

CITY COUNCIL MEETING

AUGUST 19, 1981

AK 41

CC-20  
CC-47

COUNCIL  
AUTHORIZES 911  
IMPLEMENTATION

Following receipt of a report entitled, "First Phase Report of the Telecommunications Consulting Study", as prepared by Dr. Henry L. Richter, Council, on motion of Mayor Pro Tempore Murphy, Katnich second, directed Staff to implement the proposal contained within the report, and the necessary installations for 911, including the automated number I.D. System.

**CITY COUNCIL**

JAMES A. McCARTY, Mayor  
ROBERT G. MURPHY, Mayor Pro Tem  
RICHARD L. HUGHES  
WALTER KATNICH  
JAMES W. PINKERTON, Jr.

**CITY OF LODI**

CITY HALL, 221 WEST PINE STREET  
POST OFFICE BOX 320  
LODI, CALIFORNIA 95241  
(209) 334-5634

HENRY A. CLAVES, Jr.  
City Manager

ALICE M. REIMCHE  
City Clerk

RONALD M. STEIN  
City Attorney

September 23, 1981

Mr. C. E. Dixon  
County Administrator  
San JOaquin County Courthouse  
Room 707  
222 E. Weber Avenue  
Stockton, CA 95202

Re: 911 - Emergency Telephone System - Automatic  
Number Identification

Gentlemen:

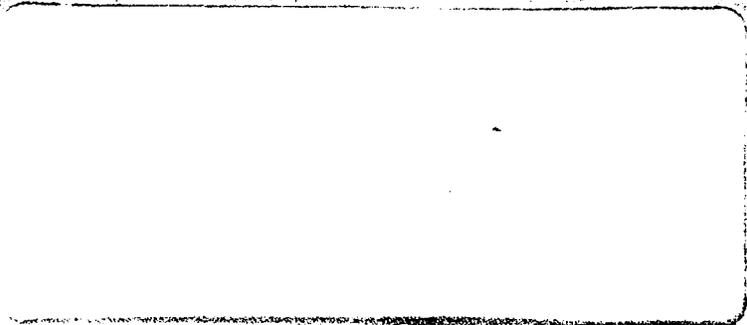
This letter\*will confirm action taken by the Lodi  
City Council, whereby the Council at its regular  
meeting of August 19, 1981 directed Staff to imple-  
ment the necessary installation for the 911-Emergency  
Telephone System, including the automatic number  
identification.

Should you have any questions regarding this action,  
please do not hesitate to call this office.

Very truly yours,

Alice M. Reimche  
City Clerk

AR:dg



**TeleComm Consultants Inc.**

8812 E. Las Tunas Drive  
San Gabriel, CA 91776  
213/445-0249

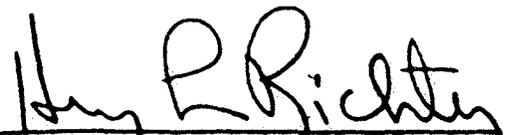
TCI-210  
July 24, 1981

FIRST PHASE REPORT  
TO THE  
CITY OF LODI CITY COUNCIL  
TASKS 1, 2, and 3

Submitted to:

Mr. Jerry Glen  
Assistant City Manager  
CITY OF LODI  
221 West Pine Street  
Lodi, CA 95240

Approved by:



Henry L. Richter, Ph.D., PE  
President

TELECOMM CONSULTANTS, INC.  
8812 East Las Tunas Drive  
San Gabriel, CA 91776

# FIRST PHASE REPORT TO THE CITY OF LODI CITY COUNCIL

## TASKS 1, 2, and 3

This report documents Tasks 1, 2 and 3 of the TCI consulting contract with Lodi, and summarizes both data and findings.

Some of the information has been presented piecemeal to the staffs of the Police Department, the Fire Department, and the City Manager's office. This allowed the accuracy of some of the observations and conclusions to be checked; adjustments have been made where TCI has become aware of them.

### 1. TASK ONE -- BASELINE DATA

Task One involved collecting and examining the FCC license data for the city; all is in order at the present time. TCI took a set of radio and telephone traffic statistics in both the police and fire dispatch centers. This was reduced to chart form to help in determining the necessary staffing patterns, necessary telephone lines, and other requirements.

