

NORC Report: 55A

COMMUNITY ASPECTS  
OF  
JET AIRCRAFT NOISE AND FLIGHT OPERATIONS

NATIONAL OPINION RESEARCH CENTER  
University of Chicago

July 1955

Wright Air Development Center

## FOREWORD

This report was prepared by Paul N. Borsky, Study Director, of the National Opinion Research Center, University of Chicago, under the general direction of Clyde W. Hart, Director of N.O.R.C., on Air Force Contract No. AF33(616)-2624, "The Implications of The Operation of Jet Aircraft on Communities in the Vicinity of Airports." It was administered under the direction of the Aero Medical Laboratory, Wright Air Development Center, Wright-Patterson Air Force Base, Ohio.

Included among those who were primarily responsible for the detailed research are David E. Ryan and Richard L. Blumenthal, Assistant Study Directors at N.O.R.C., and Dr. Kenneth N. Stevens of Bolt, Beranek and Newman Inc. Valuable advice and assistance was also given by Dr. H.O. Parrack, Henig Von Gierke and Captain Ronald Hansen of the Aero Medical Laboratory.

TABLE OF CONTENTS

	<u>Page</u>
I. <u>INTRODUCTION</u> . . . . .	1
II. <u>FINDINGS</u> . . . . .	3
A. Chronology of Activities. . . . .	3
B. Major Problems Considered . . . . .	6
1. Relationship of Human Response to Variations of the Airplane Stimulus . . . . .	6
2. Importance of Different Parameters of the Airplane Stimulus. . . . .	9
a. Variability of sound spectra . . . . .	10
b. Variability of peak levels and durations of peak . . . . .	11
c. Variability of type of aircraft operation. . . . .	13
d. Variability of different types of airplanes. . . . .	14
e. Variability due to altitude of air base and atmospheric conditions . . . . .	14
f. Variability due to irregularity of aircraft operations . . . . .	14
g. Variability due to volume of aircraft operations . . . . .	15
h. Variability due to change in slant-distance. . . . .	15
i. Variability in aircraft emergence NL . . . . .	16
j. Variability in trends in aircraft operations . . . . .	17
3. Importance of Socio-Psychological Factors in Determining Perception and Feelings of Annoyance. . . . .	17
a. Structure of feelings of overall annoyance . . . . .	19
b. Importance of perception of noise source . . . . .	22
c. Importance of activities affected. . . . .	25
d. The effects of fear on adaptation. . . . .	27
e. The effects of inter-personal relations. . . . .	30

f. Importance of expectations of character of residential area . . . . .	31
g. Importance of attitudes toward missions of the Air Base . . . . .	33
h. Importance of feeling that the aircraft disturbance is unavoidable . . . . .	35
i. Importance of personal variables . . . . .	36
4. Importance of Socio-Psychological Variables in Determining Overt Behavioral Responses. . . . .	38
a. Some evidence on the general incidence of complaint behavior . . . . .	40
b. Factors influencing personal expression of annoyance. . . . .	41
1) Lack of knowledge of proper authorities . . . . .	41
2) Belief that it is physically impossible to reduce the airplane disturbance . . . . .	42
3) Belief that complaints will be considered improper by neighbors or the social group . . . . .	43
4) Belief in personal weakness of expression . . . . .	44
5) Belief that complaints will be ineffective. . . . .	44
6) Lack of social organization, leadership, and ease of expression. . . . .	45
c. Problems of judging neighborhood and community reactions. . . . .	46
1) The relationship between the number and importance of the neighborhoods most intensely affected and the community as a whole . . . . .	47
2) The structure of the governmental and non-governmental organizations in the community . . . . .	47
3) The relative pressures of other community problems. . . . .	48
4) The history of past community action. . . . .	48
5) Belief in the possibility of successful action. . . . .	48
6) Socio-economic differences. . . . .	48
d. Problems of validating responses . . . . .	49

III. APPENDICES

- I. Some of the Major Gaps in Knowledge of the Effects of Airplane Noise on Man
- II. Special Analysis of Community Aspects of Aircraft Annoyance Among Persons Mentioning Jet Aircraft
- III. Perception, Annoyance and Activities Reported as Affected by Aircraft and Traffic Noises
- IV. Variability of Overall Annoyance Responses Among Sampling Areas
- V. Analytical Outline of Exploratory Study of Jet Annoyance
- VI. Question Outline for Intensive Interviews
- VII. Conceptual Framework of Community Aspects of Aircraft Noise and Other Annoyances
- VIII. First Draft of Questionnaire
- IX. Second Draft of Questionnaire
- X. Third Draft of Questionnaire
- XI. Physical Parameters of Jet Aircraft Noise Complex

## I. INTRODUCTION

For the past three years the National Opinion Research Center has been engaged in the study of human reactions to aircraft noise and flight operations. Following the series of tragic accidents at Newark, N.J. and Jamaica, L.I., in early 1952, the National Advisory Committee for Aeronautics asked NORC to develop a research plan for determining the nature and extent of human annoyance with airplanes flying overhead and for establishing the relationships of the acoustical and socio-psychological factors which tend to intensify or reduce such annoyance.

Following a brief pilot study in New York and Chicago which indicated that the personal interview technique was a feasible method for establishing neighborhood reactions to the aircraft stimulus, a full-scale study of eight major commercial airports was completed. This study, involving 3635 interviews in 180 different neighborhoods, was concerned primarily with reactions to air carrier propeller driven airplanes. While this initial study provided valuable evidence on the effects of airplane noise on people living in the vicinity of airports, it also suggested a number of questions requiring additional research. 1/

Since jet airplanes are likely to replace most propeller planes in the next few years, it was recognized that further research on airplane noise problems should concern itself primarily with jet operations. The U.S. Air Force, which is represented on the NACA research committee, indicated that it was very much concerned with research on jet aircraft since it was the sole operator of jet aircraft in the U.S. These Air Force representatives reported that some of their bases were already experiencing widespread complaints from nearby communities. It was decided, therefore, to transfer sponsorship of airplane noise research to the U.S. Air Force.

1/ Some of the findings of the NACA study will be summarized in sections of this report. The detailed report "Community Aspects of Aircraft Annoyance" may be obtained from the NACA.

When NORC was asked to recommend the next phase of such research, it suggested that a broad exploratory program be initiated. Full field studies are expensive and time consuming and before embarking on a series of definitive studies, it was felt that additional experimental work should be done to sharpen the conceptual understanding of the annoyance process<sup>and</sup> to develop further research tools and procedures. It was suggested that a selected panel of respondents who had indicated atypical reactions on the NACA questionnaire be reinterviewed intensively to probe for a better understanding of the dynamic factors affecting their responses. It was also proposed that new respondents be selected who were primarily exposed to jet airplane operations, since it was believed that jet noise experiences might present some entirely different response problems. Paralleling these experimental studies of the human aspects of the problem, it was suggested that detailed investigations be made of the acoustical and operational aspects of the aircraft complex to determine which physical parameters appeared to be most significant in distinguishing different aircraft experiences.

Following a detailed analysis of these intensive exploratory studies, it was suggested that an integrated conceptual framework be developed to describe theoretically the annoyance and adaptation processes. The final step in this exploratory phase would be the development and pretesting of a personal interview questionnaire embodying the various hypotheses included in the conceptual scheme.

One point should be emphasized. The exploratory intensive interview is largely unstructured and is designed to encourage the respondent to reveal his views with a minimum of direction and a maximum of spontaneity. Since it does not contain responses to a uniform set of questions it is extremely difficult to quantify its findings. It is not designed to obtain statistically reliable data but, rather to gather a wide range of ideas and hypotheses for more systematic future research. It follows, therefore, that the testing of the hypotheses, and the establishment of quantitative relationships between the various physical and socio-psychological

factors are not objectives of this phase of the exploratory research. The final objective of this phase is to develop the questionnaire, the analytical tool, which can be used in a future large scale study. Such a future study can lead to the preparation of an analytical matrix with numerical values attached to the different variables which can be used for planning purposes to approximate average human responses to known variations in aircraft acoustical and other stimuli. But this ultimate objective or even the more limited goal of ranking statistically the hierarchy of physical and socio-psychological factors contributing to annoyance and adaptation are not within the scope of this report.

After negotiation with the appropriate Air Force officials the above proposals were accepted and the results of the exploratory research will be reported below. The report will briefly describe the chronology of activities during the past year, and then, will discuss in detail the findings bearing on a number of substantive research problems.

## II. FINDINGS

### A. Chronology of Activities

1. The first phase involved the further analysis of interview data obtained from the NACA study. A detailed statement of "Major Gaps in Knowledge of the Effects of Airplane Noise on Man" was prepared and is included as Appendix I of this report.

2. Since two of the eight airport areas which were included in the NACA study, St. Louis and Minneapolis, happened to have some jet planes operating at the time of the survey (about 10% of total operations), a special analysis was made of all voluntary mentions by respondents of jet aircraft. This analysis, which is included as Appendix II of this report, suggested a number of qualitative aspects of the jet noise experience which were further explored in the intensive interviews.

3. Other special tabulations were prepared from the NACA data, of which the following are included as appendices to this report:

- a. Appendix III - Perception, Annoyance and Activities Reported As Affected by Aircraft and Traffic Noises.
- b. Appendix IV - Variability of Overall Annoyance Responses Among Sampling Areas.

4. A sub-contract was signed with the firm of Bolt, Beranek and Newman, Inc. to explore the acoustic and other physical aspects of the aircraft stimulus. After analyzing the problem, the firm agreed to pretest its procedures for measuring selected parameters of the stimulus and to determine the expected variability of normal stimulus exposures.

5. Discussions were held with Air Force officials at Wright Patterson Field and at Mitchell Air Force Base, L.I. to establish as much information as possible about jet operations and experiences with complaints from local residents.

6. Discussions were held with operating officials of Grumman and Republic Aircraft plants on Long Island and after a detailed study of operating conditions, it was decided to select the first new respondents for intensive interviewing in communities adjacent to the Republic Plant at Farmingdale, L.I. About a dozen such respondents were initially interviewed. Complaint files and public relations files at the Republic plant were also evaluated.

7. The following types of respondents who had previously been interviewed during the NACA study were selected for re-interview at the LaGuardia and Idlewile Airport neighborhoods:

- a. Respondents in close areas who were "not bothered".
- b. Respondents in close areas who were "greatly bothered".
- c. Respondents in distant areas who were "greatly bothered".

Considerable difficulty was encountered in locating and arranging interviews with these respondents. Some had moved, others were not at home when the interviewers

called, and since callbacks are expensive and time consuming, only 25 of these interviews were actually obtained. Other factors which influenced our decision not to push this phase of the research were the likely interviewer effects and problems of recall and the absence of jet planes in these areas.

8. After the New York and Farmingdale interviews, which ranged from 2-4 hours in length, were analyzed, a tentative analytical outline and Question Guide were prepared for future intensive interviewing. These are attached as Appendices V and VI of this report.

9. After a series of discussions with Air Force officials, it was decided to select the Hanscom Air Force Base at Bedford, Mass., as a second area for intensive interviewing. Flight paths and operations were analyzed and about 40 respondents were selected at Lexington, Bedford, Concord and Lincoln areas. The complaint files at the Hanscom Base as well as newspaper files and other historical records of minutes of meetings concerning the expansion of the base etc., were reviewed. Special interviews were also arranged with a panel of "community leaders" in the above four towns. Included were town selectmen, chiefs of police, newspaper editors, members of town planning boards, a local postmaster and the chairman of a local Chamber of Commerce. These special interviews were analyzed to establish a picture of the community structure and of the attitudes of these leaders toward the local air base.

10. The intensive interviews obtained at Hanscom Base were analyzed and after a series of discussions with Air Force officials, a revised conceptual outline and the first draft of a structured questionnaire were prepared. These are attached as Appendices VII and VIII of this report.

11. The first draft of the questionnaire was pre-tested at the Hanscom Air Base area, and was found to run about 2-1/2 hours in length. After a series of revisions, eliminating certain sections and clarifying others, a revised second draft was prepared, and is attached as Appendix IX.

12. The second draft was pre-tested at Farmingdale, L.I., and after further revisions, the interview was estimated to run from an hour to an hour and a half in length.

13. After further discussions with Air Force officials and with members of sub-committee Z24-X-20 of the American Standards Association on Community Noise Problems, a final draft of the questionnaire was prepared and is included as Appendix X.

B. Major Problems Considered in Exploratory Research

1. Relationship of Human Responses to Variations in the Airplane Stimulus.

Is knowledge of the characteristics of the Airplane noise stimulus essential or helpful to an understanding of human perception, annoyance or activities affected by the airplanes? Or are human responses more general and not directly related to variations in the physical stimulus? If perception and annoyance are closely related to changes in the airplane stimulus, then precise knowledge of the stimulus characteristics will reduce the error of estimate of corresponding perceptual and annoyance responses. Likewise, in order to compare one airport area with another, or for planning purposes to estimate human responses to a hypothetical aircraft situation, it would be essential to have knowledge of the airplane noise and operations complex. If, on the other hand, human responses are not closely related to the airplane stimulus, then, a generalized cross-section analysis of a neighborhood or community with regard to other socio-psychological variables would be sufficient.

The findings of the NACA study shed some light on this problem as far as propeller and traffic noises are concerned. Our pretest experiences also reveal some qualitative evidence on jet noises which will be presented below.

As Table 1 of Appendix III indicates, if the specific Aircraft SNL is disregarded, as would be the case in a cross-section community analysis, then the findings indicate that an average of 58% might be expected to voluntarily mention the presence of

aircraft noise, and about a third report that it bothered or annoyed in some way. If the variations in actual Aircraft SNL's among the different neighborhoods are considered, however, the average estimate is seen to produce a wide range of error. For example, when the aircraft SNL is only 50-60 db, only 15% mention airplane noise in contrast with the overall average of 58%, and only 8% report any bother or annoyance in comparison with the overall average of 33%. Likewise, when the Aircraft SNL is at the relatively high level of 79+db, over 90% mention the noise and almost 70% are bothered by it. Table A below summarizes the direct relationship between reported perception and annoyance and the actual level of aircraft SNL.

TABLE A  
 Relationship Between Reported Perception and Annoyance  
 With Airplane Noise and the Aircraft SNL

	All Respondents	Aircraft SNL				
		50-60 db	61-65 db	66-72 db	73-78 db	79+ db
Mention Airplane Noise . . . . .	58%	15%	27%	43%	58%	90%
Report noise bothers or annoys . . . . .	33	8	16	28	40	69
Bothers hearing radio or TV.	12	3	6	10	14	28
Bothers conversation . . . . .	8	1	3	7	8	23
Bothers sleep or rest. . . . .	11	2	3	9	14	27
Frightens respondent . . . . .	9	2	3	8	14	15

It is quite apparent that an overall average response which disregards the specific airplane noise conditions to which respondents are exposed, is a poor measure of human response. If one community were exposed to only 50-60 db and another to 79+ db and this wide difference in airplane stimulus were ignored, the reported variation in reported annoyance of from 8% to 69% would be hard to explain from an analysis of socio-psychological factors alone. In fact, one might be tempted to conclude that "human behavior is unpredictable." But if the variations in stimulus conditions are

considered, the range of annoyance responses are considerably reduced. It follows that if important socio-psychological factors are also interrelated with the changes in stimulus conditions, then the estimated annoyance response would become even more accurate.

Appendix IV presents the variability among the 180 sample areas of overall annoyance with airplanes in relation to differences in Aircraft SNL. In 8 out of 10 areas with aircraft SNL's of 79+ db, the percent of all respondents who were judged "greatly bothered" was 50% or more. This level of annoyance response was only 12% less than the average for all respondents living in areas with an exposure of 79+ db. To put it another way, if the mean value of 62% "greatly bothered" was used in 8 out of 10 areas in which the Aircraft SNL was 79+ db, the actual annoyance level would have been no lower than 50%. In 3 out of 100 cases was the "greatly bothered" response ever as low as 30%.

At the other end of the Aircraft SNL continuum, 50-60 db, in 19 of 20 cases, the percent "greatly bothered" was at most 9% above the mean value of 6% who were "greatly bothered". Contrast this small error of estimate with the overall average of about 34% "greatly bothered" in all of the 180 neighborhoods studied.

Because of the relatively few intensive and pretest interviews obtained in areas where jets are used, and because no effort was made to get accurate acoustic measurements in these areas, it is not possible to state the statistical variations in annoyance responses to jet aircraft. It is reasonable to assume, however, that the variation will be no greater than the NACA data indicate for propeller planes and it is even possible that it will be less. Our qualitative analysis indicates that annoyance with jet noise is comparatively greater than with propeller noise in the close areas. The major reason is probably the higher SNL's of jet aircraft. In any event, this greater annoyance could reduce the range of responses for the close areas. In the distant areas (10-12 miles from end of runway), the higher altitude of jet

aircraft may further reduce the average degree of annoyance and also narrow the range of responses.

Additional indications of the differential annoyance responses to jet aircraft are revealed in Table 3 of Appendix II. In Minneapolis and St. Louis where 10% of the air traffic consisted of jet flights, from 51-57% of those respondents voluntarily mentioning jets were "greatly annoyed", while only 30% of those not mentioning jets were equally bothered.

Table 7 of Appendix II, indicates that the greater annoyance of respondents mentioning jets is not due to differences in overall Aircraft SNL's. For every different Aircraft SNL, the respondents who mention jets are always more annoyed than those not mentioning jets.

The foregoing analysis clearly indicates that perception and annoyance are directly related to the aircraft stimulus and that consideration of variations in the stimulus greatly reduces the range of reported annoyance.

## 2. Importance of Different Parameters of the Airplane Stimulus

In the previous section, only one aspect of the airplane stimulus was considered, the peak SNL that was exceeded in only 25% of the observations. This single figure was selected in the NACA study as the most important single index of the airplane complex but it was recognized that a number of other parameters of the airplane stimulus were probably important. In this exploratory phase, the firm of Bolt Beranek and Newman was specifically asked to explore the feasibility of measuring some of these other aspects of the noise complex, and some of their findings as well as qualitative data reflected in the interview materials will be presented here.

a. Variability of Sound Spectra

The sound spectrum of the propeller plane differs from the spectrum of the jet in that the higher frequency components are more important in jet noise spectra. Although there are some differences from one jet plane to another, as shown in Table B below, there are characteristic differences between most jet planes and propeller planes which are readily recognized by respondents. When asked, "Do you know if there are different kinds of planes flying over, or do they all seem to be pretty much the same?", practically all respondents could distinguish between jets and propeller planes. When asked, "How would you describe the noise -- what does it sound like?", respondents answered, "The jet sounds like a dull blast on a horn, an unpleasant vibration sensation"...."Jets have a different sound to the motors and greater speed"...."Well the jets fly the fastest, and the bombers (B-29's) don't fly so fast, but they make a lot of noise too." "You hear them longer; the jets fly so fast, you hear them and they're gone"...."jets are a wicked noise, an awful racket"...."You get a tremendous roar so that you think the house will shake down"...."Occasionally they make so much noise on a Sunday when they come whooping down; they sound off a bit"...."If it's high enough you can feel by the sound. If it is flying low you can tell ahead of time. That is when you get a frightened feeling." "The propeller planes don't bother at all. They're quieter I suppose, and not as frightening. The jets go so fast and sound so loud; they're more dangerous."

Although most people can recognize a jet from a propeller plane, very few indicated that the character of the sound was in itself a cause for greater annoyance. Perhaps the right questions weren't asked, or perhaps the other objectionable features of the noise, high peak level, speed of passage and connotations of fear etc., completely masked feelings about the tone quality. Respondents were asked, "What is it about the noise that bothers you?...In what way does it bother you? What do you usually think of when you hear the noise? Aside from the loudness and other things

we've been talking about, is there anything about any of these jet noises that is unpleasant or disagreeable?" These questions and modifications of them generally failed to elicit any specific mention of the tone quality of the jet noise.

TABLE B

Estimated Sound Pressure Levels  
at 250 Knots and 400 Ft.

	<u>Power Level</u>	<u>Frequency Band -- Cycles Per Second</u>		
		<u>75 - 150</u>	<u>300 - 600</u>	<u>1200 - 2400</u>
F89C	With After Burner	107	116	110
F89C	100%	99	110	106
B57	100%	102	110	104
F86	100%	102	105	101
F86	80%	90	92	92
F84F	100%	94	101	100

b. Variability of Peak Levels and Durations of Peak

As indicated in the previous section, the NACA data reflected the peak SNL's exceeded by only 25% of the observations. In this study BB&N was asked to formulate a more precise description of the noise complex. Peak level can be defined in any number of ways. Peak point is readily ascertainable from an actual tape recording of the passage of a plane. Peak level was arbitrarily defined as the noise level within 10 db of the peak point. The length of time that a given peak level intrudes upon a conversation or some other auditory activity is also of obvious importance. Peak level and duration are principally a function of the power level of the engine, of the slant-distance from the plane to the observer, of the speed of the plane, of atmospheric effects on attenuation, and of the altitude above sea level of the ground.

Since the usual take off procedure for a jet, as Table C shows, is to maintain a fairly low altitude until a speed of about 300 knots per hour is achieved and then to climb very rapidly at about 1500-2000 feet per mile, the effects of jets on peak levels and durations is quite different from propeller airplanes. For areas from 2-3 miles from the beginning of a runway, the average altitudes on jet take offs ranges between 270-520 feet. The peak SPL in the 300-600 CPS band reaches 118-124db (F89C with AB) and the duration of peak is only a fraction of a second. At 4-5 miles, the average altitude increases to 800-1600 feet. The peak level is reduced to 110-114 db, and the duration is increased to 4-7 seconds. At eight miles, the average altitude hops to 5600 feet, the peak level is reduced to about 86 db and the duration is 25 seconds. See Table C.

TABLE C

SELECTED AIRCRAFT DATA RELATED TO TAKE OFFS FOR AN F-89C WITH AFTER BURNERS

<u>Distance from Beginning of Runway</u>	<u>Estimated Altitude Range</u>	<u>Estimated Range Peak SPL in 300-600 CPS Band</u>	<u>Duration of Peak SPL (seconds)</u>	<u>Duration of SIL of 70 db (seconds)</u>
1	0-100	---	---	--
1-1/2	50-280	119 - 134	1.2	7
2	150-400	116 - 124	1.6	8
3	320-780	109 - 118	2.9	10
4	500-1700	102 - 114	4.2	12
5	700-3100	95 - 110	7.0	17
6	1300-4400	90 - 104	13.0	20
7	2600-5800	86 - 97	20.0	18
8	4000-7200	82 - 91	25.0	10

Of even more importance than peak level, perhaps is the activity interference level. For example, other experimental studies have shown that at a Speech Interference Level (SIL) of 70 db, reliable conversation is barely possible in a very loud voice at a distance of 2 feet. (See page 205 of Vol. 2 USAF Handbook on Acoustic Noise Control). For the F89C, the SIL at 2-3 miles is 10 seconds; at 4-5 miles, it increases to <sup>17</sup> ~~20~~ seconds; and for the distant areas, it barely exceeds the SIL of 70 db *by 10 db.* Although the actual frequency bands in the SIL are weighted differently from the peak levels and are not strictly comparable, communication is one of the key activities interfered with and, therefore, the SIL comparisons may be more meaningful as daytime measures of jet noise intensity.

c. Variability by Type of Aircraft Operation

In the NACA study, an effort was made to study takeoff, landing and circling or cruising operations. Due to a number of factors these operations were hopelessly intermixed at the close areas and the reduction in engine power on landing approaches was largely offset by lower altitudes so that the measurable SNL differences were not too great.

In jet operations landings and takeoffs are believed to result in larger differences in peak levels, in Speech Interference Levels and in the duration of these levels.

The best information available indicates that jet planes on landing approaches seldom cross populated areas below 1500 feet altitude with more than 80 percent of full power. This means that, for close areas 3 miles from the beginning of a runway, peak SNL's for takeoff operations should exceed landing operations by 24 db. Even at the areas 5 miles distant, the difference in peak SNL's should be about 12 db.

Another possible difference between landing and takeoff operations is the more pronounced whine of the jet turbines on landing operations. This difference was not noted in our pretest interviews, but the possibility of this distinction should not be ignored.

d. Variability of Different Types of Airplanes

In the NACA study, it was recognized that a DC-3 made less noise than a DC-6B or a super-constellation. By the careful selection of major commercial airports, however, it was hoped that the differences in the noise complex among the eight airports would not be too great. Besides, the differences due to pilot techniques and atmospheric effects were usually greater than the variations due to large and small propeller airplanes.

In the case of jet operations, however, the differences in peak level between older smaller aircraft and newer larger planes is estimated to range up to 22 db. Obviously such large differences must be controlled in any future study. A T-33 is probably the quietest jet plane. An F-84F is about 2 db greater than a T-33 (at 400 feet altitude and 250 knots). An F-89C with after burners is about 15 db greater than an F-84-F and an F-101 with after burners is about the noisiest, at present, and is about 5 db greater than the F-89C, or 22 db greater than the T-33.

e. Variability Due to Altitude of Air Base and Atmospheric Conditions

At sea level a plane can usually gain altitude faster and, therefore, appear less noisy at given distances from the beginning of a runway. In estimating the SPL's at given altitude-distance relationships, the altitude of the base itself must be considered. In addition, it must be recognized that the temperature, wind velocity and other atmospheric conditions can also affect the peak level by as much as 10 db or more. In selecting airports for study, these factors must all be evaluated and equalized.

f. Variability Due to Irregularity of Aircraft Operations

In the NACA study little recognition was given to differences among neighborhoods due to variability over time in aircraft operations. It was recognized, however, that such variations existed. In New York and Chicago, for example, there were flights scheduled around the clock, while at Memphis and Atlanta there were

hours when there were no flights and other peak hours when the volume was almost as great as at New York and Chicago.

Theoretically, at least three types of variability over time can be distinguished:

- 1) Seasonal or month to month fluctuations
- 2) Daily changes due to shifts in wind and weather conditions
- 3) Hourly changes due to atmospheric and schedule variations.

While the precise consideration of all such variables is difficult in most study designs, awareness of these factors is important. Airport areas should be selected carefully to minimize seasonal and daily fluctuations, and control should be achieved over at least daytime vs. nighttime operations. At some jet bases, round the clock flying is scheduled; at others, only daytime flights are made. Such differences would obviously differentially affect sleep interference which is a key factor in annoyance responses.

g. Variability Due to Volume of Aircraft Operations

While the findings of the NACA study were ambiguous with regard to this factor, it cannot be completely overlooked in a study design. The inter-mixing of flight operations at the close and intermediate areas obscured any clear cut distinctions in the volume of flights, and consequently prevented any clear cut analysis of this factor. In jet operations, however, flight paths and flight schedules may be more regulated and it may be possible to select neighborhoods which distinctly have heavy or light traffic patterns.

h. Variability Due to Changes in Slant-Distance

All else being equal, the closer the airplane is to the respondent, the louder the noise he will hear. Consequently, the area directly under the flight path will receive the most intensive noise exposure. For areas 2-3 miles from the beginning of a runway a restricted zone of only 1,000 feet wide can be considered as directly under the flight path. At 4-5 miles, the altitude increases so the

width of the zone also increases to about 2,000 feet in diameter. At 7-8 miles, the width of the homogeneous acoustic zone is estimated to be about a mile.

Because of attenuation of sound, all neighborhoods outside these limited zones receive less intensive noise exposures. It is possible, therefore, by selecting a neighborhood 2-3 miles from the beginning of a runway but off the flight path (the plane is at an oblique slant relationship to the respondent), to establish a slant-distance to the plane which is equal to the altitude of the plane directly overhead at 4-5 miles or at 7-8 miles. Theoretically, the peak sound levels and SIL levels can be equated in such different on path and off path neighborhoods, with only the angle or slant relationship differing. Since fear appears to be a crucial element in psychological responses, a person off the path should be less fearful of crashes than someone directly under the flight path, and perhaps less bothered by the same peak noise level <sup>or</sup> ~~of~~ SIL.

In the NACA study, the mixture of circling operations also obscured on path and off path relationships. It is hoped, however, that purer jet operating conditions may be found to test this hypothesis.

i. Variability in Aircraft Emergence NL

Since aircraft noise is only one of the possible noises included in a particular noise environment, it is important to consider the total noise complex in an area. In the NACA study, neighborhoods with quiet and noisy ambient backgrounds were selected under equal aircraft noise conditions. While the findings were inconclusive, there was a tendency for annoyance to be greater when the difference between the aircraft SNL and Background SNL was greater. (greater emergence of aircraft noise). One of the practical difficulties was to find sufficiently noisy ambient levels in purely suburban residential areas which were close to airports. In any event, any analysis scheme must recognize such differences in emergence of the aircraft stimulus as a possible source of variation in psychological response.

j. Variability in Trends in Aircraft Operations

The final aspect of the physical stimulus which will be discussed here involves the changes over time in the level and volume of aircraft activity to which a particular neighborhood is exposed. It may be important to distinguish areas in which a larger number of noisier airplanes have recently been introduced, or in which the schedule of operations has shifted from day to night, from areas in which the amount or character of the noise has recently been reduced. With larger numbers of more powerful airplanes constantly being introduced, it may be that the psychological annoyance response is partly a function of the trend in the character of the noise stimulus. This hypothesis will be discussed at greater length in the next section.

3. Importance of Socio-Psychological Factors in Determining Perception and Feelings of Annoyance

The previous discussion considered the problems of separating and measuring in some objective manner the physical aspects of the aircraft noise source. For analysis purposes, it is of prime importance to secure an independent control over the external stimulus factors, so that in comparing different psychological responses in different neighborhoods one can be certain that the response variations are not simply due to differences in the environmental situations. Once the physical aspects have been equalized by an experimental design, then the interplay of socio-psychological factors can be examined.

It is important to emphasize that the relative influence of various human factors may not be uniform under all types of aircraft stimulation. It may be that at the intense upper levels of jet noise and frequent flight operations, that the moderating influence of various psychological factors are of little importance. Under certain intermediate stimulus conditions, on the other hand, certain human variables<sup>may</sup> be largely instrumental in securing tolerance and acceptance of unpleasant environmental conditions. Likewise, under lower, less intense noise conditions, it may be

that very few "living activities" such as speech, communication, sleep, rest, relaxation and feelings of personal security are actually disturbed, and, consequently, the significance of certain psychological forces may be minimal.

If the tolerance or acceptance levels are found to be differentially affected by various intervening human factors in accordance with ascertainable ranges of stimulus conditions, then the implications for aircraft operations and planning are obvious. Under the most intense noise conditions, people would not be expected to adapt themselves to the intruding stimulus; and under other intermediate ranges, it would be possible to institute certain policies and practices to minimize the disturbance and to maximize neighborhood acceptance of the noise source.

The determination of the actual existence of such differential effects, the statistical derivation of the cut-off points and the establishment of relative weights to the hierarchy of socio-psychological adaptive factors, however, is not within the scope of this exploratory study. Available evidence supporting such hypotheses and some of the technical problems of measuring these factors, however, will be presented below. Nine major topics will be discussed:

- a. Structure of Feelings of Overall Annoyance
- b. Importance of Perception of Noise Source
- c. Importance of Activities Affected
- d. The Effects of Fear on Adaptation
- e. The Effects of Inter-personal Relations
- f. Importance of Expectation of Character of Residential Area
- g. Importance of Attitudes toward the Missions of the Air Base
- h. Importance of Feeling that the Aircraft Disturbance is Unavoidable
- i. Importance of Personal Variables

a. Structure of Feelings of Overall Annoyance

In the NACA study, a three-point scale of feelings of overall annoyance was established, and an effort was made to analyze the various components of annoyance. A number of technical problems, however, prevented a more systematic evaluation of the structure of overall annoyance. Since this was the first full field study of this problem, inadequate knowledge of the detailed factors contributing to annoyance dictated the use of open, non-directive questions. This technique as has been mentioned before, permits a maximum of spontaneous comment and the reporting of whatever salient factors appear to be important to the respondents. It also reduces the uniformity of stimulation by identical questions, however, and complicates the establishment of intensity or substantive rating scales.

For example, as Table A shows, when all respondents in the NACA study were asked, "What kinds of noise do you usually hear around here?", only 58% spontaneously mentioned airplane noise. Since only those persons voluntarily mentioning airplanes were even asked, "Does the airplane noise ever bother or annoy you in any way?", 42% of all respondents were never asked this question. Likewise, since 57% of those mentioning airplane noise said they were bothered by it, only one out of every three respondents <sup>was</sup> ~~were~~ even asked, "In what way does it bother or annoy you?". For two thirds of the interviews no systematic data <sup>were</sup> ~~was~~ collected on the question of the structure of annoyance with airplane noise.

Another weakness of the NACA interviews which complicated the development of substantive and intensity type scales was the recording of apparently inconsistent responses in answer to specific questions. This factor was not uniform at all aircraft SNL's as Table D below shows:

TABLE D

DETAILED OVERALL ANNOYANCE GROUPS BY AIRCRAFT SNL

Overall Annoyance	Aircraft SNL				
	50-60db	61-66db	67-72db	73-78db	79+db
Never bothered. . . . .	59%	37%	26%	9%	8%
Used to it now. . . . .	4	5	7	6	4
Bother some - qualified . . . . .	20	25	24	26	17
Bother some - unqualified . . . . .	10	15	10	9	7
Bother some - border line to great bother 1	-	-	2	2	2
Bother a great deal - border line to "some" bother. . . . .	-	1	1	2	2
Bother a great deal - qualified . . . . .	2	8	11	18	20
Bother a great deal - unqualified . . . . .	4	9	19	28	40
	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>
Number of interviews. . . . .	650	481	1048	725	731

Over a third of all persons living under 79+db gave qualified and sometimes inconsistent responses. Of these, 17% sometimes said the airplane noise didn't bother or annoy and 20% indicated a lesser degree of annoyance in some answers. In contrast, only 22% of all respondents living under aircraft SNL conditions of 50-60 db gave contradictory answers, of which 20% indicated no bother and only 2% who were generally seriously bothered giving less intensive responses.

Additional knowledge gained during the exploratory work of the past year indicates that most of these difficulties can probably be overcome by careful planning of future research. An analysis of the intensive interviews indicates that one of the major reasons for apparently contradictory responses is the presence of ambivalent feelings and a fear that one's answers are not giving a balanced picture of these feelings. For example, if other neighborhood problems are very important, persistent questioning about airplane noise may result in a conscious effort by the respondent to minimize his feelings about the noise problem in order to stress the other problems. Likewise, if the respondent feels that the missions of jets are

connected with important national defense efforts or that the manufacture and maintenance of airplanes involves the livelihood of many friends and neighbors, he may be reluctant to give answers which indicate intense feelings of bother or annoyance. He may be fearful that a strong negative response will be interpreted as too hostile to the group's interest. Some illustrative responses follow:

"I'd rather they didn't (fly low)...it wouldn't hurt if they weren't going so low over the house....It's the safety rather than the noise. I do feel it is a necessity that they are over there. They are an asset but they fly so low"...."That's why I say you can't do without them; it's a necessary evil"... "When you consider they are all planes for defense, you just keep your mouth shut and be glad they are there."... "Myself, I could complain, but with the world situation being what it is, it's just as well for those fellows to have a place to train."... "I don't like them, but I can't see complaining about it.".... "They (jet run up) blast until 10:30 to 11 at night and they really sound like they're going to explode right in your living room. They're trying to do something about that, they say. It was in the local paper -- an article. It's a terrific sound, of course, but it's better than the enemy or destruction. It's a small inconvenience and you don't notice it because they're accomplishing something".... "You don't go around saying, 'Did you hear the planes last night?' I'm not the one to go look for arguments. I have no grudge on airplanes. I wouldn't concentrate on them too much. After all it means a living for all my neighbors you know."

During the intensive interviewing the following approach was found effective in reducing such apprehensions and in achieving the proper perspective of ambivalent responses. First, sufficient time must be given at the very beginning of the interview for the respondent to spontaneously discuss all kinds of problems about living in his neighborhood. A discussion of 10-15 minutes is generally sufficient to satisfy the respondent that a balanced picture has been given and it also furnishes the study with the necessary general context of aircraft noise in relation to other

environmental problems of the neighborhood. This approach also effectively masks the major objective of the study, aircraft noise, by indicating that our interests are general, involving all aspects of living in the area. Once the respondent's suspicions about the purposes of the survey are allayed, it has been found that he is generally more willing to reveal critical comments as well as favorable ones. If, on the other hand, the respondent is ambivalent in his feelings about airplanes and the discussion plunges into the details of airplane noise, before he has had an opportunity to express his feelings about the pros and cons of the airplane situation or other important problems, experience indicates that he often becomes very suspicious and that frankness and rapport deteriorates rapidly.

A second approach is to anticipate the existence of ambivalent feelings and to initiate each phase of the interview with some open questions which will afford an opportunity for these feelings to be expressed. Then, when subsequent specific questions probe about responses to the detailed aspects of a problem, the answers tend to be more direct and less qualified. A further advantage to this method is that every respondent is systematically questioned about key aspects of the airplane noise source and that, as a consequence, statistical treatment of the various factors is facilitated.

Questions 1-6, of Appendix X are indicative of the open questions discussed above and Questions 9 to 11 are illustrative of the systematic probing about feelings about airplane noise. It will be noted that not only are responses to airplane noise included, but that parallel treatment is afforded to other noise sources spontaneously reported in the neighborhood. This not only masks our interest in airplanes but also provides valuable data on comparative responses to other noise conditions.

b. Importance of Perception of Noise Source

The acoustic engineers can record the airplane noise on a sound meter or recorder and as has been shown, it is important to know the actual stimulus

characteristics. In order to understand individual differences in annoyance under equal stimulus conditions, however, it is essential to know the way in which a person perceives the noise source, whether or not his view agrees with the meter readings. In the course of re-interviewing "Non-annoyed" respondents living close to the airport, responses indicated that they did not feel that airplanes were very loud, low flying or a threat to their security. For example, one person said, "they don't fly so low; you can't touch them." Another said, "They don't fly right overhead they fly over that house." (pointing two houses away -- about 150 feet.) The fact that if any plane going by should crash, it would objectively have affected the respondent as well as his neighbors is not important in understanding the atypical feelings of these respondents. That they did not see the planes as too close or as a threat to them is the important consideration.

