D/V *Chikyu*
Third-Party Tools and Instruments Policy

(Ver. 3; July 2015)

General Principles

In addition to the standard instruments and tools that are available on all D/V *Chikyu* International Ocean Discovery Program (IODP) scientific expeditions (ref to D/V *Chikyu* Standard Measurements), ocean drilling expeditions have historically drawn upon tools or instruments that were purchased or developed outside the framework of the primary contractors. These are known as "third-party tools and instruments". Tools and instruments can be divided into three types:

1. Downhole (transient borehole measurements),
2. Observatory (left behind in the hole after hole is completed), and
3. Laboratory based (shipboard or IODP core repository).

Each of these categories has unique characteristics, but all require technical support from the Center for Deep Earth Exploration (CDEX) that, in turn, may require approval of associated operating costs by the Chikyu IODP Board (CIB).

Support for Development or Purchase

Support for third-party tools and instruments can come from a variety of sources. The CIB cannot impose standards on external funding agencies, but principal investigators and those agencies should ensure that proposals for funding of third-party tools include plans and funds for satisfying the criteria set out in this document. The final responsibility for the use of a third-party tool or instrument during a *Chikyu* IODP expedition or in an IODP core repository rests with CDEX.

Third party tools and instruments must:

1. Satisfy all of the operational and safety criteria that CDEX applies to its

own in-house tools and instruments.

2. Develop and present to CDEX careful pre-cruise and science planning. This is essential if third-party tools and instruments are to be successfully integrated into the scope of shipboard work.
3. Demonstrate a clear need. Define how the tool or instrument will expand current observation or fill gaps in data collection or analysis.
4. Not interfere in the collection of standard shipboard measurements.
5. Be funded through the efforts of the principal investigator (PI). This includes providing funds for planning activities, shipping the tool to and back from the site of deployment, and integrating tool deployment into the expedition work and data flow. Work that CDEX is expected to contribute must be identified as early as possible to minimize the impact of potential resource requirements.
6. Share all data and samples with the shipboard expedition scientists, as per standard IODP sample and data sharing policy (http://www.iodp.org/program-documents). In addition, the data produced through the use of third–party tools and instruments will be made publicly available after the moratorium period ends.

None of these conditions should be seen as mandating approval for deploying any third-party tool. CDEX reserves the right to refuse any tool or instrument boarding rights, especially if there are any safety concerns. The primary responsibility for integrating a tool or instrument into IODP operations rests with the PI (not the CDEX). If a third-party tool or instrument is accepted for deployment, there will be no ambiguities in operation and support responsibility.

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(s) for the expedition.

Guidelines for Third Party Tools

Communication is the key to the successful development and deployment of

third-party tools. Tool or instrument development must be officially proposed to CDEX, including a schedule of milestones and a developmental and testing timeline. The final approval of tool or instrument development will require realistic scheduling plans.

The PI wishing to deploy a third-party tool or instrument should consult with CDEX early and often in the development planning process and provide specifications and operational criteria. For example, a laboratory instrument to be operated by the third-party PI may have special space, power, and consumable requirements. These needs must be shared with CDEX in a timely manner. Failure to do so will negatively affect the chance of the tool or instrument being deployed. The sampling plan must be shared with the Co-Chief Scientists, who will discuss the proposal with the third-party PI.

For all categories of tools or instruments, development and deployment must follow these guidelines:

1. There must be at least one PI who has ultimate responsibility for tool/instrument development and oversight. They must either themselves, or appoint a delegate to, sail on *Chikyu* to monitor their tool/instrument.
2. Project planning must explicitly define the time and resources needed (funds and personnel) together with the portion that CDEX has agreed to commit during this phase.
3. The PI must maintain good communication with CDEX, including updates on progress and development. Any potential delays in production or delivery to the ship must be communicated as soon as possible.
4. The PI must clearly identify shipping, loading, storage, space, environmental, electrical, and any other requirements (e.g. consumables) to use or store the tools or instruments aboard *Chikyu*.
5. The science plan must be integrated with the expedition's goals. Close communication with the expedition Co-Chief Scientists is required.

