

Date: June 30 2015
 From: NSF, ONR and the UNOLS Executive Secretary
 To: Dr. Chris Measures

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Subj: 2016 U.S. Academic Research Fleet Operations Support Findings and Recommendations

Ref: UNOLS Non-Operators Subcommittee Procedures for Recommending Non-Operational Periods of Ships in the UNOLS Fleet (revised 8 June 2015)

Introduction

The National Science Foundation (NSF), the Office of Naval Research (ONR), and the UNOLS Executive Secretary provide the following letter to UNOLS Council after having participated in numerous ship scheduling meetings and conducted a thorough review of the 2016 Letters of Intent for the U.S Academic Research Fleet (ARF) Global, Ocean/Intermediate, Regional, and Coastal/Local class ships. Realizing that additional funding decisions will be made over the coming weeks for the 2016-scheduling year, based on current projections the agencies present the following outlook for 2016. NSF feels that an early review provides good analysis on where work is needed to fill out schedules, especially in the promotion of non-federal work. This year's findings are reviewed with the National Research Council's Decadal Survey of Ocean Sciences *Sea Change* report and the subsequent NSF Reply in mind. This by no means is meant to convey a final forecast, but rather a baseline for continued discussions within UNOLS of how to improve the outlook for CY 16. The percentage variances from past June letters have been mainly a result of non-NSF work becoming known later in the scheduling process.¹ NSF anticipates fewer ship days will be added to CY 16 schedules from the

Agency	ACOE	DOE	EPA	Inst/ State	BOEM	NASA	NAVY	NOAA	NSF	USGS	Other	Total
Projected 2013 as of June 1, 2012: Total Funded and Pending	0	0	0	128	0	32	151	154	1682	20	239	2406
Actual/Final 2013 days by agency	8	0	0	200	4	14	594	227	1989	23	403	3462
Projected 2014 as of June 17, 2013: Total Funded and Pending	0	0	0	121	20	17	334	152	1700	40	175	2559
Actual/Final 2014 days by agency	0	7	6	227	18	20	370	343	1977	33	283	3284
Projected 2015 as of June 11, 2014: Total Funded and 30% Pending	10	0	0	77	8	0	308	119	1291	57	90	1960
Provisional 2015 days by agency	13	30	5	204	8	26	519	423	1436	42	262	2968
Projected 2016 as of June 9, 2015: Total Funded and 30% Pending	0	0	0	71	3	26	206	162	1281	29	259	2037

Spring 2015 OCE panels. Most NSF days are being considered for the fall panels per NSF/OCE guidelines.

There are presently 1485 funded days across all agencies for CY 16, as shown in Table 1. There are 1839 pending days of which an estimated 30% (552) will likely be funded resulting in a total of 2037 days (Institution/State=71, Navy=206, NOAA=162, NSF=1281, BOEM=3, USGS=29, NASA=26, and Other=259) of proposed ship time. The available information indicates the number of proposed Fleet operating days for 2016 is lower than historical levels. Figures 1-4 illustrate the Fleet utilization trends over the past ten years and the anticipated use in 2016, and Figure 3 in particular demonstrates the Global demand.

Based on the findings outlined below, several ships in the ARF will have less than optimal schedules in 2016. As agreed to by the UNOLS Council, the referenced document which guides the recommended process for making decisions regarding non-operational periods, calls for recommendations to be made by the Agencies. This letter provides those recommendations. The link to the reference document is:

https://www.unols.org/sites/default/files/NonOp_Process_Recmd.pdf

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 when owner-operators continue to retain their ship in service, as outlined in the *UNOLS Guidelines for Requesting/Becoming a UNOLS Vessel*, Chapter 6, dated 9/30/2004.
- 2) NSF and ONR will not provide operators of agency-owned assets with lay-up funds or divert work from other UNOLS ships as an artificial mechanism by which 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 right-sizing and budgetary projections. NSF and ONR believe this 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 between 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 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 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, it has become apparent ARF size is an important factor, and requires continued evaluation. With regard to “right sizing” of the ARF, consideration will be given to geographic distribution of the ships and overall projected science utilization by class.
- 6) NSF is currently reviewing options as outlined in NSF’s *Sea Change* Reply for operations of R/V *Marcus Langseth* outside the current ownership model. NSF agrees that maintaining specialized seismic capabilities is important. The NSF/OCE Marine Geology and Geophysics Program plans to support science needs using a regional planning approach.
- 7) Federal agencies encourage institutions that own and/or operate ARF vessels to charter ship days for institutional education and research. This commitment reduces the dependency on the Federal agencies, and lowers the day rate for all potential users. Multi-ship operators should avoid unintended consequences of shifting costs to other ships they operate. The use of institutional days must conform to requirements set forth in Charter Party and Cooperative Agreements.

