

MILITARY SEALIFT COMMAND



Mediterranean Ship Repair Industry Day

19 NOV 2019

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Agenda

- **Introduction to MSC**
- **MSC Organization**
 - **Overall Organization**
 - **N7/N75/PM and Relationships to CTF-63 and FLC**
 - **Overhaul Management Team**
- **MSC Engineering Overview & Maintenance and Repair**
 - **Ship Types and Characteristics**
 - **LCC20 – USS MOUNT WHITNEY**
 - **Expeditionary Fast Transport (EPF)**
 - **Expeditionary Sea Base (ESB)**
 - **Fleet Oiler (AO)**
 - **Dry Cargo / Ammunition (AKE)**
 - **Built and Operated to Commercial Industry Standards**
 - **Classed by ABS**



MSC Engineering (N7)

MISSION STATEMENT

To plan, develop and promulgate the Engineering policies, programs and procedures to ensure the MSC fleet operates in the most efficient, cost effective, and mission-ready posture by providing technical resources and trained personnel to support MSC ships and activities worldwide.

To be the Department of the Navy's engineering resource of choice on all engineering issues related to the afloat capital management of the Navy's commercially Operated fleet, including CIVMAR (civilian mariner), contract operated, and chartered ships.



MSC Technical Authority

COMSC Retains Technical Authority for MSC Vessels.

The MSC N7 Engineering Technical Director, Mr. Andrew Busk, has delegated Technical Authority granted by COMSC, RADM Michael Wettlaufer.



MSC Engineering (N7)

Staff of approx. **330 Engineers** iso more than **130 Vessels.**
(Gov't Owned, Gov't Operated & Gov't Owned, Contract Operated)

< 3 Engineers / Ship

> 30 Ship Classes

Re-capitalization of 86% of approximately 130 MSC vessels will be started within next 5 Years and completed within the next 20!



MSC Maintenance and Repair

- **MSC Ship Repair Availability Types**
 - **Voyage Repair Availabilities (VRA)**
 - **Mid-Term Availabilities (MTA)**
 - **Regular Overhaul / Dry Dock (ROH/DD)**



MSC Maintenance – Solicitations

Competitive Acquisition Process

- via FLC NAPLES Contracting Office

Contract type will be specified within RFP.

- Firm Fixed Price within set Performance Period.

Bid Proposal “Exceptions” will not be accepted by MSC.

Vendors are encouraged to engage MSC via FLC NAPLES PCO and Contract Specialist in dialogue if any aspect of the solicitation may result in “not bidding”.



ROHDD Solicitation – POAM/PALT

New **381**-Day POAM → Key Milestones:

- A-381 Initiate Planning and Issue Advance Planning Letter (378)
- A-351 SMT Start Planning Effort. PPE conduct Planning and Scoping Conference with PM, N10/FLC, N4, N6, Type Desk Supervisor, ABS, USCG.
- A-346 PPE Arrange for Pre-Availability Assessments
- A-255 Submit Initial Work Package Index for Review
- A-238 Submit Final Work Package & Estimates
- A-212 Issue Solicitation
- A-198 Bidder's Ship Check
- A-167 Solicitation Closes
 - *Evaluation Time (3+ months)*
- A-60 Contract Award
- A-40 PPE Conduct Post Award Planning Conference



Industrial Support SOW's

- **Statement of Work (SOW)**
 - **Understanding / Reading MSC Work Items**
 - **Use of General Technical Requirements**
 - **Use of SWIRRs (Standard Work Items for Repetitive Repair)**
 - aka **CSI's & CCSI's**
 - (Class Standard Items and Cross Class Standard Items)
 - **References: Technical Manuals and Drawings**



Industrial Support – OEM Tech Reps

- **Required Technical Representatives**
 - **OEM Technical Representatives**
 - Required by Instruction
 - **Responsibility for Arranging Required Technical Representatives**
- **Specialty Work Requirements**
 - **Rationale for Providing Recommended Sources for Specialty Work Requirements**



Industrial Support - EXECUTION

- **Execution of the Maintenance and Repair Availability**
 - **SAFETY**
 - **Working Relationship - Communication**
 - **Efficient processing of Condition Found Reports (CFRs), Request For Proposals (RFPs), Issues and Problem Areas, etc.**
 - **Sourcing Adequate Skilled Labor to get Complete All Work Requirements on Time, and to Address Emergent Requirements Found in the Execution of the Work Requirements**



EXECUTION continued...

