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Three Mile Island Telephone Survey

Preliminary Report on Procedures and Findings

Prepared by C. B. Flynn

Mountain West Research, Inc.

Prepared for
U. S. Nuclear Regulatory Commission

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This report is the result of five months of intensive effort. Many individuals contributed substantially to the final product, but a few deserve special mention.

The Post-Licensing Study Team as a whole had substantial input into the design of the instrument. Kristi Branch, Jim Chalmers, and David Pijawka of Mountain West Research and Jim Flynn of Social Impact Research participated actively in developing and revising the instrument. Other major contributors to the instrument were Peter Houts and Bob Miller of the Hershey Medical Center, and Bob St. Louis, who also helped with the sampling and reliability analysis.

The cooperation of all the staff at Chilton Research Services was extraordinary, especially given the very tight time constraints. Nancy Kreuser was the project director and coordinated all the interal flow of work. Dan Hagen worked many hours with us in the development of the sampling and daily monitoring strategies. Ricky Goins deserves credit for making clean data tapes a reality.

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Cynthia Bullock Flynn
Seattle, September 1979

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I. BACKGROUND

In October 1978, Mountain West Research, Inc. was awarded a contract to study the social and economic consequences of siting, constructing, and operating nuclear power stations in the United States. Fourteen stations at thirteen sites were selected for study. After the licensing record for each study site was reviewed, field work began in December 1978. Preliminary Site Visit Reports were prepared for each location. These reports provided an introduction to the characteristics of the site and station, with emphasis on the construction work force; major economic, demographic, or social effects of the siting; conspicuous facilities, services, or fiscal impacts; and the community's response to the nuclear facility.

These Preliminary Site Visit Reports, submitted in February 1979, provided an information base for the refinement of the overall methodology for the case studies. Finalization of the methodology statement was completed in June 1979. Detailed case study work was begun at four sites in July 1979 and will continue at these and the other sites through December 1980.

The original work plan for the study did not include any provision for survey research on the general population. The study methodology relied on published secondary sources, information supplied by utilities, newspaper accounts, records supplied by public officials, and key informant interviews.

The accident at Three Mile Island (TMI) substantially affected the study plans underway at that time. Not only was TMI one of the case study sites, but there was reason to suspect that some of the socioeconomic effects of nuclear stations were going to be different after the accident at TMI than they were before the accident. The original design had to be modified, therefore, to include three analytic time periods: construction, operation pre-TMI, and operation post-TMI. For TMI there was yet a fourth period, the two-week period following the accident, that had to be studied. It became clear that survey data would have to be collected from residents of the Harrisburg area if the accident and post-accident effects were to be adequately documented. This new information requirement led to the Three Mile Island Telephone Survey.

What follows is a preliminary report on the survey methodology and on the findings. The definitive analysis of the survey results as they relate to the objectives of the "Post Licensing Studies" will be integrated into the TMI Case Study Report, which will be completed during the summer of 1980. Prior to that time, however, complete documentation of the survey, and procedures to use the resulting data will be described in a publication TMI Telephone Survey: User's Guide. The anticipated distribution date of this publication and accompanying data tapes is 1 December 1979.

II. METHODOLOGY

A. Instrument Design

Development of the survey instrument began 30 March 1979, two days after the accident at Three Mile Island. Persons with a wide range of expertise provided input into the final document. Among these were:

1. Academic specialists in the areas of risk and hazard assessment and disaster research, in addition to sociologists, economists, and geographers.

2. Other federal agencies, especially the Department of Defense Civil Preparedness Agency.

3. State of Pennsylvania agencies, especially the Office of State Planning and Development.

4. Other local researchers studying the accident.

5. The NRC's technical review staff.

Once the inputs from these sources were considered, the survey was designed to address a variety of related issues. First, the survey describes the behavior of people in the area near Three Mile Island. In particular, the survey provides an estimate of the extent of the evacuation. Second, it estimates the costs of the accident to households in the area. Other techniques are available for estimating many of these costs (employment records and tax records for instance), but many of the out-of-pocket expenses of individuals are difficult to estimate using these techniques. Third, the survey addresses the social and psychological effects of the accident. Included among these effects are how stressed, upset, and threatened people in the area felt and how disrupted their normal activities were. Fourth, it describes how information received during this time period was evaluated by persons in the area and what notification procedures were used during the emergency. Fifth, it assesses the attitudes of persons in the area towards the TMI nuclear station, nuclear power in general, and the area in which they live. In many cases, these attitudes are assessed for different points in time. A copy of the instrument is attached as Appendix A.

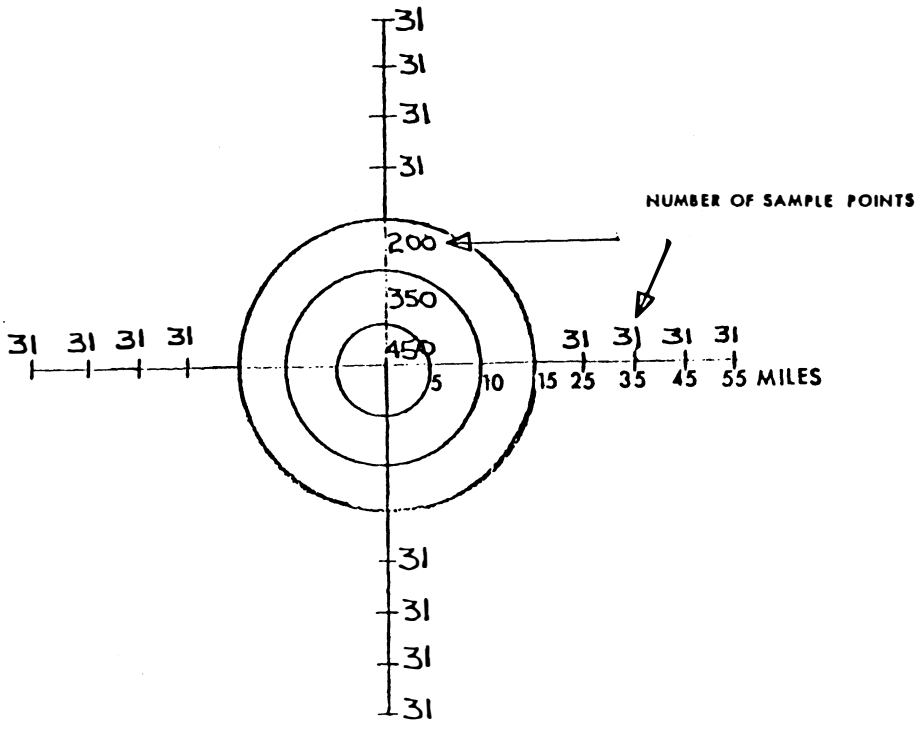
B. Sampling Strategy

The sampling strategy used in this study was a randomized quota sample of 1,500 respondents distributed as shown in Figure II-1 below, which allows testing for the effects of both distance and direction of the households from TMI. The strategy included an area thought to be large enough that the distance threshold at which certain consequences of the accident ceased to occur could be defined.

Based on a site visit to the local area at the time of the accident and on conversations with others after that time, it appeared that a majority of the impacts occurred within 15 miles of TMI. The sampling strategy was designed, therefore, so that we could generalize reliably about the 15 mile ring. Beyond 15 miles, some effects were expected, but at a reduced level. Therefore, the sampling strategy beyond 15 miles was modified since both the geographical area and the number of persons became large very quickly and since the primary concern was to be able to differentiate among distance/direction categories. Cases were clustered along transects due north, east, south, and west of TMI in order to generate

FIGURE II-1

DISTRIBUTION OF SAMPLE



sufficient cases (with a limited sample size) so that it would be possible to talk reliably about the phenomena being studied with respect to distance and direction simultaneously.

C. Data Gathering

Given the geographical dispersion of the respondents and the need for timely results, a telephone survey using random digit dialing (RDD) was employed. Chilton Research Services of Radnor, Pennsylvania was used for the interviewing and for production of the raw data tape. Twenty-five pretests were conducted on 20 July, which resulted in minor wording modifications to the questionnaire. Forty interviewers were trained on 23 July, and an additional 15 were trained 27 July. Interviewing began on 23 July and continued through 6 August. Interviewing took place primarily between 5:00 p.m. and 9:30 p.m. Interviews with those within 5 miles of the station averaged 32 minutes in length and in other cases, 28 minutes.

After the first night of interviewing (about 25 interviews) one additional modification was made in the questionnaire. The order of the questions was originally the same as in another telephone survey conducted by Chilton within the 5-mile radius. However, it appeared that some respondents in our study initially agreed to participate and then refused to continue when the demographic questions were asked first. Therefore, questions 2-10 were moved behind question 20.

Interviews were monitored throughout the study. Both the study manager and the interviewing supervisors were able to listen to interviews as they occurred, without the interviewer knowing when she or he was being monitored. Thus, there was an efficient mechanism for quickly correcting training gaps for individual interviewers.

Completed interviews were immediately checked for completeness and accuracy by the interviewer. They were then sent to editing where a second check for completeness was made. Editors also filled in missing data codes, checked the logical consistency of responses, and checked the legibility of verbatim responses. Any questionnaires which did not pass editing were returned to the interviewer for a call back to the respondent for clarification.

Chilton's coding section was responsible for developing the codes for the open-ended responses and for any "other (specify)" portions of closed questions that had sufficient common responses. Verbatim responses from the first 300 questionnaires were copied and analyzed. A preliminary set of codes was developed, and the verbatim responses were tentatively coded into these categories to ascertain the percentage that could be coded with the categories. This preliminary coding manual was given to the study manager for approval, modifications were made when needed, and the coding manual was finalized.

All keypunched questionnaires were machine verified. In addition, a cleaning program was developed which checked for both out-of-range responses and logically inconsistent responses. Questionnaires that did not pass the cleaning check were re-examined, and corrections were made on the tape. A tape was delivered to the study manager 16 August.

During the interviewing period, a daily log of the status of the previous night's dialings was made. This log, or disposition, was used both to insure that sufficient staff were being utilized to finish the interviewing within the prescribed time period and to keep track of the quotas for each sampling area. Within the 15 mile radius, the initial breakdown of the sample was as shown in Table II-1.

The first disposition was made based on an initial call plus up to four follow-up attempts to obtain a completed interview. In addition, in the case of refusals, a second call was made. Subsequently, a predetermined random subsection of the sample that had been designated for follow-up was re-dialed up to five more times. The completes so obtained were treated as a random, representative sample of all no answer/busy/call-backs and were given an additional weight to reflect this double sampling. For the 0-5 mile ring, the additional weight was 6.3, and for the 5-10 mile ring, it was 1.42. The 10-15 mile ring was not sampled, so it had no additional weight greater than 1.0. The disposition for the follow-ups is shown in Table II-2.

TABLE II-1

INITIAL BREAKDOWN OF THE SAMPLE FOR THE 3-RING AREA

Potential Non-Households (52% of Total)		
Non-working numbers	2,037	60%
Known non-households (businesses, etc.)	474	14
No answer/busy; household status undetermined	872	26
	3,383	100%
Total Households (48% of Total)		
Non-Eligible:		
Out of the 15 mile area (terminate)	1,566	51
Eligible:		
Completed interviews	1,052	34
Refusals	263	9
Call backs (not completed)	136	4
Language barriers, other physical problems	41	1
Other incompletes	36	1
	3,094	100%

TABLE II-2

FOLLOW-UP DISPOSITION

	Follow-Ups For Call-Backs	Follow-Ups For No Answer/Busy
Completes	19	13
Non-eligible	14	14
Not working	0	233
All other	37	115
Total Follow-Ups	70	375

D. Weight Calculation

The disposition was also used to calculate weights for the responses. First, the sample was broken down into distance rings. The universe number of households in each ring was estimated from the household/non-household ratio in the sample. These universe estimates slightly underestimate the true universe number of households because, for instance, not everyone has a telephone. Weights were calculated to inflate the actual number of completed interviews in an area only to the estimated universe count. The weights were computed by dividing the universe estimates by the number of completed interviews. For the three 5-mile radii within 15 miles of TMI, these weights were calculated as shown in Table II-3.

A full discussion of the calculation of the weights is in Appendix B.

The daily dispositioning of the completed questionnaires by geographical area was based on respondents' reported distances from Three Mile Island. At the time interviewing was occurring, an exhaustive list of communities within 15 miles of TMI had not been developed, so that sorting by actual distance from TMI was not yet possible. As is clear from the discrepancy between the originally designated quotas and the actual distance breakdowns (Table II-4), many persons reported that they lived closer to TMI than they, in fact, did. Weights were calculated using actual distances.

The transects were treated somewhat differently than the 15 mile ring. Communities lying along each transect were chosen, and telephone exchanges for the communities were identified. A separate random sample was then generated for these exchanges. These numbers were dialed, and respondents were screened for eligibility; i.e., they must have resided in a household located within three miles of the specified communities (see screening sheet in Appendix A). Dialing was continued until the desired number of interviews was completed for each of the four locations (25, 35, 45, and 55 miles) along each of the four transects (north, south, east, and west). Although this method yields a random sample, the sampling fraction cannot be determined; therefore, the population total cannot be estimated. Weights have not been assigned to these 433 cases, and we report only percentages for this group.

