

Texas A&M University
International Ocean Discovery Program
***JOIDES Resolution* Science Operator**

Strategic Plan
2015–2020

Vision Statement

As the science operator of the *JOIDES Resolution*, we are committed to exceeding the expectations of the scientific ocean drilling community by maximizing the science the *JOIDES Resolution* delivers.

Mission Statement

The International Ocean Discovery Program (IODP) is a multinational scientific research program that uses scientific ocean drilling to explore the evolution of Earth's crust, oceans, climate, and deep biosphere. The *JOIDES Resolution* Science Operator (JRSO) operates the scientific drilling vessel *JOIDES Resolution* on behalf of IODP and implements the science objectives as defined by the *JOIDES Resolution* Facility Board. The JRSO holistically provides the wide array of services for planning and implementing expeditions from the proposal stage to published results.

Values

We value innovation, resourcefulness, integrity, service, and performance. We take pride in our can-do attitude that ensures each scientist who sails on the *JOIDES Resolution* has the greatest chance of achieving success. Our commitment to excellence is founded on respect for one another, respect for the science community we serve, and respect for our scientific mission.

Environmental Scan

Strengths

Our organization's greatest strength is the range and breadth of experience of our dedicated staff. This experience comes from a tradition of resourcefulness, innovation, and self-reliance—qualities that are required to make two-month expeditions routinely successful. Our second greatest strength is our access to a world-class drilling vessel (and crew) that is cost effective and uniquely suited to our mission.

Challenges

In an effort to maximize efficiency, the JRSO has been staffed with minimal overlap in many areas of responsibility. Two consequences arise from this staffing model: (1) employee attrition hinders our ability to deliver highest quality key services, and (2) workload demands lead to a focus on external customer service rather than internal customer service. Our very lean staffing model at times creates a work environment where respect and accountability may not appear to be valued as highly as they should.

Although a number of the Geosciences faculty take advantage of the IODP core repository as a teaching resource, a stronger flow of ideas, students, and resources between the Geosciences faculty and the staff scientists and research associates at IODP would greatly enhance the integration of the JRSO into the educational mission of the College of Geosciences.

The JRSO lacks a dedicated outreach/marketing effort. As a result, many Texas A&M faculty and staff are not aware that a major international research facility is located on

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campus. A sustained effort is required to ensure that the campus and the community beyond are aware of our program and its importance to understanding our planet.

Opportunities

With NSF's selection of Texas A&M University to be the independent operator of the *JOIDES Resolution* for IODP, we have a unique opportunity to redefine our organization and rededicate ourselves to excellent science service and improving our team-oriented approach to shipboard science service delivery.

Implementing TAMU-managed wireline logging services aboard the *JOIDES Resolution* provides an opportunity to deliver this valuable suite of measurement capabilities to our shipboard science parties in an economically viable way.

The rapidly changing landscape of scholarly communications (open access publishing and data publishing requirements) provides an opportunity for us to redefine our publication and data service models. We envision a model in which the boundary between traditional electronic publications and published data disappears. By ensuring that the program's data are discoverable, we will enable scientific connections that are impossible to predict or imagine today.

Threats

The greatest risk to our organization's continued success is the level of future funding, both from the U.S. National Science Foundation (NSF), as well as from international partners who contribute financially to the operations of the *JOIDES Resolution*. Volatility in expenses from tangibles, such as fuel and oilfield supply costs, as well as from intangibles, such as growing regulatory environments at both the university and federal levels, also poses significant risk. If the JRSO is unable to augment the facility's funding with revenue from off-contract work, the number of expeditions that can be operated annually (currently down from six to four expeditions a year) would likely have to be reduced further, which could place the viability of the entire program in question.

A portion of the greater science community shares a perception that scientific ocean drilling should be completed by now. There is a risk that the Decadal Survey of Ocean Sciences will not highly rate the need for a continued capability to access the sediments and rocks below the seafloor that contain an invaluable record of our planet's history and evolution.

The great benefit of an experienced workforce comes at the expense of having an aging workforce. Within the next five years we expect a significant number of highly qualified individuals to retire. Many of these are in specialty areas where recruitment of replacements is exceedingly difficult, particularly within our salary (and benefit) constraints.

The timescale at which IODP plans its science has often been too short to allow the JRSO to plan effectively and efficiently. This situation often necessitates the need to maintain larger inventories of major drilling equipment to be able to respond quickly to short lead times.

