Department of Defense
Fiscal Year (FY) 2021 Budget Estimates

February 2020

Navy

Justification Book Volume 1 of 1

Shipbuilding and Conversion, Navy

The estimated cost of this report for the Department of the Navy (DON) is $101,693.

The estimated total cost for supporting the DON budget justification material is approximately $2,970,459 for the 2020 fiscal year. This includes $82,977 in supplies and $2,887,482 in labor.

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Shipbuilding and Conversion, Navy

For expenses necessary for the construction, acquisition, or conversion of vessels as authorized by law, including armor and armament thereof, plant equipment, appliances, and machine tools and installation thereof in public and private plants; reserve plant and Government and contractor-owned equipment layaway; procurement of critical, long lead time components and designs for vessels to be constructed or converted in the future; and expansion of public and private plants, including land necessary therefore, and such lands and interests therein, may be acquired, and construction prosecuted thereon prior to approval of title.

In all: $19,902,757 to remain available for obligation until September 30, 2032: *Provided*, That additional obligations may be incurred after September 30, 2032, for engineering services, tests, evaluations, and other such budgeted work that must be performed in the final stage of ship construction: *Provided further*, That none of the funds provided under this heading for the construction or conversion of any naval vessel to be constructed in shipyards in the United States shall be expended in foreign facilities for the construction of major components of such vessel: *Provided further*, That none of the funds provided under this heading shall be used for the construction of any naval vessel in foreign shipyards.

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Department of the Navy
FY 2021President's Budget
Exhibit FY 2021 President's Budget
Total Obligational Authority
(Dollars in Thousands)

27 Jan 2020

Appropriation	FY 2019 (Base + OCO)	FY 2020 Base Enacted	FY 2020 Emergency	FY 2020 OCO Enacted
Shipbuilding and Conversion, Navy	20,936,660	23,975,378		
Total Department of the Navy	20,936,660	23,975,378		

Department of the Navy
FY 2021President's Budget
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Total Obligational Authority
(Dollars in Thousands)

27 Jan 2020

Appropriation	FY 2020 Total Enacted (Base+Emerg+ OCO)	FY 2021 Base	FY 2021 OCO for Base Requirements	FY 2021 OCO for Direct War and Enduring Costs
Shipbuilding and Conversion, Navy	23,975,378	19,902,757		
Total Department of the Navy	23,975,378	19,902,757		

Department of the Navy
FY 2021President's Budget
Exhibit FY 2021 President's Budget
Total Obligational Authority
(Dollars in Thousands)

27 Jan 2020

Appropriation	FY 2021 Total OCO	FY 2021 Total (Base + OCO)
Shipbuilding and Conversion, Navy		19,902,757
Total Department of the Navy		19,902,757

Department of the Navy
FY 2021President's Budget
Exhibit FY 2021 President's Budget
Total Obligational Authority
(Dollars in Thousands)

27 Jan 2020

Appropriation: Shipbuilding and Conversion, Navy

Budget Activity	FY 2019 (Base + OCO)	FY 2020 Base Enacted	FY 2020 Emergency	FY 2020 OCO Enacted
01. Fleet Ballistic Missile Ships		1,820,927		
02. Other Warships	17,010,549	18,523,203		
03. Amphibious Ships	1,597,100	1,522,100		
05. Auxiliaries, Craft, and Prior-Year Program Costs	2,329,011	2,109,148		
Total Shipbuilding and Conversion, Navy	20,936,660	23,975,378		

Department of the Navy
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Total Obligational Authority
(Dollars in Thousands)

27 Jan 2020

Appropriation: Shipbuilding and Conversion, Navy

Budget Activity	FY 2020 Total Enacted (Base+Emerg+ OCO)	FY 2021 Base	FY 2021 OCO for Base Requirements	FY 2021 OCO for Direct War and Enduring Costs
01. Fleet Ballistic Missile Ships	1,820,927	4,014,650		
02. Other Warships	18,523,203	12,975,762		
03. Amphibious Ships	1,522,100	1,155,801		
05. Auxiliaries, Craft, and Prior-Year Program Costs	2,109,148	1,756,544		
Total Shipbuilding and Conversion, Navy	23,975,378	19,902,757		

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Total Obligational Authority
(Dollars in Thousands)

27 Jan 2020

Appropriation: Shipbuilding and Conversion, Navy

Budget Activity	FY 2021 Total OCO	FY 2021 Total (Base + OCO)
01. Fleet Ballistic Missile Ships		4,014,650
02. Other Warships		12,975,762
03. Amphibious Ships		1,155,801
05. Auxiliaries, Craft, and Prior-Year Program Costs		1,756,544
Total Shipbuilding and Conversion, Navy		19,902,757

Department of the Navy
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Appropriation: 1611N Shipbuilding and Conversion, Navy

Line No	Item Nomenclature	Ident Code	FY 2019 (Base + OCO) Quantity	FY 2019 (Base + OCO) Cost	FY 2020 Base Enacted Quantity	FY 2020 Base Enacted Cost	FY 2020 Emergency Quantity	FY 2020 Emergency Cost	FY 2020 OCO Enacted Quantity	FY 2020 OCO Enacted Cost	Sec
	Budget Activity 01: Fleet Ballistic Missile Ships										
	Fleet Ballistic Missile Ships										
1	OHIO Replacement Submarine	A									U
	Less: Advance Procurement (PY)										U
	Less: Subsequent Full Funding (FY)										U
2	OHIO Replacement Submarine										
	Advance Procurement (CY)					1,820,927					U
	C (FY 2020 for FY 2021) (M)					(1,636,356)					
	C (FY 2020 for FY 2024) (M)					(148,450)					
	C (FY 2020 for FY 2026) (M)					(19,955)					
	C (FY 2020 for FY 2027) (M)					(478)					
	C (FY 2020 for FY 2028) (M)					(224)					
	C (FY 2020 for FY 2029) (M)					(224)					
	C (FY 2020 for FY 2030) (M)					(224)					
	C (FY 2020 for FY 2031) (M)					(224)					
	C (FY 2020 for FY 2032) (M)					(224)					
	C (FY 2020 for FY 2033) (M)					(224)					
	C (FY 2020 for FY 2034) (M)					(224)					
	C (FY 2020 for FY 2035) (M)					(14,120)					
	C (FY 2021 for FY 2024) (M)										
	C (FY 2021 for FY 2026) (M)										
	C (FY 2021 for FY 2027) (M)										
	C (FY 2021 for FY 2028) (M)										
	C (FY 2021 for FY 2029) (M)										
	C (FY 2021 for FY 2030) (M)										
	C (FY 2021 for FY 2031) (M)										
	C (FY 2021 for FY 2032) (M)										
	C (FY 2021 for FY 2033) (M)										
	C (FY 2021 for FY 2034) (M)										
	C (FY 2021 for FY 2035) (M)										
	Total Fleet Ballistic Missile Ships					1,820,927					

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Department of the Navy
FY 2021President's Budget
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Total Obligational Authority
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27 Jan 2020

Appropriation: 1611N Shipbuilding and Conversion, Navy

Line No	Item Nomenclature	Ident Code	FY 2020 Total Enacted (Base+Emerg+ OCO) Quantity	FY 2020 Total Enacted (Base+Emerg+ OCO) Cost	FY 2021 Base Quantity	FY 2021 Base Cost	FY 2021 OCO for Base Requirements Quantity	FY 2021 OCO for Base Requirements Cost	FY 2021 OCO for Direct War and Enduring Costs Quantity	FY 2021 OCO for Direct War and Enduring Costs Cost	Sec
	Budget Activity 01: Fleet Ballistic Missile Ships										
	Fleet Ballistic Missile Ships										
1	OHIO Replacement Submarine	A			1	(14,393,443)					U
	Less: Advance Procurement (PY)					(-6,227,811)					U
	Less: Subsequent Full Funding (FY)					(-5,274,157)					U
						2,891,475					
2	OHIO Replacement Submarine										
	Advance Procurement (CY)			1,820,927		1,123,175					U
	C (FY 2020 for FY 2021) (M)			(1,636,356)							
	C (FY 2020 for FY 2024) (M)			(148,450)							
	C (FY 2020 for FY 2026) (M)			(19,955)							
	C (FY 2020 for FY 2027) (M)			(478)							
	C (FY 2020 for FY 2028) (M)			(224)							
	C (FY 2020 for FY 2029) (M)			(224)							
	C (FY 2020 for FY 2030) (M)			(224)							
	C (FY 2020 for FY 2031) (M)			(224)							
	C (FY 2020 for FY 2032) (M)			(224)							
	C (FY 2020 for FY 2033) (M)			(224)							
	C (FY 2020 for FY 2034) (M)			(224)							
	C (FY 2020 for FY 2035) (M)			(14,120)							
	C (FY 2021 for FY 2024) (M)					(1,015,652)					
	C (FY 2021 for FY 2026) (M)					(93,034)					
	C (FY 2021 for FY 2027) (M)					(140)					
	C (FY 2021 for FY 2028) (M)					(1,070)					
	C (FY 2021 for FY 2029) (M)					(140)					
	C (FY 2021 for FY 2030) (M)					(140)					
	C (FY 2021 for FY 2031) (M)					(140)					
	C (FY 2021 for FY 2032) (M)					(140)					
	C (FY 2021 for FY 2033) (M)					(140)					
	C (FY 2021 for FY 2034) (M)					(140)					
	C (FY 2021 for FY 2035) (M)					(12,439)					
	Total Fleet Ballistic Missile Ships			1,820,927		4,014,650					

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Line No	Item Nomenclature	Ident Code	FY 2021 Total OCO Quantity	FY 2021 Total OCO Cost	FY 2021 Total (Base + OCO) Quantity	FY 2021 Total (Base + OCO) Cost	Sec
Budget Activity 01: Fleet Ballistic Missile Ships							
Fleet Ballistic Missile Ships							
1	OHIO Replacement Submarine	A			1	(14,393,443)	U
	Less: Advance Procurement (PY)					(-6,227,811)	U
	Less: Subsequent Full Funding (FY)					(-5,274,157)	U
				----------		----------	
						2,891,475	
2	OHIO Replacement Submarine						
	Advance Procurement (CY)					1,123,175	U
	C (FY 2020 for FY 2021) (M)						
	C (FY 2020 for FY 2024) (M)						
	C (FY 2020 for FY 2026) (M)						
	C (FY 2020 for FY 2027) (M)						
	C (FY 2020 for FY 2028) (M)						
	C (FY 2020 for FY 2029) (M)						
	C (FY 2020 for FY 2030) (M)						
	C (FY 2020 for FY 2031) (M)						
	C (FY 2020 for FY 2032) (M)						
	C (FY 2020 for FY 2033) (M)						
	C (FY 2020 for FY 2034) (M)						
	C (FY 2020 for FY 2035) (M)						
	C (FY 2021 for FY 2024) (M)					(1,015,652)	
	C (FY 2021 for FY 2026) (M)					(93,034)	
	C (FY 2021 for FY 2027) (M)					(140)	
	C (FY 2021 for FY 2028) (M)					(1,070)	
	C (FY 2021 for FY 2029) (M)					(140)	
	C (FY 2021 for FY 2030) (M)					(140)	
	C (FY 2021 for FY 2031) (M)					(140)	
	C (FY 2021 for FY 2032) (M)					(140)	
	C (FY 2021 for FY 2033) (M)					(140)	
	C (FY 2021 for FY 2034) (M)					(140)	
	C (FY 2021 for FY 2035) (M)					(12,439)	
				----------		----------	
Total Fleet Ballistic Missile Ships						4,014,650	

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	Budget Activity 02: Other Warships										
	Other Warships										
3	Carrier Replacement Program	A		(643,000)		(1,062,000)					U
	Less: Subsequent Full Funding (FY)										U
				643,000		1,062,000					
	Subsequent Full Funding for FY 2018			930,181		1,062,000					
4	CVN-81	A			1	(12,450,695)					U
	Less: Subsequent Full Funding (FY)					(-12,022,877)					U
						427,818					
	Subsequent Full Funding for FY 2020										
5	Virginia Class Submarine	B	2	(6,500,178)	2	(7,483,677)					U
	Less: Advance Procurement (PY)			(-2,159,502)		(-2,118,496)					U
				4,340,676		5,365,181					
6	Virginia Class Submarine										
	Advance Procurement (CY)			2,796,401		2,969,552					U
	C (FY 2019 for FY 2020) (M)			(835,268)							
	C (FY 2019 for FY 2021) (M)			(1,468,403)							
	C (FY 2019 for FY 2022) (M)			(246,365)							
	C (FY 2019 for FY 2023) (M)			(246,365)							
	C (FY 2020 for FY 2021) (M)					(1,112,629)					
	C (FY 2020 for FY 2022) (M)					(1,562,935)					
	C (FY 2020 for FY 2023) (M)					(293,988)					
	C (FY 2021 for FY 2022) (M)										
	C (FY 2021 for FY 2023) (M)										

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Line No	Item Nomenclature	Ident Code	FY 2020 Total Enacted (Base+Emerg+ OCO) Quantity	FY 2020 Total Enacted (Base+Emerg+ OCO) Cost	FY 2021 Base Quantity	FY 2021 Base Cost	FY 2021 OCO for Base Requirements Quantity	FY 2021 OCO for Base Requirements Cost	FY 2021 OCO for Direct War and Enduring Costs Quantity	FY 2021 OCO for Direct War and Enduring Costs Cost	Sec
	Budget Activity 02: Other Warships										
	Other Warships										
3	Carrier Replacement Program	A		(1,062,000)							U
	Less: Subsequent Full Funding (FY)										U
				1,062,000							
	Subsequent Full Funding for FY 2018			1,062,000		997,544					
4	CVN-81	A	1	(12,450,695)							U
	Less: Subsequent Full Funding (FY)			(-12,022,877)							U
				427,818							
	Subsequent Full Funding for FY 2020					1,645,606					
5	Virginia Class Submarine	B	2	(7,483,677)	1	(4,946,733)					U
	Less: Advance Procurement (PY)			(-2,118,496)		(-2,612,040)					U
				5,365,181		2,334,693					
6	Virginia Class Submarine										
	Advance Procurement (CY)			2,969,552		1,901,187					U
	C (FY 2019 for FY 2020) (M)										
	C (FY 2019 for FY 2021) (M)										
	C (FY 2019 for FY 2022) (M)										
	C (FY 2019 for FY 2023) (M)										
	C (FY 2020 for FY 2021) (M)			(1,112,629)							
	C (FY 2020 for FY 2022) (M)			(1,562,935)							
	C (FY 2020 for FY 2023) (M)			(293,988)							
	C (FY 2021 for FY 2022) (M)					(833,091)					
	C (FY 2021 for FY 2023) (M)					(1,068,096)					

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Appropriation: 1611N Shipbuilding and Conversion, Navy

Line No	Item Nomenclature	Ident Code	FY 2021 Total OCO Quantity	FY 2021 Total OCO Cost	FY 2021 Total (Base + OCO) Quantity	FY 2021 Total (Base + OCO) Cost	Sec
	Budget Activity 02: Other Warships						
	Other Warships						
3	Carrier Replacement Program	A					U
	Less: Subsequent Full Funding (FY)						U
				----------		----------	
	Subsequent Full Funding for FY 2018					997,544	
4	CVN-81	A					U
	Less: Subsequent Full Funding (FY)						U
				----------		----------	
	Subsequent Full Funding for FY 2020					1,645,606	
5	Virginia Class Submarine	B			1	(4,946,733)	U
	Less: Advance Procurement (PY)					(-2,612,040)	U
				----------		----------	
						2,334,693	
6	Virginia Class Submarine						
	Advance Procurement (CY)					1,901,187	U
	C (FY 2019 for FY 2020) (M)						
	C (FY 2019 for FY 2021) (M)						
	C (FY 2019 for FY 2022) (M)						
	C (FY 2019 for FY 2023) (M)						
	C (FY 2020 for FY 2021) (M)						
	C (FY 2020 for FY 2022) (M)						
	C (FY 2020 for FY 2023) (M)						
	C (FY 2021 for FY 2022) (M)					(833,091)	
	C (FY 2021 for FY 2023) (M)					(1,068,096)	

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Appropriation: 1611N Shipbuilding and Conversion, Navy

Line No	Item Nomenclature	Ident Code	FY 2019 (Base + OCO) Quantity	FY 2019 (Base + OCO) Cost	FY 2020 Base Enacted Quantity	FY 2020 Base Enacted Cost	FY 2020 Emergency Quantity	FY 2020 Emergency Cost	FY 2020 OCO Enacted Quantity	FY 2020 OCO Enacted Cost	Sec
7	CVN Refueling Overhauls	A			1	(5,629,430)					U
	Less: Advance Procurement (PY)					(-749,870)					U
	Less: Subsequent Full Funding (FY)					(-3,763,145)					U
	Less: Prior Year OPN funding					(-481,789)					U
				---		---		---		---	
						634,626					
	Subsequent Full Funding for FY 2020										
8	CVN Refueling Overhauls										
	Advance Procurement (CY)			425,873		16,900					U
	C (FY 2019 for FY 2020) (M)			(425,873)							
	C (FY 2020 for FY 2025) (M)					(16,900)					
	C (FY 2021 for FY 2025) (M)										
9	DDG 1000	A		270,965		155,944					U
10	DDG-51	A	3	(5,289,199)	3	(5,428,955)					U
	Less: Advance Procurement (PY)			(-39,362)		(-363,660)					U
				---		---		---		---	
				5,249,837		5,065,295					
	Completion PY Shipbuild for FY 2013			37,266							
11	DDG-51										
	Advance Procurement (CY)			641,928		744,028					U
	C (FY 2019 for FY 2020) (M)			(337,720)							
	C (FY 2019 for FY 2021) (M)			(152,104)							
	C (FY 2019 for FY 2022) (M)			(152,104)							
	C (FY 2020 for FY 2021) (M)					(632,014)					
	C (FY 2020 for FY 2022) (M)					(112,014)					
	C (FY 2021 for FY 2022) (M)										
12	Littoral Combat Ship	A	3	1,571,244							U
	Completion PY Shipbuild for FY 2014			19,492							
	Completion PY Shipbuild for FY 2015			83,686							
	Completion PY Shipbuild for FY 2016					14,000					

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Appropriation: 1611N Shipbuilding and Conversion, Navy

Line No	Item Nomenclature	Ident Code	FY 2020 Total Enacted (Base+Emerg+ OCO) Quantity	FY 2020 Total Enacted (Base+Emerg+ OCO) Cost	FY 2021 Base Quantity	FY 2021 Base Cost	FY 2021 OCO for Base Requirements Quantity	FY 2021 OCO for Base Requirements Cost	FY 2021 OCO for Direct War and Enduring Costs Quantity	FY 2021 OCO for Direct War and Enduring Costs Cost	Sec
7	CVN Refueling Overhauls	A	1	(5,629,430)							U
	Less: Advance Procurement (PY)			(-749,870)							U
	Less: Subsequent Full Funding (FY)			(-3,763,145)							U
	Less: Prior Year OPN funding			(-481,789)							U
				634,626							
	Subsequent Full Funding for FY 2020					1,878,453					
8	CVN Refueling Overhauls										
	Advance Procurement (CY)			16,900		17,384					U
	C (FY 2019 for FY 2020) (M)										
	C (FY 2020 for FY 2025) (M)			(16,900)							
	C (FY 2021 for FY 2025) (M)					(17,384)					
9	DDG 1000	A		155,944		78,205					U
10	DDG-51	A	3	(5,428,955)	2	(3,836,905)					U
	Less: Advance Procurement (PY)			(-363,660)		(-796,635)					U
				5,065,295		3,040,270					
	Completion PY Shipbuild for FY 2013										
11	DDG-51										
	Advance Procurement (CY)			744,028		29,297					U
	C (FY 2019 for FY 2020) (M)										
	C (FY 2019 for FY 2021) (M)										
	C (FY 2019 for FY 2022) (M)										
	C (FY 2020 for FY 2021) (M)			(632,014)							
	C (FY 2020 for FY 2022) (M)			(112,014)							
	C (FY 2021 for FY 2022) (M)					(29,297)					
12	Littoral Combat Ship	A									U
	Completion PY Shipbuild for FY 2014										
	Completion PY Shipbuild for FY 2015										
	Completion PY Shipbuild for FY 2016			14,000							

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Appropriation: 1611N Shipbuilding and Conversion, Navy

Line No	Item Nomenclature	Ident Code	FY 2021 Total OCO Quantity	FY 2021 Total OCO Cost	FY 2021 Total (Base + OCO) Quantity	FY 2021 Total (Base + OCO) Cost	Sec
7	CVN Refueling Overhauls	A					U
	Less: Advance Procurement (PY)						U
	Less: Subsequent Full Funding (FY)						U
				----------		----------	
	Subsequent Full Funding for FY 2020					1,878,453	
8	CVN Refueling Overhauls						
	Advance Procurement (CY)					17,384	U
	C (FY 2019 for FY 2020) (M)						
	C (FY 2020 for FY 2025) (M)						
	C (FY 2021 for FY 2025) (M)					(17,384)	
9	DDG 1000	A				78,205	U
10	DDG-51	A			2	(3,836,905)	U
	Less: Advance Procurement (PY)					(-796,635)	U
				----------		----------	
						3,040,270	
	Completion PY Shipbuild for FY 2013						
11	DDG-51						
	Advance Procurement (CY)					29,297	U
	C (FY 2019 for FY 2020) (M)						
	C (FY 2019 for FY 2021) (M)						
	C (FY 2019 for FY 2022) (M)						
	C (FY 2020 for FY 2021) (M)						
	C (FY 2020 for FY 2022) (M)						
	C (FY 2021 for FY 2022) (M)					(29,297)	
12	Littoral Combat Ship	A					U
	Completion PY Shipbuild for FY 2014						
	Completion PY Shipbuild for FY 2015						
	Completion PY Shipbuild for FY 2016						

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Appropriation: 1611N Shipbuilding and Conversion, Navy

Line No	Item Nomenclature	Ident Code	FY 2019 (Base + OCO) Quantity	FY 2019 (Base + OCO) Cost	FY 2020 Base Enacted Quantity	FY 2020 Base Enacted Cost	FY 2020 Emergency Quantity	FY 2020 Emergency Cost	FY 2020 OCO Enacted Quantity	FY 2020 OCO Enacted Cost	Sec
13	FFG-Frigate	A			1	1,281,177					U
	Total Other Warships			17,010,549		18,523,203					
	Budget Activity 03: Amphibious Ships										
	Amphibious Ships										
14	LPD Flight II	A				524,100					U
15	LPD Flight II										
	Advance Procurement (CY)			350,000							U
	C (FY 2019 for FY 2020) (M)			(350,000)							
16	Expeditionary Sea Base (ESB)	A	1	647,000							U
	Completion PY Shipbuild for FY 2016					38,000					
17	LHA Replacement	A				650,000					U
	Completion PY Shipbuild for FY 2011			25,100							
18	LHA Replacement										
	Advance Procurement (CY)			350,000							U
	C (FY 2019 for FY 2024) (M)			(350,000)							
19	Expeditionary Fast Transport (EPF)	A	1	(274,000)	1	(261,000)					U
	Less: Future Completion of Shipbuilding (FY)			(-49,000)							U
				225,000		261,000					
	Completion PY Shipbuild for FY 2019					49,000					
	Total Amphibious Ships			1,597,100		1,522,100					

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Department of the Navy
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Exhibit FY 2021 President's Budget
Total Obligational Authority
(Dollars in Thousands)

27 Jan 2020

Appropriation: 1611N Shipbuilding and Conversion, Navy

Line No	Item Nomenclature	Ident Code	FY 2020 Total Enacted (Base+Emerg+ OCO) Quantity	FY 2020 Total Enacted (Base+Emerg+ OCO) Cost	FY 2021 Base Quantity	FY 2021 Base Cost	FY 2021 OCO for Base Requirements Quantity	FY 2021 OCO for Base Requirements Cost	FY 2021 OCO for Direct War and Enduring Costs Quantity	FY 2021 OCO for Direct War and Enduring Costs Cost	Sec
13	FFG-Frigate	A	1	1,281,177	1	1,053,123					U
	Total Other Warships			18,523,203		12,975,762					
	Budget Activity 03: Amphibious Ships										
	Amphibious Ships										
14	LPD Flight II	A		524,100	1	(2,029,901)					U
	Less: Advance Procurement (PY)					(350,000)					U
	Less: Subsequent Full Funding (FY)					(524,100)					U
						1,155,801					
15	LPD Flight II										
	Advance Procurement (CY)										U
	C (FY 2019 for FY 2020) (M)										
16	Expeditionary Sea Base (ESB)	A									U
	Completion PY Shipbuild for FY 2016			38,000							
17	LHA Replacement	A		650,000							U
	Completion PY Shipbuild for FY 2011										
18	LHA Replacement										
	Advance Procurement (CY)										U
	C (FY 2019 for FY 2024) (M)										
19	Expeditionary Fast Transport (EPF)	A	1	(261,000)							U
	Less: Future Completion of Shipbuilding (FY)										U
				261,000							
	Completion PY Shipbuild for FY 2019			49,000							
	Total Amphibious Ships			1,522,100		1,155,801					

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Total Obligational Authority
(Dollars in Thousands)

27 Jan 2020

Appropriation: 1611N Shipbuilding and Conversion, Navy

Line No	Item Nomenclature	Ident Code	FY 2021 Total OCO Quantity	FY 2021 Total OCO Cost	FY 2021 Total (Base + OCO) Quantity	FY 2021 Total (Base + OCO) Cost	Sec
13	FFG-Frigate	A			1	1,053,123	U
				----------		----------	
	Total Other Warships					12,975,762	
	Budget Activity 03: Amphibious Ships						
	Amphibious Ships						
14	LPD Flight II	A			1	(2,029,901)	U
	Less: Advance Procurement (PY)					(350,000)	U
	Less: Subsequent Full Funding (FY)					(524,100)	U

						1,155,801	
15	LPD Flight II						
	Advance Procurement (CY)						U
	C (FY 2019 for FY 2020) (M)						
16	Expeditionary Sea Base (ESB)	A					U
	Completion PY Shipbuild for FY 2016						
17	LHA Replacement	A					U
	Completion PY Shipbuild for FY 2011						
18	LHA Replacement						
	Advance Procurement (CY)						U
	C (FY 2019 for FY 2024) (M)						
19	Expeditionary Fast Transport (EPF)	A					U
	Less: Future Completion of Shipbuilding (FY)						U
				----------		----------	
	Completion PY Shipbuild for FY 2019						
				----------		----------	
	Total Amphibious Ships					1,155,801	

Department of the Navy
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(Dollars in Thousands)

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Appropriation: 1611N Shipbuilding and Conversion, Navy

Line No	Item Nomenclature	Ident Code	FY 2019 (Base + OCO) Quantity	FY 2019 (Base + OCO) Cost	FY 2020 Base Enacted Quantity	FY 2020 Base Enacted Cost	FY 2020 Emergency Quantity	FY 2020 Emergency Cost	FY 2020 OCO Enacted Quantity	FY 2020 OCO Enacted Cost	Sec
	Budget Activity 05: Auxiliaries, Craft, and Prior-Year Program Costs										
	Auxiliaries, Craft and Prior Yr Program Cost										
20	TAO Fleet Oiler	A	2	(1,052,172)	2	(1,056,261)					U
	Less: Advance Procurement (PY)			(-75,068)		(-75,046)					U
				977,104		981,215					
	Completion PY Shipbuild for FY 2016			15,449							
	Completion PY Shipbuild for FY 2018					3,700					
21	TAO Fleet Oiler										
	Advance Procurement (CY)			75,046		73,000					U
	C (FY 2019 for FY 2020) (M)			(75,046)							
	C (FY 2020 for FY 2021) (M)					(73,000)					
22	Towing, Salvage, and Rescue Ship (ATS)	A	1	80,517	2	150,282					U
23	LCU 1700	A	2	41,520	4	83,670					U
24	Outfitting	A		550,038		695,992					U
25	Ship to Shore Connector	A	8	507,875	1	65,000					U
	Completion PY Shipbuild for FY 2015			9,400							
26	Service Craft	A		72,062		56,289					U
27	LCAC SLEP	A									U

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27 Jan 2020

Appropriation: 1611N Shipbuilding and Conversion, Navy

Line No	Item Nomenclature	Ident Code	FY 2020 Total Enacted (Base+Emerg+ OCO) Quantity	FY 2020 Total Enacted (Base+Emerg+ OCO) Cost	FY 2021 Base Quantity	FY 2021 Base Cost	FY 2021 OCO for Base Requirements Quantity	FY 2021 OCO for Base Requirements Cost	FY 2021 OCO for Direct War and Enduring Costs Quantity	FY 2021 OCO for Direct War and Enduring Costs Cost	Sec
	Budget Activity 05: Auxiliaries, Craft, and Prior-Year Program Costs										
	Auxiliaries, Craft and Prior Yr Program Cost										
20	TAO Fleet Oiler	A	2	(1,056,261)		(73,000)					U
	Less: Advance Procurement (PY)			(-75,046)		(-73,000)					U
				981,215							
	Completion PY Shipbuild for FY 2016										
	Completion PY Shipbuild for FY 2018			3,700							
21	TAO Fleet Oiler										
	Advance Procurement (CY)			73,000							U
	C (FY 2019 for FY 2020) (M)										
	C (FY 2020 for FY 2021) (M)			(73,000)							
22	Towing, Salvage, and Rescue Ship (ATS)	A	2	150,282	2	168,209					U
23	LCU 1700	A	4	83,670	5	87,395					U
24	Outfitting	A		695,992		825,586					U
25	Ship to Shore Connector	A	1	65,000							U
	Completion PY Shipbuild for FY 2015										
26	Service Craft	A		56,289		249,781					U
27	LCAC SLEP	A			3	56,461					U

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(Dollars in Thousands)

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Appropriation: 1611N Shipbuilding and Conversion, Navy

Line No	Item Nomenclature	Ident Code	FY 2021 Total OCO Quantity	FY 2021 Total OCO Cost	FY 2021 Total (Base + OCO) Quantity	FY 2021 Total (Base + OCO) Cost	Sec
	Budget Activity 05: Auxiliaries, Craft, and Prior-Year Program Costs						
	Auxiliaries, Craft and Prior Yr Program Cost						
20	TAO Fleet Oiler	A				(73,000)	U
	Less: Advance Procurement (PY)					(-73,000)	U
				----------		----------	
	Completion PY Shipbuild for FY 2016						
	Completion PY Shipbuild for FY 2018						
21	TAO Fleet Oiler						
	Advance Procurement (CY)						U
	C (FY 2019 for FY 2020) (M)						
	C (FY 2020 for FY 2021) (M)						
22	Towing, Salvage, and Rescue Ship (ATS)	A			2	168,209	U
23	LCU 1700	A			5	87,395	U
24	Outfitting	A				825,586	U
25	Ship to Shore Connector	A					U
	Completion PY Shipbuild for FY 2015						
26	Service Craft	A				249,781	U
27	LCAC SLEP	A			3	56,461	U

Department of the Navy
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(Dollars in Thousands)

27 Jan 2020

Appropriation: 1611N Shipbuilding and Conversion, Navy

Line No	Item Nomenclature	Ident Code	FY 2019 (Base + OCO) Quantity	FY 2019 (Base + OCO) Cost	FY 2020 Base Enacted Quantity	FY 2020 Base Enacted Cost	FY 2020 Emergency Quantity	FY 2020 Emergency Cost	FY 2020 OCO Enacted Quantity	FY 2020 OCO Enacted Cost	Sec
28	Completion of PY Shipbuilding Programs	A									U
	AUX (MEMO NON ADD)										U
	CVN (MEMO NON ADD)										U
	CVN RCOH (MEMO NON ADD)										U
	DDG (MEMO NON ADD)										U
	LPD 17 (MEMO NON ADD)										U
Total Auxiliaries, Craft, and Prior-Year Program Costs				2,329,011		2,109,148					
Total Shipbuilding and Conversion, Navy				20,936,660		23,975,378					

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(Dollars in Thousands)

27 Jan 2020

Appropriation: 1611N Shipbuilding and Conversion, Navy

Line No	Item Nomenclature	Ident Code	FY 2020 Total Enacted (Base+Emerg+ OCO) Quantity	FY 2020 Total Enacted (Base+Emerg+ OCO) Cost	FY 2021 Base Quantity	FY 2021 Base Cost	FY 2021 OCO for Base Requirements Quantity	FY 2021 OCO for Base Requirements Cost	FY 2021 OCO for Direct War and Enduring Costs Quantity	FY 2021 OCO for Direct War and Enduring Costs Cost	Sec
28	Completion of PY Shipbuilding Programs	A				369,112					U
	AUX (MEMO NON ADD)					(59,900)					U
	CVN (MEMO NON ADD)					(71,000)					U
	CVN RCOH (MEMO NON ADD)					(198,000)					U
	DDG (MEMO NON ADD)					(9,634)					U
	LPD 17 (MEMO NON ADD)					(30,578)					U
	Total Auxiliaries, Craft, and Prior-Year Program Costs			2,109,148		1,756,544					
	Total Shipbuilding and Conversion, Navy			23,975,378		19,902,757					

21PB: FY 2021 President's Budget (Published Version), as of January 27, 2020 at 10:14:09

Department of the Navy
FY 2021President's Budget
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Total Obligational Authority
(Dollars in Thousands)

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Appropriation: 1611N Shipbuilding and Conversion, Navy

Line No	Item Nomenclature	Ident Code	FY 2021 Total OCO Quantity	FY 2021 Total OCO Cost	FY 2021 Total (Base + OCO) Quantity	FY 2021 Total (Base + OCO) Cost	Sec
28	Completion of PY Shipbuilding Programs	A				369,112	U
	AUX (MEMO NON ADD)					(59,900)	U
	CVN (MEMO NON ADD)					(71,000)	U
	CVN RCOH (MEMO NON ADD)					(198,000)	U
	DDG (MEMO NON ADD)					(9,634)	U
	LPD 17 (MEMO NON ADD)					(30,578)	U
	Total Auxiliaries, Craft, and Prior-Year Program Costs					1,756,544	
	Total Shipbuilding and Conversion, Navy					19,902,757	

21PB: FY 2021 President's Budget (Published Version), as of January 27, 2020 at 10:14:09

Line Item Table of Contents (by Appropriation then Line Number)

Appropriation 1611N: Shipbuilding and Conversion, Navy

Line #	BA	BSA	Line Item Number	Line Item Title	Page
1	01	01	1045	COLUMBIA Class Submarine	Volume 1 - 1
2	01	01	1045	COLUMBIA Class Submarine, Advance Procurement	Volume 1 - 21

Appropriation 1611N: Shipbuilding and Conversion, Navy

Line #	BA	BSA	Line Item Number	Line Item Title	Page
3	02	01	2001	Carrier Replacement Program	Volume 1 - 31
4	02	01	2004	CVN-81	Volume 1 - 63
5	02	01	2013	Virginia Class Submarine	Volume 1 - 93
6	02	01	2013	Virginia Class Submarine, Advance Procurement	Volume 1 - 107
7	02	01	2086	CVN Refueling Overhauls	Volume 1 - 111
8	02	01	2086	CVN Refueling Overhauls, Advance Procurement	Volume 1 - 151
9	02	01	2119	DDG 1000	Volume 1 - 153
10	02	01	2122	DDG-51	Volume 1 - 175

Appropriation 1611N: Shipbuilding and Conversion, Navy

Line #	BA	BSA	Line Item Number	Line Item Title	Page
11	02	01	2122	DDG-51, Advance Procurement	Volume 1 - 201
12	02	01	2127	Littoral Combat Ship (LCS)	Volume 1 - 205
13	02	01	2128	FFG-Frigate	Volume 1 - 215

Appropriation 1611N: Shipbuilding and Conversion, Navy

Line #	BA	BSA	Line Item Number	Line Item Title	Page
14	03	01	3010	LPD Flight II	Volume 1 - 241
15	03	01	3010	LPD Flight II, Advance Procurement	Volume 1 - 259
16	03	01	3039	Expeditionary Sea Base (ESB)	Volume 1 - 261
17	03	01	3041	LHA Replacement	Volume 1 - 269
18	03	01	3041	LHA Replacement, Advance Procurement	Volume 1 - 297
19	03	01	3043	Expeditionary Fast Transport (EPF)	Volume 1 - 301
991	03	01	3036	LPD-17	Volume 1 - 309

Appropriation 1611N: Shipbuilding and Conversion, Navy

Line #	BA	BSA	Line Item Number	Line Item Title	Page
20	05	01	5025	TAO Fleet Oiler	Volume 1 - 313
21	05	01	5025	TAO Fleet Oiler, Advance Procurement	Volume 1 - 321
22	05	01	5035	Towing, Salvage, and Rescue Ship (ATS)	Volume 1 - 323
23	05	01	5100	LCU 1700	Volume 1 - 327
24	05	01	5110	Outfitting	Volume 1 - 331
25	05	01	5112	Ship to Shore Connector	Volume 1 - 343
26	05	01	5113	Service Craft	Volume 1 - 351
27	05	01	5139	LCAC SLEP	Volume 1 - 359
28	05	01	5300	Completion of PY Shpbldg Progr	Volume 1 - 363
992	05	01	5087	Oceanographic Ships	Volume 1 - 369
995	05	01	5092	Moored Training Ship	Volume 1 - 373
996	05	01	5212	YP Craft Maintenance/ROH/SLEP	Volume 1 - 377

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Line Item Title	Line Item Number	Line #	BA	BSA	Page
COLUMBIA Class Submarine	1045	1	01	01	Volume 1 - 1
COLUMBIA Class Submarine, Advance Procurement	1045	2	01	01	Volume 1 - 21
CVN Refueling Overhauls	2086	7	02	01	Volume 1 - 111
CVN Refueling Overhauls, Advance Procurement	2086	8	02	01	Volume 1 - 151
CVN-81	2004	4	02	01	Volume 1 - 63
Carrier Replacement Program	2001	3	02	01	Volume 1 - 31
Completion of PY Shpbldg Progr	5300	28	05	01	Volume 1 - 363
DDG 1000	2119	9	02	01	Volume 1 - 153
DDG-51	2122	10	02	01	Volume 1 - 175
DDG-51, Advance Procurement	2122	11	02	01	Volume 1 - 201
Expeditionary Fast Transport (EPF)	3043	19	03	01	Volume 1 - 301
Expeditionary Sea Base (ESB)	3039	16	03	01	Volume 1 - 261
FFG-Frigate	2128	13	02	01	Volume 1 - 215
LCAC SLEP	5139	27	05	01	Volume 1 - 359
LCU 1700	5100	23	05	01	Volume 1 - 327
LHA Replacement	3041	17	03	01	Volume 1 - 269
LHA Replacement, Advance Procurement	3041	18	03	01	Volume 1 - 297

Line Item Title	Line Item Number	Line #	BA	BSA	Page
LPD Flight II	3010	14	03	01	Volume 1 - 241
LPD Flight II, Advance Procurement	3010	15	03	01	Volume 1 - 259
LPD-17	3036	991	03	01	Volume 1 - 309
Littoral Combat Ship (LCS)	2127	12	02	01	Volume 1 - 205
Moored Training Ship	5092	995	05	01	Volume 1 - 373
Oceanographic Ships	5087	992	05	01	Volume 1 - 369
Outfitting	5110	24	05	01	Volume 1 - 331
Service Craft	5113	26	05	01	Volume 1 - 351
Ship to Shore Connector	5112	25	05	01	Volume 1 - 343
TAO Fleet Oiler	5025	20	05	01	Volume 1 - 313
TAO Fleet Oiler, Advance Procurement	5025	21	05	01	Volume 1 - 321
Towing, Salvage, and Rescue Ship (ATS)	5035	22	05	01	Volume 1 - 323
Virginia Class Submarine	2013	5	02	01	Volume 1 - 93
Virginia Class Submarine, Advance Procurement	2013	6	02	01	Volume 1 - 107
YP Craft Maintenance/ROH/SLEP	5212	996	05	01	Volume 1 - 377

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 01: Fleet Ballistic Missile Ships / BSA 1: Fleet Ballistic Missile Ships	**P-1 Line Item Number / Title:** 1045 / COLUMBIA Class Submarine

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: 0603595N, 0603570N

Line Item MDAP/MAIS Code: 444

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity *(Units in Each)*	-	-	-	1	-	1	-	-	1	-	10	12
Gross/Weapon System Cost *($ in Millions)*	0.000	0.000	0.000	14,393.443	0.000	14,393.443	0.000	0.000	9,326.056	0.000	86,036.019	109,755.518
Less PY Advance Procurement *($ in Millions)*	-	-	-	1,636.356	-	1,636.356	-	-	2,786.849	-	32,767.255	37,190.460
Less Subsequent Year Full Funding *($ in Millions)*	-	-	-	5,274.157	-	5,274.157	-	-	3,347.765	-	-	8,621.922
Less AP Transfer to NSBDF *($ in Millions)*	-	-	-	4,591.455	-	4,591.455	-	-	198.638	-	18.270	4,808.363
Net Procurement (P-1) *($ in Millions)*	0.000	0.000	0.000	2,891.475	0.000	2,891.475	0.000	0.000	2,992.804	0.000	53,250.494	59,134.773
Plus Subsequent Year Full Funding *($ in Millions)*	-	-	-	-	-	-	2,767.677	2,506.480	-	3,347.765	-	8,621.922
Full Funding TOA *($ in Millions)*	-	-	-	2,891.475	-	2,891.475	2,767.677	2,506.480	2,992.804	3,347.765	53,250.494	67,756.695
Plus CY Advance Procurement *($ in Millions)*	-	-	1,820.927	1,123.175	-	1,123.175	1,229.000	1,643.671	2,211.248	2,760.174	26,402.265	37,190.460
Plus AP Transfer to NSBDF *($ in Millions)*	1,634.963	3,173.400	-	-	-	-	-	-	-	-	-	4,808.363
Total Obligation Authority *($ in Millions)*	**1,634.963**	**3,173.400**	**1,820.927**	**4,014.650**	**0.000**	**4,014.650**	**3,996.677**	**4,150.151**	**5,204.052**	**6,107.939**	**79,652.759**	**109,755.518**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Plus Outfitting and Post Delivery *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	2,787.100	2,787.100
Total *($ in Millions)*	**1,634.963**	**3,173.400**	**1,820.927**	**4,014.650**	**-**	**4,014.650**	**3,996.677**	**4,150.151**	**5,204.052**	**6,107.939**	**82,439.859**	**112,542.618**
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	14,393.443	-	14,393.443	-	-	9,326.056	-	8,603.602	9,146.293

Description:

MISSION: Strategic Deterrence. The COLUMBIA Class Program is an Acquisition Category (ACAT) ID Major Defense Acquisition Program (MDAP) to design, construct, and deliver a replacement for the OHIO Class Fleet Ballistic Missile Submarines (SSBNs), which begins retiring at a rate of one per year beginning in 2027. The mission of the COLUMBIA SSBN is to maintain an appropriate state of readiness to assist in deterring nuclear attack on the United States and its allies. In the event deterrence should fail, the force must be capable of launching missiles against pre-planned or adaptively planned targets. To fulfill this mission COLUMBIA SSBNs must be capable of performing extended strategic deterrent patrols without requiring assistance or replenishment. It does not have a requirement for additional capabilities or other missions unrelated to survivable strategic nuclear deterrence.

Armament:
Torpedo Tubes
Ballistic Missile Tubes

Major Electronics:
Trident D5 Strategic Weapons System
Command, Control, Communications and Intelligence System
- Open System Architecture
- Twenty-three Subsystems

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy		Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 01: Fleet Ballistic Missile Ships / BSA 1: Fleet Ballistic Missile Ships	**P-1 Line Item Number / Title:** 1045 / COLUMBIA Class Submarine	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** 0603595N, 0603570N
Line Item MDAP/MAIS Code: 444		

Note:
FY2021 is the year of authorization for the lead ship, USS COLUMBIA, and is a new start program due to FY2021 being the first year of incremental full funding. The budget request supports detailed design and construction of Contractor Furnished Equipment (CFE) and Government Furnished Equipment (GFE) systems to build, test, outfit, and deliver SSBN826. Funding also supports Continuous Production of Missile Tubes, Advance Construction (AC), Economic Order Quantity (EOQ) for Multi-Program Procurement, Continuous Production of Shipyard Manufactured Items, and Supplier Development to reduce COLUMBIA Class construction schedule risk executed in accordance with enhanced acquisition authorities contained within the U.S.C. 2218a. These funds are required in October of 2020 to ensure the COLUMBIA Program meets program schedules and the components will meet in yard need dates to support on time construction start and delivery. The Navy intends to pursue a block buy contract for the first two COLUMBIA class submarines (SSBN826 and SSBN827). This strategy provides industrial base stability, production efficiencies, and cost savings when compared to an annual procurement with options cost estimate.

Note: The Navy and Electric Boat reached a signed settlement on 20 December 2019 for awarding the COLUMBIA Build I modification (SSBN 826, SSBN 827, and associated design/support efforts) planned for FY 2020. This will be a modification of the current IPPD contract (N00024-17-C-2117). Award of this modification (with an option for hulls 826 and 827) is targeted for third quarter FY 2020 (originally planned for first quarter FY 2021). This is in line with the program's approved Acquisition Strategy. The program will request authorization of SSBN 826 in FY21, funded with three years of incremental funding in FY21-23, and authorization of SSBN 827 in FY24, funded with two years of incremental funding in FY24-25.

Since the FY 2020 President's Budget request, the COLUMBIA Class Program continues investment in initiatives to reduce construction schedule risk and enable cost savings (Multi-Program Material Procurement, Continuous Production of Missile Tubes/Outfitting, Ordnance Systems and Shipyard Manufactured Components, Economic Order Quantity efforts, and Advance Construction). Increased investment in Strategic Weapons System (SWS) Shipboard Systems EOQ and Continuous Production leverages additional opportunities to mitigate obsolescence and construction schedule risks, and realize additional cost savings outside of the FYDP. The first Missile Tube Module (MTM) was funded through RDTEN PE 0603595N for $617M.

Characteristics:	**SSBN**
Length Overall	560 ft
Beam	43 ft
Displacement	20,800 TONS
Draft	36.9 ft

Production Status:	**SSBN 826** (1)
Contract Award Date	Oct 2020
Months to Completion	
a) Award to Delivery	84 months
b) Construction Start to Delivery	84 months
Delivery Date	Oct 2027
Completion Of Fitting Out	Oct 2027
Obligation Work Limit Date	Oct 2029

Design Schedule	Start / Issue	Complete / Response	Reissue	Reissue Complete / Response
Issue Date for TLR	N/A	N/A		
Issue Date for TLS	N/A	N/A		
Preliminary Design	N/A	N/A		
Contract Design	N/A	N/A		
Detail Design	N/A	N/A		

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy			Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 01: Fleet Ballistic Missile Ships / BSA 1: Fleet Ballistic Missile Ships		**P-1 Line Item Number / Title:** 1045 / COLUMBIA Class Submarine	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A		**Other Related Program Elements:** 0603595N, 0603570N
Line Item MDAP/MAIS Code: 444			

Design Schedule	Start / Issue	Complete / Response	Reissue	Reissue Complete / Response
Request for Proposals	N/A	N/A		
Design Agent				

Classification of Cost Estimate:

Footnotes:

(1) The FY21 award of COLUMBIA Class Build I is on track to award in May 2020 (as noted in the P40). The start of construction dates reflect when Electric Boat starts construction of lead ship.

Exhibit P-5c, Ship Cost Analysis: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 01 / 1	**P-1 Line Item Number / Title:** 1045 / COLUMBIA Class Submarine

Cost Categories (†) indicates the presence of a P-8a	**FY 2021**	
	Qty *(Each)*	**Total Cost** *($ M)*
Plan Costs	1	6,007.781
Basic Construction/Conversion		5,164.418
Change Orders		260.029
Electronics (†)		358.141
Propulsion Equipment		1,700.896
Hull, Mechanical, and Electrical (HM&E) (†)		170.431
Ordnance (†)		660.034
Other Cost		71.713
Total Ship Estimate		**14,393.443**
Less Advance Procurement FY 2020		1,636.356
Less Subsequent Full Funding FY 2022		2,767.677
Less Subsequent Full Funding FY 2023		2,506.480
Less AP Transfer to NSBDF FY 2017		773.138
Less AP Transfer to NSBDF FY 2018		802.288
Less AP Transfer to NSBDF FY 2019		3,016.029
Net P-1 Funding		**2,891.475**

Exhibit P-27, Ship Production Schedule: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 01 / 1	**P-1 Line Item Number / Title:** 1045 / COLUMBIA Class Submarine

Ship	Shipbuilder	Fiscal Year	Contract Award	Start of Construction	Delivery Date
SSBN 826 (1)	TBD	2021	Oct 2020	Oct 2020	Oct 2027
SSBN 827 (2)	TBD	2024		Mar 2024	Oct 2030

Footnotes:

(1) The FY21 award of COLUMBIA Class Build I is on track to award in May 2020 (as noted in the P40). The start of construction dates reflect when Electric Boat starts construction of lead ship.

(2) The Contract Award Dates (FY21 SSBN 826 and FY24 SSBN 827) are contingent on authority to award the Columbia Class Build I (SSBN 826 and SSBN 827) option (FY21 Legislation proposed). The Delivery Date reflects current estimated dates (not the contract delivery dates).

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 01 / 1	**P-1 Line Item Number / Title:** 1045 / COLUMBIA Class Submarine

Electronics	FY 2021 Qty *(Each)*	FY 2021 Total Cost *($ M)*
P-35 Items		
Sonar	1	95.117
Combat Control	1	15.512
CANES	1	16.306
Electronic Warfare	1	21.804
Photonics	1	22.104
Universal Modular Masts (UMM)	1	9.761
Exterior Communications	1	39.219
P-35 Items Subtotal		**219.823**
Major Items		
System Level Activities	1	46.642
RADAR	1	3.452
Navigation	1	2.075
CWITT	1	25.151
Non-Propulsion Electronics System, Systems Engineering and Integration (NPES SE&I)	1	27.119
BRR-6 System	1	17.916
BST-1 System	1	8.100
External Countermeasures, IFF	1	7.863
Major Items Subtotal		**138.318**
Total Electronics		**358.141**

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 01 / 1	**P-1 Line Item Number / Title:** 1045 / COLUMBIA Class Submarine

Hull, Mechanical, and Electrical (HM&E)	FY 2021	
	Qty *(Each)*	Total Cost *($ M)*
P-35 Items		
Propulsor	1	97.748
Advanced Carbon Dioxide Removal Unit (ACRU)	1	5.960
P-35 Items Subtotal		**103.708**
Other Cost Elements		
HM&E Installation and testing		11.898
T&E		7.547
SUPSHIP responsible material		1.304
Naval Foundry Propeller Center (NFPC)		45.974
Other Cost Elements Subtotal		**66.723**
Total Hull, Mechanical, and Electrical (HM&E)		**170.431**

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 01 / 1	**P-1 Line Item Number / Title:** 1045 / COLUMBIA Class Submarine

Ordnance	FY 2021	
	Qty *(Each)*	Total Cost *($ M)*
P-35 Items		
Strategic Weapons System (SWS) Launcher	1	283.667
SWS Fire Control	1	113.272
SWS Navigation	1	86.033
P-35 Items Subtotal		**482.972**
Major Items		
SWS System Level Activities		43.926
SWS Reentry Subsystem		5.202
SWS Guidance Subsystem		3.891
SWS Missile Integration Activities		40.808
SWS Test Instrumentation Subsystem		19.135
SWS Demonstration and Shakedown Availability (System Certification)		64.100
Major Items Subtotal		**177.062**
Total Ordnance		**660.034**

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 01 / 1	**P-1 Line Item Number / Title:** 1045 / COLUMBIA Class Submarine
Equipment Item: Sonar	**PARM Code:** N/A

P-35 Category	FY 2021 Qty (Each)	FY 2021 Total Cost ($ M)
Major Hardware	1	60.875
Technical Engineering Services		17.597
Other Costs		16.645
Total	**1**	**95.117**

Description:

The COLUMBIA ELECTRONICS budget funds procurement of the Non-Propulsion Electronics System (NPES), which is the collection of command and control subsystems required to provide all of the non-strategic warfighting, navigation, communications, and crew information technology functions. The Sonar P-35 item contains acoustic sensors and processing electronics required to detect, classify, track and localize surface and submerged contacts. This includes Large Aperture Bow (LAB) array hydrophones, outboard electronics bottles, the Low Cost Conformal Array (LCCA), the AN/WSQ-9 signal analysis system, acoustic intercept and miscellaneous single purpose function sensors, total ship monitoring system (TSMS) , two (2) tactical towed arrays, high frequency sail array, and inboard signal conditioning and display electronics capacity to support both GFE sensors and the CFE Large Vertical Array (LVA). The SONAR P-35 includes engineering services required to produce the sonar logistics products, perform equipment installation, provide construction window field support/troubleshooting/repair, and support platform compatibility engineering, integration, and testing. Other costs include software, initial spares, ship systems data, and SONAR program management labor.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2021	SSBN 826	Lockheed Martin	C/CPIF	Apr 2019	Option	1	60.875

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2021	SSBN 826	Oct 2027	42	32	Aug 2021

Competition/Second Source Initiatives:

N/A

Remarks:

The SONAR P-35 exhibit includes funding for multiple subsystem contracts, field activities, and support efforts in addition to system hardware. The unit cost in the contract data section only reflects the major prime contractor HW/SW procurement and system integration cost, specifically Lockheed Martin: A-RCI, TSMS, AI&R, LWLCCA (CPIF); NSMA: WSQ-9 (FPI); and L-3: TB-34,TB-29(CPIF).

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 01 / 1	**P-1 Line Item Number / Title:** 1045 / COLUMBIA Class Submarine
Equipment Item: Combat Control	**PARM Code:** N/A

P-35 Category	FY 2021 Qty (Each)	FY 2021 Total Cost ($ M)
Major Hardware	1	4.886
Technical Engineering Services		3.490
Other Costs		7.136
Total	**1**	**15.512**

Description:

The COLUMBIA ELECTRONICS budget funds procurement of the Non-Propulsion Electronics System (NPES), which is the collection of command and control subsystems required to provide all of the non-strategic warfighting, navigation, communications, and crew information technology functions. The Combat Control P-35 item contains processing electronics and attack center controls and displays required to support launch of non-strategic defensive weapons and fuse all contact data with own-ship navigational positioning. The hardware suite contains combat control processing and display electronics, and electronics specific to cyber security protection and monitoring of the entire NPES. The Combat Control P-35 includes engineering services required to produce the logistics products, perform equipment installation, provide construction window field support/troubleshooting/repair, and support platform compatibility engineering, integration, and system testing. Other costs include the extensive suite of individually procured software applications (Tactical Control, Weapons Control, Common Infrastructure Services, Voyage Management System, Information Assurance, On-Board Team Trainer Master Controller, Integrated System Maintenance Tool), initial spares, ship systems data, and Combat Control program management labor.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2021	SSBN 826	Competitive	C/CPIF	Apr 2021	New	1	4.866

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2021	SSBN 826	Oct 2027	42	32	Aug 2021

Competition/Second Source Initiatives:

N/A

Remarks:

The Combat Control P-35 exhibit includes funding for the H/W suite, multiple software contracts, field activities, and support efforts in addition to system hardware.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 01 / 1	**P-1 Line Item Number / Title:** 1045 / COLUMBIA Class Submarine
Equipment Item: CANES	**PARM Code:** N/A

P-35 Category	FY 2021 Qty (Each)	FY 2021 Total Cost ($ M)
Major Hardware	1	4.484
Technical Data and Documentation		4.810
Other Costs		7.012
Total	**1**	**16.306**

Description:

The COLUMBIA ELECTRONICS budget funds procurement of the Non-Propulsion Electronics System (NPES), which is the collection of command and control subsystems required to provide all of the non-strategic warfighting, navigation, communications, and crew information technology functions. This P-35 covers the procurement requirements for the Consolidated Afloat Networks and Enterprise Services (CANES) crew information technology hardware suite and the non-tactical data processing system (NTDPS) software. The hardware suite contains CANES processing and display electronics and peripherals (laptops, printers, data storage), and the software suite is inclusive of the NTDPS applications. The CANES P-35 includes engineering services required to produce the logistics products, perform equipment installation, provide construction window field support/troubleshooting/repair, and support platform compatibility engineering, integration, and system testing. Other costs include the suite of individually procured NTDPS software applications, initial spares, ship systems data, and CANES program management labor.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2021	SSBN 826	NEIS	Various	May 2022	Option	1	4.484

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2021	SSBN 826	Oct 2027	42	15	Jan 2023

Competition/Second Source Initiatives:

N/A

Remarks:

The CANES P-35 exhibit includes funding for the H/W suite, software contracts, field activities, and support efforts in addition to system hardware.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 01 / 1	**P-1 Line Item Number / Title:** 1045 / COLUMBIA Class Submarine
Equipment Item: Electronic Warfare	**PARM Code:** N/A

P-35 Category	FY 2021 Qty (Each)	FY 2021 Total Cost ($ M)
Major Hardware	1	11.992
Technical Engineering Services		5.342
Other Costs		4.470
Total	**1**	**21.804**

Description:

The COLUMBIA ELECTRONICS budget funds procurement of the Non-Propulsion Electronics System (NPES), which is the collection of command and control subsystems required to provide all of the non-strategic warfighting, navigation, communications, and crew information technology functions. The EW P-35 item contains the processing electronics and software required to detect surface borne electromagnetic energy and classify threat emissions spanning a variety of signal types and frequency range. This includes the AN/BLQ-10 signal processing, display and control system and TYPE 20/24 antenna below deck processing electronics. The EW P-35 includes engineering services required to produce the EW logistics products, perform equipment installation, provide construction window field support/ troubleshooting/repair, and support platform compatibility engineering, integration, and system testing. Other costs include software, initial spares, ship systems data, and EW program management labor.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2021	SSBN 826	LM RMS	Various	Feb 2021	Option	1	11.992

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2021	SSBN 826	Oct 2027	42	24	Apr 2022

Competition/Second Source Initiatives:

N/A

Remarks:

The EW P-35 exhibit includes total funding for the contracts, field activities, and support efforts in addition to system hardware.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 01 / 1	**P-1 Line Item Number / Title:** 1045 / COLUMBIA Class Submarine
Equipment Item: Photonics	**PARM Code:** N/A

P-35 Category	FY 2021 Qty (Each)	FY 2021 Total Cost ($ M)
Major Hardware	1	12.820
Technical Engineering Services		5.195
Other Costs		4.089
Total	**1**	**22.104**

Description:

The COLUMBIA ELECTRONICS budget funds procurement of the Non-Propulsion Electronics System (NPES), which is the collection of command and control subsystems required to provide all of the non-strategic warfighting, navigation, communications, and crew information technology functions. The Photonics P-35 item contains the two (2) imaging masts, inboard processing electronics and software required to support surface and submerged periscope operations, and includes visual and infrared (IR) imaging, RF signal communications, and radar early warning. The Photonics P-35 includes engineering services required to produce the logistics products, perform equipment installation, provide construction window field support/troubleshooting/repair, and support platform compatibility engineering and integration. Other costs include software, initial spares, ship systems data, and Photonics program management labor.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2021	SSBN 826	LM RMS	C/CPIF	Sep 2021	Option	1	12.820

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2021	SSBN 826	Oct 2027	42	24	Apr 2022

Competition/Second Source Initiatives:

N/A

Remarks:

The Photonics P-35 exhibit includes funding for multiple contracts, field activities, and support efforts in addition to system hardware. The unit cost in the contract data section only reflects the major electronics (LM: CPIF Option) and mast (1 shipset, $4,220 unit cost); (L3-KEO: CPIF Option) prime contractor HW/SW procurement (1 shipset, $8,600 unit cost)and system integration cost.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 01 / 1	**P-1 Line Item Number / Title:** 1045 / COLUMBIA Class Submarine
Equipment Item: Universal Modular Masts (UMM)	**PARM Code:** N/A

P-35 Category	FY 2021 Qty (Each)	FY 2021 Total Cost ($ M)
Major Hardware	1	6.979
Technical Engineering Services		2.050
Other Costs		0.732
Total	**1**	**9.761**

Description:

The COLUMBIA ELECTRONICS budget funds procurement of the Non-Propulsion Electronics System (NPES), which is the collection of command and control subsystems required to provide all of the non-strategic warfighting, navigation, communications, and crew information technology functions. The UMM P-35 item contains the hardware costs for six (6) telescopic mechanical mast assemblies custom sized for Columbia Class Sail installation, and required to raise and lower the Photonics and Exterior Communications mast heads. The UMM P-35 includes engineering services required to produce the logistics products, perform equipment installation, provide construction window field support/troubleshooting/repair, and support platform compatibility engineering and integration. Other costs include initial spares, ship systems data, and UMM program management labor.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2021	SSBN 826	L3-KEO	SS/FFP	Feb 2021	Option	1	6.979

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2021	SSBN 826	Oct 2027	53	21	Aug 2021

Competition/Second Source Initiatives:

N/A

Remarks:

The UMM P-35 exhibit includes funding for the prime contract, services contract, and field activities.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 01 / 1	**P-1 Line Item Number / Title:** 1045 / COLUMBIA Class Submarine
Equipment Item: Exterior Communications	**PARM Code:** N/A

P-35 Category	FY 2021 Qty (Each)	FY 2021 Total Cost ($ M)
Major Hardware	1	24.512
Technical Engineering Services		7.648
Other Costs		7.059
Total	**1**	**39.219**

Description:

The COLUMBIA ELECTRONICS budget funds procurement of the Non-Propulsion Electronics System (NPES), which is the collection of command and control subsystems required to provide all of the non-strategic warfighting, navigation, communications, and crew information technology functions. The Exterior Communications Systems (ECS) provides the secure off-hull connectivity vital to ship operation and mission success. The ECS P-35 item contains two (2) multi-function antennas, one (1) high data rate antenna, two (2) floating wire antennas, below deck digital modular radios, cryptology, routers, and operator display and control electronics. The ECS P-35 includes engineering services required to produce the ECS logistics products, perform equipment installation, provide construction window field support/ troubleshooting/repair, and support platform compatibility engineering and integration. Other costs include software, initial spares, ship systems data, and ECS program management labor.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2021	SSBN 826	Various	Various	Various	Option	1	24.512

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2021	SSBN 826	Oct 2027	79	9	Jun 2020

Competition/Second Source Initiatives:

N/A

Remarks:

The ECS P-35 exhibit includes funding for multiple subsystems, contracts, and field activities. The preponderance of components are submarine fleet common, and procured as Government-Off-The-Shelf (GOTS) components using existing PEO C4I contracts.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 01 / 1	**P-1 Line Item Number / Title:** 1045 / COLUMBIA Class Submarine
Equipment Item: Propulsor	**PARM Code:** N/A

P-35 Category	FY 2021 Qty (Each)	FY 2021 Total Cost ($ M)
Major Hardware	1	86.043
Technical Engineering Services		11.705
Total	**1**	**97.748**

Description:

The propulsor consists of Ni-Al-bronze components and assemblies, a monel bearing support structure, other engineered components and supporting items for corrosion protection, noise monitoring, etc. The purpose of the propulsor is to generate proper thrust to propel the ship at a rated speed within the approved limits of torque and shaft RPM, while at the same time meeting acoustic and structural requirements. This design is unique to the COLUMBIA Class. The propulsor consists of a large quantity of government supplied material and contracts for specific engineered components.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2021	SSBN 826	Various	Various	Sep 2019	New	1	86.043

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2021	SSBN 826	Oct 2027	52	44	Oct 2019

Competition/Second Source Initiatives:

Each contract planned to support manufacture of SSBN 826 propulsor components is intended to be a competitive award.

Remarks:

Naval Surface Warfare Center Carderock Division (NSWCCD) awarded the lead ship Bearing Support Structure contract in Sep 2019 to General Atomics. This contract will be competitively awarded. NSWCCD will award separate contracts for Ropeguard and Cover Plates, Plug Production, Hydrodynamic Shaping Material (HYSHMA) Production, and Tailcone Production in FY20-22 to support deliveries to SSBN 826.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 01 / 1	**P-1 Line Item Number / Title:** 1045 / COLUMBIA Class Submarine
Equipment Item: Advanced Carbon Dioxide Removal Unit (ACRU)	**PARM Code:** N/A

P-35 Category	FY 2021 Qty *(Each)*	FY 2021 Total Cost *($ M)*
Major Hardware	1	3.576
Technical Engineering Services		1.341
Other Costs		1.043
Total	**1**	**5.960**

Description:

Advanced Carbon Dioxide (CO2) Removal Unit (ACRU) will replace legacy CO2 removal equipment on COLUMBIA Class Submarines. The ACRU uses a solid sorbent material vice the hazardous liquid amine used in existing CO2 scrubbers . The ACRU is Government Furnished Equipment for the first two hulls and will be procured to support EB's integration schedule and required in year need dates. The solid sorbent material will be procured separately from the ACRUs. On-board spares, drawing updates and Government technical and contractual oversight, and other costs are also included in the engineering and Other costs.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity *(Each)*	Unit Cost *($ M)*
FY 2021	SSBN 826	Various	Various	Jun 2020	New	1	3.576

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2021	SSBN 826	Oct 2027	55	34	May 2020

Competition/Second Source Initiatives:

Each contract planned to support manufacture of SSBN 826 propulsor components is intended to be a competitive award.

Remarks:

NSWC Philadelphia has been tasked to award contract for lead ship ACRU procurement with option for second hull. Contract procurement is scheduled for FY20.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 01 / 1	**P-1 Line Item Number / Title:** 1045 / COLUMBIA Class Submarine
Equipment Item: Strategic Weapons System (SWS) Launcher	**PARM Code:** N/A

P-35 Category	FY 2021 Qty (Each)	FY 2021 Total Cost ($ M)
Major Hardware	1	221.876
Technical Engineering Services		61.791
Total	**1**	**283.667**

Description:

The COLUMBIA Strategic Weapon System (SWS) will consist of multiple subsystems comprised of tactical and non-tactical subsystems which work as a single unit to prepare, launch, and deliver the warheads to their predetermined targets. The SWS Launcher Subsystem includes the equipment necessary to store and launch the TRIDENT II (D5) Missile when the submarine is submerged or surfaced. This SWS Launcher Subsystem consists of a Launch Tube Group, Missile Handling Equipment, a Vertical Support Group, an Umbilical Retractor Group, a Closure Group, a Missile Ejector Group, and security locks. The SWS Launcher P-35 includes program management and engineering services required to produce the logistics products, support equipment installation, provide construction window field support/troubleshooting/ repair, and support platform compatibility engineering, integration, and system testing.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2021	SSBN 826	Various	Various	Mar 2019	New	1	221.876

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2021	SSBN 826	Oct 2027	74	29	Mar 2019

Competition/Second Source Initiatives:

N/A

Remarks:

Northrop Grumman System Corporation - Marine Systems was a awarded a contract in March 2019 to procure the preponderance of Launcher Subsystem components for SSBN 826. Naval Surface Warfare Center Crane Division will award separate contracts for associated support equipment in FY19-21 to support deliveries to SSBN 826.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 01 / 1	**P-1 Line Item Number / Title:** 1045 / COLUMBIA Class Submarine
Equipment Item: SWS Fire Control	**PARM Code:** N/A

P-35 Category	FY 2021 Qty (Each)	FY 2021 Total Cost ($ M)
Major Hardware	1	90.043
Technical Engineering Services		23.229
Total	**1**	**113.272**

Description:

The COLUMBIA Strategic Weapon System (SWS) will consist of multiple subsystems comprised of tactical and non-tactical subsystems which work as a single unit to prepare, launch, and deliver the warheads to their predetermined targets. The SWS Fire Control Subsystem includes equipment necessary to launch the TRIDENT II (D5) Missile; monitor and control the missile environment; provide checkout and fault isolation capabilities; and provide equipment and network infrastructure capable of collecting, recording, processing, on-loading, and off-loading SWS data to support weapon system performance and accuracy evaluation. The SWS Fire Control P-35 includes engineering services required to produce the logistics products, support equipment installation, provide construction window field support/troubleshooting/repair, and support platform compatibility engineering, integration, and system testing.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2021	SSBN 826	General Dynamics Mission Systems	SS/CPIF	Feb 2020	New	1	90.043

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2021	SSBN 826	Oct 2027	65	27	Feb 2020

Competition/Second Source Initiatives:

N/A

Remarks:

General Dynamics Missions Systems will be awarded a lead ship contract in FY20 to procure SWS Fire Control subsystem components and provide subsystem integration efforts.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 01 / 1	**P-1 Line Item Number / Title:** 1045 / COLUMBIA Class Submarine
Equipment Item: SWS Navigation	**PARM Code:** N/A

P-35 Category	FY 2021 Qty (Each)	FY 2021 Total Cost ($ M)
Major Hardware	1	64.452
Technical Engineering Services		21.581
Total	**1**	**86.033**

Description:

The COLUMBIA Strategic Weapon System (SWS) will consist of multiple subsystems comprised of tactical and non-tactical subsystems which work as a single unit to prepare, launch, and deliver the warheads to their predetermined targets. The SWS Navigation Subsystem includes inertial and non-inertial equipment necessary to determine submarine position which is critical in support of SWS accuracy as well as platform tactical navigation requirements. The SWS Navigation P-35 includes engineering services required to produce the logistics products, support equipment installation, provide construction window field support/troubleshooting/repair, and support platform compatibility engineering, integration, and system testing.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2021	SSBN 826	Lockheed-Martin (Rotary & Mission Systems)	SS/CPIF	Feb 2020	Option	1	64.452

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2021	SSBN 826	Oct 2027	55	26	Jan 2021

Competition/Second Source Initiatives:

N/A

Remarks:

Additional fixed priced contracts will be awarded to Lockheed Martin Rotary and Mission Systems in FY21 to continually produce inertial navigation components for all SSBN platforms. Other non-inertial navigation components for SSBN 826, as well as Navigation Subsystem integration efforts, was procured on options to an existing Lockheed Martin Rotary and Mission Systems awarded November 2019.

Exhibit P-10, Advance Procurement Requirements Analysis (*page 1 - Budget Funding Justification*): PB 2021 Navy | **Date:** February 2020

Appropriation / Budget Activity / Budget Sub Activity:
1611N / 01 / 1

P-1 Line Item Number / Title:
1045 / COLUMBIA Class Submarine

First System (2021) Award Date: October 2020
First System (2021) Completion Date: October 2027
Interval Between Systems: 0 Months

Cost Elements	Production Leadtime (Months)	When Required* (Months)	FY 2019 ($ M)	FY 2020 ($ M)	FY 2021 ($ M)	FY 2022 ($ M)	FY 2023 ($ M)	FY 2024 ($ M)	FY 2025 ($ M)
PLANS									
Lead Ship Design (1)	12-60	Various	628.670	727.262	0.000	-	-	-	-
Supplier Development (2)	12-60	Various	127.300	145.400	0.000	-	-	-	-
Total: PLANS			*755.970*	*872.662*	*-*	*-*	*-*	*-*	*-*
BASIC CONSTRUCTION (3) - SHIPBUILDER PROCURED LLTM									
SSBN 826	24-42	Various	405.133	460.469	0.000	-	-	-	-
SSBN 827	24-54	Various	-	-	136.040	142.134	220.247	-	-
SSBN 828	24-54	Various	-	-	0.000	-	145.688	277.814	314.990
SSBN 829	24-54	Various	-	-	0.000	-	-	150.800	149.736
SSBN830	24-54	Various	-	-	0.000	-	-	-	156.063
Total: BASIC CONSTRUCTION (3) - SHIPBUILDER PROCURED LLTM			*405.133*	*460.469*	*136.040*	*142.134*	*365.935*	*428.614*	*620.789*
BASIC CONSTRUCTION (4) - MISSILE TUBE CONTINUOUS PRODUCTION									
SSBN 827	36-42	Various	59.671	66.169	0.000	-	-	-	-
SSBN 828	36-42	Various	-	19.477	86.288	90.522	-	-	-
SSBN 829	36-42	Various	-	-	0.000	57.399	112.201	38.287	-
SSBN 830	36-42	Various	-	-	0.000	-	-	55.899	109.769
SSBN 831	36-42	Various	-	-	0.000	-	-	-	57.548
Total: BASIC CONSTRUCTION (4) - MISSILE TUBE CONTINUOUS PRODUCTION			*59.671*	*85.646*	*86.288*	*147.921*	*112.201*	*94.186*	*167.317*
BASIC CONSTRUCTION (5) - ADVANCE CONSTRUCTION									
SSBN 826	24-42	Various	72.100	148.380	0.000	-	-	-	-
SSBN 827	24-42	Various	-	-	28.730	76.493	230.494	-	-
SSBN 828	24-42	Various	-	-	0.000	-	2.851	88.552	252.776
SSBN 829	24-42	Various	-	-	0.000	-	-	3.000	96.392
SSBN 830	24-42	Various	-	-	0.000	-	-	-	3.071
Total: BASIC CONSTRUCTION (5) - ADVANCE CONSTRUCTION			*72.100*	*148.380*	*28.730*	*76.493*	*233.345*	*91.552*	*352.239*
BASIC CONSTRUCTION (6) - EOQ IN SUPPORT OF MULTI-PROGRAM PROCUREMENT									
SSBN 827	24-42	Various	78.380	61.447	20.866	-	-	-	-
SSBN 837 - Production Backup Units	24-42	Various	17.500	13.896	12.299	12.198	11.898	13.998	-

Exhibit P-10, Advance Procurement Requirements Analysis (*page 1 - Budget Funding Justification*): PB 2021 Navy	Date: February 2020
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First System (2021) Award Date:	First System (2021) Completion Date:	Interval Between Systems:
October 2020	October 2027	0 Months

Cost Elements	Production Leadtime (Months)	When Required* (Months)	FY 2019 ($ M)	FY 2020 ($ M)	FY 2021 ($ M)	FY 2022 ($ M)	FY 2023 ($ M)	FY 2024 ($ M)	FY 2025 ($ M)
Total: BASIC CONSTRUCTION (6) - EOQ IN SUPPORT OF MULTI-PROGRAM PROCUREMENT			*95.880*	*75.343*	*33.165*	*12.198*	*11.898*	*13.998*	*-*
BASIC CONSTRUCTION (7) - SHIPYARD MANUFACTURED ITEMS CONTINUOUS PRODUCTION									
SSBN 827	12-36	Various	1.050	6.619	8.891	11.953	15.738	-	-
SSBN 828	12-36	Various	0.770	-	4.530	8.210	2.780	16.268	15.299
SSBN 829	12-36	Various	-	-	0.000	4.560	5.860	5.789	11.660
SSBN 830	12-36	Various	-	-	0.930	-	5.780	4.000	7.531
SSBN 831	12-36	Various	-	-	0.000	0.930	-	4.610	4.683
SSBN 832	12-36	Various	-	-	0.000	-	1.180	-	5.420
SSBN 833	12-36	Various	-	-	0.000	-	-	0.940	-
SSBN 834	12-36	Various	-	-	0.000	-	-	-	1.099
Total: BASIC CONSTRUCTION (7) - SHIPYARD MANUFACTURED ITEMS CONTINUOUS PRODUCTION			*1.820*	*6.619*	*14.351*	*25.653*	*31.338*	*31.607*	*45.692*
NUCLEAR PROPULSION PLANT EQUIPMENT (8)									
SSBN 826	30-72	Various	1,700.896	-	0.000	-	-	-	-
SSBN 827 (In support of AC)	30-72	Various	-	-	816.737	797.262	-	-	-
SSBN 828 (In Support of AC)	30-72	Various	-	-	0.000	-	772.686	782.314	-
SSBN 829 (In Support of AC)	30-72	Various	-	-	0.000	-	-	748.200	765.800
SSBN 830 (In support of AC)	30-72	Various	-	-	0.000	-	-	-	734.937
Total: NUCLEAR PROPULSION PLANT EQUIPMENT (8)			*1,700.896*	*-*	*816.737*	*797.262*	*772.686*	*1,530.514*	*1,500.737*
HM&E (9)									
SSBN 826 (In support of AC)	24-42	Various	26.000	41.948	0.000	-	-	-	-
SSBN 827 (In Support of AC)	24-42	Various	-	-	0.000	-	51.919	-	-
SSBN 828 (In support of AC)	24-42	Various	-	-	0.000	-	-	-	36.940
Total: HM&E (9)			*26.000*	*41.948*	*-*	*-*	*51.919*	*-*	*36.940*
ORDNANCE SWS SHIPBOARD SYSTEMS (10) - LLTM									
SSBN 826 (In Support of AC)	12-28	Various	48.300	83.783	0.000	-	-	-	-
SSBN 827 (In Support of AC)	12-48	Various	-	6.237	1.912	20.623	55.707	-	-
SSBN 828	12-28	Various	-	-	0.000	-	-	3.785	31.493

Exhibit P-10, Advance Procurement Requirements Analysis (*page 1 - Budget Funding Justification*): PB 2021 Navy	Date: February 2020
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First System (2021) Award Date:	First System (2021) Completion Date:	Interval Between Systems:
October 2020	October 2027	0 Months

Cost Elements	Production Leadtime (Months)	When Required* (Months)	FY 2019 ($ M)	FY 2020 ($ M)	FY 2021 ($ M)	FY 2022 ($ M)	FY 2023 ($ M)	FY 2024 ($ M)	FY 2025 ($ M)
SSBN 829	12-28	Various	-	-	0.000	-	-	-	4.882
Total: ORDNANCE SWS SHIPBOARD SYSTEMS (10) - LLTM			*48.300*	*90.020*	*1.912*	*20.623*	*55.707*	*3.785*	*36.375*
ORDNANCE SWS SHIPBOARD SYSTEMS (11) - ECONOMIC ORDER QUANTITY									
SSBN 826	12-24	Various	-	0.224	0.000	-	-	-	-
SSBN 827	12-24	Various	-	0.478	0.140	0.141	0.035	-	-
SSBN 828	12-24	Various	-	0.478	0.140	0.141	0.054	0.679	-
SSBN 829	12-24	Various	-	0.478	0.140	0.141	0.054	0.679	0.005
SSBN 830	12-24	Various	-	0.224	0.140	0.141	0.054	0.679	0.010
SSBN 831	12-24	Various	-	0.224	0.140	0.141	0.054	0.679	0.010
SSBN 832	12-24	Various	-	0.224	0.140	0.141	0.054	0.679	0.010
SSBN 833	12-24	Various	-	0.224	0.140	0.141	0.054	0.679	0.010
SSBN 834	12-24	Various	-	0.224	0.140	0.141	0.054	0.679	0.010
SSBN 835	12-24	Various	-	0.224	0.140	0.141	0.054	0.679	0.010
SSBN 836	12-24	Various	-	0.224	0.140	0.141	0.054	0.679	0.010
SSBN 837	12-24	Various	-	0.224	0.140	0.141	0.054	0.679	0.010
Total: ORDNANCE SWS SHIPBOARD SYSTEMS (11) - ECONOMIC ORDER QUANTITY			*-*	*3.450*	*1.540*	*1.551*	*0.575*	*6.790*	*0.085*
ORDNANCE SWS SHIPBOARD SYSTEMS (12) - CONTINUOUS PRODUCTION									
SSBN 827	12-24	Various	-	-	2.336	-	-	-	-
SSBN 828	12-24	Various	-	-	2.076	0.258	-	-	-
SSBN 829	12-24	Various	-	-	0.000	2.324	-	-	-
SSBN 830	12-24	Various	-	-	0.000	2.325	-	-	-
SSBN 831	12-24	Various	-	-	0.000	0.258	2.082	-	-
SSBN 832	12-24	Various	-	-	0.000	-	2.342	-	-
SSBN 833	12-24	Various	-	-	0.000	-	2.342	-	-
SSBN 834	12-24	Various	-	-	0.000	-	1.301	1.316	-
SSBN 835	12-24	Various	-	-	0.000	-	-	2.962	-
SSBN 836	12-24	Various	-	-	0.000	-	-	2.962	-
SSBN 837	12-24	Various	-	-	0.000	-	-	2.962	-

Exhibit P-10, Advance Procurement Requirements Analysis (*page 1 - Budget Funding Justification*): PB 2021 Navy			Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 01 / 1		**P-1 Line Item Number / Title:** 1045 / COLUMBIA Class Submarine	
First System (2021) Award Date: October 2020	**First System (2021) Completion Date:** October 2027		**Interval Between Systems:** 0 Months

Cost Elements	Production Leadtime (Months)	When Required* (Months)	FY 2019 ($ M)	FY 2020 ($ M)	FY 2021 ($ M)	FY 2022 ($ M)	FY 2023 ($ M)	FY 2024 ($ M)	FY 2025 ($ M)
Total: ORDNANCE SWS SHIPBOARD SYSTEMS (12) - CONTINUOUS PRODUCTION			-	-	*4.412*	*5.165*	*8.067*	*10.202*	-
NFPC EXTERNAL POWER UPGRADE (13)									
-	12	Various	-	-	0.000	-	-	-	-
Total: NFPC EXTERNAL POWER UPGRADE (13)			-	-	-	-	-	-	-
ELECTRONICS (14)									
SSBN 826	12-24	Various	7.630	28.890	0.000	-	-	-	-
SSBN 827 (EOQ in support of Multi-Program Procurement)	12-24	Various	-	7.500	0.000	-	-	-	-
Total: ELECTRONICS (14)			*7.630*	*36.390*	-	-	-	-	-
Total Advance Procurement/Obligation Authority			**3,173.400**	**1,820.927**	**1,123.175**	**1,229.000**	**1,643.671**	**2,211.248**	**2,760.174**

*Note: "When Required" is the number of months required before ship delivery.

