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The History and Development of a Consolidated Communications System and an Emergency Medical Services System in Nebraska

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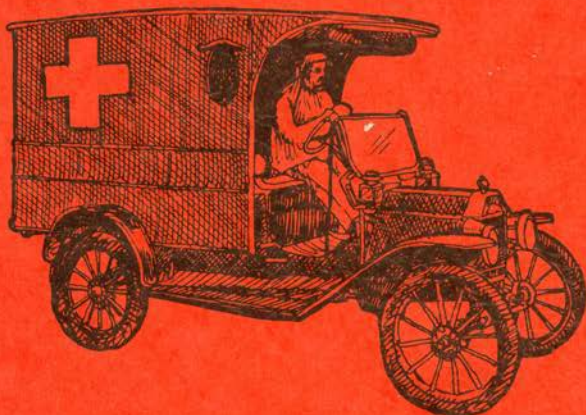
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The History And Development Of A Consolidated Communications System And An Emergency Medical Services System In Nebraska

from the BLACK BOX



to the STAR OF LIFE



**Kenneth F. Kimball, Donald G. Penterman
Rollin D. Schnieder**

THE HISTORY AND DEVELOPMENT OF A
CONSOLIDATED COMMUNICATIONS SYSTEM
AND AN
EMERGENCY MEDICAL SERVICES SYSTEM
IN NEBRASKA

Kenneth F. Kimball
Donald G. Penterman
Rollin D. Schnieder

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Service Press, Henderson, Nebraska

Acknowledgment

We wish to thank the many people who were kind enough to review portions of this material as well as those who shared their memories and experiences with us.

A special thanks to Bev who labored untold hours in sorting, correcting and revising much of the material in order to bring this book to its present form.

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1985
DEDICATION

5-16-88 Bad

This book is dedicated to

SAM SEELEY, M.D., of the National Academy of Science
Washington, D.C.

a native Nebraskan from Palmer

LEO SCHWARTZ, Department of Transportation
Washington, D.C.

a native Nebraskan from Sargent

M. M. MUSSELMAN, M.D., Department of Surgery
University of Nebraska College of Medicine
who provided inspiration, guidance and counsel
and

with special recognition of people
such as the following without whose efforts the events
in this book would not have occurred.

LYNN W. THOMPSON, M.D., Omaha

TYLER RYAN, LT&T, Lincoln

THOMAS C. WOODS III, LT&T, Lincoln

EARL NELSON, Hamilton Telephone Co., Aurora

C. G. GROSS, M.D., Cambridge

RICHARD FRUEHLING, M.D., St. Paul

EMMETT J. JUNGE, Lincoln

and

to the volunteer and salaried ambulance attendants
the EMS Regional Managers
and the many other Nebraskans who, through
their untiring efforts, worked
to make the Emergency Medical Services System
in Nebraska so effective.

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INTRODUCTION

The authors were privileged to be involved as participants or as observers in the 1960s and 1970s during the time two systems, Consolidated Communications and Emergency Medical Services were under development in Nebraska.

As time passes, more and more of those involved during the early days of the programs will have passed on. It is our desire to set down what we see as the major events in this evolutionary process while the details of these events and some of the involved people are still available.

A book such as this cannot cover every event, and unquestionably some people or events will be inadvertently left out. We regret any such oversight.

Nebraska has been blessed with volunteers whose dedication is almost unbelievable and whose only compensation comes from knowing they have helped their fellow citizen. Almost without exception, those involved in the early days discussed in this book were responsible for their own travel expense and lodging.

You will find here the story of the evolution of the two systems both of which had great promise for the citizens of Nebraska. One was born, began to grow and then was killed on the vine. The other was born, evolved with numerous growing pains, and appears to be healthy and well. Each system served to help the other yet each was different.

The concepts of a statewide Consolidated Telecommunications System and of a Total Emergency Medical Services System are presented in the first two chapters and allow the reader to grasp the end result strived for.

The Consolidated Communications System evolved in the early 1960s. The Adjutant General's office had identified the urgency for emergency operations and the substantial savings which might be realized. Many areas of state government were interested in reduction of duplication and cost of such a system. This was a unique Nebraska concept and a great chapter of state leadership in the early motivations for telecommunications evolution.

The Total Emergency Medical Services System is

not an idea unique to Nebraska but was the guiding principle for a system developed in our state. You will find throughout the book that cooperation between individuals and agencies was exceptional.

Emergency Medical Services has benefited from the fact that Nebraska is essentially a rural state without sophisticated or "in-place" systems so that territorial battles were at a minimum, except in Lincoln and Omaha, as the EMS system evolved. It was relatively easy to start from scratch to build toward a TOTAL Emergency Medical Services System without having to dismantle or modify existing programs. However, where programs exist and appear to be working well, it is very difficult to alter or modify them. Most people are honest and do what they do because they believe it is right. Hospitals and physicians tend to see any change in the status quo as a threat since had the need for change been recognized it would likely have been done already.

Much of the groundwork that had been done on the communication system allowed for the orderly evolution of a statewide emergency medical net for use by the EMS system. In some instances, the work done on communications helped to stimulate the growth of the EMS system, while in other instances the funding available for EMS helped to stimulate the consolidation of the communications for various sections of the State. The radically new concept of cross-talk or mobile-to-mobile, where an ambulance could communicate directly with police or fire units, lent excitement to the field.

We hope you will find this material interesting to read and will better appreciate the unique thoughts and efforts that have helped our state evolve to its present status. We assume that you, like us, will be motivated to wonder at the losses and gains that have happened in Nebraska.

K.F.K.

D.G.P.

R.D.S.