Agency Decisions and Recommendations

- 1) NSF and ONR recommend the operators of all ships identify ways to reduce costs, and seek appropriate opportunities to support research and education programs from other funding sources, including institutional funds. It is important operators not over-estimate yearly costs, which tend to result in large residual carry-forward funds, reducing opportunities to schedule additional operational days in the current year.
- 2) NSF and ONR recommend the science community start implementing plans to adjust the size of their programs in order to utilize the new but smaller vessels R/Vs *Sikuliaq*, *Armstrong* and *Ride*. The 12-month major overhaul of *Thompson*, starting in May 2016, will provide an initial opportunity/necessity to fit onto these smaller capacity vessels.
- 3) NSF/OCE has started the process of restoring the balance between core science and infrastructure portfolios. PIs preparing proposals for upcoming target dates are encouraged to stay in touch with NSF program managers.
- 4) University of Washington should continue with plans for an R/V *Clifford Barnes* replacement. NSF will support transferring the ship’s title to UW at the appropriate time to support the replacement efforts.

Guidelines

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

- 1) Budgetary constraints across the Federal agencies, escalating ship day rates and ship repairs, require that operators strive to maintain operating costs within inflation. An institution's ability to maintain reasonable day rates will be considered when negotiating annual awards. In CY 15, Global and Ocean Class ships accounted for 60% percent of the NSF budget for ship operations and technical support, and the impact to the Fleet should be especially considered, as stated in the agency decisions and recommendation #2.
- 2) Federal agencies will continue to evaluate weak schedules of institution-owned ships, and the additional impact to an agency's costs. Recognizing 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 must be developed to meet the science program requirements while adhering to budgetary constraints.
- 5) Science program requirements must match the oceanographic outfitting capabilities of the ship on which the program is scheduled.
- 6) The size/class of vessel should be considered when selecting ships appropriate for the science mission.
- 7) The Funding Agency Program Manager and the Principal Investigator (PI) will be consulted when information beyond that listed on the UNOLS Ship Time Request Form is required. PIs and operators should avoid changing the scope and purpose of the funded project unless approved by the Federal agency.
- 8) Programs may be scheduled as a two-ship operation instead of a single Global Class ship if it will be more efficient and cost effective.
- 9) Every effort should be 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.

10) Cruises requiring Federal assets, such as NDSF ROVs, need special consideration when scheduling. It may necessitate substitution of assets, which requires approval by the funding agencies to either give flexibility for scheduling the cruises or for cost savings.

Supporting Information and Findings

The following findings regarding ARF ship operations for 2016 are based on the submitted ship time requests, posted Letters of Intent (preliminary schedules) and cost estimates provided by the ship operators as of June 9th, 2015:

Table 1: Fleet Utilization by Agency (2011 - 2016)

Agency	ACOE	DOE	EPA	Inst/State	BOEM	NASA	NAVY	NOAA	NSF	USGS	Other	Total
2011 Funded Days	0	0	1	198	35	2	491	498	2282	62	232	3801
2012 Funded Days	0	0	0	170	21	37	376	337	2164	11	281	3397
2013 Funded Days	8	0	0	146	4	14	594	227	2043	23	403	3462
2014 Funded Days	0	7	6	227	18	20	370	343	1977	33	283	3284
2015 Funded & Pending Days*	13	30	5	204	8	26	519	423	1436	42	262	2968
2016 Funded Days**	0	0	0	56	0	26	116	83	1003	29	172	1485
2016 Pending Days**	0	0	0	51	9	0	299	263	926	0	291	1839
2016 Funded & 30% of Pending Days***	0	0	0	71	3	26	206	162	1281	29	259	2037

Notes about the table:

- * The 2015 Funded and Pending days are based on posted ship schedules as of 6/5/2015.
- ** The 2016 Funded and Pending days are based on the latest LOIs and draft schedules posted as of 6/5/2015.
- *** A 30% success factor rate has been applied to the pending days

1. There were 3284 operating days on the 2014 final ARF published schedules.
2. There are currently 2968 operating days (funded and pending) on the 2015 published schedules as of June 9, 2015 (the total does not include the R/V *Sikuliaq* Project Days funded by NSF's MREFC account). (All numbers presented exclude RVIB *NB Palmer* and USCGC *Healy*; 85.5 days in 2015.)
3. The number of funded operating days in 2015 for NSF is 1436 days or 48% of the total. In 2014, of the total 3284 days, NSF funded 1977 days, or 60 %. In terms of percentages, NSF continues to provide the largest proportion of the total funded Fleet days.