The NACA findings offer further evidence on the distortions of perception. As Table E indicates, "greatly bothered" persons more often report that airplanes fly by very often. Although the objective conditions were equalized in the study design, three times as many "greatly bothered" as "non bothered" said the airplanes fly by "very often".

TABLE E

PERCEPTION OF FREQUENCY OF FLIGHT

Respondent Says <u>Airplanes Fly Over:</u>	<u>Overall Annoyance</u>		
	<u>No</u> <u>Bother</u>	<u>Some</u> <u>Bother</u>	<u>Great</u> <u>Bother</u>
Very often . . . . .	21%	32%	59%
Fairly often . . . . .	34	41	31
Occasionally . . . . .	45	27	10
Number of interviews . . . . .	1148	1237	1250

When asked, "When the planes do pass here, do they ever fly very low?", 91% of the "greatly annoyed" said yes, while only 31% of the "non-annoyed" gave this answer. As Table F shows, under every kind of airplane noise situation, the "greatly annoyed" more often perceive the airplanes as flying very low. It is interesting to note that 80% of the atypical "greatly annoyed" living 10-12 miles distant from the airport said planes fly low over their homes, while only 20% of the "non-annoyed" living in these same neighborhoods gave this answer.

TABLE F  
PERCENT SAYING PLANES FLY VERY LOW

<u>Aircraft SNL</u>	<u>Daytime Emergent NL</u>	<u>Volume of Air Traffic</u>	<u>Overall Annoyance</u>		
			<u>No Bother</u>	<u>Some Bother</u>	<u>Great Bother</u>
50-60 db	-18 db	High	24%	37%	82%
		Low	20	48	83
	18-29db	High	39	47	71
		Low	14	56	100
61-66 db	-18 db	High	19	42	80
		Low	15	41	86
	18-29db	Both	27	46	91
67-72 db	-18 db	Both	30	70	73
	18-29	Both	35	65	92
73+ db	-29 db	Both	41	63	90
73-78 db	30+ db	Both	42	67	92
79+ db	30+ db	Both	45	69	94
All interviews regardless of airplane situation			31%	60%	91%

The administrative implications of perceptual distortions has already been recognized by a number of Air Base commanders. While it is probably true that airplanes have to fly fairly low over the neighborhoods which are close to the airport, a public demonstration of actual take off and landing procedures has been found effective in correcting some of the perceptual distortions which respondents had. The effects of such public relations programs on persons living in more distant areas may be even greater, since it can be objectively shown that jets are usually quite high in these neighborhoods.

c. Importance of Activities Affected

As Table A, which is repeated below indicates, the most important residential living activities interfered with by airplane noise are hearing radio or TV programs, conversation, and sleep, rest and relaxation. It is significant that the percent of all respondents mentioning such interference increases consistently as the aircraft SNL increases. This indicates an appropriate relationship to the reality of the stimulus exposure. It is also interesting to note on Table 1 of Appendix III, however, that if people report that airplane noise bothers even when the aircraft SNL is only 50-60 db, that the percent who mention interference with hearing radio or TV programs or with sleep and relaxation is almost as great as those respondents under more intense aircraft noise conditions.

Because these activities were reported as voluntary responses to several successive open questions, and as mentioned previously about two-thirds of all respondents weren't even asked these questions, the absolute percentages are probably understated, but the relative difference among SNL groups are probably more valid. In the exploratory interviews, the way in which the noise bothers was intensively probed and the activities mentioned were similar to the items reported above. Of course, it wasn't possible in these selected interviews to establish a statistical hierarchy of importance of these activities, but as Question 10 of Appendix X indicates, a systematic investigation of these factors is possible.

TABLE A

Relationship Between Reported Perception and Annoyance  
with Airplane Noise and the Aircraft SNL

	Aircraft SNL					
	All Resp.	50 - 60 db	61 - 65 db	66 - 72 db	73 - 78 db	79+ db
Mention Airplane Noise. . . .	58%	15%	27%	43%	58%	90%
Report Noise Bothers or Annoys	33	8	16	28	40	69
Bothers hearing radio or TV	12	3	6	10	14	28
Bothers conversation. . . .	8	1	3	7	8	23
Bothers sleep, or rest. . .	11	2	3	9	14	27
Frightens respondent. . . .	9	2	3	8	14	15

In the NACA study, the question also arose as to the importance of the cumulative effects, and "Johnny-come-lately" aspects of aircraft noise in relation to other noise and non-noise disturbances in a neighborhood. In the intensive interviews, an effort was made to ascertain the chronology of annoyance feelings. As Part 8 of Appendix VI indicates respondents were asked, "Which of the nuisances did you first find out about after moving here? Do you remember how you felt about it at first?... Which of the nuisances did you find out about next?.....Did your feelings about (the first nuisance) change in any way when you found out about the second?".....etc.

Responses to these questions indicated a considerable diversity of experiences. Newer residents tend to perceive of many local annoyances practically simultaneously, so that as soon as they moved to their neighborhoods they report awareness of a number of problems. Older residents, on the other hand, have difficulty in recalling the sequence of events, so that little insight can be secured from their answers.

A few persons did indicate a cumulative effect of one disturbance piling up on top of another. One "greatly annoyed" respondent who was reinterviewed reported that mosquitoes were the first disturbance and that airplanes followed with the following effects: "Well the mosquitoes (were first). We were here one day and were attacked. I felt I was sold down the river. My daughter was bitten up so badly that she had scars for six months.....The airplanes (were next). The mosquitoes were minor compared to the airplanes. All you really had to do was to get adequate screens and that would have been enough. With the airplanes all you can do is shoot them down." Another respondent mentioned traffic noise first and then airplanes, and when asked how he felt about the traffic, he answered, "I felt, boy what a place; getting it both sides at once."

d. The Effects of Fear on Adaptation

As reported in the NACA findings and as summarized in Table G below, 60% of all "greatly annoyed" voluntarily mentioned their personal fear of airplanes crashing into their homes; another 20% indicated personal fear of flying in an airplane or of having airports close to populated areas. The pervasiveness of connotations of fear being associated with airplane noise is further emphasized by the responses of the deviant group of "greatly annoyed" living in distant areas where planes do not generally fly below 2000 feet. Three-fourths of these respondents indicated a fear of crashes on the first direct question about noise.

TABLE G

PERCENT OF RESPONDENTS MENTIONING FEAR OF CRASHES IN ANSWER TO SELECTED KEY QUESTIONS

<u>Content of Questions</u>	<u>Overall Annoyance</u>			
	<u>Some Bother</u>		<u>Great Bother</u>	
	<u>Percent Indicating Fear on Each Question</u>	<u>Cumulative Percent of Unduplicated Respondents</u>	<u>Percent Indicating Fear on Each Question</u>	<u>Cumulative Percent of Unduplicated Respondents</u>
Present dislikes about area... .	1%	1%	11%	11%
Noises heard in area - kinds of bother. . . . .	10	11	33	35
How do you feel about planes? .	20	22	49	58
Importance of airplanes . . . .	2	23	2	59
Reaction to closing Newark Airport . . . .	4	25	6	60
<u>Subtotal-Direct expressions of fear . . . . .</u>		<u>25%</u>		<u>60%</u>
Present attitudes about flying. .	48	31	53	17
Necessity of having airports near city . . . . .	23	38	33	20
<u>Subtotal-Indirect expressions of fear. . . . .</u>		<u>38%</u>		<u>20%</u>
<u>Subtotal-not expressing any fear</u>		<u>37%</u>		<u>20%</u>
<u>Total all respondents . . . . .</u>		100%		100%
Number of interviews		1237		1250

The NACA report suggested that fear was one of the most important elements distinguishing airplane noise from other noise experiences. It was hypothesized that if a person is fearful of airplane crashes, that "time" may intensify feelings of annoyance rather than soothe it. Some people concerned with the airplane problem have been heard to say almost wishfully that many residents objected to the trains and automobiles at first and now have learned to accept them, and that "time" will also solve the airplane problem. Naturally, it is impossible to say with certainty that in the long run, a process of "natural selection" may not result in people who are sensitive to low flying airplanes moving away from airport areas and being replaced by persons more tolerant of airplanes. Of course, it took fifty years or

more for the railroads to overcome strenuous neighborhood opposition, and it may be that in the year 2000, a similar process of adaptation will occur as far as airplanes are concerned. During the next fifty years, however, our intensive interviews indicate that where fear exists, annoyance does not usually lessen with time.

Airplane noise often acts as a trigger mechanism in stimulating fear reactions.

When this process occurs, each passage of an airplane represents a potential threat. The noise of an approaching plane sets up a tension system which is only released when the plane safely passes. Viewed from this constant tension-provoking process, "time" and increased volume of exposure may actually intensify the number of fearful experiences and, therefore, increase annoyance with airplane noise. Some of the actual responses obtained during the intensive interviews which suggest such reactions are cited below:

"Well you can't help it. (pay attention when they are low). How can you help it when they are so low. Suppose something happened to the plane and she hit the building. That would probably mean death to everyone in the house. Do you remember a few years ago when a few transports hit some houses in Newark. My niece wanted me to fly to her wedding but I wouldn't take a chance on getting killed."..."You seldom think of a car going by. With an airplane you can't help it; you have to look. Well we hear the motor boats, but they are pretty good. They don't keep it up late at night. That is a sound when they miss you aren't worried. When they fly over the house, then you take notice."..."If they go any lower, just a couple of inches, they will take the chimney off."..."The only thing that bothers me is the hazard. There's no need for it -- to fly over Manor Section (supposed to be off the flight path)"..."In 1906, I moved to 5th Ave. near the elevated in Brooklyn. I couldn't sleep the first few nights because of the elevated going by, but after that it didn't bother me. (the airplanes) you can hear them missing and that is when you get scared." "Well whomever you talk to -- that is the only thing that bothers them. You can never really tell when one of them will drop on you. (Get

used to it?) "I guess so. I believe in that, but no matter how much will power you have, when a plane comes right over your house, it will scare you."....(Get used to it?) "Yes, I would agree to that, in certain ways. But not to that noise and the plane coming down real low. It is the danger that is so worrisome and frightening.".. "Eventually you get used to it. You just don't pay too much attention to it. That's how you get used to it. We used to hear the cars when they went by but we don't any more. Now I sleep on this cot and the only thing that wakes me is the jets when they roar overhead." "Generally, the traffic doesn't bother; just some planes when they come low. A few years ago, they brought in the jets here and, Oh brother! Well they come so low, it gives you the impression that they are coming right through you. I usually put my hands over my head and think, 'Is it really going to crash in?' It's a wicked feeling....."

On the other hand, "time" may sometimes reduce feelings of fear and, thereby, lessen tension. One respondent said, "I'm not as frightened as I was. Well, because so many have gone over and they all pass over the house, that I know they just fly low and will pass over."

Whether fear increases or decreases with time can only be established over the years with continued research. Present indications which are based, at most, on 6 or 7 years of intense exposure to large commercial transports or jet planes, indicate that fear has increased as the volume of planes and the size and speed of planes have increased. NACA data also indicate that those persons who had lived all their lives in the same neighborhoods, and those who lived in their present area the longest, were more often "greatly bothered" by the airplanes. If "time" alone (6-7 years) were sufficient to produce adaptation, then they would have been "greatly bothered" less often.

e. The Effects of Inter-personal Relations

Since housewives are usually at home during the day and more often

exposed to the airplane noise stimulus, it was felt that they might be a major influence on the family's feelings about airplanes. Likewise, the perceived feelings of friends and neighbors was believed to be potentially important. During the intensive interviews each respondent was asked, "Now what about others in your family... How does your (husband-wife-children) feel about living around here? Why is that? What does he like? Dislike?.....How about your neighbors etc.?"

Practically every respondent reported that other members of his family as well as his neighbors shared his feelings about the airplanes. As in the case of the perceived stimulus, it is not too important whether these other people actually do share the respondents' feelings, but that he considers that others agree with the appropriateness of his reactions.

Since this agreement with one's own reported feelings was so universal, and since there was need to reduce the length of the interview, this battery of questions was eliminated from the final draft of the proposed questionnaire. Reports about neighbors' attitudes are covered in Question 26 of Appendix X in connection with reports about complaint experiences.

f. Importance of Expectation of Character of Residential Area

Practically everyone has some notion of what his ideal residential area would be like. The extent to which the airplane noise source is in conflict with this ideal is, of course, an important psychological variable.

Very little information was gathered on desired ideals for residential living in the NACA study. Information was collected, however, on anticipated likes and dislikes. It was found that very few people are aware of the specific character of a neighborhood when they decide to move there. Their concern is generally directed toward the house itself -- the cost, the layout, the aesthetic appeal. When asked, "How did you happen to pick this neighborhood to live in?", almost 40% indicated that it wasn't a personal decision, that they had no choice or that it was an

accident. About 20% mentioned convenience to job or general convenience of the location and only about a third offered specific social or physical advantages of the area. Only one out of every four people who were bothered by the airplanes had any expectations of any disadvantages or annoyances, and only 1% expected trouble from the airplanes. Most of the expected dislikes involved location, facilities, neighbors, congestion etc.

It has often been said that people should expect noise if they select a house near the airport. The fact is that all evidence indicates that they are not aware of the airplanes until they actually move to the area. Many people inspect the area on a Sunday, when few planes are flying. Others may notice a few planes flying by while they are briefly inspecting a house, but don't realize what the experience will be like on a 24 hour basis.

In the intensive interviews at Bedford and Farmingdale, it became quite apparent that goals and expectations are very important. Most respondents indicated that they had moved to the suburbs to get away from the congestion and hub-bub of the city and the dangers to their children of heavy traffic. They expected the neighborhood (near the airport) to provide quiet, residential open country. Few were even aware of the airport or believed it would be as bad as they now felt it was. The airport at Bedford, for example, has expanded tremendously in the past five years, bringing a heavy influx of population with all of the growing pains of rapid suburban growth. In addition, the expanded base has brought more noisier jets flying overhead. All of these affects attributed to the airport are in direct conflict with the basic values most people expected to find in their areas. Consequently, it is not surprising that they resent the intrusion of the airplane activity on their nice residential areas. In fact, some of the resentment due to high taxes and congestion which are blamed on the airport expansion may increase the intensity of complaints about airplane noise and low flying. Not that the noise and low flying are not considered important disturbances in themselves, but that it is difficult to complain

to the airport authorities about such indirect effects as high taxes and growing congestion of new homes. Consequently, it was sometimes found that a "convenient handle", such as noise or closing of access roads, was often used to express the cumulative annoyances with the airbase.

As Question 4 of Appendix X indicates, it was also found that an "aided-recall" flash-card technique was helpful in stimulating discussion about specific problems which hadn't previously been spontaneously mentioned. The open questions about likes and dislikes are followed by this flash-card which introduced questions about ideals, expectations etc.

The net balance of feelings about the area is an indication of the intensity of the conflicts between goals, expectations and the reality of the current situation. It also reflects attitudes about the future of the area. The NACA findings indicated that respondents who were "greatly bothered" with the airplanes generally only reported liking their area "a little", but that few indicated a net negative "dislike" for their areas. A complementary finding was the fact that few were actively planning to move from their area and that most people still had hopes for changing the airplane noise situation.

At the Bedford Airport, the temporary closing of one runway increased the volume of flights over the Lincoln area. Most respondents in Lincoln were informed of this temporary shift and as a short-run situation they were generally willing to accept it. There is ample indication, however, that if the expectation were for an indefinite prolonged exposure that their feelings would have been much more critical.

g. Importance of Attitudes towards the Missions of the Air Base

In the NACA study, it was found that attitudes toward the commercial airlines was generally positively correlated with tolerance of airplane noise. Persons who reported "no bother" or only "a little bother" more often said the airlines were "very important", while "greatly bothered" more often said they were

only "fairly important" or "not important."

In the case of U.S. Air Force operations, indications are that general feelings about "National Defense" and the specific missions of the military airplanes are even more important in securing the acceptance of the airplane disturbances.

Whether this psychological factor is equally important under all levels of aircraft noise and operations is not known. That it is important, however, is clearly indicated by the following comments gathered during the intensive interviews: "and if it's essential for defense, we can put up with a slight annoyance. In case of a national emergency, we'd probably be delighted that we had all these planes here for protection."...."They are essential to national defense -- if that was a commercial field, I'd move out of here."...."As far as I know I don't know a great deal about the airport, I think that they are here for the welfare of the vicinity and humanity and as such they are valuable enough so I won't speak any more about it." "In other words, they are an asset and not a liability."...."One of the complaints was that they had planes there for research, but I don't see anything wrong with that. I also feel that military support is valuable.".. "Well what he (Air Force representative) had to say sounded logical. As I said, there are two sides to it. There is our defense over there."

Feelings that the jets are for defense and that national defense is important to everyone is not always quite enough to produce acceptance of the local noise etc. Some people feel that the activity does not have to be near their neighborhood. Others passively accept it as a military decision beyond their control, and still others welcome the nearby installation. The latter group, of course, are most likely to make an effort to accommodate themselves to the noise situation. Some of the comments indicating these feelings are reported here: "Someone was telling me that they will need more airbases because of the possibility of another war. It's nice to know that they are handy."... "Well, in case of war, they've got to practice somewhere and get their experience."...."Well, I feel that if a defense post is

necessary and it seems to be, I would just as soon have it here."...."They can't get much further away and protect the city of Boston..."

h. Importance of Feeling that Aircraft Disturbance is Unavoidable

If a person feels that the noise source is important and that it is located nearby for a good reason, but that the particular operations create an unnecessary or avoidable disturbance, then it is likely that the person will feel bothered and annoyed. In understanding this complicated process, it has been found convenient first to ascertain whether a person feels that it is physically possible for anyone to do anything about the noise and aircraft operations. In the NACA study, 69% of the "greatly annoyed" felt that it was physically possible to secure an improvement. In the intensive interviews, feelings about jet noise were somewhat less optimistic. One person said, "Yes, definitely, they could muffle them. Johnson put a good muffler on the motor boat, so they could do the same with the airplanes." Most respondents, however, agreed with this answer, "Well, I don't suppose they can do much about that. That's something you have to live with if you want to stay here." Further discussion of the influence of feelings of futility on restricting the expression of annoyance feelings will be presented in connection with a discussion of overt complaint behavior.

A second consideration is whether the respondent feels that pilots and officials are sufficiently concerned about his rights and welfare. If he feels they are making a maximum effort to minimize the disturbance, then it is more likely he will make a greater effort to live with the noise. Some comments reflecting these attitudes are reported below:

"Oh yes.....definitely (concern) I guess they have rules and probably strict ones... The military are pretty strict. If a guy pulls a boner more than a couple of times then he isn't going to pull it much more."...."I feel that (concern) is stressed by the military and the civilian authorities. That is why you find the pilots in a

lot of ditchings and putting themselves in hazardous conditions."...."Well the pilots have a certain amount of control, but he has to get up to a certain speed and altitude in a limited amount of time and space. I don't go on one cylinder instead of 8 in my car."...."They're supposed to get a certain altitude before they come over."...."Yes, I think so...except occasionally there's some reason why they don't -- like the weather or something, but I think they try to be careful. They get called down if they don't -- they investigate"...."Yes, the majority are conscientious."

Sometimes respondents distinguish between the relative skills and maturity of Air Force and commercial pilots. Most respondents feel that both are equally well trained and oriented toward the seriousness of their jobs. A few felt that Air Force pilots were young and less responsible. Such comments reported below, of course, heightens feelings of fear and the unnecessary nature of the disturbance: "I never gave it much thought....they probably would be... they (commercial pilots) are a business and some of these fellows are more or less on a joy ride."..."In other words, assume the pilot did make a mistake, or was just horsing around. I don't think any pilot at the base would deliberately come out and buzz the area as far as that goes. But the reason I say if I knew the pilot....in the past when I was doing my hitch in the army, there were some pilots that I wouldn't have step inside of the plane just to have them warm it up..." "The only thing that bothers me is the hazard. There's no need for it -- to fly over here. I'm assuming they are familiar with the ground rules; the tower should notify them.."

i. Importance of Personal Variables

Only age and education were found to be significant demographic variables, affecting annoyance feelings. The middle aged and better educated were generally more tolerant than the younger and less well educated.

Previous experiences with other noise conditions at work or in other residential neighborhoods did not appear to have much effect on acceptance of intense aircraft noise levels. A person might accept equally intense noise at work because he felt it was an inevitable part of the job, but for residential living, he wanted different conditions. The primary consideration generally was not other noise experiences, but the necessity, or avoidability of the aircraft noise.

#### 4. Importance of Socio-Psychological Variables in Determining Overt Behavioral Responses

Our discussion so far has been in terms of variations of the physical airplane stimulus and corresponding shifts in human perceptions and feelings about the airplane situation. Most administrators can roughly understand the meaning of changes in sound level readings or the fluctuations in flight operations statistics. These are tangible data recorded on acoustic instruments and operations reports. The measurement of psychological feelings, however, often appears to be too intangible and complicated for them to comprehend. Their primary experience is with reported complaints by individuals or civic groups appealing for the reduction of aircraft noise or the modification of some operating procedure.

Their major concern is with the potential threat that such tangible complaints have on the continued operations of their bases. Although many of them don't realize it, however, their concern is also with the underlying feelings of annoyance which prompt the overt complaints. Whenever complaints are received, the administrator must make a judgment as to the validity of the annoyance expressed in these complaints. He must decide whether the disturbance is real and serious, or whether the complainer is a "chronic griper" exaggerating the situation. He usually also tries to anticipate the seriousness of the first complaints by making a rough judgment of the number of non-complainers who may feel as keenly about the disturbance but have not yet expressed themselves. The advantage of making an accurate estimate of the "complaint potential" before actual complaints snowball into an organized community campaign is quite obvious. Yet, the techniques for making such judgments about the underlying feelings of non-complainers are extremely difficult, and as will be shown in subsequent discussion, the volume of complaints at any given unit of time is often a poor reflection of a community's underlying feelings and "complaint potential."

For years public relations experts have tried to develop "rules of thumb" to relate overt complaints to a corresponding "complaint potential." While a considerable amount of general knowledge and experience has been amassed, the specific judgment is still largely a crude personalized art. It is known for example, that relatively few people will ever, under any circumstances, express their feelings to the authorities. It is known generally that younger, better educated people in a higher socioeconomic status group will more often complain or express themselves. But the specific standards which would provide a more precise clue as to the "expected number" of complaints under a given intensity of feeling are still not available.

It is known that a number of intervening socio-psychological variables often facilitate or discourage the expression of annoyance feelings. The precise statistical relationships of these variables are not yet known, but their general impact will be briefly described below. It should be emphasized that until such numerical relationships are empirically determined it will be very difficult to judge accurately the underlying "complaint potential" from the relatively few overt complaints actually received. It is the complaint potential which constitutes the maximum scope of the disturbance and the possible extent of community interference with base operations.

It is the objective of this research to develop a better understanding of the relationships between actual variations in the aircraft noise source, the "complaint potential" or underlying psychological feelings and the actual overt expression of these feelings in the various forms of complaint. Eventually, it is hoped that an analytical matrix will be developed embodying the empirical numerical relationships of the above parameters so that more accurate judgment may be made of the "complaint potential." At the present time, however, the most reliable method for ascertaining these underlying feelings of annoyance is through personal interviews of a cross-section of residents. It is hoped that after enough of such interviews have been analyzed under known variations of the offending noise stimulus that average empirical relationships will be established. These average factors will then

provide the basis for anticipating "complaints" and "complaint potentials" and for judging the seriousness of actual community conditions.

It may be helpful to discuss first the variables which affect expressions of annoyance by individuals then to consider the interpersonal factors which shape a neighborhood and a community's behavior. In the NACA study, personal and neighborhood complaints were studied. In the exploratory phase of this research, some of the broader community factors were also investigated.

a. Some Evidence on the General Incidence of Complaint Behavior

In June, 1946, the National Opinion Research Center asked a national cross-section the following question: "Have you ever written a letter to your Congressman or any other government official to give him your views about some public question?" It should be stressed that the question did not concern a response to a single issue at a given moment in time, but a cumulative experience during the lifetime of all adults interviewed. Naturally, the response to a single issue would be much smaller than the cumulative answers given in response to the above question. Only one out of every eight adults reported that they had ever written to officials in the past. As expected, about a third of the college educated, 12% of the high school and only 5% of the grammar school educated reported having written. The rate among men was greater than among women, averaging 15% vs. 12%; and the rate among younger persons under 40 years of age was 14% in comparison with 12% among older adults over 40 years. A regional difference was also found with 18% of New Englanders reporting activity in contrast with only 11% of the Southerners.

It should be recognized that these letters were not all critical; some of them were undoubtedly in support of a policy expressed by a public official. Consequently, it can be seen that the average number of "expected" critical letters one could reasonably anticipate receiving on a single issue would be quite small. If reports of Presidential mail on controversial issues are considered, the number of such letters probably ranges from 3 to 5 per 11,000 adults or only about .03 of 1%.

In the NACA study, about 0.5% of the "moderately annoyed" and 5.0% of the "greatly annoyed" reported that they had ever expressed their feelings to the authorities by writing, telephoning, signing a petition, or communicating in some other way. These complaint notes compare favorably with the general experience reported above.

b. Factors Influencing Personal Expression of Annoyance

In the NACA study and in the subsequent intensive interviews completed under this exploratory research program a number of factors were found to reduce complaints. Six of the principal variables will be discussed below:

- 1) Lack of knowledge of the proper authorities
- 2) Belief that it is physically impossible to reduce the airplane disturbance
- 3) Belief that complaints will be considered improper by neighbors or the social group
- 4) Belief in personal weakness of expression
- 5) Belief that complaints will be ineffective
- 6) Lack of social organization, leadership and ease of expression

It should be emphasized that the relationships of these impediments to complaints are unstable and that given an intense feeling of annoyance, the change in any one of these factors can release an increase of individual complaints without any apparent change in the airplane stimulus situation.

1) Lack of Knowledge of the Proper Authorities

In order to make a complaint, it is first necessary to know to whom one can complain. In the NACA study, over 60 percent of all respondents had completely wrong notions about the proper authorities. Only 16% correctly mentioned the CAA or CAB; the rest mentioned city or county agencies, the airlines or airport operators. At many civil airports, there are no central facilities for registering

a complaint; each of the airlines maintains separate facilities. At manufacturing establishments, such as the Republic plant, and at Air Force Bases, this problem of decentralization may not be as serious a consideration. Yet even at the generally well informed Bedford area, there were some people who reported, "You'd call someone at the base." Who that someone was, they didn't know and rather than get the expected run-around if their telephone call was transferred from official to official, they indicated they failed to call.

2) Belief That it is Physically Impossible to Reduce the Airplane Disturbance.

This factor has already been briefly discussed in connection with its influence on feelings of annoyance. Obviously, if the respondent believes there is nothing that can be done, the telephoning of a complaint would be expected to produce at best "commiseration" by sympathetic officials but not physical relief. Consequently, under such feelings of futility it might be considered a waste of time to complain. Some people, however, feel so badly about a particularly intense experience that they will call anyway to get their annoyance off their chests. Others must feel that the effort has even the slightest possibility of success in order to make the effort. Some illustrations of these feelings are cited below:

"Outside of calling once or twice, I never called after the group was formed. I've had the impulse, but just had the feeling it wouldn't do any good. I felt they were aware of the situation and were doing what they could"...."They hold your hand beautifully on the phone"...."I think they're here to stay. I don't think anything can be done. You know these things are going to continue to exist, so rather than fight it, you live with it"...."I guess it has to be done somewhere. I think they just have to. I don't see where else it could be put. They'd have the same problem anywhere else they put it"...."Nothing much can be done about it. It's a government reservation."

Of course, this concept of physical impossibility to do anything is also a very unstable and relative situation. When asked, "Do you think some one may find a solution in the next few years?", most respondents who felt that there was no current solution had unlimited faith that scientists would find a way in a few years. Should they shift their feelings and believe that a new method had been found to reduce the disturbance, the volume of complaints might be expected to increase without any change in the stimulus situation.

3) Belief That Complaints will be Considered Improper

If a person feels that he may be considered unpatriotic if he complains, or if he thinks he will lose his friends and alienate his neighbors who may depend on the air base for their livelihoods, he may hesitate to express himself fully. Some examples of these restraints are cited below:

"They are here for the welfare of the vicinity and humanity and as such they are valuable enough so I won't speak any more about it."...."As my husband says it is a good thing that they are ours. We are kind of used to them. At first though they would wake the children and I was irritated by that. I'd rather not have them here, but there is nothing to do about that."...."I suppose the Army thinks it's important so I imagine it's a necessary evil. I have two nephews in the Air Corps so I suppose I can't say much about it"...."If you're up and about not -- but if you're in bed the planes give you a bad time. The cat hides and sometimes runs up on people. But I like to put up with the planes because it's for defense. When they take off (I feel) here comes a friend, a jet. There was a big article in the local paper. It's a choice of Republic or Grumman and their noises, or the enemy. They don't want people to complain. There were some people who wrote to Albany and Washington. If influential people complain, they might move the plants. Only one person (complained around here) because they're anti-social. After all it means a living for all my neighbors, you know."

4) Belief in Personal Weakness of Expression

Some people have a self image of being inarticulate and unable to express themselves capably. For fear they may embarrass themselves if they called or wrote, they refrain from expressing themselves at all. When asked in the NACA study, "Do you think it's possible that you and your neighbors could help get the authorities to improve the airplane situation?" about 60% said, "No". In the intensive interviews, when asked, "Why?" some of the respondents revealed inferiority feelings such as, "I'm not much of a talker....I can't convince them....I'm not the one to be the complainer....I can't stand up to them and argue...."

5) Belief that Complaints will be Ineffective

Even if a person feels capable himself of complaining to the officials, he usually likes to feel that he isn't alone, that the group is behind him and that others will help. He likes to feel that there will be sufficient pressure to be effective. Past experiences of successful groups efforts tend to encourage individual expression, while feelings of isolation, of group weakness or past failures at group action tend to discourage complaints.

In the NACA study, the most frequently mentioned reasons for not complaining were the feelings that authorities wouldn't pay attention or that enough people wouldn't join together in complaint. Of those who did complain, about 2/3 felt it was a waste of effort. Some additional indications of such feelings of futility were obtained in the intensive interviews:

"Little fellows don't count much around here. All the people here signed the petition but it went into the wastebasket like I suppose all the others. Crooked politicians; they all take a little bribe",...."Well if the Government has put so much money into it, they aren't going to pull up stakes because the town wants it" ...."They appealed to the State Senator. I know they talked to the officials over

at the Bedford Airport. I think that after the meeting things improved a little. They told us that when the new runway is built we won't get the traffic. Meanwhile they go right over the house you know"...."I think they do as good as they possibly can. They've got to have these planes. You can't have them so far out they can't defend the city. If you must accept them you might as well do it graciously. We can't do anything about it anyway"...."Well it's got to be done someplace. They will do what they want to. If we don't get the noise someone else will"...."They have a committee at the airport to meet with the people of the surrounding towns. I suppose you call that public relations and they ended the complaints. I suppose that is as far as it got..."

It doesn't have to be repeated that this feeling of social futility is also a very unstable factor. New aggressive leadership can instill the spark of confidence needed to releast latent feelings of annoyance. Experiences at Cedarhurst, L.I., Newark, N.J. and elsewhere are ample proof that once local leadership gets behind an anti-noise and low flying campaign, mass support can be generated.

6) Lack of Social Organization, Leadership and Ease of Expression

This last factor is perhaps one of the most important and is related to feelings of social futility discussed above. Every neighborhood and community of which it is a part has certain established groups and procedures for handling social problems such as noise control. The way in which an individual of such a community would be expected to think of the problem and to express himself is largely determined by such group mores. For example, at Lincoln, Mass., the town meeting is the established medium of such expression and at a town meeting a warrant (resolution) was passed to establish a committee to reduce the noise and low flying of airplanes. A respondent, then answered that she herself, hadn't called to complain because she felt it was best to give the committee a chance to do its job. If she complained personally, she felt it would be a sign of "no confidence" and interference with the committee's work.

The extent to which a community has a long established tradition and closely knit system of organizations concerned with problems such as noise control, of course, will influence the ease of personal and group expression. If there are no established groups, with organizational know-how, funds, leadership and a history of past successes on other issues, it will obviously be more difficult for group action to get started. Moreover, if some energetic group does succeed in getting an organized group in motion and calls a meeting or circulates a petition, it is obvious that the volume of complaints will rise without a corresponding increase in the intensity of the stimulus situation. One respondent who reported that she had signed a petition, but had not indicated any personal annoyance was asked why she had signed. She answered, "My neighbors asked me to, and they would have thought me mean if I didn't support them...."

c. Problems of Judging Neighborhood and Community Reactions

In the NACA study, the primary sampling unit was a group of adjacent city blocks or a group of houses within a relatively small rural area which was exposed to homogeneous airplane and background noise conditions. Each sampling unit could be considered a part of a different neighborhood, but all 22-24 neighborhoods within the 10 mile radius of the major airport could be considered part of one or more comparable communities. A community is defined operationally as usually the smallest unit of political authority which includes the neighborhood. In most instances it would be a city, a town or a township. In some cases, it might be a special purpose district, such as a school, water or fire control area. It would be the primary political unit in which members of a neighborhood would normally expect legislative or administrative action concerning noise control problems.

Since different neighborhoods within a community are exposed to different kinds of airplane operations, it would be expected that neighborhoods would differ in their "complaint potentials." Those exposed to more intense noise or low flying would be

expected to feel more annoyed than distant neighborhoods off the flight path, over which airplanes never fly low or are seldom even heard. The expression of complaints by individuals in a neighborhood would be a function of the various factors discussed above, especially the knowledge of the authorities, cohesiveness of feelings among neighbors, and the existence of active neighborhood civic or home-owner groups to facilitate group action.

Whether the larger community could be induced by some of its constituent neighborhoods to take the lead in complaint activities depends on still other sets of social variables. No extensive study has been made of these factors since the neighborhood has been the primary unit of past research. During this exploratory phase, however, a start was made at analyzing this still more complicated problem. At least six important social factors were found to be operative at the Hanscom Airport area:

- 1) The relationship between the number and importance of the neighborhoods most intensely affected and the community as a whole.

If only a relatively small number of neighborhoods are intensely affected by the jets and the people in these neighborhoods have little prestige or influence on the local governmental organization, then it is generally difficult to obtain the support of official community leadership.

- 2) The structure of the governmental and non-governmental organizations in the community

The existence of established and influential neighborhood groups and the ease with which they can express themselves or gain access to the governmental authorities is important. In New England, the town meeting is the legislative unit of each community and each resident is entitled to attend, speak and vote on town warrants which can be proposed by any group of residents. Under such a power structure it is relatively easy for residents in selected neighborhoods to "pack" a meeting and secure community sanction for neighborhood programs.

3) The relative pressures of other community problems

If most of the residents of a community are fully occupied with the consideration of other problems which are considered more urgent or more important to the welfare of the community, the noise problem may be temporarily lost in the shuffle.

4) The history of past community action

If the community has attempted to cope with the problem or similar problems in the past and has succeeded in accomplishing something, it is usually an incentive to try again. But if previous efforts were unsuccessful, then the community leadership might hesitate to risk another defeat.

5) Belief in the possibilities of successful action

Whether or not previous efforts were ever made, if the leaders of a community feel that opposing the will of the Air Force or Federal government has little chance of success, they may hesitate even to undertake a campaign against them.

6) Socio-economic differences

The socio-economic character of a neighborhood is, of course, important. If it consists of primarily well-to-do residential areas with high property values and strict street zoning regulations, the impetus to act on a noise control problem might be greater. If, on the other hand, the neighborhoods affected are mixed, industrial, commercial, and less desirable residential areas, with a host of other physical disturbances besides the airplane problem, the willingness of the community to assume leadership in attempting to restrict airplane activity may be lessened.

The relevance of the above community factors, as well as others which may be uncovered in future research, should be considered in any further investigation of neighborhood reactions. Even if they do not become the object of primary research efforts until a better understanding is achieved of neighborhood responses, the influence of these factors on different neighborhoods should be understood.

d. Problems of Validating Responses

Since administrators of Air Bases are primarily worried about the net effects of annoyance feelings as expressed in restrictive community action, it is understandable that there is concern about the validity of personal interview reports. This is not a unique problem associated with aircraft noise but applies to all public opinion research. The question is often asked, "How can you be sure that people give you honest answers?" The past 25 years of experience in opinion polling offers ample evidence of a general frankness of response by most respondents. Once general suspicions are overcome and good rapport is established, most people are in a sense flattered that their opinions are important enough to be solicited.

In the case of aircraft noise, several validating checks are built into the proposed questionnaire (Appendix X). First, there is the question of salience and free response. The first six questions of the interview offer no clues as to the purpose of the study. The extent to which airplane noise is spontaneously mentioned is an indication of the true salience and intensity of feeling about the disturbance. Likewise, every major section is introduced by an open question which again measures spontaneity of response. For example, question 9A5 of Appendix X, asks in open fashion, "Could you tell me just how you feel about the ( ) noise -- in what way does it bother you?" before specific probes are asked about fear, sleep, conversation, etc.

Second, there is the question of consistency of response which can be determined from an internal analysis of each pattern of answers. Another aspect of this check is the consistency of answers from respondents within the same neighborhood who are presumably subject to the same environmental conditions.

Third, there is the report of the trained interviewer about the rapport and frankness of response. The mannerisms, inflections, gestures and general context of response are valuable clues to a trained observer of the honesty and sincerity of response.

