PUBLIC OPINION IN PENNSYLVANIA TOWARD THE ACCIDENT AT THREE MILE ISLAND AND ITS AFTERMATH

a survey conducted for

GENERAL PUBLIC UTILITIES CORPORATION

June, 1980

Field Research Corporation

FRC

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FOREWORD

This report contains a summary of the findings of a survey of public opinion in the state of Pennyslvania.

The purpose of the study was to examine public opinion regarding a number of issues relating to the accident at the Three Mile Island nuclear power plant which occurred in late March, 1979, and its aftermath. The survey was conducted by Field Research Corporation, an independent public opinion research organization in behalf of Metropolitan Edison Company and its parent, General Public Utilities Corporation. FRC was solely responsible for all phases of the survey -- design, implementation and the report.

The survey was conducted by telephone with a representative sample of 2033 adults between June 18 and June 30, 1980. The sample design called for dividing the state into three regions -- Primary, Secondary and Tertiary -- relative to the proximity of residents to the TMI plant. These regions were defined in the following manner:

Primary Region: the area within a radius of five miles from the Three Mile Island nuclear power plant, which includes parts of Dauphin, Lancaster, and York Counties.

Secondary Region: the area within a radius of about five to twenty-five miles from the Three Mile Island nuclear power plant which includes large portions of Dauphin, Lebanon, York, Perry, Lancaster and Cumberland Counties.

Tertiary Region: the larger area of Pennsylvania not included in either the Primary or Secondary Regions. The Tertiary Region was sub-divided into Eastern and Western Pennsylvania. The East-West dividing line was roughly the county lines separating Potter, Clinton, Mifflin, Huntingdon and Fulton Counties from Tioga, Lycoming, Union, Snyder, Juniata, and Franklin Counties.

In order to produce adequate statistical bases for each of the regions, sampling was done on a disproportionate basis, that is, the number of interviews allocated to each region was not proportionate to the statewide population of adults. When the three regions were combined to produce the "Statewide" base, appropriate statistical weighting was used to restore each area to its proper population proportion.

Interviewing was done from FRC's two central telephone interviewing facilities in San Francisco and Los Angeles.

A complete description of the survey methodology can be found in the appendix of this report along with a copy of the questionnaire used in the survey. A second volume of computer print-outs contains the detailed tabulations of the data.

THE FINDINGS

I. Most serious problems in county

At the beginning of the interview, respondents were asked to state in their own words what they felt were the "most serious problems" facing people in their county today. Answers were recorded verbatim and were coded into general categories.

During the period of the interviewing (prior to the release of the krypton gas at TMI) it is clear that TMI and the krypton gas venting was the major concern of residents near the plant. In the Primary region a majority (55%) mention the "dangers of TMI/venting of the krypton gas" among the most serious problems facing their county. Next most frequently cited are "inflation/cost of living" (22%) and "unemployment/lack of work" (20%). Other issues raised by people in this region include "taxes/big government"(10%), "crime/law enforcement" (8%), "use of drugs/alcoholism" (6%) and the "need for social services" (5%).

Residents in the Secondary region also included TMI among their principal three concerns. "Inflation/cost of living" ranks first with a 31% mention, followed by "unemployment/lack of work" (28%) and the "dangers of TMI/venting of the krypton gas" (27%). Other problems cited by those in the Secondary region are: "crime/law enforcement" (12%), "taxes/big government" (11%), "need for social services" (8%)

The same high degree of concern with TMI and the venting of the krypton gas, however, does not extend to residents in the rest of the state. Just 1% of residents in the Tertiary region mention the dangers of "TMI/venting of the krypton gas" among their most serious problems. The problems most often cited in this region are "unemployment/lack of work" (42%) and "inflation/cost of living" (34%). Other problems reported frequently are: "taxes/big government" (16%), "crime/law enforcement" (13%), "poor roads/lack of road maintenance" (13%), "use of drugs/alcoholism" (8%), and "health care needs" (7%).

A listing of the problems mentioned by residents in all three regions and on a statewide basis is shown in Table 1 opposite.

Table 1

What do you personally feel are some of the most serious problems facing people in your county today?

	Primary Region	Secondary Region	Tertiary Region	Statewide
Dangers of TMI/venting of krypton gas	55%	27%	1%	3%
Inflation/cost of living	22	31	34	33
Unemployment/lack of work	20	28	42	41
Taxes/big government	10	11	16	15
Crime/law enforcement	8	12	13	13
Use of drugs/alcoholism	6	6	8	8
Need for social services	5	8	4	5
Influx of Cubans, refugees into U.S.	4	6	1	2
Poor roads/lack of road maintenance	3	5	13	13
Health care needs	3	2	7	6
Energy problems	3	2	2	2
Cost of gasoline	3	4	6	6
Dangers of nuclear power	3	2	1	1
Education/the schools	2	4	6	6
Lack of housing	2	6	5	5
Air, water pollution	2	4	4	4
Cost of utility bills	2	3	2	2
No problems	4	3	3	3
Other mentions (less than 2%)	6	15	18	17
(Base)	(623)	(605)	(805)	(2033)

(Adds to more than 100% due to multiple mentions.)

II. Availability of electric power in the next few years

A large majority of residents in all three regions believe that there will be enough electric power available for household needs in their own area during the next few years. Nearly three out of four (74%) of those in the Primary region, 68% of those in the Secondary region and 71% of residents in the Tertiary region feel that the supply of electricity in their area will be adequate.

Just one in six persons in each of the regions think that there is likely to be a shortage of power in the next few years.

Those who feel that an electric power shortage is likely during the next few years were asked what they believed would be the main causes of the shortage.

The reasons offered varied somewhat by region. Among those in the Primary and Secondary regions the "shutdown, closing of TMI" is mentioned most frequently.

Table 2

Do you think there will be enough electric power available for household needs in this area of Pennsylvania in the next few years, or is there likely to be a shortage of power? (IF SHORTAGE LIKELY) What will cause this shortage of electric power?

	Primary Region	Secondary Region	Tertiary Region	Statewide
Enough availability	74%	68%	71%	71%
Likely to be a shortage	15%	18%	15%	15%
Shutdown, closing of TMI	5	5	1	2
Rapid growth/new building	4	4	2	2
Lack of conservation/ inefficiencies	3	5	6	6
Resistance to nuclear power	2	2	2	2
Lack of low cost oil/ shortage of oil	1	1	1	1
Failure to explore other energy alternatives	1	2	1	1
Not enough coal production	1	1	2	2
Poor planning by utility	*	2	1	1
Gov't regulations	*	*	1	1
Other mentions	1	1	1	1
Don't know	11%	14%	14%	14%
(Base)	(623)	(605)	(805)	(2033)

(Adds to more than subtotal due to multiple mentions)

*Less than one half of one percent

III. Electric power utility charges during the past year

A substantial majority of residents in all regions state that their electric utility charges have increased during the past year. This is reported with somewhat greater frequency by those in the Tertiary region where eight in ten (80%) report an electric utility rate increase. Sixty-eight percent of residents in Primary region and 74% of those in the Secondary region say that their electric utility charges increased during the past year.

Residents who reported increases in their electric utility charges were asked what they felt caused their electric power rates to rise.

In the Primary and Secondary regions "the added cost of the TMI accidents" is mentioned most often. Next most frequently mentioned is "inflation" in each region. Other ranking reasons for the rate hikes include: the "rising cost of fuel/energy", that the "utility has to buy electricity from other sources", "higher labor costs", and "waste/profiteering by the utility."

In the Tertiary region the primary factors which residents cite for rate increases are: "inflation" (15%), "higher labor costs" (14%), the "rising cost of fuels/energy" (12%), "waste/profiteering by the utility" (9%) and "OPEC price increases" (9%).

"Added costs of the TMI accident" receive a 6% mention in the Tertiary region.

Table 3

In the past year have the rates that your electric power utility charges for electricity increased, decreased, or remained about the same? (IF INCREASED) What do you think the reasons were that caused electric power rates to go up?

	Primary Region	Secondary Region	Tertiary Region	Statewide
Rates have increased	68%	74%	80%	79%
Added cost of TMI accident	29	29	6	8
Inflation	13	12	15	15
Rising cost of fuels/energy	7	8	12	11
Utility has to buy from other sources	6	7	3	3
Higher labor costs	6	7	14	13
Waste/profiteering by utility	6	5	9	9
Higher taxes, surcharges	4	4	4	4
OPEC oil price increases	3	6	9	9
People using too much/ failure to conserve	3	3	6	6
Higher production costs	2	7	6	6
Increases in cost of coal	1	2	6	6
Increases in cost of building new power plants	1	2	3	3
Shortages in natural resources	1	1	2	2
Worker strikes	*	*	1	1
Other mentions	2	2	4	4
Rates have remained about the same	24%	19%	15%	15%
Rates have decreased	1%	2%	*	1%
Don't know	6%	5%	5%	5%
(Base)	(623)	(605)	(805)	(2033)

(Adds to more than subtotal due to multiple mentions)

*Less than one half of one percent

IV. Reactions to the accident at Three Mile Island

Respondents were asked to think back to the time of the accident at the Three Mile Island nuclear power plant and recall what their main feelings and reactions were as word about the accident was coming out.