Exhibit P-10, Advance Procurement Requirements Analysis (*page 2 - Budget Funding Justification*): PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 01 / 1	**P-1 Line Item Number / Title:** 1045 / COLUMBIA Class Submarine

Cost Elements	FY 2021						
	Production Leadtime *(Months)*	When Required* *(Months)*	Unit Cost *($ M)*	Contract Forecast Date	2021 Qty *(Each)*	For FY	Total Cost Request *($ M)*
PLANS							
Lead Ship Design (1)	12-60	Various	-		-	2021	0.000
Supplier Development (2)	12-60	Various	-		-	2021	0.000
Total: PLANS							-
BASIC CONSTRUCTION (3) - SHIPBUILDER PROCURED LLTM							
SSBN 826	24-42	Various	-		-	2021	0.000
SSBN 827	24-54	Various	-	Oct 2020	-	2024	136.040
SSBN 828	24-54	Various	-		-	2026	0.000
SSBN 829	24-54	Various	-		-	2028	0.000
SSBN830	24-54	Various	-		-	2028	0.000
Total: BASIC CONSTRUCTION (3) - SHIPBUILDER PROCURED LLTM							*136.040*
BASIC CONSTRUCTION (4) - MISSILE TUBE CONTINUOUS PRODUCTION							
SSBN 827	36-42	Various	-		-	2024	0.000
SSBN 828	36-42	Various	-	Oct 2020	-	2026	86.288
SSBN 829	36-42	Various	-		-	2027	0.000
SSBN 830	36-42	Various	-		-	2028	0.000
SSBN 831	36-42	Various	-		-	2029	0.000
Total: BASIC CONSTRUCTION (4) - MISSILE TUBE CONTINUOUS PRODUCTION							*86.288*
BASIC CONSTRUCTION (5) - ADVANCE CONSTRUCTION							
SSBN 826	24-42	Various	-		-	2021	0.000
SSBN 827	24-42	Various	-	Oct 2020	-	2024	28.730
SSBN 828	24-42	Various	-		-	2026	0.000
SSBN 829	24-42	Various	-		-	2027	0.000
SSBN 830	24-42	Various	-		-	2028	0.000
Total: BASIC CONSTRUCTION (5) - ADVANCE CONSTRUCTION							*28.730*
BASIC CONSTRUCTION (6) - EOQ IN SUPPORT OF MULTI-PROGRAM PROCUREMENT							
SSBN 827	24-42	Various	-	Oct 2020	-	2024	20.866
SSBN 837 - Production Backup Units	24-42	Various	-	Oct 2020	-	2035	12.299

Exhibit P-10, Advance Procurement Requirements Analysis (*page 2 - Budget Funding Justification*): PB 2021 Navy	Date: February 2020
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Cost Elements	FY 2021 Production Leadtime (Months)	When Required* (Months)	Unit Cost ($ M)	Contract Forecast Date	2021 Qty (Each)	For FY	Total Cost Request ($ M)
Total: BASIC CONSTRUCTION (6) - EOQ IN SUPPORT OF MULTI-PROGRAM PROCUREMENT							*33.165*
BASIC CONSTRUCTION (7) - SHIPYARD MANUFACTURED ITEMS CONTINUOUS PRODUCTION							
SSBN 827	12-36	Various	-	Oct 2020	-	2024	8.891
SSBN 828	12-36	Various	-	Oct 2020	-	2026	4.530
SSBN 829	12-36	Various	-		-	2027	0.000
SSBN 830	12-36	Various	-	Oct 2020	-	2028	0.930
SSBN 831	12-36	Various	-		-	2029	0.000
SSBN 832	12-36	Various	-		-	2030	0.000
SSBN 833	12-36	Various	-		-	2031	0.000
SSBN 834	12-36	Various	-		-	2032	0.000
Total: BASIC CONSTRUCTION (7) - SHIPYARD MANUFACTURED ITEMS CONTINUOUS PRODUCTION							*14.351*
NUCLEAR PROPULSION PLANT EQUIPMENT (8)							
SSBN 826	30-72	Various	-		-	2021	0.000
SSBN 827 (In support of AC)	30-72	Various	-	Oct 2020	-	2024	816.737
SSBN 828 (In Support of AC)	30-72	Various	-		-	2026	0.000
SSBN 829 (In Support of AC)	30-72	Various	-		-	2027	0.000
SSBN 830 (In support of AC)	30-72	Various	-		-	2028	0.000
Total: NUCLEAR PROPULSION PLANT EQUIPMENT (8)							*816.737*
HM&E (9)							
SSBN 826 (In support of AC)	24-42	Various	-		-	2021	0.000
SSBN 827 (In Support of AC)	24-42	Various	-		-	2024	0.000
SSBN 828 (In support of AC)	24-42	Various	-		-	2026	0.000
Total: HM&E (9)							-
ORDNANCE SWS SHIPBOARD SYSTEMS (10) - LLTM							
SSBN 826 (In Support of AC)	12-28	Various	-		-	2021	0.000
SSBN 827 (In Support of AC)	12-48	Various	-	Oct 2020	-	2024	1.912
SSBN 828	12-28	Various	-		-	2026	0.000
SSBN 829	12-28	Various	-		-	2027	0.000

Exhibit P-10, Advance Procurement Requirements Analysis (*page 2 - Budget Funding Justification*): PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 01 / 1	**P-1 Line Item Number / Title:** 1045 / COLUMBIA Class Submarine

Cost Elements	FY 2021						
	Production Leadtime (Months)	When Required* (Months)	Unit Cost ($ M)	Contract Forecast Date	2021 Qty (Each)	For FY	Total Cost Request ($ M)
Total: ORDNANCE SWS SHIPBOARD SYSTEMS (10) - LLTM							*1.912*
ORDNANCE SWS SHIPBOARD SYSTEMS (11) - ECONOMIC ORDER QUANTITY							
SSBN 826	12-24	Various	-		-	2021	0.000
SSBN 827	12-24	Various	-	Oct 2020	-	2024	0.140
SSBN 828	12-24	Various	-	Oct 2020	-	2026	0.140
SSBN 829	12-24	Various	-	Oct 2020	-	2027	0.140
SSBN 830	12-24	Various	-	Oct 2020	-	2028	0.140
SSBN 831	12-24	Various	-	Oct 2020	-	2029	0.140
SSBN 832	12-24	Various	-	Oct 2020	-	2030	0.140
SSBN 833	12-24	Various	-	Oct 2020	-	2031	0.140
SSBN 834	12-24	Various	-	Oct 2020	-	2032	0.140
SSBN 835	12-24	Various	-	Oct 2020	-	2033	0.140
SSBN 836	12-24	Various	-	Oct 2020	-	2034	0.140
SSBN 837	12-24	Various	-	Oct 2020	-	2035	0.140
Total: ORDNANCE SWS SHIPBOARD SYSTEMS (11) - ECONOMIC ORDER QUANTITY							*1.540*
ORDNANCE SWS SHIPBOARD SYSTEMS (12) - CONTINUOUS PRODUCTION							
SSBN 827	12-24	Various	-	Oct 2020	-	2024	2.336
SSBN 828	12-24	Various	-	Oct 2020	-	2026	2.076
SSBN 829	12-24	Various	-		-	2027	0.000
SSBN 830	12-24	Various	-		-	2028	0.000
SSBN 831	12-24	Various	-		-	2029	0.000
SSBN 832	12-24	Various	-		-	2030	0.000
SSBN 833	12-24	Various	-		-	2031	0.000
SSBN 834	12-24	Various	-		-	2032	0.000
SSBN 835	12-24	Various	-		-	2033	0.000
SSBN 836	12-24	Various	-		-	2034	0.000
SSBN 837	12-24	Various	-		-	2035	0.000
Total: ORDNANCE SWS SHIPBOARD SYSTEMS (12) - CONTINUOUS PRODUCTION							*4.412*

Exhibit P-10, Advance Procurement Requirements Analysis (*page 2 - Budget Funding Justification*): PB 2021 Navy	Date: February 2020
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Cost Elements	FY 2021						
	Production Leadtime *(Months)*	When Required* *(Months)*	Unit Cost *($ M)*	Contract Forecast Date	2021 Qty *(Each)*	For FY	Total Cost Request *($ M)*
NFPC EXTERNAL POWER UPGRADE (13)							
-	12	Various	-		-		0.000
Total: NFPC EXTERNAL POWER UPGRADE (13)							-
ELECTRONICS (14)							
SSBN 826	12-24	Various	-		-	2021	0.000
SSBN 827 (EOQ in support of Multi-Program Procurement)	12-24	Various	-		-	2024	0.000
Total: ELECTRONICS (14)							-
Total Advance Procurement/Obligation Authority							**1,123.175**

Description:

(1) PLANS: COLUMBIA Class Lead Design Yard and program office support for the detail design for the Common Missile Compartment, Strategic Weapons System, Propulsion Plant, and Rest of Ship. The Program is targeting 83% design completion for the entire ship at construction start (October 2020). This design maturity target is necessary to achieve the aggressive 7 year lead ship construction time for the lead ship and subsequent construction spans for the Class, which is required to support Strategic Deterrent mission requirements - there is no margin to patrol dates. Detail design activities also support critical engineering analysis and risk reduction efforts. This line reflects adjustments made based on the award of the Integrated Product and Process Development (IPPD) contract.

(2) SUPPLIER DEVELOPMENT: COLUMBIA Class, in coordination with Congress, continues to execute Supplier Development to de-risk construction schedules, strengthen submarine industrial base health, ensure on-time delivery of quality components and increase sub-vendors' ability to accept shipbuilder outsourced work. These funds execute supplier improvement and facilitization actions to increase capability of existing suppliers, increase capacity where needed, and qualify new suppliers in market spaces with capacity challenges. Initiatives include developing alternate sources for high-risk suppliers, developing sources for complex parts traditionally built at the shipbuilders that have been identified for strategic outsourcing, performing process and facility improvements with existing sources, and qualifying existing sources for more stringent requirements. Investment in the sub-vendor supplier base is required to promote facilities investment and vendor qualification to ensure adequate industrial capacity, and reduce COLUMBIA Class construction schedule risk.

(3) BASIC CONSTRUCTION - SHIPBUILDER PROCURED LLTM: Funding is required to support long lead time shipbuilder procured material (for example the Weapons Handling, Air Conditioning Unit, Diesel Generator Set, and Reverse Osmosis Unit). These and other components are required early in the construction phase to meet the delivery schedule. 3 Year AP is required for long lead shipbuilder procured equipment for ships 2-12 as determined through actual production spans on recently-completed prototype equipment and updated shipbuilder required-in-yard need dates to support advance construction and serial production of follow-on COLUMBIA hulls. Without these efforts the construction schedules are not supported. SSBN 827 LLTM scope is also reflected in EOQ to support multiprogram procurement to mitigate construction risk and strengthen submarine industrial base (see foot note #6 - funds are reflected in this category). SSBN 828 and 829 do not currently have funds for EOQ in support of multiprogram procurement and therefore the Shipbuilder LLTM appears to be much larger for 828 and 829 than 827 but it is not. It is solely a function of 827 having some of its LLTM in EOQ.

(4)BASIC CONSTRUCTION - MISSILE TUBE CONTINUOUS PRODUCTION: COLUMBIA Class continues to execute Continuous Production of Missile Tubes to reduce schedule risk, improve manufacturing efficiencies, improve vendor learning, maintain critical production skills, and reduce costs by leveraging high-volume procurements. These benefits increase schedule margin and reduce risk to follow ship deliveries, while also achieving cost reduction savings. Missile Tubes produced for SSBN 826 are funded through RDT&E,N Program Element 0603595N, Project Number 3220.

(5) BASIC CONSTRUCTION - ADVANCE CONSTRUCTION: Advance Construction (AC) efforts are to de-risk construction schedule and improve probability of on-time delivery. AC begins construction activities in key areas to gain schedule margin and reduce controlling path risks. AC key areas include, but are not limited to, the Bow (Sections 1A and 1B in Supermodule 1 that includes the forward Ballast Tanks and Hemi-head), Stern (Sections 9B and 9C in Supermodule 6 that includes the X-Stern and aft Ballast Tanks and Hemi-Head) and Common Missile Compartment (CMC) adjacent areas contained in Supermodule 2 that include the Missile Compartment Control Module (MCCM). AC will begin on structural fabrication areas that have sufficient design maturity and material availability to begin construction and some outfitting. These areas include MCCM Deck Module Fabrication, Mid-Span Tank complex and Foundation Fabrication, and Missile Compartment Forward Bulkhead and S2C Hull Cylinder Fabrication. AC efforts improve

efficiency by smoothing workload at Quonset Point and capture efficiencies. The reduced funding in 2024-2025 is a combination of budget reductions to SSBN 827 and 2 years of escalation impacts between SSBN 827 and 828. Budget deltas between SSBN 829-830 hulls are related to ship schedules and escalation impacts.

(6) BASIC CONSTRUCTION - EOQ IN SUPPORT OF MULTI-PROGRAM PROCUREMENT: COLUMBIA Class continues to execute Multi-Program Procurement as authorized by US Code 10 2218a (NSBDF) subsection (f), to align shipbuilder procured material procurements with COLUMBIA Class funding with funds budgeted for VIRGINIA Class (LI 2013) and CVN (LI 2001) for common components and vendors, where applicable. Appreciable risk mitigation is provided for COLUMBIA Class construction schedules through acceleration of material procurement, ensuring increased readiness to support construction need dates and through supplier base management and workload leveling. MPMP strengthens the industrial base to improve material availability and avoid construction delays due to late material. COLUMBIA Class Production Backup Units will procure a shipset of critical long lead time material to serve as rolling construction assets throughout COLUMBIA Class construction to be consumed in the event of unforeseen issues from late material or obsolescence to reduce schedule risk and avoid production disruptions from late material, and ensure Required In Yard (RIY) dates are met for compressed shipbuilding schedules. Material not consumed during construction will be consumed on the 12th hull if not used. PBUs also strengthen critical at-risk vendors in the sub-tier industrial base, reducing the risk of future obsolescence issues and production disruptions.

(7) BASIC CONSTRUCTION - SHIPYARD MANUFACTURED ITEMS CONTINUOUS PRODUCTION: COLUMBIA Class continues to execute Continuous Production of selected Shipyard Manufactured Items (US Code 10 2218a subsection (i)) to reduce schedule risk, improve manufacturing efficiencies, improve learning, maintain critical production skills, and reduce costs by leveraging high-volume procurements. Continuous production of items with long lead time material requirements which are difficult to manufacture will ensure critical material is available to support construction schedules. These benefits will increase schedule margin and reduce risk to follow ship deliveries, while also achieving cost reduction savings through workforce level loading and minimizing the effects of large variations in demand and procurement efficiencies. Examples of Shipyard Manufactured Items include Spherical Air Flasks, Hull Valves, Logistics Escape Trunks, and Torpedo Tubes.

(8) NUCLEAR PROPULSION PLANT EQUIPMENT: Nuclear Propulsion Plant Equipment AP is required to fund long-lead time propulsion plant equipment, and ensure production capability that supports projected production quantities. To support the COLUMBIA Class' implementation of advanced modular construction methods to drive cost efficiency, reactor plant components must be delivered earlier in the construction process. The component delivery timeline is in line with that of the VIRGINIA Class submarines. 3 Year AP is required for Propulsion GFE for ships 2-12 as determined through actual production spans on recently-completed prototype equipment and updated shipbuilder required-in-yard need dates to support advance construction and serial production of follow-on COLUMBIA hulls. Without these efforts the construction schedules are not supported.

(9) HM&E: Hull Mechanical & Engineering AP is required to align the Propulsor procurement and production schedule with COLUMBIA Class Advance Construction schedule acceleration and support the overall ship schedules.

(10) ORDNANCE SWS SHIPBOARD SYSTEMS - LLTM: Ordnance SWS Shipboard Systems AP is required to fund Long Lead Time Material (LLTM) for the Strategic Weapon System (SWS) shipboard components to meet COLUMBIA (CLB) Class Government Furnished Equipment (GFE) Required-In-Yard (RIY) dates to support construction activities for CLB. AP is required to procure selected SWS Launcher and Fire Control Subsystem components including launch tube assemblies and construction support equipment, launch tube umbilical housings, launcher ejector group and vertical support group equipment, and Fire Control power and network equipment and sub-assemblies. The SWS shipboard components have a lead time of 12-48 months and are required by the shipbuilder early in the construction phase to meet the ship delivery schedule (beginning in September 2020 for SSBN 826 and April 2023 for SSBN 827, and continue for the rest of the Class). This line does not fund any efforts related to the procurement of the TRIDENT II D5 Missile. (Note: SWS components requiring 48 month lead time for SSBN 826 are procured through RDT&E,N Program Element 0603595N, Project Number 3220 in support of lead ship Missile Tube Module prototyping). A delay to these LLTM purchases will impact the U.S. Navy's ability to meet the shipbuilder's RIY dates for tactical hardware resulting in increased schedule risk to construction and ship delivery.

(11) ORDNANCE SWS SHIPBOARD SYSTEMS - EOQ: Ordnance SWS Shipboard Systems EOQ funding (US Code 10 2218a subsection (f)) is required for large lot procurements of SWS shipboard components to mitigate significant obsolescence, requalification and vendor risk while ensuring SWS homogeneity and consistent SWS system performance across all COLUMBIA Class hulls. Examples include SWS Launcher Subsystem Detonator Power Assembly electronics components and SWS Fire Control Subsystem components such as network switch memory and flash devices, Navigation Timing Interface Module oscillators and display units. Since the FY 2020 President's Budget request, funding for SWS Shipboard Systems EOQ increased to leverage additional opportunities to mitigate obsolescence and construction schedule risks, and realize additional cost savings outside the FYDP. This line does not fund any efforts related to the procurement of the TRIDENT II D5 Missile.

(12) ORDNANCE SWS SHIPBOARD SYSTEMS - CONTINUOUS PRODUCTION: Ordnance SWS Shipboard Systems Continuous Production (US Code 10 2218a subsection (i)) of SWS Navigation Subsystem, Inertial Navigation Systems and Gyros is required to procure critical components to ensure homogeneity and consistent SWS system performance across the Navigation unit builds, maintain critical production and fabrication skills, eliminate production re-starts and potential re-qualification risk while gaining manufacturing efficiencies and mitigating SWS Navigation Subsystem obsolescence across all COLUMBIA Class hulls during construction. These benefits will reduce schedule risk by ensuring on-time deliveries of SWS Navigation GFE to the shipbuilder, and result in cost savings outside of the FYDP. Follow-on

Exhibit P-10, Advance Procurement Requirements Analysis (*page 2 - Budget Funding Justification*): PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 01 / 1	**P-1 Line Item Number / Title:** 1045 / COLUMBIA Class Submarine

procurements are outside the FYDP. Since the FY 2020 President's Budget request, funding for SWS Shipboard Systems Continuous Production increased to leverage additional opportunities to mitigate obsolescence and construction schedule risks, and realize additional cost savings outside the FYDP. This line does not fund any efforts related to the procurement of the TRIDENT II D5 Missile.

(13) NFPC EXTERNAL POWER UPGRADE: Advance Procurement funding was required to support the Naval Foundry and Propeller Center External Power Upgrade. The Naval Foundry and Propeller Center required upgrades to the private utility provider's infrastructure in order to provide an additional 16.5MW of electrical power to the facility. This requirement is driven by a required 85-ton furnace and six additional large machines required for concurrent COLUMBIA and VIRGINIA Class manufacturing. The Power Upgrade was completed in March 2019 to support critical path COLUMBIA Class propulsor prototype manufacturing demonstrations in FY19 through FY20. The total estimate for this effort is $46M, with $14M executed with FY17 funds.

(14) ELECTRONICS: Electronics Equipment AP is required to fund the long-lead time material for the Command and Control System Module (CCSM). AP for the CCSM plays a critical role in early system installation and test in order to maintain the CCSM out of the critical path to ship delivery and minimize risk to ship construction. AP is required to procure selected electronics and associated pre-cable kits, cabling, connector plates and mechanical structures to be installed in this module in accordance with Shipyard Government Furnished Equipment (GFE) Delivery Dates. Pre-cable kits enable shipyard cable runs and platform interface verification prior to electronics installation. Mechanical structures establish footprint unique packaging for efficient electronics installation. This funding also enables the COLUMBIA program to procure Long Lead Time Material (LLTM) and shipboard components for the SONAR system, which have lead times of up to 24 months and are required to be delivered to the shipbuilder beginning in May 2021 to meet COLUMBIA Class IPPD contract requirements.

*Note: "When Required" is the number of months required before ship delivery.

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 02: Other Warships / BSA 1: Other Warships	**P-1 Line Item Number / Title:** 2001 / Carrier Replacement Program

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: N/A

Line Item MDAP/MAIS Code: 223

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity *(Units in Each)*	3	-	-	-	-	-	-	-	-	-	-	3
Gross/Weapon System Cost *($ in Millions)*	37,035.482	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	37,035.482
Less PY Advance Procurement *($ in Millions)*	9,253.302	-	-	-	-	-	-	-	-	-	-	9,253.302
Less Cost To Complete *($ in Millions)*	1,539.860	-	-	-	-	-	-	-	-	-	-	1,539.860
Less Subsequent Year Full Funding *($ in Millions)*	21,496.701	-	-	-	-	-	-	-	-	-	-	21,496.701
Net Procurement (P-1) *($ in Millions)*	4,745.619	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	4,745.619
Plus Subsequent Year Full Funding *($ in Millions)*	12,978.213	930.181	1,062.000	997.544	-	997.544	1,014.130	1,166.136	1,047.876	2,300.621	-	21,496.701
Full Funding TOA *($ in Millions)*	17,723.832	930.181	1,062.000	997.544	-	997.544	1,014.130	1,166.136	1,047.876	2,300.621	-	26,242.320
Plus CY Advance Procurement *($ in Millions)*	9,253.302	-	-	-	-	-	-	-	-	-	-	9,253.302
Plus Cost To Complete *($ in Millions)*	1,394.860	-	-	71.000	-	71.000	74.000	-	-	-	-	1,539.860
Total Obligation Authority *($ in Millions)*	**28,371.994**	**930.181**	**1,062.000**	**1,068.544**	**0.000**	**1,068.544**	**1,088.130**	**1,166.136**	**1,047.876**	**2,300.621**	**-**	**37,035.482**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Plus Outfitting and Post Delivery *($ in Millions)*	335.709	120.923	113.072	155.186	-	155.186	5.867	97.576	34.631	15.658	342.665	1,221.287
Total *($ in Millions)*	**28,707.703**	**1,051.104**	**1,175.072**	**1,223.730**	**-**	**1,223.730**	**1,093.997**	**1,263.712**	**1,082.507**	**2,316.279**	**342.665**	**38,256.769**
Gross/Weapon System Unit Cost *($ in Millions)*	12,345.161	-	-	-	-	-	-	-	-	-	-	12,345.161

Description:

To provide credible, sustainable, independent forward presence during peacetime without access to land bases; operate as the cornerstone of a joint and/or allied maritime expeditionary force in response to crisis; and carry the war to the enemy through joint multi-mission offensive operations.

The Navy designed the FORD Class aircraft carrier with the warfighting capability essential for the 21st century, and the flexibility and resilience to rapidly adapt to emerging threats. The Ford class incorporates advances in technology such as a new reactor plant, propulsion system, electric plant, Electromagnetic Aircraft Launch System (EMALS), Advanced Arresting Gear (AAG), machinery control, and integrated warfare systems that increase lethality, while lowering life cycle costs through reductions in maintenance and manning requirements. Increased Service Life Allowances (SLA) for weight and stability enable future modernization and the ability to adapt to new missions over the ship's 50-year life cycle.

CVN 80 and CVN 81 were awarded under a two-ship buy. CVN 80 is a separate contract line item under the same contract as CVN 81, which allows discrete hull costs to be captured. The CVN 80/81 construction contract is a Fixed Price Incentive (Firm Target) (FPIF) contract type that limits the Navy's liability and incentivizes the shipyard's best performance. The contract language guarantees a single technical baseline for both ships, which allows the shipyard to re-use engineering rollover products, minimize changes between the two ships and leverages economic order quantities for equipment and material procurement.

CVN 81 was moved to BLI 2004 in accordance with the Department of Defense Appropriations Act, 2020.

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy		Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 02: Other Warships / BSA 1: Other Warships	**P-1 Line Item Number / Title:** 2001 / Carrier Replacement Program	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** N/A
Line Item MDAP/MAIS Code: 223		

Characteristics:

	-
Length Overall	1092 ft
Beam	134 ft
Displacement	97,337 TONS
Draft	38.7 ft

Systems:

Electronics
-SHIP SELF DEFENSE SYSTEM (SSDS)

Ordnance
-ELECTROMAGNETIC AIRCRAFT LAUNCHING SYSTEM (EMALS)
-ENTERPRISE AIR SURVEILLANCE RADAR (EASR)
-ADVANCED ARRESTING GEAR (AAG)

Production Status:	**CVN 79**	**CVN 80**
Contract Award Date	Jun 2015	Jan 2019
Months to Completion		
a) Award to Delivery	111 months	110 months
b) Construction Start to Delivery	163 months	110 months
Delivery Date	Sep 2024	Mar 2028
Completion Of Fitting Out	Nov 2024	May 2028
Obligation Work Limit Date	Oct 2025	Apr 2029

Design Schedule	Start / Issue	Complete / Response	Reissue	Reissue Complete / Response
Issue Date for TLR	Apr 2004	N/A		
Issue Date for TLS	Sep 2006	N/A		
Preliminary Design	Jan 2003	Jul 2008		
Contract Design	May 2004	Apr 2008		
Detail Design	Jan 2004	Sep 2009		
Request for Proposals	Jul 2007	Oct 2007		
Design Agent	Huntington Ingalls Industries			

Classification of Cost Estimate: CLASS C BUDGET ESTIMATE

Justification:
CVN 80 FY 2021 Obligation Plan = $997.544M
Plan Costs = $38.200M
Basic Construction/Conversion = $749.253M
Change Orders = $17.000M
Electronics = $29.684M
Hull, Mechanical, and Electrical = $0.076M
Ordnance = $153.581M

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy		Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 02: Other Warships / BSA 1: Other Warships	**P-1 Line Item Number / Title:** 2001 / Carrier Replacement Program	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** N/A
Line Item MDAP/MAIS Code: 223		

Other Cost = $9.750M

FY 2021 Outfitting funds for CVN 79 are necessary to ensure contract, administrative, and manufacturing lead times are accommodated to support ship milestones and key events. These funds support system turnover which starts in FY 2020 and continues through Fast Cruise when the ship must be 95% outfitted based on OPNAV readiness requirements.

Exhibit P-5c, Ship Cost Analysis: PB 2021 Navy | **Date:** February 2020

Appropriation / Budget Activity / Budget Sub Activity:
1611N / 02 / 1

P-1 Line Item Number / Title:
2001 / Carrier Replacement Program

Cost Categories (†) indicates the presence of a P-8a	FY 2013		FY 2018	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Plan Costs	1	904.578	1	433.200
Basic Construction/Conversion		6,898.656		7,776.107
Change Orders		181.149		193.902
Electronics (†)		233.681		250.697
Propulsion Equipment		2,034.582		2,524.461
Hull, Mechanical, and Electrical (HM&E) (†)		29.104		22.466
Ordnance (†)		1,033.442		1,047.203
Other Cost		82.520		73.240
Total Ship Estimate		**11,397.712**		**12,321.276**
Less Advance Procurement FY 2007		52.750		-
Less Advance Procurement FY 2008		123.530		-
Less Advance Procurement FY 2009		1,210.561		-
Less Advance Procurement FY 2010		482.938		-
Less Advance Procurement FY 2011		902.473		-
Less Advance Procurement FY 2012		554.798		-
Less Advance Procurement FY 2016		-		862.358
Less Advance Procurement FY 2017		-		1,370.784
Less Subsequent Full Funding FY 2014		917.553		-
Less Subsequent Full Funding FY 2015		1,219.417		-
Less Subsequent Full Funding FY 2016		1,569.543		-
Less Subsequent Full Funding FY 2017		1,241.783		-
Less Subsequent Full Funding FY 2018		2,557.413		-
Less Subsequent Full Funding FY 2019		-		930.181
Less Subsequent Full Funding FY 2020		-		1,062.000
Less Subsequent Full Funding FY 2021		-		997.544
Less Subsequent Full Funding FY 2022		-		1,014.130
Less Subsequent Full Funding FY 2023		-		1,166.136
Less Subsequent Full Funding FY 2024		-		1,047.876
Less Subsequent Full Funding FY 2025		-		2,300.621
Less Cost to Complete FY 2022		74.000		-
Net P-1 Funding		**490.953**		**1,569.646**

Remarks:

Exhibit P-5c, Ship Cost Analysis: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2001 / Carrier Replacement Program

CVN 79: Added additional plans funding to support CVN 78 class costs, additional basic construction funding to support government responsible portion of the shipbuilding contract overrun, and additional ordnance funding to support increased MK-9 Target Illuminator hardware costs.

Exhibit P-27, Ship Production Schedule: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2001 / Carrier Replacement Program

Ship	Shipbuilder	Fiscal Year	Contract Award	Start of Construction	Delivery Date
CVN 79	Huntington Ingalls Industries, Newport News Shipbuilding	2013	Jun 2015	Feb 2011	Sep 2024
CVN 80	Huntington Ingalls Industries, Newport News Shipbuilding	2018	Jan 2019	Jan 2019	Mar 2028

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2001 / Carrier Replacement Program

Electronics	FY 2013		FY 2018	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
P-35 Items				
CONSOLIDATED AFLOAT NETWORK AND ENTERPRISE SERVICES (CANES)	1	15.933	1	16.053
AN/USG-2, COOPERATIVE ENGAGEMENT CAPABILITY (CEC)	1	5.838	1	6.110
DIGITAL MODULAR RADIO (DMR) ULTRA HIGH FREQUENCY/VERY HIGH FREQUENCY LINE OF SIGHT (EHF/VHF LOS) SAT	1	8.886	1	10.904
AN/UPX-29(V), INTERROGATOR FRIEND OR FOE (IFF) W/MK XII	1	6.351	1	6.478
SPN-46, AUTOMATIC CARRIER LANDING SYSTEM	1	9.411	1	9.722
SHIP SELF DEFENSE SYSTEM (SSDS)	1	30.656	1	32.306
AN/SYY-1(V)1 AIR TRAFFIC CONTROL SYSTEM, SHIPBOARD	1	6.009	1	6.353
NAVY MULTI-BAND TERMINAL (NMT)	1	5.575	1	6.299
AN/SLQ-32(V)6, SURFACE ELECTRONIC WARFARE IMPROVEMENT PROGRAM (SEWIP) BLOCK 2	1	10.518	1	10.555
AN/SRQ-6/MCS-21, SHIPS SIGNAL EXPLOITATION EQUIPMENT (SSEE)	1	7.115	1	7.765
AN/SRC-61 (V)X HFDAG	1	6.012	1	6.059
P-35 Items Subtotal		**112.304**		**118.604**
Major Items				
AN/USQ-155(V)1 TACTICAL VARIANT SWITCH	1	2.342	1	2.743
INFORMATION ASSURANCE (IA)		2.112		2.031
AN/URC-141X(V), MULTI-FUNCTION INFORMATION DISTRIBUTION SYSTEM (MIDS)-ON SHIP (MOS)	1	1.593	1	1.586
AN/SLQ-25C DUAL, SURFACE SHIP TORPEDO DEFENSE SYSTEM, NIXIE	1	5.215	1	5.243
SHIPBOARD AIR TRAFFIC CONTROL COMMUNICATIONS (SATCC)	1	2.246	1	2.343
AN/WSN-7(V)3, RING LASER GYRO NAVIGATOR (RLGN)	1	2.569	1	3.121
DISTRIBUTED SYSTEMS DESIGN INTEGRATION SERVICES	1	16.957	1	19.181
C4I INTEGRATION & COORDINATION		7.236		10.119
DISTRIBUTED COMMON GROUND STATION - NAVY (DCGS-N)	1	2.061	1	2.319
AN/USQ-144K AUTOMATED DIGITAL NETWORK SYSTEM (ADNS)	1	1.223	1	1.315
AN/UYQ-86 COMMON DATA LINK MANAGEMENT SYSTEM (CDLMS) WITH NGC2P	1	1.305	1	1.816
OA-9277 ULTRA HIGH FREQUENCY (UHF) MULTICOUPLER	1	2.089	1	1.966
ARC-210 CARRIER AIR TRAFFIC CONTROL CENTER (CATCC) - PRIFLY - LANDING SIGNAL OFFICER (LSO) SYSTEM	1	1.480	1	1.668
WARFARE SYSTEM INTEGRATION		22.849		24.858
COMMERCIAL BROADBAND SATELLITE PROGRAM, FORCE LEVEL VARANT (CBSP-FLV)	2	2.249	2	2.465
AN/SSN-6(V)X BLOCK 4, NAVIGATION SENSOR SYSTEM INTERFACE (NAVSSI)	1	2.557	0	-

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2001 / Carrier Replacement Program

Electronics	FY 2013		FY 2018	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
GLOBAL POSITIONING SYSTEM, NAVIGATION, AND TIMING SERVICE (GPNTS)	0	-	1	1.338
INTEGRATED STRIKE PLANNING & EXECUTION SYSTEMS (ISP&E)	1	8.222	1	8.246
AN/USQ-123(V), COMMUNICATIONS DATA LINK-SYSTEM (CDL-S)	1	2.515	1	2.480
AN/SPN-41 (V), INSTRUMENT LANDING SYSTEM (ILS)	1	3.870	1	3.897
SHIP SIGNAL EXPLOITATION SPACE (SSES/SI) COMMUNICATIONS	1	3.601	1	4.193
TURNKEY RADIO COMMUNICATIONS SYSTEM (RCS)	1	15.592	1	14.884
AN/USQ-T52 TRAINING INTERFACE UNIT (TIU) ADVANCED TRAINING DOMAIN (ATD)	1	2.547	1	2.733
NEXT GENERATION SURFACE SEARCH RADAR (NGSSR)		-		1.804
Major Items Subtotal		**112.430**		**122.349**
Other Cost Elements				
Other ELECTRONICS		8.947		9.744
Other Cost Elements Subtotal		**8.947**		**9.744**
Total Electronics		**233.681**		**250.697**

Remarks:

AN/SYY-1(V)1 Air Traffic Control System Shipboard replaces AN/TPX-42A(V)14, Carrier Air Traffic Control Center - Direct Altitude and Identify Readout (CATCC-DAIR) beginning with CVN79 and follow. AN/SYY-1(V)1 addresses obsolescence, incorporates existing AN/TPX-42A(V) functionality and will add additional capability for EASR and interfaces across all platforms.

Global Positioning System, Navigation and Timing Service (GPNTS) is the next generation of navigation to address Fleet obsolescence issues. GPNTS replaces AN/SSN-6(V)X Block 4, Navigation Sensor System Interface (NAVSSI) on the CVN 80.

AN/USQ-T52 Training Interface Unit (TIU) Advanced Training Domain (ATD) replaces AN/USQ-T46X(V)X, Battle Force Tactical Training System (BFTT) on CVN 79 and CVN 80.

Next Generation Surface Search Radar (NGSSR) replaces AN/SPS-73A(V)12-Tech Refresh - Surface Search Radar on the CVN 80, due to SPS-73 no longer being in production.

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2001 / Carrier Replacement Program

Hull, Mechanical, and Electrical (HM&E)	FY 2013		FY 2018	
	Qty *(Each)*	Total Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*
Major Items				
HM&E ENGINEERING SERVICES		24.009		16.494
LIFE RAFTS		1.589		1.900
SUPSHIP MATERIAL AND GFE		0.780		0.620
TRUCKS (FORKLIFTS)		0.747		0.825
Major Items Subtotal		**27.125**		**19.839**
Other Cost Elements				
Other HM&E		1.979		2.627
Other Cost Elements Subtotal		**1.979**		**2.627**
Total Hull, Mechanical, and Electrical (HM&E)		**29.104**		**22.466**

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2001 / Carrier Replacement Program

Ordnance	FY 2013		FY 2018	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
P-35 Items				
ELECTROMAGNETIC AIRCRAFT LAUNCHING SYSTEM (EMALS)	1	601.363	1	607.873
ENTERPRISE AIR SURVEILLANCE RADAR (EASR)	1	67.893	1	57.133
ADVANCED ARRESTING GEAR (AAG)	1	232.310	1	251.261
PHALANX BLOCK 1B MK 15 MOD 21 & 22, CLOSE - IN WEAPONS SYSTEM (CIWS)	3	20.583	3	20.959
AN/SQQ-34, CARRIER-TACTICAL SUPPORT CENTER (CV-TSC)	1	4.354	1	4.456
MK29 MOD 5, GUIDED MISSILE LAUNCHING SYSTEM (GMLS)	2	11.597	2	11.995
AVIATION DATA MANAGEMENT AND CONTROL SYSTEM (ADMACS)	1	7.436	1	8.828
MK 49, MOD 5 ROLLING AIRFRAME MISSILE (RAM)	2	16.059	2	16.849
AN/SPQ-9B, ANTI-SHIP MISSILE DEFENSE (ASMD) SURFACE SURVEILLANCE AND TRACKING RADAR	1	12.237	1	13.726
MK-9 TARGET ILLUMINATOR	4	31.603	4	34.528
P-35 Items Subtotal		**1,005.435**		**1,027.608**
Major Items				
LANDING SIGNAL OFFICER DISPLAY SYSTEM (LSODS)	1	1.927	1	2.112
MORIAH BLOCK 2	1	1.365	1	1.499
LONG RANGE LINEUP SYSTEM (LRLS)	1	0.926	1	0.966
IMPROVED FRESNEL LENS OPTICAL LANDING SYSTEM (IFLOLS)	1	2.073	1	2.272
INTEGRATED LAUNCH AND RECOVERY TELEVISION SYSTEM (ILARTS)	1	4.685	1	5.544
COMPACT SWAGING MACHINE (CSM)	2	2.796	2	3.500
Major Items Subtotal		**13.772**		**15.893**
Other Cost Elements				
DUAL BAND RADAR (DBR) (SPY-3 AND VOLUME SEARCH RADAR (VSR))		10.948		-
Other ORDNANCE		3.287		3.702
Other Cost Elements Subtotal		**14.235**		**3.702**
Total Ordnance		**1,033.442**		**1,047.203**

Remarks:

The Enterprise Radar Suite (ERS) consists of AN/SPY-6(V)3 Enterprise Air Surveillance Radar (EASR), AN/SPQ-9B Anti-ship Missile Defense (ASMD) Surface Surveillance and Tracking Radar and MK-9 Target Illuminators (TIs). These three systems combine to functionally replace the Dual Band Radar (CVN 78) on CVN 79 and follow. The $10,948K cost on the CVN 79 represents a sunk cost paid for overruns associated with receiving the Volume Search Radar (VSR) from the DDG 1000 program and was originally planned for installation on CVN 79.

Compact Swaging Machine (CSM) is replacing Socket Pouring (FY 2020 President's Budget request - Other Ordnance) on the CVN 79 - CVN 80.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2001 / Carrier Replacement Program
Equipment Item: CONSOLIDATED AFLOAT NETWORK AND ENTERPRISE SERVICES (CANES)	**PARM Code:** PMW 160

P-35 Category	FY 2013		FY 2018	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	1	11.351	1	11.068
Spares		0.436		0.474
System Engineering		2.174		2.365
Technical Engineering Services		0.250		0.272
Other Costs		1.722		1.874
Total	**1**	**15.933**	**1**	**16.053**

Description:

CANES will provide the Navy tactical/non-tactical information environment and infrastructure necessary to enable hosting, extended services reach-back and reach-forward, and relay functions. These capabilities will support real time and non-real time tactical/non-tactical edge connected, connectionless, and ad-hoc voice, video and data information exchange requirements. CANES replace and modernize afloat networks with hardware, software and enterprise services infrastructure to enable information warfare from and within the tactical domain. CANES provides complete infrastructure inclusive of hardware, software, processing, storage and end user devices for Unclassified, Coalition, Secret and Sensitive Compartmented Information (SCI) enclaves for all basic network services to Navy surface combatants, submarines and maritime operations centers. The POR CVN 79 is Increment 1.2 and CVN 80 is Increment 2.0.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2013	CVN 79	VARIOUS	C/FFP	Mar 2017		1	11.351
FY 2018	CVN 80	VARIOUS	C/CPFF	Nov 2024		1	11.068

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2013	CVN 79	Sep 2024	67	12	Feb 2018
FY 2018	CVN 80	Mar 2028	28	12	Nov 2024

Competition/Second Source Initiatives:

N/A

Remarks:

CVN 79 - The award date and required award date have been updated from the FY 2020 President's Budget request to reflect the earliest hardware item put on contract and required to the shipbuilder.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2001 / Carrier Replacement Program
Equipment Item: AN/USG-2, COOPERATIVE ENGAGEMENT CAPABILITY (CEC)	**PARM Code:** PEO IWS 6.0

P-35 Category	FY 2013		FY 2018	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	1	2.750	1	2.750
Spares		0.432		0.470
System Engineering		2.017		2.195
Technical Engineering Services		0.181		0.197
Other Costs		0.458		0.498
Total	**1**	**5.838**	**1**	**6.110**

Description:

The Cooperative Engagement Capability (CEC) AN/USG-2B system provides real time integration of fire control quality sensor data into a single composite data source, which is used by multiple CEC ships and airborne units for direct and remote missile engagements. CEC significantly improves battle force Anti-Air Warfare (AAW) capability by coordinating all force AAW sensors into a single real time, fire control quality composite track picture.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2013	CVN 79	DRS	C/FFP	Jan 2020		1	2.750
FY 2018	CVN 80	DRS	C/FFP	Mar 2024		1	2.750

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2013	CVN 79	Sep 2024	37	18	Feb 2020
FY 2018	CVN 80	Mar 2028	30	18	Mar 2024

Competition/Second Source Initiatives:

N/A

Remarks:

Dates have been updated from the FY 2020 President's Budget request to reflect the earliest in yard need date.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2001 / Carrier Replacement Program
Equipment Item: DIGITAL MODULAR RADIO (DMR) ULTRA HIGH FREQUENCY/VERY HIGH FREQUENCY LINE OF SIGHT (EHF/VHF LOS) SAT	**PARM Code:** PMW 170

P-35 Category	FY 2013		FY 2018	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	1	7.765	1	9.187
Spares		0.050		0.055
System Engineering		0.465		0.643
Technical Engineering Services		0.317		0.565
Other Costs		0.221		0.380
Ancillary Equipment		0.068		0.074
Total	**1**	**8.886**	**1**	**10.904**

Description:

DMR-VHF/UHF LOS/SATCOM is an open architecture system that allows transmission and reception of UHF and VHF RF signals. The DMR replaces many legacy systems, including some crypto, Line Of Sight (LOS) and Satellite Communications (SATCOM) components.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2013	CVN 79	GENERAL DYNAMICS	C/FFP	Sep 2014		1	7.765
FY 2018	CVN 80	GENERAL DYNAMICS	C/FFP	Jul 2021		1	9.187

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2013	CVN 79	Sep 2024	61	18	Feb 2018
FY 2018	CVN 80	Mar 2028	38	18	Jul 2023

Competition/Second Source Initiatives:

None

Remarks:

Hardware is being procured in FY 2021 for CVN 80 and CVN 81 via an EOQ buy to achieve the estimated price as reflected in the exhibit. The system is being procured in FY 2021 to make use of an existing contract already in place. A new contract would have to be negotiated if the hardware is not procured in FY 2021, which would potentially result in higher prices for the Department.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2001 / Carrier Replacement Program
Equipment Item: AN/UPX-29(V), INTERROGATOR FRIEND OR FOE (IFF) W/MK XII	**PARM Code:** PMA 213

P-35 Category	FY 2013		FY 2018	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	1	5.026	1	5.026
Ancillary Equipment		0.094		0.102
Spares		0.112		0.122
System Engineering		0.570		0.620
Technical Engineering Services		0.139		0.151
Other Costs		0.410		0.457
Total	**1**	**6.351**	**1**	**6.478**

Description:

IFF is an approved and fully supported centralized Mark XII/XIIA Interrogator system. It uses one receiver transmitter that synchronizes video with up to four radar sweeps. It supplies synthetic video (symbology) to, and accepts requests from, as many as 22 remote locations. It provides digital target reporting to the combat systems/weapon systems computer via full scan, sectored, and/or pop-up interrogations. It provides instantaneous target reporting at requested range and azimuth through the use of an electronically-steered Antenna Group OE-120/UPX or OE-120B/UPX. It provides electronically evaluated Mode 4 target reporting directly to operators and over the combat systems/weapon system computer interface. It provides full redundancy so identification capabilities are retained in case of main processor, main antenna, or main receiver/transmitter failure.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2013	CVN 79	BAE SYSTEMS	C/FFP	May 2016		1	5.026
FY 2018	CVN 80	NOTHROP GRUMMAN-BAE SYSTEMS	SS/FFP	Mar 2021		1	5.026

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2013	CVN 79	Sep 2024	47	24	Oct 2018
FY 2018	CVN 80	Mar 2028	35	24	Apr 2023

Competition/Second Source Initiatives:

None

Remarks:

CVN 80 - Hardware is being procured in FY 2021 for CVN 80 to take advantage of an EOQ buy with other ship classes to achieve the estimated price as reflected in the exhibit.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2001 / Carrier Replacement Program
Equipment Item: SPN-46, AUTOMATIC CARRIER LANDING SYSTEM	**PARM Code:** PMA 213

P-35 Category	FY 2013		FY 2018	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	1	5.870	1	5.870
System Engineering		1.342		1.460
Technical Engineering Services		0.312		0.340
Other Costs		1.887		2.052
Total	**1**	**9.411**	**1**	**9.722**

Description:

AN/SPN-46 Automatic Carrier Landing System (ACLS) is a precision approach landing system (PALS) which provides electronic guidance to carrier-based aircraft and allows them to land in all-weather conditions with no limitations due to low ceiling or restricted visibility. AN/SPN-46 is a fully automated, all weather approach landing aid for carrier aircraft.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2013	CVN 79	NAWCAD	Various	Dec 2016		1	5.870
FY 2018	CVN 80	NAWCAD	Various	Mar 2021		1	5.870

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2013	CVN 79	Sep 2024	54	24	Mar 2018
FY 2018	CVN 80	Mar 2028	35	24	Apr 2023

Competition/Second Source Initiatives:

None.

Remarks:

CVN 79 - The award date and required award date have been updated from the FY 2020 President's Budget request to reflect the earliest hardware item put on contract and required to the shipbuilder.

CVN 80 - The funds are being procured in FY 2021 to make use of an existing contract already in place. A new contract would have to be negotiated if the hardware is not procured in FY 2021, which would potentially result in higher prices for the Department.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2001 / Carrier Replacement Program
Equipment Item: SHIP SELF DEFENSE SYSTEM (SSDS)	**PARM Code:** PEO IWS 10.0

P-35 Category	FY 2013		FY 2018	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	1	11.900	1	11.900
Technical Data and Documentation		1.430		1.556
Spares		0.592		0.644
System Engineering		6.863		7.467
Technical Engineering Services		0.728		0.792
Other Costs		9.143		9.947
Total	**1**	**30.656**	**1**	**32.306**

Description:

The SSDS MK 2, Mod (6E) Common C2 system provides capabilities for multi-mission requirements including Ship Protection against air, surface, and subsurface threats using both own-ship and remote data (Joint Composite Track Number (JCTN) and Joint Data Network (JDN)) in support of the Anti-Air Warfare (AAW) Capstone requirements.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2013	CVN 79	LOCKHEED MARTIN	TBD	Apr 2019		1	11.900
FY 2018	CVN 80	LOCKHEED MARTIN	TBD	Jan 2020		1	11.900

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2013	CVN 79	Sep 2024	41	24	Apr 2019
FY 2018	CVN 80	Mar 2028	31	24	Aug 2023

Competition/Second Source Initiatives:

None

Remarks:

Hardware procurement supports the same CPS (Common Processing System)/CDS (Common Display System) configuration for SSDS, CV-TSC and SEWIP.

CVN 79 - The award date and required award date have been updated from the FY 2020 President's Budget request to reflect the earliest hardware item put on contract and required to the shipbuilder.

CVN 80 - Hardware is being procured in FY 2021 for CVN 80 to take advantage of an EOQ buy with other ship classes to achieve the estimated price as reflected in the exhibit.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2001 / Carrier Replacement Program
Equipment Item: AN/SYY-1(V)1 AIR TRAFFIC CONTROL SYSTEM, SHIPBOARD	**PARM Code:** PMA 213

P-35 Category	FY 2013		FY 2018	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	1	3.244	1	3.244
Spares		0.267		0.291
System Engineering		1.865		2.029
Technical Engineering Services		0.056		0.061
Other Costs		0.577		0.728
Total	**1**	**6.009**	**1**	**6.353**

Description:

AN/SYY-1(V)1 Air Traffic Control System, Shipboard is a processing and display system which correlates and fuses sensor inputs from radar and IFF. The correlated sensor data is displayed to Air Traffic Controllers in a 2D air picture to facilitate the safe and expeditious movement of air traffic operating in the carrier controlled area and launching from/recovering to the ship.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2013	CVN 79	TBD	TBD	Jan 2020		1	3.244
FY 2018	CVN 80	TBD	TBD	Apr 2021		1	3.244

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2013	CVN 79	Sep 2024	28	24	May 2020
FY 2018	CVN 80	Mar 2028	34	24	May 2023

Competition/Second Source Initiatives:

N/A

Remarks:

This system replaces AN/TPX-42. AN/SYY-1(V)1 addresses obsolescence, incorporates existing AN/TPX-42A(V) functionality and will add additional capability and interfaces across all platforms.

CVN 79 - The award date and required award date have been updated from the FY 2020 President's Budget request to reflect the earliest hardware item put on contract and required to the shipbuilder.

CVN 80 - Hardware is being procured in FY 2021 for CVN 80 and CVN 81 via an EOQ buy to achieve the estimated price as reflected in the exhibit. The system is being procured in FY 2021 to make use of an existing contract already in place. A new contract would have to be negotiated if the hardware is not procured in FY 2021, which would potentially result in higher prices for the Department.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2001 / Carrier Replacement Program
Equipment Item: NAVY MULTI-BAND TERMINAL (NMT)	**PARM Code:** PMW 170

P-35 Category	FY 2013		FY 2018	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	1	5.008	1	5.682
Ancillary Equipment		0.048		0.052
System Engineering		0.090		0.098
Technical Engineering Services		0.090		0.098
Other Costs		0.339		0.369
Total	**1**	**5.575**	**1**	**6.299**

Description:

The Advanced Extremely High Frequency (AEHF) Navy Multi-band Terminal (NMT) will be used to receive signals from the Advanced EHF satellites which is a follow-on to the DoD's highly secure, highly protected MILSTAR communications satellite system.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2013	CVN 79	RAYTHEON	C/FFP	Jun 2014		1	5.008
FY 2018	CVN 80	RAYTHEON	C/FFP	Jan 2020		1	5.682

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2013	CVN 79	Sep 2024	61	18	Feb 2018
FY 2018	CVN 80	Mar 2028	30	18	Mar 2024

Competition/Second Source Initiatives:

None

Remarks:

CVN 80 - Hardware is being procured in FY 2021 to take advantage of an EOQ buy with other ship classes to achieve the estimated price as reflected in the exhibit.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2001 / Carrier Replacement Program
Equipment Item: AN/SLQ-32(V)6, SURFACE ELECTRONIC WARFARE IMPROVEMENT PROGRAM (SEWIP) BLOCK 2	**PARM Code:** PEO IWS 2E

P-35 Category	FY 2013		FY 2018	
	Qty *(Each)*	Total Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*
Major Hardware	1	10.100	1	10.100
Ancillary Equipment		0.315		0.343
System Engineering		0.091		0.099
Other Costs		0.012		0.013
Total	**1**	**10.518**	**1**	**10.555**

Description:

SEWIP Block 2 is a scalable Electronic Warfare enterprise suite to provide improved Electromagnetic Interference (EMI) mitigation and Combat System Interface capabilities to select new construction ships as well as upgrade current AN/SLQ-32(V)3 and (V)4 Electronic Warfare (EW) suites on existing ships. It provides enhanced shipboard Electronic Warfare (EW) for early detection, analysis, threat warning and protection from anti-ship missiles. SEWIP Block 2 focused on Electronic Support (ES) capability improvements.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity *(Each)*	Unit Cost *($ M)*
FY 2013	CVN 79	LOCKHEED MARTIN	C/FFP	Jan 2020		1	10.100
FY 2018	CVN 80	LOCKHEED MARTIN	C/FFP	Sep 2021		1	10.100

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2013	CVN 79	Sep 2024	27	18	Dec 2020
FY 2018	CVN 80	Mar 2028	24	18	Sep 2024

Competition/Second Source Initiatives:

None

Remarks:

Hardware procurement supports the same CPS (Common Processing System)/CDS (Common Display System) configuration for SSDS, CV-TSC and SEWIP.

CVN 79 - Dates have been updated from the FY 2020 President's Budget request to reflect the earliest in yard need date.

CVN 80 - Hardware is being procured in FY 2021 for CVN 80 to take advantage of an EOQ buy with other ship classes to achieve the estimated price as reflected in the exhibit.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2001 / Carrier Replacement Program
Equipment Item: AN/SRQ-6/MCS-21, SHIPS SIGNAL EXPLOITATION EQUIPMENT (SSEE)	**PARM Code:** PMW 120

P-35 Category	FY 2013		FY 2018	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	1	4.992	1	5.214
Ancillary Equipment		0.078		0.085
Spares		0.192		0.209
System Engineering		0.827		0.900
Technical Engineering Services		0.176		0.191
Other Costs		0.850		1.166
Total	**1**	**7.115**	**1**	**7.765**

Description:

SSEE provided for cryptological signal acquisition, recognition, analysis and geo-location. It replaces Maritime Cryptological System (MCS-21) which replaces the Battle Group Passive Horizon Extension System (BGPHES).

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2013	CVN 79	VARIOUS	Various	Jan 2020		1	4.992
FY 2018	CVN 80	VARIOUS	Various	Jan 2021		1	5.214

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2013	CVN 79	Sep 2024	32	18	Jul 2020
FY 2018	CVN 80	Mar 2028	35	18	Oct 2023

Competition/Second Source Initiatives:

None

Remarks:

Dates have been updated from the FY 2020 President's Budget request to reflect the earliest in yard need date.

CVN 80 - Hardware is being procured in FY 2021 for CVN 80 to take advantage of an EOQ buy with other ship classes to achieve the estimated price as reflected in the exhibit.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2001 / Carrier Replacement Program
Equipment Item: AN/SRC-61 (V)X HFDAG	**PARM Code:** PMW 170

P-35 Category	FY 2013 Qty (Each)	FY 2013 Total Cost ($ M)	FY 2018 Qty (Each)	FY 2018 Total Cost ($ M)
Major Hardware	1	4.869	1	4.816
Ancillary Equipment		0.048		0.052
Spares		0.010		0.011
System Engineering		0.199		0.216
Technical Engineering Services		0.484		0.527
Other Costs		0.402		0.437
Total	**1**	**6.012**	**1**	**6.059**

Description:

High Frequency (HF) Distributed Amplifier Group (DAG) is the Navy's Program of Record (POR) HF system and is the follow-on replacement of HF Radio Group (HFRG). HFDAG has a modular architecture and utilizes COTS equipment to the maximum extent possible. It provides Line Of Sight (LOS/Beyond Line of Sight (BLOS) voice and data transmission capabilities to USN Ships. The 16-channel CVN variant greatly improves capabilities from HFRG: (1) increases availability (Ao), (2) provides reprogrammable waveforms, (3) increases the number of waveforms available, (4) provides automatic link establishment (ALE).

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2013	CVN 79	GENERAL DYNAMICS	C/FFP	Feb 2019		1	4.869
FY 2018	CVN 80	GENERAL DYNAMICS	C/FFP	Feb 2019		1	4.816

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2013	CVN 79	Sep 2024	51	18	Dec 2018
FY 2018	CVN 80	Mar 2028	35	18	Oct 2023

Competition/Second Source Initiatives:

N/A

Remarks:

Dates have been updated from the FY 2020 President's Budget request to reflect the earliest in yard need date.

CVN 79 - Schedule recovery accomplished from late award.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2001 / Carrier Replacement Program
Equipment Item: ELECTROMAGNETIC AIRCRAFT LAUNCHING SYSTEM (EMALS)	**PARM Code:** PMA 251

P-35 Category	FY 2013		FY 2018	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	1	552.719	1	542.163
Technical Data and Documentation		0.491		-
Spares		-		28.050
System Engineering		19.066		17.507
Technical Engineering Services		3.015		2.556
Other Costs		26.072		17.597
Total	**1**	**601.363**	**1**	**607.873**

Description:

EMALS is an advanced technology electrically generated launching system that uses a moving electromagnetic field to propel aircraft to launch speed. EMALS is made up of six primary sub-systems: prime power interface, energy storage, energy distribution, power conversion, launch motor, and launch control subsystem. Benefits over the current C13 steam catapults include reduced weight and volume, greater launching flexibility for future aircraft, improved control, and reduced manning workload requirements.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2013	CVN 79	GENERAL ATOMICS	SS/FFP	May 2014	New	1	552.719
FY 2018	CVN 80	GENERAL ATOMICS	SS/FFP	Jan 2017	Option	1	542.163

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2013	CVN 79	Sep 2024	93	48	Dec 2012
FY 2018	CVN 80	Mar 2028	57	48	Jun 2019

Competition/Second Source Initiatives:

None

Remarks:

The CVN 80 Spares P-35 category includes $28.05M for CVN 78 Class Interim Spares.

Long Lead Time Materials Undefinitized Contract Action (UCA) awarded May 2014, Undefinitized Production UCA awarded June 2015 for CVN 79, and Production UCA definitized December 2016 for CVN 79 with option for CVN 80. CVN 80 option exercised January 2017 EMALS and AAG bundled savings on single production contract for CVN 79 and CVN 80 are reflective of contract negotiations.

Dates have been updated from the FY 2020 President's Budget request to reflect the earliest in yard need date.

CVN 79 - Negotiations with the Original Equipment Manufacturer (OEM) were required to negotiate improvements to the contractor's schedule since award was late. Additionally, several changes to the CVN 79 construction contract were required to achieve the ship delivery date.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2001 / Carrier Replacement Program
Equipment Item: ENTERPRISE AIR SURVEILLANCE RADAR (EASR)	**PARM Code:** PEO IWS 2.0

P-35 Category	FY 2013 Qty (Each)	FY 2013 Total Cost ($ M)	FY 2018 Qty (Each)	FY 2018 Total Cost ($ M)
Major Hardware	1	44.830	1	54.133
Ancillary Equipment		0.003		-
Spares		2.178		-
System Engineering		2.142		3.000
Technical Engineering Services		7.670		-
Other Costs		11.070		-
Total	**1**	**67.893**	**1**	**57.133**

Description:

The Enterprise Air Surveillance Radar (EASR) suite will be a modern long-range, three-dimensional (3D) radar used to search, detect and provide space-stabilized, three-coordinate (range, bearing, height) data for air intercept control and designation to a weapon system and Air Traffic Control (ATC) system. The Enterprise Radar Suite (ERS), which includes EASR, is intended to replace the functions that Dual Band Radar (DBR) performed on CVN 78, but at a much lower cost.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2013	CVN 79	RAYTHEON	C/CPIF	Dec 2019		1	44.830
FY 2018	CVN 80	RAYTHEON	C/CPIF	Feb 2021		1	54.133

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2013	CVN 79	Sep 2024	30	30	Sep 2019
FY 2018	CVN 80	Mar 2028	30	30	Mar 2023

Competition/Second Source Initiatives:

None

Remarks:

The hardware configuration for the CVN 79, CVN 80, and CVN 81 (non-rotating) is essentially three times that of a rotating configuration, which is currently planned for the big deck amphibious warfare ships. CVN 79, CVN 80, and CVN 81 will have three phased arrays mounted around the island, while the amphibious warfare ships will use one rotating array. Below deck equipment is also provided at a larger scale with the non-rotating variant of EASR.

The Enterprise Radar Suite (ERS) consists of AN/SPY-6(V)2 Enterprise Air Surveillance Radar (EASR), AN/SPQ-9B Anti-Ship Missile Defense (ASMD) Surface Surveillance and Tracking Radar, and MK-9 Target Illuminators (TIs).

Dates have been updated from the FY 2020 President's Budget request to reflect the earliest in yard need date.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy		Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	P-1 Line Item Number / Title: 2001 / Carrier Replacement Program	
Equipment Item: ENTERPRISE AIR SURVEILLANCE RADAR (EASR)		PARM Code: PEO IWS 2.0

CVN 79 - Schedule recovery accomplished via negotiations to mitigate late award.

CVN 80 - Hardware is being procured in FY 2021 for CVN 80 to take advantage of an EOQ buy with other ship classes to achieve the estimated price as reflected in the exhibit.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2001 / Carrier Replacement Program
Equipment Item: ADVANCED ARRESTING GEAR (AAG)	**PARM Code:** PMA 251

P-35 Category	FY 2013 Qty (Each)	FY 2013 Total Cost ($ M)	FY 2018 Qty (Each)	FY 2018 Total Cost ($ M)
Major Hardware	1	206.406	1	199.219
Spares		-		32.497
System Engineering		8.054		4.471
Technical Engineering Services		6.904		4.771
Other Costs		10.946		10.303
Total	**1**	**232.310**	**1**	**251.261**

Description:

AAG provides an upgraded ability to recover all existing and projected aircraft carrier based air vehicles. The AAG system will replace the Mark 7 arresting gear system found on the NIMITZ class carriers and will be the aircraft recovery system for the CVN 79, CVN 80, and CVN 81. AAG consists of six primary systems: energy absorption subsystem, energy storage subsystem, dynamic control subsystem, thermal management subsystem, cross deck pendant, and the control subsystem.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2013	CVN 79	GENERAL ATOMICS	SS/FFP	May 2014	New	1	206.406
FY 2018	CVN 80	GENERAL ATOMICS	SS/FFP	Jan 2017	Option	1	199.219

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2013	CVN 79	Sep 2024	91	48	Feb 2013
FY 2018	CVN 80	Mar 2028	61	48	Feb 2019

Competition/Second Source Initiatives:

None

Remarks:

The CVN 80 Spares P-35 category includes $30.727M for CVN 78 Class Interim Spares and $1.770M for Initial Installation & Checkout Spares.

Long Lead Time Materials Undefinitized Contract Action (UCA) awarded May 2014, Undefinitized Production UCA awarded June 2015 for CVN 79, and Production UCA definitized December 2016 for CVN 79 with option for CVN 80. CVN 80 option exercised January 2017. EMALS and AAG bundled savings on single production contract for CVN 79 and CVN 80 are reflective of contract negotiations.

Dates have been updated from the FY 2020 President's Budget request to reflect the earliest in yard need date.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2001 / Carrier Replacement Program
Equipment Item: PHALANX BLOCK 1B MK 15 MOD 21 & 22, CLOSE - IN WEAPONS SYSTEM (CIWS)	**PARM Code:** IWS 11

P-35 Category	FY 2013 Qty (Each)	FY 2013 Total Cost ($ M)	FY 2018 Qty (Each)	FY 2018 Total Cost ($ M)
Major Hardware	3	16.297	3	16.297
Ancillary Equipment		0.231		0.251
Spares		0.278		0.302
System Engineering		1.857		2.020
Technical Engineering Services		0.628		0.683
Other Costs		1.292		1.406
Total	**3**	**20.583**	**3**	**20.959**

Description:

Phalanx is a high fire rate Close-In Weapon System (CIWS) that automatically acquires, tracks and destroys Anti-Ship cruise missiles, Helos, Aircraft, and all types of Surface threats. The installed version will have one MK-15 Mod 21 and two MK-15 Mod 22 CIWS systems.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2013	CVN 79	RAYTHEON	C/FFP	Jan 2020		3	5.432
FY 2018	CVN 80	RAYTHEON	C/FFP	Jan 2024		3	5.432

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2013	CVN 79	Sep 2024	39	22	Aug 2019
FY 2018	CVN 80	Mar 2028	28	22	Jan 2024

Competition/Second Source Initiatives:

None

Remarks:

Dates have been updated from the FY 2020 President's Budget request to reflect the earliest in yard need date.

CVN 79 - Working to recover schedule based on late award.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2001 / Carrier Replacement Program
Equipment Item: AN/SQQ-34, CARRIER-TACTICAL SUPPORT CENTER (CV-TSC)	**PARM Code:** PEO IWS 5E

P-35 Category	FY 2013		FY 2018	
	Qty *(Each)*	Total Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*
Major Hardware	1	3.199	1	3.199
Spares		0.100		0.109
System Engineering		0.350		0.381
Technical Engineering Services		0.250		0.272
Other Costs		0.455		0.495
Total	**1**	**4.354**	**1**	**4.456**

Description:

CV-TSC provides for carrier organic Anti-submarine Warfare (ASW), Mine Warfare (MIW), Surface Warfare (SUW), and other composite warfare area sensor data processing, tactical command and control, and organic/battle-group aircraft mission support. CV-TSC supports both ship self defense and embarked Destroyer Squadron (DESRON) missions. This system is Open Architecture Computing Environment (OACE), Joint Fires Network (JFN), and FORCEnet compliant, and includes redesign to maximize introduction of expected transformational technologies such as Common Processing System (CPS), Common Display System (CDS), sensor processing in support of the MH-60R helicopter, high speed bandwidth network, Excomm systems, net-centric warfare components, etc.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity *(Each)*	Unit Cost *($ M)*
FY 2013	CVN 79	Raytheon	Various	Jan 2020		1	3.199
FY 2018	CVN 80	Raytheon	Various	Sep 2020		1	3.199

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2013	CVN 79	Sep 2024	41	18	Oct 2019
FY 2018	CVN 80	Mar 2028	35	18	Oct 2023

Competition/Second Source Initiatives:

None

Remarks:

Hardware procurement supports the same CPS (Common Processing System)/CDS (Common Display System) configuration for SSDS, CV-TSC and SEWIP.

Dates have been updated from the FY 2020 President's Budget request to reflect the earliest in yard need date.

CVN 79 - Working to recover schedule based on late award.

CVN 80 - Hardware is being procured in FY 2021 for CVN 80 to take advantage of an EOQ buy with other ship classes to achieve the estimated price as reflected in the exhibit.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2001 / Carrier Replacement Program
Equipment Item: MK29 MOD 5, GUIDED MISSILE LAUNCHING SYSTEM (GMLS)	**PARM Code:** PEO IWS 12

P-35 Category	FY 2013		FY 2018	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	2	7.071	2	7.071
Ancillary Equipment		0.400		0.435
Spares		0.922		1.003
System Engineering		0.750		0.816
Technical Engineering Services		0.710		0.773
Other Costs		1.744		1.897
Total	**2**	**11.597**	**2**	**11.995**

Description:

The MK 29 Mod 5 GMLS is a launcher only configuration integrated with the C2 system and will provide the CVN 79 and CVN 80 with a cost effective means of employing the initial Evolved Sea Sparrow Missile (ESSM) capability. This configuration consists of an open architecture launching system and does not include operator workstations. All workstations and operator interactions necessary for system operation including but not limited to power application to the GMLS and control and safety/status monitoring of loaded cells is assumed to exist at the combat system level.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2013	CVN 79	RAYTHEON	C/FFP	Nov 2019		2	3.536
FY 2018	CVN 80	RAYTHEON	C/FFP	Nov 2021		2	3.536

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2013	CVN 79	Sep 2024	31	29	Sep 2019
FY 2018	CVN 80	Mar 2028	47	29	Nov 2021

Competition/Second Source Initiatives:

None

Remarks:

Dates have been updated from the FY 2020 President's Budget request to reflect the earliest in yard need date.

CVN 79 - Working to recover schedule based on late award.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2001 / Carrier Replacement Program
Equipment Item: AVIATION DATA MANAGEMENT AND CONTROL SYSTEM (ADMACS)	**PARM Code:** PMA 251

P-35 Category	FY 2013 Qty (Each)	FY 2013 Total Cost ($ M)	FY 2018 Qty (Each)	FY 2018 Total Cost ($ M)
Major Hardware	1	3.213	1	5.141
System Engineering		1.599		0.950
Technical Engineering Services		0.401		0.592
Other Costs		2.223		2.145
Total	**1**	**7.436**	**1**	**8.828**

Description:

ADMACS is a virtual, seamless, data sharing, knowledge based data system that provides interface for all aviation data systems. It is a tactical real-time information management system maintaining data integrity throughout the ship spaces that manage aircraft launch and recovery operations on board the carrier. ADMACS includes data from launch and recovery equipment, air traffic control, aviation maintenance, landing signaling officer, etc.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2013	CVN 79	BOWHEAD	C/FFP	Jul 2016	Option	1	3.213
FY 2018	CVN 80	TBD	TBD	Feb 2024		1	5.141

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2013	CVN 79	Sep 2024	59	12	Oct 2018
FY 2018	CVN 80	Mar 2028	37	12	Feb 2024

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2001 / Carrier Replacement Program
Equipment Item: MK 49, MOD 5 ROLLING AIRFRAME MISSILE (RAM)	**PARM Code:** PEO IWS 11

P-35 Category	FY 2013		FY 2018	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	2	7.902	2	7.902
Ancillary Equipment		1.381		1.503
Technical Data and Documentation		0.035		0.038
Spares		0.140		0.152
System Engineering		2.190		2.383
Technical Engineering Services		0.380		0.413
Other Costs		4.031		4.458
Total	**2**	**16.059**	**2**	**16.849**

Description:

The MK 49 Mod 5 Rolling Airframe Missile (RAM) Weapon System is a lightweight, low cost, high power system for anti-ship missile defense against current and evolving threats. The Block 2 upgrade adds the capability of infrared, all-the-way missile guidance while maintaining the original dual-mode (RF/IR) capability. The helos, aircraft, and surface (HAS) upgrade enables the engagement of asymmetric threats.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2013	CVN 79	RAYTHEON	C/FFP	Jun 2019		2	3.951
FY 2018	CVN 80	RAYTHEON	C/FFP	Sep 2023		2	3.951

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2013	CVN 79	Sep 2024	38	21	Oct 2019
FY 2018	CVN 80	Mar 2028	33	21	Sep 2023

Competition/Second Source Initiatives:

None

Remarks:

Dates have been updated from the FY 2020 President's Budget request to reflect the earliest in yard need date.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2001 / Carrier Replacement Program
Equipment Item: AN/SPQ-9B, ANTI-SHIP MISSILE DEFENSE (ASMD) SURFACE SURVEILLANCE AND TRACKING RADAR	**PARM Code:** PEO IWS2B

P-35 Category	FY 2013		FY 2018	
	Qty *(Each)*	Total Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*
Major Hardware	1	6.486	1	7.469
Spares		0.450		0.490
System Engineering		0.980		1.066
Technical Engineering Services		0.602		0.655
Other Costs		3.719		4.046
Total	**1**	**12.237**	**1**	**13.726**

Description:

SPQ-9B is a multimode, x-band, narrow beam, pulse Doppler radar that detects and tracks sea-skimming missiles (ASMD) at the horizon in heavy clutter while simultaneously providing detection and tracking of surface targets.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity *(Each)*	Unit Cost *($ M)*
FY 2013	CVN 79	NGES	SS/FFP	Jan 2020		1	6.486
FY 2018	CVN 80	NGES	SS/FFP	Oct 2023		1	7.469

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2013	CVN 79	Sep 2024	31	18	Aug 2020
FY 2018	CVN 80	Mar 2028	35	18	Oct 2023

Competition/Second Source Initiatives:

None

Remarks:

The Enterprise Radar Suite (ERS) consists of AN/SPY-6(V)3 Enterprise Air Surveillance Radar (EASR), AN/SPQ-9B Anti-ship Missile Defense (ASMD) Surface Surveillance and Tracking Radar and MK-9 Target Illuminators (TIs).

Dates have been updated from the FY 2020 President's Budget request to reflect the earliest in yard need date.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2001 / Carrier Replacement Program
Equipment Item: MK-9 TARGET ILLUMINATOR	**PARM Code:** IWS 12

P-35 Category	FY 2013 Qty (Each)	FY 2013 Total Cost ($ M)	FY 2018 Qty (Each)	FY 2018 Total Cost ($ M)
Major Hardware	4	30.725	4	33.573
Spares		0.878		0.955
Total	**4**	**31.603**	**4**	**34.528**

Description:
MK-9 is an X-Band Illuminator that provides weapon communication and missile illumination.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2013	CVN 79	RAYTHEON	C/FFP	Feb 2020		4	7.681
FY 2018	CVN 80	RAYTHEON	C/FFP	Apr 2022		4	8.393

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2013	CVN 79	Sep 2024	31	24	Feb 2020
FY 2018	CVN 80	Mar 2028	47	24	Apr 2022

Competition/Second Source Initiatives:
None

Remarks:
The Enterprise Radar Suite (ERS) consists of AN/SPY-6(V)3 Enterprise Air Surveillance Radar (EASR), AN/SPQ-9B Anti-ship Missile Defense (ASMD) Surface Surveillance and Tracking Radar and MK-9 Target Illuminators (TIs).

CVN 79 and CVN 80 requires MK-9 TIs to provide command guidance uplink capabilities for ship's self-defense. The increased costs are due to new production unit ship sets with the new transmitters. Increased costs since the FY 2020 President's Budget request for MK-9 TIs are due to the MK 73 transmitters being obsolete and no longer procurable.

Dates have been updated from the FY 2020 President's Budget request to reflect the earliest in yard need date.

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 02: Other Warships / BSA 1: Other Warships	**P-1 Line Item Number / Title:** 2004 / CVN-81

ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** N/A

Line Item MDAP/MAIS Code: 223

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity *(Units in Each)*	-	-	1	-	-	-	-	-	-	-	-	1
Gross/Weapon System Cost *($ in Millions)*	0.000	0.000	12,450.695	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	12,450.695
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	0.000
Less Cost To Complete *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	0.000
Less Subsequent Year Full Funding *($ in Millions)*	-	-	10,593.195	-	-	-	-	-	-	-	-	10,593.195
Less Funding in SCN Line Item 2001 *($ in Millions)*	-	-	1,429.682	-	-	-	-	-	-	-	-	1,429.682
Net Procurement (P-1) *($ in Millions)*	0.000	0.000	427.818	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	427.818
Plus Subsequent Year Full Funding *($ in Millions)*	-	-	-	1,645.606	-	1,645.606	1,306.988	759.980	666.968	590.969	5,622.684	10,593.195
Full Funding TOA *($ in Millions)*	-	-	427.818	1,645.606	-	1,645.606	1,306.988	759.980	666.968	590.969	5,622.684	11,021.013
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	0.000
Plus Cost To Complete *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	0.000
Plus Funding in SCN Line Item 2001 *($ in Millions)*	-	643.000	786.682	-	-	-	-	-	-	-	-	1,429.682
Total Obligation Authority *($ in Millions)*	**0.000**	**643.000**	**1,214.500**	**1,645.606**	**0.000**	**1,645.606**	**1,306.988**	**759.980**	**666.968**	**590.969**	**5,622.684**	**12,450.695**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Plus Outfitting and Post Delivery *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	317.973	317.973
Total *($ in Millions)*	**-**	**643.000**	**1,214.500**	**1,645.606**	**-**	**1,645.606**	**1,306.988**	**759.980**	**666.968**	**590.969**	**5,940.657**	**12,768.668**
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	12,450.695	-	-	-	-	-	-	-	-	12,450.695

Description:

To provide credible, sustainable, independent forward presence during peacetime without access to land bases; operate as the cornerstone of a joint and/or allied maritime expeditionary force in response to crisis; and carry the war to the enemy through joint multi-mission offensive operations.

The Navy designed the FORD Class aircraft carrier with the warfighting capability essential for the 21st century, and the flexibility and resilience to rapidly adapt to emerging threats. The Ford class incorporates advances in technology such as a new reactor plant, propulsion system, electric plant, Electromagnetic Aircraft Launch System (EMALS), Advanced Arresting Gear (AAG), machinery control, and integrated warfare systems that increase lethality, while lowering life cycle costs through reductions in maintenance and manning requirements. Increased Service Life Allowances (SLA) for weight and stability enable future modernization and the ability to adapt to new missions over the ship's 50-year life cycle.

CVN 80 and CVN 81 were awarded under a two-ship buy. CVN 81 is a separate contract line item under the same contract as CVN 80, which allows discrete hull costs to be captured. The CVN 80/81 construction contract is a Fixed Price Incentive (Firm Target) (FPIF) contract type that limits the Navy's liability and incentivizes the shipyard's best performance. The contract language guarantees a single technical baseline for both ships, which allows the shipyard to re-use engineering rollover products, minimize changes between the two ships and leverages economic order quantities for equipment and material procurement.

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy		Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 02: Other Warships / BSA 1: Other Warships	**P-1 Line Item Number / Title:** 2004 / CVN-81	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** N/A
Line Item MDAP/MAIS Code: 223		

Characteristics:

	-
Length Overall	1092 ft
Beam	134 ft
Displacement	97,337 TONS
Draft	38.7 ft

Systems:

Electronics
-SHIP SELF DEFENSE SYSTEM (SSDS)

Ordnance
-ELECTROMAGNETIC AIRCRAFT LAUNCHING SYSTEM (EMALS)
-ENTERPRISE AIR SURVEILLANCE RADAR (EASR)
-ADVANCED ARRESTING GEAR (AAG)

Production Status:	**CVN 81**
Contract Award Date	Jan 2019
Months to Completion	
a) Award to Delivery	157 months
b) Construction Start to Delivery	157 months
Delivery Date	Feb 2032
Completion Of Fitting Out	Apr 2032
Obligation Work Limit Date	Mar 2033

Design Schedule	Start / Issue	Complete / Response	Reissue	Reissue Complete / Response
Issue Date for TLR	Apr 2004	N/A		
Issue Date for TLS	Sep 2006	N/A		
Preliminary Design	Jan 2003	Jul 2008		
Contract Design	May 2004	Apr 2008		
Detail Design	Jan 2004	Sep 2009		
Request for Proposals	Jul 2007	Oct 2007		
Design Agent	Huntington Ingalls Industries			

Classification of Cost Estimate: CLASS C BUDGET ESTIMATE

Justification:
CVN 81 FY 2021 Obligation Plan = $1,645.606M
Basic Construction/Conversion = $392.236M
Change Orders = $11.000M
Propulsion Equipment = $1,200.100M
Electronics = $6.874
Ordnance = $35.396M

Exhibit P-5c, Ship Cost Analysis: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2004 / CVN-81

Cost Categories (†) indicates the presence of a P-8a	**FY 2020**	
	Qty *(Each)*	**Total Cost** *($ M)*
Plan Costs	1	
Basic Construction/Conversion		8,110.885
Change Orders		152.000
Electronics (†)		242.600
Propulsion Equipment		2,887.110
Hull, Mechanical, and Electrical (HM&E) (†)		13.600
Ordnance (†)		1,005.406
Other Cost		39.094
Total Ship Estimate		**12,450.695**
Less Subsequent Full Funding FY 2021		1,645.606
Less Subsequent Full Funding FY 2022		1,306.988
Less Subsequent Full Funding FY 2023		759.980
Less Subsequent Full Funding FY 2024		666.968
Less Subsequent Full Funding FY 2025		590.969
Less Subsequent Full Funding FY 2026		2,170.989
Less Subsequent Full Funding FY 2027		3,451.695
Less Funding in SCN Line Item 2001 FY 2019		643.000
Less Funding in SCN Line Item 2001 FY 2020		786.682
Net P-1 Funding		**427.818**

Remarks:
The Less Subsequent Full Funding FY 2027 field shows the funds requested to complete CVN 81. This includes resources beyond FY 2027. The FY 2027 amount is $1,851.000 million while the FY 2028 amount is $1,600.695 million. There are no funds programmed after FY 2028.

$786.682 million of FY 2020 funding for CVN 81 was executed in SCN line item 2001 during the FY 2020 continuing resolution.

Exhibit P-27, Ship Production Schedule: PB 2021 Navy					**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1			**P-1 Line Item Number / Title:** 2004 / CVN-81		
Ship	**Shipbuilder**	**Fiscal Year**	**Contract Award**	**Start of Construction**	**Delivery Date**
CVN 81	Huntington Ingalls Industries, Newport News Shipbuilding	2020	Jan 2019	Jan 2019	Feb 2032

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2004 / CVN-81

Electronics	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)
P-35 Items		
CONSOLIDATED AFLOAT NETWORK AND ENTERPRISE SERVICES (CANES)	1	15.951
AN/USG-2, COOPERATIVE ENGAGEMENT CAPABILITY (CEC)	1	6.071
DIGITAL MODULAR RADIO (DMR) ULTRA HIGH FREQUENCY/VERY HIGH FREQUENCY LINE OF SIGHT (EHF/VHF LOS) SAT	1	10.835
AN/UPX-29(V), INTERROGATOR FRIEND OR FOE (IFF) W/MK XII	1	6.438
SPN-46, AUTOMATIC CARRIER LANDING SYSTEM	1	9.661
SHIP SELF DEFENSE SYSTEM (SSDS)	1	29.699
AN/SYY-1(V)1 AIR TRAFFIC CONTROL SYSTEM, SHIPBOARD	1	6.219
NAVY MULTI-BAND TERMINAL (NMT)	1	6.259
AN/SLQ-32(V)6, SURFACE ELECTRONIC WARFARE IMPROVEMENT PROGRAM (SEWIP) BLOCK 2	1	10.488
AN/SRQ-6/MCS-21, SHIPS SIGNAL EXPLOITATION EQUIPMENT (SSEE)	1	7.716
AN/SRC-61 (V)X HFDAG	1	6.021
P-35 Items Subtotal		**115.358**
Major Items		
AN/USQ-155(V)1 TACTICAL VARIANT SWITCH	1	2.725
INFORMATION ASSURANCE (IA)		2.018
AN/URC-141X(V), MULTI-FUNCTION INFORMATION DISTRIBUTION SYSTEM (MIDS)-ON SHIP (MOS)	1	1.576
AN/SLQ-25C DUAL, SURFACE SHIP TORPEDO DEFENSE SYSTEM, NIXIE	1	4.627
SHIPBOARD AIR TRAFFIC CONTROL COMMUNICATIONS (SATCC)	1	2.328
AN/WSN-7(V)3, RING LASER GYRO NAVIGATOR (RLGN)	1	3.102
DISTRIBUTED SYSTEMS DESIGN INTEGRATION SERVICES	1	19.037
C4I INTEGRATION & COORDINATION		7.114
DISTRIBUTED COMMON GROUND STATION - NAVY (DCGS-N)	1	2.304
AN/USQ-144K AUTOMATED DIGITAL NETWORK SYSTEM (ADNS)	1	1.307
AN/UYQ-86 COMMON DATA LINK MANAGEMENT SYSTEM (CDLMS) WITH NGC2P	1	1.805
OA-9277 ULTRA HIGH FREQUENCY (UHF) MULTICOUPLER	1	1.954
ARC-210 CARRIER AIR TRAFFIC CONTROL CENTER (CATCC) - PRIFLY - LANDING SIGNAL OFFICER (LSO) SYSTEM	1	1.657
WARFARE SYSTEM INTEGRATION		19.995
COMMERCIAL BROADBAND SATELLITE PROGRAM, FORCE LEVEL VARANT (CBSP-FLV)	2	2.450
AN/SSN-6(V)X BLOCK 4, NAVIGATION SENSOR SYSTEM INTERFACE (NAVSSI)		
GLOBAL POSITIONING SYSTEM, NAVIGATION, AND TIMING SERVICE (GPNTS)	1	1.250
INTEGRATED STRIKE PLANNING & EXECUTION SYSTEMS (ISP&E)	1	8.194
AN/USQ-123(V), COMMUNICATIONS DATA LINK-SYSTEM (CDL-S)	1	2.464

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2004 / CVN-81

Electronics	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)
AN/SPN-41 (V), INSTRUMENT LANDING SYSTEM (ILS)	1	3.873
SHIP SIGNAL EXPLOITATION SPACE (SSES/SI) COMMUNICATIONS	1	4.044
TURNKEY RADIO COMMUNICATIONS SYSTEM (RCS)	1	14.789
AN/USQ-T46X(V)X, BATTLE FORCE TACTICAL TRAINING SYSTEM (BFTT)		
AN/USQ-T52 TRAINING INTERFACE UNIT (TIU) ADVANCED TRAINING DOMAIN (ATD)	1	1.829
NEXT GENERATION SURFACE SEARCH RADAR (NGSSR)		2.341
Major Items Subtotal		**112.783**
Other Cost Elements		
Other ELECTRONICS		14.459
Other Cost Elements Subtotal		**14.459**
Total Electronics		**242.600**

Remarks:

AN/SYY-1(V)1 Air Traffic Control System Shipboard replaces AN/TPX-42A(V)14, Carrier Air Traffic Control Center - Direct Altitude and Identify Readout (CATCC-DAIR). AN/SYY-1(V)1 addresses obsolescence, incorporates existing AN/TPX-42A(V) functionality and will add additional capability and interfaces across all platforms.

Global Positioning System, Navigation and Timing Service (GPNTS) is the next generation of navigation to address Fleet obsolescence issues. GPNTS replaces AN/SSN-6(V)X Block 4, Navigation Sensor System Interface (NAVSSI).

AN/USQ-T52 Training Interface Unit (TIU) Advanced Training Domain (ATD) replaces AN/USQ-T46X(V)X, Battle Force Tactical Training System (BFTT).

Next Generation Surface Search Radar (NGSSR) replaces AN/SPS-73A(V)12-Tech Refresh - Surface Search Radar, due to SPS-73 no longer being in production.

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2004 / CVN-81

Hull, Mechanical, and Electrical (HM&E)	FY 2020	
	Qty *(Each)*	**Total Cost** *($ M)*
Major Items		
HM&E ENGINEERING SERVICES		7.666
LIFE RAFTS		1.888
SUPSHIP MATERIAL AND GFE		0.616
TRUCKS (FORKLIFTS)		0.820
Major Items Subtotal		**10.990**
Other Cost Elements		
Other HM&E		2.610
Other Cost Elements Subtotal		**2.610**
Total Hull, Mechanical, and Electrical (HM&E)		**13.600**

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2004 / CVN-81

Ordnance	FY 2020 Qty *(Each)*	FY 2020 Total Cost *($ M)*
P-35 Items		
ELECTROMAGNETIC AIRCRAFT LAUNCHING SYSTEM (EMALS)	1	593.314
ENTERPRISE AIR SURVEILLANCE RADAR (EASR)	1	57.854
ADVANCED ARRESTING GEAR (AAG)	1	229.279
PHALANX BLOCK 1B MK 15 MOD 21 & 22, CLOSE - IN WEAPONS SYSTEM (CIWS)	3	19.286
AN/SQQ-34, CARRIER-TACTICAL SUPPORT CENTER (CV-TSC)	1	4.100
MK29 MOD 5, GUIDED MISSILE LAUNCHING SYSTEM (GMLS)	2	11.919
AVIATION DATA MANAGEMENT AND CONTROL SYSTEM (ADMACS)	1	8.772
MK 49, MOD 3 ROLLING AIRFRAME MISSILE (RAM)	2	15.788
AN/SPQ-9B, ANTI-SHIP MISSILE DEFENSE (ASMD) SURFACE SURVEILLANCE AND TRACKING RADAR	1	13.718
MK-9 TARGET ILLUMINATOR	4	33.930
P-35 Items Subtotal		**987.960**
Major Items		
LANDING SIGNAL OFFICER DISPLAY SYSTEM (LSODS)	1	2.098
MORIAH BLOCK 2	1	1.490
LONG RANGE LINEUP SYSTEM (LRLS)	1	0.960
IMPROVED FRESNEL LENS OPTICAL LANDING SYSTEM (IFLOLS)	1	2.257
INTEGRATED LAUNCH AND RECOVERY TELEVISION SYSTEM (ILARTS)	1	5.509
COMPACT SWAGING MACHINE (CSM)	2	2.500
Major Items Subtotal		**14.814**
Other Cost Elements		
DUAL BAND RADAR (DBR) (SPY-3 AND VOLUME SEARCH RADAR (VSR))		
Other ORDNANCE		2.632
Other Cost Elements Subtotal		**2.632**
Total Ordnance		**1,005.406**

Remarks:
The Enterprise Air Surveillance Radar (EASR) replaces Dual Band Radar (DBR).

Compact Swaging Machine (CSM) is replacing Socket Pouring (FY 2020 President's Budget request - Other Ordnance).