Proposal and Development

A tool or instrument proposal needs to be submitted to CDEX. The development plan should be shared with CDEX from the earliest stages. Once CDEX (and the CIB, where appropriate) gives approval for a tool or instrument proposal, a clearly defined development plan, with schedule and milestones, must be submitted to CDEX. This plan should include, where appropriate:

1. The financial and technical feasibility of making the proposed tool or instrument.
2. A brief description or diagram of the tool or instrument. A detailed schematic drawing, technical specifications (weight, dimensions, temperature and pressure ratings, power needs, etc.), or additional required components (cables, etc.) may be requested.
3. A detailed development timeline, including milestones, for development and testing the tool or equipment.
4. Operational procedures should be clearly written out.
5. Procedures for testing on land or under controlled situations should be described. If ship time is needed for testing, both CDEX and the CIB need to agree.
6. Description of how the tool or instrument complies with basic safety standards.
7. All transportation, shipping, and handling fees are to be borne by the PI, unless described in writing otherwise.

All of these will be compiled into a formal written statement of agreement between CDEX and the PI, before formal approval for the tool or instrument development begins (when applicable). CDEX will advise and present all development plans to the CIB for further detailed discussion and review. CDEX and the CIB will appoint a liaison to monitor development progress and report to CDEX (and CIB) as needed. CDEX will report progress updates to the CIB as appropriate. If the tool or instrument falls seriously behind schedule, and deployment seems unlikely or impossible, CDEX has the right to withdraw the tool or instrument from further consideration. CDEX and the CIB, after review with the PI, may reschedule

deployment. In general, missing deployment will result in the tool or instrument being dropped by CDEX altogether.

Deployment

When the tool or instrument has reached a stage ready for deployment, the PI and CDEX will report to the CIB (as necessary). CDEX will report the submission of development and deployment plans to the CIB. The CIB will normally bear the responsibility of determining action on these submissions and will provide advice to CDEX regarding further tool or instrument development. The PI will work with the CDEX liaison, Expedition Project Manager (EPM) and the expedition Co-Chief Scientists to arrange inclusion of the tool or instrument in the expedition.

Off-the-Shelf Tools

Off-the-shelf or leased tools include (1) technically new to *Chikyu* that has been utilized routinely in other markets, or (2) leased or purchased tools/instruments from recognized providers. In order to deploy an off-the-shelf tool on *Chikyu*, the following steps must be taken:

1. Discussion should be made with CDEX prior to selecting off-the-shelf technology. CDEX will consult with the CIB if necessary.
2. Procure detailed specifications including performance requirements of the desired tool or instrument and ensure that it is suitable to meeting the objectives of a specific *Chikyu* expedition.

Laboratory Instruments

Often it is necessary for a scientist to bring aboard their own laboratory equipment in order to meet a specific expedition objective or simply to make the most of the unique opportunity and collect additional exciting and important ancillary data. The third party tool category of Laboratory Instrumentation includes (1) an instrument new to *Chikyu* that has been utilized routinely in other markets, or (2) leased or purchased instrumentation from recognized providers.

In order for a third-party laboratory instrument to be included as part of a *Chikyu*

expedition, the following steps must be taken:

1. Contact CDEX to ensure that the specific instrument is not already a part of the *Chikyu's* laboratory.
2. Procure detailed specifications including performance requirements of the desired instrument and ensure that it is suitable to meeting the objectives of a specific *Chikyu* expedition.

Export/Import Control Responsibility

PIs bear complete and sole legal responsibility for ensuring that tools and instruments comply with all domestic and foreign law requirements applicable to import, export, and technological restrictions. Tools may be subject to the Japan Export Administration Regulations and must satisfy all JAMSTEC regulations.