The volume of the responses received, especially among those living near the plant, illustrate the depth and range of feelings that prevailed at the time.

Among residents of the Primary and Secondary regions the type and frequency of comments are similar. The most frequent reactions have to do with "evacuation plans/preparing to leave" and "fear/worry/anxiety" each cited by approximately one in three. About one in four in each region say they were "confused/heard conflicting reports". Another one in four in each region however say they were "skeptical/it didn't bother me".

An assortment of other comments are offered in significant proportions most of which have to do with concerns for either one's personal safety or the safety of others: "concern about family, friends near the plant"; "anger at those in charge/lack of precautions"; "feeling of helplessness"; "concern about radiation/health dangers"; and "a concern about children, pregnant women".

The reactions to residents in the Tertiary region, though not so much oriented to their own personal safety, were nearly as if not more, diverse. The most frequent responses were "anger at those in charge/lack of precautions" (27%); "concern for family, friends near the plant" (24%); "concern about radiation/health dangers" (23%); "fear/worry/anxiety" (21%); and "felt lucky I didn't live too near the plant" (18%). Another 15% say they were "skeptical/it didn't bother me".

Table 4

Now, I'd like you to think back to the time a little more than a year ago when the accident occurred in the nuclear power plant at Three Mile Island. As you recall that time, what were your main feelings and reactions as word about the accident at Three Mile Island was coming out?

	Primary Region	Secondary Region	Tertiary Region	Statewide
Evacuation plans/preparing to leave	37%	37%	5%	7%
Fear/worry/anxiety	33	32	21	22
Confused/heard conflicting reports	27	23	8	9
Skeptical/it didn't bother me	26	23	15	16
Concern for family, friends near the plant	18	23	24	24
Anger at those in charge/lack of precautions	16	16	27	25
Feeling of helplessness	15	18	6	7
Concerned about radiation/ health dangers	14	14	23	22
Concerned about children, pregnant women	12	7	6	6
Amazed/didn't realize its seriousness	7	11	4	4
Overplayed/blown out of proportion by media	7	6	7	7
Felt truth was being covered up	5	7	7	7
Against nuclear power/feel all plants should be closed	4	7	9	9
Put my faith in God/religion	3	4	1	1
Concerned about effects on environment	3	6	7	7
Relieved that it didn't become a disaster	3	3	2	2
Felt lucky I didn't live too near the plant	2	9	18	17
Concerned about possible decline in property values	1	1	*	*
Other mentions	4	6	24	22
No answer	*	*	1	1
(Base)	(623)	(605)	(805)	(2033)

(Adds to more than 100% due to multiple mentions)

*Less than one half of one percent

V. Six dimensions of personal reaction to the TMI accident

In addition to the free response question, a second battery of six additional questions attempted to measure six dimensions of resident reactions to the accident. These included the degree to which residents: (1) felt frightened for their safety; (2) felt angry at officials or others; (3) felt confident that they would come out okay; (4) were confused by what was happening; (5) felt helpless about what was happening; and (6) felt satisfied that everything possible was being done.

A. Feeling frightened for one's safety

A majority of those in the Primary region (52%) report that they were frightened for their safety at the time of the accident with 29% stating that they were "very frightened". On the other hand, 47% say that they were "not at all frightened" for their safety.

In the Secondary region half of the residents (50%) say that they were frightened, 21% of whom say they were "very frightened". Forty-nine percent say they were not frightened at the time.

Residents in the Tertiary region, by their own account, were comparatively less frightened. Two out of three (66%) report that they were not frightened for their safety at the time of the accident. However, one in three (33%) do report being either "somewhat" or "very frightened".

Table 5A

Were you frightened for your safety?

	Primary Region		Secondary Region		Tertiary Region		Statewide	
Yes, very frightened	29%	52%	21%	50%	11%	33%	12%	34%
Yes, somewhat frightened	23		29		22		22	
No, not at all frightened	47		49		66		64	
No Answer	1		1		1		2	
(Base)	(623)		(605)		(805)		(2033)	

B. Feeling angry at the officials or other people

A majority of residents in the Primary region (53%) report being angry at either the officials or others at the time of the accident, with many (31%) saying they were "very angry". Forty-six percent of those in the Primary region, however, say they were not angry at officials during the accident.

Half of the residents in the Secondary region (50%) also report being angry at officials or others, 28% of whom describe themselves as being "very angry".

Public sentiments of anger at officials or other people extend to the Tertiary region in significant proportions. Forty-seven percent of those in the Tertiary region (and on a statewide basis) say they were angry at officials or others at the time of the accident.

Table 5B

Were you angry at the officials or other people?

	Primary Region		Secondary Region		Tertiary Region		Statewide	
Yes, very angry	31%	53%	28%	50%	20%	47%	21%	47%
Yes, somewhat angry	22		22		27		26	
No, not at all angry	46		49		50		50	
No answer	1		1		3		3	
(Base)	(623)		(605)		(805)		(2033)	

C. Feeling confident of coming out okay

Despite the fact that most residents in the Primary and Secondary regions reported feeling frightened and angry, about two out of three felt confident that they would come out of it okay.

In the Primary region 36% say they were "very confident", while 29% say they were "somewhat confident" of coming out okay. One in three (33%), however, were "not at all confident" that they would come out okay.

In the Secondary region 39% were "very confident" of coming out okay, 30% describe themselves as being "somewhat confident", while 29% say they were "not at all confident" of coming out of it okay.

Residents in the Tertiary region who as shown before did not feel as threatened, also felt more confident that they would come out okay. Greater than three out of four (78%) felt they would be okay, while just 18% were "not at all confident" of coming out okay.

Table 5C

Were you confident that you would come out ok?

	Primary Region	Secondary Region	Tertiary Region	Statewide
Yes, very confident	36%	39%	48%	47%
Yes, somewhat confident	29	30	30	30
	65%	69%	78%	77%
No, not at all confident	33	29	18	19
No answer	2	2	4	4
(Base)	(623)	(605)	(805)	(2033)

D. Feeling confused by what was happening

A large majority of people in all regions say they were confused by what was happening at the time of the accident.

Three out of four residents in the Primary region (75%) say they were confused, 40% of whom were "very confused". Nearly as many residents in the Secondary region (72%) say that they were confused at the time of the accident, with 34% saying they were "very confused".

A relatively high degree of confusion also extended to those in the Tertiary region. Nearly two out of three residents (63%) in the Tertiary region said that they were confused by what was happening, although a smaller proportion (26%) say they were "very confused".

Table 5D

Were you confused by what was happening?

	Primary Region		Secondary Region		Tertiary Region		Statewide	
Yes, very confused	40%	75%	34%	72%	26%	63%	27%	64%
Yes, somewhat confused	35		38		37		37	
No, not at all confused	25		27		35		35	
No answer	*		1		2		1	
(Base)	(623)		(605)		(805)		(2033)	

*Less than one half of one percent

E. Feeling helpless about what was happening

The results also reveal a widespread feeling of helplessness among Pennsylvania residents relative to the events at TMI at the time of the accident.

Greater than seven in ten residents in all three regions report that they felt helpless about what was happening with more than four in ten statewide saying they felt "very helpless".

Table 5E

Did you feel helpless about what was happening?

	Primary Region		Secondary Region		Tertiary Region		Statewide	
Yes, very helpless	46%	72%	45%	74%	42%	73%	42%	73%
Yes, somewhat helpless	26		29		31		31	
No, not at all helpless	27		24		25		25	
No answer	1		2		2		2	
(Base)	(623)		(605)		(805)		(2033)	

F. Feeling satisfied that everything possible was being done

Despite the widespread feeling of helplessness, confusion, fright and anger a majority of the public in each of the regions was satisfied that everything possible was being done. Slightly greater than one in three, however, say they were "not at all satisfied" that everything possible was being done.

Table 5F

Were you satisfied that everything possible was being done?

	Primary Region	Secondary Region	Tertiary Region	Statewide
Yes, very satisfied	27%	28%	28%	28%
Yes, somewhat satisfied	31	32	30	30
	58%	60%	58%	58%
No, not at all satisfied	38	35	36	36
No answer	4	5	6	6
(Base)	(623)	(605)	(805)	(2033)

VI. Perceived danger from radiation exposure during the accident

Among those in the Primary region 14% believe they got a dangerous dose of radiation at the time. Six in ten (60%) say they did not receive a dangerous amount of radiation; another 25% aren't sure.

In the Secondary region 8% of the public feel they received dangerous amounts of radiation, 72% say they did not and 19% aren't sure.

In the Tertiary region (4%) feel they received a dangerous dose of radiation during the TMI accident.

Table 6-

Do you believe you got a dangerous dose of radiation during the TMI accident?

	Primary Region	Secondary Region	Tertiary Region	Statewide
Yes	14%	8%	4%	4%
No	60	72	78	78
Don't know	25	19	10	10
Not in area	1	1	8	8
(Base)	(623)	(605)	(805)	(2033)

VII. Perceived chances of receiving a dangerous dose of radiation from TMI sometime in the future

A substantial proportion of residents living near the plant believe they stand a chance of getting a dangerous dose of radiation from TMI sometime in the near future.