- **Maintenance and Repair Availability Execution**
 - **ABS & USCG**
 - **Need to Have a Strong Quality Assurance Organization to Ensure M&R is Accomplished Correctly and that Tests and Inspections are Ready as Scheduled**
 - **Importance of Properly Planning and Executing Crew Move-Aboard (as applicable), Dock Trials, and Sea Trials**



Industry FEEDBACK

MAINTENANCE AND REPAIR EXAMPLES

HULL

- CRACK REPAIRS
- INSERTS
- TEMP REPAIRS
- NDT
- FOUNDATION REPAIRS
- TANK CLEANING
- TANK INSPECTS
- WT DOORS
- PRESERVA-TION

MACHINERY

- DIESEL ENGINE
- PUMPS
- PIPING
- VALVES
- BEARINGS
- SEALS
- COMPRESSORS
- FILTER UNITS
- PURIFIERS
- DAVITS
- CRANES
- RIGGING
- LIFEBOATS
- RHIB's

ELECTRICAL

- MOTOR SERVICE
- TROUBLE-SHOOTING
- MOTOR CONTROLLERS
- BREAKERS
- WIRING AND BLKD PENETRATION
- SWITCHBOARD CLEANING
- STUFFING TUBES

OTHER

- CERTIFICATIONS
- GAS FREEING SPACES
- ALIGNMENTS
- SUPPORT FOR REGULATORY INSPECTIONS & SURVEYS
- VENT CLEANING
- RIGGING SUPPORT
- GALLEY
- LAUNDRY
- DECKING
- COMMS
- NAV EQUIPMENT
- LOGISTICS – DRAWINGS / TMs



MSC Vessel Classes within C6F

- **USS MOUNT WHITNEY (LCC-20).**
 - Title X Exempt, Homeport Gaeta. No limitations on M&R work.
 - ROHDD, MTA, VRA
- **T-EPF Class: TRENTON, CARSON CITY, YUMA**
 - Title X Exempt. No limitations on M&R work.
 - ROHDD, MTA, VRA
- **T-ESB Class: USS HERSHEL “WOODY” WILLIAMS**
 - Title X Exempt. No limitations on M&R work.
 - ROHDD, MTA, VRA
- **T-AO Class: “East Coast” US - KAISER Class Oiler, on rotation**
 - Not Title X Exempt.
 - CASREP and CASREP avoidance M&R work only.
 - VRA’s
- **T-AKE: “East Coast” US – Lewis and Clark Cargo Vessel, on rotation**
 - Not Title X Exempt.
 - CASREP and CASREP avoidance M&R work only.
 - VRA’s

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Voyage Repairs Availabilities (VRA)

- **VR PERIOD LOCATIONS (EPF's)**
 - Generally dictated by the vessel's schedule and Area of Operations
- **HISTORICAL VRA LOCATIONS**
 - Croatia: Rijeka
 - Germany: Keil, Eckenforde
 - Greece: Pireaus, Rhodes, Astikos
 - Israel: Haifa
 - Italy: Gaeta, Augusta, Civitavecchia, Cagliari
 - Portugal: Lisbon
 - Spain: Malaga, Cartegena
 - The Netherlands
 - Turkey: Ismir, Aksaz
 - UK: Gibraltar
- **Local HM&E Maintenance and Repair Support**
- **Local and/or CONUS OEM Maintenance and Repair**



USS MOUNT WHITNEY (LCC 20)



Characteristics

Length: 636 ft

Beam: 108 ft

Displacement: 15,000 tons

Speed: 23 knots

Shipyard Arrival Drafts: 26' 10"



T-EPF CLASS



Characteristics

Length: 338 ft

Beam: 93.5 ft

Displacement: 2460 LT tons

Speed: 35 knots

Shipyard Arrival Drafts: 12' 10"



T-ESB CLASS

USNS HERSHEL "WOODY" WILLIAMS (T-ESB 4)