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2004 / CVN-81
Equipment Item: CONSOLIDATED AFLOAT NETWORK AND ENTERPRISE SERVICES (CANES)	**PARM Code:** PMW 160

P-35 Category	FY 2020 Qty *(Each)*	FY 2020 Total Cost *($ M)*
Major Hardware	1	10.998
Spares		0.471
System Engineering		2.350
Technical Engineering Services		0.270
Other Costs		1.862
Total	**1**	**15.951**

Description:

CANES will provide the Navy tactical/non-tactical information environment and infrastructure necessary to enable hosting, extended services reach-back and reach-forward, and relay functions. These capabilities will support real time and non-real time tactical/non-tactical edge connected, connectionless, and ad-hoc voice, video and data information exchange requirements. CANES replace and modernize afloat networks with hardware, software and enterprise services infrastructure to enable information warfare from and within the tactical domain. CANES provides complete infrastructure inclusive of hardware, software, processing, storage and end user devices for Unclassified, Coalition, Secret and Sensitive Compartmented Information (SCI) enclaves for all basic network services to Navy surface combatants, submarines and maritime operations centers. The POR is Increment 2.0.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity *(Each)*	Unit Cost *($ M)*
FY 2020	CVN 81	VARIOUS	C/FFP	Oct 2028		1	10.998

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	CVN 81	Feb 2032	28	12	Oct 2028

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2004 / CVN-81
Equipment Item: AN/USG-2, COOPERATIVE ENGAGEMENT CAPABILITY (CEC)	**PARM Code:** PEO IWS 6.0

P-35 Category	FY 2020 Qty *(Each)*	FY 2020 Total Cost *($ M)*
Major Hardware	1	2.733
Spares		0.467
System Engineering		2.181
Technical Engineering Services		0.196
Other Costs		0.494
Total	**1**	**6.071**

Description:

The Cooperative Engagement Capability (CEC) AN/USG-2B system provides real time integration of fire control quality sensor data into a single composite data source, which is used by multiple CEC ships and airborne units for direct and remote missile engagements. CEC significantly improves battle force Anti-Air Warfare (AAW) capability by coordinating all force AAW sensors into a single real time, fire control quality composite track picture.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity *(Each)*	Unit Cost *($ M)*
FY 2020	CVN 81	TBD	TBD	Feb 2028		1	2.733

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	CVN 81	Feb 2032	30	18	Feb 2028

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2004 / CVN-81
Equipment Item: DIGITAL MODULAR RADIO (DMR) ULTRA HIGH FREQUENCY/VERY HIGH FREQUENCY LINE OF SIGHT (EHF/VHF LOS) SAT	**PARM Code:** PMW 170

P-35 Category	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)
Major Hardware	1	9.129
Spares		0.055
System Engineering		0.639
Technical Engineering Services		0.561
Other Costs		0.378
Ancillary Equipment		0.073
Total	**1**	**10.835**

Description:

DMR-VHF/UHF LOS/SATCOM is an open architecture system that allows transmission and reception of UHF and VHF RF signals. The DMR replaces many legacy systems, including some crypto, Line Of Sight (LOS) and Satellite Communications (SATCOM) components.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	CVN 81	TBD	TBD	Jul 2021		1	9.129

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	CVN 81	Feb 2032	39	18	May 2027

Competition/Second Source Initiatives:

None

Remarks:

Hardware is being procured in FY 2021 for CVN 80 and CVN 81 via an EOQ buy to achieve the estimated price as reflected in the exhibit. The funds are being procured in FY 2021 to make use of an existing contract already in place. A new contract would have to be negotiated if the hardware is not procured in FY 2021, which would potentially result in higher prices for the Department.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2004 / CVN-81
Equipment Item: AN/UPX-29(V), INTERROGATOR FRIEND OR FOE (IFF) W/MK XII	**PARM Code:** PMA 213

P-35 Category	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)
Major Hardware	1	4.994
Ancillary Equipment		0.101
Spares		0.121
System Engineering		0.616
Technical Engineering Services		0.150
Other Costs		0.456
Total	**1**	**6.438**

Description:

IFF is an approved and fully supported centralized Mark XII/XIIA Interrogator system. It uses one receiver transmitter that synchronizes video with up to four radar sweeps. It supplies synthetic video (symbology) to, and accepts requests from, as many as 22 remote locations. It provides digital target reporting to the combat systems/weapon systems computer via full scan, sectored, and/or pop-up interrogations. It provides instantaneous target reporting at requested range and azimuth through the use of an electronically-steered Antenna Group OE-120/UPX or OE-120B/UPX. It provides electronically evaluated Mode 4 target reporting directly to operators and over the combat systems/weapon system computer interface. It provides full redundancy so identification capabilities are retained in case of main processor, main antenna, or main receiver/transmitter failure.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	CVN 81	NOTHROP GRUMMAN-BAE SYSTEMS	SS/FFP	Mar 2023		1	4.994

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	CVN 81	Feb 2032	35	24	Mar 2027

Competition/Second Source Initiatives:

None

Remarks:

Hardware is being procured in FY 2023 to take advantage of an EOQ buy with other ship classes to achieve the estimated price as reflected in the exhibit. Funding in FY 2021 is needed to start prep work to support this hardware purchase in FY 2023.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2004 / CVN-81
Equipment Item: SPN-46, AUTOMATIC CARRIER LANDING SYSTEM	**PARM Code:** PMA 213

P-35 Category	FY 2020 Qty *(Each)*	FY 2020 Total Cost *($ M)*
Major Hardware	1	5.833
System Engineering		1.451
Technical Engineering Services		0.338
Other Costs		2.039
Total	**1**	**9.661**

Description:

AN/SPN-46 Automatic Carrier Landing System (ACLS) is a precision approach landing system (PALS) which provides electronic guidance to carrier-based aircraft and allows them to land in all-weather conditions with no limitations due to low ceiling or restricted visibility. AN/SPN-46 is a fully automated, all weather approach landing aid for carrier aircraft.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity *(Each)*	Unit Cost *($ M)*
FY 2020	CVN 81	NAWCAD	Various	Mar 2021		1	5.833

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	CVN 81	Feb 2032	35	24	Mar 2027

Competition/Second Source Initiatives:

None.

Remarks:

The system is being procured in FY 2021 along with CVN 80 to make use of an existing contract already in place. A new contract would have to be negotiated if the hardware is not procured in FY 2021, which would potentially result in higher prices for the Department.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2004 / CVN-81
Equipment Item: SHIP SELF DEFENSE SYSTEM (SSDS)	**PARM Code:** PEO IWS 10.0

P-35 Category	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)
Major Hardware	1	10.940
Technical Data and Documentation		1.430
Spares		0.592
System Engineering		6.865
Technical Engineering Services		0.728
Other Costs		9.144
Total	**1**	**29.699**

Description:

The SSDS MK 2, Mod (6E) Common C2 system provides capabilities for multi-mission requirements including Ship Protection against air, surface, and subsurface threats using both own-ship and remote data (Joint Composite Track Number (JCTN) and Joint Data Network (JDN)) in support of the Anti-Air Warfare (AAW) Capstone requirements.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	CVN 81	Lockheed Martin	TBD	Jul 2027		1	11.825

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	CVN 81	Feb 2032	31	24	Jul 2027

Competition/Second Source Initiatives:

None

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2004 / CVN-81
Equipment Item: AN/SYY-1(V)1 AIR TRAFFIC CONTROL SYSTEM, SHIPBOARD	**PARM Code:** PMA 213

P-35 Category	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)
Major Hardware	1	3.176
Spares		0.285
System Engineering		1.986
Technical Engineering Services		0.060
Other Costs		0.712
Total	**1**	**6.219**

Description:

AN/SYY-1(V)1 Air Traffic Control System, Shipboard" is a processing and display system which correlates and fuses sensor inputs from radar and IFF. The correlated sensor data is displayed to Air Traffic Controllers in a 2D air picture to facilitate the safe and expeditious movement of air traffic operating in the carrier controlled area and launching from/recovering to the ship.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	CVN 81	TBD	TBD	Apr 2021		1	3.176

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	CVN 81	Feb 2032	34	24	Apr 2027

Competition/Second Source Initiatives:

N/A

Remarks:

This system replaces AN/TPX-42. AN/SYY-1(V)1 addresses obsolescence, incorporates existing AN/TPX-42A(V) functionality, and adds additional capability and interfaces across all platforms.

Hardware is being procured in FY 2021 for CVN 80 and CVN 81 via an EOQ buy to achieve the estimated price as reflected in the exhibit. The system is being procured in FY 2021 to make use of an existing contract already in place. A new contract would have to be negotiated if the hardware is not procured in FY 2021, which would potentially result in higher prices for the Department.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2004 / CVN-81
Equipment Item: NAVY MULTI-BAND TERMINAL (NMT)	**PARM Code:** PMW 170

P-35 Category	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)
Major Hardware	1	5.646
Ancillary Equipment		0.052
System Engineering		0.097
Technical Engineering Services		0.097
Other Costs		0.367
Total	**1**	**6.259**

Description:

The Advanced Extremely High Frequency (AEHF) Navy Multi-band Terminal (NMT) will be used to receive signals from the Advanced EHF satellites which is a follow-on to the DoD's highly secure, highly protected MILSTAR communications satellite system.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	CVN 81	TBD	TBD	Feb 2028		1	5.646

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	CVN 81	Feb 2032	30	18	Feb 2028

Competition/Second Source Initiatives:

None

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2004 / CVN-81
Equipment Item: AN/SLQ-32(V)6, SURFACE ELECTRONIC WARFARE IMPROVEMENT PROGRAM (SEWIP) BLOCK 2	**PARM Code:** PEO IWS 2E

P-35 Category	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)
Major Hardware	1	10.036
Ancillary Equipment		0.341
System Engineering		0.098
Other Costs		0.013
Total	**1**	**10.488**

Description:

SEWIP Block 2 is a scalable Electronic Warfare enterprise suite to provide improved Electromagnetic Interference (EMI) mitigation and Combat System Interface capabilities to select new construction ships as well as upgrade current AN/SLQ-32(V)3 and (V)4 Electronic Warfare (EW) suites on existing ships. It provides enhanced shipboard Electronic Warfare (EW) for early detection, analysis, threat warning and protection from anti-ship missiles. SEWIP Block 2 focused on Electronic Support (ES) capability improvements.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	CVN 81	TBD	TBD	Aug 2028		1	10.036

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	CVN 81	Feb 2032	24	18	Aug 2028

Competition/Second Source Initiatives:

None

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2004 / CVN-81
Equipment Item: AN/SRQ-6/MCS-21, SHIPS SIGNAL EXPLOITATION EQUIPMENT (SSEE)	**PARM Code:** PMW 120

P-35 Category	FY 2020 Qty *(Each)*	FY 2020 Total Cost *($ M)*
Major Hardware	1	5.181
Ancillary Equipment		0.084
Spares		0.208
System Engineering		0.894
Technical Engineering Services		0.190
Other Costs		1.159
Total	**1**	**7.716**

Description:

SSEE provided for cryptological signal acquisition, recognition, analysis and geo-location. It replaces Maritime Cryptological System (MCS-21) which replaces the Battle Group Passive Horizon Extension System (BGPHES).

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity *(Each)*	Unit Cost *($ M)*
FY 2020	CVN 81	TBD	TBD	Sep 2027		1	5.181

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	CVN 81	Feb 2032	35	18	Sep 2027

Competition/Second Source Initiatives:

None

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2004 / CVN-81
Equipment Item: AN/SRC-61 (V)X HFDAG	**PARM Code:** PMW 170

P-35 Category	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)
Major Hardware	1	4.786
Ancillary Equipment		0.052
Spares		0.011
System Engineering		0.215
Technical Engineering Services		0.524
Other Costs		0.433
Total	**1**	**6.021**

Description:

High Frequency (HF) Distributed Amplifier Group (DAG) is the Navy's Program of Record (POR) HF system and is the follow-on replacement of HF Radio Group (HFRG). HFDAG has a modular architecture and utilizes COTS equipment to the maximum extent possible. It provides Line Of Sight (LOS/Beyond Line of Sight (BLOS) voice and data transmission capabilities to USN Ships. The 16-channel CVN variant greatly improves capabilities from HFRG: (1) increases availability (Ao), (2) provides reprogrammable waveforms, (3) increases the number of waveforms available, (4) provides automatic link establishment (ALE).

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	CVN 81	TBD	TBD	Feb 2021		1	4.786

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	CVN 81	Feb 2032	35	18	Sep 2027

Competition/Second Source Initiatives:

N/A

Remarks:

Hardware is being procured in FY 2021 to take advantage of an EOQ buy with other ship classes to achieve the estimated price as reflected in the exhibit.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2004 / CVN-81
Equipment Item: ELECTROMAGNETIC AIRCRAFT LAUNCHING SYSTEM (EMALS)	**PARM Code:** PMA 251

P-35 Category	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)
Major Hardware	1	557.474
Technical Data and Documentation		
Spares		
System Engineering		18.001
Technical Engineering Services		2.628
Other Costs		15.211
Total	**1**	**593.314**

Description:

EMALS is an advanced technology electrically generated launching system that uses a moving electromagnetic field to propel aircraft to launch speed. EMALS is made up of six primary sub-systems: prime power interface, energy storage, energy distribution, power conversion, launch motor, and launch control subsystem. Benefits over the current C13 steam catapults include reduced weight and volume, greater launching flexibility for future aircraft, improved control, and reduced manning workload requirements.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	CVN 81	GENERAL ATOMICS	SS/FFP	Jan 2021	Option	1	557.474

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	CVN 81	Feb 2032	57	48	May 2023

Competition/Second Source Initiatives:

None

Remarks:

The program is pursuing the addition of the CVN 81 shipset to the previously awarded 79/80 contract.
Hardware is being procured in FY 2021 to lessen the production gap for Long Lead Time Material (LLTM) and reduce lost learning on units completed early in production on CVN 80.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2004 / CVN-81
Equipment Item: ENTERPRISE AIR SURVEILLANCE RADAR (EASR)	**PARM Code:** PEO IWS 2.0

P-35 Category	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)
Major Hardware	1	53.365
Ancillary Equipment		
Spares		
System Engineering		4.489
Technical Engineering Services		
Other Costs		
Total	**1**	**57.854**

Description:

The Enterprise Air Surveillance Radar (EASR) suite will be a modern long-range, three-dimensional (3D) radar used to search, detect and provide space-stabilized, three-coordinate (range, bearing, height) data for air intercept control and designation to a weapon system and Air Traffic Control (ATC) system. The Enterprise Radar Suite (ERS), which includes EASR, is intended to replace the functions that Dual Band Radar (DBR) performed on CVN 78, but at a much lower cost.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	CVN 81	RAYTHEON	C/CPIF	Feb 2027		1	53.365

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	CVN 81	Feb 2032	30	30	Feb 2027

Competition/Second Source Initiatives:

None

Remarks:

The hardware configuration (non-rotating) is essentially three times that of a rotating configuration, which is currently planned for the big deck amphibious warfare ships. EASR will have three phased arrays mounted around the island, while the amphibious warfare ships will use one rotating array. Below deck equipment is also provided at a larger scale with the non-rotating variant of EASR.

The Enterprise Radar Suite (ERS) consists of AN/SPY-6(V)3 Enterprise Air Surveillance Radar (EASR), AN/SPQ-9B Anti-ship Missile Defense (ASMD) Surface Surveillance and Tracking Radar, and MK-9 Target Illuminators (TIs).

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2004 / CVN-81
Equipment Item: ADVANCED ARRESTING GEAR (AAG)	**PARM Code:** PMA 251

P-35 Category	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)
Major Hardware	1	204.845
Spares		1.827
System Engineering		4.597
Technical Engineering Services		4.906
Other Costs		13.104
Total	**1**	**229.279**

Description:

AAG provides an upgraded ability to recover all existing and projected aircraft carrier based air vehicles. The AAG system will replace the Mark 7 arresting gear system found on the NIMITZ Class carriers for the FORD Class. AAG consists of six primary systems: energy absorption subsystem, energy storage subsystem, dynamic control subsystem, thermal management subsystem, cross deck pendant, and the control subsystem.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	CVN 81	GENERAL ATOMICS	SS/FFP	Jan 2021	Option	1	204.845

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	CVN 81	Feb 2032	64	48	Oct 2022

Competition/Second Source Initiatives:

None

Remarks:

The program is pursuing the addition of the CVN 81 shipset to the previously awarded 79/80 contract.
Hardware is being procured in FY 2021 to lessen the production gap for Long Lead Time Material (LLTM) and reduce lost learning on units completed early in production on CVN 80.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2004 / CVN-81
Equipment Item: PHALANX BLOCK 1B MK 15 MOD 21 & 22, CLOSE - IN WEAPONS SYSTEM (CIWS)	**PARM Code:** IWS 11

P-35 Category	FY 2020 Qty *(Each)*	FY 2020 Total Cost *($ M)*
Major Hardware	3	14.996
Ancillary Equipment		0.231
Spares		0.278
System Engineering		1.858
Technical Engineering Services		0.629
Other Costs		1.294
Total	**3**	**19.286**

Description:

Phalanx is a high fire rate Close-In Weapon System (CIWS) that automatically acquires, tracks, and destroys Anti-Ship cruise missiles, Helos, Aircraft, and all types of Surface threats. The installed version will have one MK-15 Mod 21 and two MK-15 Mod 22 CIWS systems.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity *(Each)*	Unit Cost *($ M)*
FY 2020	CVN 81	RAYTHEON	C/FFP	Dec 2027		3	4.999

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	CVN 81	Feb 2032	28	22	Dec 2027

Competition/Second Source Initiatives:

None

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2004 / CVN-81
Equipment Item: AN/SQQ-34, CARRIER-TACTICAL SUPPORT CENTER (CV-TSC)	**PARM Code:** PEO IWS 5E

P-35 Category	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)
Major Hardware	1	3.621
Spares		0.245
System Engineering		0.029
Technical Engineering Services		0.035
Other Costs		0.170
Total	**1**	**4.100**

Description:

CV-TSC provides for carrier organic Anti-submarine Warfare (ASW), Mine Warfare (MIW), Surface Warfare (SUW), and other composite warfare area sensor data processing, tactical command and control, and organic/battle-group aircraft mission support. CV-TSC supports both ship self defense and embarked Destroyer Squadron (DESRON) missions. This system is Open Architecture Computing Environment (OACE), Joint Fires Network (JFN), and FORCEnet compliant. It includes redesign to maximize introduction of expected transformational technologies such as Common Processing System (CPS), Common Display System (CDS), sensor processing in support of the MH-60R helicopter, high speed bandwidth network, Excomm systems, net-centric warfare components, etc.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	CVN 81	TBD	TBD	Sep 2027		1	3.621

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	CVN 81	Feb 2032	35	18	Sep 2027

Competition/Second Source Initiatives:

None

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2004 / CVN-81
Equipment Item: MK29 MOD 5, GUIDED MISSILE LAUNCHING SYSTEM (GMLS)	**PARM Code:** PEO IWS 12

P-35 Category	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)
Major Hardware	2	7.026
Ancillary Equipment		0.432
Spares		0.997
System Engineering		0.811
Technical Engineering Services		0.768
Other Costs		1.885
Total	**2**	**11.919**

Description:

The MK 29 Mod 5 GMLS is a launcher only configuration integrated with the C2 system and will provide a cost effective means of employing the initial Evolved Sea Sparrow Missile (ESSM) capability. This configuration consist of an open architecture launching system and does not include operator workstations. All workstations and operator interactions necessary for system operation including but not limited to power application to the GMLS and control and safety/status monitoring of loaded cells is assumed to exist at the combat system level.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	CVN 81	TBD	TBD	Oct 2025		2	3.513

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	CVN 81	Feb 2032	47	29	Oct 2025

Competition/Second Source Initiatives:

None

Remarks:

Dates have been updated from the FY 2020 President's Budget request to reflect the earliest in yard need date.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2004 / CVN-81
Equipment Item: AVIATION DATA MANAGEMENT AND CONTROL SYSTEM (ADMACS)	**PARM Code:** PMA 251

P-35 Category	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)
Major Hardware	1	5.108
System Engineering		0.944
Technical Engineering Services		0.588
Other Costs		2.132
Total	**1**	**8.772**

Description:

ADMACS is a virtual, seamless, data sharing, knowledge based data system that provides interface for all aviation data systems. It is a tactical real-time information management system maintaining data integrity throughout the ship spaces that manage aircraft launch and recovery operations on board the carrier. ADMACS includes data from launch and recovery equipment, air traffic control, aviation maintenance, landing signaling officer, etc.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	CVN 81	TBD	TBD	Jan 2026		1	5.108

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	CVN 81	Feb 2032	61	12	Jan 2026

Competition/Second Source Initiatives:

N/A

Remarks:

Dates have been updated from the FY 2020 President's Budget request to reflect the earliest in yard need date.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2004 / CVN-81
Equipment Item: MK 49, MOD 3 ROLLING AIRFRAME MISSILE (RAM)	**PARM Code:** PEO IWS 11

P-35 Category	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)
Major Hardware	2	7.404
Ancillary Equipment		1.408
Technical Data and Documentation		0.036
Spares		0.142
System Engineering		2.233
Technical Engineering Services		0.387
Other Costs		4.178
Total	**2**	**15.788**

Description:

The MK 49 Mod 5 Rolling Airframe Missile (RAM) Weapon System is a lightweight, low cost, high power system for anti-ship missile defense against current and evolving threats. The Block 2 upgrade adds the capability of infrared, all-the-way missile guidance while maintaining the original dual-mode (RF/IR) capability. The helos, aircraft, and surface (HAS) upgrade enables the engagement of asymmetric threats.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	CVN 81	TBD	TBD	Aug 2027		2	3.702

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	CVN 81	Feb 2032	33	21	Aug 2027

Competition/Second Source Initiatives:

None

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2004 / CVN-81
Equipment Item: AN/SPQ-9B, ANTI-SHIP MISSILE DEFENSE (ASMD) SURFACE SURVEILLANCE AND TRACKING RADAR	**PARM Code:** PEO IWS2B

P-35 Category	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)
Major Hardware	1	7.576
Spares		0.497
System Engineering		1.081
Technical Engineering Services		0.664
Other Costs		3.900
Total	**1**	**13.718**

Description:

SPQ-9B is a multimode, x-band, narrow beam, pulse Doppler radar that detects and tracks sea-skimming missiles (ASMD) at the horizon in heavy clutter while simultaneously providing detection and tracking of surface targets.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	CVN 81	NGES	SS/FFP	Sep 2027		1	7.576

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	CVN 81	Feb 2032	35	18	Sep 2027

Competition/Second Source Initiatives:

None

Remarks:

The Enterprise Radar Suite (ERS) consists of AN/SPY-6(V)3 Enterprise Air Surveillance Radar (EASR), AN/SPQ-9B Anti-ship Missile Defense (ASMD) Surface Surveillance and Tracking Radar and MK-9 Target Illuminators (TIs).

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2004 / CVN-81
Equipment Item: MK-9 TARGET ILLUMINATOR	**PARM Code:** IWS 12

P-35 Category	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)
Major Hardware	4	33.139
Spares		0.791
Total	**4**	**33.930**

Description:
MK-9 is an X-Band Illuminator that provides weapon communication and missile illumination.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	CVN 81	RAYTHEON	C/FFP	Mar 2026		4	8.285

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	CVN 81	Feb 2032	47	24	Mar 2026

Competition/Second Source Initiatives:
None

Remarks:
The Enterprise Radar Suite (ERS) consists of AN/SPY-6(V)3 Enterprise Air Surveillance Radar (EASR), AN/SPQ-9B Anti-ship Missile Defense (ASMD) Surface Surveillance and Tracking Radar, and MK-9 Target Illuminators (TIs).

MK-9 TIs are required to provide command guidance uplink capabilities for ship's self-defense. The increased costs are due to new production unit ship sets with the new transmitters. Increased costs since the FY 2020 President's Budget request for MK-9 TIs are due to the MK 73 transmitters being obsolete and no longer procurable.

Dates have been updated from the FY 2020 President's Budget request to reflect the earliest in yard need date.

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Exhibit P-40, Budget Line Item Justification: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 02: Other Warships / BSA 1: Other Warships	**P-1 Line Item Number / Title:** 2013 / Virginia Class Submarine

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: 0604558N, 0604580N, 0204281N

Line Item MDAP/MAIS Code: 516

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity *(Units in Each)*	28	2	2	1	-	1	2	2	2	2	7	48
Gross/Weapon System Cost *($ in Millions)*	73,293.768	6,500.178	7,483.677	4,946.733	0.000	4,946.733	6,859.849	6,407.133	6,813.193	6,885.242	32,513.682	151,703.455
Less PY Advance Procurement *($ in Millions)*	20,785.335	2,128.891	1,756.902	2,040.679	-	2,040.679	1,888.328	1,486.306	2,316.870	2,027.556	10,095.210	44,526.077
Less Cost To Complete *($ in Millions)*	1,844.685	-	-	-	-	-	-	-	-	-	-	1,844.685
Less Economic Order Quantity *($ in Millions)*	3,790.036	30.611	361.594	571.361	-	571.361	778.189	778.089	-	272.007	2,577.693	9,159.580
Net Procurement (P-1) *($ in Millions)*	46,873.712	4,340.676	5,365.181	2,334.693	0.000	2,334.693	4,193.332	4,142.738	4,496.323	4,585.679	19,840.779	96,173.113
Plus CY Advance Procurement *($ in Millions)*	24,082.225	1,810.941	2,087.588	1,473.767	-	1,473.767	2,140.407	2,185.743	2,021.506	1,948.697	6,775.203	44,526.077
Plus Cost To Complete *($ in Millions)*	1,844.685	-	-	-	-	-	-	-	-	-	-	1,844.685
Plus Economic Order Quantity *($ in Millions)*	4,015.036	985.460	881.964	427.420	-	427.420	-	-	1,088.028	668.134	1,093.538	9,159.580
Total Obligation Authority *($ in Millions)*	**76,815.658**	**7,137.077**	**8,334.733**	**4,235.880**	**0.000**	**4,235.880**	**6,333.739**	**6,328.481**	**7,605.857**	**7,202.510**	**27,709.520**	**151,703.455**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Plus Outfitting and Post Delivery *($ in Millions)*	1,189.332	105.553	142.734	154.634	-	154.634	137.167	148.829	101.818	100.860	2,015.046	4,095.973
Total *($ in Millions)*	**78,004.990**	**7,242.630**	**8,477.467**	**4,390.514**	**-**	**4,390.514**	**6,470.906**	**6,477.310**	**7,707.675**	**7,303.370**	**29,724.566**	**155,799.428**
Gross/Weapon System Unit Cost *($ in Millions)*	2,617.635	3,250.089	3,741.839	4,946.733	-	4,946.733	3,429.925	3,203.567	3,406.597	3,442.621	4,644.812	3,160.489

Description:

MISSION: To seek out and destroy enemy ships across a wide spectrum of tactical scenarios, working both independently and in concert with a battle group/other ships, providing Joint Commanders with early, accurate knowledge of the battlefield on which power may be projected from sea; covert striking power against targets ashore; the capability to establish covertly an expeditionary force on land; and the maritime strength to destroy enemy naval forces and interdict seaborne commerce.

NOTE: The program awarded the fourth Multi-Year Procurement (MYP) (Block V) contract on 2 December 2019 incorporating Acoustic Superiority modifications on all SSNs and Virginia Payload Module (VPM) on the second FY19 and subsequent SSNs. To support the award of the Block V MYP contract and fund construction of the FY19 Virginia Class Submarines (VCS), the program identified FY19 reductions in Government Furnished Equipment (GFE), specifically in Electronics and Nuclear Propulsion Plant Equipment. These Virginia Class exhibits reflect a 9 SSN Block V FY19-23 (2-2-1-2-2) incorporating changes for AS on all 9 SSNs and VPM on 8 (1-2-1-2-2). This contract includes an option for a 10th ship that may be exercised in FY21, FY22 or FY23. There is Economic Order Quantity (EOQ) in FY18-21 and FY17-22 Advance Procurement (AP) funding for Long-lead Time Material (LLTM) and detail design.

NOTE: Block V SSNs will include significant enhancements. All Block V and future SSNs will include modifications similar to SOUTH DAKOTA Insertion Program (SDIP) efforts performed via RDT&E (PE 0604558N/Prj 1947) which will provide enhanced capability and improved performance. VPM will be introduced on the second FY19 SSN and subsequently fielded on all follow-on Virginia Class submarines. VPM is an 84-foot hull section with four additional payload tubes, each capable of carrying seven Tomahawk cruise missiles or various other payloads. VPM helps mitigate the loss of undersea strike capability with the retirement of the Service's four guided missile submarines (SSGNs) in the mid-2020s. These changes to the baseline require additional funding which is shown in more detail on subsequent pages of these exhibits.

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy		Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 02: Other Warships / BSA 1: Other Warships	**P-1 Line Item Number / Title:** 2013 / Virginia Class Submarine	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** 0604558N, 0604580N, 0204281N
Line Item MDAP/MAIS Code: 516		

Characteristics:	**Baseline (B/L)**	**B/L w/ VPM(SSN803 & out)**
Length Overall	377 feet	461 feet
Beam	34 feet	34 feet
Displacement	7830 tons	10174 tons
Draft	32 feet	31 feet

Production Status:	**SSN 792** (1)	**SSN 793**	**SSN 794**	**SSN 795**	**SSN 796**	**SSN 797**	**SSN 798**
Contract Award Date	Apr 2014	Apr 2014	Apr 2014	Apr 2014	Apr 2014	Apr 2014	Apr 2014
Months to Completion							
a) Award to Delivery	71 months	79 months	88 months	87 months	93 months	99 months	104 months
b) Construction Start to Delivery	70 months	74 months	76 months	70 months	70 months	70 months	69 months
Delivery Date	Mar 2020	Nov 2020	Aug 2021	Jul 2021	Jan 2022	Jul 2022	Dec 2022
Completion Of Fitting Out	Mar 2020	Nov 2020	Aug 2021	Jul 2021	Jan 2022	Jul 2022	Dec 2022
Obligation Work Limit Date	Feb 2021	Oct 2021	Jul 2022	Jun 2022	Dec 2022	Jun 2023	Nov 2023

Production Status:	**SSN 799**	**SSN 800**	**SSN 801**	**SSN 802** (2)	**SSN 803**	**SSN 804**	**SSN 805**
Contract Award Date	Apr 2014	Apr 2014	Apr 2014	Dec 2019	Dec 2019	Dec 2019	Dec 2019
Months to Completion							
a) Award to Delivery	110 months	116 months	119 months	66 months	76 months	82 months	86 months
b) Construction Start to Delivery	69 months	69 months	66 months	69 months	73 months	73 months	71 months
Delivery Date	Jun 2023	Dec 2023	Mar 2024	Jun 2025	Apr 2026	Oct 2026	Feb 2027
Completion Of Fitting Out	Jun 2023	Dec 2023	Mar 2024	Jun 2025	Apr 2026	Oct 2026	Feb 2027
Obligation Work Limit Date	May 2024	Nov 2024	Feb 2025	May 2026	Mar 2027	Sep 2027	Jan 2028

Production Status:	**SSN 806**
Contract Award Date	Dec 2019
Months to Completion	
a) Award to Delivery	92 months
b) Construction Start to Delivery	71 months
Delivery Date	Aug 2027
Completion Of Fitting Out	Aug 2027
Obligation Work Limit Date	Jul 2028

Design Schedule	**Start / Issue**	**Complete / Response**	**Reissue**	**Reissue Complete / Response**
Issue Date for TLR	N/A	N/A		
Issue Date for TLS	N/A	N/A		
Preliminary Design	Oct 1993	Sep 1995		
Contract Design	Oct 1994	Sep 1996		
Detail Design	Jan 1996	Jun 2004		

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy			Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 02: Other Warships / BSA 1: Other Warships		**P-1 Line Item Number / Title:** 2013 / Virginia Class Submarine	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A		**Other Related Program Elements:** 0604558N, 0604580N, 0204281N
Line Item MDAP/MAIS Code: 516			

Design Schedule	Start / Issue	Complete / Response	Reissue	Reissue Complete / Response
Request for Proposals	N/A	N/A		
Design Agent	Electric Boat			

Classification of Cost Estimate: C

Justification:
FY21 funds one VCS with VPM incorporating Acoustic Superiority and some AP/EOQ for future Block V SSNs.

Pricing for FY21 includes critical spare materials for a tenth hull as required by the VCS Block V MYP contract. This material includes non-nuclear CFE components bought with two-year and one-year AP and non-nuclear Economic Order Quantity material. Not included in this pricing is the two-year AP for government furnished equipment required for a tenth hull in the Block V MYP contract. As a result, the Gross Weapons System Cost (End Cost) is approximately $1.4 billion higher than a single submarine procurement. Specifically:

-FY19 and FY20 Advanced Procurement (AP) for the FY21 submarine procured 2 sets of components for a second FY21 submarine. FY19 two-year AP of $611 million and FY20 one-year AP of $309 million will be consumed on a future submarine

-The $200M appropriated in FY20 in support of the 10th submarine in the VCS Block V MYP will not be obligated except in support of a 10th shipset of GFE.

-FY18, 19, and 20 Economic Order Quantity (EOQ) procured equipment for a 10-ship block buy which was critical to sustain the supplier base and an integral part of the Block V MYP contract award. FY18 EOQ of $15.5 million, FY 19 EOQ of $123 million, and FY20 EOQ of $147 million will be consumed on a future submarine.

Funding these critical spare materials early in the MYP is critical to level loading supplier's work orders and maintaining the industrial base. All of these spares will be consumed in a future submarine.

The Block VI (FYs 24-28) technical baseline has not yet been established. The funding values shown herein for FY24 and FY25 are for planning purposes only.

Footnotes:
(1) All construction starts are on the first day of the stated month and deliveries are on the last day of the stated month. Block IV delivery dates are current program projections (SSN 792-SSN 801).
(2) These Virginia Class exhibits reflect a 9 SSN Block V FY19-23 (2-2-1-2-2) incorporating changes for AS on all 9 SSNs and VPM on 8 (1-2-1-2-2). Block V dates are contracted delivery dates. (SSN 802-810).

Exhibit P-5c, Ship Cost Analysis: PB 2021 Navy | **Date:** February 2020

Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1

P-1 Line Item Number / Title: 2013 / Virginia Class Submarine

Cost Categories (†) indicates the presence of a P-8a	FY 2014		FY 2015		FY 2016		FY 2017		FY 2018		FY 2019		FY 2020		FY 2021	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Plan Costs	2	167.937	2	177.095	2	183.078	2	180.184	2	187.778	2	472.813	2	394.106	1	187.370
Basic Construction/Conversion		3,492.087		3,335.501		3,384.290		3,430.573		3,508.117		4,397.589		5,186.180		3,192.770
Change Orders		104.021		89.481		91.459		73.043		74.536		87.952		103.891		51.709
Electronics (†)		503.718		504.701		514.795		515.852		525.653		482.551		546.354		294.239
Technology Insertion		73.500		28.835		13.535		12.501		18.000		8.500		15.096		14.800
Propulsion Equipment		910.157		970.000		1,025.000		1,032.500		1,051.100		871.675		1,047.000		1,083.600
Hull, Mechanical, and Electrical (HM&E) (†)		105.248		106.822		109.920		110.190		112.394		119.028		125.882		89.007
Other Cost		52.658		53.233		54.777		54.058		55.140		60.070		65.168		33.238
Total Ship Estimate		**5,409.326**		**5,265.668**		**5,376.854**		**5,408.901**		**5,532.718**		**6,500.178**		**7,483.677**		**4,946.733**
Less Advance Procurement FY 2012		988.246		-		-		-		-		-		-		-
Less Advance Procurement FY 2013		540.376		1,110.000		-		-		-		-		-		-
Less Advance Procurement FY 2014		-		467.014		1,145.000		-		-		-		-		-
Less Advance Procurement FY 2015		-		-		468.536		1,152.500		-		-		-		-
Less Advance Procurement FY 2016		-		-		-		470.788		1,171.100		-		-		-
Less Advance Procurement FY 2017		-		-		-		-		475.940		1,376.294		-		-
Less Advance Procurement FY 2018		-		-		-		-		-		752.597		1,167.999		-
Less Advance Procurement FY 2019		-		-		-		-		-		-		588.903		1,222.038
Less Advance Procurement FY 2020		-		-		-		-		-		-		-		818.641
Less EOQ FY 2014		-		158.400		219.380		194.909		169.909		-		-		-
Less EOQ FY 2015		-		-		197.568		251.603		231.618		-		-		-
Less EOQ FY 2016		-		-		-		151.116		178.836		-		-		-
Less EOQ FY 2018		-		-		-		-		-		30.611		115.229		31.008
Less EOQ FY 2019		-		-		-		-		-		-		246.365		246.365
Less EOQ FY 2020		-		-		-		-		-		-		-		293.988
Net P-1 Funding		**3,880.704**		**3,530.254**		**3,346.370**		**3,187.985**		**3,305.315**		**4,340.676**		**5,365.181**		**2,334.693**

Remarks:

Exhibit P-5c, Ship Cost Analysis: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2013 / Virginia Class Submarine

These Virginia Class exhibits reflect a 9 SSN Block V FY19-23 (2-2-1-2-2) incorporating changes for AS on all 9 SSNs and VPM on 8 (1-2-1-2-2).

The program identified cost efficiencies in the Electronics category to support the award of the Block V MYP contract. The overall cost efficiencies from the FY 2020 President's Budget request to FY 2021 President's Budget request are carried through all future program years. Additionally, the Electronics profile fluctuation (FY19-21) reflects improved alignment of non-recurring engineering support to physically and electronically integrate the pre-planned NPES TI-24 Tech Insertion configuration change and various phased Undersea Dominance payloads.

The FY 2021 President's Budget request reflects an out-year cost reduction of VIRGINIA Class Submarine (VCS) nuclear propulsion equipment. Two areas of cost reduction include: (1) risk reduction associated with successful plant criticality of the first Virginia Forward Fit nuclear reactor core in PCU VERMONT (792), and (2) increased business volume due to the recent two-carrier procurement, the level loading of COLUMBIA follow ships, and an increase to two VCS per year in all but one COLUMBIA authorization years (two VCS per year was accounted for in the COLUMBIA and FORD Class reactor plant government furnished equipment budget requests).

Exhibit P-27, Ship Production Schedule: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2013 / Virginia Class Submarine

Ship	Shipbuilder	Fiscal Year	Contract Award	Start of Construction	Delivery Date
SSN 792 (1)	EB/HII-NNS	2014	Apr 2014	May 2014	Mar 2020
SSN 793	EB/HII-NNS	2014	Apr 2014	Sep 2014	Nov 2020
SSN 794	EB/HII-NNS	2015	Apr 2014	Apr 2015	Aug 2021
SSN 795	EB/HII-NNS	2015	Apr 2014	Sep 2015	Jul 2021
SSN 796	EB/HII-NNS	2016	Apr 2014	Mar 2016	Jan 2022
SSN 797	EB/HII-NNS	2016	Apr 2014	Sep 2016	Jul 2022
SSN 798	EB/HII-NNS	2017	Apr 2014	Mar 2017	Dec 2022
SSN 799	EB/HII-NNS	2017	Apr 2014	Sep 2017	Jun 2023
SSN 800	EB/HII-NNS	2018	Apr 2014	Mar 2018	Dec 2023
SSN 801	EB/HII-NNS	2018	Apr 2014	Sep 2018	Mar 2024
SSN 802 (2)	EB/HII-NNS	2019	Dec 2019	Sep 2019	Jun 2025
SSN 803	EB/HII-NNS	2019	Dec 2019	Mar 2020	Apr 2026
SSN 804	EB/HII-NNS	2020	Dec 2019	Sep 2020	Oct 2026
SSN 805	EB/HII-NNS	2020	Dec 2019	Mar 2021	Feb 2027
SSN 806	EB/HII-NNS	2021	Dec 2019	Sep 2021	Aug 2027
SSN 807	EB/HII-NNS	2022	Dec 2019	Mar 2022	Feb 2028
SSN 808	EB/HII-NNS	2022	Dec 2019	Sep 2022	Aug 2028
SSN 809	EB/HII-NNS	2023	Dec 2019	Mar 2023	Feb 2029
SSN 810	EB/HII-NNS	2023	Dec 2019	Sep 2023	Aug 2029
SSN 811	EB/HII-NNS	2024	Dec 2023	Mar 2024	Feb 2030
SSN 812	EB/HII-NNS	2024	Dec 2023	Sep 2024	Aug 2030
SSN 813	EB/HII-NNS	2025	Dec 2023	Mar 2025	Feb 2031
SSN 814	EB/HII-NNS	2025	Dec 2023	Sep 2025	Aug 2031

Footnotes:

(1) All construction starts are on the first day of the stated month and deliveries are on the last day of the stated month. Block IV delivery dates are current program projections (SSN 792-SSN 801).

(2) These Virginia Class exhibits reflect a 9 SSN Block V FY19-23 (2-2-1-2-2) incorporating changes for AS on all 9 SSNs and VPM on 8 (1-2-1-2-2). Block V dates are contracted delivery dates. (SSN 802-810).

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2013 / Virginia Class Submarine

Electronics	FY 2019		FY 2020		FY 2021	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
P-35 Items						
Sonar, Combat Control & Architecture	2	198.119	2	224.315	1	127.307
Electronic Support Measures (ESM)	2	54.121	2	61.277	1	31.218
Photonics Masts	2	36.398	2	41.210	1	19.986
Universal Modular Mast (UMM)	2	20.758	2	23.504	1	20.648
Exterior Communications System (ECS) Recurring	2	49.102	2	55.595	1	26.961
P-35 Items Subtotal		**358.498**		**405.901**		**226.120**
Major Items						
System Level Activities	2	36.437	2	41.255	1	20.009
AN/BPS-16	2	5.587	2	6.325	1	3.069
Navigation	2	6.336	2	7.173	1	3.479
CWITT	2	41.207	2	46.652	1	22.627
Non-Propulsion Electronics System, Systems Engineering and Integration (NPES SE&I)	2	32.249	2	36.515	1	17.708
Major Items Subtotal		**121.816**		**137.920**		**66.892**
Other Cost Elements						
Misc Electronics	0	2.237	0	2.533	0	1.227
Other Cost Elements Subtotal		**2.237**		**2.533**		**1.227**
Total Electronics		**482.551**		**546.354**		**294.239**

Remarks:

The program identified cost efficiencies in the Electronics category to support the award of the Block V MYP contract. The overall cost efficiencies from the FY 2020 President's Budget request to FY 2021 President's Budget request are carried through all future program years. Additionally, the Electronics profile fluctuation (FY19-21) reflects improved alignment of non-recurring engineering support to physically and electronically integrate the pre-planned NPES TI-24 Tech Insertion configuration change and various phased Undersea Dominance payloads.

The FY 2021 President's Budget request includes AP/EOQ funds to procure LLTM to maintain a 2 per year construction cadence for material buys and support in-yard need dates for the option for a 10th ship that may be exercised in FY21, FY22, or FY23. If the 10th ship option is not exercised, this material would be assigned to subsequent SSNs.

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2013 / Virginia Class Submarine

Hull, Mechanical, and Electrical (HM&E)	FY 2019		FY 2020		FY 2021	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
P-35 Items						
Propulsor	2	79.434	2	81.022	1	66.128
P-35 Items Subtotal		**79.434**		**81.022**		**66.128**
Major Items						
CSA MK2		3.364		3.432		1.750
Major Items Subtotal		**3.364**		**3.432**		**1.750**
Other Cost Elements						
HM&E Installation and testing		19.892		20.290		10.348
T&E		14.084		18.838		9.608
SUPSHIP responsible material		2.254		2.300		1.173
Other Cost Elements Subtotal		**36.230**		**41.428**		**21.129**
Total Hull, Mechanical, and Electrical (HM&E)		**119.028**		**125.882**		**89.007**

Remarks:

The profile for T&E reflects the VPM variation; FY19 has 2 ships, one with VPM. FY20 has two ships with VPM. FY21 has one ship with VPM. T&E for VPM ships reflect additional requirement. A VPM ship adds (4) additional payload tubes compared to Block III/IV. The requirements for Peculiar Support Equipment (PSE) / Special Support Equipment (SSE) delivered with each ship increase from (2) All Up Round Simulators (AURS) and (10) All Up Round Ballast, Grade B (AURBb) to (6) AURS and (34) AURBb. This support equipment is required to be delivered with each ship in order to support testing for the VA Payload Tubes when they are not loaded with ordnance.

The FY 2021 President's Budget request includes AP/EOQ funds to procure LLTM to maintain a 2 per year construction cadence for material buys and support in-yard need dates for the option for a 10th ship that may be exercised in FY21, FY22, or FY23. If the 10th ship option is not exercised, this material would be assigned to subsequent SSNs.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2013 / Virginia Class Submarine
Equipment Item: Sonar, Combat Control & Architecture	**PARM Code:** N/A

P-35 Category	FY 2019		FY 2020		FY 2021	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	2	179.504	2	183.095	1	111.991
Technical Engineering Services		3.214		3.278		1.673
Other Costs		15.401		37.942		13.643
Total	**2**	**198.119**	**2**	**224.315**	**1**	**127.307**

Description:

The VIRGINIA Class Command, Control, Communications and Intelligence (C3I) System is the electronics suite which will provide required operational and warfighting capability for the Navy's newest attack submarine. The C3I System includes 15 subsystems (23 if all electronically interfaced subsystems are included) integrated by an overarching Architecture Subsystem. This P-35 covers the procurement requirements for the following: C3I Prime Contractor Furnished Equipment (Sonar, Combat Control and Architecture subsystems) and associated Government Furnished Equipment; technical data documentation; spares; technical engineering services; design engineering services; field engineering services; management support services; and shipboard certification efforts.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2019	SSN 802	Lockheed Martin	C/CPIF	Jan 2019	New	2	49.870
FY 2020	SSN 804	Lockheed Martin	C/CPIF	Jan 2020	Option	2	50.867
FY 2021	SSN 806	Lockheed Martin	C/CPIF	Jan 2021	Option	1	51.884

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2019	SSN 802	Jun 2025	26	32	Aug 2020
FY 2020	SSN 804	Oct 2026	26	32	Dec 2021
FY 2021	SSN 806	Aug 2027	26	32	Oct 2022

Competition/Second Source Initiatives:

N/A

Remarks:

Remarks: The Sonar, Combat Control & Architecture P-35 exhibit includes funding for multiple subsystems, contracts and field activities. However, the unit cost in the contract data section reflects only the major contract, Sonar acoustics processing.

Other Costs - The program identified cost efficiencies in the Electronics category to support the award of the Block V MYP contract. The overall cost efficiencies from the FY 2020 President's Budget request to the FY 2021 President's Budget request are carried through all future program years. Additionally, the Electronics profile fluctuation (FY19-21) reflects improved alignment of non-recurring engineering support to physically and electronically integrate the pre-planned NPES TI-24 Tech Insertion configuration change and various phased Undersea Dominance payloads.

The profile for electronics in FY21 includes AP/EOQ funds to procure LLTM to support in-yard need dates should the option for a 10th ship be exercised in either FY21, FY22, or FY23. If the 10th ship option is not exercised, this material would be assigned to subsequent SSNs.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2013 / Virginia Class Submarine
Equipment Item: Electronic Support Measures (ESM)	**PARM Code:** N/A

P-35 Category	FY 2019		FY 2020		FY 2021	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	2	45.606	2	46.519	1	25.248
Technical Engineering Services		2.554		2.605		1.330
Other Costs		5.961		12.153		4.640
Total	**2**	**54.121**	**2**	**61.277**	**1**	**31.218**

Description:

The VIRGINIA Class Command, Control, Communications and Intelligence (C3I) System is the electronics suite which will provide required operational and warfighting capability for the Navy's newest attack submarine. The C3I System includes 15 subsystems (23 if all electronically interfaced subsystems are included) integrated by an overarching Architecture Subsystem. This P-35 covers the procurement requirements for the following: Electronic Support Measures subsystem Prime Contractor Furnished Equipment, and associated Government Furnished Equipment; technical data documentation; spares; systems engineering; technical engineering services; computer program support; system test & evaluation; field engineering services; management support services; shipboard certification efforts; quality assurance and reliability/maintainability assurance; maintenance of technical data; and contractor support services efforts. This system provides the capability to process a variety of electromagnetic signal types over a wide frequency range in support of all applicable submarine mission areas.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2019	SSN 802	Lockheed Martin	C/FPIF	Jun 2019	New	2	22.803
FY 2020	SSN 804	Lockheed Martin	C/FPIF	Jun 2020	Option	2	23.260
FY 2021	SSN 806	Lockheed Martin	C/FPIF	Jun 2021	Option	1	25.248

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2019	SSN 802	Jun 2025	26	24	Apr 2021
FY 2020	SSN 804	Oct 2026	26	24	Aug 2022
FY 2021	SSN 806	Aug 2027	26	24	Jun 2023

Competition/Second Source Initiatives:

Multi-Functional Modular Mast: Full and open competition for SSN 802 through SSN 811.

Remarks:

Other Costs - The program identified cost efficiencies in the Electronics category to support the award of the Block V MYP contract. The overall cost efficiencies from the FY 2020 President's Budget request to the FY 2021 President's Budget request are carried through all future program years. Additionally, the Electronics profile fluctuation (FY19-21) reflects improved alignment of non-recurring engineering support to physically and electronically integrate the pre-planned NPES TI-24 Tech Insertion configuration change and various phased Undersea Dominance payloads.

The profile for electronics in FY21 includes AP/EOQ funds to procure LLTM to support in-yard need dates should the option for a 10th ship be exercised in either FY21, FY22, or FY23. If the 10th ship option is not exercised, this material would be assigned to subsequent SSNs.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2013 / Virginia Class Submarine
Equipment Item: Photonics Masts	**PARM Code:** N/A

P-35 Category	FY 2019		FY 2020		FY 2021	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	2	27.958	2	28.517	1	14.558
Technical Engineering Services		1.256		1.281		0.654
Other Costs		7.184		11.412		4.774
Total	**2**	**36.398**	**2**	**41.210**	**1**	**19.986**

Description:

The VIRGINIA Class Command, Control, Communications and Intelligence (C3I) System is the electronics suite which will provide required operational and warfighting capability for the Navy's newest attack submarine. The C3I System includes 15 subsystems (23 if all electronically interfaced subsystems are included) integrated by an overarching Architecture Subsystem. This P-35 covers the procurement requirements for the following: Photonics subsystem Prime Contractor Furnished Equipment; spares; systems engineering; technical engineering services; computer program support; field engineering services; management support services; shipboard certification; maintenance of technical data; and contractor support services efforts. This system consists of two outboard mast/antenna/camera assemblies and the associated inboard processing and display equipment. This system supports visual and infrared (IR) imaging, RF signal communications, early warning and contact direction finding capability.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2019	SSN 802	Lockheed Martin	C/FFP	Sep 2019	New	2	13.979
FY 2020	SSN 804	Lockheed Martin	C/FFP	Sep 2020	Option	2	14.259
FY 2021	SSN 806	Lockheed Martin	C/FFP	Sep 2021	Option	1	14.558

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2019	SSN 802	Jun 2025	26	24	Apr 2021
FY 2020	SSN 804	Oct 2026	26	24	Aug 2022
FY 2021	SSN 806	Aug 2027	26	24	Jun 2023

Competition/Second Source Initiatives:

AN/BVY-1 Integrated Submarine Imaging System (ISIS): Full and open competition for SSN 802 through SSN 811.

Remarks:

Other Costs - The program identified cost efficiencies in the Electronics category to support the award of the Block V MYP contract. The overall cost efficiencies from the FY 2020 President's Budget request to the FY 2021 President's Budget request are carried through all future program years. Additionally, the Electronics profile fluctuation (FY19-21) reflects improved alignment of non-recurring engineering support to physically and electronically integrate the pre-planned NPES TI-24 Tech Insertion configuration change and various phased Undersea Dominance payloads.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2013 / Virginia Class Submarine
Equipment Item: Universal Modular Mast (UMM)	**PARM Code:** N/A

P-35 Category	FY 2019		FY 2020		FY 2021	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	2	17.189	2	17.534	1	18.201
Technical Engineering Services		2.851		2.908		1.485
Other Costs		0.718		3.062		0.962
Total	**2**	**20.758**	**2**	**23.504**	**1**	**20.648**

Description:

The VIRGINIA Class Command, Control, Communications and Intelligence (C3I) System is the electronics suite which will provide required operational and warfighting capability for the Navy's newest attack submarine. The C3I System includes 15 subsystems (23 if all electronically interfaced subsystems are included) integrated by an overarching Architecture Subsystem. This P-35 covers the procurement requirements for the following: Modular Mast Prime Contractor Furnished Equipment; technical data documentation; spares; systems engineering; technical engineering services; management support services; shipboard certification; and maintenance of technical data efforts. This system consists of eight common masts for purposes of housing, raising and lowering antenna and other sensor units.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2019	SSN 802	L3 KEO	SS/FP	Apr 2019	Option	2	8.595
FY 2020	SSN 804	L3 KEO	SS/FP	Apr 2020	New	2	8.767
FY 2021	SSN 806	L3 KEO	SS/FP	Apr 2021	Option	1	8.951

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2019	SSN 802	Jun 2025	37	21	Aug 2020
FY 2020	SSN 804	Oct 2026	37	21	Dec 2021
FY 2021	SSN 806	Aug 2027	37	21	Oct 2022

Competition/Second Source Initiatives:

N/A

Remarks:

Other Costs - The program identified cost efficiencies in the Electronics category to support the award of the Block V MYP contract. The overall cost efficiencies from the FY 2020 President's Budget request to the FY 2021 President's Budget request are carried through all future program years. Additionally, the Electronics profile fluctuation (FY19-21) reflects improved alignment of non-recurring engineering support to physically and electronically integrate the pre-planned NPES TI-24 Tech Insertion configuration change and various phased Undersea Dominance payloads.

The profile for electronics in FY21 includes AP/EOQ funds to procure LLTM to support in-yard need dates should the option for a 10th ship be exercised in either FY21, FY22, or FY23. If the 10th ship option is not exercised, this material would be assigned to subsequent SSNs.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2013 / Virginia Class Submarine
Equipment Item: Exterior Communications System (ECS) Recurring	**PARM Code:** N/A

P-35 Category	FY 2019		FY 2020		FY 2021	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	2	36.597	2	37.329	1	19.057
Technical Engineering Services		6.204		6.328		3.230
Other Costs		6.301		11.938		4.674
Total	**2**	**49.102**	**2**	**55.595**	**1**	**26.961**

Description:

The VIRGINIA Class Command, Control, Communications and Intelligence (C3I) System is the electronics suite which will provide required operational and warfighting capability for the Navy's newest attack submarine. The C3I System includes 15 subsystems (23 if all electronically interfaced subsystems are included) integrated by an overarching Architecture Subsystem. Exterior Communications Systems (ECS) is an integration effort with multiple Government-Off-The-Shelf (GOTS) components providing the core ECS capability. The GOTS components of ECS will be provided using existing contracts. This P-35 covers the procurement requirements for the following: ECS GOTS equipment; fabrication/production; systems engineering; system test & evaluation; training; data; technical engineering services; spares and repair parts; and program management. This system provides the capability for seamless, transparent, secure connectivity for information exchange between submarine users and the Global Command and Communications System (GCCS).

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2019	SSN 802	SAIC	C/IDIQ	May 2021	New	2	18.299
FY 2020	SSN 804	SAIC	C/IDIQ	May 2022	Option	2	18.665
FY 2021	SSN 806	SAIC	C/IDIQ	May 2023	Option	1	19.057

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2019	SSN 802	Jun 2025	24	9	Sep 2022
FY 2020	SSN 804	Oct 2026	24	9	Jan 2024
FY 2021	SSN 806	Aug 2027	24	9	Nov 2024

Competition/Second Source Initiatives:

SAIC is the prime contractor for fabrication and production.

Remarks:

Other Costs - The program identified cost efficiencies in the Electronics category to support the award of the Block V MYP contract. The overall cost efficiencies from the FY 2020 President's Budget request to the FY 2021 President's Budget request are carried through all future program years. Additionally, the Electronics profile fluctuation (FY19-21) reflects improved alignment of non-recurring engineering support to physically and electronically integrate the pre-planned NPES TI-24 Tech Insertion configuration change and various phased Undersea Dominance payloads.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2013 / Virginia Class Submarine
Equipment Item: Propulsor	**PARM Code:** N/A

P-35 Category	FY 2019		FY 2020		FY 2021	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	2	68.704	2	70.077	1	60.546
TECH ENGINEERING SERVICES		10.730		10.945		5.582
Total	**2**	**79.434**	**2**	**81.022**	**1**	**66.128**

Description:

The propulsor consists of Ni-Al-bronze blades and a large steel and inconel fabrication piece. The purpose of the propulsor is to generate proper thrust to propel the ship at a rated speed within the approved limits of torque and shaft RPM, while at the same time meeting acoustic and structural requirements. This design is unique to the VIRGINIA Class. The propulsor consists of a large quantity of government supplied material and a contract for the fixed portion construction and assembly.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2019	SSN 802	BAE Systems	C/FFP	Apr 2016	Option	2	26.888
FY 2020	SSN 804	BAE Systems	C/FFP	Mar 2020	Option	2	27.426
FY 2021	SSN 806	BAE Systems	C/FFP	Mar 2021	Option	1	27.974

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2019	SSN 802	Jun 2025	40	30	Aug 2019
FY 2020	SSN 804	Oct 2026	40	30	Dec 2020
FY 2021	SSN 806	Aug 2027	40	30	Oct 2021

Competition/Second Source Initiatives:

N/A

Remarks:

LLTM for SSN 804-815 being procured on a Basic Ordering Agreement (BOA) on a yearly basis with expected first award 3Q20. Manufacturing and Delivery for 804-813 to award on new contract 2Q20.

The profile for the FY21 propulsor includes AP funds to procure LLTM to support in-yard need dates should the option for a 10th ship be exercised in either FY21, FY22, or FY23. If the 10th ship option is not exercised, this material would be assigned to subsequent SSNs.

Exhibit P-10, Advance Procurement Requirements Analysis (*page 1 - Budget Funding Justification*): PB 2021 Navy			Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1		**P-1 Line Item Number / Title:** 2013 / Virginia Class Submarine	
First System (2021) Award Date:	**First System (2021) Completion Date:**		**Interval Between Systems:** 0 Months

Cost Elements	Production Leadtime (Months)	When Required* (Months)	FY 2019 ($ M)	FY 2020 ($ M)	FY 2021 ($ M)	FY 2022 ($ M)	FY 2023 ($ M)	FY 2024 ($ M)	FY 2025 ($ M)
Advance Procurement									
Nuclear Propulsion Plant Equipment (1)	30-72	Various	1,083.600	1,046.830	650.010	1,121.470	1,160.650	1,201.270	1,243.320
Electronics Equipment (2)	37-43	Various	29.354	29.940	30.540	31.150	31.774	32.408	33.056
NON-Nuclear Propulsion Plant Equipment - Propulsor (3)	36	Various	44.840	45.738	46.653	47.214	48.538	49.508	50.498
Long Lead-Time CFE One Year AP (4)	24-42	Various	514.709	742.963	542.188	553.556	728.071	568.280	532.507
Long Lead-Time CFE Two Year AP (4)	24-42	Various	138.438	222.117	204.376	387.017	216.710	170.040	89.316
Total: Advance Procurement			*1,810.941*	*2,087.588*	*1,473.767*	*2,140.407*	*2,185.743*	*2,021.506*	*1,948.697*
Economic Order of Quantity									
EOQ for FY20 SSNs (5)	-	Various	246.365	-	0.000	-	-	-	-
EOQ for FY21 SSNs	-	Various	246.365	293.988	0.000	-	-	-	-
EOQ for FY22 SSNs	-	Various	246.365	293.988	213.710	-	-	-	-
EOQ for FY23 SSNs	-	Various	246.365	293.988	213.710	-	-	-	-
EOQ for FY25 SSNs	-	Various	-	-	0.000	-	-	272.007	-
EOQ for FY26 SSNs	-	Various	-	-	0.000	-	-	272.007	324.586
EOQ for FY27 SSNs	-	Various	-	-	0.000	-	-	272.007	221.959
EOQ for FY28 SSNs	-	Various	-	-	0.000	-	-	272.007	121.589
Total: Economic Order of Quantity			*985.460*	*881.964*	*427.420*	*-*	*-*	*1,088.028*	*668.134*
Total Advance Procurement/Obligation Authority			**2,796.401**	**2,969.552**	**1,901.187**	**2,140.407**	**2,185.743**	**3,109.534**	**2,616.831**

*Note: "When Required" is the number of months required before ship delivery.

Exhibit P-10, Advance Procurement Requirements Analysis (*page 2 - Budget Funding Justification*): PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2013 / Virginia Class Submarine

Cost Elements	FY 2021						
	Production Leadtime *(Months)*	When Required* *(Months)*	Unit Cost *($ M)*	Contract Forecast Date	2021 Qty *(Each)*	For FY	Total Cost Request *($ M)*
Advance Procurement							
Nuclear Propulsion Plant Equipment (1)	30-72	Various	-	Oct 2020	-	2023	650.010
Electronics Equipment (2)	37-43	Various	-	Dec 2020	-	2022	30.540
NON-Nuclear Propulsion Plant Equipment - Propulsor (3)	36	Various	-	Dec 2020	-	2022	46.653
Long Lead-Time CFE One Year AP (4)	24-42	Various	-	Jan 2021	-	2022	542.188
Long Lead-Time CFE Two Year AP (4)	24-42	Various	-	Jan 2021	-	2023	204.376
Total: Advance Procurement							*1,473.767*
Economic Order of Quantity							
EOQ for FY20 SSNs (5)	-	Various	-		-		0.000
EOQ for FY21 SSNs	-	Various	-		-		0.000
EOQ for FY22 SSNs	-	Various	-		-		213.710
EOQ for FY23 SSNs	-	Various	-		-		213.710
EOQ for FY25 SSNs	-	Various	-		-		0.000
EOQ for FY26 SSNs	-	Various	-		-		0.000
EOQ for FY27 SSNs	-	Various	-		-		0.000
EOQ for FY28 SSNs	-	Various	-		-		0.000
Total: Economic Order of Quantity							*427.420*
Total Advance Procurement/Obligation Authority							**1,901.187**

Description:

*Note: "When Required" is the number of months required before ship delivery.

Footnotes:

(1) Reactor Plant Equipment Advance Procurement is required to fund long-lead time propulsion plant equipment, which is the longest lead-time equipment required for construction of nuclear-powered attack submarines, and ensure production capability that supports projected production quantities. To support the VIRGINIA Class' innovative and more efficient modular construction method, reactor plant components must be delivered earlier in the construction process than previous submarine classes. Under the new method, the VIRGINIA Class reactor plant is assembled and tested before being mounted and installed in the hull. The FY 2021 President's Budget request reflects an out-year cost reduction of VIRGINIA Class Submarine (VCS) nuclear propulsion equipment. Two areas of cost reduction include: (1) risk reduction associated with successful plant criticality of the first Virginia Forward Fit nuclear reactor core in PCU VERMONT (792), and (2) increased business volume due to the recent two-carrier procurement, the level loading of COLUMBIA follow ships, and an increase to two VCS per year in all but one COLUMBIA authorization years (two VCS per year was accounted for in the COLUMBIA and FORD Class reactor plant government furnished equipment budget requests). The reduction to 1 shipset of reactor plant GFE in FY21 and its impact to the nuclear industrial base is under evaluation.

Exhibit P-10, Advance Procurement Requirements Analysis (*page 2 - Budget Funding Justification*): PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2013 / Virginia Class Submarine

(2) Electronics Equipment AP is required to fund the long-lead time material for the Command and Control System Module (CCSM). AP for the CCSM plays a critical role in early system installation and test in order to keep the CCSM out of the critical path to ship delivery and minimize risk to ship construction. AP is required to procure selected electronics and associated pre-cable kits, cabling, connector plates and mechanical structures to be installed in this module in accordance with Shipyard Required in Yard Dates (RIYD). Pre-cable kits allow the shipyard to establish cable runs and checkout platform interfaces prior to electronics installation. Mechanical structures establish footprint unique packaging to allow electronics to install efficiently. Additionally, this 1 YR AP is for long lead items such as metal fabrication parts (mechanical structures, chassis, drawer slides, mounting hardware), power supplies and cable connectors, subcontract items (Aft Sonar Receive Unit), and acoustic hull sensors (such as DT-574 LAB Hydrophones).

(3) Non-Nuclear Propulsion Plant Equipment Propulsor AP is required to satisfy in-yard need dates for ship delivery. Other prior year non-nuclear propulsion plant equipment has been negotiated as CFE in the Construction Contract.

(4) Long Lead-Time CFE AP is required to fund long lead time contractor furnished material including the Weapons Handling and Reactor Plant Modules and the Main Propulsion Unit (MPU)/Ship Service Turbine Generator (SSTG). Additionally VPM LLTM CFE in FY19 - FY25 required to support the increased material procurement (i.e. electrical, valves, flanges, fittings, pipe, fabricated parts, hardware, and tools, etc.) associated with the increased VPM workload and to maintain anticipated ship construction schedules is included. These and other components are required early in the construction phase to meet the delivery schedule. The one and two year CFE includes essential funding to support the Block V LLTM that has been negotiated into the MYP Construction Contract (not inflation driven due to VPM fluctuation and cadence of vendor base procurements) in combination with the EOQ profile to maximize cost savings and meet in yard need dates of materials.

(5) EOQ is for Economic Order Quantity for large lot procurements of shipbuilder material and major Government Furnished Equipment to achieve MYP savings. Examples of shipbuilder large lot procurements include items such as Electrical (cable, wire, fittings, switches, instrumentation, connectors, resistors, etc.); Valves, flanges and fittings, piping; Fabricated Parts (bearings, sound isolation mounts, pipe hanged assemblies, machined parts); Hardware and Tools (fasteners, marine fittings, locks, latches, small tools). Examples of GFE large lot procurements include items such as: Sonar - Large Aperture Bow (LAB) Arrays and associated bottles, Light Weight Wide Aperture Array (LWWAA) Receivers & electronic components (network servers, switches) ECS - High Data Rate (HDR) Antennas, Digital Modular Radios (DMRs) & associated power amplifiers, Navy Multiband Terminals (NMTs), and Multifunction Masts (MFMs) OE-538. ESM - Photonics ESM Performance Improvement (PEPI)-3 systems and Multifunctional Modular Masts (MMMs) Photonics Masts - outboard equipment only, such as Diploops along with complex electronic & mechanical components that are required to manufacture the Photonics masts.

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Exhibit P-40, Budget Line Item Justification: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 02: Other Warships / BSA 1: Other Warships	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls

ID Code (A=Service Ready, B=Not Service Ready): A | **Program Elements for Code B Items:** N/A | **Other Related Program Elements:** N/A

Line Item MDAP/MAIS Code: N/A

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity *(Units in Each)*	6	-	1	-	-	-	-	-	-	1	1	9
Gross/Weapon System Cost *($ in Millions)*	22,987.608	0.000	5,629.430	0.000	0.000	0.000	0.000	0.000	0.000	6,231.974	6,537.123	41,386.135
Less PY Advance Procurement *($ in Millions)*	5,275.478	-	749.870	-	-	-	-	-	-	1,473.032	1,579.064	9,077.444
Less Cost To Complete *($ in Millions)*	455.398	-	-	-	-	-	-	-	-	-	-	455.398
Less Subsequent Year Full Funding *($ in Millions)*	10,092.768	-	3,763.145	-	-	-	-	-	-	2,180.843	2,450.018	18,486.774
Less Transfer *($ in Millions)*	128.131	-	-	-	-	-	-	-	-	-	-	128.131
Less Previously Appropriated OPN *($ in Millions)*	-	-	481.789	-	-	-	-	-	-	538.583	568.210	1,588.582
Net Procurement (P-1) *($ in Millions)*	7,035.833	0.000	634.626	0.000	0.000	0.000	0.000	0.000	0.000	2,039.516	1,939.831	11,649.806
Plus Subsequent Year Full Funding *($ in Millions)*	10,092.768	-	-	1,878.453	-	1,878.453	1,884.692	-	-	-	4,630.861	18,486.774
Full Funding TOA *($ in Millions)*	17,128.601	-	634.626	1,878.453	-	1,878.453	1,884.692	-	-	2,039.516	6,570.692	30,136.580
Plus CY Advance Procurement *($ in Millions)*	5,599.475	425.873	16.900	17.384	-	17.384	237.868	508.026	692.854	15.639	1,563.425	9,077.444
Plus Cost To Complete *($ in Millions)*	180.598	-	-	198.000	-	198.000	76.800	-	-	-	-	455.398
Plus Transfer *($ in Millions)*	128.131	-	-	-	-	-	-	-	-	-	-	128.131
Plus Previously Appropriated OPN *($ in Millions)*	1,588.582	-	-	-	-	-	-	-	-	-	-	1,588.582
Total Obligation Authority *($ in Millions)*	**24,625.387**	**425.873**	**651.526**	**2,093.837**	**0.000**	**2,093.837**	**2,199.360**	**508.026**	**692.854**	**2,055.155**	**8,134.117**	**41,386.135**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Plus Outfitting and Post Delivery *($ in Millions)*	110.615	14.625	31.597	16.897	-	16.897	48.922	19.667	25.226	24.558	69.621	361.728
Total *($ in Millions)*	**24,736.002**	**440.498**	**683.123**	**2,110.734**	**-**	**2,110.734**	**2,248.282**	**527.693**	**718.080**	**2,079.713**	**8,203.738**	**41,747.863**
Gross/Weapon System Unit Cost *($ in Millions)*	3,831.268	-	5,629.430	-	-	-	-	-	-	6,231.974	6,537.123	4,598.459

Description:

To support and operate aircraft to engage in attacks on targets afloat and ashore which threaten our use of the sea and to engage in sustained operations in support of other forces. The refueling of the reactors and repair and upgrade of the main propulsion equipment will provide for reliable operations during its remaining 23 plus years of ship life using only the normal maintenance cycle.

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy		Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 02: Other Warships / BSA 1: Other Warships	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** N/A
Line Item MDAP/MAIS Code: N/A		

Characteristics:

	CVN 73	CVN 74
Length Overall	1092 ft	1092 ft
Beam	252 ft	252 ft
Displacement	101,200 LT	100,700 LT
Draft	39.96 ft	39.81 ft

Systems:

Electronics

-C4ISR
-INTEGRATED COMMUNICATION NETWORK (ICAN / DDCN & IVCN)
-SHIP SELF DEFENSE SYSTEM (SSDS) MK2 MOD 1E
-ELECTRONIC CONSOLIDATED AUTOMATED SUPPORT SYSTEM (ECASS)
-JOINT PRECISION APPROACH AND LANDING SYSTEM (JPALS)
-AN/SPN-46 OVERHAUL/UPGRADE
-MQ-25 - UNMANNED AVIATION WARFARE CENTER (UAWC)
-AN/USG-2B - COOPERATIVE ENGAGEMENT CAPABILITY (CEC)
-AN/SLQ-59 - ELECTRONIC WARFARE (EW) SYSTEM
-AN/SPN-41 REFURBISHMENT
-AN/SPN-50(V)1 - AIR TRAFFIC CONTROL RADAR
-BATTLE FORCE TACTICAL TRAINING (BFTT) SYSTEM
-AN/SLQ-32A(V)4 - ELECTRONIC WARFARE SUITE
-AN/SPN-43C REFURBISHMENT
-NAVAL STRIKE WARFARE PLANNING CENTER (NSWPC)
-AN/UPX-29 - IDENTIFICATION FRIEND OR FOE (IFF) INTERROGATOR SET
-JOINT STRIKE FIGHTER AUTONOMIC LOGISTICS INFORMATION SYSTEM (JSF-ALIS)
-AN/TPX-42(V)15 UPGRADE
-AN/SYY-1 - AIR TRAFFIC CONTROL SYSTEM

Hull, Mechanical, and Electrical (HM&E)

-AIRCRAFT ELECTRICAL SERVICE STATION (AESS) INSTALL
-FURNITURE (NON PROPULSION PLANT)
-LOW PRESSURE AIR PLANT (LPAP)
-AUTOMATIC VOLTAGE REGULATOR (AVR)
-VSA O2 GENERATOR
-NODE ROOM RIPOUT/INSTALL
-COMBAT SYSTEMS SUPPORT CENTER (CSSC) RIPOUT/INSTALL
-PASSIVE COUNTER MEASURE SYSTEM (PCMS)
-COMBI-OVENS
-LAUNDRY DRYERS
-AFT CREW MESS
-CARRIER INTELLIGENCE CENTER (CVIC) RIPOUT/INSTALL
-MEDICAL AND DENTAL SUITE
-MODULAR REFRIGERATION UNIT (MRU)
-ACE PLC CONTROL SYSTEM UPGRADE
-OPERATOR BALLISTIC PROTECTION FOR CREW SERVED WEAPONS STATIONS

Ordnance

-AVIATION EQUIPMENT & SUPPORT
-NATO SEASPARROW SURFACE MISSILE SYSTEM (NSSMS)
-AN/SPS-48G - 3D AIR SEARCH RADAR
-AN/SPS-49(V)1 OVERHAUL/REFURBISHMENT
-AN/SPQ-14 - ADVANCED SENSOR DISTRIBUTION SYSTEM (ASDS)
-MK 38 MOD 3 GUN SYSTEM
-ENTERPRISE AIR SURVEILLANCE RADAR (EASR)
-CIWS/RAM DEFENSE CAPABILITY (CRDC) BLOCK 1
-SURFACE ELECTRONIC WARFARE IMPROVEMENT PROGRAM (SEWIP) BLOCK 2
-COMBAT DIRECTION CENTER (CDC)/FLAG RIPOUT/INSTALL
-AN/SPQ-9B - ANTI-SHIP CRUISE MISSILE DEFENSE RADAR
-RAM GUIDED MISSILE LAUNCHING SYSTEM
-AN/SQQ-34C - CARRIER TACTICAL SUPPORT CENTER
-MK 53 DECOY LAUNCHING SYSTEM (DLS)

Production Status:	CVN 73	CVN 74
Contract Award Date	Aug 2017	Jan 2021
Months to Completion		
a) Award to Delivery	52 months	48 months
b) Construction Start to Delivery	52 months	48 months
Delivery Date	Dec 2021	Jan 2025
Completion Of Fitting Out	Feb 2022	Mar 2025
Obligation Work Limit Date	Jan 2023	Feb 2026

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy		**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 02: Other Warships / BSA 1: Other Warships	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** N/A
Line Item MDAP/MAIS Code: N/A		

Design Schedule	Start / Issue	Complete / Response	Reissue	Reissue Complete / Response
Issue Date for TLR	Jan 2000	Feb 2000	Mar 2000	Apr 2000
Issue Date for TLS	Jan 2001	Feb 2001	Mar 2001	Apr 2001
Preliminary Design	Jan 2002	Feb 2002	N/A	N/A
Contract Design	Jan 2003	Feb 2003	N/A	N/A
Detail Design	Jan 2004	Feb 2004	N/A	Apr 2004
Request for Proposals	Jan 2005	Feb 2005	Mar 2005	N/A
Design Agent	[Design Agent]			

Classification of Cost Estimate: [cost estimate]

Justification:
FY 2021 CVN RCOH profile now includes CVN 75 RCOH starting in FY 2025 with five years of advance procurement from FY 2020 to FY 2024 and one year of subsequent full funding in FY 2026.

FY 2021 is the second of three years of full funding for CVN 74. The CVN 74 RCOH funding profile was revised at the FY 2020 President's Budget request to four years of advance procurement from FY 2016 to FY 2019 and three years of full funding from FY 2020 to FY 2022, which is similar to CVN 73 RCOH profile.

FY 2021 includes $198.0M of completion of prior year shipbuilding programs funding for CVN 73. This includes $158.2M for shipyard contract cost overrun and crew berthing cost increases. This also includes support to incorporate MQ-25 into the CVN 73 ($11.8M) increases in C4ISR costs ($17.8M), SSDS cost increases ($3.2M), Node Room Ripout/Install cost increases ($4.9M), and Combat Systems Support Center Ripout/Install cost increases ($2.1M).

Previously appropriated OPN represents reactor power units procured for CVN 74-76 RCOHs. Funding was included with the end cost per Section 1018 of the 2019 National Defense Authorization Act.

Exhibit P-5c, Ship Cost Analysis: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls

Cost Categories (†) indicates the presence of a P-8a	**FY 2016**		**FY 2020**	
	Qty *(Each)*	**Total Cost** *($ M)*	**Qty** *(Each)*	**Total Cost** *($ M)*
Plan Costs	1	65.548	1	72.736
Basic Construction/Conversion		4,019.563		4,084.341
Electronics (†)		360.101		363.571
Propulsion Equipment		155.888		603.379
Hull, Mechanical, and Electrical (HM&E) (†)		168.260		180.226
Ordnance (†)		126.840		230.107
Other Cost		98.296		95.070
Total Ship Estimate		**4,994.496**		**5,629.430**
Less Advance Procurement FY 2012		13.971		-
Less Advance Procurement FY 2013		69.918		-
Less Advance Procurement FY 2014		245.793		-
Less Advance Procurement FY 2015		483.600		-
Less Advance Procurement FY 2016		-		14.951
Less Advance Procurement FY 2017		-		233.149
Less Advance Procurement FY 2018		-		75.897
Less Advance Procurement FY 2019		-		425.873
Less Subsequent Full Funding FY 2017		1,699.120		-
Less Subsequent Full Funding FY 2018		1,569.669		-
Less Subsequent Full Funding FY 2021		-		1,878.453
Less Subsequent Full Funding FY 2022		-		1,884.692
Less Cost to Complete FY 2021		198.000		-
Less Cost to Complete FY 2022		76.800		-
Less Previously Appropriated OPN FY 2004		-		234.028
Less Previously Appropriated OPN FY 2005		-		247.761
Net P-1 Funding		**637.625**		**634.626**

Remarks:
The $0.583M decrease for CVN 73 in Plans from the FY 2020 President's Budget request reflects realized savings from contract close-out de-obligations. The $2.465M increase for CVN 74 in Plans from the FY 2020 President's Budget request is due to an unplanned design studies for integrating new combat system equipment (EASR, SPN-50, SEWIP, etc.). The Norfolk Naval Shipyard (NNSY) Planning Yard contract re-compete resulted in higher labor rates and a shift from NNSY resources to contractor. Additional resources were required for Ship's Force work package planning due to overlap of CVN 73 and CVN 74 hulls (the prior plan assumed shared resources).

The $206.150M increase for CVN 73 in Basic Construction from the FY 2020 President's Budget request is to provide for the shipyard contract cost overrun and four-month schedule shift for a December 2021 re-delivery.

Exhibit P-5c, Ship Cost Analysis: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls

CVN 74 $4.908M increase in propulsion equipment from the FY 2020 President's Budget request is due to a modification to a major propulsion plant component, manufacturing spares, material for infrastructure installation, and corresponding technical services.

Non-nuclear government furnished equipment (GFE) is captured in Electronics, HM&E, and Ordnance. The GFE Governance Program was initiated to target soft costs by punctiliously challenging performers to achieve savings in program management, system engineering, and logistics support. Procurement details are recorded in NAVSEA Form 7300s and reviewed annually to refine and adjust estimates for required products and services to the most current data available. The $20.000M increase for CVN 74 in HM&E from the FY 2020 President's Budget request is to provide operator ballistic protection for crew served weapons stations as required in the Department of Defense Appropriations Act, 2020.

The $8.000M increase for CVN 73 in Other Cost from the FY 2020 President's Budget request is due to the increase in negotiated rates for crew berthing.

Exhibit P-27, Ship Production Schedule: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls

Ship	Shipbuilder	Fiscal Year	Contract Award	Start of Construction	Delivery Date
CVN 73	HUNTINGTON INGALLS INDUSTRIES	2016	Aug 2017	Aug 2017	Dec 2021
CVN 74	HUNTINGTON INGALLS INDUSTRIES	2020	Jan 2021	Jan 2021	Jan 2025
CVN 75	HUNTINGTON INGALLS INDUSTRIES	2025	May 2025	May 2025	Mar 2029

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls

Electronics	FY 2016		FY 2020	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
P-35 Items				
C4ISR	1	125.175	1	114.710
INTEGRATED COMMUNICATION NETWORK (ICAN / DDCN & IVCN)	1	54.554	1	64.907
SHIP SELF DEFENSE SYSTEM (SSDS) MK2 MOD 1E	1	45.426	1	37.177
ELECTRONIC CONSOLIDATED AUTOMATED SUPPORT SYSTEM (ECASS)	1	36.969	1	36.981
JOINT PRECISION APPROACH AND LANDING SYSTEM (JPALS)	1	14.131	1	14.372
AN/SPN-46 OVERHAUL/UPGRADE	1	12.851	1	13.030
MQ-25 - UNMANNED AVIATION WARFARE CENTER (UAWC)	1	11.823	1	21.500
AN/USG-2B - COOPERATIVE ENGAGEMENT CAPABILITY (CEC)	1	11.280	1	12.742
AN/SLQ-59 - ELECTRONIC WARFARE (EW) SYSTEM	1	6.303	0	-
AN/SPN-41 REFURBISHMENT	1	5.737	1	5.821
AN/SPN-50(V)1 - AIR TRAFFIC CONTROL RADAR	0	-	1	15.293
P-35 Items Subtotal		**324.249**		**336.533**
Major Items				
BATTLE FORCE TACTICAL TRAINING (BFTT) SYSTEM	1	7.584	1	4.144
AN/SLQ-32A(V)4 - ELECTRONIC WARFARE SUITE	1	7.458	0	-
AN/SPN-43C REFURBISHMENT	1	4.037	0	-
NAVAL STRIKE WARFARE PLANNING CENTER (NSWPC)	1	3.028	1	5.397
AN/UPX-29 - IDENTIFICATION FRIEND OR FOE (IFF) INTERROGATOR SET	1	2.946	1	4.352
JOINT STRIKE FIGHTER AUTONOMIC LOGISTICS INFORMATION SYSTEM (JSF-ALIS)	1	1.876	1	1.826
AN/TPX-42(V)15 UPGRADE	1	1.450	0	-
AN/SYY-1 - AIR TRAFFIC CONTROL SYSTEM	0	-	1	4.160
Major Items Subtotal		**28.379**		**19.879**
Other Cost Elements				
TEST & CERTIFICATIONS, MISC.		7.473		7.159
Other Cost Elements Subtotal		**7.473**		**7.159**
Total Electronics		**360.101**		**363.571**

Remarks:

P-35 item MQ-25 Unmanned Aviation Warfare Center (UAWC) replaces the FY 2020 President's Budget request major item MQ-25 Unmanned Aircraft System (UAS).

BATTLE FORCE TACTICAL TRAINING (BFTT) SYSTEM: CVN 74 is utilizing the same hardware & software configuration as CVN 73, resulting in significantly less non-recurring engineering (NRE).

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls

AN/SLQ-32A(V)4 - ELECTRONIC WARFARE SUITE: CVN 73 cost increase ($3.882M) from the FY 2020 President's Budget request for Electronic Counter Measure (ECM) Room No 2 infrastructure and outfitting (HVAC, lighting, paint, insulation, decking) additional scope. Replaced by Surface Electronic Warfare Improvement Program (SEWIP) Block 2 onboard CVN 74 (listed under Ordnance P-35 items).

AN/SPN-43C REFURBISHMENT: Replaced by AN/SPN-50(V)1 Air Traffic Control Radar onboard CVN 74.

NAVAL STRIKE WARFARE PLANNING CENTER (NSWPC): CVN 74 cost increase from the FY 2020 President's Budget request ($1.931M) and from CVN 73 ($2.369M) is due to incorporation of additional Ready Room modernization and collaborative conferencing equipment technology refresh not required for CVN 73.

AN/UPX-29 - IDENTIFICATION FRIEND OR FOE (IFF) INTERROGATOR SET: CVN 73 cost increase ($1.031M) from the FY 2020 President's Budget request due to the poor condition of the GFE upon removal and inspection, resulting in additional refurbishment and testing efforts. CVN 74 cost increase ($1.497M) from the FY 2020 President's Budget request is due to the required relocation of the IFF equipment room to make space for the installation of the new main mast.

AN/TPX-42(V)15 UPGRADE: CVN 73 cost reduction ($0.353M) from the FY 2020 President's Budget request due to efficiencies gained in the GFE Governance Program. CVN 74 RCOH is receiving AN/SYY-1 Air Traffic Control System instead of AN/TPX-42(V)15 refurbishment.

AN/SYY-1 - AIR TRAFFIC CONTROL SYSTEM: New display system that replaces AN/TPX-42(V)15 onboard CVN 74.

CVN 73 RCOH Other Cost Elements includes eight unlisted systems, each under $1 million in major hardware requirement. CVN 74 RCOH Other Cost Elements includes seven unlisted systems, each under $1 million in major hardware requirement. CVN 73 increase from the FY 2020 President's Budget request is to support a full test & certification program required to re-deliver the ship. CVN 74 RCOH increase from the FY 2020 President's Budget request is due in part to adding the Common Munitions & Bit/Reprogramming (CMBRE) system.