#### POLICE

A radio coverage survey was completed, during which time two TCI field engineers made actual signal strength measurements of the police system throughout Lodi (i.e., quality of radio coverage). Their conclusions substantiate some of the expressed difficulties. Other radio difficulties that have been reported by police appear to have resulted from poor radio usage (improper training) and the lack of a proper battery-charging procedure for handheld radios. This situation is typical; as yet, TCI has not worked with a department that did not have this problem.

Three staff members conducted an evaluation of the police dispatch center; the equipment in it was documented, floor and

equipment plans of the area were drawn, and time was spent observing operations in the dispatch center and riding in the police cars. As a result, a set of deficiency statements and suggestions was prepared which has already been provided to this police staff; comments on some of these appear below. Several serious deficiencies in the radio equipment and system (of which many people were already aware) were identified and will be addressed soon.

## **FIRE**

TCI staff also performed an evaluation in the fire dispatch center and observed operations there. Interviews were conducted with some of the key fire personnel to determine how Lodi's police and fire departments use and view their communications system.

## **TELEPHONE SYSTEM**

TCI has also examined the telephone system and its utilization by the Police Department, Fire Department, and local government (City Hall). TCI has examined present telephone charges and expects to report an evaluation of the effectiveness of Lodi's present telephone expenditures that has been based on an analysis of the bills.

## **2. TASK TWO**

Task Two of the TCI work statement involved interviewing the management and numerous key police and fire department individuals to determine their expressed and perceived needs for Lodi's public-safety communications. These responses are characteristic of public-safety organizations similar to Lodi; the needs cover the subject range of dispatch center layout, dispatch console equipment capability, radio system effectiveness, radio system coverage, mutual-aid considerations, communication with the Sheriff's Department and other nearby departments, and access to the various external data bases that are available to the city.

The TCI staff documented Lodi's operating methodology and understands both that department's dispatch process and the additional duties that are required of both police and fire dispatch personnel. Particular attention has been paid to the separate operations of police and fire, so that the possibility of merging the two can be considered, and the subject of a possible merger has been discussed at some length with the management of the two departments.

#### RADIO COVERAGE

Better radio coverage is among the foremost needs. The examination of the reports of coverage difficulties, and of the TCI field measurements, demonstrated that Lodi's present police radio system operates marginally (as well as any typical local government, VHF-highband, simplex system does), but this is significantly below the capability which could be expected.

Most complaints about coverage relate to mobile to mobile or to mobile to handheld-unit communications. Citywide coverage in this mode will, of course, be limited. Coverage from the base station to either mobiles or handheld radios was found to be only minimally acceptable. It appears that the quality of communications is poor because a special audio filter has not been installed at either department's base station; this allows a loud "buzz" to cover the transmissions.

A degrading influence is the fact that the police transmitting antenna is not located on top of the antenna mast. Its height on the tower was limited to reduce interference from another department to the north. This reflects a compromise that often is made; in this case, the damage of interference was balanced against the frustration of poor coverage.

Users need to be educated in the proper way to use a handheld radio, and a better battery-charging routine needs to be established and followed.

The present police and fire consoles have reached (or passed) the end of their useful life. Spare parts are no longer obtainable, and work on them is quite difficult due to their age and to the lack of physical access to them. They also lack the many capabilities which are present in more modern console hardware.

Early attention needs to be paid to putting the basement room (where the fixed transmitting and receiving equipment is contained) into better order. The room is very cluttered, the routing of wires is quite bad, the room has inadequate cooling, and it is certain that maintenance must be difficult for the technicians. TCI has been in contact with Delta Communications, the city's new radio maintenance contractor, to put some of these affairs into order.

### **3. TASK THREE -- SYSTEM ALTERNATIVES**

TCI analyzed the situation, considered the possible alternatives for the police radio system (for joint dispatch and for the console equipment), and is now ready to make recommendations. The recommendations are general and are being presented to you for your consideration and approval. After approval or modification of the modifications has been received, TCI will move ahead rapidly in developing specifications for the equipment that is needed.

