

Appendix D

Proficiency Testing

Appendix D, Proficiency Testing Table of Contents

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1.0 Objectives

Laboratories participating in the Installation Restoration (IR) Program must successfully analyze proficiency test (PT) samples as part of the laboratory assessment process and on an ongoing basis once the Navy accepts them for use.

Proficiency testing is used to evaluate the performance of a laboratory and the quality of the data produced on a parameter, matrix, and method specific basis. PT sample results are used as a tool to evaluate the entire laboratory analysis process. This includes sample tracking, preparation, analysis, method selection (i.e., selection of particular options within specified standard operating procedures (SOPs)), record keeping, and data reduction and reporting.

2.0 Roles and Responsibilities

2.1 Assessment Organizations

The assessment organization is responsible for administering the PT sample phase of the laboratory assessment. In this capacity they are responsible for:

- PT design.
- Selecting and using a PT provider that meets the requirements described in Section 2.2.
- Assessing the PT information generated by the laboratory, and scored by the PT provider.

2.2 PT Sample Providers

PT sample providers are responsible for generating and scoring PT samples in accordance with the requirements specified in this appendix, and must:

- Use a manufacturing quality system that meets the requirements of both:
 - ISO 9001 for the design, production, testing, and distribution of performance evaluation samples
 - ISO Guide 34 Quality System Guidelines for the Production of Reference Materials
- Meet the requirements of ISO Guide 43, Proficiency Testing by Interlaboratory Comparisons regarding the design and operation of the PT provider's proficiency testing program.
- Limit disclosure of laboratory specific results or evaluations to the Navy, the specific laboratory, and the assessing organization.

2.2.1 Conflict of Interest

PT providers must be free of any organizational conflict of interest. A PT sample provider shall never split a sample lot and offer these samples for sale as known-value check samples before the unknown samples are used in a PT study. In addition, each provider shall demonstrate that its security procedures are adequate to maintain confidentiality and security of all target values through the closing date of each study.

2.3 Laboratories

Laboratories shall analyze PT samples and report the results in accordance with the requirements specified in this appendix, and the directions specified by the PT supplier. Laboratories shall:

- Ensure that management and all analysts handle (i.e., manage, analyze, and report) all PT samples in the same manner as real environmental samples to the extent possible.
- Use the same staff, procedures, equipment, facilities, and frequency of analysis for PT samples as for real environmental samples.

2.3.1 Restrictions

Laboratories must comply with the following restrictions on the transfer of PT samples and communication of PT sample results prior to the time the results of the study are released, regardless of what PT provider instructions imply:

- A laboratory shall not send any PT sample or a portion of a PT sample to another laboratory for any analysis for which it seeks acceptance.
- A laboratory shall not knowingly receive any PT sample or portion of a PT sample from another laboratory for any analysis for which the sending laboratory seeks acceptance.
- A laboratory shall not allow management or staff to communicate with any individual at another laboratory (including intracompany communication) concerning the PT sample.
- Laboratory management and staff shall not attempt to obtain the target value of any PT sample from the provider.

3.0 PT Design

The lead assessor is responsible for coordinating the PT phase of a laboratory assessment at the direction of the Contractor or the Naval Facilities Engineering Service Center (NFESC). The lead assessor shall collaborate with the Contractor or NFESC to determine which types of PT samples should be sent to the laboratory.

The assessing organization must design the PT sample such that the types of PT samples sent to the laboratory are commensurate with the fields of testing to be provided to Navy IR projects (i.e., to the extent possible, resemble the methods and matrices of the analysis to be provided).

PT samples for the laboratory assessment are single blind. The sample is known by the analyst to be a PT sample, but the composition is unknown.

If the scope of services to be provided by the laboratory is unknown, the representative samples listed in Table D-1 shall be sent to the laboratory for analysis:

Table D-1. Navy IR Standard PT Suite

Abbrev	Matrix	Parameter	Method (latest version)	Instrument
VOCs	water	Volatile Organic Compounds	EPA 8260	GC/MS
VOCs	soil	Volatile Organic Compounds	EPA 8260	GC/MS
VOCs	water	Volatile Organic Compounds	EPA 8021	GC
VOCs	soil	Volatile Organic Compounds	EPA 8021	GC
BNAs	water	Semivolatile Organics	EPA 8270	GC/MS
BNAs	soil	Semivolatile Organics	EPA 8270	GC/MS
Pest	water	Pesticides	EPA 8081	GC
PCBs	water	Polychlorinated Biphenyls	EPA 8082	GC
PCBs	soil	Polychlorinated Biphenyls	EPA 8082	GC
Metals	water	TAL Metals (23 Metals)	EPA 6010/7000 series	ICP/AAGF
Metals	soil	TAL Metals (23 Metals)	EPA 6010/7000 series	ICP/AAGF
TPH*	water	Total Petroleum Hydrocarbons	EPA 8015	Documentation/ On-site Review*
TPH*	soil	Total Petroleum Hydrocarbons	EPA 8015	Documentation/ On-site Review*

*There is much variability in state method protocol, therefore the review process shall require state certification and include a review of the method and laboratory SOP during the on-site assessment.

