Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Office of the Secretary Of Defense	Date: May 2017
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604165D8Z / *Prompt Global Strike Capability Development*

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
Total Program Element	984.616	88.660	181.303	201.749	-	201.749	217.231	220.480	224.733	229.367	Continuing	Continuing
P164: *Hypersonic Glide Experiment and Concepts Demonstration Support*	371.124	2.617	2.000	1.000	-	1.000	2.000	2.000	2.000	2.000	Continuing	Continuing
P166: *Alternate Re-Entry System/Warhead Engineering*	489.001	73.700	174.013	197.440	-	197.440	211.174	214.274	218.088	223.367	Continuing	Continuing
P167: *Test Range Development*	62.446	0.000	2.000	0.000	-	0.000	1.000	1.000	1.000	1.000	Continuing	Continuing
P168: *OSD CPGS Studies*	62.045	12.343	3.290	3.309	-	3.309	3.057	3.206	3.645	3.000	Continuing	Continuing

A. Mission Description and Budget Item Justification

This Program Element (PE) was established to develop and demonstrate technologies and applications that advance conventional prompt global strike (CPGS) warfighting capabilities. The program uses a national team with participation from the Services, Agencies, national research laboratories, and further involvement of competitive industry. Program emphasis is on demonstrating component and subsystem technology maturity with risk reduction initiatives highlighted by flight tests. The program funds the design, development, and experimentation of boosters, payload delivery vehicles (PDVs), non-nuclear warheads, thermal protection systems, guidance systems, test range modernization, and mission planning and enabling capabilities. To support these development activities, the program procures modeling and simulation capabilities, ground testing, command and control interfaces, test range support, and launch system infrastructure. Additionally, expert resources address strategic policy and treaty issues. Program timing will be driven by the outcome of flight and ground test events as well as DoD budgets. In FY 2018, as in previous years, funding for the individual Service initiatives will be contingent upon their abilities to execute and achieve satisfactory progress towards project goals as determined by the CPGS portfolio manager.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	78.660	181.303	203.907	-	203.907
Current President's Budget	88.660	181.303	201.749	-	201.749
Total Adjustments	10.000	0.000	-2.158	-	-2.158
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	10.000	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• SRRB Reduction/Management Realignment	-	-	-0.786	-	-0.786

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Office of the Secretary Of Defense					Date: May 2017
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 5: *System Development & Demonstration (SDD)*			R-1 Program Element (Number/Name) PE 0604165D8Z *I Prompt Global Strike Capability Development*		
• DTIC Offset	-	-	-1.372	-	-1.372

Change Summary Explanation

CPGS program funding aligned with CPGS program plan.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Office of the Secretary Of Defense			Date: May 2017
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604165D8Z / *Prompt Global Strike Capability Development*	Project (Number/Name) P164 / *Hypersonic Glide Experiment and Concepts Demonstration Support*	