It may be said that it isn't only a question of honesty of response but also of the predictability of following thru on intentions to complain. Election polls have, of course, provided valuable information on the relationships between intentions to vote and actual practices of voting. Intensity of feeling, certainty of convictions and ease of facilitating circumstances are generally considered important variables. It is proposed to study these and other factors facilitating and inhibiting expression of annoyance feelings in any future research. (See Qs. 22-27 of Appendix X). An internal analysis of these factors in terms of reported actual historical behavior of having complained in the past will provide valuable clues as to the dynamics of feelings and the expression of such feelings.

A second test will be the historical behavior of individuals with respect to non-aircraft disturbances. (See Q. 28 of Appendix X) Whether a person ever was moved to complain and under what circumstances he acted or didn't act can be determined from a factor analysis of answers to this question.

A third test will be the relationship between reported intentions to sign a petition, calling or writing or attending a meeting on aircraft noise (See Q. 29 of Appendix X), and actual past behavior.

There are several problems involved in contriving an experimental test situation which actually measures a behavioral decision. In the NACA pre-test in New York, the interviewer left a postcard with each respondent and suggested that a local group, the NAT C was interested in hearing their views. This experiment was a failure for several reasons. In the first place, the sponsorship of the test was suspicious. After insisting that the survey was neutral and not connected with any airlines, etc., the interviewer indicated a relationship to the airlines. Secondly, the test offered no indications of a bona fide group effort, which most campaigns would involve. The individual was asked to express an individual opinion and since most persons felt individual efforts were futile, it was to be expected that few would write. Third, valid campaigns are usually spread over a considerable period of time and all sorts of group pressures are gradually directed at individuals before they are faced with the critical decision of supporting or not supporting a drive.

The experience with the contrived post card campaign indicates that any future test should consider the following four factors:

- 1) Bona fide sponsorship by local community leaders
- 2) Sufficient time for usual build-up of educational campaign
- 3) Active participation by local people and not by NORC interviewers
- 4) All residents should be involved, not only NORC respondents

Of course, there is the added administrative problem of artificially creating a protest movement and of being able to control it. Before any such contrived test is attempted an analysis should be made of aircraft operations and the possibilities of actually reducing the disturbance. Obviously without sufficient control, a test could easily boomerang.

It is our belief that sufficient knowledge has been obtained in this exploratory research to sharpen our conceptual understanding of the annoyance and complaint problems. In our judgment the proposed questionnaire included as Appendix X of this report is a feasible instrument for obtaining the necessary data from which an appropriate analytical matrix can be developed. A detailed research proposal outlining a study design for use of such an interview instrument will be submitted in the near future.

Rept 55

APPENDICES

- I. Some of the Major Gaps in Knowledge of the Effects of Airplane Noise on Man
- II. Special Analysis of Community Aspects of Aircraft Annoyance Among Persons Mentioning Jet Aircraft
- III. Perception, Annoyance and Activities Reported as Affected by Aircraft and Traffic Noises
- IV. Variability of Overall Annoyance Responses Among Sampling Areas
- V. Analytical Outline of Exploratory Study of Jet Annoyance
- VI. Question Outline for Intensive Interviews
- VII. Conceptual Framework of Community Aspects of Aircraft Noise and Other Annoyances
- VIII. First Draft of Questionnaire
- IX. Second Draft of Questionnaire
- X. Third Draft of Questionnaire
- XI. Physical Parameters of Jet Aircraft Noise Complex

LIBRARY  
NATIONAL OPINION RESEARCH CENTER  
*University of Chicago*

## APPENDIX: I

### SOME OF THE MAJOR GAPS IN KNOWLEDGE OF THE EFFECTS OF AIRPLANE NOISE ON MAN

While this study has provided a great deal of valuable insight into the effects of airplane noise on man, it has also revealed a number of questions which require additional research. In preceding sections our survey findings were presented together with their limitations. In this concluding section of the report, some of these limitations will again be summarized to gain perspective of the tasks ahead.

One of the most important methodological lessons revealed by this initial research is that the combined efforts of the acoustical, aeronautical and social scientists are required to understand fully the complex interrelationships between the airplane noise stimuli and human responses. Before the social scientist can learn more about annoyance and complaint reactions, it is clearly evident that the acoustical and aeronautical engineers must first differentiate and describe the characteristics of the airplane stimulus in greater detail. Before the physical scientists, on the other hand, can decide which parameters of the stimulus require control, the social scientist must be consulted about the human limitations of perception. The entire analytical scheme which was finally used in this study is based on the assumption that the characteristics of airplane stimulus can be clearly differentiated and controlled. Variations in human response are compared with variations in the airplane stimulus and after any differences in the personal characteristics of respondents are statistically controlled, the remaining differences in annoyance and complaint responses are attributed to the differences in the airplane stimulus. Likewise, variations in human response are analyzed under comparable stimulus situations, and an effort is made to identify statistically the socio-psychological factors which influence these variations in individual annoyance and complaint responses. If the airplane stimulus is inadequately controlled, the observed variations in response are likely to be confounded and the effects which are attributed to specific socio-psychological factors may merely reflect different reactions to different stimulus conditions. It is apparent, therefore, that fruitful research in this field requires the close collaboration of both the physical and social scientists.

In the following section a brief description will be presented of some of the major gaps in our knowledge of both the physical stimulus and of the socio-psycho-

2.

logical factors interacting with the stimulus situations.

#### A. GAPS IN OUR KNOWLEDGE OF AIRPLANE STIMULUS CHARACTERISTICS

##### 1. Effects of Irregularity of Exposure

In the present N.A.C.A. study an effort was made to control for frequent (average of 3 or more per hour) and infrequent (average of one or less per hour) exposure to the aircraft stimulus. As the results indicate, however, it was not always possible to secure even this gross measure of control. The maze of circling patterns of airplanes criss-crossing over the close and intermediate sampling areas may well have prevented clear-cut differentiation of stimulus conditions. Consequently, correlations between annoyance responses and irregularity of average exposure were somewhat inconclusive. In any future research, an effort should be made to secure more distinct stimulus situations; it may be possible to select airport areas where there is less variability in wind and weather conditions and, therefore, more regularity in utilization of the same runway and flight paths.

It may also be desirable to investigate further the effects of irregularity of exposure from hour to hour and from day to day. At some airports there are definite peak hours when the volume of air traffic is fairly heavy while at other hours each day there are practically no airplanes landing or taking off. Likewise, at some airports wind or weather conditions on certain days sometimes require almost all flights to pass over selected communities while on other days different weather conditions result in very few airplanes passing over the same communities. The effects of such variations in exposure to airplane stimuli on annoyance and complaint responses should be explored. If distinct stimulus situations can not be found, additional accoustical measurements will be necessary to take account of these variations.

##### 2. The Effects of Emergent Noise Levels

In the present study it was not possible to find sampling areas close to the airport with sufficiently loud background SNL's to reduce the intense airplane SNL to a low emergent noise level. Conversely, it was also impossible to find distant sampling areas with a low enough background SNL to result in a very high emergent NL.

3.

Only in the middle distance areas was it possible to secure all types of emergent NL conditions. Although most airport areas will present the same difficulties, effort should be made to find special airports at which these atypical airplane emergent NL's are present. It will then be possible to test more fully the interaction of airplane SNL and emergent NL with annoyance responses.

3. The Effects of the Location of a Respondent's House Directly Under a Flight Path or Off the Flight Path

Only a limited number of interviews were secured from residents who lived off the direct flight path. In addition, because of circling operations it is uncertain whether these sampling areas did not actually have planes pass overhead at a higher altitude. Problems involved in the control over this variable are similar to those already discussed under "Irregularity of Exposure." If airports with less variable flight conditions can be found, a **broader** analysis of the factor may be possible.

4. The Effects of Other Acoustical Factors

In the present study only peak intensity levels were measured in three selected octave bands (75-150 cps, 300-600 cps and 1200-2400 cps). In addition, efforts should be made to explore the significance of such other acoustical parameters as:

- a. Rate of change of noise level -- time interval of peak airplane SNL.
- b. Variations in frequency spectrum of the airplane noise resulting from the airplane approaching and passing overhead, including the Doppler Shift.
- c. Spectral characteristics of the noise which produce such descriptions of the noise as screeching, whining, blasting, whooshing and booming.
- d. Other qualitative characteristics of the noise which carry specific connotations to different residents.

B.. GAPS IN OUR KNOWLEDGE OF SOCIO-PSYCHOLOGICAL FACTORS INFLUENCING FEELINGS OF ANNOYANCE

1. Structure of Overall Annoyance

In the present study, dislike, bother or disturbance with airplane noise was combined with feelings of annoyance with vibrations, TV picture interference, landing lights, fear of crashes and other miscellaneous airplane nuisances into one overall annoyance rating. In addition to such a gross index of annoyance, it would also be desirable to know more about the relative importance of each of these aircraft nuisances, of their interactions and historical development. In the present study inferences were drawn regarding the key role of "fear" and of the minor role of TV picture scrambling. While such inferences appear to be reasonable, additional direct comparative information should be secured on the relationships of these factors.

2. Knowledge Possessed by Residents of the Purposes of Different Air Operations

In this N.A.C.A. study, sampling areas were selected in terms of the principle kinds of civilian air operations to which residents were exposed. Consequently, some areas were designated as landing, take-off or cruising zones. In any future research, questions should be asked to determine systematically the extent to which residents are actually aware of these different air operations and can recognize them from characteristics of the sound stimulus. An effort should also be made to elicit annoyance responses to each of these different operations and to compare them with the intensity characteristics of the airplane SNL.

In the case of jet airplanes which are operated by the Armed Forces, the extent to which residents are aware of the different kinds of local missions should be determined. At some bases, a variety of operations occur including such activities as training, testing, defense scrambling, and air cargo transport. The extent to which residents are aware of these different activities, are able to identify them and differ in their feelings about them should be ascertained.

3. Feelings of Residents About the Importance and Necessity of Different Air Operations

To what extent do residents feel differently about the importance of civilian and military operations? To what extent do they differentiate between training or testing activities and air carrier or defense scrambling operations? In the event that a resident feels differently about the relative importance of these activities, does this fact influence his feelings of annoyance with these activities? A further basic factor which should be investigated in relation to this question is the respondent's feelings about the nation's security. Does he feel we are in imminent danger of attack, or does he feel the nation is relatively secure? Does he feel that his particular community is a likely target area or does he feel that his area is non-strategic? These attitudes may influence general feelings about the necessity of particular military operations and in particular whether they are necessary in the respondent's locality.

4. Knowledge Possessed by Residents of Flight and Safety Regulations

To what extent are residents aware of the existence of various flight regulations designed to minimize community disturbances? Such regulations might cover preferential runway use, minimum altitude and flight path patterns directed away from populated areas, limitations of certain operations to daytime periods, prohibitions of stunting, power diving, sonic boom passage, etc. Our results indicated widespread ignorance of these administrative regulations, but these questions were only asked if a person felt the airplane situation should be improved. It is possible that some respondents were not asked these questions because they felt it wasn't possible to improve the situation. Consequently, it would be desirable to ask these questions of all respondents.

5. Feelings of Residents About the Necessity of Different Flight Regulations

To what extent are residents convinced that every consideration has been given to their welfare, and that passage of airplanes over their areas is absolutely

6.

essential? Assuming that some operations are considered essential and others are not, do these feelings influence annoyance and complaint reactions?

6. Feelings of Residents About the Actual Observance of Flight Regulations

Assuming that the respondent agrees with the reasonableness of various flight regulations, to what extent does he feel that they are actually observed by the pilots? To what extent does he feel that the local civil airlines and military authorities are sincerely interested in enforcing the regulations? To what extent does he feel that pilots are concerned with the community welfare and are abiding by the regulations? To what extent does he differentiate between civilian and military authorities and pilots? Does he feel differently about the maturity, training and skill of civilian and military pilots? What about local government authorities -- are they believed to be interested in minimizing airplane disturbances? If they are, how effective have they been?

7. Relative Importance of Other Local Disturbances

In the N.A.C.A. study, the first six questions were designed to provide an unbiased picture of a respondent's feelings about the advantages and disadvantages of living in a particular neighborhood. Because the questions were of the general "free answer" type, little information was secured systematically on the relative importance of these negative or positive aspects of living in an area. Additional information might also be gathered about the specific activities affected by these non-aircraft disturbances and the time pattern of adjustment to them. In our analysis, it was suggested that the airplane problem was superimposed on a series of other local problems and, therefore, may have been "the straw which broke the camel's back." Further direct evidence should be secured of the possible transference of hostility feelings to the airplane situation and conversely, of the heightening of annoyance with non-aircraft problems as the result of the introduction of intense aircraft noise experience.

7.

### 8. The Effects of Previous Exposures to Noisy Situations

An effort was made to have each respondent report more about his previous experiences with noisy situations. The limitations of "memory biases" restrict the types of data which can reliably be obtained, but further attempts should be made to get additional insight into the processes of past adjustment to these situations. Were respondents bothered at first by the noise and at what point and under what circumstances did they become accustomed to it? If they failed to get used to it, what aspects contributed most to continued annoyance?

### C. GAPS IN OUR KNOWLEDGE OF FACTORS INFLUENCING EXPRESSIONS OF ANNOYANCE

This entire question is perhaps one of the most important and yet, the least predictable. It involves the complex factors which relate different individuals to various local groups and government functions, and while these relationships are known to very greatly, an effort should be made to learn more about them. Below are listed a number of factors which should be investigated:

#### 1. The General Structure of the Community

How closely knit and organized is the community? What kinds of local organizations exist and are expected to act in the solution of different civic problems? How important are these organizations and what previous experience have they had in successfully coping with local problems? Who are the opinion leaders and how influential are they in initiating and leading local activities?

#### 2. The Role of the Individual Citizen and His Feelings About Participation in The Solution of Local Problems

How does the respondent visualize his status and role in the community? Does he feel that he is expected to express his feelings about civic problems directly to the appropriate authorities or through his civic organizations, local newspapers or some other way? How would he usually express himself on a local problem? Has he actually ever complained to anyone about other local problems? What happened? Does he feel it is proper to complain or not? Does he feel it proper to participate if the

8.

action is initiated by established civic groups or does he feel that individual initiative is proper? What about new problems vs. old ones? Does he expect others to act first and suggest the proper course of action on each new problem or does he feel that each person should spontaneously speak for himself?

3. Knowledge of the Proper Authorities

This factor proved very important in the NACA study. In any future research it must be ascertained and controlled.

4. Feelings About the Physical Possibility of Improving the Airplane Situation

To what extent does the respondent feel it is physically possible to improve the airplane situation if the authorities wanted to act? Obviously, if one were completely pessimistic about the mere possibility of altering the airplane situation, there would be little incentive to express annoyance to the authorities.

5. Feelings About the Feasibility of Improving the Airplane Situation

Does the respondent feel that the various authorities would be interested in his expression of annoyance and would they act favorably if they considered his complaint justified? What previous experiences has he had, or has he heard about concerning the responsiveness of the authorities?

6. Feelings About Group Attitudes

Does the respondent feel that most of his neighbors feel as he does about the airplanes or does he feel that he is in the minority? Does he feel it would be socially acceptable to complain or does he feel that he would face group censure if he expressed his annoyance?

While the above factors are not an exhaustive list of pertinent considerations affecting expressions of annoyance, they are believed to contain the most important of the many variables. While the measurement of these "complaint potential" factors and the understanding of their dynamic interactions is a difficult task, an effort must be made to evaluate them if one is to appreciate the varying relationships between feelings of annoyance and their overt expression in different forms of complaint.

APPENDIX: II

SPECIAL ANALYSIS

OF COMMUNITY ASPECTS OF AIRCRAFT ANNOYANCE

AMONG PERSONS MENTIONING JET AIRCRAFT

NATIONAL OPINION RESEARCH CENTER  
University of Chicago

100 Fifth Avenue  
New York 11, New York

Paul N. Borsky  
Study Director

David E. Ryan  
Assistant Study Director

## Introduction

The study of Community Aspects of Aircraft Annoyance which has already been reported to the MACA was directed specifically to research into the reactions of populations exposed primarily to operations of large, propeller-driven aircraft. Care was especially exercised in selecting the major airport areas included in the survey to avoid areas with a heavy proportion of jet operations.

In two of the major airport areas (Minneapolis and St. Louis), however, jet operations approximated ten percent of total operations at the time of the study. In the six remaining airport areas, no more than four or five of the individual sampling areas were exposed to regular jet operations, and the few jet aircraft traversing these areas are believed to travel at a higher altitude than the propeller-driven planes. Precise information is not available on possible differences in altitude, flight path and flight regulations observed by military and commercial pilots, due to differences in the nature of the missions and flight procedures used by military and commercial aircraft. Formation flights, for example, may involve considerably more low circling over populated areas due to such operations as forming up and landing in series than do commercial flights.

Since jet operations were only a minor factor in the study design and since no direct and pointed effort was made in the interviews to elicit uniform information about them in a standard way (beyond careful instructions to the interviewers to probe carefully for information about both jet and propeller-driven aircraft whenever the respondent himself mentioned jets or differentiated between the two types of aircraft), it was felt that there was no adequate basis for detailed statistical comparisons of reactions to jets vs. other aircraft. Since almost 400 respondents did voluntarily mention jets, however, gross comparisons of their remarks were made and will be reported below. Interviews in which jet planes were mentioned were also analyzed on a qualitative basis and the impressions formed in the course of the qualitative analysis have been taken into account in the interpretation of the quantitative data which will be reported.

Quantitative Analysis

Table 1 compares the overall annoyance of respondents mentioning jets with those not mentioning them.

TABLE 1

COMPARISON OF OVERALL ANNOYANCE OF RESPONDENTS MENTIONING JET AIRCRAFT  
WITH THOSE NOT MENTIONING JETS

<u>Overall Annoyance</u>	<u>Mention Jets</u>		<u>Do Not Mention Jets</u>		<u>All Respondents</u>	
	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>
No Bother. . . . .	47	12.4%	1097	33.7%	1144	31.5%
Some Bother. . . . .	140	36.9	1103	33.9	1243	34.2
Great Bother . . . . .	192	50.7	1056	32.4	1248	34.3
	<u>379</u>	<u>100.0</u>	<u>3256</u>	<u>100.0</u>	<u>3635</u>	<u>100.0</u>

It is quite apparent that those persons who voluntarily mention jets are more annoyed with airplanes than those not mentioning jets. Since only about 10% of all respondents mention jets, however, the impact of their greater annoyance on the pattern of annoyance for all respondents is not significant.

It must be borne in mind from the outset, that no systematic examination has been made to determine whether the annoyance classification of each of the 379 interviews in which jets were mentioned is attributable to jet planes only, to propeller-driven planes only, or to both in greater or lesser degree. It is known from the qualitative analysis that a substantial number of the 332 respondents who mentioned jets and were adjudged to be bothered by aircraft operations were bothered by both jets and propeller-driven craft and that, of these, some were bothered more by jets, some were bothered more by propeller-driven planes and some appeared to be bothered about equally by both types. Our impression is that a rather larger proportion were bothered more severely by jets, but the impression is not strong enough to warrant a percentage estimate. By estimation, a still smaller proportion reported bother by

one type and specifically not the other. Again, we would estimate the proportion of those who specify jets as the only source of bother to be somewhat greater.

The decision not to undertake a systematic classification of these interviews to determine the degree of annoyance with aircraft operations attributable to jet aircraft was based on the aforementioned lack of systematic interview material and the statistical consideration that the numbers of cases in the various sub-groups into which the "jet mentions" would have to be separated would, in all probability, be too small to permit detailed comparisons in terms of any of the major variables. In the light of these limitations, it is our judgment that the data do not warrant a more elaborate treatment.

It should be clear from the foregoing qualifications that two explanations are possible for the stronger annoyance reported by those who mention jets, and that it is not possible with the present data to determine the relative importance of these hypotheses. One possibility is that jets actually caused more bother than propeller-driven planes. Another, equally possible, would be that respondents who were more bothered by aircraft operations were more likely to differentiate jet and non-jet aircraft. In our judgment, however, both factors were probably effective in some degree, with the distinct possibility that jet aircraft do cause more annoyance in areas where both are operating.

Table 2 shows the distribution of the number of respondents mentioning jets for each of the eight major airport areas. As noted above, jet operations were a factor principally in Minneapolis and St. Louis; and only in these areas are the numbers of jet mentions appreciable.

TABLE 2

INTERVIEWS IN WHICH JET AIRCRAFT WERE MENTIONED VS. TOTAL NUMBER  
OF INTERVIEWS OBTAINED FOR EACH OF THE EIGHT MAJOR AIRPORT AREAS

	<u>Jets Mentioned</u>		<u>Total Interviews</u>
	<u>Number</u>	<u>Percent</u>	<u>Number</u>
New York . . . . .	10	2.1%	482
Philadelphia . . . . .	43	8.8	488
Minneapolis . . . . .	142	32.1	443
Chicago . . . . .	19	4.1	462
St. Louis . . . . .	110	25.0	440
Memphis . . . . .	21	4.8	440
Atlanta . . . . .	9	2.0	440
Miami . . . . .	25	5.7	440
Total . . . . .	379	10.4	3635

As was noted earlier with reference to Table 1 the greater annoyance reported by respondents mentioning jets had no serious impact on the overall annoyance pattern for all interviews, which included them. Since about a fourth of all interviews in St. Louis and almost a third in Minneapolis mention jets, however, the effect on the overall annoyance patterns in these areas was also determined. As Table 3 indicates, while the respondents who mention jets are much more annoyed than those not mentioning jets in these areas, the effect on the total pattern of annoyance is to increase the proportion of "greatly annoyed" by about only 6 percent. While the other six areas are not shown in Table 3, a similar analysis indicated an impact of less than one percent in these areas.

TABLE 3

OVERALL ANNOYANCE PATTERNS IN MINNEAPOLIS AND ST. LOUIS  
 BY RESPONDENTS MENTIONING AND NOT MENTIONING JETS

<u>Minneapolis</u>				
<u>Overall Annoyance</u>	<u>Mention Jets</u>	<u>Not Mention Jets</u>	<u>Total Respondents</u>	<u>Difference (Total-Not Mention Jets)</u>
No Bother. . . . .	7.8%	28.0%	26.0%	- 2.0%
Some Bother. . . . .	35.2	41.4	37.2	- 4.2
Great Bother . . . . .	57.0	30.6	36.8	+ 6.2
No. of Interviews. .	(142)	(261)	(443)	
<u>St. Louis</u>				
No Bother. . . . .	14.5%	32.1%	27.7%	- 4.4%
Some Bother. . . . .	34.6	39.1	38.0	- 1.1
Great Bother . . . . .	50.9	28.8	34.3	+ 5.5
No. of Interviews. .	(110)	(330)	(440)	

Table 4 shows the frequency distribution of jet mentions by aircraft sampling areas for each of the eight major airport areas. It will be recalled that there are twelve such areas for New York and Philadelphia and eleven for each of the remaining six airport areas. In each of the total of ninety sampling areas, 40 interviews were obtained - ignoring minor deviations. The sampling units are the appropriate unit for this classification because it was a feature of the sample design that the airplane stimulus conditions would be almost identical for all respondents in a particular sampling area.

TABLE 4

FREQUENCY DISTRIBUTIONS OF JET MENTIONS PER SAMPLING UNIT  
FOR EACH OF THE EIGHT MAJOR AIRPORT AREAS

Number of Jet Mentions per Sampling Unit	New York	Philadelphia	Minneapolis	Chicago	St. Louis	Memphis	Atlanta	Miami	All Areas	
									Number	Percent
None	8	2	1	3	0	2	6	1	23	25.5
1 or 2	2	5	1	3	0	5	4	6	26	20.0
3 or 4	2	2	0	5	1	3	1	3	17	18.9
5 - 10	0	2	2	0	5	1	0	1	11	12.2
11 - 26	0	1	7	0	5	0	0	0	13	14.4
	<u>12</u>	<u>12</u>	<u>11</u>	<u>11</u>	<u>11</u>	<u>11</u>	<u>11</u>	<u>11</u>	<u>90</u>	<u>100%</u>

It is apparent from the table that roughly one-fourth of all sampling areas had absolutely no voluntary mentions of jets. An additional 29% had only one or two mentions for each forty respondents, and about 19% of areas had three or four mentions - 10% or less of respondents in these areas. In only 26.6% of the areas then, were there more than a negligible number of mentions, and it is immediately apparent from the table that these are concentrated in the Minneapolis and St. Louis airport areas.

It should be noted that in sampling areas in which only a few respondents mentioned jets, the character of the remarks sometimes indicated interest in jets rather than annoyance. In a few cases the remarks also indicated anticipation of future annoyance rather than current bother. One respondent, for example, expressed considerable annoyance with propeller-driven aircraft flying over his residence and added, "What will we do when they put the jets in!"

We have considered, thus far, only the comparative annoyance levels for those mentioning jet airplanes vs. those who did not mention jets. In this gross comparison respondents who live in sampling areas in which no mentions of jets are reported are combined with those who also do not mention jets but live in areas in which other respondents do report jet activity. In the major analysis controlling for level of aircraft noise, it is obviously necessary to compare the annoyance reported by respondents mentioning jet aircraft with annoyance reported by those living in the identical areas but who did not mention jets. In addition, the annoyance levels of those living in totally different areas who did not mention jets are also presented. This classification enables us to control reasonably well for actual exposure to jet operations. In areas where no respondent mentioned jets we have reliable information that jets do not in fact generally operate, and the absence of reports of jets by respondents tends to confirm this. In areas where jets are mentioned, we frequently have reliable information that jets do operate in the area, and the presumption is strong in many of the areas where there were more than one or two mentions for each group of forty respondents that jets do operate to some extent even though the existence of these operations was unknown to our advisers. Since there seemed to be a possibility that only one or two mentions might reflect only "crack-pot" reports, mentions of anticipation of jet operations, or remarks reflecting interest in jet aircraft rather than response to actual exposure to jet operations, a large sample of these interviews was checked to establish whether or not this was the case. There proved to be no definite greater tendency for these reasons for mentioning jets to be given and since there were only 33 such cases in our study they are included in subsequent tables.

Table 5 shows the distributions of overall annoyance for those mentioning jets, those living in the same areas but not mentioning jets, and those living in areas where no jets were mentioned.

TABLE 5

ANNOYANCE WITH AIRCRAFT OPERATIONS FOR RESPONDENTS MENTIONING JET AIRCRAFT,  
 RESPONDENTS IN JET AREAS WHO DID NOT MENTION JETS, AND RESPONDENTS IN AREAS  
 WHERE JETS WERE NOT MENTIONED

Overall Annoyance	Areas Where Jets Were Mentioned			Areas Where No Jets Were Mentioned	All Areas
	Mention Jets	Do Not Mention Jets	Total		
No Bother. . . . .	12.4%	31.7%	28.4%	36.2%	31.5%
Some Bother. . . . .	36.9	36.3	36.4	30.8	34.2
Great Bother . . . . .	50.7	32.0	35.2	33.0	34.3
Number of Interviews . . .	379	1827	2206	1429	3635

It must be observed again that it is not possible to determine from the present data whether those individuals who mention jets are merely more sensitive to aircraft operations generally and, therefore, more likely to mention jets or are more bothered by aircraft operations because of jets. However, this analysis demonstrates conclusively that those who mention jets are more annoyed by aircraft operations in their areas than are other respondents in the same areas, who do not mention jets. Since only responses of persons living in the same sampling areas are compared, it can not be said that the greater annoyance reported by those mentioning jets is due to variations in the aircraft stimulus.

Turning now to a consideration of the possible clustering of respondents who mention jets in particular Aircraft SNL groups, we note in Table 6 below that the greatest concentration of such "jet mentions" occurs in the middle distance 67-72 db group which is 3-4.5 miles from the end of a runway. Further analysis also reveals a heavier concentration in the middle Aircraft Emergent NL of 18-29 db than in the high Emergent NL of 30+ db. This may be another contributing reason for the greater overall annoyance observed in this stimulus category. It is also possible that

forming-up and other circling operations are disproportionately heavy at this middle distance, although we lack definite information on this point. The small percentage of "jet mentions" in the 61-68 db level on the other hand, may be due in part to sampling variability, since this level of aircraft noise has the smallest number of cases generally, with only a total of one hundred and **forty-four** interviews in areas where jets were mentioned.

TABLE 6

DISTRIBUTION OF "JET MENTIONS" BY AIRCRAFT SNL

<u>Aircraft SNL</u>	<u>Percent of Interviews In "Jet Areas" That Mention Jets</u>	<u>Percent of All Interviews That Mention Jets</u>
50 - 60 db . . . . .	12.0%	7.1%
61 - 66 db . . . . .	7.6	2.3
67 - 72 db . . . . .	22.3	15.8
73 - 78 db . . . . .	18.8	11.8
79+ db . . . . .	14.6	9.4
All SNL's Combined . . . . .	17.2%	10.4%

Table 7, below, shows the detailed distributions of overall annoyance groups for the whole sample of 3635 interviews divided into "jet-mention" areas and areas in which jets were not mentioned, controlling for the level of intensity of aircraft noise.

TABLE 7

COMPARATIVE ANNOYANCE OF "JET MENTIONS" AND "NON-JET MENTIONS"  
IN THE SAME SAMPLING AREAS AND "NON-JET AREAS" BY AIRCRAFT SNL

Aircraft SNL	Level of Annoyance	Respondents in Areas Where Jets Were Mentioned		Respondents in Areas Where No Jets Were Mentioned
		Mention Jets	Do Not Mention Jets	
50-60 db	No Bother . . . . .	34.8%	60.7%	70.3%
	Some Bother . . . . .	47.8	34.6	24.1
	Great Bother. . . . .	17.4	4.7	5.6
	No. of Interviews	(46)	(338)	(266)
61-66 db	No Bother . . . . .	*	36.8	43.7
	Some Bother . . . . .	*	42.2	40.0
	Great Bother. . . . .	*	21.0	16.3
	No. of Interviews	(11)	(133)	(337)
67-72 db	No Bother . . . . .	10.3	34.2	42.7
	Some Bother . . . . .	36.1	38.2	33.7
	Great Bother. . . . .	53.6	27.6	23.6
	No. of Interviews	(166)	(577)	(305)
73-78 db	No Bother . . . . .	6.9	20.3	9.2
	Some Bother . . . . .	40.2	39.2	32.7
	Great Bother. . . . .	52.9	40.5	58.1
	No. of Interviews	(87)	(377)	(260)
79 + db	No Bother . . . . .	7.2	13.2	11.1
	Some Bother . . . . .	23.2	30.4	20.3
	Great Bother. . . . .	69.6	56.4	68.6
	No. of Interviews	(69)	(402)	(261)
Total Number of Interviews . . . . .		(379)	(1827)	(1429) = 3635

\* The number of interviews is too small to permit valid comparisons.

It is at once apparent that for every Aircraft SNL, those mentioning jets are more annoyed than respondents living in the same areas who do not mention jets. It is somewhat surprising, however, to find that in the more intense Aircraft SNL's, the degree of annoyance among respondents in areas where no jets are mentioned is about the same as the "jet mentions" and greater than the "jet mention" areas as a whole.

Owing to our reservations about the validity of detailed comparisons of the present data, it would not be well to press the analysis much further. It is interesting to note, however, that the trend of the differences in degree of annoyance is toward a steady decrease with increasing intensity of aircraft noise which is suggestive for future research. It would be legitimate to hypothesize that for a given high level of intensity of aircraft noise, intensity of annoyance would not differ greatly for either jet or propeller-driven operations. In respect to such an hypothesis, however, one would have to make reservation for frequency of operations, since we know that for our sampling areas the proportion of jet operations was, on the average, relatively small.

While we will not present the analysis in detail, we should remark that the analysis reported in Table 7 controlling for level of Aircraft SNL was actually carried further to control for level of emergence of aircraft noise over the ambient noise level. This was done to check whether chance clustering of sampling areas having jet operations might have affected the emergence comparisons. The analysis showed that this was not the case. The sub-division of analytical groups inevitably reduced the number of cases available for each comparison, but it is interesting to note that for each available comparison, the annoyance reported by those mentioning jets was always greater than for those in the same areas not mentioning jets.

One further finding which is of considerable interest concerns the association of reports by respondents of vibrations due to aircraft flying overhead and mention of jet aircraft. The number of respondents reporting bother due to vibrations is rather small, but a statistically significant association between mention of jets and vibrations does exist. Table 8 shows the relationship.

TABLE 8

COMPLAINTS OF BOTHER DUE TO VIBRATION BY "JET MENTION"

	Respondents in Jet Areas		Respondents in Non-Jet Areas
	<u>Mention Jets</u>	<u>Do Not Mention Jets</u>	
Report Vibration Bother . . . . .	10.8%	5.6%	5.9%
No Vibration Bother . . . . .	89.2	94.4	94.1
Number of Interviews. . . . .	379	1827	1429 = 3635

We are again unable to ascertain with certainty the extent to which the evident association between jet mention and bother due to vibration is actually due to jet operations, but at the very least this evidence affords a clue which should be tested in future research.

Qualitative Analysis of Interviews

Aside from examinations of particular groups of ballots for special purposes, such as the separate sorting given interviews in areas where there were only one or two mentions of jets, the qualitative analysis was directed toward the development of insights into the dynamics of particular patterns of response and of possible hypotheses for future research.

It is of interest that when both jet and propeller-driven aircraft are discussed, the jets are often described as "very much the same thing only more so." One respondent, when asked what kind of noises she usually heard in her neighborhood replied, "Airplanes, especially jets." Her remarks about jets are worthy of more extensive quotation since a number of other points are raised which will serve as illustrations.

When asked whether the airplane noise bothered her in any way, she answered, "Yes. The closeness scares us; we expect an accident any day." Here the interviewer probed, presumably by asking, "Anything else?" She replied, "Jets are the noisiest

type of planes." In answer to the direct question about how she felt about airplanes, she answered, "Commercial we have to accept because it's important to a lot of business and businessmen to travel and get places in a hurry." Interviewer: "How about jets?" "Jets should be out further so they wouldn't have to fly over residential districts. . ." Shortly after this she was asked whether the airplane noises "around here" bothered her more than they used to or not as much. She felt that they bothered more and went on to explain, ". . . especially jets make an extra loud noise when they whiz by -- they scare me." Interviewer: "How do you mean?" "I think they'll fly too low and hit something or explode over our homes." Finally, in the area of action which should be taken, she replied that she felt something should be done about the airplane noise and safety situation and volunteered one suggestion, "Get Army personnel and Army flying out of congested areas." When asked directly what more the authorities could do to improve the situation, she reiterated her suggestion but broadened it slightly, "Move it out in the country so planes - especially jets don't have to fly over people's houses."

This respondent was a thirty-two year old married woman with two young children, seven and four years of age. She considered herself to be in good health, no more nor less nervous than other people, and bothered by noise in about the same degree as other people. She regarded herself as the main earner in her family and is regularly employed as an entertainer at county fairs. The valuation reported for her home, \$22,000, is high, and total family income exceeded \$8,000, our highest category. Her attitude toward flying was highly favorable. She flew often and had, in fact, just bought a ticket for her next airplane trip on the day she was interviewed. She felt that airplanes have become faster and safer in the last four years. In short - all of her expressed annoyance is directed toward jets.

Although we are concerned here with the illustrative value of her responses rather than their dynamic interpretation, it is worth noting the distinction made between "Army personnel" and "Army flying" in one of the remarks cited above. It may well be that attitudes toward the basing of personnel in the vicinity of a person's residence can considerably influence their annoyance with aircraft, suggesting strongly the need for ascertaining these views systematically in future research on jet operations.

The whole pattern of responses is typical in one important respect for a large proportion of respondents who mentioned jets in this study. There is ready and highly spontaneous comparison of the two types of aircraft, and comparisons of diverse aspects of the two types of operation are not difficult to elicit.

Certain of the replies are variations on themes which are frequently mentioned in other interviews. This woman describes the difference in sound of jets vs. propeller-driven planes as one of intensity, as many respondents do: "Jets are the noisiest type of planes. . . jets make an extra loud sound when they whiz by -- they scare me." Other respondents emphasize the difference in character of the sound as they perceive it - employing terms like "screaming," "screeching," or "blasting" to describe the sound.

One important point is that many terms have multiple connotations - "thundering" often seems to connote threat as well as greater intensity. "Whizzing" is often apparently connotative of speed and consequent lack of control, as well as an irritating and disagreeable characteristic. These usages indicate the need for a scrupulous phenomenological approach in future research on jet aircraft. Unusual caution will have to be exercised in assigning meaning to specific terms and expressions both in questioning the respondent and in interpreting his responses.

The idea that jets might "explode over our homes" as distinct from flying too low and crashing was encountered in one or two other cases, which suggests that for at least a few people jets are considered intrinsically more dangerous, even aside from questions of maneuverability or control. This idea also is sometimes expressed in that jets are "less well-developed" than conventionally-powered aircraft.

Opposed to this must, of course, be set the frequently expressed feeling that airplanes generally, and jets specifically, represent progress. One man, despite his own considerable annoyance at airplane operations over his residence, thought that closing Newark was a "bad" idea. He commented, "Some people want to act modern and as soon as there's one little accident they're back in the horse and buggy days. I'm a believer in progress."

Wholly distinct from questions of the plane itself and differences in its operating characteristics are several aspects of aircraft operations which relate to personnel and organizations. Military pilots are often seen as reckless, immature, inexperienced, inconsiderate. Army authorities controlling aircraft operations are often considered to be unconcerned with civilian welfare. One man carried the thought still further, "It's for the Army and if they want 'em they'll have 'em. There's no use bucking Uncle Sam."

Jet and other military operations are often regarded as essential to defense. A woman who experienced moderate annoyance with planes said, for example, "Some people complain about the planes but every time they do I think 'isn't it wonderful that they're our planes!."

Contrary reactions are also found, however. Another woman remarked about jets, "The others that go three and four at a time are terrible. I mean those jets. They come at such a roaring speed and are so loud I don't know if it's an enemy or not. I don't know why I worry, but an enemy that attacked will pick on a big city. They will

attack us as well as New York." Other respondents were more explicit in expressing their feeling that the existence of the military planes made the area a target for attack. A man who expressed no annoyance whatever with aircraft operations over his residence, for example, said, "I wouldn't complain. I don't think they are anything to be annoyed at. X I've only thought of our proximity to the airport and the oil companies in case of an attack."

