IODP Third-Party Tools Policy

(Approved by Science Planning Committee, 9 March 2006)

General Principles Governing Third-Party Tools and Instruments

In addition to the standard instruments and tools that are available on all Integrated Ocean Drilling Program (IODP) scientific expeditions, 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. In IODP the term tool includes all forms of scientific instrumentation intended for use as part of an IODP expedition. Third-party tools may be classified as either developmental or certified for deployment. Broadly speaking, tools 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 (shipboard or IODP core repository). Each of these categories has unique characteristics, but all of them require technical support from the implementing organizations (IOs) that, in turn, may require IODP-MI approval of associated science operating costs. In the Appendix to this statement of principles, we specify guidelines for development and acceptance of third-party tools.

Support for the purchase or development of third-party tools can come from a variety of sources. In the United States, third-party tools have generally been supported by the National Science Foundation, using funds earmarked for ocean drilling and allocated to highly ranked, unsolicited proposals. International partners operate similar procedures. It is recognized that the IODP cannot impose standards on external funding agencies, but it is hoped that principal investigators and those agencies will 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 during an IODP expedition or in an IODP core repository rests with the IODP-MI and the IOs.

It is important that third-party tools are certified as satisfying all of the operational and safety criteria that the IODP applies to its own in-house tools and instruments. Careful pre-cruise planning is essential if third-party tools are to be successfully integrated into the scope of shipboard work. This planning is particularly necessary when a tool requires dedicated ship time for deployments. Funding agencies are urged to include sufficient funds in a third-party tool development project for travel to the IO's main office to participate in pre-expedition planning that will ensure proper communication and laboratory testing during development, as well as sufficient funds for field tests of the tool(s) prior to deployment during an IODP expedition. The principal investigator (PI) for a third-party tool is responsible for providing funds for planning activities, shipping the tool to the site of deployment, and integrating tool deployment into the expedition work and data flow. Requests for deployment of third-party tools often are made late in the schedule when IODP program budgets have been completed. Work that the IO is expected to contribute must therefore be identified as early as possible to minimize the impact of potential resource requirements.

It is important to note that funding of a third-party tool by an external agency does not guarantee time or space aboard a drilling platform for experiment execution. Scheduling of implementation of a tool on an expedition is subject to approval by the Operations Task Force (OTF) and Science Planning Committee (SPC) during their iterative planning process. Deployment also depends on acceptance by the IO. The primary responsibility for integrating a tool into IODP operations rests with the PI and not with the IO. The level of integration and potential sharing of associated costs depend on the nature of development and timing. Tools

that are not ready for deployment or demand inordinate operator resources during the course of an expedition are a drain on support and platform time for all expedition participants. It is crucial that the IO accept a tool for deployment before an expedition begins and that there are no ambiguities in operation and support responsibilities.

Data and/or samples acquired through the use of certified third-party tools are subject to the same dissemination rules as any other data or samples collected by the IODP. Furthermore, the data produced through the use of third-party tools is the property of the IODP and therefore will be made publicly available after the moratorium period ends. Any third-party tool deployment plan must specify the current and potential future data and sample deliverables for the tool. PIs are required to submit a Deployment Report and relevant digital data files for the *Proceedings of the Integrated Ocean Drilling Program* volume for the expedition.

If a certified third-party tool has proven itself as crucial for answering certain scientific questions, the PIs and the operator are encouraged to work collaboratively to add it to the standard pool of IODP capabilities for the duration of the program to make it accessible to the IODP community. After the tool has been added to the IODP standard measurement capabilities, it is no longer considered a third-party tool.

Appendix: Guidelines for Third-Party Tool Development and Deployment

Communication is the key to the successful development and deployment of third-party tools. It is the responsibility of the scientist wishing to deploy a third-party tool to consult with the appropriate IO early in the development planning process and provide tool specifications and operational criteria. Where the tool is a laboratory instrument to be operated by the PI, this process 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., drilling pipe, cable heads, data retrieval and storage). In the case of developmental tools for downhole or observatory deployment, the investigator 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 tools, the project planning phase must define explicitly how much time and resources (funds and personnel) are needed and how much the IO 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 IO and the PI, subject to approval by Integrated Ocean Drilling Program Management International (IODP-MI) because the necessary IO support is related to science operating costs (SOCs). Such agreements will be reported to the Scientific Technology Panel (STP), Engineering Development Panel (EDP), and Operations Task Force (OTF).

The following guidelines for third-party tool development and deployment have been formulated to reflect the fact that the IOs are responsible for assisting with and monitoring third-party tool developments and reporting status to the STP, EDP, OTF, and IODP-MI. These guidelines indicate a general progression through which new tools are introduced to IODP operations.

Developmental Tool: For a non-certified tool to be considered for deployment on an IODP expedition, the following criteria must be met:

1) There must be an identified PI who is the primary proponent and point of contact for the use of the tool by the IODP.

