APPENDIX A

PRELIMINARY EMISSIONS FACTORS PROGRAM IMPROVEMENT OPTION PAPER 1
ASSESSING AND DOCUMENTING THE QUALITY OF SOURCE TESTS

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1.0 OPTION PAPER 1 - ASSESSING AND DOCUMENTING THE QUALITY OF SOURCE TESTS

1.1 Introduction

A successful source testing effort will result in the generation of different types of data including emissions data, process data, and calibration data, to name a few. The ability to assess the overall accuracy, precision, and validity of the collected data is a key element in the process of developing reliable emissions factors. The current 4-point rating criteria, which results in test data with assigned ratings of either A, B, C, or D, is very dependent on the personal judgement of the source test report reviewer and is, thus, highly subjective. This subjective judgement is based primarily on the level of detail presented in the source test report and an assessment of the conformance with the published Federal (or other) test methods. There is no guidance on what types of information are more important to differentiate one quality rating from another quality rating. Thus, while clearly unacceptable data may uniformly receive a D rating, different evaluators may assign a single test report any of the three higher ratings based upon their assessment of the information presented in the report. Moreover, these quality ratings have little effect on the final reported emissions factors nor on the end user's acceptance and use of the emissions factors.

As the 4-point data evaluation ratings are currently applied, there is no distinction between A and B rated tests for use in emission factor development. Also, for some source categories, the mean and variation of the more numerous C rated source tests are comparable to the A and B rated tests. As a result, the development of several emissions factors has included C rated test data even when there are a moderate number of A and B rated test data. Thus, for use in developing emissions factors, the current 4-point data evaluation ratings often have very little meaning relative to how emissions factors are developed and used.

Development of emissions factors requires the accurate measurement of both pollutant emissions and process rate. Each of these components are of equal importance; however, unlike emissions testing where reference test methods and protocols exist, there exist few or no reference procedures and protocols for determining accurate process rate data.

MACTEC has considered various approaches that could be implemented as alternatives to the current test data rating criteria. The options that will be presented range from replacing the current rating criteria with a simple pass/fail approach to an approach that would be used to assign a specific "uncertainty" value to each data point. Sections 1.2 and 1.3 present a brief description of the current data rating criteria and several options for further evaluation.

1.2 Existing Source Test Evaluation Criteria

Prior to inclusion of emissions factors in AP-42, the reliability of the underlying emission test data must be appraised in accordance with the rating system specified in *Procedures for Preparing Emissions Factor Documents*. Under this rating system, test data are assigned a rating from A to D, where an "A" rating is assigned to the highest quality data. The typical time used in assigning one of these ratings to an acceptable simple test report is estimated at four hours per pollutant measured. The criteria used to assign a specific data quality rating are summarized in Table 1.1.

Table 1.1 Existing Test Report Rating Criteria

Rating	Criteria
A	Tests are performed by using an EPA reference test method, or when not applicable, a sound methodology. Tests are reported in enough detail for adequate validation and raw data are provided that can be used to duplicate the emission results presented in the report.
B	Tests are performed by a generally sound methodology, but lacking enough detail for adequate validation. Data are insufficient to completely duplicate the emission result presented in the report.
C	Tests are based on an unproven or new methodology, or are lacking a significant amount of background information.
D	Tests are based on a generally unacceptable method, but the method may provide an order-of-magnitude value for the source.

Four specific criteria are identified in *Procedures for Preparing Emissions factor Documents* for consideration to assist in the assignment of a test data quality rating. These four criteria are:

1. Source operation. If the manner in which the source was operated is well documented in the report and the source was operating within typical parameters during the test, an A rating should be assigned. If the report stated parameters were typical, but lacked detailed information, a B rating should be assigned. If there is reason to believe the operation was not typical, a C or D rating should be assigned.

2. Test methods and sampling procedures. In developing the ratings, the estimated accuracy and precision of the test method as well as the adequacy of the documentation should be considered. In general, if a current EPA reference test method, appropriate for the source, was followed, the rating should be higher (A or B). If other methods were used, an assessment should be made of their validity. If it is judged that the method was likely to be inaccurate or biased, a lower rating (C or D) should be given. A complete report should indicate whether any procedures deviated from standard methods and explain any deviations. If deviations were reported, an evaluation should be made of whether these were likely to influence the test results.