TABLE II-3

CALCULATED WEIGHTS

	Distance		
	0-5 Mile Ring	5-10 Mile Ring	10-15 Mile Ring
Household Universe Counts	11,927	40,161	72,262
Number Completed on Initial Sampling	269	376	393
Weights	40.54	104.18	174.13
Number Completed on Follow-Up	4	6	22
Weight for Follow-Up	6.3 x 40.54 = 255.4	1.42 x 104.18 = 147.94	1.0 x 174.13 = 177.13

TABLE II-4

REPORTED VS. ACTUAL NUMBER OF HOUSEHOLDS IN EACH RING

Distance	Reported Number	Actual Number
0- 5 mile ring	450	273
5-10 mile ring	399	382
10-15 mile ring	233	415
15 miles or more	422	433

E. File Construction

In order to facilitate analysis, raw data are stored on two tapes using software that requires square records (fixed format). The data are stored on 1600 bpi, 1 rec/block, unlabelled 9-track tape that is compatible with IBM systems. Both tapes had SPSS system files prepared for them at the Capitol Campus of Pennsylvania State University under the direction of Dr. Robert Munzenrider. The first file contains all information supplied by the respondent. For heuristic purposes, this information can be divided into four categories: 1) information about the respondent's behavior and demographic characteristics, 2) information about other household members' behavior and demographic characteristics, 3) information that is common for the whole household (whether they are owners or renters, what the household income is, whether there was family agreement to evacuate), and 4) information regarding the respondent's attitudes and opinions.

This first file consists of 498 variables recorded for 1,504 respondents/households located on 10 cards per case. The file stores the information for each member of the household as a separate variable on the respondent's record. For instance, in households with eight members, eight separate AGE variables are used to record all the data; viz., AGER (age of the respondent), AGE 2 (age of the second household member), and so forth up to AGE 8. This file is used primarily to describe households as a unit, to correlate attitudes with behavior, and to use as the master file. Additional created variables are stored in an archival file.

The second SPSS file is designed to facilitate analysis of behavior for individuals within households. Each member of the household is treated as a separate case; thus, the total number of cases for the second file is 4,585 rather than 1,504. However, there is only one record per case (49 variables) in the second file, because the amount of data gathered on individual household members is more limited than that gathered on the respondents. Categories 1-3 above are included in this file. In this file, AGE, for instance, is treated as a single variable, and the age of each member of the household is stored in the same location on his/her single record. This file is constructed in order to analyze the demographic characteristics of evacuees, the number of person-days lost from work, and the members of the household who were more likely to be upset by the accident.

F. Reliability

The household data are based on a stratified random sample of households. The households for which interviews were obtained during the initial sampling phase constitute one stratum, and the households for which interviews were obtained during the follow-up phase constitute the other stratum. Different sampling fractions have been applied to each of these strata, and all estimates for population parameters have been derived by combining the estimates for the strata.

The individual data, on the other hand, are based on a stratified cluster sample of individuals; the cluster consists of the individuals belonging to a given household. However, as was the case for the household data: a) the individuals for whom interviews were obtained during the initial sampling phase constitute one stratum, and the individuals for whom interviews were obtained during the follow-up phase constitute the other stratum; b) different sampling fractions have been applied to each stratum; and c) all estimates for population parameters have been derived by combining estimates for the strata.

Taking this stratification into account when determining the reliability of estimates based on the data (either household or individual) allows for the possibility that initial respondents may differ systematically from initial non-respondents. Smaller bounds on the errors of estimators would be obtained if this stratification were ignored, but it is not felt that this would be justified. Hence all

bounds on the errors of estimates will be computed using formulas for stratified random (for the household data) or stratified cluster (for the individual data) samples.

G. Approach to the Analysis

The purpose of this document is to report the initial findings of the survey. This description of the results for key variables will provide the foundation for more detailed analyses to follow. The description gives particular emphasis to the spatial pattern of phenomena associated with the accident. Communities in which the respondents resided were coded by their distance (to the nearest mile) and direction (8 quadrants) from Three Mile Island. A geocode was also constructed for each case by collapsing the distance measure into five categories (0-5 miles, 5-10 miles, 10-15 miles, 15-25 miles, 25-40 miles, and over 40 miles) and the direction measure into four categories (north, east, south, and west). This resulted in 20 geocode categories. Table II-5 shows the distribution of cases and evacuees where we have information on both variables. As is clear from this table, the number, as well as the proportion, of households in the sample who evacuated beyond 15 miles is not large. For many analyses, there are insufficient cases to use geocoded results beyond 15 miles.

An attempt has also been made to determine whether different subgroups of the population were affected in different ways. The subgroups of greatest interest are those who evacuated, as opposed to those who did not, and families with young children or pregnant women. However, preliminary analyses for other demographic variables have been drafted and are reported in the text where appropriate. Since most of these preliminary analyses were performed with weighted data in order to ascertain the total magnitude of the impact, no significance tests of differences are available at this time. Therefore, all differences that are mentioned should be treated as preliminary results, rather than as statistically significant findings.

TABLE II-5
GEOGRAPHICAL DISTRIBUTION OF RESPONDENTS, INDIVIDUALS, AND EVACUEES

Geocode Category		Respondents/Households File 1 (unweighted)		Individuals File 2 (unweighted)	
Distance (Miles)	Direction	# Evacuated	Total in Category	# Evacuated	Total in Category
0- 5	North	116	173	300	499
0- 5	East	9	16	30	58
0- 5	South	21	31	68	109
0- 5	West	29	47	72	132
5-10	North	72	144	206	440
5-10	East	43	95	125	308
5-10	South	37	74	117	254
5-10	West	31	60	84	193
10-15	North	47	147	153	431
10-15	East	9	32	29	96
10-15	South	42	155	101	447
10-15	West	35	73	104	226
15-25	North	2	25	7	76
15-25	East	7	49	20	152
15-25	South	4	26	12	87
15-25	West	3	37	11	124
25-40	North	2	30	5	92
25-40	East	1	31	3	104
25-40	South	1	32	2	97
25-40	West	0	38	0	104
40+	North	0	53	0	190
40+	East	0	20	0	66
40+	South	0	37	0	131
40+	West	1	29	3	111
		512	1454	1452	4527

III. PRELIMINARY FINDINGS

A. EVACUATION BEHAVIOR

1. Extent of Evacuation

Preliminary estimates of the total number of evacuees within 15 miles of TMI have been made.[1] Persons nearest Three Mile Island were most likely to evacuate, as would be expected. Figure III-1 shows that evacuation behavior in each direction from Three Mile Island was generally similar. It is estimated that 60 percent of the population living in the 0-5 mile ring evacuated; this amounts to approximately 21,000 persons. In the 5-10 mile ring, 56,000 persons (44 percent) evacuated. In the 10-15 mile ring, which contains most of the Harrisburg SMSA, 67,000 persons (32 percent) evacuated. Thus, within 15 miles of TMI, it appears that a total of 144,000 persons, or about 39 percent of the total population living within 15 miles of the station, evacuated.

In addition to those persons who evacuated, a substantial number of people were also directly affected because they remained at home during the emergency after other household members had evacuated. It is estimated that an additional 18,000 persons within 15 miles of the station were affected in this way. Table III-1 shows that the percent of people who were impacted by having their households separated during a stressful time was 9 percent in the 0-5 mile ring, 5 percent in the 5-10 mile ring, and 4 percent in the 10-15 mile ring.[2]

In all, 41 percent of the households surveyed (50,000 households within 15 miles) contained at least one evacuee. Within the five mile radius of TMI, it is estimated that 66 percent of the households contained at least one evacuee. The comparable figure for the 5-10 mile radius is 49 percent. At 10-15 miles, the figure is 33 percent, but it drops off beyond 15 miles with an overall average of 5 percent in our sample. The data indicate that evacuation was very rare beyond a 40 mile radius of TMI.

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[1] Estimates have not yet been made for the population residing in the 15-55 mile ring.

[2] Results are not given beyond 15 miles because of the small cell sizes.

FIGURE III–1 – PERCENT OF PERSONS WHO EVACUATED

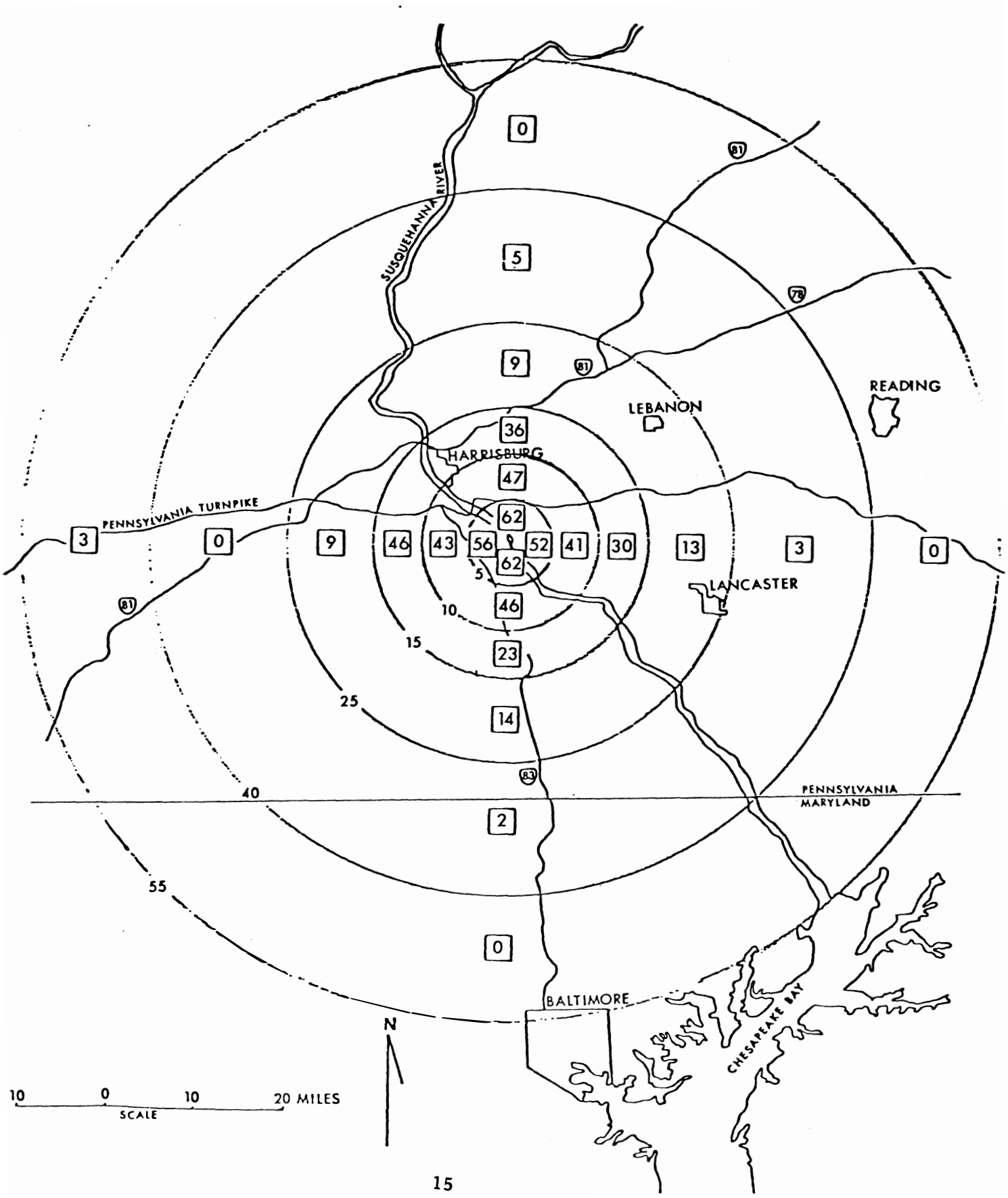

TABLE III-1

PERCENT OF PERSONS WHO DID NOT EVACUATE
BUT SOMEONE FROM THE HOUSEHOLD DID EVACUATE
(Total = 18,000)

	Percent of Persons				
	North	East	South	West	Total for All Directions
0-5 mile ring	9[a]	7	10	9	9
5-10 mile ring	5	5	6	6	5
10-15 mile ring	5	3	3	4	4
Total for 15 Mile Ring	5	5	4	5	5

[a]The total number of individuals in the 0-5 north cell is found in Table II-5. This (499) is the base number used to calculate the 9 percent figure. Bases for entries in all similar tables are contained in Table II-5.

Timing of Evacuation

Within the 15 mile radius, the modal date for evacuating the area was 30 March for all groups. Beyond 15 miles, the distribution of departure dates was much flatter, with 32 percent leaving 29 March (Thursday), only 18 percent leaving 30 March, 21 percent leaving 31 March, and 19 percent leaving 1 April (Sunday). Return dates for all groups were similar.

TABLE III-2

TIME OF DEPARTURE AND RETURN FOR EVACUEES

	Percent of Persons Departing Prior to March 30	Percent of Persons Departing March 30	Median Return Date
0-5 mile ring	17	58	April 5
5-10 mile ring	11	56	April 4
10-15 mile ring	14	45	April 4

There appear to be some demographic differences in the amount of time evacuees spent outside of the immediate area surrounding TMI. The youngest and

the oldest people were gone longer than those aged 40-60. Parents and children of respondents were gone longer than spouses or the respondents themselves, and pregnant women were more than half again as likely (84 percent) as other persons to be gone at least 5 days.

2. Distance Traveled

The median distance traveled by evacuees was 100 miles. Table III-3 shows the surprising result that there is a strong positive relationship between distance from TMI and distance traveled to evacuate. A priori it might be expected that those who lived nearest the plant would travel the farthest. Just the opposite was the case. Persons living closer to the TMI station tended to travel shorter distances, and persons living farther from the plant tended to evacuate greater distances.

