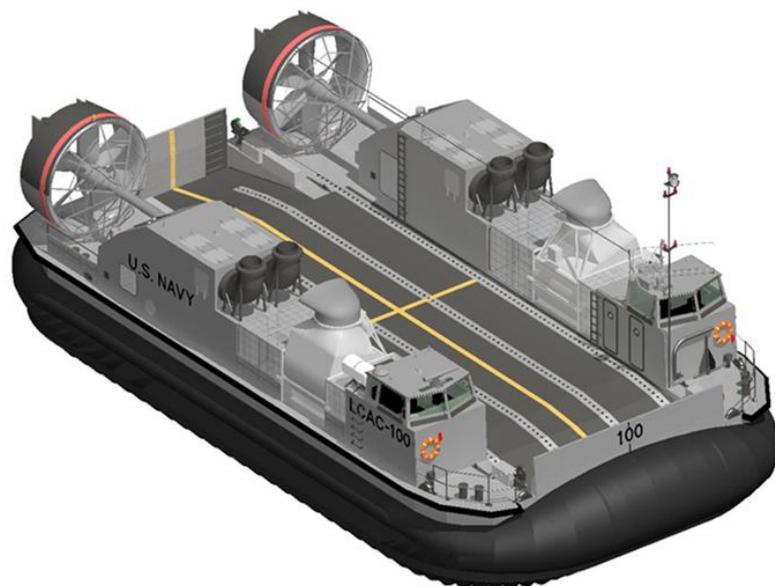




## Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-303



### Ship to Shore Connector Amphibious Craft (SSC)

As of FY 2016 President's Budget

Defense Acquisition Management  
Information Retrieval  
(DAMIR)

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## Common Acronyms and Abbreviations for MDAP Programs

Acq O&M - Acquisition-Related Operations and Maintenance  
ACAT - Acquisition Category  
ADM - Acquisition Decision Memorandum  
APB - Acquisition Program Baseline  
APPN - Appropriation  
APUC - Average Procurement Unit Cost  
\$B - Billions of Dollars  
BA - Budget Authority/Budget Activity  
Blk - Block  
BY - Base Year  
CAPE - Cost Assessment and Program Evaluation  
CARD - Cost Analysis Requirements Description  
CDD - Capability Development Document  
CLIN - Contract Line Item Number  
CPD - Capability Production Document  
CY - Calendar Year  
DAB - Defense Acquisition Board  
DAE - Defense Acquisition Executive  
DAMIR - Defense Acquisition Management Information Retrieval  
DoD - Department of Defense  
DSN - Defense Switched Network  
EMD - Engineering and Manufacturing Development  
EVM - Earned Value Management  
FOC - Full Operational Capability  
FMS - Foreign Military Sales  
FRP - Full Rate Production  
FY - Fiscal Year  
FYDP - Future Years Defense Program  
ICE - Independent Cost Estimate  
IOC - Initial Operational Capability  
Inc - Increment  
JROC - Joint Requirements Oversight Council  
\$K - Thousands of Dollars  
KPP - Key Performance Parameter  
LRIP - Low Rate Initial Production  
\$M - Millions of Dollars  
MDA - Milestone Decision Authority  
MDAP - Major Defense Acquisition Program  
MILCON - Military Construction  
N/A - Not Applicable  
O&M - Operations and Maintenance  
ORD - Operational Requirements Document  
OSD - Office of the Secretary of Defense  
O&S - Operating and Support  
PAUC - Program Acquisition Unit Cost

PB - President's Budget  
PE - Program Element  
PEO - Program Executive Officer  
PM - Program Manager  
POE - Program Office Estimate  
RDT&E - Research, Development, Test, and Evaluation  
SAR - Selected Acquisition Report  
SCP - Service Cost Position  
TBD - To Be Determined  
TY - Then Year  
UCR - Unit Cost Reporting  
U.S. - United States  
USD(AT&L) - Under Secretary of Defense (Acquisition, Technology and Logistics)

## Program Information

**Program Name**

Ship to Shore Connector Amphibious Craft (SSC)

**DoD Component**

Navy

## Responsible Office

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Program Executive Office, Ships  
Amphibious Warfare Program Office  
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**Date**

**Assigned:** May 21, 2010

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## References

**SAR Baseline (Development Estimate)**

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated July 5, 2012

**Approved APB**

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated July 5, 2012

## **Mission and Description**

Ship to Shore Connector (SSC) is the Landing Craft, Air Cushion (LCAC) replacement. It is an Air Cushion Vehicle with the same footprint as the LCAC Service Life Extension Program. The SSC mission is to land surface assault elements in support of Operational Maneuver from the Sea at Over-The-Horizon distances, while operating from amphibious ships and mobile landing platforms. The primary role of SSC is to transport weapon systems, equipment, cargo, and personnel of the assault elements of the Marine Expeditionary Brigades and the Army Brigade Combat Teams during Ship-to-Objective Maneuver and Prepare for Movement operations.

## Executive Summary

The end of 2014 marked the completion of another successful year for the SSC program. In addition to completing a second year of detail design, Integrated Baseline Reviews (IBR) were held with the Shipbuilder and the major subcontractor for the Command, Control, Communications, Computers, and Navigation (C4N) System development, and Performance Measurement Baselines (PMB) were established. The Navy also successfully conducted a Critical Design Review (CDR) and Production Readiness Review (PRR), authorizing production to begin on the dedicated Test and Training (T&T) Craft as well as the commencement of significant operational and developmental testing activities. The SSC program is on course for Milestone C in the third quarter of FY 2015 and is on track to meet financial and performance requirements.

On July 6, 2012, the Navy awarded a \$212.7M fixed price incentive fee contract for the Detail Design and Construction of the T&T Craft (LCAC 100) and technical manuals to Textron Systems Marine and Land Systems, a division of Textron, Inc. The award was based on full and open competition. On December 19, 2012, the Navy exercised a contract option to procure Long Lead Time Material, Advanced Planning and Engineering for LCAC 101. On August 24, 2014, the Navy exercised the option for the construction of LCAC 101.

The Navy and Textron established a mutual understanding of the PMB for the design and construction Craft 100 by conducting an IBR in June 2013. The resulting action items were adjudicated and implemented in the PMB in April 2014. The C4N system represents the highest technical risk to the success of the program. As a result, full flow down of Earned Value Management to the C4N subcontractor is contractually required and a joint Textron and Navy team conducted an IBR with L3, the subcontractor for C4N. Action items from the IBR were satisfactorily completed by L3 and incorporated into the PMB. An IBR for LCAC 101 construction is planned with Textron in second quarter FY 2015.

