Police

INDIVIDUAL TECHNICAL ASSISTANCE REPORT

In Response to a Request for Technical Assistance by the

New Orleans, ~~Louisiana,~~ Police Department – Bid Evaluation for Modifying Police UHF Communications System

August 10, 1972

Prepared by

Public Administration Service
1313 East 60th Street
Chicago, Illinois 60637

(Per Contract J-LEAA-015-72)

DEPARTMENT OF JUSTICE

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			INSTALLING POLICE UHF
			COMMUNICATIONS SYSTEM
			NEW ORLEANS P.D.

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I. PRELIMINARY INFORMATION

A. Consultant Assigned:

S. A. Yefsky
Communications Consultant
Public Administration Service

B. Date Assignment Received:

May 2, 1972

C. Date of Contact with LEAA Regional Coordinator:

May 2, 1972

D. Dates of On-Site Consultation:

June 1, 2, 3, 22, and 23, 1972

E. Individuals Interviewed:

Clarence B. Giarrusso
Superintendent

Joseph Murry
Mayor

Robert Falcon
Captain

Jules Killelea
Detective

And several other officers and civilian employees of the Department

II. STATEMENT OF THE PROBLEM

A. Problem as per Technical Instruction:

The New Orleans Police Department received bids from three companies for providing and installing a police UHF communication system. The Department requested expert advice to evaluate the bids and to assure that the various options offered met the bid specifications.

B. Problem Actually Observed:

(As stated in I)

III. FACTS BEARING ON THE PROBLEMS

The Communications Center is the focal point for command and control of the Department's field operations. Citizens' complaints, requests for service, and patrol assignments are the operational responsibility of the Communications Center. In addition to police services, Communications Center represents the only "government" which the citizen may contact for 16 out of 24 hours a day. The radio system and all other telecommunication systems which are a functional part of the Department's Communications Center must be reliable, have the capacity necessary to meet any predictable demand, must be contemporary, and capable of absorbing, in the future, the increasingly complex demands of police operations.

The New Orleans Police Department has demonstrated that the present system is inadequate and lacks the potential for upgrading. The present hardware which constitutes the system is largely obsolete, and cannot meet the general performance requirements of the public safety services.

IV. POSSIBLE COURSE OF ACTION

(Not applicable.)

V. RECOMMENDED COURSES OF ACTION

On the basis of the consultant's report, that of another communications consultant, and that of the Department's own communications officer, a decision was reached on the bid responses and a vendor selected. (See attached Memorandum by the Superintendent of Police, and copy of the consultant's preliminary report.)

MEMORANDUM

June 30, 1972

TO: Mr. Frank J. Vaccarella, Director
Criminal Justice Coordinating Council

FROM: Clarence B. Giarrusso
Superintendent of Police

SUBJECT: LEAA Technical Assistance

As you know, we have requested and received technical assistance from the LEAA to evaluate the bid responses to the first phase of our telecommunications system improvement program. Attached is a copy of the preliminary report of the consultant, Mr. S. Arthur Yefsky.

On the basis of Mr. Yefsky's report, a report by another communications consultant, and our own communications officer, a decision was reached on the bid responses and the bid submitted by General Electric Company was selected as being most responsive to our invitation to bid.

Mr. Yefsky's report and his oral comments were so noteworthy that Captain Robert G. Falcon, Communications Officer, has requested that we attempt to obtain further assistance from Mr. Yefsky for technical advice in the system design of Phase II of our system.

Please, therefore, request through LCLE that Mr. Yefsky be allowed to continue consulting with the New Orleans Police Department under a separate technical assistance project for at least another ten (10) days.

Any assistance you may be able to afford us in obtaining this request will be sincerely appreciated.

(signed)
Clarence B. Giarrusso
Superintendent of Police

MEMORANDUM

August 4, 1972

TO: New Orleans Police Department

FROM: S. A. Yefsky

SUBJECT: Preliminary Findings—New Orleans Police Department

1.0 Goals and Objectives for Radio Communications

The Communications Center is the focal point for command and control of the Department's field operations. Citizens' complaints, requests for service, and patrol assignments are the operational responsibility of the Communications Center. In addition to police services, Communications Center represents the only "government" which the citizen may contact for 16 out of 24 hours a day. The radio system and all other telecommunication systems which are a functional part of the Department's Communications Center must be reliable, have the capacity necessary to meet any predictable demand, must be contemporary, and capable of absorbing, in the future, the increasingly complex demands of police operations.

The New Orleans Police Department has demonstrated that the present system is inadequate and lacks the potential for upgrading. The present hardware which constitutes the system is largely obsolete, and cannot meet the general performance requirements of the public safety services.

The Department's basic program of system upgrade and expansion has been reviewed.

We find that:

> It is concluded that the Department's basic program to upgrade the New Orleans Police Department communications through conversion to the UHF band, expansion of channel capacity in the UHF band, and procurement of equipment for that purpose is necessary, and a sound, practical approach.

2.0 Basic Implementation Plan

The current plan of the New Orleans Police Department calls for a phased introduction of a 12-channel UHF satellite system. The present plan calls for the following:

1. Procurement of four (4) UHF satellite system channels. These channels will utilize six (6) satellite stations to provide areawide coverage.

2. Procurement of eighty (80) 12-channel UHF mobile radios at two-power levels and fifty (50) 4-channel UHF portables.

3. Assignment of these channels and equipment to four (4) nonpatrol units of the Department.

A phased implementation plan is required to establish and perfect the operation of a satellite communications system. The concept of assigning these channels to nonpatrol operations is a sound approach which would provide the Department with the knowledge and experience necessary to expand the satellite systems on a departmentwide basis. This approach can be taken by the Department and will yield good results. The following implementation plan is presented as an alternative.

