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Date: August 26, 2022

From: NSF, ONR and the UNOLS Executive Secretary
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To: Dr. Dennis Hansell, UNOLS Council Chair

Subj: CY 2023 U.S. Academic Research Fleet Operations Support Findings and Recommendations

Introduction

The National Science Foundation (NSF), the Office of Naval Research (ONR), and the UNOLS Executive Secretary provide the following letter to the UNOLS Council after having participated in numerous 2023 ship scheduling meetings and having conducted a review of the 2023 ship requests using the MFP* system to produce draft schedules for the U.S Academic Research Fleet's (ARF) Global, Ocean/Intermediate, Regional, and Coastal/Local Class ships. We recognize additional science funding decisions will be made by all funding agencies. Most of NSF/OCE science programs have gone to no-deadlines. However, as noted in the recent OCE announcement requesting Global or Ocean Class ARF vessels and especially those needing National Deep Submergence Facility (NDSF) assets, proposals should be submitted at least 18 months before the anticipated time of the first expedition. The timing of the cruise needs to consider many factors in order to align the work with the study region along with the necessary ancillary components that enable efficient scheduling. For Intermediate, Regional and Local-Class vessels the proposal should be submitted with as much lead time as is practical, but we recommend doing so at least 12 months before the anticipated time of the first cruise.

Further guidance for proposals that include U.S. Academic Research Fleet ship time can be found here: https://www.nsf.gov/geo/oce/pubs/Guidance-for-Proposals-with-shiptime-Jan2022.pdf

ONR continues to operate without deadlines and often the ship time catches up after the funding decisions are made.

CY 2023 may still be dealing with deferred programs due to the COVID-19 pandemic, which includes supply chain issues, major increases in fuel prices and unprecedented

mariner staffing shortages. The largest challenge in the U.S. ARF is crewing shortages. This is a problem which stems from a variety of factors, including a historic decline in the population of mariners working in the industry, higher than projected retirements accelerated by fatigue from COVID mitigation requirements, extreme competition for the smaller pool of mariners from sectors of the industry that are experiencing a boom cycle, and Jones Act requirements (which mandates the requirement for U.S. licenses for certain positions on our ships).

As a little more background, our Global and Ocean Class vessels operate under USCG 46 CFR subchapter U with a Certificate of Inspection (COI), which mandates licensed crewing regulations among many other safety provisions since all ships in the ARF are U.S. Flagged. This COI becomes the governing mechanism the USCG uses to issue what are known as CG-835s, or "no-sails" which prevents a ship from getting underway. The ARF has had several no-sails across the Fleet due to a shortage of licensed crew and attempts to quickly fill these positions has been difficult in the current labor market.

Table 1 demonstrates a significant bounce back to pre-pandemic utilization of the ARF despite the challenges in the market that have impacted ship schedules.