#### **POLICE RADIO**

The first recommendation concerns the police radio system. TCI studied the system extensively, made actual field strength measurements, and measured the effectiveness of the base radio equipment and the mobile equipment. At this point two alternatives should be considered. One would be to replace a considerable amount of the present police VHF highband radio system and add some augmenting satellite receivers around the city. Converting the system to use "mobile relay" equipment (which in effect, repeats all transmissions so that anyone within range can hear any transmission made by either a mobile radio or a handheld radio) would be desirable.

The other alternative would be to develop a new radio system on a new frequency band. This latter suggestion was advanced because San Joaquin Sheriff's Department is in the process of developing a unified countywide radio system in the UHF spectrum. When this has been completed, neither the Lodi units nor dispatcher will be able to access the Sheriff's radio system because it will be operating in a different frequency region. The Lodi police staff feels that communication with sheriff's vehicles would be desirable (Stockton PD also operates in the same UHF range, and contact with them would also be possible if this band change were to be made.) In addition, since the San Joaquin Sheriff's Department currently operates high-altitude sites, these are available for occasional use by Lodi police personnel when out of the city, and would permit police to contact either their own department or the sheriff's dispatcher, if necessary. This range would be countywide and even into adjacent counties. That present capability will disappear with the Sheriff's Department changeover.

These two alternatives were considered and the implications for each studied. It is the recommendation of the TCI staff that the City of Lodi develop a radio system in the UHF portion of the spectrum so that it will be compatible with the sheriff's new radio system; further, it will be able to operate in the mobile relay mode, thus allowing direct communication between everyone with a police radio (including handheld radios) within the Lodi city limits and for some distance outside the city. Preliminary tests indicate that the new system recommended here would have a communication radius from the police department for handheld radios out in the open of about eight to ten miles.

The cost implications of correcting the problems in the police radio system should be considered. The city has a quotation from General Electric to install a series of satellite receivers around the edge of the city and to put in a voter-comparator system to augment the now-deficient coverage. In addition to that expense, because of its age, much of the equipment should be replaced so that

the operating effectiveness of the system can be maintained. TCI estimates the cost of improving the existing system to be about \$35,000; the GE bid for just the "quick fix" (satellite receivers) was \$20,000.

TCI feels that conversion of the system to the UHF frequency range should cost about \$50,000. This would buy a totally new radio system, with a lifetime that would well exceed the present system (even a system with the \$35,000 corrections). The long-term viewpoint suggests that moving to UHF would be more cost-effective, as it would provide radio coverage that will be superior to even that of the upgraded highband system and would allow continued mutual-aid communications with the Sheriff's Department or with other nearby law enforcement organizations.

#### **SECOND POLICE FREQUENCY**

In addition, the Police Department expressed the desire for a second radio frequency for tactical operations to avoid congesting the dispatch frequency. A move to UHF would be a possible solution to this need. The sheriff's department intends to establish tactical frequencies of their own, one for north county and one for south county. The tactical north coverage would be provided by mobile relay equipment located at the Lodi Police Department with antennas on the county tower in back. If an arrangement could be worked out with the sheriff's department, the sheriff's tactical north could also be used by Lodi police for local tactical purposes. The county will be installing all of the necessary equipment in the Lodi Police Department to operate this tactical north frequency; in effect, a second frequency, with a top quality mobile relay-type base station, could be obtained at near-zero cost, as the only cost would be the addition of this frequency to the new Lodi mobile and handheld radios.

One of the first results of the police radio system conversion to UHF would be that some highband mobile and handheld radios would

become available. These could be converted to fire use quite inexpensively. A conversion to the fire frequency would cost about \$120 per unit, and the transfer of the police radios (some of them are quite new) would release good quality equipment for installation in fire units. In addition, a number of handheld radios would be available to the fire department for their use; this would alleviate some of the fundamental needs discovered in the fire radio system.

The TCI staff wishes to urge that the police system be converted to UHF. Much of the police radio equipment is quite old; even though improvements can be made and upgrading of equipment can be accomplished, without really major expenditures, the system it will continue to give problems. The kind of budget that will be required to repeatedly upgrade the present police radio system cannot be cost-effective.

