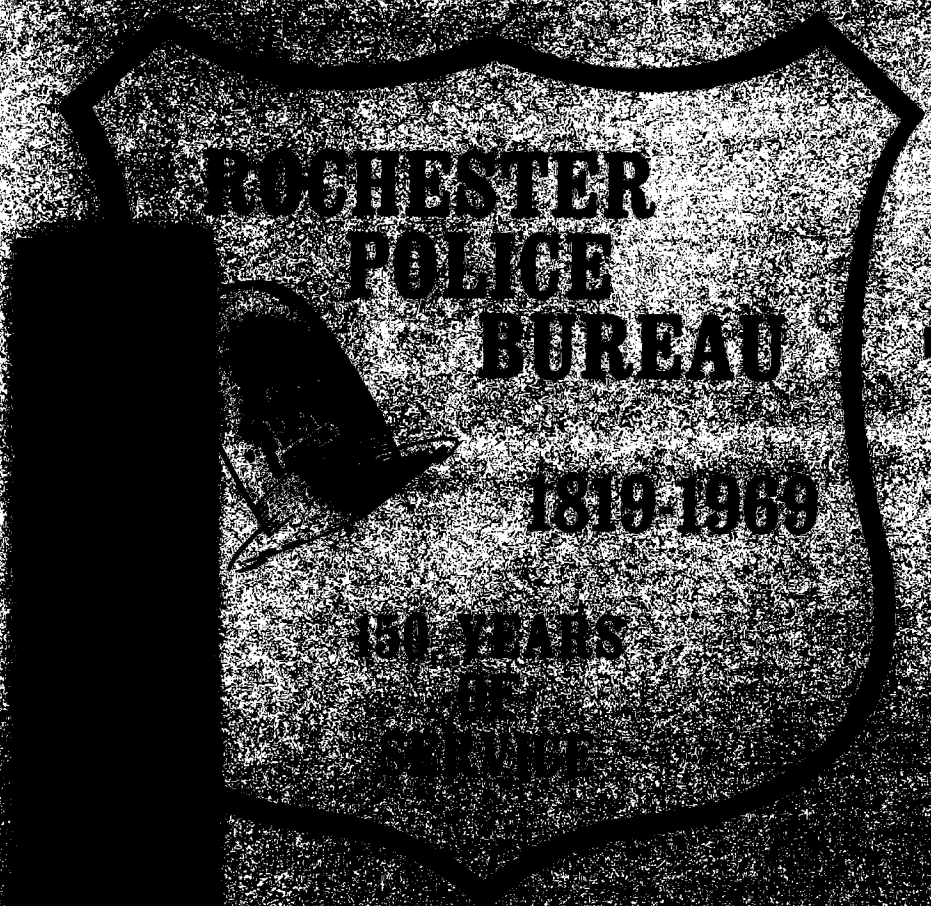
APPLICABILITY OF THE ROCHESTER TACTICAL COMMUNICATIONS SYSTEM CONCEPT TO OTHER MEDIUM-SIZED CITIES



A REPORT BY THE
ROCHESTER POLICE BUREAU
AND THE
ELECTRONICS DIVISION OF
GENERAL DYNAMICS

Final Report Phase II
September 1969
Grant No. 322

CITY OF ROCHESTER
NEW YORK
DEPARTMENT OF PUBLIC SAFETY

BUREAU OF POLICE
CIVIC CENTER PLAZA
ROCHESTER, NEW YORK 14614

WILLIAM M. LOMBARD
CHIEF OF POLICE

GRANT 322

APPLICABILITY OF THE ROCHESTER TACTICAL COMMUNICATIONS SYSTEM CONCEPT TO OTHER MEDIUM-SIZED CITIES

A REPORT BY THE ROCHESTER POLICE BUREAU
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ELECTRONICS DIVISION OF GENERAL DYNAMICS
ROCHESTER, NEW YORK

This report is a follow-up to the report of the study of the Tactical Communications System of the Rochester Police Bureau, Phase I, and is intended to be examined in conjunction with that report. Both phases of the study were conducted under a grant from the Office of Law Enforcement Assistance pursuant to authority of the Law Enforcement Assistance Act of 1965.

The Tactical Communications System Study was originally conceived as being concerned only with the Rochester Police Bureau's Communications System and to formulate conclusions and recommendations which would be applicable to other medium-sized cities. Prior to the awarding of the grant, it was suggested by the Office of Law Enforcement Assistance that the scope of the study be expanded to include a second phase. This second phase was to test the conclusions and recommendations formulated during the study of the Rochester Police Bureau against the requirements of two other medium-sized police departments with the objective of determining if the results of the study were, in fact, applicable to other departments.

Phase II was conducted by visits to two medium-sized cities by members of the General Dynamics study team and a representative of the Rochester Police Bureau. Data was collected through tape recordings of telephone and radio communications, observation of operating procedures and equipment, and through the completion of a questionnaire by communications personnel. This report is an analysis of the results of these visits and examines in some detail the applicability of various recommendations and conclusions to the two departments visited.

The cooperation of the two police departments that participated in this study is gratefully acknowledged. They are not identified in the report except as City A and City B in order to avoid any possibility of the conclusions or remarks concerning them being misconstrued as criticism of their systems or operations.

The final evaluation of the Phase I conclusions and recommendations will lie with the individual reader. The findings of Phase II indicate that, in general, the requirements of medium-sized police departments' communications systems are similar, and the results of the Phase I study are, for the most part, applicable to other cities of medium size.

W. M. Lombard

William M. Lombard, Project Director
Chief of Police
Rochester Police Bureau

APPLICABILITY OF THE ROCHESTER TACTICAL COMMUNICATIONS SYSTEM CONCEPT TO OTHER MEDIUM-SIZED CITIES

A REPORT BY THE ROCHESTER POLICE BUREAU
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FINAL REPORT
PHASE II
SEPTEMBER 1969
GRANT NO. 322

Submitted to Mr. William M. Lombard, Chief of Police,
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This study was performed under a grant from the United States Department of Justice, Law Enforcement Assistance Administration, to the city of Rochester, New York, Department of Public Safety. Work on the study was carried out by the Electronics division of General Dynamics, Rochester, New York, under the direction of Mr. William M. Lombard, Chief of Police, through the immediate supervision of Captain Charles Richardson of the Office of Planning and Research, Rochester Police Bureau.

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I. INTRODUCTION

This is the second phase of the project reported recently under the title "A Study of the Tactical Communications System of the Rochester Police Bureau, Rochester, New York" by the Rochester Police Bureau and the Electronics division of General Dynamics.

A. REASONS FOR A PHASE II STUDY.

Phase I focussed on the Rochester Police Bureau. The recommendations of the report were formulated specifically to meet the Bureau's needs and requirements.

Phase II is an evaluation of the Rochester findings in a larger context. It asks: To what extent are the Phase I recommendations applicable to other medium-size cities?

The study reported here is much smaller in scope that that which would be needed for a really adequate answer to this question. The contract with the City of Rochester required checking the Phase I findings at two other medium-size cities. It was neither feasible nor required that the Rochester study be duplicated at each locality.

These limitations are somewhat less critical than they might appear on the surface. Phases I and II were never as sharply separated as the issuance of two separate reports might imply. The mere existence of Phase II led us to collect and examine information about other cities during Phase I. For example, the Phase I study teams, together with members of the Rochester Police Bureau, visited a number of large and medium-size departments to be sure that available technology and practices were assessed and used appropriately in formulating the Rochester recommendations. The "broad view" was also taken in reviewing reports on police problems and methods in the literature. This approach does not in itself assure the generality of the Rochester recommendations, but it did provide the study team with much data on the conditions under which one set of recommendations may be superior to another.

Every city is unique. The question is: What differences make a difference in evaluating a given procedure? A good deal of information of this type is woven into discussions of various topics in the Phase I report. This enlarged the report, but it removes the need for repeating information of this type here.

In a very real sense, therefore, the Phase I report is part and parcel of this one and familiarity with it is assumed throughout.

I. Cont'd.

B. THE GENERAL APPROACH.

How does one go about determing whether the conclusions and recommendations derived in a study of one situation apply to another? Or even to the situation in which they were developed?

The best method is hardly feasible. It would involve implementing the recommendations at enough different locations for a long enough period and systematically evaluating the results. This could be a long and costly process, particularly if some of the recommendations did not produce the expected results.

There are two additional possibilities. The first involves utilizing the experience and judgment of qualified individuals at each location. The other requires collecting data on the operations and conditions at each location and evaluating the applicability of recommendations for the particular situation. Both methods were used.

1. <u>The judgments of cognizant personnel at each city.</u>

The Rochester Police Bureau and other departments are accountable through the higher eschelons of their respective municipal governments to the general public. Authority to make operating decisions of the type considered here is normally delegated to such departments along with the commensurate responsibility, within budgetary and certain other constraints.

Thus, the Rochester Police Bureau must examine and evaluate the Phase I recommendations and decide which items (if any!) merit implementation on a full-scale basis or for a limited trial. Such judgments are inescapable even in the organization for which the recommendations were generated.

Two methods of obtaining such judgments were employed:

a. Questionnaire.

Question numbers ran from 1 to 82, but there were only 80 questions. The numbers were added by the typist who skipped number 53, without omitting a question. A question-14 appreared on the form but the answers are not reported since the answers belonged with a question on unified police communications systems, which we had decided to delete, while the introductory statement pertained to 911. There is fortunately another question about the universal emergency telephone number which got at the information of greatest concern to us.

I.

B. 1. a. Cont'd.

After the usual directives about how to record answers to the questions, the written instructions proceeded as follows:

> "Space for COMMENTS is provided between questions. Continue on back of sheet (with question number), if more space is needed.
>
> "Try to take the "broad view" in answering questions. Consider what is good for the Police Department and city overall, rather than what might seem advantageous for some particular group. Think mostly of your own city, but consider also what you would tend to recommend generally for cities and departments like yours in size and other respects.
>
> "It is not necessary to identify yourself on the questionnaire. We will NOT identify individuals or cities in publishing the results, or at any other time."

The questionnaires were used at Rochester and at Cities A and B as we shall call them. Distribution was limited to individuals responsibly involved in communication center operations. The group included mostly dispatchers and those responsible for the dispatch function. No complaint interviewers were sampled, except in City B where complaint calls were received and dispatched by the same individuals (interviewer-dispatchers). The technician responsible for communications equipment was included in Cities A and B, but not in Rochester, and his assistant participated in City B.

It was not possible to reach everyone in these categories at any location, but there was no obvious bias in the selection. The forms were distributed by the department to everyone in these categories who was conveniently available at the time. No one who was asked failed to respond, though some did want to know exactly what would be done with the results and seemed satisfied with our explanations.

The numbers are exceedingly small: 6 for City A, 7 for City B and 8 for Rochester, making 21 in all. The qualifications of the respondents with respect to most of the questions, and their organizational responsibilities in these areas, give the results a far greater credibility than a much larger sample of less experienced and knowledgeable individuals. Nevertheless, the limitations inherent in taking very small "samples" from three cities must be kept in full view while examining the results.

I.

B. 1. Cont'd.

b. Face-to-face discussions.

Opinions and judgments were also sought as the team went about collecting measurements, recordings and other data.

2. Judgments based on operating data and conditions.

Many of the Phase I recommendations were based upon the collection and analysis of data and other information about Rochester operations and conditions. Checking these involves seeing whether the same conditions exist elsewhere.

To this end, recordings were made of complaint interviews and of dispatcher traffic. Scaled layouts were made of each facility and numerous photographs were taken. An effort was made to understand the operating procedures, conditions, achievements and problems at each location through observations and discussions. Automatic measurements of radio traffic loads were not taken, as they were in Rochester. However, the man responsible for electronic equipment at City B had previously set up to make identical measurements on his own, and was kind enough to make his results available to us. (See III. C.)

C. THE TWENTY-FIVE CHECKPOINTS.

A set of 25 checkpoints was identified, each representing a single or a group of related Phase I recommendations, or the set of measurements or observations from which important recommendations were derived. Obviously, many more could have been chosen.

The checkpoints are grouped under the several chapter headings constituting this report --complaint board operations, the dispatcher and the radio channels, the communication center layout, and communications equipment.

Each checkpoint is cross-referenced to appropriate sections of the Phase I report, and the relevant Phase II evidence is reported and discussed. (Attention is called to Section I.C (p. 3) of the Phase I report for an explanation of appendix and page references.)

I. Cont'd.

D. CITIES A AND B.

Cities A and B are within a thousand miles or so of Rochester, New York. The Phase I recommendations were not formulated with them in mind, since they were not among the cities visited during Phase I.

City A has a population over 100,000 and City B, over 300,000, according to the 1960 census. These compare with 318,000 for Rochester in 1960 and 295,000 currently.

City A has a two-stage system, with electric penwriters connecting the complaint interviewer and the dispatcher. City B has a one-stage system, in that calls are received and dispatched by the same individual. Rochester has a two-stage system connected by a conveyor.

City A employs police officers exclusively in both the complaint interviewer and the dispatcher positions. The interviewer-dispatcher group at City B consists of four male civilians and one police officer. At Rochester, the complaint board is staffed by female interviewers and one police officer. All dispatchers are policeman.

City A has a police switchboard with 10 incoming lines for administrative and complaint calls, all from a single listed telephone number. City B has a Centrex system with 8 emergency lines, along with circuitry which automatically assigns calls to the lowest numbered line available. The Rochester switchboard is more like City A's, but emergency calls go directly to the complaint board where they are assigned automatically to the lowest numbered available line, as at City B.

City A has three channels in the UHF band; its single job assignment channel is duplex with repeaters as in the Rochester system. City B has four channels in the high VHF band, including two job assignment channels serving two distinct geographic areas of the city; these are simplex operations, with repeaters and voting equipment to select the receiver with the strongest signal. The base transmitters in both cities are located atop buildings, since neither city has a suitably located natural prominence like Rochester's Cobbs Hill.

Additional details will be given as specific questions are discussed. Some information will be omitted in order to avoid identifying those who cooperated so fully with us.

II. COMPLAINT BOARD CHECKPOINTS

A. CHECKPOINT-1: ALLOCATION AND USE OF INCOMING TELEPHONE LINES.

This section is concerned with recommendations in the Phase I report covering the restriction of emergency lines and of operator time to complaint calls, making police calls from public telephones without coins, expressway phones and 911. Some limited telephone traffic data on the two cities are also presented.

1. Question-7. Lines associated with the number listed in the telephone directory for police emergency calls should be reserved for that purpose, and not used for administrative calls --e.g., officers reporting "out of service." (Ref. Phase I, p. AII-40)

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	-	-	-	-
Disagree.	1	-	1	2 (10%)
Undecided.	-	-	-	-
Agree.	3	-	4	7 (33%)
Strongly Agree.	2	7	3	12 (57%)

Thus 90% want to exclude administrative calls from emergency lines. Of the two who disagree, one is in Rochester where police officers make some use of these lines for administrative calls. The other is from City A, where all calls arrive at a two-position manual switchboard, manned by two police officers who take all calls.

2. Question-8. Administrative calls should be answered by someone other than the complaint operator. (Ref. Phase I, pp. AII-42 to -44)

	City A(6)	City B(7)	City R(7)	Total (20)
Strongly Disagree.	1	-	-	1 (5%)
Disagree.	2	-	1	3 (15%)
Undecided.	-	1	-	1 (5%)
Agree.	3	3	4	10 (50%)
Strongly Agree.	-	3	2	5 (25%)

II.

A. 2. Cont'd.

Thus 75% agree on restricting the responsibility of complaint board interviewers to emergency calls.

City B has a Centrex system. Its interviewer-dispatchers receive calls from citizens on a set of eight emergency lines. Police officers also call in on these lines despite the fact that another set of lines to the interviewer-dispatchers is intended for this and other administrative purposes.

3. Question-10. Rules restricting (but not excluding) personal calls to and from the complaint board should be established. Such calls should be limited to administrative lines. (Ref. Phase I, pp. AII-41 to -43)

	City A(6)	City B(6)	City R(8)	Total (20)
Strongly Disagree.	-	-	-	-
Disagree.	-	-	-	-
Undecided.	-	-	-	-
Agree.	3	4	5	12 (60%)
Strongly Agree.	3	2	3	8 (40%)

4. Question-11. Some method of assuring that incoming calls are processed in order of arrival is essential. (Ref. Phase I, p. AII-38)

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	1	-	-	1 (5%)
Disagree.	1	1	3	5 (24%)
Undecided.	-	1	-	1 (5%)
Agree.	2	2	2	6 (28%)
Strongly Agree.	2	3	3	8 (38%)

Thus 66% favor order-of-arrival processing of incoming calls.

The wording of this question should be improved by substituting "answered by complaint operators" for "processed," since the latter might have been taken by some to include dispatching in order-of-arrival, which was not intended.

II.

A. Cont'd.

5. Question-12. Citizens should be able to call the police free, from designated booths, without depositing a coin. (Ref. Phase I, p. 50)

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	-	-	2	2 (10%)
Disagree.	-	2	1	3 (14%)
Undecided.	-	-	-	-
Agree.	3	3	-	6 (29%)
Strongly Agree.	3	2	5	10 (48%)

Thus 77% favor coinless telephone booths.

This question should be improved by substituting "from all public telephone booths" for "from designated booths." Rochester respondents may have thought we were proposing an increase in the 81 police call boxes around the city, which are not generally used by the public.

6. Question-13. Expressway should have free phones, located one-half mile apart, terminating at the complaint board. (Ref. Phase I, p. 51)

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	-	1	-	1 (5%)
Disagree.	-	3	-	3 (14%)
Undecided.	2	1	-	3 (14%)
Agree.	4	1	3	8 (38%)
Strongly Agree.	-	1	5	6 (29%)

Thus 67% agree. The 4 (19%) who disagree come from City B where expressway development within city limits has not reached a point comparable to that of the other two cities.

II.

A. Cont'd.

7. Question-15. 911 should be used for (check one): (Ref. Phase I, pp. 49-50)

	City A(6)	City B(1)	City R(8)	Total (21)
Police only.	2	3	3	8 (38%)
Police and fire.	1	-	1	2 (10%)
Police, fire & ambulances.	1	1	-	2 (10%)
All emergency services.	-	3	4	7 (33%)
All others except police.	-	-	-	-
None.	2	-	-	2 (10%)

Although 90% agree with the 911 concept, there is considerable disagreement regarding its use. 38% feel it should be restricted to police. Another 20% would include fire and ambulance dispatching, and 33% go along with the publicized "all emergency number."

Since this is the first item on which the Rochester respondents express opinions at variance with Phase-I recommendations, an explanation may be helpful. The study team visited the Rochester Fire Bureau and made a preliminary evaluation of its county-wide fire and ambulance dispatching system. It seemed unlikely that it would be improved in any way by tying it in with police dispatching for either the City of Rochester or on a county-wide basis. Since this issue has not been discussed with most of the Rochester respondents, it is possible that they are not aware of the scope and excellence of the Fire Bureau's system and that they are responding to the "all emergency" publicity for 911. Further discussion will be needed to determine the reasons for this division of Rochester opinion.

In City A, the fire dispatcher is located on the same floor of the same building. In City B, the two are at different locations.

8. Complaint call arrival rates.

As in Rochester, data on incoming telephone traffic was not readily available in Cities A and B. In City B we were able to follow the Rochester sampling procedure (Ref. Phase I, pp. AI-4 to -6), i.e., by recording one complete call and then switching to the next call started by any operator. Of 30 calls recorded during the 9-10 PM hour on a Thursday evening, 18 represented requests for service, 10 were administrative, and in 2 cases the caller hung up before answering.

II.

A. 8. Cont'd.

Rochester averaged 34.8 calls/hour in our 9-10 PM samples, which was estimated (Ref. Phase I, pp. AI-33 to -34) to represent 44% of total incoming traffic. Assuming that the same proportion of calls were sampled at City B leads to an estimate of about 66 calls/hour for the period sampled, which is just a little under the Rochester average.

This load was handled by five men, three functioning as interviewer-dispatchers (I. D, Phase II), with two others taking the overflow of calls and passing the information to the respective dispatchers.

In City A, 29 calls were recorded on a Monday evening, 9-10 PM, of which 9 were complaints, the remainder being administrative calls. It was not possible physically to connect into the system in a manner which permitted sampling the (two) operators. Instead, we tied into one of the channels and one of the officers tried to take all the calls at his switchboard. The second operator processed a very small number of calls on an overflow basis. Since their two-position switchboard handles all calls to the department, the proportion of non-emergency calls processed probably drops during the day when the various offices are fully staffed.