The *JOIDES Resolution* is now nearly forty years old. In spite of significant investments in its infrastructure, there is risk that a major failure of one or more of its systems may

result in a delay of expeditions that could exceed the funding agency's ability or willingness to fund.

Other countries recognize the importance of scientific ocean drilling, and unlike the United States, some of these countries are increasing investments in basic scientific research. Notably, both Germany and China are examining the feasibility of building their own drilling research vessels. The history of the Integrated Ocean Drilling Program has shown us that the international science community does not have the resources or commitment to support more than one drilling platform full time. Therefore, competition from other countries must be viewed as a [risk](#) to continued operations of the *JOIDES Resolution*.

Critical Issues

In addition to implementing four *JOIDES Resolution* expeditions per year and transitioning to operating under a Facility Board, we also have to implement changes to our operation that we proposed for the new award. Critical issues include

1. Implementing contracts in support of wireline logging services and the Kochi Core Center
2. Providing better training/coaching for our technical supervisors
3. Better integrating the activities of the facility into the educational mission of the College of Geosciences

1. A major challenge in implementing a wireline logging support program will be attracting talented staff. Although many areas of the overall U.S. economy are recovering slowly, the oilfield services industry is experiencing a boom, which has resulted in a very competitive hiring market. Standard university compensation packages will likely have to be reevaluated if we are to attract and retain top talent in this specialty area. As a parallel approach, the JRSO will work to engage engineering students, particularly through the TAMU Society for Underwater Technology and the College of Engineering's new program in subsea technology. By providing internships and/or GAR support, it may be possible to attract young talented engineers who can assist our engineering staff while gaining valuable professional experience. Failure to address the underlying compensation issues and to appropriately staff for wireline logging operations could prevent the JRSO from fulfilling a portion of its contractual obligation with NSF.

In addition to establishing a successful wireline logging services model, we also have to establish a success working relationship with the Kochi Core Center (KCC) to provide curatorial services for the NSF cores stored at the KCC. This will involve negotiating a contract for KCC services with the Japan Agency for Marine-Earth Science and Technology (JAMSTEC) as well as establishing standard operating procedures that ensure excellent service delivery as we partner with KCC to provide the science community with access to the *JOIDES Resolution* cored material stored at the KCC.

2. As an organization that depends upon functional supervisors, individuals often advance within our organization as a result of their technical ability, not necessarily because of their supervisory ability or interpersonal skills. The result is that the

organization's supervisors/managers exhibit a wide range of effectiveness in their supervisory skills and in motivating and empowering their staff. Continued effort in training and coaching is required to provide these supervisors with the tools necessary to be successful. Failure to sustain a strong leadership development program would likely result in a reactive, management-by-crisis approach.

3. To foster a stronger flow of ideas, students, and resources between the College of Geosciences and the JRSO, we need to establish more formal mechanisms to encourage JRSO Staff Scientists to work with students by teaching first-year seminars, supervising undergraduate and graduate research, and partnering with College faculty who can provide research and faculty mentorship. This effort will require buy-in from multiple departments within the College of Geosciences and the University. Compelling incentives will also be required to stimulate faculty engagement with the JRSO Staff Scientists and empower them in the educational mission of the College.

Defining Our Practical Vision: Imperatives, Goals, and Strategies for the JRSO

In order to address the critical issues facing the JRSO and to most effectively advance our organization, we outline below a number of specific goals the organization needs to achieve over the next five years. A number of perceived weaknesses and threats to the organization, including the age of the *JOIDES Resolution* and the risk to the facility that could come from alternate scientific drilling research platforms being built by other countries are beyond our immediate control and are not addressed.

Imperative 1: Provide excellent science service delivery in support of every JOIDES Resolution expedition

To best position the JRSO for future success in a climate of challenging funding resources, we commit to improving science service delivery in support of every *JOIDES Resolution* expedition scheduled over the next five years. Providing excellent science service delivery at an excellent cost is the most effective way to minimize the external threats of funding reductions and competition from other programs and countries.

Goal 1: Ensure science systems are working properly and performing at a level that meets or exceeds the expectations of shipboard scientists and the ocean drilling community

Strategies for accomplishing Imperative 1, Goal 1:

- Maintain a change management program for all technology and laboratory software, infrastructure, and hardware.
- Maintain a laboratory working group program that seeks ideas and feedback from internal and external stakeholders.
- Include relevant stakeholders when creating or enhancing science services.
- Maintain updated training plans for IT professionals and technical and analytical staff who support science system services.
- Establish a personnel qualification system to develop skills, qualifications, and certifications required to support science system services.