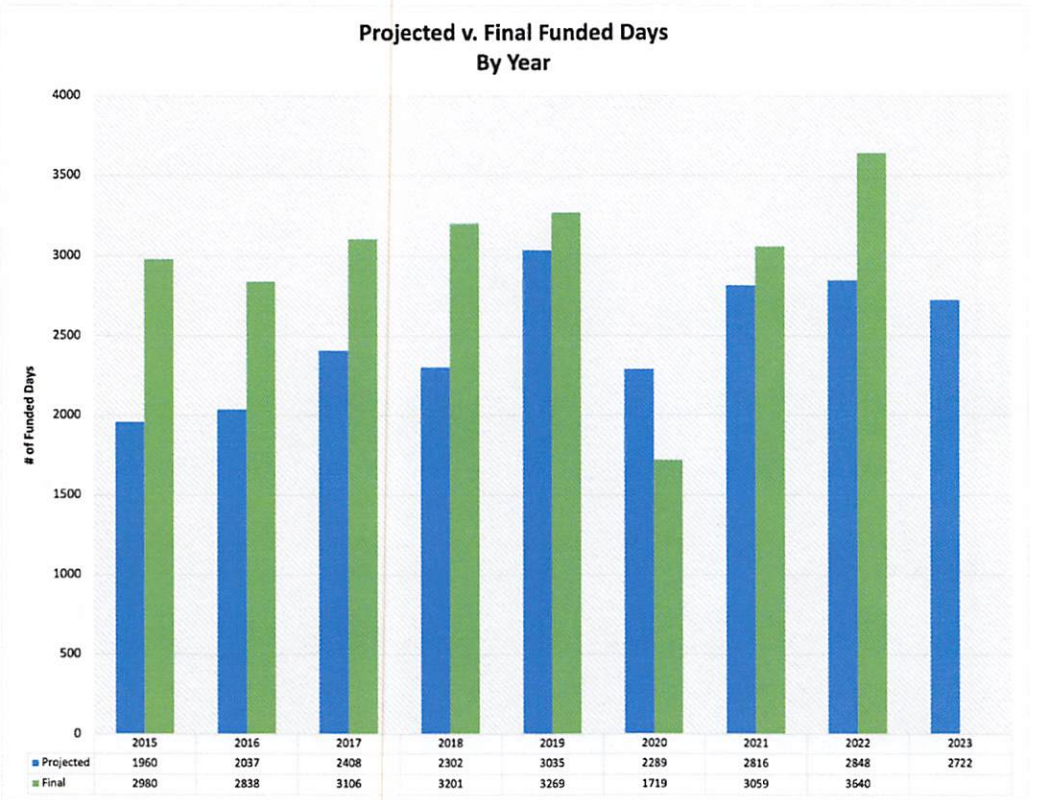
Last September, a Research Vessel Operators Committee (RVOC) Tiger Team was formed to focus exclusively on the crewing issue with a goal of identifying workable recommendations to immediately address this challenge. These recommendations include adding tools to alleviate the current situation in the short-term, as well as looking at the long-term goals and benchmarks. A near-term action is the addition of a designated Crewing Coordinator position within the UNOLS Office to help coordinate a recruiting effort across the nation for qualified mariners. The agencies also recognize that salary parity is a critical element in recruiting and is vital for crew retention and training. Consideration is also being given to allocating berths on our ships to support sailing potential crew candidates, such as those coming out of maritime academies, to demonstrate the opportunities and the value of a rewarding career supporting U.S. science. It is recognized that this may affect the science berthing capacities.

Because of these tertiary effects of COVID-19 continue to impact science missions, budgets, and operations there is no way to adequately compare the percentage variances from past pre-COVID annual agency letters, however the Federal agencies continue to believe that the current balance between the number of ships in the ARF and projected available agencies' funding to support the infrastructure and science awards is sustainable in the short term but increases in budgets are necessary to account for these inflationary impacts.

Table 1: Comparison of Projected Utilization vs. Actual Utilization

	Agency	ACOE	BOEM	DOE	EPA	Inst/ State	NASA	NAVY	NOAA	NSF	Other	USGS	Total
2015	Projected	10	8	0	0	77	0	308	119	1291	90	57	1960
	Final	13	12	24	6	195	26	506	423	1477	258	40	2980
2016	Projected	0	3	0	0	71	26	206	162	1281	259	29	2037
	Final	14	0	0	0	168	31	534	284	1465	340	2	2838
2017	Projected	4	45	10	3	137	62	413	144	1484	105	1	2408
	Final	9	3	13	12	230	70	643	276	1578	270	2	3106
2018	Projected	0	3	3	0	61	64	326	141	1597	86	22	2302
	Final	14	2	0	4	192	111	422	232	1968	227	29	3201
2019	Projected	5	0	0	3	279	1	443	196	1867	234	9	3035
	Final	14	0	0	15	335	0	429	219	1993	264	0	3269
2020	Projected	11	0	0	0	143	127	246	92	1537	133	1	2289
	Final	10	0	0	8	146	3	173	70	1134	173	2	1719
2021	Projected	0	0	0	7	146	18	465	184	1830	155	11	2816
	Final	0	1	6	11	199	18	490	214	1884	214	22	3059
2022	Projected	0	3	0	0	76	39	300	173	2135	122	0	2848
	Provisional*	0	0	0	40	158	7	493	237	2409	196	22	3562
2023	Projected	0	0	0	0	110	34	433	97	1932	116	0	2722