In the Primary region nearly one-half (49%) of the residents believe this is a possibility.

Forty-one percent in the Secondary area believe they do stand a chance of getting a dangerous dose of radiation from TMI in the future.

Among those in the Tertiary region about one in four (28%) think there is a chance of receiving a dangerous dosage of radiation from TMI in the future.

Table 8

Do you think you stand a chance of getting a dangerous dose of radiation from TMI sometime in the future?

	Primary Region	Secondary Region	Tertiary Region	Statewide
Yes	49%	41%	28%	29%
No	32	39	55	53
Don't know	19	20	17	18
(Base)	(623)	(605)	(805)	(2033)

VIII. Residents who left the area because of the accident

Two out of five residents (40%) in the Primary region say they left the area for more than a day specifically because of the TMI accident.

About one in six (17%) of the residents in the Secondary region and 2% in the Tertiary area say they left the area at the time.

Table 7

Did you leave this area for more than a day specifically because of the TMI accident?

	Primary Region	Secondary Region	Tertiary Region	Combined Statewide
Yes	40%	17%	2%	3%
No	59	81	89	88
Not in area	2	2	9	9
(Base)	(623)	(605)	(805)	(2033)

IX. Perceived radiation exposure from krypton gas release

Residents offer varying opinions when asked to compare the radiation levels that would be received during the impending release of the krypton gas to the amount of radiation received in a typical chest X-ray.

About one in four of those in the Primary and Secondary regions (22% and 25% respectively) felt that the krypton gas release would expose people within a mile of the plant to more radiation than a typical chest X-ray. However, a similar proportion in each region (27% and 24% respectively) believed the amount of radiation exposure would be less than a chest X-ray. Another twenty-one percent said they felt the amount would be "about the same", while the largest group (30% in both the Primary and Secondary regions) said that they didn't know.

A somewhat greater proportion of residents in the Tertiary region feel the krypton gas will expose them to more radiation than a typical X-ray. Nearly 37% of the residents in this region felt the amount of radiation exposure to those within a mile of the plant would be more than a chest X-ray. Eighteen percent feel it would be less and another 19% of the residents in the Tertiary region feel it would be "about the same" as a chest X-ray.

Among those who feel the radiation exposure would be greater than a typical chest X-ray, estimates of what that amount would be range from "slightly more" to "more than ten times more" than a chest X-ray.

Similarly among those who felt that the amount of radiation exposure from the krypton gas release would be less than a typical chest X-ray, there is no agreement as to how much less it would be with estimates ranging from "one half as much" to "less than one tenth as much". Table 9 opposite shows the wide range of estimates made on this matter.

Table 9

As you understand it, what level of radiation exposure would people within a mile of the damaged nuclear power at Three Mile Island receive when the Krypton gas that is inside the plant is released into the atmosphere -- would it be less than a chest X-ray, about the same, or more than a chest X-ray? (IF MORE OR LESS) How much (more)(less) would it be?"

	Primary Region	Secondary Region	Tertiary Region	Statewide
More than chest X-ray	22%	25%	37%	36%
Slightly more	5	5	4	4
Twice as much	3	4	8	7
Three times as much	3	4	3	3
Four times as much	2	2	2	2
Five to ten times as much	3	3	6	6
More than ten times as much	1	3	5	5
Don't know	5	4	9	8
About the same as a chest X-ray	21%	21%	19%	19%
Less than chest X-ray	27%	24%	18%	18%
One half as much	5	5	3	3
One quarter as much	4	3	2	2
One tenth as much	3	4	3	3
Less than one tenth as much	6	4	3	3
Don't know	9	8	7	7
Don't know	30%	30%	26%	27%
(Base)	(623)	(605)	(805)	(2033)

X. Satisfaction with handling of TMI clean-up so far

More people in the Primary and Secondary regions say they are dissatisfied than satisfied with the handling of the TMI clean-up so far. Forty-eight percent of those in the Primary region say they are dissatisfied with the clean-up, 30% of whom are "strongly" dissatisfied. This compares to 41% who are either "strongly" or "somewhat" satisfied with the TMI clean-up thus far.

Sentiments toward the clean-up in the Secondary region are somewhat comparable. Forty-six percent say they are dissatisfied and 41% say they are satisfied.

Residents in the Tertiary region appear to be more satisfied with the way the clean-up at TMI is proceeding. Half (50%) report being either "strongly" or "somewhat" satisfied with the clean-up, while about one in three (34%) say they are dissatisfied.

Table 10

Are you satisfied or dissatisfied with how the problems of cleaning up Three Mile Island are being handled so far?

	Primary Region		Secondary Region		Tertiary Region		Statewide	
Strongly satisfied	13	41%	13	41%	14	50%	14	49%
Somewhat satisfied	28		28		36		35	
Somewhat dissatisfied	18	48%	21	46%	16	34%	17	35%
Strongly dissatisfied	30		25		18		18	
Undecided/Don't know	11		13		16		16	
(Base)	(623)		(605)		(805)		(2033)	

XI. Who is not doing a proper job in the clean-up

Residents dissatisfied with the clean-up were asked who or what organization was not doing a proper job in the TMI clean-up. The most frequent mention made in all of the regions are the Metropolitan Edison Company and the Nuclear Regulatory Commission.

Twenty-four percent of residents in the Primary region, 23% of those in the Secondary region and 13% of those in the Tertiary region cite Met Ed as not doing a proper job. The Nuclear Regulatory Commission is mentioned by 17% in the Primary region, by 14% in the Secondary region and by 8% in the Tertiary region.

Other organizations cited frequently as not doing a proper job are the federal government, state government and government officials in general.

Table 11

(IF DISSATISFIED) Who, or what organization, do you believe is not doing a proper job?

Dissatisfied with clean-up	Primary Region (48%)	Secondary Region (46%)	Tertiary Region (34%)	Statewide (35%)
Met Ed/The Utility	24	23	13	14
Nuclear Regulatory Commission	17	14	8	9
Federal gov't	6	5	5	5
State government	4	4	2	2
Gov't officials (general)	3	5	7	7
Whoever is in charge	3	2	2	2
Everyone connected with it	2	2	1	1
Babcock & Wilcox/builders of the plant	1	1	*	*
Local officials	1	1	*	*
Anti-nuclear groups	*	1	*	*
Other mentions	4	2	1	1
(Base)	(623)	(605)	(805)	(2033)

(Adds to more than 100% due to multiple mentions)

*Less than one half of one percent

XII. Confidence that the problems of cleaning up TMI will be solved

Substantial majorities of the public in all regions are confident that the TMI clean-up problems will be solved. Sixty-three percent of those in the Primary region, 60% of residents in the Secondary region and 67% of those in the Tertiary region say that they are either "very" or "somewhat" confident that the problems of cleaning up TMI will be solved.

Table 12

How confident are you that the problems of cleaning up TMI will be solved -- very confident, somewhat confident, not too confident, or not at all confident?

	Primary Region		Secondary Region		Tertiary Region		Statewide	
Very confident	23	63%	21	60%	23	67%	23	67%
Somewhat confident	40		39		44		44	
Not too confident	19	34%	23	35%	19	30%	19	30%
Not at all confident	15		12		11		11	
No opinion	3		5		3		13	
(Base)	(623)		(605)		(805)		(2033)	

XIII. Awareness of water inside the damaged reactor at TMI

There is high awareness that there is water inside the damaged reactor at TMI among residents of the Primary and Secondary regions. In each region nearly three out of four (74%) say they have heard or read something about the water in the TMI reactor.

Awareness is not as high in the Tertiary region but a majority of people (56%) say they know about it.

A. Hazardousness of the water

Those persons aware of the water in the TMI reactor were asked a series of questions having to do with the hazardousness of the water, the importance they attached to removing the water, and the confidence they had that the water would be removed safely.

Large proportions of residents in each region believe that the water is the reactor is hazardous. Less than 5% in any region feel it is not hazardous.

Table 13A

Have you heard or read anything about the water that is inside the damaged reactor at TMI? (IF AWARE OF THE WATER) As you understand it, is this water hazardous or not?

	Primary Region	Secondary Region	Tertiary Region	Statewide
Heard about water in TMI reactor	74%	74%	56%	58%
Believe water is hazardous	64	63	48	49
Believe water not hazardous	4	4	3	4
Don't know	6	7	5	5
Have not heard about water in TMI reactor	26%	26%	44%	42%
(Base)	(623)	(605)	(805)	(2033)

B. Importance of removing the water

Large proportions of residents in each region feel it is important that the water be removed from the damaged reactor as soon as possible. Majorities of 56% in the Primary region and 52% in the Secondary region feel it is either "extremely" or "somewhat" important that the water be removed. In the Tertiary region, where awareness about the water in the reactor is somewhat less, 39% say it is important that the water be removed as soon as possible.

Fewer than one in ten residents in any region describe the removal of the water in the reactor as not important.

Table 13B

(IF AWARE OF WATER IN THE REACTOR) How important do you feel it is that the water be removed as soon as possible?