B. CHECKPOINT-2: COMPLAINT BOARD FUNCTIONS.

The desirability of restricting traffic on emergency lines and of limiting operators to the main business of handling complaint calls was indicated by two questions (A. 1 and A. 2) of the preceding section.

A basic question in police operations is whether a car should be dispatched in response to every request for service. If not, the problem of discriminating when and where not to respond becomes a function of critical importance. The skill level required to implement it will depend on how clearly the lines are drawn for the operator.

Cities A and B, like Rochester, dispatch cars in response to nearly all requests for service, the exceptions in Rochester being stolen bicycles and missing license plates, in which cases the interviewer records the information. The specific exclusions (if any) of Cities A and B are not known.

II.

B. Cont'd.

1. Question-65. A car should be dispatched in response to every request from a citizen.

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	-	-	4	4 (19%)
Disagree.	2	6	3	11 (52%)
Undecided.	-	1	-	1 (5%)
Agree.	2	-	1	3 (14%)
Strongly Agree.	2	-	-	2 (10%)

Thus 71% disagree with the idea of "rolling" on every request from a citizen. Only 24% agree. Two of those disagreeing commented: "Crank calls should not tie up a police department." And, "Some complaints can be handled by phone."

2. Question-66. A department striving to maintain essential services with minimum budget should avoid sending cars for (check those that apply):

	City A	City B	City R	Total
(a) Stolen bikes.	5	4	8	17 (81%)
(b) Stolen license plates.	5	5	8	18 (86%)
(c) Stolen cars.	2	0	1	3 (14%)
(d) Accidents not involving personal injury.	1	0	3	4 (19%)
(e) Accidents not jamming traffic.	1	0	3	4 (19%)
(f) Fires off busy streets.	0	1	2	3 (14%)
(g) Ambulance cases for illness.	1	1	8	10 (48%)
(h) Animal bites.	3	3	4	10 (48%)
(i) Family, tenant, neighbor trouble involving no threats.	0	1	5	6 (29%)
(j) Parked vehicles blocking traffic.	0	0	0	0 (0%)
(k) Other, Identify.	1	1	4	6 (29%)

II.

B. 2. Cont'd.

Stolen bicycles and license plates are the two items on which there is general agreement --81% and 86% respectively-- that cars should not be dispatched. No other item has a clear majority, although ambulance cases for illness and animal bites come fairly close with 48% each. Family, tenant and neighbor trouble where no threats are involved would be omitted by 29%, with most of the respondents in Rochester.

Surprisingly, only 19% recommend not responding to accidents, whether or not a traffic problem is involved. Also, the only point on which all agreed --i. e. no one voted to eliminate item-j-- is that the police should respond whenever a vehicle is reported to be blocking traffic.

Most additional suggestions came from Rochester. These included flooded cellars, lack of heat, cats in trees, tree limbs down presenting no hazard, warrants, vacant houses and business places, alarms out of order, junk cars, and constant complainers on parking who refuse to give name and address, with one mention each. One respondent in City A commented that "any reports not requiring direct police action should be made by the complainant in person at the division."

One respondent commented: "If you want a police department, then the budget should be adequate to cover its needs, otherwise accept anarchy and be satisfied."

One respondent who checked items a, b, g and h, commented that "there are exceptions to all these." It is this question of "exceptions" which makes it difficult to exclude categories while leaving the action in specific cases to the judgment of interviewers. This obviously bears on the question of staffing (II.C, Phase II).

3. Question-9. Stolen bikes or license plate calls should be referred (or transferred) to a Records clerk who takes the necessary information, at least during "busy hours." (Phase I, p. AII-41)

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	-	-	-	-
Disagree.	-	-	-	-
Undecided.	-	-	1	1 (5%)
Agree.	4	4	5	13 (33%)
Strongly Agree.	2	3	2	7 (62%)

II.

B. 3. Cont'd.

The virtually unanimous agreement (95%) on this point raises the question of whether or not all stolen property calls --except those where immediate field unit action might reasonably be expected to catch the criminal or retrieve the property-- be referred by the complaint clerk to a telephone number in the Records function.

C. CHECKPOINT-3: COMPLAINT BOARD STAFFING.

Here we raise the questions of police officers or civilians? Males or females? How to staff busy periods? How long and how many "coffee breaks"?

1. Question-1. The complaint board should consist of (check one): (Ref. Phase I, p. 16)

	City A(6)	City B(7)	City R(8)	Total (21)
All female (civilian) operators.	-	-	-	-
All male (civilian) operators.	-	-	-	-
All police officers.	3	3	5	11 (52%)
One police officer and the rest female civilians.	-	2	1	3 (14%)
One police officer and the rest male civilians.	3	2	2	7 (33%)

A majority (52%) favor a staff consisting exclusively of police officers, with Rochester feeling more strongly (62.5%) on this point than the others.

A substantial minority (33%) prefer male civilians with one police officer present. Only 14% favor the current Rochester practice of an essentially female complaint board with one officer. There is unanimous agreement that civilians should not be allowed to operate without an officer present.

It is interesting that City A has an all-police complaint operation, but splits 50-50 on the issue of substituting male civilians for all but one position. (They have only two.) There was no evidence to justify a change in the Rochester

II.

C. 1. Cont'd.

interviews examined. City B employs male civilians almost exclusively, but opinion is divided there between an all-police board and one which includes females.

Though space was provided for comments, no one specified that his answer might vary with the conditions --e. g., with a shortage of police officers in a city requiring the use of civilians, or with the amount of training the operators received.

One would like to know how responses to this question tie in with feelings about the Phase-I recommendation that operators identify only the police department and not themselves at the beginning of a call. With this practice, male civilians would be indistinguishable from male police officers (to the anxious female complainant usually mentioned in this connection). The operator would give his name at the end of the call only when a follow-on call from the same complainant on the same incident is expected.

2. Question-2. Assume that an officer is assigned to the complaint board to answer questions from operators and to handle difficult calls at their request. How should he spend the rest of his time? (Check those which apply.) (Ref. Phase I, p. AII-44)

	City A(5)	City B(7)	City R(4)	Total (16)
(a) Waiting for questions and requests from operators.	-	-	-	-
(b) Monitoring interviews by operators.	3	4	-	7 (44%)
(c) Answering calls like an operator.	1	3	4	8 (50%)
(d) Answering calls on administrative lines only.	-	-	-	-
(e) Other. Specify:	1	-	-	1 (6%)

No one questioned the assumption that one of the officer's functions on a civilian complaint switchboard was "to answer questions from operators and to handle difficult calls at their request."

II.

C. 2. Cont'd.

50% felt that he should spend the remainder of his time answering calls like any other operator.

The other 50% felt he should spend the remainder of his time monitoring operators (44%) and supervising them (6%). The City A respondent checking other explained: "Supervise and take charge when any difficulty arises." One City B respondent who checked the monitoring alternative added: "Also training personnel under his supervision on a continuing basis."

Interestingly, no one felt he should simply sit there waiting for calls from operators or that he should take over the calls (mainly from or for officers) on the administrative lines.

3. Question-25. To maintain an adequate staff at the complaint board, it is desirable to (rate each alternative). (Ref. Phase I, pp. AII-45 to -47)

(a) Hire part-time operators to fill in during lunch and busy periods.

	City A(6)	City B(7)	City R(7)	Total (20)
Strongly Disagree.	3	2	3	8 (40%)
Disagree.	2	3	2	7 (35%)
Undecided.	1	-	-	1 (5%)
Agree.	-	2	2	4 (20%)
Strongly Agree.	-	-	-	-

(b) Use police officers from the field to fill in.

	City A(6)	City B(7)	City R(6)	Total 19)
Strongly Disagree.	1	4	1	6 (32%)
Disagree.	2	1	1	4 (21%)
Undecided.	1	-	-	1 (5%)
Agree.	2	2	3	7 (37%)
Strongly Agree.	-	-	1	1 (5%)

II.

C. 3. Cont'd.

(c) Develop a pool of trained operators (like substitute teachers) who are willing to respond on short notice.

	City A(6)	City B(7)	City R(7)	Total (20)
Strongly Disagree.	1	1	-	2 (10%)
Disagree.	3	3	1	7 (35%)
Undecided.	1	-	-	1 (5%)
Agree.	1	3	3	7 (35%)
Strongly Agree.	-	-	3	3 (15%)

(d) Maintain a larger regular staff in anticipation of absenteeism, etc.

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	-	-	1	1 (5%)
Disagree.	-	-	-	-
Undecided.	-	-	1	1 (5%)
Agree.	3	2	3	8 (38%)
Strongly Agree.	3	5	3	11 (52%)

There is strong (75%) opposition to using part-time help to fill in busy periods. (This Phase I recommendation stemmed from the predictable occurrence of periods of high telephone traffic considerably shorter than a platoon. Part-time help reporting for 4-hour shifts could be used during these quite regular daily periods.)

The majority (52%) opposes using police officers from the field as backups on the complaint board. A 42% minority favor the idea, but this is due to the endorsement (4 out of 6) by respondents in Rochester where this is the practice. One City B respondent, who favored a female board with one officer in Question-1, commended that police officers should function as police and not as telephone operators.

This group is split evenly on the question of developing "a pool of trained operators (like substitute teachers) who are willing to respond on short notice." 45% agree and 45% disagree. Rochester favors the idea (6 out of 7), City A is least favorable (1 out of 6), and City B is in between (3 out of 7).

II.

C. 3. Cont'd.

The last item (part d) provides the key. 90% feel that the problem should be handled by maintaining "a larger regular staff in anticipation of absenteeism, etc." This viewpoint is more understandable than may appear on the surface. It stems from the day-to-day problems which plague police departments who must maintain an operating staff of civilians 24 hours a day, seven days a week. Some degree of "overstaffing" has proved essential to continued operations. A good deal of evidence and testing will be required before any alternative approaches are proven to the point where they will gain acceptance. It is hoped that some departments will have the courage to develop alternatives and to test them to the point where their advantages and disadvantages are clear.

4. Question-24. Complaint operators need a ___ minute relief break every ___ hours, in addition to the usual break for "lunch."

City A(6)	City B(7)	Rochester (8)	Total (21)	Equivalent min/hr.
10/4:(1)			10/4:(1)	2.25:(1)
		15/4:(1)	15/4:(1)	3.75:(1)
	15/3.5:(1)		15/3.5:(1)	4.29:(1)
20/4:(1)			20/4:(1)	5.0:(7)
	10/2:(2)	10/2:(5)	10/2:(5)	
		5/1:(1)	5/1:(1)	
15/2:(3)	15/2:(2)	15/2:(1)	15/2:(6)	7.5:(7)
	5-10/1:(1)		5-10/1:(1)	
20/2:(1)		20/2:(2)	20/2:(3)	10.0:(4)
	10/1:(1)		10/1:(1)	

10/4:(1) means 1 person felt that operators need "a 10 minute relief break every 4 hours." This is equivalent to saying that operators earn 2.25 minutes relief every hour.

The average group estimates are that 6.56 minutes of relief is earned for every hour worked and that breaks should be spaced every 2.2 hours. This adds up to two 13-minute breaks every two hours, or at least two such breaks before lunch and two after lunch.

II.

D. CHECKPOINT-4: COMMUNICATIONS BETWEEN THE COMPLAINT BOARD AND THE DISPATCHER.

The four questions which follow assume a two-stage system in which a card (CR Card) is completed by the complaint clerk and forwarded to the dispatcher by a conveyor, as in the present and recommended Rochester system. Other possibilities will be discussed later in this section.

1. Question-3. Which of the following procedures do you prefer? (Check one and briefly explain your preference in the space below the question.)

	City A(6)	City B(7)	City R(8)	Total (21)
(a) CR (Case Record, or slot-) cards are color coded to indicate two or three levels of urgency, as estimated by the complaint operator. The operator must wait until she hears enough to know which card to use, before she can begin recording the information on the card. Caller's name, address and other information are often written on scratch sheets and later copied on the card. The dispatcher detects the urgency of cards arriving on the conveyor belt by their color. He includes in the job assignment message, a numerical code reflecting his estimate of urgency, based on card color and other recorded information.	-	2	4	6(29%)
(b) In alternative procedure, one CR card is used for all calls requiring police action, thus enabling the operator to begin recording on the card immediately. To indicate her "urgency estimate," she encircles one of several digits in a block for this purpose. She places non-urgent cards on one conveyor belt, and urgent cards travelling the urgent belt, activate a signal light on the dispatcher's panel, and arrive in a special slot. The dispatcher includes the urgency code in the job assignment message, occasionally modifying the operator's estimate when the information clearly warrants this.	6	5	4	15(71%)

II.

D. 1. Cont'd.

The first alternative (3a) is the current Rochester procedure. The second (3b) is the recommended one. The purpose of this question is to compare the two.

The group as a whole prefers (71%) the second approach. The city differences are interesting: City A, with a two-stage system, prefers (3b) over (3a) unanimously (100%). City B, with a modified one-stage system, prefers (3b) over (3a) (71%). Rochester, on the other hand, split 50-50.

Three people who checked the first procedure added comments indicating that their preference is based on the fact that multicolored cards alert the dispatcher and show him the nature of the call immediately. This is a legitimate point. Any system using one card for all complaints must provide an adequate signal to the dispatcher to mark the arival of an emergency card and the cards themselves must be clearly marked so that a dispatcher can tell the difference at a glance.

Nine of those prefering the second alternative added comments. Seven of these emphasized speed and the elimination of note taking and copying errors. These are also valid points.

One respondent in City A who checked (3b) added: "Do not like either --number-2 seems to be faster." The chances are that he prefers electric penwriter system of transferring information to the dispatcher, but we cannot tell this from the data.

Another City A respondent who checked (3b) felt that: "There will be less chance of getting conveyor belts confused than if you used multicolored cards." One of the 4 in Rochester who prefers (3b) suggested that only one conveyor belt be used because "all cards are picked up as they arrive and only one color should be used regardless of the importance of the job because of the fact that they are read immediately anyway."

2. Question-4. Indicate the number of "levels of urgency" which the complaint operator should be required to discriminate. (Ref. Phase I, pp. AIV-11 to 12)

II.

D. 2. Cont'd.

	City A(6)	City B(6)	City R(7)	Total (19)
None.	-	-	-	-
Two.	3	4	7	14 (74%)
Three.	2	2	-	4 (21%)
Four.	1	-	-	1 (5%)
Five.	-	-	-	-

74% feel that two "levels of urgency" are enough, Rochester respondents being almost unanimous on this point --almost unanimous since one failed to respond and added: "This would have to be worded differently in order to answer correctly." His difficulty with the question is probably due to the jump from none to two, since treating all cards at one level requires no discrimination. He is right. This confusion should be avoided by rewording the question.

3. Question-5. A special signalling system should be provided whereby an operator can alert the dispatcher the instant she detects a major emergency, such as an airport disaster, an explosion, an armed robbery in progress, etc. (Ref. Phase I, p. 35)

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	-	-	2	2 (10%)
Disagree.	-	2	1	3 (14%)
Undecided.	-	-	-	-
Agree.	2	-	-	2 (10%)
Strongly Agree.	4	5	5	14 (67%)

77% agree on the need for a special dispatcher-alert under the control of the complaint operator.

II.

D. Cont'd.

4. Question-6. If such an alert is provided, (Ques. 5), the dispatcher should: (Check one). (Ref. Phase I, p. 35)

	City A(5)	City B(4)	City R(7)	Total (16)
(a) Watch for the CR card and prepare to take immediate action.	2	-	5	7 (44%)
(b) Switch as quickly as possible to hear the remainder of the call, without participating in it. When the call is complete, get the information he missed directly from the operator, so that he may begin the dispatch while the operator completes the card.	3	2	2	7 (44%)
(c) Take over the call and get all the information from the complaintant, even if this means repeating some questions. (The operator listens in to complete the card.) The dispatcher begins the job assignment(s) immediately.	-	2	-	2 (12%)

Taken literally, this would mean that opinion is about evenly divided (44% each) between having the dispatcher wait for the card and listening in on the interview so that he might get the address sooner and get a car on the way. Rewording alternative (b) might be desirable. One respondent in City B placed a question mark beside this alternative and did not check an answer. One in City B expressed an answer somewhat similar to (b): "Dispatcher should be advised immediately of location and nature of call and operator should secure all available information.

II.

D. Cont'd.

5. A comment on electric penwriter systems.

Although City A was happy with their overall system, they did express a concern over the usual inking problems encountered with penwriters. However, there is no reason to suppose that they would prefer the card-conveyor link between complaint operators and dispatchers as recommended for Rochester in Phase I.

This naturally raises the question of why a system of this type was not recommended for Rochester. The Phase I team had visited Detroit, which also has a penwriter system, and evaluated it for possible Rochester application. The reasons for not recommending its adoption were:

a. Rochester has a functioning conveyor system and any change from it would be expensive and difficult to justify unless the advantages were very substantial.

b. Detroit reported problems with its inking system which sometimes skips words and whole messages. City A reports similar problems.

c. Two ways of incorporating penwriters in the Rochester system were considered:

(1) Place perhaps three penwriters at the F-1 dispatcher's console, from which all job assignments are dispatched.

However, 4, 5 or 6 operators taking calls at a busy moment, only three could get through. The others would have to take notes and penwrite the message when a channel became available. Detroit supplements the system with an intercom system which is used to get through to the dispatcher in an emergency when the penwriter channels are busy.

(2) If Rochester were divided into two districts by the Genesee River, as discussed in the Phase I report (p. 35), each could be assigned two penwriters, as in Detroit, or perhaps even three.

In this arrangement, operators must wait until the location of the complainant is known before throwing the selector switch to route the message to the correct dispatcher. Any information given by the caller before the responsible dispatcher is identified must be written on a scratch pad for later transmission.

II.

D. 5. c. (2) Cont'd.

The system has the advantage that a dispatcher might catch a critical message the moment the operator begins to write. But in a busy period, the message might be locked out for a while, requiring the operator to use the intercom, probably after the essential information has been gotten.

Neither of these possibilities seemed superior to the card-conveyor system as applied to Rochester. The next level of technology appears to be computer dispatching, but this is in the future for most medium-size cities.

The system appears to work well in City A, which has only one penwriter between the two telephone complaint operators, and this is tied directly to one receiving penwriter at the dispatcher console. The city is in the 100,000 class and the arrival rate of requests for service is not so great that the two operators need the penwriter very often at the same time. When this occurs, one must make notes and copy them on the penwriter when it becomes available.

6. City B's modified one-stage system.

City B has three interviewer-dispatchers taking city-wide calls from 8 incoming lines. If the call is not within the jurisdiction of the interviewer-dispatcher receiving it, he passes it to the correct man. The system differs from the Chicago one-stage system in which telephone lines are arranged so that the interviewer-dispatcher receives only calls within his dispatching district. In City B the interviewing and dispatching functions are combined in one person, but information must be passed from the individual conducting the interview to the dispatcher responsible for the appropriate job assignment channel (of two) or function.

The system has grown to the point where two telephone complaint interviewers take overflow calls and pass the information to the appropriate dispatcher much as in a two-stage system but without the convenience of a conveyor belt or penwriter.

The load is approaching the point where the staff is beginning to consider alternatives. One mentioned to us consisted in separating the interviewing and dispatching functions and placing interviewers on one side of a partition and dispatchers on the other, with some facility for passing cards between them. (The question of whether or not the principles embodied in the recommended Rochester layout would meet the requirements of City B was not discussed, but is considered later (Phase II, IV.H. 2.).

II.

E. CHECKPOINT-5: EVALUATION OF TELEPHONE COMPLAINT INTERVIEWING PROCEDURES.

Telephone complaint interviews were recorded in Cities A and B, as they were during Phase I in Rochester. A basic five-step procedure, referred to as the five phases of the interview, and three areas of interpersonal effectiveness were identified. These are listed in the first column of Table II-1. They were incorporated in the Telephone Complaint Evaluation Form (Phase I, p. AI-7) and provided the basis of the procedure applied to evaluate the Rochester interviews.

As noted earlier (II. A. 8), 29 calls were recorded during a 9-10 PM busy hour at City A and 30 during a similar period at City B, of which 9 and 18, respectively, were requests for police service. Only 7 of the 9 could be analyzed because of the quality of the recordings. This was due to electrical noise created by connecting into the City A system at the only available point, without the time or equipment to wire up an adequate impedance match.

