

Core Research Centre Material Sampling Procedures

Effective February 6, 2014

Purpose

The purpose of the material sampling operating procedure is to preserve and maintain the integrity of the core and drill cuttings stored at the Alberta Energy Regulator Core Research Centre (CRC) while allowing other geological and engineering research that supports the safe and efficient development of Alberta's energy resources.

Overview of Sampling Activities

This procedure will guide you through the standard process for obtaining approval to sample material from the CRC. It will describe

- what is expected before material sampling can be approved,
- how to get approval to sample material,
- how to submit test results and return residual material, and
- how test results will be disseminated.

Any routine core analysis that is completed by a licensee before the core has been submitted to the AER is not covered by this procedure.

All forms and documents noted in this procedure are available on the AER's website at www.aer.ca.

Terms and Definitions

“Core” refers to all core that has been selected for storage or core required to be submitted as per the *Oil and Gas Conservation Rules (OGCR)*, regardless of its current location.

“CRC Compliance” refers to those AER staff members responsible for the material sampling approval process, including compliance activities related to the submission of test results, artifacts, and returned material.

“CRC privileges” refers to all services listed in the *AER Products and Services Catalogue* that are provided by the CRC, as well as access to the CRC and its collections.

“Material” means all core and drill cuttings stored at CRC regardless of the type of resource (i.e., oil sands, conventional, coal, shale, etc.).

“Material sampling technical team” refers to the team that has been established to provide technical assistance related to material sampling. The material sampling technical team will advise CRC Compliance on all matters requiring technical expertise related to material sampling activities.

The material sampling technical team includes representatives from the following AER business areas:

- Science and Evaluation Branch, Reserves Group
- Regulatory Submissions and Compliance, CRC Compliance

“Residual material” is the physical material that is remaining after the test has been performed on the original sample.

“Sampling category” refers to the type of analysis being performed, which can be either one of the following:

- Reservoir evaluation/productivity studies (REPS): Testing pertaining to the estimation or recovery of oil and gas reserves that does not involve routine measurements of porosity, permeability, or fluid saturation. Also referred to as reservoir evaluation, productivity studies, or special core analysis.
- Geological/other studies (GOS): All other testing of material for geological or other purposes.

“Test results” means all analytical data (both qualitative and quantitative) derived from the sampling. Test results may also include context and methodology of the study as well as artifacts created such as thin section slides, SEM stubs, imaging, etc.

Before Obtaining Approval

- You must check the [Reservoir Evaluation/Productivity Studies Index](#) and the [Geological/Other Studies Index](#) to see if the required analysis has already been performed and is available for use. CRC Compliance will not approve material sampling requests if the analysis already exists.
- You must check the list of test types approved for material sampling to confirm whether the proposed test is an approved type. This list contains the following information:
 - test types approved for material sampling (e.g., TOC, Rock Eval, etc.),
 - a description of the test,
 - the sampling type of each test (REPS or GOS),
 - sample allowance per test,
 - whether residual material is to be returned to the CRC, and
 - the required condition of the residual material (which determines whether or not the residual material is to be returned to the CRC).

If the proposed test is not on the list of test types, you must e-mail CRC Compliance (crccomplianceadmin@aer.ca) and request to have it added. The material sampling technical team will determine whether the test should be allowed and, if allowed, what the appropriate sampling allowance for this type of sampling will be. Replies to requests will be completed within two work days.

- Authorization from the licensee of the materials to be sampled is required for the following viewing and sampling activities:
 - reservoir evaluation and productivity studies,
 - requests to slab for viewing more than one-third the length of a box of core,
 - requests to sample an unbroken full diameter of analyzed samples,
 - requests to remove core from the CRC on loan, and
 - wells listed as confidential.

Customers must have the licensee provide a formal letter of authorization on company letterhead. The letter must include the licensed UWI, licence number, whether the authorization is for core, drill cuttings, or both, and which activities are being authorized.

E-mail authorization letters to CRC Compliance at crccomplianceadmin@aer.ca.

- If the material to be viewed or sampled is confidential, customers are required to complete and submit the Information Release and Liability Waiver for Sampling and Viewing of Confidential Material form to CRC Compliance before being given access to the material.

Obtaining Approval to Sample

- To obtain approval to sample material, you must complete the following forms:
 - Material Sampling Approval Form: Part A
 - Material Sampling Approval Form: Part B
- Submit your request by taking the forms to the CRC Service Desk.

A member of CRC Compliance will review the forms with you and decide whether to approve the request. CRC Compliance will not approve requests for sampling if the integrity of the remaining material is put at risk. Risk conditions include the following:

Drill cuttings:

- Less than one-third of the vial is available for viewing.

Core:

- Only one-quarter of core's diameter is available for viewing.

- The core’s unique geological features (e.g., formation contacts, fossils) would be destroyed or diminished by sampling.
- The condition of the core is not conducive for cutting (e.g., shale, clay).