TABLE III-3

DISTANCE TRAVELED BY EVACUATING HOUSEHOLDS

	Percent of Households Who Evacuated 45 Miles or Less				
	North	East	South	West	Total for All Directions
0-5 mile ring	34	33	55	23	34
5-10 mile ring	20	21	37	20	24
10-15 mile ring	17	22	25	14	19
Total for 15 Mile Ring	22	22	31	17	23

	Percent of Households Who Evacuated 90 Miles or Less				
	North	East	South	West	Total for All Directions
0-5 mile ring	43	22	30	55	43
5-10 mile ring	56	53	46	50	53
10-15 mile ring	51	67	53	60	55
Total for 15 Mile Ring	51	56	49	57	52

Evacuees stayed in all parts of the country, but the largest number (72 percent) stayed in Pennsylvania. Pennsylvania was followed by other states nearby: New Jersey (6.6 percent), Maryland (5.8 percent), and Virginia (3.8 percent). Other, more distant destinations included California, Oklahoma, and Florida. In all, 21 states received evacuees.

3. Type of Accommodations

The majority of persons (78 percent) evacuated to the home of a friend or a relative. Hotels or motels were the destination of only 15 percent of the evacuees.

4. Reasons for Leaving/Staying

Respondents were asked to state whether any of the following reasons contributed to their decision to evacuate. The items were presented to each respondent from a randomly selected beginning point in the list, and multiple "yes" responses were permitted.

Although the fact that the situation seemed dangerous was clearly a contributing factor in nearly all the decisions to evacuate, other factors also contributed to their decision. Respondents cited confusing information and fear of forced evacuation as additional motives for leaving (see Table III-4).

TABLE III-4

REASONS CONTRIBUTING TO DECISION TO EVACUATE

Reason	Percent Respondents Answering "Yes" to Reason Given
Situation seemed dangerous	91
Information on situation was confusing	83
To protect children	61
To protect pregnancy	8
To avoid the confusion or danger of a forced evacuation	76
Pressure from someone outside the family	28
Trip planned before incident	5

Table III-5 shows the spatial differentation of the major reasons for evacuating. There is no consistent pattern by distance in the perception that the situation seemed dangerous. There are, however, quite different patterns of perceived confusion by distance. The highest percent occurs in the 5-10 mile ring; both the 0-5 mile ring and the 10-15 mile ring respondents were less likely to mention confusion as a reason for evacuating. This is not surprising given that persons within the 5-10 mile ring were not advised to evacuate, but were in effect "on stand by, the next to go." Generally, those farther from the plant were more concerned about a forced evacuation than those closer to TMI.

Those respondents who stayed were given a list of reasons why people did not evacuate and then asked which applied to their decision. This question was asked to respondents in households in which no one evacuated and to respondents in households in which some persons evacuated and others did not. Table III-6 shows the results.

Clear differences in the reasons for not evacuating are apparent in the two groups. Although households in which some evacuated and some did not were very sensitive to the danger of the situation (in effect, 86 percent thought the situation seemed dangerous), the primary reasons they remained behind were that they were unable to leave their jobs or would have left only had they received an evacuation order. Many (45 percent) felt that whatever happened was in God's hands, and fully a third were concerned about looters.

The households where none evacuated exhibit a quite different pattern. The overriding reason given for staying was that they were waiting for an evacuation order; this reason was followed by the feeling that whatever happened was in God's hands. The third reason for staying was that they saw no danger: this was mentioned two and a half times as frequently by households in which no one evacuated, compared to households where some members evacuated and others did not. Together, these three reasons suggest greater confidence in authority in the households where everyone stayed. Although the ability to leave their jobs was something of a consideration for this group, it was not the overriding concern that it was for non-evacuees in households in which some persons evacuated.

TABLE III-5

REASONS CONTRIBUTING TO DECISION TO EVACUATE
BY DISTANCE FROM TMI

Reason	Percent of Respondents in Households in which One or More Persons Evacuated Answering "Yes" to Reasons Given			
	0-5 mile ring	5-10 mile ring	10-15 mile ring	Total for 15 mile ring
Situation seemed dangerous	89	92	91	91
Information on situation was confusing	74	89	81	83
To protect children	59	64	58	61
To protect pregnancy	11	5	11	8
To avoid the confusion or danger of a forced evacuation	65	78	78	76
Pressure from someone outside family	27	25	31	28
Trip planned before accident	4	5	6	5

TABLE III-6

REASONS CONTRIBUTING TO THE DECISION OF HOUSEHOLD MEMBERS NOT TO EVACUATE

Reason	Percent of Respondents Answering "Yes" in Households in which Some Persons Evacuated and Others Did Not	Percent of Respondents Answering "Yes" in Households in which No One Evacuated
Saw no danger	14	36
Unable to leave job	64	25
Lacked transportation	7	4
Had things to do at home	15	22
Had no place to go	5	10
Waiting for evacuation order	52	71
Afraid of looters	34	28
Whatever happens is in God's hands	45	65
Too sick or disabled to travel	2	4

5. Demographic Characteristics of Evacuees vs. Non-Evacuees

Females were more likely than males to evacuate. Two-thirds of the children aged 5 and under evacuated, and it appears that 71 percent of the pregnant women over the entire area evacuated. Preliminary tabulations examining the income, education, and occupational characteristics of the evacuees and the non-evacuees have been run. No simple pattern emerges, however, from the bivariate analysis. The obvious determinants of evacuation were distance from TMI, sex, pregnancy status, and presence of small children, but the additional effects of other socioeconomic characteristics will have to be examined in more detail before their roles are understood.

B. INFORMATION PROCESSING

1. Critical Information for Decision to Evacuate

In response to the open-ended question "Was there a particular piece of information which influenced your decision to evacuate?", evacuees volunteered the responses shown in Table III-7.

Respondents who mentioned that a specific piece of information was important in their decision to evacuate were also asked where they obtained that information. The sources identified by the respondents were primarily TV or radio (65 percent).

TABLE III-7

INFORMATION THAT WAS IDENTIFIED AS CRITICAL IN THE DECISION TO EVACUATE (TWO CODED PER RESPONDENT)

Information	Percent of Respondents Who Mentioned the Following
Hydrogen bubble	30
Conflicting reports	19
Governor's advice to evacuate	14
Threat of forced evacuation	14
News bulletins	9
Family member's urging	6
No particular information	25

Specific questions were asked about the communication of the Governor's advice to respondents in households with pregnant women or children under six. Ninety-eight percent of the respondents in such households (N=85) were aware of the Governor's advice. Most respondents heard it between 11 a.m. and 1 p.m., or virtually as soon as it was given. About two-thirds of the sample heard it on TV or radio, about 11 percent heard from friends, and the rest heard in some other way. Two-thirds said that they were not told to listen to a specific radio or TV station for additional information and that they were not told that they would be transported to an evacuation center. But two-thirds were told where they could expect to be evacuated. Only one-fourth said they were told who would be responsible for conducting the evacuation.

2. Information Processing for Possible General Evacuation

All respondents were asked about expected procedures in case of a general evacuation. In response to the open-ended question "In case of an emergency at a nuclear power station, how do you expect to be notified that you should evacuate?", respondents gave the answers shown in Table III-8. Again, radio and TV were seen as the primary means of notification. Respondents were asked additional questions about who they expected would be responsible for emergency services. A majority of respondents (64 percent) felt that an emergency group would be responsible for their food and shelter during an emergency, but that they themselves would be responsible for their transportation (66 percent). Metropolitan Edison was volunteered as a response by 15 respondents (1 percent) to the question with respect to food and shelter, and by 3 respondents with respect to the responsibility for transportation.

TABLE III-8

EXPECTED MEDIUM OF NOTIFICATION IN THE EVENT OF A GENERAL EVACUATION

Medium	Percent of Respondents Identifying Medium
TV	56
Radio	62
Police, siren, bullhorn	30
Civil Defense	8
Governor, government	6
Personal contact	6
Newspaper, leaflets	3
Others	2

3. Rating of Information Sources

Respondents were asked how useful they found various sources of information during the emergency. The Governor of Pennsylvania and the Nuclear Regulatory Commission were cited as the most helpful during the two-week period of the accident. Respondents perceived Metropolitan Edison as least helpful, with over half the sample saying it was totally useless (see Table III-9).

TABLE III-9

EVALUATION OF INFORMATION SOURCES

Percent of Respondents Answering:

Source	Extremely Useful	Useful	Of Some Use	Totally Useless	DK
President of the United States	8	23	31	31	7
Governor of Pennsylvania	21	36	27	13	4
Nuclear Regulatory Commission	27	30	25	11	8
State emergency agencies	14	26	27	22	11
Local government agencies	11	25	27	27	11
Metropolitan Edison	2	9	18	60	11

When the evaluation of these information sources according to distance from TMI is examined, an interesting pattern appears, as seen in Table III-10. Respondents closer to the plant were more likely to say that the information given by the NRC and the Governor of Pennsylvania was extremely useful. Respondents who said both sources were totally useless tended to be farther from TMI, especially in the south. However, the distribution for "totally useless" is much flatter in both cases than it is for "extremely useful."

There were no important differences in the evaluation of sources by evacuation status.

4. Rating of Media

Respondents were also asked to rate the different modes of communication according to usefulness. The results are shown in Table III-11. Respondents found media such as local TV and radio most useful. National sources such as national network TV were less useful, and the print media ranked behind all radio and TV. Interviewers' comments suggest that the poor scores for friends and relatives as information sources resulted because they were perceived as having rumors rather than factual information. Demographic analyses of the responses failed to show consistent patterns for either the favored or the disfavored modes of communication.

Again, there was no difference in evaluation by evacuation status; but in this case, evaluation also seemed largely independent of distance from TMI.

5. Overall Satisfaction with Information

When asked "Overall, how satisfied were you with the way you were given information during the emergency?", the median response was in the middle of the four-point scale. Half the respondents were very satisfied (12 percent) or mostly satisfied (37 percent), and half the respondents were very dissatisfied (22 percent) or mostly dissatisfied (29 percent). Generally, those farther from TMI were more likely to be satisfied with the information they received than were those closest to TMI. Those who were most likely to be dissatisfied were pregnant women (71 percent) and students (75 percent). There was a marked difference in overall satisfaction with information by evacuation status. Evacuees were much more likely to be dissatisfied (64 percent) than were those who did not evacuate (47 percent).

TABLE III-10

EVALUATION OF INFORMATION SOURCES BY DISTANCE FROM TMI

Percent Respondents Who Thought Information Source Was Extremely Useful

	Governor					NRC					Metropolitan Edison				
	North	East	South	West	Total for all directions	North	East	South	West	Total for all directions	North	East	South	West	Total for all directions
0-5 mile ring	20	19	27	14	19	23	36	25	16	23	3	7	7	0	3
5-10 mile ring	23	20	23	30	23	31	30	33	34	32	3	5	2	4	3
10-15 mile ring	23	29	17	26	21	33	20	26	31	29	2	4	1	2	2
15-25 mile ring	8	11	16	20	14	32	8	9	24	17	15	0	5	3	4
25-40 mile ring	25	7	17	8	14	30	15	7	9	15	8	4	8	0	5
40-55 mile ring	20	14	7	11	14	16	6	3	5	10	14	0	0	0	5
Total for all distances	22	23	18	26	22	31	27	27	30	29	3	5	2	2	2

Percent Respondents Who Thought Information Source Was Totally Useless

	Governor					NRC					Metropolitan Edison				
	North	East	South	West	Total for all directions	North	East	South	West	Total for all directions	North	East	South	West	Total for all directions
0-5 mile ring	18	19	10	19	17	20	14	4	12	17	66	67	59	74	67
5-10 mile ring	14	11	4	8	10	14	4	13	10	11	69	54	66	74	65
10-15 mile ring	15	14	21	2	15	13	20	12	4	12	65	58	68	85	69
15-25 mile ring	16	7	23	17	14	18	12	17	12	14	50	58	48	61	56
25-40 mile ring	7	7	17	17	12	19	12	22	18	18	29	29	32	48	36
40-55 mile ring	22	19	29	18	22	16	11	34	25	22	46	56	44	33	45
Total for all distances	15	12	17	5	14	14	9	12	7	12	67	56	67	79	67

TABLE III-11

EVALUATION OF MEDIA

Mode	Percent of Respondents Answering: Extremely Useful	Useful	Of Some Use	Totally Useless	DK
Newspapers	17	33	31	14	6
National network TV	26	29	25	15	5
Local TV	33	34	20	9	6
Radio	34	33	20	7	7
National news magazines	6	20	20	24	30
Friends	7	23	27	38	5
Relatives	9	21	21	40	8

C. SHORT-TERM ACCIDENT EFFECTS

1. Economic

Loss of work

Thirty-six percent of the evacuees in the labor force lost work because of the accident at Three Mile Island. The total number of evacuees affected is estimated at 34,000 persons. The percent of evacuees who lost work appears to be independent of the household's location with respect to TMI. Evacuees lost a total of approximately 256,000 person-days of work. These were distributed as 40,000 person-days in the 0-5 mile ring; 117,000 in the 5-10 mile ring; and 99,000 person-days in the 10-15 mile ring.

Loss of pay

The majority (56 percent, or 19,000) of the evacuees who lost work also lost pay. The median amount lost was $100; however, 11 percent of the respondents reported losing more than $500. Again, those evacuees who lost pay are geographically dispersed. Among non-evacuees, an additional 8,000 persons reported loss of income because of loss of work.

Costs of evacuation

The median cost of evacuation was also given as $100. Table III-12 shows that, in general, those nearest the plant were more likely to say that their evacuation costs were in excess of $100. Given that those farther from the plant traveled farther and were more likely to stay at hotels/motels, other factors must account for the pattern of higher expenditures.