Table II-1 compares the Rochester ratings with those of the two cities. Interpretation is facilitated by examining first the following data extracted from the table:

A. PHASES OF THE INTERVIEW:	100:69:77
B. INTERPERSONAL EFFECTIVENESS:	100:83:81
C. OVERALL EVALUATION:	100:94:80
A + B:	100:72:79
A + B + C:	100:75:78

The three numbers separated by colons show the percent of Good and Excellent ratings on each item at City A, City B and Rochester, respectively. Thus 100% of the interviews recorded at City A were rated as Good or Excellent on the first item, as compared with 69% for City B and 77% for Rochester. The remaining items may be read similarly.

Note that 100% of the interviews at City A were rated Good or Excellent on all items. City B and Rochester are comparable, both running around 80% Good or above. Several factors should be considered in interpreting this results:

1. The 7 interviews from City A were conducted by one man, who performed very well. City B recordings were sampled from 4 male civilians and one

II.

E. 1. Cont'd.

police officer, using the same quasi-random procedure applied at Rochester to sample 3-5 female operators and one police officer.

2. On incoming message quality, only 43% (=3) of the interviews of City A were rated Good and none Excellent. Another 43% were rated Fair and 14% (=1) was rated Poor. This compares with 79% and 74% Good and Excellent from City B and Rochester, respectively. This factor was included in the evaluations to differentiate among interviews where the complaintant spoke from a noisy background, or in a manner difficult to understand, since this could have a marked effect on the interviewer and the course of the interview. In the City A recordings the difficulties were not of this type, having been introduced by the recording process itself. This made these interviews very difficult to judge.

3. Only 3 of the 5 phases were rated for Cities A and B. The omitted items --A. 3. Decide and take action and A. 5. Record-- require information from the CR Cards or other records used by the interviewers to notify the dispatchers. Since this information is considered confidential in most departments, we were reluctant to ask for copies of these records for our analyses. Therefore, only the Rochester ratings are presented on these items. This affects not only the specific items but sums like "All A," "A + B" and "A + B + C" in the table. The five phases of the interview were identifiable in both cities. This is further substantiated by the results of Question-18 in section II. F. 3.

Table II-1. Telephone complaint operator performance ratings. Same as Table AI-3, Phase I. See text for explanations.

THE PERFORMANCE TO BE RATED.	POOR A	POOR B	POOR R	FAIR A	FAIR B	FAIR R	GOOD A	GOOD B	GOOD R	EXCELLENT A	EXCELLENT B	EXCELLENT R	* A	* B	* R	NUMBER A	NUMBER B	NUMBER R
A. PHASES OF THE INTERVIEW																		
1. Establish communications:	0	1(6%)	(3%)	0	0	(8%)	2(29%)	7(39%)	(79%)	5(71%)	4(22%)	(7%)	0	6(33%)	(4%)	7	18	179
2. Define problem:	0	0	(7%)	0	1(6%)	(6%)	2(29%)	6(33%)	(73%)	5(71%)	5(28%)	(9%)	0	6(33%)	(4%)	7	18	179
3. Decide & take action:	0	0	(3%)	0	0	(3%)	0	0	(78%)	0	0	(8%)	0	0	(8%)	0	0	179
4. Close interview:	0	0	(4%)	0	3(17%)	(7%)	2(29%)	7(39%)	(45%)	5(71%)	8(44%)	(40%)	0	0	(4%)	7	18	179
5. Record:	0	0	(4%)	0	0	(14%)	0	0	(31%)	0	0	(14%)	0	0	(37%)	7	18	179
All A:	0	1(2%)	(4%)	0	4(7%)	(7%)	6(29%)	20(37%)	(61%)	15(71%)	17(32%)	(16%)	0	12(22%)	(11%)	21	54	895
B. INTERPERSONAL EFFECTIVENESS																		
1. Getting information:	0	0	(6%)	0	1(6%)	(13%)	7(100%)	13(72%)	(65%)	0	4(22%)	(14%)	0	0	(2%)	7	18	179
2. Communicating information:	0	0	(6%)	0	1(6%)	(7%)	7(100%)	15(83%)	(71%)	0	2(11%)	(12%)	0	0	(4%)	7	18	179
3. Establishing and maintaining rapport:	0	0	(7%)	0	1(6%)	(8%)	7(100%)	12(67%)	(68%)	0	4(22%)	(15%)	0	1(6%)	(3%)	7	18	179
All B:	0	0	(6%)	0	3(6%)	(10%)	21(100%)	40(74%)	(68%)	0	10(9%)	(13%)	0	1(1%)	(3%)	21	54	537
C. OVERALL EVALUATION	0	0	(10%)	0	1(6%)	(7%)	7(100%)	13(72%)	(70%)	0	4(22%)	(10%)	0	0	(3%)	7	18	179
A:	0	1(2%)	(4%)	0	4(7%)	(7%)	6(29%)	20(37%)	(61%)	15(71%)	17(32%)	(16%)	0	12(22%)	(11%)	21	54	895
B:	0	0	(6%)	0	3(6%)	(10%)	21(100%)	40(74%)	(68%)	0	10(19%)	(13%)	0	0	(3%)	21	54	537
C:	0	0	(10%)	0	1(6%)	(7%)	7(100%)	13(72%)	(70%)	0	4(22%)	(10%)	0	0	(3%)	7	18	179
A & B:	0	1(1%)	(5%)	0	7(6%)	(8%)	27(64%)	60(56%)	(64%)	15(36%)	17(16%)	(15%)	0	12(11%)	(8%)	42	108	1432
A & B & C:	0	1(1%)	(6%)	0	8(6%)	(8%)	34(69%)	73(58%)	(64%)	15(31%)	21(17%)	(14%)	0	12(10%)	(8%)	49	126	1611
INCOMING MESSAGE QUALITY:	1(14%)	0	(5%)	3(43%)	4(22%)	(21%)	3(43%)	11(61%)	(55%)	0	3(17%)	(19%)	0	0	(0%)	7	18	179

* Data not available or not applicable

II. Cont'd.

F. CHECKPOINT-6: TRAINING OF TELEPHONE COMPLAINT BOARD INTERVIEWERS.

Eight questions were asked about complaint clerk training. The basic concern was: How much of what kind of training and by whom?

1. Question-16. Complaint operators should receive ___ hours of training before answering calls. (Ref. Phase I, p. AVII-7)

The answers, converted to days, were as follow:

City A(4):	6.3 days
City B(5):	6.3 days
Rochester (6):	8.5 days
Total (15):	7.3 days

There is general agreement that almost 1-1/2 weeks should be spent in training before the operator answers calls. One estimate of 4 months was omitted since the respondent was undoubtedly estimating the length of time it takes to develop a fully trained operator, which was not the question. The question could be improved by substituting "before being assigned to answering calls on a regular basis, under supervision" for "before answering calls." The range of estimates indicates that there may have been some uncertainty on this point.

2. Question-17. Who should train complaint operators? When? How much? Answer by listing the titles of those who should be involved in the first column. Then estimate the number of hours each should give before the operator is assigned to a station, and during the first two weeks on the job. Use range estimates -e.g., 2-4hrs, 8-10hrs.-- if you wish. (Ref. Phase I, p. AVII-7 to 8)

Training should be done by:	Hrs. before assignment	Hrs. on-job training first two weeks
a. _____	a. ____hrs.	a. ____hrs.
b. _____	b. ____hrs.	b. ____hrs.
c. _____	c. ____hrs.	c. ____hrs.
d. _____	d. ____hrs.	d. ____hrs.
e. _____	e. ____hrs.	e. ____hrs.

II.

F. 2. Cont'd.

The results are presented in Table II-2. The first column lists the recommended instructors named by the respondents. These are grouped by 8 categories. The next two columns show, respectively, the number of hours that the instructor named would spend training new operators either before they are assigned to the job or as part of their on-the-job training. Letters in parentheses beside an instructor-designation identify answers given by the same respondent. For example, respondent-e has three listings, Chief of Police, Officer in charge of Communications, and experienced operators. The 80 hours noted beside his first listing (item A. 1) represents his answer to Question-16, i. e., the number of hours he thinks an operator should be trained "before answering calls." Some answered one question, without the other. The midpoints of range estimates were used in calculating the averages.

Of greatest interest is the number of times sergeants and above are mentioned. This is a little surprising, especially in connection with on-the-job training. The emphasis on this level at City A reflects their excellent on-the-job training practices. Telephone operators and dispatchers are assigned periods of duty at each position, by the Lieutenant and Sergeants in order to maintain their skills. With police officers handling both positions, this is relatively easy to do.

The participation recommended for dispatchers and sergeants at City A and Rochester is of similar interest.

The Phase I report recommended that the watch sergeant participate in the orientation training and that someone else, perhaps an experienced operator, be selected and trained as a trainer on each platoon, if possible. The watch sergeant's participation increases again once the individual begins full-time work answering telephones. The results seem compatible with those recommendations.

Table II-2. Summary of responses to Question-17 (II.F.2., Phase II). (See text)

	RECOMMENDED INSTRUCTORS	HOURS BEFORE ASSIGNMENT A	B	R	HOURS ON-THE-JOB TRAINING A	B	R
A.	SERGEANTS AND ABOVE.						
1.	Chief of Police (e, 80 hrs)	4	—	—	0	—	—
2.	Department Head (a, 16 hrs)	2	—	—	24	—	—
3.	Communication Lt. (m, 80 hrs)	—	—	2-4	—	—	0
4.	Officer in charge commun. (e)	8	—	—	16	—	—
5.	Communications Officer (b, 24 hrs)	24	—	—	8	—	—
6.	Communications Officer (d, omitted)	(160)*	—	—	80	—	—
7.	Sergeant (a)	0	—	—	80+	—	—
8.	Sergeant (n, 8 hrs)	—	—	2-4	—	—	8
9.	Duty sergeant (h, 50 hrs)	—	0	—	—	3-40	—
10.	Watch sergeant (j, 40 hrs)	—	4-8	—	—	0	—
11.	Sgt. resp. for commun. (o, omitted)	—	—	1	—	—	10
12.	Communications sgt. (m)	—	—	16-24	—	—	8-10
13.	Senior Officer (?) (n)	—	—	4-6	—	—	8
	Averages:	9.4	3.0	7.8	32.0	20.8	7.0
B.	DISPATCHERS.						
1.	Experienced dispatcher (i, 40 hrs)	—	40	—	—	80	—
2.	Dispatcher (k, 80 hrs)	—	8-10	—	—	8-10	—
3.	Dispatcher (n)			2-4			8
	Averages:	-	24.5	3.0	-	44.5	8.0
C.	INFORMATION OFFICER (COMMUN.) (o)	-	-	2-4	-	-	20
D.	TRAINING OFFICER						
1.	Training officer (f, "adequate")	—	40	—	—	40	—
2.	Training officer (g, omitted)	—	40	—	—	10	—
3.	Training officer (h)	—	8-16	—	—	0	—
4.	Police training officer (k)	—	8-10	—	—	8-10	—
	Averages:	-	25.3	-	-	7.3	-
E.	POLICE OFFICERS						
1.	P.O. or qual supervisor with enough knowledge of subject to be taught. (p, 40 hrs)	—	—	((248))	—	—	24
2.	Experienced in police duties (?). (r, 70 hrs)	—	—	10	—	—	25
	Averages:	-	-	10	-	-	24.5
F.	POLICE ACADEMY (q, 80 hrs)	-	-	80	-	-	20
G.	EXPERIENCED OPERATORS.						
1.	Experienced operator (e, 80 hrs)	8	—	—	44	—	—
2.	Seasoned operator (h)	—	6-8	—	—	10-20	—
3.	Seasoned operator (j)	—	8-16	—	—	16-24	—
4.	Trained operator (l, 40 hrs)	—	40	—	—	40	—
	Averages:	8.0	19.7	-	44.0	25.0	-
H.	OTHER.						
1.	Telephone Company (k)	—	8-10	—	—	8-10	—
2.	Public Tel. Op. (m)	—	—	8-12	—	—	2-4
3.	English teacher (m)	—	—	16-24	—	—	0
4.	Civilian (o)	—	—	6	—	—	30
	Averages	-	9.0	12.0	-	9.0	11.0
		7.7	18.7	14.8	25.7	20.3	13.8

* If this unusually high estimate is included, the City A average on category-A jumps from 9.4 to 39.6.

II.

F. Cont'd.

3. Question-18. Indicate your estimate of the relative importance for new operators, of each training area, listed below, by entering the percent of available training time that should be devoted to each. (Ref. Phase I, pp. AVII-2 to 3) (See Table II-3)

The ten TRAINING AREAS in the first column of Table II-3 were listed below Question-18 in the questionnaire along with the indicated explanations. Respondents recorded their estimated percentages in a column to facilitate addition.

There is surprising consistency in the table among the cities. The three most critical training areas are, apparently, "pinpointing problems," "deciding action," and "techniques for getting information." "Opening the interview" and "closing the interview" are the least important. Other items in the list are between the two, with none approaching the first three in significance.

4. Question-19. What METHODS OF TRAINING are most effective for complaint interviewing? Rate each of the following methods using the P F G E scale defined in the instructions. (Ref. Phase I, pp. AVII-3 to 7)

Eight different training techniques were listed on the questionnaire, exactly as in the first column of Table I-4, except that the four letters of the rating scale were given immediately after each question.

The table shows the total number of people in the three cities checking the respective ratings. Underneath each set of totals is the corresponding percentage.

Some points of interest are:

a. There is a unanimous rejection of the idea that new operators can be assigned to telephone complaint interviewing on a "sink or swim" basis, after a brief introduction to the job (Item h).

b. Opinion on the value of TELLING as a training method is quite sharply divided, with 38% rating it Fair and 43% Excellent. Only City A and Rochester show this division. In City B, 57% rate the method Fair, 29% Good, and 14% Excellent.

II.

F. 4. b. Cont'd.

In a sense both views are correct. Telling is a very weak method to rely on, which is what most of those rating it low had in mind. As a first step in a sequence, followed by showing, practice and follow-up, it has some merits which is what those rating it high were probably thinking.

c. Method-c is most highly regarded.

d. Methods-e, f and g are also rated very high.

e. Method-d is rated poor by 62% and Excellent by 29%. This came as a surprise, since it is recommended in the Phase I report for use after some of the other techniques have been applied. The idea being that at first a trainee should not be assigned to a job for long periods at a time. Instead they should be "handle batches of calls, starting small (e.g., a set of 3-5 calls) and progressing to larger sets. A senior operator would monitor the performance to assure that any emergency calls which arrive are properly handled.... Each interview in the batch would be recorded on a cartridge recorder, activated automatically as each call was selected. The trainee would review each interview to discover for herself where she did well, and where improvements are needed. Her analysis would be reviewed by her supervisor." (Ref. Phase I, pp. AVII-6 to 7)

The description of the method in the questionnaire was perhaps too brief. The notion that the batches start very small and progress was omitted. More than likely, the 62% who thought poorly of it considered it as a method applied by itself instead of in a sequence, while the 29% who rated it Excellent may have viewed it in the sequence listed. If so, the division parallels the one hypothesized for TELLING.

Table II-3. Average estimated percent of time for indicated training areas, by city, from Question-18. The number of estimates averaged in each case is given in parentheses.

	TRAINING AREA	City A	City B	Rochester	Total
1.	OPENING THE INTERVIEW. E.g., "Police Department. Go ahead please."	4%(6)	5%(4)	4%(5)	4%(15)
2.	PINPOINTING THE PROBLEM. Recognizing the essential information in problems of various types, and structuring the interview to get the information efficiently, in a logical sequence.	28%(6)	18%(4)	20%(5)	22%(15)
3.	DECIDING ACTION. Determining the "level of urgency." Deciding when to use CR Card recommending car dispatch. When to alert dispatcher via emergency signal, if available? When to avoid sending car? When to give information or advice, and when not to? When to refer caller and to whom? When to refer information derived from a call, and to whom?	23%(6)	26%(4)	17%(6)	21%(16)
4.	CLOSING INTERVIEWS. How to terminate interviews of various types?	4%(6)	6%(4)	5%(6)	5%(16)
5.	PREPARING CARDS AND RECORDS.	5%(5)	13%(3)	7%(5)	8%(13)
6.	TECHNIQUES FOR GETTING INFORMATION. What questions to ask? How to ask them? Encouraging the inarticulate. Controlling the overly talkative. Checking to assure understanding.	19%(6)	15%(4)	19%(6)	18%(16)
7.	TECHNIQUES FOR GIVING INFORMATION. Making statements. Checking to see that essential points are understood.	6%(5)	8%(4)	12%(6)	9%(15)
8.	ESTABLISHING AND MAINTAINING A GOOD RELATIONSHIP WITH THE CALLER.	7%(6)	8%(4)	8%(4)	8%(16)
9.	HANDLING PROBLEM CALLERS.	6%(6)	5%(4)	11%(5)	7%(15)
10.	OTHER Specify.*	4%(2)	0%	10%(1)	6%(3)

*Item 10 was apparently used by some respondents to make the numbers add to 100%. The three who used it did not specify a training area.

Table II-4. Evaluation of training techniques based on data from Question-19. Shows the number and percent of respondents who rated each technique Poor, Fair, Good and Excellent. Results for the three cities are summed. Differences among them are noted in the text.

	TRAINING TECHNIQUE		Poor	Fair	Good	Excellent
a.	Telling person how to conduct complaint interviews.	Total:	0	8	4	9
		Percent:	0%	38%	19%	43%
b.	Reading written instructions on how to conduct interviews, assuming these were available.	Total:	3	8	7	3
		Percent:	14%	38%	33%	14%
c.	Listening to interviews (selected and recorded for training purposes) to see if she can identify good and poor procedures. Trainee would take notes on observations and discuss them shortly thereafter, with the supervisor.	Total:	1	0	9	11
		Percent:	5%	0%	43%	52%
d.	Handling a batch of calls under direct, uninterrupted supervision.	Total:	13	0	2	6
		Percent:	62%	0%	10%	29%
e.	Listening to recordings of her early interviews, to discover for herself where she did well, where improvements are needed, and what she learned from the interview. Notes would be made and discussed with the supervisor.	Total:	0	4	10	7
		Percent:	0%	19%	48%	33%
f.	Spending several hours a day listening to experienced interviewers, when traffic is not heavy, during the first few weeks.	Total:	2	1	12	6
		Percent:	10%	5%	57%	29%
g.	Completing CR cards, administrative cards and other reports on the recorded and actual calls she audits.	Total:	1	4	11	3
		Percent:	5%	21%	58%	16%
h.	Assigning the new operator to a station, on a "sink or swim" basis, after a brief (say one hour) introduction to the job, without all this training "jazz."	Total:	21	0	0	0
		Percent:	100%	0%	0%	0%

II.

F. Cont'd.

5. Question-20. Complaint operators should receive training in recognizing and distinguishing types of "crimes."

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	-	-	-	-
Disagree.	-	-	-	-
Undecided.	-	-	-	-
Agree.	3	6	4	13 (62%)
Strongly Agree.	3	1	4	8 (38%)

There is 100% agreement that operators should be able to distinguish types of crimes --"to a certain degree only," as one of the respondents put it.

6. Question-21. Complaint operators should know the functions of the various sections and units of the police department. (Ref. Phase I, p. AVII-4)

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	-	-	-	-
Disagree.	-	-	-	-
Undecided.	-	-	-	-
Agree.	1	2	1	4 (19%)
Strongly Agree.	5	5	7	17 (81%)

There is 100% agreement that operators should know the functions of the various sections and units of the police department.

7. Question-22. No good will come from attempts to train experienced operators. (Ref. Phase I, p. AVII-8.)

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	1	4	3	8 (38%)
Disagree.	4	8	4	11 (52%)
Undecided.	-	-	1	1 (5%)
Agree.	-	-	-	-
Strongly Agree.	1	-	-	1 (5%)

II.

F. 7. Cont'd.

Only 5% feel strongly that "no good will come from attempts to train experienced operators," another 5% is undecided. 90% feel that at least some good will come of it, of whom 38% feel strongly on the point.

