

IODP JRSO POLICY: PROTOCOL FOR STORAGE, ARCHIVING, AND MANAGEMENT OF IODP CORES

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INTRODUCTION

Detailed instructions for ship core curation are recorded and routinely updated in the IODP JRSO Shipboard Curatorial Cookbook (available from Gulf Coast Repository [GCR] Superintendent). Additional information about the GCR can be found on the JRSO website (<http://iodp.tamu.edu/curation/gcr/index.html>). Additional information regarding sampling can be found in the International Ocean Discovery Program Sample, Data, and Obligations Policy and Implementation Guidelines (<http://www.iodp.org/policies-and-guidelines/114-iodp-sample-data-obligation-policy-final/file>).

CORE STORAGE AND ARCHIVING

CORE HANDLING ON SHIP

Cores retrieved on ship are measured, divided into sections (150 cm maximum length), sampled on catwalk for special analyses (e.g., hydrocarbon safety, pore water chemistry, microbiology), permanently labeled on the core liner, sealed with core liner caps, and stored in the ship's Core Laboratory for temperature equilibration and for whole-round core physical properties analyses. After sections are split into working and archive halves and labeled, they undergo more analyses and sampling. Hard igneous and other lithified rocks recovered as rubble or broken pieces are labeled as individual pieces, with orientation marked where possible. Whole-round pieces of hard rock are split with a rotary saw.

After ship analyses and sampling, sediment sections are wrapped with plastic wrap (reducing oxidation and desiccation) and hard rock sections are shrink-wrapped (keeping pieces from shifting in core liner). Sections are stored in labeled plastic tubes (red endcaps for archive halves, black endcaps for working halves) for protection during ship storage, packing, shipping, and on-shore storage. Archive halves and working halves are stored separately onboard ship in a refrigerated storage room at 4.4°C. They are packed separately in core boxes, and boxes are secured on pallets for shipping.

Sediment cores are transferred as directly as possible from the ship's refrigerated hold into refrigerated shipping containers. These containers include digital temperature monitors and paper copies of the core box inventory. Electronic copies of core inventory are sent to the appropriate repositories. If cores are all hard rock, they may be shipped in non-refrigerated containers. Deep-frozen microbiology samples are shipped separately from cores, packed in dry ice to ensure frozen conditions until they reach the repository, where they are stored in -86°C freezers with emergency power backup.

CORE STORAGE AT GULF COAST REPOSITORY

At the GCR, new sediment cores are shrink-wrapped in moisture and oxygen barrier film before shelving in refrigerated storage at 4.4°C. Hard rock cores are put in racks with no additional handling. Refrigerated storage units (reefers) are equipped with temperature sensors that send an alarm signal to curatorial staff and TAMU Facilities Maintenance staff if the temperature in any part of the reefers reaches 8.3°C. IODP JRSO technicians are immediately dispatched to rectify the problem, and curatorial staff members respond to alarms to ensure any

issues are resolved. Cores in storage tubes are stored on galvanized steel racks (working halves on bottom half of core racks, archive halves on top half of racks). In addition, the GCR stores shipboard thin sections, smear slides, and sample residues, as well as samples returned by investigators.

MANAGEMENT OF CORE STORAGE, SAMPLING, AND ARCHIVING

The GCR Superintendent is responsible for proper storage and inventory of cores and other materials and for maintenance of the facility. Sea-going curatorial specialists assist the superintendent in the GCR between sailing on expeditions and help supervise student workers in the superintendent's absence. All GCR staff and students engage in sampling for requests, depending on the request workload. The Curator provides guidance on archiving and sampling when necessary, reviews requests for approval, and also helps with repository work when necessary.

SAMPLE REQUESTS

Sample requests are submitted using the online Sample and Data Request (SaDR) system, which automatically assigns a unique request number and emails an acknowledgment message to the requester and to the repository staff. SaDR is in-house developed and maintained software, as market surveys repeatedly result in no appropriate commercial products. Requesters may ask the GCR staff to sample for them or they may schedule a visit to the GCR to sample the cores themselves. The Curator reviews for approval all requests for material stored in the GCR, communicates with requesters, and sends the GCR staff the approval decision with any special instructions or guidelines needed to fulfill a request. Requests for U-channels, whole sections for scanning, thin sections, and smear slides are fulfilled with loan agreements for no longer than 1 year. The GCR Superintendent assigns approved requests to GCR staff to fulfill and keeps progress records of each request through to completion.

Samples are taken at sampling tables using our custom SampleMaster software connected to the Oracle database. After removing samples, voids are filled with spacers to maintain integrity of the remaining core material. Sampled cores are digitally imaged, with images posted online so the public can see their current condition and level of depletion. After imaging, section halves are re-wrapped in shrink film, placed back in storage tubes, and returned to refrigerated storage. When samples are shipped to requesters, a completion letter is sent by email informing the requesters of shipping details, a summary of the sampling effort, and a link to the IODP database where their sample information, including depths, can be accessed. GCR Curatorial staff members inform the IT Department of problems with sample request or sampling software, or hardware, and participate in project teams to develop new or improved software.

CURATORIAL ADVISORY BOARD

The Curatorial Advisory Board (CAB) is a standing body that consists of five members of the scientific community (selected by the *JOIDES Resolution* Facility Board/ECORD Facility Board/Chikyu IODP Board – with nominations from the IODP Curators) who serve overlapping 4-year terms. The CAB has two primary functions:

- Functions as an appeals board with the authority to mediate differences of opinion between the sample requestor and the IODP Curator and
- Reviews requests to sample the permanent archive.

BASIS

International Ocean Discovery Program Sample, Data, and Obligations Policy and Implementation Guidelines: <http://www.iodp.org/program-documents>