



Independent Review Team NOAA Fleet Recapitalization Report

OCTOBER 1, 2016

Independent Review Team (IRT)

Terms of Reference Objectives

- The National Oceanic and Atmospheric Agency (NOAA) requested a senior-level independent review team (IRT) to:
 - ***Assess the health*** of the **NOAA fleet** of oceanographic vessels, ***requirements*** for recapitalization and analysis of ***operations, maintenance and practices***, and ***technology infusion***
 - ***Consider*** data collection ***requirements*** that need access to the ocean; applicable ***technologies*** and relationship to requirements; appropriate fleet ***size and composition***; and ***potential alternatives*** to meet NOAA's multi-mission at sea requirements

IRT Members

Dick West, RADM, United States Navy (ret)

Robert Winokur, Senior Advisor, Michigan Tech Research Institute, NOAA National Environmental Satellite, Data, Information Service (NESDIS)

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Dr. John Hughes-Clark, Professor, University of New Hampshire

John Crowley, RADM, United States Coast Guard (ret), National Association of Waterfront Employers

Bauke (Bob) Houtman, Head, Integrative Programs Section, National Science Foundation

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Blake Powell, President, JMS Naval Architects

Dr. Nancy Rabalais, Professor, Louisiana State University, Louisiana Universities Marine Consortium

Robert (Tim) Schnoor, Ocean Research Facilities Manager, Office of Naval Research

Dr. Steve Ramberg, Distinguished Research Fellow, National Defense University, Penn State University

Dick Vortmann, President and CEO (ret), National Steel and Shipbuilding Company (NASSCO)

NOAA Liaisons:

CAPT Nancy Hann, Chief of Staff, Office of Marine and Aviation Operations (OMAO)

LT Richard Park, Flag Aide to Director NOAA Corps and OMAO

LT Zachary Cress, Flag Secretary, OMAO

IRT Terms of Reference Tasks

IRT will assess:

1. Current fleet composition and capabilities
2. Long-term recapitalization planning based on NOAA's at sea data collection requirements
3. Utilization of alternatives to the NOAA fleet (commercial contracting, Academic Research Fleet, other public-funded vessels) to meet requirements
4. Current operational systems (crewing, scheduling)
5. Current maintenance practices
6. Technology readiness and infusion (instrumentation and mechanical)
7. Risk identification, mitigation and management planning

IRT Process

- Met monthly in person and via teleconference calls for background and fact finding briefings and discussion
 - Jan 20-21, March 10-11, May 10-11, July 13-14, September 14,15 2016 (in-person meetings)
 - Feb 16, April 13, June 14, August 23 2016 (teleconferences)
- Reviewed Office of Marine and Aviation Operation (OMAO) plans for and current status of ship, requirements, recapitalization and acquisition approaches
- Received briefings from NOAA line offices on ship requirements and utilization
- Received briefings on: ocean observatories (Integrated Ocean Observing Systems (IOOS), Ocean Observatories Initiative (OOI), Argo), U.S. Navy Auxiliary General Oceanographic Research (AGOR) vessels 27/28, National Science Foundation (NSF) Regional Class Research Vessel (RCRV) and NOAA's Ocean Exploration program
- Met with Senate and House Appropriations Committees and Office of Management and Budget (OMB) staff
- June 30, July 13, July 21, August 19 – Briefed NOAA ship recapitalization planning Tiger Team
- July 15 – Briefed NOAA leadership and updated report based on feedback
- August 18 – Briefed Department of Commerce and NOAA chief financial officers (CFO) and staff
- September 14 – Received briefing on Tiger Team draft recapitalization report; completed IRT report
- October – Brief NOAA leadership and issue final report