Characteristics

Length: 784 ft

Beam: 164 ft

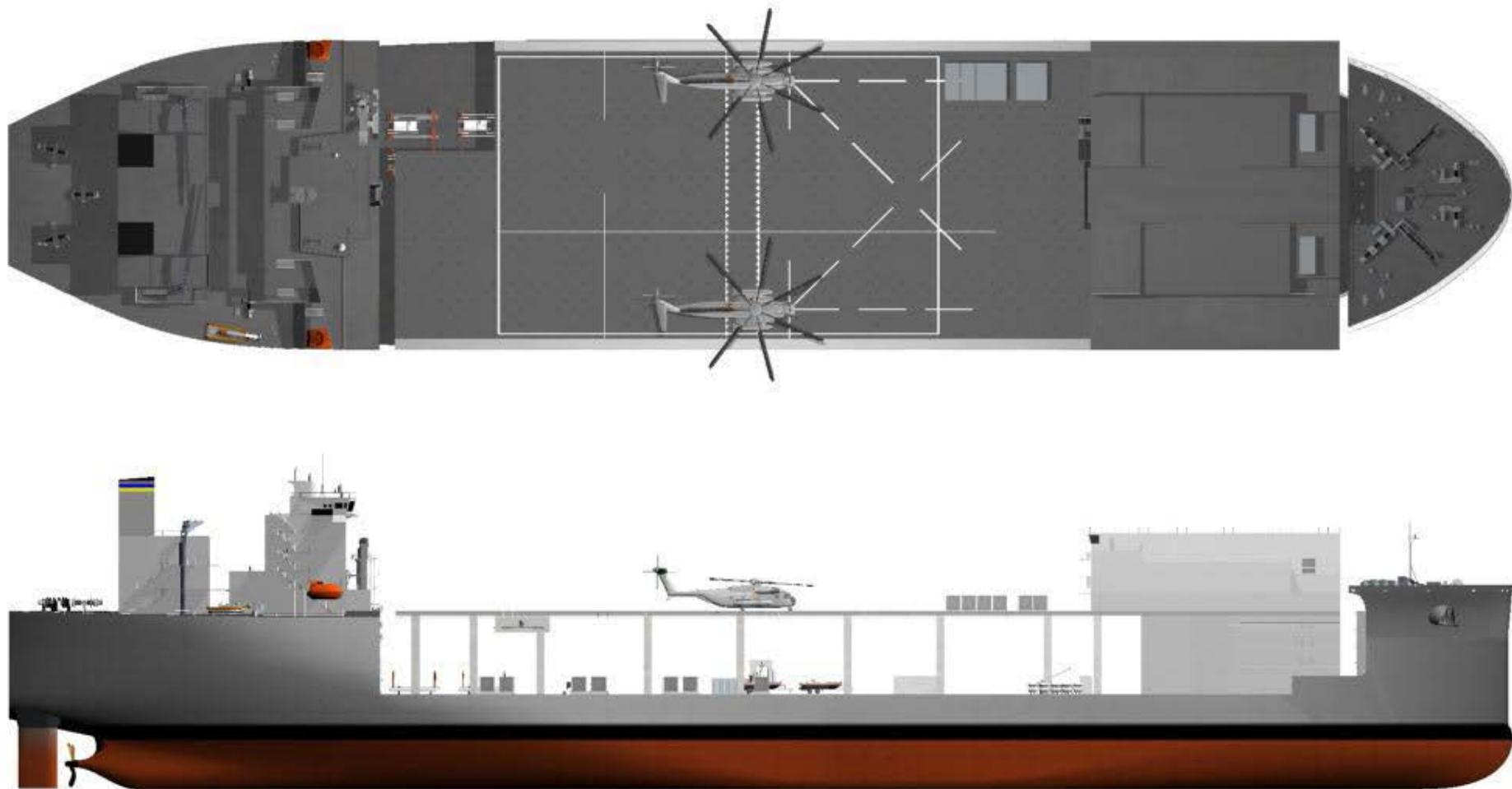
Displacement: 106,664 tons

Speed: 15 knots

**Arrives in the
Mediterranean in
Summer 2020**



T-ESB CLASS





T-AO CLASS



Characteristics

Length: 677.5 ft

Beam: 97.5 ft

Displacement: 40,900-41,225 tons

Speed: 20 knots



T-AKE CLASS



Characteristics

Length: 689 ft

Beam: 106 ft

Displacement: 41,000 tons

Speed: 20 knots

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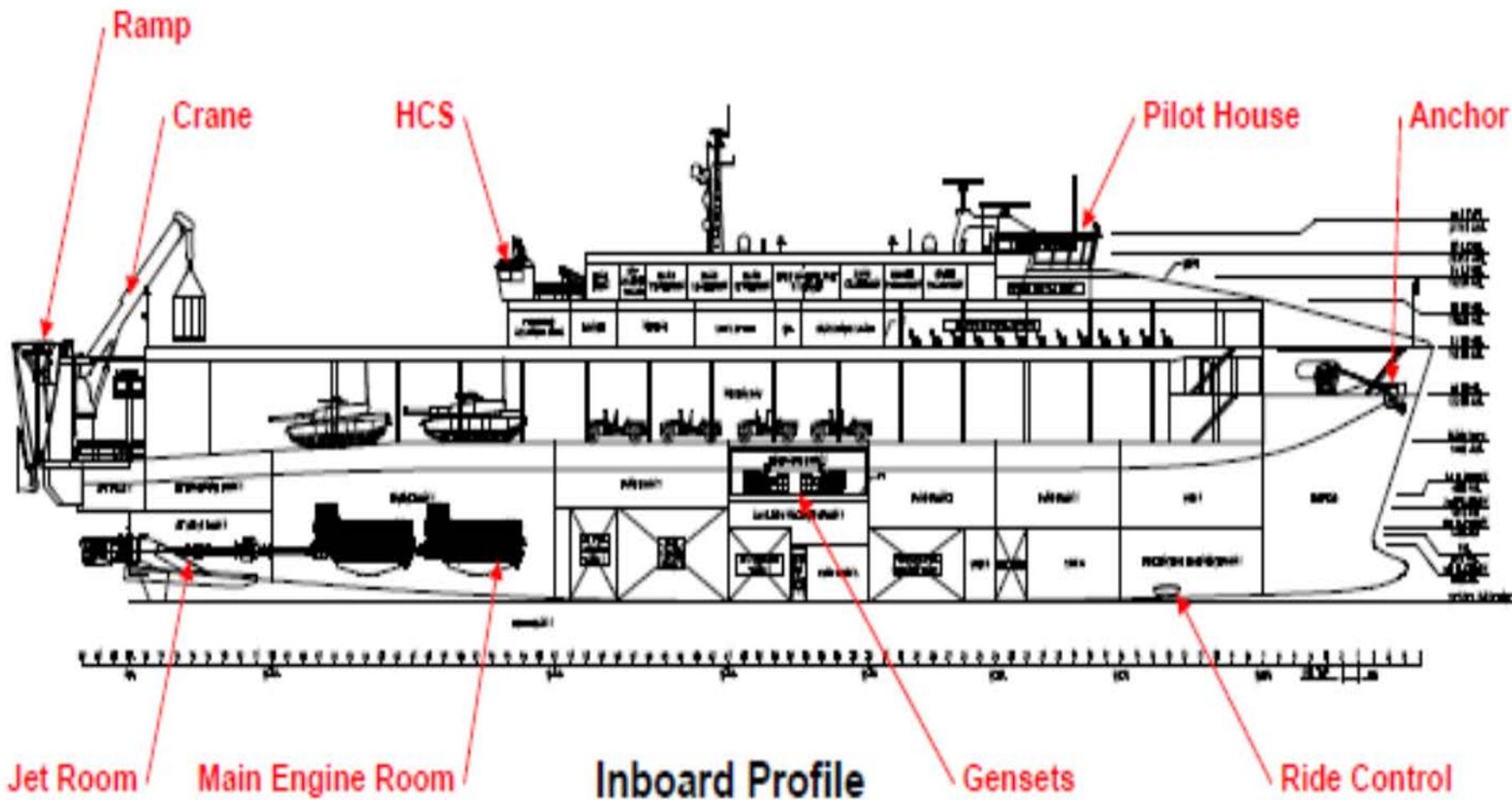


A Little More About the EPF CLASS





T-EPF Profile





EPF – Draft, Weather, and Sea State Limitations

- EPF Class – Approach Berth and Mooring
 - Waterjet Under Keel Clearance (UKC) - 3 meters

- *Vessel is unable to dock/undock in high winds*
 - *Sustained winds in excess of 20 knots, depending on direction and fuel state can create a situation in which the ship will have difficulty safely docking and undocking.*

- *Vessel is weather sensitive above Sea State 3, capable but limited*
 - *SOA of 15knots is a key planning tool for both fuel consumption and sea state operability*

- *IMPACT -- > Potential always exists for late shipyard arrivals and inability to get underway for Sea Trials*



T-EPF MAINTENANCE

- **Dry Docking – Twice in 5 Years:**
 - Vessels are ABS Classified, and vessel delivery date establishes the annual inspection requirements
 - Annual surveys in years 1 through 4 allow a 3 month inspection window
 - The ABS Class Renewal Survey at the completion of year 5 has a hard end date and must be COMPLETED prior to the due date to include any work growth!