Early detail design activities fell behind schedule primarily due to the later than planned subcontract awards by Textron, which subsequently delayed receipt of vendor furnished information needed to complete the design effort. While these delays caused a minor slip to completion of the detail design, PRR, and start of production events, the prolonged subcontract negotiations resulted in Textron successfully awarding all Firm Fixed Price subcontracts to its vendors, which will significantly control cost on this program.

In July 2014, the Navy authorized Textron to begin pre-Hull Assembly Line activities including qualification and cutting of aluminum plate, to successfully demonstrate the new production line and tooling. The CDR and PRR were held in September 2014 to evaluate SSC detail design maturity and readiness, the availability of materials and components, and industry's ability to successfully start and sustain fabrication. The NAVSEA Chief Engineer approved the product baseline and all actions items from the PRR were successfully addressed, adjudicated and closed out in October 2014. Production planning activities, material ordering schedules and purchase order placements are aligned to support construction. Facilities recapitalization and tooling stand up of automated manufacturing equipment support full rate production. Construction of LCAC 100 began November 2014.

An Operational Assessment (OA) was conducted in July 2014 to assess the risk associated with the detail design and a follow-on OA was held in December 2014 to assess reliability via equipment-level reliability predictions and engineering analyses. Developmental testing, including reliability growth testing, began in October 2014 on first articles of critical craft components.

Adjustments to the Program of Record were made throughout the FY 2016 PB budget cycle to support naval operational force requirements. This included, as identified in the following cost and funding sections, modifications to accelerate the procurement profile. Major changes include the movement of a craft from FY 2019 to FY 2018 and from FY 2024 to FY 2020. Additionally, Congress transitioned LCAC 101 funding from the RDT&E appropriation to Shipbuilding and Conversion, Navy, in FY 2015.

The SSC program will complete all required Milestone C requirements and satisfy all Milestone C exit criteria by the third quarter of FY 2015.

There are no significant software-related issues with this program at this time.

## Threshold Breaches

### APB Breaches

<b>Schedule</b>		<input type="checkbox"/>
<b>Performance</b>		<input type="checkbox"/>
<b>Cost</b>	RDT&E	<input type="checkbox"/>
	Procurement	<input type="checkbox"/>
	MILCON	<input type="checkbox"/>
	Acq O&M	<input type="checkbox"/>
<b>O&amp;S Cost</b>		<input type="checkbox"/>
<b>Unit Cost</b>	PAUC	<input type="checkbox"/>
	APUC	<input type="checkbox"/>

### Nunn-McCurdy Breaches

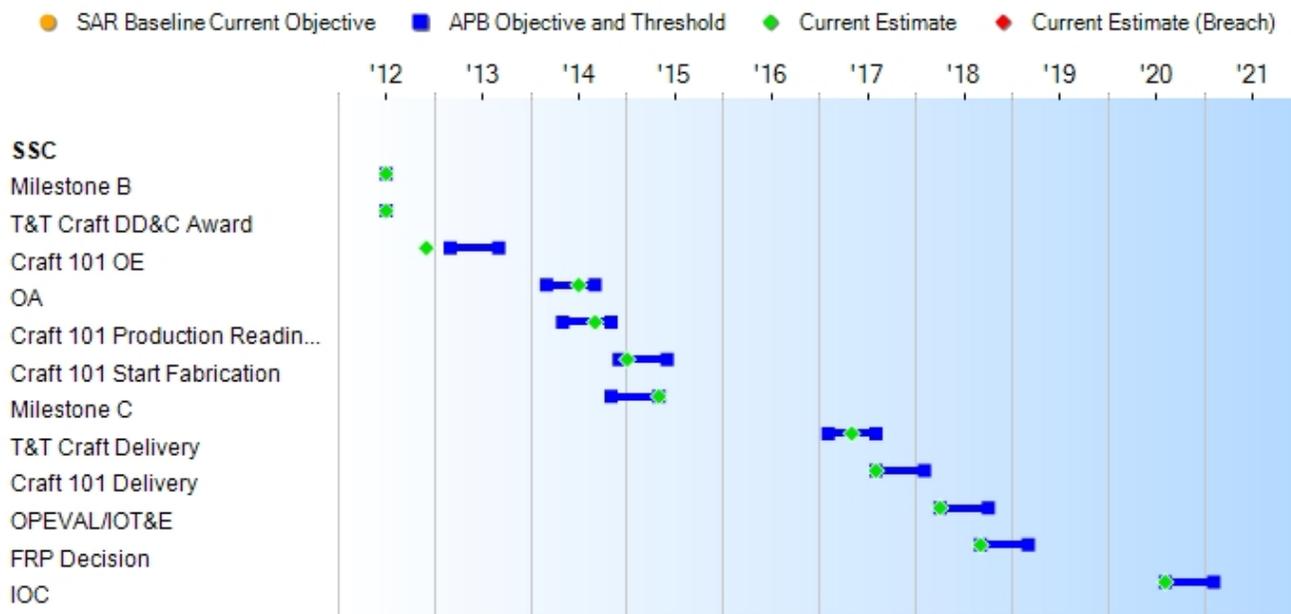
#### Current UCR Baseline

PAUC	None
APUC	None

#### Original UCR Baseline

PAUC	None
APUC	None

### Schedule



Schedule Events				
Events	SAR Baseline Development Estimate	Current APB Development Objective/Threshold	Current Estimate	
Milestone B	Jul 2012	Jul 2012	Jul 2012	
T&T Craft DD&C Award	Jul 2012	Jul 2012	Jul 2012	
Craft 101 OE	Mar 2013	Mar 2013	Sep 2013	Dec 2012
OA	Mar 2014	Mar 2014	Sep 2014	Jul 2014
Craft 101 Production Readiness Review	May 2014	May 2014	Nov 2014	Sep 2014
Craft 101 Start Fabrication	Dec 2014	Dec 2014	Jun 2015	Jan 2015 (Ch-1)
Milestone C	Nov 2014	Nov 2014	May 2015	May 2015 (Ch-1)
T&T Craft Delivery	Feb 2017	Feb 2017	Aug 2017	May 2017 (Ch-2)
Craft 101 Delivery	Aug 2017	Aug 2017	Feb 2018	Aug 2017
OPEVAL/IOT&E	Apr 2018	Apr 2018	Oct 2018	Apr 2018
FRP Decision	Sep 2018	Sep 2018	Mar 2019	Sep 2018
IOC	Aug 2020	Aug 2020	Feb 2021	Aug 2020

## Change Explanations

(Ch-1) The current estimated for Craft 101 Production Readiness Review changed from December 2014 to January 2015 and Milestone C changed from November 2014 to May 2015 due to a delay in completing entrance criteria for Milestone C. Primary delays include prolonged negotiations between Textron and vendors to secure Firm Fixed Price (FFP) contracts, delay in receipt of Vendor Furnished Information (VFI), as well as an underestimation of the level of effort required to complete the detail design. Additional delay can be attributed to the correction of defects in the Government Contract Design and testing of the main engine. The formal Program Manager's Estimate at Completion (PMEAC) for SSC will begin once Earned Value progress for Production labor hours for Craft 100 reaches 20% complete. The release of the PMEAC is currently forecasted for July 2015.