TABLE III-12

PERCENT OF EVACUATING HOUSEHOLDS WHO HAD TOTAL EVACUATION COSTS OF OVER $100

Distance	Percent of Households that Evacuated
0- 5 mile ring	63
5-10 mile ring	49
10-15 mile ring	47
Total for 15 Mile Ring	50

As would be expected, insurance payments up to the date of the survey had been made primarily to persons in the 0-5 mile ring. Approximately 29 percent of the households with evacuees in the 0-5 mile ring have been reimbursed by insurance for evacuation costs.

Other economic consequences

During the time of the accident, other losses of income were experienced by about 9 percent of the households, mainly because business slowed down or because employees who evacuated still had to be paid. About 9 percent of the households also had other expenses (median = $50) during the accident. Among those who did not evacuate, farmers were more likely to have extra expenses; among those who evacuated, students were more likely to report extra expenses.

Total costs of the accident to households

Based on this information, an estimate of the total cost of the accident to households within 15 miles of Three Mile Island has been constructed. The estimate was made by adding together evacuation costs, other expenses of evacuees and non-evacuees, lost pay, and other income losses of evacuees and non-evacuees, and subtracting gains in income and insurance payments. These figures were adjusted by the appropriate weights to arrive at the reported total cost. The total cost of the accident to households within 15 miles of TMI, therefore, is estimated at $18 million, as shown in Table III-13.

TABLE III-13

ECONOMIC COSTS OF THE ACCIDENT AT TMI FOR HOUSEHOLDS IN THE 15 MILE RING

	0-5 Mile Ring	5-10 Mile Ring	10-15 Mile Ring	Total for 15 Mile Ring
Costs for Evacuees				
Pay loss (or gain)	$ 726,000.	$1,861,000.	$1,270,000.	$ 3,857,000.
Evacuation costs	1,719,000.	2,990,000.	4,119,000.	8,828,000.
Other expenses	108,000.	75,000.	763,000.	946,000.
Other income loss (or gain)	34,000.	600,000.	2,162,000.	2,796,000.
Insurance Payments to Evacuees	643,000.	424,000.	148,000.	1,215,000.
Total Costs Net of Insurance	$1,944,000.	$5,102,000.	$8,166,000.	$15,212,000.
Costs for Non-Evacuees				
Income loss (or gain)	140,000.	1,043,000.	1,412,000.	2,595,000.
Other expenses	29,000.	122,000.	255,000.	406,000.
Total Costs for Non-Evacuees	169,000.	1,165,000.	1,667,000.	3,001,000.
Total Costs Net of Insurance Compensation (Evacuees and Non-Evacuees)	$2,113,000.	$6,267,000.	$9,833,000.	$18,213,000.

2. Social/Psychological Effects

Differences in perceived threat

Respondents were asked about the seriousness of the threat at the time of the accident. Most respondents thought the threat was very serious (48 percent) or serious (19 percent), but more than a fifth (21 percent) thought it was only somewhat serious, and 12 percent thought it was no threat at all. Generally, those closer to the plant were more likely to perceive a serious threat than those farther away. Conversely, those who thought it was no threat at all were located farther from TMI (Table III-14).

At the time of the accident, those who thought TMI was a very serious threat were younger, female, more highly educated, and of high income. Pregnant women were much more likely (64 percent) than average to view it as a very serious threat: only 0.1 percent of them saw it as no threat at all. Evacuees (63 percent) were nearly twice as likely as non-evacuees (38 percent) to think it was a very serious threat and much less likely to think it was no threat at all (4 vs. 16 percent).

Emotional upset

Respondents were asked how upset individual family members were during the time of the accident. Table III-15 shows their response.

More than one-fifth of the sample was extremely upset, and over one-fourth were not at all upset. Those most likely to be extremely or quite upset were pregnant women (72 percent), people aged 18-40 (51 percent), females, those with more education, and the divorced (49 percent).

Households nearer the plant were more likely to have at least one member who was quite or extremely upset (Table III-16). Although the patterns are similar in all directions, persons to the east were somewhat less likely to be very upset, and persons to the west were somewhat more likely to be quite or extremely upset. Those who did not evacuate were more than twice as likely to say that no one was upset (56 vs. 23 percent).

TABLE III-14

PERCEIVED THREAT OF TMI TO FAMILY SAFETY
DURING ACCIDENT PERIOD

Distance	Percent Respondents Who Felt TMI Was a Very Serious Threat During Emergency Period				
	North	East	South	West	Total for All Distances
0-5 mile ring	48	50	69	48	50
5-10 mile ring	53	43	49	52	50
10-15 mile ring	43	42	48	55	47
15-25 mile ring	20	31	36	24	28
25-40 mile ring	23	13	10	24	18
40 or more miles	25	10	14	29	20
Total for All Distances	47	43	49	53	48

Distance	Percent Respondents Who Felt TMI Was No Threat During Emergency Period				
	North	East	South	West	Total for All Directions
0-5 mile ring	16	13	7	12	14
5-10 mile ring	10	16	10	7	11
10-15 mile ring	12	19	10	10	11
15-25 mile ring	32	12	12	33	21
25-40 mile ring	29	26	26	18	24
40 or more miles	33	57	41	52	42
Total for All Distances	12	17	10	9	12

TABLE III-15

EXTENT TO WHICH PERSONS WERE UPSET DURING
THE TWO WEEK EMERGENCY PERIOD

Degree of Upset	Percent
Extremely upset	22
Quite upset	16
Somewhat upset	17
A little upset	15
Not at all upset	29

TABLE III-16

PERCENT HOUSEHOLDS IN WHICH AT LEAST ONE PERSON WAS EXTREMELY OR QUITE UPSET OVER TMI BY DIRECTION AND DISTANCE FROM TMI

	Percent of Households				
Distance	North	East	South	West	Total for All Directions
0-5 mile ring	54	73	58	74	59
5-10 mile ring	60	52	59	66	59
10-15 mile ring	58	48	53	54	54
15-25 mile ring	30	33	23	22	28
25-40 mile ring	17	15	20	32	22
40 miles or more	27	6	25	31	24
Total for All Distances	58	52	54	59	56

Agreement to evacuate

A second indicator of the degree of psychological stress experienced by families near TMI is the extent of disagreement regarding the decision to evacuate. Nearly 20 percent of the households over the entire area said there was disagreement over the decision (Table III-17). This was particularly true nearest to TMI, but was somewhat less of a problem to the west, which had the highest evacuation rate and a somewhat higher concentration of pre-school children than other directions. Households that had no evacuees were somewhat more likely to disagree than households that had evacuees.

TABLE III-17

DISAGREEMENT OVER THE DECISION TO EVACUATE

	Percent of Households that Disagreed Strongly or Somewhat Over Decision To Evacuate				
Distance	North	East	South	West	Total for All Directions
0-5 mile ring	20	27	21	23	21
5-10 mile ring	16	14	16	17	15
10-15 mile ring	22	22	18	12	19
15-25 mile ring	22	18	19	6	16
25-40 mile ring	16	0	0	7	6
40 miles or more	0	0	5	6	2
Total for All Distances	20	17	18	15	18

Concern about emissions

A third indicator of the level of stress at the time of the accident is concern over emissions from TMI. Households that were very concerned about the emissions tended to be nearer the station, but the percentage was still quite high beyond 15 miles from TMI. About 60 percent of households in the 0-15 mile ring were very concerned about TMI emissions during the accident, and 38 percent of the respondents beyond 15 miles were very concerned.

Disruption of normal activities

An attempt was made to identify households in which normal activities were particularly disrupted by the accident. Twenty-seven percent of the households reported high disruption, and an additional 24 percent mentioned some disruption. Over and above the disruptive evacuation experience per se, disruption of normal activities was four times as likely to be reported by evacuees than by non-evacuees. These persons tended to be closer to the plant, particularly to the west (Table III-18). Younger persons, the highly educated, separated persons, and those earning $20-25,000 were most likely to have their activities disrupted. The households that reported no disruption tended to be farther from TMI (Table III-18). The main changes mentioned by those experiencing disruptions were staying indoors, canceling plans, being on edge, and getting ready to leave. Other frequently mentioned responses were that someone was out of work, children were home from school, extra time was spent listening to the news, or they worked more than usual.

D. CONTINUING EFFECTS OF THE ACCIDENT

1. Economic

Although the primary economic effects occurred soon after the accident, some households report continuing economic effects. Among households that evacuated, 12 percent report continuing economic effects. Among households that did not evacuate, only 4 percent report continuing economic effects. The most frequently mentioned effects are higher electric bills, reduced real estate values, and a decline in business.

TABLE III-18

DISRUPTION OF NORMAL HOUSEHOLD ACTIVITY
DURING EMERGENCY PERIOD

Percent of Households With High Disruption

Distance	North	East	South	West	Total for All Directions
0-5 mile ring	35	20	29	47	36
5-10 mile ring	32	24	32	29	29
10-15 mile ring	26	22	20	29	24
15-25 mile ring	8	12	11	11	11
25-40 mile ring	0	3	3	8	4
40 miles or more	4	0	0	0	1
Total for All Distances	29	23	23	31	27

Percent of Households With No Disruption

Distance	North	East	South	West	Total for All Directions
0-5 mile ring	26	7	13	13	21
5-10 mile ring	29	29	25	11	25
10-15 mile ring	28	41	32	26	30
15-25 mile ring	64	45	48	61	53
25-40 mile ring	87	84	81	67	79
40 miles or more	76	91	76	71	77
Total for All Distances	28	32	30	21	28

A small group of respondents (3 percent) have considered changing jobs as a result of the accident; about half of these have taken definite steps to change jobs. Evacuees are four times as likely as non-evacuees to say that they have considered changing jobs (6.4 percent) as compared to staying (1.5 percent), but are no more likely to have taken definite steps to change their jobs. These responses imply that over 2,000 persons within 15 miles of TMI have taken definite steps to change jobs.

Overall, most people feel that the economy of the area will be hurt by the accident (60 percent) rather than be helped (6 percent) or have no effect (34 percent). Those closer to TMI are somewhat more likely to feel that it will be hurt by the accident, and those farther away feel that it will have no effect (Table III-19). Students and pregnant women are most likely to feel that the economy will be hurt. Evacuees are more likely to think that it will be hurt and less likely than non-evacuees to think there will be no effect.

TABLE III-19

OPINIONS WITH RESPECT TO EFFECT OF TMI ON ECONOMY OF THE AREA

Distance	Percent of Respondents Who Feel TMI Will Hurt Economy of Area				
	North	East	South	West	Total for All Directions
0-5 mile ring	60	40	64	68	61
5-10 mile ring	61	56	53	59	58
10-15 mile ring	66	40	57	67	61
15-25 mile ring	52	61	56	49	55
25-40 mile ring	43	42	21	65	44
40 miles or more	55	42	31	48	45
Total for All Distances	64	50	56	65	60

Distance	Percent of Respondents Who Feel TMI Will Have No Effect on Economy of Area				
	North	East	South	West	Total for All Directions
0-5 mile ring	32	47	36	21	31
5-10 mile ring	29	39	41	38	36
10-15 mile ring	27	52	40	27	33
15-25 mile ring	43	34	36	49	40
25-40 mile ring	43	54	76	29	50
40 miles or more	31	58	58	44	44
Total for All Distances	29	43	40	30	34

2. Social/Psychological Effects

In addition to the continuing economic effects, respondents in the area are continuing to experience some social and psychological effects of the accident. Twenty-two percent of the respondents still feel TMI represents a very serious threat to their family, and an additional 19 percent think it is serious. Now, 28 percent think TMI is no threat at all, as compared to the 11 percent who perceived a threat at the time of the accident. Those who still feel it is a serious threat live nearer to the plant (Table III-20), while those who feel it is no threat live farther away (Table III-20). This is similar to the pattern found for perceived threat at the time of the accident, although the percentages of those who see it as a serious threat now are smaller. Divorced or separated persons, families, and evacuees are more likely to still perceive TMI as a serious threat.

TABLE III-20

PERCEIVED THREAT OF TMI AT PRESENT

Percent of Respondents Who Feel That TMI Is A Very Serious Threat To Family

Distance	North	East	South	West	Total for All Directions
0-5 mile ring	28	20	24	16	25
5-10 mile ring	23	17	24	25	22
10-15 mile ring	22	13	19	26	21
15-25 mile ring	16	10	19	13	14
25-40 mile ring	10	7	10	8	9
40 miles or more	9	5	14	10	10
Total for All Distances	23	16	21	25	22

Percent of Respondents Who Feel That TMI Is No Threat To Family

Distance	North	East	South	West	Total for All Directions
0-5 mile ring	32	27	24	24	30
5-10 mile ring	26	32	26	26	28
10-15 mile ring	27	45	28	23	28
15-25 mile ring	48	42	30	50	43
25-40 mile ring	50	36	52	32	42
40 miles or more	57	62	51	45	54
Total for All Distances	28	37	27	24	28

There is also continuing concern about radioactive emissions from TMI. Forty-one percent of the respondents are still very concerned, and 34 percent are somewhat concerned. People who are very concerned tend to live nearer TMI, but persons more than 40 miles away are still likely to be quite concerned (Table III-21). Pregnant women are especially concerned, with 71 percent stating that they are still very concerned.

The pattern of concern today can be contrasted with the patterns of concern both during and before the accident (Tables III-22 and III-23). Relative to the 41 percent of households that reported being very concerned today, 61 percent said they were very concerned during the accident, and only 12 percent reported being very concerned prior to the accident. As would be expected, the responses of households that are not concerned are simply reversed. A relatively high proportion (62 percent) reported being unconcerned prior to the accident. This fell

to a low of only 14 percent that were not concerned during the accident and has now risen to 25 percent of households reporting that they are not concerned with TMI emissions today.