- **Typical Maintenance periods based on 5-year ABS cycle:**
 - Years 1, 2, 4: 30-45 days. Annual Pier side Availability
 - Year 3: 60 days. Dry Docking Availability
 - Year 5: 60-90 days. Dry Docking Availability
 - **NOTE: Hull Repair Requirements may require Docking in years 1, 2, or 4!**

- **Voyage Repairs – Two x 21 days each**
 - Mission planners must anticipate at a minimum two VR periods
 - Supports Crew SAMM (Preventive Maintenance) and Industrial Support.
 - *MSC will provide max flexibility for VR period scheduling*
 - *Mission on / offload not scheduled during dedicated maintenance periods*
 - *Advance planning and communications are critical!*

- **M&R windows often include time for regulatory requirements!**
 - *SMART, AVCERT, ARQ, ISM/SMC, ISA...*

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ALUMINUM REPAIRS

- **Determine Sensitization Levels**
- **Pulse GMAW must be used on repairs and install where deck plate thickness is below 6mm.**
- **Provide material certs, welder certs, and an ABS approved, 'reduced heat' weld procedure specification (WPS) to the MSC REP and ABS surveyor prior to commencing work**
- **All material, including prefabricated installations, shall be traceable to the material certifications and verified prior to installation.**
- **Ultrasonic Impact Treatment (UIT) shall be used as part of the repair process where the area is considered to be moderately sensitized.**
- **Plasma Arc Cutting shall NOT be used for material cutting**



ALUMINUM REPAIRS

- **continued...**
- **Shell seams shall be 300mm apart unless a request for deviation is approved by the MSC REP**
- **The recommended distance between field weld seams is 100mm (4in).**
- **Inserts shall include cut and insert plate or planking with a minimum of 75mm (3in) radius corners.**
- **All welds shall include non-destructive testing (NDT) upon completion and be completed to the satisfaction of the MSC REP and ABS surveyor. As a minimum, PT and UT shall be conducted on ALL shell plating welds. NDT 100% of weld seam. Structure welded to the hull perimeter shall have 20% PT testing.**
 - **The 20% structure PT locations shall be determined based on 5X visual inspection completed in the presence of ABS and MSC REP.**



EPF – Future Projects

- **Modifications/Design studies in progress:**
 - Baseline consideration for improved potable water production and capacity
 - 312 Re-design-increased berthing/office space/organic water capability/laundry
 - Porch extension-to support launch/recovery of 11M RIB
 - Bow Mod (2.0)- feasibility to improve Safe Operating Envelope
 - 5454 Aluminum- Class Hull study/design and material replacement
 - Small Boat re-fueling / Ship Astern re-fueling (take on fuel)

- **MER Aluminum Replacement:**
 - Replaces inboard hull of each MER with 5454
 - TBD - Estimating 2020 – 2021 for execution
 - SEE NEXT SLIDE



ANY FINAL QUESTIONS OR DISCUSSION?

