SURVEY METHODS FOR NONFUEL MINERALS

By Jacqueline A. McClaskey

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The U.S. Bureau of Mines (USBM) Information and Analysis Directorate collects worldwide data on virtually every commercially important nonfuel mineral commodity. These data form the base for tracking and assessing the health of the minerals sector of the U.S. economy.

The USBM’s data collection activity was instituted by the 47th Congress in an appropriations act of August 7, 1882 (22 Stat. 329), which placed the collection of mineral statistics on an annual basis. The most recent authority for the USBM survey activity is the National Materials and Minerals Policy, Research and Development Act of 1980 (Public Law 96-479, 96th Congress). This act strengthens protection for proprietary data provided to the U.S. Department of the Interior by persons or firms engaged in any phase of mineral or mineral-material production or consumption.

Data Collection Surveys

The USBM begins the collection of domestic nonfuel minerals and materials statistics by appraising the information requirements of Government and private organizations of the United States. Requirements that can be met by collecting data from minerals establishments are posed as questions on USBM surveys. Figure 1 shows a typical survey form.

Specific questions about the production, consumption, shipments, etc., of mineral commodities are structured in the survey forms to provide meaningful aggregated data. Thus, the entire mineral economic cycle from production through consumption is covered by 149 monthly, quarterly, semiannual, and annual surveys.

After the survey form has been designed, a list of the appropriate establishments to be canvassed is developed. Many sources are used to determine which companies, mines, plants, and other operations should be included on the survey mailing list. State geologists, Federal organizations (e.g., Mine Safety and Health Administration), trade associations, industry representatives, and trade publications and directories are some of the sources that are used to develop and update survey listings. With few exceptions, a complete canvass of the list of establishments is employed rather than a sample survey. The iron and steel scrap industry is one of the exceptions where a sample survey is conducted.

The Paperwork Reduction Act requires that any Government agency wishing to collect information from 10 or more individuals or establishments first obtain approval from the Office of Management and Budget (OMB). OMB approves the need to collect the data and protects industry from unwarranted Government paperwork.

Survey Processing

The USBM surveys approximately 25,000 establishments. Each year the USBM mails about 43,500 forms that gather information for 149 different surveys. Each completed survey form returned to the USBM undergoes extensive scrutiny to ensure the highest possible accuracy of the mineral data. The statistical staff monitors all surveys to ensure that errors are not created by reporting in physical units different from the units requested on the form. Relationships between related measures, such as produced crude ore and marketable crude ore, are analyzed for consistency. Engineering relationships, such as recovery factors from ores and concentrates, are also employed. The totals for each form are verified, and currently reported data are checked against prior reports to detect possible errors or omissions.

All surveys forms are reviewed for completeness and accuracy prior to data entry. The computer is
programmed to conduct a series of automated checks to verify mathematical consistency and to identify discrepancies between the data reported and logically acceptable responses.

The USBM is modernizing and automating all of its survey processing and data dissemination functions. Automated commodity data system functions include computerized preparation of statistical tables; the use of desktop publishing to integrate text and tables; and electronic dissemination through a bulletin board system and the Internet. Also, information on minerals and mineral-related publications is now available through an easy-to-use automated facsimile (fax) response system known as MINES FaxBack.

To produce reliable aggregated data, the USBM employs efficient procedures for handling instances of nonresponse. Failure to return the initial survey form results in a second mailing of the form. If the second form is not returned, telephone calls are made to the nonrespondents. The followup calls provide the necessary data to complete the survey forms and/or verify questionable data entries. Periodic visits to important minerals establishments also are made by USBM commodity specialists to gather missing data and to explain the importance of the establishment's reporting. By describing the use of the published statistics and showing the impact of nonresponse, the USBM strives to encourage respondents to give a complete and accurate reply.

The OMB "Guidelines for Reducing Reporting Burden" stipulates that the minimum acceptable response rate shall be 75% of the panel surveyed. In addition, the USBM strives for a minimum reporting level of 75% of the quantity produced or consumed (depending on the survey) for certain key statistics. Response rates are periodically reviewed. For those surveys not meeting the minimum reporting level, procedures are developed and implemented to improve response rates.

