

**U.S. SUB-SEAFLOOR SAMPLING PROGRAM (S3P)
(FORMERLY INTERNATIONAL OCEAN DISCOVERY PROGRAM (IODP))**

**U.S. Sub-Seafloor Sampling Program Funding
(formerly Integrated Ocean Discovery Program)**

(Dollars in Millions)

FY 2023 Base Plan	FY 2024 (TBD)	FY 2025 Request	Change over	
			FY 2023 Base Plan Amount	Percent
\$50.40	-	\$55.51	\$5.11	10.1%

Brief Description

The U.S. scientific ocean drilling enterprise is transitioning from the International Ocean Discovery Program to a U.S.-led effort (the U.S. Sub-Seafloor Sampling Program, S3P). NSF is shifting to a model of scientific ocean drilling that uses alternative drilling platforms, such as mission-specific platforms, and technologies. Additionally, NSF will capitalize on the wealth of information stored in the already-retrieved cores accessible through the instrumented core repositories in Texas, Japan, and Germany. During this transition phase, NSF will actively engage in planning efforts with the research community to envision the future of U.S.-led scientific ocean drilling. Additionally, NSF will begin the process of establishing a Scientific Ocean Drilling Coordination Office that will be supported for an initial 5-year period and NSF, in partnership with the drilling community, will also continue to develop a plan for future platform design and construction.

Meeting Scientific Community Needs

Throughout its history, ocean drilling has represented an international partnership of scientists, research institutions, and funding organizations of multiple nations that collect geologic data and samples from beneath the ocean floor. The scientific ocean drilling enterprise explores Earth's evolution and structure as recorded in the ocean basins. A portfolio of scientific drilling platforms provides sediment and rock samples (cores), *in situ* monitoring, measurements from borehole observatories, shipboard and shore-based descriptive and analytical facilities, downhole geophysical and geochemical measurements (logging), and opportunities to conduct experiments to determine *in situ* conditions beneath the sea floor.

After numerous international workshops, in October 2020, the IODP community released a new science plan entitled *2050 Science Framework for Scientific Ocean Drilling*.¹ This plan guides multidisciplinary sub-seafloor research into interconnected processes that characterize the complex Earth system and shape our planet's future. The *2050 Science Framework* has a 25-year outlook, requiring state-of-the-art approaches for scientific ocean drilling to achieve its objectives into the mid-21st century.

NSF has asked the National Academies of Science, Engineering, and Medicine to conduct the 2025-2035 Decadal Survey of Ocean Sciences, with an interim report that will specifically address high

¹ www.iodp.org/2050-science-framework

priority research questions requiring scientific ocean drilling. NSF will also support workshops to engage researchers, including early career scientists, to explore future scientific ocean drilling objectives, new approaches in methodology and platforms, and international engagement.

Status of the Facility

As a result of international partner decisions to not financially contribute to the operations of the *JOIDES Resolution (JR)*, and to lay the groundwork for a vibrant U.S. scientific ocean drilling enterprise that will extend for decades to come, NSF has chosen not to renew its cooperative agreement with Texas A&M University for operations and maintenance of the *JR*, a 45-year-old drilling vessel. The final year of full *JR* operations as an NSF-provided platform in the IODP will be FY 2024. NSF will, however, continue to support research by the U.S. scientific ocean drilling community and is committed to supporting cutting-edge science along with the tools and workforce that make it possible.

Governance Structure and Partnerships

NSF Governance Structure

NSF oversight is provided by a program officer in the GEO Division of Ocean Sciences (OCE), who works cooperatively with staff from BFA's Research Infrastructure Office and Division of Acquisition and Cooperative Support, the Office of the General Counsel, and the Office of Legislative and Public Affairs. The GEO facilities team and the Chief Officer for Research Facilities also provide high-level guidance, support, and oversight.

External Governance Structure

Currently, the *JR* Board, one of three IODP governing bodies, is chaired by a U.S. scientist, with participation by NSF, other contributing international funding agencies, community scientists, and the facility operator (also termed *JR* Science Operator (*JRSO*)). The Board provides operational and management oversight of (1) the *JR* (via the facility operator—Texas A&M University), (2) the Science Support Office, and (3) the *JR* Facility Advisory Panels. The Board also approves annual program plans and decides on ship tracks on behalf of IODP; NSF decides whether to accept these plans in executing its fiduciary and legal authority for the operation of the *JR*. As the U.S. effort transitions to a new structure, a parallel governance structure will be established that facilitates a nimble facility to meet the evolving needs of the scientific community.

Partnerships and Other Funding Sources

IODP participants have included the U.S., Japan, ECORD, the People's Republic of China, India, Australia, and New Zealand, with all participants except Japan having provided financial contributions to *JR* operations. Japan provides program support through substantial investment in operations of the heavy drill ship *Chikyu*, with U.S. and Japanese scientists enjoying reciprocal privileges on each drilling vessel. Australia and New Zealand have indicated an interest in making financial contributions as part of a future sub-seafloor sampling program.

Funding

**Total Obligations for S3P
(formerly IODP)
(Dollars in Millions)**

	FY 2023	FY 2024	FY 2025	ESTIMATES ¹				
	Base Plan	(TBD)	Request	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Operations & Maintenance	\$50.40	-	\$55.51	\$55.51	\$55.51	\$55.51	\$55.51	\$55.51

¹ Outyear estimates are for planning purposes only. The current cooperative agreement ends in September 2024.

The FY 2025 Request includes \$55.51 million for S3P. The increase above FY 2023 is primarily associated with the close-out phase of IODP as well as costs to establish a new U.S. Scientific Ocean Drilling Coordination Office. In addition, these increased costs consider the Coordination Office efforts to establish future pathways to a sustainable drilling enterprise.

Reviews and Reports

An external mid-award review panel was convened by NSF in July 2022 to examine the facility’s performance. Excerpts from the panel summary follow: “The JRSO facility is vital to the marine geoscience community... The physical facility (ship and instruments) and human resources currently provided through the JRSO... is spearheading the implementation of innovative measurements, curation (cores and data), computing, publications, and training the next generation of scientists and technical innovators. The (IODP) program... is working remarkably well and is addressing the current science plan as well as key elements of the 2050 Scientific Framework...” These comments support the rationale for continuing the U.S. scientific ocean drilling enterprise through the end of the cooperative agreement. These comments also underscore the need to maintain and evolve scientific ocean drilling capacity beyond FY 2024 and S3P is the next step in that evolution. S3P will focus on a sustainable and nimble U.S.-led effort that continues to invite international partnership but is not reliant on those partnerships. As a follow-on to the 2050 Framework, the Science Mission Requirements for a new scientific ocean drilling vessel were submitted to NSF by the scientific community in September 2022. These requirements form the basis of NSF’s continuing efforts to establish future platforms for U.S. scientific ocean drilling.

Renewal/Recompetition/Disposition

The current IODP award was made, as a renewal, for five years of operation from FY 2020 through FY 2024. After following its internal processes and careful consideration of alternatives, NSF decided not to renew the award for IODP O&M after FY 2024. NSF is actively planning and engaging the scientific community regarding the future of scientific ocean drilling.