LCS in the Fleet Today

Surface Navy Association
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Littoral Combat Ship (LCS)

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Currently 19 LCSs delivered, 16 more on contract, 12 in Sustainment

- 2 hot production lines in serial production; total of 35 LCS awarded
  - Last 3 FY2019 LCS awarded in Dec 2018/Jan 2019
  - FY 2019 last year for LCS

LCS in serial production and on budget

- Stable design with improvements based on Fleet response
- Costs in-line with Service Cost Position established at Milestone B
- Both shipyards/industry teams motivated to deliver two ships per year

Focus on the delivery of complete, operationally-ready ships to the Fleet

- Planning and execution of post delivery work packages during rigorous post delivery test and trial period
- Operational Test Program complete
  - Both variants have completed OT&E with SUW Mission Module and achieved IOC
  - Both variants completed Full Ship Shock Trials (LCS 5 & LCS 6) in 2016
LCS SCN Notional Post-Delivery Timeline

15 month period – Post Delivery BOA for PSA Planning/Emergent/CSSQT

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SCN Acronyms
- CMA: Crew Move Aboard
- OWLD: Obligated Work Limiting Date
- IPDA/PDA: Industrial Post Delivery Availability
- CMAV: Continuous Maintenance Availability
- FCT: Final Contract Trial
- WOO: Window of Opportunity
- CSSQT: Combat Systems Ship Qualifications Trial

34-37 Months

Construction & Test

Sea Trials

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

Commissioning

CMA

IPDA

PDA

Post Sail

CSSQT

FCT Prep

CSSQT

PSA

Sailaway/CFO

34-37 Months

Delivery

Fleet & Life Cycle Support

SCN OWLD (11 months after fitting-out)
LCS 9 and LCS 14 completed
PSA on schedule

PSA (PSA Start through OWLD): 3 ships
- LCS 13 – PSA start Jul 19 @ BAE Mayport, FL
- LCS 11 – PSA start Oct 19 @ BAE Mayport, FL
- LCS 16 – PSA start Oct 19 @ Vigor Seattle, WA

PDT&T/CSSQT (CMA through PSA start): 4 ships
- LCS 15 – PSA start Apr 20 @ BAE Mayport, FL
- LCS 17 – PSA start Aug 20 @ TBD
- LCS 18 – PSA start Jan 20 @ Vigor Seattle, WA
- LCS 20 – PSA start May 20 @ TBD
LCS 20 Arriving in Homeport
– San Diego, CA
LCS 14 Arriving in Seattle, WA

LCS 14 Pierside - Seattle, WA

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LCS 16 Entering Drydock - Seattle, WA

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LFT&E Overview

LFT&E program is required to be completed by 10 U.S.C. §2366 to provide assurance that Survivability requirements are satisfied through a combination of testing, modeling, simulation and analysis.

Final Survivability Assessment Report approved April 2019 and provided to OSD DOT&E

LFT&E program consists of various events

- Total Ship Survivability Trial (TSST)
  - Completed 2014 (FRE variant) 2016 (IND variant)
- Full Ship Shock Trial (FSST)
  - Demonstrated LCS can withstand the effects of underwater shock and retain required capability to exit immediate area
  - Completed 2016
- Live Fire Testing of LCS Multi-Compartment Surrogate (MCS)
  - Independence variant representative full scale welded-aluminum structures
  - Completed 2016

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Freedom & Independence Variant

INSURV Figure of Merit (IFOM) Scores

Freedom Variant

<table>
<thead>
<tr>
<th>AT</th>
<th>LCS 5</th>
<th>LCS 7</th>
<th>LCS 9</th>
<th>LCS 11</th>
<th>LCS 13</th>
<th>LCS 15</th>
<th>LCS 17</th>
<th>LCS 19</th>
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- AT IFOM
- FCT IFOM

Independence Variant

<table>
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<tr>
<th>AT</th>
<th>LCS 6</th>
<th>LCS 8</th>
<th>LCS 10</th>
<th>LCS 12</th>
<th>LCS 14</th>
<th>LCS 16</th>
<th>LCS 18</th>
<th>LCS 20</th>
<th>LCS 22</th>
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</table>

- AT IFOM
- FCT IFOM

LCS 19 INSURV Message not received

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Deliver LCS 19, 21, 22, 24 & 26

By the end of 2020:
- 70% of LCSs will be delivered
- 16 and 46% of LCSs will be in Sustainment

Last ships deliver in 2024

Last LCS transition to Sustainment in 2025

Actively working to accelerate transition to Sustainment by completing known post-delivery work in-yard for the Independence variant
USS Gabrielle Giffords (LCS 10)
Launching NSM
LCS 10 Launching NSM
USS Freedom (LCS 1) and USS Independence (LCS 3) Nested
LCS 3 ASW Install and Embark

Stem Door Aperture

RC2

Stem Door Operation
SUW Mission Package Build-Up
MMRC Mayport
Container Movement Device Testing – MPSF Port Hueneme

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Littoral Combat Ship (LCS) FY-19/20 Accomplishments

- **FREEDOM**
  - First FRE-variant deployment since 2016 (LCS-7)
  - First in variant (LCS-17 and Follow (AF)):
    - SPS-80 Air/Surface Solid State Radar
    - SeaRAM Missile
    - Navy Multiband Terminal (NMT)

- **INDEPENDENCE**
  - Combat Systems upgrade to integrate Surface-to-Surface Missile Module Mission Package (SSMM MP) (LCS-6)
  - Naval Strike Missile (NSM) accelerated acquisition & install for LCS-10 deployment
Littoral Combat Ship (LCS) Modernization Efforts

- Major development and acquisition effort undertaken by PEO IWS and PEO USC for LCS ships in-service

- Introduces commonality between LCS variants and other surface combatants / Coast Guard ships
  - Improves capability
  - Simplifies training
  - Decreases life-cycle costs

- Modernization increases Lethality & Survivability
  - Improve ASCM defense
  - Support Distributed Maritime Operations
  - Decrease susceptibility
Phase 1 (Funded in PB19)
- Contractor Furnished Equipment (CFE) Combat System replacement with Government Furnished Equipment (GFE)
  - Gun Weapon System
  - Decoys
  - Electronic Support Measures
  - Combat Management System
- Initial engineering analysis commenced in FY18
- L&S Development and Procurement begin in FY21

### Combat System Elements
- Combat Management System
  - Display
  - Infrastructure
  - Radar
- Gun Weapon System
- Electronic Support Measures
  - Decoys
- Air Warfare Self Defense
  - Missile
- Over the Horizon Missile
- Tactical Data Link

### Ship Elements
- Cyber Security
- Surface Search Radar
- Training
- IBS
- Navigation
LCS Lethality and Survivability Modernization Plan

- Common Combat System improves capability simplifies back-fit integration and decreases life cycle costs
- Upgraded Radar enhances detection capability
- Surface Missile to increase lethality
- Advanced Electronic Warfare system to improve survivability
- Improved FCS enables use of improved gun projectiles
- Use of Navy Standard systems improves capability, simplifies training, and decreases life cycle costs

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LCS Outlook
- Develop *integrated* NSM capability
- Install on two more IND-variant LCS
- FY21 NSM install on FRE-variant LCS
- Software development into AEGIS Common Source Library

Lethality & Survivability
- PEO IWS and PEO USC are undertaking a large-scale Lethality & Survivability modernization effort for LCS ships in-service
- Significant schedule and funding alignment across internal and external stakeholders
- Increased Fleet readiness resources
Questions?