3. Process information. During testing, many variations in the process can occur without warning and sometimes without being noticed. Such variations can induce wide deviations in sampling results. If a large variation between test run results cannot be explained by information contained in the site final test report or from final test reports of other sources, the data are suspect and should be given a lower rating or excluded. The reviewer should recognize that a process may have naturally occurring highly variable emissions and a lower rating may not be appropriate solely on the basis of wide deviations in sampling results.

4. Analysis and calculations. Ideally, final test reports should contain original raw data sheets and other documentation such as gas parameters (dry cubic feet per minute, oxygen percentage), calculation sheets, or example calculations describing how the calculated emission results were obtained. If there are data sheets, the nomenclature and equations used should be compared to those specified by EPA to establish equivalency. The depth of review of the calculations should be dictated by the reviewers' confidence in the ability and conscientiousness of the tester, based on such factors as consistency of results and completeness of other areas of the final test report.

Reports may indicate that raw data sheets were available, but were not included. If the final test report is of high quality based on the other criteria, the quality rating should not be lowered due to a lack of data sheets.

When reviewing a source testing report for the purpose of assigning a data quality rating, the reviewer should first assign scores for each of the four areas described above. Two of these criteria, (test method and sampling procedures, and process information) should be weighted heavily, and if either of these two criteria are assigned a low rating, a low rating should be assigned to the report overall.

One of the primary weaknesses of the current 4-point rating system for source test reports is the lack of detailed guidance on assigning these ratings and the lack of uniformity among the reviewers which results from different interpretation of the published general guidance.

A related weakness is an overall lack of information on the potential impacts on the precision and accuracy of the emissions data resulting from deficiencies in applying required and optional testing procedures. This lack of guidance translates into the inability of users of the reports to assess the potential impact certain deficiencies in the report may have on the accuracy or usefulness of the reported emission levels. Depending on their experience and knowledge of source testing, reviewers will react differently to the various issues that they encounter in reviewing a test report. As a result, there is not a clear-cut relationship for the A through D ratings and the margin of error that could be expected in applying the emissions factors. While the current rating system attempts to indicate the relative significance of errors or omissions that may be discovered when reviewing the test report, the system does not provide any means of attaching a numerical value to the uncertainty resulting from the errors or omissions. The current rating system also does not specifically address the precision of the various testing methods and procedures (e.g., the uncertainty that would be introduced into the final emissions factor value if all testing variables were within the acceptable range, but just barely so).

It is also possible that source testing personnel may implement procedures that exceed the specific requirements of the published test method. There are several instances where method quality assurance or performance specifications are based upon what was technologically feasible when the method was initially promulgated. Areas where procedures may exceed the requirements of the published test method include: using more restrictive calibration requirements for thermocouples, Pitot tubes, and dry gas meters; more rigorous calibration of continuous emissions monitoring systems (CEMS); and the use of technologically advanced equipment. Conversely, there is no method to determine the affects on overall precision and accuracy of measurements if QA/QC checks do not meet acceptable criteria. Both of these conditions may result in a test that is acceptable for the intended purpose, but the present rating system does not include any guidance on dealing with these differences quantitatively.

1.3 Options for Source Test Evaluation Criteria

MACTEC has identified six options that we believe should be considered as potential replacements for the current test data evaluation criteria:

- Option 1.1 - Replace the existing A, B, C, D format by simply designating reports as “Applicable” or “Not Applicable” for use in developing emission factors. Data from reports evaluated as being Applicable would be used for subsequent emissions factor development.

- Option 1.2 - Accept only reports for use in emissions factor development that are certified by a third-party reviewer.

- Option 1.3 - Use the existing A, B, C, D rating system, but develop clear-cut guidelines for assigning data quality ratings to test reports to eliminate the subjective element of individual report reviewers.

- Option 1.4 - Revise the existing rating system to expand the range of ratings by assigning numerical ratings for report elements.

- Option 1.5 - Revise the quality assessment system by eliminating the A, B, C, D quality rating system. The system would be replaced with a quantitative system that would allow for the calculation of bias and precision values for data presented in test reports.

- Option 1.6 - Implement process and emission control device operational guidelines that must be adhered to during source tests.

Sections 1.3.1 through 1.3.6. describe each of the options more fully, including the perceived advantages and disadvantages of each option, and estimated cost impacts (i.e., level-of-effort required for development and implementation). There are no doubt many details that would need to be resolved prior to implementing any of the listed options. Rather than focusing the project resources on attempting to resolve all of these details for any one option at this point, the list of options should first be narrowed to only those options that would be most acceptable in the improved overall emissions factor development program.