	Primary Region	Secondary Region	Tertiary Region	Statewide
Heard about water in TMI reactor	74%	74%	56%	58%
Extremely important to remove water	40	32	25	26
Somewhat important to remove water	16	20	14	14
Not too important to remove water	4	6	6	6
Not at all important to remove water	3	4	2	3
Don't know	11	12	9	9
Have not heard about water in TMI reactor	26%	26%	44%	42%
(Base)	(623)	(605)	(805)	(2033)

C. Confidence that the water will be removed safely

Large proportions of those aware of the water in the reactor also feel confident that it will be removed safely. However, minorities of between 20% and 30% in each region say they are not confident that the water will safely be removed.

Table 13C

(IF AWARE OF WATER IN THE REACTOR) How confident are you that the water will be removed safely?

	Primary Region	Secondary Region	Tertiary Region	Statewide
Heard about water in TMI reactor	74%	74%	56%	58%
Extremely confident it will be removed safely	13	13	11	11
Somewhat confident it will be removed safely	28	32	21	22
Not too confident it will be removed safely	16	16	14	14
Not at all confident it will be removed safely	12	9	6	6
Don't know	5	4	4	5
Have not heard about water in the TMI reactor	26%	26%	44%	42%
(Base)	(623)	(605)	(805)	(2033)

XIV. Awareness of procedural and other changes at the TMI plant

Respondents in the survey were asked if they had heard of various changes in procedure and operations at TMI since the accident. The four changes posed to respondents included: equipment changes to improve safety; improved training of operators; improved public notification procedures during emergencies; and the reorganization of the company's management set-up at the plant.

Relatively large proportions of the public in the Primary and Secondary regions are aware of two plant changes. These are the improved public notification procedures to be used during an emergency and the improved training programs for operators at the plant. Recognized by less than one in three of those living near the plant are the reorganization of the company's management set-up at TMI and the equipment changes to improve the level of safety.

Among persons in the Tertiary region none of the changes in procedure and operations at the TMI plant are known to more than one-third of the public.

Table 14

Aware of procedural and other changes at the TMI plant

Level of awareness	Primary Region	Secondary Region	Tertiary Region	Statewide
Improved public notification procedures to be used during an emergency	58%	54%	31%	33%
Improved training program for the operators	50	43	32	33
Reorganization of the company's set-up to improve management	33	25	22	23
Equipment changes that have or are being made to improve the level of safety	27	25	27	27
(Base)	(623)	(605)	(805)	(2033)

The proportion of residents not aware of the changes listed above equals the difference between the awareness percentage cited and 100%.

XV. Attitudes toward starting up Unit #1 while repairing Unit #2

Residents in all of the regions are sharply divided on allowing Unit #1 to be re-started while clean-up operations are underway at Unit #2.

Opinion in the Primary region divides 49% to 46% in favor of re-starting Unit #1. However, of those who disapprove most say they disapprove "strongly".

Narrow majorities of the public in the Secondary and Tertiary regions approve of re-starting Unit #1 while cleaning up Unit #2. However, as is the case in the Primary region, among those who disapprove, significant proportions of Secondary and Tertiary residents say they disapprove "strongly".

Table 15

Assuming that it would be operated under improved safety standards, would you approve or disapprove of allowing Unit #1 to be started up again while they continue to clean-up Unit #2?

	Primary Region		Secondary Region		Tertiary Region		Combined Statewide	
Approve strongly	28	49%	30	53%	26	51%	26	51%
Approve somewhat	21		23		25		25	
Disapprove somewhat	8	46%	7	41%	11	41%	10	41%
Disapprove strongly	38		34		30		31	
No opinion	5		6		8		8	
(Base)	(623)		(605)		(805)		(2033)	

XVI. Attitudes toward re-starting Unit #2 after it is repaired

A similar sharp division exists in the Primary region in respect to the eventual re-starting of Unit #2 if it could be repaired and rebuilt to improved safety standards. About half (51%) of those in the Primary region say they approve of re-starting Unit #2 if such repairs could be made, but 43% disapprove, with 36% saying they disapprove "strongly".

Residents in the Secondary and Tertiary regions appear to be more favorable to the idea of re-starting Unit #2 if it could be repaired and rebuilt to improved safety standards. Fifty-nine percent in the Secondary region approve of resuming operations at Unit #2, and nearly two out of three (64%) in the Tertiary region approve of re-starting Unit #2.

Table 16

Assuming that the damaged Unit #2 at Three Mile Island could be repaired and rebuilt to improved safety standards, would you approve or disapprove of allowing it to be started up again?

	Primary Region		Secondary Region		Tertiary Region		Combined Statewide	
Approve strongly	27	51%	31	59%	30	64%	30	63%
Approve somewhat	24		28		34		33	
Disapprove somewhat	7	43%	5	36%	6	29%	6	30%
Disapprove strongly	36		31		23		24	
No opinion	6		5		7		7	
(Base)	(623)		(605)		(805)		(2033)	

XVII. Reactions to pro-nuclear arguments in the Primary region

Eleven statements about nuclear power were read to respondents in each region and respondents were asked whether they agreed or disagreed with each one. Reactions to the pro-nuclear arguments in the Primary region are listed in Table 17 opposite according to their rank order of agreement.

There is substantial agreement with five of the six pro-nuclear positions in the Primary region. Nearly eight in ten (79%) agree either "strongly" or "somewhat" that "residents living in the vicinity of nuclear power plants will be much safer in the future as a result of the lessons learned at TMI." About three out of four (74%) agree that if repairs aren't made soon at TMI, further equipment failures could cause new dangers.

Sixty-two percent of residents in the Primary region agree that the media coverage of the accident at TMI was not fair and "blew things out of proportion." Overall, a similar proportion agree that "we will have to rely on nuclear power as an important energy source for many years to come." Also the statement that "people who oppose the clean-up operations at TMI are simply in a panic and do not have a realistic view of what needs to be done" is supported on the order of about five to three (56% to 38%).

The one pro-nuclear position to which residents in the Primary region are sharply divided has to do with the idea that the events at TMI prove that "the science and technology of nuclear power was adequate to cope with the problems that arose before anyone was hurt." Forty-nine agree with this position, but 46% disagree.

Table 17

Pro-Nuclear Power Arguments

Primary Region

	Agree Strongly	Agree Somewhat	Disagree Somewhat	Disagree Strongly	NO Opinion
Residents living in the vicinity of nuclear power plants will be much safer in the future as a result of the lessons learned at TMI	79	48%	19	8	11	2
If repairs are not made as soon as possible to the damaged reactor there could be further equipment failures which could cause new dangers	74	48%	14	8	6	12
Newspapers and television reporters were not fair in their coverage of the accident at TMI and have blown things out of proportion	62	41%	34	16	18	4
We will have to rely on nuclear power as an important energy source for many years to come	62	36%	35	13	22	3
People who oppose the clean-up operations at TMI are simply in a panic and do not have a realistic view of what needs to be done	56	30%	38	19	19	6
The Three Mile Island events showed that even in a major accident the science and technology of nuclear power was adequate to cope with the problems that arose before anyone was hurt	49	17%	46	17	29	5

XVIII. Reaction to pro-nuclear arguments in the Secondary region

The responses of residents in the Secondary region to the six pro-nuclear statements are similar to the results obtained in the Primary region. Five of the six statements are supported by substantial proportions of the public.

As in the Primary region, more than seven in ten agree that "residents living in the vicinity of nuclear power plants will be safer in the future as a result of the lessons learned at TMI" and that "if repairs are not made soon to the damaged reactor further equipment failures could cause new dangers".

The belief that nuclear power will be an important energy source for many years to come is affirmed by 66% in the Secondary region. Also, overall 56% agree that media accounts of the TMI accident "were not fair and blew things out of proportion," and that "people opposed to the clean-up operations at TMI do not have a realistic view of what needs to be done."

One pro-nuclear position also sharply divides residents in the Secondary region. Forty-eight percent agree that "the TMI events showed that even in a major accident the science and technology of nuclear power was adequate to cope with the problems that arose before anyone was hurt," but 47% disagree.

Table 18

Pro-Nuclear Power Arguments

Secondary Region

	Agree Strongly	Agree Somewhat	Disagree Somewhat	Disagree Strongly	No Opinion
Residents living in the vicinity of nuclear power plants will be much safer in the future as a result of the lessons learned at TMI	46%	30 (76)	10	11 (21)	3
If repairs are not made as soon as possible to the damaged reactor there could be further equipment failures which could cause new dangers	46%	25 (71)	10	3 (13)	6
We will have to rely on nuclear power as an important energy source for many years to come.	39%	27 (66)	11	19 (30)	4
Newspapers and television reporters were not fair in their coverage of the accident at TMI and have blown things out of proportion	33%	23 (56)	17	21 (38)	6
People who oppose the clean-up operations at TMI are simply in a panic and do not have realistic view of what needs to be done.	28%	28 (56)	17	19 (36)	8
The Three Mile Island events showed that even in a major accident the science and technology of nuclear power was adequate to cope with the problems that arose before anyone was hurt.	16%	32 (48)	20	27 (47)	5

XIX. Reaction to pro-nuclear arguments in the Tertiary region

The rank ordering of the responses of those in the Tertiary region is essentially the same as in the other regions, although in this region all six pro-nuclear statements receive majority support.