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
P164: *Hypersonic Glide Experiment and Concepts Demonstration Support*	371.124	2.617	2.000	1.000	-	1.000	2.000	2.000	2.000	2.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Program Element (PE) was established to develop and demonstrate technologies and applications that advance conventional prompt global strike (CPGS) warfighting capabilities. The program uses a national team with participation from the Services, Agencies, national research laboratories, and further involvement of competitive industry. Program emphasis is on demonstrating component and subsystem technology maturity with risk reduction initiatives highlighted by flight tests. The program funds the design, development, and experimentation of boosters, payload delivery vehicles (PDVs), non-nuclear warheads, thermal protection systems, guidance systems, test range modernization, and mission planning and enabling capabilities. To support these development activities, the program procures modeling and simulation capabilities, ground testing, command and control interfaces, test range support, and launch system infrastructure. Additionally, expert resources address strategic policy and treaty issues. Program timing will be driven by the outcome of flight and ground test events as well as DoD budgets. In FY 2018, as in previous years, funding for the individual Service initiatives will be contingent upon their abilities to execute and achieve satisfactory progress towards project goals as determined by the CPGS portfolio manager.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
Title: Hypersonic Glide Experiments and Concept Demonstration Development/Support	2.617	2.000	1.000
Description: This sub-project develops technologies and applications that could lead to a system with the following characteristics: effects on targets in a very short-period of time from execution order; non-ballistic flight over the majority of the flight path; positive control from launch to impact; adequate cross-range/ maneuverability to avoid overflight issues; controlled stage drop over Broad Ocean Area. This sub-project also oversees development of non-nuclear warhead technologies to defeat time-sensitive targets for near and longer-term CPGS applications. The technologies developed will have cross-Service and cross-concept applicability and will be developed through close coordination among DoD components. This activity will support both ground and flight tests, and provide all national data to inform a potential acquisition program.			
FY 2016 Accomplishments: - Conduct trade studies to evaluate system alternatives, affordability, end-to-end system concepts that will study a weaponized integrated system complete with system architecture, and industrial manufacturing readiness - Continue aerodynamic and weapon risk reduction and technology maturation efforts through ground and wind tunnel tests to improve modeling and simulation capabilities and technology readiness, assessing readiness to conduct component technology tests of alternative warheads			

Exhibit R-2A, RDT&E Project Justification: FY 2018 Office of the Secretary Of Defense		Date: May 2017
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604165D8Z / *Prompt Global Strike Capability Development*	**Project (Number/Name)** P164 / *Hypersonic Glide Experiment and Concepts Demonstration Support*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
- Update the Technology Development Strategy and System Engineering documentations based on updated CPGS community engineering and test data, trade studies, and on-going risk reduction/technology development efforts - Continue Systems Engineering support to CPGS program and acquisition. Apply support to Integrated Product Teams to facilitate judgments of feasibility and risks of all CPGS concepts. Continue to support outreach and strategic messaging to entire CPGS community and COCOMs. ***FY 2017 Plans:*** - Conduct trade studies to evaluate system alternatives, affordability, end-to-end system concepts that will study a weaponized integrated system complete with system architecture, and industrial manufacturing readiness - Continue aerodynamic and weapon risk reduction and technology maturation efforts through ground and wind tunnel tests to improve modeling and simulation capabilities and technology readiness, assessing readiness to conducted integrated penetrator component technology tests - Continue Systems Engineering support to CPGS program and acquisition. Apply support to Integrated Product Teams to facilitate judgments of feasibility and risks of all CPGS concepts. Continue to support outreach and strategic messaging to entire CPGS community and COCOMs. ***FY 2018 Plans:*** - Conduct trade studies to evaluate system alternatives, affordability, end-to-end system concepts that will study a weaponized integrated system complete with system architecture, and industrial manufacturing readiness - Continue aerodynamic and weapon risk reduction and technology maturation efforts through ground and wind tunnel tests to improve modeling and simulation capabilities and technology readiness, assessing readiness to conducted integrated penetrator component technology tests - Continue Systems Engineering support to CPGS program and acquisition. Apply support to Integrated Product Teams to facilitate judgments of feasibility and risks of all CPGS concepts. Continue to support outreach and strategic messaging to entire CPGS community and COCOMs.			
Accomplishments/Planned Programs Subtotals	2.617	2.000	1.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: FY 2018 Office of the Secretary Of Defense		Date: May 2017
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604165D8Z / *Prompt Global Strike Capability Development*	**Project (Number/Name)** P164 / *Hypersonic Glide Experiment and Concepts Demonstration Support*

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: FY 2018 Office of the Secretary Of Defense			Date: May 2017
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604165D8Z / *Prompt Global Strike Capability Development*	Project (Number/Name) P166 / *Alternate Re-Entry System/Warhead Engineering*	