The adoption and implementation of any of the options for source test report evaluation will result in several short-term issues related to transitioning from one system to another. The first issue to be resolved is the development of all information necessary to "create" an option to the current evaluation system. If, for example, the option selected involves the use of estimates of bias and precision, it will be necessary to gather sufficient data to establish estimates that are acceptable to the technical experts in the source testing profession.

The second issue that must be addressed is the process of educating the source test reviewers as to how the new evaluation system works. While the current system of A through D rated test reports is highly subjective, it has been in place for years and source test review personnel have developed their own perception of what each of the rating levels mean. Changing to a system that evaluates "quality" in terms other than A through D will require educating the personnel and will take a period of transition. For example, a test report that would currently receive an "A" rating may, when reviewed using bias and precision estimates, receive a score of ± 50 percent. While the ultimate usefulness of this report has not changed because of the different evaluation system, many people may view an "A" rated report as being of much higher quality than a " ± 50 percent" report. The extent to which this will be an issue, of course, cannot be predicted until the bias and precision estimates have been developed and the range of values associated with a "good" report are known. It is anticipated, however, that a significant effort will be required to educate personnel about the new system.

Another issue to be considered is how a new source test report review system will impact both emission factor development activities in progress at the time of the transition and existing emission factors. The primary question that must be addressed is the extent to which test reports supporting existing emission factors will be re-evaluated.

1.3.1 Option 1.1 - Evaluate Test Reports as "Applicable" or "Not Applicable" for Emission Factor Development

During discussions with the WAM regarding the quality of source test reports, MACTEC discovered that the difference in data quality between reports with A quality ratings and reports with B quality ratings is relatively minor. Also, as stated previously, for some source categories there are more C rated reports available, and the mean and variation of the data in the C rated reports is comparable to the mean and variation of the data in the A and B rated reports. Based on the existing source test evaluation criteria, it may well be that some C rated reports are of similar quality as some A and B rated data, but may lack a significant amount of background information which helps to document the quality of the data. Bearing this in mind, one may make the assumption that reports with A, B, or C data quality ratings are applicable for use in emissions factor development, and only reports with D ratings are not applicable for use. Therefore, one option for revising the emissions factor development process would be replacing the existing quality rating criteria with a system which designates test reports as applicable or not applicable for emission factor development. It should be noted, however, that even though a test report may be considered not applicable for emission factor development, it may meet all of the needs of the businesses or agencies for which the test was performed. Therefore, the use of the terms "applicable" and "not applicable" should only apply to the usefulness of test reports in developing emission factors.

This option would represent a simplification of the current evaluation system. In this option, results from source test reports would be classified as either applicable or not applicable. Data that were obtained using the appropriate EPA Test Methods or a sound methodology would be rated as acceptable. Testing performed using inappropriate procedures (e.g., use of a Summa canister to quantify polar compounds, use of the older formaldehyde test method, use of Method 25 when concentrations are less than 50 parts per million) would be rated not applicable.

A variation under this option would be to also accept all source tests that have accompanying documentation that they have been accepted for use by the applicable State/local permitting authority. Based upon interviews with personnel in New Jersey, North Carolina, and Pennsylvania who routinely review compliance test reports, the staff require about two to three days to evaluate a test report for completeness and accuracy generally using simple accept/reject criteria relative to determining compliance. The reviews do not include an evaluation for suitability for emissions factor development. With this option, the state reviewer could include an assessment of the data in the report relative to emissions factors development with little additional time spent by the agency reviewer. An advantage of this option is the streamlining of the process in eliminating need for a second (e.g., EPA) review of the report for the purpose of assigning a data quality rating, thereby saving two to three days of time in the emissions factor development process. State agencies have guidelines as to what constitutes an acceptable test report that are less subjective than the current test report rating system. Therefore, subjectiveness due to individual report reviewers may be reduced if this option were implemented.

The primary disadvantage of this applicable/not applicable evaluation system is the lack of a quantified evaluation of the precision and accuracy expected in applying the emissions factor.