A TCI suggestion to the city management is if the police operations are converted to UHF and UHF equipment is to be purchased, this should be coordinated with San Joaquin County. San Joaquin County's procurement of radio equipment for the sheriff's department, local government, dispatch center, jail system, and the like will be extensive, and if Lodi could collaborate in this County procurement, the city's discount on the equipment should be much better than would be available with an independent procurement; the competitive interest in a large procurement is always greater than in a small procurement. Some discounting should be expected on a competitive bid for a new radio system, and this discounting should run between twelve and 25 percent. An additional ten percent might be saved if Lodi were to procure the equipment as part of the County's system purchase.

#### JOINT DISPATCH CENTER

The next subject concerns the establishment of a joint dispatch center for Police and Fire. Police and Fire now operate dispatch centers that are only a short distance apart and within the same

building; the question of combining these is natural. The TCI staff studied both operations and looked at the requirements and the economies. The fundamental conclusion is that a consolidated police and fire dispatch center does not offer any particular advantage to the city. However, some cooperative efforts would enhance the operation of both.

Staffing is one of the economic considerations. The Fire Department does not have any full-time dispatch staff; during normal working hours, the fire department secretary handles the dispatch console and the telephones. When a fire call comes in, the secretary takes the information, dispatches the equipment, maintains the status, and keeps in contact with the field units. After hours, the fire telephone is answered by a fireman in the fire station, who takes the information and determines the response; the fire department, in essence, self-dispatches. However, to provide after-hour coverage of phones and radio, one fireman must remain behind in the station at all times. The police dispatch center could provide a valuable service to the citizens of Lodi by assuming responsibility for handling subsequent after-hour fire calls, assisting with fire radio operations, or providing necessary contact during those times when the firemen are out of the station. In this way, the full fire force could be available on the fire scene, just as they are during working hours when the secretary is on duty.

After 911 telephone service has been established, all emergency calls will terminate in the fire department. When a fire call is received, the first action will be to transfer it to the fire telephone. This telephone would be handled either by the departmental secretary or (after hours) by a fireman. If a second call comes in and no one in the fire department can answer it, the police complaint-taker could obtain the necessary information and either communicate this to the fire forces or take any necessary mutual-aid steps.

Selective transfer is one feature that will be obtained with 911. The city needs to include a fire-transfer button needs in its 911 telephone equipment order; this would be used to transfer any fire calls that have come in to fire dispatch to the secondary 911 fire line. This button would be located at fire dispatch, and could be located in the key fire station where the after-hours answering will be done; it could also be duplicated in the police department so that any unanswered fire call could be picked up.

#### DISPATCH CENTER CONSOLE EQUIPMENT REPLACEMENT

The next subject concerns total replacement of dispatch center console equipment. The console equipment was obsolete a number of years ago, when the company manufacturing it went out of business and spare parts became unavailable. The patchwork corrections require increasing amounts of attention. In addition, the consoles lack many features now available with modern dispatch equipment. For this reason, the TCI staff strongly urges that the city replace the dispatch console equipment. A two-position console should be obtained for the police department and a one-position console for the fire department. A brief list of features and estimated costs has been prepared. A two-position console for police should cost about \$26,000 and a single console for fire about \$15,000. These prices, which fall somewhere between the retail list prices and the maximum discounts that might be expected under a highly favorable competitive bidding situation, are felt to be realistic. The fire logging recorder is a very old device and should be discarded. The police logging recorder is in reasonably good condition and should last for several more years; it has sufficient channels to log all of the police radio and telephone calls, as well as fire radio and telephone traffic. TCI recommends that instant-replay recorders be added to each of the three positions and that this equipment assume some of the present police logging recorder load.

Combined police and fire dispatching would require additional space in the police dispatch area, and the building layout cannot

accommodate the necessary expansion of the police dispatch center. However, maintaining independent police and fire dispatch will alleviate the necessity of expanding the police dispatch room.

Adopting TCI's recommendations would give the Lodi a fine public-safety radio system, one which would have much greater capability than now exists and which should provide trouble-free operation for the next ten years. Without the recommended new equipment, public-safety communications will be in a precarious and inferior position, and the cost over the next few years for this service will still be expensive.

TCI has enjoyed working with the city staff. Lodi is a very interesting and delightful city, and TCI has appreciated the progressive and professional attitudes that have been encountered.