Sampling

- CRC Compliance will allow one sampling for a given test type as follows:
 - **Drill cuttings:** One test type per vial of drill cutting material when material is removed for the test.
 - **Core:** An appropriate amount of spacing (identified by CRC Compliance) is required between each sample, depending on the type of test. For example, reservoir evaluation and productivity studies completed on core drill plugs may be cut every 30 linear centimetre of core. To remove plugs closer than 30 centimetres apart requires further justification and approval from the material sampling technical team.
- CRC Compliance will allow a set amount per test (sample allowance) to be removed from the core or the drill cutting vial.
- Sampling of nonconfidential wells will be allowed for the licensee or other third parties, as is standard AER practice for accessing data.
- Material sampling will be in one of the following forms:
 - **Drill cuttings:** A representative sample (high grading is not allowed).
 - **Core:** Rubble to the required amount.
 - **Core cut by CRC staff:** CRC Compliance will arrange for core cutting service. All core cuttings must be completed at the CRC unless the CRC does not provide the specific cutting service. See the *AER Products and Services Catalogue* for core cutting service charges.
 - **Core removed by rock hammer:** Eye protection must be worn when using a rock hammer to remove core samples. You must supply your own eye protection on site. Samples may only be taken from thin pieces. Lengths of core will not be broken to obtain samples without prior approval. CRC Compliance will arrange for in-house cutting service if core cannot be sampled using a rock hammer.
- CRC Compliance will arrange a core loan if you have approval from the licensee to move the core off site for sampling. The customer will be responsible for maintaining the integrity of the core while it is off site and for adhering to all terms and conditions that were agreed upon with CRC Compliance before moving the material. Any sampling of core completed off site must be done in a manner that minimizes the disturbance to the surrounding core.
- You must identify any material to be exported out of the Province of Alberta (see Material Sampling Form: Part A).

- Customers are responsible for any shipping or other expenses incurred for the movement of the material.
- If the core is returned to the CRC in an unsatisfactory condition, core loan privileges may be suspended until the customer can demonstrate to the satisfaction of the AER that any future core moved off site for sampling will be able to be returned in a satisfactory condition.

Submitting Test Results (Including Artifacts and Residual Material)

- All test results are to be submitted to CRC Compliance by the submission date appropriate for the type of sampling completed.
 - **Reservoir evaluation/productivity studies:** Test results are to be submitted within six months of the analysis date (see section 11.040 of the *OGCR*).
 - **Geological/other studies:** It is expected that test results will be submitted within one month of the test being completed. Extensions can be negotiated with CRC Compliance to a maximum of six months at the time of sampling approval.
- If an extension is required, customers must get approval from CRC Compliance before the submission due date.
- If the CRC does not receive test results by the agreed upon due date, corrective action will be taken. Corrective action may include the suspension of all CRC privileges for the company and person responsible for submitting the test results until it receives the test results.
- All test results, artifacts, and residual material must be submitted to

AER Core Research Centre
Attention: CRC Compliance
3545 Research Way NW
Calgary, Alberta T2L 1Y7
- Test results of each UWI sampled must each be submitted separately, except for when
 - using fluid (e.g., water, oil) from one well to test the material from another well or
 - conducting special studies that investigate a group of wells.

You must submit all UWIs included in the study together in these instances.

- Test results (except for physical artifacts) are to be submitted to CRC Compliance in an electronic format that is read only and searchable and must include processed raw data (both qualitative and quantitative). Quantitative data must be in a file format that allows the data to be easily analyzed or manipulated (i.e., an Excel spreadsheet). A PDF for quantitative data is unacceptable.

- Physical artifacts must have the complete UWI including location exception (LE) and event sequence (ES; e.g., 00/13-20-046-12W4/00), depth with measurement unit (ft/m), orientation of core on slide, and type of dye used. Markings must be permanent and legible. Thin section slides are to be submitted in a protective cardboard box or sleeve.
- All test results must be submitted on a CD or DVD.
- The CD or DVD being submitted must be labelled with the following information: “AER- CRC Compliance,” your company name, contact name, contact phone number, and e-mail address.
- All test results on the CD or DVD must follow the following file naming convention:
 - Separate blocks of information with an underscore (e.g., RS_0123456_00-13-20-045-12W4-02_MP.pdf).
 - Identify the sampling category of the data by either using “RS” for reservoir evaluation/productivity studies or “GS” for geological/other studies.
 - Submit each individual analysis as a separate file.
 - When multiple UWIs are being studied, identify one UWI that was sampled.

Each file name should be unique.

Example:

Data type	Licence no.	UWI (maximum 20 alphanumeric characters, including hyphens)*	Other	File extension
GS	0123456	00-13-20-045-12W4-02	ASEN	.xls
Resulting file name:		GS_0123456_00-13-20-045-12W4-02_ASEN.xls		

*Location exception code-legal subdivision-section-township-range-west meridian-event sequence

Returning Residual and Untested Materials

- Return residual core material to the CRC as required (see the list of test types approved for material sampling). All core and drill cutting samples must be returned in an unaltered state if the test was not completed.
 - Returned core samples must be labelled with the complete UWI and depth.
 - Do not combine drill cuttings taken for composite testing unless you are certain the test can be completed. The drill cutting sample must be returned in the sample vials provided by the CRC and labelled with the complete UWI and depth.

Dissemination of Test Results

- As per section 12.150(5) of the *OGCR*, test results for reservoir evaluation and productivity studies will be held confidential for one year from the date of the test.

- Confidentiality of the test results for geological or other studies will be the same as the confidentiality status of the well or wells within the study. Where multiple UWI's are contained within the study, the confidentiality of the study will be based on the latest UWI confidential release date.
- A searchable index of all submitted nonconfidential test results is available through the AER *Products and Services Catalogue*.
- Artifacts such as thin section slides are available for viewing at the CRC.

Contact Us

CRC Compliance: crccomplianceadmin@er.ca

CRC Service Desk: 403-297-6400 (phone); erc.servicedesk@er.ca (e-mail)

Material Sampling Service Hours:

Monday to Friday 8:00 a.m. – 11:30 a.m.
1:00 p.m. – 3:30 p.m.