It should be observed in passing that formation flying is often given as a common distinction between military and commercial operations.

These illustrations should make it clear that the qualitative analysis has revealed a number of valuable leads for future research into the reactions of civil populations to jet operations.

# APPENDIX: III

## SPECIAL NOTES APPLYING TO TABULATIONS

TABLE 1 Summarizes responses relating to aircraft by 5 aircraft SNL Groups. It presents data on the number of people who voluntarily mentioned airplane noise, who indicate whether it bothers or annoys in any way and the specific activities which are affected. Because these data were secured in response to "free-answer" questions, it is more than likely that the levels of response are considerably understated but that the comparative responses among the various aircraft SNL's are fairly valid. By that is meant, if all respondents were asked directly, "Do you ever hear airplanes flying by here?", the number answering "yes" would be considerably greater than the number voluntarily mentioning airplane noise in response to the open question, "What kinds of noise do you usually hear around here?"

Since only those persons voluntarily mentioning that they hear airplane noise were even asked if it bothered in any way; and since only those who reported some bother were asked, "In what way does it bother or annoy you?", obviously the potential number reporting interference with conversation, sleep, etc. is considerably less than if everyone had been asked directly, "Does the airplane noise ever interfere with your telephone conversation.....etc.?"

Consequently, the first part of Table 1 is based upon all respondents living under stated aircraft stimulus conditions. It is quite apparent that both the number of persons voluntarily mentioning airplane noise and reporting bother varies directly with the aircraft noise level. Likewise, the percent of persons reporting interference with hearing, radio, or TV or conversation, or sleep also increases as the aircraft SNL increases. But, the level of these percentages is probably understated. For example, only 28.5 percent of all persons living under an aircraft SNL of 79 plus db mentioned interference with hearing radio or TV. However, only 69 percent of all persons in these areas were even asked, "In what way airplane noise bother or annoy you?"

The second set of percentages are based upon the number responding that the airplane noise bothers in some way. The distinctions by aircraft SNL are less marked in these second tabulations. Apparently if aircraft noise bothers at all even under fairly low aircraft SNL conditions, the way in which it bothers does not differ appreciably from those respondents living under more intense SNL conditions.

Table 1 also summarizes these responses by the degree of overall annoyance with the aircraft stimuli.

TABLE 2 Summarizes responses relating to traffic noise in terms of the daytime background SNL level and the aircraft SNL level. The first set of percentages indicate the overall noise rating of the area and reflects the intercorrelation between background and aircraft noise levels. The second and third sets of percentages are comparable to Table 1 and contain the same limitations.

The fourth set of data indicate the frequency of traffic noise bother as reported by all persons indicating some bother with traffic noise.

The last set of data on this table are responses to the second "free-answer" question, "Could you tell me about some of the things around here which bother or disturb you in any way?". As you can see, Table 2 reflects an increasing trend of bother with traffic noise as the background SNL increases, but as has already been indicated the levels of response have probably been understated.

TABLE 3 Presents the activities affected by traffic noise in terms of the nighttime background SNL level and aircraft SNL categories. Of major interest here is the percent of respondents reporting interference with sleep, rest, and relaxation. While only 28 percent of those bothered by traffic noise mentioned interference with sleep when the nighttime background SNL is less than 32 db, almost 52 percent report such interference when the night background SNL is 49 plus db.





TABLE I -- PART C

RESPONDENTS WITH GREAT BOTHER

	50 - 60 db		61 - 65 db		66 - 72 db		73+	
	No. (39)	%	No. (85)	%	No. (321)	%	No. (805)	%
Q.10. No. Answering								
Mention airplane noise . . . . .	22	56.4	51	60.0	245	76.3	718	89.2
Planes bother. . . . .	19	48.7	43	50.6	212	66.0	645	80.1
Bother hearing radio . . . . .	5	12.8	14	16.5	70	21.8	251	31.2
Conversation . . . . .	3	7.7	8	9.4	56	17.4	175	21.7
Sleep, rest, etc . . . . .	7	18.0	13	15.3	77	24.0	259	32.2
Fear mentioned . . . . .	7	18.0	13	15.3	76	23.7	204	25.3
Q.10A (If mentioned)	(22)	100	(51)	100	(245)	100	(718)	100
Does airplane noise ever bother or annoy you in any way?								
Yes . . . . .	19	86.4	43	84.3	212	86.5	645	89.8
No . . . . .	2	9.1	7	13.7	33	13.5	72	10.0
Don't know . . . . .	1	4.5	1	2.0	-	-	1	0.2
(If Bother)	(19)		(43)		(212)		(645)	
Q.10B. "In what way?"								
Hear radio and TV . . . . .	5	27.6	14	32.6	70	33.0	251	38.9
Conversation, telephone . . . . .	3	16.6	8	18.6	56	26.4	175	27.1
Sleep . . . . .	7	38.7	13	30.2	77	36.3	259	40.2
Fear . . . . .	7	38.7	13	30.2	76	35.9	204	31.6
Work-study - concentration . . . . .	2	11.1	1	2.3	12	5.7	38	5.9
Amt. & character of noise bother	3	16.6	5	11.6	46	21.7	105	16.3
TV pictures . . . . .	2	11.1	5	11.6	28	13.2	62	9.6
No answer, don't know, vague, irrelevant. . . . .	-	-	-	-	5	2.4	10	1.6



TABLE II --- PART A (Page 2)

DAY BACKGROUND SNL --- 40 DB

	Total		Aircraft SNL				73 - 78 db		79+	
	No.	%	50 - 60 db	61 - 65 db	66 - 72 db	No.	%	No.	%	
Q.10C. (If "yes" to LOB, "In what way?")										
Hearing radio, television	15	12.6	8	2	4	12.9	-	1	5.9	
Conversation, phone. . .	7	5.9	5	-	-	-	1	1	5.9	
Sleep, rest, relaxation . .	33	27.7	12	3	11	35.5	3	4	23.5	
Fear, personal, other. . .	41	34.5	6	3	18	58.0	11	3	17.6	
Work, study, concentrate	9	7.6	4	1	1	3.2	-	3	17.6	
Amt. character of noise bother . . . . .	43	36.1	13	3	12	38.7	8	7	41.2	
All other bother . . . . .	6	5.0	2	-	1	3.2	1	2	11.8	
No answer, vague, irr. . .	4	3.4	2	1	-	-	1	-	-	
(If "yes" to LOB, how often does it bother you?)										
Very often. . . . .	30	25.2	6	1	14	45.2	3	6	35.3	
Fairly often. . . . .	33	27.7	15	4	8	25.8	2	4	23.5	
Occasionally. . . . .	52	43.7	19	6	7	22.6	13	7	41.2	
Don't know. . . . .	4	3.4	-	-	2	6.5	2	-	-	
Q.2 Free Answer. . . . .	680		200	60	220		100	100		
Could you tell me about some of the things around here that bother or disturb you in any way?										
Airplane noise. . . . .	56	8.2	2	1	12	5.5	15	26	26.0	
Other airplane bother . . .	27	4.0	1	2	3	1.4	3	18	18.0	
Traffic noise . . . . .	65	9.6	34	6	10	4.5	6	9	9.0	
Other noise . . . . .	88	12.9	24	8	32	14.5	11	13	13.0	

DAY BACKGROUND SNL -- 41 - 48 DB

	Aircraft SNL													
	Total	50 - 60 db	61 - 65 db	66 - 72 db	73 - 78 db	79+	No.	%	No.	%				
Q.9 Would you tell me about the noise around here-- would you say it's very noisy, fairly noisy, fairly quiet or very quiet?														
Very Noisy. . . .	199	11.6	8	4.4	29	12.0	60	11.9	33	8.6	69	17.2		
Fairly Noisy. . . .	481	28.1	39	21.4	64	26.6	119	23.6	120	31.3	139	34.6		
Fairly Quiet. . . .	779	45.5	102	56.0	112	46.5	246	48.8	170	44.4	149	37.1		
Very Quiet. . . .	249	14.5	33	18.1	36	14.9	78	15.5	59	15.4	43	10.7		
Q.10 What kinds of noise do you usually hear around here?														
Plane . . . . .	1086	63.3	46	25.1	91	37.8	296	58.7	296	77.3	357	88.4		
Traffic . . . . .	1101	64.2	126	68.9	169	70.1	327	64.9	240	62.7	239	59.2		
People. . . . .	765	44.6	106	57.9	115	47.7	224	44.4	180	47.0	140	34.7		
Others. . . . .	537	31.3	51	27.9	95	39.4	167	33.1	132	34.5	92	22.8		
None. . . . .	35	2.0	4	2.2	5	2.1	16	3.2	2	0.5	8	2.0		
Don't know. . . .	4	0.2	1	0.5	1	0.4	2	0.4	-	-	-	-		
(If "traffic noise" is mentioned in Q.10)														
Q.10B. Does the traffic noise ever bother or annoy you in any way?														
Yes. . . . .	473	43.0	44	34.9	83	49.1	132	40.4	86	35.8	128	53.6		
No. . . . .	618	56.1	81	64.3	83	49.1	191	58.4	154	64.2	109	45.6		
Don't know. . . .	10	0.9	1	0.8	3	1.8	4	1.2	-	-	2	0.8		



TABLE II -- PART C (Page 1)

DAY BACKGROUND SNL -- 49+ DB

	Aircraft SNL											
	Total No.	%	50 - 60 db No.	%	61 - 65 db No.	%	66 - 72 db No.	%	73 - 78 db No.	%	79+ No.	%
Q.9 Would you tell me about the noise around here-- would you say it's very noisy, fairly noisy, fairly quiet or very quiet?												
Very Noisy. . . . .	312	25.6	73	27.4	43	23.9	87	28.6	58	24.2	51	22.5
Fairly Noisy. . . . .	452	37.1	101	38.0	58	32.2	104	34.2	93	38.8	96	42.3
Fairly Quiet. . . . .	358	29.4	70	26.3	61	33.9	94	30.9	71	29.6	62	27.3
Very Quiet. . . . .	88	7.2	21	7.9	14	7.8	18	5.9	17	7.1	18	7.9
Q.10 What kinds of noise do you usually hear around here?												
Plane. . . . .	581	47.7	32	12.0	53	29.4	145	47.7	161	66.8	190	83.7
Traffic. . . . .	1063	87.3	239	89.8	164	91.1	265	87.2	201	83.4	194	85.5
People. . . . .	398	32.7	97	36.5	42	23.3	98	32.2	98	40.7	63	27.8
Others. . . . .	265	21.8	60	22.6	41	22.8	66	21.7	53	22.0	45	19.8
None. . . . .	17	1.4	2	0.8	6	3.3	4	1.3	2	0.8	3	1.3
Don't know. . . . .	2	0.2	1	0.4	-	-	1	0.3	-	-	-	-
(If "traffic noise" is mentioned in Q. 10)												
Q.10B. Does the traffic noise ever bother or annoy you in any way?												
Yes. . . . .	574	54.0	132	55.2	84	51.2	133	50.2	112	55.7	113	58.2
No. . . . .	486	45.7	106	44.4	80	48.8	131	49.4	88	43.8	81	41.8
Don't know. . . . .	3	0.3	1	0.4	-	-	1	0.4	1	0.5	-	-

TABLE II -- PART C (Page 2)

DAY BACKGROUND SNL -- 49+ DB

	Aircraft SNL											
	Total No.	%	50 - 60 db No.	%	61 - 65 db No.	%	66 - 72 db No.	%	73 - 78 db No.	%	79+ No.	%
Q.10C. (If "yes" to LOB, "In what way?")												
Hearing radio, television	116	20.2	27	20.5	18	21.4	25	18.8	26	23.2	20	17.7
Conversation, phone. . .	96	16.7	20	15.2	14	16.7	27	20.3	12	10.7	23	20.4
Sleep, rest, relaxation.	259	45.1	64	48.5	40	47.6	64	48.1	46	41.1	45	39.8
Fear, personal, other	95	16.6	21	16.0	10	12.0	21	15.8	25	22.3	18	15.9
Work, study, concentrate	40	7.0	3	2.3	5	6.0	9	6.8	11	9.8	12	10.6
Amt. character of noise bother. . . . .	185	32.2	38	28.8	14	16.7	53	39.8	46	41.1	34	30.1
All other bother. . . . .	50	8.7	14	10.6	5	6.0	8	6.0	15	13.4	8	7.1
No answer, vague, irr. . .	23	4.0	7	5.3	3	3.6	4	3.0	4	3.6	5	4.4
(If "yes" to LOB, how often does it bother you?)												
Very often . . . . .	240	41.8	52	39.4	35	41.7	66	24.8	49	43.8	38	33.6
Fairly often . . . . .	150	26.1	34	25.6	20	23.8	32	24.0	23	20.5	41	36.3
Occasionally . . . . .	164	28.6	42	31.9	26	31.0	32	24.0	35	31.3	29	25.7
Don't know . . . . .	20	3.5	4	3.0	3	3.6	3	2.3	5	4.5	5	4.4
Q.2 Free Answer . . . . .	1218		266		180		304		241		227	
Could you tell me about some of the things around here that bother or disturb you in any way?												
Airplane noise . . . . .	138	11.33	1	0.4	5	2.8	28	9.2	34	14.1	70	30.8
Other airplane bother.	46	3.7	-	-	1	0.6	7	2.3	10	4.1	28	12.3
Traffic noise. . . . .	519	42.6	133	50.0	92	51.0	126	41.4	90	37.3	78	34.4
Other noise. . . . .	143	11.7	29	10.9	18	10.0	40	13.2	39	16.2	17	7.6

TABLE III -- PART A

NIGHT BACKGROUND SNL -- 32 DB

	50 - 65 db		66 - 72 db		73 - 78 db		79+	
	No.	%	No.	%	No.	%	No.	%
Total	138		49		6		17	
(If Traffic Bothers)								
"In what way?"								
Hearing radio and TV. . . . .	21	15.2	7	14.3	-	-	1	5.9
Conversation, phone . . . . .	19	13.8	9	18.4	-	-	2	11.8
Sleep, rest, relaxation . . . . .	39	28.3	11	22.4	-	-	9	52.9
Fear - personal - other . . . . .	40	29.0	20	40.8	5	83.3	2	11.8
Work - study - concentration. . . . .	7	5.1	4	8.2	-	-	-	-
Amt. character of noise bother. . . . .	51	37.0	24	44.9	1	16.7	4	23.5
All other bother. . . . .	9	6.5	2	4.1	-	-	4	23.5
No ans. don't know, vague, irr. . . . .	12	8.7	6	4.1	1	16.7	3	17.6

TABLE III -- PART B

NIGHT BACKGROUND SNL -- 33 - 36 DB

	50 - 65 db		66 - 72 db		73 - 78 db		79+	
	No.	%	No.	%	No.	%	No.	%
Total	205		42		12		77	
(If Traffic Bothers)								
"In what way?"								
Hearing radio and TV . . . . .	25	12.2	4	9.5	7	16.7	8	10.4
Conversation, phone . . . . .	19	9.3	3	7.1	3	7.1	12	15.6
Sleep, rest, relaxation. . . . .	72	32.1	21	50.0	11	26.2	23	29.9
Fear - personal - other. . . . .	40	19.5	12	28.6	10	23.8	13	16.9
Work - study - concentration. . . . .	7	3.4	3	7.1	-	-	2	2.6
Amt. character of noise bother . . . . .	80	39.0	19	45.2	18	42.9	26	33.8
All other bother. . . . .	10	4.9	4	9.5	2	4.8	4	5.2
No ans. don't know, vague, irr. . . . .	16	7.8	1	2.4	4	9.5	6	7.8

TABLE III -- PART C

NIGHT BACKGROUND SNL -- 37 - 40

	50 - 65 db		Aircraft SNL 66 - 72 db		73 - 78 db		79+	
	No.	%	No.	%	No.	%	No.	%
Total	112		60		48		43	
No. Answering								
(If Traffic Bothers)								
"In what way?"								
Hearing radio and TV. . . . .	21	18.7	9	15.0	2	4.2	5	11.6
Conversation, phone . . . . .	21	18.7	10	16.7	2	4.2	8	18.6
Sleep, rest, relaxation . . . . .	51	45.5	28	46.7	11	22.9	20	46.5
Fear - personal - other . . . . .	20	17.9	14	23.3	17	35.4	8	18.6
Work - study - concentration.	5	4.5	7	11.7	4	8.3	5	11.6
Amt. character of noise bother	23	20.5	26	43.3	17	35.4	16	37.2
All other bother. . . . .	15	13.4	2	3.3	6	12.5	2	4.7
No ans. don't know, vague, irr.	4	3.6	-	-	3	6.2	1	2.3

TABLE III -- PART D

NIGHT BACKGROUND SNL -- 41 - 44

	50 - 65 db		Aircraft SNL 66 - 72 db		73 - 78 db		79+	
	No.	%	No.	%	No.	%	No.	%
Total	51		80		55		53	
No. Answering								
(If Traffic Bothers)								
"In what way?"								
Hearing radio and TV. . . . .	9	17.6	18	22.5	12	21.8	8	15.1
Conversation, phone . . . . .	2	3.9	20	25.0	8	14.5	8	15.1
Sleep, rest, relaxation . . . . .	22	43.1	44	55.0	23	41.8	25	47.2
Fear - personal - other . . . . .	10	19.6	15	18.8	15	27.3	8	15.1
Work - study - concentration.	2	3.9	1	1.3	8	14.5	5	9.4
Amt. character of noise bother	24	47.1	25	31.3	13	23.6	21	39.6
All other bother. . . . .	9	17.6	7	8.8	3	5.5	3	5.7
No ans. don't know, vague, irr.	2	3.9	3	3.8	4	7.3	-	-

TABLE III -- PART E

NIGHT BACKGROUND SNL -- 45 - 48

	50 - 65 db		Aircraft SNL 66 - 72 db		73 - 78 db		79+	
	No.	%	No.	%	No.	%	No.	%
Total	185		56		30		51	
No. Answering								
(If Traffic Bothers)								
"In what way?"								
Hearing radio and TV . . . . .	37	20.0	9	16.1	7	23.3	12	23.5
Conversation, phone . . . . .	23	12.4	4	7.1	3	10.0	9	17.6
Sleep, rest, relaxation . . . . .	87	47.0	29	51.8	16	53.3	23	45.1
Fear - personal - other . . . . .	24	13.0	6	10.7	5	16.7	6	11.8
Work - study - concentration . . . . .	15	8.1	5	8.9	1	3.3	5	9.8
Amt. character of noise bother . . . . .	54	29.2	16	28.6	5	16.7	22	43.1
All other bother. . . . .	17	9.2	5	8.9	3	10.0	4	7.8
No ans. don't know, vague, irr.	8	4.3	3	5.4	1	3.3	2	3.9

TABLE III -- PART F

NIGHT BACKGROUND SNL -- 49+

	50 - 65 db		Aircraft SNL 66 - 72 db		73 - 78 db		79+	
	No.	%	No.	%	No.	%	No.	%
Total	136		9		37		17	
No. Answering								
(If Traffic Bothers)								
"In what way?"								
Hearing radio and TV . . . . .	27	19.9	-	-	5	13.5	2	11.8
Conversation, phone . . . . .	14	10.3	-	-	2	5.4	2	11.8
Sleep, rest, relaxation . . . . .	70	51.5	3	33.3	17	45.9	5	29.4
Fear - personal - other . . . . .	28	20.6	2	22.2	11	29.7	7	41.2
Work - study - concentration . . . . .	12	8.8	2	22.2	6	16.2	3	17.6
Amt. character of noise bother . . . . .	40	29.4	3	23.3	18	48.7	4	23.5
All other bother . . . . .	17	12.5	1	11.1	9	24.3	3	17.6
No ans. don't know, vague, irr.	8	5.9	2	22.2	-	-	1	5.9

# APPENDIX IV

## PERCENT DISTRIBUTION OF SAMPLE AREAS BY AIRCRAFT SNL AND PERCENT OF RESPONDENTS "GREATLY BOTHERED"

Percent "Greatly Bothered"	Percent of Sample Areas in Each Aircraft SNL														
	79+			73 - 78			67 - 72			61 - 66			50 - 60		
	%	Cumulative %	%	Cumulative %	%	Cumulative %	%	Cumulative %	%	Cumulative %	%	Cumulative %	%	Cumulative %	
90	12	12	100	3	3	100									
85	9	21	88	3	6	97									
80	12	33	79	-	-	-									
75	6	<u>39</u>	<u>67</u>	8	14	94									
70	6	45	61	8	22	86	2	2	100						
65	9	54	55	6	<u>28</u>	<u>78</u>	4	6	98						
60	6	60	46	-	-	-	4	10	94						
55	16	76	40	8	36	72	6	16	90						
50	6	<u>82</u>	<u>24</u>	6	42	64	6	<u>22</u>	<u>84</u>						
45	6	88	18	27	69	58	-	-	-	8	8	100			
40	6	94	12	8	<u>77</u>	<u>31</u>	11	33	78	8	<u>16</u>	<u>92</u>			
35	3	97	6	3	80	23	13	46	67	-	-	-	3	3	100
30	3	100	3	3	83	20	15	61	54	8	24	84	-	-	-
25				3	86	17	6	67	39	8	32	76	-	-	-
20				6	92	14	8	<u>75</u>	<u>33</u>	17	49	68	3	6	97
15				8	100	8	8	83	25	8	57	51	3	<u>9</u>	<u>94</u>
10							7	90	17	5	<u>62</u>	<u>43</u>	19	28	91
5							6	96	10	21	83	38	41	69	72
0							4	100	4	17	100	17	31	100	31
Total number of Sample Areas *			33			36			52			24			32
Average percent "Great Bother"			62%			48%			31%			18%			6%

\* 3 sample areas which were off the flight path were not included in this tabulation.

# APPENDIX: V

## ANALYTICAL OUTLINE OF EXPLORATORY STUDY OF JET ANNOYANCE

### I. Structure of Overall Feelings about Community

#### A. Net like or dislike

- 1- Net intensity of feelings
- 2- Ambivalences - qualifications
- 3- Feelings about future development of community

#### B. Positive feelings about community

##### 1- Clear statement of things liked by respondent -- why?

- a) Location: close to work, close to schools etc.
- b) Facilities - transportation: - bus on corner, roads are good
- c) Facilities - schools, educational program
- d) Facilities - Shopping
- e) Facilities - Churches
- f) Facilities - Other: - beaches, parks, theatres, recreation
- g) Social Aspects - Friends, neighbors, relatives are friendly
- h) Social Aspects - Good relations with military personnel
- i) Social Aspects - Active community organizations, activities
- j) Physical Aspects - Looks, Aesthetic value : trees - healthy climate, well kept lawns
- k) Physical Aspects - Sufficient Space: No congestion, privacy, place to play, place for dogs
- l) Physical Aspects - Safety: No thru traffic, safe for children
- m) Quiet: - peaceful, residential, absence of traffic and commercial noises
- n) Economic: - low tax, rent, living expenses
- o) House: Physical features, layout, price of house
- p) All other

##### 2- Intensity of likes

- a) Importance of individual items
- b) Comparative importance

##### 3- Chronology of likes

- a) Anticipated likes: - expected advantages before moving
- b) Likes developed since living here
- c) Changes in feelings - things formerly liked

##### 4- Positive Feelings of Other People

- a) Other adults in family
- b) Children in family
- c) Friends and neighbors

#### C. Negative Feelings About Community

##### 1- Clear statement of things disliked by respondent

- a) Activities or specific feelings affected

- (1) Location
- (2) Facilities - Transportation

- (3) Facilities-School:-Educational program, sessions, crowded conditions
- (4) Facilities - Shopping
- (5) Facilities - Churches
- (6) Facilities - Other
- (7) Social Aspects - unfriendly neighbors, relatives
- (8) Social Aspects - Military personnel create problems
- (9) Social Aspects - Absence of active community organizations, activities
- (10) Social Aspects - No privacy
- (11) Physical - unhealthy conditions:- climate, smoke, odors, well water
- (12) Physical - Congestion: insufficient space to play, garden etc.
- (13) Physical - Other: Lights, dog damage, destruction of property-less aesthetic features.
- (14) Dangerous - Other than Aircraft: - traffic, sand pits, drainage pits
- (15) Noise - traffic
- (16) Noise - people
- (17) Noise - industry and commerce
- (18) Noise - jet airplanes - ground noise:, run up, testing
- (19) Noise - jet airplanes - flight
- (20) Noise - propeller planes - ground noise
- (21) Noise - propeller planes - flight
- (22) Noise - Other: animals, crickets, fire engines
- (23) Airplane - fear of crashes
- (24) Airplane - Vibration
- (25) Airplane - Other - landing lights, TV flicker, oil spray, lower property values
- (26) Economic - high taxes - living expenses
- (27) House - Inadequate size, layout
- (28) All Other

- b) Frequency of occurrence of each noise source
- c) Regularity of occurrence of each noise source
- d) Duration of each occurrence of each noise source
- e) Necessity of occurrence of each noise source - physical

2- Intensity of dislikes

- a) Individual conditions
- b) Comparative

3- Chronology of dislikes

- a) Anticipated dislikes
- b) Dislikes since living here
  - 1) Sequence of occurrence
  - 2) Interactions with other dislikes
- c) Changes in intensity of feeling
- d) Feelings about possible future changes in conditions

4- Negative Feelings of Other People

- a) Other adults in family
- b) Children in family
- c) Friends and neighbors

D. Expression of Annoyance

1- Usual pattern for coping with annoyances

a) Action taken - when?

- 1) By respondent
- 2) By neighbors and individual local leaders
- 3) By local organizations (non-government)
- 4) By government authorities

b) Results of Action

- 1) Effect on disturbance
- 2) Attitude of government authorities
- 3) Attitude of group producing disturbance
- 4) Effect on respondents willingness to take further action

2- Knowledge of persons responsible for creation and control of the disturbance

3- Feelings about the technical possibility of reducing the disturbance

4- Feelings about the social possibility of securing consent of responsible persons to reduce the disturbance

a) Personal feelings

- 1) Need for improvement
- 2) Willingness to express feelings
- 3) Guilt at failure to anticipate problem

b) Feelings of Neighbors - other Leaders

- 1) Need for improvement
- 2) Willingness to express feelings

c) Feelings of local organizations

- 1) Need for improvement
- 2) Willingness to express feelings

d) Feelings of government authorities

- 1) Concern about effect of disturbance on community
- 2) Willingness to improve disturbance

e) Feelings of persons responsible for control of disturbance

- 1) Concern about effect of disturbance on community
- 2) Willingness to improve disturbance

5-Feelings about moving from area

- a) Reasons for wanting to move
- b) Factors affecting move
  - 1) Decision function - who decides
  - 2) Sale of home
  - 3) Location of alternate home
  - 4) Other factors - growth of children, job etc.
- c) Expectation of remaining in area

II. Structure of Annoyance with Noises

A. Problems involving failure to voluntarily mention airplane disturbance

- 1- Semantics
- 2- Reluctance to discuss problem
- 3- Futility-Nothing can be done-- discussion is waste of time
- 4- Other Factors

B. Overall noise rating of present community

- 1- Statements about net feelings
- 2- Ambivalence of feelings

C. Kinds of noise perceived in present community

1-Descriptions of each noise

- a) Qualitative description
- b) Relative intensity
- c) Connotation
- d) Technical possibility of reducing disturbances
- e) Social possibility of reducing disturbances
- f) Importance of activity
- g) Necessity of existence of activity in area

2-Intensity of annoyance with each noise

- a) Statement of annoyance feelings
- b) Activities affected
- c) Frequency of perception
- d) Regularity of perception:- day - week - season
- e) Duration of each exposure

3-Comparative intensity of annoyances

- a) Statement of feelings
- b) Relative intensity of noise
- c) Other auditory characteristics
- d) Frequency of exposure
- e) Regularity of exposure
- f) Duration of exposure

- g) Connotation of noise
- h) Technical possibility of reducing disturbance
- i) Social possibility of reducing disturbance
- j) Necessity for existence of activity in area

4- Feelings of Other People

- a) Other adults in family
- b) Children in family
- c) Friends and neighbors

D. Chronology of Annoyance

- 1-Disturbances perceived prior to living in community
- 2-Disturbances perceived since living here

- a) Sequence of occurrence
- b) Interactions with other dislikes

3-Changes in feelings of Annoyance

- a) More annoyed
- b) Less annoyed
- c) No annoyance - "Used to it"

1) Trend in stimulus characteristics

- a) Intensity
- b) Frequency
- c) Regularity
- d) Duration
- e) Relative to other areas

2) Perception of separate stimulus occurrences in same detail as previously

3) Meaning of stimulus

- a) Ease of recognition
- b) Fear reactions

4) Changes in family activities

5) Social approval of annoyance feelings

6) Personal attitudes about admission of annoyance

7) Technical possibility of reducing disturbance

8) Social possibility of reducing disturbance

9) Importance of activity producing disturbance

10) Necessity of existence of activity in area

11) Secondary effects of disturbances on performance of respondent's activities

12) Importance of repetition of stimulus exposures

- a) increase annoyance
- b) decrease annoyance

13) Other disturbances in area

14) Other Factors

E. Previous Noise Experiences

1-Residential noises

- a) Intensity - comparison to present area
- b) Kinds of noise sources
- c) Intensity of annoyance
- d) Number of years ago lived there
- e) Duration of residence
- f) Chronology of annoyance
  - (1) At beginning of exposure
  - (2) At end of exposure - (See D-3)
    - (a) More annoyed
    - (b) Less annoyed
    - (c) No annoyance - used to it
- g) Feelings of other people
  - (1) Family
  - (2) Neighbors

2-Jobs

- a) Intensity - comparison to present area
- b) Kinds of noise
- c) Intensity of annoyance
- d) Number of years ago worked there
- e) Duration
- f) Chronology of annoyance
  - (1) At beginning
  - (2) At end (see D-3)
- f) Feelings of other workers

F. Expression of annoyances (see I-D)

III. Structure of Aircraft Annoyance

A. Different Kinds of Planes

1-Knowledge of different kinds

- a) Jets
  - 1) Single engine
  - 2) Multi-engine
- b) Propeller
  - 1) Small craft
  - 2) 2 engine
  - 3) 4 engine

2-Annoyance with different kinds of planes

- a) Expressions of annoyances
- b) Knowledge of variations in use of planes
- c) Importance of different missions
  - 1) Defense
    - a) training
    - b) testing
    - c) defense alert
    - d) maintenance

2-Commercial

- (a) training
- (b) testing
- (c) passenger or cargo service
- (d) maintenance

3-Other Civil Craft

- a) flying
- b) maintenance

d) Necessity for different missions

- 1) In general
- 2) Near populated areas
  - a) Protection
  - b) Convenience
  - c) Hazard
  - d) Nuisance
- 3) At present location
  - a) Protection
  - b) Convenience
  - c) Hazard
  - d) Nuisance
  - e) Alternate sites available

e) Stimulus characteristics

- 1) Intensity
  - a) Near respondent's residence
  - b) At other nearby places
- 2) Frequency
  - a) Near respondent's residence
  - b) At other nearby places
- 3) Regularity
  - a) Near respondent's residence
  - b) At other nearby places
- 4) Duration
  - a) Near respondent's residence
  - b) At other nearby places
- 5) Activities and pursuits affected
- 6) Meaning of stimulus
  - a) Ease of recognition
  - b) Unexpected occurrence
  - c) Fear of crash

B. Different kinds of Operations

1- Knowledge of different kinds

- a) Landing
  - 1) Single
  - 2) Formation
- b) Take off
  - 1) Single
  - 2) Formation
- c) Cruising or circling -
  - 1) Single
  - 2) Formation
- d) Other flight - diving, sonic boom, stunting
- e) Ground testing or run up--

2- Annoyance with different operations

- a) Expressions of annoyance
- b) Importance of different operations
- c) Necessity for different operations
  - 1) Near populated areas
  - 2) Near respondent's residence
- d) Stimulus characteristics
  - 1) Intensity
    - a) Near respondent's residence
    - b) At other nearby places
    - c) Necessity - possible physical modification
  - 2) Frequency
    - a) Near respondent's residence
    - b) At other nearby places
    - c) Necessity - possible physical modification
  - 3) Regularity
    - a) Near respondent's residence
    - b) At other nearby places
    - c) Necessity - possible physical modification
  - 4) Duration
    - a) Near respondent's residence
    - b) At other nearby places
    - c) Necessity - possible physical modification
  - 5) Activities or pursuits affected
  - 6) Meaning of stimulus
    - a) Ease of recognition
    - b) Unexpected occurrence
    - c) Fear of crash

3) Regulations of Aircraft Operations

- a) Knowledge of different regulations
- b) Knowledge of persons originating regulations
- c) Observance by:
  - 1) Pilots
    - a) Consideration for people in area
    - b) Skill, training and experience
    - c) Control over nuisances or disturbances

- 2) Airports and airline officials--
  - a) Consideration for people in area
  - b) Skill, training and experience
  - c) Control over nuisances or disturbances
  - d) Effort to enforce
  
- 3) Government authorities
  - a) Consideration for people in area
  - b) Skill, training and experience
  - c) Control over nuisances or disturbances
  - d) Effort to enforce

C. Feelings About Flying and Actual Experiences

- 1- Overall feelings
  - a) Importance
  - b) Likes and dislikes
  - c) Safety
  
- 2- Knowledge of people connected with flying
  - a) Relationship to respondent
  - b) Type of connection with flying
  - c) Information secured from association
  
- 3- Flying Experiences
  - a) Respondent
    - 1) Frequency of flight
    - 2) Year of last experience
    - 3) Feelings of flight experiences
  - b) Other members of family
    - 1) Frequency of flight
    - 2) Year of last experience
    - 3) Feelings of flight experiences
  - c) Friends -
    - 1) Frequency of flight
    - 2) Year of last experience
    - 3) Feelings of Annoyance

D. Expression of Annoyance (like I-D)

APPENDIX VI

Question Outline

I. OVERALL FEELINGS ABOUT THE AREA

1. Overall Net Like or Dislike

- a) In general, how do you like living in this part of ( )....would you say that you like it very much....that you like it a little....or that you dislike it a little....or that you dislike it very much?
- b) Generally speaking, do you expect living conditions around here to get better, to get worse or to stay pretty much the same in the next year or so?

2. Positive Feelings About Area

- a) (What are some of the things) that you (like) about living (in this part of)?  
(Are there any other things?) (enjoy) (around here?)
- b) Have we overlooked anything that makes you satisfied with living etc. (here?)
- c) Are there any other things that make this a good place to live?
- d) " " " " " " " " desirable place to live?
- e) " " " " " " " " pleasant place to live?
- f) Have we overlooked anything that you consider to be an advantage of living around here?

3. Negative Feelings About Area

- a) Now, what are some of the things you (don't like about living)  
(don't enjoy)  
(are dissatisfied with)  
(Especially during the warm weather)  
(In this part of ( )?)  
(Around here?)
- b) Are there any other conditions that bother you....or annoy you....or disturb you at all....even (little things)(everyday things)?
- c) Is there anything you haven't mentioned which you feel is a nuisance -- that you'd just as well do without if it were possible?
- d) Have we covered (everything)(every condition) that you feel is unpleasant or disagreeable (about living around here)?
- e) Are there any (other) things (conditions) that bother you or annoy you that you just take for granted because nothing much can be done about them?
- f) How about any everyday experiences which are unpleasant or bothersome but which you take for granted because nothing much can be done about them?

- g) Taking everything into consideration, would you say this is a pretty safe place to live or are there some dangerous conditions affecting this area? What are they?

Utility Questions -- (Ask if not specified by respondent)

- h) If some friend of yours were going to move around here, how would you describe the (specific annoyance mentioned) to him?
- i) How often would you say the (specific annoyance mentioned) is an actual (problem)(nuisance)(inconvenience)(annoyance) to you?
- j) Do you think the (specific annoyance mentioned) can possibly be (improved) (reduced)(eliminated)?
- (Do you think it is at all possible to do anything about the (specific annoyance)?)
- k) Now to be sure I have all your feelings straight -- Here is a list of advantages which people usually like to have in a residential area. Could you tell me whether you feel this area has or does not have each of these advantages?

1. Close to work or place of business
2. Good schools - not overcrowded
3. Quiet - no loud or unpleasant noises
4. Convenient to shopping, schools, churches
5. Good bus or other transportation services
6. Friendly neighbors
7. Clean, healthy, pleasant surroundings
8. Enough space for work and play
9. Safe, peaceful neighborhood
10. Taxes or rent reasonable

4. Chronology of Feelings About Area

- a) When did you first move to this part of ( )?
- b) How did you happen to choose this particular house to live in?
- c) How did you happen to pick this particular part of (name of locality)?
- d) How much did you know about the neighborhood before you moved here? What kinds of things did you know about it?
- e) How did you learn about (find out about) the neighborhood before you moved here?
- f) If some friend of yours were thinking of moving around here, how would you describe the (neighborhood)(area)(community) to him? (What could he expect to (like)(find pleasant)(find agreeable) about living around here?) (What could he expect to (dislike)(find unpleasant)(find disagreeable) about living around here?)

What kind of things would he have to "get used to" -- just at first -- if he were to move around here?

5. Anticipated Likes

- a) What were the particular things about living (around here)(in this community) that you thought you would like, especially?

Are there any other particular things that you thought (would make this a pleasant place to live)?

6. Chronology of Dislikes - Anticipated

- a) Was there anything that you thought you might not like about living (around here)(in \_\_\_\_\_)? What?  
Was there any other condition that you felt might be a nuisance (unpleasant) (bothersome)(annoying)?

b) How did you learn (find out) about it?

7. Chronology of Likes - Developed Since Moving Here

- a) People sometimes say that over the years a person becomes "attached to" his community. . .if they were talking about (this community)(living around here) what kind of things would they probably be thinking of?