4. For 2015, Globals/Ocean Class, (*Atlantis*, *Langseth*, *Revelle*, *Sikuliaq* and *Thompson*) and *Kilo Moana* have schedules with between 148 and 305 operating days (funded and all pending). Specific homeport maintenance periods are planned. In CY 15, NSF funded 938 days on Globals/Ocean, including use of *RVIB N.B. Palmer*, accounting for 65% of the OCE/IPS/Ship Ops budget, or about \$44M. Not included in that cost figure (but counted in the 938) are the OOI days (225 days) that NSF/IPS/OOI supported, accounting for an additional \$7.4M. The cost to ONR for Globals is \$6.1M. The CY 16 projection for the Global and Ocean Class ships is approximately 1099 days total (funded + 30% pending). At this time, NSF is scheduled for 550 days on Globals, both funded and 30% of the pending. The ONR projection for CY 16 is 206 total days (funded and 30% of the pending).

Langseth plans to support 228 days, with funding from NSF, NOAA, USGS, and European work (including NSF-NERC Barter Exchange). For CY 16 *Langseth* will need to identify the most cost effective way to handle work in the South Atlantic for several funded projects, and sometime that year transit the ship into the Pacific.

Sikuliaq straddled both MREFC and O&M funding, as sea trials continue into the first half of CY 16. The *Sikuliaq* CY 16 schedule is awaiting decisions from NSF PLR/ARC, but the overall Letter of Intent looks light. *Sikuliaq* should continue to work on options that include work that *Thompson* will not be able to handle once the Service Life Extension Program commences (SLEP) (1 June 2016).

Thompson has a full schedule in CY 15, with many trips in/out of homeport. *Thompson's* schedule includes support of NSF-OOI cruises, NOAA work, institutional days, Ocean Networks Canada, and a mapping cruise, as well as significant NSF days. For CY 16, *Thompson* will work the first half of the year before the start of the SLEP.

Kilo Moana continues to modify her CY 15 schedule due to a repair issue that is scheduled to be resolved in 2016 and will impact scheduling for next year. As a result, some of the KM days have been shifted to *Ka'imikai-O-Kanaloa* (KOK). As of this writing, the provisional schedule has KM at 196 days, of which 136 were NSF days, 30 NOAA days, and the remaining a combination of international work and institutional days.

Revelle and *Atlantis* will continue to have robust schedules in CY 16. In CY 15, *Revelle* plans to execute 305 days, supported with 178 NSF days and 127 Navy days. *Atlantis* will have 285 days, with 258 days of NSF & NSF/OOI time. The schedule will also have 26 days for a NASA cruise, and one day for ONR. In CY 16, it is anticipated that the number of days for each of these ships will be close to 300 days, with a mix of funding sources. *Atlantis* will have several *Alvin* cruises.

5. In CY 16, NSF and NOAA will also implement a barter agreement between agencies to exchange ship days in order to optimize scheduling efficiencies.