Table 19

Pro-Nuclear Power Arguments

Tertiary Region

	Agree Strongly	Agree Somewhat	Disagree Somewhat	Disagree Strongly	No Opinion
Residents living in the vicinity of nuclear power plants will be much safer in the future as a result of the lessons learned at TMI	42%	34 (76)	9	11 (20)	4
We will have to rely on nuclear power as an important energy source for many years to come.	42%	27 (69)	10	18 (28)	8
If repairs are not made as soon as possible to the damaged reactor there could be further equipment failures which could cause new dangers	38%	28 (66)	11	6 (17)	17
Newspapers and television reporters were not fair in their coverage of the accident at TMI and have blown things out of proportion.	27%	24 (51)	19	20 (39)	10
People who oppose the clean-up operations at TMI are simply in a panic and do not have a realistic view of what needs to be done	27%	30 (57)	17	18 (35)	8
The Three Mile Island events showed that even in a major accident the science and technology of nuclear power was adequate to cope with the problems that arose before anyone was hurt.	19%	34 (53)	18	21 (39)	8

XX. Reaction to anti-nuclear arguments in the Primary region

Five anti-nuclear statements were administered to respondents in the survey. Two are supported by large majorities of the residents in the Primary region. By a 59% to 29% margin residents agree that "not nearly enough is being done to deal with serious emotional and psychological problems that TMI has caused among the people of the area." Similarly by a 54% to 28% margin residents of the Primary region agree that "a nuclear power plant can fail and the nuclear materials can come together to cause a massive nuclear explosion."

Opinion in the Primary region is divided on two anti-nuclear positions. A slight majority (52%) disagrees that "all nuclear power plants in the country should be closed down until the federal government knows more about the safety risks involved in them." However, 44% agree with this position.

A plurality (44%) disagree with the assertion that the release of radioactivity from TMI has caused some miscarriages and birth defects. However, 28% say they agree and another 28% are not sure or do not have an opinion on this argument.

There is strong disagreement that "all nuclear power plants should be shut down permanently and no more should be allowed to be built." Two out of three residents in the Primary region (66%) disagree with this position, 40% of whom disagree "strongly."

Table 20

Anti-Nuclear Power Arguments

Primary Region

	Agree Strongly	Agree Somewhat	Disagree Somewhat	Disagree Strongly	No Opinion
Not nearly enough is being done to deal with serious emotional and psychological problems that TMI has caused among the people of the area	37%	22 (59)	16	13 (29)	12
A nuclear power plant can fail and the nuclear materials can come together to cause a massive nuclear explosion	34%	20 (54)	10	18 (28)	18
All nuclear power plants in the country should be closed down until the federal government knows more about the safety risks involved in them	30%	14 (44)	25	27 (52)	4
The release of radioactivity from TMI since the accident has caused some miscarriages and birth defects	11%	17 (28)	17	27 (44)	28
All nuclear power plants should be shut down permanently and no more should be allowed to be built	20%	8 (28)	26	40 (66)	6

XXI. Reaction to anti-nuclear arguments in the Secondary region

Reaction to the five anti-nuclear positions in the Secondary region does not vary much from the Primary region.

Two of the arguments are accepted by a majority of the residents. These are that "not enough is being done to deal with the serious emotional and psychological problems caused by TMI" (59% agreement) and the belief that "a nuclear power plant can fail and can cause a massive nuclear explosion" (53% agreement).

Slight pluralities of the public in the Secondary region disagree that all nuclear plants should be shut down until more is known about their safety risks, and that "the release of radioactivity from TMI since the accident has caused miscarriages and birth defects," although significant minorities agree with these statements.

By a three to one margin residents in the Tertiary region disagree that "all nuclear power plants should be shut down permanently and no more should be allowed to be built." Nearly half (45%) disagree "strongly".

Table 21

Anti-Nuclear Power Arguments

Secondary Region

	Agree Strongly	Agree Somewhat	Disagree Somewhat	Disagree Strongly	No Opinion
Not nearly enough is being done to deal with serious emotional and psychological problems that TMI has caused among the people of the area	59		29		
	35%	24	17	12	12
A nuclear power plant can fail and the nuclear materials can come together to cause a massive nuclear explosion	53		28		
	31%	22	13	15	19
All nuclear power plants in the country should be closed down until the federal government knows more about the safety risks involved in them	39		58		
	26%	13	27	31	3
The release of radioactivity from TMI since the accident has caused some miscarriages and birth defects	32		45		
	15%	17	22	23	23
All nuclear power plants should be shut down permanently and no more should be allowed to be built	24		72		
	15%	9	27	45	4

XXII. Reaction to anti-nuclear arguments in the Tertiary region

Public opinion to the five anti-nuclear arguments among residents in the Tertiary region is comparable to the attitudes of those in the other regions.

Several of the arguments, however, appear to have somewhat more currency in the Tertiary region. These include the arguments that "not enough is being done to deal with serious emotional and psychological problems caused by TMI," which receives 64% agreement in the Tertiary region; and the belief that "the release of radioactivity from TMI has caused some miscarriages and birth defects" which receives 43% agreement among Tertiary region residents.

The statement "All nuclear power plants should be shut down permanently and no more should be allowed to be built" is firmly rejected by residents in the Tertiary region. Seventy-four disagree with this position, 49% of whom say they disagree "strongly".

Table 22

Anti-Nuclear Power Arguments

Tertiary Region

	Agree Strongly	Agree Somewhat	Disagree Somewhat	Disagree Strongly	No Opinion
Not nearly enough is being done to deal with serious emotional and psychological problems that TMI has caused among the people of the area	40%	24	11	7	18
A nuclear power plant can fail and the nuclear materials can come together to cause a massive nuclear explosion	27%	25	10	14	24
All nuclear power plants in the country should be closed down until the federal government knows more about the safety risks involved in them.	28%	14	23	30	4
The release of radioactivity from TMI since the accident has caused some miscarriages and birth defects.	22%	21	15	12	30
All nuclear power plants should be shut down permanently and no more should be allowed to be built	15%	5	25	49	6

XXIII. Reliability of information sources on nuclear power in the Primary region

Ten sources of information about nuclear power were tested for their degree of credibility and reliability. The responses of residents in the Primary region to these ten groups are rank ordered in Table 23.

Scientists from both the nuclear power industry and from universities and independent laboratories are rated as the most reliable sources of information on nuclear power. Greater than eight in ten of those in the Primary region feel that information from such scientists is either "somewhat" or "very" reliable.

Next most credible as a source of information on nuclear power are environmental protection organizations and the Nuclear Regulatory Commission. Both are seen as reliable by greater than seven in ten residents of the Primary region, while less than one in four describe them as "not too reliable".

More people in the Primary region describe statements made by the Metropolitan Edison Company officials and anti-nuclear groups as being unreliable than as being reliable on matters having to do with nuclear power. Fifty-one percent feel Met Ed officials are "not too reliable" compared to 44% who describe them as being "somewhat" or "very" reliable. Anti-nuclear groups are rated not reliable by 47%, whereas 46% feel they are a reliable source of information.

Statements made by officials of the Babcock and Wilcox Company and daily newspaper editorials are also viewed cautiously by residents in the Primary region. While 50% rate Babcock and Wilcox officials as reliable, 43% feel they are "not too reliable". Similarly, 56% say that editorials in their daily newspapers are reliable, while nearly four in ten (39%) do not.

Residents rank the statements of state and local officials and those made in television news editorials in the middle range of reliability relative to the other eight information sources.

Table 23

Reliability of various sources

Primary Region

	Not too Reliable	Somewhat Reliable	Very Reliable	No Opinion
Metropolitan Edison Company officials	51%	36	8	5
Anti-nuclear groups	47%	38	8	7
Babcock and Wilcox officials	43%	39	11	7
Daily newspaper editorials	39%	51	5	5
State and local agencies and officials	35%	49	11	5
T.V. news editorials	30%	57	10	3
The Federal Nuclear Regulatory Commission	21%	43	31	5
Environmental protection organizations	16%	51	27	6
Scientists from the nuclear power industry	12%	39	44	5
Scientists from universities and independent laboratories	8%	47	39	6

XXIV. Reliability of information sources on nuclear power in the Secondary region

The views of those in the Secondary region as to the reliability of information sources on nuclear power are quite similar to Primary region residents.

Scientists from both the nuclear power industry and from universities and independent laboratories are most reliable. Next are statements made by environmental organizations and the Nuclear Regulatory Commission.

Statements made by Met Ed officials and by anti-nuclear groups are the least reliable, with editorials in daily newspapers and Babcock and Wilcox officials next in order of least reliability.