- b) Are there any things (about living around here)(in this community) that you feel you, yourself have become attached to?

If "Yes": What are they?

If "No": Why do you suppose you feel that way?

- c) Do you like living here now more than you used to at first or not as much?  
(enjoy)

Why is that?

- d) By the way, is there anything that you used to like around here which you no longer like? What is it? Why don't you like it any more?

8. Chronology of Dislikes -- Since Living Here

- a) Which of the nuisance (things you dislike)(annoyances) did you first find out about after moving here? Do you remember how you felt about it at first?

Did your feelings change in any way as time went on? How?

- b) Which of the nuisances did you find out about next? How did you feel about it at first? Did your feelings about (the first nuisance mentioned) change in any way when you found out about the second?

Did your feelings about (the second) change in any way as time went on? How?

- c) You sometimes hear people say -- "Oh well, if you live around here you just have to expect such-and-so." If you heard someone say that about living around here, what sort of things would they be talking about?

- d) Incidentally, are there any (other) things which you used to dislike or which used to bother you about living around here) which don't any more?

If "Yes": What?

Why is that? (Why is it that they don't bother you any more?)

9. Intensity of Likes - Comparative

- a) If you had to choose just one thing, what would you say is the thing you (like) most about living (around here)(in this community)?  
(are most satisfied with)
- b) What would you like next best?
- c) What would you say is the third best thing?

10. Intensity of Dislikes

- a) Now of all the unpleasant conditions (things) that you (don't like)(feel are nuisances)(feel bother or annoy you) which one thing (condition) do you dislike most?
- b) What would be the next thing? (you dislike most?)
- c) What would be the third thing?

NOTE: Use alternative questions below when necessary.

- a) Now of all the conditions you've mentioned that you (don't like)(feel are nuisances)(feel bother or annoy you) which one thing do you feel is the worst?
- b) Which is the second worst?
- c) The third?

11. Feelings of Other People

- a) Now what about others in your family -- How does your (husband-wife-children, etc.) feel about living(around here)(in this area)?

Why is that? What does (he-she) like? Dislike?

- b) How about your neighbors, do they seem to (like)(enjoy) living (around here) (in this area)?

Why is that? What do they especially seem to (like)(enjoy) about living here?  
to (dislike)(not to enjoy)?

12. Usual Pattern for Coping with Annoyances

- a) Is there anything which could be done to make this a better place to live?  
Anything else?

IF MAJOR DISLIKES (SEE PART 10) ARE NOT MENTIONED, Ask about each one not mentioned:

- b) Do you believe it is at all possible to (improve)(reduce)(eliminate) the (specific annoyance)?

If "No", ask: Why is that? Who is in charge of making the improvements?  
How do they feel about it?  
Was any effort ever made to do something? What?

IF "YES", Ask about each thing that could be done:

- c) Do you happen to know who is in charge of (making improvements)(reducing) (eliminating) the (specific annoyance?)
- d) What could you do about it?
- e) How would you go about it? (How could it be done?)  
(What could you yourself do?)  
(What could your neighbors do?)  
(Are there any local organizations that could help?  
Which ones? What could they do?)
- f) To the best of your knowledge, has anything ever been done about (each item)?

IF "YES": What was done? By whom? When was that?

What was the effect on (each item)?

What was the feeling of the (people in charge of making improvements)

What was the feeling of the (people causing the disturbances?)

Do you feel that you and your neighbors can do anything else to improve the \_\_\_\_\_ situation?

- g) IF "NO": Do you have any idea why nothing has ever been done?  
(How do your neighbors) feel about it? How do you know this?  
Have you ever talked to them about it?  
(How do the people in charge) feel about it?  
(How do the people causing it) feel about it? How do you know this?
- h) Would you say that most people around here seem to take a pretty active interest in community affairs -- or don't they seem to take much interest?

Do you, yourself, belong to any organizations or groups which take an active interest in community affairs? (If "Yes"): Which ones? Do you participate actively? Do you attend meetings regularly? Are you an officer or committee member of any of these groups?

NOTE: If specific approach meets with resistance, use following general approach outlined in (i) and (j):

- i) Now, thinking particularly about certain things which are often problems in a particular neighborhood -- like road repairs or sanitation problems or traffic safety or mosquito control -- things like that...are there any groups or organizations in the community which take an interest in problems of this kind? What kind of problems have they been concerned about? What have they done about some of these problems?
- j) Can you recall any time when some problem like the ones we've mentioned became an issue around here? What was done about it? How did you feel about it? What did you do? Why couldn't anything be done? Were you satisfied with what was done? Why not?

k) 1. We were talking a while ago about annoyances or bothersome things about living around here...I'd like you to think for a few minutes about a (man)(woman) who had a problem in his own neighborhood...It rained very hard one night and in the morning he noticed that the pavement had given way in the street. He didn't think much about it for a few days, but on the way home one evening he noticed that the rut was very deep. It seemed to him that it was dangerous, but after thinking it over he decided not to do anything about it right away because it wasn't really his responsibility.

a) What(do you suppose) made him feel that way? (Why do you think he felt that way?)

b) Who do you suppose he felt was really responsible for doing something about it?

c) Does it seem to you that he was right to feel that way about it?

If "Yes": d) (Even though he was right to feel that way) what else might he have done?)

If "No": e) What should he have done about it? (What else?)(Then what?)

f) Should he have talked the problem over with anyone else? Who? What could they have done about it?

g) Do you think that he should have done something about it right away, or was he right to wait a while?

h) I told a friend about this man's problem and he said the man should have called the highway department or someone like that as soon as he noticed the hole...how do you feel about that -- do you agree with my friend or do you think the man was right to wait?

2. Another (woman)(man) I know of moved into a new neighborhood...Everything seemed fine at first, but when (she)(he) had been there a few days (she)(he) noticed a terrible smell that lasted just about all day. (She)(He) learned from one of the new neighbors that garbage from the community was dumped about a mile away.

How do you suppose (she)(he) felt about it? (How would have felt about it if you were in (her)(his) position?)

What could she do about it? (What would you do if you were in her place?)

3. Now in another case a woman (man) moved into a neighborhood which she (he) thought would be fairly quiet. But she (he) found out after living there a while, that a big factory nearby made an awful racket. What do you think she could do about it? What would you do if you were in her place?

13. Expectation of Remaining in Area

- a) Have you ever felt like moving away from this neighborhood?
- b) IF "YES": Have you done anything about it? What? -- Why not?  
Why did you feel like moving?

If you did want to move or if you had to move, what kind of neighborhood would you like to live in? (Describe it for me...)(What would be the most important thing about it which would lead you to choose it?...What virtues would you want to be sure it had?)

- c) Are there any things--nuisances or annoyances or disagreeable things that you'd be sure to avoid? If "Yes": What? How could you be sure you were avoiding that? (How could you check on that?) Why would you want to avoid it?
- d) Now, suppose you really did have to move to another neighborhood in this (same general area)(city, town, county)...do you think it would be possible to find a place which you'd like at least as much as your present one?

How difficult would it be?  
Why would it be (difficult)(easy)?

- e) Do you know of anyone who has moved away from this area within the past year or so?

Do you happen to know why they moved?  
Do you know anyone who is planning to move?  
Do you happen to know why they're planning to move?

II. STRUCTURE OF ANNOYANCE WITH NOISES

1. Overall Noise Rating of Present Area

- a) Now, how do you feel about the noise around here--would you say it's generally very noisy--fairly noisy--fairly quiet--or very quiet?

2. Kinds of Noise Perceived in Area

- a) What kinds of noise do you usually hear around here? (probe exhaustively.)
- b) Are there any other sounds that you hear that you wouldn't usually think of as noise?

3. Description of Each Noise Mentioned

- a) How would you describe the \_\_\_\_ noise? (What does it sound like?)
- b) If some friend of yours were going to move around here how would you describe the \_\_\_\_ noise to him?  
What would you tell him about it?

IF APPROPRIATE:

- c) Could you tell me where the \_\_\_\_\_ noise comes from?
- d) How often do you hear the \_\_\_\_\_ noise? Very often, fairly often, or only occasionally? Every day? How many times a day?
- e) What time of the day or night do you usually hear it? When does it usually start? When does it stop? On week days? On Saturday and Sunday?
- f) Do you always hear it start and stop about the same time or does the time differ from day to day?
- g) Every time you hear it, how long does it usually last?

4. Intensity of Feeling

- a) Are any of these noises (sounds) pleasant or agreeable to you? Which ones? Why is that?
- b) Are any of these noises (sounds) unpleasant or disagreeable to you? Which ones? Why is that?
- c) Now how about the (\_\_\_\_\_ noise), does it ever bother or annoy you in any way?
- d) Does it bother you very much, only moderately or hardly at all?

IF "BOTHER", OR "DISAGREEABLE OR UNPLEASANT":

- e) How often does it bother you? Would you say very often, fairly often, or only occasionally?
- f) What is it about the noise that (bothers you)(is disagreeable or unpleasant)?
- g) How does it bother you? (In what way does it bother you?)
- h) What are you usually doing when it bothers you most? Why is that?
- i) What are you usually doing when it bothers you least? Why is that?
- j) What do you usually think or do when it bothers you?  
(How do you usually react when you hear the \_\_\_\_\_ noise?)
- k) Have you ever tried to do anything in the house to cut down on the noise?
- l) Have you ever done anything to avoid hearing the \_\_\_\_\_ noise?

IF "NO BOTHER" OR "NOT DISAGREEABLE":

Now, if it came down to a choice, would you say that you like having the noise, that you would rather not have it, (or that you don't care one way or the other)?

IF "RATHER NOT HAVE IT":

Why is that? (Is there any particular time when you feel that way?)  
(What are you doing then?)

NOTE: ASK 5. IF MORE THAN ONE NOISE IS MENTIONED

5. Comparative Intensity of Annoyances

IF MORE THAN ONE NOISE BOTHERS:

- a) Which one of the noises bothers or annoys you the most when it happens? Why?
- b) Which one (noise) bothers you the least when it happens? Why?
- c) Which one of the noises you've mentioned bothers or annoys you most often? Why?

IF ONE NOISE BOTHERS AND ONE NOISE DOES NOT BOTHER:

- d) How is that \_\_\_\_\_ noise appears to bother you and \_\_\_\_\_ noise doesn't?

6. Chronology of Annoyance with Noise

- a) Before moving here, did you have any idea that you would find any of these noises around here? Which? How did you find out about it?

IF ANTICIPATED SOME NOISES:

- b) Is the \_\_\_\_\_ noise worse than you originally expected, not as bad, or about the same as you expected?

IF "BETTER OR "WORSE": In what way? (Probe for comments on intensity, frequency, regularity, duration)

- c) To the best of your knowledge, do you think the \_\_\_\_\_ noise around here is worse, not as bad or about the same as other places \_\_\_\_\_ in this part of \_\_\_\_\_ (why is that?)
- d) Have your feelings about the \_\_\_\_\_ noise changed in any way since your first experience with it? In what way? Why?

NOTE: Probe for:

- 1) Do you generally hear each (noise source - car, child, dog, plane) as it goes by?

IF "YES": Do you pay attention to it each time? Why?

- 2) What do you think of when you hear the \_\_\_\_\_ noise?  
(How do you react when you hear the \_\_\_\_\_ noise?)
- 3) Can you tell from the noise anything about what the (noise source) is doing? How? In what way?
- 4) Do you think it is possible to reduce the \_\_\_\_\_ noise around here in any way? How?
- 5) Do you feel it is very important to have the (noise source) around here, or do you feel it could just as well be(done) someplace else?

- e) Do you remember which of the noises you (first)(next) found out about after moving here?
- f) Do you remember how you felt about it at first? Did your feelings change in any way as time went on? How did it happen?
- g) How did you feel about the (first noise) after you found out about (the second)? etc.

IF CAN'T RECALL SEQUENCE OF PERCEPTION OF NOISES:

- h) Now, thinking about the sounds and noises which you hear but which don't really bother you now....was there ever a time when the (each noise mentioned) did bother you?

IF "YES": How did it come about? (see 6d)

- i) Some people say that you can get used to any noise if you just exercise your will power....how do you feel about that? (Would you agree or disagree?) Why do you feel that way?

7. Feelings of Other People

- a) What about your (husband)(wife)(children) etc.-- does the \_\_\_\_\_ noise ever seem to bother or annoy(him)(her)(them) in any way?

Why is that? Could you tell me a little more about how (he)(she)(they) feel?

- b) How about your neighbors, does the \_\_\_\_\_ noise ever seem to bother or annoy any of them in any way?

Why is that? Could you tell me a little more about how they feel?

8. Expression of Annoyance with Noise

- a) Do you believe it is at all possible to (reduce)(improve)(eliminate) the \_\_\_\_\_ noise or does it have to be as noisy as it is?

IF "YES": See section I-12 for specific questions (Items B-C)

9. Previous Noise Experiences - Other Residential Areas

- a) How would you compare the noise around here generally with the noise where you lived before moving here? Would you say it is noisier here, quieter or about the same as your old neighborhood?

- b) What kinds of noise did you have in your old neighborhood?

- c) Did any of the noises there ever bother or annoy you in any way? Which? In what way?

- d) Do you remember how you felt about the (each noise) when you first experienced it? How?

- e) Did you feel any differently about it later -- say just before you moved? How?

- f) How did your (husband-wife) feel about the noise in your old neighborhood?
- g) How did your old neighbors feel about it?
- h) How long ago is it since you moved from your old neighborhood?
- i) How long did you live there?
- j) Did you ever live in any (other) noisy areas?

IF "YES": Ask B-I again.

- k) Were there any other unusually noisy neighborhoods? (Ask A-I)
- l) IF ALL NEIGHBORHOODS NOISY, ASK: Did you ever live in a fairly quiet neighborhood? (Ask A-I)

10. Previous Noise Experiences -- At Work

If Respondent ever worked at a job away from home:

- a) What would you say about the noise where you (last worked) work? Is (was) it very noisy, only fairly noisy -- fairly quiet or very quiet?
- b) How would you compare the noise around here with the noise where you work(ed)? Would you say it is noisier here, quieter or about the same as where you work(ed)?

IF IT WAS "VERY NOISY" OR "FAIRLY NOISY" AT WORK:

- c) What kinds of noise did you generally have at work?
- d) Did any of the noises there ever bother or annoy you in any way?
- e) Do you remember how you felt about the noise when you first experienced it?
- f) Did you feel any different about it as time went by?
- g) How did other people working with you feel about it?
- h) How long ago is it since you worked there?
- i) How long did you work there?
- j) How about any of your other jobs -- were any of them under noisy conditions?

IF "YES": Ask A-I)

### III. STRUCTURE OF ANNOYANCE WITH AIRCRAFT

#### 1. General Perception of Airplanes

- a) Do airplanes ever seem to fly directly overhead when they pass by here or are they usually well off to the side? (Have you ever seen one?)

IF OVERHEAD, ASK B-D

- b) Do they seem to fly directly overhead very often, fairly often, or only occasionally?
- c) When they fly overhead, do they ever fly very low, or are they always pretty well up?

IF "YES": How often do they fly very low -- very often, fairly often, or only occasionally?

- d) Does the weather seem to have anything to do with how high they fly?

IF NOT OVERHEAD, ASK E-G

- e) How often do they seem to fly by here....very often, fairly often, or only occasionally?
- f) When they do fly by, do they ever fly very low or are they always pretty well up?

IF "VERY LOW": How often do they fly very low? Very often, fairly often, or only occasionally?

- g) Does the weather seem to have anything to do with how the planes fly over here? What?

#### 2. Kinds of Airplanes

- a) Do you know if there are different kinds of planes flying over or do they all seem to be pretty much the same?

IF DIFFERENT: What are the different kinds? Can you usually tell them apart when they fly over? How?

#### 3. Annoyance with Different Kinds of Planes

- a) In general, how do you feel about the airplanes around here?
- b) Are they ever unpleasant or do they ever bother or annoy you in any way? How?

IF "NOT ANNOYED", ASK C & D

- c) I think I have a pretty good idea of how you feel about this, but let's make sure I've got it straight....in general, would you say that you like having them fly over--or that you don't care whether they fly over or not--or that you'd rather that they didn't fly over here? Why do you feel that way?
- d) Was there ever a time when the planes were a nuisance (flying over) or bothered you at all?

IF ANNOYANCE FEELINGS ARE NOT SPECIFIED FOR DIFFERENT PLANES, ASK:

- e) Do you feel any differently about \_\_\_\_\_ planes as compared with the \_\_\_\_\_ planes? (Why do you feel that way?) (What is it about the \_\_\_\_\_ planes that makes you feel that way?)

NOTE: If not specified, probe intensively for intensity, frequency, regularity, duration, meaning of stimulus, activities affected.

- 1) Does the loudness of the \_\_\_\_\_ noise differ in any way from the \_\_\_\_\_ noise?
- 2) Do the \_\_\_\_\_ planes fly over more often than the \_\_\_\_\_ planes?
- 3) Do the \_\_\_\_\_ planes fly over here pretty regularly or don't you know when to expect them?
- 4) When do you notice them most? Least?  
(How is it that you notice them then? What are you doing then?)

IF NECESSARY: Let's pin some of these things down a little more closely  
-- do you notice them more: At certain times of the day or night?  
On certain days of the week?  
On weekends?  
Summer or winter?

- 5) What do you think of when you notice the \_\_\_\_\_ planes going over?  
(How do you react to them when they go over?)

4. Knowledge of Missions

- a) From what you have heard about the (each type) planes, can you tell me the purpose of having them use this field? (Why do they use this field?)
- b) How important do you feel (each purpose) is?
- c) Do you feel that (each purpose) has to be carried out (done) close to populated areas or could it just as well be done away from cities? Why?
- d) Do you feel that (each purpose) (it) has to be done around here, or could they just as well find a better place? Why? Where? Who benefits?

5. Knowledge of Different Operations

- a) What are the \_\_\_ planes doing when they fly over here?
- b) Where are they (going)(coming from)?
- c) Why do they fly over this particular area?
- d) How do you feel about(one operation) compared with (other operation)?  
Why is that?

NOTE: Probe for such possible differences in stimulus as intensity, frequency, regularity, duration, meaning of stimulus, and activities affected.

6. Regulations of Aircraft Operations

- a) As far as you know, are there any rules which the pilot is supposed to follow when he is (flying)(landing or taking-off)?

IF "YES": b) What do these rules cover? What do they tell the pilot to do?

c) Who makes these rules?

d) Who is responsible for enforcing (them)(these rules)?

7. Observance by Pilots

- a) Now, just based on what you know, do you feel the pilots pay much attention to these rules? Why do you say that?
- b) Do you suppose the pilot gives much thought to the people living underneath the plane as he flies over them? (...especially when he's flying low to land or take-off?)
- c) Do you think the pilot can do anything about the noise which the plane makes as it flies over this particular area...can he make it more noisy or less noisy according to the way he flies? Can he make it fly higher than he does?

IF CAN CONTROL OR DON'T KNOW

- d) Does he usually try to make it as quiet as possible, or doesn't he pay attention to the noise the plane makes?

Does he usually try to fly as high as possible or doesn't he?

e) Do you happen to know any pilots personally?

f) Do you know any other people who are connected in any way with flying or with the airport around here?

Some people say that pilots for the commercial (airlines)(companies) are a lot different from the Air Force pilots...how do you feel about that? (Is it your impression that they are different?)

g) IF "DIFFERENT": In what respect are they different? (How would you compare them?)

Do you feel that any Air Force pilot could get a job as a commercial pilot when his service is completed? Why do you feel that way?

(Probe for both positive and negative elements in all comparisons.)

8. Observance - Airport Management

- a) How about the way the airport is run...is it your impression that they are doing a very good job, just an average job, or a poor job of running the airport (over here)?
- b) Who do you think is mainly responsible for running the airport?
- c) Thinking now about the man who is in charge of the airport...what would you say is the most important problem which he has to solve to do his job well?
- d) Do you feel that (the man who is in charge of the airport)(he) has enough concern for the comfort and safety of the people who live near the airport? What makes you feel that way?
- e) Do you think that he could do anything to improve the airplane situation in this area (right around here)?

IF "YES": f) What could he do?

g) Do you think anyone else could do anything to improve the noise situation?  
IF "YES": How could that be done?

h) Who is mainly responsible for getting that done? Who else? (Probe exhaustively)

i) Why hasn't it been done so far?

j) Is there anything that you, yourself could do?

k) Do you feel that you, personally, have some responsibility for getting it done?

l) Do you think that anyone else could do anything to improve the safety situation in this area (right around here)?

IF "YES", ASK M - R

m) What could be done?

n) How could that be done?

o) Who is mainly responsible for getting that done? Who else?  
(Probe exhaustively)

p) Why hasn't it been done so far?

q) Is there anything that you, yourself, could do?

r) Do you feel that you, personally, have some responsibility for getting it done?

9. Experiences with Flying

- a) Have you ever flown in a plane? How often? Last time?
- b) How do you feel about flying?
- c) Has anyone in your family ever flown? Who?
- d) How do they feel about flying?
- e) Suppose you were invited to go for a ride in a jet plane -- how would you feel about that? (Would you go?)  
(How do you think it would compare with riding in a propeller plane?)
- f) Do you feel that one type of plane is just about as safe as another, or do you feel that some types are more dangerous than others? Which ones are less safe? In what way are they (less safe)(more dangerous)? What makes them(less safe)(more dangerous)?
- g) Do you feel that airplanes will always have an element of danger or do you feel that eventually planes will be perfected to the point where accidents will be extremely rare?
- h) As far as you know, what is the main cause of airplanes crashing--when they do? Are there any other important reasons?
- i) In general, do you feel that there has been enough attention and effort given to making planes safer or do you feel that there should be more attention and effort given to making planes safer? In what way could they be made safer? Who is responsible for seeing to it that they are made safer? Who else?

10. Feelings About Military Personnel

- a) How do you feel about having military personnel stationed in this area?
- b) From what you have read or heard has there been any problem with having military personnel stationed in this area?

IF PROBLEM, ASK: What? When? What happened? How do you feel about it?

## APPENDIX VII

### CONCEPTUAL FRAMEWORK OF COMMUNITY ASPECTS OF AIRCRAFT NOISE AND OTHER ANNOYANCES

#### I Physical Characteristics of Airplane Stimulus

1. Sound spectrum
2. Peak sound pressure level
3. Peak duration
4. Regularity of stimulus occurrence
5. Frequency of stimulus occurrence
6. Slant-distance of sound-source (angle and distance of airplane to respondent)
7. Relation of signal stimulus to ambient noise level
8. History of changes in local airplane stimulus

#### II Intervening Socio-Psychological Variables Affecting Feelings About Airplane Stimulus

1. Perceived characteristics of Airplane Stimulus
  - a) sound spectrum
  - b) loudness of peak noise level
  - c) peak duration
  - d) regularity of occurrence
  - e) frequency of occurrence
  - f) slant-distance of sound-source
  - g) relation of airplane noise to other local noises
  - h) history of changes in local airplane stimulus
2. Overall attachment to community
  - a) respondent
  - b) other members of family
  - c) friends and neighbors' feelings about the community

3. Desired living conditions for residential area
  - a) physical characteristics - peace, quiet, open spaces, absence of congestion, aesthetic values, no physical hazards
  - b) convenience of location and adequacy of facilities - work, shopping, churches, recreation, highway and other transportation
  - c) social aspects - neighbors friendly but not intruding; no conflicts with military personnel; active community clubs (social, civic, religious, etc.)
  - d) economic - taxes and other costs of living reasonable
4. Anticipated advantages in living conditions for residential area
5. Anticipated deficiencies in living conditions for residential area
  - a) prior awareness of deficiencies
  - b) expected intensity
6. Outlook for improvement in living conditions
7. Extent to which present actual living conditions differ from desired and anticipated conditions
  - a) character and intensity of other noises in relation to aircraft noise
  - b) physical conditions believed to be affected by airplanes
  - c) other conditions believed to be affected by airplanes - social, economic, location
8. Personal experiences affected by airplane stimulus
  - a) fear of crash - danger to family, neighbors, friends
  - b) sleep interference
  - c) rest and relaxation
  - d) concentration and reading
  - e) speech interference - conversation, telephone, radio and TV
  - f) vibrations - shake house, dishes, damage property
  - g) resale value of property
  - h) other aspects - landing lights, TV flicker, oil spray, animal husbandry, general annoyance

9. Belief in the importance of different missions at the airport
  - a) belief in importance of functions
  - b) belief in the necessity of function being performed at local airport
10. Belief in the physical possibility of regulating airplane stimulus
11. Feeling about comparative intensity of the exposure to airplane stimulus at other areas in the vicinity of the airport
12. Belief airplane regulations are designed to minimize disturbance
  - a) belief that those responsible for regulating disturbance have an interest in the welfare of the community
    - 1) pilots
    - 2) operators of aircraft (Air Forces, Airlines) - local, headquarters
    - 3) government authorities (federal, state, local)
  - b) belief existing disturbance is unavoidable in relation to airplane missions
13. Belief airplane regulations are enforced by authorities
  - a) extent to which regulations are violated
  - b) reasons for violations - detailed knowledge of operations
  - c) receipt of complaints are facilitated and welcome
  - d) belief in skill of pilots and safety of the airplanes
14. Expectation of remaining in community
  - a) certainty of continued residence
  - b) length of expected continued residence
15. Personal variables
  - a) demographic - age, sex, education, income, occupation, family composition, etc.
  - b) extent at home and exposed to airplane stimulus

- c) length of residence in present community
- d) previous exposure to noisy conditions
- e) previous experiences with flying in airplanes
- f) association with persons connected with aviation

### III Intervening Socio-Psychological Variables Affecting Expression of Annoyance

- 1. Social approval of feelings of annoyance
  - a) family
  - b) neighbors and friends
- 2. Knowledge of responsible officials in charge of regulating airplane operations.
- 3. Belief in the physical possibility of regulating airplane stimulus
- 4. Belief in individual responsibility to assist in improvement of civic conditions
- 5. Belief in the social possibility of influencing the responsible officials
  - a) extent to which a person feels that other neighbors or local organizations will help
  - b) extent to which a person feels that the officials will be sympathetic to reasonable suggestions
  - c) extent to which previous experiences with personal or group complaints have been successful - airplane or other problems
- 6. Degree of social organization and ease of expression
  - a) types of individuals and local groups giving sanction to complaints
  - b) ease of forms of expression -
    - 1) petitions
    - 2) community meetings
    - 3) telephone calls
    - 4) letters
    - 5) visits

APPENDIX: ~~VIII~~ : FIRST DRAFT

Questionnaire No. \_\_\_\_\_

CONFIDENTIAL  
Survey 358  
First Draft  
5-13-55

NATIONAL OPINION RESEARCH CENTER  
University of Chicago

Respondent No. \_\_\_\_\_

Time interview began \_\_\_\_\_  
ended \_\_\_\_\_

Hello. I'm from the National Opinion Research Center at the University of Chicago. We are doing a study about how people feel about living in different places, and I'd like to get some of your views.

1. In general, how do you feel about living in this part of ( ). Do you rate it as excellent, good, fair, poor, or very poor -- as a place to live?

- Excellent. . . . . 1\*
- Good . . . . . 2\*
- Fair . . . . . 3\*
- Poor . . . . . 4\*\*
- Very poor. . . . . 5\*\*
- Don't know . . . . . 6\*\*

\*IF "EXCELLENT, GOOD, OR FAIR", ASK Q. 2 AND Q. 3

\*\*IF "POOR", "VERY POOR", OR "DON'T KNOW", ASK Q. 3 FIRST AND THEN Q. 2

2. A. What are some of the things you like about living around here -- things that make this a good place to live?

B. Are there any other things that make you satisfied with living around here-- things that you feel are advantages?

C. Have we overlooked anything that you feel makes this a pleasant place to live?

Q. 2 (continued)

- D. People sometimes say that over the years a person becomes attached to his community. Are there any things around here that you, yourself, have become attached to?

---

3. A. Now what are some of the things you don't like about living around here?

- B. Are there other things that affect this area that you feel sometimes are nuisances -- or that are unpleasant or disagreeable to you?

C. Are there any other conditions that bother, disturb or annoy you at all?

- D. Have we overlooked anything -- even little things that are unpleasant or bothersome that you just take for granted because nothing much can be done about them?

E. You sometimes hear people say, "If you live around here you just have to expect such and so...". If you heard someone say that about living here, what sort of things would he probably be talking about?

Q. 3 (continued)

F. Taking everything into consideration, would you say this is a very safe place to live, or are there some dangerous conditions affecting this area? (Could you describe them to me?)

4. Now to be sure I have all your feelings straight. Here is a list of advantages which some people have said they like to have in a residential area.

A. I'd like you to look at each item on this card and tell me how important it is to you, personally, to have each advantage in your residential area. How about the first one, for example, would you say it is very important, fairly important, or of little importance that the area you live in be "close to your work or place of business"? How about (next item)?

B. Now how would you rate this area in terms of actually having these advantages--- would you say this area was excellent, good, fair, poor or very poor ----- in terms of being "close to your work or place of business."

NOTE: ASK "A" FOR EACH ITEM, THEN ASK "B" FOR EACH ITEM

	A			B				
	Very Imp.	Fair Imp.	Lit'l Imp.	Exc.	Good	Fair	Poor	Very Poor
a. Close to work or place of business	1	2	3	1	2	3	4	5
b. Good schools	1	2	3	1	2	3	4	5
c. Quiet--no loud or unpleasant noises	1	2	3	1	2	3	4	5
d. Convenient shopping	1	2	3	1	2	3	4	5
e. Clean, healthy, pleasant surroundings	1	2	3	1	2	3	4	5
f. Reasonable taxes or rent	1	2	3	1	2	3	4	5
g. Good roads and transportation facil.	1	2	3	1	2	3	4	5
h. Convenient recreation & entertainment	1	2	3	1	2	3	4	5
i. Safe area	1	2	3	1	2	3	4	5
j. Friendly neighbors	1	2	3	1	2	3	4	5
k. Land for garden, work, and play space	1	2	3	1	2	3	4	5
l. Good sewage and sanitation services	1	2	3	1	2	3	4	5
m. Close to church	1	2	3	1	2	3	4	5
n. Good local government	1	2	3	1	2	3	4	5
o. Attractive, well-kept homes	1	2	3	1	2	3	4	5

Survey 358-4

Q. 4 (continued)

C1. Now, of all the things that you like about living around here...all the things that are pleasant or that you'd consider advantages--what is the one thing you like most?

C2. Before you moved here, did you expect to find this (advantage) here?

Yes. . . . . 1  
No . . . . . 2

C3. What would be the next best thing?

C4. Before you moved here, did you expect to find this advantage here?

Yes. . . . . 1  
No . . . . . 2

C5. And what would be the third?

C6. Before you moved here, did you expect to find this advantage here?

Yes. . . . . 1  
No . . . . . 2

C7. Was there any other advantage you expected to find around here?  
(What was that?)

D1. Now let's rate some of the things you don't like...those you consider unpleasant, bothersome, or disadvantages. What is the one thing you dislike most?

D2. How often is that a problem to you--would you say very often, fairly often, or only occasionally?

Very often . . . . . 1  
Fairly often . . . . . 2  
Occasionally . . . . . 3  
Don't know . . . . . 4

Q. 4 (continued)

D3. Before you moved here did you expect to have this disadvantage around here?

Yes. . . . . 1  
No . . . . . 2

D4. What would be the next thing you dislike most?

D5. How often is that a problem to you--would you say very often, fairly often, or only occasionally?

Very often . . . . . 1  
Fairly often . . . . . 2  
Occasionally . . . . . 3  
Don't know . . . . . 4

D6. Before you moved here did you expect to have this disadvantage around here?

Yes. . . . . 1  
No . . . . . 2

D7. What would be the third?

D8. How often is that a problem to you--would you say very often, fairly often, or only occasionally?

Very often . . . . . 1  
Fairly often . . . . . 2  
Occasionally . . . . . 3  
Don't know . . . . . 4

D9. Before you moved here did you expect to have this disadvantage around here?

Yes. . . . . 1  
No . . . . . 2

Q. 4 (continued)

NOTE: If any type of Airplane Annoyance or Noise Annoyance was mentioned previously, but has not been selected as one of the three things most disliked, ASK, D10. and 11 for each Airplane or Noise item:

D10. And how would you rate (airplane noise, traffic noise, danger from planes etc.) in comparison with these other three problems we've just discussed-- would you say it is just as important, almost as important, or much less important to you?

(item) _____	(item) _____	(item) _____	(item) _____
Just as imp. . . . 1			
Almost as imp. . . 2			
Much less imp. . . 3			
Don't know . . . . 4			

D11. Before you moved here, did you expect to have this (item) around here?

(item) _____	(item) _____	(item) _____	(item) _____
Yes. . . . . 1			
No . . . . . 2			

5. A. O.K., now how do you think your (wife) (husband) would rate them...what would (he) (she) probably say was the best thing about living around here-- the thing (he) (she) would like most?

B. What would be the next best thing?

C. And what would be the third best thing?

D. And how do you think (he) (she) would feel about the unpleasant or bothersome things--the disadvantages--what would (he) (she) probably dislike most about living around here?  
What would be next? What would be third?

What would be next?

What would be third?

Q. 5 (continued)

E. O.K., now what is your general impression of what most of your neighbors probably like best about living around here?

F. And what would be the thing that most of them would probably dislike most about living around here?

6. A. Now how would you rate the noise around here--- in general, would you say it's Very Noisy, Fairly Noisy, Fairly Quiet or Very Quiet?

NOTE: If no qualification is given, Enter "None" in the blank space (Except for \_\_\_\_\_) and the rating given.

\* If answer is "Except for the \_\_\_\_\_ noise it's \_\_\_\_\_." Enter the qualified noise and the overall noise rating, then ask B.

- Except for \_\_\_\_\_ Very noisy. . . . . 1
- Fairly noisy. . . . . 2
- Fairly quiet. . . . . 3
- Very quiet. . . . . 4
- Don't know. . . . . 5

\*B. Now including the \_\_\_\_\_ noise, how would you rate it---would you say it's Very Noisy, Fairly Noisy, Fairly Quiet, or Very Quiet?

- Very noisy. . . . . 1
- Fairly noisy. . . . . 2
- Fairly quiet. . . . . 3
- Very quiet. . . . . 4
- Don't know. . . . . 5

7. A. What kinds of noises or sounds do you usually hear around here?  
(any others?)

NOTE: Record verbatim comments about the "kinds of noises", then be  
sure to list each noise below in Q. 8.

IF AIRPLANE NOISE IS MENTIONED without specifying whether it is "jet" or  
"propeller", or whether it is ground or flight noise, ASK B.

B. Do you happen to know what kind of planes (plane noise) they are?  
(Are those noises from (jet, propeller) planes flying by here, or are  
they from planes on the ground warming up or testing their engines?)

Jet planes in flight. . . . .	1
Jet planes on ground. . . . .	2
Propeller planes in flight. . . . .	3
Propeller planes on ground. . . . .	4
Don't know. . . . .	5

IF \*AIRPLANES, \*TRUCKS, OR \*\*\*CARS ARE NOT MENTIONED  
ASK D, E, OR F AS THEY APPLY:

\*D1. Do you ever hear airplanes flying by here?  
(Do you happen to know what kind of planes?)

No planes . . . . .	1
Jet planes. . . . .	2
Propeller planes. . . . .	3
Don't know. . . . .	4

Survey 358-9

\*D2. Do you ever hear airplanes on the ground warming up or testing their engines?  
(Can you tell what kind of planes they are?)

- No planes . . . . . 1
- Jet planes . . . . . 2
- Propeller planes . . . . . 3
- Don't know . . . . . 4

\*\*E. Do you ever hear trucks going by here?

- Yes. . . . . 1
- No . . . . . 2
- Don't know . . . . . 3

F. Do you ever hear cars going by here?

- Yes. . . . . 1
- No . . . . . 2
- Don't know . . . . . 3

---

8. Now let's see if we have all the noises and sounds you hear around here ---

NOTE: Go over answers to Q. 6 and Q. 7, reading aloud the noises and sounds mentioned, and recording each noise below: The Ask A for each noise mentioned, then B....etc.

A. If you were describing the \_\_\_\_\_ noise to a friend, what would you say it sounds like? (How about the \_\_\_\_\_ (next) noise?)

(1) (Enter 1st noise) \_\_\_\_\_

(2) (Enter 2nd noise) \_\_\_\_\_

(3) (Enter 3rd noise) \_\_\_\_\_

(4) (Enter 4th noise) \_\_\_\_\_

	1st Noise	2nd Noise	3rd Noise	4th Noise
B1. Is noise ever unpleasant or disagreeable to you?	Yes . . . . . 1** Yes . . . . . 1** Yes . . . . . 1** Yes . . . . . 1** No . . . . . 2* No . . . . . 2* No . . . . . 2* No . . . . . 2* Don't know . 3* Don't know . 3* Don't know . 3* Don't know . 3*			

IF "NOW", ASK:

#B2. Now, if it came to a choice, would you say that you like having the noise, or that you'd rather not have it?	1 Like it. . . . . 1 2 Not have it. 2 Not have it. 2 Not have it. 2 Not have it. 2 3 Don't care . 3 Don't care . 3 Don't care . 3 Don't care . 3 4 Don't know . 4 Don't know . 4 Don't know . 4 Don't know . 4
---	--

IF "YES", ASK:

**B3. Would you say it ever bothers, annoys, or disturbs you in any way?	Yes . . . . . 1** Yes . . . . . 1** Yes . . . . . 1** Yes . . . . . 1** No . . . . . 2 No . . . . . 2 No . . . . . 2 No . . . . . 2 Don't know . 3 Don't know . 3 Don't know . 3 Don't know . 3
--	---

\*\*\*IF YES, ASK: B4 and B5

***B4. Does it bother you very much, moderately, or hardly at all?	1 Very much . 1 Very much . 1 Very much . 1 Very much . 2 Moderately. 2 Moderately. 2 Moderately. 2 Moderately. 3 Hardly at all 3 Hardly at all 3 Hardly at all 3 Hardly at all 4 Don't know . 4 Don't know . 4 Don't know . 4 Don't know .
--	--

\*\*\*B5.