8. Question-23. The best method of improving and maintaining the performance of current operators is to inform them that the Watch Sergeant will record their interviews occasionally, on a random basis, using a separate cartridge for each operator. Operators will be asked to review their own recordings and evaluate them for discussion with the supervisor. Good, experienced operators would, of course, be sampled and handled differently from poor or inexperienced ones. (Ref. Phase I, p. AVII-8.)

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	1	-	2	3 (14%)
Disagree.	1	-	-	1 (5%)
Undecided.	-	3	1	4 (19%)
Agree.	2	3	4	9 (43%)
Strongly Agree.	2	1	1	4 (19%)

There is considerable spread of opinion on this one, with 62% agreeing. One respondent of the 4 (19%) who are Undecided commented: "This could be a useful method, but may not be the best method." The question should be changed to substitute "very good" for "best."

III. DISPATCHER AND RADIO CHANNEL CHECKPOINTS

The next set of checkpoints pertains to the dispatcher and the radio communications he controls. The checkpoints selected concern the informational inputs to the dispatcher, radio channel assignments and loadings, radio procedures, the related field unit procedures and, lastly, dispatcher classification, incentive pay and training.

A. CHECKPOINT-7: DISPLAYS AND OTHER INPUTS TO THE DISPATCHER.

A major source of informational inputs to the dispatcher is the complaint board. As already noted, these consist in the written messages received on a penwriter at City A, the written and oral messages passed among the interviewer-dispatchers of City B, and the conveyor-delivered CR at Rochester. This route is also travelled by administrative messages received by those answering telephones.

Dispatchers at each location have telephones on which they may receive direct calls from field units, higher eschelons, and others.

The main additional need is for current information on the availability and status of cars in the field. Four of the three questions in this section are concerned with this problem, the first with what information is needed and the next three with how it should be displayed. A question about headsets is also included here since dispatchers receive much information acoustically.

1. Question-27. Dispatchers must have the following status information, displayed conveniently, on a car-by-car basis: (Ref. Phase I, p. 38 and pp. AVI-26 to 27)

	SD	D	U	A	SA
a. Car available for assignment.				19%	81%
b. Car out of service.				30%	70%
c. Car on call, priority indication unnecessary.	5%	40%	20%	20%	15%

III
A. 1. Cont'd.

	SD	D	U	A	SA
d. Car on call, with at least two priority levels distinguished.	15%	15%	15%	30%	25%
e. Car on routine assignment.				60%	40%

SD-Strongly Disagree. SA-Strongly Agree.
D-Disagree. A-Agree.
U-Undecided.

All agreed that a dispatcher needs to have conveniently displayed indication of field units which are in service and of those which are out of service. And, if a field unit is in service, they want to know whether he is on a routine assignment. There is a wide range of opinion in each city regarding the need for indicating the priority of the field unit assignment (items c and d).

2. Question-28. Rank order the following methods for displaying car-status to a dispatcher, starting with "1" for your preferred answer: (Ref. Phase I, p. 38 and pp. AVI-26 to 27)

	City A(5)	City B(4)	City R(6)	Total (15)
a. Slot-card rack and its cards provide car status information.	4.0	3.8	2.5	3.3
b. Slot-card rack with a set of indicator lights beside or above each slot.	3.0	3.0	1.8	2.5
c. A compact bank of status lights, identified by car, just above each slot.	2.0	2.3	3.2	2.5

III
A. 2. Cont'd.

	City A(5)	City B(4)	City R(6)	Total (15)
d. A large map with the status lights for each car in a fixed position near the center of its assigned area.	1.0	1.0	2.5	1.6

The overall preferences are: status maps most preferred with an average ranking of 1.6, slot-card racks with indicating lights beside each slot and the compact bank of indicator lights tied at 2.5, and a slot card rack without lights as least preferred at 3.3.

Response to this question seems to reflect the system in use at that city. City A has a large map with status lights on the wall and this was everyone's first choice. They also have a bank of lights on the dispatching console which indicates car status; this was everyone's second choice. In third and fourth place were slot card rack indication; this city did not use IBM job cards.

City B had status maps with a bank of lights along side, and ranked these 1.0 and 2.3 respectively. They also have a card rack but rated these last, with an average ranking of 3.8.

Rochester has only a makeshift card rack without light indicators. Therefore, they perferred a slot-card rack with a set of indicator lights beside or above each slot, for which the average ranking is 1.8. Least perferred was a compact bank of status lights, identified by car, just above each slot. This was ranked 3.2. A large status map (d) and the simple slot-card rack without lights now in use, tie at an average ranking of 2.5.

Statement-c could be improved by substituting "just above the card racks" for "just above each slot," which was the intended version.

3. Question-29. The Watch Sergeant should have a large, map-type status display. (Ref. Phase I, p. 38 and pp. AVI-26 to 27)

III
A. 3. Cont'd.

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	-	-	-	- -
Disagree.	-	-	1	1 (5%)
Undecided.	-	-	3	3 (14%)
Agree.	5	3	2	10 (48%)
Strongly Agree.	1	4	2	7 (33%)

Thus 81% favor a car-status map for the watch sergeant. The next question shows the relevance of this one to our current focus on displays for the dispatcher.

4. Question-30. Only the Watch Sergeant should have a map-type display. (Ref. Phase I, p. 38 and pp. AVI-26-27)

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	2	2	2	6 (29%)
Disagree.	4	5	3	12 (57%)
Undecided.	-	-	2	2 (10%)
Agree.	-	-	1	1 (5%)
Strongly Agree.	-	-	-	-

86% disagree. Responses to the last three questions indicate that men working in the dispatch center want map-type car-status displays.

This is an interesting result, since we have observed that dispatchers refer to the slot-card rack more often than the maps in situations where both are available. Since it is known that people differ in their ability to visualize spatial relationships, it may be that a map showing the boundaries and relationships among the car beats is helpful in assigning cars across boundaries even when the indicator lights are situated permanently near the center of each beat.

5. Question-34. Dispatchers should wear headsets to eliminate loud speakers. (Ref. Phase I, pp. AVIII-25 to 26)

III

A. 5. Cont'd.

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	1	-	3	4 (19%)
Disagree.	4	-	3	7 (33%)
Undecided.	1	-	-	1 (5%)
Agree.	-	2	1	3 (14%)
Strongly Agree.	-	5	1	6 (29%)

Overall opinion is strongly divided with 52% disagreeing and 42% agreeing.

The favorable votes were contributed by City B where it was standard procedure to use headsets. We observed that some dispatchers did not use them. One respondent commented that stand mikes "should not even be installed."

In Rochester and City A no attempt has been made to have dispatchers use headsets.

The response to this question may indicate the individuals' dislike for these devices until they become accustomed to them.

B. CHECKPOINT-8: RADIO TRANSMISSION ANALYSIS.

Tape recordings were made of the radio traffic in both cities visited, 8 hours for City A and 5 hours for City B. Recordings were made on a continuous basis, except for normal interruptions to change cartridges. In City A the main job assignment channel, F-1, was recorded. In City B the F-2 channel was selected since it is known to be the busiest of its two job assignment channels.

Time permitted the analysis of only one hour of data from each city. The hour chosen for analysis was 9-10 PM in both cases since considerable Rochester data is available for this "busy hour." The analysis proceeded in the same manner as in Phase I, except that much more data were collected and analyzed in the Rochester situation (Ref. Phase I, pp. AIV-1 to -8).

The new data fit very well the message categories developed for Phase I with two exceptions: Time checks were given by the dispatcher in both cities and, in City B, the dispatcher was required to conduct "Recall Tests," i.e., tests of the field unit recall system. If these two new message types were added to

the "Administrative" category, the data on this category would be less comparable to Rochester. For this reason, the two message types were added to the "Other" category.

The message categories developed in Phase I (pp. AIV-36 to -40) are presented with data from Cities A and B in Table III-1. The data are presented in bar-graph form for each city in Figures III-1 and III-2. These graphs may be compared directly with the results obtained for Rochester (Ref. Phase I, p. AIV-32).

Table III-2 is a more convenient presentation of the results, enabling the comparison of these cities on the basis of traffic measures which are summed over each of the four categories. The three measures used --the "percent keyings," the "average transmission length," and the "percent transmitter on-time"-- are defined in the Phase I report (pp. AIV-6 to -8).

Note that there are two entries for City A in each comparison. The first is based on all the messages in the 9-10 PM hour. The second omits category 1.g., "Descriptions Wanted." It was the practice in this city to give stolen car descriptions over the job assignment channel, which accounted for 20 transmitter keyings and 7.36 minutes of transmitter on-time. This considerably "biased" the City A data, which we attempted to correct by omitting this item in the second of the two City A figures presented for each measurement.

There is consistency in the results obtained from the three cities (assuming the corrected figure for City A). Event Related messages account for 21% - 32% of the keyings and use 39%-56% of the air-time. Procedural messages require about 50% of the keyings and 21% - 30% of the air time. Administrative messages are involved in 13%-20% of the keyings and 12% - 27% of the transmitter on-time.

The average transmission lengths are quite consistent, except that Event Related messages in City A average 7.2 seconds even when the long car descriptions are excluded, as compared with 4.0 and 3.5 for City B and Rochester, respectively. This measure ranges from 1.0 - 1.5 seconds for Procedureal messages, 2.6 - 3.3 seconds for Administrative and 1.9 - 2.6 seconds for Other.

The spread of these categories would be considerably smaller, except for the Rochester practice of assigning CR numbers over the radio. The Other category for Cities A and B is higher than for Rochester due to the inclusion

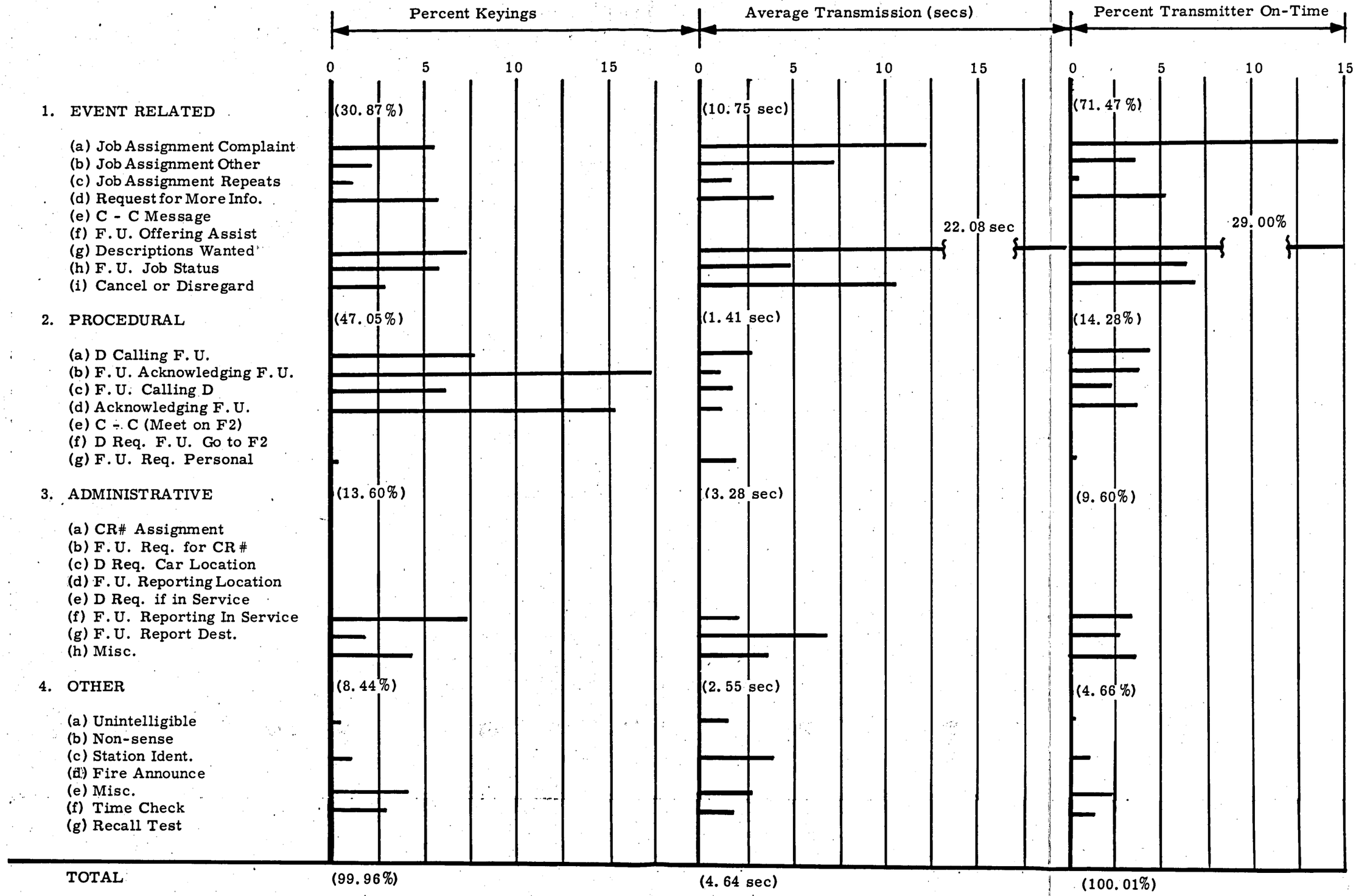


Figure III-1. A bar graph showing, by message category, for City A: (a) the number of keyings (transmissions); (b) the average transmission length; and (c) the percent loading (= transmitter on-time in percent).

1. EVENT RELATED

   (a) Job Assignment Complaint
   (b) Job Assignment Other
   (c) Job Assignment Repeats
   (d) Request for More Info.
   (e) C - C Message
   (f) F.U. Offering Assist
   (g) Descriptions Wanted
   (h) F.U. Job Status
   (i) Cancel or Disregard

2. PROCEDURAL

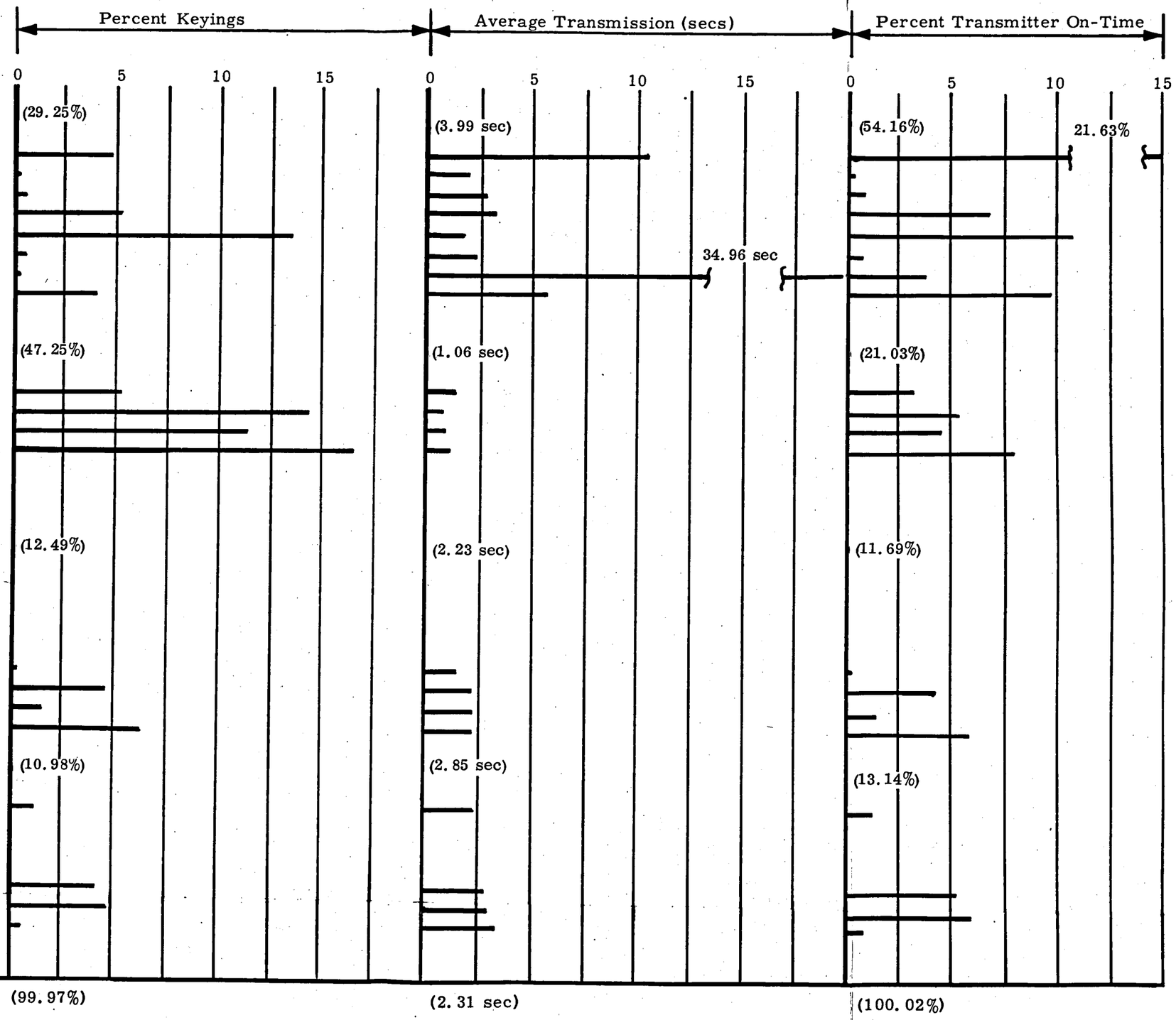
   (a) D Calling F.U.
   (b) F.U. Calling D
   (c) F.U. Calling D
   (d) Acknowledging F.U.
   (e) C - C (Meet on F2)
   (f) D Req. F.U. Go to F2
   (g) F.U. Req. Personal

3. ADMINISTRATIVE

   (a) CR # Assignment
   (b) F.U. Req. for CR#
   (c) D Req. Car Location
   (d) F.U. Reporting Location
   (e) D Req. if in Service
   (f) F.U. Reporting in Service
   (g) F.U. Report Dest.
   (h) Misc.

4. OTHER

   (a) Unintelligible
   (b) Non-sense
   (c) Station Ident.
   (d) Fire Announce
   (e) Misc.
   (f) Time Check
   (g) Recall Test



TOTAL (99.97%) (2.31 sec) (100.02%)

Figure III-2. A bar graph showing, by message category, for City B: (a) the number of keyings (transmissions); (b) the average transmission length; and (c) the percent loading (= transmitter on-time in percent).

Table III-1. Tabulation showing, by message category, for Cities A and B: (a) transmitter on-time in seconds; (b) percent loading (= transmitter on-time as a percent of available time); (c) number of keyings (= transmissions); (d) percent keyings; and (e) average transmission length in seconds.