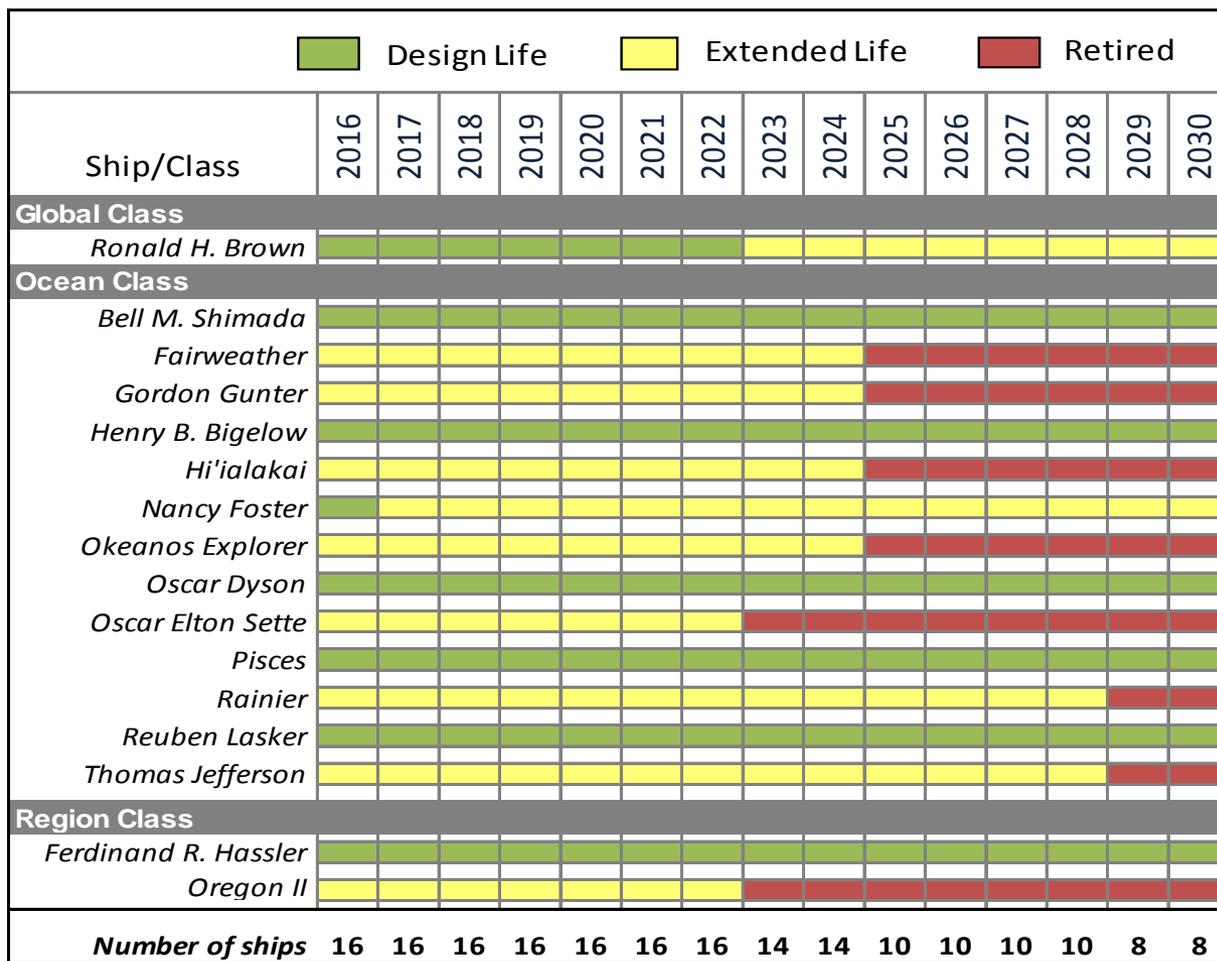
Backdrop and Overarching Context

- NOAA needs to:
 - maintain a capable fleet to gather the information to inform a variety of critical mission responsibilities in the oceans which are important to providing products and services for the Nation
 - maintain access to the sea to perform its mission and provide an enabling capability for the nation
 - maintain a core robust fleet of ships augmented by appropriate charters, remote sensing and commercial data to meet its mission
 - maintain management of the operational infrastructure needed to support its mission; maintain in-house expertise; invest in future technology; and ensure the capability for rapid response to national and natural emergencies
 - modernize its oceanographic fleet to avoid a gap in capacity and capability as ships reach their end of design service life