In what way does it bother you? (Could you describe your feelings?)

NOTE: List names of noises that bother, then describe feelings.

C. How often do you hear the noise around here -- do you hear it very often, fairly often, or only occasionally?

Very often.	1						
Fairly often.	2						
Occasionally.	3	Occasionally.	3	Occasionally.	3	Occasionally.	3
Don't know.	4						

D1. Does the noise ever seem to be very loud, or moderately loud, or is it always fairly low?

Very loud.	1						
Moderately.	2	Moderately.	2	Moderately.	2	Moderately.	2
Fairly low.	3						
Don't know.	4						

\*IF "VERY LOUD" OR "MODERATELY LOUD": ASK D2

D2. Is it (very loud, moderately loud) very often, fairly often, or only occasionally?

Very loud, moderately loud	Very often.	1	Very often.	1	Very often.	1
Very loud	Fairly often.	2	Fairly often.	2	Fairly often.	2
Moderately loud	Occasionally.	3	Occasionally.	3	Occasionally.	3
Fairly low	Don't know.	4	Don't know.	4	Don't know.	4

E1. What time of day or night do you usually hear the noise?

6AM to 11:59AM	1						
12AM to 5:59PM	2						
6PM to 10:59PM	3						
11PM to 6:00AM	4						
Don't know.	5						

E2. Now do you always hear the noise about the same time or does it differ from day to day?

Same time	1						
Differs	2	Differs	2	Differs	2	Differs	2
Don't know	3						

\*IF DIFFERS, ASK E3:

E3. How does it differ? (Are week days different from Saturdays and Sundays?)

Same	1	Same	1	Same	1	Same	1
Different	2	Different	2	Different	2	Different	2
Don't know	3						

F1. Now we may have already covered this, but did you have any idea that you would find any of these noises here, before you moved here?

<u>1st Noise</u>	<u>2nd Noise</u>	<u>3rd Noise</u>	<u>4th Noise</u>
Yes*	Yes*	Yes*	Yes*
No	No	No	No
Don't know	Don't know	Don't know	Don't know

\*IF "YES", ASK F2:

F2. Is it worse than you expected, not as bad, or about the same as you expected?

<u>1st Noise</u>	<u>2nd Noise</u>	<u>3rd Noise</u>	<u>4th Noise</u>
Worse. . . . 1			
Not as bad . 2			
Same . . . . 3			

9. Now I have a pretty good idea of how you feel about these noises, but could you tell me:

A1. Do any of them ever startle you at all?

- Yes. . . . . 1\*
- No . . . . . 2\*\*
- Don't know . . . . . 3

\*IF YES, ASK A2 and A3:

A2. Which one(s)?

A3. Could you tell me in your own words about any particular experiences that stand out in your mind? (How long ago was that?)

\*\*IF NO, ASK A4:

A4. Have they ever in the past?

B1. Do any of these noises ever wake you up or keep you from going to sleep?  
(which ones?)

Yes. . . . . 1  
No . . . . . 2\*  
Don't know . . . . . 3

\*IF NO, ASK B2:

B2. Did they ever in the past?

C1. Do they ever disturb you when you are trying to rest or relax?  
(which ones?)

Yes. . . . . 1  
No . . . . . 2\*  
Don't know . . . . . 3

\*IF NO, ASK C2:

C2. Did they ever in the past?

D1. How about talking to other people or listening to the radio or TV -- do  
they ever make it more difficult for you to do these things?  
(which ones?)

Yes. . . . . 1  
No . . . . . 2\*  
Don't know . . . . . 3

E. Do the (cars, trucks, jets, propeller planes, etc.) ever make the TV  
flicker? (which ones?)

F. Do the (cars, trucks, jets, propeller planes, etc.) ever make the house vibrate or shake? (which ones?)

G. Do any of these noises have any other effect on you that you haven't already mentioned? (Could you tell me about it?)

Yes . . . . . 1  
No . . . . . 2\*  
Don't know . . . . . 3

\*IF NO, ASK G2:

G2. Did they ever in the past?

---

10. A. Do the airplanes ever seem to fly right overhead when they pass by here?

Right overhead . . . . . 1\*  
Never overhead . . . . . 2  
Don't know . . . . . 3

\*IF OVERHEAD, ASK B-C:

B. Do they seem to fly overhead very often, fairly often, or only occasionally?

Very often . . . . . 1  
Fairly often . . . . . 2  
Occasionally . . . . . 3

C1. When they fly overhead, do they ever fly very low, or are they always pretty well up?

Fly low. . . . . 1\*\*  
Well up. . . . . 2  
Don't know . . . . . 3

\*\*IF FLY LOW, ASK C2 and C3:

C2. Do they fly very low very often, fairly often, or only occasionally?

Very often . . . . . 1  
Fairly often . . . . . 2  
Occasionally . . . . . 3  
Don't know . . . . . 4

Q. 10 (continued)

C3. How do you feel about it when they fly very low?

C4. Do you have any idea why they fly low here?  
(why is that?)

11. A. Do you have any idea or impression of the sort of jobs assigned to the airplanes around here? (Why do they have them here?)

Yes. . . . .	1*
No . . . . .	2

\*IF "YES", ASK B:

B. What are they?

NOTE: Number each different "job" mentioned 1,2,3,4 etc. and ask about each in part C and D.

C. How important do you feel (each job) is -- would you say it's very important, moderately important, or hardly important at all?  
(As far as you are concerned?)

	(Jobs) <u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
Very important. . . . .	1	1	1	1
Moderately important. . . . .	2	2	2	2
Hardly important . . . . .	3	3	3	3
Don't know. . . . .	4	4	4	4

D. Do you feel that (each job) has to be done at the airport near here, or could it be done at a better place?

	(Jobs) <u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
Done here . . . . .	1	1	1	1
Better place. . . . .	2	2	2	2
Don't know. . . . .	3	3	3	3

12. A. As far as you know, are there any special rules which pilots are supposed to follow when they fly over here?

Yes. . . . . 1\*  
No . . . . . 2  
Don't know . . . . . 3

\* IF "YES", ASK B-C:

B. What are they?

C. Do you feel that pilots always pay attention to these rules? (What do you mean?)

Yes. . . . . 1  
No . . . . . 2\*

\*IF "NO", ASK C2:

C2. How often do you feel that they don't -- very often, fairly often, or only occasionally?

Very often . . . . . 1  
Fairly often . . . . . 2  
Occasionally . . . . . 3  
Don't know . . . . . 4

---

13. A. Do you suppose that pilots care very much about the feelings of people, like yourself, when they fly overhead?

Yes. . . . . 1\*  
No . . . . . 2\*  
Don't know . . . . . 3

\*B. Why do you feel that way?

C. Do you think that pilots can do anything about the way they fly over here -- can they fly higher, or make less noise if they want to? (Can you explain that a little more?)

Q. 13 (continued)

D. Do you happen to know any pilots personally?

Yes. . . . . 1  
No . . . . . 2  
Don't know . . . . . 3

E. Do you know any other people connected with flying or with the airport near here?

Yes. . . . . 1  
No . . . . . 2  
Don't know . . . . . 3

F. Some people say that pilots for the commercial companies are much different than the Air Force pilots -- how do you feel about that?  
(In what way are they different?)

---

14. As far as you know, are there any (other) rules affecting airplanes around here?

---

15. A. Do you have any idea who is supposed to make the rules for the airplanes around here? (Who is that?)

Q. 15 (continued)

B1. Do you think that (they) (the people who make these rules) care about people, like yourself, who live near the airport -- would you say they are very concerned, moderately concerned, only slightly concerned, or not concerned at all with people like you?

- Very concerned. . . . . 1\*
- Moderately concerned. . . . . 2\*
- Slightly concerned. . . . . 3\*
- Not concerned . . . . . 4\*
- Don't know. . . . . 5

\*B2. Why do you say that?

C. As far as you know, do these people (who make the rules) do very much to enforce their rules or to punish violators (what do they do?)

---

15. A. To the best of your knowledge, do you feel the airplanes around here are worse, not as bad, or about the same as other places near the airport?

- Worse. . . . . 1
- Not as bad . . . . . 2
- Same . . . . . 3
- Don't know . . . . . 4

B. Why is that?

NOTE: ASK Q. 16 ONLY IF MORE THAN ONE NOISE IS MENTIONED.

16. Now we've been talking a good deal about how you feel about different noises around here, and I'd like to be sure I have all your feelings straight.

A. Could you tell me (again) which noise is usually the loudest?

B. Which noise do you usually hear most often?

C. Which is the greatest nuisance, or bothers you the most? (Why is that?)

---

17. Some people say that you can get used to any noise if you just exercise your will power.... how do you feel about that? Why?

---

18. Now to sum up your feelings about all of the different disadvantages in living around here, which we have discussed so far -- could you tell me again, which one thing you dislike most?

B. What is the next thing you dislike most?

C. What is the third thing?

B1. Do you have any idea of the people in charge of (improving, reducing, controlling) the (disadvantage)? (Do you know the position of the man in charge?)

Yes . . . . .	1*
No. . . . .	2
Don't know. . . . .	3

\*IF "YES", ASK B2 & B3

B2. Who is that?

B3. Do you have any idea how (he, they) feel(s) about it?

C1. Do you think that you could help to get the people in charge to do something about (the disadvantage)?

Yes . . . . .	1*
No. . . . .	2**
Don't know. . . . .	3**

\*IF "YES", ASK C2

C2. What could you do? (How would you go about it?)

\*\*IF "NO" OR "DON'T KNOW", ASK C3

C3. Why is that?

D1. Have you yourself ever tried to do anything about the (disadvantage)?

Yes . . . . .	1**
No. . . . .	2*
Don't know. . . . .	3*

\*IF "NO" OR "DON'T KNOW", ASK D2

D2. Why is that?

Question 21 continued

\*\*IF "YES", ASK D3-5

D3. What did you do?

D4. When was that?

D5. Did it do any good? (What happened?)

E1. Could you tell me, in general, how your neighbors feel about the (disadvantage)? (Are they ever bothered or annoyed by it?)

Bothered. . . . .	1*
Not bothered. . . . .	2
Don't know. . . . .	3

\*IF "BOTHERED", ASK E2

E2. Do you think they could help to get something done?

Yes . . . . .	1**
No. . . . .	2***
Don't know. . . . .	3***

\*\*IF "YES", ASK E3

E3. What could they do?

\*\*\*IF "NO" OR "DON'T KNOW", ASK E4

E4. Why is that?

Question 21 continued

F1. As far as you know, have any of them (your neighbors) ever tried to do anything?

Yes . . . . .	1**
No. . . . .	2*
Don't know. . . . .	3*

\*IF "NO" OR "DON'T KNOW", ASK F2

F2. Why is that?

\*\*IF "YES", ASK F3-5

F3. What did they do?

F4. When was that?

F5. Did it do any good? (What happened?)

G. Are there any local groups or organizations around here who usually take an interest in such problems?

Yes . . . . .	1*
No. . . . .	2
Don't know. . . . .	3

\*IF "YES", ASK THE REST OF G & H

G2. Which ones?

G3. Do you happen to belong to any of them? (Which ones?)

Question 21 continued

G4. As far as you know are they concerned about the (disadvantage)?

Yes . . . . .	1***
No. . . . .	2**
Don't know. . . . .	3

\*\*IF "NO", ASK G5

G5. Why is that?

\*\*\*IF "YES", ASK G6

G6. Do you think they could help to get something done?

Yes . . . . .	1
No. . . . .	2****
Don't know. . . . .	3

\*\*\*\*IF "NO", ASK G7

G7. Why is that?

H1. As far as you know have any of them ever tried to do anything about it?

Yes . . . . .	1**
No. . . . .	2*
Don't know. . . . .	3

\*IF "NO", ASK H2

H2. Why is that?

\*\*\*IF "YES", ASK H3-5

H3. What did they do?

Question 21 continued

H4. When was that?

H5. Did it do any good? (What happened?)

---

22. Now how about the (second most serious problem) --

A. Do you think that anybody connected with \_\_\_\_\_ knows how to (reduce, improve, control) the situation, if he wanted to?

Yes . . . . .	1**
No. . . . .	2*
Don't know. . . . .	3*

\*IF "NO" OR "DON'T KNOW", ASK A2

A2. Do you think someone may find a solution in the next few years?

Yes . . . . .	1**
No. . . . .	2
Don't know. . . . .	3

\*\*IF "YES", ASK A3

A3. What do you think could be done?

B1. Do you have any idea of the people in charge of (improving, reducing, controlling) the (disadvantage)? (Do you know the position of the man in charge?)

Yes . . . . .	1*
No. . . . .	2
Don't know. . . . .	3

\*IF "YES", ASK B2 & B3

B2. Who is that?

B3. Do you have any idea how (he, they) feel(s) about it?

C1. Do you think that you could help to get the people in charge to do something about (the disadvantage)?

Yes . . . . .	1*
No. . . . .	2**
Don't know. . . . .	3**

\*IF "YES", ASK C2

C2. What could you do? (How would you go about it?)

\*\*IF "NO" OR "DON'T KNOW", ASK C3

C3. Why is that?

D1. Have you yourself ever tried to do anything about the (disadvantage)?

Yes . . . . .	1**
No. . . . .	2*
Don't know. . . . .	3*

\*IF "NO" OR "DON'T KNOW", ASK D2

D2. Why is that?

Question 22 continued

\*\*IF "YES", ASK D3-5

D3. What did you do?

D4. When was that?

D5. Did it do any good? (What happened?)

E1. Could you tell me, in general, how your neighbors feel about the (disadvantage)? (Are they ever bothered or annoyed by it?)

Bothered. . . . .	1*
Not bothered. . . . .	2
Don't know. . . . .	3

\*IF "BOTHERED", ASK E2

E2. Do you think they could help to get something done?

Yes . . . . .	1**
No. . . . .	2***
Don't know. . . . .	3***

\*\*IF "YES", ASK E3

E3. What could they do?

\*\*\*IF "NO" OR "DON'T KNOW", ASK E4

E4. Why is that?

Question 22 continued

F1. As far as you know, have any of them (your neighbors) ever tried to do anything?

Yes . . . . .	1**
No. . . . .	2*
Don't know. . . . .	3*

\*IF "NO" OR "DON'T KNOW", ASK F2

F2. Why is that?

\*\*IF "YES", ASK F3-5

F3. What did they do?

F4. When was that?

F5. Did it do any good? (What happened?)

G1. As far as you know are any of the local groups or organizations concerned about (second most serious problem)?

Yes . . . . .	1**
No. . . . .	2*
Don't know. . . . .	3

\*IF "NO", ASK G2

G2. Why is that?

\*\*IF "YES", ASK G3

G3. Do you think they could help to get something done?

Yes . . . . .	1
No. . . . .	2***
Don't know. . . . .	3

Question 22 continued

H1. As far as you know have any of them ever tried to do anything about it?

Yes . . . . .	1**
No. . . . .	2*
Don't know. . . . .	3

\*IF "NO", ASK H2

H2. Why is that?

\*\*IF "YES", ASK H3-5

H3. What did they do?

H4. When was that?

H5. Did it do any good? (What happened?)

---

23. NOTE: If airplanes were selected as the "most serious" or "second most serious" problems, ask Q. 23 about the "third most serious one."  
 If airplanes were NOT selected as one of the three most serious problems, ask Q. 23 about airplanes.

Now how about (the airplanes, or third problem) --

A. Do you think that anybody connected with \_\_\_\_\_ knows how to (reduce, improve, control) the situation, if he wanted to?

Yes . . . . .	1**
No. . . . .	2*
Don't know. . . . .	3*

\*IF "NO" OR "DON'T KNOW", ASK: A2. Do you think someone may find a solution in the next few years?

Yes . . . . .	1**
No. . . . .	2
Don't know. . . . .	3

\*\*IF "YES", ASK: A3. What do you think could be done?

B1. Do you have any idea of the people in charge of (improving, reducing, controlling) the (disadvantage)? (Do you know the position of the man in charge?)

Yes . . . . .	1*
No. . . . .	2
Don't know. . . . .	3

\*IF "YES", ASK B2 & B3

B2. Who is that?

B3. Do you have any idea how (he, they) feel(s) about it?

C1. Do you think that you could help to get the people in charge to do something about (the disadvantage)?

Yes . . . . .	1*
No. . . . .	2**
Don't know. . . . .	3**

\*IF "YES", ASK C2

C2. What could you do? (How would you go about it?)

\*\*IF "NO" OR "DON'T KNOW", ASK C3

C3. Why is that?

D1. Have you yourself ever tried to do anything about the (disadvantage)?

Yes . . . . .	1**
No. . . . .	2*
Don't know. . . . .	3*

\*IF "NO" OR "DON'T KNOW", ASK D2

D2. Why is that?

Question 23 continued

\*\*IF "YES", ASK D3-5

D3. What did you do?

D4. When was that?

D5. Did it do any good? (What happened?)

E1. Could you tell me, in general, how your neighbors feel about the (disadvantage)? (Are they ever bothered or annoyed by it?)

Bothered. . . . .	1*
Not bothered. . . . .	2
Don't know. . . . .	3

\*IF "BOTHERED", ASK E2

E2. Do you think they could help to get something done?

Yes . . . . .	1**
No. . . . .	2***
Don't know. . . . .	3***

\*\*IF "YES", ASK E3

E3. What could they do?

\*\*\*IF "NO" OR "DON'T KNOW", ASK E4

E4. Why is that?

F1. As far as you know, have any of them (your neighbors) ever tried to do anything?

Yes . . . . .	1**
No. . . . .	2*
Don't know. . . . .	3*

\*IF "NO" OR "DON'T KNOW", ASK F2

F2. Why is that?

\*\*IF "YES", ASK F3-5

F3. What did they do?

F4. When was that?

F5. Did it do any good? (What happened?)

G1. As far as you know are any of the local groups or organizations concerned about (second most serious problem)?

Yes . . . . .	1**
No. . . . .	2*
Don't know. . . . .	3

\*IF "NO", ASK G2

G2. Why is that?

\*\*IF "YES", ASK G3

G3. Do you think they could help to get something done?

Yes . . . . .	1
No. . . . .	2***
Don't know. . . . .	3

\*\*IF "NO", ASK G4

G4. Why is that?

Question 23 continued

H1. As far as you know have any of them ever tried to do anything about it?

Yes . . . . .	1**
No. . . . .	2*
Don't know. . . . .	3

\*IF "NO", ASK H2

H2. Why is that?

\*\*IF "YES", ASK H3-5

H3. What did they do?

H4. When was that?

H5. Did it do any good? (What happened?)

24A. Have you ever felt like moving away from this area?

Yes . . . . .	1*
No. . . . .	2
Don't know. . . . .	3

\*IF "YES", ASK B & C

B1. Have you done anything about finding another place?

Yes . . . . .	1**
No. . . . .	2
Don't know. . . . .	3

\*\*IF "YES" TO B1: What have you done?

Question 24 continued

C. Why have you felt like moving?

25. A. Do you know of anyone who has moved away from this area within the past year or so?

Yes . . . . .	1*
No. . . . .	2
Don't know. . . . .	3

\*IF "YES", ASK B

B. Do you happen to know why they moved?

26. A. Do you know anyone planning to move?

Yes . . . . .	1*
No. . . . .	2
Don't know. . . . .	3

\*IF "YES", ASK B

B. Do you happen to know why they plan to move?

27. Now we have what we call background data, and we'll be through.

Are you usually in this neighborhood during the morning? The afternoon?  
The evening? The night?

	<u>Yes</u>	<u>No</u>	<u>Don't Know</u>
Morning (6AM - 11:59AM) . . . . .	1	2	1
Afternoon (12N - 5:59PM) . . . . .	2	2	2
Evening (6PM - 10:59PM) . . . . .	3	3	3
Night (11PM - 5:59AM) . . . . .	4	4	4

28. A. How long have you lived in this part of \_\_\_\_\_? \_\_\_\_\_ years\*

\*IF LESS THAN 3 YEARS, ASK B & C

B. Where did you live just before moving here? (About how far is that from here?)

C. How long did you live there? \_\_\_\_\_ years

29. A. How would you compare the noise around here with the noise where you lived just before moving here -- Would you say it is noisier here, quieter, or about the same as your old neighborhood?

- Noisier . . . . . 1\*
- Quieter . . . . . 2\*
- Same. . . . . 3\*
- Never lived elsewhere . . . . . 4

\*ASK ONLY IF RESPONDENT HAS LIVED ELSEWHERE

B. What kinds of noise did you have in your old neighborhood?

C. About how long did you live there? \_\_\_\_\_ years

D1. Did any of the noises ever bother or annoy you in any way?

- Yes . . . . . 1\*
- No. . . . . 2
- Don't know. . . . . 3

\*IF "YES, ASK D2 & D3

D2. Which ones?

D3. In what way? (Did it bother you at all when you first experienced it? -- later, just before you moved?)

Question 29 continued

E1. Did you ever live in any (other) noisy areas?

Yes . . . . .	1*
No. . . . .	2
Don't know. . . . .	3

\*IF "YES", ASK E2

E2. How long ago was that? \_\_\_\_\_ years

E3. What kinds of noise did you have there?

E4. Did any of them ever bother or annoy you in any way?

Yes . . . . .	1**
No. . . . .	2
Don't know. . . . .	3

\*\*IF "YES", ASK E5

E5. In what way? (Did it bother you at first? Later, just before you moved?)

30. Family Composition:

Including yourself, how many people live with you in this house? \_\_\_\_\_  
 Please list them for me.

Relation to head of family	SEX		About how old is	Race	
	M	F		W	N.W.
Self	M	F			
	M	F			
	M	F			
	M	F			
	M	F			

31. A. What sort of work does (main earner in the family) do?

Job:

Industry:

IF RESPONDENT IS NOT MAIN EARNER, ASK B:

B. Do you have a job away from your home?

- Yes. . . . . 1\*
- No . . . . . 2\*\*
- Don't know . . . . . 3

\*IF "YES", ASK B2:

B2. What sort of work is that?

Job:

Industry:

\*\*IF "NO", ASK B3:

B3. Have you ever had a job outside your home?

- Yes. . . . . 1
- No . . . . . 2
- Don't know . . . . . 3

32. IF RESPONDENT NOW WORKS OR USED TO WORK, ASK:

A. What would you say about the noise where you work(ed) --- would you say it is (was) very noisy, fairly noisy, fairly quiet, or very quiet?

- Very noisy. . . . . 1\*
- Fairly noisy. . . . . 2\*
- Fairly quiet. . . . . 3
- Very quiet. . . . . 4

A2. How would you compare the noise around here with the noise where you work(ed) --- would you say it is noisier here, quieter or about the same as where you work(ed)?

- Noisier . . . . . 1
- Quieter . . . . . 2
- Same. . . . . 3
- Don't know. . . . . 4

\*IF "VERY NOISY" OR "FAIRLY NOISY", ASK B-D:

B. What kinds of noise do(did) you have?

C. About how long have you been working (did you work) there?

D. Did any of these noises ever bother or annoy you in any way? (Which ones?) (In what way?)

E. How about any of your other jobs --- were any of them very noisy or moderately noisy?

- Yes . . . . . 1\*
- No. . . . . 2
- Don't know. . . . . 3

\*IF "YES", ASK E2-4:

E2. What kind of noise was it?

E3. How long did you work there? \_\_\_\_\_

E4. Did any of these noises ever bother or annoy you in any way? (Which ones?) (In what way?)

33. Now what is the highest grade of school you completed?

Completed 0-4 years of grade school. . . . .	1
" 5-6 years of grade school. . . . .	2
" 7-8 years of grade school. . . . .	3
" 1-3 years of high school. . . . .	4
" 4 years of high school. . . . .	5
" 1-3 years of college. . . . .	6
" 4 or more years of college. . . . .	7

34. Here is a card with a list of typical family incomes. Could you tell me the one which comes closest to the amount that all members of your family earned last year. I mean how much money did they get all together from all sources -- before taxes and other deductions?

A. under \$2,000. . . . .	1
B. \$2,000 - 4,000. . . . .	2
C. \$4,000 - 6,000. . . . .	3
D. \$6,000 - 8,000. . . . .	4
E. \$8,000 - \$10,000. . . . .	5
F. \$10,000 and more. . . . .	6

35. A. By the way, have you ever flown in a plane?

Yes. . . . .	1*
No . . . . .	2**
Don't know . . . . .	3**

\*IF "YES", ASK B-C

B. About how many times?

C. When was the last time?

\*\*IF "NO", ASK D:

D. Has anyone in your family ever flown in one?

Yes. . . . .	1***
No . . . . .	2
Don't know . . . . .	3

\*\*\*IF "YES", ASK E:

E. Who was that?

F. About how many times has he(she) flown?

Enter Relationship  
to Respondent:

Number of Times Flown:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

36. A. How do you feel about flying?

B. What are some of the (other) things about flying you don't like so much?

C. Suppose you were invited to go for a ride in a jet plane -- how would you feel about it?

37. Do you happen to have a TV set in this house?

- Yes. . . . . 1
- No . . . . . 2
- Don't know . . . . . 3

38. Do you rent or own this house? (check one and get appropriate information)

       Rent -- IF RENT, Ask: A. How much do you pay per month, including the cost of heat, light and cooking fuel?

\$

       Own -- IF OWN, Ask: B. About how much would you say your home is worth today?

\$

39. Now I guess we're all through. Can you think of anything else you'd like to add to describe your feelings about living around here -- or do you think we already have a complete picture?

APPENDIX IX : SECOND DRAFT

CONFIDENTIAL  
Survey 358  
Second Draft  
6-3-55

NATIONAL OPINION RESEARCH CENTER  
University of Chicago

Respondent No. \_\_\_\_\_

Time interview began \_\_\_\_\_  
ended \_\_\_\_\_

-----  
Hello. I'm from the opinion research center at the University of Chicago.  
We are doing a study about how people feel about living in different places, and  
I'd like to get some of your views.  
-----

1. In general, how do you feel about living in this part of ( ). Do you rate  
it as excellent, good, fair, poor, or very poor -- as a place to live?

Excellent. . . . .	1*
Good . . . . .	2*
Fair . . . . .	3*
Poor . . . . .	4**
Very poor. . . . .	5**
Don't know . . . . .	6**

\*IF "EXCELLENT, GOOD, OR FAIR", ASK Q. 2 AND Q. 3

\*\*IF "POOR", "VERY POOR", OR "DON'T KNOW", ASK Q. 3 FIRST AND THEN Q. 2

- 
2. A. What are some of the things you like about living around here -- things  
that you feel are advantages or that make this a good place to live?
- B. Have we overlooked anything that you feel makes this a pleasant place  
to live? (Any others?)

ASK EVERYONE PARTS A, B, C, D AND E

3. A. Now what are some of the things you don't like about living around here-- things you feel are sometimes nuisances or are unpleasant or disagreeable to you?
- B. Are there any other conditions that affect this area that bother, disturb, or annoy you at all?
- C. Now, you sometimes hear people say, "If you live around here you just have to expect such and so...". If you heard someone say that about living here, what sort of things would he probably be talking about?
- D. Have we overlooked anything -- even little things that are unpleasant or bothersome that you just take for granted because nothing much can be done about them?
- E. Taking everything into consideration, would you say this is a very safe place to live, or are there some dangerous conditions affecting this area? (Could you describe them to me?)

4. Now to be sure I have all your feelings straight. Here is a list of advantages which some people have said they like to have in a residential area.

A. I'd like you to look at these advantages and to think of those you've already told me about -- and tell me which ones would be most important to you -- if you were choosing a place to live in?

B. Which ones would be least important?

C. Now how would you rate this area in terms of actually having these advantages---- would you say this area was very good, good, fair, poor or very poor ----- in terms of being "close to your work or place of business."

	Very Good	Good	Fair	Poor	Very Poor
a. Close to work or place of business. . . . .	1	2	3	4	5
b. Good schools. . . . .	1	2	3	4	5
c. Quiet--no loud or unpleasant noises . . . . .	1	2	3	4	5
d. Convenient shopping . . . . .	1	2	3	4	5
e. Clean, healthy, pleasant surroundings	1	2	3	4	5
f. Reasonable taxes or rent. . . . .	1	2	3	4	5
g. Good roads and transportation facil. . . . .	1	2	3	4	5
h. Convenient recreation & entertainment	1	2	3	4	5
i. Safe area . . . . .	1	2	3	4	5
j. Friendly neighbors. . . . .	1	2	3	4	5
k. Land for garden, work, and play space	1	2	3	4	5
l. Good sewage and sanitation services . . . . .	1	2	3	4	5
m. Close to church . . . . .	1	2	3	4	5
n. Good local government . . . . .	1	2	3	4	5
o. Attractive, well-kept homes . . . . .	1	2	3	4	5

5. A. Now, of all the things that you like about living around here...all the things that are pleasant or that you'd consider advantages -- which ones are most important to you? (Any others?)

B. Before you moved here, did you expect to find any of these advantages here?

- Yes. . . . . 1\*
- No . . . . . 2
- Never lived elsewhere. . . 3
- Don't know . . . . . 4

\*IF "YES", ASK C:

C. Could you tell me which ones? (Any others?)

6. A. Now let's rate some of the things you don't like...of those you consider unpleasant, bothersome, or disadvantages, which ones do you dislike most? (Any others?)

NOTE: Number the dislikes 1,2,3 etc. and ask B-D.

B. How often do you think of (1st dislike, etc.) as a problem -- would you say very often, fairly often, or only occasionally?

	<u>1st</u> <u>Dislike</u>	<u>2nd</u> <u>Dislike</u>	<u>3rd</u> <u>Dislike</u>	<u>4th</u> <u>Dislike</u>
Very often. . . . .	1	2	1	1
Fairly often. . . . .	2	2	2	2
Occasionally. . . . .	3	3	3	3
Don't know. . . . .	4	4	4	4

6. (continued)

C1. Before you moved here did you expect to find any of these disadvantages around here?

- Yes. . . . . 1\*
- No . . . . . 2
- Never lived elsewhere. . . 3
- Don't know . . . . . 4

\*IF "YES", ASK C2:

C2. Could you tell me which ones?

D1. Were there any other disadvantages that you expected to find around here?

- Yes. . . . . 1\*\*
- No . . . . . 2
- Don't know . . . . . 3

\*\*IF "YES", ASK D2:

D2. Could you tell me which ones?

7. A. Now how would you rate the noise around here---in general, would you say it's Very Noisy, Fairly Noisy, Fairly Quiet or Very Quiet?

NOTE: If no qualification is given, Enter "None" in the blank space (Except for \_\_\_\_\_) and the rating given.

\*If answer is "Except for the \_\_\_\_\_ noise it's \_\_\_\_\_." Enter the qualified noise and the overall noise rating, then ask B.

- Except for \_\_\_\_\_ Very noisy. . . . . 1
- Fairly noisy. . . . . 2
- Fairly quiet. . . . . 3
- Very quiet. . . . . 4
- Don't know. . . . . 5

\*B. Now including the \_\_\_\_\_ noise, how would you rate it--- would you say it's Very Noisy, Fairly Noisy, Fairly Quiet, or Very Quiet?

- Very noisy. . . . . 1
- Fairly noisy. . . . . 2
- Fairly quiet. . . . . 3
- Very quiet. . . . . 4
- Don't know. . . . . 5

8. A. Could you tell me (again) what kinds of noises or sounds you usually hear around here? (Any others?)

NOTE: Record verbatim comments about the "kinds of noises", then be sure to list each noise below in Q. 9.

IF "JET" OR "PROPELLER" --"FLIGHT"OR "GROUND NOISE"IS NOT MENTIONED, ASK B OR C AS THEY APPLY:

B. Do you (also) ever hear (jet and/or propeller) planes fly by here?

C. Do you ever hear (jet and/or propeller) planes warming up or testing their engines?

	B. <u>Flight</u>		C. <u>Ground</u>	
	Yes	No	Yes	No
Jets heard. . . . .	1	2	1	2
Propeller heard . . . . .	1	2	1	2
Planes in general heard . . . . .	1	2	1	2
No planes heard . . . . .	1	2	1	2
Don't know. . . . .	1	2	1	2

9. Now let's see if we have all the noises and sounds you hear around here---

NOTE: Go over answers to Q. 7 and Q. 8, reading aloud the noises and sounds mentioned, and recording each noise below: Then ask A for each noise mentioned, then B....etc.

A1. Does the \_\_\_\_\_ noise bother you very much, moderately, only a little, or not at all? (How about the (second noise)? etc.)

Kinds of Noise					
	1.(_____)	2.(_____)	3.(_____)	4.(_____)	5.(_____)
Very much . . . . .	1***	1***	1***	1***	1***
Moderately . . . . .	2***	2***	2***	2***	2***
A little . . . . .	3***	3***	3***	3***	3***
Not at all . . . . .	4*	4*	4*	4*	4*
Don't know . . . . .	5*	5*	5*	5*	5*

\*IF "NOT AT ALL", OR "DON'T KNOW", ASK A2 AND A3.

A2. Now if it came to a choice would you say you like having the noise, or that you'd rather not have it?

	1.(_____)	2.(_____)	3.(_____)	4.(_____)	5.(_____)
Like it. . . . .	1	1	1	1	1
Not have it. . . . .	2	2	2	2	2
Don't care . . . . .	3	3	3	3	3
Don't know . . . . .	4	4	4	4	4

A3. Was it ever unpleasant or did it ever bother you at all in the past?

	1.(_____)	2.(_____)	3.(_____)	4.(_____)	5.(_____)
Yes. . . . .	1**	1**	1**	1**	1**
No . . . . .	2	2	2	2	2
Don't know . . . . .	3	3	3	3	3

\*\*IF "YES" TO A3, ASK A4:

A4. Could you tell me about it -- how you got used to it? (How did it happen? How does it work?)

9. (continued)

A5. Could you tell me just how you feel about the ( ) noise -- in what way does it bother you? (Why would you rather not have it? How would you describe the noise to a friend?)

NOTE: List name of noise before each answer. 1. (\_\_\_\_\_)

A6. Does the ( ) noise bother you more than it used to or not as much?

	1. (_____)	2. (_____)	3. (_____)	4. (_____)	5. (_____)
More . . . . .	1*	1*	1*	1*	1*
Not as much . . . . .	2*	2*	2*	2*	2*
Some . . . . .	3*	3*	3*	3*	3*
Don't know . . . . .	4	4	4	4	4

\* Why is that?

B. How often do you hear the ( ) noise around here -- would you say very often, fairly often, or only occasionally? (How about the second noise?)

	1. (_____)	2. (_____)	3. (_____)	4. (_____)	5. (_____)
Very often . . . . .	1	1	1	1	1
Fairly often . . . . .	2	2	2	2	2
Occasionally . . . . .	3	3	3	3	3
Don't know . . . . .	4	4	4	4	4

9. (continued)

C1. Does the ( ) noise ever seem very loud or is it always fairly low?  
(How about the 2nd noise?)

1.( ) 2.( ) 3.( ) 4.( ) 5.( )

Very loud. . . .	1*	1*	1*	1*	1*
Moderately loud.	2*	2*	2*	2*	2*
Fairly low . . . .	3	3	3	3	3
Don't know . . . .	4	4	4	4	4

\*IF "VERY LOUD" OR "MODERATELY LOUD", ASK C2:

C2. Is it (very loud, moderately loud) very often, fairly often, or only occasionally?

1.( ) 2.( ) 3.( ) 4.( ) 5.( )

Very often. . . .	1	1	1	1	1
Fairly often. . .	2	2	2	2	2
Occasionally. . .	3**	3**	3**	3**	3**
Don't know. . . .	4**	4**	4**	4**	4**

\*\*IF LOUD ONLY "OCCASIONALLY" OR "DON'T KNOW", ASK C3:

C3. Is it usually moderately loud or fairly low?

1.( ) 2.( ) 3.( ) 4.( ) 5.( )

Moderately loud.	1	1	1	1	1
Fairly low . . . .	2	2	2	2	2
Don't know . . . .	3	3	3	3	3

D. Do you usually hear the ( ) noise more on Saturdays or Sundays than on week days -- or is it always about the same? (How about the (2nd noise)?)

1.( ) 2.( ) 3.( ) 4.( ) 5.( )

More on Sat. or Sun. . .	1	1	1	1	1
More on Week days. . . .	2	2	2	2	2
More on ( ) . . . .	3	3	3	3	3
Always same. . . . .	4	4	4	4	4
Don't know . . . . .	5	5	5	5	5

9. (continued)

E1. Now we may have already covered this, but did you have any idea that you would find any of these noises here, before you moved here? (Which ones?)

	1. (____)	2. (____)	3. (____)	4. (____)	5. (____)
Yes. . . . .	1*	1*	1*	1*	1*
No . . . . .	2	2	2	2	2
Don't know . . .	3	3	3	3	3

\*IF "YES", ASK E2:

E2. Is it worse than you expected, not as bad, or about the same as you expected?

	1. (____)	2. (____)	3. (____)	4. (____)	5. (____)
Worse. . . . .	1	1	1	1	1
Not as bad . . .	2	2	2	2	2
Same . . . . .	3	3	3	3	3

10. Now I have a pretty good idea of how you feel about these noises, but could you tell me:

A1. Do any of them ever frighten or startle you at all?

Yes. . . . .	1*
No . . . . .	2
Don't know . . . . .	3

\*IF "YES", ASK A2 AND A3:

A2. Which one(s)?

A3. Could you tell me in your own words about any particular experiences that stand out in your mind? (How long ago was that?)

10. (continued)

B. Do any of these noises ever wake you up or keep you from going to sleep?  
(which ones?)

Yes. . . . . 1  
No . . . . . 2  
Don't know . . . . . 3

C. Do they ever disturb you when you are trying to rest or relax?  
(which ones?)

Yes. . . . . 1  
No . . . . . 2  
Don't know . . . . . 3

D. Do they ever make the TV flicker?  
(which ones?)

Yes. . . . . 1  
No . . . . . 2  
Don't know . . . . . 3

E. How about talking to other people or listening to the TV or radio -- do  
they ever make it more difficult for you to do these things?  
(which ones?)