Table 24

Reliability of various sources

Secondary Region

	Not too Reliable	Somewhat Reliable	Very Reliable	No Opinion
Metropolitan Edison Company officials	50%	38	6	6
Anti-nuclear	45%	42	6	7
Daily newspaper editorials	40%	51	4	5
Babcock and Wilcox officials	39%	42	12	7
State and local agencies and officials	32%	54	9	5
T.V. news editorials	28%	57	9	6
The Federal Nuclear Regulatory Commission	16%	47	32	5
Environmental protection organizations	13%	56	23	8
Scientists from the nuclear power industry	11%	37	47	5
Scientists from universities and independent laboratories	6%	44	44	6

XXV. Reliability of information sources on nuclear power in the Tertiary region

The view of residents in the Tertiary region to each of the ten information sources are comparable to the other regions.

Scientists from both the nuclear power industry and from universities and independnt laboratories are rated as the most reliable, followed by environmental protection organizations and the Nuclear Regulatory Commission.

In contrast to the other regions, however, public opinion of the Metropolitan Edison Company officials on nuclear power is not as negative. In the Tertiary region 53% rate statements made by Met Ed officials on nuclear power as being either somewhat or very reliable, compared to 36% who describe Met Ed as "not too reliable". Assessments of the Babcox and Wilcox officials is also somewhat less negative in the Tertiary region, as 58% rate them to be reliable and 33% feel they are "not too reliable".

Least reliable as information sources about nuclear power in the Tertiary region are anti-nuclear groups, daily newspaper editorials and state and local officials.

Table 25

Reliability of various sources

Tertiary Region

	Not too Reliable	Somewhat Reliable	Very Reliable	No Opinion
Anti-nuclear groups	48%	39	6	7
Daily newspaper editorials	39%	47	9	5
State and local agencies and officials	37%	48	9	6
Metropolitan Edison Company officials	36%	41	12	11
Babcock and Wilcox officials	33%	40	18	9
T.V. news editorials	31%	52	12	5
The Federal Nuclear Regulatory Commission	15%	47	31	8
Environmental protection organizations	12%	49	31	7
Scientists from the nuclear power industry	8%	35	51	5
Scientists from universities and independent laboratories	6%	39	49	6

XXVI. Public involvement in community activities associated with TMI

Residents in each of the regions were asked if they have been involved in any public or community activities in connection with the accident at Three Mile Island. Those residents who stated some involvement were asked to specify the particular activities they had attended.

About one in ten of the residents in the Primary and Secondary regions mention they were involved in an activity having to do with the TMI accident.

Among the things cited are the following: "attended nuclear protests, marches" (3%) "talked with others at group gatherings" (2%); "attended meetings for planning evacuation" (2%); and signed anti-nuclear/anti-TMI petition" (1%).

Just 2% of residents in the Tertiary region mention any involvement in activities having to do with the TMI accident.

Table 26

Have you been involved in any public or community activities in connection with TMI?

	Primary Region	Secondary Region	Tertiary Region	Statewide
Involved	10%	9%	2%	2%
Attended nuclear protests, marches	3	3	1	1
Talked with others at group gatherings	2	2	*	*
Attended meetings for planning evacuation	2	2	*	*
Signed anti-nuclear/ anti-TMI petition	1	1	*	*
Attended NRC local meeting	1	*	*	*
Attended utility company meeting	*	1	*	*
Other mentions	3	1	1	1
Not involved	90%	91%	98%	98%
(Base)	(623)	(605)	(805)	(2033)

(Adds to more than sub-total due to multiple mentions)

*Less than one half of one percent.

THE SURVEY METHOD

Interviewing Dates

This survey was conducted by means of telephone interviews conducted between June 18 and June 30, 1980. Interviewing was done from FRC's central location telephone interview facilities in San Francisco and Los Angeles. Interviewers were supervised and monitored throughout the data gathering period by FRC's full-time staff supervisors.

Sample Universe

The population universe for this survey is civilian men and women 18 years and older living in Pennsylvania households which have private telephones. Not included in this definition are persons residing in hotels or transient quarters, persons with no clearly defined place of residence, migrants, drifters, inmates of institutions, or military personnel residing in government quarters.

Sample Design

One objective of the study was to compare public opinion among residents living very close to the TMI plant with those in the surrounding area as well as with those living in the distant, more populous parts of Pennsylvania. The sample was divided into the following three areas.

Primary Region: the area within a radius of five miles from the Three Mile Island nuclear power plant, which includes parts of Dauphin, Lancaster, and York Counties.

Secondary Region: the area within a radius of about five to twenty-five miles from the Three Mile Island nuclear power plant which includes large portions of Dauphin, Lebanon, York, Perry, Lancaster and Cumberland Counties.

Tertiary Region: the larger area of Pennsylvania not included in either the Primary or Secondary Regions. The Tertiary Region was sub-divided into Eastern and Western Pennsylvania. The East-West dividing line was roughly the county lines separating Potter, Clinton, Mifflin, Huntingdon and Fulton Counties from Tioga, Lycoming, Union, Snyder, Juniata, and Franklin Counties.

In order to produce adequate statistical bases for each of the regions sampling was done on a disproportionate basis, that is, the number of interviews allocated to each region was not proportionate to the statewide population of adults. When the three regions were combined to produce the "Statewide" base, appropriate statistical weighting was used to restore each area to its proper population proportion. A more detailed discussion of the weighting procedure used is outlined in the "Sample Weighting" section of this appendix.

Sample Selection

Telephone numbers called were generated by a computer randomization process. First, all telephone exchanges within each region were specified. Then samples of random four-digit

numbers were generated within each exchange. Each such random telephone number in the sample was then called. Those numbers which were found to be "not in service" or which were business numbers were discarded. The remaining sample of numbers represent a proportionate representation of all residential telephone households, including unlisted telephone numbers and those recently installed to be included in current directories.

Interviews were attempted at residential numbers during afternoon and early evening hours (3 p.m. - 9 p.m.) on weekdays and on weekends between the hours of 10 a.m. and 3 p.m. These times were chosen to insure the greatest chance of contacting the widest spectrum of individuals male and female, working and non-working, old and young. Nevertheless, even during these hours a bias exists as to the characteristics of individuals likely to be at home. It has traditionally been the case that when interviewing a random number of households a somewhat greater chance exists that the person at home answering will be a woman, generally a younger woman. Least likely to be at home are males, younger males in particular.

To compensate for this, a systematic procedure was employed by each interviewer for the selection of a respondent within each household. The procedure directs the interviewer to ask to speak with the youngest adult male in the household.

If no males are available, the interviwer then asks to speak with the oldest female in the household. In doing so, the most difficult group of respondents to reach, i.e. young males, are given overall a somewhat greater chance of being included to compensate for the fact that they are the least likely to be at home. Because the procedure is used in a strict, systematic manner, the interviewer exerts no personal discretion in the selection of who in a particular household will be interviewed.

Interviewing Results

In the process of obtaining the designated number of completed interviews in each region (600 in the Primary Region, 600 in the Secondary Region and 800 in the Tertiary Region), a total of 11,758 numbers were called. Of these 5423 (46%) proved to be invalid numbers (not in use, business or non-working numbers) and the remaining 5021 (44%) were deemed as "usable numbers". Of the usable numbers, 2033 interviews were completed, an overall completion rate of 41%. The disposition of all attempts overall and within each of the regions is shown on the following page.

RESULTS OF INTERVIEW ATTEMPTS

	TOTAL		Primary Region		Secondary Region		Tertiary Region: Western Pennsylvania		Tertiary Region: Eastern Pennsylvania	
Total numbers dialed	11,758		2579		3483		3065		2631	
Not usable										
Not assigned, disc.	5423	46%	795	31%	1610	46%	1715	56%	1303	50%
Business	980	8	167	6	320	9	217	7	276	10
Busy all attempts*	334	3	40	2	70	2	147	5	77	3
Usable numbers	5021	43%	1577	61%	1483	43%	986	32%	975	37%
		(100%)		(100%)		(100%)		(100%)		(100%)
No answer all attempts	1024	20%	358	23%	290	19%	198	20%	178	18%
Busy last attempt(s)	154	3	67	4	48	3	17	2	22	2
Adult not available	179	4	78	5	58	4	20	2	23	2
Comm. barrier	57	1	18	1	14	1	11	1	14	2
Refused/terminate	1574	31	433	27	468	32	331	34	342	35
Completed interviews	2033	41%	623	40%	605	41%	409	41%	396	41%

* Assumed to be non-working numbers.

Data Processing

Finished interviews were edited for completeness and open-end questions were coded by FRC's staff of professional coders. Questionnaire information was then keypunched to data cards for computer processing. The data deck was checked with a special card cleaning program to uncover incomplete, incorrect,

or inconsistent data before processing. Discrepant cards were checked against the original questionnaire data and when necessary were corrected.

Sample Weighting

When the questionnaire data were entered into the computer, the data set were subjected to a statistical weighting procedure.

Statistical weighting was performed to bring the sample within each region into conformity with census-established population parameters with respect to age within sex.

Variations in interview completions and respondent availability can make the survey sample different than designated population distributions. Population weighting attends to these discrepancies. Estimates of population distributions for age within sex for each of the three target regions were obtained using the most recent population data.