QUESTIONS

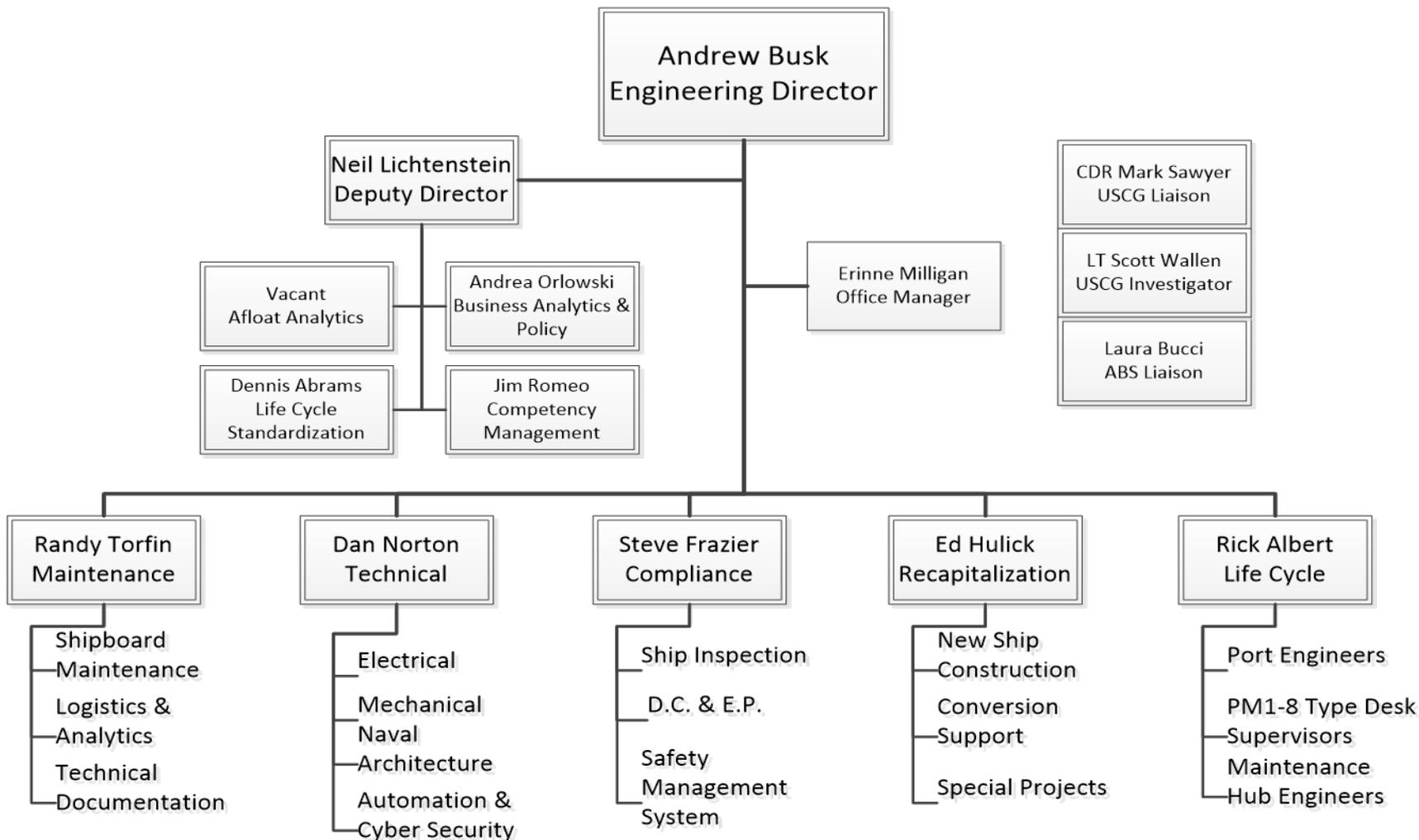


BACK-UP SLIDES

BACK – UP SLIDES



MSC N7 Organization



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T-EPF CHARACTERISTICS



T-EPF CHARACTERISTICS



DIMENSIONS

LENGTH	183.0m	(337.9 ft)
BEAM	28.5 m	(93.5 ft)
DRAFT	3.92 m	(12.85 ft)

MATERIAL PERFORMANCE

SPEED @ 90% MCR	Average	35 knots with Payload
	Maximum	43 knots without Payload

RANGE

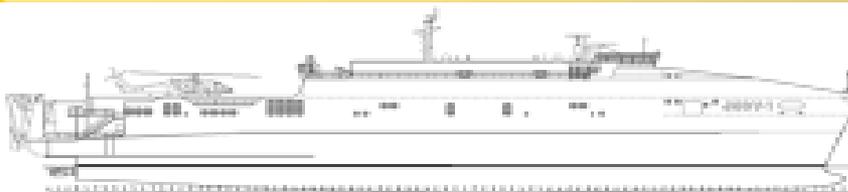
Maximum Transit	1288 nm/58% fuel
Self-Deployment	4788 nm/95% fuel
SURVIVAL THROUGH	85-7

ACCOMMODATIONS

CREW	42 p
Single SR	2
Double SR	6
Quad SR	7
TROOP SEATS	312 p
TROOP BERTHS	184 p
Permanent	184 p
GALLEY AND MESSING	48 p

MACHINERY

- (4) MTU 20V8000 M71L Diesel Engines (3.1 MW each, 12.4 MW total)
- (4) ZF 8000MR2H Reduction Gears (2,156 ft)
- (4) Wärtsilä WLD-1400 SR Waterjets
- (4) F V1313C2ME-HPCR Diesel Generators (600 kW each, 2.4MW total)



WEIGHTS

FULL LOAD (Load Line)	2500 mt	(2488 LT)
FUEL (MAX)	575,388 U	(152,000 gal/ 583 LT)
JP-5 (MAX)	73,948 U	(19,520 gal/ 62 LT)
PAYLOAD	544 mt	(588 st)

AVIATION FACILITIES

- NAVAIR Level 1 Class 2 Certified Flight Deck for one helicopter
- Centerline parking area for one helicopter
- NAVAIR Level 1 Class 4 Type 2 Certified VERTREP
- Helicopter Control Station