4.0 Analysis of PT Sample

The laboratory shall use contract-required analytical methods for all PT sample analyses. The assessor, in coordination with the EFD/EFA must preapprove any changes in analytical methods from the contract-required analytical methods.

The laboratory shall maintain copies of all written, printed, and electronic records, including but not limited to, bench sheets, instrument strip charts or printouts, data calculations, and data reports resulting from the analysis of any PT sample analyzed in support of the Navy IR Program as specified by the Navy. These laboratory records shall be made available to assessors during on-site assessments of the laboratory.

4.1 Internal Quality Control (QC) Analyses

A laboratory shall conduct and report all method-required internal quality control (QC) analyses. Supplemental to the method required QC, the minimum internal QC analyses required for PT samples include:

- Method blanks for all PT sample analyses
- Surrogate spikes for all organic PT sample analyses
- Laboratory control samples (LCS), second column confirmation, etc., whenever applicable
- Replicates, matrix spikes, and matrix spike duplicates for all soil/sediment PT sample analyses
- Replicates, matrix spikes, and matrix spike duplicates for all water PT samples

5.0 Reporting of PT Sample Results

The laboratory shall submit PT results no later than 30 calendar days from the date of sample receipt, unless the PT provider specifies otherwise.

5.1 Data Reporting Package

A data reporting package shall be generated and forwarded to the assessor for review. A laboratory may use its standard data package to report PT sample results, however, the data package submitted should be reflective of packages that will be submitted for Navy IR projects. In addition, the package shall be sequentially numbered and contain at least the following information:

- Table of contents
- Case narrative including a list of PT samples analyzed/reported and problems encountered with PT sample analysis
- Chain-of-custody (CoC) report
- Sample preparation information including sample preparation date, method citations for sample digestion, extraction, solvent exchange, concentration, clean-up, etc.

- Analytical results for all target analytes plus method citations and laboratory RLs
- Summary of method-specific QC results and assessments of precision and accuracy;
- Raw data including sample preparation and run logs, calibrations, chromatograms, calculations, etc.
- Phone conversation records on major issues related to PT sample analysis

The analysis results shall identify and quantify all target analytes listed in the required analytical method, including estimated values and the quantitation limits for target analytes not detected.

6.0 PT Evaluation

6.1 Data Reporting by PT Providers

The PT provider shall evaluate the results submitted by the laboratory according to the applicable sections of this manual and return the results within 21 calendar days of the close of each study. The PT provider shall report laboratory PT performance results to the assessing organization at the same time that it reports the results to the laboratory.

All data developed by the provider in support of verification testing, homogeneity testing, and stability analysis must be provided to the laboratory upon request, after the close of the study.

6.1.1 Failed Studies

If a laboratory has a "not acceptable" result, it shall determine the cause for the failure and take necessary corrective action. It shall then document in its own records both the investigation and the action taken. Copies of the documentation shall be provided to the PT provider as necessary to reconcile the result, and a copy shall be provided to the assessor for review.

If a laboratory fails two consecutive studies for a given field of testing, its performance is considered unacceptable for that field.

7.0 Application of PT Information to the Assessment

PT results for the laboratory assessment will be considered along with the other elements of the assessment process when determining a laboratory's compliance with the requirements of the Navy IR QA Program.

8.0 Ongoing PT

After a laboratory has been accepted (by Navy) to perform analyses, they must participate in the Navy's ongoing PT program, administered by NFESC. Every six months, participating laboratories are required to submit their results from nationally recognized PT studies (e.g., copy of the letter that presents the results, issued by the study administrator). The results shall be

reflective of the tests for which the laboratory has been accepted. If a laboratory does not have results available for Navy review, NFESC reserves the option of sending PT samples to the laboratory as needed. Navy samples for the ongoing PT program are typically generated and evaluated by the Army Corps of Engineers Hazardous, Toxic & Radioactive Waste, Center of Expertise (ACE HTRW-CX). Specific information pertaining to the analysis, reporting and scoring for these PT samples is found in the Army Corps of Engineers (ACE) document Validation of Analytical Chemistry Laboratories (EM 200-1-1, dated 1 July 1994 or the latest version). Samples may be single or double blind.

8.1 Failed Studies

The following protocol is applicable to failed studies associated with PT samples sent by the ACE HTRW-CX, in support of the Navy's ongoing PT program:

- If a laboratory has a "not acceptable" result, it shall determine the cause for the failure and take necessary corrective action. It shall then document in its own records both the investigation and the action taken.
 - Copies of the documentation shall be provided to ACE HTRW-CX. Upon review, ACE HTRW-CX will consult with the EFD/EFA to determine the next appropriate action which may be to accept corrective action, elect to send a remedial PT, or investigate the nature of the failure in more detail (i.e., review more documentation or on-site review).
- If a laboratory fails two studies for a given field of testing, its performance is considered unacceptable for that field and its acceptance for that field may be revoked.