Yes. . . . . 1  
No . . . . . 2  
Don't know . . . . . 3

F. Do they ever make the house vibrate or shake?  
(which ones?)

Yes. . . . . 1  
No . . . . . 2  
Don't know . . . . . 3

G. Aside from the loudness and other things we've been talking about, is  
there anything about any of these \_\_\_\_\_ noises that is unpleasant or  
disagreeable?  
(what is that?)

11. A. Do the airplanes ever seem to fly right overhead when they pass by here?

- Right overhead. . . . . 1
- Never overhead. . . . . 2
- Don't know. . . . . 3

B. Do they seem to fly overhead (by) very often, fairly often, or only occasionally?

- Very often. . . . . 1
- Fairly often. . . . . 2
- Occasionally. . . . . 3

C1. When they fly overhead (by) do they ever fly very low, or are they always pretty well up?

- Fly low . . . . . 1\*
- Well up . . . . . 2
- Don't know. . . . . 3

\*IF "FLY LOW", ASK C2:

C2. Do they fly very low very often, fairly often, or only occasionally?

- Very often. . . . . 1
- Fairly often. . . . . 2
- Occasionally. . . . . 3
- Don't know. . . . . 4

D. How do you feel about it when they fly (by) very low?

E. Do you have any idea why they fly (by) low here?  
(why is that?)

12. A. Do you have any idea or impression of the sort of jobs assigned to the airplanes around here? (Why do they have them here?)

- Yes. . . . . 1\*
- No . . . . . 2

\*IF "YES", ASK B:

B. What are they?

NOTE: Number each different "job" mentioned 1,2,3,4 etc. and ask about each in Part C and D.

12. (continued)

C. As far as you are concerned, how important do you feel (each job or whatever they do) is -- would you say it's very important, moderately important, or hardly important at all?

	(Jobs) <u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>General</u>
Very important. . . . .	1	1	1	1	1
Moderately important. . . . .	2	2	2	2	2
Hardly important. . . . .	3	3	3	3	3
Don't know. . . . .	4	4	4	4	4

D. Do you feel that (each job or what they do) has to be done at the airport near here, or could it just as well be done at a better place?

	(Jobs) <u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>General</u>
Done here . . . . .	1	1	1	1	1
Better place. . . . .	2	2	2	2	2
Don't know. . . . .	3	3	3	3	3

13. A. Do you suppose that pilots care very much about the feelings of people, like yourself, when they fly by here?

Yes. . . . .	1*
No . . . . .	2*
Don't know . . . . .	3

\*B. Why do you feel that way?

C. Do you think that pilots can do anything about the way they fly over here -- can they fly higher, or make less noise if they want to? (Can you explain that a little more?)

14. A. As far as you know, are there any special rules that the planes are supposed to follow around here?

- Yes. . . . . 1\*
- No . . . . . 2
- Don't know . . . . . 3

\*IF "YES", ASK B-C:

B. What are they?

C1. Do you feel that they always pay attention to these rules?

- Yes. . . . . 1
- No . . . . . 2\*\*

\*\*IF "NO" TO C1, ASK C2:

C2. How often do you feel that they don't -- very often, fairly often, or only occasionally?

- Very often . . . . . 1
- Fairly often . . . . . 2
- Occasionally . . . . . 3
- Don't know . . . . . 4

15. A. Do you happen to know anyone connected with flying generally or with the airport near here?

- Yes. . . . . 1\*
- No . . . . . 2
- Don't know . . . . . 3

\*IF "YES", ASK A2:

A2. Could you tell me who they are and what they do?

B. Some people say that pilots for the commercial companies are much different than the Air Force pilots -- how do you feel about that? (In what way are they different?)

16. A1. Do you think that the people who make the rules for airplanes care about people, like yourself, who live near the airport -- would you say they are very concerned, moderately concerned, only slightly concerned, or not concerned at all with people like you?

- Very concerned. . . . . 1\*
- Moderately concerned. . . . . 2\*
- Slightly concerned. . . . . 3\*
- Not concerned . . . . . 4\*
- Don't know. . . . . 5

A2. Why do you say that?

B. As far as you know, do the people who make the rules do very much to enforce them or to punish violators? (What do they do?)

17. A. To the best of your knowledge, do you feel the airplanes around here are worse, not as bad, or about the same as other places near the airport?

- Worse. . . . . 1\*
- Not as bad . . . . . 2\*
- Same . . . . . 3\*
- Don't know . . . . . 4

\*B. Why is that?

18. A. Now considering everything you've told me about the airplanes and the other things you dislike or consider disadvantages to living around here-- how would you rate the airplane problem in comparison with the other problems. Would you say it is more important, just as important, almost as important or much less important to you?

- More important. . . . . 1\*
- Just as important . . . . . 2\*
- Almost as important . . . . . 3\*
- Much less important . . . . . 4\*
- Don't know. . . . . 5

\*B. Why do you say that?

---

19. Some people say that you can get used to any noise if you just exercise your will power....how do you feel about that? Why?

---

20. Now considering everything you've told me about things you like and dislike, would you pick out the number on this scale which best describes your overall feelings about living here?

NOTE: Hand card to respondent and enter number selected.

---

---

21. A. In general, do you feel this will be a better place or a worse place to live in a few years from now?

- Better. . . . . 1\*
- Worse . . . . . 2\*
- Same. . . . . 3\*
- Don't know. . . . . 4

\*B. Why is that?

22. Now here is an interesting question.

A. Do you think that anybody connected with airplanes has the scientific know-how to improve the situation, if he wanted to?

Yes. . . . .	1**
No . . . . .	2*
Don't know . . . . .	3*

\*IF "NO", OR "DON'T KNOW", ASK A2:

A2. Do you think someone may find a solution in the next few years?

Yes. . . . .	1**
No . . . . .	2
Don't know . . . . .	3

\*\*IF "YES", ASK A3:

A3. What do you think could be done?

---

23. A1. Do you have any idea whether there is anybody you could get in touch with, if you wanted to, about improving the airplane situation?

Yes. . . . .	1*
No . . . . .	2

\*IF "YES", ASK A2 and A3:

A2. Could you tell me who that is?  
(Are there any officials around here in charge of making rules for airplane operations?)

A3. Do you have any idea how they feel about it?

24. A. Have you, yourself ever felt like getting in touch with the people in charge of improving the airplane situation around here?

Yes. . . . .	1*
No . . . . .	2****
Don't know . . . . .	3****

\*IF "YES", ASK B-D

\*\*\*\* IF "NO" OR "DON'T KNOW", ASK Q. 25

\*B. Have you yourself ever tried to do anything about it?

Yes. . . . .	1***
No . . . . .	2**
Don't know . . . . .	3**

\*\*IF "NO" OR "DON'T KNOW", ASK C:

C. Why is that? (Do you think that you and your neighbors could **help** get the people in charge to do something?)

\*\*\*IF "YES" TO B, ASK D:

D1. What did you do?

D2. When was that?

D3. Did it do any good? (What happened?)

\*\*\*IF "NO" OR "DON'T KNOW" TO Q. 24, ASK Q. 25:

25. A. Suppose you were bothered, do you think that you and your neighbors could help get the people in charge to do something?

Yes. . . . .	1*
No . . . . .	2**
Don't know . . . . .	3**

\*IF "YES", ASK B:

B. What could you do? (How would you go about it?)

\*\*IF "NO" OR "DON'T KNOW", ASK C:

C. Why is that?

26. A. Could you tell me, in general, how your neighbors feel about the airplanes? (Are they ever bothered or annoyed by them?)

Bothered . . . . .	1*
Not bothered . . . . .	2
Don't know . . . . .	3

\*IF "BOTHERED", ASK B

B. As far as you know, have any of them (your neighbors) ever tried to do anything?

Yes. . . . .	1***
No . . . . .	2**
Don't know . . . . .	3**

\*\*IF "NO" OR "DON'T KNOW", ASK C:

C. Why is that?

26. (continued)

\*\*\*IF "YES", ASK D1-3

D1. What did they do?

D2. When was that?

D3. Did it do any good? (What happened?)

---

27. A. Are there any local groups or organizations around here who usually take an interest in such problems?

Yes . . . . .	1*
No . . . . .	2
Don't know . . . . .	3

\*IF "YES", ASK B-G:

B. Which ones?

C. Do you happen to belong to any of them? (Which ones?)

27. (continued)

D. As far as you know are they concerned about the airplanes?

Yes . . . . .	1***
No . . . . .	2**
Don't know . . . . .	3

\*\*IF "NO", ASK E:

E. Why is that?

\*\*\*IF "YES", ASK F-G:

F1. Do you think they could help to get something done?

Yes . . . . .	1
No . . . . .	2****
Don't know . . . . .	3

\*\*\*\*IF "NO" TO F1, ASK F2:

F2. Why is that?

G1. As far as you know have any of them ever tried to do anything about it?

Yes . . . . .	1**
No . . . . .	2*
Don't know . . . . .	3

\*IF "NO", TO G1, ASK G2:

G2. Why is that?

\*\*IF "YES" TO G1, ASK G3-5:

G3. What did they do?

27. (continued)

G4. When was that?

G5. Did it do any good? (What happened?)

28. A. How about other local problems, other than airplanes, have you,yourself ever felt like doing something about them?

Yes. . . . .	1**
No . . . . .	2*
Don't know . . . . .	3*

\*IF "NO" OR "DON'T KNOW", ASK B:

B. Why is that?

\*\*IF "YES", ASK C:

C1. Did you ever do anything?

Yes. . . . .	1****
No . . . . .	2***

\*\*\*IF "NO" TO C1, ASK C2:

C2. Why is that?

28. ( continued )

\*\*\*IF "YES" TO C1, ASK C3:

C3. What did you do?

C4. When was that?

C5. Did it do any good? (What happened?)

---

29. ASK Q. 29 ONLY IF RESPONDENT IS OR WAS ANNOYED WITH AIRPLANES.

A1. Now suppose some of the local civic groups asked you to sign a petition asking the airplane officials to reduce their disturbance -- do you think that you would probably sign such a petition?

Yes . . . . .	1
No . . . . .	2*
Don't know . . . . .	3*

\*IF "NO" OR "DON'T KNOW", ASK A2:

A2. Why is that?

29. (continued)

B. How about calling up or writing to these officials -- if you were asked to call or write about the disturbance, do you think you probably would?

Would. . . . .	1
Would not. . . . .	2**
Don't know . . . . .	3**

\*\*IF "WOULD NOT" OR "DON'T KNOW", ASK B2:

B2. Could you tell me why?

C1. If they called a meeting to urge the officials to do something, do you think you probably would attend?

Yes. . . . .	1
No . . . . .	2***
Don't know . . . . .	3***

\*\*\*IF "NO" OR "DON'T KNOW", ASK C2:

C2. Why is that?

30. Could you tell me if you ever felt like moving away from this area?

Yes. . . . .	1*
No . . . . .	2
Don't know . . . . .	3

\*IF "YES", ASK B & C:

B1. Have you done anything about finding another place?

Yes. . . . .	1**
No . . . . .	2
Don't know . . . . .	3

\*\*IF "YES" TO B1: What have you done?

30. (continued)

C. Why have you felt like moving?

31. A. Do you know of anyone who has moved away or is planning to move from this area?

Yes . . . . .	1*
No . . . . .	2
Don't know . . . . .	3

\*IF "YES", ASK B:

B. Do you happen to know why?

32. Now we have what we call background data, and we'll be through.

Are you usually in this neighborhood during the morning? The afternoon?  
The evening? The night?

	<u>Yes</u>	<u>No</u>	<u>Don't Know</u>
Morning (8AM - 11:59AM) . . . . .	1	1	1
Afternoon (12N - 5:59PM) . . . . .	2	2	2
Evening (6PM - 10:59PM) . . . . .	3	3	3
Night (11PM - 7:59AM) . . . . .	4	4	4

33. A. How long have you lived in this part of \_\_\_\_\_? \_\_\_\_\_ years\*

\*IF LESS THAN 3 YEARS, ASK B AND C:

B. Where did you live just before moving here? (About how far is that from here?)

C. How long did you live there? \_\_\_\_\_ years

34. A. Now how would you compare the noise around here with the noise where you lived just before moving here -- Would you say it is noisier here, quieter, or about the same as your old neighborhood?

- Noisier. . . . . 1\*
- Quieter. . . . . 2\*
- Same . . . . . 3\*
- Never lived elsewhere. . . . . 4

\*ASK ONLY IF RESPONDENT HAS LIVED ELSEWHERE

B. What kinds of noise did you have in your old neighborhood?

C. About how long did you live there? (Enter answer to Q. 33C, if given)

D. Did any of the noises ever bother or annoy you in any way?

- Yes. . . . . 1\*
- No . . . . . 2
- Don't know. . . . . 3

\*IF "YES", ASK D2 AND D3:

D2. Which ones?

D3. In what way? (Did it bother you at all when you first experienced it? -- later, just before you moved?)

E1. Did you ever live in any (other) noisy areas?

- Yes. . . . . 1\*\*
- No . . . . . 2
- Don't know . . . . . 3

\*\*IF "YES", ASK E2:

E2. How long ago was that? \_\_\_\_\_ years

E3. What kinds of noise did you have there?

34. (continued)

E4. Did any of them ever bother or annoy you in any way?

Yes. . . . . 1\*\*\*  
 No . . . . . 2  
 Don't know . . . . . 3

\*\*\*IF "YES", ASK E5:

E5. In what way? (Did it bother you at first? Later, just before you moved?)

35. Family Composition:

Including yourself, how many people live with you in this house? \_\_\_\_\_  
 Please list them for me.

Relation to head of family	SEX		About how old is	RACE	
	M	F		W	N.W.
Self	M	F			
	M	F			
	M	F			
	M	F			
	M	F			
	M	F			
	M	F			

36. A. What sort of work does (main earner in the family) do?

Job:

Industry:

36. (continued)

IF RESPONDENT IS NOT MAIN EARNER, ASK B:

B1. Do you have a job away from your home?

Yes. . . . .	1**
No . . . . .	2*
Don't know . . . . .	3

\*IF "NO", ASK B2:

B2. Have you ever had a job outside your home?

Yes. . . . .	1**
No . . . . .	2
Don't know . . . . .	3

\*\*IF "YES" TO B1 OR B2, ASK B3:

B3. What sort of work is that?

Job:

Industry:

37. IF RESPONDENT NOW WORKS OR USED TO WORK, ASK:

A. What would you say about the noise where you work(ed) -- would you say it is (was) very noisy, fairly noisy, fairly quiet, or very quiet?

Very noisy . . . . .	1*
Fairly noisy . . . . .	2*
Fairly quiet . . . . .	3
Very quiet . . . . .	4

\*IF "VERY NOISY" OR "FAIRLY NOISY", ASK B-D:

B. What kinds of noise do (did) you have?

C. About how long have you been working (did you work) there?

D. Did any of these noises ever bother or annoy you in any way?  
(Which ones?) (In what way?)

37. (continued)

E. How would you compare the noise around here with the noise where you work(ed) -- would you say it is noisier here, quieter or about the same as where you work(ed)?

Noisier. . . . .	1
Quieter. . . . .	2
Same . . . . .	3
Don't know . . . . .	4

F1. How about any of your other jobs -- were any of them very noisy or moderately noisy?

Yes. . . . .	1*
No . . . . .	2
Don't know . . . . .	3

\*IF "YES", ASK F2-4:

F2. What kind of noise was it?

F3. How long did you work there? \_\_\_\_\_

F4. Did any of these noises ever bother or annoy you in any way?  
(Which ones?) (In what way?)

38. Now what is the highest grade of school you completed?

Completed 0-4 years of grade school. . . . .	1
" 5-6 years of grade school. . . . .	2
" 7-8 years of grade school. . . . .	3
" 1-3 years of high school . . . . .	4
" 4 years of high school . . . . .	5
" 1-3 years of college . . . . .	6
" 4 or more years of college . . . . .	7

39. Here is a card with a list of typical family incomes. Could you tell me the one which comes closest to the amount that all members of your family earned last year. I mean how much money did they get all together from all sources -- before taxes and other deductions?

- A. under \$2,000. . . . . 1
- B. \$2,000 - 4,000. . . . . 2
- C. \$4,000 - 6,000. . . . . 3
- D. \$6,000 - 8,000. . . . . 4
- E. \$8,000 - 10,000. . . . . 5
- F. \$10,000 and more. . . . . 6

40. A. By the way, have you ever flown in a plane?

- Yes. . . . . 1\*
- No . . . . . 2\*\*
- Don't know . . . . . 3\*\*

\*IF "YES", ASK: B-C:

- B. About how many times?
- C. When was the last time?

\*\*IF "NO", ASK D:

D. Has anyone in your family ever flown in one?

- Yes. . . . . 1
- No . . . . . 2
- Don't know . . . . . 3

41. A. How do you feel about flying?

B. What are some of the (other) things about flying you don't like so much?

C. Suppose you were invited to go for a ride in a jet plane -- how would you feel about it?

42. Do you happen to have a TV set in this house?

Yes. . . . .	1
No . . . . .	2
Don't know . . . . .	3

43. Do you rent or own this house? (check one and get appropriate information)

         Rent -- IF RENT, ASK: A. How much do you pay per month, including the cost of heat, light and cooking fuel?

\$

         Own -- IF OWN, ASK: B. About how much would you say your home is worth today?

\$

44. Now I guess we're all through. Can you think of anything else you'd like to add to describe your feelings about living around here --- or do you think we already have a complete picture?

Name of Interviewer \_\_\_\_\_

Date: \_\_\_\_\_

APPENDIX X : THIRD DRAFT

CONFIDENTIAL  
Survey 358  
Third Draft  
7-1-55

NATIONAL OPINION RESEARCH CENTER  
University of Chicago

Respondent No. \_\_\_\_\_

Time interview began \_\_\_\_\_  
ended \_\_\_\_\_

-----  
Hello. I'm from the opinion research center at the University of Chicago.  
We are doing a study about how people feel about living in different places, and  
I'd like to get some of your views.  
-----

1. In general, how do you feel about living in this part of ( ). Do you rate  
it as excellent, good, fair, poor, or very poor -- as a place to live?

- Excellent. . . . . 1\*
- Good . . . . . 2\*
- Fair . . . . . 3\*
- Poor . . . . . 4\*\*
- Very poor. . . . . 5\*\*
- Don't know . . . . . 6\*\*

\*IF "EXCELLENT, GOOD, OR FAIR", ASK Q.2 AND Q. 3

\*\*IF "POOR", "VERY POOR", OR "DON'T KNOW", ASK Q. 3 FIRST AND THEN Q. 2

- 
2. A. What are some of the things you like about living around here -- things  
that you feel are advantages or that make this a good place to live?
- B. Have we overlooked anything that you feel makes this a pleasant place  
to live? (Any others?)

NOTE: ASK EVERYONE PARTS A, B, C, D, AND E. WRITE "A" BEFORE THE ANSWER TO PART "A" ETC.

3.
  - A. Now what are some of the things you don't like about living around here-- things you feel are sometimes nuisances or are unpleasant or disagreeable to you?
  - B. Are there any other conditions that affect this area that bother, disturb, or annoy you at all?
  - C. Now, you sometimes hear people say, "If you live around here you just have to expect such and so...". If you heard someone say that about living here, what sort of things would he probably be talking about?
  - D. Have we overlooked anything -- even little things that are unpleasant or bothersome that you just take for granted because nothing much can be done about them?
  - E. Taking everything into consideration, would you say this is a very safe place to live, or are there some dangerous conditions affecting this area? (Could you describe them to me?)

4. Now to be sure I have all your feelings straight. Here is a list of advantages which some people have said they like to have in a residential area.

A. I'd like you to look at each of these advantages and then tell me how you would rate this area in terms of actually having them. For example, would you say this area was very good, good, fair, poor or very poor in terms of being "close to your work or place of business?" (How about "good schools?" etc.)

	<u>Very Good</u>	<u>Good</u>	<u>Fair</u>	<u>Poor</u>	<u>Very Poor</u>	<u>Don't Know</u>
a. Close to work or place of business. . . . .	1	2	3	4	5	6
b. Good schools. . . . .	1	2	3	4	5	6
c. Quiet--no loud or unpleasant noises . . . . .	1	2	3	4	5	6
d. Convenient shopping. . . . .	1	2	3	4	5	6
e. Clean, healthy, pleasant surroundings. . . . .	1	2	3	4	5	6
f. Reasonable taxes or rent . . . . .	1	2	3	4	5	6
g. Good roads and transportation facil. . . . .	1	2	3	4	5	6
h. Convenient recreation & entertainment. . . . .	1	2	3	4	5	6
i. Safe area. . . . .	1	2	3	4	5	6
j. Friendly neighbors . . . . .	1	2	3	4	5	6
k. Land for garden, work, and play space. . . . .	1	2	3	4	5	6

	Very Good	Good	Fair	Poor	Very Poor	Don't Know
	1	2	3	4	5	6
l. Good sewage and sanitation services .						
m. Close to church . . . . .	1	2	3	4	5	6
n. Good local government . . . . .	1	2	3	4	5	6
o. Attractive, well-kept homes . . . . .	1	2	3	4	5	6

4. B. Now if you could pick an ideal place to live, which three or four advantages would you want to have above all others?

5. A. Now, of all the things that you actually like about living around here..... all the things that are pleasant or that you'd consider advantages -- which ones are most important to you? (Any others?)

B. Before you moved here, did you expect to find any of these advantages here?

- Yes. . . . . 1\*
- No . . . . . 2
- Never lived elsewhere. . . . . 3
- Don't know . . . . . 4

\*IF "YES", ASK C:

C. Could you tell me which ones? (Any others?)

6. A. Now let's rate some of the things you actually don't like...of those you consider unpleasant, bothersome, or disadvantages, which ones do you dislike most? (Any others?)

NOTE: Number the dislikes 1,2,3 etc. and ask B-D

B. How often do you think of (1st dislike, etc.) as a problem -- would you say very often, fairly often, or only occasionally?

	<u>1st Dislike</u>	<u>2nd Dislike</u>	<u>3rd Dislike</u>	<u>4th Dislike</u>
Very often. . . . .	1	1	1	1
Fairly often. . . . .	2	2	2	2
Occasionally. . . . .	3	3	3	3
Don't know. . . . .	4	4	4	4

C1. Before you moved here did you expect to find any of these disadvantages around here?

- Yes. . . . . 1\*
- No . . . . . 2
- Never lived elsewhere. . . . . 3
- Don't know . . . . . 4

\*IF "YES", ASK C2:

C2. Could you tell me which ones?

D1. Were there any other disadvantages that you expected to find around here?

- Yes. . . . . 1\*\*
- No . . . . . 2
- Don't know . . . . . 3

\*\*IF "YES", ASK D2:

D2. Could you tell me which ones?

7. A. Now how would you rate the noise around here -- in general, would you say it's Very Noisy, Fairly Noisy, Fairly Quiet or Very Quiet?

NOTE: If no qualification is given, Enter "None" in the blank space (Except for \_\_\_\_\_) and the rating given.

\*If answer is "Except for the \_\_\_\_\_ noise it's \_\_\_\_\_." Enter the qualified noise and the overall noise rating, then ask B.

- Except for \_\_\_\_\_
- Very Noisy. . . . . 1
  - Fairly Noisy. . . . . 2
  - Fairly Quiet. . . . . 3
  - Very Quiet. . . . . 4
  - Don't Know. . . . . 5

\*B. Now including the \_\_\_\_\_ noise, how would you rate it -- would you say it's Very Noisy, Fairly Noisy, Fairly Quiet, or Very Quiet?

- Very Noisy. . . . . 1
- Fairly Noisy. . . . . 2
- Fairly Quiet. . . . . 3
- Very Quiet. . . . . 4
- Don't Know. . . . . 5

8. A. Could you tell me (again) what kinds of noises or sounds you usually hear around here? (Any others?)

NOTE: Record verbatim comments about the "kinds of noises", then be sure to list each noise below in Q. 9.

Also find out whether the respondent ever hears jet and propeller planes in flight and on the ground and circle the appropriate items. Unless a "Yes" or "No" answer is spontaneously given to each of the four items, Ask B & C as they apply:

B. Do you (also) ever hear (jet and/or propeller) planes fly by here?

C. Do you ever hear (jet and/or propeller) planes warming up or testing their engines?

	B. Flight			C. Ground		
	Yes	No	Don't Know	Yes	No	Don't Know
Jets heard. . . . .	1	2	3	1	2	3
Propeller heard . . . . .	1	2	3	1	2	3
Planes heard -- types unknown	1	2	3	1	2	3

9. Now let's see if we have all the noises and sounds you hear around here --

NOTE: Go over answers to Q. 7 and Q. 8, reading aloud the noises and sounds mentioned, and recording each noise below: Then ask A for each noise mentioned, then B.....etc.

A1. Does the \_\_\_\_\_ noise bother you very much, moderately, only a little, or not at all? (How about the (second noise)? etc.)

Kinds of Noise

	1. (____)	2. (____)	3. (____)	4. (____)	5. (____)	6. (____)
Very much . . .	1***	1***	1***	1***	1***	1***
Moderately . . .	2***	2***	2***	2***	2***	2***
A little . . .	3***	3***	3***	3***	3***	3***
Not at all . . .	4*	4*	4*	4*	4*	4*
Don't know . . .	5*	5*	5*	5*	5*	5*

\*IF "NOT AT ALL", OR "DON'T KNOW", ASK A2 AND A3 IMMEDIATELY.

A2. Now if it came to a choice would you say you like having the noise, or that you'd rather not have it?

	1. (____)	2. (____)	3. (____)	4. (____)	5. (____)	6. (____)
Like it . . . .	1	1	1	1	1	1
Not have it . .	2	2	2	2	2	2
Don't care . . .	3	3	3	3	3	3
Don't know . . .	4	4	4	4	4	4

A3. Was it ever unpleasant or did it ever bother you at all in the past?

	1. (____)	2. (____)	3. (____)	4. (____)	5. (____)	6. (____)
Yes . . . . .	1**	1**	1**	1**	1**	1**
No . . . . .	2	2	2	2	2	2
Don't know . .	3	3	3	3	3	3

\*\*IF "YES" TO A3, ASK A4 AND, THEN, ASK PART A1 ABOUT NEXT NOISE.

A4. Could you tell me about it -- how you got used to it? (How did it happen? How does it work?)

9. (continued)

\*\*\*IF BOTHERS "VERY MUCH", "MODERATELY" OR "ONLY A LITTLE" ON A1 ASK A5 AND A6.

A5. Could you tell me just how you feel about the ( ) noise -- in what way does it bother you? (Why would you rather not have it? How would you describe your feelings to a friend who was thinking of moving here and asked you about it?)

NOTE: List number of noise before each answer.

A6. Does the ( ) noise bother you more than it used to or not as much?

NOTE: Enter any qualification, if given, in parenthesis ( ) by each number.  
(Except for.....)

1.( ) 2.( ) 3.( ) 4.( ) 5.( ) 6.( )

More. . . . .	1*	1*	1*	1*	1*	1*
Not as much .	2*	2*	2*	2*	2*	2*
Some. . . . .	3*	3*	3*	3*	3*	3*
Don't know. .	4	4	4	4	4	4

\*Why is that?

9. (continued)

ASK EVERYBODY PARTS B-D FOR EACH NOISE MENTIONED.

B. How often do you hear the ( ) noise around here -- would you say very often, fairly often, or only occasionally? (How about the second noise?)

1.( ) 2.( ) 3.( ) 4.( ) 5.( ) 6.( )

Very often. . .	1	1	1	1	1	1
Fairly often. .	2	2	2	2	2	2
Occasionally. .	3	3	3	3	3	3
Don't know. . .	4	4	4	4	4	4

C1. Does the ( ) noise ever seem very loud or is it always fairly low? (How about the 2nd noise?)

1.( ) 2.( ) 3.( ) 4.( ) 5.( ) 6.( )

Very loud. . . .	1*	1*	1*	1*	1*	1*
Moderately loud.	2*	2*	2*	2*	2*	2*
Fairly low . . .	3	3	3	3	3	3
Don't know . . .	4	4	4	4	4	4

\*IF "VERY LOUD" OR "MODERATELY LOUD", ASK C2:

C2. Is it (very loud, moderately loud) very often, fairly often, or only occasionally?

1.( ) 2.( ) 3.( ) 4.( ) 5.( ) 6.( )

Very often. . .	1	1	1	1	1	1
Fairly often. .	2	2	2	2	2	2
Occasionally. .	3	3	3	3	3	3
Don't know. . .	4	4	4	4	4	4

D. Do you usually hear the ( ) noise more on Saturdays or Sundays than on week days -- or is it always about the same? (How about the (2nd noise)?)

1.( ) 2.( ) 3.( ) 4.( ) 5.( ) 6.( )

More on Sat. or Sun	1	1	1	1	1	1
More on Week Days.	2	2	2	2	2	2
More on ( ).	3	3	3	3	3	3
Always same. . . .	4	4	4	4	4	4
Don't know . . . .	5	5	5	5	5	5

9. (continued)

E1. Now we may have already covered this, but did you have any idea that you would find any of these noises here, before you moved here? (Which ones?)

1.( ) 2.( ) 3.( ) 4.( ) 5.( ) 6.( )

Yes . . . . .	1*	1*	1*	1*	1*	1*
No . . . . .	2	2	2	2	2	2
Noise started after . . . . .	3	3	3	3	3	3
Don't know . . . .	4	4	4	4	4	4

\*IF "YES", ASK E2:

E2. Is it worse than you expected, not as bad, or about the same as you expected?

1.( ) 2.( ) 3.( ) 4.( ) 5.( ) 6.( )

Worse . . . . .	1	1	1	1	1	1
Not as bad . . . .	2	2	2	2	2	2
Same . . . . .	3	3	3	3	3	3

10. Well, I have a pretty good idea of how you feel about these noises, but could you tell me:

A1. Do any of them ever frighten or startle you at all?

Yes . . . . .	1*
No . . . . .	2
Don't know . . . . .	3

\*IF "YES", ASK A2 AND A3:

A2. Which one(s)?

A3. Could you tell me about any particular experiences that stand out in your mind( for each noise mentioned?) (How long ago was that? How often do you feel that way?)

10. (continued)

B. Do any of these noises ever wake you up or keep you from going to sleep?  
(which ones?)

Yes. . . . . 1  
No . . . . . 2  
Don't know . . . . . 3

C. Do any of them ever disturb you when you are trying to rest or relax?  
(which ones?)

Yes. . . . . 1  
No . . . . . 2  
Don't know . . . . . 3

D. Do they ever make the TV flicker?  
(which ones?)

Yes. . . . . 1  
No . . . . . 2  
Don't know . . . . . 3

E. Do any of them ever interfere with your talking to other people on the  
telephone or in normal conversation? (which ones?)

Yes. . . . . 1  
No . . . . . 2  
Don't know . . . . . 3

F. How about listening to the TV or radio -- do any of them ever make it  
more difficult for you to do these things?

Yes. . . . . 1  
No . . . . . 2  
Don't know . . . . . 3

G. Do any of them ever make the house vibrate or shake?  
(which ones?)

Yes. . . . . 1  
No . . . . . 2  
Don't know . . . . . 3

11. A. Do the airplanes ever seem to fly right overhead when they pass by here?

- Right overhead. . . . . 1\*
- Never overhead. . . . . 2\*\*
- Don't know. . . . . 3

\*IF EVER"OVERHEAD", ASK B-E USING WORD "OVERHEAD".

\*\*IF"NEVER OVERHEAD", ASK B-E USING WORK "BY".

B. Do they seem to fly (overhead) (by) very often, fairly often, or only occasionally?

- Very often. . . . . 1
- Fairly often. . . . . 2
- Occasionally. . . . . 3

C1. When they fly (overhead) (by) do they ever fly very low, or are they always pretty well up?

- Fly low . . . . . 1\*\*\*
- Well up . . . . . 2
- Don't know. . . . . 3

\*\*\*IF "FLY LOW", ASK C2:

C2. Do they fly very low very often, fairly often, or only occasionally?

- Very often. . . . . 1
- Fairly often. . . . . 2
- Occasionally. . . . . 3
- Don't know. . . . . 4

D. How do you feel about it when they fly (by) (very low)?

E. Do you have any idea why they fly (by) (low) here?  
(why is that?)

12. A. Do you have any idea or impression of the sort of jobs assigned to the airplanes around here? (Why do they have them here?)

- Yes. . . . . 1\*
- No . . . . . 2

\*IF "YES", ASK B:

B. What are they?

NOTE: Number each different "job" mentioned 1,2,3,4 etc. and ask about each in Part C and D.

12. (continued)

C. As far as you are concerned, how important do you feel (each job -- or if "No" to 12 A, whatever they do) is -- would you say it's very important, moderately important, or hardly important at all?

	(Jobs) <u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>General</u>
Very important. . . . .	1	1	1	1	1
Moderately important. . . . .	2	2	2	2	2
Hardly important. . . . .	3	3	3	3	3
Don't know. . . . .	4	4	4	4	4

D1. Do you feel that (each job or what they do) has to be done at the airport near here, or could it just as well be done someplace else?

	(Jobs) <u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>General</u>
Done here . . . . .	1*	1*	1*	1*	1*
Better place. . . . .	2*	2*	2*	2*	2*
Don't know. . . . .	3	3	3	3	3

\*D2. Why is that?

13. A. Do you suppose that pilots care very much about the feelings of people, like yourself, when they fly by here?

Yes. . . . .	1*
No . . . . .	2*
Don't know . . . . .	3

\*B. Why do you feel that way?

C. Do you think that pilots can do anything about the way they fly over here -- can they fly higher, or make less noise if they want to? (Can you explain that a little more?)

14. A. As far as you know, are there any flight or ground rules that the planes are supposed to follow around here?

Yes. . . . .	1*
No . . . . .	2
Don't know . . . . .	3

\*IF "YES", ASK B-C:

B. What are they?

C1. Do you feel that they always pay attention to these rules?

Yes. . . . .	1
No . . . . .	2**
Don't know . . . . .	3

\*\*IF "NO" TO C1, ASK C2:

C2. How often do you feel that they don't -- very often, fairly often, or only occasionally?

Very often . . . . .	1
Fairly often . . . . .	2
Occasionally . . . . .	3
Don't know . . . . .	4

15. A. Do you happen to know of anyone connected with flying generally or with the airfield near here?

Yes. . . . .	1*
No . . . . .	2
Don't know . . . . .	3

\*IF "YES", ASK A2:

A2. Could you tell me who they are and what they do?

B. Some people say that pilots for the commercial companies are much different than the Air Force pilots -- how do you feel about that? (In what way are they different?)

16. A1. Do you think that the officials who make the rules for airplanes care about people, like yourself, who live near the airport -- would you say they are very concerned, moderately concerned, only slightly concerned, or not concerned at all with people like you?

- Very concerned. . . . . 1\*
- Moderately concerned. . . . . 2\*
- Slightly concerned. . . . . 3\*
- Not concerned . . . . . 4\*
- Don't know. . . . . 5

\*A2. Why do you say that?

B. As far as you know, do the officials who make the rules do very much to enforce them or to punish violators? (What do they do?)

---

17. A. To the best of your knowledge, do you feel the airplanes around here are worse, not as bad, or about the same as other places near this airport?

- Worse. . . . . 1\*
- Not as bad . . . . . 2\*
- Same . . . . . 3\*
- Don't know . . . . . 4

\*B. Why is that?

ASK ONLY IF NON-AIRPLANE PROBLEMS HAVE BEEN MENTIONED.

18. A. Now considering everything you've told me about the airplanes and the other things you dislike or consider disadvantages to living around here -- how would you rate the airplane problem in comparison with the other problems. Would you say it is more important, just as important, almost as important or much less important to you?

- More important. . . . . 1\*
- Just as important . . . . . 2\*
- Almost as important . . . . . 3\*
- Much less important . . . . . 4\*
- Don't know. . . . . 5

\*B. Why do you say that?

---

19. Some people say that you can get used to any noise if you just exercise your will power.....how do you feel about that? Why?

---

20. Now considering everything you've told me about things you like and dislike, would you pick out the number on this scale which best describes your overall feelings about living here?

NOTE: Hand card to respondent and enter number selected.

---

21. A. In general, do you feel this will be a better area or a worse area to live in a few years from now?

- Better. . . . . 1\*
- Worse . . . . . 2\*
- Same. . . . . 3\*
- Don't know. . . . . 4

\*B. Why is that?

22. A. At the present time, do you think that anybody connected with airplanes has the scientific know-how to improve the situation where it is bothersome?

Yes. . . . .	1**
No . . . . .	2*
Don't know . . . . .	3*

\*\*IF "NO", OR "DON'T KNOW", ASK A2:

A2. Do you think someone may find a solution in the next few years?

Yes. . . . .	1**
No . . . . .	2
Don't know . . . . .	3

\*\*IF "YES", ASK A 3:

A3. What do you think could be done?

23. A1. Do you have any idea whether there are any officials you could get in touch with, if you wanted to, about improving the airplane situation around here?

Yes. . . . .	1*
No . . . . .	2

\*IF "YES", ASK A2 AND A3:

A2. Could you tell me who that is? (Any others?)

A3. Do you have any idea how they feel about it?

24. A. Have you, yourself ever felt like getting in touch with somebody about improving the airplane situation around here?

Yes. . . . . 1\*  
No . . . . . 2\*\*\*\*  
Don't know . . . . . 3\*\*\*\*

\*IF "YES", ASK B-D

\*\*\*IF "NO" OR "DON'T KNOW", ASK Q. 25

\*B. Have you yourself ever called anyone, signed a petition or done anything else about it?

Yes. . . . . 1\*\*\*  
No . . . . . 2\*\*  
Don't know . . . . . 3\*\*

\*\*IF "NO" OR "DON'T KNOW", ASK C:

C. Why is that? (Do you think that you and your neighbors could help get the people in charge to do something?)

\*\*\*IF "YES" TO B, ASK D:

D1. What did you do? (Anything else?)

