

**STANDARD OPERATING PROCEDURE FOR
ASSIGNING FIELD SAMPLING FLAGS
FOR THE CHEMICAL SPECIATION TRENDS NETWORK**

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¹RTI International is a trade name of Research Triangle Institute.

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
1.0 Procedural Section	3
1.1 Purpose and Applicability	3
1.2 Summary of Method	3
2.0 Procedure	3
2.1 Field Custody and Field Data Form	4
2.2 Field Sampling Null Value and Validity Coding Form	4
2.3 Level 0 Validation SHAL Form	5
2.4 Aliquot Creation Form	5
3.0 Invalidation of Data	5

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1.0 Procedural Section

1.1 Purpose and Applicability

This Standard Operating Procedure (SOP) describes how field data validation flags are assigned during data input operations for the Chemical Speciation Trends Network (STN) laboratory program operated for the U.S. Environmental Protection Agency (EPA) by Research Triangle Institute (RTI). This SOP assumes the use of the current version of the STN data management system which was developed for this program. Note: The actual flags and validation criteria are described in the Laboratory Quality Assurance Project Plan.

1.2 Summary of Method

Data sheets are received from the field operators which contain information used for assigning validation flags and for determining the overall validity status of data for a particular exposure. The data sheets are examined by a senior staff member who assesses the form for completeness and validity, marks any necessary changes, assigns validation flags based on set criteria, and enters the data from the forms into the data base. Data are re-entered by a junior staff member for duplicate keypunch checking. All flagging is reviewed by the Quality Assurance Officer (QAO) prior to reporting to the state agencies.

2.0 Procedure

The following STN data forms are required for this procedure. They are usually provided by the sample handling analysis laboratory (SHAL). All the forms for a single event should be stapled together. (For sample forms, refer to the Sample Handling and Archiving Laboratory SOP.)

- Field Sampling Chain of Custody Sheet(s)
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- Field Sampling Null Value and Validity Coding Form
- Level 0 Validation - SHAL Form
- Aliquot Creation Form.

2.1 Field Custody and Field Data Form

Review the field custody form for completeness. If any required data is missing, contact the SHAL Manager who can either supply the missing data or contact the site operator regarding the data. Certain data can be filled in during data entry based on other information written on the form. For example, when average flow rate is missing from the form, but both the elapsed time and the total volume are present, then the average flow rate can be calculated. Whenever data are calculated in this manner the FCE informational flag should be assigned to the affected channel's data.

Examine the field custody form to make sure that the data meet the acceptance criteria specified in the QA Project Plan (QAPP). Assign appropriate flags if the data does not meet the QAPP specifications. [Note: most range checking of this type has been converted to automated checking performed by the data base software. This checking is run later in the data management process, prior to review by the STN QAO.]

Enter into the data system any data flags generated by the monitor and recorded on the form by the field operator. Some monitors use flags that are identical to the flags defined for the Federal Reference Method (FRM) PM2.5 monitors, but this is not universally true for chemical speciation monitors.

2.2 Field Sampling Null Value and Validity Coding Form

This form contains certain additional flags assigned by the field operator. Examine the flag(s) for reasonableness based on information written on the other forms. Enter the data into the STN data base, making sure that the flag(s) is assigned to the correct sampler channel. The flags on this form are a subset of Aerometric Information Retrieval System (AIRS) null value codes and AIRS validity status codes that are applicable to STN data.

2.3 Level 0 Validation SHAL Form

Determine if any additional flag assignments should be made based on information recorded by SHAL personnel. Assign flags to the appropriate field channels. The flags on this form include observations such as shipping temperature out of range, module end cap missing, filter missing, etc.

2.4 Aliquot Creation Form

This form is used to record observations by SHAL personnel while assigning aliquots. This will usually indicate whether valid laboratory aliquots were created for analysis. If a laboratory aliquot number was created, but no sample was sent to the laboratory for analysis, that aliquot should be marked as invalid in the data base.

3.0 Invalidation of Data

Flagged data may optionally be marked as "invalid." Invalid data are sent to AIRS with a null value code, while suspicious data receive a validity status code in AIRS. The QAO and the state agencies will review the validity status before the data are sent to AIRS. Reasons for invalidating an event, channel, or aliquot include serious events such as missing filter, lost shipment, seriously damaged filter, etc.