(Ch-2) The current estimate for T&T Craft Delivery changed from February 2017 to May 2017 as a result to a delay in the start of Craft 100 fabrication. Textron is managing to the forecast delivery date of July 2017, although the latest Integrated Master Schedule (IMS) shows a range of delivery dates. Presently, since production has only recently commenced, there is little actual cost performance data available to make an informed determination on Textron's ability to achieve the February 2017 contract delivery. The program has not made a final determination on adjustments to IOT&E, FRP, and the LRIP quantity.

## Notes

Based upon Textron's adjudication of Integrated Baseline Review issues, incorporation of engineering changes and insight into the Schedule Risk Analysis, a Performance Measurement Baseline (PMB) has been established and an IMS has been approved. Early design delays and establishment of the PMB, have or will result in delays to the PRR, Milestone C, and Craft 100 and Craft 101 delivery dates. The schedule changes were briefed to the MDA in April 2014. All key events and milestones remain within APB program thresholds.

An OA was conducted in July 2014 to assess the risk associated with the detail design and a follow-on OA was held in December to assess reliability. The PRR was successfully held in September 2014. Production began on Craft 100 in November 2014.

## Acronyms and Abbreviations

DD&C - Detail Design and Construction

IOT&E - Initial Operational Test and Evaluation

OA - Operational Assessment

OE - Option Exercise

OPEVAL - Operational Evaluation

PRR - Production Readiness Review

T&T - Test and Training

## Performance

Performance Characteristics				
SAR Baseline Development Estimate	Current APB Development Objective/Threshold	Demonstrated Performance	Current Estimate	
<b>Payload Capacity</b>				
The SSC should be capable of transporting 79 short tons over the threshold range in the threshold temperature operating range and threshold sea state.	The SSC should be capable of transporting 79 short tons over the threshold range in the threshold temperature operating range and threshold sea state.	The SSC should be capable of transporting 74 short tons over the threshold range in the threshold temperature operating range and threshold sea state.	TBD	The SSC should be capable of transporting 74 short tons over the threshold range in the threshold temperature operating range and threshold sea state.
<b>Interoperability</b>				
In addition to the threshold Interoperability, the SSC should be able to operate with allied amphibious ships classes with suitable well decks, to include French Mistral, Japanese Osumi, Korean Dokdo, Spanish Juan Carlos, and Australian Canberra if this interoperability does not alter other interfaces.	In addition to the threshold Interoperability, the SSC should be able to operate with allied amphibious ships classes with suitable well decks, to include French Mistral, Japanese Osumi, Korean Dokdo, Spanish Juan Carlos, and Australian Canberra if this interoperability does not alter other interfaces.	The SSC shall be able to: enter, exit, and embark in well decks of current and programmed USN amphibious ships, to include LHD-1, LPD-17, LSD-41, LSD-49 classes, without ship alterations, while transporting an embarked load 168" high; the off cushion length of the SSC shall permit embarkation of (4) SSCs in LSD-41 class, (2) SSCs in LSD-49 and LPD-17 classes, and (3) SSCs in LHD-1 class; and, enter/exit well decks of amphibious ships while on cushion or in displacement mode (wet well only). SSC shall embark on board the planned MLP, without ship alterations, as designed and built for the LCAC. SSC shall be able to operate with existing ships services, including the planned MLP, in place for the LCAC including	TBD	The SSC shall be able to: enter, exit, and embark in well decks of current and programmed USN amphibious ships, to include LHD-1, LPD-17, LSD-41, LSD-49 classes, without ship alterations, while transporting an embarked load 168" high; the off cushion length of the SSC shall permit embarkation of (4) SSCs in LSD-41 class, (2) SSCs in LSD-49 and LPD-17 classes, and (3) SSCs in LHD-1 class; and, enter/exit well decks of amphibious ships while on cushion or in displacement mode (wet well only). SSC shall embark on board the planned MLP, without ship alterations, as designed and built for the LCAC. SSC shall be able to operate with existing ships services, including the planned MLP, in place for the LCAC including

		ship's power, fueling/defueling stations, compressed air, potable and washdown water, lighting, navigational aids, footprint for spare / consumable pack-up kits, and night vision systems.		ship's power, fueling/defueling stations, compressed air, potable and washdown water, lighting, navigational aids, footprint for spare / consumable pack-up kits, and night vision systems. The SSC shall be able to enter and exit allied amphibious ships Mistral (French) and Osumi (Japan).
<b>Net-Ready</b>				
The SSC should fully support execution of all operational activities and information exchanges identified in DoD Enterprise Architecture and solution architectures based on integrated DoDAF content, and must satisfy the technical requirements for transition to Net-Centric military operations to include: 1) Solution architecture products compliant with DoD Enterprise Architecture based on integrated DoDAF content, including specified operationally effective information exchanges. 2) Compliant with Net - Centric Data Strategy and Net-Centric Services Strategy, and the principles and rules identified in the DoD IEA, excepting tactical and non-IP communications. 3) Compliant with GIG Technical Guidance to include IT Standards identified in the TV-1 and implementation guidance of GESPs,	The SSC should fully support execution of all operational activities and information exchanges identified in DoD Enterprise Architecture and solution architectures based on integrated DoDAF content, and must satisfy the technical requirements for transition to Net-Centric military operations to include: 1) Solution architecture products compliant with DoD Enterprise Architecture based on integrated DoDAF content, including specified operationally effective information exchanges. 2) Compliant with Net - Centric Data Strategy and Net-Centric Services Strategy, and the principles and rules identified in the DoD IEA, excepting tactical and non-IP communications. 3) Compliant with GIG Technical Guidance to include IT Standards identified in the TV-1 and	The SSC must fully support execution of joint critical operational activities and information exchanges identified in the DoD Enterprise Architecture and solution architectures based on integrated DoDAF content, and must satisfy the technical requirements for transition to Net-Centric military operations to include: 1) Solution architecture products compliant with DoD Enterprise Architecture based on integrated DoDAF content, including specified operationally effective information exchanges. 2) Compliant with Net - Centric Data Strategy and Net-Centric Services Strategy, and the principles and rules identified in the DoD IEA, excepting tactical and non-IP communications. 3) Compliant with GIG Technical Guidance to include IT Standards identified in the TV-1 and	TBD	The SSC must fully support execution of joint critical operational activities and information exchanges identified in the DoD Enterprise Architecture and solution architectures based on integrated DoDAF content, and must satisfy the technical requirements for transition to Net-Centric military operations to include: 1) Solution architecture products compliant with DoD Enterprise Architecture based on integrated DoDAF content, including specified operationally effective information exchanges. 2) Compliant with Net - Centric Data Strategy and Net-Centric Services Strategy, and the principles and rules identified in the DoD IEA, excepting tactical and non-IP communications. 3) Compliant with GIG Technical Guidance to include IT Standards identified in the TV-1 and