6. In CY 14 *Melville* and *Knorr* were retired by the Navy, and in early CY 16 *Neil Armstrong* will transition into science operations, followed mid-year by *Sally Ride*.
7. For the East Coast Intermediates, *Endeavor* has 257 days (funded) in CY 15, up 95 days from CY 14. For 2016, *Endeavor's* LOI has 126 funded days split between NOAA, ONR, Institution/State, Other, and NSF, and 187 pending days. In CY 15, *Atlantic Explorer's* schedule has 119 NSF days, along with a multi-ship ONR cruise for 38 days. The CY 16 LOI shows 107 funded NSF days, with 50 pending days.
8. In CY 15 R/V *Pelican* in the Gulf of Mexico has a fully subscribed schedule of 185 days but is down from CY 14 by 14 days. Historically *Pelican* has added days over the course of the operating year.
9. In CY 15 R/V *Hugh Sharp* has a relatively strong schedule at 198 funded operating days, and work concentrated regionally. This is down from CY 14 by 5 days. For 2016, *Sharp's* LOI has 19 funded and 155 pending.
10. In CY 15 R/V *Walton Smith* has a relatively modest schedule, with 122 days, down from CY 14 by 16 days. The 2016 LOI has 72 days funded and 27 days pending.
11. R/V *Savannah* has a full schedule at 169 days in CY 15, up from 165 days in CY 14. The 2016 LOI for R/V *Savannah* has 73 funded days and 45 pending.
12. R/V *Blue Heron* has 40 operating days in CY15, down from 54 days in CY14. *Blue Heron's* CY 16 LOI has 3 funded days, and 92 pending days. The majority of pending days are NSF.
13. For the West Coast Intermediates, *Oceanus* has 220 days scheduled in 2015, up by 31 days. *New Horizon* has completed her final cruise and is being sold by UCSD/SIO.
14. R/V *Point Sur* was sold in CY15 to University of Southern Mississippi to be used as an institution research vessel.
15. In CY 15 *Robert G. Sproul* is scheduled for 74 days, supported by NSF, Navy, Institutional/State, EPA and Other. In 2016 there are 37 funded days and 45 pending days shown on the Letter of Intent.

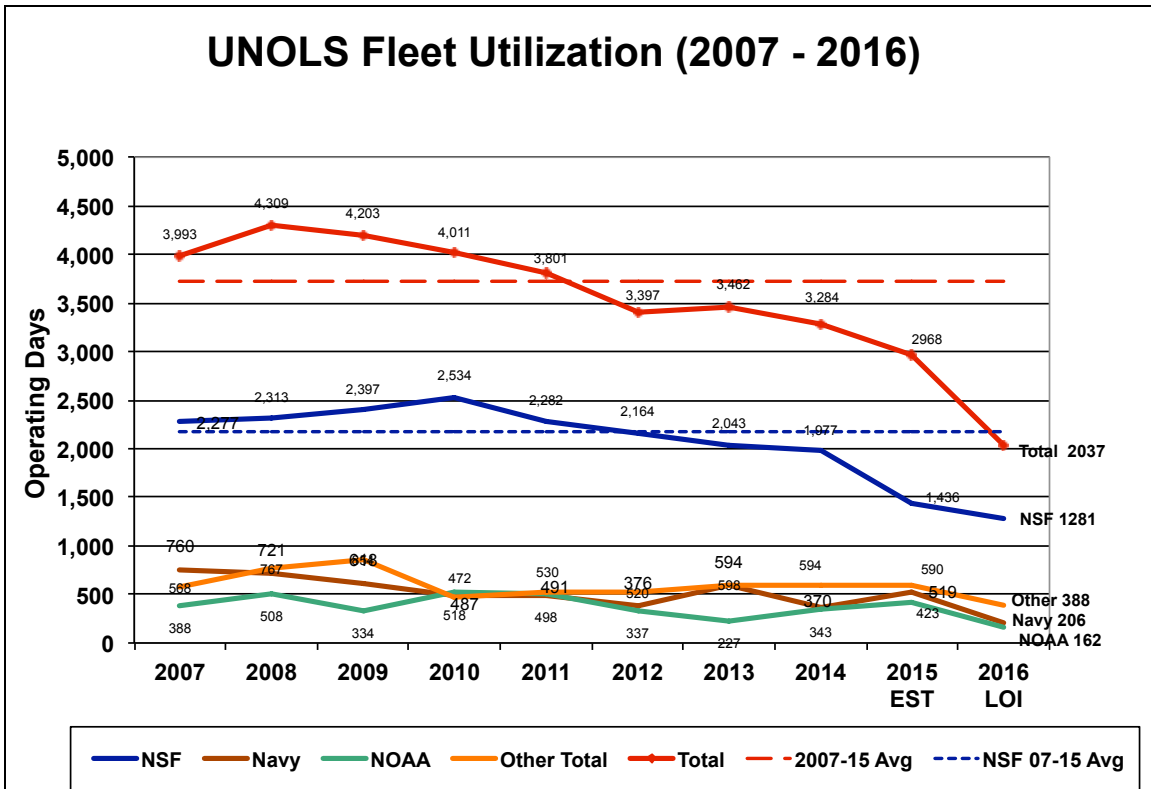


Figure 1: UNOLS Fleet Utilization (2007-2016)