Figure 1: Comparison of Projected Utilization vs. Actual Utilization



Agency Positions

1) Vessel owners have sole discretion on whether or not to retain their vessel(s) in service. Agencies have final say on where their respective Federal work will be carried out. UNOLS can withdraw ships from the ARF, if utilization declines over a period of time and owner-operators continue to retain their ship in service, as outlined in the UNOLS Guidelines for Requesting/Becoming a UNOLS Vessel, (dated 9/30/2004). https://www.unols.org/document/guidelines-becoming-unols-vessel

2) NSF and ONR will not normally provide operators of agency-owned assets with lay-up funds and will not divert work from other ARF vessels as an artificial means to reduce day rates. Lay-up funds for a specific ship will be carefully reviewed on a case-by-case basis and will be considered within the context of the overall ARF usage and budgetary projections. NSF and ONR believe this practice is in compliance with the UNOLS Charter (ANNEX I, Ship Scheduling Committee).

3) Federal agencies prioritize decisions based on schedule efficiency, scientific effectiveness, and budget comparisons among ship options, to maximize science support while making every effort to reduce overall costs. This may require a long-term view beyond a 12-month forecast. It may be the case that consolidation of underutilized

schedules adds transit days in the short-term but reduces overall costs and is in line with Agency Position 2 above.

4) NSF and ONR agree an appropriate level of surge capacity is needed, in particular for rapid response-type cruises, and also to allow for potential future increases in science utilization.

5) Given the current and projected Federal funding limitations and the need to modernize the ARF, Fleet size is an important factor in overall planning and budgeting resources for maximum attainment of science objectives and requires continued evaluation. Consideration will be given to geographic distribution of the ships, mission capabilities, and overall projected science utilization by Class, as all are important factors in ensuring efficient and effective investments in science operations at sea.

6) Federal agencies encourage institutions that own and/or operate ARF vessels to employ their assets for institutional education and research. This type of shared-use lowers the day rate for all potential users and provides important funding for normal maintenance and/or emergent repairs. The use of institutional days must conform to requirements set forth in Charter Party and Cooperative Agreements.

Agency Decisions and Recommendations

The Federal Agencies will continue modernization efforts in the Fleet, along with investments in maintenance.

Guidelines

The guidelines and principals used by ONR and the NSF to develop the recommendations noted above, as well as budgetary investments in ship operations, are outlined below:

1) Escalating ship day rates and ship repairs, require that operators strive to strictly control operating costs. An institution's ability to maintain reasonable day rates will be considered when negotiating annual awards. In CY 2022, Global and Ocean Class ships accounted for approximately 71 % of the NSF budget for ship operations and technical support. In CY 2022, the NSF/OCE (including OOI) funded 73% (1883 days) of the total ship time (2567 days) for the ARF's Global and Ocean Class vessels and ONR funded 17% (432 days). The remaining 10% was from NOAA, NASA, Army Corps of Engineers, Institutional, and non-Federal funding.

2) Federal agencies will continue to evaluate weak schedules of institution-owned ships, and the additional impact to an agency's costs. Recognizing that shore-side support is one area where costs are distributed across the ships, these costs will continue to be reviewed on an annual basis. Base costs should be used in evaluating comparisons.

3) When possible, scheduled maintenance periods should be carried out in a vessel's homeport, both as a cost saving measure as well as an opportunity to conduct substantive preventative maintenance. Unless an exemption is granted, U.S. shipyards must be used for regulatory dry-docking.

4) Ship schedules should be developed to meet the science program requirements while adhering to budgetary constraints.

5) Science program requirements should match the oceanographic outfitting capabilities of the ship on which the program is scheduled.