TABLE III-21

CONCERN ABOUT TMI EMISSIONS TODAY

Distance	Percent Respondents Very Concerned About TMI Emissions Today				
	North	East	South	West	Total for All Directions
0-5 mile ring	36	44	42	56	41
5-10 mile ring	44	37	40	47	42
10-15 mile ring	43	34	41	39	41
15-25 mile ring	29	35	37	21	31
25-40 mile ring	23	13	9	39	22
40 miles or more	32	19	24	31	28
Total for All Distances	42	36	41	43	41

Distance	Percent Respondents Not Concerned About TMI Emissions Today				
	North	East	South	West	Total for All Directions
0-5 mile ring	31	19	23	19	27
5-10 mile ring	23	26	27	13	23
10-15 mile ring	26	41	23	23	26
15-25 mile ring	38	25	22	40	31
25-40 mile ring	45	26	53	39	41
40 miles or more	26	38	40	31	33
Total for All Distances	26	30	24	20	25

Evacuees were more likely to be concerned than non-evacuees about emissions before, during, and after the accident. Before the accident, 14 percent of the evacuees (compared to 10 percent of the non-evacuees) reported concern. During the accident, there was a greater difference between the two groups: 79 percent of the evacuees, compared to 50 percent of the non-evacuees, were concerned. The percentage of concerned evacuees today is nearly twice that for non-evacuees (58 vs. 30 percent).

TABLE III-22

CONCERN ABOUT TMI EMISSIONS DURING THE ACCIDENT

	Percent Respondents Very Concerned About TMI Emissions During Accident				
Distance	North	East	South	West	Total for All Directions
0-5 mile ring	58	50	71	62	60
5-10 mile ring	60	58	65	61	61
10-15 mile ring	61	47	64	62	61
15-25 mile ring	32	49	52	40	44
25-40 mile ring	29	23	19	49	31
40 miles or more	48	19	37	43	39
Total for All Distances	60	54	64	61	61

	Percent Respondents Not Concerned About TMI Emissions During Accident				
Distance	North	East	South	West	Total for All Directions
0-5 mile ring	20	13	20	6	17
5-10 mile ring	7	13	16	8	10
10-15 mile ring	13	34	13	11	15
15-25 mile ring	24	12	15	24	18
25-40 mile ring	26	13	44	26	27
40 miles or more	21	29	29	17	24
Total for All Distances	13	20	14	10	14

Although there are continuing psychological concerns, the continuing sociological concerns are less pronounced. Ninety percent of the respondents say that their normal activities today are completely unchanged because of the accident. Those living nearer the stations, particularly 0-5 miles to the west, are more likely to say that there is substantial change in their day to day activities today (Table III-24). Changes most frequently mentioned are that TMI is always in the back of their mind (6 percent) and that they avoid the area (2 percent). There are no striking demographic differences for those whose activities are still being highly disrupted, but evacuees are more likely than non-evacuees to report at least a minimal disruption.

TABLE III-23

CONCERN ABOUT TMI EMISSIONS BEFORE THE ACCIDENT

	Percent Respondents Very Concerned About TMI Emissions Before The Accident				
Distance	North	East	South	West	Total for All Directions
0-5 mile ring	12	20	20	12	13
5-10 mile ring	16	10	16	15	14
10-15 mile ring	15	3	9	7	10
15-25 mile ring	12	8	19	3	9
25-40 mile ring	4	7	0	18	8
40 miles or more	12	14	6	7	10
Total for All Distances	15	8	11	10	12

	Percent Respondents Not Concerned About TMI Emissions Before The Accident				
Distance	North	East	South	West	Total for All Directions
0-5 mile ring	63	53	60	61	62
5-10 mile ring	59	69	65	59	63
10-15 mile ring	57	69	60	67	61
15-25 mile ring	72	63	46	61	61
25-40 mile ring	70	50	83	63	66
40 miles or more	58	81	69	76	69
Total for All Distances	59	69	61	64	62

TABLE III-24

HOUSEHOLDS WHO FEEL THEIR NORMAL ACTIVITIES TODAY ARE NOT CHANGED AT ALL BECAUSE OF TMI

	Percent of Respondents				
Distance	North	East	South	West	Total for All Directions
0-5 mile ring	88	93	100	82	88
5-10 mile ring	90	89	95	92	91
10-15 mile ring	91	94	90	87	90
15-25 mile ring	100	96	93	100	97
25-40 mile ring	100	97	100	92	97
40 miles or more	96	100	100	90	97
Total for All Distances	90	91	91	88	90

The respondents were specifically asked whether anyone in the household had considered moving because of the accident. Nineteen percent said they had: this response was most frequently given by those nearest the station (Table III-25). Those who have considered moving are more likely to be younger and more highly educated. Evacuees are more than three times as likely to say that they have considered moving as compared to non-evacuees (33 percent vs. 9 percent). Among those who have considered moving, 22 percent have definitely decided to move (4 percent of the total). This implies that a total of 5,100 households within 15 miles of the plant report they have decided to move. The number that will actually move remains to be seen, of course.

TABLE III-25

HOUSEHOLDS WHO CONSIDERED MOVING BECAUSE OF TMI

	Percent of Respondents				
Distance	North	East	South	West	Total for All Directions
0-5 mile ring	32	20	16	33	30
5-10 mile ring	17	19	22	21	19
10-15 mile ring	17	22	14	20	17
15-25 mile ring	8	2	19	5	7
25-40 mile ring	7	3	0	8	5
40 miles or more	4	0	0	7	3
Total for All Distances	19	20	16	22	19

E. RESPONDENT'S EVALUATION OF TMI AND NUCLEAR POWER IN GENERAL

The interviews were begun with a series of general evaluation questions so that opinions could be measured prior to any sensitivities the questionnaire might produce. Respondents were first asked to list the advantages and disadvantages of the area. The advantages most frequently mentioned (in order) were the peaceful environment, the availability of jobs, the convenient location to work and services, and the presence of family in the area. The disadvantages most frequently volunteered were the Three Mile Island Nuclear Station, various social problems (crime, pollution, crowding, noise, traffic, and so forth), lack of accessibility, the high cost of living, and weather and floods. Evacuees were much more likely than

other respondents to mention TMI as a disadvantage (46 vs. 21 percent). Overall, 78 percent of the sample rated the area excellent or good as a place to live, and only 6 percent rated it as poor. Evacuees and non-evacuees rated the area similarly.

Next, respondents were asked specifically about the disadvantages and advantages of having TMI in the area. The disadvantages volunteered included fear of another accident, lack of safety, after-effects on health, and the radioactivity at TMI. The advantages mentioned were that it produces power, provides employment, and reduces the cost of electricity. However, 52 percent of the sample said there were no advantages of having TMI nearby.

After these open-ended questions, respondents were asked to compare the relative advantages and disadvantages of TMI. More then half said the disadvantages outweighed the advantages either somewhat or strongly. Persons responding this way tended to live nearer the plant (Table III-26), whereas those who felt the advantages outweighed the disadvantages (17 percent) lived farther from TMI (Table III-26).

When asked whether their current opinion of TMI is the same as before the accident, 38 percent said no. People closer to TMI and evacuees were more likely to have changed their opinion (Table III-27). Before the accident, 27 percent of those questioned had already felt that the disadvantages of the plant outweighed the advantages, while an equal percentage had felt that the advantages clearly outweighed the disadvantages. After the accident, however, most of those who changed their opinions became more negative toward the presence of TMI in their area.

When asked how far from the nearest community a nuclear power station should be located, the median distance given was 30 miles. Those nearer to TMI were no more likely than those farther away to think that a nuclear station should be located at least 25 miles from the nearest community. However, evacuees were more likely than non-evacuees to say they should be over 25 miles away (58 vs. 47 percent).

TABLE III-26

EVALUATION OF THE ADVANTAGES OF TMI TODAY RELATIVE TO THE DISADVANTAGES

Distance	Percent of Respondents Saying Disadvantages Outweigh Advantages				
	North	East	South	West	Total For All Directions
0- 5 mile ring	45	53	54	68	50
5-10 mile ring	47	42	56	49	48
10-15 mile ring	56	38	51	53	52
15-25 mile ring	36	33	36	38	35
25-40 mile ring	30	30	17	40	30
40 miles or more	32	55	32	25	34
Total For All Distances	52	41	52	53	50

Distance	Percent of Respondents Saying Advantages Outweigh Disadvantages				
	North	East	South	West	Total For All Directions
0- 5 mile ring	20	27	4	8	16
5-10 mile ring	20	18	13	18	18
10-15 mile ring	16	25	15	12	16
15-25 mile ring	16	35	32	24	28
25-40 mile ring	35	30	35	23	30
40 miles or more	22	30	38	7	25
Total For All Distances	18	21	14	13	17

Finally, respondents were more positive about nuclear power in general (32 percent) than they were about TMI specifically (17 percent) While about a third classified themselves as neutral, the other third said the disadvantages were greater. Those nearer the station were more likely to say that the advantages of nuclear power in general were fewer than the disadvantages (Table III-28). Pregnant women were twice as likely (73 percent) as the general population (32 percent) to say that the disadvantages of nuclear power in general outweighed the advantages. Evacuees were more likely than other respondents to be strongly negative about nuclear power in general (50 vs. 27 percent).

TABLE III-27

CHANGE IN ATTITUDES WITH RESPECT TO THE RELATIVE ADVANTAGES AND DISADVANTAGES OF TMI BECAUSE OF THE ACCIDENT

	Percent of Respondents Who Changed Their Opinion of TMI Because of Accident				
Distance	North	East	South	West	Total For All Directions
0- 5 mile ring	34	44	34	44	37
5-10 mile ring	41	37	32	38	37
10-15 mile ring	39	28	41	38	38
15-25 mile ring	36	36	22	21	31
25-40 mile ring	37	16	10	24	21
40 miles or more	20	15	30	36	24
Total For All Distances	38	34	39	39	38

TABLE III-28

ATTITUDE TOWARD NUCLEAR POWER IN GENERAL

	Percent of Respondents Who Feel Disadvantages Nuclear Power Outweigh Advantages				
Distance	North	East	South	West	Total For All Directions
0- 5 mile ring	34	33	23	33	33
5-10 mile ring	39	36	36	33	37
10-15 mile ring	37	23	37	46	37
15-25 mile ring	36	27	16	23	26
25-40 mile ring	18	20	7	23	18
40 miles or more	27	26	27	21	25
Total For All Distances	37	31	36	41	37

	Percent of Respondents Who Feel Advantages Nuclear Power Outweigh Disadvantages				
Distance	North	East	South	West	Total For All Directions
0- 5 mile ring	36	33	23	25	33
5-10 mile ring	33	33	28	33	32
10-15 mile ring	34	33	28	32	31
15-25 mile ring	27	61	33	40	44
25-40 mile ring	50	47	63	26	45
40 miles or more	41	42	53	38	44
Total For All Distances	34	34	28	31	32

F. SUMMARY

The data from this study indicate that the accident at Three Mile Island affected a large number of people, both socially and economically, and that it is continuing to affect some people today. Evacuation near the station was quite extensive, yet a substantial minority (40 percent) even in the 5-mile ring did not evacuate. The median length of stay outside the area was 5 days, but the range was from from 1 to 62 days. Evacuees in the sample traveled an average of 100 miles to a total of 21 states. Most stayed with friends and relatives. The main reasons for evacuating were the perceived danger, the confusion, and the fear of a forced evacuation. Those who stayed did so for different reasons, depending on whether the whole household or only some members stayed. In the former case, they stayed mainly because they were waiting for an evacuation order; in the latter case, it was because they were unable to leave their jobs.

The primary information sources used by respondents were TV and radio. Generally, local sources were rated higher than national sources or personal acquaintances. The most useful sources of information were the Nuclear Regulatory Commission and the Governor of Pennsylvania. Overall, half the respondents were satisified with the information they received, and half were dissatisfied.

Several types of immediate effects were experienced by people in the area. These included evacuation costs (some reimbursed by insurance), other expenses, loss of pay, and other income losses and gains. Together, the cost to households within 15 miles of TMI is estimated to be at least $18 million. In addition, activities were interrupted, people were upset and felt threatened, and some families (over a fifth) disagreed over whether to evacuate.

Moreover, there are continuing effects. Most people feel that the economy of the area will be hurt by the accident. There is continuing concern about emissions from TMI, at a reduced level since the time of the accident, but at a higher level than before the accident. Most people's activity patterns (90 percent) are back to normal. A fifth have considered moving because of the accident, but a much smaller percent (4 percent) report having decided to move. Less than a tenth are still experiencing direct economic effects or have considered changing jobs.

More than a third of the respondents have changed their opinions about the relative advantages and disadvantages of TMI since the accident. About a third volunteered that TMI was a disadvantage of living in the area in response to a prior open-ended question. More than half think a nuclear station should be at least 25 miles from the nearest community.

Although many of the findings of this study are as expected, it is important that these results be reliably documented. This report summarizes the key findings to date. However, much more detailed analyses of the survey results are needed in order to fully describe the social and economic effects of the accident. In addition, these survey findings will be combined with other available data so that a more complete description of the effects can be presented. This description will be integrated into the Case Study Report for Three Mile Island, which will include the effects of construction, pre-accident operation, and both the short-term and long-term effects of the accident.