1.3.2 Option 1.2 - Third Party Reviewer

The second option for test data evaluation is the acceptance of test data that has been "certified" by an independent entity not directly associated with the source testing team. Although there are no "certified" assessors, staff at many State and local agencies perform quality assurance evaluations of source test programs. Components of several of these quality assurance evaluations extend beyond the assessment conducted during the emissions factors assessment process. Some of the components include

assessment of the operation of the facility during the conduct of the test, assessment of field test crew during the conduct of the test, and potentially a more extensive assessment of the final source test report. To be most succesfull, this option is envisioned as requiring the development of quality assessment guidelines to be followed by the test team and the independent reviewer. The reviewer and the test team representative would then submit, along with the test report, a statement certifying that they followed the guidelines. Test reports that are accompanied by the certification would be accepted for use in the emissions factor development process. Alternatively, source testing firms could become "certified" through the use of qualified individuals such as Professional Engineers, Certified Industrial Hygienists, or similar professionals. Presently, several states accredit firms that conduct stack testing and the Source Evaluation Society (SES), the Sampling and Analysis of Atmospheres committee (D22) of the American society of Testing Materials (ASTM), and the National Environmental Laboratory Conference (NELAC) are working on programs for qualifying individuals who conduct stack testing.

As with Option 1.1, this option would result in a reduced level of effort for reviewing the test report for use in the emissions factor development process. The reduced effort is accomplished through a reduction in the duplication of efforts when this data is used for secondary uses such as the emissions factors program. While it may appear that this option places an increased burden on State or local agencies, it could not only standardize the assessment process but also provide a range of assessments that reflects the existing level of effort by these agencies. In the alternative form, this option would place some additional burden on the source testing firms (and source owners). This option does not provide for quantitative assessment of the uncertainties associated with applying the emissions factors.

1.3.3 Option 1.3 - Establish Specific Guidelines for Data Quality Rating Assignment

Option 1.3 makes use of the current evaluation criteria by continuing to assign an overall rating of either A, B, C, or D to the reviewed test data. Although general guidelines are presented in *"Procedures for Preparing Emissions Factor Documents,"* this option would entail the development of more specific guidelines to be used to assign a data quality rating. MACTEC envisions developing a standard checklist of items that would have to be included in a test report to qualify for the highest rating. As significant deficiencies are identified, the overall quality rating of the test report would be lowered. The primary advantage of this option is that, through careful selection of the items to be included on the checklist, more weight could be assigned to the more critical items in the testing process. Errors or omissions in the documentation of steps in the testing procedures that are likely to have a significant impact on the precision or accuracy of the results would be grounds for lowering the rating of the report. This option is considered to be an improvement to the current system because much of the subjectivity could be reduced. Clearly defining the expectations for each rating would introduce much more uniformity into the evaluations.

The implementation of a review system based on Option 1.3 would probably result in about the same level of effort as is currently expended on source test data evaluations. The benefits would be improved consistency among reviewers and a more defensible assessment of the accuracy of the results. On the other hand, as with Options 1.1 and 1.2, this option provides no quantitative analysis of uncertainty associated with applying the emissions factors.

1.3.4 Option 1.4 - Establish Numerical Rating System to Assist in Assigning a Data Quality Rating

Option 1.4 would be implemented by establishing a revised rating system with an expanded range of quality ratings that would use multiple specific rating areas. The expanded range of quality ratings (including ranges such as: yes, no, maybe, possibly, excellent, good, average, poor, not applicable, etc.) would be assigned a numerical value reflecting the relative importance of the rating areas so that the sum of the numerical rating would provide the measure of quality for the test report.

This option would have the advantage of providing a less subjective evaluation of the test data and would also provide a system where several pollutant test results could be ranked in order of their overall quality rating. One approach under this system would break down the current categories under which a source test report is reviewed (e.g., source operating status, test method and sampling procedures, analysis and calculations, and quality assurance) into additional sub-categories. Each subcategory would be scored based upon the data completeness and accuracy. The awarded points would then be summed, and assigned a data quality rating based upon the overall score. An example system might consist of the following:

I - Source Operation

- 5 Process data sheets document process operation at fixed intervals during testing.
- 5 Process data sheets document process operation in units of the emissions factor.
- 5 For combustion sources, a fuel sample is collected and analyzed for heat content.
- 5 Process operating at a capacity of 80% or greater that the rated capacity
- 5 Process operating smoothly during testing with no unplanned shutdowns

II - Test Method Sampling Procedures

- 5 Promulgated EPA Test Method used, and test method was appropriate for the source
- 5 If an approved test method was not used, Method 301 validation procedures were employed.
- 5 At least three valid sampling runs were completed for each target parameter.
- 5 Completed sampling runs comply with all QA/QC guidelines specified in the method.
- 5 Field data sheets are pre-printed forms, and are accurately and completely filled out.