necessary to meet all operational requirements specified in the DoD Enterprise Architecture and solution architecture views. 4) Information assurance requirements including availability, integrity, authentication, confidentiality, and non-repudiation, and issuance of an ATO by the DAA. 5) Supportability requirements to include SAASM, Spectrum and JTRS requirements. See appendix A of the CDD for additional details on the NR-KPP.	implementation guidance of GESPs, necessary to meet all operational requirements specified in the DoD Enterprise Architecture and solution architecture views. 4) Information assurance requirements including availability, integrity, authentication, confidentiality, and non-repudiation, and issuance of an ATO by the DAA. 5) Supportability requirements to include SAASM, Spectrum and JTRS requirements. See appendix A of the CDD for additional details on the NR-KPP.	implementation guidance of GESPs necessary to meet all operational requirements specified in the DoD Enterprise Architecture and solution architecture views. 4) Information assurance requirements including availability, integrity, authentication, confidentiality, and non-repudiation, and issuance of an IATO or ATO by the DAA. 5) Supportability requirements to include SAASM, Spectrum and JTRS requirements. See appendix A of the CDD for additional details on the NR-KPP.		implementation guidance of GESPs necessary to meet all operational requirements specified in the DoD Enterprise Architecture and solution architecture views. 4) Information assurance requirements including availability, integrity, authentication, confidentiality, and non-repudiation, and issuance of an IATO or ATO by the DAA. 5) Supportability requirements to include SAASM, Spectrum and JTRS requirements. See appendix A of the CDD for additional details on the NR-KPP.
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### Force Protection

The SSC should be equipped with a remotely operated crew-served weapon system and provide ballistic and fragmentation protection for crew, internally carried embarked forces and critical machinery spaces. Appendix F of the CDD describes the specific ballistic protection requirement.	The SSC should be equipped with a remotely operated crew-served weapon system and provide ballistic and fragmentation protection for crew, internally carried embarked forces and critical machinery spaces. Appendix F of the CDD describes the specific ballistic protection requirement.	The SSC shall provide protection to the crew and internally carried embarked forces from small arms, crew served weapons and fragmentation. Appendix F of the CDD describes the specific ballistic protection requirement. The SSC shall be equipped with mounts capable of accepting current US crew-served weapons to include the M2 .50 Caliber (12.7mm) Machine Gun, MK19 40mm Grenade Machine Gun and M60/M240 Series 7.62mm Light Machine Gun.	TBD	The SSC shall provide protection to the crew and internally carried embarked forces from small arms, crew served weapons and fragmentation. Appendix F of the CDD describes the specific ballistic protection requirement. The SSC shall be equipped with mounts capable of accepting current US crew-served weapons to include the M2 .50 Caliber (12.7mm) Machine Gun, MK19 40mm Grenade Machine Gun and M60/M240 Series 7.62mm Light Machine Gun.
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### Survivability (Sea-Worthiness)

T=O The SSC shall be capable of surviving (remaining afloat) in	T=O The SSC shall be capable of surviving (remaining afloat) in	T=O The SSC shall be capable of surviving (remaining afloat) in	TBD	T=O The SSC shall be capable of surviving (remaining afloat) in
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displacement mode without power or steerage through seas up to ten foot SWH without incurring structural damage which would impair mission capability until recovered or towed to a boat haven.	displacement mode without power or steerage through seas up to ten foot SWH without incurring structural damage which would impair mission capability until recovered or towed to a boat haven.	displacement mode without power or steerage through seas up to ten foot SWH without incurring structural damage which would impair mission capability until recovered or towed to a boat haven.		displacement mode without power or steerage through seas up to ten foot SWH without incurring structural damage which would impair mission capability until recovered or towed to a boat haven.
<b>Manpower</b>				
The SSC should be fully operable with a crew of no more than three (3).	The SSC should be fully operable with a crew of no more than three (3).	The SSC shall be fully operable, to include conducting on load/offload operations, with a crew of no more than five (5).	TBD	The SSC shall be fully operable, to include conducting on load/offload operations, with a crew of no more than five (5).
<b>Materiel Availability (Am)</b>				
The SSC should have a Materiel Availability of 63 percent.	The SSC should have a Materiel Availability of 63 percent.	The SSC shall have a Materiel Availability of 59.5 percent.	TBD	The SSC shall have a Materiel Availability of 61.9 percent.
<b>Inland Accessibility</b>				
T=O The SSC shall be capable of operating over the high water mark. This includes movement over ice, mud, rivers, swamps, and marshes. While moving inland, the SSC shall be able to negotiate obstacles found in the complex operational environment (natural and man-made). The SSC shall be able to operate over a beach high water mark, rocks, rubble, obstacles and walls up to 4 feet high, grass, reeds and dunes.	T=O The SSC shall be capable of operating over the high water mark. This includes movement over ice, mud, rivers, swamps, and marshes. While moving inland, the SSC shall be able to negotiate obstacles found in the complex operational environment (natural and man-made). The SSC shall be able to operate over a beach high water mark, rocks, rubble, obstacles and walls up to 4 feet high, grass, reeds and dunes.	T=O The SSC shall be capable of operating over the high water mark. This includes movement over ice, mud, rivers, swamps, and marshes. While moving inland, the SSC shall be able to negotiate obstacles found in the complex operational environment (natural and man-made). The SSC shall be able to operate over a beach high water mark, rocks, rubble, obstacles and walls up to 4 feet high, grass, reeds and dunes.	TBD	T=O The SSC shall be capable of operating over the high water mark. This includes movement over ice, mud, rivers, swamps, and marshes. While moving inland, the SSC shall be able to negotiate obstacles found in the complex operational environment (natural and man-made). The SSC shall be able to operate over a beach high water mark, rocks, rubble, obstacles and walls up to 4 feet high, grass, reeds and dunes.