Weighting for the Primary and Secondary regions included four categories of weights each 2 (sex) by 2 (age). Weighting for the Tertiary region included sixteen categories of weights 2 (sex) by 2 (age) by 4 (area). The additional refinements in

the Tertiary region are predicated on the size of the area covered. In effect the weighting plan in the Tertiary region sub-divides the region into four areas: Southwestern Pennsylvania including Pittsburgh, other Western Pennsylvania, Southeastern Pennsylvania including Philadelphia, and other Eastern Pennsylvania (excluding the Primary and Secondary Regions).

In order to have the results of each region's interviews more closely reflect its proper proportion of the statewide population, the weights for age and sex within each region were assigned in proportion to the state population as a whole. The result produced twenty-four categories of weights for the statewide region: 2 (sex) by 2 (age) by 6 (area). (The six area categories included the Primary region, the Secondary region, and the four sub-divisions of the Tertiary region.)

The sample proportions for each of the weighting categories is then calculated. The proportion within each category is transformed by a weight to bring it to conformity with the established population figures for that category. The following is the representation of this stage of weighting:

$$W = \frac{P_{jk}}{p_{jk}}$$

where P_{jk} is the population proportion for the jth sex and the kth age group, and p_{jk} is the sample proportion of interviews found in that category.

Estimate of Sampling Error

In any survey based on a sample, some variance or "sampling error" is introduced in the data by the sampling process. If the sample has been drawn by a random process, the range of potential sampling error can be estimated to show the degree of precision which figures from the survey has as representations of, or projections to, the population from which the sample was drawn. The question that this procedure answers is:

> If the survey finds that x% of the people interviewed hold a given opinion, what is the tolerance range of the figure as an estimate of the percentage of the total adult population holding that opinion using similar methods.

Table A below shows how much sampling tolerance should be applied to any particular statistic of interest in order to have 95% confidence that it brackets the "true value" (i.e., the value which would have been obtained had the survey attempted to interview the whole population of interest. For example, suppose 30% of the respondents in the Primary region (sample size = 623) answered "yes" to a particular question. From Table A a statistic such as this has a plus/minus tolerance of about 3.7 percentage points. This means that the "true value" would have a 95% chance of being found between 26.3% and 33.7%. The same procedure can be used to estimate the sampling tolerance of any other data from the survey.

Table A

Sampling Tolerance (plus and minus range)
for Data at the 95% Confidence Level

Sample base	Percentage division of replies 50-50	70-30	90-10
100	9.8	9.0	5.9
300	5.7	5.2	3.4
600	4.0	3.7	2.4
1000	3.1	2.8	1.9
2000	2.2	2.0	1.3

Other Accuracy Considerations

Sampling error is not the only criterion in judging the validity and reliability of a survey's results and for that reason we caution against citing only the sampling error alone as a measure of this survey's accuracy. In addition to sampling error, there are other important sources of possible inaccuracies in the survey findings which are inherent in any survey. These relate to the phrasing of the questions, question sequence, and other aspects of the survey method.

The FRC research executives who had responsibility for the conduct of this survey took considerable care and time in formulating and testing the questionnaire to produce in its judgment an instrument which was objective in its posing of the issues. Careful scrutiny was also employed in supervising the data gathering and data processing phases as well as the other research operations. If there were some inadvertent errors committed in those areas there is no standard measure of these effects.

Field Research Corporation
234 Front Street
San Francisco, CA 94111

465-007
061780
FINAL

Time started: _____
Region Number: _____ 16-

PENNSYLVANIA OPINION SURVEY

1a. First of all, how long have you lived in Pennsylvania (RECORD UNDER 1a)
1b. How long have you lived in this County? (RECORD UNDER 1b)

	(Q.1a) Pennsylvania 17-	(Q.1b) This County 18-
1 YEAR OR LESS	1	1
OVER ONE YEAR - FIVE YEARS	2	2
OVER FIVE YEARS - TEN YEARS	3	3
OVER TEN YEARS - TWENTY YEARS	4	4
OVER TWENTY YEARS	5	5

2. First, what do you personally feel are some of the most serious problems facing people in your County today? (PROBE) What are some of the other issues facing people in your area that you are concerned about?

*19,20
*21,22
*23,24

3a. Do you think there will be enough electric power available for household needs in this area of Pennsylvania in the next few years, or is there likely to be a shortage of power? 25-

ENOUGH AVAILABLE 1
LIKELY TO BE A SHORTAGE. . . 2 (ASK Q.3b)
NO OPINION 0

(IF "LIKELY TO BE A SHORTAGE", ASK):

3b. As you understand it, what will cause this shortage of electric power? (PROBE FOR SPECIFICS)

*26
*27

4a. In the past year have the rates that your electric power utility charges for electricity increased, decreased, or remained about the same? 28-

INCREASED 1
DECREASED . . . . . 2 (ASK Q.4b)
REMAINED THE SAME 3
DON'T KNOW. 0

(IF "INCREASED" OR "DECREASED", ASK):

4b. What do you think the reasons were that caused electric power rates (to go up) (to come down)?

*29
*30
*31

5. Now, I'd like you to think back to the time a little more than a year ago when the accident occurred in the nuclear power plant at Three Mile Island. As you recall that time, what were your main feelings and reactions as word about the accident at Three Mile Island was coming out? (PROBE: What else did you feel at that time?)

32 -
33 -
34 -
35 -

6. People reacted in many different ways to Three Mile Island, or as it has become known, TMI. As I describe some different reactions, I'd like you to tell me whether any of these fit your own feelings at the time of the accident. Here's the first one. (BEGIN WITH ITEM CHECKED) (IF RESPONDENT ANSWERS "YES" ASK): Were you very, or somewhat _____? (CONTINUE UNTIL ALL ITEMS ARE READ)

			Yes Very	Yes Somewhat	No Not At All	No Answer	
[ ]	a.	Were you FRIGHTENED for your safety?	1	2	3	4	36 -
[ ]	b.	Were you ANGRY at the officials or other people?	1	2	3	4	37 -
[ ]	c.	Were you CONFIDENT that you would come out OK?	1	2	3	4	38 -
[ ]	d.	Were you CONFUSED by what was happening?	1	2	3	4	39 -
[ ]	e.	Did you feel HELPLESS about what was happening?	1	2	3	4	40 -
[ ]	f.	Were you SATISFIED that everything possible was being done?	1	2	3	4	41 -

7. Do you believe you got a dangerous dose of radiation during the TMI accident?

92 -
YES 1
NO. 2
DON'T KNOW. 3
NOT IN THE AREA . . 4

8. Do you think you stand a chance of getting a dangerous dose of radiation from TMI sometime in the future?

43 -
YES 1
NO. 2
DON'T KNOW. 3
NOT IN THE AREA . . 4

9. Did you leave this area for more than a day specifically because of the TMI accident?

44 -
YES 1
NO. 2
DON'T KNOW. 3
NOT IN THE AREA . . 4

10a. Are you satisfied or dissatisfied with how the problems of cleaning up Three Mile Island are being handled so far? Would you say you are strongly (satisfied) (dissatisfied) or just somewhat (satisfied) (dissatisfied)?

45 -
STRONGLY SATISFIED . . . 1
SOMEWHAT SATISFIED . . . 2
SOMEWHAT DISSATISFIED. . 3
STRONGLY DISSATISFIED. . 4 } (ASK Q.10b)
UNDECIDED/DON'T KNOW . . 5

(IF DISSATISFIED, ASK):

10b. Who, or what organization, do you believe is not doing a proper job?

46 -
47 -

11. How confident are you that the problems of cleaning up TMI will be solved -- very confident, somewhat confident, not too confident, or not at all confident?

48-

VERY CONFIDENT	1
SOMEWHAT CONFIDENT	2
NOT TOO CONFIDENT	3
NOT AT ALL CONFIDENT	4
NO OPINION	5

12a. You may have heard that the Nuclear Regulatory Commission has authorized the gradual release of the accumulated Krypton gas at TMI. As you know, almost everyone gets exposed to some radiation from such things as medical X-rays or natural background sources. As you understand it, what level of radiation exposure would people within a mile of the damaged nuclear plant at Three Mile Island receive when the Krypton gas that is inside the plant is released into the atmosphere -- would it be less than a chest X-ray, about the same, or more than a chest X-ray?

49-

MORE THAN ONE CHEST X-RAY	1	(GO TO Q.12b)
ABOUT SAME	2	(GO TO Q.13a)
LESS THAN ONE CHEST X-RAY	3	(GO TO Q.12c)
DON'T KNOW	4	(GO TO Q.13a)

(IF "MORE"):

50-

12b. How much more would it be, as you understand it? (READ CATEGORIES IF NECESSARY)

SLIGHTLY MORE	1
TWICE AS MUCH	2
THREE TIMES AS MUCH	3
FOUR TIMES AS MUCH	4
FIVE TO TEN TIMES AS MUCH	5
11 TO 20 TIMES AS MUCH	6
MORE THAN 20 TIMES AS MUCH	7
DON'T KNOW	8

(IF "LESS"):

51-

12c. How much less would it be, as you understand it? (READ CATEGORIES IF NECESSARY)

ONE HALF AS MUCH	1
ONE QUARTER AS MUCH	2
ONE TENTH AS MUCH	3
LESS THAN ONE TENTH AS MUCH	4
DON'T KNOW	5

52-

13a. Have you heard or read anything about the water that is inside the damaged reactor at TMI?