C4I SYSTEMS*

- BPP / TACAM / MORAN
- Aviation VLS / Stabilized CSI
- C4I Spaces - 284 m² (2200 ft²)
- ISMS (MIPNET/SIPNET/CENTRALS)
- ADNS
- VHF/UHF LDS
- UHF SATCOM
- CBSP SATCOM
- TWS
- ERMS

Commercial Electronic and Navigation Systems

- VMS / ECDIS-R
- Four-Node Fiberoptic Gyrocompass MK-27P and UPS
- Surface Search RADAR (X-Band and S-Band)
- Dual GPS
- Vessel Automatic Identification System (AIS)
- Autopilot
- Voyage Data Recorder
- GMDSS (Sea Area 4)
- Integrated Voice Communication System
- Entertainment and Training System
- FLIR EOIR

AUXILIARY SYSTEMS

ACTIVE RIDE CONTROL

- Transom Interceptors
- Foil: 3.24 m² (34.9 ft²) each, forward on inboard sides of demi-hulls

VEHICLE RAMP

- Articulated Slewing Stern Ramp
- Straight-Aft to 40° Starboard
- TELESCOPING BOOM CRANE*
 - 12.3 mt @ 15m, 18.2 mt @ 10 m
 - 13.6 st @ 49.2 ft, 28.1 st @ 32.8 ft

ARMAMENT

- Four .50 Caliber Machine Guns
- Magazine Space
- Reservation for AT/TP System
- Reservation for Non-Lethal Effectors

FIREFIGHTING

- High Expansion Foam (HEX) for Mission Bay & Main Machinery Rooms
- AFFF on Flight Deck, Mission Bay
- Seawater Sprinkling in Habitability Spaces
- FM200 in SSGG / AUX Machinery Spaces

MISSION BAY

AREA (with Tie Downs)	1858m ²	(20043 ft ²)
CLEAR HEIGHT	4.75m	(15.6 ft)
TURNING DIAMETER	26.2m	(86.0 ft)
ISO TEU STATIONS	6 Interface Panels	

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MSC delivers

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ESB – formerly MLP/AFSB

DIMENSIONS

Length, LBP:	233.2 m
Length, Overall:	239.3 m
Beam, DWL:	50.0 m
Full Load Departure Draft	9.54 m
Load Line Draft:	12.0 m
Depth, Mission Deck:	15.5 m
Depth, Upper/Flight Deck:	28.9 m

PERFORMANCE

Sustained Speed:	15 knots @ 85% MC
Endurance:	9,500 nm
Service Life:	40 years

ACCOMMODATIONS

	Lic/	CPO/	Unlic/	
	Off	SNCO	OEP	Total
MSC	15	-	19	34
Military Det.	19	16	215	250
Total	34	16	234	284

HABITABILITY

MSC crew to BP tanker legacy standards
Embarked military personnel to NAVSEA standards

MEDICAL

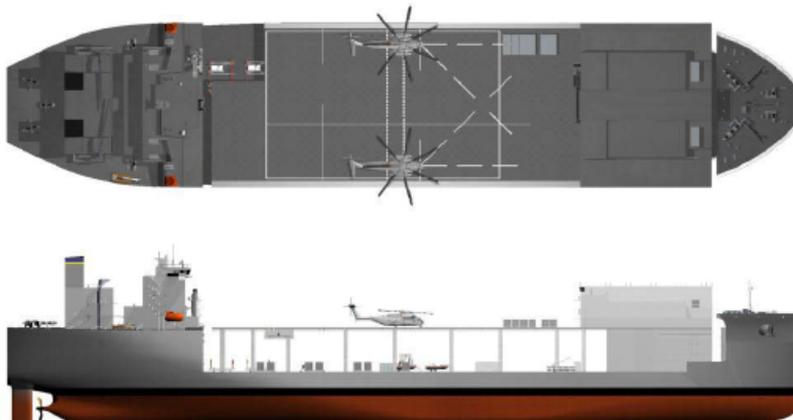
MSC crew to BP tanker legacy facility standard
Embarked military personnel to BUMED standard

AVIATION FACILITIES

Level 1, Class 2 for aircraft flight operations
Level I, Class 4, Type 3 for VERTREP operations
Aviation Systems: TACAN, Moriah, ASGSI, VLA

