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Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Air Force **Date:** February 2020

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0207573F / <i>National Technical Nuclear Forensics</i>
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COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
Total Program Element	-	1.723	1.788	0.396	0.000	0.396	0.000	0.000	0.000	0.000	0.000	3.907
674881: <i>Prompt Diagnostics</i>	-	1.723	1.788	0.396	0.000	0.396	0.000	0.000	0.000	0.000	0.000	3.907
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 weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F.

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. Program Change Summary (\$ in Millions)

	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021 Base</u>	<u>FY 2021 OCO</u>	<u>FY 2021 Total</u>
Previous President's Budget	1.788	1.788	0.397	0.000	0.397
Current President's Budget	1.723	1.788	0.396	0.000	0.396
Total Adjustments	-0.065	0.000	-0.001	0.000	-0.001
• 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	-0.065	0.000			
• Other Adjustments	0.000	0.000	-0.001	0.000	-0.001

C. Accomplishments/Planned Programs (\$ in Millions)

	FY 2019	FY 2020	FY 2021
Title: Nuclear Forensics - Prompt Diagnostics	1.723	1.788	0.396
Description: 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			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2019	FY 2020	FY 2021
elements with radiochemical analysis enables analysts to distinguish between wide ranges of nuclear weapon designs and origin, supporting the national attribution assessment process.			
<i>FY 2020 Plans:</i> 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.			
<i>FY 2021 Plans:</i> 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.			
<i>FY 2020 to FY 2021 Increase/Decrease Statement:</i> Funding decreased due to ramp down of research and development portion of program.			
Accomplishments/Planned Programs Subtotals	1.723	1.788	0.396

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u> <u>Base</u>	<u>FY 2021</u> <u>OCO</u>	<u>FY 2021</u> <u>Total</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPAF 03 Line Item 834320: <i>National Technical Nuclear Forensics</i>	6.070	4.581	5.208	-	5.208	3.995	4.946	3.998	7.136	Continuing	Continuing

Remarks

E. Acquisition Strategy
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 2 is focused on documenting and delivering technical data packages, developing configuration status accounting, and Product Support Analysis/Logistics Product Data.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Air Force **Date:** February 2020

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207573F / <i>National Technical Nuclear Forensics</i>	Project (Number/Name) 674881 / <i>Prompt Diagnostics</i>
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Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Nuclear Forensics - Prompt Diagnostics	MIPR	DOE : Kansas City, MO	-	1.723	Jan 2019	1.364	Jan 2020	0.396	Dec 2020	-		0.396	0.000	3.483	-
Subtotal			-	1.723		1.364		0.396		-		0.396	0.000	3.483	N/A

Remarks
Multiple nuclear related organizations throughout the nation receive funds to work towards the completion of the prompt diagnostics system.

Management Services (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Management Services	C/CPAF	Not specified. : TBD	-	-		0.424		-		-		-	0.000	0.424	-
Subtotal			-	-		0.424		-		-		-	0.000	0.424	N/A

			Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	1.723	1.788	0.396	-	0.396	0.000	3.907	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2021 Air Force		Date: February 2020
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	FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025			
	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

<i>Unites States Prompt Diagnostics System</i>	
Nuclear Forensics - Prompt Diagnostics	[REDACTED]
- Phase 2: Complete Technical Data Package, Configuration Status Accounting, and Product Support Analysis/Logistics Product Data	[REDACTED]

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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Air Force		Date: February 2020
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Unites States Prompt Diagnostics System</i>				
Nuclear Forensics - Prompt Diagnostics	1	2019	4	2021
- Phase 2: Complete Technical Data Package, Configuration Status Accounting, and Product Support Analysis/Logistics Product Data	1	2019	1	2021