2) The PI must formulate a development plan in consultation with the appropriate IO. Where a tool is intended for multiple platforms, the appropriate IO will be the one responsible for the first deployment. The lead IO will coordinate with the other IOs and the IODP-MI as necessary.

3) The development plan should, where appropriate:
- indicate the usefulness of the proposed measurements and the financial and technical feasibility of making them
- include a brief description of the tool, schematic diagram(s), details of the operational procedure, and technical specifications such as dimensions, weight, temperature and pressure ratings, cable-length restrictions, cable type, etc.
- identify a development timeline in terms of technical achievements and reporting requirements, including a specific deadline for a yes or no decision by the IO on deployment
- provide for initial testing on land, when possible, and request ship time if testing from the drillship is necessary, subject to OTF approval
- satisfy safety considerations
- specify shipboard requirements such as the data processing necessary to make the information accessible aboard ship, if applicable, any special facilities (emphasizing where the tool is not compatible with existing hardware and software), and appropriate technical support
- specify the data deliverables
- provide for transporting tools for shipboard testing, in terms of both cost and time
- contain a signed (pro forma) statement of agreement with these requirements

4) The IO will report the submission of development and deployment plans to the STP, EDP, OTF, and IODP-MI. The STP will normally bear the responsibility of determining action on these submissions in accordance with the panel mandate and will provide advice to the IO regarding further tool development. In the instance of engineering development playing a significant role in the delivery of a tool for an expedition, the STP and EDP will designate individuals to coordinate panel input to the OTF, SPC, and IOs. The EDP may take the lead where engineering is the major focus of the development. The IODP-MI will ensure that this third-party tools policy is enforced.

5) If the IO and the STP (and/or EDP when appropriate) endorse the development plan, a staff liaison will be appointed by the appropriate IO to monitor the tool's progress through the development plan. The IO's tool liaison will be charged with providing status reports of the tool's progress to the STP, EDP, and OTF through their panel liaisons, and to the IODP-MI.

6) With a positive OTF recommendation, an IODP development tool may be scheduled for testing during an upcoming expedition. Development tools must be deployed in test mode. By their very definition, they are not certified tools, and therefore the scientific success of an expedition must not be contingent upon the proper functioning of such a tool.

7) It is incumbent upon the PI to ensure that the appropriate IO is fully advised of the tool's status. If the development plan falls seriously behind schedule and the PI is unlikely to have satisfied all of the above criteria prior to a planned deployment, the IO has the right to withdraw the tool from further consideration for an expedition after consulting with the IODP-MI. The shipboard test may be canceled, and an agreement may be reached on a revised schedule.

8) If the above procedures have not been followed, then the tool in question cannot be regarded as an IODP development tool and therefore cannot be scheduled for testing in future

expeditions. A development tool cannot be deployed during an IODP expedition unless the IO and the IODP-MI are fully satisfied that the terms of the development plan have been fully met.

Certified Tool: For a tool to be considered an IODP certified tool, and thus suitable for routine scheduling on IODP expeditions, the following criteria must be met:

1) The tool must have satisfied all the requirements for an IODP development tool.

2) The tool must have been tested at sea during an IODP expedition(s) and performed satisfactorily in the opinion of the relevant (lead) IO.

3) The PI must formulate a request for certification in consultation with the appropriate IO.

4) The request for certification should:

- be prepared in coordination with the operator's tool development liaison (or designate) to ensure adequate communication between the developer and the operator
- indicate the cost of routine shipboard operations including data processing
- outline the operational requirements for routine deployment and data processing
- detail the availability of spare components,;
- provide information on adequate maintenance facilities
- include an operating and maintenance manual
- satisfy safety considerations
- confirm the long-term usefulness of the data
- confirm accessibility of the data
- provide source code with documentation where appropriate
- define performance specifications (pressure, temperature, vibration, shock limits, etc.)

5) The request for certification must be submitted for approval to the lead IO .The lead IO submits a request for certification to the IODP-MI. The IODP-MI seeks agreement from the other IOs and coordinates a discussion if appropriate. If and when an IO consensus has been achieved, the IODP-MI seeks endorsement by the STP and/or the EDP.

6) If and when the STP and/or the EDP endorse the request for certification, the IODP-MI will issue a certificate confirming the satisfactory conclusion of tests and compliance with all requirements to the PI. A copy of this certificate must be forwarded to the STP and EDP chairs.

7) Maintenance and operation of an IODP certified tool remains the charge of the third party. A certified tool can be scheduled for deployment during an upcoming IODP expedition and would be expected to contribute to the scientific success of the expedition.

8) Third-party tools that do not possess a certificate cannot be programmed for scientific deployment on future expeditions as part of the regular planning process.