	(a) Transm. On-Time (secs)		(b) Loading		(c) Number of Keyings		(d) of Keyings		(e) Av. Transmission (secs)	
	City A	City B	City A	City B	City A	City B	City A	City B	City A	City B
ADMINISTRATIVE										
Job Assignment Complaint	183.50	168.75	14.53	21.63	15	16	5.51	4.88	12.23	10.55
Job Assignment Other	43.75	2.00	3.46	0.26	6	1	2.21	0.30	7.29	2.00
Job Assignment Repeats	5.25	5.75	0.42	0.74	3	12	1.10	0.61	1.75	2.88
Request for More Information	64.00	53.00	5.07	6.79	16	17	5.88	5.18	4.00	3.12
C-C Message	-	83.25	-	10.67	-	44	-	13.41	-	1.89
F.U. Offering Assit	-	4.75	-	0.61	-	2	-	0.61	-	2.38
Descriptions Wanted	441.50	29.00	34.95	3.72	20	1	7.35	0.30	22.08	29.00
F.U. Job Status	79.25	76.00	6.27	9.74	16	13	5.88	3.96	4.95	5.85
Cancel or Disregard	85.50	-	6.77	-	8	-	2.94	-	10.69	-
PROCEDURAL										
D Calling F.U.	-	-	-	-		-	-	-	-	-
F.U. Acknowledging D	54.25	24.25	4.30	3.11	21	17	7.72	5.18	2.58	1.43
F.U. Calling D	48.50	42.50	3.84	5.45	47	47	17.28	14,33	1.03	0.90
D. Acknowledging F.U.	29.75	35.25	2.36	4.52	17	37	6.25	11.28	1.75	0.95
C-C (Meet on F-2)	45.75	62.00	3.62	7.95	42	54	15.44	16,46	1.09	1.15
D Req. F.U. Go to F-2.	-	-	-	-	-	-	-	-	-	-
F.U. Req. Personal	2.00	-	0.16	-	1	-	0.36	-	2.00	-
ADMINISTRATIVE										
CR# Assignment	-	-	-	-	-	-	-	-	-	-
F.U. Req. for CR#	-	-	-	-	-	-	-	-	-	-
D Req. Car Location	-	-	-	-	-	-	-	-	-	-
F.U. Reporting Location	-	-	-	-	-	-	-	-	-	-
D Req. if in Service	-	1.50	-	0.19	-	1	-	0.30	-	1.50
F.U. Reporting in Service	42.50	33.00	3.37	4.23	20	15	7.35	4.57	2.12	2.20
F.U. Reporting Destination	35.00	11.50	2.77	1.47	5	5	1.84	1.52	7.00	2.30
Miscellaneous	43.75	45.25	3.46	5.80	12	20	4.41	6.10	3.65	2.26
OTHER										
Unintelligible	1.50	9.25	0.12	1.19	1	4	0.36	1.22	1.50	2.31
Non-Sense	-	-	-	-	-	-	-	-	-	-
Station Identification	12.00	-	0.95	-	3	-	1.10	-	4.00	-
Fire Announce	-	-	-	-	-	-	-	-	-	-
Miscellaneous	29.75	39.50	2.36	5.06	11	14	4.04	4.27	2.70	2.82
Time Check	15.50	46.75	1.23	5.99	8	16	2.94	4.88	1.94	2.92
Recall Test	-	7.00	-	0.90	-	2	-	0.61	-	3.50
TOTAL	1263.00	780.25	100.01%	100.02%	272	338	99.96%	99.97%	4.64	2.31
Actual Duration of Recorded Hour	3743.75	3749.75	-	-	-	-	-	-	-	-
TOTAL AIR TIME	-	-	33.73%	20.80%	-	-	-	-	-	-

III
B. Cont'd.

Table III-2. Comparison of Message Categories by major groupings for the 3 Cities Measured.

		Percent Keyings	Average Transmission (sec)	Percent Transmission On-Time
1. Event Related	City A	30.88	10.75	71.48
(1.g. omitted)	City A	25.40	7.21	56.15
	City B	32.32	3.99	54.15
	City R	21.13	3.48	38.65
2. Procedural	City A	47.06	1.41	14.27
(1.g. omitted)	City A	50.79	1.41	21.94
	City B	47.26	1.06	21.02
	City R	55.38	1.04	30.35
3. Administrative	City A	13.60	3.28	9.60
(1.g. omitted)	City A	14.68	3.28	14.76
	City B	12.50	2.23	11.69
	City R	19.52	2.63	26.96
4. Other	City A	8.46	2.55	4.65
(1.g. omitted)	City A	9.13	2.55	7.15
	City B	10.98	2.85	13.14
	City R	3.96	1.94	4.03
Average	City A	-	4.64	-
(1.g. omitted)	City A	-	3.26	-
	City B	-	2.31	-
	City R	-	1.90	-

III
B. Cont'd.

of "time checks" and "recall tests," as noted above. If these had been placed in the Administrative group, the numerical results would have agreed more closely. Perhaps a better way to achieve comparable measures is to restrict the major categories to items which are virtually universal and place locally unique items --including the radio assignment of CR numbers in Rochester-- in the Other category.

The fact that these comparisons are based on only one hour of recorded data from the two cities is emphasized. Reduction of the additional data collected would have been highly desirable, except that time did not permit it. It is apparent, nevertheless, that the method of analysis and the specific categories developed in Phase I can be applied to other police departments. The analysis is time-consuming, but not prohibitively so, and easy to perform. The results serve to highlight procedures requiring more air-time than necessary or than justified by their importance.

C. CHECKPOINT-9: RADIO CHANNEL LOADING.

A method was developed and used in the Phase I study for making automatic loading measurements over extended periods on radio channels (Ref. Phase I, pp. AIII-1 to -6). The equipment for making these measurements was taken to the two cities, just in case monitoring receivers of the type required for the measurements happened to be conveniently available. They were not and time did not permit modifying the test equipment to fit the situation.

Loading estimates were derived, however, while making the transmission message analysis discussed in the preceding section. The results are as follows:

	Monday 9-10 PM	Thursday 9-10 PM
City A:	33.73% (5/19/69)	
City B:		20.80% (5/22/69)
Rochester:	39.01% (8/12/68)	33.66% (8/15/68)

If car descriptions were eliminated in City A (see III. B, above), its loading would have been 22.00%, which is close to City B's 20.80%. Apparently City A feels they can use their channel in this manner without undue strain on the system, otherwise they would have found a substitute method of communicating car descriptions since it is obvious without measurements that this is a time-consuming procedure.

III
C. Cont'd.

It is also interesting to note that City B felt that its F-2 channel was too heavily loaded and that some of the traffic should be shifted to another channel. Actually its loading is below that on City A's F-1 channel, and considerably below the Rochester figures cited, with respect to this index of traffic.

This interpretation is compatible with the channel loading measurements made by the individual responsible for the City's electronic equipment. The measurements are made periodically to check loadings. The following measurements were made in May 1969:

	F-1	F-2	F-3
Sat. May 10, 1200 to Mon. 12, 0900 (33 hrs.)	-	18%	-
Mon. May 12, 0900 to Tues. 13, 0900 (24 hrs.)	16%	-	-
Tues. May 13, 0900 to Wed. 14, 0900 (24 hrs.)	-	-	9.8%
Wed. May 14, 1640 to Thurs. 15, 0920 (16.7 hrs.)	16%	-	-
Fri. May 16, 1700 to Wed. 21, 0900 (103 hrs)	-	21.5%	-
Wed. May 21, 1700 to Thur. 22, 1530 (22.5 hrs.)	18.5%	-	-

These are long-term means and can be compared to the 21% loading on F-1 and the 16% loading on F-2 in the Rochester measurements.

The fact that City B feels that its F-2 frequency is overloaded at 21% may be in its one-stage system; i.e., the "excessive load" felt is probably on the interviewer-dispatcher rather than on the F-2 channel itself.

D. CHECKPOINT-10: RADIO PROCEDURES.

A good deal of attention was given in Phase I to determining and specifying improvements in radio procedures which would reduce air-time utilization and errors in communication and at the same time present a professional appearance to the monitoring public. (See Appendix AIV and section IV. B of the main text, Phase I report.) Questions covering the recommended job assignment format, codes and other procedures were included in the questionnaire and the results are discussed in the following paragraphs.

III
D. Cont'd.

1. The job assignment format.

a. Question-47. The following is an acceptable job assignment format for dispatchers. (Ref. Phase I, pp. AIV-17 to -18)

WHO?	WHAT?	WHERE?	URGENCY?
Adam 19,	A 405 gang fight, with knives,	123 Main St.	Code-3.

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	1	-	-	1 (5%)
Disagree.	1	-	1	2 (10%)
Undecided.	1	1	-	2 (10%)
Agree.	2	4	5	11 (52%)
Strongly Agree.	1	2	2	5 (24%)

75% agree with the proposed job assignment message format. In Rochester all but one agreed, even though no attempt has been made there to format messages. Only City B uses codes extensively.

b. Question-48. The essential elements of the assignment message should be repeated as common practice, without waiting for a repeat-request. (Ref. Phase I, pp. AIV-17 to -18)

	City A(6)	City B(7)	City R(7)	Total (20)
Strongly Disagree.	-	-	2	2 (10%)
Disagree.	4	2	4	10 (50%)
Undecided.	-	1	-	1 (5%)
Agree.	1	2	1	4 (20%)
Strongly Agree.	1	2	-	3 (15%)

60% disagree. It was not the practice of any of the cities to repeat elements of the assignment message without a request to do so, although City A did repeat messages which the field unit was expected to copy, such as stolen car data.

III
D. Cont'd.

2. Codes.

a. Question-42. The use of codes will reduce civilian monitoring of police channels. (Ref. Phase I, pp. AIV-18 to -21)

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	1	-	1	2 (10%)
Disagree.	1	3	-	4 (19%)
Undecided.	-	-	1	1 (5%)
Agree.	2	1	4	7 (33%)
Strongly Agree.	2	3	2	7 (33%)

66% feel that codes will reduce civilian monitoring, and 29% disagree.

b. Question-43. Codes will reduce monitoring of police channels by criminal elements. (Ref. Phase I, oo. AIV-18 to -21)

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	1	1	2	4 (19%)
Disagree.	2	3	1	6 (29%)
Undecided.	-	-	-	-
Agree.	1	1	3	5 (24%)
Strongly Agree.	2	2	2	6 (29%)

Opinion is divided on this question, with 53% agreeing and 48% disagreeing. (The fact that these add to 101% is due to rounding. Throughout these computations we have rounded each individual number. It was not worth the time with so small a number of cases to find the number which should be adjusted downward to make the total exactly 100%.)

c. Question-44. Codes provide a worthwhile measure of security. (Ref. Phase I, pp. AIV-18 to -21)

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree	1	-	-	1 (5%)
Disagree	-	3	3	6 (29%)
Undecided	-	1	1	2 (10%)
Agree	3	1	3	7 (33%)
Strongly Agree	2	2	1	5 (24%)

III
D. 2. c. Cont'd.

57% agree that codes provide enough security to make them worthwhile, and 34% disagree.

d. Question-45. Codes should be used extensively for better utilization of radio channel time. (Ref. Phase I, pp. AIV-18 to -21)

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	1	-	-	1 (5%)
Disagree.	-	-	1	1 (5%)
Undecided.	-	-	2	2 (10%)
Agree.	3	5	3	11 (52%)
Strongly Agree.	2	2	2	6 (29%)

81% agree that codes result in better utilization of radio time. It is interesting that everyone from City B which uses codes agrees. The two individuals who disagree are from cities which make little or no use of codes.

e. Question-46. Codes are confusing and should be avoided whenever possible. (Ref. Phase I pp. AIV-18 to -21)

	City A(6)	City B(7)	City R(7)	Total (20)
Strongly Disagree.	2	3	3	8 (40%)
Disagree.	3	4	1	8 (40%)
Undecided.	-	-	3	3 (15%)
Agree.	-	-	-	-
Strongly Agree.	1	-	-	1 (5%)

This is another clear endorsement of codes. 80% agree that codes are NOT confusing and should NOT be avoided whenever possible, as stated in the question. City B is unanimous in its endorsement.

f. Question-50. The full set of APCO 10-codes should be used for radio communications. (Ref. Phase I, p. AIV-19)

III
D. 2. f. Cont'd.

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	1	-	1	2 (10%)
Disagree.	1	2	1	4 (19%)
Undecided.	1	1	3	5 (24%)
Agree.	2	1	2	5 (24%)
Strongly Agree.	1	3	1	5 (24%)

See comment at end of next question.

g. Question-51, APCO 10-codes should be used for administrative messages, whether or not the other sections are applied. (Ref. Phase I, p. AIV-19).

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	2	-	-	2 (10%)
Disagree.	2	-	2	4 (19%)
Undecided.	-	2	3	5 (24%)
Agree.	2	5	2	9 (43%)
Strongly Agree.	-	-	1	1 (5%)

48% agree and 29% (10% + 19%) disagree with the use of APCO-10 codes either as a full set (Ques. 50) or as restricted to administrative messages (Ques. 51). A substantial group (24%) is undecided. In City B where a full set of 10 codes (not APCO) is in use, 5 out of 7 felt they should be limited to administrative messages. One of the two who disagreed with the full set commented: "Each police department should deviate from the APCO-10 codes to better meet their own needs." One who strongly agreed with the use of the full set added: "With modifications to suit each particular department."

h. Question-52. An acceptable "urgency code" for the job assignment format is (Ref. Phase I, p. AIV-19):

Code-1: Routine.
Code-2: Urgent, no light or siren.
Code-3: Very urgent, light and siren. Sergeant also responds.

III
D. 2. h. Cont.

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	-	-	1	1 (5%)
Disagree.	-	-	1	1 (5%)
Undecided.	1	1	-	2 (10%)
Agree.	3	3	5	11 (48%)
Strongly Disagree.	2	3	2	7 (33%)

81% agree with the suggested 3-level urgency code. See next question for further comments.

i. Question-54. What additions or modifications would you suggest for the aforementioned "urgency code?" (Note: This question applies to Question 52, since 53 was skipped when the questions were numbered as they were typed.)

12 suggested no additions or modifications. 11 of these expressed agreement (A or SA) and one strongly disagreed with the "urgency code" in Question-52. 4 of the 12 left Question-54 blank and the rest responded with "none," "good as is," etc.

Of the 9 who made suggestions, 4 felt that a code-4 was needed for "very urgent." Two of these suggested that perhaps the sergeant and the lieutenant should respond to code-4; another felt it should mean light, siren and sergeant; and the fourth felt that all available cars in the vicinity should respond. Of the 4 making these suggestions, 3 marked SA and 1 marked A on Question-52. Another who checked SA on #52 added "Proceed with caution," probably intending that this be added as code-4. This brings to 5, the number suggesting a Code-4.

One man who checked A on #52 suggested that "the sergeant wouldn't be needed on all urgent calls."

The comments of the two who were undecided in #52 were: "I do not think any code is needed, the assigned officer should be able to take the proper action." "Change the urgent code, may have urgent calls not requiring siren."

The man who disagreed said: "Let the dispatcher use his police talents to decide whether it is urgent." Of course the dispatcher does have this priviledge in the proposed procedure.

j. Question-56. A set of "deployment codes" is needed for situations requiring the movement of a substantial number of men and cars to pre-designated locations --e.g., for road blocks, an airport disaster, a school disturbance. (Ref. Phase I, p. AIV-20)

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	1	-	-	1 (5%)
Disagree.	2	-	2	4 (19%)
Undecided.	-	-	-	-
Agree.	2	6	4	12 (57%)
Strongly Agree.	1	1	2	4 (19%)

76% agree, but 24% disagree. No one is undecided. In City B, where such a code is in use by the Fire Department for bomb scares, there is complete agreement.

k. Question-55. All-cars messages should be preceded by an alert signal --e.g., tone or beeps-- on all channels. (Ref. Phase I, p. AIV-19)

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	-	2	3	5 (24%)
Disagree.	-	1	4	5 (24%)
Undecided.	-	-	-	-
Agree.	3	3	-	6 (29%)
Strongly Agree.	3	1	1	5 (24%)

Opinion on this issue is sharply divided with 53% agreeing and 48% disagreeing, with no one undecided. (Here again we find 101%, since 5/21 = 23.8% and three of these add to 71.4, or 71, as compared with 3 x 24 = 72. Whereas 6/21 = 28.6% which would have to be rounded to 28% to make the sum equal 100%. As noted earlier, we have not bothered with such adjustments.)

One comment was that a policeman on duty should monitor all the time, not just when a tone is given out. Another said that a tone should be used, but only for urgent messages.

3. Other radio procedures.

a. Question-49. Call-up and acknowledge routines preceding an assignment should be discontinued. (Assume repetition of the assignment format, if you consider this an essential condition.) (Ref. Phase I, pp. AIV-24 to -25)

	City A(6)	City B(6)	City R(6)	Total (18)
Strongly Disagree.	-	-	1	1 (6%)
Disagree.	-	4	3	7 (39%)
Undecided.	1	1	1	3 (17%)
Agree.	3	-	-	3 (17%)
Strongly Agree.	2	1	1	4 (22%)

This is another on which opinion is divided with 45% disagreeing, 39% agreeing, and a substantial undecided group. It is common practice in all three cities to use call-up and acknowledge procedures. These were found in Phase I to use a significant amount of air-time, and we recommended repetition of the beat number of the car addressed to increase the probability that he will hear the message completely and will not require repetition of it.

b. Question-57. Call-up and acknowledge routines prior to a message, should be eliminated in car-to-car communications. Only received messages should be acknowledged. (Ref. Phase I, pp. AIV-24 to -25)

	City A(6)	City B(7)	City R(7)	Total (20)
Strongly Disagree.	-	-	-	- -
Disagree.	1	2	2	5 (25%)
Undecided.	-	1	-	1 (5%)
Agree.	2	4	3	9 (45%)
Strongly Agree.	3	-	2	5 (25%)

III
D. 3. b. Cont'd.

70% agree to the elimination of call-up and acknowledge procedures in car-to-car communications. But a substantial minoirity (25%) disagrees.

c. Question-58. To prevent complaints of "no service," the field unit should always contact the complainant. (As a cue that the complainant has given his name and address, the job assignment format can include the phrase, "See the man (Woman, manager, etc.)." (Ref. Phase I, pp. AIV-23 to -24)

	City A(4)	City B(5)	City R(8)	Total (17)
Strongly Disagree.	-	-	-	-
Disagree.	-	-	2	2 (12%)
Undecided.	-	1	-	1 (6%)
Agree.	2	4	2	8 (47%)
Strongly Agree.	2	-	4	6 (35%)

82% agree. One who disagreed commented: "Many times they don't want to have officers at their door." Another who did not check an answer may have had the same point in mind when he added: "Only on certain calls such as a blocked driveway or something similar." (See next question.)

d. Question-59. It is often not advisable to visit the complainant, thereby identifying him (or her) to those creating a disturbance (e.g., a gang of boys), if corrective action can be taken without such a visit. (Ref. Phase I, pp. AIV-23 to -24)

	City A(6)	City B(5)	City R(8)	Total (19)
Strongly Disagree.	-	-	-	- -
Disagree.	1	-	-	1 (5%)
Undecided.	-	-	-	- -
Agree.	4	5	4	13 (68%)
Strongly Agree.	1	-	4	5 (26%)

94% agree with this one. These two questions were intentionally phrased this way to bring out the complexity of the issue. In terms of strict logic one cannot say in one breath that the field unit "should always contact the complainant" and in the other "it is often advisable not to visit the complainant." Considering the level of discrimination shown in answers to previous questions, which range all the way from 100% agreement to almost 100% disagreement, and some representing divided opinions, it would be difficult to maintain that the respondents were checking favorable answers just to be nice.

A more likely alternative explanation is as follows: The first part of Question-58 probably called to mind the fact that there are complaints of "no service." When one suspects that there may be such a complaint, he should always see the complainant. Those who agreed may have derived this meaning from the question as they scanned it. Those who disagreed or who did not answer, including the two who anticipated the next question in their comments, probably disagreed with the "always."

If this is so, a summary of their opinion would be as follows: Always see the complainant if there is any possibility of a complaint of "no service," except when the nature of the call is such that the complainant probably does not want to be identified because of possible consequences. Ordinarily this would be left to the judgment of the field unit. The dispatcher may, at his discretion, direct the field unit by the coded instruction to make the visit in specific instances.

e. Question-61. An officer in trouble should be empowered to specify the number of officers (not cars) he needs, and get them. Any questions about the soundness of his judgment should be reserved till later. (Ref. Phase I, pp. AIV-28-29)

	City A(6)	City B(6)	City R(8)	Total (20)
Strongly Disagree.	-	-	-	- -
Disagree.	-	2	4	6 (30%)
Undecided.	-	-	-	- -
Agree.	3	4	3	10 (50%)
Strongly Agree.	3	-	1	4 (20%)

70% agree and 30% disagree, but not strongly. No one is undecided. One respondent felt that an officer should not have to specify how many men he needs, the dispatcher should send all available men.

4. Enforcement of prescribed radio procedures.

A five-part question was asked to explore attitudes in this area.

Question-64. The rules of a police department governing radio communications should be enforced by:

		SD	D	U	A	SA	(N)
a.	Making procedures applicable to all users, without exception.	-	-	-	67%	33%	(21)
b.	Appealing to ranking officers and detectives to set an example.	-	5%	5%	65%	25%	(20)
c.	Immediate correction of dispatcher or field unit by the watch sergeant whenever he detects deviation.	-	20%	10%	50%	20%	(20)
d.	Recording the transmissions of habitual offenders for review with their supervisors.	-	5%	5	63%	26%	(19)
e.	Returning the offenders to the academy for refresher training.	-	30%	15%	50%	5%	(20)

There is certainly substantial agreement that prescribed procedures should be enforced and there is the strong implication that a variety of methods will be needed and should be used, including all those listed.

Some of the comments were: A man agreeing with statement-b suggested "insist" instead of "appeal."