IRT Key Findings

- A modern core fleet with multi-mission capability is required to meet mission requirements for use in surveys, research and unplanned surge requirements from ocean/coastal disasters
- Current fleet of ships is aging and needs recapitalization starting immediately with up to eight ships reaching or exceeding end of design service life by 2028
- NOAA has no approved fleet recapitalization and modernization plan to address future ship needs to accomplish its mission
- A structured process to identify requirements for “Days At Sea” is in place but lacks the methodology to define the needed fleet capabilities and composition
- Current fleet is underfunded for operations and consequently underutilized
- Lost time due to maintenance is abnormally high
- New observing technologies will be mainly “force multipliers”
 - Use of autonomous systems should be factored into ship designs

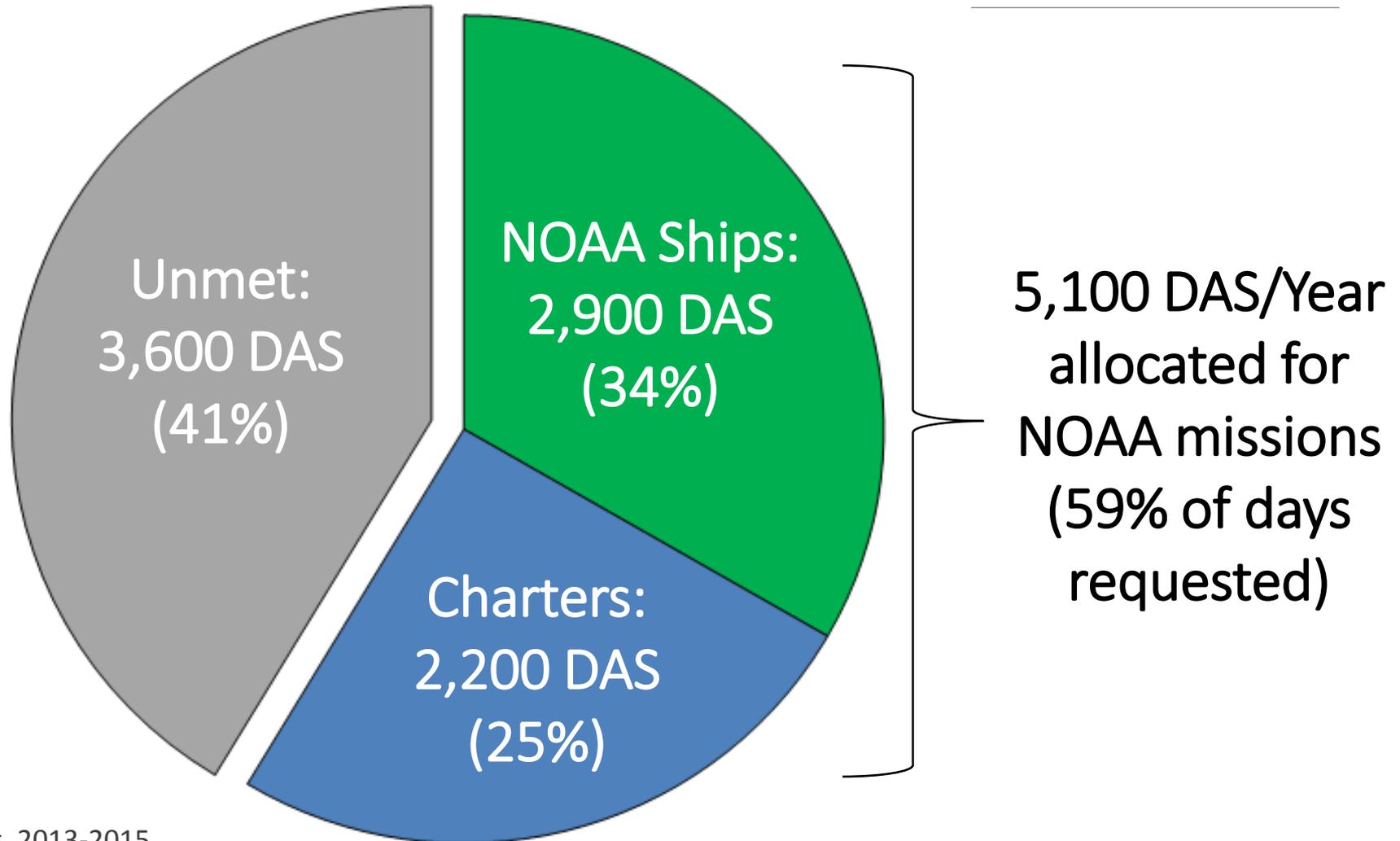
Estimated Remaining Years of Design Service Life