APPENDIX A

INSTRUMENT

Chilton Research Services
Radnor, Pennsylvania

Study #8296
July, 1979

T.M.I. IMPACT STUDY - SCREENING

1. How far do you live from Three Mile Island Nuclear Power Plant?

DO NOT READ LIST EXCEPT TO AID RESPONDENT	USE A (PINK)	Within 5 miles or less	1
	USE B (BLUE)	More than 5 miles up to 10 miles	2
	USE C (GREEN)	More than 10 miles up to 15 miles	3
	GO TO Q. 2	Over 15 miles	4
	TERMINATE	Over 55 miles	5

2. (IF OVER 15 MILES) In what community or town do you live?

_____

(IF LANCASTER, CARLISLE CITY LIMITS, TERM.)

3. What direction is that from the Three Mile Island nuclear plant? (CHECK BELOW TO DETERMINE IF RESPONDENT RESIDES IN ANY COMMUNITY LISTED AND PROCEED WITH INTERVIEW)

_____

4. Do you live within three miles of any of the following communities? (READ COMMUNITIES LISTED UNDER DIRECTION FROM T.M.I. WHERE RESPONDENT CLAIMS TO LIVE. IF RESPONDENT RESIDES IN ONE OF THESE COMMUNITIES, GO TO INTRODUCTION AND D QUESTIONNAIRE. IF NOT TERMINATE.

EAST	Ephrata - Hinkletown - Farmerville	(25)	1
	Churchtown - Morgantown - Goodville	(35)	2
	Mantmeal Village - Warwick - Knavertown	(45)	3
	Montclair - Royersford - Spring City	(55)	4
WEST	Plainfield - Greason	(25)	5
	Oakville - Greenspring	(35)	6
	Roxbury - Amberson - Dry Run	(45)	7
	Meadow Gap - Maddensville	(55)	8
NORTH	Lykens - Loyalton	(25)	1
	Rebuck - Leckkill - Dornsife	(35)	2
	Northumberland - Sunbury	(45)	3
	Washingtonville - Ottawa	(55)	4
SOUTH	Maryland line - Freeland	(25)	1
	Butler - Sparks - Phoenix	(35)	2
	North side of Baltimore	(45)	3
	South side of Baltimore	(55)	4

(IF NOT WITHIN 3 MILES OF ANY OF THESE COMMUNITIES, THANK RESPONDENT AND TERMINATE)

RESPONDENT SELECTION:

Male	1
Female	(2)

INTRODUCTION:

Good _____. I'm _____ calling from Chilton Research Services on behalf of the Pennsylvania Office of State Planning and Development and the U. S. Nuclear Regulatory Commission. We are conducting a study among residents in your area on the effects of the Three Mile Island accident.

Your participation in this survey is voluntary. Any information which you give us in response to our questions will be kept strictly confidential and will be used only for routine statistical research purposes. We will not ask you your last name and our records linking your telephone number to your answers will be destroyed once our conversation is complete. May I begin?

I hereby certify that I have read the above Privacy Act Statement to the designated survey respondent.

Signature of
Interviewer:_____ Date:_____

Study #8296
July, 1979

THREE MILE ISLAND IMPACT STUDY

REFUSAL

IF RESPONDENT REFUSES ASK:

Would you please tell me the reasons why you chose not to participate in this survey.

_____

_____

_____

_____

_____

_____

_____

(IF RESPONDENT MENTIONS OTHER STUDY CONDUCTED BY CHILTON, EXPLAIN)

Yes, you may have been interviewed by Chilton Research Services previously on a study for the Penn State Medical School and the Pennsylvania Department of Health. The study we are conducting now is for the Pennsylvania Office of State Planning and Development and the U. S. Nuclear Regulatory Agency. The earlier study dealt primarily with health reactions and, although this current study does have some health-related questions, it also contains other kinds of questions concerning the impact of the Three Mile Island accident on residents of your area. We would like to have your response to these questions. As a resident of the area your answers are important. (CONTINUE WITH PRIVACY ACT STATEMENT)

Chilton Research Services
Radnor, Pennsylvania

Study #8296
July, 1979

Int. #_____
(1-4)

T.M.I. IMPACT STUDY - A

(Within 5 miles)

SAMPLE # ____ ____
5 6

Q. #	Comments

Time Began_____AM_____PM

Time Ended_____AM_____PM

(ASK TO SPEAK TO MALE/OR FEMALE HEAD OF HOUSEHOLD 18 OR OVER AS INDICATED.)

7-

INTRODUCTION:

Male	1
Female	2

1A. Exactly how many miles do you live from the Three Mile Island Nuclear Power Plant? (RECORD EXACT MILEAGE. IF MORE THAN 5 MILES, SELECT PROPER QUESTIONNAIRE AND CONTINUE.)

_____
8-9

1B. What community or town do you live in?

_____
10-
11-

1C. What is your Zip code?

12-
_____
13-17

FOR CODING PURPOSES ONLY

____ ____	____ ____	____
18 19	20 21	22

11. What year did you move to this area? (RECORD LAST TWO DIGITS OF YEAR BELOW AND ON FLAP)

19	57 58
All my life	59- 1

12. What do you feel are the most important advantages of living in this area?

60-
61-
62-

13. What do you feel are the most important disadvantages of living in this area?

63-
64-
65-

14. Taking everything into consideration, how do you personally rate this town as a place to live? Is it excellent, good, fair, or poor?

66-

Excellent	1
Good	2
Fair	3
Poor	4
Don't Know	9-

15. What do you think are the main disadvantages of having the Three Mile Island Nuclear Station in your area?

67-
68-
69-

16. What do you think are the main advantages of having the Three Mile Island Nuclear Station in your area?

70-
71-
72-

17. Now I'd like you to compare the advantages of having the T.M.I. nuclear station in your area with the disadvantages. Would you say that the advantages are greater than, less than or about the same as the disadvantages? (PROBE) And is that MUCH greater (less) or SOMEWHAT greater (less)?

	Advantages are much greater than disadvantages 73-	1
	The advantages are somewhat greater than disadvantages	2
	The advantages and disadvantages about the same	3
	Advantages are somewhat less than disadvantages	4
	The advantages are much less than disadvantages	5
DO NOT READ	Don't Know	9

18. Did you feel the same way before the accident at Three Mile Island?

74-

SKIP TO Q. 20	Yes	1
	No	2

19. Before the accident did you think the advantages of having the Three Mile Island Nuclear Station in your area were greater than, less than or about the same as the disadvantages? (PROBE) And was that much greater (less) or somewhat greater (less)?

	Advantages much greater than disadvantages 75-	1
	The advantages somewhat greater than disadvantages	2
	The advantages and disadvantages about the same	3
	Advantages somewhat less than disadvantages	4
	The advantages much less than disadvantages	5
DO NOT READ	Don't Know	9

20. For the nation as a whole, how do the advantages of nuclear power in general compare to its disadvantages? Are the advantages greater than, less than or about the same as the disadvantages? (PROBE) And is that much greater (less) or somewhat greater (less)?

	The advantages are much greater than the disadvantages 76-	1
	The advantages are somewhat greater than the disadvantages	2
	The advantages and disadvantages are about the same	3
	The advantages somewhat less than the disadvantages	4
	The advantages are much less than the disadvantages	5
DO NOT READ	Don't Know	9

2. How many people, including yourself, live in this household? #_____

3. Starting with yourself and then the oldest, please tell me the names, ages and sexes of people living in your household. (RECORD BELOW AND ON FLAP)

4. What is their relationship to you? (RECORD BELOW AS SPOUSE, CHILD, OTHER (SPECIFY OTHER))

5. (FOR EACH PERSON MENTIONED IN Q. 3) How many years of school has (NAME) completed? (RECORD BELOW)

6. (FOR EACH PERSON MENTIONED IN Q. 3) What is (NAME'S) marital status? (RECORD BELOW)

7. (FOR EACH PERSON MENTIONED IN Q. 3) What is (NAME'S) occupation, and is that full-time or part-time? (RECORD BELOW. IF CHILD 6 OR OVER, ASK IF HE IS A STUDENT AND RECORD AS SUCH)

8. Were any of these people you mentioned not living here at the time of the Three Mile Island accident, that is, around March 28? (RECORD BELOW)

9. Was there anyone else living in this household on March 28 who you haven't mentioned? (RECORD NAME AND INFORMATION ON TABLE BELOW. CIRCLE RESPONDENT UNDER Q. 9 COLUMN)

10. (IF ANY HOUSEHOLD MEMBERS ARE FEMALES, AGE 15 - 50:) Was anyone in this household pregnant at the time of the Three Mile Island accident? (RECORD BELOW AND ON FLAP)

Q.5 children = 44

Q. 3				Q. 4			Q. 5	Q. 6					Q. 7			Q. 8	Q. 9	Q.10
Name	Age	Sex M	Sex F	Relship S	Relship C	Relship O(Sp)	Yrs. of School	Marital Status Single	Marr.	Div.	Sep.	Wid.	Occupation (WRITE IN)	Full Time	Part Time	Not Present March 28	Present on 3/28 Not Now	Pregnant
1.	24-25	26-1	2	27-R-3			28-29	30-1	2	3	4	5	31-32	33-1	2	34-1	35-1	36-1
2.	37-38	39-1	2	40-1	2	0	41-42	43-1	2	3	4	5	44-45	46-1	2	47-1	48-1	49-1
3.	50-51	52-1	2	53-1	2	0	54-55	56-1	2	3	4	5	57-58	59-1	2	60-1	61-1	62-1
4.	63-64	65-1	2	66-1	2	0	67-68	69-1	2	3	4	5	70-71	72-1	2	73-1	74-1	75-1
5.	5-6	7-1	2	8-1	2	0	9-10	11-1	2	3	4	5	12-13	14-1	2	15-1	16-1	17-1
6.	18-19	20-1	2	21-1	2	0	22-23	24-1	2	3	4	5	25-26	27-1	2	28-1	29-1	30-1
7.	31-32	33-1	2	34-1	2	0	35-36	37-1	2	3	4	5	38-39	40-1	2	41-1	42-1	43-1
8.	44-45	46-1	2	47-1	2	0	48-49	50-1	2	3	4	5	51-52	53-1	2	54-1	55-1	56-1

END CARD 1 (80-1)

I would like to ask you some questions about the accident at the Three Mile Island Nuclear Station that deal specifically with the two-week emergency period immediately after the accident on March 28.

21. How serious a threat did you feel the Three Mile Island Nuclear Station was for you and your family's safety at that time? Was it . . . (READ LIST)

77-

	Very serious threat	1
	Serious threat	2
	Somewhat of a threat, or	3
	No threat at all	4
DO NOT READ	Don't Know	9

22. How about today, how serious a threat do you feel the Three Mile Island Nuclear Station is for you and your family's safety? Is it a . . . (READ LIST)

78-

	Very serious threat	1
	Serious threat	2
	Somewhat of a threat, or	3
	No threat at all	4
DO NOT READ	Don't Know	9

END CARD 2
80- 2

23. During the past 2 weeks, has anyone in your household had the following symptoms? (READ LIST AND GET RESPONSE TO EACH BEFORE GOING ON TO NEXT SYMPTOM. ASK Q.24-26 FOR EACH "YES" BEFORE GOING TO NEXT SYMPTOM. RECORD BELOW. IF NONE, SKIP TO Q. 27)

24. (FOR ANY "YES" IN Q. 23) Who had that symptom? (RECORD BELOW)

25. How many days did they have it? (RECORD BELOW)

26. Did they seek medical help? (RECORD BELOW)

27. During the 2 weeks of the Three Mile Island incident, did anyone in your household have any of the following symptoms? (REREAD LIST AND GET RESPONSE BEFORE GOING ON TO NEXT SYMPTOM. ASK Q.28-31 FOR EACH YES BEFORE GOING TO NEXT SYMPTOM. RECORD BELOW)

28. (FOR ANY "YES" IN Q. 27) Who had that symptom? (RECORD BELOW)

29. How many days did they have it? (RECORD BELOW)

30. Did they seek medical help for it? (RECORD BELOW)

31. Was this a result of the T.M.I. incident? (RECORD BELOW)

		PAST 2 WEEKS						2 WEEKS AFTER T.M.I.								
		Q. 23		Q.24	Q.25	Q. 26		Q.27		Q.28	Q. 29	Q. 30		Q. 31		
	SYMPTOMS:	Yes	No	Who (#)	# Days	Med. Help Yes	Med. Help No	Yes	No	Who (#)	# Days	Med. Help Yes	Med. Help No	Result of TMI Yes	Result of TMI No	Result of TMI DK
1.	Stomach trouble	5-1	2	6-	7-8	9-1	2	10-1	2	11-	12-13	14-1	2	15-1	2	9
2.	Headache	16-1	2	17-	18-19	20-1	2	21-1	2	22-	23-24	25-1	2	26-1	2	9
3.	Diarrhea	27-1	2	28-	29-30	31-1	2	32-1	2	33-	34-35	36-1	2	37-1	2	9
4.	Constipation	38-1	2	39-	40-41	42-1	2	43-1	2	44-	45-46	47-1	2	48-1	2	9
5.	Frequent urination	49-1	2	50-	51-52	53-1	2	54-1	2	55-	56-57	58-1	2	59-1	2	9
6.	Rash	60-1	2	61-	62-63	64-1	2	65-1	2	66-	67-68	69-1	2	70-1	2	9
7.	Abdominal pain	5-1	2	6-	7-8	9-1	2	10-1	2	11-	12-13	14-1	2	15-1	2	9
8.	Loss of appetite	16-1	2	17-	18-19	20-1	2	21-1	2	22-	23-24	25-1	2	26-1	2	9
9.	Overeating	27-1	2	28-	29-30	31-1	2	32-1	2	33-	34-35	36-1	2	37-1	2	9
10.	Trouble sleeping	38-1	2	39-	40-41	42-1	2	43-1	2	44-	45-46	47-1	2	48-1	2	9
11.	Sweating spells	49-1	2	50-	51-52	53-1	2	54-1	2	55-	56-57	58-1	2	59-1	2	9
12.	Feeling trembly and shaky	60-1	2	61-	62-63	64-1	2	65-1	2	66-	67-68	69-1	2	70-1	2	9
13.	Trouble thinking clearly	5-1	2	6-	7-8	9-1	2	10-1	2	11-	12-13	14-1	2	15-1	2	9
14.	Irritability	16-1	2	17-	18-19	20-1	2	21-1	2	22-	23-24	25-1	2	26-1	2	9
15.	Extreme anger	27-1	2	28-	29-30	31-1	2	32-1	2	33-	34-35	36-1	2	37-1	2	9
	ADDITIONAL FAMILY MEMBERS															
	38-39-	40-1	2	41-	42-43	44-1	2	45-1	2	46-	47-48	49-1	2	50-1	2	9
	51-52-	53-1	2	54-	55-56	57-1	2	58-1	2	59-	60-61	62-1	2	63-1	2	9
	64-65-	65-1	2	67-	68-69	70-1	2	71-1	2	72-	73-74	75-1	2	76-1	2	9
	5-6-	7-1	2	8-	9-10	11-1	2	12-1	2	13-	14-15	16-1	2	17-1	2	9
	18-19-	20-1	2	21-	22-23	24-1	2	25-1	2	26-	27-28	29-1	2	30-1	2	9
	31-32-	33-1	2	34-	35-36	37-1	2	38-1	2	39-	40-41	42-1	2	43-1	2	9

END CD3 80-3

END CD4 80-4

END CD5 80-5

32. (FOR EACH FAMILY MEMBER LISTED IN Q. 3) Please tell me whether any of the people in your household were upset during the Three Mile Island crisis? How about . . .