Statement-c occasioned two comments: A man who disagreed (D) said: "Reprimands should be made in private, not over the radio system." One who agreed (A) also had in mind some good human relations practices when he suggested: "Find out why first, because maybe there was cause."

III
D. 4. Cont'd.

One of the two who left statement-d unchecked indicated a weak inclination toward agreement with the comment, "Possibility."

There were no comments on statements a and d.

E. CHECKPOINT-11: FIELD UNIT PROCEDURES

Several questions were asked about the use of administrative telephone lines by field units, about the use of radio time for getting CR numbers and -- since the availability of field units for assignments is a critical factor in the response time of the tactical communication system-- about the report requirements on field units.

1. Question-60. Administrative telephone lines should be used instead of the radio for: (Ref. Phase I, pp. AIV-27 to -28)

	SD	D	U	A	SA	(N)
a. Confidential messages from field units and detectives.	-	10%	5%	67%	19%	(21)
b. License checks, other than on-the-spot checks.	10%	40%	-	40%	10%	(20)
c. "Wants" and descriptions not of an urgent nature.	-	45%	-	40%	15%	(20)
d. Reporting "out of service," etc.	16%	63%	5%	5%	11%	(19)

There is general agreement with statement-a that telephones should be used for confidential messages unless time is an element or circumstances warrant an exception, according to two comments. One City B respondent seemed to feel that "some type of code" can be used for radio security. A Rochester man felt that their 10-81 channel is sufficiently secure, since the public generally monitors the job assignment frequency.

III
E. 1. Cont'd.

A Rochester man who disagreed with statement-b recommended use of the 10-81 channel for license checks. Opinion on this item is evenly divided, with no one on the fence.

The majority (55%) favors telephoning "Wants" and non-urgent descriptions, statement-c, but a strong minority (45%) is opposed.

79% disagree with statement-d which would require the field unit to go to a telephone to report "out of service," etc. One of the two who did not answer was from Rochester and commented that either its 10-81 or 10-82 are appropriate for this purpose. This recommendation was aimed at conserving radio time to allow for growth in traffic. There was no question about the appropriateness of using the radio for such messages.

2. Question-41. Radio time should not be taken for the assignment of CR (Case Record) numbers, even if discontinuous results in some inconvenience in records processing. (Ref. Phase I, pp. AIV-13 to -14)

	City A(4)	City B(6)	City R(8)	Total (18)
Strongly Disagree.	-	-	1	1 (6%)
Disagree.	-	1	3	4 (22%)
Undecided.	-	-	-	- -
Agree.	3	3	3	9 (50%)
Strongly Agree.	1	2	1	4 (22%)

72% agreed and 28% disagreed, with two from City A and one from City B abstaining.

Rochester is the only city of the three that uses CR numbers and opinion there is divided 50:50, with no one on the fence. The Phase I report recommended discontinuing the use of radio time to assign CR numbers, while providing for the continued use of these numbers for clerical purposes.

In City A the penwritten record is filed by time of day.

In City B the dispatchers (CR) job card is computer processed using the field unit number and time of day.

III
E. Cont'd.

3. Question-62. Field units should be required to file a written report on every call they make. (Ref. Phase I, P. AIV-29)

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	1	-	1	2 (10%)
Disagree.	4	2	1	7 (33%)
Undecided.	-	1	1	2 (10%)
Agree.	1	3	4	8 (38%)
Strongly Agree.	-	1	1	2 (10%)

This is another issue on which opinion is divided. The 48% who agree are saying that a report should be filed on every item. The 43% who disagree would allow at least some exceptions. One of them explained that there is "too much paper work already." An Undecided said, "Most Cases," meaning that a report should be filed in "most cases." (See next question.)

4. Question-63. List the exceptions (if any) you would make to the foregoing rule.

Two from City A and seven from Rochester answered the question. The rest left it blank. This is strange since opinion was divided in City B as well.

Of the nine who answered:

Three would allow "no exception" to the rule.

Three others would eliminate reports on nuisance calls such as dog barking, loud radio, children annoying, mnior family problems, and when there is no cause (chronics, mentals, etc.)

One voted for "no reports on parking problems unless the complainant desires to see an officer. Parking should be an in-service job."

One (from City A) apparently felt that the radio should be used for this purpose: "Officers responding to call, should after returning to service, advise dispatcher of deposition and action taken or advice given to complainant."

One would limit reports to "assigned calls only."

III
Cont'd.

F. CHECKPOINT-12: PERSONNEL PROCEDURES AND POLICIES APPLICABLE TO DISPATCHERS.

It was assumed in the Phase I report (pp. AVII-8 to 13) that "dispatcher trainees will be selected from experienced field officers and --since the job itself is not generally attractive to field officers-- that an adequate incentive pay differential will be provided to attract capable individuals. In these circumstances, candidates can be selected who have much of the knowledge, skill and personality characteristics for the dispatcher job.... The fact that the dispatcher poisition requires skills and experience not acquired in the field is also recognized. The broad objective of dispatcher training is the development of these additional skills...."

Thus, the questions in this section are concerned with the selection of dispatchers, with their training, with their classification and incentive pay, and with the amount and frequency of rest periods they need because of the generally demanding nature of their work.

1. Dispatcher selection.

a. Question-67. Dispatchers should be policemen. Civilian dispatchers should not be used. (Ref. Phase I, p. AVII-8)

	City A(6)	City B(6)	City R(8)	Total (20)
Strongly Disagree.	-	3	-	3 (15%)
Disagree.	2	1	-	3 (15%)
Undecided.	-	-	1	1 (5%)
Agree.	1	1	1	3 (15%)
Strongly Agree.	3	1	6	10 (50%)

65% agree that dispatchers should be policeman. Continuation of this practice in Rochester is recommended in the Phase I report. The main disagreement comes from City B where 4 of the 5 interviewer-dispatchers are male civilians.

A respondent from City A who disagreed explained that the dispatcher could be a "civilian under the direction of a police supervisor."

III
F. 1. a. Cont'd.

Two from City B added comments. One who strongly disagreed stated that "policemen should do police duties, not act as male telephone/radio dispatch operators." Another who did not answer felt that there "should be more policeman than civilians."

b. Question-68. Officers selected for the job must have demonstrated a mastery of radio codes and procedures before selection. (Ref. Phase I, pp. AVII-8 to -9)

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	-	2	-	2 (10%)
Disagree.	2	-	4	6 (29%)
Undecided.	-	-	-	-
Agree.	4	4	2	10 (48%)
Strongly Agree.	-	1	2	3 (14%)

64% agree that a dispatcher should have mastered radio codes and procedures before selection.

Two of the dissenters explained their position. One (City A) who Disagreed felt that "a man can be trained easily." The other (City B) Strongly Disagreed on the grounds that "officers should not be selected, but civilians should be trained to have a thorough mastery before becoming a dispatcher." Their comments bring out the assumptions underlying the question.

c. Question-69. Dispatcher candidates should have demonstrated a good knowledge of law and penal codes in performing as police officers. (Ref. Phase I, pp. AVII-8 to -9)

	City A(6)	City B(5)	City R(8)	Total (19)
Strongly Disagree.	-	-	-	-
Disagree.	2	-	-	2 (11%)
Undecided.	-	-	1	1 (5%)
Agree.	4	5	4	13 (68%)
Strongly Agree.	-	-	3	3 (16%)

III
F. 1. c. Cont'd.

84% agree on this one and only 11% disagree. One of the two who did not check one of the five answers referred to the two preceding items indicating that he objected to having police officers do this work, and therefore would disagree with this qualification as stated.

d. Question-70. Dispatcher candidates should have demonstrated a good understanding of department organization, policies, procedures and reports. (Ref. Phase I, pp. AVII-8 to -9)

	City A(6)	City B(7)	City R(7)	Total (20)
Strongly Disagree.	-	-	-	-
Disagree.	-	-	-	-
Undecided.	-	-	-	-
Agree.	4	3	4	11 (55%)
Strongly Agree.	2	4	3	9 (45%)

There is 100% agreement on this one partly because it allowed for the possibility that civilians could demonstrate this knowledge perhaps through prior experience or in police training courses. It is too bad that this issue contaminated responses to 68 and 69.

2. Dispatcher training.

On the assumption that dispatchers would be selected from the police force on the basis of qualifications such as those covered in the preceding questions, only two questions were asked about their training. In City B, where civilians function as interviewer-dispatchers under police supervision, the scope of these questions would have to be broadened.

a. Question-71. Dispatcher training should focus on station operation and management. (Ref. Phase I, pp. AVII-10 to -13)

	City A(5)	City B(5)	City R(8)	Total (18)
Strongly Disagree.	-	-	-	-
Disagree.	1	-	3	4 (22%)
Undecided.	-	-	2	2 (11%)
Agree.	3	5	2	10 (56%)
Strongly Agree.	1	-	1	2 (11%)

III
F. 2. a. Cont'd.

67% agree, 22% disagree and 11% are undecided.

The phrase "focus on" probably caused some trouble. One City B man who did not check any of the five standard answers added: "Thorough knowledge of equipment operation is mandatory." It appears that he agreed with the main point of the question, but disagreed on the implication of "focus on," perhaps because civilian dispatcher trainees need more than this. It is also possible that the 4 who disagreed and the 2 who were uncertain had in mind some other training areas that should be "focussed on." This leads to the next question.

b. Question-72. Specify any areas not mentioned in the five preceding items which deserve emphasis in the selection and training of dispatchers.

Eleven of the 21 gave specific suggestions, 2 from City A, 3 from City B and 6 from Rochester. The results are tabulated below in terms of the number of times each item was mentioned:

Six of the 11 mentioned speaking voice: "Dispatcher should have a clear speaking voice (City A)." Three comments from City B were, "Voice quality." "Voice modulation." And, "Voice training and proper microphone techniques are the areas where most improvement could occur in most systems." The two from Rochester mentioned "Good speaking voice" and "proper voice."

Four from Rochester emphasized knowledge of city streets: "A good geographic knowledge of the city is a must." "Should have worked in the field for years plus having a good knowledge of all street locations." "Must be knowledgeable of all city streets." "Good knowledge of city street locations."

Five commented on various aspects related to abilities and temperament: "To be able to use common sense and judgment (City A)." "Good common sense (Rochester)." "Must have proper attitude (Rochester)." "Temperament (City B)." And, lastly, "public relations (City B)."

III
F. Cont'd.

3. Dispatcher classification and incentive pay.

Question-26. A classification of POLICE OFFICER DISPATCHER, grades I, II and III, should be established, with incumbents appointed as Police Officers on a special assignment carrying a pay incentive, in order to make the job more attractive and to permit reassignment of poor performers, with loss of incentive pay.

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	-	2	-	2 (10%)
Disagree.	-	-	-	-
Undecided.	1	-	1	2 (10%)
Agree.	3	2	2	7 (33%)
Strongly Agree.	2	3	5	10 (47%)

80% agree that a personnel classification of "Police Officer Dispatcher" should be established with three "labor grades" and incentive pay, as stated in the question. One City B respondent who disagreed commented: "I don't think this is a police function except in a supervisory capacity." Another from City B, perhaps with the same thought in mind, seemed to have civilians in mind when he recommended transfer "to another division without loss of pay," in place of transferring poor performers to field duty as implied by the question.

4. Dispatcher rest periods.

Question-73. Dispatchers need a ___ minute break every ___ hours, in addition to the usual break for "lunch."

City A(6)	City B(7)	City R(7)	Total (20)	Equivalent Minutes/hr.
10/4:(1)			10/4:(1)	2.25:(1)
	5/1:(1)	5/1:(2)	5/1:(3)	
	10/2:(2)	10/2:(1)	10/2:(3)	5.0:(8)
15/3:(1)			15/3:(1)	
20/4:(1)			20/4:(1)	
15/2:(2)	15/2:(2)		15/2:(4)	7.5:(4)
	10/1:(2)	10/1:(2)	10/1:(4)	10.0:(6)
		20/2:(1)	20/2:(2)	
		60/2:(1)	60/2:(1)	30.0:(1)

10/4:(1) means that 1 person listed "a 10-minute break every 4 hours."

III
F. 4. Cont'd.

The group feels that the dispatcher earns about 7.72 minutes rest for every hour worked, and that breaks should be spaced every 1.9 hours. This adds up to two 15-minute breaks for each 4-hour shift.

The Rochester respondent who recommended 60-minute rest every 2 hours added: "Tongue in cheek." Two City B men who estimated 15 minutes rest every two hours suggested that the lunch break should be increased to one full hour, in addition.

IV. COMMUNICATIONS CENTER LAYOUT CHECKPOINTS

Four layouts, A, B, C and D, were developed for Rochester (Appendix AVI, Phase I). Layouts C and D are in the recommended improvement program which represents the third of three levels of effort and expense.

We are concerned here with questions like the following: Are Cities A and B using any of the specific principles and features of Layout C, which is preferred? If so, are they satisfied? If not, would we recommend that they change? Is there any evidence that they would want to change? To what extent should we modify the recommendations formulated for Rochester?

A layout of the communication center was prepared for each city by the study team to approximate tape measure accuracy. These are shown in Figures IV-1 and IV-2 for Cities A and B respectively. Figure IV-3 is a reprint at reduced size of Layout C (p. AVI-60, Phase I). Photographs of the facilities were also taken to facilitate the writing of this report, but they are not included since they could identify the cities visited.

The specific checkpoints selected are as follows:

A. CHECKPOINT-13: AREA AVAILABLE.

Considering first the area used for telephone and radio operations, City A has approximately 400 square feet, City B has 550 square feet, and Rochester occupies 720 square feet. Rochester has an additional 300 square feet for the watch sergeant and the emergency operations command post.

From this and general observations it appears that City B, which is comparable to Rochester in size, has little room for expansion within its allocated area. The situation appears similar to City A, but the comparison is difficult because of the smaller capacity required there.

B. CHECKPOINT-14: WATCH SERGEANT'S AREA.

Neither of the cities visited provides a separate supervisor's work area. In City A the supervisor sometimes uses the emergency command console in a separate enclosure. In City B the watch officer was positioned at a table at the end of the number-2 dispatcher station.

In the Rochester recommended layout (Figure IV-3), area 509 is reserved for the watch sergeant. The enclosure is made of slideable glass partitions.

IV.

B. Cont'd

Several questions were asked concerning the need for a watch sergeant's enclosure and its equipment:

1. Question-35. A separate enclosure should be provided for the watch sergeant, located to permit easy visual supervision of dispatchers and complaint clerks. (Ref. Phase I, pp. AVI-30 to 31)

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	-	2	-	2 (10%)
Disagree.	2	3	3	8 (38%)
Undecided.	-	-	1	1 (5%)
Agree.	3	1	2	6 (29%)
Strongly Agree.	1	1	2	4 (19%)

Opinion was evenly divided (48%) on a separate work area for the watch sergeant. The strongest opinions were expressed by City B where 5 out of 7 disagreed. A comment from this city which employs civilian interviewer-dispatchers was: "Watch sergeants should be in the same room as dispatchers."

2. Question-38. The watch sergeant's console should permit him to monitor or take command of any radio channel or telephone line, and to communicate with any one or combination of complaint operators or dispatchers. (Ref. Phase I, pp. VI-30 to 31)

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	-	-	-	-
Disagree.	-	-	-	-
Undecided.	-	-	-	-
Agree.	4	5	3	12 (57%)
Strongly Agree.	2	2	5	9 (43%)

Agreement was unanimous on this question. A City B respondent agreed: "except that providing the override control to take command increases complexity and cost of control system to where it is not economically feasible."

In a one-stage system, such as the one in City B, the need for a dispatcher or watch sergeant to take over a call is not quite so great as in a two-stage system. If is interesting to note that no one from this city disgreed.

IV.

B. Cont'd.

3. Question-39. The watch sergeant should have a small recorder (separate from the department logging recorder), with switching to permit recording any telephone or radio communication for training or other purposes. (Ref. Phase I, pp. AVIII-26 to 28)

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	-	-	-	-
Disagree.	2	-	1	3 (14%)
Undecided.	1	-	-	1 (5%)
Agree.	2	5	3	10 (48%)
Strongly Agree.	1	2	4	7 (33%)

81% were in favor of the use of tape recorders for training or other purposes. This is not current practice in any of these cities.

4. Questions-29, 30. The need for a map type car-status board in the sergeant's area was affirmed in the responses to these questions. Responses to these questions were reported in section III.A, items 2 and 3.

C. CHECKPOINT-15: OBSERVATION AREA FOR VISITORS.

Area 505 of Figure IV-3 shows the area for visitors provided in the proposed Rochester layout. It was also recommended that the communications center should be restricted to its own personnel.

City A made no provision for visitors, except that a small group could view the operation from the emergency command post which has glass partitions on three sides. The communications center is part of the local civilian defense system, with admission restricted to employees.

In City B, the Public Safety Building houses the communication center. The center is enclosed. Visitors may walk along a corridor with windows through which the operation can be observed.

There were two items in the questionnaire related to this issue:

IV.

C. Cont'd.

1. Question-31. The Communication Center should be restricted to its own personnel. (Ref. Phase I, p. 37 and pp. AVI-31 to 32)

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	-	-	-	-
Disagree.	-	-	-	-
Undecided.	-	-	2	2 (10%)
Agree.	2	4	2	8 (38%)
Strongly Agree.	4	3	4	11 (52%)

90% agree on restricting the communication center to those who work there.

The two who were undecided on the question were from Rochester, where the communication center is readily accessible to other personnel working in the general area.

2. Question-32. A glass enclosed observation area should be provided for visitors. (Ref. Phase I, p. 37 and pp. AVI-31 to 32)

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	1	-	-	1 (5%)
Disagree.	1	1	2	4 (19%)
Undecided.	-	-	-	-
Agree.	4	6	2	12 (57%)
Strongly Agree.	-	-	4	4 (19%)

76% favor an enclosed observation area for visitors.

City B has such an area. Rochester does not. In City A the dispatching operation is in a secure area, behind locked doors.

D. CHECKPOINT-16: ARRANGEMENT OF DISPATCHER CONSOLES.

Side-by-side placement of dispatchers is recommended in all proposed layouts for Rochester, except the one involving minimal change. (Ref. Phase I, pp. AVII-58 to 61)

IV.

D. Cont'd.

In City A there is only one radio console and one dispatcher, so the question of arranging dispatcher consoles is not pertinent. However, their console is just about large enough for two men and is operated this way when a new man is being trained.

In City B, the two dispatchers who control the field units in two separate districts are positioned side-by-side. A third dispatcher, who is functionally specialized, is somewhat removed from the other two.

1. Question-36. Dispatcher consoles should be side-by-side (not back-to-back) to facilitate mutual assistance. (Ref. Phase I, pp. AVI-58 to 61)

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	-	-	1	1 (5%)
Disagree.	1	-	-	1 (5%)
Undecided.	-	1	-	1 (5%)
Agree.	2	4	5	11 (52%)
Strongly Agree.	3	2	2	7 (33%)

85% favor the side-by-side arrangement for dispatcher consoles, recommended in Phase I. One person from City A, where the operation requires only one dispatcher, disagreed.

One person from Rochester strongly disagreed without specifying a reason.

2. Question-37. All channels should be available at all consoles, to permit relief take-overs, and operation with partial or full staff. (Ref. Phase I, pp. AVI-33 to 35)

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	-	-	-	-
Disagree.	-	-	-	-
Undecided.	-	-	-	-
Agree.	4	5	3	12 (57%)
Strongly Agree.	2	2	5	9 (43%)

IV.

D. 2. Cont'd.

The response to this question was unanimous. One respondent from City B feared under-staffing: "Providing this capability will allow police systems to be undermanned in many cases by attempting to double up."

E. CHECKPOINT-17: USE OF CALL DIRECTORS.

Communications between complaint interviewers and dispatcher(s) was discussed in section II.D. Some of the questions reported there were framed in the context of the Rochester two-stage system with a conveyor to carry CR cards from interviewer to dispatcher. They dealt with CR Card procedures, indicating levels of urgency, signalling the dispatcher in an emergency and the way the F-1 dispatcher should respond in this system to an alert from the operator. Two sections were then added to get away from the Rochester assumptions. These dealt with penwriter communications between interviewer and dispatcher, and City B's modified one-stage system.

Currently, at City A, "hot calls" are passed by the interviewer to the dispatcher by telephone to avoid the delay of writing them out on the penwriter. A desire was expressed there for a two-number listing, one for administrative calls and one for emergency calls. At present all calls go in on a single number to the two-position switchboard. It was felt that a CALL DIRECTOR located at the dispatcher's position enabling him to answer all calls on the emergency lines would improve the system. This would convert City A to a one-stage system.