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
P166: *Alternate Re-Entry System/Warhead Engineering*	489.001	73.700	174.013	197.440	-	197.440	211.174	214.274	218.088	223.367	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Program Element (PE) was established to develop and demonstrate technologies and applications that advance conventional prompt global strike (CPGS) warfighting capabilities. The program uses a national team with participation from the Services, Agencies, national research laboratories, and further involvement of industry. Program emphasis is on demonstrating component and subsystem technology maturity with risk reduction initiatives highlighted by flight tests. The program funds the design, development, and experimentation of boosters, payload delivery vehicles (PDVs), non-nuclear warheads, thermal protection systems, guidance systems, test range modernization, and mission planning and enabling capabilities. To support these development activities, the program procures modeling and simulation capabilities, ground testing, command and control interfaces, test range support, and launch system infrastructure. Additionally, expert resources address strategic policy and treaty issues. Program timing will be driven by the outcome of flight and ground test events as well as DoD budgets. In FY 2018, as in previous years, funding for the individual Service initiatives will be contingent upon their abilities to execute and achieve satisfactory progress towards project goals as determined by the CPGS portfolio manager.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
Title: Alternative Re-Entry System/Warhead Engineering and Delivery Vehicle Options/Development	73.700	174.013	197.440
Description: This sub-project will test and evaluate alternative booster and delivery vehicle options and will assess the feasibility of producing an affordable solution to fill the CPGS capability gap. It will mature technologies that could lead to advanced systems with the following characteristics: effects on targets in a very short-period of time from execution order; non-ballistic flight over the majority of the flight path; positive control from launch to impact; adequate cross-range/maneuverability to avoid over flight issues; and controlled stage drop over Broad Ocean Area. The technologies developed will have cross-Service and cross-concept applicability and will be developed through close coordination among DoD components. This activity will support both ground and flight tests, and provide all national data to inform a potential acquisition program.			
FY 2016 Accomplishments: - Complete Critical Design Review for FE-1 through collaboration with national CPGS team - Leverage AHW FT-2 engineering workup, design algorithms and lessons learned for application to FE-1 - Begin integrated system-level test, evaluation, and assembly for FE-1 - Support development of future flight test systems for CPGS concepts as required - Conduct System Requirements Review (SRR) and begin design for technology FE-2 Booster (Competitive Industry led effort)			
FY 2017 Plans:			

Exhibit R-2A, RDT&E Project Justification: FY 2018 Office of the Secretary Of Defense		Date: May 2017
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604165D8Z / *Prompt Global Strike Capability Development*	**Project (Number/Name)** P166 / *Alternate Re-Entry System/Warhead Engineering*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
- Finalize manufacturing and testing of Hypersonic Glide Body and Booster to be used in FE-1 - Continue intermediate range technology booster development for FE-3 with competitive industry; to include hardware procurement and fabrication - Support development of future flight test systems for CPGS concepts as required - Update the Technology Development Strategy and system engineering documentation based on updated CPGS engineering and test data, trade studies, and on-going risk reduction/technology development efforts			
FY 2018 Plans: - Finalize testing of Hypersonic Glide Body and Booster to be used in FE-1,and begin manufacturing and testing of Hypersonic Glide Booster to be used in FE-2 - Continue intermediate range objective technology booster development for FE-3 with competitive industry; to include hardware procurement and fabrication - Support development of future flight test systems for CPGS concepts as required - Update the Technology Development Strategy and system engineering documentation based on updated CPGS engineering and test data, trade studies, and on-going risk reduction/technology development efforts			
Accomplishments/Planned Programs Subtotals	73.700	174.013	197.440

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Office of the Secretary Of Defense			Date: May 2017
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604165D8Z / *Prompt Global Strike Capability Development*	Project (Number/Name) P166 / *Alternate Re-Entry System/Warhead Engineering*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Alternative Reentry System/Warhead Engineering and Delivery Vehicle Options/ Development	Allot	Army Space and Missile Defense Center/Navy Strategic Systems Program : Huntsville AL/Washington DC	489.001	73.700		174.013		197.440		-		197.440	Continuing	Continuing	-
		Subtotal	489.001	73.700		174.013		197.440		-		197.440	-	-	-