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls

Hull, Mechanical, and Electrical (HM&E)	FY 2016		FY 2020	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
P-35 Items				
AIRCRAFT ELECTRICAL SERVICE STATION (AESS) INSTALL	1	14.480	0	-
FURNITURE (NON PROPULSION PLANT)	1	13.853	1	12.739
LOW PRESSURE AIR PLANT (LPAP)	1	6.126	1	6.527
AUTOMATIC VOLTAGE REGULATOR (AVR)	1	4.340	0	-
VSA O2 GENERATOR	0	-	1	5.363
P-35 Items Subtotal		**38.799**		**24.629**
Major Items				
NODE ROOM RIPOUT/INSTALL	1	6.831	1	7.036
COMBAT SYSTEMS SUPPORT CENTER (CSSC) RIPOUT/INSTALL	1	5.970	1	6.407
PASSIVE COUNTER MEASURE SYSTEM (PCMS)	1	5.548	1	6.065
COMBI-OVENS	1	5.128	0	-
LAUNDRY DRYERS	1	4.280	1	3.035
AFT CREW MESS	1	3.706	1	3.744
CARRIER INTELLIGENCE CENTER (CVIC) RIPOUT/INSTALL	1	3.074	1	3.416
MEDICAL AND DENTAL SUITE	1	2.709	1	2.832
MODULAR REFRIGERATION UNIT (MRU)	1	2.106	1	2.586
ACE PLC CONTROL SYSTEM UPGRADE	1	1.785	1	2.000
OPERATOR BALLISTIC PROTECTION FOR CREW SERVED WEAPONS STATIONS	0	-	1	20.000
Major Items Subtotal		**41.137**		**57.121**
Other Cost Elements				
ENGINEERING, TEST & CERTIFICATION		64.123		63.118
MISCELLANEOUS GOVERNMENT FURNISHED EQUIPMENT (GFE)		24.201		35.358
Other Cost Elements Subtotal		**88.324**		**98.476**
Total Hull, Mechanical, and Electrical (HM&E)		**168.260**		**180.226**

Remarks:

NODE ROOM RIPOUT/INSTALL: CVN 73 cost increase ($4.843M) from the FY 2020 President's Budget request due to completion of detailed drawings and provision of the basis of estimate (BOE) from the contractor. Original estimates were based on the work scope from previous availabilities. CVN 74 cost increase ($4.809M) from the FY 2020 President's Budget request to reflect actual cost incurred on CVN 73.

COMBAT SYSTEMS SUPPORT CENTER (CSSC) RIPOUT/INSTALL: CVN 73 cost increase ($2.119M) from the FY 2020 President's Budget request due to completion of detailed drawings and provision of the basis of estimate (BOE) from the contractor. Original estimates were based on the work scope from previous availabilities. CVN 74 increase ($2.094M) from the FY 2020 President's Budget request to reflect actual cost incurred on CVN 73.

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls

COMBI-OVENS: CVN 73 cost increase ($3.275M) from the FY 2020 President's Budget request due to hardware unit cost increase upon negotiated price with vendor. Combi-ovens already installed on CVN 74 and not a requirement.

LAUNDRY DRYERS: CVN 73 cost increase ($1.560M) from the FY 2020 President's Budget request due to added groom and maintenance required for poor as-arrived material condition.

AFT CREW MESS: CVN 73 cost increase ($0.284M) from the FY 2020 President's Budget request due to actual incurred cost for AIT. CVN 74 reduced cost ($0.083M) from the FY 2020 President's Budget request is due to efficiencies gained in program management and engineering support gained through the GFE Governance Program.

CARRIER INTELLIGENCE CENTER (CVIC) RIPOUT/INSTALL: CVN 73 cost decrease ($0.547M) from the FY 2020 President's Budget request due to completion of detailed drawings and provision of the basis of estimate (BOE) from the contractor. Original estimates were based on the work scope from previous availabilities. CVN 74 decrease ($0.639M) from the FY 2020 President's Budget request to reflect actual cost incurred on CVN 73.

MEDICAL AND DENTAL SUITE: CVN 73 cost increase ($0.123M) and CVN 74 cost increase ($0.397M) from the FY 2020 President's Budget request due to increased price of Authorized Medical and Dental Allowance Lists (AMAL/ADAL) items by vendor.

MODULAR REFRIGERATION UNIT (MRU): New modernization added to CVN 68 class aircraft carriers. New MRUs correct longstanding obsolescence issues and will provide reduced life cycle maintenance and repair costs.

OPERATOR BALLISTIC PROTECTION FOR CREW SERVED WEAPONS STATIONS: New modernization added to CVN 74 at the direction of the Department of Defense Appropriations Act, 2020. The modernization will provide ballistic shielding protection around exposed common served weapons stations.

ENGINEERING, TEST & CERTIFICATION: Engineering funds a lean team of subject matter expert engineers to diagnose issues and provide solutions at a lower cost point to mitigate risk of cost and scope creep at the shipyard. CVN 73 increase of $3.553M from the FY 2020 President's Budget request is to support a full test & certification program required to re-deliver the ship. CVN 74 decrease of $5.963M is due to cost efficiencies from shared CVN 73 and CVN 74 resources and updated engineering support long-term projections.

MISCELLANEOUS GOVERNMENT FURNISHED EQUIPMENT (GFE):
The CVN 73 RCOH includes twenty-eight unlisted systems, each under $1 million in major hardware requirement. The CVN 74 RCOH includes twenty unlisted systems, each under $1 million in major hardware requirement. CVN 74 decrease of $2.211M from the FY 2020 President's Budget request is the result of cost efficiencies realized through the GFE Governance Program and the shifting of GFE Ship Machinery Opening (SMO) hole cuts to end-use work.

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls

Ordnance	FY 2016 Qty (Each)	FY 2016 Total Cost ($ M)	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)
P-35 Items				
AVIATION EQUIPMENT & SUPPORT	1	45.888	1	55.144
NATO SEASPARROW SURFACE MISSILE SYSTEM (NSSMS)	1	17.934	1	30.870
AN/SPS-48G - 3D AIR SEARCH RADAR	1	13.330	0	-
AN/SPS-49(V)1 OVERHAUL/REFURBISHMENT	1	8.281	0	-
AN/SPQ-14 - ADVANCED SENSOR DISTRIBUTION SYSTEM (ASDS)	1	3.790	1	3.970
MK 38 MOD 3 GUN SYSTEM	0	2.030	1	9.071
ENTERPRISE AIR SURVEILLANCE RADAR (EASR)	0	-	1	48.911
CIWS/RAM DEFENSE CAPABILITY (CRDC) BLOCK 1	0	2.321	1	21.270
SURFACE ELECTRONIC WARFARE IMPROVEMENT PROGRAM (SEWIP) BLOCK 2	0	-	1	18.397
P-35 Items Subtotal		**93.574**		**187.633**
Major Items				
COMBAT DIRECTION CENTER (CDC)/FLAG RIPOUT/INSTALL	1	20.960	1	22.637
AN/SPQ-9B - ANTI-SHIP CRUISE MISSILE DEFENSE RADAR	1	3.552	1	4.059
RAM GUIDED MISSILE LAUNCHING SYSTEM	1	1.199	1	2.542
AN/SQQ-34C - CARRIER TACTICAL SUPPORT CENTER	1	1.160	1	2.485
MK 53 DECOY LAUNCHING SYSTEM (DLS)	0	0.443	1	5.185
Major Items Subtotal		**27.314**		**36.908**
Other Cost Elements				
TEST & CERTIFICATIONS, MISC		5.952		5.566
Other Cost Elements Subtotal		**5.952**		**5.566**
Total Ordnance		**126.840**		**230.107**

Remarks:

CVN 74 RCOH Ordnance increase from CVN 73 RCOH includes $86.500M for Enterprise Air Surveillance Radar (EASR), CIWS/RAM Defense Capability (CRDC) Block 1, and Surface Electronic Warfare Improvement Program (SEWIP) Block 2. EASR replaces AN/SPS-48 and AN/SPS-49 Air Search Radars. CRDC replaces Phalanx MK 15 MOD 22 (CIWS). SEWIP replaces AN/SLQ-32A(V)4 Electronic Warfare Suite.

COMBAT DIRECTION CENTER (CDC)/FLAG RIPOUT/INSTALL: CVN 73 increased to reflect the actual cost of the Painting, Insulation, and Decking (PID) drawing. CVN 74 increase ($5.617M) adjusted to reflect actuals on CVN 73 as effort will be nearly identical.

AN/SQQ-34C - CARRIER TACTICAL SUPPORT CENTER: CVN 74 increase ($1.325M) from CVN 73 accounts for a full (with GFE) installation onboard CVN 74. CVN 73 is an infrastructure-only installation (no GFE).

RAM GUIDED MISSILE LAUNCHING SYSTEM: CVN 74 increase from CVN 73 by $1.343M due to procurement of new hardware. CVN 73 hardware was obtained from decommissioned assets and refurbished. Additional decommissioned hardware assets are not available for CVN 74 and all new hardware is required.

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls

MK 53 DECOY LAUNCHING SYSTEM (DLS): CVN 73 is a removal, refurbishment, and re-installation effort. CVN 74 requires procurement of all new equipment. CVN 74 decrease from the FY 2020 President's Budget request due to hardware bulk buy cost savings.

CVN 73 RCOH Other Cost Elements includes five unlisted systems, each under $1 million in major hardware requirement. CVN 74 RCOH Other Cost Elements includes five unlisted systems, each under $1 million in major hardware requirement. CVN 74 cost increase ($1.770M) from the FY 2020 President's Budget request is due to separating Phalanx MK 15 MOD 22 (CIWS) from CRDC, which is a P-35 item.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls
Equipment Item: C4ISR	**PARM Code:** NAVWAR PMW 750

P-35 Category	FY 2016 Qty (Each)	FY 2016 Total Cost ($ M)	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)
Major Hardware	1	46.778	1	47.373
Ancillary Equipment		2.383		2.813
Technical Data and Documentation		0.218		0.685
Spares		1.136		2.297
System Engineering		9.945		12.208
Technical Engineering Services		51.164		34.565
Other Costs		13.551		14.769
Total	**1**	**125.175**	**1**	**114.710**

Description:

Provides an integrated communications infrastructure to support both tactical and non-tactical applications in all warfare and support areas, an improved shipboard RF distribution system and multiband antennas, and capabilities for the control and monitoring of RF assets introducing network automation and provide interoperable communications for joint operations. It will interconnect forces of the Battle Group (BG)/ Amphibious Readiness Group (ARG) and connects the BG/ARG with expeditionary forces and the Commander-in-Chief Command Complex (CCC) ashore crossing all available media including Ultra High Frequency (UHF), Super High Frequency (SHF), Extremely High Frequency (EHF), commercial satellite links, and new medium-to-high data rate HF and UHF line of sight (LOS) links. C4ISR includes RCS, weather, navigational, signal exploitation, and command and control equipment.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2016	CVN 73	Various	Various	Various	Various	1	46.778
FY 2020	CVN 74	Various	Various	Various	Various	1	47.373

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2016	CVN 73	Dec 2021	0		Various
FY 2020	CVN 74	Jan 2025	0		Various

Competition/Second Source Initiatives:

N/A

Remarks:

CVN 73 RCOH - Comprised of 36 discreetly funded line items. Overall increase due to additional work scope required to complete the C4ISR Install ($17.742M). Detailed design ship installation drawings levied additional requirements to install significant electrical power, HVAC, and structural infrastructure that was not originally estimated. CANES is the primary driver of the increase. New work is required to support the ship's communications and networking capabilities and return the ship to a Forward Deployed Navy Asset status. CVN 73 is the first hull to significantly increase the use of government installation teams for GFE vice HII-NNS installation teams during RCOH. Technical engineering services costs in P-35 exhibits appear higher than previous hulls because these costs were categorized as Basic Construction in the P-5 exhibit when the work was performed by the shipbuilder, HII-NNS. Government installation teams are approximately 25% less costly and are an overall cost savings to the program.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls
Equipment Item: C4ISR	**PARM Code:** NAVWAR PMW 750

CVN 74 RCOH - Comprised of 35 discreetly funded line items. A decrease of $10.465M from the CVN 73 is due to a change in configuration and lessons learned.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls
Equipment Item: INTEGRATED COMMUNICATION NETWORK (ICAN / DDCN & IVCN)	**PARM Code:** NAVSEA 05H3, NSWC Philadelphia

P-35 Category	FY 2016 Qty (Each)	FY 2016 Total Cost ($ M)	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)
Major Hardware	1	24.037	1	28.218
Ancillary Equipment		-		0.005
Technical Data and Documentation		1.170		1.625
Spares		0.556		0.414
System Engineering		8.927		8.202
Technical Engineering Services		13.811		17.711
Other Costs		6.053		8.732
Total	**1**	**54.554**	**1**	**64.907**

Description:

The Integrated Communication Network consists of the following systems: An Integrated Communications System (ICS) that provides the ship's Internal Command and Control Communications. In addition, ICS provides connectivity to other onboard systems such as Announcing Systems, Sound Powered Circuits, Secure / Non Secure off-ship Communications, Shipboard Air Traffic Control Communications (SATCC) and Hierarchical Yet Dynamically Reprogrammable Architecture (HYDRA). The Machinery Control Monitoring System (MCMS) controls and monitors approximately 3500 machinery signals for various HM&E auxiliary systems (e.g. JP5, firemain, IC/SM panels) for aircraft carriers. It utilizes the Machinery Control Network (MCN) for signals. The MCN is the core network that provides communication services and transport for the MCMS system and part of the backbone that rides over the Fiber Optic Cable Plant (FOCP). It consists of five network switches, associated racks, and cabling. The Navigation Critical Distribution System (NAVCRIT) is a switched network providing communication services and transport for the NAV Standard Message, which is originated in the Naval Sensor System Interface (NAVSSI) system. The NAVCRIT Distribution consists of three backbone switches and eight I/0 controllers to convert digital NAV data for analog outputs. It will use the FOCP to the maximum extent for connectivity. The Ship Control System (SCS) provides control and display of rudder position, Engine and Propeller Order Telegraph functions. SCS provides data for heading, speed, and rudder angles through NAVCRIT Network from NAVSSI. The SCS interfaces to an Electronic Chart Display Information System. Shipboard Multipurpose Copiers includes the acquisition and installation of Class III Copier/Printer (B&W), Class III Color Copier/ Printer, Class IV Copier/Printer (B&W) and Class IV Color Copier/Printer. The related equipment is for use on surface vessels in the US Navy as part of the Shipboard Multipurpose Copier Program.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2016	CVN 73	Various	Various	Various	Various	1	24.037
FY 2020	CVN 74	Various	Various	Various	Various	1	28.218

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2016	CVN 73	Dec 2021	0		Various
FY 2020	CVN 74	Jan 2025	0		Various

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy		**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls	
Equipment Item: INTEGRATED COMMUNICATION NETWORK (ICAN / DDCN & IVCN)		**PARM Code:** NAVSEA 05H3, NSWC Philadelphia

Remarks:

CVN 73 RCOH - Overall decrease from the FY 2020 President's Budget request is a result of realized savings across the ICAN / DDCN & IVCN portfolio of 24 distinct systems from the GFE Governance Program to reduce program management, system engineering, and logistics support.

CVN 74 RCOH - Overall decrease from the FY 2020 President's Budget request is a result of realized savings across the ICAN / DDCN & IVCN portfolio of 25 distinct systems from the GFE Governance Program to reduce program management, system engineering, and logistics support. Increases from CVN 73 are driven by several new system requirements including Cyber Security Upgrades ($5.370M), Afloat Multi-Media Production System (AMMPS) ($2.552M), and Advanced Damage Control Systems (ADCS) ($2.431M).

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls
Equipment Item: SHIP SELF DEFENSE SYSTEM (SSDS) MK2 MOD 1E	**PARM Code:** NAVSEA PEO IWS 10

P-35 Category	FY 2016		FY 2020	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	1	12.903	1	10.972
Technical Data and Documentation		0.933		1.189
Spares		0.901		0.898
System Engineering		9.329		6.361
Technical Engineering Services		4.396		4.155
Other Costs		16.964		13.602
Total	**1**	**45.426**	**1**	**37.177**

Description:

The Ship Self Defense System (SSDS) MK2 provides primary support for force/own ship combat systems control and enhanced self-defense capabilities. SSDS is the heart of the Combat System integrating sensors, weapons systems, data links, and command and control elements into a unified Combat System.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2016	CVN 73	Raytheon/Lockheed Martin	C/CPFF	Apr 2018	Option	1	12.903
FY 2020	CVN 74	Lockheed Martin	Various	Mar 2021	Various	1	10.972

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2016	CVN 73	Dec 2021	26	18	Apr 2018
FY 2020	CVN 74	Jan 2025	21	24	Apr 2021

Competition/Second Source Initiatives:

N/A

Remarks:

CVN 73 RCOH - Overall increase from the FY 2020 President's Budget request is a result of final negotiated contractor price increase over the estimate for hardware and system engineering.

CVN 74 RCOH - Overall decrease from CVN 73 due to CVN 74 utilizing the same CVN 73 TI-16 hardware configuration, thus having significantly less non-recurring engineering (NRE).

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls
Equipment Item: ELECTRONIC CONSOLIDATED AUTOMATED SUPPORT SYSTEM (ECASS)	**PARM Code:** NAVAIR PMA 260

P-35 Category	FY 2016		FY 2020	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	1	34.953	1	35.017
Technical Engineering Services		1.616		1.564
Other Costs		0.400		0.400
Total	**1**	**36.969**	**1**	**36.981**

Description:

The Electronic Consolidated Automated Support System (eCASS) provides repair capability for aircraft instruments, components ("black boxes"), subcomponents (e.g. circuit cards), avionics and missile systems for all current deployable aircraft, F/A-18 ATFLIR (Forward Looking Infrared Receiver) and ALQ-99 (electronic jamming) systems, as well as new and future aircraft such as E-2D and F-35C. The eCASS replaces the obsolete Consolidated Automated Support System (CASS) that formerly provided this support. The eCASS suite provides expeditious, on-site repair capability for more than 1,100 different components, without which parts support for the ship's AIRWING (which routinely operates at great distances from logistics supply points) would be degraded to the point that it would result in increased support costs and negatively affect mission accomplishment, combat readiness, and required sortie generation rates.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2016	CVN 73	Lockheed Martin	C/CPFF	Oct 2018	New	1	34.953
FY 2020	CVN 74	Lockheed Martin	SS/FFP	Nov 2020	Option	1	35.017

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2016	CVN 73	Dec 2021	27	12	Sep 2018
FY 2020	CVN 74	Jan 2025	23	12	Feb 2022

Competition/Second Source Initiatives:

N/A

Remarks:

CVN 73 technical engineering services increase from the FY 2020 President's Budget request due to the discovery of steam piping removal growth work that is required to be completed before eCASS installation.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls
Equipment Item: JOINT PRECISION APPROACH AND LANDING SYSTEM (JPALS)	**PARM Code:** NAVAIR PMA 213

P-35 Category	FY 2016 Qty (Each)	FY 2016 Total Cost ($ M)	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)
Major Hardware	1	11.353	1	9.921
Spares		0.637		0.946
System Engineering		0.178		0.762
Technical Engineering Services		1.377		1.435
Other Costs		0.586		1.308
Total	**1**	**14.131**	**1**	**14.372**

Description:

The Joint Precision Approach and Landing System (JPALS) is the future precision approach and landing system which will be the primary landing system for the Joint Strike Fighter (F-35B/F-35C), Unmanned Carrier Aviation Air System (MQ-25A), and future aircraft platforms onboard CVNs and LHA/LHD type ships. JPALS is the Navy certified sea-based system to have the capabilities necessary to provide ship range/bearing for JPALS-equipped aircraft operating within 200NM; provide air traffic control surveillance of JPALS-equipped aircraft via secure, two-way data link with the ship; and support auto-land functionality for the F-35C, MQ-25A, and future platforms to CVNs. JPALS is critical for MQ-25A as currently no secondary landing system exists for MQ-25A operations at sea.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2016	CVN 73	Raytheon	C/FPIF	May 2019	New	1	11.353
FY 2020	CVN 74	Raytheon	C/FPIF	Oct 2020	Option	1	9.921

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2016	CVN 73	Dec 2021	19	12	May 2019
FY 2020	CVN 74	Jan 2025	34	12	Mar 2021

Competition/Second Source Initiatives:

N/A

Remarks:

CVN 73 hardware increase from the FY 2020 President's Budget request due to low rate initial production (LRIP) vendor price increase. CVN 74 hardware will be procured via a full rate production contract that leverages multiple ship buys at a reduced cost.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls
Equipment Item: AN/SPN-46 OVERHAUL/UPGRADE	**PARM Code:** NAVAIR PMA 213

P-35 Category	FY 2016		FY 2020	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	1	6.661	1	5.768
System Engineering		0.599		0.666
Technical Engineering Services		3.360		3.565
Other Costs		2.231		3.031
Total	**1**	**12.851**	**1**	**13.030**

Description:

The AN/SPN-46 Automatic Carrier Landing System (ACLS) is a precision approach landing system (PALS) which provides electronic guidance to carrier-based aircraft and allows them to land in all-weather conditions with no limitations due to low ceiling or restricted visibility. AN/SPN-46 is a fully automated, all-weather approach landing aid for carrier aircraft that enhances safety of flight during recovery, enables the execution of all-weather air combat operations, and is required to achieve full air traffic control certification following RCOH. AN/SPN-46 is required to be removed during the RCOH to prevent damage and allow for major infrastructure recapitalization and reconfiguration of the ship's island, mast, and tower.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2016	CVN 73	NAWC Aircraft Division	WR	Mar 2016		1	6.661
FY 2020	CVN 74	NAWC Aircraft Division	WR	Oct 2019		1	5.768

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2016	CVN 73	Dec 2021	28	41	Mar 2016
FY 2020	CVN 74	Jan 2025	13	39	Sep 2020

Competition/Second Source Initiatives:

N/A

Remarks:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls
Equipment Item: MQ-25 - UNMANNED AVIATION WARFARE CENTER (UAWC)	**PARM Code:** NAVAIR PMA 268

P-35 Category	FY 2016		FY 2020	
	Qty *(Each)*	Total Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*
Major Hardware	1	2.778	1	15.855
Technical Data and Documentation		0.182		-
Technical Engineering Services		8.666		5.147
Other Costs		0.197		0.498
Total	**1**	**11.823**	**1**	**21.500**

Description:

MQ-25 - Unmanned Aviation Warfare Center (UAWC) will incorporate a family of systems providing a carrier-based unmanned aircraft system that supports long-endurance, proven Intelligence, Surveillance, Reconnaissance, and Targeting (ISR&T) and precision strike capability to Joint and Naval Warfare Commanders.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity *(Each)*	Unit Cost *($ M)*
FY 2016	CVN 73	Various	Various	Various	Various	1	2.778
FY 2020	CVN 74	Various	Various	Various	Various	1	15.855

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2016	CVN 73	Dec 2021	0		Various
FY 2020	CVN 74	Jan 2025	0		Various

Competition/Second Source Initiatives:

N/A

Remarks:

MQ-25 infrastructure installation restored to the CVN 73 work package for the FY 2021 President's Budget request as mandated by the National Defense Authorization Act for Fiscal Year 2019. CVN 74 is installing the full system with GFE hardware.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls
Equipment Item: AN/USG-2B - COOPERATIVE ENGAGEMENT CAPABILITY (CEC)	**PARM Code:** NAVSEA PEO IWS 6.0

P-35 Category	FY 2016		FY 2020	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	1	3.503	1	4.973
Technical Data and Documentation		0.193		-
Spares		0.338		0.476
System Engineering		3.631		3.123
Technical Engineering Services		2.579		2.140
Other Costs		1.036		2.030
Total	**1**	**11.280**	**1**	**12.742**

Description:

AN/USG-2B - Cooperative Engagement Capability (CEC) provides Battle Force Anti-Air Warfare (AAW) capability by coordinating all force AAW sensors into a single real time, fire control quality composite track picture. CEC distributes sensor measurement data from each Cooperating Unit (CU) to all other CUs. Each CU has a Data Distribution System (DDS) and a Cooperative Engagement Processor (CEP). The DDS encodes and distributes ownship sensor and engagement data to other CUs, and receives and decodes other CU's data. The CEP processes ownship data and DDS supplied remote sensor and weapon data needed to provide the common air picture.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2016	CVN 73	Raytheon/Sechan	C/FFP	Jan 2016	Option	1	3.503
FY 2020	CVN 74	Seaport-e	C/IDIQ	Oct 2020	Option	1	4.973

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2016	CVN 73	Dec 2021	38	18	Apr 2017
FY 2020	CVN 74	Jan 2025	24	18	Jul 2021

Competition/Second Source Initiatives:

N/A

Remarks:

CVN 73 RCOH - Overall decrease from the FY 2020 President's Budget request is a result of realized savings from the GFE Governance Program to reduce program management, system engineering, and logistics support.

CVN 74 RCOH - System engineering increase from the FY 2020 President's Budget request due to incorporation of new estimate for post-installation testing requirements ($2.446M). Increases from CVN 73 in hardware and other costs are due to upgrade of antennas from PAO-cooled (polyalphaolefin, a liquid coolant) to air-cooled aboard CVN 74 to address obsolescence and maintainability issues.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls
Equipment Item: AN/SLQ-59 - ELECTRONIC WARFARE (EW) SYSTEM	**PARM Code:** NAVSEA PEO IWS 2E

P-35 Category	FY 2016 Qty (Each)	FY 2016 Total Cost ($ M)	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)
Major Hardware	1	1.499	0	-
Ancillary Equipment		0.100		-
Spares		0.045		-
System Engineering		0.299		-
Technical Engineering Services		3.890		-
Other Costs		0.470		-
Total	**1**	**6.303**	**0**	**-**

Description:

AN/SLQ-59 - ELECTRONIC WARFARE (EW) SYSTEM is a CNO designated program in response to PACFLT/CJTF519 Urgent Operational Needs Statement (UONS) designed to enhance existing shipboard Surface Electronic Warfare Systems. AN/SLQ-59 provides enhanced shipboard Electronic Support (ES) and Electronic Attack (EA) capabilities.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2016	CVN 73	Electro Impulse Laboratory, Inc	SS/IDIQ	Nov 2018	Option	1	1.499

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2016	CVN 73	Dec 2021	22	12	Feb 2019

Competition/Second Source Initiatives:

N/A

Remarks:

AN/SLQ-59 was installed onboard CVN 74 prior to the RCOH.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls
Equipment Item: AN/SPN-41 REFURBISHMENT	**PARM Code:** NAVAIR PMA 213

P-35 Category	FY 2016		FY 2020	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	1	3.577	1	3.796
System Engineering		0.393		0.433
Technical Engineering Services		1.561		1.331
Other Costs		0.206		0.261
Total	**1**	**5.737**	**1**	**5.821**

Description:

The AN/SPN-41 Aircraft Approach Control Transmitting Set provides all-weather instrument approach guidance from the ship to the aircraft. It is used as the ship's Instrument Landing System (ILS) and Monitor to provide azimuth and elevation alignment information to landing aircraft on final approach to the deck. It also serves as an independent monitor of other shipboard landing systems for the pilot as well as providing a backup landing guidance option. AN/SPN-41 enhances safety of flight during recovery, enables the execution of all-weather air combat operations, and is required to achieve full air traffic control certification following RCOH. AN/SPN-41 is required to be removed during the RCOH to prevent damage and allow for major infrastructure recapitalization and reconfiguration of the ship's island, mast, and tower.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2016	CVN 73	NAWC Aircraft Division	WR	Jul 2017		1	3.577
FY 2020	CVN 74	NAWC Aircraft Division	WR	Dec 2020		1	3.796

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2016	CVN 73	Dec 2021	29	24	Jul 2017
FY 2020	CVN 74	Jan 2025	25	24	Dec 2020

Competition/Second Source Initiatives:

N/A

Remarks:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls
Equipment Item: AN/SPN-50(V)1 - AIR TRAFFIC CONTROL RADAR	**PARM Code:** NAVAIR PMA 213

P-35 Category	FY 2016 Qty (Each)	FY 2016 Total Cost ($ M)	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)
Major Hardware	0	-	1	10.734
Technical Data and Documentation		-		0.134
Spares		-		1.087
System Engineering		-		0.636
Technical Engineering Services		-		2.351
Other Costs		-		0.351
Total	**0**	**-**	**1**	**15.293**

Description:

Digital radar system capable of modern radar processing to improve target detection and track in the presence of competing clutter. C-band radar alleviating operational congestion of new shipboard S-band radars and restrictions caused by increasing spectrum encroachment and National Broadband Plan.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	CVN 74	SAAB	C/FPIF	Mar 2021	Option	1	10.734

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	CVN 74	Jan 2025	32	12	May 2021

Competition/Second Source Initiatives:

N/A

Remarks:

AN/SPN-50(V)1 is a new equipment installation for the CVN 74 RCOH program of record, replacing AN/SPN-43C. CVN 73 AN/SPN-43C refurbishment is an Electronics major item.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls
Equipment Item: AIRCRAFT ELECTRICAL SERVICE STATION (AESS) INSTALL	**PARM Code:** NSWC Philadelphia

P-35 Category	FY 2016 Qty (Each)	FY 2016 Total Cost ($ M)	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)
Major Hardware	1	6.668	0	-
System Engineering		0.244		-
Technical Engineering Services		7.335		-
Other Costs		0.233		-
Total	**1**	**14.480**	**0**	**-**

Description:

Aircraft Electrical Service Station (AESS) supports the F-35 Joint Strike Fighter (JSF) and JUCAS electrical requirements. They require 270VDC electrical power for maintenance and pre-flight operations. This type of power is not currently available on CVN 68 class aircraft carriers. This ship alteration will equip CVN 68 class ships with a dual purpose AESS station providing either: 90KVA of 115VAC, 400Hz, power for the Advanced Hawkeye (E-2D), and all legacy aircraft, or 70KW of 270VDC electrical power for the JSF (F-35) and JUCAS. This upgrade will replace the obsolete components now part of the AESS with a quiet, lightweight, low-cost, dual-purpose system that decreases maintenance costs and improves habitability.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2016	CVN 73	Various	C/FFP	Jan 2017	New	1	6.668

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2016	CVN 73	Dec 2021	55	12	May 2016

Competition/Second Source Initiatives:

N/A

Remarks:

Aircraft Electrical Service Station (AESS) was installed onboard CVN 74 prior to the RCOH. No further AESS work is required during the RCOH.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls
Equipment Item: FURNITURE (NON PROPULSION PLANT)	**PARM Code:** NSWC Philadelphia

P-35 Category	FY 2016 Qty (Each)	FY 2016 Total Cost ($ M)	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)
Major Hardware	1	4.647	1	4.000
Ancillary Equipment		0.069		-
System Engineering		0.377		-
Technical Engineering Services		8.703		8.350
Other Costs		0.057		0.389
Total	**1**	**13.853**	**1**	**12.739**

Description:

Replaces damaged/worn furniture for 250 spaces. During the RCOH, all furniture is offloaded and evaluated for reuse. Most furniture is stored and reinstalled. However, damaged furniture must be replaced as it cannot be properly secured and poses a personnel risk during high sea states.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2016	CVN 73	Tecnico	C/CPFF	Dec 2016	New	1	4.647
FY 2020	CVN 74	TBD	TBD	Apr 2021		1	4.000

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2016	CVN 73	Dec 2021	43	6	Nov 2017
FY 2020	CVN 74	Jan 2025	39	6	Apr 2021

Competition/Second Source Initiatives:

N/A

Remarks:

Overall increase from the FY 2020 President's Budget request ($2.582M on CVN 73 and $1.378M on CVN 74) due to the cost of OSHA-required abatement of paint with toxic heavy metals (lead and zinc chromate). Contract Data is "TBD" as contract award information is unknown at this time.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls
Equipment Item: LOW PRESSURE AIR PLANT (LPAP)	**PARM Code:** NSWC Philadelphia

P-35 Category	FY 2016 Qty (Each)	FY 2016 Total Cost ($ M)	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)
Major Hardware	1	5.990	1	6.242
System Engineering		0.064		0.061
Technical Engineering Services		0.021		0.093
Other Costs		0.051		0.131
Total	**1**	**6.126**	**1**	**6.527**

Description:

Remove three Ship Service Air Compressors (SSAC), four Control Air Compressors, and associated dryers from two machinery rooms and two reactor rooms. Install nine MARC 350 Low Pressure Air Plants (LPAPs) to serve both ship service air and control air systems.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2016	CVN 73	RIX Industries	SS/IDIQ	Feb 2015	Option	1	5.990
FY 2020	CVN 74	RIX Industries	SS/IDIQ	Jan 2019	Option	1	6.242

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2016	CVN 73	Dec 2021	55	12	May 2016
FY 2020	CVN 74	Jan 2025	60	12	Jan 2019

Competition/Second Source Initiatives:

N/A

Remarks:

CVN 73 RCOH - Overall decrease from the FY 2020 President's Budget request is a result of realized savings from the GFE Governance Program to reduce program management, system engineering, and logistics support.

CVN 74 RCOH - Overall decrease from the FY 2020 President's Budget request is a result of re-negotiated vendor service fees.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls
Equipment Item: AUTOMATIC VOLTAGE REGULATOR (AVR)	**PARM Code:** NAVSEA PMS 312

P-35 Category	FY 2016 Qty (Each)	FY 2016 Total Cost ($ M)	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)
Major Hardware	1	4.340	0	-
Total	**1**	**4.340**	**0**	**-**

Description:

The Turbine Generator Automatic Voltage Regulator is a digital upgrade to the legacy voltage regulator. Its purpose is to regulate output voltage from shipboard turbine generators to meet electrical requirements for all ship systems. This upgrade is required to improve operational safety of the turbine generators and eliminate material shortages due to obsolescence of legacy voltage regulator system components.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2016	CVN 73	Northrop Grumman Power/Control Systems	C/FFP	Jun 2015	Option	1	4.340

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2016	CVN 73	Dec 2021	51	26	Jul 2015

Competition/Second Source Initiatives:

N/A

Remarks:

Automatic Voltage Regulator was installed onboard CVN 74 prior to the RCOH. No further AVR work is required during the RCOH.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls
Equipment Item: VSA O2 GENERATOR	**PARM Code:** NSWC Philadelphia

P-35 Category	FY 2016 Qty (Each)	FY 2016 Total Cost ($ M)	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)
Major Hardware	0	-	1	3.849
Spares		-		0.170
System Engineering		-		0.752
Technical Engineering Services		-		0.294
Other Costs		-		0.298
Total	**0**	**-**	**1**	**5.363**

Description:

One liquid oxygen generating and storage plant with associated support equipment; one gaseous nitrogen generator with associated storage flasks.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	CVN 74	PCI	SS/IDIQ	Feb 2020		1	3.849

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	CVN 74	Jan 2025	47	12	Feb 2020

Competition/Second Source Initiatives:

N/A

Remarks:

CVN 73 received Oxygen Nitrogen Generator (O2N2) refurbishment during RCOH. CVN 74 increased costs ($0.180M) from the FY 2020 President's Budget request is due to unit cost increase of the O2 generator increasing ($0.240M) with a reduction in vendor service fees ($0.060M).

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls
Equipment Item: AVIATION EQUIPMENT & SUPPORT	**PARM Code:** NAVAIR PMA 251

P-35 Category	FY 2016 Qty (Each)	FY 2016 Total Cost ($ M)	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)
Major Hardware	1	28.620	1	38.266
Ancillary Equipment		0.040		0.135
Technical Data and Documentation		-		0.199
Spares		0.084		0.332
System Engineering		3.636		3.217
Technical Engineering Services		8.358		7.395
Other Costs		5.150		5.600
Total	**1**	**45.888**	**1**	**55.144**

Description:

Provides procurement, engineering and logistics support for launch and recovery equipment (includes overhaul/replacement of catapult launch valves and arresting gear engines), ADMACS (Aviation Data Management and Control System Phase II upgrade; includes Cyber Security requirement and future aircraft ready), Moriah Wind System, ILARTS (Integrated Launch and Recovery TV Surveillance System; includes Technical Refresh Service Change to mitigate obsolescence issues), mission pods, Jet Blast Deflectors (includes Service Change to provide side panel cooling to meet JSF requirements), aviation maintenance facility, weapons compatibility, aircraft spotting, aviation servicing facilities, Landing Signal Officer Display System (LSODS; includes ADMACS interfacing and Cyber Security updates), Long Range Lineup System (LRLS), Improved Fresnel Lens Optical Landing System (IFLOLS; includes Phase IV upgrade), Manually Operated Visual Landing Aid System (MOVLAS) and Flight Deck Lighting and Marking and Lighting. All of these systems are required to be repaired, updated, overhauled as required and tested during RCOH to attain final Flight Deck Certification authorizing launch and recovery of USN aircraft.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2016	CVN 73	Various	Various	Various	Various	1	28.620
FY 2020	CVN 74	Various	Various	Various	Various	1	38.266

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2016	CVN 73	Dec 2021	0		Various
FY 2020	CVN 74	Jan 2025	0		Various

Competition/Second Source Initiatives:

N/A

Remarks:

CVN 73 RCOH - Overall decrease from the FY 2020 President's Budget request is a result of realized savings across the AE&S portfolio of 18 distinct systems from the GFE Governance Program to reduce program management, system engineering, and logistics support.

CVN 74 RCOH - Increased costs from the FY 2020 President's Budget request ($8.301M) is due to revised hardware costs for Recovery to include CVN 74 condition findings during open & inspect. CVN 74 requires overhaul of additional crosshead and fixed sheaves and an additional engine new-build, which are not required on the CVN 73.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls
Equipment Item: NATO SEASPARROW SURFACE MISSILE SYSTEM (NSSMS)	**PARM Code:** NAVSEA PEO IWS 12

P-35 Category	FY 2016 Qty (Each)	FY 2016 Total Cost ($ M)	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)
Major Hardware	1	5.284	1	17.062
Ancillary Equipment		-		0.050
Spares		0.913		1.260
System Engineering		0.680		0.861
Technical Engineering Services		9.346		9.346
Other Costs		1.711		2.291
Total	**1**	**17.934**	**1**	**30.870**

Description:

The NATO Seasparrow Surface Missile System (NSSMS) is a medium range self defense missile system capable of defeating near/mid-term air/surface threats.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2016	CVN 73	Raytheon	SS/FFP	Apr 2017	New	1	5.284
FY 2020	CVN 74	Raytheon	SS/FFP	May 2020		1	17.062

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2016	CVN 73	Dec 2021	32	30	Apr 2017
FY 2020	CVN 74	Jan 2025	25	31	May 2020

Competition/Second Source Initiatives:

N/A

Remarks:

CVN 74 hardware increase of $11.778M from CVN 73 is due to the requirement to buy new hardware to replace high wear items that have significantly degraded due to the age of the system, including a Missile Launcher Upgrade (MLU). CVN 73 was limited to refurbishment of the removed hardware. Spare components are not available to support refurbishment of the CVN 74 removed hardware.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls
Equipment Item: AN/SPS-48G - 3D AIR SEARCH RADAR	**PARM Code:** NAVSEA PEO IWS 2RI

P-35 Category	FY 2016 Qty (Each)	FY 2016 Total Cost ($ M)	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)
Major Hardware	1	8.500	0	-
Technical Data and Documentation		0.017		-
Spares		0.328		-
System Engineering		2.405		-
Technical Engineering Services		1.528		-
Other Costs		0.552		-
Total	**1**	**13.330**	**0**	**-**

Description:

AN/SPS-48G (V)1 is a long range three dimensional (3D) radar used to search, detect and provide space-stabilized, three-coordinate (range, bearing, height) data to track airborne contacts.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2016	CVN 73	Harris	SS/FPIF	Sep 2016	Option	1	8.500

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2016	CVN 73	Dec 2021	32	18	Oct 2017

Competition/Second Source Initiatives:

N/A

Remarks:

CVN 73 Combat system integration efforts were re-categorized from Other to System Engineering ($1.554M) and a net cost increase of $0.110M was realized for rate changes. AN/SPS-48G will be replaced by Enterprise Air Surveillance Radar (EASR) on CVN 74, enhancing air surveillance radar capability, increasing system availability, and re-baselining sustainment.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls
Equipment Item: AN/SPS-49(V)1 OVERHAUL/REFURBISHMENT	**PARM Code:** NAVSEA PEO IWS 2RI

P-35 Category	FY 2016		FY 2020	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	1	3.291	0	-
Ancillary Equipment		0.030		-
Spares		0.275		-
System Engineering		0.533		-
Technical Engineering Services		3.605		-
Other Costs		0.547		-
Total	**1**	**8.281**	**0**	**-**

Description:

The AN/SPS-49A(V)1 Radar is a narrow beam, very long range, two dimensional air search radar. This is the primary air search radar for the ship providing early detection of airborne contacts (range, bearing, and altitude).

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2016	CVN 73	NSWC Crane	WR	Apr 2017	Option	1	3.291

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2016	CVN 73	Dec 2021	26	30	Apr 2017

Competition/Second Source Initiatives:

N/A

Remarks:

CVN 73 overall decrease from the FY 2020 President's Budget request is a result of realized savings from the GFE Governance Program to reduce program management, system engineering, and logistics support. AN/SPS-49A(V)1 will be replaced by Enterprise Air Surveillance Radar (EASR) on CVN 74, enhancing air surveillance radar capability, increasing system availability, and re-baselining sustainment.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls
Equipment Item: AN/SPQ-14 - ADVANCED SENSOR DISTRIBUTION SYSTEM (ASDS)	**PARM Code:** NAVSEA PEO IWS 1.0

P-35 Category	FY 2016		FY 2020	
	Qty *(Each)*	Total Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*
Major Hardware	1	1.090	1	1.068
Ancillary Equipment		0.010		0.011
Spares		0.049		0.075
System Engineering		1.070		0.954
Technical Engineering Services		1.254		1.394
Other Costs		0.317		0.468
Total	**1**	**3.790**	**1**	**3.970**

Description:

AN/SPQ-14(V) - Advanced Sensor Distribution System (ASDS) provides the distribution of radar sensor data and video to radar displays on board the ship.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity *(Each)*	Unit Cost *($ M)*
FY 2016	CVN 73	Lockheed Martin/DRS Technologies	C/FFP	Jan 2018	Option	1	1.090
FY 2020	CVN 74	TBD	TBD	Sep 2021		1	1.068

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2016	CVN 73	Dec 2021	26	18	Apr 2018
FY 2020	CVN 74	Jan 2025	22	18	Sep 2021

Competition/Second Source Initiatives:

N/A

Remarks:

CVN 73 RCOH - Combat system integration efforts were re-categorized from Other to System Engineering ($0.834M) and a net cost increase of $0.166M was realized for rate changes.

CVN 74 RCOH - Overall cost increase from the FY 2020 President's Budget request to reflect actual cost incurred on CVN 73. Contract Data is "TBD" as contract award information is unknown at this time.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls
Equipment Item: MK 38 MOD 3 GUN SYSTEM	**PARM Code:** NAVSEA PEO IWS 3C

P-35 Category	FY 2016 Qty (Each)	FY 2016 Total Cost ($ M)	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)
Major Hardware	0	-	1	6.693
Spares		-		0.097
Technical Engineering Services		1.900		2.056
Other Costs		0.130		0.225
Total	**0**	**2.030**	**1**	**9.071**

Description:

MK 38 Mod 3 Gun System is a 25mm stabilized gun with auto tracking and day/night capability that is also capable of interfacing with 7.62 mm MK 52 MOD 0 Coaxial gun.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	CVN 74	BAE Systems	SS/FP	Jun 2020	Option	1	6.693

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	CVN 74	Jan 2025	22	20	Jul 2021

Competition/Second Source Initiatives:

N/A

Remarks:

CVN 73 de-scoped GFE hardware procurement and installation to a future availability. CVN 73 will install system infrastructure (cable, foundations) to facilitate installation during a CIA in 2021. CVN 74 will receive a full (with GFE) installation.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls
Equipment Item: ENTERPRISE AIR SURVEILLANCE RADAR (EASR)	**PARM Code:** NAVSEA PEO IWS 2RI

P-35 Category	FY 2016 Qty (Each)	FY 2016 Total Cost ($ M)	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)
Major Hardware	0	-	1	26.103
Technical Data and Documentation		-		0.005
Spares		-		0.778
System Engineering		-		6.606
Technical Engineering Services		-		9.745
Other Costs		-		5.674
Total	**0**	**-**	**1**	**48.911**

Description:

Enterprise Air Surveillance Radar (EASR) is the next generation S-band air search radar with 3-D search capability supporting: Anti-Air Warfare, Anti-Surface Warfare, Air Traffic Control.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	CVN 74	Raytheon	TBD	Aug 2020	Option	1	26.103

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	CVN 74	Jan 2025	22	24	Mar 2021

Competition/Second Source Initiatives:

N/A

Remarks:

Enterprise Air Surveillance Radar (EASR) is a replacement for the legacy AN/SPS-48 and AN/SPS-49 Air Search Radars that are no longer in production and are experiencing increasing service life obsolescence issues.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls
Equipment Item: CIWS/RAM DEFENSE CAPABILITY (CRDC) BLOCK 1	**PARM Code:** NAVSEA PEO IWS 3G

P-35 Category	FY 2016 Qty (Each)	FY 2016 Total Cost ($ M)	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)
Major Hardware	0	-	1	18.300
Technical Engineering Services		2.271		2.820
Other Costs		0.050		0.150
Total	**0**	**2.321**	**1**	**21.270**

Description:

Close-In Weapon System (CIWS)/Rolling Airframe Missile (RAM) Defense Capability (CRDC) is a high fire rate gun weapon system that automatically acquires, tracks, and destroys threats. Active radars, supporting platforms, below deck equipment, and interfaces them to CIWS for Quick Reaction Capability (QRC).

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	CVN 74	Raytheon	C/FFP	Dec 2020	New	1	18.300

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	CVN 74	Jan 2025	24	24	Jan 2021

Competition/Second Source Initiatives:

N/A

Remarks:

CIWS/RAM Defense Capability (CRDC) Block 1 is a significant enhancement of Phalanx MK 15 MOD 22 (CIWS). On CVN 73, infrastructure-only efforts (no GFE hardware) have been added since the FY 2020 President's Budget request. On CVN 74, the decrease from the FY 2020 President's Budget request is due to separating CIWS from CRDC into an Ordnance other cost element. CVN 74 increase from CVN 73 by $18.949M due to procurement of CRDC GFE. CVN 74 includes a refurbishment of Phalanx MK 15 MOD 22 and procurement and installation of CRDC equipment.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls
Equipment Item: SURFACE ELECTRONIC WARFARE IMPROVEMENT PROGRAM (SEWIP) BLOCK 2	**PARM Code:** NAVSEA PEO IWS 2E

P-35 Category	FY 2016		FY 2020	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	0	-	1	10.222
Technical Data and Documentation		-		0.233
Spares		-		0.401
System Engineering		-		0.827
Technical Engineering Services		-		5.635
Other Costs		-		1.079
Total	**0**	**-**	**1**	**18.397**

Description:

Surface Electronic Warfare Improvement Program (SEWIP) Block 2 detects and classifies special signals not processed by other SLQ-32 receivers. SEWIP Block 2 provides enhanced Electronic Support (ES) capability with improved detection and accuracy to pace evolving threats through an upgraded ES antenna & receiver along with an open combat system interface.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	CVN 74	Lockheed Martin	C/FFP	Mar 2020	Option	1	10.222

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	CVN 74	Jan 2025	25	29	Jul 2020

Competition/Second Source Initiatives:

N/A

Remarks:

CVN 73 is receiving AN/SLQ-32A(V)4 Electronic Warfare Suite, which is being replaced by Surface Electronic Warfare Improvement Program (SEWIP) Block 2 on CVN 74.

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Exhibit P-10, Advance Procurement Requirements Analysis (*page 1 - Budget Funding Justification*): PB 2021 Navy | **Date:** February 2020

Appropriation / Budget Activity / Budget Sub Activity:
1611N / 02 / 1

P-1 Line Item Number / Title:
2086 / CVN Refueling Overhauls

First System (2021) Award Date: June 2025

First System (2021) Completion Date: March 2029

Interval Between Systems: 41 Months

Cost Elements	Production Leadtime *(Months)*	When Required* *(Months)*	FY 2019 *($ M)*	FY 2020 *($ M)*	FY 2021 *($ M)*	FY 2022 *($ M)*	FY 2023 *($ M)*	FY 2024 *($ M)*	FY 2025 *($ M)*
Advance Procurement									
Plans	-	Various	41.415	16.900	2.896	14.365	27.173	31.980	1.348
Basic	-	Various	265.709	-	3.418	176.866	403.850	457.114	2.022
Other	-	Various	6.732	-	0.000	-	9.225	14.350	-
Propulsion Equipment	-	Various	21.045	-	11.070	46.637	17.015	9.225	12.257
HM&E	-	Various	13.646	-	0.000	-	16.118	21.510	-
Electronics	-	Various	60.069	-	0.000	-	17.599	95.468	0.012
Ordnance	-	Various	17.257	-	0.000	-	17.046	63.207	-
Total: Advance Procurement			*425.873*	*16.900*	*17.384*	*237.868*	*508.026*	*692.854*	*15.639*
Total Advance Procurement/Obligation Authority			**425.873**	**16.900**	**17.384**	**237.868**	**508.026**	**692.854**	**15.639**

*Note: "When Required" is the number of months required before ship delivery.

Exhibit P-10, Advance Procurement Requirements Analysis (*page 2 - Budget Funding Justification*): PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2086 / CVN Refueling Overhauls

Cost Elements	FY 2021						
	Production Leadtime *(Months)*	When Required* *(Months)*	Unit Cost *($ M)*	Contract Forecast Date	2021 Qty *(Each)*	For FY	Total Cost Request *($ M)*
Advance Procurement							
Plans	-	Various	-	Dec 2020	-	2025	2.896
Basic	-	Various	-	Apr 2021	-	2025	3.418
Other	-	Various	-		-		0.000
Propulsion Equipment	-	Various	-	Dec 2020	-	2025	11.070
HM&E	-	Various	-		-		0.000
Electronics	-	Various	-		-		0.000
Ordnance	-	Various	-		-		0.000
Total: Advance Procurement							*17.384*
Total Advance Procurement/Obligation Authority							**17.384**

Description:
FY 2021 is the second of five years of advance procurement for CVN 75 RCOH. Full funding begins in FY 2025 with one years of subsequent full funding in FY 2026. FY 2021 resumes the required advance procurement funding profile to support a May 2025 start date.

Plans: Efforts include advance planning engineering support; authorized work package (AWP) development; shipchecks and shipcheck oversight; government furnished information (GFI) development; and technical oversight and authority.

Basic: Efforts include prime contractor advance planning; integration of the AWP into the execution integrated master schedule; Ship's Force work package material procurement; and technical support.

Propulsion Equipment: Nuclear component procurement and technical support services.

*Note: "When Required" is the number of months required before ship delivery.

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 02: Other Warships / BSA 1: Other Warships	**P-1 Line Item Number / Title:** 2119 / DDG 1000

ID Code (A=Service Ready, B=Not Service Ready): A | **Program Elements for Code B Items:** N/A | **Other Related Program Elements:** N/A

Line Item MDAP/MAIS Code: N/A

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity *(Units in Each)*	3	-	-	-	-	-	-	-	-	-	-	3
Gross/Weapon System Cost *($ in Millions)*	13,275.637	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	13,275.637
Less PY Advance Procurement *($ in Millions)*	1,160.116	-	-	-	-	-	-	-	-	-	-	1,160.116
Less Subsequent Year Full Funding *($ in Millions)*	8,023.656	-	-	-	-	-	-	-	-	-	-	8,023.656
Net Procurement (P-1) *($ in Millions)*	4,091.865	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	4,091.865
Plus Subsequent Year Full Funding *($ in Millions)*	7,463.960	270.965	155.944	78.205	-	78.205	25.297	29.285	-	-	-	8,023.656
Full Funding TOA *($ in Millions)*	11,555.825	270.965	155.944	78.205	-	78.205	25.297	29.285	-	-	-	12,115.521
Plus CY Advance Procurement *($ in Millions)*	1,160.116	-	-	-	-	-	-	-	-	-	-	1,160.116
Total Obligation Authority *($ in Millions)*	**12,715.941**	**270.965**	**155.944**	**78.205**	**0.000**	**78.205**	**25.297**	**29.285**	**0.000**	**0.000**	**-**	**13,275.637**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Plus Outfitting and Post Delivery *($ in Millions)*	269.423	43.211	62.992	39.236	-	39.236	18.940	35.037	-	-	11.500	480.339
Total *($ in Millions)*	**12,985.364**	**314.176**	**218.936**	**117.441**	**-**	**117.441**	**44.237**	**64.322**	**-**	**-**	**11.500**	**13,755.976**
Gross/Weapon System Unit Cost *($ in Millions)*	4,425.212	-	-	-	-	-	-	-	-	-	-	4,425.212

Description:

DDG 1000, a multi-mission surface combatant will serve as a versatile asset in the context of future Naval Strategy. Armed with an array of weapons, DDG 1000 will provide the Joint Force Commander with precision strike and volume fires. Designed with sustainable payload, multi-spectral stealth and optimal manning, DDG 1000 will take the fight to the enemy with unprecedented striking power, sustainability, survivability and information dominance. FY21 funding will support DDG 1002 combat availability and mission systems activation.

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy		**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 02: Other Warships / BSA 1: Other Warships	**P-1 Line Item Number / Title:** 2119 / DDG 1000	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** N/A
Line Item MDAP/MAIS Code: N/A		

Characteristics:

	DDG
Length Overall	610 ft
Beam	80.7 ft
Displacement	15,742 TONS
Draft	27.6 ft

Systems:

Electronics
-EXTERIOR COMMUNICATIONS (EXCOMMS)
-MULTI FUNCTION RADAR (MFR)
-TOTAL SHIP COMPUTING ENVIRONMENT (TSCE)

Hull, Mechanical, and Electrical (HM&E)
-MAIN TURBINE GENERATOR (MTG)

Ordnance
-ADVANCED GUN SYSTEM (AGS)
-CLOSE-IN GUN SYSTEM (CIGS)

Production Status:

	DDG 1000 (1)	DDG 1001 (2)	DDG 1002 (3)
Contract Award Date	Feb 2008	Sep 2011	Sep 2011
Months to Completion			
a) Award to Delivery	145 months	108 months	132 months
b) Construction Start to Delivery	133 months	126 months	125 months
Delivery Date	Mar 2020	Sep 2020	Sep 2022
Completion Of Fitting Out	Apr 2020	Oct 2020	Oct 2022
Obligation Work Limit Date	Mar 2021	Sep 2021	Sep 2023

Design Schedule	Start / Issue	Complete / Response	Reissue	Reissue Complete / Response
Issue Date for TLR	N/A	N/A		
Issue Date for TLS	N/A	N/A		
Preliminary Design	N/A	N/A		
Contract Design	N/A	N/A		
Detail Design	N/A	N/A		
Request for Proposals	Jan 2006	Apr 2006		
Design Agent	Northrop Grumman Ship Systems			

Classification of Cost Estimate: CLASS C BUDGET ESTIMATE

Footnotes:

(1) DDG 1000 Final Delivery is March 2020.

(2) DDG 1001 Final Delivery is September 2020.

(3) DDG 1002 HM&E contractual delivery from the shipbuilder is December 2020. Final Delivery is September 2022

Exhibit P-5c, Ship Cost Analysis: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2119 / DDG 1000

Cost Categories (†) indicates the presence of a P-8a	**FY 2007**		**FY 2009**	
	Qty *(Each)*	**Total Cost** *($ M)*	**Qty** *(Each)*	**Total Cost** *($ M)*
Plan Costs	2	1,553.687	1	563.438
Basic Construction/Conversion		3,642.747		1,287.000
Change Orders		320.320		80.328
Electronics (†)		2,768.477		1,461.488
Hull, Mechanical, and Electrical (HM&E) (†)		242.156		76.848
Ordnance (†)		515.811		264.891
Other Cost		366.007		132.439
Total Ship Estimate		**9,409.205**		**3,866.432**
Less Advance Procurement FY 2005		304.046		-
Less Advance Procurement FY 2006		706.240		-
Less Advance Procurement FY 2008		-		149.830
Less Subsequent Full Funding FY 2008		3,009.929		-
Less Subsequent Full Funding FY 2010		313.025		1,065.507
Less Subsequent Full Funding FY 2011		107.020		140.062
Less Subsequent Full Funding FY 2012		437.938		70.789
Less Subsequent Full Funding FY 2013		536.503		138.020
Less Subsequent Full Funding FY 2014		230.944		31.349
Less Subsequent Full Funding FY 2015		374.916		85.933
Less Subsequent Full Funding FY 2016		277.658		155.643
Less Subsequent Full Funding FY 2017		198.180		73.576
Less Subsequent Full Funding FY 2018		150.006		66.962
Less Subsequent Full Funding FY 2019		81.518		189.447
Less Subsequent Full Funding FY 2020		93.714		62.230
Less Subsequent Full Funding FY 2021		-		78.205
Less Subsequent Full Funding FY 2022		-		25.297
Less Subsequent Full Funding FY 2023		-		29.285
Net P-1 Funding		**2,587.568**		**1,504.297**

Remarks:
The following items increased with the FY 2021 President's Budget Request: Electronics increased by $40.9M for DDG 1001 and $17.8M for DDG 1002 to support mission systems activation, Basic Construction for DDG 1002 increased by $11.9M for government liability for Huntington Ingalls Gulfport facility termination costs, and Basic construction for DDG 1000 increased by $10M to account for six month delivery delay.

Exhibit P-27, Ship Production Schedule: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2119 / DDG 1000

Ship	Shipbuilder	Fiscal Year	Contract Award	Start of Construction	Delivery Date
DDG 1000 (1)	BIW	2007	Feb 2008	Feb 2009	Mar 2020
DDG 1001 (2)	BIW	2007	Sep 2011	Mar 2010	Sep 2020
DDG 1002 (3)	BIW	2009	Sep 2011	Apr 2012	Sep 2022

Footnotes:

(1) DDG 1000 Final Delivery is March 2020.

(2) DDG 1001 Final Delivery is September 2020.

(3) DDG 1002 HM&E contractual delivery from the shipbuilder is December 2020. Final Delivery is September 2022

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy | **Date:** February 2020

Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1

P-1 Line Item Number / Title: 2119 / DDG 1000

Electronics	FY 2007 Qty (Each)	FY 2007 Total Cost ($ M)	FY 2009 Qty (Each)	FY 2009 Total Cost ($ M)
P-35 Items				
EXTERIOR COMMUNICATIONS (EXCOMMS)	2	470.348	1	79.962
INTEGRATED UNDERSEA WARFARE (IUSW) SYSTEM	2	216.263	1	105.136
MULTI FUNCTION RADAR (MFR)	2	519.609	1	297.999
COMMON ARRAY POWER SYSTEM (CAPS)	2	97.017	1	16.409
TOTAL SHIP COMPUTING ENVIRONMENT (TSCE)	2	382.591	1	259.191
ELECTRO-OPTICAL / INFRARED (EO/IR)	2	94.411	1	31.452
IDENTIFICATION FRIEND OR FOE (IFF)	2	35.532	1	28.138
COMMON ARRAY COOLING SYSTEM (CACS)	2	20.065	1	0.965
SHIP CONTROL SYSTEM (SCS)	2	111.527	1	117.229
COOPERATIVE ENGAGEMENT CAPABILITY (CEC)	2	16.025	1	7.800
SURFACE ELECTRONIC WARFARE IMPROVEMENT PROGRAM (SEWIP)	2	40.242	1	17.682
VERTICAL LAUNCHING SYSTEM (VLS) MK 57 4-CELL MODULES	40	276.782	20	302.815
P-35 Items Subtotal		**2,280.412**		**1,264.778**
Other Cost Elements				
MISSION SYSTEM ENGR INTEGR & TEST (MSEIT)		322.274		132.510
MISSION SYSTEM ACTIVATION		155.791		58.700
SPARES		10.000		5.500
Other Cost Elements Subtotal		**488.065**		**196.710**
Total Electronics		**2,768.477**		**1,461.488**

Remarks:
The FY 2021 President's Budget Request for Electronics includes an additional $40.9M for DDG 1001 and $17.8M for DDG 1002 Mission Systems Activation support costs.

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2119 / DDG 1000

Hull, Mechanical, and Electrical (HM&E)	FY 2007		FY 2009	
	Qty *(Each)*	Total Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*
P-35 Items				
MAIN TURBINE GENERATOR (MTG)	4	84.797	2	39.412
P-35 Items Subtotal		**84.797**		**39.412**
Major Items				
BATTLE SPARES (MTG)		32.168		-
RIGID HULL INFLATABLE BOAT (RHIB)	4	2.100	2	1.100
Major Items Subtotal		**34.268**		**1.100**
Other Cost Elements				
HM&E (NGVLA, Moriah Wind Measurement System (WMS), Aviation Integration)		68.492		12.446
MISSION SYSTEM ACTIVATION		18.781		16.390
INTERIM SPARES		35.818		7.500
Other Cost Elements Subtotal		**123.091**		**36.336**
Total Hull, Mechanical, and Electrical (HM&E)		**242.156**		**76.848**

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2119 / DDG 1000

Ordnance	FY 2007		FY 2009	
	Qty *(Each)*	Total Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*
P-35 Items				
ADVANCED GUN SYSTEM (AGS)	4	458.711	2	248.596
CLOSE-IN GUN SYSTEM (CIGS)	4	36.151	2	13.795
P-35 Items Subtotal		**494.862**		**262.391**
Major Items				
BATTLE SPARES (AGS)		18.449		-
Major Items Subtotal		**18.449**		**-**
Other Cost Elements				
MISSION SYSTEM ACTIVATION		2.500		2.500
Other Cost Elements Subtotal		**2.500**		**2.500**
Total Ordnance		**515.811**		**264.891**

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2119 / DDG 1000
Equipment Item: EXTERIOR COMMUNICATIONS (EXCOMMS)	**PARM Code:** PEOC4I

P-35 Category	FY 2007 Qty (Each)	FY 2007 Total Cost ($ M)	FY 2009 Qty (Each)	FY 2009 Total Cost ($ M)
Major Hardware	2	195.953	1	20.600
Technical Support Services		33.947		6.585
Other / NRE		240.448		52.777
Total	**2**	**470.348**	**1**	**79.962**

Description:

EXCOMMs are part of the DDG 1000 C3I Segment and consists of a set of seven (7) external communications elements. The EXCOMM Elements support the DDG 1000 system in achieving its mission by providing communications between DDG 1000 and other land, air, and sea based platforms as well as pier-side communications. These EXCOMM elements provide the voice, data, and video communications between DDG 1000 and the external world at sea as well as when in port. The 7 elements are: Satellite Communications (SATCOMs), Line of Sight (LOS), Common Data Link-Navy (CDL-N), Information Security (INFOSEC), Common Array Element (CAE), Cooperative Engagement Capability (CEC) and Integrated Communications Controller Software (ICCS). Government legacy systems include: Distributed Common Ground System, Navy (DCGS-N), Cooperative Engagement Capability (CEC), Communication Terminals, AN/WSC-6(V)9 Shipboard Terminal, Common Link Integrated Processor (CLIP), Automated Digital Network System (ADNS), Global Broadcast Service (GBS), Communications Data Link System (CDLS), & Naval Modular Automated Communications System (NAVMACS).

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2007	DDG 1000	Raytheon	C/CPIF	May 2008		2	97.977
FY 2009	DDG 1002	Raytheon	C/CPIF	May 2012		1	20.600

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2007	DDG 1000	Mar 2020	43	26	Jun 2014
FY 2009	DDG 1002	Sep 2022	43	26	Dec 2016

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2119 / DDG 1000
Equipment Item: INTEGRATED UNDERSEA WARFARE (IUSW) SYSTEM	**PARM Code:** IWS 5.0 XR

P-35 Category	FY 2007		FY 2009	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	2	95.829	1	54.300
Technical Support Services		11.293		5.639
Other / NRE		109.141		45.197
Total	**2**	**216.263**	**1**	**105.136**

Description:

The IUSW suite supports DDG 1000 in achieving Undersea and Surface Dominance with the capability to detect and track hostile surface vessels, submarines, and moored volume mines. It supports the Sensor Systems Segment in accomplishing its Integrated Air and Surface Dominance (IASD) and Integrated Undersea Dominance (IUSD) objectives by providing the capability to conduct Anti-Submarine Warfare (ASW), Torpedo Defense (TD) and Mine Warfare (MIW) missions. Military Operations Other than War (MOOTW) objectives, such as Search and Rescue (SAR) (locating downed aircraft and vessels in the ocean) are also supported. There are four major subcomponents: Bow Array Component, Towed Array Component, Towed Torpedo Countermeasures Component, as well as software.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2007	DDG 1000	Raytheon	C/CPIF	May 2008		2	47.915
FY 2009	DDG 1002	Raytheon	C/CPIF	Oct 2012		1	54.300

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2007	DDG 1000	Mar 2020	47	18	Oct 2014
FY 2009	DDG 1002	Sep 2022	46	18	May 2017

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2119 / DDG 1000
Equipment Item: MULTI FUNCTION RADAR (MFR)	**PARM Code:** IWS 2.0 SQ

P-35 Category	FY 2007 Qty (Each)	FY 2007 Total Cost ($ M)	FY 2009 Qty (Each)	FY 2009 Total Cost ($ M)
Major Hardware	2	314.313	1	189.573
Technical Support Services		21.993		11.145
Other / NRE		183.303		97.281
Total	**2**	**519.609**	**1**	**297.999**

Description:

The Multi Function Radar (MFR) element supports the DDG 1000 system in achieving Integrated Air and Surface Dominance with the capability to neutralize hostile surface vessels and aircraft at short ranges. The MFR is comprised of X-Band (AN/SPY-3) arrays integrated through a common signal data processor offering surface and horizon search capabilities and 3-D air search radar capabilities. The X-Band portion also has two navigation modes (high power and lower power) for use in piloting and marine navigation.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2007	DDG 1000	Raytheon	C/CPIF	Mar 2008		2	157.157
FY 2009	DDG 1002	Raytheon	C/CPIF	Oct 2012		1	189.573

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2007	DDG 1000	Mar 2020	45	28	Feb 2014
FY 2009	DDG 1002	Sep 2022	36	28	May 2017

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2119 / DDG 1000
Equipment Item: COMMON ARRAY POWER SYSTEM (CAPS)	**PARM Code:** IWS 2.0 SQ

P-35 Category	FY 2007 Qty (Each)	FY 2007 Total Cost ($ M)	FY 2009 Qty (Each)	FY 2009 Total Cost ($ M)
Major Hardware	2	56.185	1	12.624
Battle Spares		1.000		-
Technical Support Services		4.490		0.420
Other / NRE		35.342		3.365
Total	**2**	**97.017**	**1**	**16.409**

Description:

The Common Array Power System (CAPS) provides electrical power for the Multi Function Radar (MFR), Identification of Friend or Foe (IFF), EW/Cryptology and External Communications (EXCOMMs) Elements. The CAPS is a distributed power system designed to operate from the ship-supplied medium voltage distribution Integrated Power System's (IPS) 13.8 kV AC power source. The CAPS consists of two Power Distribution Units (PDUs) and four Power Conversion Units (PCUs).

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2007	DDG 1000	Raytheon	C/CPIF	Mar 2008		2	28.093
FY 2009	DDG 1002	Raytheon	C/CPIF	Nov 2012		1	12.624

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2007	DDG 1000	Mar 2020	48	28	Nov 2013
FY 2009	DDG 1002	Sep 2022	35	28	Jun 2017

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2119 / DDG 1000
Equipment Item: TOTAL SHIP COMPUTING ENVIRONMENT (TSCE)	**PARM Code:** IWS 9.0 XV

P-35 Category	FY 2007		FY 2009	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	2	196.450	1	147.453
Technical Support Services		21.834		10.499
Other / NRE		164.307		101.239
Total	**2**	**382.591**	**1**	**259.191**

Description:

The Total Ship Computing Environment (TSCE) Segment provides all computing resources and associated software to the DDG 1000 System. It is a single computing environment for Ship, Combat and Support Systems. The TSCE provides a common middleware platform upon which all application/functional software can build and execute. The segment applications software, combined with TSCE hardware and software infrastructure represent the majority of the computing resources and associated software for the DDG 1000 System.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2007	DDG 1000	Raytheon	C/CPIF	May 2008		2	98.225
FY 2009	DDG 1002	Raytheon	C/CPIF	Oct 2012		1	147.453

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2007	DDG 1000	Mar 2020	48	21	Jun 2014
FY 2009	DDG 1002	Sep 2022	43	21	May 2017

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2119 / DDG 1000
Equipment Item: ELECTRO-OPTICAL / INFRARED (EO/IR)	**PARM Code:** IWS 2.0 SJ

P-35 Category	FY 2007		FY 2009	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	2	33.368	1	12.973
Technical Support Services		6.900		1.551
Other / NRE		54.143		16.928
Total	**2**	**94.411**	**1**	**31.452**

Description:

The Electro-Optical / Infrared (EO/IR) Sensor Suite Element is composed of both the hardware and software components required to detect and range on specified targets and report track data to C2. The EO/IR sensor suite consists of five (5) gimbaled EO sensors located on the cardinal faces of the deckhouse and associated electronics in Electronic Modular Enclosures (EMEs). Also included are Detect and Tracking Software components that provide embedded control and generate tracks for the C2 system and Mine Like Object (MLO) detection algorithm.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2007	DDG 1000	Raytheon	C/CPIF	May 2008		2	16.684
FY 2009	DDG 1002	Raytheon	C/CPIF	Nov 2012		1	12.973

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2007	DDG 1000	Mar 2020	47	22	Jun 2014
FY 2009	DDG 1002	Sep 2022	41	22	Jun 2017

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2119 / DDG 1000
Equipment Item: IDENTIFICATION FRIEND OR FOE (IFF)	**PARM Code:** NAVAIR

P-35 Category	FY 2007 Qty (Each)	FY 2007 Total Cost ($ M)	FY 2009 Qty (Each)	FY 2009 Total Cost ($ M)
Major Hardware	2	16.018	1	8.640
Technical Support Services		2.186		2.163
Other / NRE		17.328		17.335
Total	**2**	**35.532**	**1**	**28.138**

Description:

Identification Friend or Foe (IFF) sensor element supports the DDG 1000 Ship System segment in accomplishing Anti-Air Warfare (AAW) and Anti-Surface Warfare (ASUW) missions. The IFF Sensor Element is a cooperative "challenge and reply" system that assists in the rapid identification, tracking and control of friendly platforms. IFF is comprised of three hardware components to include the Interrogator component, the Transponder component and the Electronically Scanned Antenna (ESA) component, as well as software.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2007	DDG 1000	Raytheon	C/CPIF	May 2008		2	8.009
FY 2009	DDG 1002	Raytheon	C/CPIF	Dec 2012		1	8.640

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2007	DDG 1000	Mar 2020	40	29	Jun 2014
FY 2009	DDG 1002	Sep 2022	33	29	Jul 2017

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2119 / DDG 1000
Equipment Item: COMMON ARRAY COOLING SYSTEM (CACS)	**PARM Code:** IWS 2.0 SQ

P-35 Category	FY 2007 Qty (Each)	FY 2007 Total Cost ($ M)	FY 2009 Qty (Each)	FY 2009 Total Cost ($ M)
Major Hardware	2	11.766	1	-
Battle Spares		1.000		-
Technical Support Services		0.824		0.107
Other / NRE		6.475		0.858
Total	**2**	**20.065**	**1**	**0.965**

Description:

The Common Array Cooling System (CACS) provides liquid cooling for the Multi Function Radar (MFR) and External Communications (EXCOMMs) arrays. CACS is a distributed cooling system consisting of three Cooling Equipment Units (CEUs). Each CEU operates an independent coolant loop used to transport, monitor and control coolant flow to the DBR and EXCOMMs Equipment. CEUs consist of redundant pumps, a heat exchanger and filtration system. It is designed to provide liquid coolant to the MFR and EXCOMM equipment and dissipate heat to the ship-supplied chilled water.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2007	DDG 1000	Raytheon	C/CPIF	May 2008		2	5.883
FY 2009	DDG 1002	Raytheon	C/CPIF	Nov 2012		1	0.000

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2007	DDG 1000	Mar 2020	49	28	Oct 2013
FY 2009	DDG 1002	Sep 2022	35	28	Jun 2017

Competition/Second Source Initiatives:

N/A

Remarks:

CACS Technical Services are incorporated into DBR Technical Services. DDG 1002 CACS costs are included in the DDG 1002 MFR value.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2119 / DDG 1000
Equipment Item: SHIP CONTROL SYSTEM (SCS)	**PARM Code:** SPAWAR

P-35 Category	FY 2007 Qty (Each)	FY 2007 Total Cost ($ M)	FY 2009 Qty (Each)	FY 2009 Total Cost ($ M)
Major Hardware	2	58.000	1	42.801
Technical Support Services		6.031		8.256
Other / NRE		47.496		66.172
Total	**2**	**111.527**	**1**	**117.229**

Description:

The Flight 1 Ship Control System (SCS) element is a system of hardware and software items that provide hierarchical and integrated ship control by the DDG 1000 crew. The SCS software architecture allows for various levels of automation for monitoring, control, reporting and configuration of SCS equipment and operations to support mission and low manning concepts. From workstation positions on the ship bridge or in the ship mission centers, the SCS coordinates, controls and monitors the navigation, hull, electric plant, machinery plant and damage control functions on the DDG 1000.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2007	DDG 1000	Raytheon	C/CPIF	May 2008		2	29.000
FY 2009	DDG 1002	Raytheon	C/CPIF	May 2012		1	42.801

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2007	DDG 1000	Mar 2020	38	31	Jun 2014
FY 2009	DDG 1002	Sep 2022	38	31	Dec 2016

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2119 / DDG 1000
Equipment Item: COOPERATIVE ENGAGEMENT CAPABILITY (CEC)	**PARM Code:** IWS 6.0 XN

P-35 Category	FY 2007 Qty (Each)	FY 2007 Total Cost ($ M)	FY 2009 Qty (Each)	FY 2009 Total Cost ($ M)
Major Hardware	2	12.000	1	6.800
Technical Support Services		4.025		1.000
Total	**2**	**16.025**	**1**	**7.800**

Description:

Cooperative Engagement Capability (CEC) is a sensor network with Integrated Fire Control capability that significantly improves Battle Force air and missile defense capabilities by coordinating measurement data from Battle Force air search sensors on CEC-equipped units into a single, real-time, composite cooperating unit (CU), to all other CUs in the Battle Force through a real-time, line of sight, high data rate sensor and engagement data distribution network. CEC is highly resistant to jamming and provides accurate grid locking (relative spatial positioning) between CUs. Each CU independently employs high capacity, parallel processing and advanced algorithms to combine all distributed sensor data into a high quality track picture that is the same for all CUs. CEC data is presented as a superset of the best air and missile defense sensor capabilities from each CU, all of which are integrated into a single input to each CU's combat weapon system. CEC significantly improves Battle Force defense in depth, including both local and area defense capabilities against current and future air missile threats.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2007	DDG 1000	Raytheon	C/FPIF	Feb 2007		2	6.000
FY 2009	DDG 1002	Raytheon	C/FPIF	Oct 2013		1	6.800

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2007	DDG 1000	Mar 2020	34	18	Nov 2015
FY 2009	DDG 1002	Sep 2022	34	18	May 2018

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2119 / DDG 1000
Equipment Item: SURFACE ELECTRONIC WARFARE IMPROVEMENT PROGRAM (SEWIP)	**PARM Code:** IWS 2.0 SJ

P-35 Category	FY 2007		FY 2009	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	2	36.214	1	15.906
Technical Support Services		2.406		0.935
Other / NRE		1.622		0.841
Total	**2**	**40.242**	**1**	**17.682**

Description:

SEWIP provides enhanced Electronic Warfare (EW) capabilities to improve anti-ship missile defense, counter-targeting and counter surveillance capabilities, as well as improved situational awareness to pace the threat, improving detection, accuracy, and mitigation of EMI. The SEWIP Block 2 is an upgraded antenna, receiver and combat system interface for AN/SLQ-32.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2007	DDG 1000	Lockheed Martin	C/FPIF	Jul 2012		2	18.107
FY 2009	DDG 1002	Lockheed Martin	C/FPIF	Jan 2015		1	15.906

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2007	DDG 1000	Mar 2020	2	19	Jun 2018
FY 2009	DDG 1002	Sep 2022	2	16	Mar 2021

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2119 / DDG 1000
Equipment Item: VERTICAL LAUNCHING SYSTEM (VLS) MK 57 4-CELL MODULES	**PARM Code:** IWS 3L S8

P-35 Category	FY 2007		FY 2009	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	40	180.987	20	234.670
Technical Support Services		9.029		4.231
Other / NRE		86.766		63.914
Total	**40**	**276.782**	**20**	**302.815**

Description:

The MK 57 VLS is a general purpose, operationally unmanned launching system capable of stowing, preparing, and launching missiles in support of DDG-1000 mission areas including: land attack warfare, integrated air and surface dominance, and integrated undersea dominance. The MK57 VLS provides the capability for rapid launch of missiles into a 360-degree hemispherical volume above and about the ship. The canistered missiles are stowed within the launching systems below-deck cells. DDG-1000 will have 80 total cells grouped into 20 four-cell modules. Flight 1 missiles to be carried include: Enhanced Sea Sparrow Missile (ESSM), Standard Missile-2 (SM-2) Blk III, Tomahawk Land Attack Missile (TLAM) Blk III/IV, and Vertical Launch Anti-Submarine Rocket (VLA).

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2007	DDG 1000	Raytheon	C/CPIF	May 2008		40	4.525
FY 2009	DDG 1002	Raytheon	C/CPIF	Oct 2012		20	11.734

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2007	DDG 1000	Mar 2020	40	24	Nov 2014
FY 2009	DDG 1002	Sep 2022	40	24	May 2017

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2119 / DDG 1000
Equipment Item: MAIN TURBINE GENERATOR (MTG)	**PARM Code:** PMS 500 WA

P-35 Category	FY 2007 Qty (Each)	FY 2007 Total Cost ($ M)	FY 2009 Qty (Each)	FY 2009 Total Cost ($ M)
Major Hardware	4	73.262	2	39.412
Technical Support Services		6.126		-
Other / NRE		5.409		-
Total	**4**	**84.797**	**2**	**39.412**

Description:

The Main Turbine Generator Set (MTG) shall be capable of being utilized as the prime power source on the DDG 1000 Destroyer for electrical power applications (propulsion, ship services, and combat systems loads). The DDG 1000 baseline includes two MTGs. The minimum output power from each MTG shall be 35.25 MWe. The engine utilizes a Full Authority Digital Control Local Operating Panel (FADC LOCOP) and electric start system. The generator contains redundant automatic voltage regulators (AVR) with automatic changeover.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2007	DDG 1000	Rolls-Royce	C/FFP	Mar 2007	New	4	18.316
FY 2009	DDG 1002	Rolls-Royce	C/FFP	Jan 2008	Option	2	19.706

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2007	DDG 1000	Mar 2020	33	24	Jun 2015
FY 2009	DDG 1002	Sep 2022	33	24	Dec 2017

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2119 / DDG 1000
Equipment Item: ADVANCED GUN SYSTEM (AGS)	**PARM Code:** IWS 3C YF

P-35 Category	FY 2007 Qty (Each)	FY 2007 Total Cost ($ M)	FY 2009 Qty (Each)	FY 2009 Total Cost ($ M)
Major Hardware	4	298.654	2	206.747
Technical Support Services		14.500		3.860
Other / NRE		145.557		37.989
Total	**4**	**458.711**	**2**	**248.596**

Description:

The Advanced Gun System is a fully automated, single barrel, 155mm, vertically loaded, stabilized gun mount that is capable of storing, initializing/programming, loading and firing projectiles and propelling charges. Its primary mission is Land Attack Warfare in support of ground and expeditionary forces beyond the Line of Sight in the DDG 1000 system's littoral engagement area where precise, rapid-response, high-volume, long-range fire support is required. Each DDG 1000 will carry two complete AGS systems - Mount 61 and 62. The above deck configurations are identical but each has a slightly different below deck configuration.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2007	DDG 1000	BAE	C/CPIF	Apr 2008		4	74.664
FY 2009	DDG 1002	BAE	C/CPIF	Apr 2012		2	103.374

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2007	DDG 1000	Mar 2020	31	39	May 2014
FY 2009	DDG 1002	Sep 2022	31	39	Nov 2016

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2119 / DDG 1000
Equipment Item: CLOSE-IN GUN SYSTEM (CIGS)	**PARM Code:** IWS 3C YF

P-35 Category	FY 2007 Qty (Each)	FY 2007 Total Cost ($ M)	FY 2009 Qty (Each)	FY 2009 Total Cost ($ M)
Major Hardware	4	16.034	2	7.534
Technical Support Services		7.177		3.381
Other / NRE		12.940		2.880
Total	**4**	**36.151**	**2**	**13.795**

Description:

The Close-In Gun System (CIGS) supports the DDG 1000 system in achieving Integrated Air and Surface Dominance with the capability to neutralize hostile surface vessels and aircraft at short ranges. CIGS also supports the Military Operations Other than War (MOOTW) missions, such as performing maritime interdiction, conducting maritime law enforcement, and supporting hostage rescue. Two (2) CIGS will be mounted on the aft end of the hanger. The CIGS MK 46 MOD 2 GWS is composed of a turret assembly that houses the MK 44 MOD 2 cannon and an advanced Fire Control System that includes a ballistic solution computer, an electro-optical sensor package, and an eye-safe laser range finder. The system uses a forward-looking infrared sensor, a low-light television camera, and eye safe laser range finder with a closed-loop tracking system to optimize accuracy against small, high-speed surface targets. The system can be operated locally from the gun control station inside the turret, remotely from the MK 46 MOD 2 GWS Remote Gun Station Operator (RGSO) panel in the Combat Information Center (CIC), or manually using hand cranks from inside the turret. The 30mm cannon, MK 44 MOD 2, is a single barrel, open bolt, dual feed, electrically powered, chain-driven automatic cannon. The system has a magazine capacity of 424 rounds, a dual-feed capability with a firing rate of 200 rounds per minute, and is capable of selectively switching between ammunition types and firing modes.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2007	DDG 1000	General Dynamics Land Systems	C/FFP	Jan 2015		4	4.008
FY 2009	DDG 1002	General Dynamics Land Systems	C/FFP	Mar 2016		2	3.767

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2007	DDG 1000	Mar 2020	6	22	Nov 2017
FY 2009	DDG 1002	Sep 2022	6	18	Sep 2020

Competition/Second Source Initiatives:

N/A

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 02: Other Warships / BSA 1: Other Warships	**P-1 Line Item Number / Title:** 2122 / DDG-51

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: N/A

Line Item MDAP/MAIS Code: N/A

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity *(Units in Each)*	79	3	3	2	-	2	2	1	2	1	2	95
Gross/Weapon System Cost *($ in Millions)*	83,832.970	5,289.199	5,428.955	3,836.905	0.000	3,836.905	3,865.271	1,988.578	3,989.057	2,033.184	4,266.420	114,530.539
Less PY Advance Procurement *($ in Millions)*	2,911.459	-	-	-	-	-	-	-	-	-	-	2,911.459
Less Cost To Complete *($ in Millions)*	1,225.289	-	-	-	-	-	-	-	-	-	-	1,225.289
Less Subsequent Year Full Funding *($ in Millions)*	433.000	-	-	-	-	-	-	-	-	-	-	433.000
Less Hurricane *($ in Millions)*	227.100	-	-	-	-	-	-	-	-	-	-	227.100
Less EOQ *($ in Millions)*	421.584	39.362	363.660	796.635	-	796.635	305.932	-	168.679	100.202	279.320	2,475.374
Less Escalation *($ in Millions)*	48.200	-	-	-	-	-	-	-	-	-	-	48.200
Less Transfer *($ in Millions)*	218.500	-	-	-	-	-	-	-	-	-	-	218.500
Net Procurement (P-1) *($ in Millions)*	78,347.838	5,249.837	5,065.295	3,040.270	0.000	3,040.270	3,559.339	1,988.578	3,820.378	1,932.982	3,987.100	106,991.617
Plus Subsequent Year Full Funding *($ in Millions)*	433.000	-	-	-	-	-	-	-	-	-	-	433.000
Full Funding TOA *($ in Millions)*	78,780.838	5,249.837	5,065.295	3,040.270	-	3,040.270	3,559.339	1,988.578	3,820.378	1,932.982	3,987.100	107,424.617
Plus CY Advance Procurement *($ in Millions)*	3,333.043	-	-	-	-	-	-	-	-	-	-	3,333.043
Plus Cost To Complete *($ in Millions)*	1,102.185	37.266	-	9.634	-	9.634	33.077	14.242	25.914	2.971	-	1,225.289
Plus EOQ *($ in Millions)*	90.336	641.928	744.028	29.297	-	29.297	-	373.130	175.071	-	-	2,053.790
Plus Escalation *($ in Millions)*	48.200	-	-	-	-	-	-	-	-	-	-	48.200
Plus Transfer *($ in Millions)*	218.500	-	-	-	-	-	-	-	-	-	-	218.500
Plus Hurricane *($ in Millions)*	227.100	-	-	-	-	-	-	-	-	-	-	227.100
Total Obligation Authority *($ in Millions)*	**83,800.202**	**5,929.031**	**5,809.323**	**3,079.201**	**0.000**	**3,079.201**	**3,592.416**	**2,375.950**	**4,021.363**	**1,935.953**	**3,987.100**	**114,530.539**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Plus Outfitting and Post Delivery *($ in Millions)*	2,437.140	50.869	86.353	134.203	-	134.203	136.298	114.818	117.114	119.457	1,011.957	4,208.209
Total *($ in Millions)*	**86,237.342**	**5,979.900**	**5,895.676**	**3,213.404**	**-**	**3,213.404**	**3,728.714**	**2,490.768**	**4,138.477**	**2,055.410**	**4,999.057**	**118,738.748**
Gross/Weapon System Unit Cost *($ in Millions)*	1,061.177	1,763.066	1,809.652	1,918.453	-	1,918.453	1,932.636	1,988.578	1,994.529	2,033.184	2,133.210	1,205.585

Description:

DDG 51 will be able to operate offensively and defensively, independently or as units of Carrier Strike Groups and Surface Action Groups, in support of Marine Amphibious Task Forces in multi-threat environments that include air, surface and subsurface threats. These ships will respond to Low Intensity Conflict/Coastal and Littoral Offshore Warfare (LIC/CALOW) scenarios as well as open ocean conflict providing or augmenting power projection and forward presence requirements, and escort operations at sea. Beginning in FY17, DDG 51 Flight III with the Air and Missile Defense Radar (SPY-6) will significantly enhance Integrated Air and Missile Defense capability against current and future threats. Starting in FY21, Bridge System Upgrades will be incorporated for improved navigation capability. Starting in FY22, Surface Electronic Warfare Improvement Program (SEWIP) Block 3 will provide Electronic Attack (EA) capability improvements against current and future threats.