*Estimation for Nonresponse.*—When efforts to obtain a response to a survey fail, it becomes necessary to employ estimation or imputation techniques to account for missing data. These techniques are most effective when the response rate is relatively high. Some of the estimation methods depend on knowledge of prior establishment reporting, while other techniques rely on external information to estimate the missing data. When survey forms are received after the current publication has been completed, the forms are edited, necessary imputations are made for missing data, and the survey data base is updated. The revised data are reported in later publications.

*Protection of Proprietary Data.*—The USBM relies on the cooperation of the U.S. minerals industry to provide the mineral data that are presented in this and other USBM publications. Without a strong response to survey requests, the USBM would not be able to present reliable statistics. The USBM in turn respects the proprietary nature of the data received from the individual companies and establishments. To ensure that proprietary rights will not be violated, the USBM analyzes each of the aggregated statistics to determine if the data reported by an individual establishment can be deduced from the aggregated statistics. If, for example, there are only two significant producers of a commodity in a given State, the USBM will not publish the State total because either producer could readily estimate the production of the other. It is this obligation to protect proprietary information that results in the "Withheld" or "W" entries in the published tables. However, if a company gives permission in writing, the USBM will publish the data as long as the data from other respondents are protected from disclosure.

Publications

The USBM disseminates current and historical minerals information through a broad range of printed publications.

The Minerals Yearbook summarizes annually, on a calendar-year basis, the significant economic and technical developments in the mineral industries. Three separate volumes are issued each year: Volume I, Metals and Minerals; Volume II, Area Reports, Domestic; and Volume III, Area Reports, International. Chapters in all volumes are issued separately as Mineral Industry Surveys (MIS) before the bound volume is available. Volume I of the Minerals Yearbook presents, by mineral commodity, salient statistics on production, trade, consumption, reserves, and other measures of economic activity. Volume II of the Minerals Yearbook reviews the U.S. minerals industry by State and island possessions. Volume III of the Minerals Yearbook contains the latest available mineral data for the year of review on more than 180 foreign countries and discusses the importance of minerals to the economies of these nations.

MIS contain timely statistical and economic data on minerals. The surveys are designed to keep Government agencies and the public, particularly the
mineral industry and the business community, informed of trends in the production, distribution, inventories, and consumption of minerals. Frequency of issue depends on the demand for current data. MIS are released monthly, quarterly, semiannually, or annually.

Mineral Commodity Summaries, an up-to-date summary of about 80 nonfuel mineral commodities, is the earliest Government publication to furnish estimates covering the previous year's nonfuel mineral industry data. It contains information on the domestic industry structure, Government programs, tariffs, 5-year salient statistics, and a summary of international mining news.

Metal Industry Indicators, published monthly, contains indexes that measure the current and future performance of four U.S. minerals industries. For each of the four industries, a composite coincident index and a composite leading index have been developed based on procedures and data similar to those used to construct the U.S. Department of Commerce's coincident and leading cyclical indicators for the national economy.

Information Circulars and special publications are primarily concerned with USBM economic reviews and interpretative analyses. These series also include surveys of mining and operating activities, guides to marketing of mineral commodities, and compilations of historical information and statistical and economic data on minerals.

Order free copies of the Mineral Industry Surveys, the Metal Industry Indicators, or the current bimonthly list of new USBM publications from Publication Distribution, U.S. Bureau of Mines, Cochran's Mill Rd., P.O. Box 18070, Pittsburgh, PA 15236, (412) 892-4338.


Information Circulars may be purchased from the National Technical Information Service, Springfield, VA 22161, 1-800-553 NTIS (in Virginia and foreign countries: 1-703-487-4650). Bureau publications are also available on a CD-ROM format. The CD-ROM is updated on a quarterly basis. It is available from the Government Printing Office at the number listed above.