	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	489.001	73.700		174.013		197.440		-		197.440	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Office of the Secretary Of Defense		Date: May 2017
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604165D8Z / *Prompt Global Strike Capability Development*	**Project (Number/Name)** P166 / *Alternate Re-Entry System/Warhead Engineering*

P166 CPGS Flight Experiment 1 (order 10)

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Planning/Design																								
Fabrication/Integration																								
Test Execution																								
Post Test Analysis & Reporting																								

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Office of the Secretary Of Defense		Date: May 2017
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604165D8Z / *Prompt Global Strike Capability Development*	**Project (Number/Name)** P166 / *Alternate Re-Entry System/Warhead Engineering*

P166 CPGS Flight Experiment 2 (order 20)

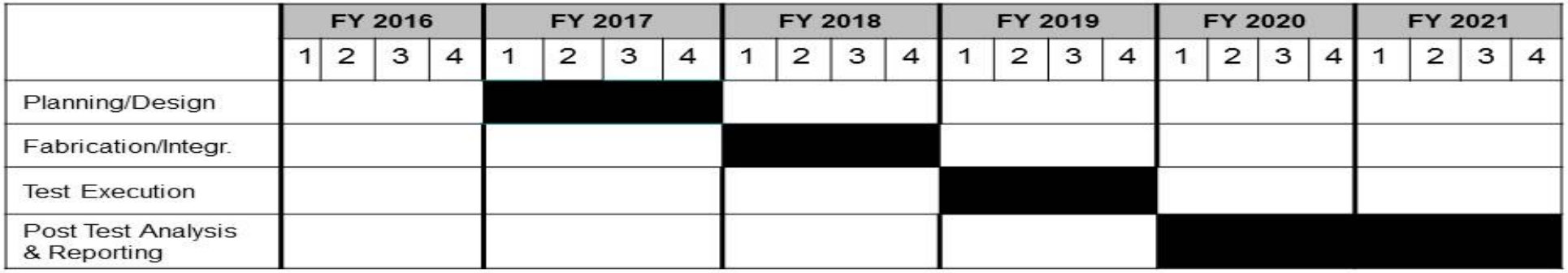

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Office of the Secretary Of Defense		Date: May 2017
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604165D8Z / *Prompt Global Strike Capability Development*	**Project (Number/Name)** P166 / *Alternate Re-Entry System/Warhead Engineering*

P166 Alternate Re-Entry System/Warhead Engineering

	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Trade Studies, Ground Testing and Systems Engineering																								

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Office of the Secretary Of Defense		Date: May 2017
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604165D8Z / *Prompt Global Strike Capability Development*	**Project (Number/Name)** P166 / *Alternate Re-Entry System/Warhead Engineering*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Navy Flight Experiment 1	1	2014	4	2017
Navy Flight Experiment 2	4	2017	4	2020

Exhibit R-2A, RDT&E Project Justification: FY 2018 Office of the Secretary Of Defense			Date: May 2017
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604165D8Z / *Prompt Global Strike Capability Development*	Project (Number/Name) P167 / *Test Range Development*	

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
P167: *Test Range Development*	62.446	0.000	2.000	0.000	-	0.000	1.000	1.000	1.000	1.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Program Element (PE) was established to develop and demonstrate technologies and applications that advance conventional prompt global strike (CPGS) warfighting capabilities. The program uses a national team with participation from the Services, Agencies, national research laboratories, and further involvement of industry. Program emphasis is on demonstrating component and subsystem technology maturity with risk reduction initiatives highlighted by flight tests. The program funds the design, development, and experimentation of boosters, payload delivery vehicles (PDVs), non-nuclear warheads, thermal protection systems, guidance systems, test range modernization, and mission planning and enabling capabilities. To support these development activities, the program procures modeling and simulation capabilities, ground testing, command and control interfaces, test range support, and launch system infrastructure. Additionally, expert resources address strategic policy and treaty issues. Program timing will be driven by the outcome of flight and ground test events as well as DoD budgets. In FY 2018, as in previous years, funding for the individual Service initiatives will be contingent upon their abilities to execute and achieve satisfactory progress towards project goals as determined by the CPGS portfolio manager.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
Title: Test Range Development	-	2.000	-
Description: This sub-project will complete design, assembly and delivery of power/telemetry subsystems; assemble and integrate components to check command/control and verify range safety functions. ***FY 2017 Plans:*** - Continue to improve telemetry collection and range safety infrastructure in preparation for future flight testing of system concepts - Continue to support test range infrastructure for long term use			
Accomplishments/Planned Programs Subtotals	-	2.000	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: FY 2018 Office of the Secretary Of Defense		Date: May 2017
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604165D8Z / *Prompt Global Strike Capability Development*	**Project (Number/Name)** P167 / *Test Range Development*

