record signals resulting from a nuclear detonation. These event signature elements support weapon and event characterization analysis for the purposes of identifying the weapon classification, magnitude of the detonation (yield), and Reaction Time History (RTH) of the device. The combination of these elements with radiochemical analysis enables analysts to distinguish between wide ranges of nuclear weapon designs and origin, supporting the national attribution assessment process.  <b>FY 2019 Plans:</b> Continue to develop Prompt Diagnostics detection system. Focused areas include but are not limited to prompt output signal detection and nuclear debris collection analysis and evaluation.  <b>FY 2020 Plans:</b> Will continue to develop Prompt Diagnostics detection system. Focused areas include but are not limited to prompt output signal detection and nuclear debris collection analysis and evaluation.  <b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> No change from FY19 to FY20								2.307	1.788	1.788	
<b>Accomplishments/Planned Programs Subtotals</b>								2.307	1.788	1.788	
<b>D. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</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>
• OPAF 03 Line Item 834320: <i>National Technical Nuclear Forensics</i>	5.711	6.070	4.581	-	4.581	7.163	7.291	8.707	7.554	Continuing	Continuing
<b>Remarks</b>											
<b>E. Acquisition Strategy</b>											
Will continue development of Prompt Diagnostics detection systems. Focus areas include but are not limited to prompt output signal detection and nuclear debris collection analysis, evaluation, technical data package, documentation, revalidate documented design with representative articles, logistics product data, and product support analysis. Using a phased approach with a single integrator to incrementally deliver technical data and logistics product data by funding various nuclear related government organizations/FFRDC's throughout the nation. Phase 1 and 2 are focused on documenting and delivering technical data packages, developing configuration status accounting, and Product Support Analysis/Logistics Product Data.											

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<b>F. Performance Metrics</b> Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.		

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2020 Air Force													<b>Date:</b> February 2019		
<b>Appropriation/Budget Activity</b> 3600 / 7						<b>R-1 Program Element (Number/Name)</b> PE 0207573F / <i>National Technical Nuclear Forensics</i>				<b>Project (Number/Name)</b> 674881 / <i>Prompt Diagnostics</i>					
<b>Product Development (\$ 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>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Nuclear Forensics - Prompt Diagnostics	MIPR	DOE : Kansas City, MO	-	2.307	Feb 2018	1.538	Jan 2019	1.538	Dec 2019	-		1.538	Continuing	Continuing	-
<b>Subtotal</b>			-	2.307		1.538		1.538		-		1.538	Continuing	Continuing	N/A
<b>Remarks</b> Multiple nuclear related organizations throughout the nation receive funds to work towards the completion of the prompt diagnostics system.															
<b>Management Services (\$ 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>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
PMA: Other Govt Cost	Various	Not specified. : Dayton, OH	-	-		0.250	May 2019	0.250	May 2020	-		0.250	Continuing	Continuing	-
<b>Subtotal</b>			-	-		0.250		0.250		-		0.250	Continuing	Continuing	N/A
			<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>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>			-	2.307		1.788		1.788		-		1.788	Continuing	Continuing	N/A
<b>Remarks</b>															

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2020 Air Force										<b>Date:</b> February 2019			
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0207573F / <i>National Technical Nuclear Forensics</i>					<b>Project (Number/Name)</b> 674881 / <i>Prompt Diagnostics</i>			

	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b><i>Unites States Prompt Diagnostics System</i></b>																												
Nuclear Forensics - Prompt Diagnostics																												
- Phase 1: Developmental Technical Data Package																												
- Phase 2: Complete Technical Data Package, Configuration Status Accounting, and Product Support Analysis/Logistics Product Data																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2020 Air Force		<b>Date:</b> February 2019
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0207573F / <i>National Technical Nuclear Forensics</i>	<b>Project (Number/Name)</b> 674881 / <i>Prompt Diagnostics</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Unites States Prompt Diagnostics System</i></b>				
Nuclear Forensics - Prompt Diagnostics	1	2018	4	2021
- Phase 1: Developmental Technical Data Package	1	2018	4	2018
- Phase 2: Complete Technical Data Package, Configuration Status Accounting, and Product Support Analysis/Logistics Product Data	1	2018	1	2021