6) Funding agency science and ship program managers and the Principal Investigator (PI) will be consulted when information beyond that listed on the UNOLS Marine Facilities Planning Ship-time & Marine Equipment (MSE) request is required. Any changes in the scope and purpose of the funded project must be approved by the Federal Agency. PIs should take initiative to reach out to the operators, UNOLS Office, or NSF to discuss complex projects before submission.

7) Every effort is made to schedule each year's funded programs within the budgetary constraints of each Federal agency. Deferrals will be considered if a particular cruise cannot be accommodated effectively and efficiently. All cruises requiring significant transit costs will be specifically reviewed and evaluated to determine if it can be accommodated within the available funding.

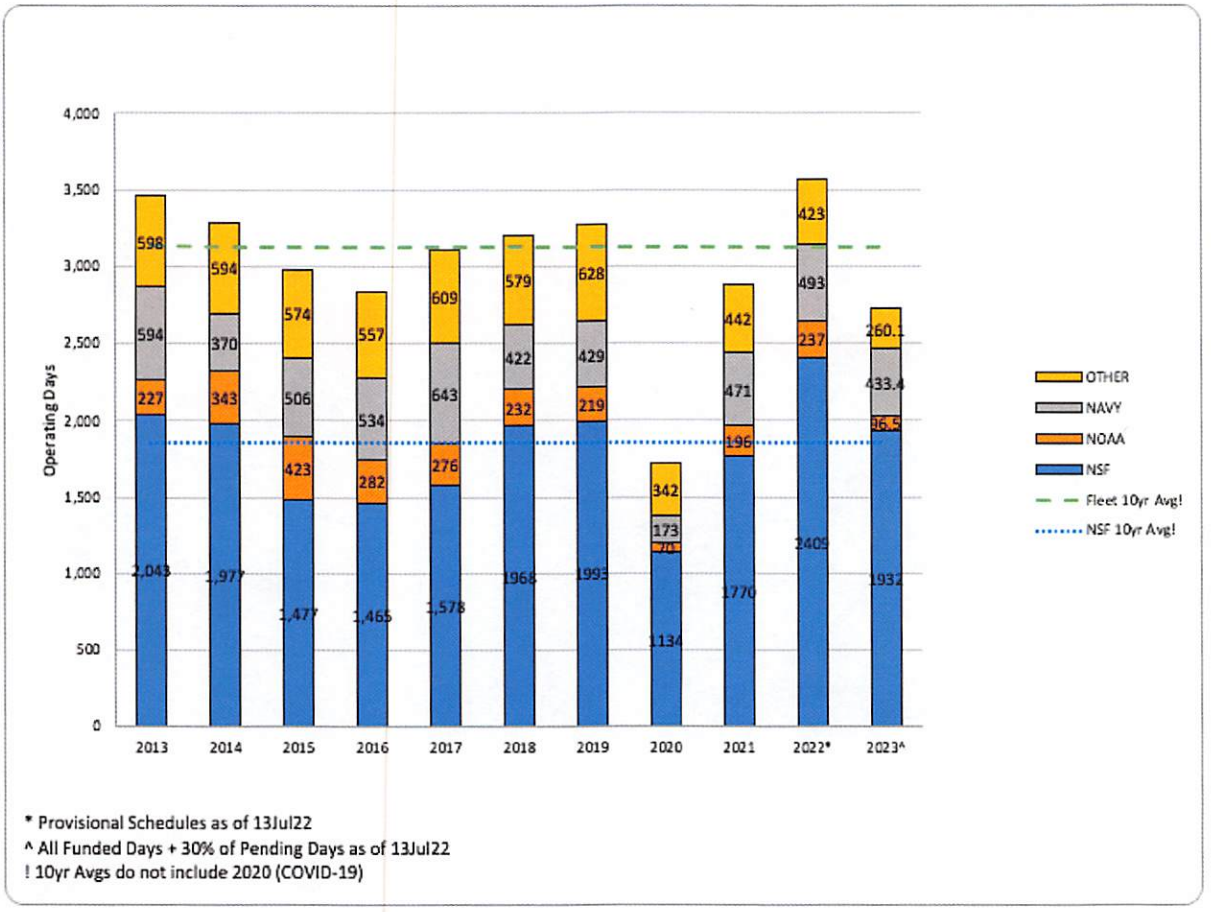
8) Science missions requiring Federal assets, such as NDSF Remotely Operated Vehicles (ROV), need special consideration when scheduling and may necessitate substitution of assets to either give flexibility for scheduling the missions or for cost savings. All substitutions require approval from the Federal agencies.