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy		Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 02: Other Warships / BSA 1: Other Warships	**P-1 Line Item Number / Title:** 2122 / DDG-51	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** N/A
Line Item MDAP/MAIS Code: N/A		

Note:
(1) The FY18-22 acquisition strategy is a 10 ship Multi-year Procurement (MYP) with options. The FY 2021 President's Budget request reflects savings for the ships in FY18-FY22 associated with EOQ procurement and a MYP strategy. Additional ships in FY19 and FY20 also reflect quantity savings over annual ship prices.
(2) The prior years column reflects the $44.5M FY12 reduction of AP to the DDG 51 program.
(3) The FY19 EOQ and FY22 Gross Weapon System Cost is overstated by $51.0M as this exhibit does not reflect the FY19 rescission of DDG-51 AP from the Department of Defense Appropriations Act, 2020.

Characteristics:	**FLIGHT IIA**	**FLIGHT III**
Length Overall	509 ft	509 ft
Beam	59 ft	59 ft
Displacement	9217 TONS	9650 TONS
Draft	-	

Production Status:	**DDG 118** (1)	**DDG 120**	**DDG 119**	**DDG 121**	**DDG 122**	**DDG 123**	**DDG 124**
Contract Award Date	Jun 2013	Mar 2014	Jun 2013	Jun 2013	Jun 2013	Jun 2013	Jun 2013
Months to Completion							
a) Award to Delivery	89 months	88 months	82 months	92 months	103 months	97 months	108 months
b) Construction Start to Delivery	63 months	58 months	57 months	58 months	52 months	54 months	47 months
Delivery Date	Nov 2020	Jul 2021	Apr 2020	Feb 2021	Jan 2022	Jul 2021	Jun 2022
Completion Of Fitting Out	Apr 2021	Nov 2021	Sep 2020	Jun 2021	May 2022	Nov 2021	Oct 2022
Obligation Work Limit Date	Mar 2022	Oct 2022	Aug 2021	May 2022	Apr 2023	Oct 2022	Sep 2023

Production Status:	**DDG 127**	**DDG 125** (2)	**DDG 126** (3)	**DDG 128**	**DDG 129**	**DDG 130**	**DDG 131**
Contract Award Date	Sep 2017	Jun 2013	Jun 2013	Sep 2018	Sep 2018	Sep 2018	Sep 2018
Months to Completion							
a) Award to Delivery	62 months	118 months	132 months	73 months	82 months	82 months	91 months
b) Construction Start to Delivery	43 months	59 months	50 months	52 months	50 months	60 months	49 months
Delivery Date	Nov 2022	Apr 2023	Jun 2024	Oct 2024	Jul 2025	Jul 2025	Apr 2026
Completion Of Fitting Out	Mar 2023	Aug 2023	Oct 2024	Feb 2025	Nov 2025	Nov 2025	Aug 2026
Obligation Work Limit Date	Feb 2024	Jul 2024	Sep 2025	Jan 2026	Oct 2026	Oct 2026	Jul 2027

Production Status:	**DDG 132**	**DDG 134**	**DDG 133**	**DDG 135** (4)	**DDG 136** (5)	**DDG 137**
Contract Award Date	Dec 2018	Sep 2018	Sep 2018	Jun 2020	Sep 2018	Sep 2018
Months to Completion						
a) Award to Delivery	89 months	98 months	98 months	81 months	105 months	108 months
b) Construction Start to Delivery	59 months	55 months	49 months	52 months	53 months	52 months
Delivery Date	May 2026	Nov 2026	Nov 2026	Mar 2027	Jun 2027	Sep 2027
Completion Of Fitting Out	Sep 2026	Mar 2027	Mar 2027	Aug 2027	Oct 2027	Jan 2028
Obligation Work Limit Date	Aug 2027	Feb 2028	Feb 2028	Jul 2028	Sep 2028	Dec 2028

Design Schedule	Start / Issue	Complete / Response	Reissue	Reissue Complete / Response
Issue Date for TLR	Jun 1983	N/A		
Issue Date for TLS	N/A	N/A		

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy		**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 02: Other Warships / BSA 1: Other Warships	**P-1 Line Item Number / Title:** 2122 / DDG-51	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** N/A
Line Item MDAP/MAIS Code: N/A		

Design Schedule	Start / Issue	Complete / Response	Reissue	Reissue Complete / Response
Preliminary Design	Mar 1982	Dec 1982		
Contract Design	May 1983	Jun 1984		
Detail Design	N/A	N/A		
Request for Proposals	N/A	N/A		
Design Agent	BIW			

Classification of Cost Estimate: CLASS C BUDGET ESTIMATE

Footnotes:

(1) DDG 118 - DDG 124 reflects actual and contract milestone dates based on ship production progress.

(2) DDG 125 reflects actual and contract milestone dates based on ship production progress.

(3) DDG 126- DDG 134 reflects contract milestone dates.

(4) DDG 135 Reflects notional dates

(5) DDG 136- DDG 139 reflect contract milestone dates.

Exhibit P-5c, Ship Cost Analysis: PB 2021 Navy | **Date:** February 2020

Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1

P-1 Line Item Number / Title: 2122 / DDG-51

Cost Categories (†) indicates the presence of a P-8a	FY 2013		FY 2014		FY 2015		FY 2016		FY 2017		FY 2018		FY 2019		FY 2020	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Plan Costs	3	67.450	1	74.980	2	68.814	3	204.160	2	81.454	2	72.811	3	74.195	3	75.713
Basic Construction/Conversion		2,171.586		718.189		1,463.210		2,299.208		1,662.382		1,749.226		2,796.814		2,894.944
Change Orders		60.461		21.087		42.133		122.000		41.307		53.196		83.164		85.974
Electronics (†)		544.024		226.095		349.746		533.916		346.044		379.000		576.510		597.388
Hull, Mechanical, and Electrical (HM&E) (†)		191.246		91.207		159.533		223.907		153.668		164.571		224.300		226.260
Ordnance (†)		1,176.955		523.108		838.247		1,469.584		1,008.587		865.400		1,457.000		1,467.208
Other Cost		81.240		76.736		77.775		73.033		73.971		75.846		77.216		81.468
Total Ship Estimate		**4,292.962**		**1,731.402**		**2,999.458**		**4,925.808**		**3,367.413**		**3,360.050**		**5,289.199**		**5,428.955**
Less Advance Procurement FY 2012		92.454		-		-		-		-		-		-		-
Less Advance Procurement FY 2015		-		-		-		134.039		-		-		-		-
Less Subsequent Full Funding FY 2017		-		-		-		433.000		-		-		-		-
Less Cost to Complete FY 2014		100.000		-		-		-		-		-		-		-
Less Cost to Complete FY 2018		31.941		-		-		-		-		-		-		-
Less Cost to Complete FY 2019		37.266		-		-		-		-		-		-		-
Less Cost to Complete FY 2021		-		-		9.634		-		-		-		-		-
Less Cost to Complete FY 2022		-		-		33.077		-		-		-		-		-
Less Cost to Complete FY 2023		-		-		-		14.242		-		-		-		-
Less Cost to Complete FY 2024		-		-		-		22.882		3.032		-		-		-
Less Cost to Complete FY 2025		-		-		-		-		-		2.971		-		-
Less EOQ FY 2013		-		115.838		224.851		108.345		13.677		-		-		-
Less EOQ FY 2014		-		-		69.989		130.650		168.912		-		-		-
Less EOQ FY 2018		-		-		-		-		-		-		39.362		25.940
Less EOQ FY 2019		-		-		-		-		-		-		-		337.720
Less EOQ FY 2020		-		-		-		-		-		-		-		-
Net P-1 Funding		**4,031.301**		**1,615.564**		**2,661.907**		**4,082.650**		**3,181.792**		**3,357.079**		**5,249.837**		**5,065.295**

Exhibit P-5c, Ship Cost Analysis: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2122 / DDG-51

Cost Categories (†) indicates the presence of a P-8a	**FY 2021**	
	Qty *(Each)*	**Total Cost** *($ M)*
Plan Costs	2	77.117
Basic Construction/Conversion		2,036.333
Change Orders		56.334
Electronics (†)		413.024
Hull, Mechanical, and Electrical (HM&E) (†)		161.970
Ordnance (†)		1,014.534
Other Cost		77.593
Total Ship Estimate		**3,836.905**
Less Advance Procurement FY 2012		-
Less Advance Procurement FY 2015		-
Less Subsequent Full Funding FY 2017		-
Less Cost to Complete FY 2014		-
Less Cost to Complete FY 2018		-
Less Cost to Complete FY 2019		-
Less Cost to Complete FY 2021		-
Less Cost to Complete FY 2022		-
Less Cost to Complete FY 2023		-
Less Cost to Complete FY 2024		-
Less Cost to Complete FY 2025		-
Less EOQ FY 2013		-
Less EOQ FY 2014		-
Less EOQ FY 2018		12.517
Less EOQ FY 2019		152.104
Less EOQ FY 2020		632.014
Net P-1 Funding		**3,040.270**

Remarks:
FY20 AP for FY21 ships of $632.014M includes $130M Congressional Add AP funding for Surface Combatant Supplier Base. This is shown under the basic construction/conversion P-5c cost category.

Exhibit P-27, Ship Production Schedule: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2122 / DDG-51

Ship	Shipbuilder	Fiscal Year	Contract Award	Start of Construction	Delivery Date
DDG 118 (1)	Bath Iron Works	2013	Jun 2013	Aug 2015	Nov 2020
DDG 120	Bath Iron Works	2013	Mar 2014	Sep 2016	Jul 2021
DDG 119	Huntington Ingalls Industries	2014	Jun 2013	Jul 2015	Apr 2020
DDG 121	Huntington Ingalls Industries	2015	Jun 2013	Apr 2016	Feb 2021
DDG 122	Bath Iron Works	2015	Jun 2013	Sep 2017	Jan 2022
DDG 123	Huntington Ingalls Industries	2016	Jun 2013	Jan 2017	Jul 2021
DDG 124	Bath Iron Works	2016	Jun 2013	Jul 2018	Jun 2022
DDG 127	Bath Iron Works	2016	Sep 2017	Apr 2019	Nov 2022
DDG 125 (2)	Huntington Ingalls Industries	2017	Jun 2013	May 2018	Apr 2023
DDG 126 (3)	Bath Iron Works	2017	Jun 2013	Apr 2020	Jun 2024
DDG 128	Huntington Ingalls Industries	2018	Sep 2018	Jun 2020	Oct 2024
DDG 129	Huntington Ingalls Industries	2018	Sep 2018	May 2021	Jul 2025
DDG 130	Bath Iron Works	2019	Sep 2018	Jul 2020	Jul 2025
DDG 131	Huntington Ingalls Industries	2019	Sep 2018	Mar 2022	Apr 2026
DDG 132	Bath Iron Works	2019	Dec 2018	Jun 2021	May 2026
DDG 134	Bath Iron Works	2020	Sep 2018	Apr 2022	Nov 2026
DDG 133	Huntington Ingalls Industries	2020	Sep 2018	Oct 2022	Nov 2026
DDG 135 (4)	TBD	2020	Jun 2020	Nov 2022	Mar 2027
DDG 136 (5)	Bath Iron Works	2021	Sep 2018	Jan 2023	Jun 2027
DDG 137	Huntington Ingalls Industries	2021	Sep 2018	May 2023	Sep 2027
DDG 138	Bath Iron Works	2022	Sep 2018	Aug 2023	Dec 2027
DDG 139	Huntington Ingalls Industries	2022	Sep 2018	Mar 2024	Apr 2028
DDG 140 (6)	TBD	2023	Jun 2023	Jul 2024	Jul 2028
DDG 141	TBD	2024	Jun 2023	Jul 2025	Jul 2029
DDG 142	TBD	2024	Jun 2023	Jul 2025	Jul 2029
DDG 143	TBD	2025	Jun 2023	Jul 2026	Jul 2030

Footnotes:

(1) DDG 118 - DDG 124 reflects actual and contract milestone dates based on ship production progress.

(2) DDG 125 reflects actual and contract milestone dates based on ship production progress.

(3) DDG 126- DDG 134 reflects contract milestone dates.

(4) DDG 135 Reflects notional dates

Exhibit P-27, Ship Production Schedule: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2122 / DDG-51

(5) DDG 136- DDG 139 reflect contract milestone dates.

(6) DDG 140 and follow are notional. Ships reflect notional dates.

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy | **Date:** February 2020

Appropriation / Budget Activity / Budget Sub Activity:
1611N / 02 / 1

P-1 Line Item Number / Title:
2122 / DDG-51

Electronics	FY 2019		FY 2020		FY 2021	
	Qty *(Each)*	Total Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*
P-35 Items						
SQQ 89 ASW	3	124.991	3	148.191	2	100.968
AN/SLQ-32 (V)6 SEWIP	3	47.897	3	48.855	2	33.286
USQ 82(V) GEDMS	3	43.196	3	44.060	2	30.020
EXCOMM	3	153.667	3	156.413	2	106.570
AN/UPX 29(V) IFF and TACAN	3	22.265	3	22.710	2	15.474
CEC	3	16.947	3	17.284	2	11.776
P-35 Items Subtotal		**408.963**		**437.513**		**298.094**
Major Items						
NAVIGATION SYSTEM	3	12.035	3	12.274	2	8.362
SLQ 25 NIXIE	3	4.971	3	5.070	2	3.454
SRQ 4 LAMPS III	3	13.310	3	13.575	2	9.250
SSEE/SPECTRAL	3	51.000	3	51.000	2	34.748
MIDS	3	10.356	3	10.563	2	7.196
MK 53 NULKA	3	6.789	3	6.926	2	4.718
TSA ANTENNA	3	5.408	3	5.515	2	3.758
Major Items Subtotal		**103.869**		**104.923**		**71.486**
Other Cost Elements						
MISC. ELECTRONICS	3	63.678	3	54.952	2	43.444
Other Cost Elements Subtotal		**63.678**		**54.952**		**43.444**
Total Electronics		**576.510**		**597.388**		**413.024**

Remarks:
FY20 and later reflects the addition of the Multi-Function Towed Array (MFTA) sensor along with the Handling and Stowage Gear (H&SG) as part of in-line construction of new DDG-51 class ships as part of the SQQ-89 ASW system.

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2122 / DDG-51

Hull, Mechanical, and Electrical (HM&E)	FY 2019		FY 2020		FY 2021	
	Qty *(Each)*	Total Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*
P-35 Items						
STC 3 IVCS	3	23.298	3	23.765	2	16.160
Main Reduction Gear	3	114.168	3	116.451	2	79.188
P-35 Items Subtotal		**137.466**		**140.216**		**95.348**
Major Items						
Machinery Control System	3	16.251	3	16.576	2	11.272
Integrated Bridge Navigation System	3	14.021	3	14.301	2	12.694
CYBER BDC	3	11.300	3	9.000	2	6.200
Major Items Subtotal		**41.572**		**39.877**		**30.166**
Other Cost Elements						
MISC. HM&E	3	45.262	3	46.167	2	36.456
Other Cost Elements Subtotal		**45.262**		**46.167**		**36.456**
Total Hull, Mechanical, and Electrical (HM&E)		**224.300**		**226.260**		**161.970**

Remarks:

FY19 and future years include the introduction of the Boundary Defense Capability (BDC) and cyber Situational Awareness (SA) capability for core H,M&E systems on new construction DDG-51 ships. FY19 Cyber BDC includes efforts for cabinet qualifications, Technical Data Package (TDP) updates, and installation support services for implementation in DDG 51 new construction.
FY21 and future years include the introduction of Bridge System Modifications to improve navigation capabilities on new construction DDG 51 ships.

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy | **Date:** February 2020

Appropriation / Budget Activity / Budget Sub Activity:
1611N / 02 / 1

P-1 Line Item Number / Title:
2122 / DDG-51

Ordnance	FY 2019		FY 2020		FY 2021	
	Qty *(Each)*	Total Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*
P-35 Items						
AEGIS WEAPON SYSTEM (MK-7)	3	390.356	3	398.163	2	297.298
AN/SPY-6 (AMDR)	3	499.466	3	497.700	2	338.436
VLS MK 41	3	163.190	3	166.454	2	113.188
MK 45 Light Weight Gun (LWG)	3	80.907	3	82.526	2	56.118
MK 37 TOMAHAWK	3	39.785	3	40.580	2	27.594
PHALANX (CIWS)	3	25.859	3	26.376	2	17.936
SPQ-9B Radar	3	29.231	3	29.816	2	20.276
P-35 Items Subtotal		**1,228.794**		**1,241.615**		**870.846**
Major Items						
MK 32 Surface Vessel Torpedo Tubes (SVTT)	3	9.335	3	9.520	2	6.474
ELECTRO-OPTICAL SYSTEM	3	9.878	3	10.075	2	6.852
MK 160 Gun Fire Control System (GFCS)	3	10.272	3	10.477	2	7.124
Major Items Subtotal		**29.485**		**30.072**		**20.450**
Other Cost Elements						
MISC. ORDNANCE	3	198.721	3	195.521	2	123.238
Other Cost Elements Subtotal		**198.721**		**195.521**		**123.238**
Total Ordnance		**1,457.000**		**1,467.208**		**1,014.534**

Remarks:

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2122 / DDG-51
Equipment Item: SQQ 89 ASW	**PARM Code:** N/A

P-35 Category	FY 2019		FY 2020		FY 2021	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	3	72.480	3	94.629	2	64.300
Spares		1.542		1.573		1.068
System Engineering		12.944		13.203		8.972
Technical Engineering Services		7.518		7.668		5.210
Other Costs		30.507		31.118		21.418
Total	**3**	**124.991**	**3**	**148.191**	**2**	**100.968**

Description:

Detect, classify, localize and track submerged submarines under all environmental conditions at long range from ASW ships, using bottom reflected and convergence zone acoustic paths. Starting in FY20, the Multi-Function Towed Array (MFTA) sensor along with the Handling and Stowage Gear (H&SG) is included as part of in-line construction of new DDG-51 class ships.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2019	DDG 130	LOCKHEED MARTIN	C/FFP	Jan 2019	Option	3	24.160
FY 2020	DDG 133	LOCKHEED MARTIN	C/FFP	Feb 2020	Option	3	31.543
FY 2021	DDG 136	LOCKHEED MARTIN	C/FFP	Mar 2021	Option	2	32.150

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2019	DDG 130	Jul 2025	41	24	Feb 2020
FY 2020	DDG 133	Nov 2026	41	24	Jun 2021
FY 2021	DDG 136	Jun 2027	41	24	Jan 2022

Competition/Second Source Initiatives:

Competitive

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2122 / DDG-51
Equipment Item: AN/SLQ-32 (V)6 SEWIP	**PARM Code:** N/A

P-35 Category	FY 2019		FY 2020		FY 2021	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	3	40.715	3	41.529	2	28.296
Spares		1.158		1.182		0.806
System Engineering		2.810		2.865		1.952
Technical Engineering Services		0.408		0.417		0.284
Other Costs		2.806		2.862		1.948
Total	**3**	**47.897**	**3**	**48.855**	**2**	**33.286**

Description:

SLQ-32(V)6 Surface Electronic Warfare Improvement Program (SEWIP) provides the DDG 51 Class Destroyers with the electronic warfare capability of automatically detecting, sorting, classifying, tracking, engaging and continually displaying emitter and platform densities.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2019	DDG 130	LM/GD-AIS	C/FFP	Mar 2019	Option	3	13.572
FY 2020	DDG 133	COMPETITIVE	C/FFP	Jan 2021	New	3	13.843
FY 2021	DDG 136	COMPETITIVE	C/FFP	Mar 2021	Option	2	14.148

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2019	DDG 130	Jul 2025	43	16	Aug 2020
FY 2020	DDG 133	Nov 2026	43	16	Dec 2021
FY 2021	DDG 136	Jun 2027	43	16	Jul 2022

Competition/Second Source Initiatives:

Competitive

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2122 / DDG-51
Equipment Item: USQ 82(V) GEDMS	**PARM Code:** N/A

P-35 Category	FY 2019		FY 2020		FY 2021	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	3	23.105	3	23.567	2	16.058
Technical Data and Documentation		2.055		2.096		1.428
System Engineering		4.980		5.081		3.462
Technical Engineering Services		0.840		0.856		0.584
Other Costs		12.216		12.460		8.488
Total	**3**	**43.196**	**3**	**44.060**	**2**	**30.020**

Description:

Gigabit Ethernet Data Multiplex System (GEDMS) is the mission critical ship-wide network that transfers data associated with Machinery, Steering, Navigation, Combat, Alarms & Indicating, and Damage Control Systems. It is a general purpose modular data transfer system that provides high speed, reliable and survivable data from source systems to user systems automatically or on demand.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2019	DDG 130	BOEING/DRS	C/FFP	May 2019	Option	3	7.702
FY 2020	DDG 133	BOEING/DRS	C/FFP	Mar 2020	Option	3	7.856
FY 2021	DDG 136	BOEING/DRS	C/FFP	Mar 2021	Option	2	8.029

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2019	DDG 130	Jul 2025	40	16	Nov 2020
FY 2020	DDG 133	Nov 2026	40	16	Mar 2022
FY 2021	DDG 136	Jun 2027	40	16	Oct 2022

Competition/Second Source Initiatives:

Competitive

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2122 / DDG-51
Equipment Item: EXCOMM	**PARM Code:** N/A

P-35 Category	FY 2019		FY 2020		FY 2021	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	3	91.866	3	93.508	2	63.846
Technical Data and Documentation		0.368		0.375		0.256
Spares		0.848		0.863		0.590
System Engineering		9.561		9.732		6.646
Technical Engineering Services		5.580		5.679		3.878
Other Costs		18.066		18.389		12.326
Assembly & Integration		27.378		27.867		19.028
Total	**3**	**153.667**	**3**	**156.413**	**2**	**106.570**

Description:

The Exterior Communication System (EXCOMM) provides voice, data, teletypewriter (TTY), continuous wave (CW), and other communication services on designated frequencies from very low frequency (VLF) to ultra high frequency (UHF) for tactical and record requirements. It includes all external radio communication devices aboard the ship.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2019	DDG 130	VARIOUS	Various	Various	Various	3	30.622
FY 2020	DDG 133	VARIOUS	Various	Various	Various	3	31.169
FY 2021	DDG 136	VARIOUS	Various	Various	Various	2	31.923

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2019	DDG 130	Jul 2025	31	24	Dec 2020
FY 2020	DDG 133	Nov 2026	31	24	Apr 2022
FY 2021	DDG 136	Jun 2027	31	24	Nov 2022

Competition/Second Source Initiatives:

Numerous contract arrangements (sole source/competitive)

Remarks:

There are numerous components and contracts resulting in various award dates.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2122 / DDG-51
Equipment Item: AN/UPX 29(V) IFF and TACAN	**PARM Code:** N/A

P-35 Category	FY 2019		FY 2020		FY 2021	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	3	19.140	3	19.522	2	13.300
Spares		0.240		0.244		0.166
System Engineering		1.160		1.184		0.808
Technical Engineering Services		0.489		0.498		0.338
Other Costs		1.236		1.262		0.862
Total	**3**	**22.265**	**3**	**22.710**	**2**	**15.474**

Description:

The UPX-29 Interrogator System is a centralized Mark XIIA interrogator and target processor. It employs a cooperative challenge and reply technique to positively identify friendly platforms. The system is capable of interrogating Mark XII, Mark XIIA, International Civil Aviation Organization (ICAO), or Federal Aviation Administration (FAA)-compliant IFF transponders using a standard shipboard interrogator set, a target processor, and an Electronically Steerable Antenna (ESA) system. TACAN is a navigational beacon system that provides azimuth, slant range, and station identification information to TACAN equipped aircraft, permitting 24/7, all weather landing operations.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2019	DDG 130	BAE	SS/FFP	Jul 2019	Option	3	6.380
FY 2020	DDG 133	BAE	SS/FFP	Jul 2020	Option	3	6.507
FY 2021	DDG 136	BAE	SS/FFP	Jul 2021	Option	2	6.650

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2019	DDG 130	Jul 2025	29	24	Feb 2021
FY 2020	DDG 133	Nov 2026	29	24	Jun 2022
FY 2021	DDG 136	Jun 2027	29	24	Jan 2023

Competition/Second Source Initiatives:

N/A

Remarks:

Note: Months Required Before Delivery reflect timeline for earliest ship delivery date of each Program Year. Additional deliveries for each program year may have a higher number of Months Required Before Delivery based on shipyard required delivery dates.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2122 / DDG-51
Equipment Item: CEC	**PARM Code:** N/A

P-35 Category	FY 2019		FY 2020		FY 2021	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	3	14.513	3	14.802	2	10.086
System Engineering		0.744		0.759		0.518
Technical Engineering Services		0.533		0.543		0.370
Other Costs		1.157		1.180		0.802
Total	**3**	**16.947**	**3**	**17.284**	**2**	**11.776**

Description:

Cooperative Engagement Capability (CEC) is a sensor netting system which distributes sensor data from each CEC equipped ship, aircraft, and/or Cooperating Unit (CU), to all other CUs in the battle force through a real-time, line of sight, high data rate sensor and engagement data distribution network.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2019	DDG 130	DRS	C/FFP	Aug 2019	Option	3	4.838
FY 2020	DDG 133	DRS	C/FFP	Mar 2020	Option	3	4.934
FY 2021	DDG 136	DRS	C/FFP	Mar 2021	Option	2	5.043

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2019	DDG 130	Jul 2025	40	18	Sep 2020
FY 2020	DDG 133	Nov 2026	40	18	Jan 2022
FY 2021	DDG 136	Jun 2027	40	18	Aug 2022

Competition/Second Source Initiatives:

Competitive

Remarks:

Note: Months Required Before Delivery reflect timeline for earliest ship delivery date of each Program Year. Additional deliveries for each program year may have a higher number of Months Required Before Delivery based on shipyard required delivery dates.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2122 / DDG-51
Equipment Item: STC 3 IVCS	**PARM Code:** N/A

P-35 Category	FY 2019		FY 2020		FY 2021	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	3	14.991	3	15.292	2	10.398
Spares		0.810		0.825		0.562
System Engineering		2.819		2.874		1.954
Technical Engineering Services		0.719		0.734		0.500
Other Costs		3.959		4.040		2.746
Total	**3**	**23.298**	**3**	**23.765**	**2**	**16.160**

Description:

A solid state integrated voice communication system (IVCS) for application with the AEGIS combat system.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2019	DDG 130	DRS	C/FFP	Jul 2019	Option	3	4.997
FY 2020	DDG 133	DRS	C/FFP	Jul 2020	Option	3	5.097
FY 2021	DDG 136	DRS	C/FFP	Jul 2021	Option	2	5.199

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2019	DDG 130	Jul 2025	46	12	Sep 2020
FY 2020	DDG 133	Nov 2026	46	12	Jan 2022
FY 2021	DDG 136	Jun 2027	46	12	Aug 2022

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2122 / DDG-51
Equipment Item: Main Reduction Gear	**PARM Code:** N/A

P-35 Category	FY 2019		FY 2020		FY 2021	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	3	108.088	3	110.014	2	74.810
System Engineering		-		-		-
Technical Engineering Services		6.080		6.437		4.378
Total	**3**	**114.168**	**3**	**116.451**	**2**	**79.188**

Description:

The contractor will engineer, manufacture, test and deliver a fully operational DDG 51 Main Reduction Gear (MRG). A DDG 51 Class MRG shipset consists of two gear assemblies. Each reduction gear combines the input of two LM2500 engines to convert the high speed, low torque of the engine to low speed, high torque output suitable to drive the propulsion shafting, and the related support systems and equipment.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2019	DDG 130	TIMKEN GEARS & SERVICES	C/FFP	May 2019	Option	3	36.029
FY 2020	DDG 133	TIMKEN GEARS & SERVICES	C/FFP	Mar 2020	Option	3	36.671
FY 2021	DDG 136	TIMKEN GEARS & SERVICES	C/FFP	Mar 2021	Option	2	37.405

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2019	DDG 130	Jul 2025	42	32	May 2019
FY 2020	DDG 133	Nov 2026	42	32	Sep 2020
FY 2021	DDG 136	Jun 2027	42	32	Apr 2021

Competition/Second Source Initiatives:

Competitive

Remarks:

Note: Months Required Before Delivery reflect timeline for earliest ship delivery date of each Program Year. Additional deliveries for each program year may have a higher number of Months Required Before Delivery based on shipyard required delivery dates.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2122 / DDG-51
Equipment Item: AEGIS WEAPON SYSTEM (MK-7)	**PARM Code:** N/A

P-35 Category	FY 2019		FY 2020		FY 2021	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	3	227.855	3	232.412	2	166.358
System Engineering		2.705		2.759		1.876
Technical Engineering Services		2.546		2.597		1.766
Other Costs		13.140		13.402		27.342
Logistics Support		30.927		31.546		21.452
Combat System Integration		113.183		115.447		78.504
Total	**3**	**390.356**	**3**	**398.163**	**2**	**297.298**

Description:

AEGIS is a fast reaction, high firepower, all weather weapon system incorporating a high degree of system availability and effectiveness. It consists of a multi-function phase/plane array radar, high powered illuminators, advanced missile guidance and fully digitizalized and integrated combat ship control for radar, weapons and command and decision. An Operational Readiness Test System performs continuous on-line assessment and fault detection.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2019	DDG 130	LM/ RTN/ TBD	Various	Jan 2020	Option	3	75.952
FY 2020	DDG 133	LM/ RTN/ TBD	Various	Jan 2021	Option	3	77.471
FY 2021	DDG 136	LM/ RTN/ TBD	Various	Jan 2022	Option	2	83.179

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2019	DDG 130	Jul 2025	29	36	Feb 2020
FY 2020	DDG 133	Nov 2026	29	36	Jun 2021
FY 2021	DDG 136	Jun 2027	29	36	Jan 2022

Competition/Second Source Initiatives:

Multiple contract arrangements (sole source/competitive)

Remarks:

Note: Months Required Before Delivery reflect timeline for earliest ship delivery date of each Program Year. Additional deliveries for each program year may have a higher number of Months Required Before Delivery based on shipyard required delivery dates.

Contract Data Notes:
AWS Antenna and Signal Processors - Contractor: Lockheed Martin
Fire Control System Transmitter - Contractor: Raytheon

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2122 / DDG-51
Equipment Item: AEGIS WEAPON SYSTEM (MK-7)	**PARM Code:** N/A

AWS Director/Director Controller - Contractor: TBD

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2122 / DDG-51
Equipment Item: AN/SPY-6 (AMDR)	**PARM Code:** N/A

P-35 Category	FY 2019		FY 2020		FY 2021	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	3	396.955	3	401.643	2	273.118
System Engineering		30.282		30.888		21.004
Technical Engineering Services		23.616		24.089		16.380
Other Costs		33.714		25.884		10.334
Logistics		14.899		15.196		17.600
Total	**3**	**499.466**	**3**	**497.700**	**2**	**338.436**

Description:

The AN/SPY-6 Air and Missile Defense Radar (AMDR) suite consists of an S-Band radar (AMDR-S), an X-band radar (via SPQ-9B starting with DDG 119), and a Radar Suite Controller (RSC). AMDR will provide multi-mission capabilities, simultaneously supporting both long range, exoatmospheric detection, tracking and discrimination of ballistic missiles, as well as Area and Self Defense against air and surface threats.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2019	DDG 130	RAYTHEON	C/FPIF	Feb 2019	Option	3	132.318
FY 2020	DDG 133	RAYTHEON	C/FPIF	Jan 2020	Option	3	133.881
FY 2021	DDG 136	COMPETITIVE	TBD	Jan 2021	New	2	136.559

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2019	DDG 130	Jul 2025	43	34	Feb 2019
FY 2020	DDG 133	Nov 2026	43	34	Jun 2020
FY 2021	DDG 136	Jun 2027	43	34	Jan 2021

Competition/Second Source Initiatives:

Competitive

Remarks:

AMDR is only applicable to Flight III ships.

Note: Months Required Before Delivery reflect timeline for earliest ship delivery date of each Program Year. Additional deliveries for each program year may have a higher number of Months Required Before Delivery based on shipyard required delivery dates.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2122 / DDG-51
Equipment Item: VLS MK 41	**PARM Code:** N/A

P-35 Category	FY 2019		FY 2020		FY 2021	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	3	104.865	3	107.010	2	72.766
Ancillary Equipment		4.883		4.976		3.384
Technical Data and Documentation		0.863		0.879		0.598
System Engineering		21.686		22.101		15.028
Technical Engineering Services		19.997		20.381		13.860
Other Costs		10.896		11.107		7.552
Total	**3**	**163.190**	**3**	**166.454**	**2**	**113.188**

Description:

The VLS is a Missile Launching System which provides Surface Combatants with a launcher to carry, prepare for launch and fire, Anti-Air Warfare, Strike/Surface Warfare, and Anti-Submarine Warfare weapons. The MK-41 VLS Launchers consist of twelve modules comprised of eight cells each.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2019	DDG 130	COMPETITIVE	C/FFP	Jan 2020	New	3	34.955
FY 2020	DDG 133	COMPETITIVE	C/FFP	Jan 2020	New	3	35.670
FY 2021	DDG 136	COMPETITIVE	C/FFP	Jan 2021	New	2	36.383

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2019	DDG 130	Jul 2025	34	24	Sep 2020
FY 2020	DDG 133	Nov 2026	34	24	Jan 2022
FY 2021	DDG 136	Jun 2027	34	24	Aug 2022

Competition/Second Source Initiatives:

Competitive

Remarks:

VLS equipment procurements are partially funded with Advance Procurement funds.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2122 / DDG-51
Equipment Item: MK 45 Light Weight Gun (LWG)	**PARM Code:** N/A

P-35 Category	FY 2019		FY 2020		FY 2021	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	3	59.897	3	61.095	2	41.544
Spares		0.510		0.521		0.354
System Engineering		7.239		7.383		5.020
Technical Engineering Services		3.887		3.965		2.696
Other Costs		9.374		9.562		6.504
Total	**3**	**80.907**	**3**	**82.526**	**2**	**56.118**

Description:

The 5" 62 caliber MK 45 Mod 4 Gun is a digitized high energy system with the capability to automatically select, load and fire different types of 5"/62 caliber projectiles.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2019	DDG 130	BAE AD/MCNALLY	Various	Mar 2020	Option	3	19.966
FY 2020	DDG 133	BAE AD/MCNALLY	Various	Mar 2021	Option	3	20.365
FY 2021	DDG 136	BAE AD/MCNALLY	Various	Feb 2022	Option	2	20.772

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2019	DDG 130	Jul 2025	40	24	Mar 2020
FY 2020	DDG 133	Nov 2026	40	24	Jul 2021
FY 2021	DDG 136	Jun 2027	40	24	Feb 2022

Competition/Second Source Initiatives:

Sole Source

Remarks:

Contract Data notes:
Gun Mount contract: BAE Armament Division - Sole Source
Lower Hoist contract: McNally - Sole Source

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2122 / DDG-51
Equipment Item: MK 37 TOMAHAWK	**PARM Code:** N/A

P-35 Category	FY 2019		FY 2020		FY 2021	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	3	13.679	3	13.950	2	9.486
Spares		2.225		2.270		1.544
System Engineering		6.920		7.059		4.800
Technical Engineering Services		6.573		6.705		4.560
Other Costs		10.388		10.596		7.204
Total	**3**	**39.785**	**3**	**40.580**	**2**	**27.594**

Description:

The Tactical Tomahawk Weapon Control System (TTWCS) is an open system architecture of work stations, processors, printers, fiber optic Local Area Network (LAN) and the Navy Standard Mass Measurement storage device which provides target data management, engagement planning, weapon selection and initiation and launch functions for the TOMAHAWK cruise missile.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2019	DDG 130	NSWC PT HUENEME	WR	Apr 2020	Various	3	4.560
FY 2020	DDG 133	NSWC PT HUENEME	WR	Apr 2021	Various	3	4.650
FY 2021	DDG 136	NSWC PT HUENEME	WR	Apr 2022	Various	2	4.743

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2019	DDG 130	Jul 2025	46	12	Sep 2020
FY 2020	DDG 133	Nov 2026	46	12	Jan 2022
FY 2021	DDG 136	Jun 2027	46	12	Aug 2022

Competition/Second Source Initiatives:

Navy construction

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2122 / DDG-51
Equipment Item: PHALANX (CIWS)	**PARM Code:** N/A

P-35 Category	FY 2019		FY 2020		FY 2021	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	3	19.161	3	19.547	2	13.292
System Engineering		1.296		1.321		0.898
Technical Engineering Services		2.319		2.366		1.608
Other Costs		3.083		3.142		2.138
Total	**3**	**25.859**	**3**	**26.376**	**2**	**17.936**

Description:

Phalanx Close-In Weapon System (CIWS) provides fast reaction terminal defense against anti-ship missiles, aircraft, helicopters, low-slow flyers (e.g. unmanned aerial vehicles) and surface threats. The system is an automatic, self-contained unit consisting of search/track radar, threat evaluation and fire control subsystem, and a 20 mm M61A1 Gatling gun subsystem all mounted in a single structure requiring a minimum of integration with other ship systems.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2019	DDG 130	RAYTHEON	SS/FFP	Oct 2019	New	3	6.387
FY 2020	DDG 133	RAYTHEON	SS/FFP	Apr 2020	Option	3	6.516
FY 2021	DDG 136	RAYTHEON	SS/FFP	Apr 2021	Option	2	6.646

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2019	DDG 130	Jul 2025	36	24	Jul 2020
FY 2020	DDG 133	Nov 2026	36	24	Nov 2021
FY 2021	DDG 136	Jun 2027	36	24	Jun 2022

Competition/Second Source Initiatives:

Sole Source

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2122 / DDG-51
Equipment Item: SPQ-9B Radar	**PARM Code:** N/A

P-35 Category	FY 2019		FY 2020		FY 2021	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	3	24.728	3	25.223	2	17.152
Spares		0.324		0.332		0.226
System Engineering		1.290		1.315		0.894
Technical Engineering Services		1.371		1.398		0.950
Other Costs		1.518		1.548		1.054
Total	**3**	**29.231**	**3**	**29.816**	**2**	**20.276**

Description:

The AN/SPQ-9B Radar detects and tracks low flying Anti-Ship Missile targets in heavy clutter. The mission of the AN/SPQ-9B includes the capability to detect and classify periscopes with the completion and incorporation of a Periscope Detection and Discrimination (PDD) capability designed to operate concurrently with the AN/SPY-6 capability.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2019	DDG 130	DRS	C/FFP	Mar 2019	Option	3	8.243
FY 2020	DDG 133	DRS	C/FFP	Mar 2020	Option	3	8.408
FY 2021	DDG 136	DRS	C/FFP	Mar 2021	Option	2	8.576

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2019	DDG 130	Jul 2025	41	30	Aug 2019
FY 2020	DDG 133	Nov 2026	41	30	Dec 2020
FY 2021	DDG 136	Jun 2027	41	30	Jul 2021

Competition/Second Source Initiatives:

Competitive

Exhibit P-10, Advance Procurement Requirements Analysis (*page 1 - Budget Funding Justification*): PB 2021 Navy			Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1		**P-1 Line Item Number / Title:** 2122 / DDG-51	
First System (2021) Award Date: January 2018	**First System (2021) Completion Date:** July 2024		**Interval Between Systems:** 12 Months

Cost Elements	Production Leadtime (Months)	When Required* (Months)	FY 2019 ($ M)	FY 2020 ($ M)	FY 2021 ($ M)	FY 2022 ($ M)	FY 2023 ($ M)	FY 2024 ($ M)	FY 2025 ($ M)
SHIP CONSTRUCTION EOQ									
SHIP Construction EOQ FY19 Ships	-	-	-	-	0.000	-	-	-	-
SHIP Construction EOQ FY20 Ships	-	-	274.594	-	0.000	-	-	-	-
SHIP Construction EOQ FY21 Ships	-	-	125.029	502.014	0.000	-	-	-	-
SHIP Construction EOQ FY22 Ships	Various	Various	125.029	112.014	13.797	-	-	-	-
SHIP Construction EOQ FY23 Ships	-	-	-	-	0.000	-	-	-	-
SHIP Construction EOQ FY24 Ships	-	-	-	-	0.000	-	140.679	-	-
SHIP Construction EOQ FY25 Ships	-	-	-	-	0.000	-	51.233	34.969	-
SHIP Construction EOQ FY26 Ships	-	-	-	-	0.000	-	64.813	70.051	-
SHIP Construction EOQ FY27 Ships	-	-	-	-	0.000	-	32.405	70.051	-
Total: SHIP CONSTRUCTION EOQ			*524.652*	*614.028*	*13.797*	*-*	*289.130*	*175.071*	*-*
VLS Advanced Procurement									
VLS EOQ FY19 Ships	-	-	-	-	0.000	-	-	-	-
VLS EOQ FY20 Ships	-	-	27.126	-	0.000	-	-	-	-
VLS EOQ FY21 Ships	-	-	27.075	-	0.000	-	-	-	-
VLS EOQ FY22 Ships	-	-	27.075	-	0.000	-	-	-	-
VLS EOQ FY23 Ships	-	-	-	-	0.000	-	-	-	-
VLS EOQ FY24 Ships	-	-	-	-	0.000	-	28.000	-	-
VLS EOQ FY25 Ships	-	-	-	-	0.000	-	14.000	-	-
VLS EOQ FY26 Ships	-	-	-	-	0.000	-	28.000	-	-
VLS EOQ FY27 Ships	-	-	-	-	0.000	-	14.000	-	-
Total: VLS Advanced Procurement			*81.276*	*-*	*-*	*-*	*84.000*	*-*	*-*
Other GFE									
MRG AP FY20 Ship	-	-	36.000	-	0.000	-	-	-	-
EXCOMM AP FY22 Ships	55	Oct-25	-	-	12.000	-	-	-	-
AN/SRQ-4 AP FY22 Ships	24	Feb-26	-	-	3.500	-	-	-	-
Total: Other GFE			*36.000*	*-*	*15.500*	*-*	*-*	*-*	*-*
Industrial Supplier Base									
Surface Combatant Supplier Base	-	-	-	130.000	0.000	-	-	-	-

Exhibit P-10, Advance Procurement Requirements Analysis (*page 1 - Budget Funding Justification*): PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2122 / DDG-51

First System (2021) Award Date:	First System (2021) Completion Date:	Interval Between Systems:
January 2018	July 2024	12 Months

Cost Elements	Production Leadtime (Months)	When Required* (Months)	FY 2019 ($ M)	FY 2020 ($ M)	FY 2021 ($ M)	FY 2022 ($ M)	FY 2023 ($ M)	FY 2024 ($ M)	FY 2025 ($ M)
Total: Industrial Supplier Base			-	*130.000*	-	-	-	-	-
Total Advance Procurement/Obligation Authority			**641.928**	**744.028**	**29.297**	**-**	**373.130**	**175.071**	**-**

*Note: "When Required" is the number of months required before ship delivery.

Exhibit P-10, Advance Procurement Requirements Analysis (*page 2 - Budget Funding Justification*): PB 2021 Navy | **Date:** February 2020

Appropriation / Budget Activity / Budget Sub Activity:
1611N / 02 / 1

P-1 Line Item Number / Title:
2122 / DDG-51

Cost Elements	FY 2021						
	Production Leadtime *(Months)*	When Required* *(Months)*	Unit Cost *($ M)*	Contract Forecast Date	2021 Qty *(Each)*	For FY	Total Cost Request *($ M)*
SHIP CONSTRUCTION EOQ							
SHIP Construction EOQ FY19 Ships	-	-	-		-		0.000
SHIP Construction EOQ FY20 Ships	-	-	-		-		0.000
SHIP Construction EOQ FY21 Ships	-	-	-		-		0.000
SHIP Construction EOQ FY22 Ships	Various	Various	-	Mar 2021	-	2022	13.797
SHIP Construction EOQ FY23 Ships	-	-	-		-		0.000
SHIP Construction EOQ FY24 Ships	-	-	-		-		0.000
SHIP Construction EOQ FY25 Ships	-	-	-		-		0.000
SHIP Construction EOQ FY26 Ships	-	-	-		-		0.000
SHIP Construction EOQ FY27 Ships	-	-	-		-		0.000
Total: SHIP CONSTRUCTION EOQ							*13.797*
VLS Advanced Procurement							
VLS EOQ FY19 Ships	-	-	-		-		0.000
VLS EOQ FY20 Ships	-	-	-		-		0.000
VLS EOQ FY21 Ships	-	-	-		-		0.000
VLS EOQ FY22 Ships	-	-	-		-		0.000
VLS EOQ FY23 Ships	-	-	-		-		0.000
VLS EOQ FY24 Ships	-	-	-		-		0.000
VLS EOQ FY25 Ships	-	-	-		-		0.000
VLS EOQ FY26 Ships	-	-	-		-		0.000
VLS EOQ FY27 Ships	-	-	-		-		0.000
Total: VLS Advanced Procurement							-
Other GFE							
EXCOMM AP FY22 Ships	55	Oct-25	-	Mar 2021	-	2022	12.000
AN/SRQ-4 AP FY22 Ships	24	Feb-26	-	Mar 2021	-	2022	3.500
Total: Other GFE							*15.500*
Industrial Supplier Base							
Surface Combatant Supplier Base	-	-	-		-		0.000
Total: Industrial Supplier Base							-
Total Advance Procurement/Obligation Authority							**29.297**

Exhibit P-10, Advance Procurement Requirements Analysis (*page 2 - Budget Funding Justification*): PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2122 / DDG-51

Description:

AP is required for shipbuilder Economic Order Quantity procurements for material items to achieve savings under the FY18-22 MYP and FY23-27 planned/projected MYP contracts and for VLS procurements.
Reflects FY19 Congressional Addition of $250 million for FY20 third ship. FY19 $250M is divided into shipbuilder EOQ, VLS, and MRG procurements.
Reflects FY20 Congressional Addition of $390M for long lead time material (LLTM) for FY21 ship(s)
Reflects FY20 Congressional Addition of $130M for the Surface Combatant Supplier Base.
FY21 AP funds support LLTM procurement and procurement of Government Furnished Equipment (GFE) systems (EXCOMM and SRQ-4) for FY22 ships prior to expiration of current contract vehicles in FY21. This procurement strategy for the GFE systems enables consistent system configurations, avoids shipbuilder change impacts, and also avoids projected system cost growth for the DDG 51 program.

The FY19 column for the Ship Construction EOQ FY22 Ships is overstated by $51.0M as this exhibit does not include the FY19 rescission of DDG-51 AP from the Department of Defense Appropriations Act, 2020.

*Note: "When Required" is the number of months required before ship delivery.

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 02: Other Warships / BSA 1: Other Warships	**P-1 Line Item Number / Title:** 2127 / Littoral Combat Ship (LCS)

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: N/A

Line Item MDAP/MAIS Code: N/A

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity *(Units in Each)*	30	3	-	-	-	-	-	-	-	-	-	33
Gross/Weapon System Cost *($ in Millions)*	15,226.359	1,571.244	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	16,797.603
Less PY Advance Procurement *($ in Millions)*	158.893	-	-	-	-	-	-	-	-	-	-	158.893
Less Cost To Complete *($ in Millions)*	455.383	-	-	-	-	-	-	-	-	-	-	455.383
Net Procurement (P-1) *($ in Millions)*	14,612.083	1,571.244	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	16,183.327
Full Funding TOA *($ in Millions)*	14,612.083	1,571.244	-	-	-	-	-	-	-	-	-	16,183.327
Plus CY Advance Procurement *($ in Millions)*	158.893	-	-	-	-	-	-	-	-	-	-	158.893
Plus Cost To Complete *($ in Millions)*	271.815	103.178	14.000	-	-	-	15.000	31.860	19.530	-	-	455.383
Total Obligation Authority *($ in Millions)*	**15,042.791**	**1,674.422**	**14.000**	**0.000**	**0.000**	**0.000**	**15.000**	**31.860**	**19.530**	**0.000**	**-**	**16,797.603**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Plus Outfitting and Post Delivery *($ in Millions)*	740.893	133.487	156.640	182.093	-	182.093	137.015	130.997	127.975	134.726	-	1,743.826
Total *($ in Millions)*	**15,783.684**	**1,807.909**	**170.640**	**182.093**	**-**	**182.093**	**152.015**	**162.857**	**147.505**	**134.726**	**-**	**18,541.429**
Gross/Weapon System Unit Cost *($ in Millions)*	507.545	523.748	-	-	-	-	-	-	-	-	-	509.018

Description:

Provides for the design, construction, integration, and testing of the Littoral Combat Ship (LCS) including ordnance, government furnished equipment (GFE), plans and change order costs.

LCS: Operates with focused-mission packages that deploy manned and unmanned vehicles to execute a variety of missions, including anti-submarine warfare (ASW), surface warfare (SUW), and mine countermeasures (MCM). LCS also possesses inherent capabilities, regardless of the mission package installed, including intelligence, surveillance, and reconnaissance (ISR), anti-terrorism/force protection (AT/FP), air warfare self-defense, joint littoral mobility, and logistic support for movement of personnel and supplies. LCS SUW ships will also include maritime interdiction/interception operations (MIO). This relatively small, shallow-draft, high-speed surface combatant complements the U.S. Navy's Surface Fleet by operating in environments where it is impossible or undesirable to employ larger deeper-draft, multi-mission ships. LCS can deploy independently to overseas littoral regions or remain on station for extended periods of time either with a battle group or through a forward-basing arrangement. LCS will operate with Carrier Strike Groups, Surface Action Groups, or independently as dictated by the mission and environment. Additionally, LCS can operate cooperatively with the U.S. Coast Guard and Allies.

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 02: Other Warships / BSA 1: Other Warships	**P-1 Line Item Number / Title:** 2127 / Littoral Combat Ship (LCS)

ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** N/A

Line Item MDAP/MAIS Code: N/A

Characteristics:	**LM**	**AUSTAL**
Length Overall	115.3m	127.6m
Beam	17.5m	31.6m
Displacement	3089 mt	2842 mt
Draft	4.3m	4.4m

Systems:

Electronics
-NAVY MULTIBAND TERMINAL (NMT)

Ordnance
-SEARAM

Production Status:	**LCS 19**	**LCS 22**	**LCS 21**	**LCS 24**	**LCS 23**	**LCS 26**	**LCS 25**
Contract Award Date	Mar 2014	Mar 2015	Mar 2015	Mar 2015	Nov 2015	Mar 2016	Mar 2016
Months to Completion							
a) Award to Delivery	71 months	59 months	67 months	61 months	63 months	55 months	65 months
b) Construction Start to Delivery	42 months	38 months	44 months	33 months	41 months	33 months	42 months
Delivery Date	Feb 2020	Feb 2020	Oct 2020	Apr 2020	Feb 2021	Oct 2020	Aug 2021
Completion Of Fitting Out	Jan 2021	Jun 2020	Aug 2021	Jan 2021	Oct 2021	Jul 2021	Feb 2022
Obligation Work Limit Date	Dec 2021	May 2021	Jul 2022	Dec 2021	Sep 2022	Jun 2022	Jan 2023

Production Status:	**LCS 28**	**LCS 27**	**LCS 30**	**LCS 29**	**LCS 32**	**LCS 34**	**LCS 36**
Contract Award Date	Jun 2017	Oct 2017	Oct 2017	Sep 2018	Sep 2018	Sep 2018	Dec 2018
Months to Completion							
a) Award to Delivery	48 months	57 months	50 months	52 months	46 months	52 months	55 months
b) Construction Start to Delivery	32 months	44 months	31 months	42 months	31 months	31 months	30 months
Delivery Date	Jun 2021	Jul 2022	Dec 2021	Jan 2023	Jul 2022	Jan 2023	Jul 2023
Completion Of Fitting Out	Feb 2022	Dec 2022	Sep 2022	Aug 2023	Mar 2023	Sep 2023	Apr 2024
Obligation Work Limit Date	Jan 2023	Nov 2023	Aug 2023	Jul 2024	Feb 2024	Aug 2024	Mar 2025

Production Status:	**LCS 38**	**LCS 31**
Contract Award Date	Dec 2018	Jan 2019
Months to Completion		
a) Award to Delivery	61 months	60 months
b) Construction Start to Delivery	30 months	48 months
Delivery Date	Jan 2024	Jan 2024
Completion Of Fitting Out	Oct 2024	Oct 2024
Obligation Work Limit Date	Sep 2025	Sep 2025

Design Schedule	**Start / Issue**	**Complete / Response**	**Reissue**	**Reissue Complete / Response**
Issue Date for TLR	N/A	N/A		
Issue Date for TLS	N/A	N/A		
Preliminary Design	Jul 2003	Dec 2003		
Contract Design	May 2004	Dec 2004		
Detail Design	Dec 2004	Jun 2007		
Request for Proposals	N/A	Jan 2010		

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy		**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 02: Other Warships / BSA 1: Other Warships	**P-1 Line Item Number / Title:** 2127 / Littoral Combat Ship (LCS)	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** N/A
Line Item MDAP/MAIS Code: N/A		

Design Schedule	Start / Issue	Complete / Response	Reissue	Reissue Complete / Response
Design Agent	LOCKHEED MARTIN - AUSTAL			

Classification of Cost Estimate: CLASS C

Exhibit P-5c, Ship Cost Analysis: PB 2021 Navy | **Date:** February 2020

Appropriation / Budget Activity / Budget Sub Activity:
1611N / 02 / 1

P-1 Line Item Number / Title:
2127 / Littoral Combat Ship (LCS)

Cost Categories (†) indicates the presence of a P-8a	FY 2014		FY 2015		FY 2016		FY 2017		FY 2018		FY 2019	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Plan Costs	4	80.577	3	117.073	3	85.490	3	17.967	3	8.026	3	0.100
Basic Construction/Conversion		1,508.301		1,189.579		1,171.567		1,333.684		1,343.222		1,325.938
Change Orders		72.896		47.383		33.998		34.500		36.770		36.596
Electronics (†)		45.962		40.831		43.812		46.183		47.014		47.954
Hull, Mechanical, and Electrical (HM&E) (†)		14.318		11.041		11.228		11.419		11.625		11.858
Ordnance (†)		37.759		29.169		29.665		30.169		30.712		31.326
Other Cost		73.164		75.659		74.684		131.300		89.602		117.472
Total Ship Estimate		**1,832.977**		**1,510.735**		**1,450.444**		**1,605.222**		**1,566.971**		**1,571.244**
Less Advance Procurement FY 2015		-		-		80.000		-		-		-
Less Cost to Complete FY 2018		20.471		-		-		-		-		-
Less Cost to Complete FY 2019		19.492		83.686		-		-		-		-
Less Cost to Complete FY 2020		-		-		14.000		-		-		-
Less Cost to Complete FY 2022		-		-		15.000		-		-		-
Less Cost to Complete FY 2023		-		-		9.860		22.000		-		-
Less Cost to Complete FY 2024		-		-		-		19.530		-		-
Net P-1 Funding		**1,793.014**		**1,427.049**		**1,331.584**		**1,563.692**		**1,566.971**		**1,571.244**

Exhibit P-27, Ship Production Schedule: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2127 / Littoral Combat Ship (LCS)

Ship	Shipbuilder	Fiscal Year	Contract Award	Start of Construction	Delivery Date
LCS 19	LOCKHEED MARTIN	2014	Mar 2014	Aug 2016	Feb 2020
LCS 22	AUSTAL	2015	Mar 2015	Dec 2016	Feb 2020
LCS 21	LOCKHEED MARTIN	2015	Mar 2015	Feb 2017	Oct 2020
LCS 24	AUSTAL	2015	Mar 2015	Jul 2017	Apr 2020
LCS 23	LOCKHEED MARTIN	2016	Nov 2015	Sep 2017	Feb 2021
LCS 26	AUSTAL	2016	Mar 2016	Jan 2018	Oct 2020
LCS 25	LOCKHEED MARTIN	2016	Mar 2016	Feb 2018	Aug 2021
LCS 28	AUSTAL	2017	Jun 2017	Oct 2018	Jun 2021
LCS 27	LOCKHEED MARTIN	2017	Oct 2017	Nov 2018	Jul 2022
LCS 30	AUSTAL	2017	Oct 2017	May 2019	Dec 2021
LCS 29	LOCKHEED MARTIN	2018	Sep 2018	Jul 2019	Jan 2023
LCS 32	AUSTAL	2018	Sep 2018	Dec 2019	Jul 2022
LCS 34	AUSTAL	2018	Sep 2018	Jun 2020	Jan 2023
LCS 36	AUSTAL	2019	Dec 2018	Jan 2021	Jul 2023
LCS 38	AUSTAL	2019	Dec 2018	Jul 2021	Jan 2024
LCS 31	LOCKHEED MARTIN	2019	Jan 2019	Jan 2020	Jan 2024

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2127 / Littoral Combat Ship (LCS)

Electronics	FY 2019 Qty (Each)	FY 2019 Total Cost ($ M)
P-35 Items		
NAVY MULTIBAND TERMINAL (NMT)	3	12.636
P-35 Items Subtotal		**12.636**
Major Items		
AN/URC-141 (C) MIDS ON SHIP (MOS)	3	8.549
MULTI-VEHICLE COMMUNICATION SYSTEM (MVCS)	3	5.690
AN/USQ-172(V)5 GLOBAL COMMAND AND CONTROL SYSTEM - MARITIME (GCCS-M)	3	2.341
COMMON DATA LINK MANAGEMENT SYSTEM (CDLMS) Link-11 (C2P)	1	1.266
AN/USQ-144J(V)2 AUTOMATED DIGITAL NETWORK SYSTEM (ADNS)	3	2.008
ELECTRONIC KEY MANAGEMENT SYSTEM (EKMS)/CRYPTO SYSTEM	3	1.873
DS- LOGISTICS MAINTENANCE AUTOMATED INFO SYSTEM - BAR CODE SUPPLY (BCS) NAVY TACTICAL COMMAND SPT SY	3	1.307
Major Items Subtotal		**23.034**
Other Cost Elements		
OTHER ELECTRONICS	0	12.284
Other Cost Elements Subtotal		**12.284**
Total Electronics		**47.954**

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2127 / Littoral Combat Ship (LCS)

Hull, Mechanical, and Electrical (HM&E)	FY 2019	
	Qty *(Each)*	Total Cost *($ M)*
Major Items		
VISUAL LANDING AIDS (VLA)	3	7.179
AN/SRC-59 SHIPWIDE INTERIOR WIRELESS COMMUNICATION SYSTEM (SIWCS)	3	1.887
TRASH DISPOSAL - SMALL PULPER	3	0.544
JOINT BIOLOGICAL POINT DETECTION SYSTEM (JBPDS)	3	0.488
Major Items Subtotal		**10.098**
Other Cost Elements		
OTHER HM&E	0	1.760
Other Cost Elements Subtotal		**1.760**
Total Hull, Mechanical, and Electrical (HM&E)		**11.858**

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2127 / Littoral Combat Ship (LCS)

Ordnance	FY 2019	
	Qty *(Each)*	Total Cost *($ M)*
P-35 Items		
SEARAM	3	28.996
P-35 Items Subtotal		**28.996**
Major Items		
ORDNANCE HANDLING EQUIPMENT	3	1.413
SMALL ARMS, MACHINE GUNS	3	0.917
Major Items Subtotal		**2.330**
Total Ordnance		**31.326**

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2127 / Littoral Combat Ship (LCS)
Equipment Item: NAVY MULTIBAND TERMINAL (NMT)	**PARM Code:** PMW170

P-35 Category	FY 2019 Qty (Each)	FY 2019 Total Cost ($ M)
Major Hardware	3	11.131
System Engineering		0.200
Engr/ILS/Mgmt Spt		0.250
Technical Support Services		0.869
Program Management		0.186
Total	**3**	**12.636**

Description:

Navy Multiband Terminal (NMT) radio provides joint interoperable high capability voice, data, and video communications for combatants and Flag-capable ships. It provides the required global connectivity among Fleet units, joint forces, allied and NATO forces, and Naval C4I commands.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2019	LCS 36	RAYTHEON	SS/FFP	Mar 2019	Option	3	3.710

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2019	LCS 36	Jul 2023	21	14	Aug 2020

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2127 / Littoral Combat Ship (LCS)
Equipment Item: SEARAM	**PARM Code:** IWS11

P-35 Category	FY 2019 Qty (Each)	FY 2019 Total Cost ($ M)
Major Hardware	3	24.584
Technical Data and Documentation		0.154
System Engineering		1.081
Technical Engineering Services		1.538
Software		0.153
Test & Evaluation		0.925
Program Management		0.561
Total	**3**	**28.996**

Description:

SeaRAM is an Anti-Ship Missile Defense System and is an evolved Close-In Weapon System (CIWS) composed of key attributes of both the existing Phalanx CIWS and the RAM . SeaRAM is designed to extend the battle space of the CIWS and enable the ship to effectively engage multiple targets.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2019	LCS 36	RAYTHEON	SS/FFP	Aug 2019	Option	3	8.195

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2019	LCS 36	Jul 2023	13	22	Aug 2020

Competition/Second Source Initiatives:

N/A

Remarks:

N/A

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 02: Other Warships / BSA 1: Other Warships	**P-1 Line Item Number / Title:** 2128 / FFG-Frigate

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: N/A

Line Item MDAP/MAIS Code: N/A

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity *(Units in Each)*	-	-	1	1	-	1	1	2	2	3	10	20
Gross/Weapon System Cost *($ in Millions)*	0.000	0.000	1,281.177	1,053.123	0.000	1,053.123	954.513	1,865.908	1,868.826	2,817.264	9,973.959	19,814.770
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	0.000	0.000	1,281.177	1,053.123	0.000	1,053.123	954.513	1,865.908	1,868.826	2,817.264	9,973.959	19,814.770
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**0.000**	**0.000**	**1,281.177**	**1,053.123**	**0.000**	**1,053.123**	**954.513**	**1,865.908**	**1,868.826**	**2,817.264**	**9,973.959**	**19,814.770**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Plus Outfitting and Post Delivery *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	0.000
Total *($ in Millions)*	**-**	**-**	**1,281.177**	**1,053.123**	**-**	**1,053.123**	**954.513**	**1,865.908**	**1,868.826**	**2,817.264**	**9,973.959**	**19,814.770**
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	1,281.177	1,053.123	-	1,053.123	954.513	932.954	934.413	939.088	997.396	990.739

Description:

The Guided Missile Frigate (FFG(X)) is a more lethal and survivable multi-mission small surface combatant. In FY 2014, the Navy established the requirements for a lethal and survivable small surface combatant ship (designated as Frigate (FF)), above that of Littoral Combat Ship (LCS), to meet future missions. Based upon the Navy's 2016 Force Structure Assessment resulting in validation of the need for 52 small surface combatants and the need to address increasingly complex threats in the global maritime environment, the Navy reassessed the capabilities required to ensure the Frigate paces future threats. The updated assessment was completed to support establishment of top-level FFG(X) requirements in Summer 2017 and resulted in a Navy approved Capability Development Document (CDD). The CDD was JROC approved in Feb 2019. With FFG(X), the Navy will maximize the small surface combatant capabilities in the Anti-Surface Warfare (SUW), Anti-Submarine Warfare (ASW), Electromagnetic Maneuver Warfare (EMW), Air Warfare (AW) mission areas, and survivability while keeping the ship affordable and as a part of a "high-low" mix of surface ships. The FFG(X) program completed Gate 5 in June 2019 and a Component Cost Position (CCP) in January 2020, and will continue to refine the cost estimates to support a FY 2020 Detail Design and Construction (DD&C) contract award.

Characteristics:

	TBD
Length Overall	-
Beam	-
Displacement	-
Draft	-

Production Status:	FFG 1	FFG 2
Contract Award Date	Jul 2020	Apr 2021
Months to Completion		
a) Award to Delivery	72 months	66 months
b) Construction Start to Delivery	48 months	48 months
Delivery Date	Jul 2026	Oct 2026
Completion Of Fitting Out	Oct 2026	Jan 2027
Obligation Work Limit Date	Sep 2027	Dec 2027

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy		**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 02: Other Warships / BSA 1: Other Warships	**P-1 Line Item Number / Title:** 2128 / FFG-Frigate	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** N/A
Line Item MDAP/MAIS Code: N/A		

Design Schedule	Start / Issue	Complete / Response	Reissue	Reissue Complete / Response
Issue Date for TLR	Feb 2017	Oct 2017		
Issue Date for TLS	N/A	N/A		
Preliminary Design	N/A	N/A		
Contract Design	Feb 2018	May 2019		
Detail Design	Jul 2020	N/A		
Request for Proposals	Jun 2019	Sep 2019		
Design Agent				

Classification of Cost Estimate:

Exhibit P-5c, Ship Cost Analysis: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2128 / FFG-Frigate

Cost Categories (†) indicates the presence of a P-8a	**FY 2020**		**FY 2021**	
	Qty *(Each)*	**Total Cost** *($ M)*	**Qty** *(Each)*	**Total Cost** *($ M)*
Plan Costs	1	145.000	1	29.363
Basic Construction/Conversion		718.261		642.310
Change Orders		25.000		21.679
Electronics (†)		277.731		247.295
Hull, Mechanical, and Electrical (HM&E) (†)		21.814		18.488
Ordnance (†)		45.371		44.335
Other Cost		48.000		49.653
Total Ship Estimate		**1,281.177**		**1,053.123**
Net P-1 Funding		**1,281.177**		**1,053.123**

Remarks:
The changes from FY 2020 President's Budget request to the FY 2021 request are driven by the adjusted ship procurement profile (1,2,2,2,2,2 to 1,1,1,2,2,3), which causes variation in BCC and GFE equipment areas due to the loss of quantity. The program has also completed a Component Cost Position (CCP), which has driven variation.

Exhibit P-27, Ship Production Schedule: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2128 / FFG-Frigate

Ship	Shipbuilder	Fiscal Year	Contract Award	Start of Construction	Delivery Date
FFG 1	TBD	2020	Jul 2020	Jul 2022	Jul 2026
FFG 2	TBD	2021	Apr 2021	Oct 2022	Oct 2026
FFG 3	TBD	2022	Apr 2022	Oct 2023	Sep 2027
FFG 4	TBD	2023	Apr 2023	Jun 2024	Apr 2028
FFG 5	TBD	2023	Apr 2023	Dec 2024	Oct 2028
FFG 6	TBD	2024	Apr 2024	Jun 2025	Mar 2029
FFG 7	TBD	2024	Apr 2024	Dec 2025	Sep 2029
FFG 8	TBD	2025	Apr 2025	Jun 2026	Feb 2030
FFG 9	TBD	2025	Apr 2025	Nov 2026	Jul 2030
FFG 10	TBD	2025	Apr 2025	Apr 2027	Nov 2030

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2128 / FFG-Frigate

Electronics	FY 2020		FY 2021	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
P-35 Items				
Enterprise Air Surveillance Radar (EASR)	1	65.995	1	59.165
AEGIS Weapon System (AWS)	1	44.454	1	43.369
Anti-Submarine Warfare (ASW) Combat Suite	1	45.787	1	33.684
Surface Electronic Warfare Improvement Program (SEWIP) BLK II (SLQ-32(V)6)	1	13.989	1	12.573
Tactical COMINT System- Spectral	1	11.709	1	11.299
Cooperative Engagement Capability (CEC)	1	11.539	1	10.080
Identification Friend or Foe (IFF) UPX-29	1	8.043	1	5.890
External Communication Suite	1	7.420	1	7.413
Navy Advanced Extremely High Frequency (AEHF) Multiband Terminal (NMT)(AN/WSC-9(V)1))	1	6.850	1	6.363
Consolidated Afloat Network Enterprise System (CANES)	1	6.672	1	6.638
Network Tactical Common Data Link (NTCDL) Variant B	1	6.105	1	6.034
Inertial Navigation System (INS) AN/WSN-7(V)1	1	5.816	1	5.752
Situation Awareness EO/IR	1	4.999	1	3.696
NIXIE AN/SLQ-25E	1	3.340	1	2.502
P-35 Items Subtotal		**242.718**		**214.458**
Major Items				
Next Generation Surface Search Radar (NGSSR)	2	3.249	2	3.001
OA-9277A	1	2.066	1	2.064
Moriah Wind System (MWS) (AN/SMQ-13)	1	1.872	1	1.488
Tactical Variant Switch (TVS) (AN/USQ-155(V))	1	1.704	1	1.737
Major Items Subtotal		**8.891**		**8.290**
Other Cost Elements				
Other Electronics	1	26.122	1	24.547
Other Cost Elements Subtotal		**26.122**		**24.547**
Total Electronics		**277.731**		**247.295**

Remarks:

Other Electronics include C4I System Innovation Facility (C-SIF) / Technical Integration Facility (TIF), Advanced Training Domain (ATD), Navy Electronic Chart Display Information System (ECDIS), Global Positioning System (GPS) Based positioning Navigation and Timing Service (GPNTS), Antennas, and various other systems. In FY 2020, several GFE items include lead ship costs for detail design.

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2128 / FFG-Frigate

Hull, Mechanical, and Electrical (HM&E)	FY 2020		FY 2021	
	Qty *(Each)*	Total Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*
P-35 Items				
Aircraft Ship Integrated Securing and Traversing System (ASIST)	1	8.805	1	6.263
Internal Communication (IC) Voice	1	3.422	1	3.440
P-35 Items Subtotal		**12.227**		**9.703**
Major Items				
Advanced Flight Deck Lighting System (AFDLS)	1	2.413	1	2.237
Unclassified Video System (UVS)	1	1.855	1	1.650
Interior Wireless Communication System (IWCS)	1	1.809	1	1.580
Major Items Subtotal		**6.077**		**5.467**
Other Cost Elements				
Other HM&E	1	3.510	1	3.318
Other Cost Elements Subtotal		**3.510**		**3.318**
Total Hull, Mechanical, and Electrical (HM&E)		**21.814**		**18.488**

Remarks:
Other HM&E includes 7M Rigid Hull Inflatable Boat (RHIB), Horizon Reference Set (HRS), Enhanced Maritime Biological Detection (EMBD), Plastic Shredder, and other systems. In FY 2020, several GFE items include lead ship costs for detail design.

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2128 / FFG-Frigate

Ordnance	FY 2020		FY 2021	
	Qty *(Each)*	Total Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*
P-35 Items				
MK 41 Vertical Launch System (VLS)- 32 Cell	1	15.071	1	15.130
MK 48 Gun Weapon System (GWS)	1	14.838	1	13.622
Rolling Airframe Missile (RAM) Guided Missile Launching System- 21 Cell	1	12.254	1	12.851
P-35 Items Subtotal		**42.163**		**41.603**
Major Items				
MK 53 Decoy Launching System (DLS) (Nulka)- 4 Launcher	1	1.359	1	1.214
Major Items Subtotal		**1.359**		**1.214**
Other Cost Elements				
Other Ordnance	1	1.849	1	1.518
Other Cost Elements Subtotal		**1.849**		**1.518**
Total Ordnance		**45.371**		**44.335**

Remarks:
Other Ordnance includes Over-the-Horizon Missile Launcher (OTH), Portable Ordnance Handling Equipment (POHE) and Machine Gun Mounts. In FY 2020, several GFE items include lead ship costs for detail design.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2128 / FFG-Frigate
Equipment Item: Enterprise Air Surveillance Radar (EASR)	**PARM Code:** PEO IWS 2A

P-35 Category	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)	FY 2021 Qty (Each)	FY 2021 Total Cost ($ M)
Major Hardware	1	48.557	1	43.129
System Engineering		3.048		3.083
Technical Engineering Services		2.360		2.173
Other Costs		12.030		10.780
Total	**1**	**65.995**	**1**	**59.165**

Description:

Enterprise Air Surveillance Radar (EASR) is the next generation S-band air search radar with 3-D search capability supporting Air Warfare (AW) for self- and local area defense; Surface Warfare (SUW) for Fast Attack Craft (FAC), Fast Inshore Attack Craft (FIAC); Asymmetric / Force Protection; Electromagnetic Maneuver Warfare. The EASR consists of arrays, below deck gear support equipment computer program for radar processing and radar control.

FY20 cost increases are due to receiving updated cost estimates based on the loss of cost sharing initiatives and higher unit costs due to the new profile, and contract alignment with the support activities and other shipbuilding programs.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	FFG 1	Raytheon	Various	Aug 2020	Option	1	48.557
FY 2021	FFG 2	Raytheon	Various	Aug 2021	Option	1	43.129

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	FFG 1	Jul 2026	40	30	Sep 2020
FY 2021	FFG 2	Oct 2026	40	29	Jan 2021

Competition/Second Source Initiatives:

N/A

Remarks:

Both FFG(X) and CVN (starting at CVN 79) will have fixed faced 9-RMA EASRs, however the software integration to the Aegis Weapon System (AWS) will be different. FFG(X) will integrate EASR into the AEGIS Combat System FFG(X) Baseline.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2128 / FFG-Frigate
Equipment Item: AEGIS Weapon System (AWS)	**PARM Code:** PEO IWS 8.0

P-35 Category	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)	FY 2021 Qty (Each)	FY 2021 Total Cost ($ M)
Major Hardware	1	14.413	1	13.729
System Engineering		1.993		0.789
Technical Engineering Services		1.763		1.477
Other Costs		26.285		27.374
Total	**1**	**44.454**	**1**	**43.369**

Description:

The AEGIS Weapon System (AWS, formerly Frigate Weapon System (FWS)) is an integrated combat management system that provides doctrine, management, control, and display functionality for FFG(X) Combat System (FCS) missions as well as command and control functionality for all warfare areas. The AWS comprises: Command and Decision (C&D) System, Combat System Computing Infrastructure (CSCI), Shipboard Gridlock System/Automatic Correlation (SGS/AC), AEGIS Display System (ADS), Weapons Control System (WCS), Operational Readiness Training System (ORTS), Mission Planner (MP), Vehicle Control Domain (VCD), and resource management for the Enterprise Air Surveillance Radar.

FY20 cost decreases are due to receiving updated cost estimates, and contract alignment with the support activities and other shipbuilding programs.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	FFG 1	TBD	C/FFP	TBD		1	14.413
FY 2021	FFG 2	TBD	C/FFP	TBD		1	13.729

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	FFG 1	Jul 2026	40	24	Mar 2021
FY 2021	FFG 2	Oct 2026	40	24	Jun 2021

Competition/Second Source Initiatives:

AWS will be procured under the competitive combat system contract run by IWS 1.0 with award in FY 2021.

Remarks:

Other costs represent the system integration and test for the entire combat system (not just the AWS).

The change from FWS to AEGIS CS Frigate baseline occurred to align with AEGIS Baseline 10 (BL 10). The Frigate AWS is an AEGIS BL 10 derivative.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2128 / FFG-Frigate
Equipment Item: Anti-Submarine Warfare (ASW) Combat Suite	**PARM Code:** PEO IWS 5.0

P-35 Category	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)	FY 2021 Qty (Each)	FY 2021 Total Cost ($ M)
Major Hardware	1	30.379	1	20.421
System Engineering		6.292		5.947
Technical Engineering Services		2.990		2.914
Other Costs		6.126		4.402
Total	**1**	**45.787**	**1**	**33.684**

Description:

The Anti-Submarine Warfare (ASW) Combat Suite provides surface warships with an integrated undersea/anti-submarine warfare detection, localization, classification, and targeting ability. It includes AN/SQQ-89(V)16, Undersea Warfare Decision Support System (USW-DSS), Multi Function Towed Array (MFTA), expendable bathythermograph (XBT) launcher LM-48, and the fathometer.

FY20 cost decreases are due to receiving updated cost estimates, and contract alignment with the support activities and other shipbuilding programs.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	FFG 1	Various	Various	Various		1	30.379
FY 2021	FFG 2	Various	Various	Various		1	20.421

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	FFG 1	Jul 2026	40	24	Mar 2021
FY 2021	FFG 2	Oct 2026	40	24	Jun 2021

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2128 / FFG-Frigate
Equipment Item: Surface Electronic Warfare Improvement Program (SEWIP) BLK II (SLQ-32(V)6)	**PARM Code:** PEO IWS 2E

P-35 Category	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)	FY 2021 Qty (Each)	FY 2021 Total Cost ($ M)
Major Hardware	1	10.409	1	10.311
System Engineering		0.966		0.969
Technical Engineering Services		0.108		0.111
Other Costs		2.506		1.182
Total	**1**	**13.989**	**1**	**12.573**

Description:

The AN/SLQ-32 SEWIP Block II is a scalable Electronic Warfare enterprise suite that interfaces to the AWS. It provides enhanced shipboard Electronic Warfare (EW) for early detection, analysis, threat warning and soft kill protection from anti-ship missiles.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	FFG 1	Various	Various	Mar 2021	Various	1	10.409
FY 2021	FFG 2	Various	Various	Mar 2021	Various	1	10.311

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	FFG 1	Jul 2026	40	29	Oct 2020
FY 2021	FFG 2	Oct 2026	40	29	Jan 2021

Competition/Second Source Initiatives:

The SEWIP contract option is scheduled to be renegotiated in FY 2020, which is in support of the FY 2021 planned award. A phased delivery of equipment will be used for FFG 1 to mitigate risk due to award later than required.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2128 / FFG-Frigate
Equipment Item: Tactical COMINT System- Spectral	**PARM Code:** PMW 120

P-35 Category	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)	FY 2021 Qty (Each)	FY 2021 Total Cost ($ M)
Major Hardware	1	9.885	1	9.885
System Engineering		0.477		0.450
Technical Engineering Services		0.678		0.458
Other Costs		0.669		0.506
Total	**1**	**11.709**	**1**	**11.299**

Description:

Spectral is the next generation information warfare weapons system, enhancing Ship Signal Exploitation System (SSES) capabilities that detects, classifies, and tracks SOI (Signals of Interest) used in the Tasking, Collection, Processing, Exploitation and Dissemination (TCPED) process. Spectral is scalable, mission configurable, modular, and remotable, rapidly responding to new threats and/or capabilities. A integrated capability enables data sharing with other systems to support Electromagnetic Maneuver Warfare (EMW/Integrated Fires (IF)).

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	FFG 1	TBD	TBD	TBD		1	9.885
FY 2021	FFG 2	TBD	TBD	TBD		1	9.885

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	FFG 1	Jul 2026	40	16	Nov 2021
FY 2021	FFG 2	Oct 2026	40	16	Feb 2022

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2128 / FFG-Frigate
Equipment Item: Cooperative Engagement Capability (CEC)	**PARM Code:** PEO IWS 6.0

P-35 Category	FY 2020		FY 2021	
	Qty *(Each)*	Total Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*
Major Hardware	1	8.831	1	8.227
System Engineering		0.740		0.393
Technical Engineering Services		0.699		0.646
Other Costs		1.269		0.814
Total	**1**	**11.539**	**1**	**10.080**

Description:

The AN/USG-2B Cooperative Engagement Capability (CEC) system provides real time integration of fire control quality sensor data into a single composite data source, which can be used by multiple CEC ships and airborne units for direct and remote missile engagements. CEC significantly improves battle force Air Warfare (AW) capability by coordinating all force AW sensors into a single real time, fire control quality composite track picture.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity *(Each)*	Unit Cost *($ M)*
FY 2020	FFG 1	DRS Technologies & Raytheon	Various	Various	Option	1	8.831
FY 2021	FFG 2	DRS Technologies & Raytheon	Various	Various	Option	1	8.227

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	FFG 1	Jul 2026	21	18	Apr 2023
FY 2021	FFG 2	Oct 2026	21	18	Jul 2023

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2128 / FFG-Frigate
Equipment Item: Identification Friend or Foe (IFF) UPX-29	**PARM Code:** PMA 213

P-35 Category	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)	FY 2021 Qty (Each)	FY 2021 Total Cost ($ M)
Major Hardware	1	6.443	1	5.243
System Engineering		0.572		0.387
Technical Engineering Services		0.845		0.210
Other Costs		0.183		0.050
Total	**1**	**8.043**	**1**	**5.890**

Description:

The AN/UPX-29(V) provides a centralized identification system that operates independently to transmit interrogations, detect transponder replies, and process the resulting information for use by a ship's operators and combat weapons system computers. The system provides Modes 1, 2, 3A, C and provides secure, positive ID of Mode 4, Mode S and Mode 5 targets.

FY20 cost increases are due to receiving updated cost estimates based on the loss of cost sharing initiatives and higher unit costs due to the new profile, and contract alignment with the support activities and other shipbuilding programs.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	FFG 1	TBD	Various	Various		1	6.443
FY 2021	FFG 2	TBD	Various	Various		1	5.243

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	FFG 1	Jul 2026	40	24	Mar 2021
FY 2021	FFG 2	Oct 2026	40	24	Jun 2021

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2128 / FFG-Frigate
Equipment Item: External Communication Suite	**PARM Code:** PMW 760

P-35 Category	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)	FY 2021 Qty (Each)	FY 2021 Total Cost ($ M)
Major Hardware	1	6.335	1	6.333
System Engineering		0.268		0.266
Technical Engineering Services		0.478		0.476
Other Costs		0.339		0.338
Total	**1**	**7.420**	**1**	**7.413**

Description:

External Communication Suite (EXCOMM) is a software programmable tactical radio (with embedded Information Security [INFOSEC]) that provides interoperable Line of Sight/Beyond Line of Sight (LOS/BLOS) C4I capabilities to the fleet.

FY20 cost increases are due to receiving updated cost estimates based on the loss of cost sharing initiatives and higher unit costs due to the new profile, and contract alignment with the support activities and other shipbuilding programs.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	FFG 1	Various	C/FFP	TBD		1	6.335
FY 2021	FFG 2	Various	C/FFP	TBD		1	6.333

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	FFG 1	Jul 2026	40	24	Mar 2021
FY 2021	FFG 2	Oct 2026	40	24	Jun 2021

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2128 / FFG-Frigate
Equipment Item: Navy Advanced Extremely High Frequency (AEHF) Multiband Terminal (NMT)(AN/WSC-9(V)1))	**PARM Code:** PMW 170

P-35 Category	FY 2020		FY 2021	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	1	5.823	1	5.452
System Engineering		0.052		0.052
Technical Engineering Services		0.243		0.231
Other Costs		0.732		0.628
Total	**1**	**6.850**	**1**	**6.363**

Description:

The Navy Multiband Terminal (NMT) is the Navy's next generation ground terminal for military protected and wideband satellite communications, providing voice, video and data communications. NMT supports protected strategic/tactical warfare communications down to housekeeping and humanitarian (quality of life) communications for the Sailor and maintains backwards compatibility with legacy waveforms and systems while ensuring access to new and future MILSATCOM capabilities (Advanced Extremely High Frequency [AEHF], Wideband Global Satellite [WGS], and Enhanced Polar Satellite [EPS]).

FY20 cost increases are due to receiving updated cost estimates based on the loss of cost sharing initiatives and higher unit costs due to the new profile, and contract alignment with the support activities and other shipbuilding programs.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	FFG 1	Raytheon	C/FFP	Dec 2020	Option	1	5.823
FY 2021	FFG 2	Raytheon	C/FFP	Dec 2020	Option	1	5.452

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	FFG 1	Jul 2026	21	24	Oct 2022
FY 2021	FFG 2	Oct 2026	21	24	Jan 2023

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2128 / FFG-Frigate
Equipment Item: Consolidated Afloat Network Enterprise System (CANES)	**PARM Code:** PMW 160

P-35 Category	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)	FY 2021 Qty (Each)	FY 2021 Total Cost ($ M)
Major Hardware	1	4.332	1	4.332
System Engineering		1.785		1.755
Technical Engineering Services		0.426		0.426
Other Costs		0.129		0.125
Total	**1**	**6.672**	**1**	**6.638**

Description:

CANES is a single, highly scalable network, computing, and services infrastructure supporting mission area application hosting and service delivery across a diverse set of Communities of Interest (COIs). It provides Navy tactical/nontactical information environment and infrastructure necessary to enable hosting, extended services reach back & reach forward and relay functions.

