

Besides Standard Instrumentation the International Ocean Discovery Program (IODP) draws upon tools and instruments purchased and developed outside the framework of the JOIDES Resolution Science Operator and known as Third-Party Tools

JOIDES Resolution Third-Party Tools and Instruments Policy



The JOIDES Resolution Facility Board approved these guidelines on May 15, 2018

JOIDES Resolution Third-Party Tool and Instruments Policy

Approved by *JOIDES Resolution* Facility Board: **15 May, 2018**

Latest Revision: **6 May, 2018**

(1) General Principles

In addition to the standard instrumentation and tools available on all *JOIDES Resolution* scientific expeditions for the International Ocean Discovery Program (IODP), these expeditions have historically drawn upon tools or instruments that were purchased or developed outside the framework of the primary contractor, the *JOIDES Resolution* Science Operator (JRSO). These are known as “third-party tools and instruments.”

Broadly speaking, IODP tools and instruments comprise three types: (1) downhole (transient borehole measurements), (2) observatory (left behind in the drill hole), and (3) laboratory-based (either shipboard or in the IODP Gulf Coast Repository (GCR)). Each category has unique characteristics, but all of them require technical support from the JRSO, which may require recommendation of approval of associated operating costs by the *JOIDES Resolution* Facility Board (JRFB).

Support for the purchase or development of third-party tools and instruments can come from various sources. The JRFB cannot impose standards on external funders, but it is hoped that principal investigators and those funders will ensure that proposals for funding of third-party tools and instruments include plans, resources and funds for satisfying the criteria set out in this document. The final responsibility and approval for the use of a third-party tool or instrument during *JOIDES Resolution* expeditions or in the IODP GCR rest with the JRSO.

Third-party tools and instruments must satisfy the operational and safety criteria that the JRSO applies to its own in-house tools and instruments. Careful pre-expedition planning is essential if third-party tools and instruments are to be successfully integrated into the scope of the planned shipboard work. The principal investigator (PI) for a third-party tool or instrument, in consultation with the JRSO, is responsible for providing funds for the planning activities, shipping the tool or instrument to the site of deployment (i.e. the port of departure), and integrating tool or instrument deployment into the expedition work and data flow. Work that the JRSO is expected to contribute must be identified as early as possible to minimize the impact of potential resource requirements.

Funding of a third-party tool or instrument does not guarantee time or space on board the *JOIDES Resolution* for use of that tool or instrument. The primary responsibility for integrating a tool or instrument into IODP operations rests entirely with the PI, not with

the JRSO. Should the JRSO accept a tool or instrument for deployment, operation and support responsibilities should be unambiguous.

Third-party tools and instruments are considered shipboard instruments when deployed aboard the *JOIDES Resolution*. Consequently, data and/or samples acquired through the use of third-party tools and instruments are subject to the same dissemination rules as any other data or samples collected by the *JOIDES Resolution* during IODP expeditions (see the **IODP Sample, Data and Obligation Policy**). For example, data produced through the use of such third-party tools or instruments are considered expedition data and will be made publicly available after the IODP moratorium period ends. Any third-party tool or instrument deployment plan must specify the current and potential future data and sample deliverables for the tool or instrument. PIs are required to submit a deployment report and relevant digital data files for the “Proceedings” volume for the expedition.

The latest version of the ***JOIDES Resolution Third-Party Tool and Instrument Policy*** always can be downloaded from <http://iodp.org/jr-facility-policies-procedures-guidelines>.

(2) Guidelines for Third-Party Tool and Instrument Development and Deployment

2-1 Primary Guidelines and Criteria

Communication is key to the successful development and deployment of third-party tools and instruments. The Principal Investigator (PI) wishing to deploy a third-party tool or instrument should consult with the JRSO early in the development process and should provide specifications and operational criteria. For example, a laboratory instrument to be operated by the PI may simply require power, space, safety information, and a sampling and measurement plan. Off-the-shelf borehole tools will additionally require plans for integration with existing systems (e.g., drill pipe, cable heads, data retrieval, instrument storage). In the case of developmental tools for downhole or observatory deployment, the PI must identify development milestones in terms of both the level and the timing of technical achievements such that the tool will be ready when it is scheduled for operation.

For all categories of third-party tools and instruments, the project planning phase must define explicitly how much time and resources (funds and personnel) are needed and how much the JRSO is willing to commit during the development phase (if applicable) and during deployment. Development timelines and requirements as described below may be modified by agreement between the JRSO and the PI, subject to approval by the JRFB.

The following primary guidelines for third-party tool and instrument development and deployment have been formulated to reflect the fact that the JRSO is responsible for assisting with and monitoring third-party tool and instrument developments and reporting

their status to the JRFB. These guidelines indicate a general progression through which new tools and instruments are introduced to *JOIDES Resolution* operations for IODP.