City B is a one-stage system using Call Directors. Dispatchers at positions 1 and 2 covering the two job assignment frequencies endeavor to take all incoming calls on the emergency lines. Though the city is divided in two for dispatching purposes, telephone calls arriving at the center are not distinguished by district-of-origin as they are in Chicago. Overflow calls are taken by additional clerks and job cards are passed by hand. Incoming calls are easily transferred, whenever necessary, using the call director.

The following question on Call Directors was included to check a Phase I recommendation.

IV.

E. Cont'd.

1. Question-40. "Call Director" equipment (instead of telephone panels) should be installed at complaint board and dispatcher stations to facilitate holding and transferring calls, use of intercom, initiation of signals, etc. (Ref. Phase I, p. AVI-29)

	City A(5)	City B(7)	City R(8)	Total (20)
Strongly Disagree.	1	-	-	1 (5%)
Disagree.	1	-	-	1 (5%)
Undecided.	1	2	4	7 (35%)
Agree.	2	3	3	8 (40%)
Strongly Agree.	-	2	1	3 (15%)

Only 55% agreed that "Call Director" equipment should be used instead of telephone panels and 10% disagreed. A substantial minority (35%) was undecided, which probably indicates that the respondents were not familiar with these devices. This is not the case in City B where Call Director equipment is in use, and 5 out of 7 agreed.

F. CHECKPOINT-18. ENVIRONMENTAL FACTORS.

Environmental factors, particularly noise reduction, received attention in the Phase I recommendations.

In City A, noise reduction for dispatchers was effected mainly by separating functions, dispatchers being in one room and teletypewriters and the telephone switchboards were in another. Thus, the dispatcher room is relatively quiet despite the use of loudspeakers instead of headsets, the loud buzzer which sounds when a message is transmitted over the electric penwriters, and the many hard sound-reflecting surfaces. On the other hand, the room containing the telephone switchboard and teletypewriters is noisy, forcing telephone interviewers to use the standard headsets.

In City B, efforts to reduce noise were evident in the acoustic tile on the ceilings and the use of draw draperies to cover three of the walls. Ambient noise level is high, however, because of the greater number of people in the room, as compared with City A, and the fact that headsets are not worn since they are optional.

IV.

F. Cont'd.

One question was asked to ascertain opinions on the Phase I recommendations.

1. Question-33. The Communication Center should be enclosed, air-conditioned and noise-conditioned (e. g., covering hard, sound-reflecting surfaces, except as required for visitor observation and supervision by the watch sergeant). (Ref. Phase I, p. AVI-30)

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	-	-	-	-
Disagree.	-	-	-	-
Undecided.	-	-	1	1 (5%)
Agree.	2	-	1	3 (14%)
Strongly Agree.	4	7	6	17 (81%)

The virtually unanimous agreement (95%) indicates that the communication center should be enclosed, air-conditioned, and noise-conditioned.

The one respondent from Rochester who was undecided was also undecided on Question-31, which restricted the communication center to its own personnel.

G. CHECKPOINT-19. CHANNEL ASSIGNMENT CHECKPOINTS

The Phase I report recommended continuation of the current radio channel assignments and uses in Rochester.

As noted earlier, Rochester has three radio channels. F-1 is almost exclusively a job assignment channel, with only limited car-to-car transmissions permitted. F-2 is used for license checks, car-to-car communications, and all detailed or lengthy instructions. And F-3 is reserved for the tactical unit and detectives (Phase I, p. 29). On the basis of loading measurements and procedural analyses, we recommend continuation of the present allocations until such time as future growth required a division of the city into two dispatch areas (Phase I, p. 35). For planning purposes it was recommended that F-3 be considered for a combination of voice and radioteleprinter traffic.

IV.

G. Cont'd.

City A also has three channels. F-1 is the main job assignment frequency for all units, as in Rochester. F-2 handles ambulances, portables and special details. F-3 is a special purpose channel, lightly loaded at present but planned for strictly portable use. All three channels are duplex, requiring six frequencies. The channel allocations seem adequate and compatible with Rochester recommendations.

City B has four channels. F-1 and F-2 carry all communications for their respective districts, including job assignments, car-to-car communications, license checks, etc. In addition, F-2 is used by detectives, tow trucks and the youth bureau. F-3 is city-wide and is allocated to the traffic division and the animal bureau. F-4 is reserved for emergencies and possible overflow. This channel is duplex, presumably for the greater range this provides. The first three are simplex operations.

The possibility of assigning detectives, tow trucks and the youth bureau to the less heavily loaded F-3 and F-4 channels is so obvious that it must have been considered, so the limiting factor is probably the equipment currently available to these groups.

The fact that their F-1 and F-2 loadings approximate those of Rochester indicates that load equalizations can be achieved by either a geographic or a function allocation. With responsibility for a smaller district, each dispatcher can become more thoroughly familiar with the streets, addresses, etc. in his area. However, to the extent that dispatchers specialize geographically, scheduling and backup problems increase.

H. CHECKPOINT-20: GENERAL LAYOUT.

Here we ask two questions: Would it be <u>feasible</u> for City A or B to adapt the recommended Rochester layout? And, would it be <u>desirable</u> for them to do so?

1. <u>City A</u>.

A conveyor system is not needed or advisable for an operation of this size, in our opinion. The rate at which the demand for police services is rising in this city is not known. At present one dispatcher and two telephone operators (who handle all police calls) appear adequate.

IV.

H. 1. Cont'd.

The present dispatcher console is custom made and spacious for one dispatcher. If the system had to expand to two dispatchers, it is possible that the console could be modified to accommodate another dispatcher, in the recommended side-by-side arrangement. If this is not possible, another console could be fitted into the room, though it might be necessary to place them back to back (which is not as efficient) or the emergency command post might be relocated to enable the expansion. Based on information available to us it does not appear likely that this expansion will be necessary for a considerable time.

Officials appear very happy with their set-up except for two things: the current location of the telephone switchboard in the same room with teletypewriters and the inking difficulties encountered with electrowriters. They are considering two possibilities. The first consists in erecting a partition between the teletypewriters and the telephone switchboard and the second involves moving the telephone operators into the radio room.

The second possibility is more in accordance with our judgments. If two numbers instead of one were listed in the local telephone directory, the dispatcher could handle all incoming calls on the emergency number, particularly if he were provided with a Call Director and if switchboard operators would serve as back-up in very busy periods. This would be feasible if the switchboard were moved to the dispatcher side of the partition, close to its current location. The operator would take overflow calls and record the necessary information and pass them directly to the dispatcher. Communications during such overflow periods, which should not be common, would be on a direct person-to-person basis. There is no need for a conveyor or for penwriters in this situation.

It appears, therefore, that size of operation is a critical variable. The Rochester layout recommendations probably apply only to cities somewhat larger than City A, the actual size depending on the current and projected crime rates.

2. <u>City B.</u>

An adaptation of the Rochester layout to this location is not only feasible but desirable.

City B officials expressed strong sentiments in favor of separating the interviewing and dispatch functions. The overflow positions required by the rate

H. 2. Cont'd.

of calls necessitated the passing of job cards among personnel and, in general, there was too much congestion.

The main alternative under consideration is to partition off part of the communication center behind dispatcher positions 1 and 2 to accommodate interviewers and teletypewriters. (This could create a noise problem for the telephone interviewers). Interviewers would pass job cards to dispatchers through the partition. This arrangement was not strongly favored there, but it is an indication that all is not well with the present arrangement.

Figure IV-4 is intended to show only that with minimum effort the recommended in-line conveyor arrangement is feasible. This can be accomplished by taking approximately 125 square feet from the review and public information area for the complaint operators. As many as six operators could be located here, perhaps eight with crowding. The Centrex central board for night time and weekend operation could be located here. A conveyor would transfer written job information. Dispatcher consoles are shown in line and moved slightly forward to provide some room for expansion without encountering the building column. The console desk tops would have to be modified to allow the conveyor to bring the cards to the dispatcher at a convenient level. The review desk and the associated teletype are shown located in the records room, assuming tentatively that space is available there for this operation. In our opinion, this would greatly improve their operation.

The diagram is not intended as a working drawing. Much closer measurements would have to be made. Nor has any attempt been made to cover all problems. For example, there is no provision for a watch sergeant's position, and the teletype operation has not been enclosed. The functions served by some of the furniture in the room are also not sufficiently known.

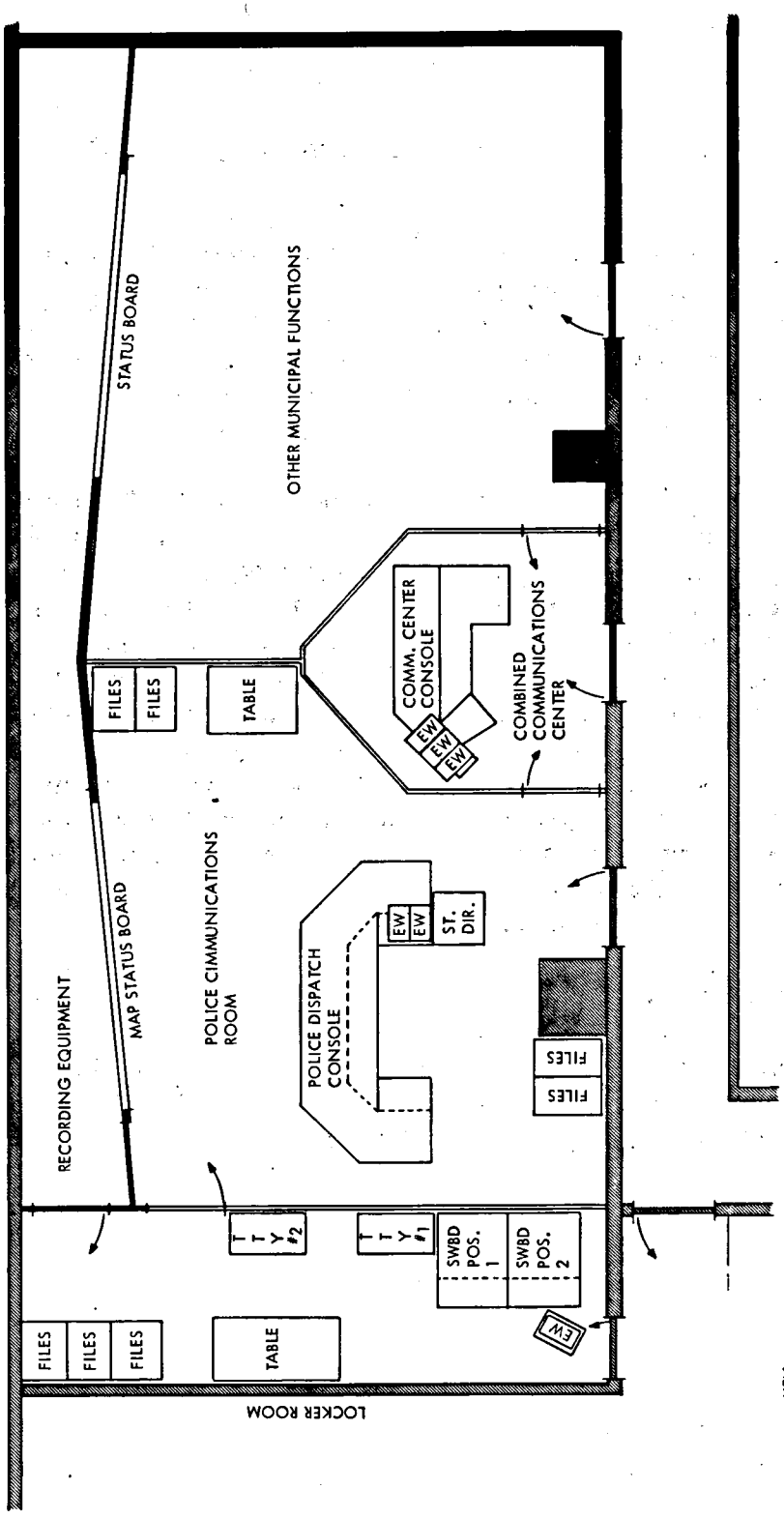


Figure IV-1. City A. Existing communication center layout.

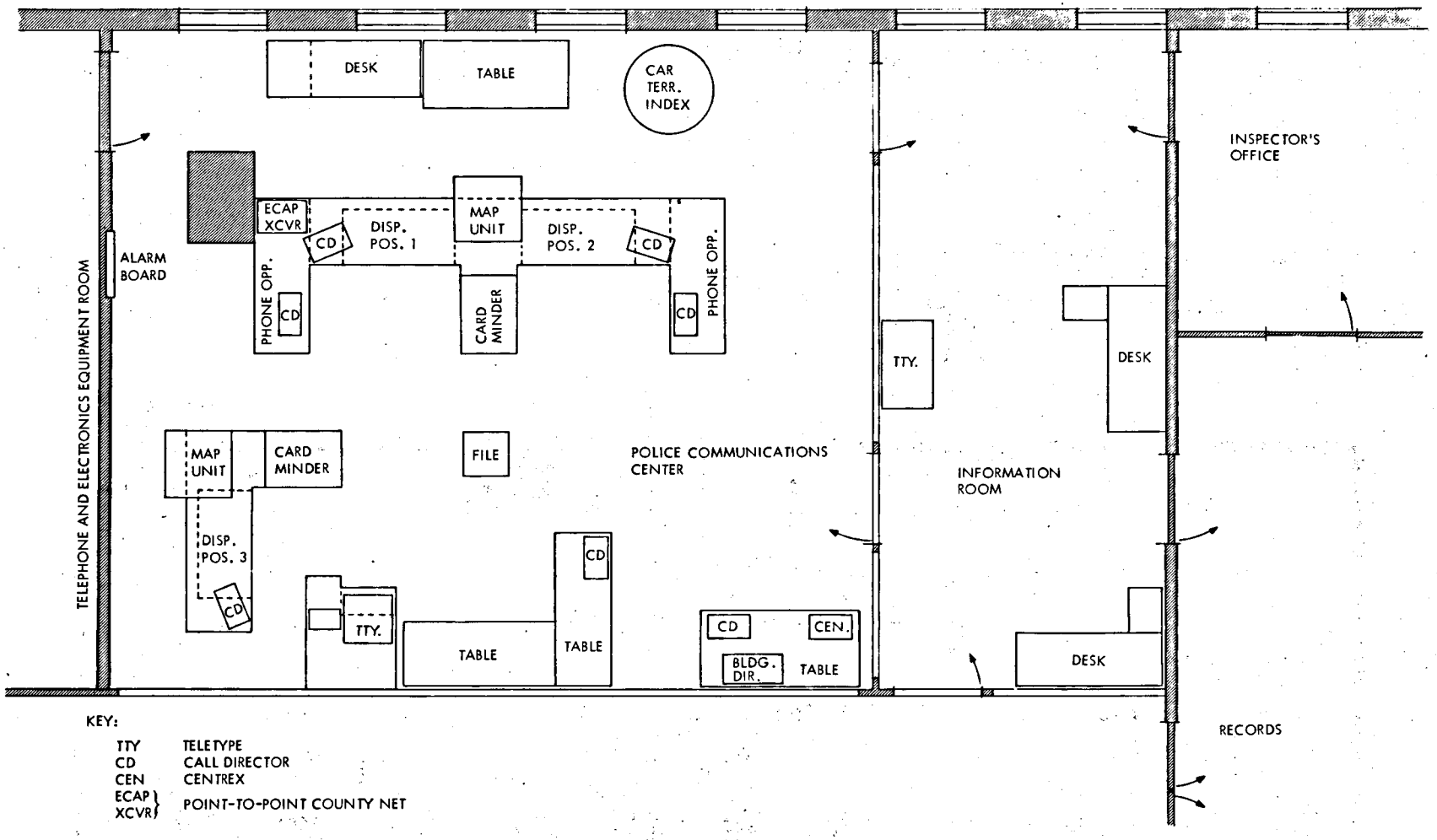


Figure IV-2. City B. Existing communication center layout.

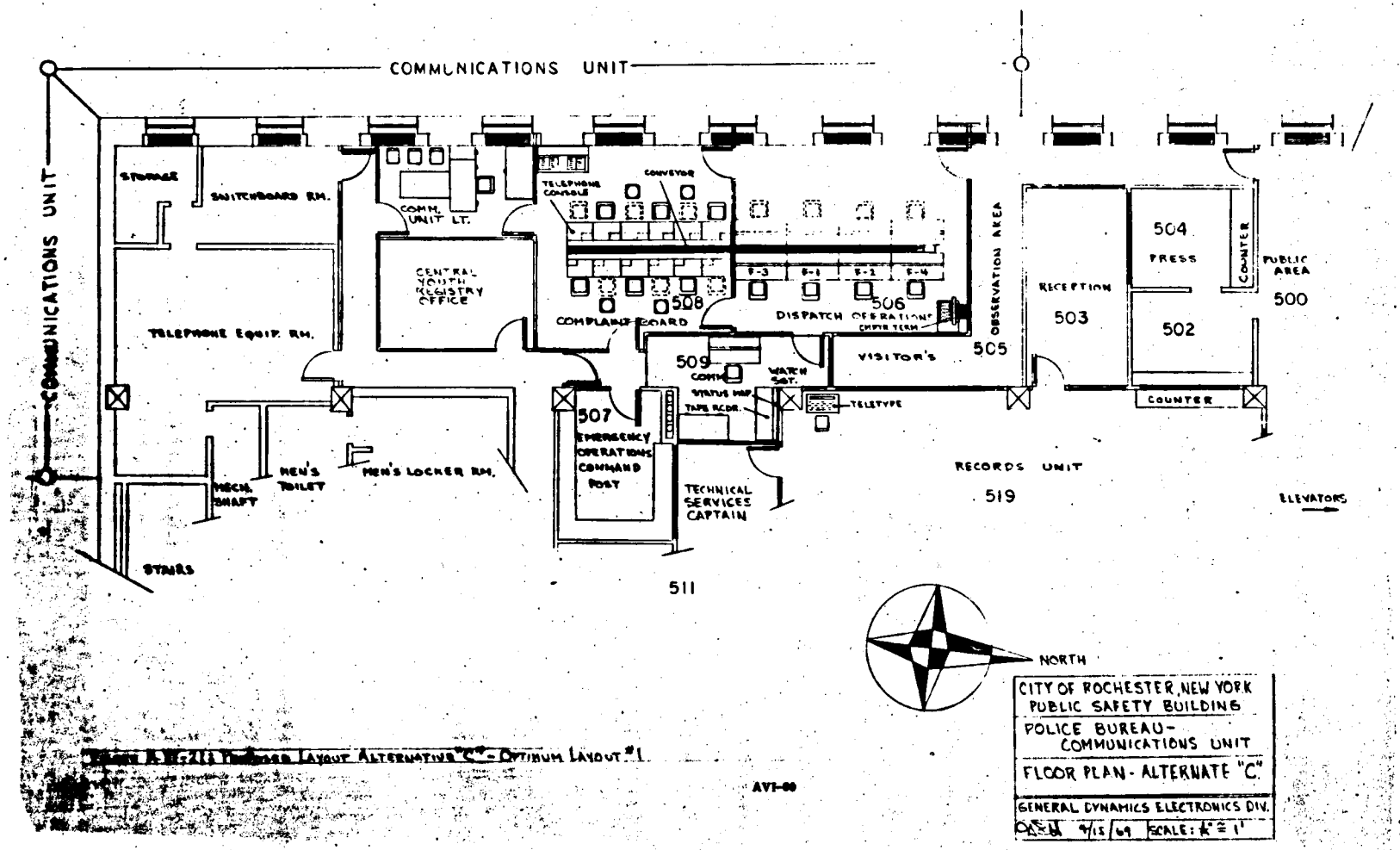


Figure IV-3. Rochester recommended layout "C".