III - Analysis and Calculations

- 3 Laboratory data sheets are pre-printed, and are accurately and completely filled out.
- 3 Copies of PC-based spreadsheets are included.
- 3 Example calculations are included which allow the reviewer to reproduce test results.

IV - Quality Assurance

- 2 Calibration data sheets included for temperature measurement devices use in the field
- 2 Calibration data sheets included for air flow measurement devices use in the field
- 2 Calibration data sheets included to gas volume measurement devices used in the field
- 2 Calibration data sheets included for gravimetric devices used in the PM laboratory
- 2 Copies of Protocol gas certification sheets are included for compressed gas standards.
- 2 Copies of CEM calibration curves and pre and post test calibration checks are included.

Each item under the four major areas would be assigned points from zero to the maximum as presented in the left-most column. Under this example system, the maximum number of points that could be awarded is 71. Reports that score 64 points or more (90%) would be awarded an A data quality rating. Reports with scores between 57 and 64 (80 - 90%) would score and B, and reports with scores between 50 and 57 (70 - 80%) would score a C. Reports with scores less than 50 points (70%) would score a D rating and would be considered unacceptable for use in emissions factor development work.

A significant amount of effort (on the order of 200 man-hours) would be required to set-up and test the scoring system for this option. This system would be amenable to the use of automation technologies, since a spreadsheet or a web-based module could be developed to record the reviewer's scoring. In addition, a duplicate review of the test report could be conducted, and the overall score could be quickly calculated by either automation approach. The level of effort that would be required to score the report is anticipated to be on the order of four to eight hours, depending on the complexity of the report. This estimate would be in addition to the time already be spent by the reviewer evaluating the contents of the report for a demonstration of compliance by the affected source. A duplicate review of the report would increase the anticipated level of effort by an additional four to eight hours, once again depending on the complexity of the report. This option would also tend to remove the subjectivity associated with assigning data quality ratings because of the nature of the scoring system, and because data quality ratings may be assigned after review by two (or more) individuals.

As with the first three options, the disadvantage of this option is there is no assessment of the uncertainty associated with applying the emissions factors.

1.3.5 Option 1.5 -Develop Quantitative System to Calculate Precision and Bias of Source Test Data

Under Option 1.5, the existing rating system would be abolished and replaced with a new quality assessment evaluation system that accommodates the development of a predicted bias and a predicted precision value for emissions and process data. The bias and precision data from these measurements would allow for the overall bias and precision of emissions factors to be calculated. In the near term, previous studies providing precision and bias information would be used to quantitatively and semi-quantitatively characterize the results of source test programs which comply fully with the conditions of the initial source test methods. For source test program which did not fully comply with the conditions of the initial source test methods, adjustments in the overall precision and bias could be made using information on the non compliant components. For source test methods without existing precision and bias information, the precision and bias could be developed based upon measurement errors (e.g., the precision with which a measurement of stack gas velocity pressure, Δp, may be made) systematic errors (e.g., quantifying the sampling bias of a sample transport and conditioning system in a CEM application), and statistical errors (i.e., calculating a deviation and a confidence interval for a group of measurements made on the same emissions source).

For this system to be implemented, some effort would be required to obtain the previous studies on bias and precision, compare the conditions during these studies with current published methods and develop methods to quantitatively adjust for non compliant components of a source test program. Examples of some of the source test components and the parameters influencing the bias and precision of those components which could be used to provide quantitative adjustments to a source test that fully complied with the current test method include:

Measurements and Uncertainties in Source Sampling Methods 1 through 5

Test Method No. and Description	Measurement	Units	Uncertainty
1 - Sample and velocity traverses	Stack diameter	inches	All uncertainty values to be assigned using historical information.
	Port length	inches	
	Distance downstream to flow disturbance	inches	
	Distance upstream to flow disturbance	inches	
2 - Stack gas velocity and flow rate	Stack gas differential pressure (0 - 1.0 in. w.c.)	in. w.c.	
	Stack gas differential pressure (1.0 - 10 in. w.c.)	in. w.c.	
	Stack gas temperature	° R	
	Presence of cyclonic flow conditions	°	
3 - Dry Molecular Weight	CO_2 Concentration (Orsat)	% volume	
	O_2 Concentration (Orsat)	% volume	
	CO_2 Concentration (Fyrite)	% volume	
	O_2 Concentration (Fyrite)	% volume	
3A - O2 and CO2 conc. (Instrumental)	O_2 Calibration error	% volume	
	O_2 System Bias	% volume	
	O_2 Calibration Drift	% volume	
	CO_2 Calibration error	% volume	
	CO_2 System Bias	% volume	
	CO_2 Calibration Drift	% volume	
4 - Stack gas Moisture	Sample Volume	cf	
	Pre-test Leak Rate	cfm	
	Post-test Leak Rate	cfm	
	Meter orifice differential pressure (0 - 1.0 in. w.c.)	in. w.c.	
	Meter orifice differential pressure (1.0 - 10 in. w.c.)	in. w.c.	
	Meter temperature (inlet)	° R	
	Meter temperature (outlet)	° R	
	Sample Train Vacuum	in. Hg	
	Initial Impinger Weights	g	
	Final Impinger Weights	g	
5 - Stack Gas PM Concentration	Sample Volume	cf	
	Pre-test Leak Rate	cfm	
	Post-test Leak Rate	cfm	
	Meter orifice differential pressure (0 - 1.0 in. w.c.)	in. w.c.	
	Meter orifice differential pressure (1.0 - 10 in. w.c.)	in. w.c.	
	Meter temperature (inlet)	° R	
	Meter temperature (outlet)	° R	
	Sample Train Vacuum	in. Hg	
	Filter Tare Weight	g	
	Filter Final Weight	g	
	Beaker Tare Weight	g	
	Beaker Final Weight	g	
	Nozzle Diameter	in.	

This assessment system would be a combination of a binary evaluation system (yes, no) and a set of individual bias and precision adjustments for each non compliant component measurement of the sampling program. Each measurement portion would be assigned a default bias and precision estimate reflective of the demonstrated performance: however, as individual source test firms collect precision and accuracy information specific to their application of the test methods, these default bias and precision values might be replaced by company-specific precision and bias values. These values may prove to be either better (less than) or worse (greater than) the default values, and may provide incentive on the part of source testing firms to conduct source testing programs with greater care. For those criteria that receive a non-response (i.e., the calibration data are not presented in the reports) a bias and precision value would be assigned indicative of a severely non-compliant component. For those criteria that receive a compliant response but where precision and accuracy information can not be calculated from information in the report, a bias and precision value associated with a minimally compliant component would be assigned. For those criteria which receive a compliant response and for which supporting information can be use to demonstrate precision and accuracy information, the precision and accuracy information would be used in place of the default values. The final bias and precision value for the test series becomes the best estimate of the bias and precision arrived at from a calculation of the biases and precision using the propagation of errors methodology.

Option 1.5 for the test report evaluation system would significantly improve the evaluation process by replacing the subjective nature of the current system. Instead of the data quality rating system, individual source and process measurements would be reported with a value, and an uncertainty value. When these data are evaluated for use in the emissions factor development process, emissions data could be selected based upon a predetermined criteria to control the bias and precision of the resulting national emission factor or determined by the individual who is developing the emissions factor for a local or facility specific purpose.

This option would be a significant departure from the existing emission factor rating system. A potential negative connotation would be that these estimates of bias and precision make the resulting data unacceptable for either their primary or some secondary purpose.

1.3.6 Option 1.6 - Implement Process and Control Equipment Guidelines

Option 1.6 makes use of guidelines and Standard Operating Procedures (SOPs) for assessing process and emission control device operating conditions during source test programs. Option 1.6 would be used in conjunction with Options 1.1 through 1.5. Because source tests are usually conducted in response to compliance and enforcement actions by regulatory agencies, the emissions test results may not be useful in developing emissions factors due to the uncertainties associated with the process rate data. Typically, sources are required to operate at some specified rate during a compliance test, and the documentation required to demonstrate this rate is often minimal. Option 1.6 would be implemented by developing process and emission control device specific guidelines for each AP-42 source category. The guidelines would include predicted bias and predicted precision so that uncertainties could be assigned to the process data in a manner similar to that for the emissions data.

The advantage of this option is that, when used in conjunction with Options 1.1 through 1.5, accurate process rate data would be obtained during each emissions test that could be used in conjunction with the emissions test data in developing emissions factors.