For a third-party tool or instrument to be considered for active deployment on a *JOIDES Resolution* during an IODP expedition, the following criteria must be met:

1. There must be a designated PI who is the primary proponent and point of contact for the use of the tool or instrument aboard the *JOIDES Resolution* and during an IODP expedition.
2. The PI must formulate a third-party tool or instrument development plan in consultation with the JRSO. This development plan should, where appropriate:
 - a. Indicate the usefulness of the proposed measurements and the financial and technical feasibility of making them;
 - b. Include a detailed description of the tool or instrument, all the schematic diagrams, a complete standard operational procedure, and a listing of all the technical specifications, including the dimensions, weight, temperature and pressure ratings, cable-length restrictions, cable type (etc.), and a detailed list of supplies and consumables (whether off the shelf or custom made);
 - c. Provide a development timeline with milestones in terms of key technical achievements and reporting requirements, including a specific deadline for a *yes* or *no* decision by the JRSO on deployment;
 - d. Provide plans and resources for initial testing on land, when possible and appropriate, and request ship time if testing from the drillship is necessary, subject to JRFB approval;
 - e. Satisfy safety considerations (see **Special Safety Considerations**);
 - f. Specify shipboard requirements, such as data processing necessary to make the information accessible on the *JOIDES Resolution*, any special facilities if so required (emphasizing where and why the tool is not compatible with existing hardware and software), and appropriate technical support;
 - g. Specify the data deliverables;
 - h. Provide both cost and time necessary for transporting tools and instruments for shipboard testing;
 - i. Include a signed *pro forma* statement of agreement with all the above listed third-party tool and instrument requirements.
3. The JRSO will inform the JRFB in the case of the development of a new third-party tool or instrument and if the deployment plans impact *JOIDES Resolution* operational time during a scheduled expedition. The JRSO in those cases also will provide the JRFB with advice on its integration into IODP activities.
4. If the JRSO and JRFB endorse the development and deployment plans, a JRSO staff liaison will be appointed to monitor the third-party tool's or instrument's progress through the development and deployment plans. The JRSO will provide progress reports on the third-party tool or instrument to the JRFB.

5. With a positive recommendation from the JRFB, a third-party tool or instrument may be scheduled for testing during an upcoming science or special engineering expedition. During the testing phase, the scientific success of an expedition must not be contingent upon the proper functioning of such a third-party tool or instrument.
6. It is incumbent upon the PI to ensure that the JRFB is fully advised of the status of the tool or instrument, at any time. If the development and deployment plans fall seriously behind schedule and the PI is unlikely to have satisfied all of the above criteria prior to a planned deployment, the JRFB has the right to withdraw the third-party tool or instrument from further consideration for an expedition and after consulting with the JRFB. The shipboard test may be canceled, or alternatively an agreement may be reached on a revised schedule.

2-2 Special Safety Considerations

The safety of the *JOIDES Resolution* and all staff and scientists onboard are paramount, so the hazards of any third-party tool or instrument must be identified by the PI before the third-party tool or instrument can be approved by the JRFB and JRFB. Each type of hazard requires its own set of considerations and questions that should be answered by the PI.

2-3 Lasers

For any third-party tool or instrument equipped with a laser, the PI must provide the class of the laser and safety measures and protocols for its safe use. Texas A&M University's Environmental Health and Safety Department (TAMU-EHSD) must license any Class IIb or higher laser prior to the expedition.

2-4 Radioactive Source/Radiation-Producing Devices

For equipment with a radioactive source, the PI must provide a list of all isotopes, their form, and the activity of each of the isotope(s) in mCi or μ Ci units. If the equipment has a radiation-producing device (RPD), the PI must provide the voltage and amperage of the RPD. The PI will also provide the relevant safety precautions for the third-party tool or instrument. Any radioactive source or RPD must be licensed by TAMU-EHSD prior to the expedition.

2-5 High Pressure Devices

High-pressure devices are defined as follows for each category of gas: (1) compressed gas with service or operating pressures above 10 atmospheres (10^3 kPa, or 147 psi); (2) liquefied gas held at pressures above 2 atmospheres (200 kPa, or 29 psi) at 35°C; and (3) special gas at any measurable pressure at 35°C. The latter category is reserved for gases or liquefied gases that present special hazards (such as methyl bromide [CH_3Br], acetyl group or ethanone [$\text{C}_2\text{H}_3\text{O}$]).

For high-pressure devices, the PI must identify the gas or liquefied gas, specify the expected operating conditions and pressures, and list all safety features that are included for hazard protection.

2-6 Chemical Hazards

Any chemical to be used by the third-party tool must be identified to the JRSO during the submission and approval process. This includes chemicals with U.S. National Fire Protection Association (NFPA) safety ratings of zero (0), those marked “general storage,” and those commercially available (e.g., cleaning solutions).

Each chemical substance will be evaluated by JRSO staff for its specific hazards and a determination will be made if it is compatible with shipboard *JOIDES Resolution* or GCR safety measures and protocols, or if a conflict exists with normal operations.