33. (FOR EACH "YES" MENTION IN Q.32) How upset was (NAME)? Was he/she extremely, quite, somewhat or a little upset?

	Q.32 and Q. 33					
	Was Upset:					
Numbers of Household Members:	Extremely	Quite	Some-what	Little	Not Upset	Don't Know
#1	44- 1	2	3	4	5	9
2	45- 1	2	3	4	5	9
3	46- 1	2	3	4	5	9
4	47- 1	2	3	4	5	9
5	48- 1	2	3	4	5	9
6	49- 1	2	3	4	5	9
7	50- 1	2	3	4	5	9
8	51- 1	2	3	4	5	9

34. Did any members of your household evacuate during the 2 weeks of the TMI incident? By evacuate we mean stay one or more nights somewhere other than your home because of the accident on Wednesday, March 28. (RECORD BELOW. IF "NO", SKIP TO Q. 58)

35. (IF "YES") Who left? (RECORD BELOW)

36. (FOR EACH PERSON LEAVING) When did they leave? (RECORD MONTH AND DATE BELOW)

37. When did they return? (RECORD MONTH AND DATE BELOW)

38. (IF APPLICABLE) Did they lose any time at work? (RECORD BELOW)

39. (IF "YES" TO Q. 38) How many days were lost? (RECORD BELOW)

40. Did they lose any pay? (RECORD BELOW)

41. (IF "YES" TO Q. 40) About how much pay was lost? (RECORD BELOW)

Q. 34 If Left			Q. 35 Who Left(#)	Q. 36 Date Left	Q. 37 Date Returned	Q. 38 Work Loss Yes	No	DK	Q.39 # Days Lost	Q. 40 Pay Loss Yes	No	DK	Q.41 Pay Lost
Yes		52-1	53-	54-56	57-59	60-1	2	9	61-62	63-1	2	9	$ 64-67
SKIP TO Q. 58	No	2	5-	6-8	9-11	12-1	2	9	13-14	15-1	2	9	$ 16-19
	DK	9	20-	21-23	24-26	27-1	2	9	28-29	30-1	2	9	$ 31-34
			35-	36-38	29-41	42-1	2	9	43-44	45-1	2	9	$ 46-49
			50-	51-53	54-56	57-1	2	9	58-59	60-1	2	9	$ 61-64
			65-	66-68	69-71	72-1	2	9	73-74	75-1	2	9	$ 76-79
			5-	6-8	9-11	12-1	2	9	13-14	15-1	2	9	$ 16-19
			20-	21-23	24-26	27-1	2	9	28-30	31-1	2	9	$ 32-35

ENI CDE 80-

ENI CDE 80-

42. Other than any possible pay loss already mentioned while you evacuated, during the two-week period following the accident, was your family's income affected in any other way by the accident? Was there a gain in family income, a loss of income, or no difference (except for lost pay)?

36-

	Other gains in income	1
	Other losses in income	2
SKIP TO Q. 45	No difference	3

43. (IF OTHER GAINS OR LOSSES MENTIONED IN Q. 42) Other than lost pay, how much would you estimate this total (gain/loss) was during the two-week period of the accident?

$_____
37-40

44. Can you tell me how this (gain/loss) occurred?

41-42

14-

45. Where did the people who left your household go? (IF MORE THAN ONE PLACE, CODE PLACE WHERE LARGEST NUMBER OF HOUSEHOLD MEMBERS WENT FOR THE LONGEST PERIOD OF TIME. IF GIVES NAME OF TOWN, PROBE) Where did they stay, was it a ...(READ LIST)

43-

An official evacuation center (SPECIFY NAME OF CENTER)	1
Home of relative or friend	2
Hotel, motel, or resort	3
Somewhere else (SPECIFY)	4

46. What city is that in or near?

City_____ (44-46)

State_____ (47-48)

47. About how many miles is that from your home?

_____ miles
49-52

47a. (IF ANY HOUSEHOLD MEMBER LEFT) Here is a list of reasons why people left. Which ones apply to those in your household who left? (READ LIST AND GET RESPONSE FROM EACH STATEMENT BEFORE GOING TO NEXT STATEMENT.)

RANDOM START		Yes	No
	Situation seemed dangerous	53-1	2
	Information on situation was confusing	54-1	2
	To protect children	55-1	2
	To protect pregnancy	56-1	2
	To avoid the confusion or danger of a forced evacuation	57-1	2
	Pressure from someone outside the family	58-1	2
✓	Trip planned before incident	59-1	2
	Other (SPECIFY)	60-1	
	Don't Know	9	

48. Was there a particular piece of information which influenced your decision to evacuate?

_____

_____ 61- 62-

_____

49. Where did you get that information? (DO NOT READ LIST)

TV or radio	63- 1
Newspapers	64- 2
Doctor or health professional	65- 3
Local or community government agency	66- 4
Friends or neighbors	67- 5
Other (SPECIFY)	68- 6
Don't remember	9

50. Including all costs, for example, transportation, lodging, food, long distance calls, etc., about how much did it cost your household to leave?

$_____ (69-72)

51. Were any of your evacuation costs paid for by Metropolitan-Edison insurance?

		73-
	Yes	1
SKIP TO Q. 53	No	2
	Don't Know	9

52. About how much did the insurance pay?

$_____ (74-77

53. Other than evacuation costs, did the situation at Three Mile Island result in any other expenses during the two-week period following the accident?

		78-
	Yes	1
SKIP TO Q. 55	No	2

END CARD 8 80-8

54. (IF "YES") How much?

$_____ (5-8)

55. It has now been a few months since the accident. Is the accident continuing to affect your household's economic situation in any way?

		9-
	Yes	1
SKIP TO Q. 57	No	2
	Don't Know	9

56. (IF "YES") In what way is it continuing to affect your economic situation?

	10-
	11-
	12-

(FOR THOSE HOUSEHOLDS WHERE SOME MEMBERS DID NOT EVACUATE, ASK Q. 57. OTHERWISE, SKIP TO Q. 66)

57. I would like to ask you about the member(s) of this household who did not evacuate. Here is a list of reasons why people stayed. Which ones apply to the people in your household who stayed? Did they stay because they . . . (READ LIST AND GET RESPONSE FOR EACH STATEMENT BEFORE GOING TO NEXT STATEMENT.)

RANDOM START		Yes	No
	Saw no danger	13- 1	2
	Were unable to leave their job	14- 1	2
	Didn't have transportation	15- 1	2
	Had things to do at home	16- 1	2
	Had no place to go	17- 1	2
	Were waiting for an evacuation order	18- 1	2
	Were afraid of looters	19- 1	2
✓	Felt that whatever happens is in God's hands	20- 1	2
	Were too sick or disabled to travel	21- 1	2
	Other (SPECIFY)	22- 1	
	Don't Know	9	

(SKIP TO Q. 66)

(ASK Q. 58 - 65 ONLY IF NO ONE IN HOUSEHOLD EVACUATED.)

58. Here is a list of reasons why people stayed. Which ones apply to the people in your household who stayed? Did they stay because they . . . (READ LIST AND GET RESPONSE FOR EACH STATEMENT BEFORE GOING TO NEXT STATEMENT)

RANDOM START		Yes	No
	Saw no danger	23- 1	2
	Were unable to leave their job	24- 1	2
	Didn't have transportation	25- 1	2
	Had things to do at home	26- 1	2
✓	Had no place to go	27- 1	2
	Were waiting for an evacuation order	28- 1	2
	Were afraid of looters	29- 1	2
	Felt that whatever happens is in God's hands	30- 1	2
	Were too sick or disabled to travel	31- 1	2
	Other (SPECIFY)	32- 1	
	Don't Know	9	

59. Did the situation at Three Mile Island result in any extra expenses during the two-week period following the accident?

33-

Yes	1
No	2

60. (IF "YES") How much?

$_____ (34-37)

61. During the two-week period following the accident, was your household's income affected? Was there a gain in household income, a loss of income, or no difference in income because of the accident?

38-

	Gain in income	1
	Loss in income	2
SKIP TO Q. 64	No difference	3

62. (IF GAIN OR LOSS MENTIONED IN Q. 61) How much would you estimate this total (gain/loss) was during the two-week period following the accident?

$_____ (39-42)

63. Can you tell me how this (gain/loss) occurred?

_____ 43-
_____ 44-
_____

64. It has now been three months since the accident. Is the accident affecting your household's economic situation in any way now?

45-

	Yes	1
SKIP TO Q. 66	No	2
	No sure	9

65. (IF "YES") In what way is it continuing to effect your economic situation?

_____ 46-
_____ 47-
_____ 48-
_____

(ASK EVERYONE)

Now, I'd like to ask you a few questions about your day-to-day experiences during the two-week period following the accident.

66. Did people in your household agree or disagree with each other about whether or not to evacuate? Did they . . . (READ LIST)

		49-
	Strongly agree with each other	1
	Somewhat agree	2
	Somewhat disagree, or	3
	Strongly disagree over the decision that was finally made	4
DO NOT READ	Doesn't apply	8
	Don't Know	9

67. During the emergency, can you tell me whether your normal activities were affected by the accident? Was there a . . . (READ LIST)

		50-
	High level of disruption	1
	Some disruption	2
	Minimal disruption, or	3
SKIP TO Q. 69	No disruption of usual activities	4
	Don't Know	9

68. In what ways were your normal activities disrupted?

	51-
	52-
	53-

69. Today, are any of your normal activities changed because of the accident? Has there been a . . . (READ LIST)

		54-
	Substantial change	1
	Moderate change	2
	Minimal change, or	3
SKIP TO Q. 71	No change at all	4
	Don't Know	9

70. In what ways have your activities been changed because of the accident?

	55-
	56-
	57-

71. There has been some talk about possible radioactive emissions or releases from nuclear plants. Before the accident at Three Mile Island, how concerned were you with radioactive emissions from the plant? Were you . . . (READ LIST)

58-

	Not concerned	1
	Somewhat concerned, or	2
	Very concerned	3
DO NOT READ	Don't Know	9

72. During the two-week period immediately following the accident, how concerned were you with radioactive emissions from the plant? Were you . . . (READ LIST)

59-

	Not concerned	1
	Somewhat concerned, or	2
	Very concerned	3
DO NOT READ	Don't Know	9

73. How concerned are you today with radioactive emissions from the plant? Are you . . . (READ LIST)

60-

	Not concerned	1
	Somewhat concerned, or	2
	Very concerned	3
DO NOT READ	Don't Know	9

74. Has anyone in your household considered moving because of the Three Mile Island incident?

61-

	Yes	1
SKIP TO Q. 76	No	2
	Don't Know	9

75. (IF "YES") Have they definitely decided to move?

62-

Yes	1
No	2
Don't Know	9

76. Has anyone in your household considered changing jobs due to the incident?

		63-
	Yes	1
SKIP TO Q. 78	No	2
	Don't Know	9

77. (IF "YES") Have they taken definite steps to change their jobs?

	64-
Yes	1
No	2
Don't Know	9

78. Do you think that, in the long run, this incident will help the area economically, hurt it economically, or have no effect?

