

SECTION 5

FIELD PROCEDURES -- QUESTIONNAIRE AND INVENTORY

Interviewing fieldwork for the Underground Storage Tank Survey began December 2, 1984. A staff of eight Westat field interviewers was trained to collect data from establishments selected in 34 PSUs nationwide. The interviewing phase concluded on June 29, 1985. This chapter includes some details about the field procedures, inventory data collection and followup procedures used for the survey. Interview and inventory response rate statistics are reported. The detailed summary of the fieldwork is found in Appendix B.

I. WESTAT SCREENING PROCEDURES

The sample of 600 farms and 600 large establishments was pre-screened for survey eligibility by telephone. Telephone interviewers contacted the owner or operator of the farm or business and asked if there were any underground tanks used to store motor fuel at the establishment. All establishments that could not be reached by telephone were included in the interviewer assignment lists to be located and screened in the field.

Establishments selected from the fuel-related sample frame (such as gas stations, government facilities, and trucking facilities) were screened for survey eligibility by the field interviewers.

After the screening procedures were complete, survey materials were mailed out, beginning with all sampled establishments in Survey Region 6 (West Coast). Each establishment was sent a survey package (Appendix F) including an introductory letter, a copy of the survey questionnaire, an instruction booklet, and forms for collecting tank inventory data. The owner or operator was to review the materials to prepare for the next phase of the survey in which a Westat field interviewer visited the establishment and conducted an in-person interview with the respondent. Packages were mailed according to the schedule of the field interviewer so that the respondent received the materials two weeks prior to the interviewer's arrival on site. This gave the respondent time to prepare for the in-person interview.

II. DATA COLLECTION PROCEDURES

The first phase of fieldwork in a PSU was the field screening of the fuel-related sample of establishments. Establishments were found to be ineligible for the survey for various reasons; most commonly, they had no underground motor fuel storage tanks, they were out of business, they were out of area or scope of the survey, or the only tanks at the establishments were abandoned (i.e., out of service permanently). In-person interviews were scheduled with the owners or operators of all eligible establishments within each PSU. When an owner or operator refused to participate in the survey, the interviewer informed the respondent that EPA would be notified, and contacted a Westat field director immediately. An attorney with EPA's Office of Enforcement and Compliance Monitoring was then notified by Westat and necessary action was taken. Questionnaire and inventory refusal rates are discussed in Subsection III.

After the field interviewer arrived at the establishment site, the data collection procedures began with the administration of the Operator's Questionnaire (Appendix F). The respondent received a copy of this questionnaire in the survey package and was to have completed it prior to the interview. The questionnaire gathered basic data about the establishment, its operating characteristics and its tanks.

The interviewer then reviewed the inventory forms and procedures with the respondent. The inventory record-keeping procedure involved taking and recording dipstick readings and meter readings (if the dispensers were metered) for 30 days. Any deliveries made during that time period were also recorded. The interviewer checked to see that the inventory forms were being filled out correctly and that all tank and meter numbers on the forms and in the questionnaire corresponded to one another. If previously collected inventory records were used, the interviewer made sure 30 complete readings were provided.

Once all inventory sheets were reviewed and tank and meter numbers verified, the interviewer checked the accuracy of all dispenser meters using a five-gallon Certified Standard Weights and Measures Calibration Can. Five gallons of fuel was pumped into the test can and by reading the level of fuel according to the measuring gauge on the front of the can, the interviewer was able to determine the calibration ratio that would correct for any error in the meter. The inventory records were adjusted prior to inventory reconciliation analysis to account for the meter error.

After the meter accuracy check, the interviewer measured the diameters of all tank fill pipes, determined whether or not there

were drop tubes present inside the fill pipes and, if present, whether the drop tube was permanent or removable. This data was collected to aid tank testing crews in preparing for tightness tests at selected establishments.

Before leaving the site, the interviewer located the underground storage tanks on U.S. Geological Survey maps, which were provided for each PSU in the survey. The interviewer also evaluated the overall status or attitude of the on-site interview by answering debriefing questions.

III. FIELD INTERVIEW DATA COLLECTION STATISTICS

Table 5-1 contains data collection statistics for the field interview portion of the survey. It covers statistics on interview and inventory response and refusal rates.

A. Interview Response Rate

The interview response rate for this mandatory survey is nearly 100 percent overall, as well as for each sample segment. Out of 2,800 establishments contacted, 896 had underground motor fuel storage tanks, and were therefore eligible for the survey. Of those, 890 or 99.3 percent completed interviews. The highest response rate among the sample segments was among the large establishments, where 100 percent of the eligible establishments provided interview data.