D2. When was that?

D3. Did it do any good? (What happened?)

\*\*IF "NO" OR "DON'T KNOW" TO Q. 24, ASK Q. 25:

NOTE: IF "BOTHERED" BY AIRPLANES, START QUESTION USING, "DO YOU THINK.....

IF "NOT BOTHERED" BY AIRPLANES, START QUESTION USING, "SUPPOSE YOU WERE BOTHERED....."

25. A. (Suppose you were bothered) Do you think that you and your neighbors could help get the people in charge to do something?

Yes. . . . .	1*
No . . . . .	2**
Don't know . . . . .	3**

\*IF "YES", ASK B:

B. What could you do? (How would you go about it?)

\*\*IF "NO" OR "DON'T KNOW", ASK C:

C. Why is that?

26. A. Could you tell me how your neighbors feel about the airplanes -- are any of them ever bothered or annoyed by them?

Bothered. . . . .	1*
Not bothered. . . . .	2
Don't know. . . . .	3

\*IF "BOTHERED", ASK B:

B. As far as you know, have any of them (your neighbors) ever tried to do anything?

Yes . . . . .	1***
No. . . . .	2**
Don't know. . . . .	3

\*\*IF "NO", ASK C:

C. Why is that?

26. (continued)

\*\*\*IF "YES", ASK D1-3

D1. What did they do?

D2. When was that?

D3. Did it do any good? (What happened?)

---

27. A. Are there any local groups or organizations around here that might take an interest in such problems?

Yes. . . . .	1*
No . . . . .	2
Don't know . . . . .	3

\*IF "YES", ASK B-G:

B. Which ones?

C. Do you happen to belong to any of them? (Which ones?)

27. (continued)

D. As far as you know are they concerned about the airplanes?

Yes. . . . .	1***
No . . . . .	2**
Don't know . . . . .	3

\*\*IF "NO", ASK E:

E. Why is that?

\*\*\*IF "YES", ASK F-G:

F1. Do you think they could help to get something done?

Yes. . . . .	1.
No . . . . .	2****
Don't know . . . . .	3

\*\*\*\*IF "NO" TO F1, ASK F2:

F2. Why is that?

G1. As far as you know have any of them ever tried to do anything about it?

Yes. . . . .	1**
No . . . . .	2*
Don't know . . . . .	3

\*IF "NO", TO G1, ASK G2:

G2. Why is that?

\*\*IF "YES" TO G1, ASK G3-5:

G3. What did they do?

27. (continued)

G4. When was that?

G5. Did it do any good? (What happened?)

28. A. How about other local problems, other than airplanes, have you, yourself ever felt like doing something about them?

Yes. . . . .	1**
No . . . . .	2*
Don't know . . . . .	3*

\*IF "NO" OR "DON'T KNOW", ASK B:

B. Why is that?

\*\*IF "YES", ASK C-D

C. Which ones?

D1. Did you ever do anything about them?

Yes. . . . .	1****
No . . . . .	2****

\*\*\*IF "NO" TO D1, ASK D2:

D2. Why is that?

28. (continued)

\*\*\*IF "YES" TO D1, ASK D3-5:

D3. What did you do?

D4. When was that?

D5. Did it do any good? (What happened?)

---

29. ASK Q. 29 ONLY IF RESPONDENT IS OR WAS ANNOYED WITH AIRPLANES.

A1. Now suppose some of the local civic groups asked you to sign a petition asking the airplane officials to reduce their disturbance -- do you think that you would probably sign such a petition?

Yes . . . . .	1
No . . . . .	2*
Don't know . . . . .	3*

\*IF "NO" OR DON'T KNOW, ASK A2:

A2. Why is that?

29. (continued)

B. How about calling up or writing to these officials -- if you were asked to call or write about the disturbance, do you think you probably would?

Would. . . . .	1
Would not. . . . .	2**
Don't know . . . . .	3**

\*\*IF "WOULD NOT" OR "DON'T KNOW", ASK B2:

B2. Could you tell me why?

C1. If they called a meeting to urge the officials to do something, do you think you probably would attend?

Yes . . . . .	1
No. . . . .	2***
Don't know. . . . .	3***

\*\*\*IF "NO" OR "DON'T KNOW", ASK C2:

C2. Why is that?

30. Could you tell me if you ever felt like moving away from this area?

Yes. . . . .	1*
No . . . . .	2
Don't know . . . . .	3

\*IF "YES", ASK B & C:

B1. Have you done anything about finding another place?

Yes. . . . .	1**
No . . . . .	2
Don't know . . . . .	3

\*\*IF "YES" TO B1, ASK B2:

B2. What have you done?

30. (continued)

C. Why have you felt like moving?

31. A. Do you know of anyone who has moved away in the past year or so, or is planning to move from this area?

Yes. . . . . 1\*  
 No . . . . . 2  
 Don't know . . . . . 3

\*IF "YES", ASK B:

B. Do you happen to know why?

32. Now we have what we call background data, and we'll be through.

Are you usually in this neighborhood during the morning? The afternoon?  
 The evening? The night?

	<u>Yes</u>	<u>No</u>	<u>Don't Know</u>
Morning (8AM - 11:59AM) . . . . .	1	1	1
Afternoon (12N - 5:59PM) . . . . .	2	2	2
Evening (6PM - 10:59PM) . . . . .	3	3	3
Night (11PM - 7:59AM) . . . . .	4	4	4

33. A. How long have you lived in this part of \_\_\_\_\_? \_\_\_\_\_ years\*

\*IF LESS THAN 3 YEARS, ASK B AND C:

B. Where did you live just before moving here? (About how far is that from  
 Here?)

C. How long did you live there? \_\_\_\_\_ years

34. A. Now how would you compare the noise around here with the noise where you lived just before moving here -- Would you say it is noisier here, quieter, or about the same as your old neighborhood?

- Noisier. . . . . 1\*
- Quieter. . . . . 2\*
- Same . . . . . 3\*
- Never lived elsewhere. . . . 4

\*ASK ONLY IF RESPONDENT HAS LIVED ELSEWHERE:

B. What kinds of noise did you have in your old neighborhood?

NOTE: IF SOME NOISES ARE MENTIONED IN PART B, ASK C:

C. Did any of the noises ever bother or annoy you in any way?

- Yes. . . . . 1\*
- No . . . . . 2
- Don't know . . . . . 3

\*IF "YES", ASK C2 AND C3:

C2. Which ones?

C3. In what way? (Did it bother you at all when you first experienced it? -- later, just before you moved?)

D. About how long did you live there? (Enter answer to Q. 33C, if given)

\_\_\_\_\_ years

E1. Did you ever live in any (other) noisy areas?

- Yes. . . . . 1\*\*
- No . . . . . 2
- Never lived elsewhere. . . . 3
- Don't know . . . . . 4

\*\*IF "YES", ASK E2:

E2. How long ago was that? \_\_\_\_\_ years

E3. What kinds of noise did you have there?

34. (continued)

E4. Did any of them ever bother or annoy you in any way?

Yes . . . . . 1\*\*\*  
 No . . . . . 2  
 Don't know . . . . . 3

\*\*\*IF "YES", ASK E5:

E5. In what way? (Did it bother you at first? Later, just before you moved?)

35. Family Composition:

Including yourself, how many people live with you in this house? \_\_\_\_\_  
 Please list them for me.

Relation to head of family	SEX		AGE About how old is	RACE	
	M	F		W	N.W.
Self	M	F			
	M	F			
	M	F			
	M	F			
	M	F			
	M	F			
	M	F			

36. A. What sort of work does (main earner in the family) do?

Job:

Industry:

36. (continued)

IF RESPONDENT IS NOT MAIN EARNER, ASK B:

B1. Do you have a job away from your home?

Yes. . . . .	1**
No . . . . .	2*
Don't know . . . . .	3

\*IF "NO", ASK B2:

B2. Have you ever had a job outside your home?

Yes. . . . .	1**
No . . . . .	2
Don't know . . . . .	3

\*\*IF "YES" TO B1 OR B2, ASK B3:

B3. What sort of work is that?

Job:

Industry:

IF "NO" TO B1 AND "YES" TO B2, ASK B4:

B4. About how long ago was that? \_\_\_\_\_

37. IF RESPONDENT NOW WORKS OR USED TO WORK, ASK:

A. What would you say about the noise where you work (last worked) -- would you say it is (was) very noisy, fairly noisy, fairly quiet, or very quiet?

Very noisy . . . . .	1*
Fairly noisy . . . . .	2*
Fairly quiet . . . . .	3
Very quiet . . . . .	4

\*IF "VERY NOISY" OR "FAIRLY NOISY", ASK B-D:

B. What kinds of noise do (did) you have?

C. About how long have you been working (did you work) there? \_\_\_\_\_

D. Did any of these noises ever bother or annoy you in any way?  
(Which ones?) (In what way?)

37. (continued)

E. How would you compare the noise around here with the noise where you work(ed) -- would you say it is noisier here, quieter or about the same as where you work(ed)?

- Noisier. . . . . 1
- Quieter. . . . . 2
- Same . . . . . 3
- Don't know . . . . . 4

F1. How about any of your other jobs -- were any of them very noisy or moderately noisy?

- Yes. . . . . 1\*
- No . . . . . 2
- No other jobs. . . . . 3
- Don't know . . . . . 4

\*IF "YES", ASK F2-4:

F2. What kind of noise was it?

F3. How long did you work there? \_\_\_\_\_

F4. Did any of these noises ever bother or annoy you in any way? (Which ones?) (In what way?)

---

38. Now what is the highest grade of school you completed?

- Completed 0-4 years of grade school. . . . . 1
- " 5-6 years of grade school. . . . . 2
- " 7-8 years of grade school. . . . . 3
- " 1-3 years of high school . . . . . 4
- " 4 years of high school . . . . . 5
- " 1-3 years of college . . . . . 6
- " 4 or more years of college . . . . . 7



## APPENDIX XI

### PROPOSED SPECIFICATION OF NOISE STIMULUS IN COMMUNITIES NEAR JET AIR BASES

This report presents preliminary data on the characteristics of the noise stimulus underneath jet take-off paths near air bases. This study is part of a broader research program on community aspects of annoyance by jet aircraft, conducted by the National Opinion Research Center. The principal objectives of the study reported herein are (1) to specify the primary stimulus variables that will control the selection of sampling areas for an opinion survey, and (2) to specify the stimulus variables that must be measured or evaluated in each sampling area in order to provide an adequate description of the stimulus.

The data in this report are given in brief, summary form. A report giving more detailed information, including measurement and computational procedures, is forthcoming.

Our discussion is limited principally to take-off noise, since the noise levels produced by aircraft during landing operations are substantially lower than the take-off noise levels.

Before we discuss the stimulus variables in detail we shall first list (1) the primary stimulus variables, i.e., the variables that will directly influence the selection of sampling areas, and (2) additional stimulus variables that must be evaluated in order to provide an adequate description of the stimulus in a given sampling area.

#### Primary Stimulus Variables

1. Average number of jet take-offs per day over the area.
2. Time schedule of jet operations over the area, especially relative frequency of take-offs in the daytime and at night.

3. Peak sound pressure level in the 300-600 cps frequency band as the aircraft pass overhead. (Since there will be considerable variability in the peak level, a statistical measure must be used, such as the median of the peak levels, or the peak levels that are exceeded by 25 per cent of the aircraft. Cf Aircraft SNL defined previously.<sup>1</sup>)
4. Location of the sampling area relative to the flight path, i.e. either directly under the flight path or to the side of the flight path.

#### Additional Stimulus Variables

1. The length of time during which the level in the 300-600 cps band is within 10 decibels of the peak level; this time in seconds will be called "duration of the peak."
2. The length of time during which the Speech Interference Level (SIL) exceeds a specified value, say 70 db; this time in seconds will be called "duration of speech interference."
3. A measure of the variability of the peak level due to different types of aircraft, different weather conditions and different operational procedures.
4. Background noise level.

The first two of the primary stimulus variables relate to the time schedule and frequency of the jet operations. Past experience has shown clearly that the number of noise exposures and the time at which the exposures occur are of primary importance in determining community response to an intermittent

---

<sup>1</sup> Bolt Beranek and Newman Report No. 256, "A Survey of Background and Aircraft Noise in Communities Near Airports." 22 November, 1954

noise, and hence must be included in the specification of the stimulus. The procedures for quantifying these aspects of the stimulus will not be discussed here since they are included elsewhere in the report of the National Opinion Research Center.

A measure of the peak sound pressure level as the aircraft pass overhead is certainly one of the most important stimulus variables. We have selected the peak levels in the 300-600 cps frequency band because such data correspond rather closely to the Aircraft Sampled Noise Level (SNL) used in a previous report.<sup>1</sup> Since the noise spectra for jet aircraft can be predicted reasonably accurately if certain operating characteristics of the engines are known, it is possible to relate the peak levels in the 300-600 cps band to other measures such as the overall levels or some combination of levels in other frequency bands.

The peak sound pressure level varies with distance from the end of the runway as the aircraft gains altitude. Estimates of peak sound pressure levels directly under an F-89C aircraft (with afterburner) taking off are given in Table I. The variation in peak level with distance from the beginning of the runway and the estimated range of variation are plotted in Fig. 1. The ordinate in this figure is the sound pressure level (in the 300-600 cps band) relative to the level measured at a standard distance of 400 ft and a speed of 250 knots (see Table II).

These peak levels have been computed from measured noise source characteristics of the aircraft in level flight and from estimates of flight profiles for take-offs. Some measurements of the noise of actual take-offs have been made to provide partial verification of the data in the table. The measurement and computational procedures used to obtain the data in Table I will be described in a separate report.

Estimated altitudes and altitude ranges are also given in the table, and are plotted in Fig. 2. The altitude estimates were made after discussions with flight personnel and from operating data for the various aircraft. Fighter and light bomber aircraft are assumed. Variations in the altitudes are caused by differences in wind and temperature conditions, in aircraft type and in airport height above sea level. The altitudes and altitude ranges and the estimates of peak levels are tentative and must be verified by extensive observations of aircraft take-off operations.

Table II summarizes the peak sound pressure levels in three frequency bands for several types of aircraft. The levels are corrected for an altitude of 400 ft and a speed of 250 knots.

From the data in Table I we have made a preliminary selection of sampling areas in which there will be significant differences in peak sound pressure level. The areas are shown in Fig. 3. There are 4 types of areas: The area with the highest peak levels (116 db in the 300-600 cps band for an F-89C with afterburner) is 3 to 4 miles from the beginning of the runway and it is about 1000' wide. The peak level is 10 db lower for an area 5 to 6 miles from the beginning of the runway and about 1/2 mile wide. A "control" area with a

peak level of 86 db is located about 8 miles from the beginning of the runway. A fourth sampling area is selected on either side of the runway projection at the distances shown in the figure.\* The extent of each area is selected such that the variation in peak level from point to point in any one area for a given take-off is  $\pm 3$  db. Superimposed on this variation there is, of course, the variation shown in Table I. The peak levels in the 300-600 cps band shown in Fig. 3 may be scaled up or down for different types of aircraft.

Let us now examine the secondary stimulus variables that must be specified in each sampling area in order to complete the description of the stimulus. The first two of these variables are concerned with the duration of the noise produced by one aircraft flying overhead. As the aircraft flies past, the sound pressure level on the ground rises to a maximum and then decreases. One measure of the duration of the noise is the period of time during which the sound pressure level in the 300-600 cps band is within a given number of decibels, say 10, of the peak level. For a low-flying aircraft and for a given speed this duration of the peak will be short; for higher altitudes the peak level will, of course, be lower, but the duration defined in this manner will be longer. The duration of the peak depends only on the speed of the aircraft and its altitude, and not on the magnitude of the peak level. Data on the duration of the peak for various distances from the beginning of the runway are given in Table I.

Previous studies have shown that interference with speech is often reported by people who live under aircraft flight paths and are exposed regularly to aircraft noise. Another significant measure of the duration of the noise from an aircraft flying overhead is, therefore, the length of time that the

\* If the normal flight path is curved instead of straight, the horizontal axis of Fig. 3 represents distance along the flight path.

noise interferes with normal conversation. Interference with speech can be predicted reasonably accurately if the Speech Interference Level (SIL) of the noise is known. The SIL is defined as the average, in decibels, of the sound pressure levels in the octave frequency bands 600-1200, 1200-2400, and 2400-4800 cps. An SIL of 70 db measured out-of-doors would usually interrupt normal conversation; indoors the SIL would be 10 to 20 db lower, and conversation could usually be continued in a raised voice. We have defined the duration of speech interference as the length of time, in seconds, that the SIL exceeds 70 db as the aircraft passes overhead. Similar durations could be defined for other values of the SIL. Estimates of the duration of speech interference directly under F-89C take-offs are given in Table I. It is of interest to note that this duration is a maximum for an intermediate distance from the beginning of the runway. For aircraft that produce different peak levels, these durations will be different.

The third secondary stimulus variable is the variability of the peak level. The variability from exposure to exposure depends upon the different types of aircraft and the variability of the operations and flight paths at a particular air base. It would not be unusual to find variations in peak level of  $\pm 10$  db or more for a given sampling area, especially for the more distant sampling areas where the aircraft begin to deviate from straight flight paths. A measure of this variation must be given for each sampling area in order to provide an adequate specification of the stimulus. Statistical measurements would have to be made to determine the range of levels in each sampling area.

The final stimulus variable is the background noise level. In each sampling area statistical measurements of the background noise should be made in the daytime and at night. Procedures for making such measurements and for specifying the background noise by a single number have been described previously.<sup>1</sup>

TABLE I

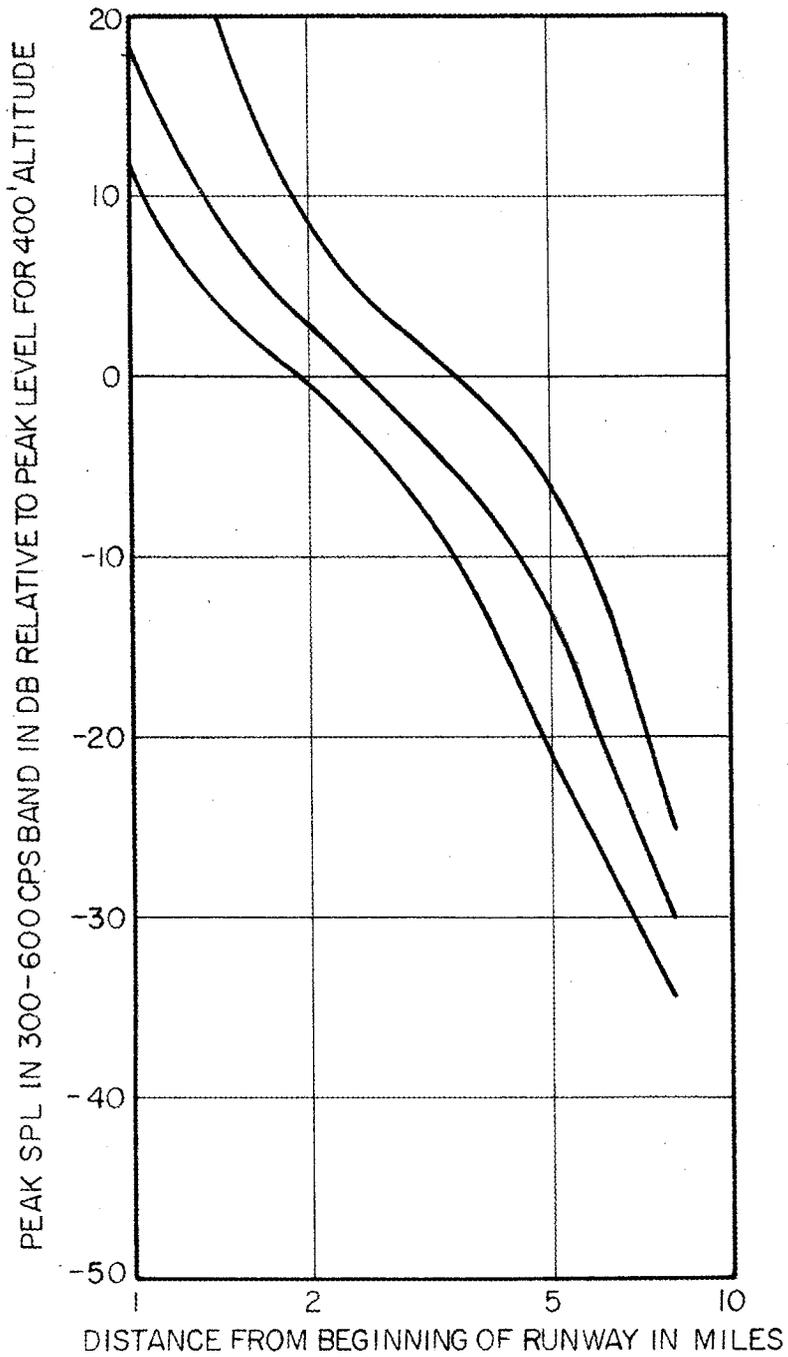
Preliminary estimates of ranges of altitudes, peak sound pressure levels and durations of noise for jet aircraft taking off. Altitude ranges apply to fighters and light bombers. Levels and durations are for F-89C aircraft with afterburner.

Distance From Beginning of Runway Miles	Est. Mean Altitude Ft.	Est. Altitude range Ft.	Peak SPL in 300-600 cps band for F-89C db re 0.0002 dyne/cm <sup>2</sup>	Est. Range of Peak SPL's db	Duration with W10 db of peak sec.	Duration above 70 db SIL sec.
1	50	0-100	---	---	---	---
1-1/2	180	50-280	123	+11-4	1.2	7
2	270	150-400	119	+ 5-3	1.6	8
3	520	320-780	113	+ 5-4	2.9	10
4	800	500-1700	109	+ 5-7	4.2	12
5	1600	700-3100	103	+ 7-8	7.3	17
6	2900	1300-4400	96	+ 8-6	13	20
7	4200	2600-5800	91	+ 6-5	20	18
8	5600	4000-7200	86	+ 5-4	25	10

TABLE II

Summary of peak sound pressure levels in three octave bands of frequency for various jet aircraft. Data are corrected for a speed of 250 knots and an altitude of 400 ft.

		Peak SPL in Decibels re 0.0002 dyne/cm <sup>2</sup>		
		75-150 cps	300-600 cps	1200-2400 cps
F-89C	A/B	107	116	110
F-89C	100%	99	110	106
B-57	100%	102	110	104
F-84F	100%	94	101	100
F-86E	100%	102	105	101
F-86E	80%	90	92	92



REPORT NO. 317

FIG. 1 ESTIMATES OF RELATIVE SOUND PRESSURE LEVELS DIRECTLY UNDERNEATH JET AIRCRAFT TAKING OFF

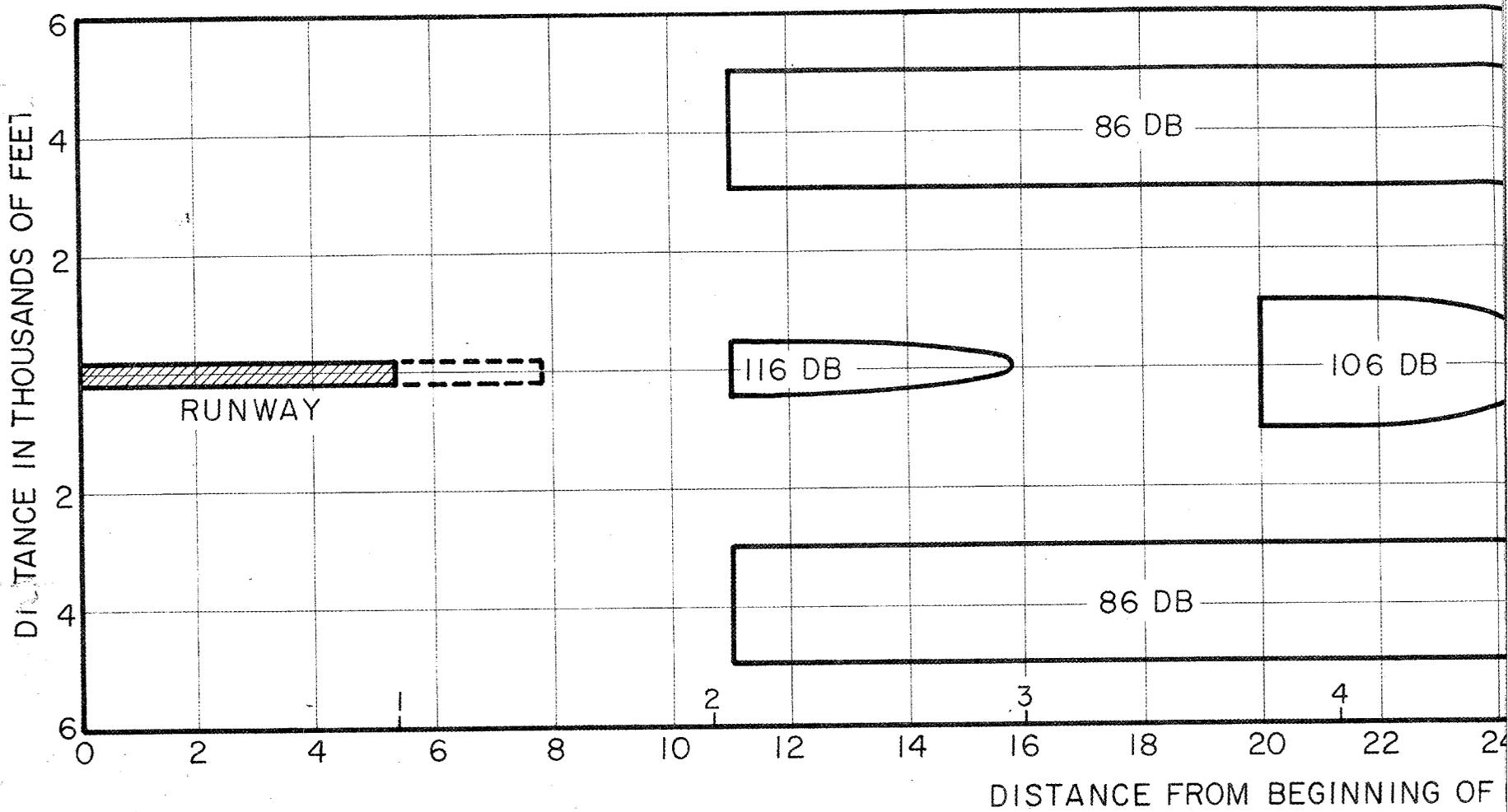
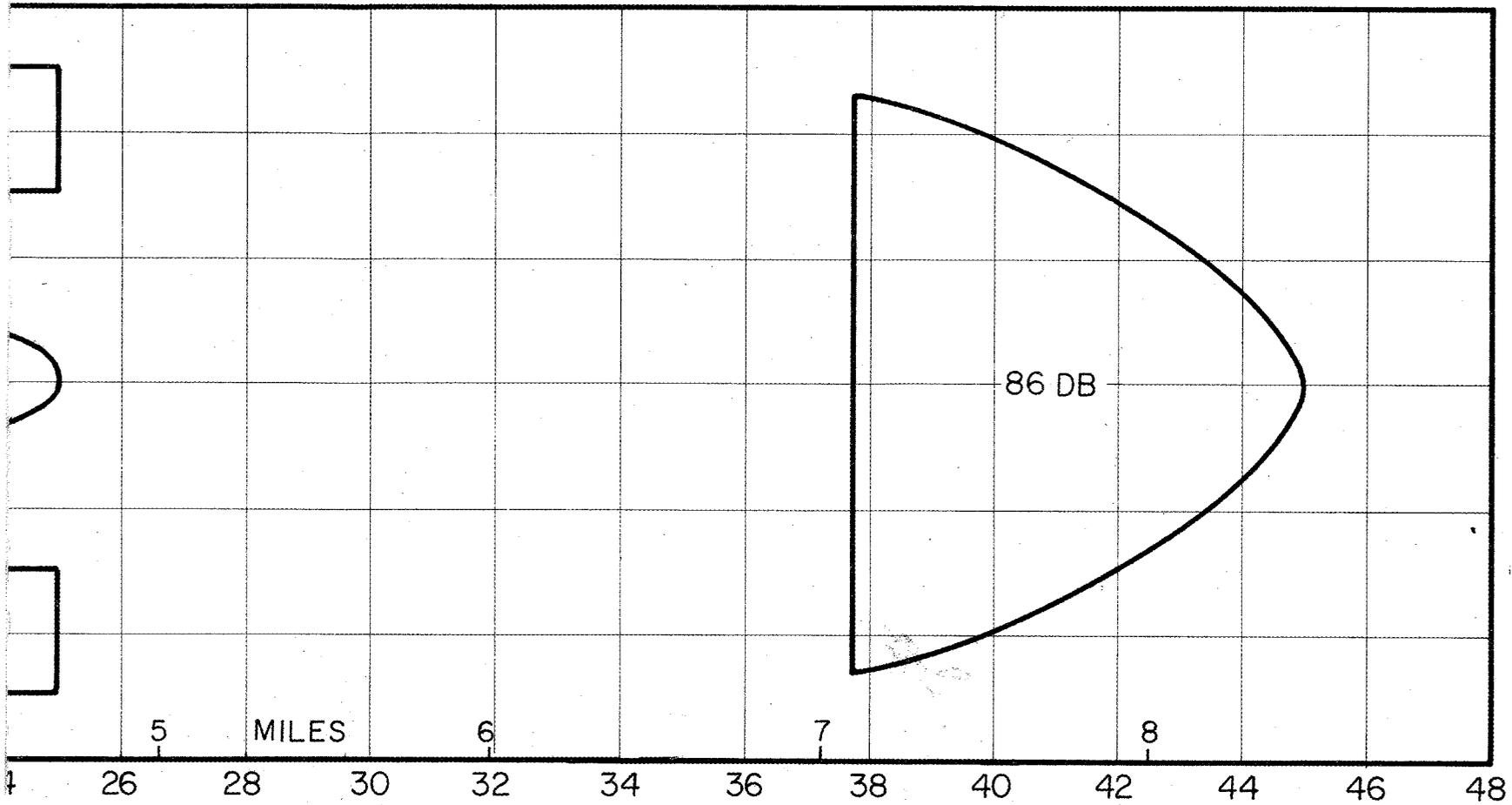


FIG. 3 PROPOSED SAMPLING AREAS, WITH PEAK LEVEL



86 DB  
RUNWAY - THOUSANDS OF FEET  
MILES IN 300-600 CPS BAND FOR F-89C AIRCRAFT

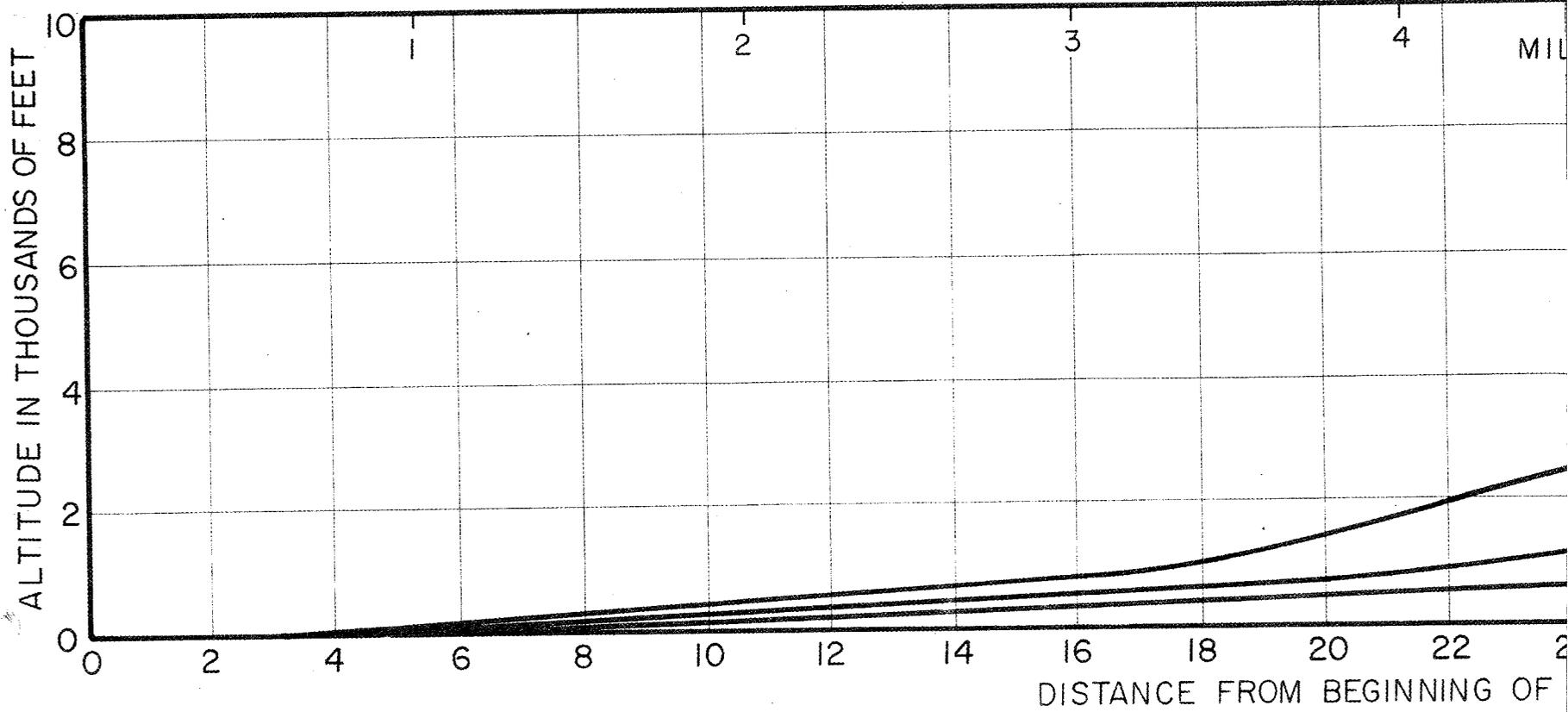
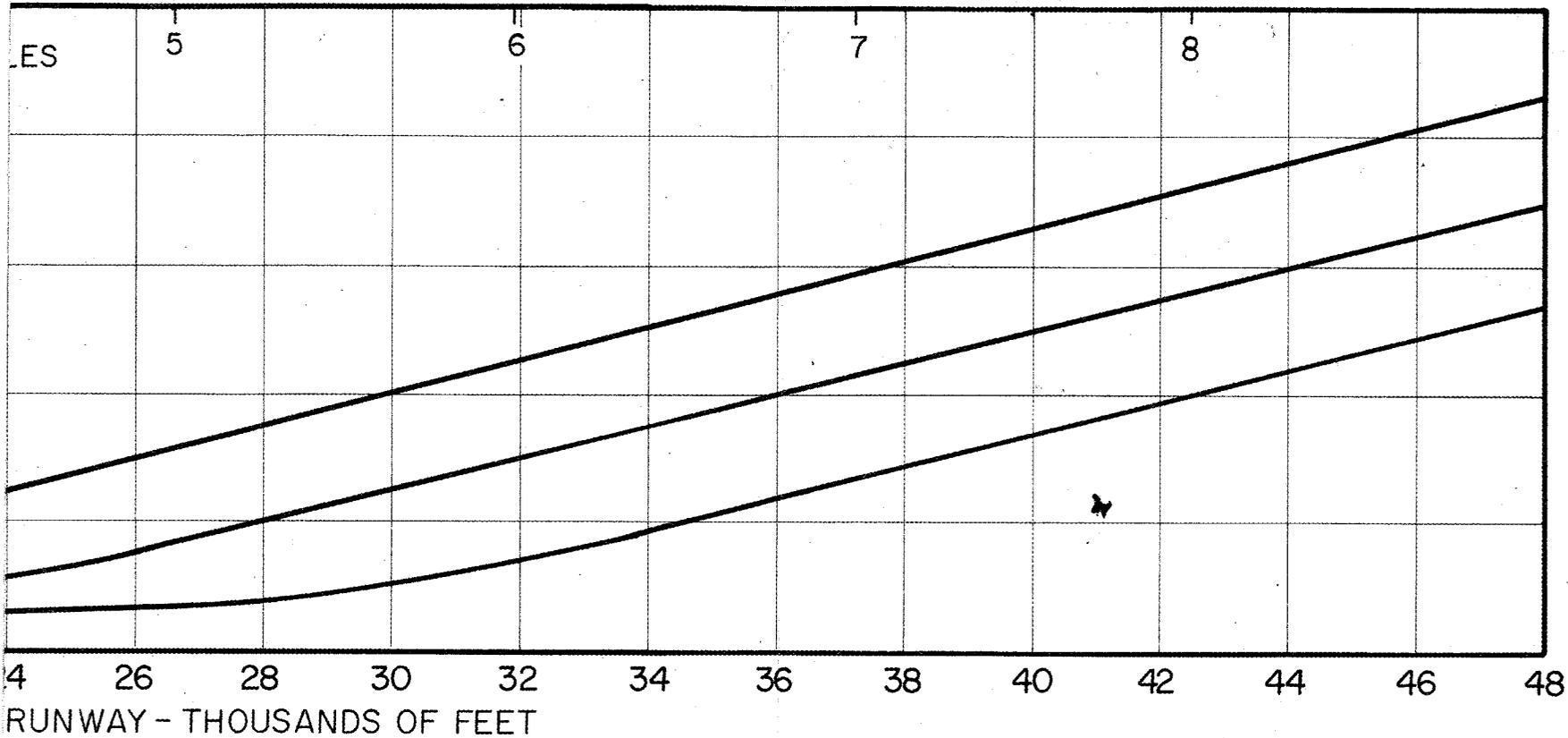


FIG. 2 ESTIMATES OF ALTITUDE RANGES FOR JET FIGHTER



ER AND LIGHT BOMBER TAKE-OFFS