FY20 cost increases are due to receiving updated cost estimates based on the loss of cost sharing initiatives and higher unit costs due to the new profile, and contract alignment with the support activities and other shipbuilding programs.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	FFG 1	TBD	TBD	TBD		1	4.332
FY 2021	FFG 2	TBD	TBD	TBD		1	4.332

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	FFG 1	Jul 2026	18	15	Oct 2023
FY 2021	FFG 2	Oct 2026	18	15	Jan 2024

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2128 / FFG-Frigate
Equipment Item: Network Tactical Common Data Link (NTCDL) Variant B	**PARM Code:** PMW 170

P-35 Category	FY 2020		FY 2021	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Major Hardware	1	5.117	1	5.117
System Engineering		0.297		0.285
Technical Engineering Services		0.255		0.215
Other Costs		0.436		0.417
Total	**1**	**6.105**	**1**	**6.034**

Description:

NTCDL provides the ability to transmit/receive real-time ISR data simultaneously from multiple sources (air, surface, subsurface, and man-portable) and exchange command and control information (voice, data, imagery, and full-motion video) across dissimilar joint, service, coalition, and civil networks. NTCDL provides warfighters the capability to support multiple, simultaneous, networked operations with in-service CDL equipped aircraft (e.g., F/A-18, P-3, and MH-60R) in addition to next-generation manned and unmanned platforms (e.g., Fire Scout). The NTCDL Variant planned for the FFG(X) is comprised of 4 Transmit and 4 Receive Phased Array Antennas (PAAs).

FY20 cost increases are due to receiving updated cost estimates based on the loss of cost sharing initiatives and higher unit costs due to the new profile, and contract alignment with the support activities and other shipbuilding programs.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	FFG 1	TBD	TBD	TBD		1	5.117
FY 2021	FFG 2	TBD	TBD	TBD		1	5.117

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	FFG 1	Jul 2026	21	12	Oct 2023
FY 2021	FFG 2	Oct 2026	21	12	Jan 2024

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2128 / FFG-Frigate
Equipment Item: Inertial Navigation System (INS) AN/WSN-7(V)1	**PARM Code:** PEO IWS 6.0

P-35 Category	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)	FY 2021 Qty (Each)	FY 2021 Total Cost ($ M)
Major Hardware	1	5.035	1	5.035
System Engineering		0.088		0.104
Technical Engineering Services		0.534		0.534
Other Costs		0.159		0.079
Total	**1**	**5.816**	**1**	**5.752**

Description:

The AN/WSN-7 Ring Laser Gyro Navigation (RLGN) System calculates and disseminates own ship's position, velocity and attitude (heading, roll and pitch) data outputs. The AN/WSN-7 RLGN System provides real time navigation data to use by Navigation & combat systems.

FY20 cost increases are due to receiving updated cost estimates based on the loss of cost sharing initiatives and higher unit costs due to the new profile, and contract alignment with the support activities and other shipbuilding programs.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	FFG 1	Sperry Marine	TBD	Sep 2020	New	1	5.035
FY 2021	FFG 2	Sperry Marine	TBD	TBD		1	5.035

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	FFG 1	Jul 2026	40	18	Sep 2021
FY 2021	FFG 2	Oct 2026	40	18	Dec 2021

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2128 / FFG-Frigate
Equipment Item: Situation Awareness EO/IR	**PARM Code:** PEO IWS 2E

P-35 Category	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)	FY 2021 Qty (Each)	FY 2021 Total Cost ($ M)
Major Hardware	1	2.906	1	2.865
System Engineering		0.555		0.463
Technical Engineering Services		0.097		0.099
Other Costs		1.441		0.269
Total	**1**	**4.999**	**1**	**3.696**

Description:

Situation Awareness Electro-Optical/Infrared (EO/IR) system provides the capability to classify, identify and assist in determining intent of conventional, asymmetrical and advanced contacts/threats. EO/IR improves Situational Awareness (SA) and supports Anti-terrorism/Force Protection (AT/FP), Intelligence, Surveillance and Reconnaissance (ISR), Navigation (NAV), Intelligence (INTEL), Anti-Surface Warfare (SUW), Air Warfare (AW) and Anti-Ship Missile Defense (ASMD) missions while providing Long Range HD Visible/Infra-Red and Laser Range Finding sensors and capability for controlling, displaying and recording sensor imagery

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	FFG 1	Ball Aerospace & Technologies	C/FFP	TBD	New	1	2.906
FY 2021	FFG 2	Ball Aerospace & Technologies	C/FFP	TBD		1	2.865

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	FFG 1	Jul 2026	40	12	Mar 2022
FY 2021	FFG 2	Oct 2026	40	12	Jun 2022

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2128 / FFG-Frigate
Equipment Item: NIXIE AN/SLQ-25E	**PARM Code:** PMS 415

P-35 Category	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)	FY 2021 Qty (Each)	FY 2021 Total Cost ($ M)
Major Hardware	1	1.877	1	1.828
System Engineering		0.268		0.123
Technical Engineering Services		0.442		0.323
Other Costs		0.753		0.228
Total	**1**	**3.340**	**1**	**2.502**

Description:

The Torpedo Countermeasures Transmitting Set AN/SLQ-25E (NIXIE) is a passive, electro-acoustic decoy system used to provide deceptive countermeasures against acoustic homing torpedoes.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	FFG 1	TBD	TBD	TBD		1	1.877
FY 2021	FFG 2	TBD	TBD	TBD		1	1.828

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	FFG 1		40	18	Sep 2021
FY 2021	FFG 2		40	18	Dec 2021

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2128 / FFG-Frigate
Equipment Item: Aircraft Ship Integrated Securing and Traversing System (ASIST)	**PARM Code:** PMA 251

P-35 Category	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)	FY 2021 Qty (Each)	FY 2021 Total Cost ($ M)
Major Hardware	1	4.974	1	5.033
System Engineering		0.516		0.712
Technical Engineering Services		2.970		0.436
Other Costs		0.345		0.082
Total	**1**	**8.805**	**1**	**6.263**

Description:

Aircraft Ship Integrated Secure and Traverse (ASIST) provides safe recovery, securing, straightening, traversing, stowing, and launching of MH-60R and MQ-8C.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	FFG 1	INDAL	C/FFP	Sep 2021	New	1	4.974
FY 2021	FFG 2	INDAL	C/FFP	TBD		1	5.033

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	FFG 1	Jul 2026	21	24	Oct 2022
FY 2021	FFG 2	Oct 2026	21	24	Jan 2023

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2128 / FFG-Frigate
Equipment Item: Internal Communication (IC) Voice	**PARM Code:** PEO SHIPS AM

P-35 Category	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)	FY 2021 Qty (Each)	FY 2021 Total Cost ($ M)
Major Hardware	1	1.758	1	1.811
System Engineering		0.185		0.166
Technical Engineering Services		0.853		0.818
Other Costs		0.626		0.645
Total	**1**	**3.422**	**1**	**3.440**

Description:

IC Voice provides shipboard internal communication consisting of the announcing system, telephones, and wireless radios.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	FFG 1	TBD	TBD	TBD		1	1.758
FY 2021	FFG 2	TBD	TBD	TBD		1	1.811

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	FFG 1	Jul 2026	40	12	Mar 2022
FY 2021	FFG 2	Oct 2026	40	12	Jun 2022

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2128 / FFG-Frigate
Equipment Item: MK 41 Vertical Launch System (VLS)- 32 Cell	**PARM Code:** PEO IWS 3L

P-35 Category	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)	FY 2021 Qty (Each)	FY 2021 Total Cost ($ M)
Major Hardware	1	11.519	1	11.578
System Engineering		2.922		2.922
Other Costs		0.630		0.630
Total	**1**	**15.071**	**1**	**15.130**

Description:

The MK 41 Vertical Launch System (VLS) is a Modular, Below Deck Missile Launcher supporting Multiple Warfighting Mission Areas to include Air Warfare (AW)/Anti-Submarine Warfare (ASW)/Ballistic Missile Defense (BMD)/Land Attack/Strike. It will be a 32 cell launching system that will support FFG(X) warfare and AW requirement for self defense.

FY20 cost increases are due to receiving updated cost estimates based on the loss of cost sharing initiatives and higher unit costs due to the new profile, and contract alignment with the support activities and other shipbuilding programs.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	FFG 1	Lockheed Martin	C/FFP	May 2020		1	11.519
FY 2021	FFG 2	Lockheed Martin	C/FFP	May 2021		1	11.578

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	FFG 1	Jul 2026	40	24	Mar 2021
FY 2021	FFG 2	Oct 2026	40	24	Jun 2021

Competition/Second Source Initiatives:

VLS has a re-compete planned in FY 2023.

Remarks:

Testing and Integration costs are captured under the Aegis Weapons System (AWS).

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2128 / FFG-Frigate
Equipment Item: MK 48 Gun Weapon System (GWS)	**PARM Code:** PEO IWS 3C

P-35 Category	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)	FY 2021 Qty (Each)	FY 2021 Total Cost ($ M)
Major Hardware	1	11.278	1	11.145
System Engineering		1.347		1.139
Technical Engineering Services		0.431		0.331
Other Costs		1.782		1.007
Total	**1**	**14.838**	**1**	**13.622**

Description:

The MK 48 MOD 2 Gun Weapon System (GWS) is fully integrated with MK 160 MOD 18 Gun Computer System w/ MK 20 MOD 1 Electro Optical Sight System and MK 110 MOD 0 57mm gun. The MK 160 Gun Fire Control System (GFCS) is the standard USN gun fire control system; the MK 20 Electro-Optical Sensor System (EOSS) is the standard gun optical sight used for gun engagements; and the MK 110 is an automated 57mm gun system used for surface and air engagements of hostile targets.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	FFG 1	Various	C/FFP	Various	Various	1	11.278
FY 2021	FFG 2	Various	C/FFP	Various	Various	1	11.145

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	FFG 1	Jul 2026	40	24	Mar 2021
FY 2021	FFG 2	Oct 2026	40	24	Jun 2021

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 02 / 1	**P-1 Line Item Number / Title:** 2128 / FFG-Frigate
Equipment Item: Rolling Airframe Missile (RAM) Guided Missile Launching System- 21 Cell	**PARM Code:** PEO IWS 11

P-35 Category	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)	FY 2021 Qty (Each)	FY 2021 Total Cost ($ M)
Major Hardware	1	10.310	1	10.412
System Engineering		0.775		0.785
Technical Engineering Services		0.372		0.388
Other Costs		0.797		1.266
Total	**1**	**12.254**	**1**	**12.851**

Description:

The Rolling Airframe Missile (RAM) Guided Missile Weapon System (GMWS) is a lightweight, fast reaction, high-firepower, passive, dual-mode (IR and RF) system. The RAM GMWS is a point defense weapon system, designed to engage and destroy incoming Anti-Ship Cruise Missiles (ASCM), helicopters, and fixed wing aircraft, and to engage and intercept surface craft. This represents the 21-cell variant.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2020	FFG 1	Raytheon	SS/FFP	Dec 2020	Option	1	10.310
FY 2021	FFG 2	Raytheon	SS/FFP	Dec 2020	Option	1	10.412

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2020	FFG 1	Jul 2026	40	24	Mar 2021
FY 2021	FFG 2	Oct 2026	40	24	Jun 2021

Competition/Second Source Initiatives:

N/A

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 03: Amphibious Ships / BSA 1: Amphibious Ships	**P-1 Line Item Number / Title:** 3010 / LPD Flight II

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: 0604454N

Line Item MDAP/MAIS Code: 542

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity *(Units in Each)*	1	-	-	1	-	1	-	1	-	1	-	4
Gross/Weapon System Cost *($ in Millions)*	1,819.600	0.000	0.000	2,029.901	0.000	2,029.901	0.000	1,847.629	0.000	1,864.703	-	7,561.833
Less PY Advance Procurement *($ in Millions)*	14.000	-	-	350.000	-	350.000	-	-	-	-	-	364.000
Less Cost To Complete *($ in Millions)*	5.600	-	-	-	-	-	-	-	-	-	-	5.600
Less Prior Year Full Funding *($ in Millions)*	-	-	-	524.100	-	524.100	-	-	-	-	-	524.100
Net Procurement (P-1) *($ in Millions)*	1,800.000	0.000	0.000	1,155.801	0.000	1,155.801	0.000	1,847.629	0.000	1,864.703	-	6,668.133
Plus Prior Year FF *($ in Millions)*	-	-	524.100	-	-	-	-	-	-	-	-	524.100
Full Funding TOA *($ in Millions)*	1,800.000	-	524.100	1,155.801	-	1,155.801	-	1,847.629	-	1,864.703	-	7,192.233
Plus CY Advance Procurement *($ in Millions)*	14.000	350.000	-	-	-	-	-	-	-	-	-	364.000
Plus Cost To Complete *($ in Millions)*	-	-	-	-	-	-	-	-	-	5.600	-	5.600
Total Obligation Authority *($ in Millions)*	**1,814.000**	**350.000**	**524.100**	**1,155.801**	**0.000**	**1,155.801**	**0.000**	**1,847.629**	**0.000**	**1,870.303**	**-**	**7,561.833**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Total *($ in Millions)*	**1,814.000**	**350.000**	**524.100**	**1,155.801**	**-**	**1,155.801**	**-**	**1,847.629**	**-**	**1,870.303**	**-**	**7,561.833**
Gross/Weapon System Unit Cost *($ in Millions)*	1,819.600	-	-	2,029.901	-	2,029.901	-	1,847.629	-	1,864.703	-	1,890.458

Description:

The LPD 17 Flight II is expected to functionally replace LSD-41 Class ships and LSD-49 Class ships for embark, transport, control, insert, sustainment, and extract of Marine Air-Ground Task Force elements and supporting forces by helicopters, landing craft, and amphibious vehicles. Program is on track to support FY27 retirement of LSDs.

The FY 2018 Defense Appropriations Act authorized the procurement of LPD 30. Per signed Acquisition Decision Memorandum, LPD 17 Flight II will meet the Capabilities Development Document for LX(R) and shall subsume all previous LX(R) efforts. LPD 30 will be the first ship of LPD 17 Flight II.

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy		Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 03: Amphibious Ships / BSA 1: Amphibious Ships	**P-1 Line Item Number / Title:** 3010 / LPD Flight II	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** 0604454N
Line Item MDAP/MAIS Code: 542		

Characteristics:

	-	
Length Overall	208.5 m	684 ft
Beam	31.9 m	105 ft
Displacement	25.3 lmt	24.9 klt
Draft	7.0 m	23 ft

Systems:

Electronics

-Mission Systems

Production Status:	LPD 30	LPD 31 (1)
Contract Award Date	Mar 2019	Mar 2020
Months to Completion		
a) Award to Delivery	71 months	83 months
b) Construction Start to Delivery	58 months	58 months
Delivery Date	Feb 2025	Feb 2027
Completion Of Fitting Out	Sep 2025	Sep 2027
Obligation Work Limit Date	Aug 2026	Aug 2028

Design Schedule	Start / Issue	Complete / Response	Reissue	Reissue Complete / Response
Issue Date for TLR	N/A	N/A		
Issue Date for TLS	N/A	N/A		
Preliminary Design	Mar 2015	Jun 2016		
Contract Design	Jun 2016	Jun 2017		
Detail Design	Dec 2018	Mar 2020		
Request for Proposals	Jul 2018	Aug 2018		
Design Agent	Huntington Ingalls Industries			

Classification of Cost Estimate: CLASS C

Justification:
The FY 2020 enactment includes a congressional rescission of $102.900 million to FY 2019 Advance Procurement funding. However this is not reflected on the P-40 and associated detailed exhibits.

Footnotes:
(1) LPD 31 is a FY21 ship with incremental funding and authority to award in FY20.

Exhibit P-5c, Ship Cost Analysis: PB 2021 Navy | **Date:** February 2020

Appropriation / Budget Activity / Budget Sub Activity:
1611N / 03 / 1

P-1 Line Item Number / Title:
3010 / LPD Flight II

Cost Categories (†) indicates the presence of a P-8a	FY 2018		FY 2021	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Plan Costs	1		1	
Basic Construction/Conversion		1,476.291		1,633.881
Change Orders		22.985		30.620
Electronics (†)		211.048		241.605
Hull, Mechanical, and Electrical (HM&E) (†)		16.400		18.774
Ordnance (†)		83.876		96.021
Other Cost		9.000		9.000
Total Ship Estimate		**1,819.600**		**2,029.901**
Less Advance Procurement FY 2016		14.000		-
Less Advance Procurement FY 2019		-		350.000
Less Cost to Complete FY 2025		5.600		-
Less Prior Year Full Funding FY 2020		-		524.100
Net P-1 Funding		**1,800.000**		**1,155.801**

Remarks:
Basic Construction for the FY 2021 ship is overstated by $102.900 million as this exhibit does not reflect the FY 2019 Rescission of LPD Flight II Advance Procurement.
Cost to Complete funding required in FY25 for LPD 30 to address cost increases associated with SSDS due to fielding of TI-16 and wholeness efforts

Exhibit P-27, Ship Production Schedule: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3010 / LPD Flight II

Ship	Shipbuilder	Fiscal Year	Contract Award	Start of Construction	Delivery Date
LPD 30	HUNTINGTON INGALLS INDUSTRIES	2018	Mar 2019	Apr 2020	Feb 2025
LPD 31 (1)	HUNTINGTON INGALLS INDUSTRIES	2021	Mar 2020	Apr 2022	Feb 2027
LPD 32	TBD	2023	Sep 2023	Apr 2024	Feb 2029
LPD 33	TBD	2025	Sep 2025	Apr 2026	Feb 2031

Footnotes:

(1) LPD 31 is a FY21 ship with incremental funding and authority to award in FY20.

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3010 / LPD Flight II

Electronics	FY 2018		FY 2021	
	Qty *(Each)*	Total Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*
P-35 Items				
Mission Systems		42.938		45.566
C4ISR		78.348		83.144
Ship Self Defense System (SSDS)		19.492		20.685
Cooperative Engagement Capability (CEC)		10.852		11.516
Interrogator System (IFF)		5.915		6.277
AN/SLQ-32(V)6 Surface Electronic Warfare Improvement Program (SEWIP)		12.771		13.553
P-35 Items Subtotal		**170.316**		**180.741**
Major Items				
Advanced Training Domain (ATD)		1.251		1.328
AN/WSN-7(RLGN)		3.882		4.120
Nulka Decoy Launching System (DLS)		1.419		1.506
AADS		1.038		1.102
Torpedo Countermeasures Transmitting Set (Nixie)		4.336		4.601
RADIAC		0.103		0.109
AN/UQN-10		0.204		0.216
DHYSL		0.373		0.396
Electronic Charting Display and Information Systems-Navy (ECDIS-N)		1.752		1.859
Major Items Subtotal		**14.358**		**15.237**
Other Cost Elements				
Miscellaneous Electronics		22.239		41.239
IWS CSI		4.135		4.388
Other Cost Elements Subtotal		**26.374**		**45.627**
Total Electronics		**211.048**		**241.605**

Remarks:
Increase in Miscellaneous Electronics reflects the need for additional class cost on LPD 31 as the Navy transitions from Flight I to Flight II. LPD 30 had a relatively low class cost requirement as the first ship in Flight II

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3010 / LPD Flight II

Hull, Mechanical, and Electrical (HM&E)	FY 2018		FY 2021	
	Qty *(Each)*	Total Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*
Major Items				
Boats		0.616		0.654
Truck, Forklift		2.070		2.196
Chemical Warfare Detector		0.246		0.261
Military Payroll System		0.586		0.622
Integrated Condition Assessment System (ICAS)		0.216		0.229
Oily Water Separator		0.294		0.312
Plastic Waste Processing EQP		0.714		0.758
Unclassified Video System (UVS)		2.394		2.541
Major Items Subtotal		**7.136**		**7.573**
Other Cost Elements				
Miscellaneous HM&E		9.264		11.201
Other Cost Elements Subtotal		**9.264**		**11.201**
Total Hull, Mechanical, and Electrical (HM&E)		**16.400**		**18.774**

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3010 / LPD Flight II

Ordnance	FY 2018		FY 2021	
	Qty *(Each)*	Total Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*
P-35 Items				
RAM BLOCK II		20.511		21.766
MK 46 GUN		8.350		8.861
AN/SPQ-9B Radar Set		6.571		6.974
EASR		32.976		34.994
P-35 Items Subtotal		**68.408**		**72.595**
Major Items				
ASGSI/HOSS/MWS Fit Control & Inst Land Sys		3.252		3.451
ORDNANCE HANDLING EQUIPMENT		0.423		0.449
Next Generation Surface Search Radar (NGSSR)		2.758		2.927
Major Items Subtotal		**6.433**		**6.827**
Other Cost Elements				
MISCELLANEOUS ORDNANCE		9.035		16.599
Other Cost Elements Subtotal		**9.035**		**16.599**
Total Ordnance		**83.876**		**96.021**

Remarks:
Increase in Miscellaneous Ordnance reflects the need for additional class cost on LPD 31 as the Navy transitions from Flight I to Flight II. LPD 30 had a relatively low class cost requirement as the first ship in Flight II.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3010 / LPD Flight II
Equipment Item: Mission Systems	**PARM Code:** N/A

P-35 Category	FY 2018 Qty (Each)	FY 2018 Total Cost ($ M)	FY 2021 Qty (Each)	FY 2021 Total Cost ($ M)
Major Hardware		40.902		43.406
Other Costs		2.036		2.160
Total		**42.938**		**45.566**

Description:

Mission Systems is a microcomputer-based integration of shipboard control electronics; Engineering Control System (ECS), Ship Control System (SCS), HM&E Network, Navigation Data Distribution System (NDDS), Interior Voice Network (IVN), and various distributed Sensors. Mission systems and associated integration will be provided by a combination of CFE and Government supplied material and services.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2018	LPD 30	Various	SS/FFP	TBD	Various	1	40.902
FY 2021	LPD 31	Various	SS/FFP	TBD	Various	1	43.406

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2018	LPD 30	Feb 2025	37	24	Jan 2020
FY 2021	LPD 31	Feb 2027	37	24	Jan 2022

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3010 / LPD Flight II
Equipment Item: C4ISR	**PARM Code:** N/A

P-35 Category	FY 2018 Qty (Each)	FY 2018 Total Cost ($ M)	FY 2021 Qty (Each)	FY 2021 Total Cost ($ M)
Major Hardware		41.102		43.618
Spares		0.941		0.999
Technical Engineering Services		6.510		6.908
Ancillary Equipment		0.246		0.261
Documentation and Systems Engineering		5.024		5.332
Other Appropriate Costs		9.523		10.106
Turnkey		15.002		15.920
Total		**78.348**		**83.144**

Description:

To provide the link between the ship, the command hierarchy, and other units of the operating forces.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2018	LPD 30	Various	Various	TBD	Various	1	41.102
FY 2021	LPD 31	Various	Various	TBD	Various	1	43.618

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2018	LPD 30	Feb 2025	16	16	Jun 2022
FY 2021	LPD 31	Feb 2027	16	16	Jun 2024

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3010 / LPD Flight II
Equipment Item: Ship Self Defense System (SSDS)	**PARM Code:** N/A

P-35 Category	FY 2018 Qty (Each)	FY 2018 Total Cost ($ M)	FY 2021 Qty (Each)	FY 2021 Total Cost ($ M)
Major Hardware		13.104		13.905
Spares		0.909		0.965
Technical Engineering Services		0.564		0.599
Other Costs		2.291		2.431
Documentation and Systems Engineering		2.624		2.785
Total		**19.492**		**20.685**

Description:

Ship Self Defense System Mark 2 is microcomputer-based, self-defense coordination system that integrates and automates multiple sensors, self defense weapons, and softkill systems to provide quick reaction combat capability against anti-ship cruise missile threats.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2018	LPD 30	TBD	TBD	TBD	New	1	13.104
FY 2021	LPD 31	TBD	TBD	TBD	New	1	13.905

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2018	LPD 30	Feb 2025	17	13	Aug 2022
FY 2021	LPD 31	Feb 2027	17	13	Aug 2024

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3010 / LPD Flight II
Equipment Item: Cooperative Engagement Capability (CEC)	**PARM Code:** N/A

P-35 Category	FY 2018 Qty (Each)	FY 2018 Total Cost ($ M)	FY 2021 Qty (Each)	FY 2021 Total Cost ($ M)
Major Hardware		8.177		8.677
Technical Engineering Services		0.435		0.462
Documentation and Systems Engineering		0.498		0.528
Other Costs		1.742		1.849
Total		**10.852**		**11.516**

Description:

Cooperative Engagement Capability (CEC) coordinates all anti-warfare sensors into single, real time, fire control quality composite track which improves battle force air defense.
Production of Planar Array Antenna Assembly (PAAA) production has ended. LPD 30 amounts reflect the Common Array Block (CAB) Family of Antenna (FoA) in place of PAAA.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2018	LPD 30	Raytheon	SS/FFP	Various	Various	1	8.177
FY 2021	LPD 31	Raytheon	SS/FFP	Various	Various	1	8.677

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2018	LPD 30	Feb 2025	24	18	Aug 2021
FY 2021	LPD 31	Feb 2027	24	18	Aug 2023

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3010 / LPD Flight II
Equipment Item: Interrogator System (IFF)	**PARM Code:** N/A

P-35 Category	FY 2018 Qty (Each)	FY 2018 Total Cost ($ M)	FY 2021 Qty (Each)	FY 2021 Total Cost ($ M)
Major Hardware		5.232		5.552
Spares		0.146		0.155
Technical Engineering Services		0.117		0.124
Other Costs		0.271		0.288
Documentation and Systems Engineering		0.149		0.158
Total		**5.915**		**6.277**

Description:

The Transponder Set is an Automatic Identification and Monitoring System (AIMS) Identification Friend or Foe (IFF) system that receives interrogation signals from air, surface, and land IFF - equipped units and automatically replies with a coded response signal that provides ownship position and identification.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2018	LPD 30	TBD	TBD	Various	New	1	5.232
FY 2021	LPD 31	TBD	TBD	Various	New	1	5.552

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2018	LPD 30	Feb 2025	6	30	Feb 2022
FY 2021	LPD 31	Feb 2027	6	30	Feb 2024

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3010 / LPD Flight II
Equipment Item: AN/SLQ-32(V)6 Surface Electronic Warfare Improvement Program (SEWIP)	**PARM Code:** N/A

P-35 Category	FY 2018 Qty (Each)	FY 2018 Total Cost ($ M)	FY 2021 Qty (Each)	FY 2021 Total Cost ($ M)
Major Hardware		10.767		11.426
Spares		0.382		0.405
Technical Engineering Services		0.142		0.151
Other Costs		0.641		0.680
Documentation and Systems Engineering		0.839		0.891
Total		**12.771**		**13.553**

Description:

The AN/SLQ-32(V)6 (SEWIP) is a shipboard system that provides a full suite of Electronic Warfare capabilities designed to protect against anti-cruise ship missile threats.
The SLQ-32 system is obsolete and NO LONGER AVAILABLE for refurbishment. LPD 30 will be built with the SEWIP (Block 2) system.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2018	LPD 30	TBD	TBD	TBD		1	10.767
FY 2021	LPD 31	TBD	TBD	TBD		1	11.426

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2018	LPD 30	Feb 2025	24	24	Feb 2021
FY 2021	LPD 31	Feb 2027	24	24	Feb 2023

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3010 / LPD Flight II
Equipment Item: RAM BLOCK II	**PARM Code:** N/A

P-35 Category	FY 2018 Qty (Each)	FY 2018 Total Cost ($ M)	FY 2021 Qty (Each)	FY 2021 Total Cost ($ M)
Major Hardware		17.935		19.033
Spares		0.129		0.137
Technical Engineering Services		0.302		0.320
Other Costs		1.020		1.082
Documentation and Systems Engineering		1.125		1.194
Total		**20.511**		**21.766**

Description:

The Rolling Airframe Missile (RAM) Block 2 system is a short-range, fast-reaction, high-firepower, lightweight weapon designed to destroy incoming anti-ship cruise missiles. LLTM was procured with FY16 Advance Procurement.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2018	LPD 30	Raytheon	C/FFP	Oct 2016	Option	2	8.968
FY 2021	LPD 31	TBD	TBD	TBD		2	19.517

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2018	LPD 30	Feb 2025	22	24	Apr 2021
FY 2021	LPD 31	Feb 2027	22	24	Apr 2023

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3010 / LPD Flight II
Equipment Item: MK 46 GUN	**PARM Code:** N/A

P-35 Category	FY 2018 Qty (Each)	FY 2018 Total Cost ($ M)	FY 2021 Qty (Each)	FY 2021 Total Cost ($ M)
Major Hardware		8.130		8.628
Technical Engineering Services		0.220		0.233
Total		**8.350**		**8.861**

Description:

The MK 46 Gun is a remotely operated naval gun system using a high velocity cannon and second-generation thermal day-night sight for close-in ship's protection.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2018	LPD 30	General Dynamics	C/FFP	TBD	New	2	4.065
FY 2021	LPD 31	TBD	TBD	TBD		2	4.314

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2018	LPD 30	Feb 2025	24	18	Aug 2021
FY 2021	LPD 31	Feb 2027	24	18	Aug 2023

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3010 / LPD Flight II
Equipment Item: AN/SPQ-9B Radar Set	**PARM Code:** N/A

P-35 Category	FY 2018 Qty (Each)	FY 2018 Total Cost ($ M)	FY 2021 Qty (Each)	FY 2021 Total Cost ($ M)
Major Hardware		4.200		4.457
Spares		0.388		0.412
Technical Engineering Services		0.707		0.751
Other Costs		0.776		0.823
Documentation and Systems Engineering		0.500		0.531
Total		**6.571**		**6.974**

Description:

The AN/SPQ-9B is a high resolution, X-band, narrow beam radar that provides both air and surface tracking information.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2018	LPD 30	DRS LAUREL TECHNOLOGIES	C/FFP	Jul 2018	Option	1	4.200
FY 2021	LPD 31	TBD	TBD	TBD		1	4.457

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2018	LPD 30	Feb 2025	24	24	Feb 2021
FY 2021	LPD 31	Feb 2027	24	24	Feb 2023

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3010 / LPD Flight II
Equipment Item: EASR	**PARM Code:** N/A

P-35 Category	FY 2018 Qty (Each)	FY 2018 Total Cost ($ M)	FY 2021 Qty (Each)	FY 2021 Total Cost ($ M)
Major Hardware		20.907		22.187
Spares		1.093		1.160
Technical Engineering Services		3.259		3.458
Other Costs		6.437		6.830
Documentation and Systems Engineering		1.280		1.359
Total		**32.976**		**34.994**

Description:

Enterprise Air Surveillance Radar (EASR) is the replacement Air Search Radar and the costs are under development.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2018	LPD 30	Raytheon	C/FFP	Nov 2020	Option	1	20.907
FY 2021	LPD 31	TBD	TBD	TBD	New	1	22.187

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2018	LPD 30	Feb 2025	18	27	May 2021
FY 2021	LPD 31	Feb 2027	18	27	May 2023

Competition/Second Source Initiatives:

N/A

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Exhibit P-10, Advance Procurement Requirements Analysis (*page 1 - Budget Funding Justification*): PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3010 / LPD Flight II

First System (2021) Award Date:	First System (2021) Completion Date:	Interval Between Systems: 0 Months

Cost Elements	Production Leadtime *(Months)*	When Required* *(Months)*	FY 2019 *($ M)*	FY 2020 *($ M)*	FY 2021 *($ M)*	FY 2022 *($ M)*	FY 2023 *($ M)*	FY 2024 *($ M)*	FY 2025 *($ M)*
LPD 31 AP									
BASIC	-	-	350.000	-	0.000	-	-	-	-
Total: LPD 31 AP			*350.000*	-	-	-	-	-	-
Total Advance Procurement/Obligation Authority			**350.000**	**-**	**-**	**-**	**-**	**-**	**-**

*Note: "When Required" is the number of months required before ship delivery.

Exhibit P-10, Advance Procurement Requirements Analysis (*page 2 - Budget Funding Justification*): PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3010 / LPD Flight II

Cost Elements	FY 2021						
	Production Leadtime *(Months)*	When Required* *(Months)*	Unit Cost *($ M)*	Contract Forecast Date	2021 Qty *(Each)*	For FY	Total Cost Request *($ M)*
LPD 31 AP							
BASIC	-	-	-		-		0.000
Total: LPD 31 AP							-
Total Advance Procurement/Obligation Authority							**-**

Description:
Advance Procurement is required in order to procure Long Lead Time Material (LLTM). There are known material items with 22-26 month lead times and AP funding allows the production to maintain a sustainable base workload and provides savings on ship costs.

*Note: "When Required" is the number of months required before ship delivery.

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 03: Amphibious Ships / BSA 1: Amphibious Ships	**P-1 Line Item Number / Title:** 3039 / Expeditionary Sea Base (ESB)

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: N/A

Line Item MDAP/MAIS Code: N/A

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity *(Units in Each)*	6	1	-	-	-	-	-	-	-	-	-	7
Gross/Weapon System Cost *($ in Millions)*	3,471.468	647.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	4,118.468
Less PY Advance Procurement *($ in Millions)*	179.700	-	-	-	-	-	-	-	-	-	-	179.700
Less Cost To Complete *($ in Millions)*	38.000	-	-	-	-	-	-	-	-	-	-	38.000
Less Subsequent Year Full Funding *($ in Millions)*	162.900	-	-	-	-	-	-	-	-	-	-	162.900
Net Procurement (P-1) *($ in Millions)*	3,090.868	647.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	3,737.868
Plus Subsequent Year Full Funding *($ in Millions)*	162.900	-	-	-	-	-	-	-	-	-	-	162.900
Full Funding TOA *($ in Millions)*	3,253.768	647.000	-	-	-	-	-	-	-	-	-	3,900.768
Plus CY Advance Procurement *($ in Millions)*	179.700	-	-	-	-	-	-	-	-	-	-	179.700
Plus Cost To Complete *($ in Millions)*	-	-	38.000	-	-	-	-	-	-	-	-	38.000
Total Obligation Authority *($ in Millions)*	**3,433.468**	**647.000**	**38.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**-**	**4,118.468**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Plus Outfitting and Post Delivery *($ in Millions)*	104.820	10.112	16.091	15.167	-	15.167	11.500	-	-	-	-	157.690
Total *($ in Millions)*	**3,538.288**	**657.112**	**54.091**	**15.167**	**-**	**15.167**	**11.500**	**-**	**-**	**-**	**-**	**4,276.158**
Gross/Weapon System Unit Cost *($ in Millions)*	578.578	647.000	-	-	-	-	-	-	-	-	-	588.353

Description:

The Expeditionary Mobile Base (ESB) (formerly MLP Afloat Forward Staging Base (AFSB)) will serve as a dedicated Naval Afloat Forward Staging Base, optimized to support naval assets in a variety of missions rather than independently modifying ships-of-opportunity as required to meet these roles. The ESB retains sealift capabilities inherent to the Class through cargo transportation and distribution, but provides enhanced aviation, berthing, small boat handling, and command and control capabilities to meet a broader mission set. The ESB provides the Combatant Commanders flexibility to respond to immediate threats and host task organized forces, including Airborne Mine Countermeasures and Special Forces to confront irregular challenges and counter-terrorism. This includes enhanced logistics and UNREP capability (receive only) and C4I capability to support future missions.

Note:
1) The amounts in the Prior Years column includes the NDSF MPF,F MLP BLI 00401 Procurement Costs for Expeditionary Transport Dock (ESD) 1, ESD 2, and ESB 3 as well as SCN BLI 3039 for the ESB 4, 5, and 6.

2) The Outfitting and Post Delivery amounts in the Prior Years column represent NDSF BLI 5000 for ESD 1, ESD 2, and ESB 3 as well as SCN BLI 5110 for the ESB 4 and 5.

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy		**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 03: Amphibious Ships / BSA 1: Amphibious Ships	**P-1 Line Item Number / Title:** 3039 / Expeditionary Sea Base (ESB)	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** N/A
Line Item MDAP/MAIS Code: N/A		

Characteristics:

	Nominal Requirements
Length Overall	255M
Beam	50M
Displacement	28879 TONS
Draft	9.1M

Production Status:	**ESB 6**	**ESB 7**
Contract Award Date	Aug 2019	Aug 2019
Months to Completion		
a) Award to Delivery	33 months	51 months
b) Construction Start to Delivery	23 months	24 months
Delivery Date	May 2022	Nov 2023
Completion Of Fitting Out	Aug 2022	Feb 2024
Obligation Work Limit Date	Jul 2023	Jan 2025

Design Schedule	**Start / Issue**	**Complete / Response**	**Reissue**	**Reissue Complete / Response**
Issue Date for TLR	N/A	N/A		
Issue Date for TLS	N/A	N/A		
Preliminary Design	Sep 2009	Dec 2009		
Contract Design	Dec 2009	Aug 2010		
Detail Design	Aug 2010	Nov 2011		
Request for Proposals	N/A	N/A		
Design Agent				

Classification of Cost Estimate: Budget Quality Class

Exhibit P-5c, Ship Cost Analysis: PB 2021 Navy | **Date:** February 2020

Appropriation / Budget Activity / Budget Sub Activity:
1611N / 03 / 1

P-1 Line Item Number / Title:
3039 / Expeditionary Sea Base (ESB)

Cost Categories (†) indicates the presence of a P-8a	FY 2018		FY 2019	
	Qty *(Each)*	Total Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*
Plan Costs	1		1	
Basic Construction/Conversion		569.929		578.639
Change Orders		6.000		6.000
Electronics (†)		41.415		42.409
Hull, Mechanical, and Electrical (HM&E)		13.416		14.712
Other Cost		4.240		5.240
Total Ship Estimate		**635.000**		**647.000**
Net P-1 Funding		**635.000**		**647.000**

Exhibit P-27, Ship Production Schedule: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3039 / Expeditionary Sea Base (ESB)

Ship	Shipbuilder	Fiscal Year	Contract Award	Start of Construction	Delivery Date
ESB 6	NASSCO	2018	Aug 2019	Jun 2020	May 2022
ESB 7	NASSCO	2019	Aug 2019	Nov 2021	Nov 2023

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3039 / Expeditionary Sea Base (ESB)

Electronics	FY 2018		FY 2019	
	Qty *(Each)*	Total Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*
P-35 Items				
C4ISR	1	25.629	1	26.244
AVIATION ELECTRONICS	1	15.786	1	16.165
P-35 Items Subtotal		**41.415**		**42.409**
Total Electronics		**41.415**		**42.409**

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3039 / Expeditionary Sea Base (ESB)
Equipment Item: C4ISR	**PARM Code:** N/A

P-35 Category	FY 2018 Qty (Each)	FY 2018 Total Cost ($ M)	FY 2019 Qty (Each)	FY 2019 Total Cost ($ M)
Major Hardware	1	14.764	1	15.122
Spares		1.855		1.899
System Engineering		5.565		5.696
Technical Engineering Services		1.060		1.085
Other Costs		2.385		2.442
Total	**1**	**25.629**	**1**	**26.244**

Description:

C4ISR items consist of equipment which is in a containerized environment for secure storage and operation of ship's C2 equipment (Next Generation Wideband Communications, SMIS, (classified and unclassified networks).
Additional cryptographic equipment above the equipment provided with SMIS, Military radios to provide VHF, UHF Line of Site, and UHF SATCOM, Commercial Broadband Satellite Program (CBSP) for wideband SATCOM to provide voice and data communications to the shore.
A Navy network consisting of a rack of electronic boxes that will provide NIPRNET, SIPRNET and CENTRIX plus additional hardware and software to support Military Detachment functions, laptops and printers to outfit several added spaces supporting embarked units: briefing room, tactical operations center, planning room, intel room, training center and communication room. The infrastructure to support installation of a HF radio.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2018	ESB 6	Booz, Allen and Hamilton (BAH)	C/FFP	Mar 2019	Option	1	14.764
FY 2019	ESB 7	Booz, Allen and Hamilton (BAH)	C/FFP	Aug 2020	Option	1	15.122

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2018	ESB 6	May 2022	19	12	Oct 2019
FY 2019	ESB 7	Nov 2023	19	12	Dec 2020

Competition/Second Source Initiatives:

N/A

Remarks:

1) BAH is prime contractor with several other contractors. NSWC Panama City is the coordinating activity for the C4ISR system.
2) C4ISR: Cost for the ESB 5 and follow ships include the procurement, installation and testing of additional radios and antennas, satellite communication terminals, and network capabilities in support of the Special Operations Forces (SOF) capability.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3039 / Expeditionary Sea Base (ESB)
Equipment Item: AVIATION ELECTRONICS	**PARM Code:** N/A

P-35 Category	FY 2018 Qty (Each)	FY 2018 Total Cost ($ M)	FY 2019 Qty (Each)	FY 2019 Total Cost ($ M)
Major Hardware	1	12.539	1	12.915
Spares		0.531		0.531
System Engineering		0.336		0.336
Technical Engineering Services		1.118		1.118
Technical Data		0.129		0.129
Other Costs		1.133		1.136
Total	**1**	**15.786**	**1**	**16.165**

Description:

Consists of a Moriah wind measuring system to support helicopter operations, a Tactical Air Navigation System (TACAN) to provide a navigation beacon for aircraft, Advanced Stabilized Glide Slope Indicator (ASGSI) and Visual Landing Aids (VLA).

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2018	ESB 6	Various	Various	Mar 2019	Option	1	12.539
FY 2019	ESB 7	Various	Various	Aug 2020	Option	1	12.915

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2018	ESB 6	May 2022	17	14	Oct 2019
FY 2019	ESB 7	Nov 2023	17	14	Apr 2021

Competition/Second Source Initiatives:

N/A

Remarks:

1) AVIATION ELECTRONICS: Aviation navigation and landing system electronics.
2) Contract Data and Delivery Date information are estimated and provided based on planned execution.
3) Cost for the ESB 5 and follow ships include the procurement, installation and test infrastructure of antennas and control systems for the Air Search Radar, Small Tactical Unmanned Aerial System (STUAS), MQ-8C Ground Control Station (GCS) and Fire Scout UAV system in support of the Special Operations Forces (SOF) capability.
4) The decrease in Aviation Electronics from the FY 2020 President's Budget request is due to savings associated with 3D radar procurement, UAS integration and bulk pricing opportunities.

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Exhibit P-40, Budget Line Item Justification: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 03: Amphibious Ships / BSA 1: Amphibious Ships	**P-1 Line Item Number / Title:** 3041 / LHA Replacement

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: 0604567N

Line Item MDAP/MAIS Code: 333

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity *(Units in Each)*	3	-	-	-	-	-	-	1	-	-	-	4
Gross/Weapon System Cost *($ in Millions)*	10,288.014	0.000	0.000	0.000	0.000	0.000	0.000	3,873.498	0.000	0.000	-	14,161.512
Less PY Advance Procurement *($ in Millions)*	1,148.628	-	-	-	-	-	-	350.000	-	-	-	1,498.628
Less Cost To Complete *($ in Millions)*	247.788	-	-	-	-	-	-	-	-	-	-	247.788
Less Subsequent Year Full Funding *($ in Millions)*	5,003.128	-	-	-	-	-	-	1,624.897	-	-	-	6,628.025
Less Prior Year Full Funding *($ in Millions)*	-	-	-	-	-	-	-	650.000	-	-	-	650.000
Less Hurricane *($ in Millions)*	202.000	-	-	-	-	-	-	-	-	-	-	202.000
Net Procurement (P-1) *($ in Millions)*	3,686.470	0.000	0.000	0.000	0.000	0.000	0.000	1,248.601	0.000	0.000	-	4,935.071
Plus Subsequent Year Full Funding *($ in Millions)*	5,003.128	-	-	-	-	-	-	-	1,624.897	-	-	6,628.025
Plus Prior Year FF *($ in Millions)*	-	-	650.000	-	-	-	-	-	-	-	-	650.000
Full Funding TOA *($ in Millions)*	8,689.598	-	650.000	-	-	-	-	1,248.601	1,624.897	-	-	12,213.096
Plus CY Advance Procurement *($ in Millions)*	1,148.628	350.000	-	-	-	-	-	-	-	-	-	1,498.628
Plus Cost To Complete *($ in Millions)*	222.688	25.100	-	-	-	-	-	-	-	-	-	247.788
Plus Hurricane *($ in Millions)*	202.000	-	-	-	-	-	-	-	-	-	-	202.000
Total Obligation Authority *($ in Millions)*	**10,262.914**	**375.100**	**650.000**	**0.000**	**0.000**	**0.000**	**0.000**	**1,248.601**	**1,624.897**	**0.000**	**-**	**14,161.512**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Plus Outfitting and Post Delivery *($ in Millions)*	139.914	27.987	11.361	27.210	-	27.210	-	-	-	-	-	206.472
Total *($ in Millions)*	**10,402.828**	**403.087**	**661.361**	**27.210**	**-**	**27.210**	**-**	**1,248.601**	**1,624.897**	**-**	**-**	**14,367.984**
Gross/Weapon System Unit Cost *($ in Millions)*	3,429.338	-	-	-	-	-	-	3,873.498	-	-	-	3,540.378

Description:

The LHA(R) Program replaces the Tarawa Class (LHA 1) Amphibious Assault Ships and the retiring Wasp Class (LHD 1) Amphibious Assault Class Ships. The LHA(R) class program ensures that the Amphibious Fleet remains capable of Expeditionary Warfare well into the 21st Century and provide for an affordable and sustainable amphibious ship development program. Provides forward presence and power projection as an integral part of joint, interagency, and multinational maritime expeditionary forces. Operates for sustained periods in transit to and operations in an Amphibious Objective Area to include the embarkation, deployment, and landing of a Marine Landing Force and supporting forces by helicopters and tilt rotors supported by Joint Strike Fighters F-35B.

LHA(R) Flight 0 is considered a transitional increment intended to increase the aviation capabilities of amphibious assault ships. The LHA(R) Flight 1 design continues the incremental development of amphibious assault ships by adding a well deck, and increasing flight deck capacity by reducing the footprint of the island and adding a sponson. LHA(R) Flight 0 consisted of two ships, LHA 6 and LHA 7. LHA(R) Flight 1 is the second increment in the LHA 6 Class with LHA 8 being the first ship of Flight 1. The Flight 1 ships maintain an aviation centric capability with the addition of a well deck that will accommodate two Landing Craft, Air Cushions. LHA 9 provided Advance Procurement funds in FY 2019. FY20 NDAA and Appropriations Bill provided incremental funding authority and the first increment of Full Funding. FY23 and FY24 provide the remaining LHA 9 Full Funding to complete construction of the ship.

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy		Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 03: Amphibious Ships / BSA 1: Amphibious Ships	**P-1 Line Item Number / Title:** 3041 / LHA Replacement	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** 0604567N
Line Item MDAP/MAIS Code: 333		

Characteristics:

	LHA 7	LHA 8
Length Overall	844ft	844ft
Beam	106ft	106ft
Displacement	45,594 tons	43,000 tons
Draft	29ft 1in	27ft 8in

Systems:

Electronics

-Command, Control, Communication, Computer Intelligence Surveillance and Reconnaissance (C4ISR)
-MK 2 MOD 4E Ship Self Defense System (SSDS)
-Integrated Voice Network (IVN)
-AN/SLQ-32(V), Surface Warfare Improvement Program (SEWIP)
-AN/SPN-50 (V)1
-Joint Precision Approach and Landing System (JPALS)
-Hierarchical Yet Dynamically Reprogrammable Architecture (HYDRA) AN/SRC-55
-AN/UPX-29(V), Identification Friend or Foe (IFF) MK12
-Ring Laser Gyro Navigator (RLGN) AN/WSN-7
-Amphibious Air Traffic Control Direct Altitude and Identity Readout (AATC-DAIR)
-Aircraft Control Approach Central AN/SPN-35C
-Aircraft Approach Control Transmitting Set (AACTS) AN/SPN-41B

Ordnance

-Enterprise Air Surveillance Radar (EASR)
-NATO Sea Sparrow Missile System (NSSMS) MK 57 Mod 14
-MK31 Mod 3, Rolling Airframe Missile (RAM) (Tech Refresh)
-PHALANX Block 1B MK15 Mod 21 & 22, Close-in Weapon System (CIWS)
-Vertical/Stationary Take-Off Landing Optical Landing System (VSTOL OLS)
-AN/SPQ-9B Radar Set

Production Status:	LHA 7	LHA 8
Contract Award Date	May 2012	Jun 2017
Months to Completion		
a) Award to Delivery	93 months	79 months
b) Construction Start to Delivery	79 months	63 months
Delivery Date	Feb 2020	Jan 2024
Completion Of Fitting Out	Nov 2020	Sep 2024
Obligation Work Limit Date	Oct 2021	Aug 2025

Design Schedule	Start / Issue	Complete / Response	Reissue	Reissue Complete / Response
Issue Date for TLR	N/A	N/A		
Issue Date for TLS	N/A	N/A		
Preliminary Design	Nov 2011	Mar 2013		
Contract Design	Mar 2013	Sep 2014		
Detail Design	Jun 2017	Mar 2019		
Request for Proposals	Jun 2015	Dec 2015		

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy		**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 03: Amphibious Ships / BSA 1: Amphibious Ships	**P-1 Line Item Number / Title:** 3041 / LHA Replacement	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** 0604567N
Line Item MDAP/MAIS Code: 333		

Design Schedule	Start / Issue	Complete / Response	Reissue	Reissue Complete / Response
Design Agent	Huntington Ingalls Inc.			

Classification of Cost Estimate: CLASS C

Exhibit P-5c, Ship Cost Analysis: PB 2021 Navy | **Date:** February 2020

Appropriation / Budget Activity / Budget Sub Activity:
1611N / 03 / 1

P-1 Line Item Number / Title:
3041 / LHA Replacement

Cost Categories (†) indicates the presence of a P-8a	FY 2011		FY 2017	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Plan Costs	1	60.084	1	329.093
Basic Construction/Conversion		2,538.275		2,770.836
Change Orders		136.476		97.790
Electronics (†)		255.638		314.754
Hull, Mechanical, and Electrical (HM&E) (†)		56.013		63.184
Ordnance (†)		110.859		158.708
Other Cost		93.946		97.641
Total Ship Estimate		**3,251.291**		**3,832.006**
Less Advance Procurement FY 2009		176.349		-
Less Advance Procurement FY 2010		169.320		-
Less Advance Procurement FY 2015		-		29.093
Less Advance Procurement FY 2016		-		476.543
Less Subsequent Full Funding FY 2012		1,928.692		-
Less Subsequent Full Funding FY 2018		-		1,708.651
Less Cost to Complete FY 2018		14.200		-
Less Cost to Complete FY 2019		25.100		-
Net P-1 Funding		**937.630**		**1,617.719**

Exhibit P-27, Ship Production Schedule: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3041 / LHA Replacement

Ship	Shipbuilder	Fiscal Year	Contract Award	Start of Construction	Delivery Date
LHA 7	HII	2011	May 2012	Jul 2013	Feb 2020
LHA 8	HII	2017	Jun 2017	Oct 2018	Jan 2024
LHA 9	HII	2023	Sep 2021	Sep 2022	Sep 2028

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3041 / LHA Replacement

Electronics	FY 2017 Qty (Each)	FY 2017 Total Cost ($ M)
P-35 Items		
Command, Control, Communication, Computer Intelligence Surveillance and Reconnaissance (C4ISR)	1	147.479
MK 2 MOD 4E Ship Self Defense System (SSDS)	1	26.185
Integrated Voice Network (IVN)	1	16.165
AN/SLQ-32(V), Surface Warfare Improvement Program (SEWIP)	1	15.513
AN/SPN-50 (V)1	1	11.145
Joint Precision Approach and Landing System (JPALS)	1	7.893
Hierarchical Yet Dynamically Reprogrammable Architecture (HYDRA) AN/SRC-55	1	7.503
AN/UPX-29(V), Identification Friend or Foe (IFF) MK12	1	6.993
Ring Laser Gyro Navigator (RLGN) AN/WSN-7	1	6.002
Amphibious Air Traffic Control Direct Altitude and Identity Readout (AATC-DAIR)	1	5.729
Aircraft Control Approach Central AN/SPN-35C	1	4.548
Aircraft Approach Control Transmitting Set (AACTS) AN/SPN-41B	1	4.397
P-35 Items Subtotal		**259.552**
Major Items		
AN/USG-2, Cooperative Engagement Transmission Processing Set (CETPS)	1	10.397
USQ-82, Gigabit Ethernet Data Multiplex System (GEDMS)	1	6.525
AN/SLQ-25C, Torpedo Countermeasures Transmitting Set (NIXIE)	2	6.211
AN/USQ-T46(V), Battle Force Tactical Training (BFTT)	1	4.002
Announcing Systems AN/SIA-127H	1	3.007
SATCC	1	2.035
Amphibious Assault Direction System (AADS)	1	1.949
Digital Photo Lab	1	1.870
MK 53 NULKA Decoy Launching System (DLS) Mod 3	1	1.725
Print Shop	1	1.539
30 TV	1	1.263
Next Generation Navigational Radar	1	1.173
Major Items Subtotal		**41.696**
Other Cost Elements		
Miscellaneous Electronics		13.506
Other Cost Elements Subtotal		**13.506**
Total Electronics		**314.754**

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3041 / LHA Replacement

Remarks:
For LHA(R) Flight 1 ships:

- Enterprise Air Surveillance Radar (EASR) suite will be a modern, long-range, three-dimensional (3-D) radar used to search, detect and provide space-stabilized, three-coordinate (range, bearing, height) data for air intercept control and designation to a weapon system and Air Traffic Control (ATC) system. The LHA(R) Flight 1 configuration includes a rotating antenna array, below decks radar and cooling equipment. The EASR suite replaces the SPS 48/49 air-search radar systems. AN/SPS-48 air search radars have not been in production for several years. All existing AN/SPS-48 radars are installed on operational Fleet ships. Without the EASR suite, LHA(R) Flight 1 ships will not have an air-search radar for self-defense and airspace deconfliction.

- AN/SPN-50 Shipboard Air Traffic Radar (SATR) system provides aircraft position, radar signal and radar data. Air traffic controllers use the data for aircraft sequencing and separation, airspace identification and containment, safety alerts, traffic advisories and landing guidance. AN/SPN-50 SATR replaces the AN/SPN 43C SATR. EASR and AN/SPN-50 are designed to be integrated systems whereas EASR and AN/SPN 43C are not as compatible.

- The dual mast antenna configuration Cooperative Engagement Transmission Processing Set (CETPS) replaces the single mast CETPS. The CETPS dual mast antenna configuration improves the compatibility with AN/SPN-50 and allows the ship to maintain 360-degree data link coverage and full combat systems capability.

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3041 / LHA Replacement

Hull, Mechanical, and Electrical (HM&E)	FY 2017	
	Qty *(Each)*	Total Cost *($ M)*
Major Items		
Equipment & Engineering		50.738
SUPSHIP Material/Services		4.196
Test & Instrumentation		8.250
Major Items Subtotal		**63.184**
Total Hull, Mechanical, and Electrical (HM&E)		**63.184**

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3041 / LHA Replacement

Ordnance	FY 2017	
	Qty *(Each)*	Total Cost *($ M)*
P-35 Items		
Enterprise Air Surveillance Radar (EASR)	1	40.063
NATO Sea Sparrow Missile System (NSSMS) MK 57 Mod 14	1	32.302
MK31 Mod 3, Rolling Airframe Missile (RAM) (Tech Refresh)	2	15.743
PHALANX Block 1B MK15 Mod 21 & 22, Close-in Weapon System (CIWS)	1	14.431
Vertical/Stationary Take-Off Landing Optical Landing System (VSTOL OLS)	1	13.824
AN/SPQ-9B Radar Set	1	10.909
P-35 Items Subtotal		**127.272**
Major Items		
MK 38 Mod 2 Stabilized Gun Stand Assembly	3	6.145
AN/SPQ-14	1	2.537
MORIAH	1	1.762
Major Items Subtotal		**10.444**
Other Cost Elements		
Aviation Support		7.745
Miscellaneous Ordnance		2.800
Total Ship Test Program		10.447
Other Cost Elements Subtotal		**20.992**
Total Ordnance		**158.708**

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3041 / LHA Replacement
Equipment Item: Command, Control, Communication, Computer Intelligence Surveillance and Reconnaissance (C4ISR)	**PARM Code:** PEO C4I

P-35 Category	FY 2017 Qty *(Each)*	FY 2017 Total Cost *($ M)*
Major Hardware	1	89.070
Technical Data and Documentation		0.965
Spares		2.319
System Engineering		14.809
Technical Engineering Services		23.962
Other Costs		16.354
Total	**1**	**147.479**

Description:

The Command, Control, Communication, Computer Intelligence Surveillance and Reconnaissance (C4ISR) system is used to prove the link between the ship, the command hierarchy, and other units of the operating forces.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity *(Each)*	Unit Cost *($ M)*
FY 2017	LHA 8	Various	Various	Various	Various	1	89.070

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2017	LHA 8	Jan 2024	0		Various

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3041 / LHA Replacement
Equipment Item: MK 2 MOD 4E Ship Self Defense System (SSDS)	**PARM Code:** PEO IWS1A5

P-35 Category	FY 2017 Qty (Each)	FY 2017 Total Cost ($ M)
Major Hardware	1	8.414
Technical Data and Documentation		1.483
Spares		0.808
System Engineering		5.590
Technical Engineering Services		0.468
Other Costs		9.422
Total	**1**	**26.185**

Description:

The Ship Self Defense System (SSDS) MK 2, Mod (x) Common C2 system provides capabilities for multi-mission requirements including Ship Protection against air, surface, and subsurface threats using both own-ship and remote data (Joint Composite Track Number (JCTN) and Joint Data Network (JDN)) in support of the Anti-Air Warfare (AAW) Capstone requirements.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2017	LHA 8	Various	C/FFP	Aug 2019	New	1	8.414

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2017	LHA 8	Jan 2024	29	24	Aug 2019

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3041 / LHA Replacement
Equipment Item: Integrated Voice Network (IVN)	**PARM Code:** SEA05H

P-35 Category	FY 2017 Qty (Each)	FY 2017 Total Cost ($ M)
Major Hardware	1	12.650
Technical Data and Documentation		0.500
System Engineering		0.760
Technical Engineering Services		1.570
Other Costs		0.685
Total	**1**	**16.165**

Description:

The Integrated Voice Communications Network (IVCN) is an overarching engineering approach to establish consistent engineering practices and integrated voice communication capabilities across the Fleet. IVN is a fully integrated, supportable communication voice solution.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2017	LHA 8	Various	C/FFP	Jul 2019	New	1	12.650

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2017	LHA 8	Jan 2024	48	6	Jul 2019

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3041 / LHA Replacement
Equipment Item: AN/SLQ-32(V), Surface Warfare Improvement Program (SEWIP)	**PARM Code:** PEO IWS2E

P-35 Category	FY 2017 Qty (Each)	FY 2017 Total Cost ($ M)
Major Hardware	1	13.421
Technical Data and Documentation		0.039
Spares		0.498
System Engineering		0.919
Technical Engineering Services		0.118
Other Costs		0.518
Total	**1**	**15.513**

Description:

SEWIP Block 2 is a scalable Electronic Warfare enterprise suite to provide improved Electromagnetic Interference (EMI) mitigation and Combat System Interface capabilities to select new construction ships as well as upgrade current AN/SLQ-32(V)3 and (V)4 Electronic Warfare (EW) suites on existing ships. It provides enhanced shipboard Electronic Warfare (EW) for early detection, analysis, threat warning and protection from anti-ship missiles. SEWIP Block 2 focused on Electronic Support (ES) capability improvements.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2017	LHA 8	Various	Various	Aug 2019	New	1	13.421

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2017	LHA 8	Jan 2024	30	18	Jan 2020

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3041 / LHA Replacement
Equipment Item: AN/SPN-50 (V)1	**PARM Code:** NAVAIR PMA213

P-35 Category	FY 2017 Qty (Each)	FY 2017 Total Cost ($ M)
Major Hardware	1	9.014
Technical Data and Documentation		0.120
Spares		0.716
System Engineering		0.703
Technical Engineering Services		0.095
Other Costs		0.497
Total	**1**	**11.145**

Description:

AN/SPN-50 Shipboard Air Traffic Radar (SATR) system provides aircraft position, radar signal and radar data. Air traffic controllers use the data for aircraft sequencing and separation, airspace identification and containment, safety alerts, traffic advisories and landing guidance.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2017	LHA 8	SAAB	C/FFP	Aug 2020	New	1	9.014

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2017	LHA 8	Jan 2024	17	24	Aug 2020

Competition/Second Source Initiatives:

N/A

Remarks:

AN/SPN-50 SATR system replaces the AN/SPN 43C SATR. EASR and AN/SPN-50 are designed to be integrated systems whereas EASR and AN/SPN 43C are not as compatible.

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3041 / LHA Replacement
Equipment Item: Joint Precision Approach and Landing System (JPALS)	**PARM Code:** NAVAIR PMA213

P-35 Category	FY 2017 Qty (Each)	FY 2017 Total Cost ($ M)
Major Hardware	1	4.898
Spares		0.914
System Engineering		0.739
Technical Engineering Services		1.075
Other Costs		0.267
Total	**1**	**7.893**

Description:

The Joint Precision Approach Landing System (JPALS) works with the GPS satellite navigation system to provide accurate, reliable and high-integrity guidance for F-35 and future JPALS equipped aircraft. The system features anti-jam protection to ensure mission continuity in hostile environments. JPALS is a differential GPS that will provide an adverse weather precision approach and landing capability.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2017	LHA 8	TBD	TBD	Oct 2020	New	1	4.898

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2017	LHA 8	Jan 2024	27	12	Oct 2020

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3041 / LHA Replacement
Equipment Item: Hierarchical Yet Dynamically Reprogrammable Architecture (HYDRA) AN/SRC-55	**PARM Code:** SEA05H

P-35 Category	FY 2017 Qty *(Each)*	FY 2017 Total Cost *($ M)*
Major Hardware	1	4.542
Technical Data and Documentation		0.301
Spares		0.093
System Engineering		1.139
Technical Engineering Services		0.642
Other Costs		0.786
Total	**1**	**7.503**

Description:

AN/SRC-55 HYDRA is a Wireless Interior Communications System that provides wire free mobile communications throughout the ship. HYDRA supports security, navigation, combat systems, engineering, damage control, maintenance and general operations such as maneuvering and docking, shore patrol and beach guard. It is interoperable with other shipboard communication systems and it has improved capabilities over the legacy wireless systems.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity *(Each)*	Unit Cost *($ M)*
FY 2017	LHA 8	Various	Various	Jun 2019	New	1	4.542

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2017	LHA 8	Jan 2024	36	6	Jul 2020

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3041 / LHA Replacement
Equipment Item: AN/UPX-29(V), Identification Friend or Foe (IFF) MK12	**PARM Code:** NAVAIR PMA213

P-35 Category	FY 2017 Qty (Each)	FY 2017 Total Cost ($ M)
Major Hardware	1	6.061
Spares		0.106
System Engineering		0.293
Technical Engineering Services		0.103
Other Costs		0.430
Total	**1**	**6.993**

Description:

Identification Friend or Foe (IFF) is an approved and fully supported centralized Mark XII Interrogator system. It uses one receiver transmitter that synchronizes video with up to four radar sweeps. It supplies synthetic video (symbology) to, and accepts requests from, as many as 22 remote locations. It provides digital target reporting to the combat systems/weapon systems computer via full scan, sectored, and/or pop-up interrogations. It provides instantaneous target reporting at requested range and azimuth through the use of an electronically-steered Antenna Group OE-120/UPX or OE-120A/UPX.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2017	LHA 8	Various	C/FFP	Feb 2019	New	1	6.061

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2017	LHA 8	Jan 2024	35	24	Feb 2019

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3041 / LHA Replacement
Equipment Item: Ring Laser Gyro Navigator (RLGN) AN/WSN-7	**PARM Code:** PEO IWS6.0

P-35 Category	FY 2017 Qty *(Each)*	FY 2017 Total Cost *($ M)*
Major Hardware	1	5.491
System Engineering		0.072
Technical Engineering Services		0.300
Other Costs		0.139
Total	**1**	**6.002**

Description:

The AN/WSN-7(V) Ring Laser Gyro Navigation System provides real-time navigation data for use by navigation and combat systems.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity *(Each)*	Unit Cost *($ M)*
FY 2017	LHA 8	Northrop Grumman Systems Corp.	C/FFP	May 2018	New	1	5.491

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2017	LHA 8	Jan 2024	38	18	May 2019

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3041 / LHA Replacement
Equipment Item: Amphibious Air Traffic Control Direct Altitude and Identity Readout (AATC-DAIR)	**PARM Code:** NAVAIR PMA213

P-35 Category	FY 2017 Qty (Each)	FY 2017 Total Cost ($ M)
Major Hardware	1	4.246
Spares		0.208
System Engineering		0.506
Technical Engineering Services		0.056
Other Costs		0.713
Total	**1**	**5.729**

Description:

The Amphibious Air Traffic Control (AATC) Direct Altitude and Identity Readout (DAIR) is an automatic beacon and radar that when integrated with an air traffic control radar, provides numeric and symbolic displays of position, identity, and altitude of aircraft in the terminal airspace on an operator's Plane Position Indicator (PPI) display.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2017	LHA 8	NAWCAD	WR	Jul 2018	New	1	4.246

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2017	LHA 8	Jan 2024	30	24	Jul 2019

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3041 / LHA Replacement
Equipment Item: Aircraft Control Approach Central AN/SPN-35C	**PARM Code:** NAVAIR PMA213

P-35 Category	FY 2017 Qty *(Each)*	FY 2017 Total Cost *($ M)*
Major Hardware	1	3.529
System Engineering		0.603
Technical Engineering Services		0.083
Other Costs		0.333
Total	**1**	**4.548**

Description:

The AN/SPN-35 is a precision approach radar that provides glide slope guidance to Navy and Marine Corps aircraft. The system is used in conjunction with a vertical/short take-off and landing, optical landing system and the AN/SPN-41 Instrument Control Landing System for precision landing operations. It is also used for aircraft recovery during adverse weather and night conditions.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity *(Each)*	Unit Cost *($ M)*
FY 2017	LHA 8	NAWCAD	WR	Jul 2018	New	1	3.529

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2017	LHA 8	Jan 2024	30	36	Jul 2018

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3041 / LHA Replacement
Equipment Item: Aircraft Approach Control Transmitting Set (AACTS) AN/SPN-41B	**PARM Code:** NAVAIR PMA213

P-35 Category	FY 2017 Qty *(Each)*	FY 2017 Total Cost *($ M)*
Major Hardware	1	3.381
System Engineering		0.622
Technical Engineering Services		0.063
Other Costs		0.331
Total	**1**	**4.397**

Description:

The AN/SPN-41 transmitting set is an electronic instrument control landing system that provides proper flight path data to an approaching aircraft. The AN/SPN-41 has two separate transmitters (azimuth and elevation) with
individual antennas used for sector scanning. It provides primary or backup instrument approach capability.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity *(Each)*	Unit Cost *($ M)*
FY 2017	LHA 8	NAWCAD	WR	Jun 2018	New	1	3.381

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2017	LHA 8	Jan 2024	40	27	Jun 2018

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3041 / LHA Replacement
Equipment Item: Enterprise Air Surveillance Radar (EASR)	**PARM Code:** PEO IWS2.0

P-35 Category	FY 2017 Qty (Each)	FY 2017 Total Cost ($ M)
Major Hardware	1	28.932
Technical Data and Documentation		0.042
Spares		1.337
System Engineering		0.472
Technical Engineering Services		3.436
Other Costs		5.844
Total	**1**	**40.063**

Description:

Enterprise Air Surveillance Radar (EASR) suite will be a modern, long-range, three-dimensional (3-D) radar used to search, detect and provide space-stabilized, three-coordinate (range, bearing, height) data for air intercept control and designation to a weapon system and Air Traffic Control (ATC) system. The LHA(R) Flight 1 configuration includes a rotating antenna array, below decks radar and cooling equipment. Without the EASR suite, LHA(R) Flight 1 ships will not have an air-search radar for self-defense and airspace deconfliction.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2017	LHA 8	Various	Various	Jul 2019	New	1	28.932

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2017	LHA 8	Jan 2024	30	24	Jul 2019

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3041 / LHA Replacement
Equipment Item: NATO Sea Sparrow Missile System (NSSMS) MK 57 Mod 14	**PARM Code:** PEO IWS3.0

P-35 Category	FY 2017 Qty (Each)	FY 2017 Total Cost ($ M)
Major Hardware	1	21.343
Spares		1.437
System Engineering		1.486
Technical Engineering Services		3.118
Other Costs		4.918
Total	**1**	**32.302**

Description:

The NSSMS MK 57 is a short-range weapon system, which provides self-defense capability against air-to-surface missiles, surface-to-surface missiles, manned attack aircraft, and surface craft. The system is designed to provide these capabilities under both clear and adverse environmental conditions as well as in a hostile electronics attack environment. NSSMS MK 57 performs target engageability; and provides launcher control, missile control and missing firing orders.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2017	LHA 8	RAYTHEON	C/FFP	Mar 2020	New	1	21.343

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2017	LHA 8	Jan 2024	10	36	Mar 2020

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3041 / LHA Replacement
Equipment Item: MK31 Mod 3, Rolling Airframe Missile (RAM) (Tech Refresh)	**PARM Code:** PEO IWS3B

P-35 Category	FY 2017 Qty (Each)	FY 2017 Total Cost ($ M)
Major Hardware	2	10.954
Technical Data and Documentation		0.663
Spares		0.103
System Engineering		2.145
Technical Engineering Services		0.083
Other Costs		1.795
Total	**2**	**15.743**

Description:

The MK 49 Mod 3 Rolling Airframe Missile (RAM) Weapon System is a lightweight, low cost, high power system for anti-ship missile defense against current and evolving threats.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2017	LHA 8	RAYTHEON	C/FFP	Jun 2019	New	2	5.477

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2017	LHA 8	Jan 2024	31	24	Jun 2019

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3041 / LHA Replacement
Equipment Item: PHALANX Block 1B MK15 Mod 21 & 22, Close-in Weapon System (CIWS)	**PARM Code:** PEO IWS3.0

P-35 Category	FY 2017 Qty (Each)	FY 2017 Total Cost ($ M)
Major Hardware	1	11.627
Technical Data and Documentation		0.098
Spares		0.383
System Engineering		0.514
Technical Engineering Services		0.720
Other Costs		1.089
Total	**1**	**14.431**

Description:

Phalanx is a high fire rate Close-In Weapon System (CIWS) that automatically acquires, tracks and destroys Anti-Ship cruise missiles, Helos, Aircraft, and all types of Surface threats.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2017	LHA 8	RAYTHEON	C/FFP	Aug 2016	New	1	11.627

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2017	LHA 8	Jan 2024	47	24	Feb 2018

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3041 / LHA Replacement
Equipment Item: Vertical/Stationary Take-Off Landing Optical Landing System (VSTOL OLS)	**PARM Code:** NAVAIR PMA251

P-35 Category	FY 2017 Qty (Each)	FY 2017 Total Cost ($ M)
Major Hardware	1	11.700
Technical Data and Documentation		0.150
Spares		0.413
System Engineering		0.319
Technical Engineering Services		0.781
Other Costs		0.461
Total	**1**	**13.824**

Description:

The Vertical/Stationary Take-Off Landing (VSTOL) Optical Landing System is a visual landing aid that displays glide path and trend information to the VSTOL pilot preparing to land on ship. The system can guide an aircraft to the ship from a distance of 0.8 nautical miles. The OLS guides the aircraft to 50 feet above the flight deck up to the final approach phase.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2017	LHA 8	LAKEHURST MANUFACTURING	WR	Jul 2017	New	1	11.700

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2017	LHA 8	Jan 2024	30	48	Jul 2017

Competition/Second Source Initiatives:

N/A

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3041 / LHA Replacement
Equipment Item: AN/SPQ-9B Radar Set	**PARM Code:** PEO IWS2B

P-35 Category	FY 2017 Qty (Each)	FY 2017 Total Cost ($ M)
Major Hardware	1	8.890
Technical Data and Documentation		0.115
Spares		0.129
System Engineering		0.365
Technical Engineering Services		0.684
Other Costs		0.726
Total	**1**	**10.909**

Description:

The AN/SPQ-9B is an X-Band Horizon Search, pulse Doppler, frequency agile radar designed for the littoral environment. It has a very high clutter improvement factor supporting a very low false track rate in the littorals and in high clutter environments.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2017	LHA 8	LEONARDO DRS	C/FFP	Apr 2018	New	1	8.890

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2017	LHA 8	Jan 2024	30	24	Jul 2019

Competition/Second Source Initiatives:

N/A

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Exhibit P-10, Advance Procurement Requirements Analysis (*page 1 - Budget Funding Justification*): PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3041 / LHA Replacement

First System (2021) Award Date:	First System (2021) Completion Date:	Interval Between Systems:
May 2020		0 Months

Cost Elements	Production Leadtime (Months)	When Required* (Months)	FY 2019 ($ M)	FY 2020 ($ M)	FY 2021 ($ M)	FY 2022 ($ M)	FY 2023 ($ M)	FY 2024 ($ M)	FY 2025 ($ M)
CFE									
PLANS	-	-	20.300	-	0.000	-	-	-	-
BASIC	-	-	139.620	-	0.000	-	-	-	-
Port Deck Edge Elevator Machinery	48	-	34.320	-	0.000	-	-	-	-
Steering Gear	46	-	5.020	-	0.000	-	-	-	-
S/S Diesel Generators	43	-	48.430	-	0.000	-	-	-	-
Main Reduction Gear	40	-	42.760	-	0.000	-	-	-	-
Oily Waste Ultrafiltration System	37	-	2.570	-	0.000	-	-	-	-
A/C Chilled Water Plant	34	-	24.270	-	0.000	-	-	-	-
450/60Hz Switchboard	32	-	32.710	-	0.000	-	-	-	-
Total: CFE			*350.000*	-	-	-	-	-	-
Total Advance Procurement/Obligation Authority			**350.000**	**-**	**-**				

*Note: "When Required" is the number of months required before ship delivery.

Exhibit P-10, Advance Procurement Requirements Analysis (*page 2 - Budget Funding Justification*): PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3041 / LHA Replacement

Cost Elements	FY 2021						
	Production Leadtime *(Months)*	When Required* *(Months)*	Unit Cost *($ M)*	Contract Forecast Date	2021 Qty *(Each)*	For FY	Total Cost Request *($ M)*
CFE							
PLANS	-	-	-		-		0.000
BASIC	-	-	-		-		0.000
Port Deck Edge Elevator Machinery	48	-	-		-		0.000
Steering Gear	46	-	-		-		0.000
S/S Diesel Generators	43	-	-		-		0.000
Main Reduction Gear	40	-	-		-		0.000
Oily Waste Ultrafiltration System	37	-	-		-		0.000
A/C Chilled Water Plant	34	-	-		-		0.000
450/60Hz Switchboard	32	-	-		-		0.000
Total: CFE							-
Total Advance Procurement/Obligation Authority							-

Description:
*Note - This is an estimated plan based on a FY23 Ship.

PLANS - ($20.3M) Funds required for non-recurring engineering.
BASIC - ($329.7M) Procurement of Long Lead Time Contractor Furnished Equipment (CFE) to support in-yard need dates for ship production and completion of design integration efforts.

PLANS - Non-recurring engineering

Port Deck Edge Elevator Machinery - Long Lead Time Contractor Furnished Equipment (CFE) to support in-yard need dates for ship production.

Steering Gear - Long Lead Time Contractor Furnished Equipment (CFE) to support in-yard need dates for ship production.

S/S Diesel Generators - Long Lead Time Contractor Furnished Equipment (CFE) to support in-yard need dates for ship production.

Main Reduction Gear - Long Lead Time Contractor Furnished Equipment (CFE) to support in-yard need dates for ship production.

Oily Waste Ultrafiltration System - Long Lead Time Contractor Furnished Equipment (CFE) to support in-yard need dates for ship production.

A/C Chilled Water Plant - Long Lead Time Contractor Furnished Equipment (CFE) to support in-yard need dates for ship production.

450/60Hz Switchboard - Long Lead Time Contractor Furnished Equipment (CFE) to support in-yard need dates for ship production.

*Note: "When Required" is the number of months required before ship delivery.

Exhibit P-10, Advance Procurement Requirements Analysis (*page 2 - Budget Funding Justification*): PB 2021 Navy		Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3041 / LHA Replacement	

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Exhibit P-40, Budget Line Item Justification: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 03: Amphibious Ships / BSA 1: Amphibious Ships	**P-1 Line Item Number / Title:** 3043 / Expeditionary Fast Transport (EPF)

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: N/A

Line Item MDAP/MAIS Code: N/A

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity *(Units in Each)*	9	1	1	-	-	-	-	-	-	-	-	11
Gross/Weapon System Cost *($ in Millions)*	1,792.929	274.000	261.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	2,327.929
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Less Cost To Complete *($ in Millions)*	61.090	49.000	-	-	-	-	-	-	-	-	-	110.090
Less Program Support *($ in Millions)*	2.732	-	-	-	-	-	-	-	-	-	-	2.732
Net Procurement (P-1) *($ in Millions)*	1,729.107	225.000	261.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	2,215.107
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Plus Cost To Complete *($ in Millions)*	61.090	-	49.000	-	-	-	-	-	-	-	-	110.090
Plus Program Support *($ in Millions)*	2.732	-	-	-	-	-	-	-	-	-	-	2.732
Total Obligation Authority *($ in Millions)*	**1,792.929**	**225.000**	**310.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**-**	**2,327.929**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Plus Outfitting and Post Delivery *($ in Millions)*	81.762	4.836	2.403	5.432	-	5.432	-	-	-	-	-	94.433
Total *($ in Millions)*	**1,874.691**	**229.836**	**312.403**	**5.432**	**-**	**5.432**	**-**	**-**	**-**	**-**	**-**	**2,422.362**
Gross/Weapon System Unit Cost *($ in Millions)*	199.214	274.000	261.000	-	-	-	-	-	-	-	-	211.630

Description:

Future joint forces will be responsive, deployable, agile, versatile, lethal, survivable, and sustainable. The nation will need lift assets that can provide for assured access, decrease predictability and dwell time, and have the capacity to quickly deliver troops and equipment together in a manner that provides for unit integrity. Expeditionary Fast Transport (EPF) (formerly Joint High Speed Vessel) will provide combatant commanders high-speed intra-theater sealift with inherent cargo handling capability and the agility to achieve positional advantage over operational distances. Not limited to major ports, the EPF will be able to operate in austere port environments. EPFs 14-15 will have modifications to conduct a Role 2 Enhanced (R2E) Medical Transport mission which will include enhanced medical capabilities to support embarked Medical Military Detachment (MILDET) teams while retaining the ability to perform high-speed intra-theater sealift.

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy		**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 03: Amphibious Ships / BSA 1: Amphibious Ships	**P-1 Line Item Number / Title:** 3043 / Expeditionary Fast Transport (EPF)	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** N/A
Line Item MDAP/MAIS Code: N/A		

Characteristics: **Aluminum Catamaran**

Length Overall	338 ft
Beam	93.5 ft
Displacement	2359 Long Tons
Draft	12.5 ft

Systems:

Electronics

-C4ISR

Production Status:	**EPF 12**	**EPF 13**	**EPF 14**	**EPF 15**
Contract Award Date	Sep 2016	Mar 2019	Mar 2019	Jun 2020
Months to Completion				
a) Award to Delivery	46 months	32 months	40 months	34 months
b) Construction Start to Delivery	34 months	27 months	27 months	27 months
Delivery Date	Jul 2020	Nov 2021	Jul 2022	Apr 2023
Completion Of Fitting Out	Oct 2020	Feb 2022	Oct 2022	Jul 2023
Obligation Work Limit Date	Sep 2021	Jan 2023	Sep 2023	Jun 2024

Design Schedule	**Start / Issue**	**Complete / Response**	**Reissue**	**Reissue Complete / Response**
Issue Date for TLR	N/A	N/A		
Issue Date for TLS	N/A	N/A		
Preliminary Design	Jan 2007	Jul 2008		
Contract Design	Jan 2007	Jul 2008		
Detail Design	Nov 2008	Dec 2009		
Request for Proposals	N/A	N/A		
Design Agent				

Classification of Cost Estimate: CLASS C

Exhibit P-5c, Ship Cost Analysis: PB 2021 Navy | **Date:** February 2020

Appropriation / Budget Activity / Budget Sub Activity:
1611N / 03 / 1

P-1 Line Item Number / Title:
3043 / Expeditionary Fast Transport (EPF)

Cost Categories (†) indicates the presence of a P-8a	FY 2016		FY 2018		FY 2019		FY 2020	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Plan Costs	1		1		1		1	
Basic Construction/Conversion		176.610		188.000		230.500		215.828
Change Orders		4.960		4.200		4.200		5.534
Electronics (†)		16.840		17.800		17.800		18.138
Hull, Mechanical, and Electrical (HM&E) (†)		14.050		8.000		9.500		9.500
Other Cost		12.540		7.000		12.000		12.000
Total Ship Estimate		**225.000**		**225.000**		**274.000**		**261.000**
Less Cost to Complete FY 2020		-		-		49.000		-
Net P-1 Funding		**225.000**		**225.000**		**225.000**		**261.000**

Remarks:
1) Basic Construction increases from the FY 2020 President's Budget request on EPF 13 reflect price at contract award (March 2019).
2) Basic Construction, HM&E, and Other increases from the FY 2020 President's Budget request on EPF 14 reflect price at contract award (March 2019) and the addition of enhanced medical capability.

Exhibit P-27, Ship Production Schedule: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3043 / Expeditionary Fast Transport (EPF)

Ship	Shipbuilder	Fiscal Year	Contract Award	Start of Construction	Delivery Date
EPF 12	AUSTAL	2016	Sep 2016	Sep 2017	Jul 2020
EPF 13	AUSTAL	2018	Mar 2019	Aug 2019	Nov 2021
EPF 14	AUSTAL	2019	Mar 2019	Apr 2020	Jul 2022
EPF 15	AUSTAL	2020	Jun 2020	Jan 2021	Apr 2023

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3043 / Expeditionary Fast Transport (EPF)

Electronics	FY 2019		FY 2020	
	Qty *(Each)*	Total Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*
P-35 Items				
C4ISR	1	13.990	1	14.256
P-35 Items Subtotal		**13.990**		**14.256**
Major Items				
VISUAL LANDING AIDE SUITE	1	3.062	1	3.120
MISC ELECTRONICS		0.748		0.762
Major Items Subtotal		**3.810**		**3.882**
Total Electronics		**17.800**		**18.138**

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3043 / Expeditionary Fast Transport (EPF)

Hull, Mechanical, and Electrical (HM&E)	FY 2019		FY 2020	
	Qty *(Each)*	Total Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*
Major Items				
ENGINEERING SERVICES		5.068		5.068
SUPSHIP MATERIAL SERVICES		1.217		1.217
LOGISTICS SUPPORT SERVICES		1.126		1.126
TEST AND INSTRUMENTATION		0.589		0.589
EQUIPMENT		1.500		1.500
Major Items Subtotal		**9.500**		**9.500**
Total Hull, Mechanical, and Electrical (HM&E)		**9.500**		**9.500**

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3043 / Expeditionary Fast Transport (EPF)
Equipment Item: C4ISR	**PARM Code:** 3Z (NAVWAR)

P-35 Category	FY 2019 Qty (Each)	FY 2019 Total Cost ($ M)	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)
Major Hardware	1	8.429	1	8.589
Spares		0.683		0.697
System Engineering		2.622		2.672
Technical Engineering Services		1.121		1.142
Other Costs		1.135		1.156
Total	**1**	**13.990**	**1**	**14.256**

Description:

The Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) system provides the line between the ship, the command hierarchy and other units of the operation force. The C4ISR Suite consists of a Network Suite (MSC-CANES, ADNS and CENTRIXS-M), CBSP, UHF SATCOM Antenna, UHF/VHF LOS Suite and UHF SATCOM Radios, TVS-TVT, IA and RCS.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2019	EPF 14	Various	Various	Jan 2019	Various	1	8.429
FY 2020	EPF 15	Various	Various	Jun 2020	Various	1	8.589

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2019	EPF 14	Jul 2022	0		Various
FY 2020	EPF 15	Apr 2023	0		Various

Competition/Second Source Initiatives:

N/A

Remarks:

Multiple systems comprise the C4ISR with varying delivery dates and lead times. NAVWAR PMW760 is the coordinating activity for the C4ISR System.