### Requirements Reference

Capability Development Document (CDD) dated June 10, 2010

### Change Explanations

None

**Notes**

The following footnotes apply to Interoperability Threshold Key Performance Parameters:

1/ LSD-41 well deck can embark a fifth craft in a non-tactical capacity without ship services.

2/ LHD-1 Power converter for 3<sup>rd</sup> spot not part of Pack Up Kit footprint.

3/ MLP ship's power for SSC may require alteration or separate pieces of equipment which is not part of Pack Up Kit footprint.

**Acronyms and Abbreviations**

ATO - Authority to Operate

CDD - Capability Development Document

DAA - Designated Accrediting Authority

DoD IEA - Department of Defense Information Enterprise Architecture

DoDAF - Department of Defense Architecture Framework

GESP - GIG Enterprise Service Profile

GIG - Global Information Grid

IATO - Interim Authority to Operate

IP - Internet Protocol

IT - Information Technology

JTRS - Joint Tactical Radio System

LCAC - Landing Craft Air Cushion

MLP - Mobile Landing Platform

mm - Millimeter

NR-KPP - Net Ready Key Performance Parameter

O - Objective

SAASM - Selective Availability Anti-Spoofing Module

SWH - Significant Wave Height

T - Threshold

TV - Technical View

US - United States

USN - United States Navy

## Track to Budget

### General Notes

As a new program, the SSC Other Procurement, Navy, and MILCON budget line items are expected to be established for the FY 2018 PB in FY 2016.

### RDT&E

Appn	BA	PE	
Navy	1319	04	0603564N
	<b>Project</b>	<b>Name</b>	
	3127	Preliminary Design and Feasibility Study (Shared) (Sunk)	
	<b>Notes:</b>	Preliminary Design and Feasibility Study/SSC Design	
Navy	1319	05	0604567N
	<b>Project</b>	<b>Name</b>	
	3133	Ship to Shore Connectors Contract Design	
	3137	SSC Construction	
Navy	1319	05	0605220N
	<b>Project</b>	<b>Name</b>	
	3133	Ship to Shore Connectors Contract Design	
	3137	SSC Construction	

### Procurement

Appn	BA	PE	
Navy	1611	05	0204411N
	<b>Line Item</b>	<b>Name</b>	
	5110	Outfitting (Shared)	
Navy	1611	05	0204228N
	<b>Line Item</b>	<b>Name</b>	
	5112	Ship to Shore Connector	
	<b>Notes:</b>	Ship to Shore Connector End Cost	

## Cost and Funding

### Cost Summary

Total Acquisition Cost							
Appropriation	BY 2011 \$M			BY 2011 \$M	TY \$M		
	SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Current Estimate	SAR Baseline Development Estimate	Current APB Development Objective	Current Estimate
RDT&E	552.7	552.7	608.0	486.4	571.9	571.9	501.4
Procurement	3354.4	3354.4	3689.8	3277.3	4137.5	4137.5	4173.4
Flyaway	--	--	--	3208.0	--	--	4085.7
Recurring	--	--	--	3208.0	--	--	4085.7
Non Recurring	--	--	--	0.0	--	--	0.0
Support	--	--	--	69.3	--	--	87.7
Other Support	--	--	--	0.0	--	--	0.0
Initial Spares	--	--	--	69.3	--	--	87.7
MILCON	18.5	18.5	20.4	18.4	21.7	21.7	21.7
Acq O&M	0.0	0.0	--	0.0	0.0	0.0	0.0
Total	3925.6	3925.6	N/A	3782.1	4731.1	4731.1	4696.5

#### Confidence Level

Confidence Level of cost estimate for current APB: 50%

The estimate to support this program, like most cost estimates, is built upon a product-oriented work breakdown structure based on historical actual cost information to the maximum extent possible, and, most importantly, based on conservative assumptions that are consistent with actual demonstrated contractor and government performance for a series of acquisition programs in which we have been successful.

It is difficult to calculate mathematically the precise confidence levels associated with life-cycle cost estimates prepared for Major Defense Acquisition Programs (MDAPs). Based on the rigor in methods used in building estimates, the strong adherence to the collection and use of historical cost information, and the review of applied assumptions, we project that it is about as likely the estimate will prove too low or too high for the program as described.

Total Quantity			
Quantity	SAR Baseline Development Estimate	Current APB Development	Current Estimate
RDT&E	2	2	1
Procurement	71	71	72
Total	73	73	73

## Cost and Funding

### Funding Summary

Appropriation Summary									
FY 2016 President's Budget / December 2014 SAR (TY\$ M)									
Appropriation	Prior	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	To Complete	Total
RDT&E	440.1	42.8	7.8	7.0	1.1	1.1	1.1	0.4	501.4
Procurement	0.0	159.6	255.6	275.6	524.2	583.9	527.1	1847.4	4173.4
MILCON	0.0	0.0	0.0	0.0	21.7	0.0	0.0	0.0	21.7
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2016 Total	440.1	202.4	263.4	282.6	547.0	585.0	528.2	1847.8	4696.5
PB 2015 Total	459.2	191.0	265.9	285.9	487.3	652.4	489.9	1881.6	4713.2
Delta	-19.1	11.4	-2.5	-3.3	59.7	-67.4	38.3	-33.8	-16.7

Quantity Summary										
FY 2016 President's Budget / December 2014 SAR (TY\$ M)										
Quantity	Undistributed	Prior	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	To Complete	Total
Development	1	0	0	0	0	0	0	0	0	1
Production	0	0	3	5	5	9	10	9	31	72
PB 2016 Total	1	0	3	5	5	9	10	9	31	73
PB 2015 Total	2	0	2	5	5	8	11	8	32	73
Delta	-1	0	1	0	0	1	-1	1	-1	0