MACHINERY/AUXILIARY SYSTEMS

Commercial Diesel-Electric Propulsion
Integrated Electric Plant
4 x 6.1 eMW Medium Speed Diesel Generators
6.6 kV Electric Propulsion System
x 10.0 MW at 85 rpm Synchronous, Variable Speed,
Reversible Propulsion Motors
1,000 kW Emergency Diesel Generator
2 x 7.45 m diameter propellers
1 x 1,090 kW Azimuthing Bow Thruster (DPS-0)
All-Electric Auxiliaries
A/C Plantts: 2 x 85 ton capacity
Potable Water Generation: 25,000 gal/day
Distilled Water Generation: 300 gal/day



DECK SYSTEMS

Stores Cranes:	2 x 5 mt capacity
Upper Deck Crane:	1 x 10 mt capacity
Mission Deck Crane:	1 x 11 mt capacity

COMMAND & CONTROL

Legacy BP Tanker Navigation and Communication
- Integrated Navigation Bridge System
- SOLAS Communications for Sea Area III
- Dual DGPS/X & S band navigation radars
Military Communications
- Wideband SATCOM, Classified/Unclassified
LANS, 2 x VHF/UHF radio, Telephone, Comm
Module Military Communications
(MILDET/Embarked Force)
- Wideband SATCOM (4 Mbps)
- NIPRNET, SIPRNET, CENTRIXS w/ MILDET
apps
- Single channel radios - 2 x VHF/UHF LOS
radios and 1 x UHF SATCOM for flight ops and
C2; infrastructure for 1x HF carry-on radio
- 2 x Radio Module
- C2 Spaces (seats): Briefing (40), Tactical Ops
Ctr (10), Intel (5), Planning (10), Comm Ctr (3)
equipped with large displays and network drops
- Support for Embarked force carry-on servers.

MISSION SUPPORT EQUIPMENT

MH-53E helicopters (4)
MK 105 minesweeping systems (4)
MK 103 minesweeping systems
MK 104 minesweeping systems
AN/SPU-1W minesweeping system
AN/AQS-24A sonar systems
AN/ASQ-232 mine neutralization system
SEAFOX mine destructor (100)
Mission support MILVANS (12)
Mission support BICONS (14)
EOD recompression chamber system
Boats and craft (e.g. RHIBs, inflatables)
MK 105 maintenance stand

CARGO CAPABILITIES

Mission Deck Area: 154.7 x 50m (7,735 m2)
Mission JP-5 Stowage: 500,000 gal
Mission Potable Water Stowage: 115,000 gal
UNREP refueling station
(receive only): DFM & JP-5 @ 3,000 gpm

WEIGHTS (mt)	Ship
Margins	1,217
SWBS 100	28,075
SWBS 200	911
SWBS 300	1,256
SWBS 400	191
SWBS 500	3,248
SWBS 600	1,516
SWBS 700	62
Lightship w/mar.	36,476 (1)
Other Loads *	44,919 (2)
Full Load Departure	81,395

(* includes 38,194 mt SW ballast)

- Notes:
- Ship weights per 3/7/13 MLP AFSB Design Weight Estimate (Rev. B)
 - Ship loads per 2/15/13 MLP AFSB T&S Assessment (Rev. A)

STABILITY

IAW IMO (SOLAS) and 46 CFR

SURVIVABILITY

No degaussing
No shock mounted equipment

HULL STRUCTURE

Commercial, ABS Steel Vessel Rules

LIFESAVING

USCG Certified (Cargo & Misc. Vessels)
Lifeboats: 2 x 46 person (one ea. P/S))
Rescue Boat: 1 x 7m RHIB
Liferafts: 24 x 25-person (12 ea. P/S aft)
2 x 10-person (one ea.. P/S fwd)

PROVISIONS & STORES (days)

	Dry	Chill	Freeze	Stores
Crew:	90	45	90	90
Military Det	10	10	10	10

Repair Parts: 90 days

DRAFT

Information as of 3/20/2013

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Adaptive Force Packages (AFP)

AFP 101

- MSC ships are being tasked to perform missions not envisioned when originally designed
- AFP Packages are attractive to mission sponsors for their rapid integration
- AFPs present different cargo payloads and operational requirements which may present high risks to ships and personnel
- The Oil and Gas industry Risk Assessment Methodology was chosen to address the complexities of compounding AFPs
- Signed Oct 9, 2018, there is official MSC guidance on shipboard Operational Risk Management program.
- ❖ ***Vessel “interface” and integration work is considered to be a TRANSALT and must follow the approved T-ALT Process with ABS and technical approvals.***