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Exhibit P-40, Budget Line Item Justification: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 03: Amphibious Ships / BSA 1: Amphibious Ships	**P-1 Line Item Number / Title:** 3036 / LPD-17

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: N/A

Line Item MDAP/MAIS Code: N/A

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity *(Units in Each)*	13	-	-	-	-	-	-	-	-	-	-	13
Gross/Weapon System Cost *($ in Millions)*	21,384.684	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	21,384.684
Less PY Advance Procurement *($ in Millions)*	1,636.241	-	-	-	-	-	-	-	-	-	-	1,636.241
Less Cost To Complete *($ in Millions)*	2,134.407	-	-	-	-	-	-	-	-	-	-	2,134.407
Less Subsequent Year Full Funding *($ in Millions)*	869.394	-	-	-	-	-	-	-	-	-	-	869.394
Less Prior Year Full Funding *($ in Millions)*	1,000.000	-	-	-	-	-	-	-	-	-	-	1,000.000
Less Hurricane *($ in Millions)*	1,623.280	-	-	-	-	-	-	-	-	-	-	1,623.280
Less Transfer *($ in Millions)*	279.031	-	-	-	-	-	-	-	-	-	-	279.031
Net Procurement (P-1) *($ in Millions)*	13,842.331	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	13,842.331
Plus Subsequent Year Full Funding *($ in Millions)*	869.394	-	-	-	-	-	-	-	-	-	-	869.394
Plus Prior Year FF *($ in Millions)*	1,000.000	-	-	-	-	-	-	-	-	-	-	1,000.000
Full Funding TOA *($ in Millions)*	15,711.725	-	-	-	-	-	-	-	-	-	-	15,711.725
Plus CY Advance Procurement *($ in Millions)*	1,636.241	-	-	-	-	-	-	-	-	-	-	1,636.241
Plus Cost To Complete *($ in Millions)*	2,050.608	-	-	30.578	-	30.578	43.682	9.539	-	-	-	2,134.407
Plus Transfer *($ in Millions)*	279.031	-	-	-	-	-	-	-	-	-	-	279.031
Plus Hurricane *($ in Millions)*	1,623.280	-	-	-	-	-	-	-	-	-	-	1,623.280
Plus Hurricane Supplemental (OF & PD) *($ in Millions)*	25.970	-	-	-	-	-	-	-	-	-	-	25.970
Total Obligation Authority *($ in Millions)*	**21,300.885**	**0.000**	**0.000**	**30.578**	**0.000**	**30.578**	**43.682**	**9.539**	**0.000**	**0.000**	**-**	**21,384.684**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Plus Outfitting and Post Delivery *($ in Millions)*	992.199	1.988	18.665	23.424	-	23.424	24.563	8.215	8.380	8.548	84.367	1,170.349
Total *($ in Millions)*	**22,319.054**	**1.988**	**18.665**	**54.002**	**-**	**54.002**	**68.245**	**17.754**	**8.380**	**8.548**	**84.367**	**22,581.003**
Gross/Weapon System Unit Cost *($ in Millions)*	1,644.976	-	-	-	-	-	-	-	-	-	-	1,644.976

Description:

Functional replacement for LKA 113, LPD 4, LSD 36, and LST 1179 classes of Amphibious Ships in embarking, transporting, and landing elements of a Marine landing force in an assault by helicopters, landing craft, amphibious vehicles, and by a combination of these methods to conduct primary amphibious warfare missions.

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy		**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 03: Amphibious Ships / BSA 1: Amphibious Ships	**P-1 Line Item Number / Title:** 3036 / LPD-17	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** N/A
Line Item MDAP/MAIS Code: N/A		

Characteristics: -

Length Overall	208.5 m	684 ft
Beam	31.9 m	105 ft
Displacement	25.3 lmt	24.9 klt
Draft	7.0 m	23 ft

Production Status:	**LPD 28**	**LPD 29**
Contract Award Date	Dec 2016	Feb 2018
Months to Completion		
a) Award to Delivery	57 months	65 months
b) Construction Start to Delivery	57 months	60 months
Delivery Date	Sep 2021	Jul 2023
Completion Of Fitting Out	May 2022	Mar 2024
Obligation Work Limit Date	Mar 2023	Feb 2025

Design Schedule	**Start / Issue**	**Complete / Response**	**Reissue**	**Reissue Complete / Response**
Issue Date for TLR	N/A	Sep 1988		
Issue Date for TLS	N/A	N/A		
Preliminary Design	Jan 1993	Nov 1993		
Contract Design	Dec 1993	Mar 1996		
Detail Design	Dec 1996	Jul 2002		
Request for Proposals	N/A	N/A		
Design Agent				

Classification of Cost Estimate: CLASS C

Exhibit P-5c, Ship Cost Analysis: PB 2021 Navy | **Date:** February 2020

Appropriation / Budget Activity / Budget Sub Activity:
1611N / 03 / 1

P-1 Line Item Number / Title:
3036 / LPD-17

Cost Categories	FY 2016		FY 2017	
	Qty *(Each)*	Total Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*
Plan Costs	1		1	
Basic Construction/Conversion		1,478.976		1,435.821
Change Orders		35.000		29.000
Electronics		208.847		243.676
Hull, Mechanical, and Electrical (HM&E)		15.826		21.494
Ordnance		64.023		102.230
Other Cost		5.976		7.000
Total Ship Estimate		**1,808.648**		**1,839.221**
Less Advance Procurement FY 2013		242.976		-
Less Cost to Complete FY 2021		30.578		-
Less Cost to Complete FY 2022		-		43.682
Less Cost to Complete FY 2023		-		9.539
Less Prior Year Full Funding FY 2015		1,000.000		-
Net P-1 Funding		**535.094**		**1,786.000**

Exhibit P-27, Ship Production Schedule: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 03 / 1	**P-1 Line Item Number / Title:** 3036 / LPD-17

Ship	Shipbuilder	Fiscal Year	Contract Award	Start of Construction	Delivery Date
LPD 28	HUNTINGTON INGALLS INDUSTRIES	2016	Dec 2016	Dec 2016	Sep 2021
LPD 29	HUNTINGTON INGALLS INDUSTRIES	2017	Feb 2018	Jul 2018	Jul 2023

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 05: Auxiliaries, Craft, and Prior-Year Program Costs / BSA 1: Auxiliaries, Craft and Prior Yr Program Cost	**P-1 Line Item Number / Title:** 5025 / TAO Fleet Oiler

ID Code (A=Service Ready, B=Not Service Ready): A | **Program Elements for Code B Items:** N/A | **Other Related Program Elements:** N/A

Line Item MDAP/MAIS Code: P452

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity *(Units in Each)*	2	2	2	-	-	-	-	1	2	1	10	20
Gross/Weapon System Cost *($ in Millions)*	1,287.953	1,052.172	1,056.261	0.000	0.000	0.000	0.000	545.584	1,113.844	568.057	7,635.262	13,259.133
Less PY Advance Procurement *($ in Millions)*	73.077	75.068	75.046	-	-	-	-	71.507	151.000	77.000	151.540	674.238
Less Cost To Complete *($ in Millions)*	82.749	-	-	-	-	-	-	-	-	-	-	82.749
Net Procurement (P-1) *($ in Millions)*	1,132.127	977.104	981.215	0.000	0.000	0.000	0.000	474.077	962.844	491.057	7,483.722	12,502.146
Plus CY Advance Procurement *($ in Millions)*	148.145	75.046	73.000	-	-	-	71.507	151.000	77.000	78.540	-	674.238
Plus Cost To Complete *($ in Millions)*	-	15.449	3.700	59.900	-	59.900	3.700	-	-	-	-	82.749
Total Obligation Authority *($ in Millions)*	**1,280.272**	**1,067.599**	**1,057.915**	**59.900**	**0.000**	**59.900**	**75.207**	**625.077**	**1,039.844**	**569.597**	**7,483.722**	**13,259.133**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Plus Outfitting and Post Delivery *($ in Millions)*	-	4.573	14.823	29.814	-	29.814	56.880	34.749	35.445	36.154	605.305	817.743
Total *($ in Millions)*	**1,280.272**	**1,072.172**	**1,072.738**	**89.714**	**-**	**89.714**	**132.087**	**659.826**	**1,075.289**	**605.751**	**8,089.027**	**14,076.876**
Gross/Weapon System Unit Cost *($ in Millions)*	643.977	526.086	528.131	-	-	-	-	545.584	556.922	568.057	763.526	662.957

Description:

T-AO 205 John Lewis Fleet Oiler Class will recapitalize the existing T-AO 187 fleet oiler class. The Navy's Combat Logistics Force (CLF) oilers supply fuel and dry cargo to Navy ships at sea. The T-AO Class will operate as shuttle ships from resupply posts to customer ships. Additionally, in conjunction with a T-AKE, they will accompany and stay on-station with a Carrier Strike Group (CSG) to provide fuel as required to customer ships.

Characteristics:

	T-AO	
Length Overall	746 ft	
Beam	106 ft	
Displacement	22,515 MT	(Lightship)
Draft	33.5 ft	(Design)

Production Status:	T-AO 205	T-AO 206	T-AO 207	T-AO 208	T-AO 209	T-AO 210
Contract Award Date	Jun 2016	Mar 2018	Dec 2018	Dec 2018	Feb 2020	Feb 2020
Months to Completion						
a) Award to Delivery	60 months	48 months	48 months	53 months	50 months	56 months
b) Construction Start to Delivery	33 months	27 months	24 months	24 months	23 months	24 months
Delivery Date	Jun 2021	Mar 2022	Dec 2022	May 2023	Apr 2024	Oct 2024
Completion Of Fitting Out	Sep 2021	Jul 2022	Mar 2023	Aug 2023	Jul 2024	Jan 2025
Obligation Work Limit Date	Aug 2022	Jun 2023	Feb 2024	Jul 2024	Jun 2025	Dec 2025

Design Schedule	Start / Issue	Complete / Response	Reissue	Reissue Complete / Response
Issue Date for TLR	N/A	N/A		

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy			Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 05: Auxiliaries, Craft, and Prior-Year Program Costs / BSA 1: Auxiliaries, Craft and Prior Yr Program Cost		**P-1 Line Item Number / Title:** 5025 / TAO Fleet Oiler	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** N/A	
Line Item MDAP/MAIS Code: P452			

Design Schedule	Start / Issue	Complete / Response	Reissue	Reissue Complete / Response
Issue Date for TLS	N/A	N/A		
Preliminary Design	N/A	N/A		
Contract Design	N/A	N/A		
Detail Design	Jun 2016	Sep 2018		
Request for Proposals	Jun 2015	Dec 2015		
Design Agent				

Classification of Cost Estimate:

Exhibit P-5c, Ship Cost Analysis: PB 2021 Navy | **Date:** February 2020

Appropriation / Budget Activity / Budget Sub Activity:
1611N / 05 / 1

P-1 Line Item Number / Title:
5025 / TAO Fleet Oiler

Cost Categories (†) indicates the presence of a P-8a	FY 2016		FY 2018		FY 2019		FY 2020	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Plan Costs	1	102.121	1	-	2	-	2	-
Basic Construction/Conversion		581.043		510.996		964.030		966.403
Change Orders		8.118		4.890		9.500		9.643
Electronics (†)		27.545		26.477		54.366		55.454
Hull, Mechanical, and Electrical (HM&E) (†)		13.312		13.449		24.276		24.761
Total Ship Estimate		**732.139**		**555.812**		**1,052.172**		**1,056.261**
Less Advance Procurement FY 2017		-		73.079		-		-
Less Advance Procurement FY 2018		-		-		75.068		-
Less Advance Procurement FY 2019		-		-		-		75.046
Less Cost to Complete FY 2019		15.449		-		-		-
Less Cost to Complete FY 2020		-		3.700		-		-
Less Cost to Complete FY 2021		42.500		17.400		-		-
Less Cost to Complete FY 2022		-		3.700		-		-
Net P-1 Funding		**674.190**		**457.933**		**977.104**		**981.215**

Remarks:
The FY 2021 increase to Basic Construction for TAO 205 (FY 2016) and TAO 206 (FY 2018) is for the Government responsible portions of the shipbuilding construction contract overruns.

Exhibit P-27, Ship Production Schedule: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 05 / 1	**P-1 Line Item Number / Title:** 5025 / TAO Fleet Oiler

Ship	Shipbuilder	Fiscal Year	Contract Award	Start of Construction	Delivery Date
T-AO 205	GD NASSCO	2016	Jun 2016	Sep 2018	Jun 2021
T-AO 206	GD NASSCO	2018	Mar 2018	Dec 2019	Mar 2022
T-AO 207	GD NASSCO	2019	Dec 2018	Dec 2020	Dec 2022
T-AO 208	GD NASSCO	2019	Dec 2018	May 2021	May 2023
T-AO 209	GD NASSCO	2020	Feb 2020	May 2022	Apr 2024
T-AO 210	GD NASSCO	2020	Feb 2020	Oct 2022	Oct 2024
T-AO 211	TBD	2023	Jan 2023	May 2023	Apr 2025
T-AO 212	TBD	2024	Jan 2024	Dec 2024	Jan 2027
T-AO 213	TBD	2024	Jan 2024	Jun 2025	Jul 2027
T-AO 214	TBD	2025	Jan 2025	Dec 2026	Jan 2029

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 05 / 1	**P-1 Line Item Number / Title:** 5025 / TAO Fleet Oiler

Electronics	FY 2019		FY 2020	
	Qty *(Each)*	Total Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*
P-35 Items				
Radio Communication System (RCS) TURNKEY	2	13.184	2	13.448
P-35 Items Subtotal		**13.184**		**13.448**
Major Items				
Consolidated Afloat Networks and Enterprise Services (CANES)	2	5.770	2	5.886
Digital Modular Radio (DMR)	2	9.674	2	9.868
Commercial Broadband Satellite Program (CBSP)	2	3.906	2	3.984
AN/SLQ-25 NIXIE	2	3.918	2	3.996
AN/USQ-155 Tactical Variant Switch (TVS)	2	2.706	2	2.760
Major Items Subtotal		**25.974**		**26.494**
Other Cost Elements				
Minor Systems		15.208		15.512
Other Cost Elements Subtotal		**15.208**		**15.512**
Total Electronics		**54.366**		**55.454**

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 05 / 1	**P-1 Line Item Number / Title:** 5025 / TAO Fleet Oiler

Hull, Mechanical, and Electrical (HM&E)	FY 2019		FY 2020	
	Qty *(Each)*	Total Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*
Major Items				
Engineering Services	2	19.388	2	19.776
Logistics Support Services		1.566		1.597
SOLAS Variant RIB (Qty 2 per ship)		1.616		1.648
Material Handling Equipment		1.268		1.294
Shipboard Automated Maintenance Module (SAMM)		0.438		0.446
Major Items Subtotal		**24.276**		**24.761**
Total Hull, Mechanical, and Electrical (HM&E)		**24.276**		**24.761**

Exhibit P-35, Major Ship Component Fact Sheet: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 05 / 1	**P-1 Line Item Number / Title:** 5025 / TAO Fleet Oiler
Equipment Item: Radio Communication System (RCS) TURNKEY	**PARM Code:** N/A

P-35 Category	FY 2019 Qty (Each)	FY 2019 Total Cost ($ M)	FY 2020 Qty (Each)	FY 2020 Total Cost ($ M)
Major Hardware	2	2.464	2	2.514
Ancillary Equipment		0.214		0.218
Technical Engineering Services		2.058		2.100
Ship Installation		7.632		7.784
Program Management		0.816		0.832
Total	**2**	**13.184**	**2**	**13.448**

Description:

The Radio Communication System (RCS) consists of the subsystems that provide data and voice communications across the RF spectrum. The RCS will be comprised of subsystems provided from various sources, including SPAWAR Program of Record systems, commercial systems, and associated ancillary equipment that can be obtained through the stock system and bought commercially. These subsystems will be integrated into one system and will include the automated and manual patching equipment required to configure these subsystems. The subsystems included in the RCS include the High Frequency 400 Watt System, Digital Modular Radio (DMR) VHF/UHF Line of Sight and UHF SATCOM voice, Naval Modular Automated Communications System (NAVMACS) Naval Messaging System, Battle Force Tactical Network (BFTN), Tactical Variant Switch (TVS), Tactical Voice Terminal (TVT), Automated Digital Networks System (ADNS), Commercial Broadband Satellite Program (CBSP), Fleet Broadcast, Navy Order wire (NOW) Terminals, OE-570A/WSC UHF SATCOM Antenna, Portable Communications Equipment (PCE) and Cryptologic equipment. The subsystems are integrated by SPAWAR Systems Center Atlantic at the Charleston, SC Test and Integration Facility with the proper interfaces to operate as an overall system. The RCS subsystems and interfaces will be tested prior to shipment for installation on board the T-AO ships.

Contract Data:

Program Year	Hull	Prime Contractor	Contract Method/Type	Award Date	New/Option	Quantity (Each)	Unit Cost ($ M)
FY 2019	T-AO 207	TBD	TBD	TBD		2	1.232
FY 2020	T-AO 209	TBD	TBD	TBD		2	1.257

Delivery Date:

Program Year	Hull	Earliest Ship Delivery Date	Months Required Before Delivery	Production Leadtime	Required Award Date
FY 2019	T-AO 207	Dec 2022	7	14	Mar 2021
FY 2020	T-AO 209	Apr 2024	7	14	Jul 2022

Competition/Second Source Initiatives:

N/A

Remarks:

FY 2019 includes T-AO 207 and T-AO 208
FY 2020 includes T-AO 209 and T-AO 210

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Exhibit P-10, Advance Procurement Requirements Analysis (*page 1 - Budget Funding Justification*): PB 2021 Navy			Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 05 / 1		**P-1 Line Item Number / Title:** 5025 / TAO Fleet Oiler	
First System (2021) Award Date: January 2021	**First System (2021) Completion Date:** January 2022		**Interval Between Systems:** 12 Months

Cost Elements	Production Leadtime (Months)	When Required* (Months)	FY 2019 ($ M)	FY 2020 ($ M)	FY 2021 ($ M)	FY 2022 ($ M)	FY 2023 ($ M)	FY 2024 ($ M)	FY 2025 ($ M)
Basic Construction/Conversion									
Propulsion, Auxiliary, Machinery, and Components (6)	12-24	Various	73.000	73.000	0.000	71.507	151.000	77.000	78.540
Total: Basic Construction/Conversion			*73.000*	*73.000*	*-*	*71.507*	*151.000*	*77.000*	*78.540*
Hull, Mechanical, and Electrical (HM&E)									
Class Engineering Efforts	-	-	-	-	0.000	-	-	-	-
Total: Hull, Mechanical, and Electrical (HM&E)			*-*	*-*	*-*	*-*	*-*	*-*	*-*
Electronics									
Digital Modular Radio (DMR) (7)	-	-	2.046	-	0.000	-	-	-	-
AN/SLQ-25 NIXIE	-	-	-	-	0.000	-	-	-	-
Total: Electronics			*2.046*	*-*	*-*	*-*	*-*	*-*	*-*
Total Advance Procurement/Obligation Authority			**75.046**	**73.000**	**-**	**71.507**	**151.000**	**77.000**	**78.540**

*Note: "When Required" is the number of months required before ship delivery.

Exhibit P-10, Advance Procurement Requirements Analysis (*page 2 - Budget Funding Justification*): PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 05 / 1	**P-1 Line Item Number / Title:** 5025 / TAO Fleet Oiler

Cost Elements	FY 2021						
	Production Leadtime *(Months)*	When Required* *(Months)*	Unit Cost *($ M)*	Contract Forecast Date	2021 Qty *(Each)*	For FY	Total Cost Request *($ M)*
Basic Construction/Conversion							
Propulsion, Auxiliary, Machinery, and Components (6)	12-24	Various	-		-		0.000
Total: Basic Construction/Conversion							-
Hull, Mechanical, and Electrical (HM&E)							
Total: Hull, Mechanical, and Electrical (HM&E)							-
Electronics							
Digital Modular Radio (DMR) (7)	-	-	-		-		0.000
AN/SLQ-25 NIXIE	-	-	-		-		0.000
Total: Electronics							-
Total Advance Procurement/Obligation Authority							**-**

*Note: "When Required" is the number of months required before ship delivery.

Footnotes:

(6) Funding to procure Contractor furnished Long Lead Time Materials (LLTM) and engineering related activities.

(7) Funding to procure Government furnished Long Lead Time Materials (LLTM) and engineering related activities.

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 05: Auxiliaries, Craft, and Prior-Year Program Costs / BSA 1: Auxiliaries, Craft and Prior Yr Program Cost	**P-1 Line Item Number / Title:** 5035 / Towing, Salvage, and Rescue Ship (ATS)

ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** N/A
Line Item MDAP/MAIS Code: N/A		

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity *(Units in Each)*	2	1	2	2	-	2	1	-	-	-	-	8
Gross/Weapon System Cost *($ in Millions)*	151.089	80.517	150.282	168.209	0.000	168.209	80.800	0.000	0.000	0.000	-	630.897
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	151.089	80.517	150.282	168.209	0.000	168.209	80.800	0.000	0.000	0.000	-	630.897
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**151.089**	**80.517**	**150.282**	**168.209**	**0.000**	**168.209**	**80.800**	**0.000**	**0.000**	**0.000**	**-**	**630.897**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Plus Outfitting and Post Delivery *($ in Millions)*	-	-	7.370	9.991	-	9.991	2.306	-	-	-	45.580	65.247
Total *($ in Millions)*	**151.089**	**80.517**	**157.652**	**178.200**	**-**	**178.200**	**83.106**	**-**	**-**	**-**	**45.580**	**696.144**
Gross/Weapon System Unit Cost *($ in Millions)*	75.545	80.517	75.141	84.105	-	84.105	80.800	-	-	-	-	78.862

Description:

The Navy requires ocean-going towing, salvage, and rescue capabilities to support Fleet operations. The Navy's current capabilities are provided by four T-ATF 166 Class Fleet tugs and four T-ARS 50 Class salvage ships which will reach the end of their expected service lives beginning in 2020 and 2025, respectively. The Towing, Salvage and Rescue Ships (T-ATS 6 Navajo Class) will recapitalize the current Fleet tugs and salvage ships with a common hull that is capable of performing the missions of the retiring T-ATF and T-ARS classes.

Characteristics:

	T-ATS
Length Overall	263 ft
Beam	59 ft
Displacement	5,110 tons
Draft	18 ft

Production Status:	T-ATS 6	T-ATS 7	T-ATS 8	T-ATS 9	T-ATS 10	T-ATS 11	T-ATS 12
Contract Award Date	Mar 2018	Apr 2019	Apr 2019	Apr 2020	Apr 2020	Feb 2021	Feb 2021
Months to Completion							
a) Award to Delivery	40 months	31 months	35 months	26 months	30 months	26 months	30 months
b) Construction Start to Delivery	25 months	26 months	26 months	20 months	20 months	20 months	20 months
Delivery Date	Jul 2021	Nov 2021	Mar 2022	Jun 2022	Oct 2022	Apr 2023	Aug 2023
Completion Of Fitting Out	Aug 2021	Dec 2021	Apr 2022	Jul 2022	Nov 2022	May 2023	Sep 2023
Obligation Work Limit Date	Jul 2022	Nov 2022	Mar 2023	Jun 2023	Oct 2023	Apr 2024	Aug 2024

Design Schedule	Start / Issue	Complete / Response	Reissue	Reissue Complete / Response
Issue Date for TLR	Dec 2015	Mar 2016		
Issue Date for TLS	N/A	N/A		
Preliminary Design	N/A	N/A		

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy		**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 05: Auxiliaries, Craft, and Prior-Year Program Costs / BSA 1: Auxiliaries, Craft and Prior Yr Program Cost	**P-1 Line Item Number / Title:** 5035 / Towing, Salvage, and Rescue Ship (ATS)	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** N/A
Line Item MDAP/MAIS Code: N/A		

Design Schedule	Start / Issue	Complete / Response	Reissue	Reissue Complete / Response
Contract Design	N/A	N/A		
Detail Design	Mar 2018	Sep 2019		
Request for Proposals	Mar 2017	May 2017		
Design Agent	Wartsila			

Classification of Cost Estimate:

Exhibit P-5c, Ship Cost Analysis: PB 2021 Navy | **Date:** February 2020

Appropriation / Budget Activity / Budget Sub Activity:
1611N / 05 / 1

P-1 Line Item Number / Title:
5035 / Towing, Salvage, and Rescue Ship (ATS)

Cost Categories	FY 2016		FY 2018		FY 2019		FY 2020		FY 2021	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Basic Construction/Conversion	1	63.742	1	62.842	1	66.685	2	130.097	2	141.181
Change Orders		3.200		2.145		2.008		2.602		3.514
Electronics		5.033		5.779		5.862		11.300		12.600
Hull, Mechanical, and Electrical (HM&E)		3.025		5.323		5.962		6.283		10.914
Total Ship Estimate		**75.000**		**76.089**		**80.517**		**150.282**		**168.209**
Net P-1 Funding		**75.000**		**76.089**		**80.517**		**150.282**		**168.209**

Remarks:
FY21 basic construction increases are due to Economic Price Adjustment (EPA) allowances on steel products, steel-based products and selected equipment. FY21 also includes Shore Base Spares ($3.0M).

Exhibit P-27, Ship Production Schedule: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 05 / 1	**P-1 Line Item Number / Title:** 5035 / Towing, Salvage, and Rescue Ship (ATS)

Ship	Shipbuilder	Fiscal Year	Contract Award	Start of Construction	Delivery Date
T-ATS 6	Gulf Island Shipyards	2016	Mar 2018	Jun 2019	Jul 2021
T-ATS 7	Gulf Island Shipyards	2018	Apr 2019	Sep 2019	Nov 2021
T-ATS 8	Gulf Island Shipyards	2019	Apr 2019	Jan 2020	Mar 2022
T-ATS 9	Gulf Island Shipyards	2020	Apr 2020	Oct 2020	Jun 2022
T-ATS 10	Gulf Island Shipyards	2020	Apr 2020	Feb 2021	Oct 2022
T-ATS 11	Gulf Island Shipyards	2021	Feb 2021	Aug 2021	Apr 2023
T-ATS 12	Gulf Island Shipyards	2021	Feb 2021	Dec 2021	Aug 2023
T-ATS 13	Gulf Island Shipyards	2022	Feb 2022	Aug 2022	Apr 2024

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 05: Auxiliaries, Craft, and Prior-Year Program Costs / BSA 1: Auxiliaries, Craft and Prior Yr Program Cost	**P-1 Line Item Number / Title:** 5100 / LCU 1700

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: N/A

Line Item MDAP/MAIS Code: N/A

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity *(Units in Each)*	1	2	4	5	-	5	4	4	4	4	4	32
Gross/Weapon System Cost *($ in Millions)*	33.980	41.520	83.670	87.395	0.000	87.395	70.249	69.650	74.082	74.321	76.036	610.903
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	33.980	41.520	83.670	87.395	0.000	87.395	70.249	69.650	74.082	74.321	76.036	610.903
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**33.980**	**41.520**	**83.670**	**87.395**	**0.000**	**87.395**	**70.249**	**69.650**	**74.082**	**74.321**	**76.036**	**610.903**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Total *($ in Millions)*	**33.980**	**41.520**	**83.670**	**87.395**	**-**	**87.395**	**70.249**	**69.650**	**74.082**	**74.321**	**76.036**	**610.903**
Gross/Weapon System Unit Cost *($ in Millions)*	33.980	20.760	20.918	17.479	-	17.479	17.562	17.413	18.521	18.580	19.009	19.091

Description:

The Landing Craft, Utility (LCU) 1700 program provides heavy lift capability to transport personnel, weapons, equipment, and cargo from the ship to shore and shore to shore across the range of military operations (ROMO). LCU 1700 will be able to conduct 24 hours/day operations for up to 10 days for continuous landing of troops, equipment, and supplies; provide support for missions requiring persistence such as riverine sustainment, surveillance or port clearing; and execute missions to reinforce, reposition, and resupply forces over a wide operating area.

LCU 1700 provides the functional replacement for the LCU 1610 class of landing craft, all of which have significantly exceeded their 25 year service life, the average age is approaching 50 years old.

LCU 1700 requirement is for 32 craft.

Note:
Notional Characteristics based on Government Preliminary Design.
Production Status dates provided are based on awarded contract delivery dates.

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy		**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 05: Auxiliaries, Craft, and Prior-Year Program Costs / BSA 1: Auxiliaries, Craft and Prior Yr Program Cost	**P-1 Line Item Number / Title:** 5100 / LCU 1700	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** N/A
Line Item MDAP/MAIS Code: N/A		

Characteristics:

	LCU
Length Overall	139 ft
Beam	31 ft
Displacement	428 Tons
Draft	7.3 ft

Production Status:	**LCU 1700**	**LCU 1701**	**LCU 1702**	**LCU 1703**	**LCU 1704**	**LCU 1705**	**LCU 1706**
Contract Award Date	Mar 2018	Feb 2019	Feb 2019	Mar 2020	Mar 2020	Mar 2020	Mar 2020
Months to Completion							
a) Award to Delivery	41 months	32 months	36 months	25 months	27 months	29 months	31 months
b) Construction Start to Delivery	18 months	18 months	18 months	16 months	15 months	14 months	13 months
Delivery Date	Aug 2021	Oct 2021	Feb 2022	Apr 2022	Jun 2022	Aug 2022	Oct 2022
Completion Of Fitting Out	Aug 2021	Nov 2021	Mar 2022	May 2022	Jul 2022	Sep 2022	Nov 2022
Obligation Work Limit Date	Jul 2022	Sep 2022	Feb 2023	Apr 2023	Jun 2023	Aug 2023	Oct 2023

Production Status:	**LCU 1707**	**LCU 1708**	**LCU 1709**	**LCU 1710**	**LCU 1711**
Contract Award Date	Mar 2021	Mar 2021	Mar 2021	Mar 2021	Mar 2021
Months to Completion					
a) Award to Delivery	24 months	26 months	28 months	30 months	32 months
b) Construction Start to Delivery	15 months	14 months	13 months	12 months	12 months
Delivery Date	Mar 2023	May 2023	Jul 2023	Sep 2023	Nov 2023
Completion Of Fitting Out	Apr 2023	Jun 2023	Aug 2023	Oct 2023	Dec 2023
Obligation Work Limit Date	Mar 2024	May 2024	Jul 2024	Sep 2024	Nov 2024

Design Schedule	**Start / Issue**	**Complete / Response**	**Reissue**	**Reissue Complete / Response**
Issue Date for TLR	N/A	N/A		
Issue Date for TLS	N/A	N/A		
Preliminary Design	Mar 2014	May 2015		
Contract Design	Jun 2015	Jun 2016		
Detail Design	Apr 2018	Apr 2020		
Request for Proposals	Feb 2017	May 2017		
Design Agent	Swiftships LLC			

Classification of Cost Estimate:

Exhibit P-5c, Ship Cost Analysis: PB 2021 Navy | **Date:** February 2020

Appropriation / Budget Activity / Budget Sub Activity:
1611N / 05 / 1

P-1 Line Item Number / Title:
5100 / LCU 1700

Cost Categories	FY 2016		FY 2019		FY 2020		FY 2021	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Basic Construction/Conversion		19.050		33.163		67.673		62.862
Change Orders		1.600		1.500		3.170		2.799
Electronics		3.890		3.768		6.761		11.607
Hull, Mechanical, and Electrical (HM&E)		2.360		1.589		3.060		3.922
Other Cost		2.080		1.500		3.006		6.205
Plan Costs	1	5.000	2	-	4	-	5	-
Total Ship Estimate		**33.980**		**41.520**		**83.670**		**87.395**
Net P-1 Funding		**33.980**		**41.520**		**83.670**		**87.395**

Remarks:
Beginning in FY 2021, Basic Construction pricing is based off contractor Firm-Fix Pricing.
FY 2016 electronics funding includes non-recurring engineering costs.
The FY 2021 increase in Other Cost is due to additional SUPSHIP resources to provide on-site Navy personnel for oversight, testing and quality assurance inspections in order to ensure the Program remains on schedule and within budget. In FY 2021, the shipbuilder is anticipated to have seven craft under construction, with the delivery of the first LCU 1700 Class craft of the Program.

Exhibit P-27, Ship Production Schedule: PB 2021 Navy | **Date:** February 2020

Appropriation / Budget Activity / Budget Sub Activity:
1611N / 05 / 1

P-1 Line Item Number / Title:
5100 / LCU 1700

Ship	Shipbuilder	Fiscal Year	Contract Award	Start of Construction	Delivery Date
LCU 1700	Swiftships LLC	2016	Mar 2018	Feb 2020	Aug 2021
LCU 1701	Swiftships LLC	2019	Feb 2019	Apr 2020	Oct 2021
LCU 1702	Swiftships LLC	2019	Feb 2019	Aug 2020	Feb 2022
LCU 1703	Swiftships LLC	2020	Mar 2020	Dec 2020	Apr 2022
LCU 1704	Swiftships LLC	2020	Mar 2020	Mar 2021	Jun 2022
LCU 1705	Swiftships LLC	2020	Mar 2020	Jun 2021	Aug 2022
LCU 1706	Swiftships LLC	2020	Mar 2020	Sep 2021	Oct 2022
LCU 1707	Swiftships LLC	2021	Mar 2021	Dec 2021	Mar 2023
LCU 1708	Swiftships LLC	2021	Mar 2021	Mar 2022	May 2023
LCU 1709	Swiftships LLC	2021	Mar 2021	Jun 2022	Jul 2023
LCU 1710	Swiftships LLC	2021	Mar 2021	Sep 2022	Sep 2023
LCU 1711	Swiftships LLC	2021	Mar 2021	Nov 2022	Nov 2023
LCU 1712	Swiftships LLC	2022	Mar 2022	Feb 2023	Feb 2024
LCU 1713	Swiftships LLC	2022	Mar 2022	Apr 2023	Apr 2024
LCU 1714	Swiftships LLC	2022	Mar 2022	Jun 2023	Jun 2024
LCU 1715	Swiftships LLC	2022	Mar 2022	Aug 2023	Aug 2024
LCU 1716	Swiftlships LLC	2023	Mar 2023	Jan 2024	Jan 2025
LCU 1717	Swiftships LLC	2023	Mar 2023	Mar 2024	Mar 2025
LCU 1718	Swiftships LLC	2023	Mar 2023	May 2024	May 2025
LCU 1719	Swiftships LLC	2023	Mar 2023	Jul 2024	Jul 2025
LCU 1720	Swiftships LLC	2024	Mar 2024	Jan 2025	Jan 2026
LCU 1721	Swiftships LLC	2024	Mar 2024	Mar 2025	Mar 2026
LCU 1722	Swiftships LLC	2024	Mar 2024	May 2025	May 2026
LCU 1723	Swiftships LLC	2024	Mar 2024	Jul 2025	Jul 2026
LCU 1724	Swiftships LLC	2025	Mar 2025	Jan 2026	Jan 2027
LCU 1725	Swiftships LLC	2025	Mar 2025	Mar 2026	Mar 2027
LCU 1726	Swiftships LLC	2025	Mar 2025	May 2026	May 2027
LCU 1727	Swiftships LLC	2025	Mar 2025	Jul 2026	Jul 2027

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy		Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 05: Auxiliaries, Craft, and Prior-Year Program Costs / BSA 1: Auxiliaries, Craft and Prior Yr Program Cost	**P-1 Line Item Number / Title:** 5110 / Outfitting	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** N/A
Line Item MDAP/MAIS Code: N/A		

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Full Funding TOA - Outfitting *($ in Millions)*	648.303	137.753	198.489	290.094	163.648	173.667	177.800	161.323	1,132.619	3,083.696
Full Funding TOA - Post Delivery *($ in Millions)*	712.637	408.523	492.202	530.096	444.481	444.613	297.420	303.761	1,683.030	5,316.763
Full Funding TOA - First Destination *($ in Millions)*	38.260	3.762	5.301	5.396	5.499	5.612	5.724	5.839	5.581	80.974
Total Obligation Authority *($ in Millions)*	**1,399.200**	**550.038**	**695.992**	**825.586**	**613.628**	**623.892**	**480.944**	**470.923**	**2,821.230**	**8,481.433**

Description:

Outfitting (OF) funds are used to acquire on board repair parts, other secondary items, equipage, recreation items, precommissioning crew support and general use consumables furnished to the shipbuilder or the fitting-out activity to fill the ship's initial allowances as defined by the baseline coordinated shipboard allowance list (COSAL). The program also budgets for contractor-furnished spares, a lead-time away from delivery. The program ensures operational readiness of ships undergoing new construction, conversion, service life extension program (SLEP), and nuclear refueling. It ensures these ships receive their full allowances of spare parts and equipment which are vitally required to support the shipboard maintenance process; ensures ships are equipped with operating space items (tools, test equipment, damage control), personnel safety and survivability commodities for successful completion of builder sea trials; supports shipboard maintenance and thereby achieving the OPNAV-directed supply readiness goals for material on board ship at delivery. SCN funding for the initial fill of allowance list items are limited to those items on the COSAL and authorized requirements through the Obligation Work Limiting Date (OWLD). While most outfitting funds are executed prior to ships' completion of fitting out dates, some outfitting funding may be required in the fiscal year following the scheduled Delivery Date.

Post Delivery (PD) funding covers the repair of government-responsible items which were believed to have been complete to standard and/or operable at delivery, as well as funding to conduct tests and trials after delivery.
It is essential to deliver to the Fleet complete ships, free from both contractor and government responsible deficiencies, capable of supporting the Navy's mission. The Post Shakedown Availability (PSA) is a shipyard availability assigned to commence after delivery and to be completed prior to the expiration of the SCN OWLD. It is during this time that acceptance and final contract trials deficiencies will be corrected. The purpose of the PSA is to correct new construction deficiencies found during the shakedown period; to correct contractor and government responsible deficiencies previously authorized; and accomplishment of other improvements or class items as authorized. Funding is used for corrections authorized by the ship's Program Manager as a result of builders' trials (pre-delivery), acceptance or underway trials, final contract trials, trial board items, and correction of production-related defects or deficiencies which develop during the post delivery period. Although the majority of post delivery funding occurs after ships' delivery dates, some funding is required prior to the delivery date in preparation for post delivery events.

First Destination Transportation (FDT). FDT delivers material from a procurement source to the first point of use or storage which may be in the Continental United States or overseas. The procurement source may be a supplier outside of the Department of Defense (DoD) supply system or a DoD activity which fabricates new material. FDT also includes transportation from point of origin to point of use or storage when Navy-owned material or equipment is provided to a contractor incident to a Research and Development project or a system/equipment acquisition or modification.

Exhibit P-29, Outfitting: PB 2021 Navy | **Date:** February 2020

Appropriation / Budget Activity / Budget Sub Activity: 1611N / 05 / 1

P-1 Line Item Number / Title: 5110 / Outfitting

Ship Class	Hull Number	Program Year	Contract Award	Start of Const.	Delivery Date	CFO	PSA Start	PSA Finish	OWL Date	Prior Years	FY 2019	FY 2020	FY 2021	To Complete	Total
CVN	78	2008	Sep 2008	Aug 2005	May 2017	Jul 2017	Jul 2018	Oct 2019	Apr 2021	151.496	-	1.322	-	-	152.818
CVN	79	2013	Jun 2015	Feb 2011	Sep 2024	Nov 2024	Mar 2023	Sep 2024	Oct 2025	1.211	0.050	1.000	76.386	93.153	171.800
CVN	80	2018	Jan 2019	Jan 2019	Mar 2028	May 2028	Oct 2028	Mar 2029	Apr 2029	-	-	-	-	175.215	175.215
CVN	81	2020	Jan 2019	Jan 2019	Feb 2032	Apr 2032	Sep 2032	Feb 2033	Mar 2033	-	-	-	-	190.435	190.435
									CVN Total	**152.707**	**0.050**	**2.322**	**76.386**	**458.803**	**690.268**
VIRGINIA	789	2012	Dec 2008	Sep 2012	Jun 2018	Jun 2018	Oct 2018	Jun 2019	Jul 2019	17.655	-	-	-	-	17.655
VIRGINIA	790	2013	Dec 2008	Mar 2013	Sep 2018	Sep 2018	Mar 2019	Dec 2020	Jan 2021	20.678	0.142	-	-	-	20.820
VIRGINIA	791	2013	Dec 2008	Sep 2013	Oct 2019	Oct 2019	Apr 2020	Aug 2020	Sep 2020	17.860	0.006	-	-	-	17.866
VIRGINIA	792	2014	Apr 2014	May 2014	Mar 2020	Mar 2020	Jun 2020	Dec 2020	Feb 2021	17.696	0.287	-	-	-	17.983
VIRGINIA	793	2014	Apr 2014	Sep 2014	Nov 2020	Nov 2020	Apr 2021	Jul 2021	Oct 2021	15.146	1.153	1.615	-	-	17.914
VIRGINIA	795	2015	Apr 2014	Sep 2015	Jul 2021	Jul 2021	Nov 2021	Mar 2022	Jun 2022	4.642	10.225	3.370	0.358	-	18.595
VIRGINIA	794	2015	Apr 2014	Apr 2015	Aug 2021	Aug 2021	Jan 2022	Apr 2022	Jul 2022	13.022	3.966	1.593	-	-	18.581
VIRGINIA	796	2016	Apr 2014	Mar 2016	Jan 2022	Jan 2022	May 2022	Aug 2022	Dec 2022	-	10.562	4.520	0.680	-	15.762
VIRGINIA	797	2016	Apr 2014	Sep 2016	Jul 2022	Jul 2022	Nov 2022	Mar 2023	Jun 2023	-	10.329	4.357	1.109	0.480	16.275
VIRGINIA	798	2017	Apr 2014	Mar 2017	Dec 2022	Dec 2022	Apr 2023	Aug 2023	Nov 2023	-	-	11.715	5.328	0.897	17.940
VIRGINIA	799	2017	Apr 2014	Sep 2017	Jun 2023	Jun 2023	Oct 2023	Feb 2024	May 2024	-	-	9.541	8.494	1.647	19.682
VIRGINIA	800	2018	Apr 2014	Mar 2018	Dec 2023	Dec 2023	Apr 2024	Sep 2024	Nov 2024	-	-	-	12.969	7.418	20.387
VIRGINIA	801	2018	Apr 2014	Sep 2018	Mar 2024	Mar 2024	Jul 2024	Nov 2024	Feb 2025	-	-	-	13.005	7.476	20.481
VIRGINIA	802	2019	Dec 2019	Sep 2019	Jun 2025	Jun 2025	Oct 2025	Feb 2026	May 2026	-	-	-	-	21.130	21.130
VIRGINIA	803	2019	Dec 2019	Mar 2020	Apr 2026	Apr 2026	Aug 2026	Jan 2027	Mar 2027	-	-	-	-	25.211	25.211
VIRGINIA	804	2020	Dec 2019	Sep 2020	Oct 2026	Oct 2026	Feb 2027	Jun 2027	Sep 2027	-	-	-	-	25.216	25.216
VIRGINIA	805	2020	Dec 2019	Mar 2021	Feb 2027	Feb 2027	Jun 2027	Oct 2027	Jan 2028	-	-	-	-	25.664	25.664
VIRGINIA	806	2021	Dec 2019	Sep 2021	Aug 2027	Aug 2027	Dec 2027	Apr 2028	Jul 2028	-	-	-	-	25.726	25.726
VIRGINIA	807	2022	Dec 2019	Mar 2022	Feb 2028	Feb 2028	Jun 2028	Oct 2028	Jan 2029	-	-	-	-	26.237	26.237
VIRGINIA	808	2022	Dec 2019	Sep 2022	Aug 2028	Aug 2028	Dec 2028	Apr 2029	Jul 2029	-	-	-	-	28.249	28.249
VIRGINIA	809	2023	Dec 2019	Mar 2023	Feb 2029	Feb 2029	Jun 2029	Oct 2029	Jan 2030	-	-	-	-	26.739	26.739
VIRGINIA	810	2023	Dec 2019	Sep 2023	Aug 2029	Aug 2029	Dec 2029	Apr 2030	Jul 2030	-	-	-	-	27.025	27.025
VIRGINIA	811	2024	Dec 2023	Mar 2024	Feb 2030	Feb 2030	Jun 2030	Oct 2030	Jan 2031	-	-	-	-	27.025	27.025
VIRGINIA	812	2024	Dec 2023	Sep 2024	Aug 2030	Aug 2030	Dec 2030	Apr 2031	Jul 2031	-	-	-	-	36.209	36.209
									VIRGINIA Total	**106.699**	**36.670**	**36.711**	**41.943**	**312.349**	**534.372**
CVN-RCOH	73	2016	Aug 2017	Aug 2017	Dec 2021	Feb 2022	Dec 2021	Dec 2022	Jan 2023	7.566	14.625	31.597	9.368	-	63.156
CVN-RCOH	74	2020	Jan 2021	Jan 2021	Jan 2025	Mar 2025	Jan 2025	Jan 2026	Feb 2026	-	-	-	1.342	67.462	68.804
									CVN-RCOH Total	**7.566**	**14.625**	**31.597**	**10.710**	**67.462**	**131.960**
DDG 1000	1000	2007	Feb 2008	Feb 2009	Mar 2020	Apr 2020	Aug 2020	Mar 2021	Mar 2021	64.858	1.669	0.450	-	-	66.977
DDG 1000	1001	2007	Sep 2011	Mar 2010	Sep 2020	Oct 2020	Apr 2021	Jul 2021	Sep 2021	19.570	2.465	0.450	-	-	22.485
DDG 1000	1002	2009	Sep 2011	Apr 2012	Sep 2022	Oct 2022	Apr 2023	Jul 2023	Sep 2023	0.030	9.494	4.654	0.717	8.000	22.895
									DDG 1000 Total	**84.458**	**13.628**	**5.554**	**0.717**	**8.000**	**112.357**
DDG	116	2012	Feb 2012	Feb 2013	Jun 2018	Oct 2018	May 2019	Oct 2019	Oct 2019	21.900	1.378	-	-	-	23.278
DDG	117	2013	Jun 2013	Sep 2014	Feb 2019	Jun 2019	Jan 2020	May 2020	May 2020	20.060	0.636	1.674	-	-	22.370

Exhibit P-29, Outfitting: PB 2021 Navy | **Date:** February 2020

Appropriation / Budget Activity / Budget Sub Activity: 1611N / 05 / 1

P-1 Line Item Number / Title: 5110 / Outfitting

Ship Class	Hull Number	Program Year	Contract Award	Start of Const.	Delivery Date	CFO	PSA Start	PSA Finish	OWL Date	Prior Years	FY 2019	FY 2020	FY 2021	To Complete	Total
DDG	118	2013	Jun 2013	Aug 2015	Nov 2020	Apr 2021	Nov 2021	Mar 2022	Mar 2022	14.941	1.758	3.099	2.709	0.350	22.857
DDG	120	2013	Mar 2014	Sep 2016	Jul 2021	Nov 2021	Jun 2022	Sep 2022	Oct 2022	-	1.022	15.461	4.739	1.694	22.916
DDG	119	2014	Jun 2013	Jul 2015	Apr 2020	Sep 2020	Mar 2021	Jul 2021	Aug 2021	16.613	2.649	2.128	1.525	-	22.915
DDG	121	2015	Jun 2013	Apr 2016	Feb 2021	Jun 2021	Jan 2022	May 2022	May 2022	-	13.660	6.543	2.056	0.693	22.952
DDG	122	2015	Jun 2013	Sep 2017	Jan 2022	May 2022	Nov 2022	Mar 2023	Apr 2023	-	-	0.529	17.287	4.945	22.761
DDG	123	2016	Jun 2013	Jan 2017	Jul 2021	Nov 2021	Jul 2022	Oct 2022	Oct 2022	-	-	8.337	12.863	2.394	23.594
DDG	124	2016	Jun 2013	Jul 2018	Jun 2022	Oct 2022	Apr 2023	Aug 2023	Sep 2023	-	-	-	10.229	13.399	23.628
DDG	127	2016	Sep 2017	Apr 2019	Nov 2022	Mar 2023	Sep 2023	Jan 2024	Feb 2024	-	-	-	-	23.768	23.768
DDG	125	2017	Jun 2013	May 2018	Apr 2023	Aug 2023	Feb 2024	Jul 2024	Jul 2024	-	-	-	-	23.125	23.125
DDG	126	2017	Jun 2013	Apr 2020	Jun 2024	Oct 2024	Apr 2025	Aug 2025	Sep 2025	-	-	-	-	23.171	23.171
DDG	128	2018	Sep 2018	Jun 2020	Oct 2024	Feb 2025	Aug 2025	Dec 2025	Jan 2026	-	-	-	-	23.456	23.456
DDG	129	2018	Sep 2018	May 2021	Jul 2025	Nov 2025	May 2026	Sep 2026	Oct 2026	-	-	-	-	23.434	23.434
DDG	130	2019	Sep 2018	Jul 2020	Jul 2025	Nov 2025	May 2026	Sep 2026	Oct 2026	-	-	-	-	23.434	23.434
DDG	131	2019	Sep 2018	Mar 2022	Apr 2026	Aug 2026	Jan 2027	May 2027	Jul 2027	-	-	-	-	24.465	24.465
DDG	132	2019	Dec 2018	Jun 2021	May 2026	Sep 2026	Mar 2027	Jun 2027	Aug 2027	-	-	-	-	24.497	24.497
DDG	133	2020	Sep 2018	Oct 2022	Nov 2026	Mar 2027	Aug 2027	Dec 2027	Feb 2028	-	-	-	-	25.113	25.113
DDG	134	2020	Sep 2018	Apr 2022	Nov 2026	Mar 2027	Sep 2027	Jan 2028	Feb 2028	-	-	-	-	25.113	25.113
DDG	135	2020	Jun 2020	Nov 2022	Mar 2027	Aug 2027	Feb 2028	Jun 2028	Jul 2028	-	-	-	-	26.891	26.891
DDG	136	2021	Sep 2018	Jan 2023	Jun 2027	Oct 2027	Apr 2028	Aug 2028	Sep 2028	-	-	-	-	27.241	27.241
DDG	137	2021	Sep 2018	May 2023	Sep 2027	Jan 2028	Jun 2028	Oct 2028	Dec 2028	-	-	-	-	27.707	27.707
DDG	138	2022	Sep 2018	Aug 2023	Dec 2027	Apr 2028	Oct 2028	Jan 2029	Mar 2029	-	-	-	-	27.379	27.379
DDG	139	2022	Sep 2018	Mar 2024	Apr 2028	Aug 2028	Feb 2029	Jun 2029	Jul 2029	-	-	-	-	27.744	27.744
DDG	140	2023	Jun 2023	Jul 2024	Jul 2028	Nov 2028	May 2029	Sep 2029	Oct 2029	-	-	-	-	28.131	28.131
DDG	141	2024	Jun 2023	Jul 2025	Jul 2029	Nov 2029	May 2030	Sep 2030	Oct 2030	-	-	-	-	28.131	28.131
DDG	142	2024	Jun 2023	Jul 2025	Jul 2029	Nov 2029	May 2030	Sep 2030	Oct 2030	-	-	-	-	28.293	28.293
									DDG Total	**73.514**	**21.103**	**37.771**	**51.408**	**484.568**	**668.364**
LCS	10	2012	Mar 2012	Mar 2013	Dec 2016	May 2017	Feb 2018	Oct 2018	Oct 2018	5.410	-	-	-	-	5.410
LCS	12	2012	Mar 2012	Sep 2013	Sep 2017	Nov 2017	Jul 2018	Mar 2019	Mar 2019	5.262	0.033	-	-	-	5.295
LCS	9	2012	Mar 2012	Jan 2013	Sep 2017	Dec 2017	Dec 2018	Aug 2019	Aug 2019	5.887	0.462	-	-	-	6.349
LCS	11	2012	Mar 2012	Aug 2013	Aug 2018	Jun 2019	Oct 2019	May 2020	May 2020	6.258	0.068	-	-	-	6.326
LCS	14	2013	Mar 2013	Feb 2014	Feb 2018	Aug 2018	Apr 2019	Nov 2019	Mar 2020	5.649	0.499	-	-	-	6.148
LCS	16	2013	Mar 2013	Sep 2014	Apr 2018	Feb 2019	Oct 2019	Apr 2020	Jun 2020	5.529	0.413	-	-	-	5.942
LCS	13	2013	Mar 2013	Feb 2014	Aug 2018	Apr 2019	Jul 2019	Mar 2020	Mar 2020	4.869	0.460	-	-	-	5.329
LCS	15	2013	Mar 2013	Dec 2014	Feb 2019	Feb 2020	Apr 2020	Dec 2020	Jan 2021	5.624	0.233	-	-	-	5.857
LCS	18	2014	Mar 2014	Mar 2015	Aug 2018	May 2019	Jan 2020	Aug 2020	Sep 2020	5.170	0.324	0.130	-	-	5.624
LCS	20	2014	Mar 2014	Feb 2016	Jun 2019	Dec 2019	May 2020	Jul 2020	Nov 2020	4.994	0.705	2.540	-	-	8.239
LCS	17	2014	Mar 2014	Aug 2015	Jul 2019	May 2020	Aug 2020	Mar 2021	Apr 2021	4.788	0.373	0.738	-	-	5.899
LCS	19	2014	Mar 2014	Aug 2016	Feb 2020	Jan 2021	Apr 2021	Nov 2021	Dec 2021	3.477	1.200	0.692	2.397	-	7.766
LCS	22	2015	Mar 2015	Dec 2016	Feb 2020	Jun 2020	Jan 2021	Mar 2021	May 2021	4.318	1.101	2.679	0.310	-	8.408

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Ship Class	Hull Number	Program Year	Contract Award	Start of Const.	Delivery Date	CFO	PSA Start	PSA Finish	OWL Date	Prior Years	FY 2019	FY 2020	FY 2021	To Complete	Total
LCS	24	2015	Mar 2015	Jul 2017	Apr 2020	Jan 2021	May 2021	Jul 2021	Dec 2021	2.556	1.599	4.255	0.894	-	9.304
LCS	21	2015	Mar 2015	Feb 2017	Oct 2020	Aug 2021	Dec 2021	Jun 2022	Jul 2022	3.452	0.612	2.445	1.259	-	7.768
LCS	26	2016	Mar 2016	Jan 2018	Oct 2020	Jul 2021	Nov 2021	Jan 2022	Jun 2022	-	0.338	2.883	6.103	-	9.324
LCS	23	2016	Nov 2015	Sep 2017	Feb 2021	Oct 2021	Mar 2022	Aug 2022	Sep 2022	2.683	0.549	1.582	2.698	0.451	7.963
LCS	25	2016	Mar 2016	Feb 2018	Aug 2021	Feb 2022	Jul 2022	Dec 2022	Jan 2023	-	0.955	1.193	3.708	2.581	8.437
LCS	28	2017	Jun 2017	Oct 2018	Jun 2021	Feb 2022	Jul 2022	Sep 2022	Jan 2023	-	-	1.142	4.611	3.602	9.355
LCS	30	2017	Oct 2017	May 2019	Dec 2021	Sep 2022	Jan 2023	Mar 2023	Aug 2023	-	-	-	3.148	6.242	9.390
LCS	27	2017	Oct 2017	Nov 2018	Jul 2022	Dec 2022	Jul 2023	Oct 2023	Nov 2023	-	-	-	2.530	5.968	8.498
LCS	32	2018	Sep 2018	Dec 2019	Jul 2022	Mar 2023	Aug 2023	Oct 2023	Feb 2024	-	-	-	-	9.513	9.513
LCS	29	2018	Sep 2018	Jul 2019	Jan 2023	Aug 2023	Mar 2024	Jun 2024	Jul 2024	-	-	-	-	8.699	8.699
LCS	34	2018	Sep 2018	Jun 2020	Jan 2023	Sep 2023	Feb 2024	Apr 2024	Aug 2024	-	-	-	-	9.516	9.516
LCS	36	2019	Dec 2018	Jan 2021	Jul 2023	Apr 2024	Aug 2024	Oct 2024	Mar 2025	-	-	-	-	10.215	10.215
LCS	38	2019	Dec 2018	Jul 2021	Jan 2024	Oct 2024	Feb 2025	Apr 2025	Sep 2025	-	-	-	-	25.095	25.095
LCS	31	2019	Jan 2019	Jan 2020	Jan 2024	Oct 2024	Mar 2025	Sep 2025	Sep 2025	-	-	-	-	8.777	8.777
									LCS Total	**75.926**	**9.924**	**20.279**	**27.658**	**90.659**	**224.446**
LPD Flight II	30	2018	Mar 2019	Apr 2020	Feb 2025	Sep 2025	Feb 2026	Aug 2026	Aug 2026	-	-	-	-	29.573	29.573
									LPD Flight II Total	**-**	**-**	**-**	**-**	**29.573**	**29.573**
LPD	27	2012	Jul 2012	Aug 2012	Sep 2017	Apr 2018	Nov 2018	Aug 2019	Aug 2019	26.043	-	-	-	-	26.043
LPD	28	2016	Dec 2016	Dec 2016	Sep 2021	May 2022	Oct 2022	Mar 2023	Mar 2023	-	-	18.458	8.124	1.557	28.139
LPD	29	2017	Feb 2018	Jul 2018	Jul 2023	Mar 2024	Sep 2024	Feb 2025	Feb 2025	-	-	-	2.000	26.673	28.673
									LPD Total	**26.043**	**-**	**18.458**	**10.124**	**28.230**	**82.855**
ESB	4	2014	Dec 2014	Oct 2015	Feb 2018	Jun 2018	Mar 2019	Jul 2019	Mar 2020	15.381	-	-	-	-	15.381
ESB	5	2016	Dec 2016	Jan 2017	Nov 2019	Feb 2020	Aug 2020	Nov 2020	Jan 2021	6.895	2.032	6.914	-	-	15.841
ESB	6	2018	Aug 2019	Jun 2020	May 2022	Aug 2022	Jan 2023	Apr 2023	Jul 2023	-	-	-	13.167	9.333	22.500
ESB	7	2019	Aug 2019	Nov 2021	Nov 2023	Feb 2024	Jul 2024	Oct 2024	Jan 2025	-	-	-	-	23.000	23.000
									ESB Total	**22.276**	**2.032**	**6.914**	**13.167**	**32.333**	**76.722**
LHA	7	2011	May 2012	Jul 2013	Feb 2020	Nov 2020	Jan 2021	Mar 2021	Oct 2021	40.544	6.718	-	-	3.304	50.566
LHA	8	2017	Jun 2017	Oct 2018	Jan 2024	Sep 2024	Mar 2025	Jun 2025	Aug 2025	-	-	-	10.400	54.192	64.592
									LHA Total	**40.544**	**6.718**	**-**	**10.400**	**57.496**	**115.158**
EPF	10	2013	Dec 2012	Jun 2016	Nov 2018	Feb 2019	Mar 2020	May 2020	Jul 2020	4.448	-	-	-	-	4.448
EPF	11	2015	Sep 2016	Jan 2017	Dec 2019	Mar 2020	Oct 2020	Dec 2020	Feb 2021	3.549	-	-	-	-	3.549
EPF	12	2016	Sep 2016	Sep 2017	Jul 2020	Oct 2020	Feb 2021	Apr 2021	Sep 2021	0.055	3.408	-	-	-	3.463
EPF	13	2018	Mar 2019	Aug 2019	Nov 2021	Feb 2022	Aug 2022	Oct 2022	Jan 2023	-	-	-	3.000	2.200	5.200
EPF	14	2019	Mar 2019	Apr 2020	Jul 2022	Oct 2022	Apr 2023	Jun 2023	Sep 2023	-	-	-	0.400	5.600	6.000
									EPF Total	**8.052**	**3.408**	**-**	**3.400**	**7.800**	**22.660**
T-AO	205	2016	Jun 2016	Sep 2018	Jun 2021	Sep 2021	Jan 2022	Apr 2022	Aug 2022	-	4.573	14.290	-	-	18.863
T-AO	206	2018	Mar 2018	Dec 2019	Mar 2022	Jul 2022	Nov 2022	Feb 2023	Jun 2023	-	-	0.533	17.891	-	18.424
T-AO	207	2019	Dec 2018	Dec 2020	Dec 2022	Mar 2023	Jul 2023	Oct 2023	Feb 2024	-	-	-	1.102	17.541	18.643
T-AO	208	2019	Dec 2018	May 2021	May 2023	Aug 2023	Dec 2023	Mar 2024	Jul 2024	-	-	-	-	18.885	18.885

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T-AO	209	2020	Feb 2020	May 2022	Apr 2024	Jul 2024	Nov 2024	Feb 2025	Jun 2025	-	-	-	-	18.710	18.710
T-AO	210	2020	Feb 2020	Oct 2022	Oct 2024	Jan 2025	May 2025	Aug 2025	Dec 2025	-	-	-	-	19.397	19.397
T-AO	211	2023	Jan 2023	May 2023	Apr 2025	Jul 2025	Nov 2025	Feb 2026	Jun 2026	-	-	-	-	19.648	19.648
T-AO	212	2024	Jan 2024	Dec 2024	Jan 2027	Apr 2027	Aug 2027	Mar 2026	Mar 2027	-	-	-	-	19.927	19.927
									T-AO Total	**-**	**4.573**	**14.823**	**18.993**	**114.108**	**152.497**
T-ATS	6	2016	Mar 2018	Jun 2019	Jul 2021	Aug 2021	Dec 2021	Dec 2021	Jul 2022	-	-	3.142	1.068	-	4.210
T-ATS	7	2018	Apr 2019	Sep 2019	Nov 2021	Dec 2021	Jul 2022	Jul 2022	Nov 2022	-	-	1.366	2.716	-	4.082
T-ATS	8	2019	Apr 2019	Jan 2020	Mar 2022	Apr 2022	Nov 2022	Nov 2022	Mar 2023	-	-	0.376	2.940	0.702	4.018
T-ATS	9	2020	Apr 2020	Oct 2020	Jun 2022	Jul 2022	Feb 2023	Feb 2023	Jun 2023	-	-	-	-	4.320	4.320
T-ATS	10	2020	Apr 2020	Feb 2021	Oct 2022	Nov 2022	Jun 2023	Jun 2023	Oct 2023	-	-	-	-	4.320	4.320
T-ATS	11	2021	Feb 2021	Aug 2021	Apr 2023	May 2023	Dec 2023	Dec 2023	Apr 2024	-	-	-	-	4.320	4.320
T-ATS	12	2021	Feb 2021	Dec 2021	Aug 2023	Sep 2023	Apr 2024	Apr 2024	Aug 2024	-	-	-	-	4.406	4.406
T-ATS	13	2022	Feb 2022	Aug 2022	Apr 2024	May 2024	Dec 2024	Jan 2025	Apr 2025	-	-	-	-	4.496	4.496
									T-ATS Total	**-**	**-**	**4.884**	**6.724**	**22.564**	**34.172**
T-AGS/AGOR	67	2018	Mar 2020	May 2019	Mar 2024	Jun 2024	Jan 2025	Mar 2025	May 2025	-	-	-	-	3.504	3.504
									T-AGS/AGOR Total	**-**	**-**	**-**	**-**	**3.504**	**3.504**
MTS	701	2015	Feb 2015	Feb 2015	Nov 2019	Nov 2019			Oct 2020	17.870	0.711	-	-	-	18.581
MTS	711	2017	May 2017	May 2017	Jul 2021	Jul 2021			Jun 2022	0.813	11.029	4.800	-	-	16.642
									MTS Total	**18.683**	**11.740**	**4.800**	**-**	**-**	**35.223**
LCU	1700	2016	Mar 2018	Feb 2020	Aug 2021	Aug 2021	Sep 2021	Sep 2021	Jul 2022	-	-	-	1.089	-	1.089
LCU	1701	2019	Feb 2019	Apr 2020	Oct 2021	Nov 2021	Nov 2021	Nov 2021	Sep 2022	-	-	-	1.089	-	1.089
LCU	1702	2019	Feb 2019	Aug 2020	Feb 2022	Mar 2022	Mar 2022	Mar 2022	Feb 2023	-	-	-	1.089	-	1.089
LCU	1703	2020	Mar 2020	Dec 2020	Apr 2022	May 2022	Jun 2022	Jun 2022	Apr 2023	-	-	-	-	1.115	1.115
LCU	1704	2020	Mar 2020	Mar 2021	Jun 2022	Jul 2022	Aug 2022	Aug 2022	Jun 2023	-	-	-	-	1.115	1.115
LCU	1705	2020	Mar 2020	Jun 2021	Aug 2022	Sep 2022	Oct 2022	Oct 2022	Aug 2023	-	-	-	-	1.115	1.115
LCU	1706	2020	Mar 2020	Sep 2021	Oct 2022	Nov 2022	Dec 2022	Dec 2022	Oct 2023	-	-	-	-	1.155	1.155
									LCU Total	**-**	**-**	**-**	**3.267**	**4.500**	**7.767**
LCAC	101	2015	Dec 2012	Mar 2015	Jun 2020	Aug 2021	Nov 2021	Feb 2022	Jul 2022	0.919	2.143	-	-	-	3.062
LCAC	102	2015	Mar 2015	Sep 2016	Sep 2020	Aug 2021	Feb 2022	Nov 2021	Jul 2022	-	0.079	-	-	-	0.079
LCAC	103	2015	Mar 2015	Nov 2016	Oct 2020	Jan 2021	Mar 2021	Jun 2021	Dec 2021	-	1.065	0.764	-	-	1.829
LCAC	104	2016	Mar 2016	Feb 2017	Nov 2020	Jan 2021	May 2021	Aug 2021	Dec 2021	-	-	1.037	-	-	1.037
LCAC	105	2016	Mar 2016	May 2017	Apr 2021	Jun 2021	Oct 2021	Jan 2022	May 2022	-	-	1.037	-	-	1.037
LCAC	106	2016	Mar 2016	Oct 2017	May 2021	Jul 2021	Apr 2022	Jul 2021	Jul 2022	-	-	0.991	0.046	-	1.037
LCAC	107	2016	Mar 2016	Apr 2018	Jul 2021	Jan 2022	Jun 2022	Sep 2022	Dec 2022	-	-	-	1.057	-	1.057
LCAC	108	2016	Mar 2016	Jul 2018	Nov 2021	Jan 2022	Jul 2022	Oct 2022	Dec 2022	-	-	-	1.057	-	1.057
LCAC	109	2017	Jan 2020	Dec 2018	Jan 2022	Jan 2022	Aug 2022	Nov 2022	Dec 2022	-	-	-	1.058	-	1.058
LCAC	110	2017	Jan 2020	Mar 2019	Mar 2022	Oct 2022	Mar 2023	Jun 2023	Sep 2023	-	-	-	1.058	-	1.058
LCAC	111	2018	Jan 2020	Aug 2019	Jun 2022	Oct 2022	Apr 2023	Jul 2023	Sep 2023	-	-	-	0.681	0.399	1.080
LCAC	112	2018	Jan 2020	Sep 2019	Aug 2022	Oct 2022	May 2023	Aug 2023	Sep 2023	-	-	-	-	1.080	1.080

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Ship Class	Hull Number	Program Year	Contract Award	Start of Const.	Delivery Date	CFO	PSA Start	PSA Finish	OWL Date	Prior Years	FY 2019	FY 2020	FY 2021	To Complete	Total
LCAC	113	2018	Jan 2020	Dec 2019	Oct 2022	Jun 2023	Oct 2023	Feb 2024	May 2024	-	-	-	-	1.080	1.080
LCAC	114	2018	Jan 2020	Aug 2020	Jan 2023	Jun 2023	Nov 2023	Mar 2024	May 2024	-	-	-	-	1.079	1.079
LCAC	115	2018	Jan 2020	Nov 2020	Mar 2023	Jun 2023	Dec 2023	Apr 2024	May 2024	-	-	-	-	1.079	1.079
LCAC	116	2018	Jan 2020	Feb 2021	Jun 2023	Jan 2024	May 2024	Sep 2024	Dec 2024	-	-	-	-	1.100	1.100
LCAC	117	2019	Jan 2020	May 2021	Aug 2023	Jan 2024	Jun 2024	Oct 2024	Dec 2024	-	-	-	-	1.100	1.100
LCAC	118	2019	Jan 2020	Aug 2021	Oct 2023	Jan 2024	Jul 2024	Nov 2024	Dec 2024	-	-	-	-	1.100	1.100
LCAC	119	2019	Jan 2020	Nov 2021	Jan 2024	Jul 2024	Dec 2024	Mar 2025	Jun 2025	-	-	-	-	1.100	1.100
LCAC	120	2019	Jan 2020	Jan 2022	Mar 2024	Jul 2024	Jan 2025	Apr 2025	Jun 2025	-	-	-	-	1.100	1.100
LCAC	121	2019	Jan 2020	Mar 2022	May 2024	Jul 2024	Feb 2025	May 2025	Jun 2025	-	-	-	-	1.125	1.125
LCAC	122	2019	Jan 2020	May 2022	Jul 2024	Jun 2025	Oct 2025	Feb 2026	May 2026	-	-	-	-	1.125	1.125
LCAC	123	2019	Jan 2020	Aug 2022	Aug 2024	Jun 2025	Nov 2025	Mar 2026	May 2026	-	-	-	-	1.125	1.125
LCAC	124	2019	Mar 2022	Mar 2023	Mar 2025	Jun 2025	Dec 2025	Apr 2026	May 2026	-	-	-	-	1.125	1.125
LCAC	125	2019	Mar 2022	May 2023	May 2025	Dec 2025	Apr 2026	Aug 2026	Nov 2026	-	-	-	-	1.125	1.125
LCAC	126	2019	Mar 2022	Jul 2023	Jul 2025	Dec 2025	May 2026	Sep 2026	Nov 2026	-	-	-	-	1.145	1.145
LCAC	127	2020	Mar 2022	Sep 2023	Sep 2025	Dec 2025	Jun 2026	Oct 2026	Nov 2026	-	-	-	-	1.145	1.145
LCAC	128	2022	Mar 2022	Nov 2023	Nov 2025	Mar 2026	Aug 2026	Nov 2026	Feb 2027	-	-	-	-	1.125	1.125
LCAC	129	2022	Mar 2022	Jan 2024	Jan 2026	Mar 2026	Sep 2026	Dec 2026	Feb 2027	-	-	-	-	1.145	1.145
LCAC	130	2023	Mar 2023	Mar 2024	Jan 2026	Mar 2026	Oct 2026	Jan 2027	Feb 2027	-	-	-	-	1.145	1.145
LCAC	131	2023	Mar 2023	May 2024	Mar 2026	Sep 2026	Feb 2027	May 2027	Aug 2027	-	-	-	-	1.167	1.167
LCAC	132	2024	Mar 2024	Jul 2024	May 2026	Sep 2026	Mar 2027	Jun 2027	Aug 2027	-	-	-	-	1.167	1.167
LCAC	133	2024	Mar 2024	Sep 2024	Jul 2026	Sep 2026	Apr 2027	Jul 2027	Aug 2027	-	-	-	-	1.167	1.167
LCAC	134	2024	Mar 2024	Nov 2024	Sep 2026	Mar 2027	Aug 2027	Nov 2027	Feb 2028	-	-	-	-	1.167	1.167
LCAC	135	2024	Mar 2024	Jan 2025	Nov 2026	Mar 2027	Sep 2027	Dec 2027	Feb 2028	-	-	-	-	1.125	1.125
LCAC	136	2024	Mar 2024	Mar 2025	Jan 2027	Mar 2027	Oct 2027	Jan 2028	Feb 2028	-	-	-	-	1.192	1.192
LCAC	137	2025	Mar 2025	May 2025	Mar 2027	Sep 2027	Feb 2028	May 2028	Aug 2028	-	-	-	-	1.192	1.192
LCAC	138	2025	Mar 2025	Jul 2025	May 2027	Sep 2027	Mar 2028	Jun 2028	Aug 2028	-	-	-	-	1.192	1.192
LCAC	139	2025	Mar 2025	Sep 2025	Jul 2027	Sep 2027	Apr 2028	Jul 2028	Aug 2028	-	-	-	-	1.192	1.192
LCAC	140	2025	Mar 2025	Nov 2025	Sep 2027	May 2028	Oct 2028	Jan 2029	Apr 2029	-	-	-	-	1.192	1.192
									LCAC Total	**0.919**	**3.287**	**3.829**	**4.957**	**33.300**	**46.292**
LCAC SLEP	86	2017	Sep 2018	Jan 2019	Apr 2020	May 2020	Jun 2020	Jun 2020	Apr 2021	-	0.238	-	-	-	0.238
LCAC SLEP	87	2017	Sep 2018	Jun 2019	Sep 2020	Oct 2020	Nov 2020	Nov 2020	Sep 2021	-	-	0.242	-	-	0.242
LCAC SLEP	77	2017	Sep 2018	Nov 2019	Feb 2021	Mar 2021	Apr 2021	Apr 2021	Feb 2022	-	-	0.242	-	-	0.242
									LCAC SLEP Total	**-**	**0.238**	**0.484**	**-**	**-**	**0.722**
YP SLEP	694	2016	Jul 2018	Aug 2018	Aug 2019	Nov 2019			Oct 2020	0.047	-	-	-	-	0.047
YP SLEP	689	2016	Jan 2020	Jan 2020	Jul 2020	Oct 2020			Sep 2021	0.046	-	-	-	-	0.046
YP SLEP	692	2016	Jan 2020	Feb 2020	Jul 2020	Oct 2020			Sep 2021	0.046	-	-	-	-	0.046
YP SLEP	698	2017	May 2020	May 2020	Oct 2020	Jan 2021			Dec 2021	0.047	-	-	-	-	0.047
YP SLEP	683	2017	Jul 2020	Aug 2020	Jan 2021	Apr 2021			Mar 2022	0.047	-	-	-	-	0.047
YP SLEP	690	2017	Aug 2020	Aug 2020	Jan 2021	Apr 2021			Mar 2022	0.047	-	-	-	-	0.047

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P-1 Line Item Number / Title:
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Ship Class	Hull Number	Program Year	Contract Award	Start of Const.	Delivery Date	CFO	PSA Start	PSA Finish	OWL Date	Prior Years	FY 2019	FY 2020	FY 2021	To Complete	Total
YP SLEP	684	2017	Nov 2020	Nov 2020	Apr 2021	Jul 2021			Jun 2022	-	-	0.048	-	-	0.048
YP SLEP	691	2017	Jan 2021	Feb 2021	Jul 2021	Oct 2021			Sep 2022	-	-	0.049	-	-	0.049
YP SLEP	700	2017	Feb 2021	Feb 2021	Jul 2021	Oct 2021			Sep 2022	-	-	0.048	-	-	0.048
									YP SLEP Total	**0.280**	**-**	**0.145**	**-**	**-**	**0.425**
PUBS	0	2010								30.636	9.757	9.918	10.240	53.808	114.359
									PUBS Total	**30.636**	**9.757**	**9.918**	**10.240**	**53.808**	**114.359**
									Full Funding TOA - Outfitting Total	**648.303**	**137.753**	**198.489**	**290.094**	**1,809.057**	**3,083.696**

Exhibit P-30, Delivery: PB 2021 Navy | **Date:** February 2020

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P-1 Line Item Number / Title: 5110 / Outfitting

Ship Class	Hull Number	Program Year	Contract Award	Start of Const.	Delivery Date	CFO	PSA Start	PSA Finish	OWL Date	Prior Years	FY 2019	FY 2020	FY 2021	To Complete	Total
CVN	78	2008	Sep 2008	Aug 2005	May 2017	Jul 2017	Jul 2018	Oct 2019	Apr 2021	183.003	120.873	110.750	78.800	-	493.426
CVN	79	2013	Jun 2015	Feb 2011	Sep 2024	Nov 2024	Mar 2023	Sep 2024	Oct 2025	-	-	-	-	106.458	106.458
CVN	80	2018	Jan 2019	Jan 2019	Mar 2028	May 2028	Oct 2028	Mar 2029	Apr 2029	-	-	-	-	121.571	121.571
CVN	81	2020	Jan 2019	Jan 2019	Feb 2032	Apr 2032	Sep 2032	Feb 2033	Mar 2033	-	-	-	-	127.538	127.538
									CVN Total	**183.003**	**120.873**	**110.750**	**78.800**	**355.567**	**848.993**
VIRGINIA	789	2012	Dec 2008	Sep 2012	Jun 2018	Jun 2018	Oct 2018	Jun 2019	Jul 2019	17.813	0.929	-	-	-	18.742
VIRGINIA	790	2013	Dec 2008	Mar 2013	Sep 2018	Sep 2018	Mar 2019	Dec 2020	Jan 2021	1.247	59.585	50.416	-	-	111.248
VIRGINIA	791	2013	Dec 2008	Sep 2013	Oct 2019	Oct 2019	Apr 2020	Aug 2020	Sep 2020	0.783	6.044	35.838	-	-	42.665
VIRGINIA	792	2014	Apr 2014	May 2014	Mar 2020	Mar 2020	Jun 2020	Dec 2020	Feb 2021	-	2.325	16.869	23.602	-	42.796
VIRGINIA	793	2014	Apr 2014	Sep 2014	Nov 2020	Nov 2020	Apr 2021	Jul 2021	Oct 2021	-	-	2.900	39.897	-	42.797
VIRGINIA	795	2015	Apr 2014	Sep 2015	Jul 2021	Jul 2021	Nov 2021	Mar 2022	Jun 2022	-	-	-	26.784	16.164	42.948
VIRGINIA	794	2015	Apr 2014	Apr 2015	Aug 2021	Aug 2021	Jan 2022	Apr 2022	Jul 2022	-	-	-	20.787	22.129	42.916
VIRGINIA	796	2016	Apr 2014	Mar 2016	Jan 2022	Jan 2022	May 2022	Aug 2022	Dec 2022	-	-	-	1.621	41.809	43.430
VIRGINIA	797	2016	Apr 2014	Sep 2016	Jul 2022	Jul 2022	Nov 2022	Mar 2023	Jun 2023	-	-	-	-	43.438	43.438
VIRGINIA	798	2017	Apr 2014	Mar 2017	Dec 2022	Dec 2022	Apr 2023	Aug 2023	Nov 2023	-	-	-	-	43.445	43.445
VIRGINIA	799	2017	Apr 2014	Sep 2017	Jun 2023	Jun 2023	Oct 2023	Feb 2024	May 2024	-	-	-	-	43.448	43.448
VIRGINIA	800	2018	Apr 2014	Mar 2018	Dec 2023	Dec 2023	Apr 2024	Sep 2024	Nov 2024	-	-	-	-	43.452	43.452
VIRGINIA	801	2018	Apr 2014	Sep 2018	Mar 2024	Mar 2024	Jul 2024	Nov 2024	Feb 2025	-	-	-	-	43.456	43.456
VIRGINIA	802	2019	Dec 2019	Sep 2019	Jun 2025	Jun 2025	Oct 2025	Feb 2026	May 2026	-	-	-	-	43.337	43.337
VIRGINIA	803	2019	Dec 2019	Mar 2020	Apr 2026	Apr 2026	Aug 2026	Jan 2027	Mar 2027	-	-	-	-	43.340	43.340
VIRGINIA	804	2020	Dec 2019	Sep 2020	Oct 2026	Oct 2026	Feb 2027	Jun 2027	Sep 2027	-	-	-	-	41.528	41.528
VIRGINIA	805	2020	Dec 2019	Mar 2021	Feb 2027	Feb 2027	Jun 2027	Oct 2027	Jan 2028	-	-	-	-	47.024	47.024
VIRGINIA	806	2021	Dec 2019	Sep 2021	Aug 2027	Aug 2027	Dec 2027	Apr 2028	Jul 2028	-	-	-	-	47.650	47.650
VIRGINIA	807	2022	Dec 2019	Mar 2022	Feb 2028	Feb 2028	Jun 2028	Oct 2028	Jan 2029	-	-	-	-	47.634	47.634
VIRGINIA	808	2022	Dec 2019	Sep 2022	Aug 2028	Aug 2028	Dec 2028	Apr 2029	Jul 2029	-	-	-	-	47.736	47.736
VIRGINIA	809	2023	Dec 2019	Mar 2023	Feb 2029	Feb 2029	Jun 2029	Oct 2029	Jan 2030	-	-	-	-	48.147	48.147
									VIRGINIA Total	**19.843**	**68.883**	**106.023**	**112.691**	**663.737**	**971.177**
CVN-RCOH	73	2016	Aug 2017	Aug 2017	Dec 2021	Feb 2022	Dec 2021	Dec 2022	Jan 2023	-	-	-	6.187	31.609	37.796
CVN-RCOH	74	2020	Jan 2021	Jan 2021	Jan 2025	Mar 2025	Jan 2025	Jan 2026	Feb 2026	-	-	-	-	44.404	44.404
									CVN-RCOH Total	**-**	**-**	**-**	**6.187**	**76.013**	**82.200**
DDG 1000	1000	2007	Feb 2008	Feb 2009	Mar 2020	Apr 2020	Aug 2020	Mar 2021	Mar 2021	167.393	18.779	45.600	-	-	231.772
DDG 1000	1001	2007	Sep 2011	Mar 2010	Sep 2020	Oct 2020	Apr 2021	Jul 2021	Sep 2021	16.372	10.804	11.838	34.766	-	73.780
DDG 1000	1002	2009	Sep 2011	Apr 2012	Sep 2022	Oct 2022	Apr 2023	Jul 2023	Sep 2023	1.200	-	-	3.753	73.265	78.218
									DDG 1000 Total	**184.965**	**29.583**	**57.438**	**38.519**	**73.265**	**383.770**
DDG	116	2012	Feb 2012	Feb 2013	Jun 2018	Oct 2018	May 2019	Oct 2019	Oct 2019	14.536	17.466	-	-	-	32.002
DDG	117	2013	Jun 2013	Sep 2014	Feb 2019	Jun 2019	Jan 2020	May 2020	May 2020	14.139	12.300	10.000	-	-	36.439
DDG	118	2013	Jun 2013	Aug 2015	Nov 2020	Apr 2021	Nov 2021	Mar 2022	Mar 2022	-	-	0.190	26.790	12.305	39.285
DDG	120	2013	Mar 2014	Sep 2016	Jul 2021	Nov 2021	Jun 2022	Sep 2022	Oct 2022	-	-	-	15.299	24.520	39.819
DDG	119	2014	Jun 2013	Jul 2015	Apr 2020	Sep 2020	Mar 2021	Jul 2021	Aug 2021	-	-	38.392	2.414	-	40.806

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DDG	121	2015	Jun 2013	Apr 2016	Feb 2021	Jun 2021	Jan 2022	May 2022	May 2022	-	-	-	22.579	16.520	39.099
DDG	122	2015	Jun 2013	Sep 2017	Jan 2022	May 2022	Nov 2022	Mar 2023	Apr 2023	-	-	-	-	39.658	39.658
DDG	123	2016	Jun 2013	Jan 2017	Jul 2021	Nov 2021	Jul 2022	Oct 2022	Oct 2022	-	-	-	15.713	24.116	39.829
DDG	124	2016	Jun 2013	Jul 2018	Jun 2022	Oct 2022	Apr 2023	Aug 2023	Sep 2023	-	-	-	-	40.525	40.525
DDG	127	2016	Sep 2017	Apr 2019	Nov 2022	Mar 2023	Sep 2023	Jan 2024	Feb 2024	-	-	-	-	40.992	40.992
DDG	125	2017	Jun 2013	May 2018	Apr 2023	Aug 2023	Feb 2024	Jul 2024	Jul 2024	-	-	-	-	45.087	45.087
DDG	126	2017	Jun 2013	Apr 2020	Jun 2024	Oct 2024	Apr 2025	Aug 2025	Sep 2025	-	-	-	-	45.240	45.240
DDG	128	2018	Sep 2018	Jun 2020	Oct 2024	Feb 2025	Aug 2025	Dec 2025	Jan 2026	-	-	-	-	45.354	45.354
DDG	129	2018	Sep 2018	May 2021	Jul 2025	Nov 2025	May 2026	Sep 2026	Oct 2026	-	-	-	-	46.823	46.823
DDG	130	2019	Sep 2018	Jul 2020	Jul 2025	Nov 2025	May 2026	Sep 2026	Oct 2026	-	-	-	-	46.847	46.847
DDG	131	2019	Sep 2018	Mar 2022	Apr 2026	Aug 2026	Jan 2027	May 2027	Jul 2027	-	-	-	-	47.248	47.248
DDG	132	2019	Dec 2018	Jun 2021	May 2026	Sep 2026	Mar 2027	Jun 2027	Aug 2027	-	-	-	-	47.521	47.521
DDG	133	2020	Sep 2018	Oct 2022	Nov 2026	Mar 2027	Aug 2027	Dec 2027	Feb 2028	-	-	-	-	47.748	47.748
DDG	134	2020	Sep 2018	Apr 2022	Nov 2026	Mar 2027	Sep 2027	Jan 2028	Feb 2028	-	-	-	-	48.987	48.987
DDG	135	2020	Jun 2020	Nov 2022	Mar 2027	Aug 2027	Feb 2028	Jun 2028	Jul 2028	-	-	-	-	48.157	48.157
DDG	136	2021	Sep 2018	Jan 2023	Jun 2027	Oct 2027	Apr 2028	Aug 2028	Sep 2028	-	-	-	-	49.346	49.346
DDG	137	2021	Sep 2018	May 2023	Sep 2027	Jan 2028	Jun 2028	Oct 2028	Dec 2028	-	-	-	-	48.573	48.573
DDG	138	2022	Sep 2018	Aug 2023	Dec 2027	Apr 2028	Oct 2028	Jan 2029	Mar 2029	-	-	-	-	49.882	49.882
DDG	139	2022	Sep 2018	Mar 2024	Apr 2028	Aug 2028	Feb 2029	Jun 2029	Jul 2029	-	-	-	-	48.157	48.157
DDG	140	2023	Jun 2023	Jul 2024	Jul 2028	Nov 2028	May 2029	Sep 2029	Oct 2029	-	-	-	-	51.377	51.377
DDG	141	2024	Jun 2023	Jul 2025	Jul 2029	Nov 2029	May 2030	Sep 2030	Oct 2030	-	-	-	-	49.652	49.652
DDG	142	2024	Jun 2023	Jul 2025	Jul 2029	Nov 2029	May 2030	Sep 2030	Oct 2030	-	-	-	-	51.376	51.376
									DDG Total	**28.675**	**29.766**	**48.582**	**82.795**	**1,016.011**	**1,205.829**
LCS	10	2012	Mar 2012	Mar 2013	Dec 2016	May 2017	Feb 2018	Oct 2018	Oct 2018	43.137	0.146	-	-	-	43.283
LCS	12	2012	Mar 2012	Sep 2013	Sep 2017	Nov 2017	Jul 2018	Mar 2019	Mar 2019	45.348	1.293	-	-	-	46.641
LCS	9	2012	Mar 2012	Jan 2013	Sep 2017	Dec 2017	Dec 2018	Aug 2019	Aug 2019	40.188	6.110	-	-	-	46.298
LCS	11	2012	Mar 2012	Aug 2013	Aug 2018	Jun 2019	Oct 2019	May 2020	May 2020	31.516	10.195	1.214	-	-	42.925
LCS	14	2013	Mar 2013	Feb 2014	Feb 2018	Aug 2018	Apr 2019	Nov 2019	Mar 2020	21.994	16.609	5.520	-	-	44.123
LCS	16	2013	Mar 2013	Sep 2014	Apr 2018	Feb 2019	Oct 2019	Apr 2020	Jun 2020	19.829	14.009	10.633	-	-	44.471
LCS	13	2013	Mar 2013	Feb 2014	Aug 2018	Apr 2019	Jul 2019	Mar 2020	Mar 2020	11.232	26.093	1.470	-	-	38.795
LCS	15	2013	Mar 2013	Dec 2014	Feb 2019	Feb 2020	Apr 2020	Dec 2020	Jan 2021	1.300	15.861	16.234	2.764	-	36.159
LCS	18	2014	Mar 2014	Mar 2015	Aug 2018	May 2019	Jan 2020	Aug 2020	Sep 2020	13.153	9.345	22.130	-	-	44.628
LCS	20	2014	Mar 2014	Feb 2016	Jun 2019	Dec 2019	May 2020	Jul 2020	Nov 2020	-	11.603	11.957	-	-	23.560
LCS	17	2014	Mar 2014	Aug 2015	Jul 2019	May 2020	Aug 2020	Mar 2021	Apr 2021	-	9.851	29.066	3.937	-	42.854
LCS	19	2014	Mar 2014	Aug 2016	Feb 2020	Jan 2021	Apr 2021	Nov 2021	Dec 2021	-	-	17.265	24.736	1.345	43.346
LCS	22	2015	Mar 2015	Dec 2016	Feb 2020	Jun 2020	Jan 2021	Mar 2021	May 2021	-	2.448	19.758	9.353	-	31.559
LCS	24	2015	Mar 2015	Jul 2017	Apr 2020	Jan 2021	May 2021	Jul 2021	Dec 2021	-	-	-	39.823	2.389	42.212
LCS	21	2015	Mar 2015	Feb 2017	Oct 2020	Aug 2021	Dec 2021	Jun 2022	Jul 2022	-	-	1.114	31.137	11.095	43.346
LCS	26	2016	Mar 2016	Jan 2018	Oct 2020	Jul 2021	Nov 2021	Jan 2022	Jun 2022	-	-	-	25.542	17.333	42.875