From draft NOAA Fleet Status Report – April 2016

FIGURE 3

Priority One Requirements: 8,700 Days At Sea Requested/Year *

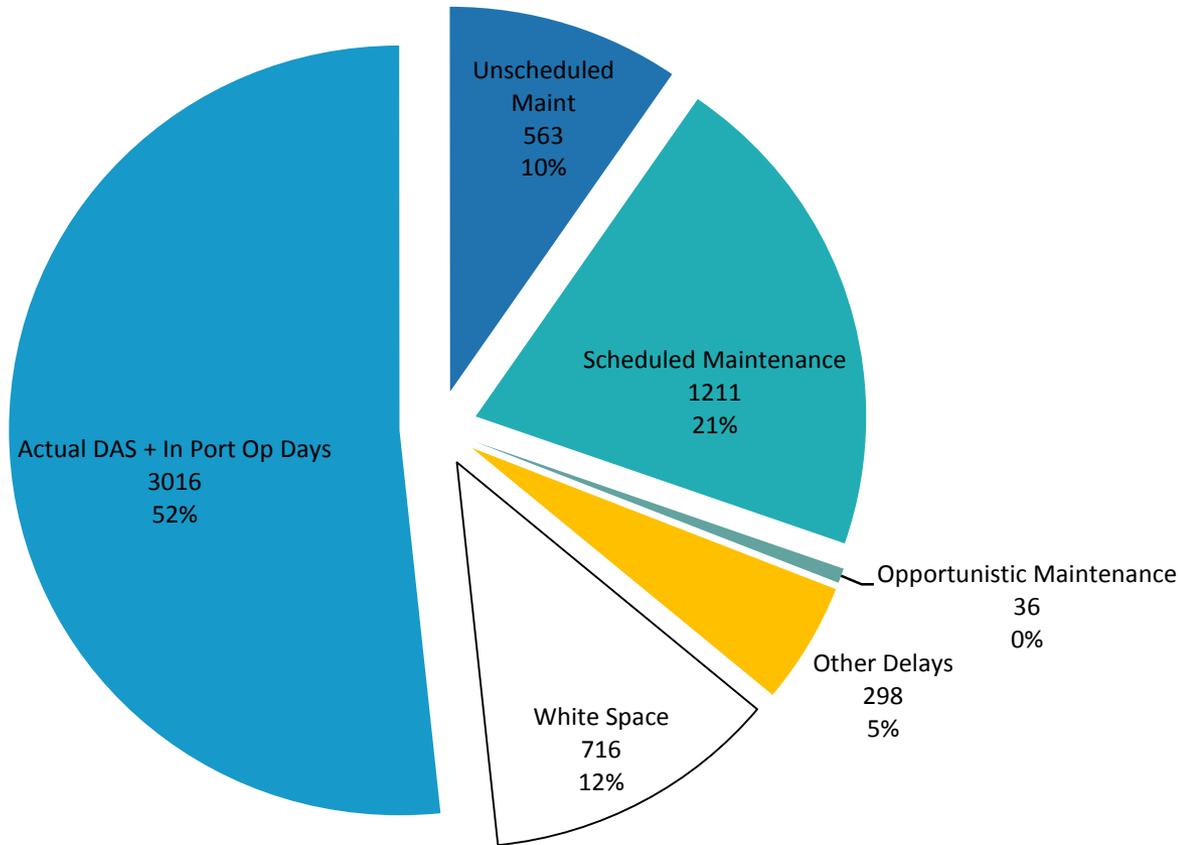


*avg. 2013-2015

pre-decisional/not for distribution



FY15 Maintenance Days vs Total Days



In Port Op Days

- Project
- Staging/Destaging
- Crew rest
- Early project completion
- Fleet Inspection
- Launch work
- Outreach events
- Required crew training

Other Delays

- Medical/injury
- Acquisition issues
- Staffing issues
- Safety issues
- Weather
- Other

FIGURE 6

IRT Comments on September 2016 Draft Tiger Team Recapitalization Plan

- IRT appreciates NOAA leaderships' response to its preliminary recommendation to establish a "Tiger Team" to immediately draft a fleet recapitalization plan
- IRT provided guidance, reviewed and gave feedback on initial draft fleet recapitalization plan
- Tiger Team draft fleet recapitalization plan is an important step in addressing the IRT key finding and recommendation concerning the lack of a currently approved recapitalization plan
- Plan addresses the sequencing of a core multi-mission fleet that is appropriate in scale and scope to satisfy priority one ocean observation requirements
- Final fleet plan should meet NOAA's requirement for a comprehensive recapitalization strategy
- An approved plan must be supported by a funding profile for recapitalization, and operations and maintenance

IRT Key Recommendations-Summary

- Immediately develop and implement a recapitalization plan for a right-sized core fleet that provides mission capacity and capabilities which considers a mix of multi-purpose and mission specific ships, charters, and time phasing for prioritized ship replacements to avoid a gap in operational capabilities 
- Initiate actions to procure a general purpose oceanographic vessel, leveraging the AGOR specifications, as the first step in a recapitalization plan
- Start mission and concept designs to address capabilities not met with the AGOR specifications
- Conduct independent benchmarking of maintenance and crewing processes against industry best practices
- Senior NOAA leadership should commit to a stable, multi-year funded capital acquisition plan and funding to fully utilize and maintain the fleet as stewards of this national capability

Recommendations

- Immediately develop and implement a recapitalization plan using a “Tiger Team” for a right-sized multi-mission fleet to meet well-defined priority one requirements 
- Plan should:
 - Assess capabilities for a mix of multi-purpose, single purpose, shallow draft, smaller (40 meters or less) and charter vessels to meet priority one requirements
 - Present a clear plan for a sequence of ship replacements
 - The recapitalization plan needs to be a living document, with a process to reevaluate every two years

Note: The IRT reviewed the resulting September 2016 Tiger Team draft recapitalization plan and utilized it in the preparation of this final report

Recommendations (continued)

- Final approved fleet recapitalization plan must be supported by funding for ship construction and utilization, building on the FY16 NOAA budget which contained ship construction funds
- NOAA leadership needs to develop and strongly advocate a multi-year capital acquisition plan which enables multi-year, multi-ship acquisition contracting
- NOAA leadership needs to routinely review metrics associated with implementation of the recapitalization plan similar to other major acquisition programs
- Initiate actions to procure general purpose oceanographic research vessels as the first step in a fleet recapitalization plan based on the AGOR 27/28 specification

Recommendations (continued)

- Concurrently start mission and concept ship design(s) to meet requirements that are not met with the AGOR specification
 - Consider alternate technologies, or smaller vessels
 - Assess domestic and international design for ships constructed in the past five years
 - Minimize the number of ship classes to achieve economies of scale
 - Ship design must be flexible to incorporate potential for unmanned surface, underwater and aerial systems (ASV/AUV/UAS) in future ships
 - Include life cycle considerations
 - Optimize acquisition strategy and minimize cost by procuring at least two ships of common design from the classes of ships identified in the draft Tiger Team recapitalization plan (i.e., classes A, B and C)
 - Conduct lessons learned and assessment of recent acquisitions

Recommendations (continued)

- Establish comprehensive benchmarking study of fleet maintenance and crewing against other federal ships and assess best commercial practices, include independent expertise
- Ensure ship and shore side fleet readiness responsibilities are better aligned and funded to utilize standard/best practices to manage maintenance requirements and infrastructure to ensure a high state of readiness
- Establish a NOAA-wide policy for chartering to address vetting with OMAO for availability of ships, potential for long-term charters, and legal constraints

Concluding Comments

- The Nation is highly dependent on information gathered by the NOAA fleet to inform a variety of critical mission responsibilities in the oceans
- IRT has identified pressing actions that are necessary to ensure success of the NOAA mission
- Implementation of the fleet recapitalization plan requires significant and immediate attention in order to avoid loss of service gaps
- With appropriate action all identified findings and recommendations are resolvable

Acknowledgements

The IRT acknowledges the outstanding support provided by the Office of Marine and Aviation Operations (OMAO) and background information provided during numerous briefings by and discussions with OMAO, along with its quick response to questions

The IRT also appreciates the information provided by numerous briefers from OMAO and the NOAA line offices, and invited external presenters, the National Science Foundation (NSF), the United States Navy, (USN), the University of Rhode Island (URI) Inner Space Center, and IRT experts

FY2016 Fleet Allocation Plan Mobilization and Demobilization Included

Fleet Council Signed & Approved on 2015/07/20

FY 2016 FLEET ALLOCATION PLAN
OMAO Scheduler's FINAL FY2016 President's Budget Fleet Allocation Plan

NOA PACIFIC	DAS/OD	FPD	OCT		NOV		DEC		JAN		FEB		MAR		APR		MAY		JUN		JUL		AUG		SEP								
OSCAR DYSON	222/249	3	M	T	DOCKSIDE REPAIRS ISM/STCW TRAINING		OMAO SD/ST		T	11	I	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO						
FAIRWEATHER	168/275	20	C	SURVEY	NOG	20	DOCKSIDE REPAIRS ISM/STCW TRAINING	OMAO		I																							
RAINIER	181/214	16	C	SURVEY	NOG	27	DOCKSIDE REPAIRS ISM/STCW TRAINING	OMAO		T	SD/ST	IOCM	NOG	24	CS	11	I	C	SURVEY	NOG	40	COASTAL SURVEY	NOG	40	COASTAL SURVEY	NOG	41	FISH	NOG	20	SURVEY	NOG	22
BELL M. SHIMADA	226/254	0	T	DOCKSIDE REPAIRS ISM/STCW TRAINING	OMAO SD/ST		I	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG						
ERINDE LARKER	216/222	0	N	WEST COAST	NOG	27	DOCKSIDE REPAIRS ISM/STCW TRAINING	OMAO		I	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG						
ST'ALABAI	156/156	0	I	WEST COAST	NOG	14	DOCKSIDE REPAIRS ISM/STCW TRAINING	OMAO SD		I	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG						
OSCAR ELTON	204/218	3	I	WEST COAST	NOG	12	DOCKSIDE REPAIRS ISM/STCW TRAINING	OMAO		T	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG						
RONALD E. SIMON	187/254	0	DOCKSIDE	OMAO	SD	TAO & PICO TROP PACIFIC	NOG	38	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG							
NANCY POSTER	188/214	25	EPHMAP LIS	NOG	20	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG							
THOMAS JEFFERSON	151/165	0	COASTAL SURVEY SAVANNAH, GA	NOG	44	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG							
OSCARO EXPLORER	197/272	19	DOCKSIDE/PROGRESSIVE MAINTENANCE ISM/STCW TRAINING	OMAO		Tap	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG							
OSCARO II	178/174	20	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG							
FISCUS	196/234	71	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG							
OSCARO CENTER	228/259	70	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG							
EMERY B. BISHOP	224/282	0	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG							
FREDERICK E. HANSLER	142/205	0	DOCKSIDE REPAIR ISM/STCW TRAINING	OMAO SD/ST		NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG	NOG							
Fleet Total	2059/2658	257																															

Line Office FPD
 NNPS 241
 NOG 16
 OAR 0
 NWS 0
 NNDSIS 0
 OMAO 0
 Total 257

Resilient Coastal Communities | Climate Adaptation & Mitigation | Healthy Oceans | Weather Ready Nation
 Sea Trials/Transits/Fleet Inspections/Maintenance Periods | Set Operations, etc | Program Funded | Other Agency

DAS = Days At Sea; OD = Operating Day; FPD = Program Funded Day; I = Fleet Inspection; T = Transit; S = Sea Trial; TS = Transit & Sea Trial; U = Underway Training (e.g. ROPCI); SD = Shutdown; ST = Staging; R = Ranging; G = Gear Trial; P = Posting; MER = Mid Season Repair; SO = Research to Operation (testing OAR, NOV, ADV etc)

1. UxS REMUS-600 5 DAS ADV project that was initially scheduled on NOAA Ship Thomas Jefferson has been shifted to NOAA Ship Bell M. Shimada. This UxS project will piggyback off the NOS 12 DAS Deep Sea Coral and Sponge Communities project in early May 2016 on a not to interfere basis.
2. The following is a breakdown of Line Office base funds for charter: OAR = \$4.74M & NWS = \$1.17M

OMAO NNPS NOG OAR NWS NNDSIS FPD