It is suggested that the Department consider an implementation plan which expands the scope of initial system application and examines a number of options for patrol officer communications. The plan involves the following:

1. Allocate three (3) of the channels to the three (3) patrol zones used for district patrol.

2. Allocate the fourth (4th) channel to a special unit.

3. Assign twelve (12) portable units and thirty-five (35) mobile units to the special unit.

4. Assign forty-five (45) mobiles and thirty-eight (38) portables to district patrol.

5. Install the three (3) patrol zone UHF satellite channels one at a time. Start the initial installation with the radio zone which represents the most difficult combination of radio propagation problems and high crime rate. Utilize all of the resources, if necessary, available under the present program to perfect the satellite system for this zone. Install and perfect each patrol zone in order of decreasing propagation problems.

6. Install thirty-five (35) UHF mobile radios in the vehicles which will be used for the special unit. The VHF equipment can be removed. The twelve (12) portable units are used as required.

7. Install the forty-five (45) mobile radios in patrol vehicles and leave the existing VHF installation in the vehicle. In the same radio zone, install the thirty-eight (38) portables in portable adaptors in the patrol cars. Similarly, leave the VHF installation in the vehicle. Arrange the distribution of UHF mobile radio units and UHF portable radios among the patrol cars in the districts such that the new mobiles and new portables are operating in adjacent beats.

The above implementation plan would enable the New Orleans Police Department to accomplish the following:

1. Perfect the mobile and portable coverage required in each radio zone prior to departmentwide implementation at a later date. Should additional satellite stations be required in the more difficult propagation areas, one or several of the satellites originally scheduled for another zone would be available for experimentation and installation in order to develop the final satellite distribution in all radio zones and citywide.

2. By installing mobile and portable equipment in patrol units in each district while still operating the present VHF equipment in that district, the Department can conduct several basic field test programs without disruption of existing operations. All radio zone transmissions would be simulcast on the appropriate UHF and VHF channel so as to maintain normal net discipline.

3. The Department can now perfect citywide coverage for portables.

4. The Department may now determine any of the following crucial options for its future UHF system:

   a. Mobiles only.

   b. Portables only.

   c. Mobiles and portables.

Under this plan the Department would transfer the equipment from one radio zone to another radio zone until all of the zones have been engineered. During this time, the full compliment of portables and mobile radios made available for special events can operate on one of the UHF frequencies.

3.0 Specifications

A review has been made of the Department's specifications. This section will deal with several basic areas. The details associated with all of the general hardware is handled elsewhere on the Analysis Sheets.

3.1 Coverage

The specification calls for achieving a specific quality of two-way communications a given percentage of the time. This method of specification is sound. However, the specification does not deal with the responsibility for selection and measurement of the system's performance, nor does it deal with the responsibility for any additional labor and equipment that may be required in order to bring the new system up to the level specified.

It is recommended that the Department specify the method of selection. A possible method of selection is as follows:

> The Communications Division will select forty (40) or more locations in each radio zone for measurement of system performance. The selection will be based upon anticipated difficulty in radio propagation and crime incidence. The system shall provide CM3 in at least 90 percent of the locations selected and a useable signal in 98 percent of the cases.

The Department should, at this point, consider its position regarding additional labor for installation and engineering. Also, the cost for additional equipment that may be necessary to achieve the required coverage will require funds. With the additional satellite sites potentially available under the implementation plan recommended, the Department should require the successful bidder to locate and install all necessary sites regardless of number. The five (5) satellite receiver assemblies would be available for this purpose.

3.2 Portables

The portables as presently specified would impose limitations because of size and weight specifications.

It is recommended that:

> Portables be selected or specified that more nearly reflect the future requirements of the Department.

3.3 Voting System

The specifications of the basic method of satellite receiver selection call for measurement of audio and noise quality as received at the central repeater site. The New Orleans telecommunications environment has been reviewed to ascertain the significance of the centralized signal measurement method as opposed to quantizing the received central strength at the satellite. The information presented by the Department regarding the nature of its telephone lines and service provides the most significant basis for the specification of a voting system which includes a measurement of the quality of the transmission link between the satellite and the central site. The system proposed by General Electric measures the signal quality as received at the central site and thereby measures the total effect of all telecommunication links between the source of the message and the central site. The system also quantizes by 3db which provides a second distinct advantage. The system as proposed by both RCA and Motorola Inc., uses tone coding of the signal quality at the satellite and quantizes in 10db steps. In this instance, a marginal 10db quality signal would not be voted over a very high quality 19db signal. In the marginal telephone line environment of New Orleans with rapidly changing transmission losses and noise levels, the more precise quantizing of the General Electric type system offers a second distinct and highly desirable advantage. Operation of both the Motorola voting system and the General Electric voting system has been observed by the consultant in connection with this program. Both systems are reliable and considered completely operational in the public safety services. Because of the specific telecommunications environment of the New Orleans Police Department, the consultant concurs with the Department's specification of a voting system which measures signal quality as received at the central repeater site. This specification would offer the Department two very distinct and necessary advantages over remote signal evaluation.

3.4 Additional Information from Manufacturers

The bidders included Specification Sheets for the equipment proposed. In general, these sheets do not delineate fully the model numbers and special features which the vendors propose.

3.5 System Integration

It is recommended that the New Orleans Police Department obtain a systems upgrading proposal from the vendors. This proposal would be aimed at clearing up the existing VHF problems at the central transmitter and antenna site and to assure proper integration of the UHF system with the existing VHF system.

The findings presented here are preliminary and do not specifically represent the final conclusions of the consultant or the Public Administration Service. These are provided for the purposes of review with the staff of the New Orleans Police Department to assist in the gathering of data and definition of the problems under consideration.

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