	65-
Help	1
Hurt	2
Have no effect	3
Don't Know	9

79. In your opinion, at least how many miles should there be between a nuclear station and the nearest community?

	Miles	66-68
DO NOT READ CIRCLE 3 NUMBERS	Nowhere is safe	997
	Anywhere is safe	998
	No opinion	998

80. I am going to give you a list of several sources that provided information during the two-week period of the accident. For each of these sources can you tell me whether the information from that source was extremely useful, useful, of some use, or totally useless? (READ LIST STARTING AT CHECKED SOURCE)

START		Extremely Useful	Useful	Of Some Use	Totally Useless	Don't Know
✓	The Nuclear Regulatory Commission	69- 1	2	3	4	9
	The President of the United States	70- 1	2	3	4	9
	The Governor of Pennsylvania	71- 1	2	3	4	9
	State Emergency Agencies	72- 1	2	3	4	9
	Local Government or Community Agencies	73- 1	2	3	4	9
	The Metropolitan-Edison Company	74- 1	2	3	4	9

END CARD 9
80 - 9

81. During the two-week emergency period, can you tell me whether each of the following were extremely useful in distributing information, useful, of some use or totally useless? (READ LIST, STARTING AT CHECKED SOURCE)

START		Extremely Useful	Useful	Of Some Use	Totally Useless	Don't Know
	Newspapers	5- 1	2	3	4	9
	National Network TV	6- 1	2	3	4	9
	Local TV	7- 1	2	3	4	9
	Radio	8- 1	2	3	4	9
	National News Magazines	9- 1	2	3	4	9
✓	Friends	10- 1	2	3	4	9
	Relatives	11- 1	2	3	4	9
	Other (SPECIFY)	12- 1	2	3	4	

82. Overall, how satisfied were you with the way you were given information during the emergency? Were you . . . (READ LIST)

		13-
	Very satisfied	1
	Mostly satisfied	2
	Mostly dissatisfied	3
	Very dissatisfied	4
DO NOT READ	Don't Know	9

I am now going to ask you a few hypothetical questions about evacuation procedures.

83. In case of an emergency at a nuclear power station, how do you expect to be notified that you should evacuate?

	TV	14- 1
	Radio	15- 1
	Police(Bull Horn)	16- 1
	Other (SPECIFY) _____	17- 1
	Don't Know	9

84. Suppose everyone from some specific area around the plant had been ordered to evacuate. Who do you feel would have been responsible for providing food and shelter for you and your family? Would you have been responsible yourself, or would some emergency group have been responsible?

18-

You	1
An emergency group	2
Don't Know	9

85. If a general evacuation had been ordered, who do you feel would have been responsible for providing transportation for you and your family? Would you have been responsible yourself, or would some emergency group have been responsible?

19-

You	1
An emergency group	2
Don't Know	9

A SAMPLE

(ASK Q.s 86-93 IF HOUSEHOLD HAS AT LEAST 1 CHILD AGE 5 OR LESS (Q. 3 ON FLAP) OR A WOMAN PREGNANT AT TIME OF ACCIDENT (Q. 10 ON FLAP))

86. On Friday afternoon, March 30, following the accident at the Three Mile Island Nuclear Station, the Governor advised all pregnant women and pre-school children to evacuate the area within 5 miles of the nuclear station.

Were you aware of this advice?

		20-
	Yes	1
SKIP TO Q. 94	No	2

87. (IF "YES") At what time did you become aware of this advice?

Date _____ (21-23)

Hour _____ (24-25)

	26-
AM	1
PM	2

88. How did you find out about it?

	27-
	28-

89. Were you told, or informed, to listen to any specific radio or TV station for additional information?

	29-
Yes	1
No	2
Don't Know	9

90. Were you told you would be transported to an evacuation station?

	30-
Yes	1
No	2
Don't Know	9

91. Were you told where you could expect to be evacuated to? That is, where you would go?

	31-
Yes	1
No	2
Don't Know	9

92. Were you told who would be responsible for conducting the evacuation?

		32-
	Yes	1
SKIP TO Q. 94	No	2
	Don't Know	9

93. (IF "YES") Who was to be responsible for the evacuation?

	33-
	34-

A SAMPLE

(Q.s 94 TO 103 ARE TO BE ASKED OF THOSE RESPONDENTS WHO HAVE LIVED IN THE AREA SINCE 1972 - Q. 11 ON FLAP)

So far I have asked you questions about the accident at the Three Mile Island Nuclear Plant. Now I would like to ask you some questions about the period before the accident occurred. The construction of the plant began in 1969 and was completed in 1977. Construction reached its peak in 1972. I am going to ask you some questions about the time when the plan was under construction.

94. What positive effects, if any, were there to the local area, because of construction workers commuting into this area?

35-
36-

95. What negative effects, if any, were there to the local area because of construction workers commuting into this area?

37-
38-

96. Were there construction workers who moved into the local area to work at the plant?

39-

SKIP TO Q. 99	Yes	1
	No	2
	Don't Know	9

97. (IF "YES") What positive effects, if any, were there to the local area because of the relocation of construction workers into this area?

40-
41-

98. What negative effects, if any, were there to the local area because of the relocation of construction workers into this area?

42-
43-

99. Did you have any good friends, acquaintances, neighbors or relatives among the construction workers, or didn't you know any of the workers at all? (CHECK ALL THAT APPLY)

	44-
Good friends	1
Acquaintances	2
Neighbors	3
Relatives	4
Didn't know any	5

100. There may have been some economic effects from constructing the plant that personally affected you or your family. Was the income or employment of anyone in this household affected in any way by the construction of the Three Mile Island Nuclear Station?

		45-
	Yes	1
SKIP TO Q. 102	No	2
	Don't Know	9

101. (IF "YES") In what way?

_____ 46-
_____ 47-
_____

102. Are there any effects of constructing the Three Mile Island Nuclear Station that anyone in this household experienced that have not yet been mentioned?

		48-
	Yes	1
SKIP TO Q. 104	No	2
	Don't Know	9

103. What were these effects?

_____ 49-
_____ 50-
_____

A SAMPLE

(Q.s 104 TO 107 ARE TO BE ASKED OF THOSE RESPONDENTS WHO WERE LIVING IN THE AREA BEFORE 1979 (Q. 11 ON FLAP)

I would now like to ask you some questions about the time during which the plant was operating commercially to produce electricity prior to the accident. This would cover the period from the time the plant went into operation in 1977 to late March, 1979, when the accident occurred.

104. What were the positive effects to this area, if any, of the plant's operation?

51-
52-

105. What were the negative effects to this area, if any, of operating the plant before the accident?

53-
54-

106. There may have been some effects from operating the plant that personally affected you and your family. Were you affected in any way because of the plant?

55-

	Yes	1
SKIP TO Q. 108	No	2
	Don't Know	9

107. In what way?

56-
57-

Since the accident
Δ in personal economic
106a
106b

Now, I have just two more questions about yourself.

108. Do you own or rent your apartment or home?

	58-
Own	1
Rent	2

109. In which one of the groups does your total family income fall?

	59-
Under $5,000	1
$5,000 up to $10,000	2
$10,000 up to $15,000	3
$15,000 up to $20,000	4
$20,000 up to $25,000	5
$25,000 up to $30,000	6
$30,000 or over	7
Refused	9

110. We really appreciate your cooperation. Do you have anything else you would like to add? Do you have any other concerns or comments? (PROBE)

60-
61-
62-

END CARD 10

80 - 0

	Q. 3				Q.10	Q. 11
#	Name	Age	Sex		Pregnant	Year Here
			M	F		
1						
2						
3						
4						
5						
6						
7						
8						

APPENDIX B

CALCULATION OF WEIGHTS

Calculation of weights for small areas sampled with random digit dialing (RDD) is performed in several steps. These can be summarized as: 1) calculation of the sampling fraction; 2) estimation of the total households in each ring; and 3) calculation of the weights.

The method used to generate the sample is known as controlled replication. Initially, approximately 65 telephone exchanges were identified that might serve households within 15 miles of the plant. The list of exchanges was developed through a review of all exchanges listed in Chilton's master file for the counties surrounding TMI.

The 10,000 possible suffixes for each exchange were divided into 100 banks of 100 each (0100's, 0200's, etc). Telephone companies provided information about which of these had been assigned for each exchange (which ones were in the working bank). The computer program that generates the random telephone numbers was programmed to delete known non-assigned numbers if they were selected.

The total sample generated for these 65 exchanges was in excess of what was required for the study. Approximately 26,000 random telephone numbers were printed (after eliminating the non-assigned numbers) using a known sampling fraction of 540/10,000. Approximately one in twenty households were selected at this point.

This initial sample was then separated into 16 replicates by a sequential subsampling process, resulting in 16 independent random subsamples, each as random as the original sample. We would expect the subsamples to each be as representative as the original sample with regard to any characteristics of the households served by the 65 telephone exchanges. Similarly, the 16 subsamples could be further sudivided as needed.

On the first night of dialing, one such replicate was "released". Based on the respondents' reported distance from TMI, the number of completed interviews for each of the three rings was tabulated. Successive replicates or portions of

replicates were released until the pre-specified quota for one of the rings was met. For our sample, this occurred after one and one-third replicates had been released: the 200 completes for the 10-15 mile ring had been obtained. The weights were calculated using only the information supplied by the respondents that had been dialed up to that point.

1. Calculation of the Sampling Fraction

The sampling fraction is simply the product of the first stage and the second stage sampling fractions:

$$\frac{540}{10,000} \quad X \quad \frac{2,326}{26,255} \quad = \quad .00478$$

Five hundred forty of the possible 10,000 suffixes for each exchange were selected. Out of the original 26,255 pieces of sample generated by the computer, 2,326 (approximately one and one-third replicates) were used to fill the 10-15 mile quota. The sampling fraction for these dialings, then, is about one in 200 households.

2. Estimation of the Total Number of Households in Each Ring

At this stage, the sample is self-weighting. The probability structure has been preserved, and no disproportionate sampling has been employed. Therefore, this sample provides unbiased estimates of the proportion of all households falling in each of the three rings. Since it was felt that the actual distance from the respondent's reported community of residence (N=215) was a more accurate gauge of the distance between TMI and the respondent than was the respondent's estimate of the distance, calculations were based on the former. The results were:

TABLE B-1

PERCENT OF HOUSEHOLDS IN EACH DISTANCE CATEGORY

0-5 miles	4.43%
5-10 miles	14.92%
10-15 miles	26.84%
Over 15 (interviewer terminates)	53.81%

These proportions were based on 1,053 household contacts in which the geographical location was determined. Additional known households were in this first wave sample, but their location was not determined either because it was

refused, contact with a knowledgeable respondent was not achieved, the interviewer was asked to call back and did not complete the interview, or the community was not codable. In total, 1,288 known households were included in this "first wave" sample.

3. Calculation of the Weights

Applying the proportions to the 1,288 known households yields the following estimates of the number of households in each of the four geographic areas:

TABLE B-2
ESTIMATED NUMBER OF HOUSEHOLDS

Distance	Households
0-5 miles	57 06
5-10 miles	191.65
10-15 miles	345.70
15+	693.72

Multiplying these by the inverse of the sampling fraction $\left(\frac{1}{.00478} = 209.03\right)$ yields the following estimates of the total number of households within each of the three rings:

TABLE B-3
ESTIMATED TOTAL NUMBER OF HOUSEHOLDS BY DISTANCE

Distance	Households
0-5 miles	11,927
5-10 miles	40,061
10-15 miles	72,262

These are conservative estimates of the totals in each ring. They are unbiased estimates of the number of households with telephones in each ring. Nationally, about 6 percent of the households do not have telephones, but it is not known with any precision what the rates are for these artifically drawn rings. By not increasing the estimated number of households to account for households without telephones, the weights calculated below are conservative. When applied to the sample data, they underestimate the number of persons in the population that experienced some phenomenon.

3. Calculation of the Weights

The "first wave" sample provided the targeted number of interviews in the 10-15 mile ring. Additional replicates were released, as required, to complete the other two rings. However, respondents in the 10-15 mile ring were no longer considered for inclusion; they were terminated by the interviewer.

Using the first wave, a count was made of the number of households within 10 miles of TMI reached per dialing for each of the 65 exchanges. Below is a partial listing of the results:

TABLE B-4
DELETED EXCHANGES

Exchange	# for which location determined	#within 10 miles	Working bank size
225	12	0	6,000
243	24	0	10,000
244	61	2	10,000
249	32	0	9,000
354	15	0	7,300

Using a binomial expansion, we can calculate the probability that there would be as many as 2,000 households within 10 miles of Three Mile Island with a given exchange and still produce these results. If that probability was less than 1/100, the exchange was no longer dialed.

The sample points that were predesignated for intensive follow-up were nested in two replicates. At the conclusion of the dialing period, all the sample used for the 10-15 mile ring was so predesignated; 16 percent of the sample used for the 0-5 mile ring and 70 percent of the 5-10 mile sample was so designated. The completed interviews from the two sampled categories were assigned an additional weight, 6.3 and 1.42, respectively, in order to compensate for the third sampling fractions.

The total number of completed interviews for each of the three rings was divided into the previously calculated total number of households to obtain the weights.

TABLE B-5
CALCULATED WEIGHTS

	Completes			Weights	
	Initial	Follow-up	Households	Initial	Follow up
0-5 miles	269	4	11,927	40.54	255.4
5-10	376	6	40,061	104.18	147.94
10-15	393	22	72,262	174.13	174.13

For instance, for the five mile ring, there are 269 + (4 x 6.3) = 294.2 household equivalents in the sample, which means that the basic weight for each equivalent must be 40.54 to expand the sample up to the universe. The indicated weights were saved as a separate variable in each file.

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This report describes the methodology used in, and the results of, a telephone survey conducted in the vicinity of the Three Mile Island nuclear power plant. The survey is part of a study of the socioeconomic impacts of nuclear power plant construction and operation at Three Mile Island, and eleven other nuclear power plant sites. The survey covers the areas of evacuation behavior, information processing, short-term accident effects, continuing effects of the accident, and respondent's evaluation of TMI and nuclear power in general. Approximately 1500 households in the vicinity of the Three Mile Island nuclear power plant participated in the survey, which was conducted in July and August, 1979.

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