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: FY 2018 Office of the Secretary Of Defense			Date: May 2017
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604165D8Z / *Prompt Global Strike Capability Development*	Project (Number/Name) P168 / *OSD CPGS Studies*	

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
P168: *OSD CPGS Studies*	62.045	12.343	3.290	3.309	-	3.309	3.057	3.206	3.645	3.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Program Element (PE) was established to develop and demonstrate technologies and applications that advance conventional prompt global strike (CPGS) warfighting capabilities. The program uses a national team with participation from the Services, Agencies, national research laboratories, and further involvement of industry. Program emphasis is on demonstrating component and subsystem technology maturity with risk reduction initiatives highlighted by flight tests. The program funds the design, development, and experimentation of boosters, payload delivery vehicles (PDVs), non-nuclear warheads, thermal protection systems, guidance systems, test range modernization, and mission planning and enabling capabilities. To support these development activities, the program procures modeling and simulation capabilities, ground testing, command and control interfaces, test range support, and launch system infrastructure. Additionally, expert resources address strategic policy and treaty issues. Program timing will be driven by the outcome of flight and ground test events as well as DoD budgets. In FY 2018, as in previous years, funding for the individual Service initiatives will be contingent upon their abilities to execute and achieve satisfactory progress towards project goals as determined by the CPGS portfolio manager.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
Title: OSD CPGS Studies	12.343	3.290	3.309
Description: This sub-project supports emergent CPGS study efforts. In addition, it supports the application of the Prompt Global Strike Analysis of Alternatives (AoA) results and any AoA updates; requirements development; CPGS basing alternatives; analysis and defining of mission enabling technologies; and measures to avoid conventional missile launch ambiguity with nuclear weapon systems. Finally, it supports administrative activities associated with the management and execution of this Program Element.			
FY 2016 Accomplishments: - Continued Flight Test instrumentation, Range Support, and Data Analysis - Began FE-1 Battery Fabrication and Qualification - Began FE-1 Component Testing and Integration - Initiated FE-1 NG&C Computer Design, Fabrication, and Qualification - Began Booster Studies Initiated Program of Record Planning support and Statutory & Regulatory Document Preparation			
FY 2017 Plans: - Continue cost assessment studies for future system development - Continue lethality and warhead fuzing studies - Continue thermal and aerodynamic modeling and simulation			

Exhibit R-2A, RDT&E Project Justification: FY 2018 Office of the Secretary Of Defense		Date: May 2017
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604165D8Z / *Prompt Global Strike Capability Development*	**Project (Number/Name)** P168 / *OSD CPGS Studies*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
- Continue senior steering group panel review and strategic messaging activities - Conduct command, control, and operational overlay exercises in parallel with CPGS flight tests - Continue program management reviews, ground test status and planning summits, and administrative support of ground test integrated product teams			
FY 2018 Plans: - Continue cost assessment studies for future system development - Continue lethality and warhead fuzing studies - Continue thermal and aerodynamic modeling and simulation - Continue senior steering group panel review and strategic messaging activities - Conduct command, control, and operational overlay exercises in parallel with CPGS flight tests - Continue program management reviews, ground test status and planning summits, and administrative support of ground test integrated product teams			
Accomplishments/Planned Programs Subtotals	12.343	3.290	3.309

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A