## Cost and Funding

### Annual Funding By Appropriation

Annual Funding							
1319   RDT&E   Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2006	--	--	--	--	--	--	14.0
2007	--	--	--	--	--	--	13.0
2008	--	--	--	--	--	--	27.0
2009	--	--	--	--	--	--	25.0
2010	--	--	--	--	--	--	33.5
2011	--	--	--	--	--	--	95.5
2012	--	--	--	--	--	--	51.0
2013	--	--	--	--	--	--	112.7
2014	--	--	--	--	--	--	68.4
2015	--	--	--	--	--	--	42.8
2016	--	--	--	--	--	--	7.8
2017	--	--	--	--	--	--	7.0
2018	--	--	--	--	--	--	1.1
2019	--	--	--	--	--	--	1.1
2020	--	--	--	--	--	--	1.1
2021	--	--	--	--	--	--	0.2
2022	--	--	--	--	--	--	0.2
Subtotal	1	--	--	--	--	--	501.4

Annual Funding 1319   RDT&E   Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	BY 2011 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2006	--	--	--	--	--	--	15.1
2007	--	--	--	--	--	--	13.7
2008	--	--	--	--	--	--	27.9
2009	--	--	--	--	--	--	25.5
2010	--	--	--	--	--	--	33.7
2011	--	--	--	--	--	--	93.7
2012	--	--	--	--	--	--	49.2
2013	--	--	--	--	--	--	107.1
2014	--	--	--	--	--	--	64.3
2015	--	--	--	--	--	--	39.6
2016	--	--	--	--	--	--	7.1
2017	--	--	--	--	--	--	6.3
2018	--	--	--	--	--	--	1.0
2019	--	--	--	--	--	--	0.9
2020	--	--	--	--	--	--	0.9
2021	--	--	--	--	--	--	0.2
2022	--	--	--	--	--	--	0.2
Subtotal	1	--	--	--	--	--	486.4

Annual Funding 1810   Procurement   Other Procurement, Navy							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2018	--	20.0	--	--	20.0	--	20.0
2019	--	15.0	--	--	15.0	--	15.0
Subtotal	--	35.0	--	--	35.0	--	35.0

Annual Funding 1810   Procurement   Other Procurement, Navy							
Fiscal Year	Quantity	BY 2011 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2018	--	17.3	--	--	17.3	--	17.3
2019	--	12.7	--	--	12.7	--	12.7
Subtotal	--	30.0	--	--	30.0	--	30.0

Annual Funding 1611   Procurement   Shipbuilding and Conversion, Navy							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2015	3	155.2	--	--	155.2	4.4	159.6
2016	5	249.6	--	--	249.6	6.0	255.6
2017	5	269.3	--	--	269.3	6.3	275.6
2018	9	492.5	--	--	492.5	11.7	504.2
2019	10	556.0	--	--	556.0	12.9	568.9
2020	9	516.2	--	--	516.2	10.9	527.1
2021	8	426.0	--	--	426.0	9.0	435.0
2022	8	441.7	--	--	441.7	9.1	450.8
2023	8	444.7	--	--	444.7	9.2	453.9
2024	7	454.5	--	--	454.5	8.2	462.7
2025	--	12.8	--	--	12.8	--	12.8
2026	--	13.1	--	--	13.1	--	13.1
2027	--	12.5	--	--	12.5	--	12.5
2028	--	6.6	--	--	6.6	--	6.6
Subtotal	72	4050.7	--	--	4050.7	87.7	4138.4

Annual Funding 1611   Procurement   Shipbuilding and Conversion, Navy								
Fiscal Year	Quantity	BY 2011 \$M						
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program	
2015	3	134.5	--	--	134.5	3.8	138.3	
2016	5	212.2	--	--	212.2	5.1	217.3	
2017	5	224.6	--	--	224.6	5.2	229.8	
2018	9	402.7	--	--	402.7	9.6	412.3	
2019	10	445.7	--	--	445.7	10.4	456.1	
2020	9	405.7	--	--	405.7	8.6	414.3	
2021	8	328.3	--	--	328.3	6.9	335.2	
2022	8	333.7	--	--	333.7	6.9	340.6	
2023	8	329.4	--	--	329.4	6.8	336.2	
2024	7	330.0	--	--	330.0	6.0	336.0	
2025	--	9.1	--	--	9.1	--	9.1	
2026	--	9.1	--	--	9.1	--	9.1	
2027	--	8.6	--	--	8.6	--	8.6	
2028	--	4.4	--	--	4.4	--	4.4	
Subtotal	72	3178.0	--	--	3178.0	69.3	3247.3	

The 2015 Defense Appropriations Act directed the completion of Craft 101 with the Shipbuilding and Conversion, Navy, appropriation. Craft 101 is partially financed with \$34.1M of FY 2013/FY 2014 RDT&E funding.

Cost Quantity Information 1611   Procurement   Shipbuilding and Conversion, Navy		
Fiscal Year	Quantity	End Item Recurring Flyaway (Aligned With Quantity) BY 2011 \$M
2015	3	138.5
2016	5	218.9
2017	5	231.3
2018	9	411.8
2019	10	452.5
2020	9	404.2
2021	8	332.2
2022	8	332.0
2023	8	331.0
2024	7	325.6
2025	--	--
2026	--	--
2027	--	--
2028	--	--
Subtotal	72	3178.0

Annual Funding 1205   MILCON   Military Construction, Navy and Marine Corps	
Fiscal Year	TY \$M
	Total Program
2018	21.7
Subtotal	21.7

Annual Funding 1205   MILCON   Military Construction, Navy and Marine Corps	
Fiscal Year	BY 2011 \$M
	Total Program
2018	18.4
Subtotal	18.4

## Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
<b>Approval Date</b>	7/5/2012	7/5/2012
<b>Approved Quantity</b>	13	13
<b>Reference</b>	Milestone B ADM	Milestone B ADM
<b>Start Year</b>	2013	2013
<b>End Year</b>	2021	2021

The Current Total LRIP Quantity is more than 10% of the total production quantity per the Milestone B approved Acquisition Strategy. The current total LRIP quantity (13) is more than the 10% of the total production quantity (72) in order to establish an initial production base for the system, provide for an orderly increase in the production rate prior to approval for FRP, and meet fleet operational requirements by FY 2020.