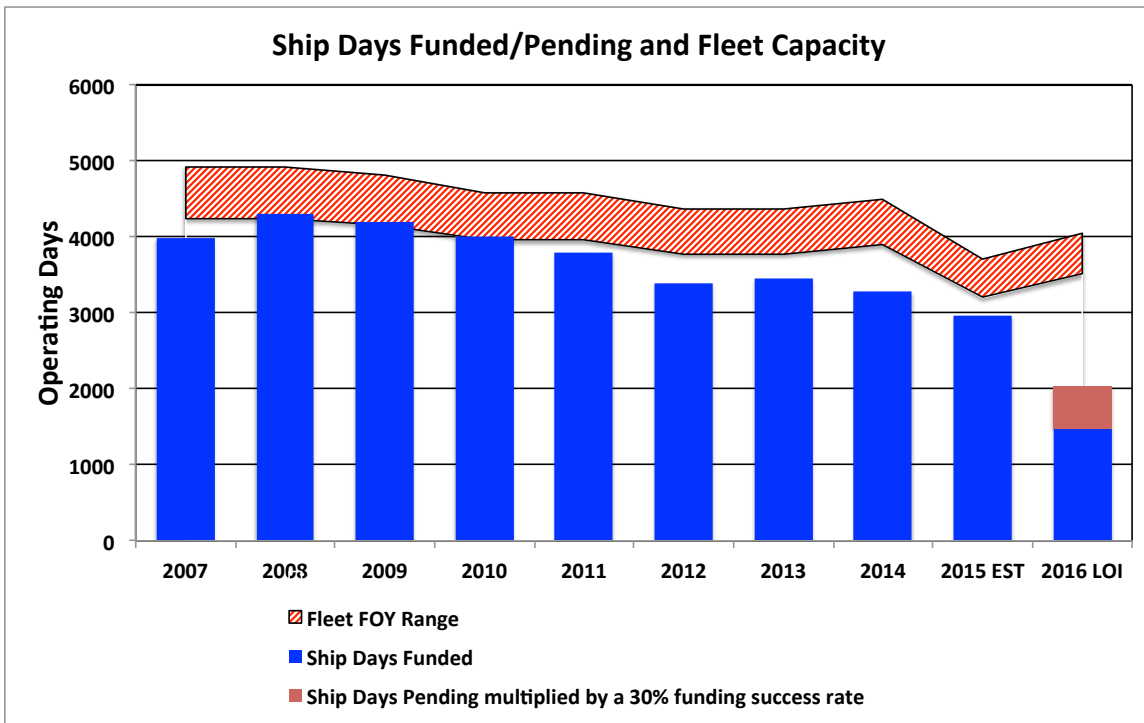


Figure 2: Ship Days Funded/Pending and Days Available

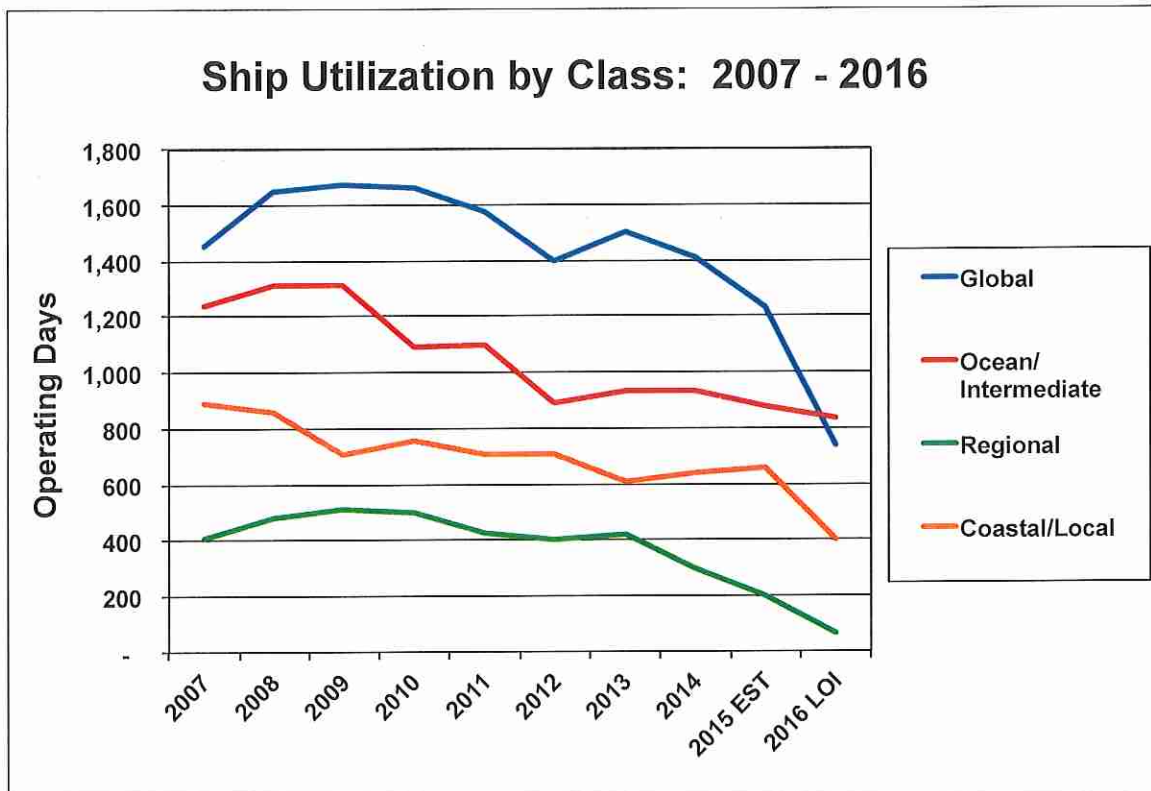