YES	1	(GO TO Q.13b)
NO	2	(SKIP TO Q.14a)
DON'T KNOW	3	(SKIP TO Q.14a)

(IF YES):

53-

13b. As you understand it, is this water hazardous or not?

YES, HAZARDOUS	1
NO, NOT HAZARDOUS	2
DON'T KNOW	3

54-

13c. How important do you feel it is that the water be removed as soon as possible-- extremely important, somewhat important, not too important or not at all important?

EXTREMELY IMPORTANT	1
SOMEWHAT IMPORTANT	2
NOT TOO IMPORTANT	3
NOT AT ALL IMPORTANT	4
DON'T KNOW	5

55-

13d. How confident are you that the water will be removed safely -- extremely confident, somewhat confident, not too confident, or not at all confident?

EXTREMELY CONFIDENT	1
SOMEWHAT CONFIDENT	2
NOT TOO CONFIDENT	3
NOT AT ALL CONFIDENT	4
DON'T KNOW	5

14a. Have you heard about any equipment changes that have or are being made to improve the level of safety at the TMI plant? 56-

YES. 1
NO 2
DON'T KNOW 0

b. Have you heard about any improved training program for the operators at the TMI plant? 57-

YES. 1
NO 2
DON'T KNOW 0

c. Have you heard about any improved public notification procedures to be used during an emergency period at the TMI plant? 58-

YES. 1
NO 2
DON'T KNOW 0

d. Have you seen or heard about any reorganization of the company's set-up to improve the management at the TMI plant? 59-

YES. 1
NO 2
DON'T KNOW 0

15. As you know TMI consists of two nuclear power generating units that are in separate buildings. Last year's accident occurred at Unit #2 while Unit #1 was not damaged. Assuming that it would be operated under improved safety standards, would you approve or disapprove of allowing Unit #1 to be started up again while they continue to clean up Unit #2? Do you (approve)(disapprove) strongly or just somewhat? 60-

APPROVE STRONGLY. 1
APPROVE SOMEWHAT. 2
DISAPPROVE SOMEWHAT 3
DISAPPROVE STRONGLY 4
NO OPINION. 0

16. Assuming that the damaged Unit #2 at Three Mile Island could be repaired and rebuilt to improved safety standards, would you approve or disapprove of allowing it to be started up again? Do you (approve)(disapprove) strongly or just somewhat? 61-

APPROVE STRONGLY. 1
APPROVE SOMEWHAT. 2
DISAPPROVE SOMEWHAT 3
DISAPPROVE STRONGLY 4
NO OPINION. 0

17. Next, I'm going to read you some statements that have been made about the Three Mile Island situation and I'd like you to tell me whether you agree or disagree with each one (BEGIN WITH ITEM CHECKED) — Do you (agree)(disagree) strongly or just somewhat? (CONTINUE UNTIL ALL ITEMS ARE READ)

		AGREE STRONGLY	AGREE SOMEWHAT	DISAGREE SOMEWHAT	DISAGREE STRONGLY	NO OPINION	
[ ]	a. If repairs are not made as soon as possible to the damaged reactor there could be further equipment failures which could cause new dangers	1	2	3	4	5	62-
[ ]	b. All nuclear power plants in the country should be closed down until the federal government knows more about the safety risks involved in them	1	2	3	4	5	63-
[ ]	c. Residents living in the vicinity of nuclear power plants will be much safer in the future as a result of the lessons learned at TMI.	1	2	3	4	5	64-
[ ]	d. All nuclear power plants should be shut down permanently and no more should be allowed to be built.	1	2	3	4	5	65-
[ ]	e. The Three Mile Island events showed that even in a major accident the science and technology of nuclear power was adequate to cope with the problems that arose before anyone was hurt.	1	2	3	4	5	66-
[ ]	f. A nuclear power plant can fail and the nuclear materials can come together to cause a massive nuclear explosion	1	2	3	4	5	67-
[ ]	g. People who oppose the cleanup operations at TMI are simply in a panic and do not have a realistic view of what needs to be done.	1	2	3	4	5	68-
[ ]	h. The release of radioactivity from TMI since the accident has caused some miscarriages and birth defects	1	2	3	4	5	69-
[ ]	i. We will have to rely on nuclear power as an important energy source for many years to come	1	2	3	4	5	70-
[ ]	j. Not nearly enough is being done to deal with serious emotional and psychological problems that TMI has caused among the people of the area.	1	2	3	4	5	71-
[ ]	k. Newspapers and television reporters were not fair in their coverage of the accident at TMI and have blown things out of proportion	1	2	3	4	5	72-

18. As you know, various people and groups have spoken up about nuclear power and the pros and cons of what to do about it. I'm going to name some of these groups and I would like you to tell me how reliable you think each one would be as a source of information about nuclear power. As I name each group, please tell me whether you think they would be very reliable, somewhat reliable or not too reliable as a source of information about nuclear power. Here is the first one: (START WITH ITEM MARKED WITH "X") (CONTINUE UNTIL ALL ITEMS ARE READ.)

		VERY RELIABLE	SOMEWHAT RELIABLE	NOT TOO RELIABLE	NO OPINION	
[ ]	a. Statements made by officials of the Babcock and Wilcox Company, builders of the TMI plant	1	2	3	0	73-
[ ]	b. Editorials in the daily newspaper	1	2	3	0	74-
[ ]	c. Environmental protection organizations	1	2	3	0	75-
[ ]	d. Editorials on the TV news programs	1	2	3	0	76-
[ ]	e. Scientists from the nuclear power industry	1	2	3	0	77-
[ ]	f. Scientists from universities and independent laboratories	1	2	3	0	78-
						(end c1)
[ ]	g. The Federal Nuclear Regulatory Commission	1	2	3	0	CD 2 12-
[ ]	h. State and local agencies and officials	1	2	3	0	13-
[ ]	i. Statements made by officials of the Metropolitan Edison Company.	1	2	3	0	14-
[ ]	j. Statements made by anti-nuclear groups	1	2	3	0	15-

16-

19a. Have you been involved in any public or community activities in connection with TMI?

YES . . . . . 1 (GO TO Q.19b)
NO. 2
NO ANSWER 3

(IF YES):

19b. What have you done?

17-
18-

Now, just so we can be sure we're getting a good cross-section, I'd like to ask you a few background questions --

19-

20. What was the last grade you completed in school?

11TH GRADE OR LESS 1
COMPLETED HIGH SCHOOL. 2
1-3 YEARS COLLEGE, TRADE OR TECHNICAL SCHOOL 3
COMPLETED COLLEGE. 4
ADVANCED DEGREE. 5

21. What is the occupation of the head of your household, please? What type of work does that person do?

_____ (occupation)

_____ (industry) 20-

21-

22. What is your approximate age?

18 - 20 1
21 - 24 2
25 - 34 3
35 - 49 4
50 - 59 5
60 - 69 6
70 AND OVER 7
REFUSED 8

23a. Including yourself, how many people in this household are adults over 18? . . . . . _____ 22-

b. How many are teenagers between 13 and 18? . . . . . _____ 23-

c. How many are children between 6 and 12? . . . . . _____ 24-

d. How many are children under 6? . . . . . _____ 25-

e. Let's see, that totals _____ living in this household. Is that correct? . . . . . [ ] TOTAL 26/27

INTERVIEWER: BE SURE NUMBER IN EACH GROUP ADDS TO TOTAL IN HOUSEHOLD

24. Now, we don't care to know your exact income, but would you tell me please whether your total annual household income, before taxes, is less than $15,000 a year, or $15,000 or more? 28-

LESS THAN $15,000 A YEAR . . . . . [ ]
$15,000 OR MORE. . . . . [ ]
REFUSED. X

(LESS THAN $15,000, ASK):

a. Is it under or over $10,000 a year?

UNDER $10,000 1
OVER $10,000. 2
REFUSED 3

(IF $15,000 OR MORE, ASK):

b. Is it between $15,000 and $20,000, or between $20,000 and $25,000 or more than $25,000?

$15,000 - $20,000 . . . 4
$20,000 - $25,000 . . . 5
MORE THAN $25,000 . . . 6
REFUSED 7

25. Sex of Respondent: 29-

MALE 1
FEMALE 2

26. Zip Code: [ ][ ][ ][ ][ ] 30- 31- 32- 33- 34-

That's all the questions I have. Thank you very much for your cooperation. So that my supervisor can verify this interview, may I please have your name and address? (IF NECESSARY, SAY): This information will be removed from the questionnaire and discarded after the interviews have been validated. This insures that my work was done honestly and accurately.

RESPONDENT NAME: _____ _____

ADDRESS: _____

TOWN OR CITY: _____

TELEPHONE NO.: _____

CLUSTER NUMBER: _____

INTERVIEWER NAME: _____

DATE: _____ TIME ENDED: _____

VERIFICATION -- For Office Use Only

Verified by: _____

Date: _____

Remarks: