SUPPORTING STATEMENT – PART B
U.S. Department of Commerce
U.S. Census Bureau
Annual Survey of Manufactures (ASM)
OMB Control No. 0607-0449

B. Collection of Information Employing Statistical Methods

1. Description of Universe and Respondent Selection

The ASM statistics are based on a survey that includes both mail and nonmail components. The mail portion of the survey is comprised of a probability sample of approximately 50,000 manufacturing establishments from a universe of approximately 346,000 establishments. The sample frame consists of all manufacturing establishments of multiunit companies (companies with operations at more than one location) and larger single-location manufacturing companies. The nonmail component is comprised of the remaining small- and medium-sized single-location companies. No data are directly collected from companies in the nonmail component. For the nonmail companies, data are directly obtained from the administrative records of the Internal Revenue Service (IRS), the Social Security Administration (SSA), and the Bureau of Labor Statistics (BLS). Although the nonmail companies account for up to two thirds of the population, they only account for approximately 7 percent of the total manufacturing output.

The unit response rate in the ASM has traditionally been in the 80-85% range. Due to the skewness in the population, the respondents typically account for over 90% of the value added in manufacturing.

2. Procedures for Collecting Information

a. Description of Reporting Forms

We will mail reporting forms to 50,000 manufacturing establishments. They will receive a MA-10000(L) (long version) or a MA-10000(S) (short version).

(1) Large firms - We mail the long version MA-10000(L) of the questionnaire to approximately 47,000 establishments. The establishments are large and represent a significant proportion of the respective class of products produced at the U.S. level.

(2) Small firms - We will send MA-10000(S) short forms to most single-establishment companies selected for the sample. We

expect to mail approximately 3,000 short forms.

The size of the ASM mailing panel breakdown, therefore, is as follows:

(1) Long Form MA-10000(L)	47,000
(2) Short Form MA-10000(S)	3,000
Total.....	50,000

(3) Ownership or Control Flier (Attachment D)- For those single-establishments firms selected in the ASM sample, an ownership or control flier will be inserted in the mail out package. We expect to mail approximately 15,000 forms.

b. Matching to Bureau of Labor Statistics Establishment List

Incomplete industry codes can cause potentially serious errors in our coverage of new producers and also in our ability to perform accurate editing and imputation. Although the SSA requests industry classification in the original application for the EI number, frequently only a 3- or 4-digit code can be assigned for a large number of the new businesses. This amounts to about 20,000 manufacturing establishments annually. In addition, a large number of newly active establishments are received from the IRS without industry classification. Classification information is requested from the BLS for both types of cases.

c. Sampling Methodology

The 2008 ASM sample was selected from the manufacturing sector of the 2002 Economic Census. The sample is supplemented annually to include new establishments in the manufacturing sector. This sample will be used through reference year 2009. Below is an overview of the sample design.

The universe was first partitioned into mail and nonmail strata. Within each of the 473 NAICS industries, small and medium-sized single-location companies were identified and defined as the nonmail component. Establishments comprising the remaining portion, including all establishments of multi-location companies, were defined as the sample frame.

The sample strategy was to select an independent sample within each of the 473 NAICS industries. This allowed optimization of the probabilities of selection within each industry, which would improve the representativeness and reliability of the survey estimates. Within each industry, each establishment was initially assigned multiple probabilities.

These probabilities were based on the establishment's relative importance within the industry that it was classified and the set of product classes that it produced; and, the target reliability constraints defined by the survey manager. For example, an establishment that has activity in three product classes was initially assigned a total of four probabilities (one would be industry-based and the other three would be product class based). For sample selection purposes, the establishment's maximum probability was used. The use of the maximum probability provided a degree of assurance that target reliability constraints would be satisfied.

d. Estimating Procedures

A primary objective of the ASM is to estimate year-to-year change between the censuses. The variances of estimated changes are always reduced when the sample overlap is high between both periods and the year-to-year correlations are positive. Since the ASM sample is selected and maintained for period of five years and the year-to-year correlations are high for most ASM data variables, an estimator that takes advantage of both the constancy of sample and the positive correlations is highly desirable. For the ASM this is achieved via the use of the "difference estimator." Essentially, an estimate of the "difference" between the current year and the census year is derived from the sample and added to or subtracted from the corresponding census value.

For a given sample size, the difference estimator generates more reliable estimates than most estimators of totals. It also offers the attractive feature that estimates for different subgroups are additive, ensuring that estimates are arithmetically consistent.

The difference estimate formula is as follows:

$$Y''_{cy} = Y'_{cy} + (Y_{02} - Y'_{02}) + I_{cy}$$

Where Y''_{cy} is the published estimate for the current year. Y'_{cy} is the linear estimate obtained by multiplying each mail sample establishment's current year data by the corresponding establishment weight.

I_{cy} is the estimate obtained from the use of administrative records and industry averages for establishments in the nonmail portion of the universe.

Y_{02} is the 2002 census value from the sampling frame.

Y'_{02} is the linear estimate of Y_{02} from the sample selected from the sampling frame.

For selected variables with poor year-to-year correlations, estimates of total are generated as follows:

$$Y''_{cy} = Y'_{cy} + I_{cy}$$

3. Methods to Maximize Response

a. Follow-up Procedures

We follow up delinquent companies by mail reminder (four separate mailings, approximately 1 month apart). We call larger delinquent companies at the time of our processing closeout prior to the tabulation review stage. In addition, the analyst staff contacts individual establishments of these larger companies as part of the tabulation review stage.

b. Estimating for Missing Data

The procedures for handling missing data essentially are the same as the prior years. For single-establishment companies that do not respond, we obtain employment and payroll data from the IRS. We then estimate the other data items for the nonrespondent, using a combination of the prior year establishment operational relationship and industry averages.

For establishments of multiunit companies that do not respond, we obtain operational status information from the Company Organization Survey to identify the establishments that actually are in business and, therefore, candidates for imputation. We then estimate the detailed items for the nonrespondent establishments using a combination of the prior year establishment operational relationships, industry averages, and changes in industry levels developed from data supplied by the Census Bureau's M3 survey (inventories) and the Bureau of Labor Statistics (employment and payroll).

c. Reliability

The estimates developed from the survey are apt to differ somewhat from the results of a census covering all companies in the sampled lists conducted under essentially the same conditions as the sample survey. We provide estimates of the magnitude of the sampling errors -- the differences between the estimates obtained and the results theoretically obtained from a comparable complete coverage census -- by the standard errors of the estimates included in the publications. For value added by manufacturers, the standard error of the estimate was one percent of the estimate at the total manufacturing level for 2006. At the 3-digit subsector levels, the standard error of estimate for the majority of the

subsectors was two percent or less for 2006.

4. Testing of Procedures

We conduct studies designed to examine methodological and processing issues. Earlier studies have resulted in the use of short forms for smaller companies and the use of administrative information for imputation purposes. For 1992, we compared the estimates, which would have been produced from the ASM with the 1992 census values for shipments and employment. From these comparisons, we improved our procedures in several areas of frame and sample maintenance.

Beginning with the 1993 ASM, we made three modifications to our estimates. We introduced an under coverage adjustment to address classification problems in the Standard Statistical Establishment List (SSEL); a weight adjustment to address biases in the classification of new single-unit operation; and a reserved scope component to eliminate the downward bias associated with ASM establishments exiting the sample because their classification was updated to a nonmanufacturing industry.

5. Contacts for Statistical Aspects and Data Collection

Mr. Mendel D. Gayle, Assistant Chief for Census and Related Programs of the Manufacturing and Construction Division, serves as consultant on the collection, analysis, and the dissemination of the ASM data. He can be reached on (301) 763-4587.

Mr. Paul L. Hsen, Assistant Chief for Research and Methodology of the Manufacturing and Construction Division, serves as consultant on the statistical aspects of the ASM. He can be reached on (301) 763-4586.

Attachments:

A. List of Consultants
B. 2008 Cover Letters
C. 2008 Report Forms and Instructions
D. Ownership or Control Flier