Table 5-1. Field interviewing and inventory status statistics

	Farms	Large Establishments	Fuel Establishments	Total
A. Number sampled	598 ¹	600	1,612 ²	2,810
B. Number contacted	596	596	1,608	2,800
C. Number of establishments contacted that have tanks ("eligibles")	20	76	800	896
D. Number of interview responses	19	76	795	890
E. <u>Response Rate</u> (percent of eligible respondents who completed interview)	95%	100%	99.4%	99.3%
F. Number of interview refusals	1	0	5	6
G. <u>Refusal rate</u> (percent of eligible respondents who refused interview)	5%	0%	0.6%	0.7%
H. Number of inventory responses (includes both complete and partial complete)	7	60	630	697
I. <u>Response rate</u> (percent of eligible respondents who returned inventory)	35%	79%	78.8%	77.8%
J. Number of inventory refusals	6	1	8	15
K. <u>Refusal rate</u> (percent of eligible respondents who refused to record inventory)	30%	1.3%	1%	1.7%
L. Number of delinquent inventory responses	4	9	131	144
M. Number of establishments for which inventory measurements are impossible	3	6	31	40

¹ 1600 farms were sampled. Two farms were found to be duplicates in the telephone pre-screening.

² 1,618 fuel establishments were sampled. Six were found to be duplicates in the field screening.

B. Certification of No Tank Status

Since many of the sampled establishments had been selected based on being in an industry expected to have underground motor fuel tanks, a verification program was undertaken for establishments which responded to the initial contact by stating that they had no eligible tanks (i.e., non-empty, underground, and storing motor fuel). For Region 6, the West Coast, which was the first region fielded, the field interviewer went to each of these establishments in person to visually confirm the statement and to get the owner or operator's signature on the "Certification Statement for Establishments Without Tanks" (a copy of which appears in Appendix F). This experience showed that those respondents initially stating they had no tanks were correct. For the remainder of the survey, the personal visits were not made to all such respondents, but they were all asked (by mail) to sign and return the no tank certifications. Signed statements were received from 80 percent of the "no tank" ineligible respondents.

C. Inventory Response Rate

Nearly 78 percent of the eligible establishments have furnished complete or partial complete inventory data. Even this relatively low response rate (compared with other parts of the survey) was achieved only after extensive edit and followup efforts by Westat's survey staff and finally a stern warning letter from EPA. Sixteen percent of the eligible establishments have not yet provided inventory records. It was impossible for 4.5 percent of the eligible establishments to keep inventory records.

D. Problems Encountered in Recordkeeping

A majority of establishment operators were unable to provide inventory data that was useable for inventory reconciliation analysis techniques without technical assistance. Establishment operators received detailed written instructions on inventory recordkeeping procedures, and on-site training was provided by the survey interviewers.

Nevertheless, almost 80 percent of the operators supplied inventory data sets that were incomplete or incorrect, initially. Extensive mail and telephone recontacts were made to the operators to attempt to capture the missing information and correct the problems. Eventually about half of the responding establishment operators were finally able to provide inventory records complete enough for analysis.

These experiences suggest that many establishment operators lack skill, training and/or motivation to correctly follow inventory recordkeeping procedures. Problems encountered with inventory records are listed in Table 5-2.

IV. FOLLOWUP PROCEDURES

Followup procedures were implemented to complete interviews which could not be completed during the time the interview team was working in a PSU and to make sure as many eligible establishments as possible returned useable inventory data.

A "clean-up" interviewer followed behind the field interviewers to complete interviews that could not be scheduled

Table 5-2. Problems encountered in inventory recordkeeping

Major problem areas	Percent of establishments with this problem
1. Meter sales and gallons used as calculated from stick readings and deliveries are equal (respondents adjusted out the daily variances)	19%
2. Did not provide inventory for the total 30 days	15%
3. Did not use the form correctly such that data was unusable	8%
4. Carried readings down from closing to opening (tanks without meters) ¹	7%
5. Did not provide enough complete readings (some stick or meter readings missing)	6%
6. No inch-to-gallons conversions provided	4%
7. Inconsistent conversions (from inches to gallons)	4%
8. No meter readings provided	3%
9. No stick readings provided	3%
10. Problems with delivery records	2%
11. Reported readings greater than tank capacity	1%

¹For tanks without meters, the inventory recording procedure involves sticking the tank before and after each inactive period. This procedure is counter-intuitive to most respondents, who cannot understand the value of measuring and recording what they regard as measurement error in the second reading. Most respondents using "Tank Without Meter" forms have, therefore, measured the level in the tank only after each use (before each inactive period), and have (incorrectly) carried the readings to the "after" columns.