



The U.S. Navy's Military Sealift Command



Weight Control of MSC Ships

N7 "TED" Talk Series
07 Dec 2017

Bill Robblee (N721)
Lead Naval Architect

The overall classification of this brief is UNCLASSIFIED



What is Weight Control?

- "All the action necessary to ensure that the ship's weight and moment are consistent with the Naval Architectural requirements of strength, stability and performance."
- Rough translation:
 - Weight of the ship must be known to be sure:
 - Ship will float, even if damaged
 - Ship will float upright and stay upright, even if damaged or in heavy weather
 - Ship will not break in half in large waves



What is Weight Control? - Continued

- Typical actions:
 - Estimating
 - Calculating
 - Weighing
 - Reporting
 - Analyzing
 - Evaluating
 - Taking corrective measures





Weight Control - Limits

- Weight: Lightship plus loads
 - Load line – ship's maximum allowable draft





Weight Control - Limits

- Vertical center of gravity
 - Stability, must meet required GM
- Longitudinal center of gravity
 - Proper trim
- Transverse center of gravity
 - No list



MSC Ships with Weight Issues

- T-EPF class – overall weight
 - Fuel/Cargo trade off
 - Added weight decreases both fuel and cargo
- T-AGOS 19 class – overall weight
 - Added weight decreases fuel
- AS class – Stability
 - Weight added low – beneficial
 - Weight added high – adverse
 - Less available fuel for consumption



Weight Changes - Responsibilities

- Program Managers
 - T-ALT Decisions
- Design Engineers
 - Calculate weights on drawings
 - T-ALT weight reports
- Port Engineers
 - Weight reports for alterations and modifications
- Naval Architects
 - Track aggregate weight changes



Weight Changes - Aggregate

- ABS/USCG
 - Aggregate weight change exceeds 2%, dead weight survey or inclining needs to be accomplished
- Aggregate weight change – sum of added and removed weight change
 - Example: 10 tons added, 5 tons removed – equals a 15 ton weight change



Weights on Drawings

- Any drawing with a bill of materials
- Installations separate from removals
- “Negligible” – not really



SWBS	WT (KG)	VCG (M ABL)	LCG (M AFP)	TCG (M P/S CL)	I, R, XI or XR
WEIGHT CONTROL DATA					
I=INSTALL, R = REMOVAL, XI LOAD ITEM INSTALLED, XR = LOAD ITEM REMOVED ABL = ABOVE BASELINE, AFP = AFT OF FORWARD PERPENDICULAR, CL = CENTERLINE)					



Weight Changes – Accomplished

- Work Item 014 – Weight and Moment Report
 - Required for all MTA and ROH availabilities
 - Should be included in other availabilities as required
 - Provide to Ship and Tech Library



Questions?