Electronic Data Dissemination

In addition to the USBM's printed publications, current Mineral Industry Surveys for all commodities are now available through the USBM’s bulletin board system. Using this system, the public may obtain information up to 4 weeks before published copies of the reports would arrive in the mail. The system may be accessed by calling (202) 501-0373 using a modem set to 1200, 2400, 9600, or 14,4000 baud, 8 data bits, no parity, and 1 stop bit. Further information on how to use the system may be obtained from the system operator by calling (202) 501-0406.

Also, current information on minerals and mineral-related publications from the USBM is now available through an easy-to-use automated facsimile response system. The MINES FaxBack service allows callers to retrieve information and order some publications for delivery to their fax machines in minutes, 24 hours per day, 7 days per week. MINES FaxBack makes monthly and quarterly Mineral Industry Surveys publications available to the public at the same time they are forwarded to the printer.

MINES FaxBack works from any Group III-compatible fax machine equipped with a touch-tone telephone (either a built-in handset with touch-tone capability or a separate touch-tone telephone plugged into the fax machine's phone jack). After calling MINES FaxBack, the requestor is guided by a series of voice messages that assist the caller in ordering the desired documents. The caller pays for the phone call that also includes the time needed to deliver the requested document to the caller's fax machine.

To access the MINES FaxBack System, use a touch-tone handset attached to a fax machine or connect a touch-tone telephone to the fax machine's telephone jack and dial (202) 219-3644. Listen to the menu options and select an option using the touch-tone telephone. After completing a selection, press the start button on the fax machine.
# FIGURE 1
A TYPICAL SURVEY FORM

Form 6-1066-M
Fpr. (9-93)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
WASHINGTON, D.C. 20241
IRON ORE (Usable ore)

(Please correct if name or address has changed.)

Public reporting burden for this collection of information is estimated to average 30 MINUTES per response, including the time for reviewing instructions, searching data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Bureau of Mines, Branch of Statistics and Methods Development, Washington D.C. 20241; and Office of Information and Regulatory Affairs, Office of Management and Budget, Washington D.C. 20503.

Please complete and return this form in the enclosed envelope by the 15th of the month following the report period. Additional forms are available upon request.

In completing this form, reasonable estimates may be used wherever exact figures are not available. Use zero (0) when appropriate. DO NOT REPORT DECIMALS OR FRACTIONS.

"Collection of non-fuel minerals information is authorized by Public Law 96-479 and the Defense Production Act. This information is used to support executive policy decisions pertaining to emergency preparedness and defense and analyses for minerals legislation and industrial trends. The Bureau relies on your voluntary and timely response to assure that its information is complete and accurate."

## SECTION 1. Mine or group covered by this report.

<table>
<thead>
<tr>
<th>Name</th>
<th>State</th>
<th>County</th>
</tr>
</thead>
</table>

## SECTION 2. Stocks, production, and shipments of usable ore for the report month.

Report only ore products as shipped to consumer, such as direct-shipping ore, concentrates, or agglomerates. Report ores produced in the United States only; do not include imports.

<table>
<thead>
<tr>
<th>Usable ore (1)</th>
<th>Code</th>
<th>Weight unit (2)</th>
<th>Physical inventory (3)</th>
<th>Beginning stocks</th>
<th>Production (5)</th>
<th>Shipments (6)</th>
<th>Ending stocks (7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron ore</td>
<td></td>
<td>Long tons</td>
<td>Metric tons</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Containing less than 5% Mn, natural)</td>
<td>201</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## SECTION 3. Please indicate any mines opened or closed by your company during the month.

Remarks:

Name of person to be contacted regarding this report

<table>
<thead>
<tr>
<th>Tel. area code</th>
<th>No.</th>
<th>Ext.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address No.</td>
<td>Street</td>
<td>City</td>
</tr>
</tbody>
</table>

May tabulations be published which could indirectly reveal the data reported above? [ ] (1) Yes [ ] (2) No

Signature: ________________
Title: ____________________
Date: ________________