ASC’s Continued Journey to Improved Cost Competitiveness

Objective Quality Evidence (OQE)

August 2016 – Osborne, South Australia
Objectives

- Provide an independent perspective on ASC AWD Shipbuilder journey to improved cost outcomes and remaining challenges
  - Highlight S1 to S3 Production direct labor learning improvement
  - Highlight ASC’s journey towards global competitiveness for equivalent AWD manufacturing hours benchmark

- Review ASC’s cost savings journey and

- Share parting thoughts to continue the journey toward global shipbuilding competitiveness
The AWD Program continues to deliver on its Five Points Reform Plan increasing shipbuilding experience to improve on cost outcomes

Summary of AWD Alliance’s Reform Plan

- Increase shipbuilding experience
- Actively reducing the cost base
- Improving shipbuilding performance
- Controlling the program
- Accelerating Learning
Overall production efficiency has shown drastic learning improvement from S1 to S2 – but more importantly S2 to S3

**Production Direct Labor Learning Improvement**

- **Discussion**
  - Ship 3 to date progress (red diamonds and best-fit line) shows tremendous improvement over S1 and S2 best-fit line slopes
  - EACs for S1 to S3 continue to trend downward with more accuracy in planning...
  - ...but also increased direct labor productivity and drastic learners improvement
  - S3 EAC has been reduced by more than 25% from Sept 2015 to June 2016
Direct Labor benchmarks for a comparable build suggest S3 is on an journey to close the gap to globally competitive Aegis-like production

Journey towards Global Competitiveness

Benchmark Target for Direct Labor Hours of Production vs. Current ASC Estimate-At-Completion Hours (Ships 1 – 3, 547G)

Discussion
- It's early, but operating on S3's current trajectory suggests that ASC AWD Shipbuilder could approach the global benchmark
Benchmarking Calculation Discussion

Methodology

- Based on previous workload analysis benchmarked from a series of Aegis-destroyers, we arrived at a benchmark for direct labor hours across fabrication, pre-outfit, offshore work, afloat work, and T&A

- We then adjusted hours for total gross tonnage across the Aegis-destroyers vs. the Hobart-class DDG, multiplying by a factor of 75% (figured a decrease in tonnage by ~33%) to adjust for the smaller size of the Hobart-class surface ship

- Since ASC outsourced fabrication and pre-outfit work of some modules, we identified the appropriate portion of direct labor work performed by ASC based on modules by PO1, B&P and PO2 to arrive at a % of Total by ASC (Source: Block Construction Allocation as of 15/05/15 provided by Supply Chain)

- We then applied the benchmark percentages to the adjusted AWD hours to arrive at a full-ship hours benchmark and then factored the non-ASC scoped hours

- Finally, we adjusted the total hours to account for just manufacturing direct labor hours to factor out support and engineering hours to arrive at a comparable DL manufacturing benchmark based off what we have experienced at other best-in-class shipyards adjusting for the complexity and tonnage difference of the Hobart-class DDG

Major Assumptions

- Assumes direct production workload roughly varies by tonnage

- Sea Trial hours are included in the benchmark hours but not in the ASC DPL manufacturing hours – but these hours are assumed as negligible for overall calculations

- Assumes that on average, the direct product hours required for fabrication and pre-outfit of each module is equal (thus the # of modules produced by ASC is proportionate to the overall fabrication and pre-outfit direct labor effort)
Appendix

- Shipbuilder’s Savings Journey
- Drawdown Plans and Observations
- Headcount Drawdown
ASC leaders should remain aggressive on drawing down indirect support cost as the production workforce continues to ebb and flow...

Savings Drawdown Plans and Observations

ASC AWD Headcount Drawdown Plan
(2015 – 2019, in FTEs)

- Overall headcount drawdown needs focus to get back on plan