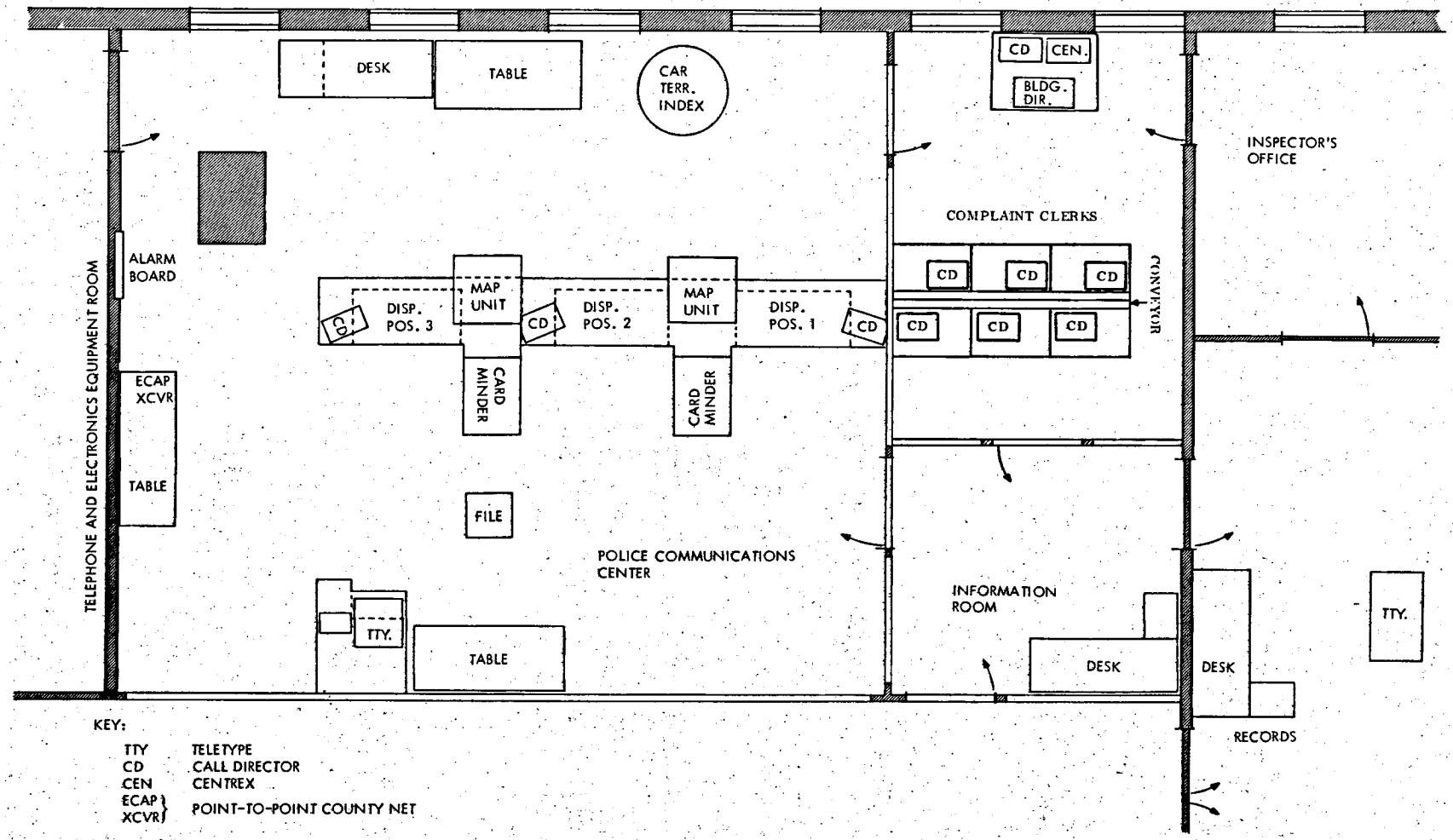


Figure IV-4. Feasibility of in-line conveyor arrangement for City B.

V. SPECIAL EQUIPMENT CHECKPOINTS

"New and improved devices" were the subject of Appendix VIII of the Phase I report. The aim there was to evaluate these for the Rochester operation and to examine some of the factors and conditions which might influence the decision of a department to adopt them.

Two types of equipment were evaluated. The first included voice privacy devices, radioteleprinters, automatic vehicle monitoring systems and remote relay systems which, generally speaking, are "new or novel to law enforcement" (AVIII-1 to 18). The second category covered "improved basic equipment" such as base transmitters, mobile and portable two-way radios, handsets, headsets and microphones and logging recorders.

The following questions were asked to see how respondents in the three cities looked at some of these devices as applied to their own operations.

A. CHECKPOINT-21: CAR PRINTERS, SCRAMBLERS AND AUTOMATIC CAR LOCATOR SYSTEMS.

Four questions inquired about these devices.

1. Question-74. CAR PRINTERS provide printed messages, whether the officer is in the car or not, and some measure of security. Indicate interest by checking one: (Ref. Phase I, pp. AVIII-6 to 8)

	City A(6)	City B(6)	City R(8)	Total (21)
No interest.	2	-	1	3 (15%)
Mild interest.	2	2	3	7 (35%)
Strong interest for certain groups (e.g., command cars, detectives) or types of traffic.	2	1	1	4 (20%)
Strong interest for all communications.	-	3	3	6 (30%)

50% express mild or no interest. 20% say they have a strong interest for certain groups of cars or personnel or for certain types of traffic. 30% express strong interest as applied to all communications, which is a stronger endorsement than most specialist in the field would give them.

V.

A. Cont'd.

2. Question-75. Indicate your interest in SCRAMBLERS for voice privacy, by checking one: (Ref. Phase I, pp. AVIII-1 to 6)

	City A(6)	City B(6)	City R(8)	Total (20)
No interest.	-	1	1	2 (10%)
Mild interest.	-	3	1	4 (20%)
Strong interest for certain groups or types of communication.	2	2	4	8 (40%)
Strong interest for all communications.	4	-	2	6 (30%)

70% express strong interest in scramblers either for specific or general application. City A has scramblers and this is reflected in their vote.

3. Question-76. It would be sufficient in our city, if an AUTOMATIC CAR LOCATOR SYSTEM could be accurate to within (check one): (Ref. Phase I, pp. AVIII-8 to 15)

	City A(4)	City B(5)	City R(8)	Total (17)
25 ft.	-	-	1	1 (6%)
50 ft.	-	-	2	2 (12%)
100 ft.	1	2	-	3 (18%)
300 ft.	-	1	-	1 (6%)
600 ft.	2	2	2	6 (35%)
1200 ft.	1	-	2	3 (18%)
2400 ft.	-	-	1	1 (6%)

The average estimate is within 607 feet, or about 600 feet, approximately one city block. As a respondent from City B put it: "This is well within the range of current technology."

V.

A. Cont'd.

4. Question-77. Assuming your budget permitted only one, which of the following would you chose? Check one:

	City A(5)	City B(6)	City R(8)	Total (19)
Automatic car locator system.	1	2	5	8 (42%)
Voice scrambler.	4	-	2	6 (32%)
Car printers.	-	4	1	5 (26%)

The results show clearly that an automatic car locator system is the most preferred device of the three, by a considerable margin.

Moreover, voice scramblers are of greater interest to this group than car printers, by a smaller margin. This is compatible with previous answers: 70% had a strong interest in scramblers (Question-75) as compared with 50% for car printers (Question-74).

The relatively low evaluation of car printers came as something of a surprise. One wonders if the choices might not reflect the composition of the group. For supervisors and dispatchers, automatic car monitoring systems would have great value and no inconvenience. Voice scramblers would relieve the ever-present concern about the monitoring public, with no additional effort. Car printers, on the other hand, are a convenience to field units and their use would require a modification of communication center procedures. Moreover, except for scramblers in City A, these items are not part of the everyday experience of these men, as most of the other questions were, and it may be that some respondents do not have full information in these area.

B. CHECKPOINT-22: COMPUTER USAGE.

The Phase I report recommended (V.B. 3. e) increased application of the municipal computer with a view toward acquiring one for police use. A long range program of this type would pave the way for incorporating automatic vehicle monitoring systems and other advanced technologies.

V.

B. Cont'd.

1. Question-78. Indicate the ways you will be (or plan to be) using a COMPUTER within the next five years, by checking those which apply. (Ref. Phase I, p. 35)

	City A(5)	City B(7)	City R(8)	Total (20)
Crime statistics.	1	7	2	10 (24%)
Department operations, e. g., budget.	-	3	2	5 (12%)
Criminalistics research.	-	4	2	6 (14%)
Car locator system.	1	-	3	4 (10%)
Criminal identification data.	3	7	7	17 (40%)
Other. Specify:	-	-	-	-

"Criminal identification data," probably including license checks, wants, life histories, etc., is clearly in the lead with 17 mentions. "Crime statistics" and "Criminalistics research" are next with 10 and 6 mentions, which cannot be added since some of the same individuals checked both.

Only 1 in City A and 3 in Rochester feel they will be using a computer as part of a car locator system in the next five years. The disparity between this and the interest expressed in the preceding set of questions may be due to lack of information about the role of computers in such systems. Or it may reflect a realistic appraisal of their chances of getting a vehicle monitoring system in the next five years, despite their keen interest.

C. CHECKPOINT-23: EQUIPPING FIELD UNITS TO KEEP THEM IN CONTACT.

This is a strong recommendation of the Phase I study (pp. AVIII-19 to 24).

1. Question-79. Every officer should be able to contact the dispatcher at any time. To accomplish this, I would recommend (check one):

	City A(6)	City B(7)	City R(7)	Total (20)
Portables for all operations, in or out of car.	-	2	-	2 (10%)

V.

C. 1. Cont'd.

	City A(6)	City B(7)	City R(7)	Total (20)
Car radio plus portables for out-of-car use.	2	4	5	11 (55%)
Pocket-size radio which uses car radio as repeater.	3	1	2	6 (30%)
Other. Specify.	1	-	1	1 (5%)

The preference is clearly (55%) for equipping every officer with a portable for out-of-car use, in addition to the car radio. An additional 30% preferred the smaller unit which uses the car radio as a repeater. The rest would use portables for all operations.

A minimum improvement would consist in adding "None of these" to the list. One man used other for this purpose, and expressed the fear that equipment of this type would be misused by their operators. The alternatives could be sharpened a bit. Despite this, the response indicates a clear recognition of the need for providing officers with equipment enabling them to contact the dispatcher at any time, in or out of the car.

D. CHECKPOINT-24. HEADSET AND MICROPHONE FOR CYCLISTS.

Two questions were asked to assess Phase I recommendations (pp. AVIII-25 to 26) concerning the unique problems of cyclists.

1. Question-80. Hats for cyclists should be outfitted with headsets and mikes, with flexible cord and quick disconnect.

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	2	-	-	2 (10%)
Disagree.	2	2	1	5 (24%)
Undecided	1	2	2	5 (24%)
Agree.	-	2	4	6 (29%)
Strongly Agree.	1	1	1	3 (14%)

V.

D. 1. Cont'd

The spread of opinion on this item is somewhat surprising. Only 43% agree, and 34% disagree, and there is a substantial (24%) undecided group.

Only one man who disagreed explained his feelings. He apparently fears "possible injury to motorcycle operator if quick-disconnect failed to function when operator and vehicle part company." This may have been the reason for the large undecided and disagree vote. If so, it should be noted that there is no technical difficulty in designing a connector which will separate with a small force and which can easily be re-connected with one hand in the event of an inadvertent disconnect. There is no doubt that such a connector would require routine maintenance checks.

Nevertheless, it is only by further interviews, possibly with the individuals who responded, that the reasons for their answers may be understood. Interviews with cyclists are particularly necessary in this regard.

2. Question-81. Radios small enough to be completely contained in a hard helmet would be desirable.

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	-	-	-	-
Disagree.	2	1	1	4 (19%)
Undecided.	1	3	2	6 (29%)
Agree.	3	2	4	9 (43%)
Strongly Agree.	-	1	1	2 (10%)

Agreement is a little stronger on this question (53%), but the undecided group is larger (29%). This is an area requiring further study, as indicated in the preceding question.

E. CHECKPOINT-25: ELIMINATION OF THE "SQUELCH CRASH."

Adoption of tone coded squelch circuits was recommended in Phase I (p. AVIII-18) mostly to eliminate interference from distant stations operating on the same frequency. The only question asked about this was aimed at a general assessment of feelings toward the squelch crash itself.

V.

E. Cont'd.

1. Question-82. One never gets used to the squelch crash of an FM receiver.

	City A(6)	City B(7)	City R(8)	Total (21)
Strongly Disagree.	1	-	1	2 (10%)
Disagree.	3	2	4	9 (43%)
Undecided.	-	3	2	5 (24%)
Agree.	1	2	-	3 (14%)
Strongly Agree.	1	-	1	2 (10%)

This also came as a surprise. The squelch crash is something that every communicator lives with and it is a type of noise that people would generally consider unpleasant. 53% feel that people get used to the crash. One from City B stated that "some operators like the squelch crash--to tell them when the other party has ceased transmitting."

It is well known that people not only adapt to mildly unpleasant stimuli to the point where they are hardly noticed, but that they also come to like them if they are associated with pleasant conditions or consequences. Something like this may have happened here. It would be interesting to see how field officers feel about this.

Of course, the proposed tone coded squelch system does not eliminate the crash entirely, so the men would still know when the other party ceased transmitting, though it is much reduced. After some experience with it, officers will certainly come to prefer it. Since there is apparently no strong opinion anywhere in the department favoring a change --otherwise this group would have heard about it-- this proposal would have low priority except in areas which are bothered by interference transmitters in other cities. This is the case in Rochester and was the basis of the Phase I recommendation.

VI. CONCLUSIONS

The objective of the Phase II effort was to check the main findings and recommendations developed for the Rochester Police Bureau in Phase I to see how well they fit the requirements of other medium-size cities.

It is appropriate now to look back and see if the questions which motivated this Phase II study can be answered any better now than they could have been at the start. In answering "Yes" to this we take on the obligation of providing the reader with some portrayal of the results, perhaps in the form of an "overall score." After attempting to provide such an overview, a few comments will be added.

A. AN OVERALL "SCORE."

The twenty-five checkpoints are listed in Table VI-1. To the right of each is a letter rating, ranging from A to E. These are defined as follows:

A. No modification necessary. Applicable to medium-size cities as is (as judged by available evidence).

B. Minor modifications needed to make recommendations applicable to medium-size cities.

C. Major modifications needed.

D. Applicable only when indicated by special local conditions.

E. Inapplicable under any circumstance. Recommendation must be completely revised or scrapped even as applied to Rochester.

Having defined these ratings, we reviewed the evidence cited under each checkpoint and assigned one of the ratings to each. The results were reviewed by another rater and differences were discussed to agreement. Comments and explanations are included in the last column. We hope that in most cases the reasons for the ratings will be obvious. In some the reader may find it necessary to consult the relevant sections of the Phase I report to see precisely what we did recommend.

VI.

A. Cont'd.

The column totals at the end of the table indicate that 14 of the 25 checkpoints come through with no need for modifications. Another 10 require minor modifications to make them applicable. One requires a major overhaul.

If a single score is desired, the weights 4, 3, 2, 1 and 0 can be assigned to the letters, A, B, C, D and E, respectively. When this is done, the "overall score" is 88% which, at an earlier phase of our lives, would have meant "passing the course" without quite making an "A"!

B. FURTHER COMMENTS.

1. Credibility.

The reader is cautioned against being overly influenced by the implication of precision often associated with counts and percentages. As emphasized in the Introduction, this was a small scale effort as compared both with Phase I and with the number of cities and people who would have to be sampled to speak with assurance on the wide range of questions, issues and recommendations covered in the two reports as applied to medium-size cities in general.

On the other hand, it is felt that the results cannot be dismissed lightly. The individual respondents were well qualified to make judgments in most of the areas covered. It was gratifying in reviewing their answers to find that they did not simply go through agreeing with statements "just to be nice." They were "tough minded" and thorough. Their answers range from virtually complete agreement to virtually complete disagreement. In some things they agreed among themselves. On some questions their answers covered the range, indicating that they answered as individuals without discussing their answers to arrive at an official departmental stand. (There was an exception at City B where two people worked together to submit one set of answers on a single questionnaire.)

2. The importance of minority opinions.

It is easy to get caught up in the spirit of questionnaires and make all judgments on the basis of majority opinions. In attempting to implement the results we must break away from this statistical, majority rule approach and examine carefully the judgments and opinions of every single qualified individual. This

VI.

B. 2. Cont'd.

is more than strategy for "selling" a set of recommendations. Instead each such individual is an opportunity to test a recommendation by probing his feelings to see if he has had an experience or if he can produce a new "fact" which would improve our understanding of the recommendation or even its formulation.

3. The importance of "where a city is" in determining "where it should go."

Changes cost money and often upset people. To justify them it must be shown that the gains are substantially ahead of the losses and that none of the losses are intolerable. A number of Rochester recommendations must be interpreted in this light. For example, if the first study had been conducted in City B, the chances are we would have recommended continuation of its allocation of radio channels F-1 and F-2 by district and probably its use of male civilian dispatchers be continued, unless we had found good readon for the change. In Rochester there was no reason to change the clear functional distinction between its F-1 and F-2 channels, particularly since it has a slight edge in the trade-offs, nor was any evidence discovered during the evaluation of 179 interviews to justify the belief that female interviewers could not do a good job with good selection and training.

The opinions of decision makers are as much a part of "where a department is" as the fact that it currently has a conveyor or a penwriter.

It is anticipated that few cities will have the funds to make big, dramatic changes all at once. In most cases a program of what might be called "planned evolution" must be developed which utilizes available resources as steps are taken toward long range goals. It is hoped that this study will help others in defining these goals and planning an orderly sequence of steps toward them.

Table VI-1. Checkpoint evaluation and explanatory comments.

Checkpoint No. & Ref.	Subject	Rating A	B	C	D	E	Comments
1(II. A.)	Allocation and use of incoming telephone lines.	x					Restricting 911 to police in Rochester could be an issue.
2(II. B.)	Complaint Board functions.	x					
2(II. C.)	Complaint Board staffing.			x			Sentiment is against continuing female interviewers and against any method of handling peak demands except "overstaffing."
4(II. D.)	Communications between the complaint board and the dispatcher.		x				Recommend one-stage system, no conveyor for 100,000 and below.
5(II. E)	Evaluation of telephone complaint interviewing procedures.	x					
6(II. F.)	Training of telephone complaint board interviewers.	x					Low evaluation of one of the techniques (item d, Table II-4) is probably a misunderstanding.
7(III. A.)	Displays and other inputs to the dispatcher.		x				It is not necessary to indicate car assignment priorities to dispatchers.
8(III. B.)	Radio transmission analysis.	x					
9(III. C.)	Radio channel loading.	x					
10(III. D.)	Radio procedures.		x				(a) 60% disagree on the practice of repeating essential elements of an assignment message, without being requested by the field unit. (b) Possibly a 4th code should be added to the "urgency code." (c) Contacting the complaintant should be left to the judgment of the field unit. Unless specifically instructed by the dispatcher.
11(III. E.)	Field Unit Procedures.		x				A substantial minority opposes use of administrative telephones to the extent recommended.
12(III. F.)	Personnel procedure and policies applicable to dispatchers.	x					

(Table VI-1 continued on next page)

Table VI-1. Cont'd

Checkpoint No. & Ref.	Subject	Rating A	B	C	D	E	Comments
13(IV.A.)	Area available.	x					
14(IV.B.)	Watch Sergeants area.		x				No majority was indicated, 48% agreed and 48% disagreed that the watch sergeant should have a separate work area.
15(IV.C.)	Observation area for visitors.	x					
16(IV.D.)	Arrangement of dispatcher consoles.	x					
17(IV.E.)	Use of Call Directors.	x					
18(IV.F.)	Environmental factors.	x					
19(IV.G.)	Channel assignments.		x				Loading equalization can be achieved either by geographic or functional allocation of channels.
20(IV.H.)	General Layout.		x				The layout does not apply to a population of 100,000, with request for Police services of the order observed. The division between small and medium in probably somewhat above 100,000, depending on crime rate.
21(V.A.)	Car printers, scramblers, and automatic car locator systems.		x				Car printers did not rate as high as was expected.
22(V.B.)	Computer usage.	x					
23(V.C.)	Equipping Field Units to keep them in contact.	x					
24(V.D.)	Headsets and microphone for cyclists.		x				No clear majority suggesting the likelihood of additional factors requiring study.
25(V.E.)	Elimination of the "Squelch Crash."		x				Squelch crash not annoying as anticipated, but recommendation of tone-coded squelch to eliminate interference of distant stations stands.
	Total Number	14	10	1	0	0	