- Ensure that crossover between offgoing and oncoming IODP expedition staff is consistent, comprehensive, and documented.
- Develop, document, and maintain a planned maintenance system for critical shipboard services.
- Address community desire for improved access to and utility of QA/QC from shipboard laboratories.

Goal 2: Collect, monitor, and analyze stakeholder feedback for confirmation of successful delivery of science services

Strategies for accomplishing Imperative 1, Goal 2:

- Debrief the offgoing Co-Chief Scientists, Expedition Project Manager, and Operations Supervisor during each port call. Develop corrective action plans as needed.
- Review cruise evaluations after each expedition, develop a response to correct problems identified, and communicate corrections to the science party.
- Annually conduct an internal performance evaluation review, first by an internal issues management team and then by the NSF Facility Evaluation Panel.

Imperative 2: Implement proposed changes that NSF has approved for the new award for operations and management of the JOIDES Resolution

In addition to an ongoing commitment to continuous improvement, this imperative includes a subset of goals that are required to achieve successful implementation of our NSF-approved plan for operating and managing the *JOIDES Resolution*.

Goal 1: Implement TAMU-managed wireline logging services to support expeditions in FY15 and beyond

Strategies for accomplishing Imperative 2, Goal 1:

- Establish wireline support team requirements.
- Hire appropriate Expedition Project Managers.
- Establish mentoring/collaboration program for TAMU engineering students to work with our engineering staff.

Goal 2: Engage IODP more effectively into the educational mission of the College of Geosciences

Strategies for accomplishing Imperative 2, Goal 2:

- Implement changes to the staff scientist model to broaden career opportunities and enhance College undergraduate education.
- Working with the College, develop compelling incentives for faculty participation.

Goal 3: Establish a contract with the Kochi Core Center for curating a portion of the cores collected on the *JOIDES Resolution* at Kochi

Strategies for accomplishing Imperative 2, Goal 3:

- Create a statement of work.
- Award and monitor contract deliverables.

Goal 4: Identify a sustainable data publishing model designed to leverage data citation best practices, enable data discoverability, and archive data for long-term, post-program retrieval and use

Strategies for accomplishing Imperative 2, Goal 4:

- Develop a feasibility plan to publish data.
- Develop an implementation plan.

Goal 5: Transition Program publications into a workflow that deposits the archival copy of record in the HathiTrust

Strategies for accomplishing Imperative 2, Goal 5:

- Deposit existing drilling program publications into the HathiTrust.
- Implement a publications workflow for IODP scientific publications that supports archival deposits into [a certified long-term scholarly publications archive](#).

Goal 6: Use the *JOIDES Resolution* for off-contract work every two years, on average, to provide cost avoidance to NSF as well as additional income to the ship operator, Overseas Drilling Ltd. (ODL)

Strategies for accomplishing Imperative 2, Goal 6:

- Market the *JOIDES Resolution*'s capabilities via industry, government, and academic VIP ship visits.
- Maintain a partnership with Energy Geosciences Institute.

Imperative 3: Build and maintain a competent workforce

In order to improve the effectiveness of our organization, we commit to a program to provide training and mentoring support for our supervisors. These goals are designed to improve the working climate within our organization and ensure that our tasks are being fulfilled effectively within our current staffing constraints.

Goal 1: Implement a training and mentoring program designed to help supervisors develop useful habits for leading and managing their work centers in an effective manner

Strategies for accomplishing Imperative 3, Goal 1:

- Define needs of supervisors.
- Identify appropriate training resources.
- Define implementation strategy.

JRSO and Texas A&M Vision 2020 Imperatives

The JRSO's imperatives and objectives also serve to advance the College of Geoscience's and the University's priorities as expressed in the twelve imperatives

defined in Texas A&M's Vision 2020 document. JRSO objectives over the next five years directly address seven of the Vision 2020 imperatives.

TAMU Imperative 1: Elevate our faculty and their teaching

JRSO goal: Offer opportunities for TAMU faculty to enhance their research productivity

Strategies for accomplishing TAMU Imperative 1:

- TAMU faculty can participate in scientific expeditions as Co-Chief Scientists or science party members. In the five years since the *JOIDES Resolution* returned to international operations, four Texas A&M faculty have sailed on *JOIDES Resolution* expeditions—two as Co-Chief Scientists and two as science party members.
- TAMU faculty can participate in the IODP Science Advisory Structure.
- Educate faculty on opportunities for IODP research.