## **Foreign Military Sales**

None

## **Nuclear Costs**

None

## Unit Cost

### Unit Cost Report

Item	BY 2011 \$M	BY 2011 \$M	% Change
	Current UCR Baseline (Jul 2012 APB)	Current Estimate (Dec 2014 SAR)	
<b>Program Acquisition Unit Cost</b>			
Cost	3925.6	3782.1	
Quantity	73	73	
Item	53.775	51.810	-3.65
<b>Average Procurement Unit Cost</b>			
Cost	3354.4	3277.3	
Quantity	71	72	
Unit Cost	47.245	45.518	-3.66

Item	BY 2011 \$M	BY 2011 \$M	% Change
	Original UCR Baseline (Jul 2012 APB)	Current Estimate (Dec 2014 SAR)	
<b>Program Acquisition Unit Cost</b>			
Cost	3925.6	3782.1	
Quantity	73	73	
Unit Cost	53.775	51.810	-3.65
<b>Average Procurement Unit Cost</b>			
Cost	3354.4	3277.3	
Quantity	71	72	
Unit Cost	47.245	45.518	-3.66

**Unit Cost History**



Item	Date	BY 2011 \$M		TY \$M	
		PAUC	APUC	PAUC	APUC
Original APB	Jul 2012	53.775	47.245	64.810	58.275
APB as of January 2006	N/A	N/A	N/A	N/A	N/A
Revised Original APB	N/A	N/A	N/A	N/A	N/A
Prior APB	N/A	N/A	N/A	N/A	N/A
Current APB	Jul 2012	53.775	47.245	64.810	58.275
Prior Annual SAR	Dec 2013	52.070	45.830	64.564	58.339
Current Estimate	Dec 2014	51.810	45.518	64.336	57.964

**SAR Unit Cost History**

Current SAR Baseline to Current Estimate (TY \$M)									
Initial PAUC Development Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
64.810	2.319	-0.021	-0.490	0.000	-2.249	0.000	-0.033	-0.474	64.336

Current SAR Baseline to Current Estimate (TY \$M)									
Initial APUC Development Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
58.275	2.353	-0.298	-0.497	0.000	-1.836	0.000	-0.033	-0.311	57.964

SAR Baseline History				
Item	SAR Planning Estimate	SAR Development Estimate	SAR Production Estimate	Current Estimate
Milestone A	N/A	N/A	N/A	N/A
Milestone B	N/A	Jul 2012	N/A	Jul 2012
Milestone C	N/A	Nov 2014	N/A	May 2015
IOC	N/A	Aug 2020	N/A	Aug 2020
Total Cost (TY \$M)	N/A	4731.1	N/A	4696.5
Total Quantity	N/A	73	N/A	73
PAUC	N/A	64.810	N/A	64.336

## Cost Variance

Summary TY \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Development Estimate)	571.9	4137.5	21.7	4731.1
Previous Changes				
Economic	+1.7	+160.4	+0.4	+162.5
Quantity	--	--	--	--
Schedule	--	-28.0	--	-28.0
Engineering	--	--	--	--
Estimating	-24.2	-123.9	-0.4	-148.5
Other	--	--	--	--
Support	--	-3.9	--	-3.9
Subtotal	-22.5	+4.6	--	-17.9
Current Changes				
Economic	-2.0	+9.0	-0.2	+6.8
Quantity	-38.4	+36.9	--	-1.5
Schedule	--	-7.8	--	-7.8
Engineering	--	--	--	--
Estimating	-7.6	-8.3	+0.2	-15.7
Other	--	--	--	--
Support	--	+1.5	--	+1.5
Subtotal	-48.0	+31.3	--	-16.7
Total Changes	-70.5	+35.9	--	-34.6
CE - Cost Variance	501.4	4173.4	21.7	4696.5
CE - Cost & Funding	501.4	4173.4	21.7	4696.5

Summary BY 2011 \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Development Estimate)	552.7	3354.4	18.5	3925.6
Previous Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	-23.7	-98.0	-0.3	-122.0
Other	--	--	--	--
Support	--	-2.5	--	-2.5
Subtotal	-23.7	-100.5	-0.3	-124.5
Current Changes				
Economic	--	--	--	--
Quantity	-35.8	+31.8	--	-4.0
Schedule	--	-3.1	--	-3.1
Engineering	--	--	--	--
Estimating	-6.8	-6.8	+0.2	-13.4
Other	--	--	--	--
Support	--	+1.5	--	+1.5
Subtotal	-42.6	+23.4	+0.2	-19.0
Total Changes	-66.3	-77.1	-0.1	-143.5
CE - Cost Variance	486.4	3277.3	18.4	3782.1
CE - Cost & Funding	486.4	3277.3	18.4	3782.1

Previous Estimate: December 2013

RDT&E	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-2.0
Quantity variance resulting from a decrease of 1 RDT&E Craft from 2 to 1. (2015 Defense Appropriations Act directed completion of Craft 101 with Shipbuilding and Conversion, Navy (SCN), funding. Craft 101 is partially financed with \$34.1M of FY 2013/FY 2014 RDT&E funding.) (Quantity)	-35.8	-38.4
Adjustment for current and prior escalation. (Estimating)	+1.7	+1.8
Revised estimate to reflect adjustments to Navy Working Capital Fund rates, Small Business Innovation Research, and the application of new outyear escalation indices. (Estimating)	-3.9	-4.4
Revised estimate due to Congressional reductions. (Estimating)	-4.6	-5.0
<b>RDT&amp;E Subtotal</b>	<b>-42.6</b>	<b>-48.0</b>

Procurement	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	+9.0
Adjustment for current and prior escalation. (Estimating)	-0.4	-0.5
Acceleration of procurement buy profile to support Navy operational requirement. (Schedule)	-2.8	-7.4
Quantity variance resulting from an increase of 1 SCN Craft from 71 to 72. (2015 Defense Appropriations Act directed completion of Craft 101 with SCN funding. Craft 101 is partially financed with \$34.1M of FY 2013/FY 2014 RDT&E funding.) (Subtotal)	+42.6	+58.7
Quantity variance resulting from an increase of 1 SCN Craft from 71 to 72. (Program of record for total Craft remains 73, which now includes only one RDT&E Craft.) (Quantity)	(+44.1)	(+60.7)
Allocation to Schedule resulting from Quantity change. (Schedule) (QR)	(-0.3)	(-0.4)
Allocation to Estimating resulting from Quantity change. (Estimating) (QR)	(-1.2)	(-1.6)
Additional Quantity variance due to Craft 101 split funding between RDT&E and SCN. (Quantity)	-12.3	-23.8
Revised estimate to reflect adjustments to Navy Working Capital Fund rates and the application of new outyear escalation indices (SCN 1611). (Estimating)	-14.5	-18.2
Revised estimate to reflect the application of new outyear escalation indices (Other Procurement, Navy 1810). (Estimating)	+0.2	+0.2
Revised estimate for Outfitting and Post Delivery allocation. (Estimating)	+9.1	+11.8
Increase in Initial Spares due to the increase in quantity of SCN Craft. (Support) (QR)	+1.5	+1.5
<b>Procurement Subtotal</b>	<b>+23.4</b>	<b>+31.3</b>

(QR) Quantity Related

MILCON	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-0.2

Revised estimate to reflect the application of new outyear escalation indices. (Estimating)	+0.2	+0.2
MILCON Subtotal	+0.2	0.0

## Contracts

### General Notes

An IBR for Craft 101 will be held during the second quarter FY 2015.