Supporting Information and Findings

The following findings regarding ARF vessel operations for 2022 and 2023 are based on the submitted Ship-time & Marine Equipment request forms, posted schedules and DRAFT or preliminary schedules.

Figure 2: U.S. Academic Research Fleet Utilization (2013-2023)

As of 15Jul22



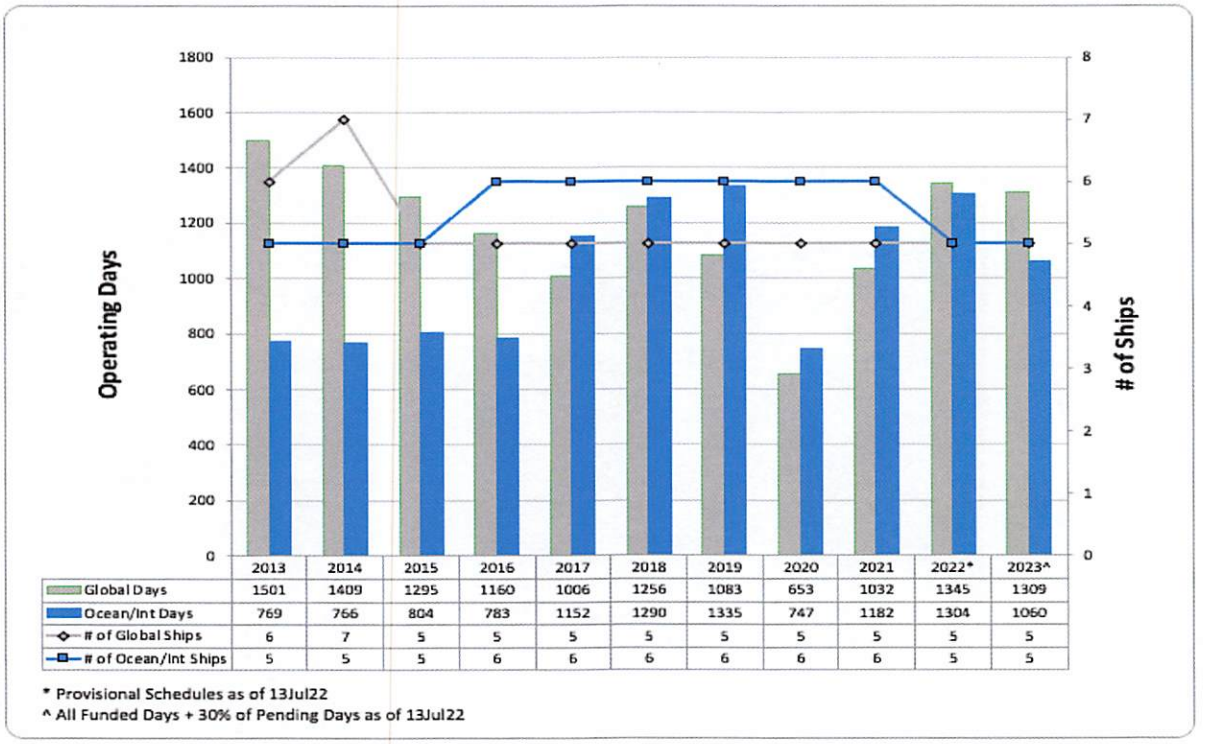
* Provisional Schedules as of 13Jul22

^ All Funded Days + 30% of Pending Days as of 13Jul22

! 10yr Avgs do not include 2020 (COVID-19)

