6 June 1994

Committee C09 on Concrete and Concrete Aggregates
Subcommittee C09.24on Supplementary Cementitious Materials

Research Report C09-1008

Interlaboratory Study to Establish Precision Statements for ASTM C311, Tests for Sampling and Testing Fly Ash or Natural Pozzolans for Use as a Mineral Admixture in Portland Cement Concrete

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August 5, 1993

REPLY TO
ATTENTION OF

CEWES-SC

For (93-2) MCLB

RECEIVED
AUG 09 1993
A.S.T.M.

Mr. W. Scott Orthey
ASTM
1916 Race Street
Philadelphia, PA 19103-1187

Scott:

Enclosed is the report I wrote from which a precision and bias statement for C 311 (C09.24) was developed. Craig Cain asked me to send it to you since this item is now at the ballot step at which a report number is appropriately assigned. Please let me know if additional things are needed.

Sincerely,

Toy S. Poole
Concrete Technology Division

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Research Rpt.

Results of Interlaboratory Study to Determine the Precision and Bias of Chemical-Analysis Methods Described in ASTM C 311

Toy S. Poole
Waterways Experiment Station, Vicksburg, MS

INTRODUCTION

ASTM C 311 essentially relies on ASTM C 114 for methods for the determination of chemical composition of coal fly ash, but the latter document does not purport to be applicable to materials other than hydraulic cements, and therefore its estimates of precision and bias are not applicable to coal fly ash. The purpose of this report is to report the results of an interlaboratory study conducted in 1987-89 for the purposes of developing these estimates.

Seven laboratories participated in the study: Ash Grove Cement Co.; Cal-Mat Co.; Dundee Cement Co.; General Portland, Inc.; Resource Materials Testing, Inc.; Riverside Cement Co.; Waterways Experiment Station.

MATERIALS AND METHODS

National Institute for Standards and Technology (NIST) Standard Reference Materials (SRM's) coal fly ash samples 2689, 2690, 2691, and 1633a were used in the program.

Participants were instructed to complete analyses according to ASTM C 311-87. These methods are basically ASTM C 114 reference methods for the chemical analysis of hydraulic cements for which insoluble residues exceed 1%. The C 114 method for determination of Fe_2O_3 has been changed since this interlaboratory work was done. Therefore, precision and bias estimates for this method, which were developed and reported by Richter and Poole (1992), are substituted for the results obtained in the interlaboratory study.

RESULTS

Results reported by each laboratory are summarized in Table 1, along with simple descriptive statistics. Laboratory identification numbers are not related to the sequence in which laboratories were identified above. All data and descriptive statistics are reported to two decimal places. There was no substantial evidence that any data needed to be removed because of variances that were too high or too low, as described in C 802. There were a few instances in which a particular set of analyses were associated with a variance that

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