JRSO goal: Attract outstanding researchers to TAMU because of the opportunities for research and international collaboration affiliated with the JRSO

Strategies for accomplishing TAMU Imperative 1:

- Continue to build relationships with TAMU faculty (faculty members with strong research interests in ocean drilling science have been hired in three colleges at TAMU).

TAMU Imperative 2: Strengthen our graduate programs

JRSO goal: Provide outstanding opportunities for Texas A&M University graduate students to become directly involved with one of the world's leading international science programs

Strategies for accomplishing TAMU Imperative 2:

- Provide opportunities for graduate students to participate in expeditions as either science party members or as members of the technical support team to gain the unique experience of working directly with experts from a variety of countries and cultural backgrounds. In the five years since the *JOIDES Resolution* returned to international operations, three TAMU graduate students have sailed as members of shipboard science parties.
- Provide opportunities for graduate students to utilize samples and data available from the Gulf Coast Repository at TAMU, which provides a wealth of cored materials that are easily accessible for their research and can provide the basis for numerous theses and dissertations.
- Hire graduate assistant researchers and provide internship opportunities.
- Utilize [JRSO](#) staff scientists as part of the graduate faculty and for advising students.
- Use IODP as a tool for recruiting graduate students to TAMU.

TAMU Imperative 3: Enhance the undergraduate academic experience

JRSO goal: Support undergraduates at Texas A&M University both financially and professionally by providing them the opportunity to participate in an international program and better prepare them to be a part of the global workforce

Strategies for accomplishing TAMU Imperative 3:

- Continue to hire undergraduate students to work at the JRSO, including in core curation, data management, and publications.
- Develop JRSO student workers as working team members.
- Pursue lecture opportunities in the Colleges of Geosciences, Engineering, Science, and Agriculture.

TAMU Imperative 6: Diversify and globalize the A&M community

As an international research program funded by 26 different countries, IODP brings a strong international presence to the Texas A&M campus.

JRSO goal: Provide the opportunity for TAMU faculty, graduate students, and staff to work directly with scientists, engineers, and administrators from all over the world

Strategies for accomplishing TAMU Imperative 6:

- Continue to host international scientists who visit JRSO for precruise planning meetings and postcruise editorial meetings and encourage the academic departments to engage these guests as seminar speakers or other interactions with the faculty and students.
- Continue to work with international scientists who visit the Gulf Coast Repository to collect samples and data for their research.
- Invite international scientists to use the JRSO shore laboratory at TAMU to analyze seafloor samples and encourage the academic departments to engage these guests in departmental activities.
- Develop collaboration and recruiting programs with historically minority colleges and universities by partnering with the U.S. Science Support Program's work with the Minority Students Seeking Higher Degrees (MSPHD) program.

TAMU Imperative 7: Increase access to intellectual resources

JRSO goal: Encourage both TAMU and non-TAMU researchers to use the resources available through the JRSO

Strategies for accomplishing TAMU Imperative 7:

- Provide access to the core collection stored at the Gulf Coast Repository, which houses more than 100 kilometers of core collected from beneath the seafloor and offers a wealth of research potential that is directly and readily accessible by TAMU faculty and graduate students for research.
- Provide researchers access to the JRSO shore laboratories, which contain state-of-the-art instrumentation and trained technical personnel.
- Provide public access and long-term preservation to the JRSO's extensive digital publications library, which encompasses all program publications from

the Deep Sea Drilling Project (DSDP), Ocean Drilling Program (ODP), [Integrated Ocean Drilling Program](#), and IODP.

TAMU Imperative 11: Attain resource parity with the best public universities

JRSO goal: Support TAMU's reputation and ability to attract research funding and donations

Strategies for accomplishing TAMU Imperative 11:

- Maintain [JRSO](#)'s status as the largest externally funded program at Texas A&M, with an annual budget of more than \$62 million.
- Boost Texas A&M's stature in the rankings of universities based on levels of external support by continuing to bring in more than \$62 million of external funding to the university per year.

TAMU Imperative 12: Meet our commitment to Texas

JRSO goal: Participate in generating the knowledge necessary for Texas to move forward into the future

Strategies for accomplishing TAMU Imperative 12:

- Through geoscience research, prepare Texas to better safeguard its environment and prepare for a changing climate.
- As an international research program, [JRSO](#) helps prepare the next generation of globally trained scientists.
- Technical developments at [JRSO](#) help advance drilling technologies, a field that is critical to the economic success of the state of Texas.
- Pursue/continue educational activities with local schools and museums.