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LCS	23	2016	Nov 2015	Sep 2017	Feb 2021	Oct 2021	Mar 2022	Aug 2022	Sep 2022	-	-	-	12.600	29.597	42.197
LCS	25	2016	Mar 2016	Feb 2018	Aug 2021	Feb 2022	Jul 2022	Dec 2022	Jan 2023	-	-	-	1.146	40.887	42.033
LCS	28	2017	Jun 2017	Oct 2018	Jun 2021	Feb 2022	Jul 2022	Sep 2022	Jan 2023	-	-	-	3.397	39.478	42.875
LCS	30	2017	Oct 2017	May 2019	Dec 2021	Sep 2022	Jan 2023	Mar 2023	Aug 2023	-	-	-	-	43.546	43.546
LCS	27	2017	Oct 2017	Nov 2018	Jul 2022	Dec 2022	Jul 2023	Oct 2023	Nov 2023	-	-	-	-	42.657	42.657
LCS	32	2018	Sep 2018	Dec 2019	Jul 2022	Mar 2023	Aug 2023	Oct 2023	Feb 2024	-	-	-	-	43.585	43.585
LCS	29	2018	Sep 2018	Jul 2019	Jan 2023	Aug 2023	Mar 2024	Jun 2024	Jul 2024	-	-	-	-	43.192	43.192
LCS	34	2018	Sep 2018	Jun 2020	Jan 2023	Sep 2023	Feb 2024	Apr 2024	Aug 2024	-	-	-	-	43.868	43.868
LCS	36	2019	Dec 2018	Jan 2021	Jul 2023	Apr 2024	Aug 2024	Oct 2024	Mar 2025	-	-	-	-	44.454	44.454
LCS	38	2019	Dec 2018	Jul 2021	Jan 2024	Oct 2024	Feb 2025	Apr 2025	Sep 2025	-	-	-	-	44.874	44.874
LCS	31	2019	Jan 2019	Jan 2020	Jan 2024	Oct 2024	Mar 2025	Sep 2025	Sep 2025	-	-	-	-	43.934	43.934
									LCS Total	**227.697**	**123.563**	**136.361**	**154.435**	**492.234**	**1,134.290**
LPD Flight II	30	2018	Mar 2019	Apr 2020	Feb 2025	Sep 2025	Feb 2026	Aug 2026	Aug 2026	-	-	-	-	61.400	61.400
									LPD Flight II Total	**-**	**-**	**-**	**-**	**61.400**	**61.400**
LPD	27	2012	Jul 2012	Aug 2012	Sep 2017	Apr 2018	Nov 2018	Aug 2019	Aug 2019	49.648	1.988	-	-	-	51.636
LPD	28	2016	Dec 2016	Dec 2016	Sep 2021	May 2022	Oct 2022	Mar 2023	Mar 2023	-	-	0.207	13.300	47.243	60.750
LPD	29	2017	Feb 2018	Jul 2018	Jul 2023	Mar 2024	Sep 2024	Feb 2025	Feb 2025	-	-	-	-	58.600	58.600
									LPD Total	**49.648**	**1.988**	**0.207**	**13.300**	**105.843**	**170.986**
ESB	4	2014	Dec 2014	Oct 2015	Feb 2018	Jun 2018	Mar 2019	Jul 2019	Mar 2020	7.273	3.350	-	-	-	10.623
ESB	5	2016	Dec 2016	Jan 2017	Nov 2019	Feb 2020	Aug 2020	Nov 2020	Jan 2021	-	4.730	9.177	2.000	-	15.907
ESB	6	2018	Aug 2019	Jun 2020	May 2022	Aug 2022	Jan 2023	Apr 2023	Jul 2023	-	-	-	-	14.437	14.437
ESB	7	2019	Aug 2019	Nov 2021	Nov 2023	Feb 2024	Jul 2024	Oct 2024	Jan 2025	-	-	-	-	12.451	12.451
									ESB Total	**7.273**	**8.080**	**9.177**	**2.000**	**26.888**	**53.418**
LHA	7	2011	May 2012	Jul 2013	Feb 2020	Nov 2020	Jan 2021	Mar 2021	Oct 2021	7.140	21.269	11.361	16.810	-	56.580
LHA	8	2017	Jun 2017	Oct 2018	Jan 2024	Sep 2024	Mar 2025	Jun 2025	Aug 2025	-	-	-	-	55.219	55.219
									LHA Total	**7.140**	**21.269**	**11.361**	**16.810**	**55.219**	**111.799**
EPF	10	2013	Dec 2012	Jun 2016	Nov 2018	Feb 2019	Mar 2020	May 2020	Jul 2020	2.855	-	-	-	-	2.855
EPF	11	2015	Sep 2016	Jan 2017	Dec 2019	Mar 2020	Oct 2020	Dec 2020	Feb 2021	-	1.428	-	-	-	1.428
EPF	12	2016	Sep 2016	Sep 2017	Jul 2020	Oct 2020	Feb 2021	Apr 2021	Sep 2021	-	-	2.403	1.199	-	3.602
EPF	13	2018	Mar 2019	Aug 2019	Nov 2021	Feb 2022	Aug 2022	Oct 2022	Jan 2023	-	-	-	0.833	2.755	3.588
EPF	14	2019	Mar 2019	Apr 2020	Jul 2022	Oct 2022	Apr 2023	Jun 2023	Sep 2023	-	-	-	-	3.856	3.856
									EPF Total	**2.855**	**1.428**	**2.403**	**2.032**	**6.611**	**15.329**
T-AO	205	2016	Jun 2016	Sep 2018	Jun 2021	Sep 2021	Jan 2022	Apr 2022	Aug 2022	-	-	-	10.821	14.623	25.444
T-AO	206	2018	Mar 2018	Dec 2019	Mar 2022	Jul 2022	Nov 2022	Feb 2023	Jun 2023	-	-	-	-	24.431	24.431
T-AO	207	2019	Dec 2018	Dec 2020	Dec 2022	Mar 2023	Jul 2023	Oct 2023	Feb 2024	-	-	-	-	21.794	21.794
T-AO	208	2019	Dec 2018	May 2021	May 2023	Aug 2023	Dec 2023	Mar 2024	Jul 2024	-	-	-	-	21.816	21.816
T-AO	209	2020	Feb 2020	May 2022	Apr 2024	Jul 2024	Nov 2024	Feb 2025	Jun 2025	-	-	-	-	22.251	22.251
T-AO	210	2020	Feb 2020	Oct 2022	Oct 2024	Jan 2025	May 2025	Aug 2025	Dec 2025	-	-	-	-	22.582	22.582
									T-AO Total	**-**	**-**	**-**	**10.821**	**127.497**	**138.318**

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T-ATS	6	2016	Mar 2018	Jun 2019	Jul 2021	Aug 2021	Dec 2021	Dec 2021	Jul 2022	-	-	2.486	1.800	-	4.286
T-ATS	7	2018	Apr 2019	Sep 2019	Nov 2021	Dec 2021	Jul 2022	Jul 2022	Nov 2022	-	-	-	1.467	2.178	3.645
T-ATS	8	2019	Apr 2019	Jan 2020	Mar 2022	Apr 2022	Nov 2022	Nov 2022	Mar 2023	-	-	-	-	3.681	3.681
T-ATS	9	2020	Apr 2020	Oct 2020	Jun 2022	Jul 2022	Feb 2023	Feb 2023	Jun 2023	-	-	-	-	3.753	3.753
T-ATS	10	2020	Apr 2020	Feb 2021	Oct 2022	Nov 2022	Jun 2023	Jun 2023	Oct 2023	-	-	-	-	3.753	3.753
T-ATS	11	2021	Feb 2021	Aug 2021	Apr 2023	May 2023	Dec 2023	Dec 2023	Apr 2024	-	-	-	-	3.829	3.829
T-ATS	12	2021	Feb 2021	Dec 2021	Aug 2023	Sep 2023	Apr 2024	Apr 2024	Aug 2024	-	-	-	-	3.905	3.905
T-ATS	13	2022	Feb 2022	Aug 2022	Apr 2024	May 2024	Dec 2024	Jan 2025	Apr 2025	-	-	-	-	3.985	3.985
									T-ATS Total	**-**	**-**	**2.486**	**3.267**	**25.084**	**30.837**
T-AGS/AGOR	67	2018	Mar 2020	May 2019	Mar 2024	Jun 2024	Jan 2025	Mar 2025	May 2025	-	-	-	-	5.200	5.200
									T-AGS/AGOR Total	**-**	**-**	**-**	**-**	**5.200**	**5.200**
LCU	1700	2016	Mar 2018	Feb 2020	Aug 2021	Aug 2021	Sep 2021	Sep 2021	Jul 2022	-	-	-	1.531	-	1.531
LCU	1701	2019	Feb 2019	Apr 2020	Oct 2021	Nov 2021	Nov 2021	Nov 2021	Sep 2022	-	-	-	1.231	-	1.231
LCU	1702	2019	Feb 2019	Aug 2020	Feb 2022	Mar 2022	Mar 2022	Mar 2022	Feb 2023	-	-	-	1.231	-	1.231
LCU	1703	2020	Mar 2020	Dec 2020	Apr 2022	May 2022	Jun 2022	Jun 2022	Apr 2023	-	-	-	0.521	0.710	1.231
LCU	1704	2020	Mar 2020	Mar 2021	Jun 2022	Jul 2022	Aug 2022	Aug 2022	Jun 2023	-	-	-	-	1.231	1.231
LCU	1705	2020	Mar 2020	Jun 2021	Aug 2022	Sep 2022	Oct 2022	Oct 2022	Aug 2023	-	-	-	-	1.231	1.231
LCU	1706	2020	Mar 2020	Sep 2021	Oct 2022	Nov 2022	Dec 2022	Dec 2022	Oct 2023	-	-	-	-	0.959	0.959
LCU	1707	2021	Mar 2021	Dec 2021	Mar 2023	Apr 2023	May 2023	May 2023	Mar 2024	-	-	-	-	0.959	0.959
LCU	1708	2021	Mar 2021	Mar 2022	May 2023	Jun 2023	Jul 2023	Jul 2023	May 2024	-	-	-	-	0.959	0.959
LCU	1709	2021	Mar 2021	Jun 2022	Jul 2023	Aug 2023	Sep 2023	Sep 2023	Jul 2024	-	-	-	-	0.959	0.959
LCU	1710	2021	Mar 2021	Sep 2022	Sep 2023	Oct 2023	Nov 2023	Nov 2023	Sep 2024	-	-	-	-	0.992	0.992
LCU	1711	2021	Mar 2021	Nov 2022	Nov 2023	Dec 2023	Jan 2024	Jan 2021	Nov 2024	-	-	-	-	0.992	0.992
									LCU Total	**-**	**-**	**-**	**4.514**	**8.992**	**13.506**
LCAC	101	2015	Dec 2012	Mar 2015	Jun 2020	Aug 2021	Nov 2021	Feb 2022	Jul 2022	1.538	3.070	0.597	-	2.417	7.622
LCAC	102	2015	Mar 2015	Sep 2016	Sep 2020	Aug 2021	Feb 2022	Nov 2021	Jul 2022	-	0.010	3.925	-	-	3.935
LCAC	103	2015	Mar 2015	Nov 2016	Oct 2020	Jan 2021	Mar 2021	Jun 2021	Dec 2021	-	0.010	2.702	0.472	0.727	3.911
LCAC	104	2016	Mar 2016	Feb 2017	Nov 2020	Jan 2021	May 2021	Aug 2021	Dec 2021	-	-	0.010	3.108	0.761	3.879
LCAC	105	2016	Mar 2016	May 2017	Apr 2021	Jun 2021	Oct 2021	Jan 2022	May 2022	-	-	0.010	0.015	3.835	3.860
LCAC	106	2016	Mar 2016	Oct 2017	May 2021	Jul 2021	Apr 2022	Jul 2021	Jul 2022	-	-	0.010	0.015	3.911	3.936
LCAC	107	2016	Mar 2016	Apr 2018	Jul 2021	Jan 2022	Jun 2022	Sep 2022	Dec 2022	-	-	0.010	0.015	3.814	3.839
LCAC	108	2016	Mar 2016	Jul 2018	Nov 2021	Jan 2022	Jul 2022	Oct 2022	Dec 2022	-	-	-	-	1.786	1.786
LCAC	109	2017	Jan 2020	Dec 2018	Jan 2022	Jan 2022	Aug 2022	Nov 2022	Dec 2022	-	-	-	-	1.760	1.760
LCAC	110	2017	Jan 2020	Mar 2019	Mar 2022	Oct 2022	Mar 2023	Jun 2023	Sep 2023	-	-	-	-	1.759	1.759
LCAC	111	2018	Jan 2020	Aug 2019	Jun 2022	Oct 2022	Apr 2023	Jul 2023	Sep 2023	-	-	-	-	1.750	1.750
LCAC	112	2018	Jan 2020	Sep 2019	Aug 2022	Oct 2022	May 2023	Aug 2023	Sep 2023	-	-	-	-	1.740	1.740
LCAC	113	2018	Jan 2020	Dec 2019	Oct 2022	Jun 2023	Oct 2023	Feb 2024	May 2024	-	-	-	-	1.727	1.727
LCAC	114	2018	Jan 2020	Aug 2020	Jan 2023	Jun 2023	Nov 2023	Mar 2024	May 2024	-	-	-	-	1.716	1.716
LCAC	115	2018	Jan 2020	Nov 2020	Mar 2023	Jun 2023	Dec 2023	Apr 2024	May 2024	-	-	-	-	1.714	1.714

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Ship Class	Hull Number	Program Year	Contract Award	Start of Const.	Delivery Date	CFO	PSA Start	PSA Finish	OWL Date	Prior Years	FY 2019	FY 2020	FY 2021	To Complete	Total
LCAC	116	2018	Jan 2020	Feb 2021	Jun 2023	Jan 2024	May 2024	Sep 2024	Dec 2024	-	-	-	-	1.706	1.706
LCAC	117	2019	Jan 2020	May 2021	Aug 2023	Jan 2024	Jun 2024	Oct 2024	Dec 2024	-	-	-	-	1.697	1.697
LCAC	118	2019	Jan 2020	Aug 2021	Oct 2023	Jan 2024	Jul 2024	Nov 2024	Dec 2024	-	-	-	-	1.685	1.685
LCAC	119	2019	Jan 2020	Nov 2021	Jan 2024	Jul 2024	Dec 2024	Mar 2025	Jun 2025	-	-	-	-	1.672	1.672
LCAC	120	2019	Jan 2020	Jan 2022	Mar 2024	Jul 2024	Jan 2025	Apr 2025	Jun 2025	-	-	-	-	1.632	1.632
LCAC	121	2019	Jan 2020	Mar 2022	May 2024	Jul 2024	Feb 2025	May 2025	Jun 2025	-	-	-	-	1.625	1.625
LCAC	122	2019	Jan 2020	May 2022	Jul 2024	Jun 2025	Oct 2025	Feb 2026	May 2026	-	-	-	-	1.621	1.621
LCAC	123	2019	Jan 2020	Aug 2022	Aug 2024	Jun 2025	Nov 2025	Mar 2026	May 2026	-	-	-	-	1.618	1.618
LCAC	124	2019	Mar 2022	Mar 2023	Mar 2025	Jun 2025	Dec 2025	Apr 2026	May 2026	-	-	-	-	1.617	1.617
LCAC	125	2019	Mar 2022	May 2023	May 2025	Dec 2025	Apr 2026	Aug 2026	Nov 2026	-	-	-	-	1.616	1.616
LCAC	126	2019	Mar 2022	Jul 2023	Jul 2025	Dec 2025	May 2026	Sep 2026	Nov 2026	-	-	-	-	1.615	1.615
LCAC	127	2020	Mar 2022	Sep 2023	Sep 2025	Dec 2025	Jun 2026	Oct 2026	Nov 2026	-	-	-	-	1.607	1.607
LCAC	128	2022	Mar 2022	Nov 2023	Nov 2025	Mar 2026	Aug 2026	Nov 2026	Feb 2027	-	-	-	-	1.601	1.601
LCAC	129	2022	Mar 2022	Jan 2024	Jan 2026	Mar 2026	Sep 2026	Dec 2026	Feb 2027	-	-	-	-	1.591	1.591
LCAC	130	2023	Mar 2023	Mar 2024	Jan 2026	Mar 2026	Oct 2026	Jan 2027	Feb 2027	-	-	-	-	1.579	1.579
LCAC	131	2023	Mar 2023	May 2024	Mar 2026	Sep 2026	Feb 2027	May 2027	Aug 2027	-	-	-	-	1.575	1.575
LCAC	132	2024	Mar 2024	Jul 2024	May 2026	Sep 2026	Mar 2027	Jun 2027	Aug 2027	-	-	-	-	1.570	1.570
LCAC	133	2024	Mar 2024	Sep 2024	Jul 2026	Sep 2026	Apr 2027	Jul 2027	Aug 2027	-	-	-	-	1.561	1.561
LCAC	134	2024	Mar 2024	Nov 2024	Sep 2026	Mar 2027	Aug 2027	Nov 2027	Feb 2028	-	-	-	-	1.550	1.550
LCAC	135	2024	Mar 2024	Jan 2025	Nov 2026	Mar 2027	Sep 2027	Dec 2027	Feb 2028	-	-	-	-	1.539	1.539
LCAC	136	2024	Mar 2024	Mar 2025	Jan 2027	Mar 2027	Oct 2027	Jan 2028	Feb 2028	-	-	-	-	1.524	1.524
LCAC	137	2025	Mar 2025	May 2025	Mar 2027	Sep 2027	Feb 2028	May 2028	Aug 2028	-	-	-	-	1.523	1.523
LCAC	138	2025	Mar 2025	Jul 2025	May 2027	Sep 2027	Mar 2028	Jun 2028	Aug 2028	-	-	-	-	1.521	1.521
LCAC	139	2025	Mar 2025	Sep 2025	Jul 2027	Sep 2027	Apr 2028	Jul 2028	Aug 2028	-	-	-	-	1.511	1.511
LCAC	140	2025	Mar 2025	Nov 2025	Sep 2027	May 2028	Oct 2028	Jan 2029	Apr 2029	-	-	-	-	1.506	1.506
LCAC	141	2025	Mar 2025	Jan 2026	Nov 2027	May 2028	Nov 2028	Feb 2029	Apr 2029	-	-	-	-	1.491	1.491
LCAC	142	2026	Mar 2026	May 2026	Mar 2028	May 2028	Dec 2028	Mar 2029	Apr 2029	-	-	-	-	1.488	1.488
LCAC	143	2026	Mar 2026	Jul 2026	May 2028	Nov 2028	Apr 2029	Jul 2029	Oct 2029	-	-	-	-	1.486	1.486
									LCAC Total	**1.538**	**3.090**	**7.264**	**3.625**	**73.744**	**89.261**
LCAC SLEP	86	2017	Sep 2018	Jan 2019	Apr 2020	May 2020	Jun 2020	Jun 2020	Apr 2021	-	-	0.150	-	-	0.150
LCAC SLEP	87	2017	Sep 2018	Jun 2019	Sep 2020	Oct 2020	Nov 2020	Nov 2020	Sep 2021	-	-	-	0.150	-	0.150
LCAC SLEP	77	2017	Sep 2018	Nov 2019	Feb 2021	Mar 2021	Apr 2021	Apr 2021	Feb 2022	-	-	-	0.150	-	0.150
									LCAC SLEP Total	**-**	**-**	**0.150**	**0.300**	**-**	**0.450**
									Full Funding TOA - Post Delivery Total	**712.637**	**408.523**	**492.202**	**530.096**	**3,173.305**	**5,316.763**

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 05: Auxiliaries, Craft, and Prior-Year Program Costs / BSA 1: Auxiliaries, Craft and Prior Yr Program Cost	**P-1 Line Item Number / Title:** 5112 / Ship to Shore Connector

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: N/A

Line Item MDAP/MAIS Code: N/A

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity *(Units in Each)*	18	8	1	-	-	-	2	2	5	5	31	72
Gross/Weapon System Cost *($ in Millions)*	1,060.261	507.875	65.000	0.000	0.000	0.000	137.947	140.443	358.172	365.178	1,702.680	4,337.556
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Less Cost To Complete *($ in Millions)*	14.500	-	-	-	-	-	-	-	-	-	-	14.500
Less Previously Appropriated RDT&E,N *($ in Millions)*	23.700	-	-	-	-	-	-	-	-	-	-	23.700
Net Procurement (P-1) *($ in Millions)*	1,022.061	507.875	65.000	0.000	0.000	0.000	137.947	140.443	358.172	365.178	1,702.680	4,299.356
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Plus Cost To Complete *($ in Millions)*	5.100	9.400	-	-	-	-	-	-	-	-	-	14.500
Plus Previously Appropriated RDT&E,N *($ in Millions)*	23.700	-	-	-	-	-	-	-	-	-	-	23.700
Total Obligation Authority *($ in Millions)*	**1,050.861**	**517.275**	**65.000**	**0.000**	**0.000**	**0.000**	**137.947**	**140.443**	**358.172**	**365.178**	**1,702.680**	**4,337.556**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Plus Outfitting and Post Delivery *($ in Millions)*	3.189	6.377	11.093	8.582	-	8.582	16.819	17.852	13.880	14.157	62.950	154.899
Total *($ in Millions)*	**1,054.050**	**523.652**	**76.093**	**8.582**	**-**	**8.582**	**154.766**	**158.295**	**372.052**	**379.335**	**1,765.630**	**4,492.455**
Gross/Weapon System Unit Cost *($ in Millions)*	58.903	63.484	65.000	-	-	-	68.974	70.222	71.634	73.036	54.925	60.244

Description:

The Ship to Shore Connector (SSC) program provides the capability to rapidly move assault forces within the littoral operational environment to accomplish Unified Command Plan (UCP) missions and ensures the Joint Force Commander's (JFCDR's) ability to conduct amphibious operations and operate over the high water mark, including movement over ice, mud, rivers, swamps and marshes. SSC provides the functional replacement for the Landing Craft, Air Cushion (LCAC) Class of ships, which began reaching extended service life in 2015.

The Department of Defense Appropriations Act, 2015 directed that the Department complete LCAC 101 in the Shipbuilding and Conversion, Navy Appropriation. LCAC 101 is partially financed with $23.7M of FY 13/FY 14 R&D funding.

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy		**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 05: Auxiliaries, Craft, and Prior-Year Program Costs / BSA 1: Auxiliaries, Craft and Prior Yr Program Cost	**P-1 Line Item Number / Title:** 5112 / Ship to Shore Connector	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** N/A
Line Item MDAP/MAIS Code: N/A		

Characteristics:

	Aluminum
Length Overall	91.8 ft
Beam	48.3 ft
Displacement	180.57 metric tons
Draft	N/A

Systems:

Hull, Mechanical, and Electrical (HM&E)

-MT7 Engines, Skirt & Composite Components
-Material/Services

Production Status:	**LCAC 101**	**LCAC 102**	**LCAC 103**	**LCAC 104**	**LCAC 105**	**LCAC 106**	**LCAC 107**
Contract Award Date	Dec 2012	Mar 2015	Mar 2015	Mar 2016	Mar 2016	Mar 2016	Mar 2016
Months to Completion							
a) Award to Delivery	90 months	66 months	67 months	56 months	61 months	62 months	64 months
b) Construction Start to Delivery	63 months	48 months	47 months	45 months	47 months	43 months	39 months
Delivery Date	Jun 2020	Sep 2020	Oct 2020	Nov 2020	Apr 2021	May 2021	Jul 2021
Completion Of Fitting Out	Aug 2021	Aug 2021	Jan 2021	Jan 2021	Jun 2021	Jul 2021	Jan 2022
Obligation Work Limit Date	Jul 2022	Jul 2022	Dec 2021	Dec 2021	May 2022	Jul 2022	Dec 2022

Production Status:	**LCAC 108**	**LCAC 109**	**LCAC 110**	**LCAC 111**	**LCAC 112**	**LCAC 113**	**LCAC 114**
Contract Award Date	Mar 2016	Jan 2020	Jan 2020	Jan 2020	Jan 2020	Jan 2020	Jan 2020
Months to Completion							
a) Award to Delivery	68 months	24 months	26 months	29 months	31 months	33 months	36 months
b) Construction Start to Delivery	40 months	37 months	36 months	34 months	35 months	34 months	29 months
Delivery Date	Nov 2021	Jan 2022	Mar 2022	Jun 2022	Aug 2022	Oct 2022	Jan 2023
Completion Of Fitting Out	Jan 2022	Jan 2022	Oct 2022	Oct 2022	Oct 2022	Jun 2023	Jun 2023
Obligation Work Limit Date	Dec 2022	Dec 2022	Sep 2023	Sep 2023	Sep 2023	May 2024	May 2024

Production Status:	**LCAC 115**	**LCAC 116**	**LCAC 117**	**LCAC 118**	**LCAC 119**	**LCAC 120**	**LCAC 121**
Contract Award Date	Jan 2020	Jan 2020	Jan 2020	Jan 2020	Jan 2020	Jan 2020	Jan 2020
Months to Completion							
a) Award to Delivery	38 months	41 months	43 months	45 months	48 months	50 months	52 months
b) Construction Start to Delivery	28 months	28 months	27 months	26 months	26 months	26 months	26 months
Delivery Date	Mar 2023	Jun 2023	Aug 2023	Oct 2023	Jan 2024	Mar 2024	May 2024
Completion Of Fitting Out	Jun 2023	Jan 2024	Jan 2024	Jan 2024	Jul 2024	Jul 2024	Jul 2024
Obligation Work Limit Date	May 2024	Dec 2024	Dec 2024	Dec 2024	Jun 2025	Jun 2025	Jun 2025

Production Status:	**LCAC 122**	**LCAC 123**	**LCAC 124**	**LCAC 125**	**LCAC 126**	**LCAC 127**
Contract Award Date	Jan 2020	Jan 2020	Mar 2022	Mar 2022	Mar 2022	Mar 2022
Months to Completion						
a) Award to Delivery	54 months	55 months	36 months	38 months	40 months	42 months
b) Construction Start to Delivery	26 months	24 months	24 months	24 months	24 months	24 months
Delivery Date	Jul 2024	Aug 2024	Mar 2025	May 2025	Jul 2025	Sep 2025
Completion Of Fitting Out	Jun 2025	Jun 2025	Jun 2025	Dec 2025	Dec 2025	Dec 2025
Obligation Work Limit Date	May 2026	May 2026	May 2026	Nov 2026	Nov 2026	Nov 2026

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy		**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 05: Auxiliaries, Craft, and Prior-Year Program Costs / BSA 1: Auxiliaries, Craft and Prior Yr Program Cost	**P-1 Line Item Number / Title:** 5112 / Ship to Shore Connector	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** N/A
Line Item MDAP/MAIS Code: N/A		

Design Schedule	Start / Issue	Complete / Response	Reissue	Reissue Complete / Response
Issue Date for TLR	N/A	N/A		
Issue Date for TLS	N/A	N/A		
Preliminary Design	Apr 2008	May 2009		
Contract Design	May 2009	Jul 2010		
Detail Design	Jul 2012	Sep 2014		
Request for Proposals	May 2011	Jul 2012		
Design Agent	NAVSEA/TEXTRON,INC			

Classification of Cost Estimate:

Exhibit P-5c, Ship Cost Analysis: PB 2021 Navy | **Date:** February 2020

Appropriation / Budget Activity / Budget Sub Activity:
1611N / 05 / 1

P-1 Line Item Number / Title:
5112 / Ship to Shore Connector

Cost Categories (†) indicates the presence of a P-8a	FY 2015		FY 2016		FY 2017		FY 2018		FY 2019		FY 2020	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Plan Costs	3		5		2		8		8		1	
Basic Construction/Conversion		152.103		191.718		94.260		395.371		376.166		48.000
Change Orders		6.425		5.109		2.833		11.592		11.200		1.467
Electronics		4.057		8.500		4.162		16.813		17.152		1.913
Hull, Mechanical, and Electrical (HM&E) (†)		12.547		4.000		22.140		89.354		92.232		12.727
Ordnance		0.010		0.015		0.006		0.025		0.025		0.003
Other Cost		22.658		1.288		4.659		10.609		11.100		0.890
Total Ship Estimate		**197.800**		**210.630**		**128.060**		**523.764**		**507.875**		**65.000**
Less Cost to Complete FY 2018		5.100		-		-		-		-		-
Less Cost to Complete FY 2019		9.400		-		-		-		-		-
Less RDTEN FY 2013		21.486		-		-		-		-		-
Less RDTEN FY 2014		2.214		-		-		-		-		-
Net P-1 Funding		**159.600**		**210.630**		**128.060**		**523.764**		**507.875**		**65.000**

Exhibit P-27, Ship Production Schedule: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 05 / 1	**P-1 Line Item Number / Title:** 5112 / Ship to Shore Connector

Ship	Shipbuilder	Fiscal Year	Contract Award	Start of Construction	Delivery Date
LCAC 101	TEXTRON, INC	2015	Dec 2012	Mar 2015	Jun 2020
LCAC 102	TEXTRON, INC	2015	Mar 2015	Sep 2016	Sep 2020
LCAC 103	TEXTRON, INC	2015	Mar 2015	Nov 2016	Oct 2020
LCAC 104	TEXTRON, INC	2016	Mar 2016	Feb 2017	Nov 2020
LCAC 105	TEXTRON, INC	2016	Mar 2016	May 2017	Apr 2021
LCAC 106	TEXTRON, INC	2016	Mar 2016	Oct 2017	May 2021
LCAC 107	TEXTRON, INC	2016	Mar 2016	Apr 2018	Jul 2021
LCAC 108	TEXTRON, INC	2016	Mar 2016	Jul 2018	Nov 2021
LCAC 109	TEXTRON, INC	2017	Jan 2020	Dec 2018	Jan 2022
LCAC 110	TEXTRON, INC	2017	Jan 2020	Mar 2019	Mar 2022
LCAC 111	TEXTRON, INC	2018	Jan 2020	Aug 2019	Jun 2022
LCAC 112	TEXTRON, INC	2018	Jan 2020	Sep 2019	Aug 2022
LCAC 113	TEXTRON, INC	2018	Jan 2020	Dec 2019	Oct 2022
LCAC 114	TEXTRON, INC	2018	Jan 2020	Aug 2020	Jan 2023
LCAC 115	TEXTRON, INC	2018	Jan 2020	Nov 2020	Mar 2023
LCAC 116	TEXTRON, INC	2018	Jan 2020	Feb 2021	Jun 2023
LCAC 117	TEXTRON, INC	2018	Jan 2020	May 2021	Aug 2023
LCAC 118	TEXTRON, INC	2018	Jan 2020	Aug 2021	Oct 2023
LCAC 119	TEXTRON, INC	2019	Jan 2020	Nov 2021	Jan 2024
LCAC 120	TEXTRON, INC	2019	Jan 2020	Jan 2022	Mar 2024
LCAC 121	TEXTRON, INC	2019	Jan 2020	Mar 2022	May 2024
LCAC 122	TEXTRON, INC	2019	Jan 2020	May 2022	Jul 2024
LCAC 123	TEXTRON, INC	2019	Jan 2020	Aug 2022	Aug 2024
LCAC 124	TBD	2019	Mar 2022	Mar 2023	Mar 2025
LCAC 125	TBD	2019	Mar 2022	May 2023	May 2025
LCAC 126	TBD	2019	Mar 2022	Jul 2023	Jul 2025
LCAC 127	TBD	2020	Mar 2022	Sep 2023	Sep 2025
LCAC 128	TBD	2022	Mar 2022	Nov 2023	Nov 2025
LCAC 129	TBD	2022	Mar 2022	Jan 2024	Jan 2026
LCAC 130	TBD	2023	Mar 2023	Mar 2024	Jan 2026
LCAC 131	TBD	2023	Mar 2023	May 2024	Mar 2026
LCAC 132	TBD	2024	Mar 2024	Jul 2024	May 2026
LCAC 133	TBD	2024	Mar 2024	Sep 2024	Jul 2026

Exhibit P-27, Ship Production Schedule: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 05 / 1	**P-1 Line Item Number / Title:** 5112 / Ship to Shore Connector

Ship	Shipbuilder	Fiscal Year	Contract Award	Start of Construction	Delivery Date
LCAC 134	TBD	2024	Mar 2024	Nov 2024	Sep 2026
LCAC 135	TBD	2024	Mar 2024	Jan 2025	Nov 2026
LCAC 136	TBD	2024	Mar 2024	Mar 2025	Jan 2027
LCAC 137	TBD	2025	Mar 2025	May 2025	Mar 2027
LCAC 138	TBD	2025	Mar 2025	Jul 2025	May 2027
LCAC 139	TBD	2025	Mar 2025	Sep 2025	Jul 2027
LCAC 140	TBD	2025	Mar 2025	Nov 2025	Sep 2027
LCAC 141	TBD	2025	Mar 2025	Jan 2026	Nov 2027

Exhibit P-8a, Analysis of Ship Cost Estimates: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 05 / 1	**P-1 Line Item Number / Title:** 5112 / Ship to Shore Connector

Hull, Mechanical, and Electrical (HM&E)	FY 2019		FY 2020	
	Qty *(Each)*	Total Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*
Major Items				
MT7 Engines, Skirt & Composite Components	32	80.058	4	10.800
Material/Services		12.174		1.927
Major Items Subtotal		**92.232**		**12.727**
Total Hull, Mechanical, and Electrical (HM&E)		**92.232**		**12.727**

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Exhibit P-40, Budget Line Item Justification: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 05: Auxiliaries, Craft, and Prior-Year Program Costs / BSA 1: Auxiliaries, Craft and Prior Yr Program Cost	**P-1 Line Item Number / Title:** 5113 / Service Craft

ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** N/A
Line Item MDAP/MAIS Code: N/A		

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity *(Units in Each)*	48	5	6	9	-	9	11	8	8	7	-	102
Gross/Weapon System Cost *($ in Millions)*	263.361	72.062	56.289	249.781	0.000	249.781	96.413	102.271	104.226	102.304	-	1,046.707
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	263.361	72.062	56.289	249.781	0.000	249.781	96.413	102.271	104.226	102.304	-	1,046.707
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**263.361**	**72.062**	**56.289**	**249.781**	**0.000**	**249.781**	**96.413**	**102.271**	**104.226**	**102.304**	**-**	**1,046.707**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Plus Outfitting and Post Delivery *($ in Millions)*	3.000	-	-	-	-	-	-	-	-	-	-	3.000
Total *($ in Millions)*	**266.361**	**72.062**	**56.289**	**249.781**	**-**	**249.781**	**96.413**	**102.271**	**104.226**	**102.304**	**-**	**1,049.707**
Gross/Weapon System Unit Cost *($ in Millions)*	5.487	14.412	9.382	27.753	-	27.753	8.765	12.784	13.028	14.615	-	10.262

Description:

The US Navy owns/operates approximately 366 Service Craft consisting of 36 different classes of craft at 56 different commands and activities throughout the world. Service Craft provide critical support to carriers, submarines, and other Navy vessels through port operations and ship maintenance. Nearly half of the Service Craft inventory is over 40 years of age. The Service Craft budget supports the acquisition and procurement of replacement craft as follows:

Auxiliary Floating Dry Dock Medium (AFDM) is utilized to dry dock surface ships and submarines (including CG, DDG, LCS, LSD, and SSN) in order to perform maintenance availabilities.

Auxiliary Personnel Lighters - Small (APL(S)) provide crew messing, duty crew berthing, and administrative training spaces to ships and improve the quality-of-life for sailors during CNO maintenance availabilities.

Harbor Tugs (YT) provide port operations towing, mooring, docking, undocking and escort of submarines, aircraft carriers, and other Navy vessels.

Small Harbor Tugs (YT(L)) are utilized by port operations for ship assist, towing, and escort of smaller Navy ships and craft.

Fuel Oil Barges (YON) carry petroleum products for refueling ships.

Waste Oil Barges (YWO) support the offload of waste oil from ships and transport for processing.

Covered Lighters (YFN) transport ordnance, equipment and cargo which must be protected from weather.

Open Lighters (YC) transport cargo/equipment and serve as a work platform for ship maintenance.

Repair, Berthing and Messing Barges (YRBM) provide crew messing, duty crew berthing, and administrative spaces for small to mid-size ships and submarines during CNO maintenance availabilities.

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy		Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 05: Auxiliaries, Craft, and Prior-Year Program Costs / BSA 1: Auxiliaries, Craft and Prior Yr Program Cost	**P-1 Line Item Number / Title:** 5113 / Service Craft	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** N/A
Line Item MDAP/MAIS Code: N/A		

Characteristics:	**Hull Various**	**Multiple Craft**
Length Overall	Various	Various
Beam	Various	Various
Displacement	Various	Various
Draft	Various	Various

Production Status:	**YT 808**	**YT 809**	**YT 810**	**YT 811**	**APL 67**	**APL 68**	**YT 812**
Contract Award Date	Jul 2018	Jul 2018	Jul 2018	Jul 2018	Sep 2018	Sep 2018	Dec 2018
Months to Completion							
a) Award to Delivery	22 months	24 months	27 months	31 months	22 months	25 months	28 months
b) Construction Start to Delivery	14 months	16 months	12 months	12 months	15 months	17 months	12 months
Delivery Date	May 2020	Jul 2020	Oct 2020	Feb 2021	Jul 2020	Oct 2020	Apr 2021
Completion Of Fitting Out	Aug 2020	Oct 2020	Jan 2021	May 2021	Oct 2020	Jan 2021	Jul 2021
Obligation Work Limit Date	Jul 2021	Sep 2021	Dec 2021	Apr 2022	Sep 2021	Dec 2021	Jun 2022

Production Status:	**YWO 04**	**YWO 05**	**YON 1801**	**APL 69**	**YT 813**	**YTL 1901**	**YTL 1902**
Contract Award Date	Jul 2020	Jul 2020	Jul 2020	Feb 2019	Mar 2019	Sep 2019	Feb 2020
Months to Completion							
a) Award to Delivery	15 months	16 months	17 months	21 months	29 months	18 months	19 months
b) Construction Start to Delivery	11 months	11 months	12 months	18 months	12 months	12 months	12 months
Delivery Date	Oct 2021	Nov 2021	Dec 2021	Nov 2020	Aug 2021	Mar 2021	Sep 2021
Completion Of Fitting Out	Jan 2022	Feb 2022	Mar 2022	Feb 2021	Nov 2021	Jun 2021	Dec 2021
Obligation Work Limit Date	Dec 2022	Jan 2023	Feb 2023	Jan 2022	Oct 2022	May 2022	Nov 2022

Production Status:	**YON 1901**	**APL 70**	**YWO 2001**	**YC 2002**	**YON 2001**	**YC 2001**	**YON 2002**
Contract Award Date	Jul 2020	Feb 2020	Jul 2020	Jul 2020	Jul 2020	Jul 2020	Jul 2020
Months to Completion							
a) Award to Delivery	18 months	19 months	16 months	10 months	17 months	12 months	19 months
b) Construction Start to Delivery	11 months	13 months	15 months	7 months	13 months	7 months	13 months
Delivery Date	Jan 2022	Sep 2021	Nov 2021	May 2021	Dec 2021	Jul 2021	Feb 2022
Completion Of Fitting Out	Apr 2022	Dec 2021	Feb 2022	Aug 2021	Mar 2022	Oct 2021	May 2022
Obligation Work Limit Date	Mar 2023	Nov 2022	Jan 2023	Jul 2022	Feb 2023	Sep 2022	Apr 2023

Production Status:	**APL 71**	**YRBM 2101**	**YC 2101**	**YFN 2101**	**YT 814**	**YC 2102**	**YC 2103**
Contract Award Date	Feb 2021	Feb 2021	Mar 2021	Mar 2021	Mar 2021	Mar 2021	Mar 2021
Months to Completion							
a) Award to Delivery	14 months	17 months	7 months	8 months	14 months	9 months	11 months
b) Construction Start to Delivery	13 months	13 months	6 months	7 months	12 months	6 months	6 months
Delivery Date	Apr 2022	Jul 2022	Oct 2021	Nov 2021	May 2022	Dec 2021	Feb 2022
Completion Of Fitting Out	Jul 2022	Oct 2022	Jan 2022	Feb 2022	Aug 2022	Mar 2022	May 2022
Obligation Work Limit Date	Jun 2023	Sep 2023	Dec 2022	Jan 2023	Jul 2023	Feb 2023	Apr 2023

Production Status:	**YFN 2102**	**AFDM 2101**
Contract Award Date	Mar 2021	May 2021
Months to Completion		
a) Award to Delivery	12 months	26 months
b) Construction Start to Delivery	7 months	19 months
Delivery Date	Mar 2022	Jul 2023
Completion Of Fitting Out	Jun 2022	Oct 2023
Obligation Work Limit Date	May 2023	Sep 2024

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy		Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 05: Auxiliaries, Craft, and Prior-Year Program Costs / BSA 1: Auxiliaries, Craft and Prior Yr Program Cost	**P-1 Line Item Number / Title:** 5113 / Service Craft	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** N/A
Line Item MDAP/MAIS Code: N/A		

Design Schedule	Start / Issue	Complete / Response	Reissue	Reissue Complete / Response
Issue Date for TLR	N/A	N/A		
Issue Date for TLS	N/A	N/A		
Preliminary Design	N/A	N/A		
Contract Design	N/A	N/A		
Detail Design	N/A	N/A		
Request for Proposals	N/A	N/A		
Design Agent				

Classification of Cost Estimate:

Justification:
One (1) Auxiliary Floating Dry Dock Medium (AFDM) is required to execute scheduled ship maintenance availabilities at Naval Base San Diego due to a shortage of available dry docks in the region.

Auxiliary Personnel Lighters - Small (APL(S)) barracks craft provide critical berthing and messing facilities for sailors while their ships are in port for availabilities and Inter-Deployment Training Cycles (IDTC). Even when the home port ashore initiative is fully implemented, berthing barges will still be required to meet the original mission of providing berthing for duty crews and messing, training, and office space for the entire crew per OPNAVINST 4700.38B. Thirteen (13) of the seventeen (17) APLs in service were built from 1944-1946; they do not meet current safety standards, are not dual gender-compatible and lack modern communication capabilities. The APL program replaces outdated and dilapidated transport ships and will greatly improve our sailors' quality of life, improve safety during availabilities and save the Navy a significant amount of money over the life of the program.

Harbor Tugs (YT) provide critical vessel docking/undocking, towing, escort, personnel transfer, and emergency services to carriers, ships, and submarines. The YT program replaces aging YTB tugboats in the Northwest Region, Yokosuka, and Portsmouth Naval Shipyard and is required to meet mission requirements.

Fuel Oil Barges (YON) will greatly reduce the risk of a major fuel oil spill. Many existing YONs are 50 to 60 years old and of single hull construction. The new YONs will be double-hulled and will meet the requirements of the Oil Pollution Act of 1990 (OPA-90).

Waste Oil Barges (YWO) will be double-hulled and have piping and other systems specifically designed for transferring oily waste. The YWO program will replace 66 to 78 years old barges being used to transport oily waste and in extremely poor condition.

Open Lighter (YC) and Covered Lighter (YFN) barges are required to replace the oldest YC and YFN in the Fleet, which are over 50 years old and have become unaffordable to overhaul.

Repair, Berthing and Messing Barges (YRBM) will replace barges that were built in the 1940s; they do not meet current safety standards, are not dual gender-compatible and lack modern communication capabilities.

Exhibit P-5c, Ship Cost Analysis: PB 2021 Navy | **Date:** February 2020

Appropriation / Budget Activity / Budget Sub Activity:
1611N / 05 / 1

P-1 Line Item Number / Title:
5113 / Service Craft

Cost Categories	FY 2016		FY 2017		FY 2018		FY 2019		FY 2020		FY 2021	
	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)	Qty (Each)	Total Cost ($ M)
Plan Costs	2		3		5		5		6		9	
Basic Construction/Conversion		28.217		62.132		61.074		69.721		55.161		241.809
Change Orders		1.400		2.260		1.220		1.391		0.528		5.727
Hull, Mechanical, and Electrical (HM&E)		0.397		0.800		0.700		0.950		0.600		2.245
Total Ship Estimate		**30.014**		**65.192**		**62.994**		**72.062**		**56.289**		**249.781**
Net P-1 Funding		**30.014**		**65.192**		**62.994**		**72.062**		**56.289**		**249.781**

Remarks:
FY 16 Craft:
2 YT: $30.014
TOTAL: $30.014

FY 17 Craft:
1 APL: $39.000
2 YT: $26.192
TOTAL: $65.192

FY 18 Craft:
1 YT: $13.660
2 YWO: $ 6.000
1 YON: $ 4.334
1 APL: $39.000
TOTAL: $62.994

FY 19 Craft:
1 APL: $39.808
1 YON $4.490
1 YT: $13.660
2 YTL: $14.104
TOTAL: $72.062

FY 20 Craft:
2 YC: $ 3.264
1 YWO: $ 3.338
2 YON: $ 9.780
1 APL: $39.907
TOTAL: $56.289

FY 21 Craft:
1 APL: $43.277
2 YFN $5.816

Exhibit P-5c, Ship Cost Analysis: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 05 / 1	**P-1 Line Item Number / Title:** 5113 / Service Craft

1 AFDM: $155.000
3 YC: $5.192
1 YRBM: $19.300
YRBM: $7.000 (YRBM-56 Conversion)
1 YT: $14.196
TOTAL: $249.781
The FY 21 Change Order total ($5.727M) includes $4.650M which represents 3% of basic construction cost ($155.000) for the FY 21 AFDM (Floating Dry Dock).

Exhibit P-27, Ship Production Schedule: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 05 / 1	**P-1 Line Item Number / Title:** 5113 / Service Craft

Ship	Shipbuilder	Fiscal Year	Contract Award	Start of Construction	Delivery Date
YT 808	Dakota Creek Industries, Inc.	2016	Jul 2018	Mar 2019	May 2020
YT 809	Dakota Creek Industries, Inc.	2016	Jul 2018	Mar 2019	Jul 2020
YT 810	Dakota Creek Industries, Inc.	2017	Jul 2018	Oct 2019	Oct 2020
YT 811	Dakota Creek Industries, Inc.	2017	Jul 2018	Feb 2020	Feb 2021
APL 67	VT Halter Marine Inc.	2017	Sep 2018	Apr 2019	Jul 2020
APL 68	VT Halter Marine Inc.	2018	Sep 2018	May 2019	Oct 2020
YT 812	Dakota Creek Industries, Inc.	2018	Dec 2018	Apr 2020	Apr 2021
YWO 04	TBD	2018	Jul 2020	Nov 2020	Oct 2021
YWO 05	TBD	2018	Jul 2020	Dec 2020	Nov 2021
YON 1801	TBD	2018	Jul 2020	Dec 2020	Dec 2021
APL 69	VT Halter Marine Inc.	2019	Feb 2019	May 2019	Nov 2020
YT 813	Dakota Creek Industries, Inc.	2019	Mar 2019	Aug 2020	Aug 2021
YTL 1901	Modutech Marine, Inc	2019	Sep 2019	Mar 2020	Mar 2021
YTL 1902	Modutech Marine, Inc	2019	Feb 2020	Sep 2020	Sep 2021
YON 1901	TBD	2019	Jul 2020	Feb 2021	Jan 2022
APL 70	VT Halter Marine Inc.	2020	Feb 2020	Aug 2020	Sep 2021
YWO 2001	TBD	2020	Jul 2020	Aug 2020	Nov 2021
YC 2002	TBD	2020	Jul 2020	Oct 2020	May 2021
YON 2001	TBD	2020	Jul 2020	Nov 2020	Dec 2021
YC 2001	TBD	2020	Jul 2020	Dec 2020	Jul 2021
YON 2002	TBD	2020	Jul 2020	Jan 2021	Feb 2022
APL 71	VT Halter Marine Inc.	2021	Feb 2021	Mar 2021	Apr 2022
YRBM 2101	TBD	2021	Feb 2021	Jun 2021	Jul 2022
YC 2101	TBD	2021	Mar 2021	Apr 2021	Oct 2021
YFN 2101	TBD	2021	Mar 2021	Apr 2021	Nov 2021
YT 814	TBD	2021	Mar 2021	May 2021	May 2022
YC 2102	TBD	2021	Mar 2021	Jun 2021	Dec 2021
YC 2103	TBD	2021	Mar 2021	Aug 2021	Feb 2022
YFN 2102	TBD	2021	Mar 2021	Aug 2021	Mar 2022
AFDM 2101	TBD	2021	May 2021	Dec 2021	Jul 2023
YRBM 2201	TBD	2022	Feb 2022	Mar 2022	Apr 2023
APL 72	VT Halter Marine Inc.	2022	Feb 2022	Jun 2022	Jul 2023
YC 2201	TBD	2022	Mar 2022	Apr 2022	Oct 2022

Exhibit P-27, Ship Production Schedule: PB 2021 Navy					Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 05 / 1			P-1 Line Item Number / Title: 5113 / Service Craft		
Ship	**Shipbuilder**	**Fiscal Year**	**Contract Award**	**Start of Construction**	**Delivery Date**
YON 2201	TBD	2022	Mar 2022	Apr 2022	Feb 2023
YWO 2202	TBD	2022	Mar 2022	Apr 2022	Dec 2022
YWO 2201	TBD	2022	Mar 2022	Apr 2022	Dec 2022
YC 2202	TBD	2022	Mar 2022	Jun 2022	Dec 2022
YON 2202	TBD	2022	Mar 2022	Jul 2022	Sep 2023
YWO 2203	TBD	2022	Mar 2022	Jul 2022	Jan 2023
YC 2203	TBD	2022	Mar 2022	Aug 2022	Feb 2023
YON 2203	TBD	2022	Apr 2022	Aug 2022	Feb 2023
YRBM 2301	TBD	2023	Feb 2023	Mar 2023	Apr 2024
APL 73	TBD	2023	Feb 2023	Jun 2023	Jul 2024
YT 815	TBD	2023	Mar 2023	Apr 2023	Apr 2024
YON 2302	TBD	2023	Mar 2023	Apr 2023	Jun 2024
YC 2301	TBD	2023	Mar 2023	Apr 2023	Oct 2023
YON 2303	TBD	2023	Mar 2023	Jun 2023	Sep 2024
YWO 2301	TBD	2023	Mar 2023	Jul 2023	Jan 2024
YON 2301	TBD	2023	Mar 2023	Oct 2023	Dec 2024
YWO 2401	TBD	2024	Mar 2024	Apr 2024	Dec 2024
YWO 2402	TBD	2024	Mar 2024	Jul 2024	Apr 2025
YFN 2401	TBD	2024	Apr 2024	Jun 2024	May 2025
YON 2401	TBD	2024	Apr 2024	Jun 2024	Jun 2025
YT 816	TBD	2024	Apr 2024	Jul 2024	Jul 2025
YRBM 2401	TBD	2024	Apr 2024	Aug 2024	Aug 2025
YON 2402	TBD	2024	Apr 2024	Sep 2024	Sep 2025
APL 74	TBD	2024	Apr 2024	Sep 2024	Oct 2025
YWO 2501	TBD	2025	Mar 2025	Jul 2025	Jan 2026
YON 2501	TBD	2025	Apr 2025	Jun 2025	Jun 2026
YFN 2501	TBD	2025	Apr 2025	Jun 2025	May 2026
YT 817	TBD	2025	Apr 2025	Jul 2025	Jul 2026
YRBM 2501	TBD	2025	Apr 2025	Aug 2025	Aug 2026
APL 2501	TBD	2025	Apr 2025	Sep 2025	Oct 2026
YON 2502	TBD	2025	Apr 2025	Sep 2025	Sep 2026

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Exhibit P-40, Budget Line Item Justification: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 05: Auxiliaries, Craft, and Prior-Year Program Costs / BSA 1: Auxiliaries, Craft and Prior Yr Program Cost	**P-1 Line Item Number / Title:** 5139 / LCAC SLEP

ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** N/A
Line Item MDAP/MAIS Code: N/A		

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity *(Units in Each)*	67	-	-	3	-	3	3	3	-	-	-	76
Gross/Weapon System Cost *($ in Millions)*	1,418.444	0.000	0.000	56.461	0.000	56.461	52.271	53.307	0.000	0.000	-	1,580.483
Less PY Advance Procurement *($ in Millions)*	27.900	-	-	-	-	-	-	-	-	-	-	27.900
Less Cost To Complete *($ in Millions)*	14.000	-	-	-	-	-	-	-	-	-	-	14.000
Less Subsequent Year Full Funding *($ in Millions)*	1.774	-	-	-	-	-	-	-	-	-	-	1.774
Less Hurricane *($ in Millions)*	19.800	-	-	-	-	-	-	-	-	-	-	19.800
Less Transfer *($ in Millions)*	1.500	-	-	-	-	-	-	-	-	-	-	1.500
Net Procurement (P-1) *($ in Millions)*	1,353.470	0.000	0.000	56.461	0.000	56.461	52.271	53.307	0.000	0.000	-	1,515.509
Plus Subsequent Year Full Funding *($ in Millions)*	1.774	-	-	-	-	-	-	-	-	-	-	1.774
Full Funding TOA *($ in Millions)*	1,355.244	-	-	56.461	-	56.461	52.271	53.307	-	-	-	1,517.283
Plus CY Advance Procurement *($ in Millions)*	27.900	-	-	-	-	-	-	-	-	-	-	27.900
Plus Cost To Complete *($ in Millions)*	14.000	-	-	-	-	-	-	-	-	-	-	14.000
Plus Transfer *($ in Millions)*	1.500	-	-	-	-	-	-	-	-	-	-	1.500
Plus Hurricane *($ in Millions)*	19.800	-	-	-	-	-	-	-	-	-	-	19.800
Total Obligation Authority *($ in Millions)*	**1,418.444**	**0.000**	**0.000**	**56.461**	**0.000**	**56.461**	**52.271**	**53.307**	**0.000**	**0.000**	**-**	**1,580.483**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Plus Outfitting and Post Delivery *($ in Millions)*	13.045	0.238	0.634	0.300	-	0.300	-	-	-	-	-	14.217
Total *($ in Millions)*	**1,431.489**	**0.238**	**0.634**	**56.761**	**-**	**56.761**	**52.271**	**53.307**	**-**	**-**	**-**	**1,594.700**
Gross/Weapon System Unit Cost *($ in Millions)*	21.171	-	-	18.820	-	18.820	17.424	17.769	-	-	-	20.796

Description:

Landing Craft, Air Cushion (LCAC) transports weapon systems, equipment, cargo and personnel of the assault elements of the Marine Air/Ground Task Force from ship to shore and across the beach. The LCAC Service Life Extension Program (SLEP) and LCAC Extended Service Life Extension Program (E-SLEP) extends the craft service life past the original twenty years.

The LCAC SLEP program incorporates the following modifications and enhancements: upgrade from the TF40B engines to the ETF40B engines; repair corrosion damage; replace obsolete electronics; upgrade C4N suite; and replace deep skirt.

The LCAC E-SLEP program incorporates the following modifications and enhancements: repairs corrosion damage; replaces obsolete electronics, upgrades C4N including cyber hardening; and replace the deep skirt.

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy		Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 05: Auxiliaries, Craft, and Prior-Year Program Costs / BSA 1: Auxiliaries, Craft and Prior Yr Program Cost	**P-1 Line Item Number / Title:** 5139 / LCAC SLEP	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** N/A
Line Item MDAP/MAIS Code: N/A		

Characteristics:

	Air Cushion
Length Overall	91.8 ft (on cushion)
Beam	49.2 ft (on cushion)
Displacement	106 tons
Draft	None (air cushion)

Production Status:	LCAC SLEP 86	LCAC SLEP 87	LCAC SLEP 77	LCAC ESLEP 40	LCAC ESLEP 41	LCAC ESLEP 45
Contract Award Date	Sep 2018	Sep 2018	Sep 2018	Nov 2020	Nov 2020	Nov 2020
Months to Completion						
a) Award to Delivery	19 months	24 months	29 months	30 months	30 months	32 months
b) Construction Start to Delivery	15 months	15 months	15 months	24 months	24 months	20 months
Delivery Date	Apr 2020	Sep 2020	Feb 2021	May 2023	May 2023	Jul 2023
Completion Of Fitting Out	May 2020	Oct 2020	Mar 2021	Jun 2023	Jun 2023	Aug 2023
Obligation Work Limit Date	Apr 2021	Sep 2021	Feb 2022	May 2024	May 2024	Jul 2024

Design Schedule	Start / Issue	Complete / Response	Reissue	Reissue Complete / Response
Issue Date for TLR	N/A	N/A		
Issue Date for TLS	N/A	N/A		
Preliminary Design	N/A	N/A		
Contract Design	N/A	N/A		
Detail Design	N/A	N/A		
Request for Proposals	May 2020	Aug 2020		
Design Agent	Landing Craft Planning Yard			

Classification of Cost Estimate: N/A

Justification:
The Prior Years column reflects the $2.000 million FY 2013 reduction to the LCAC SLEP program.

Exhibit P-5c, Ship Cost Analysis: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 05 / 1	**P-1 Line Item Number / Title:** 5139 / LCAC SLEP

Cost Categories	FY 2017		FY 2021	
	Qty *(Each)*	Total Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*
Plan Costs	3		3	
Basic Construction/Conversion		35.925		30.216
Electronics		6.542		2.225
Hull, Mechanical, and Electrical (HM&E)		33.850		17.515
Other Cost		3.983		6.505
Total Ship Estimate		**80.300**		**56.461**
Net P-1 Funding		**80.300**		**56.461**

Remarks:
FY17 is the last year of LCAC SLEP and FY21 is the first year of LCAC E-SLEP. LCAC E-SLEPs are structured to cost effectively gain more service life out of existing legacy LCACs.

Exhibit P-27, Ship Production Schedule: PB 2021 Navy | **Date:** February 2020

Appropriation / Budget Activity / Budget Sub Activity:
1611N / 05 / 1

P-1 Line Item Number / Title:
5139 / LCAC SLEP

Ship	Shipbuilder	Fiscal Year	Contract Award	Start of Construction	Delivery Date
LCAC SLEP 86	Tecnico	2017	Sep 2018	Jan 2019	Apr 2020
LCAC SLEP 87	Tecnico	2017	Sep 2018	Jun 2019	Sep 2020
LCAC SLEP 77	Tecnico	2017	Sep 2018	Nov 2019	Feb 2021
LCAC ESLEP 40	TBD	2021	Nov 2020	May 2021	May 2023
LCAC ESLEP 41	TBD	2021	Nov 2020	May 2021	May 2023
LCAC ESLEP 45	TBD	2021	Nov 2020	Nov 2021	Jul 2023
LCAC ESLEP TBD	TBD	2022	Jan 2022	Apr 2022	Dec 2023
LCAC ESLEP TBD	TBD	2022	Jan 2022	May 2022	Jan 2024
LCAC ESLEP TBD	TBD	2022	Jan 2022	Nov 2022	Jul 2024
LCAC ESLEP TBD	TBD	2023	Jan 2023	Apr 2023	Dec 2024
LCAC ESLEP TBD	TBD	2023	Jan 2023	May 2023	Jan 2025
LCAC ESLEP TBD	TBD	2023	Jan 2023	Nov 2023	Jul 2025

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 05: Auxiliaries, Craft, and Prior-Year Program Costs / BSA 1: Auxiliaries, Craft and Prior Yr Program Cost	**P-1 Line Item Number / Title:** 5300 / Completion of PY Shpbldg Progr

ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** N/A

Line Item MDAP/MAIS Code: N/A

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	0.000	0.000	0.000	369.112	0.000	369.112	246.259	55.641	45.444	8.571	-	725.027
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	0.000	0.000	0.000	369.112	0.000	369.112	246.259	55.641	45.444	8.571	-	725.027
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
LPD 17 Class *($ in Millions)*	-	-	-	30.578	-	30.578	43.682	9.539	-	-	-	83.799
LPD 17 FLT II *($ in Millions)*	-	-	-	-	-	-	-	-	-	5.600	-	5.600
ESB *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	0.000
LCS *($ in Millions)*	-	-	-	-	-	-	15.000	31.860	19.530	-	-	66.390
CVN RCOH *($ in Millions)*	-	-	-	198.000	-	198.000	76.800	-	-	-	-	274.800
CVN *($ in Millions)*	-	-	-	71.000	-	71.000	74.000	-	-	-	-	145.000
DDG-51 *($ in Millions)*	-	-	-	9.634	-	9.634	33.077	14.242	25.914	2.971	-	85.838
TAO Fleet Oiler *($ in Millions)*	-	-	-	59.900	-	59.900	3.700	-	-	-	-	63.600
Total Obligation Authority *($ in Millions)*	**0.000**	**0.000**	**0.000**	**369.112**	**0.000**	**369.112**	**246.259**	**55.641**	**45.444**	**8.571**	**-**	**725.027**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Initial Spares *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Total *($ in Millions)*	**-**	**-**	**-**	**369.112**	**-**	**369.112**	**246.259**	**55.641**	**45.444**	**8.571**	**-**	**725.027**
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-

Description:

Note: General Provision Section 8073 of the Department of Defense Appropriations Act, 2020 directs that funds appropriated for the Completion of Prior Year Shipbuilding Programs be merged with and available for the same purposes as the appropriation to which transferred.

[P5 / [2001] CVN - Carrier Replacement]: Funds in FY 2021 are for completion of mission essential requirements to include Advanced Weapons Elevator (AWE) construction and certification, advanced degaussing corrections and resolution of outstanding trial cards on CVN 78 ($71.0M).

[P5 / [2086] CVN RCOH]: Funds in FY 2021 are to finance CVN 73 cost increases on C4I Equipment ($17.8M), Ship Self Defense System ($3.2M), Node Room ripout/installation ($4.9M), Combat Systems Support Center ripout/installation ($2.1M), and to incorporate the MQ-25 into CVN 73 as mandated by the FY 2019 National Defense Authorization Act ($11.8M). Funds in FY 2021 are also to finance the Government responsible portion of the shipbuilding construction contract overrun for CVN 73 RCOH ($158.2M).

[P5 / [2122] DDG-51]: Funds in FY 2021 are for the Government responsible portion of the shipbuilding construction contract overrun for DDG 121/DDG 122 ($9.6M).

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy		Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 05: Auxiliaries, Craft, and Prior-Year Program Costs / BSA 1: Auxiliaries, Craft and Prior Yr Program Cost	**P-1 Line Item Number / Title:** 5300 / Completion of PY Shpbldg Progr	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** N/A
Line Item MDAP/MAIS Code: N/A		

[P5 / [3036] LPD]: Funds in FY 2021 are for the Avondale Deferred Restructuring Cost contract clause for LPD 28 ($5.7M), to properly price the Rolling Airframe Missile and Surface Electronic Warfare Improvement Program Block 2 for LPD 28 ($14.6M), and for cost increases for the LPD 28 Ship Self Defense System ($10.3M).

[P5 / [5025] TAO Fleet Oiler]: Funds in FY 2021 are for the Government responsible portions of the shipbuilding construction contract overruns for T-AO 205 ($41.0M), increases in HM&E for T-AO 205 ($1.5M) and Government responsible portions of the shipbuilding construction contract overruns for T-AO 206 ($17.4M).

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 05: Auxiliaries, Craft, and Prior-Year Program Costs / BSA 1: Auxiliaries, Craft and Prior Yr Program Cost	**P-1 Line Item Number / Title:** 5300 / Completion of PY Shpbldg Progr

ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** N/A

Line Item MDAP/MAIS Code: N/A

Exhibits Schedule					Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Exhibit Type	Title*	Subexhibits	ID CD	MDAP/ MAIS Code	Quantity / Total Cost *(Each) I ($ M)*	Quantity / Total Cost *(Each) I ($ M)*	Quantity / Total Cost *(Each) I ($ M)*	Quantity / Total Cost *(Each) I ($ M)*	Quantity / Total Cost *(Each) I ($ M)*	Quantity / Total Cost *(Each) I ($ M)*
P-5	Ship Estimate				- / 0.000	- / 0.000	- / 0.000	- / 369.112	- / 0.000	- / 369.112
P-40	**Total Gross/Weapon System Cost**				**- / 0.000**	**- / 0.000**	**- / 0.000**	**- / 369.112**	**- / 0.000**	**- / 369.112**

*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

Exhibit P-5, Cost Analysis: PB 2021 Navy		Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 05 / 1	P-1 Line Item Number / Title: 5300 / Completion of PY Shpbldg Progr	Item Number / Title [DODIC]: Ship Estimate
ID Code (A=Service Ready, B=Not Service Ready) :	MDAP/MAIS Code:	

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	0.000	0.000	0.000	369.112	0.000	369.112
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	0.000	0.000	0.000	369.112	0.000	369.112
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**0.000**	**0.000**	**0.000**	**369.112**	**0.000**	**369.112**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)						
Initial Spares *($ in Millions)*	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2019			FY 2020			FY 2021 Base			FY 2021 OCO			FY 2021 Total		
	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
Completion of PY Shipbuilding Programs - [2001] CVN - Carrier Replacement Cost																		
2.1) CVN 78 Advanced Weapons Elevator efforts, Degaussing corrections, trial card resolution	-	-	-	-	-	-	-	-	-	-	-	71.000	-	-	-	-	-	71.000
Subtotal: Completion of PY Shipbuilding Programs - [2001] CVN - Carrier Replacement Cost	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	***71.000***	**-**	**-**	**-**	**-**	**-**	***71.000***
Completion of PY Shipbuilding Programs - [2086] CVN RCOH Cost																		
3.1) Add MQ-25 to CVN 73 and fund GFE cost increases.	-	-	-	-	-	-	-	-	-	-	-	39.800	-	-	-	-	-	39.800
3.2) Government responsible portion of the shipbuilding contract overrun for CVN 73 RCOH	-	-	-	-	-	-	-	-	-	-	-	158.200	-	-	-	-	-	158.200
Subtotal: Completion of PY Shipbuilding Programs - [2086] CVN RCOH Cost	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	***198.000***	**-**	**-**	**-**	**-**	**-**	***198.000***
Completion of PY Shipbuilding Programs - [2122] DDG-51 Cost																		
4.1) Government responsible portion of shipbuilding contract overrun for DDG 121 and DDG 122	-	-	-	-	-	-	-	-	-	-	-	9.634	-	-	-	-	-	9.634

Exhibit P-5, Cost Analysis: PB 2021 Navy		Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 05 / 1	P-1 Line Item Number / Title: 5300 / Completion of PY Shpbldg Progr	Item Number / Title [DODIC]: Ship Estimate
ID Code (A=Service Ready, B=Not Service Ready) :	MDAP/MAIS Code:	

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2019			FY 2020			FY 2021 Base			FY 2021 OCO			FY 2021 Total		
	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
Subtotal: Completion of PY Shipbuilding Programs - [2122] DDG-51 Cost	-	-	-	-	-	-	-	-	-	-	-	***9.634***	-	-	-	-	-	***9.634***
Completion of PY Shipbuilding Programs - [3036] LPD Cost																		
5.1) Avondale Deferred Restructuring Cost contract clause for LPD 28	-	-	-	-	-	-	-	-	-	-	-	5.700	-	-	-	-	-	5.700
5.2) Rolling Airframe Missile and SEWIP Block 2 for LPD 28	-	-	-	-	-	-	-	-	-	-	-	14.578	-	-	-	-	-	14.578
5.4) Ship Self Defense System for LPD 28	-	-	-	-	-	-	-	-	-	-	-	10.300	-	-	-	-	-	10.300
Subtotal: Completion of PY Shipbuilding Programs - [3036] LPD Cost	-	-	-	-	-	-	-	-	-	-	-	***30.578***	-	-	-	-	-	***30.578***
Completion of PY Shipbuilding Programs - [5025] TAO Fleet Oiler Cost																		
7.1) Gov. resp.portion of the shipbuilding contract overrun for T-AO 205 and HM&E increases	-	-	-	-	-	-	-	-	-	-	-	42.500	-	-	-	-	-	42.500
7.2) Government responsible portion of the shipbuilding contract overrun for T-AO 206	-	-	-	-	-	-	-	-	-	-	-	17.400	-	-	-	-	-	17.400
Subtotal: Completion of PY Shipbuilding Programs - [5025] TAO Fleet Oiler Cost	-	-	-	-	-	-	-	-	-	-	-	***59.900***	-	-	-	-	-	***59.900***
Gross/Weapon System Cost	-	-	**0.000**	-	-	**0.000**	-	-	**0.000**	-	-	**369.112**	-	-	**0.000**	-	-	**369.112**

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Exhibit P-40, Budget Line Item Justification: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 05: Auxiliaries, Craft, and Prior-Year Program Costs / BSA 1: Auxiliaries, Craft and Prior Yr Program Cost	**P-1 Line Item Number / Title:** 5087 / Oceanographic Ships

ID Code (A=Service Ready, B=Not Service Ready): A | **Program Elements for Code B Items:** N/A | **Other Related Program Elements:** N/A

Line Item MDAP/MAIS Code: N/A

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity *(Units in Each)*	4	-	-	-	-	-	-	-	-	-	-	4
Gross/Weapon System Cost *($ in Millions)*	471.072	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	471.072
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	471.072	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	471.072
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**471.072**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**-**	**471.072**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Plus Outfitting and Post Delivery *($ in Millions)*	14.862	-	-	-	-	-	-	-	-	-	8.704	23.566
Total *($ in Millions)*	**485.934**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**8.704**	**494.638**
Gross/Weapon System Unit Cost *($ in Millions)*	117.768	-	-	-	-	-	-	-	-	-	-	117.768

Description:

The FY 2018 Omnibus Appropriations Act included a Congressional add for Detail Design and Construction (DD&C) efforts for one T-AGS 60 vessel. T-AGS 67 is a repeat platform of T-AGS 66 and includes the Moon Pool Launch and Recovery System (MLARS). The TAGS 67 will be capable of deep ocean and coastal surveys, oceanographic sampling and data collections of surface, midwater and ocean floor parameters, shipboard oceanographic data processing and sample analysis, and operation of remotely operated vehicles (AUVs) and hydrographic survey launches (HSLs).

Characteristics:

	T-AGS
Length Overall	353 ft
Beam	58 ft
Displacement	4,888 Long Tons
Draft	19 ft

Production Status:	**T-AGS 67**
Contract Award Date	Mar 2020
Months to Completion	
a) Award to Delivery	48 months
b) Construction Start to Delivery	58 months
Delivery Date	Mar 2024
Completion Of Fitting Out	Jun 2024
Obligation Work Limit Date	May 2025

Design Schedule	Start / Issue	Complete / Response	Reissue	Reissue Complete / Response
Issue Date for TLR	Aug 1993	N/A		
Issue Date for TLS	N/A	N/A		
Preliminary Design	N/A	N/A		

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy		**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 05: Auxiliaries, Craft, and Prior-Year Program Costs / BSA 1: Auxiliaries, Craft and Prior Yr Program Cost	**P-1 Line Item Number / Title:** 5087 / Oceanographic Ships	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** N/A
Line Item MDAP/MAIS Code: N/A		

Design Schedule	Start / Issue	Complete / Response	Reissue	Reissue Complete / Response
Contract Design	Sep 2018	N/A		
Detail Design	Mar 2019	N/A		
Request for Proposals	Aug 2018	N/A		
Design Agent	N/A			

Classification of Cost Estimate: N/A

Exhibit P-5c, Ship Cost Analysis: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 05 / 1	**P-1 Line Item Number / Title:** 5087 / Oceanographic Ships

Cost Categories	FY 2018	
	Qty *(Each)*	Total Cost *($ M)*
Plan Costs	1	
Basic Construction/Conversion		140.000
Change Orders		1.500
Electronics		29.500
Hull, Mechanical, and Electrical (HM&E)		8.876
Other Cost		
Total Ship Estimate		**179.876**
Net P-1 Funding		**179.876**

Exhibit P-27, Ship Production Schedule: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 05 / 1	**P-1 Line Item Number / Title:** 5087 / Oceanographic Ships

Ship	Shipbuilder	Fiscal Year	Contract Award	Start of Construction	Delivery Date
T-AGS 67	VT HALTER	2018	Mar 2020	May 2019	Mar 2024

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 05: Auxiliaries, Craft, and Prior-Year Program Costs / BSA 1: Auxiliaries, Craft and Prior Yr Program Cost	**P-1 Line Item Number / Title:** 5092 / Moored Training Ship

ID Code (A=Service Ready, B=Not Service Ready): A | **Program Elements for Code B Items:** N/A | **Other Related Program Elements:** N/A

Line Item MDAP/MAIS Code: N/A

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity *(Units in Each)*	2	-	-	-	-	-	-	-	-	-	-	2
Gross/Weapon System Cost *($ in Millions)*	2,186.115	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	2,186.115
Less PY Advance Procurement *($ in Millions)*	824.345	-	-	-	-	-	-	-	-	-	-	824.345
Net Procurement (P-1) *($ in Millions)*	1,361.770	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	1,361.770
Plus CY Advance Procurement *($ in Millions)*	824.345	-	-	-	-	-	-	-	-	-	-	824.345
Total Obligation Authority *($ in Millions)*	**2,186.115**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**-**	**2,186.115**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Plus Outfitting and Post Delivery *($ in Millions)*	18.683	11.740	4.800	-	-	-	-	-	-	-	-	35.223
Total *($ in Millions)*	**2,204.798**	**11.740**	**4.800**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2,221.338**
Gross/Weapon System Unit Cost *($ in Millions)*	1,093.058	-	-	-	-	-	-	-	-	-	-	1,093.058

Description:

The details of this program are CONFIDENTIAL.

Characteristics:

	MTS-711
Length Overall	433 ft
Beam	33 ft
Displacement	7,500 LT
Draft	27 ft

Production Status:	**MTS- 711** (1)
Contract Award Date	May 2017
Months to Completion	
a) Award to Delivery	50 months
b) Construction Start to Delivery	50 months
Delivery Date	Jul 2021
Completion Of Fitting Out	Jul 2021
Obligation Work Limit Date	Jun 2022

Design Schedule	Start / Issue	Complete / Response	Reissue	Reissue Complete / Response
Issue Date for TLR	N/A	N/A		
Issue Date for TLS	Apr 2008	Jan 2015		
Preliminary Design	Jan 2012	N/A		
Contract Design	Feb 2012	N/A		

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy		**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 05: Auxiliaries, Craft, and Prior-Year Program Costs / BSA 1: Auxiliaries, Craft and Prior Yr Program Cost	**P-1 Line Item Number / Title:** 5092 / Moored Training Ship	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** N/A
Line Item MDAP/MAIS Code: N/A		

Design Schedule	Start / Issue	Complete / Response	Reissue	Reissue Complete / Response
Detail Design	Feb 2012	N/A		
Request for Proposals	N/A	N/A		
Design Agent	ELECTRIC BOAT			

Classification of Cost Estimate:

Justification:
The details of this program are CONFIDENTIAL.

Footnotes:
(1) The details of this program are CONFIDENTIAL.

Exhibit P-5c, Ship Cost Analysis: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 05 / 1	**P-1 Line Item Number / Title:** 5092 / Moored Training Ship

Cost Categories	FY 2017	
	Qty *(Each)*	Total Cost *($ M)*
Design	1	46.449
Plans/Conversion		382.214
GFE		31.100
Basic Construction		404.530
Total Ship Estimate		**864.293**
Less Advance Procurement FY 2014		37.200
Less Advance Procurement FY 2015		64.388
Less Advance Procurement FY 2016		138.200
Net P-1 Funding		**624.505**

Exhibit P-27, Ship Production Schedule: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 05 / 1	**P-1 Line Item Number / Title:** 5092 / Moored Training Ship

Ship	Shipbuilder	Fiscal Year	Contract Award	Start of Construction	Delivery Date
MTS- 711 (1)	EB/NNSY	2017	May 2017	May 2017	Jul 2021

Footnotes:

(1) The details of this program are CONFIDENTIAL.

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy	Date: February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 05: Auxiliaries, Craft, and Prior-Year Program Costs / BSA 1: Auxiliaries, Craft and Prior Yr Program Cost	**P-1 Line Item Number / Title:** 5212 / YP Craft Maintenance/ROH/SLEP

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: N/A

Line Item MDAP/MAIS Code: N/A

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity *(Units in Each)*	12	-	-	-	-	-	-	-	-	-	-	12
Gross/Weapon System Cost *($ in Millions)*	43.162	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	43.162
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	43.162	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	43.162
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**43.162**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**-**	**43.162**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Plus Outfitting and Post Delivery *($ in Millions)*	0.426	-	0.145	-	-	-	-	-	-	-	-	0.571
Total *($ in Millions)*	**43.588**	**-**	**0.145**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**43.733**
Gross/Weapon System Unit Cost *($ in Millions)*	3.597	-	-	-	-	-	-	-	-	-	-	3.597

Description:

Naval Academy YP (Yard Patrol) craft are utilized to train midshipmen on piloting, seamanship, navigation, and engineering. The YP Service Life Extension Program (SLEP) extends the YP 676 Class service life approximately 10 years beyond the current average vessel age of 27 years. YP SLEP work items include but are not limited to the following: hull fendering, electronic navigation system components, paint and non-skid, damaged hull sections, hatches and deck planking, various pumps (bilge, seawater cooling, fire), and galley appliances. The SLEP will also include the overhaul of the engines and transformers, and propeller repair. The required repairs will vary by craft and will be conducted at both the U.S. Coast Guard Yard in Baltimore and private small business shipyards.

Exhibit P-40, Budget Line Item Justification: PB 2021 Navy		**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N: Shipbuilding and Conversion, Navy / BA 05: Auxiliaries, Craft, and Prior-Year Program Costs / BSA 1: Auxiliaries, Craft and Prior Yr Program Cost	**P-1 Line Item Number / Title:** 5212 / YP Craft Maintenance/ROH/SLEP	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** N/A
Line Item MDAP/MAIS Code: N/A		

Characteristics:

	YP 676 Class
Length Overall	108 ft
Beam	24 ft
Displacement	173 tons
Draft	6 ft

Production Status:	**YP SLEP 686**	**YP SLEP 689**	**YP SLEP 692**	**YP SLEP 698**	**YP SLEP 683**	**YP SLEP 690**	**YP SLEP 684**
Contract Award Date	Jul 2019	Jan 2020	Jan 2020	May 2020	Jul 2020	Aug 2020	Nov 2020
Months to Completion							
a) Award to Delivery	7 months	6 months	6 months	5 months	6 months	5 months	5 months
b) Construction Start to Delivery	6 months	6 months	5 months	5 months	5 months	5 months	5 months
Delivery Date	Feb 2020	Jul 2020	Jul 2020	Oct 2020	Jan 2021	Jan 2021	Apr 2021
Completion Of Fitting Out	May 2020	Oct 2020	Oct 2020	Jan 2021	Apr 2021	Apr 2021	Jul 2021
Obligation Work Limit Date	Apr 2021	Sep 2021	Sep 2021	Dec 2021	Mar 2022	Mar 2022	Jun 2022

Production Status:	**YP SLEP 691**	**YP SLEP 700**
Contract Award Date	Jan 2021	Feb 2021
Months to Completion		
a) Award to Delivery	6 months	5 months
b) Construction Start to Delivery	5 months	5 months
Delivery Date	Jul 2021	Jul 2021
Completion Of Fitting Out	Oct 2021	Oct 2021
Obligation Work Limit Date	Sep 2022	Sep 2022

Design Schedule	**Start / Issue**	**Complete / Response**	**Reissue**	**Reissue Complete / Response**
Issue Date for TLR	N/A	N/A		
Issue Date for TLS	N/A	N/A		
Preliminary Design	N/A	N/A		
Contract Design	N/A	N/A		
Detail Design	N/A	N/A		
Request for Proposals	Jun 2016	Sep 2017		
Design Agent	PEO SHIPS, PMS 325 Detachment Boston			

Classification of Cost Estimate: N/A

Exhibit P-5c, Ship Cost Analysis: PB 2021 Navy	**Date:** February 2020
Appropriation / Budget Activity / Budget Sub Activity: 1611N / 05 / 1	**P-1 Line Item Number / Title:** 5212 / YP Craft Maintenance/ROH/SLEP

Cost Categories	FY 2016		FY 2017	
	Qty *(Each)*	Total Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*
Basic Construction/Conversion	6	17.936	6	17.936
Change Orders		0.944		0.469
Electronics		1.458		1.458
Hull, Mechanical, and Electrical (HM&E)		1.500		1.461
Total Ship Estimate		**21.838**		**21.324**
Net P-1 Funding		**21.838**		**21.324**

Exhibit P-27, Ship Production Schedule: PB 2021 Navy | **Date:** February 2020

Appropriation / Budget Activity / Budget Sub Activity:
1611N / 05 / 1

P-1 Line Item Number / Title:
5212 / YP Craft Maintenance/ROH/SLEP

Ship	Shipbuilder	Fiscal Year	Contract Award	Start of Construction	Delivery Date
YP SLEP 686	USCG YARD	2016	Jul 2019	Aug 2019	Feb 2020
YP SLEP 689	USCG YARD	2016	Jan 2020	Jan 2020	Jul 2020
YP SLEP 692	USCG YARD	2016	Jan 2020	Feb 2020	Jul 2020
YP SLEP 698	LYON SHIPYARD/TECNICO CORP.	2017	May 2020	May 2020	Oct 2020
YP SLEP 683	LYON SHIPYARD/TECNICO CORP.	2017	Jul 2020	Aug 2020	Jan 2021
YP SLEP 690	LYON SHIPYARD/TECNICO CORP.	2017	Aug 2020	Aug 2020	Jan 2021
YP SLEP 684	LYON SHIPYARD/TECNICO CORP.	2017	Nov 2020	Nov 2020	Apr 2021
YP SLEP 691	LYON SHIPYARD/TECNICO CORP.	2017	Jan 2021	Feb 2021	Jul 2021
YP SLEP 700	LYON SHIPYARD/TECNICO CORP.	2017	Feb 2021	Feb 2021	Jul 2021