### Contract Identification

**Appropriation:** RDT&E  
**Contract Name:** SSC Detail Design & Construction  
**Contractor:** Textron, Inc  
**Contractor Location:** 19401 Chef Menteur Hwy  
 New Orleans, LA 70129-2565  
**Contract Number:** N00024-12-C-2401  
**Contract Type:** Fixed Price Incentive(Firm Target) (FPIF)  
**Award Date:** July 06, 2012  
**Definitization Date:** July 06, 2012

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
199.9	226.4	1	250.5	278.9	2	262.1	262.1

### Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to exercising the contract option for Long Lead Time Material, Advance Planning, and the construction of the second Landing Craft Air Cushion (LCAC) 101 and other engineering changes.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (2/20/2015)	-15.8	-14.5
Previous Cumulative Variances	-2.8	-20.3
Net Change	-13.0	+5.8

### Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to additional efforts associated with Auxiliary Systems design being more complex than planned and higher than anticipated Auxiliary Systems vendor pricing.

The favorable net change in the schedule variance is due to realignment of the Command, Control, Communications, and Navigation design and construction effort milestone payment plan.

## Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	0	0	1	0.00%
Production	0	0	72	0.00%
Total Program Quantity Delivered	0	0	73	0.00%

Expended and Appropriated (TY \$M)			
Total Acquisition Cost	4696.5	Years Appropriated	10
Expended to Date	262.5	Percent Years Appropriated	43.48%
Percent Expended	5.59%	Appropriated to Date	642.5
Total Funding Years	23	Percent Appropriated	13.68%

The above data is current as of January 31, 2015.

## Operating and Support Cost

### Cost Estimate Details

Date of Estimate:	April 18, 2012
Source of Estimate:	POE
Quantity to Sustain:	73
Unit of Measure:	Craft
Service Life per Unit:	30.00 Years
Fiscal Years in Service:	FY 2018 - FY 2057

### Sustainment Strategy

The SSC product support strategy is based on performance driven sustainment and involves utilizing performance-based objectives with traditional data analysis practices to meet program sustainment goals. This strategy is based on implementing an effective supportability analysis program to develop and deliver the logistics products and processes necessary to execute an efficient, affordable sustainment program. Sustainment goals will be applied to both government and contractor support activities to use supportability analysis practices that delivers required craft availability while enabling best-cost improvement opportunities. Performance of the support activities will be measured by their assigned equipment availability as it relates to overall program operational and material availability measures.

### Antecedent Information

LCAC-M is currently used as a financial model and management information tool by the LCAC Program. LCAC-M uses data from the most recent ten years of Operating Target data which funds LCAC Operations, Support, Readiness, Hours of Operation, Sustaining Support, and Continuing System Improvements to predict the O&S cost of a specified level of readiness. The LCAC-M model parameters were adjusted to reflect the specified 150 operating hours per year and manning specified in the Cost Analysis Requirements Description for the SSC.

Cost Element	Annual O&S Costs BY2011 \$M	
	SSC Average Annual Cost Per Craft	LCAC (Antecedent) Average Annual Cost Per Craft
Unit-Level Manpower	1.498	1.291
Unit Operations	0.367	1.035
Maintenance	0.307	0.440
Sustaining Support	0.184	0.061
Continuing System Improvements	0.681	0.670
Indirect Support	0.498	0.410
Other	0.000	0.000
Total	3.535	3.907

The unitized O&S costs of \$3.535 BY\$M reflect the 50<sup>th</sup> percentile estimate for one craft. In order to translate this into the total O&S Cost for the life cycle of SSC, a point estimate \$3.823 BY\$M was calculated against 73 craft over 30 years to arrive at an estimate of \$16,099.0 TY\$M. An element of risk was then added. This risk of cost changes, seen primarily through inflation adjustments over time, is associated with price fluctuations that sometimes exceed nominal inflation values in Military Personnel Navy, Operation and Maintenance Navy, and DoD fuel price indices.

Item	Total O&S Cost \$M			
	SSC			LCAC (Antecedent)
	Current Development APB Objective/Threshold		Current Estimate	
<b>Base Year</b>	10171.3	11188.4	10154.0	11222.0
<b>Then Year</b>	18058.9	N/A	18023.0	N/A

The total program O&S cost estimate is determined to be \$18,023.0 TY\$M. This total was de-escalated by the Naval Center for Cost Analysis using FY 2011 indices to arrive at a total O&S Current Estimate of \$10,154.0 BY\$M.

#### Equation to Translate Annual Cost to Total Cost

There is no direct equation that describes the relationship between the annual O&S cost to total O&S cost. As described in the annual cost section, there was risk applied to the annual O&S point estimate of \$3.823 BY\$M for 73 Craft over a 30 year service life. The risk of cost changes, seen primarily through inflation adjustments over time, is associated with price fluctuations that sometimes exceed nominal inflation values in Military Personnel Navy, Operation and Maintenance Navy, and DoD fuel price indices.

O&S Cost Variance		
Category	BY 2011 \$M	Change Explanations
Prior SAR Total O&S Estimates - Dec 2013 SAR	10154.0	
Programmatic/Planning Factors	0.0	
Cost Estimating Methodology	0.0	
Cost Data Update	0.0	
Labor Rate	0.0	
Energy Rate	0.0	
Technical Input	0.0	
Other	0.0	
<b>Total Changes</b>	<b>0.0</b>	
Current Estimate	10154.0	

#### Disposal Estimate Details

**Date of Estimate:** April 18, 2012  
**Source of Estimate:** POE  
**Disposal/Demilitarization Total Cost (BY 2011 \$M):** Total costs for disposal of all Craft are 17.2

The SSC disposal cost estimate is based on the actual disposal costs of the ten LCAC disposed of to date.