Figure 3: Ship Utilization by Class (2007-2016)

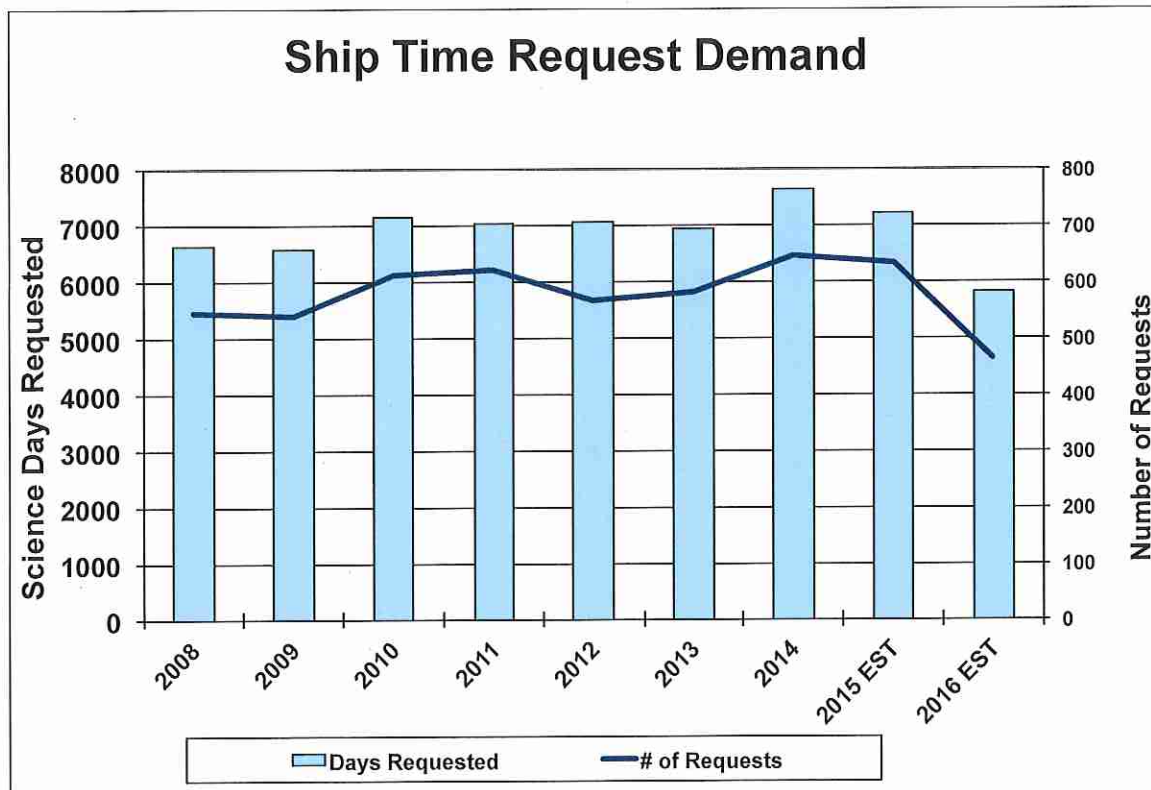


Figure 4: Ship time Request Demand