Figure 3: Ship Utilization 2013-2023: Global and Ocean/Intermediate Classes

As of 15Jul22



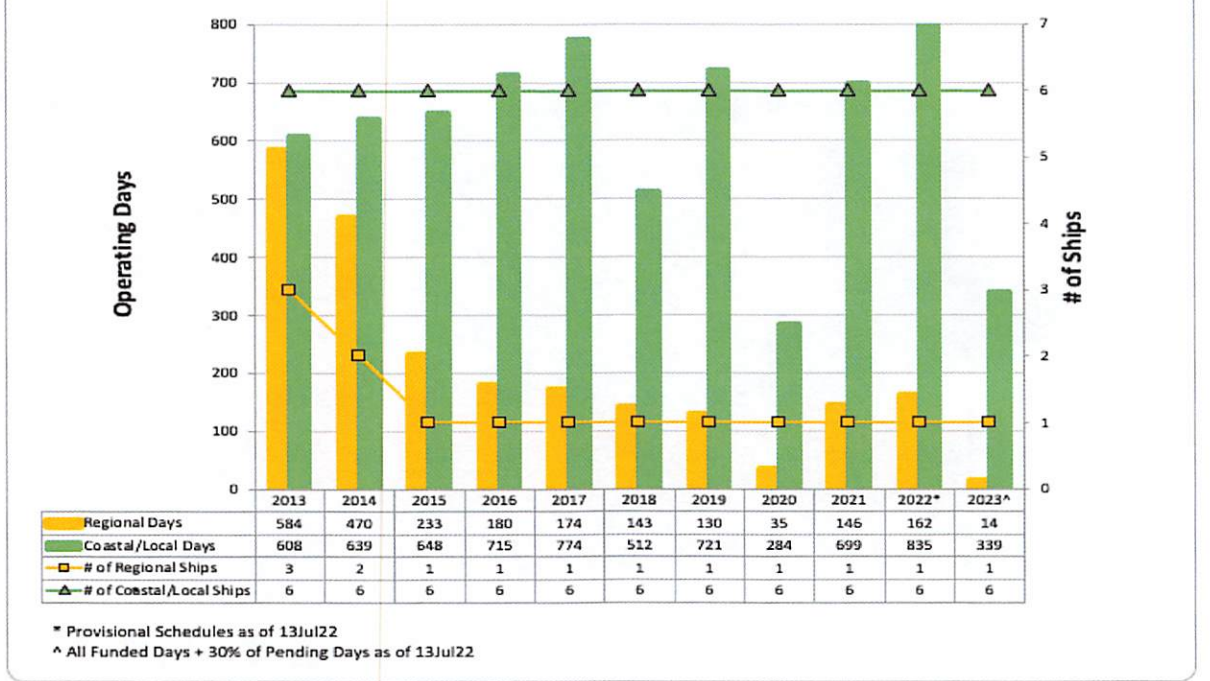
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022*	2023^
Global Days	1501	1409	1295	1160	1006	1256	1083	653	1032	1345	1309
Ocean/Int Days	769	766	804	783	1152	1290	1335	747	1182	1304	1060
# of Global Ships	6	7	5	5	5	5	5	5	5	5	5
# of Ocean/Int Ships	5	5	5	6	6	6	6	6	6	5	5

* Provisional Schedules as of 13Jul22

^ All Funded Days + 30% of Pending Days as of 13Jul22

Figure 4: Ship Utilization 2013-2023: Regional and Coastal/Local Classes

As of 19Jul22



	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022*	2023^
Regional Days	584	470	233	180	174	143	130	35	146	162	14
Coastal/Local Days	608	639	648	715	774	512	721	284	699	835	339
# of Regional Ships	3	2	1	1	1	1	1	1	1	1	1
# of Coastal/Local Ships	6	6	6	6	6	6	6	6	6	6	6

* Provisional Schedules as of 13Jul22

^ All Funded Days + 30% of Pending Days as of 13Jul22