NEBRASKA VITAL STATISTICS

1970

Population-----1,500,000

Area -----77,000 Square Miles

93 Counties

59 Counties have less than 10,000 population

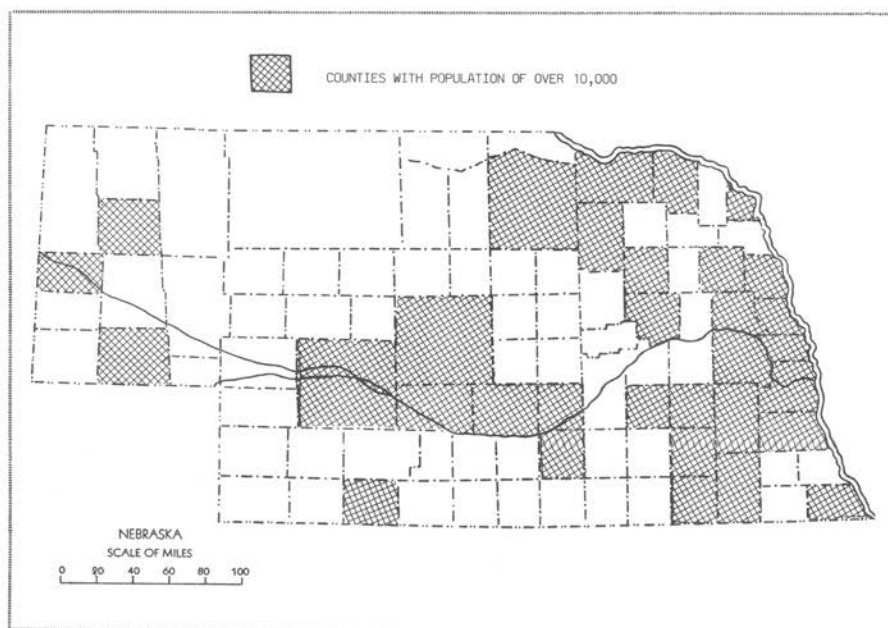
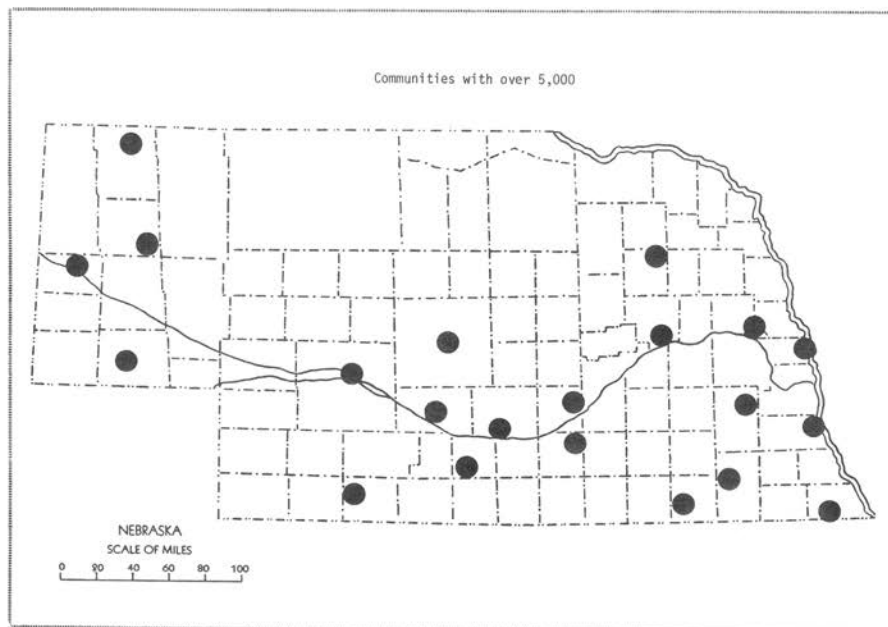
22 Counties have between 10,000 & 20,000 population

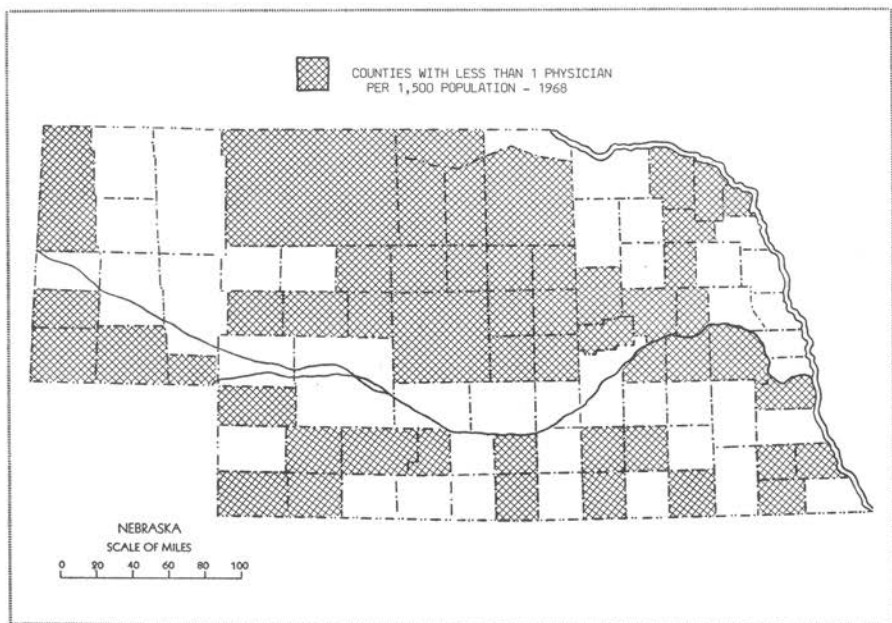
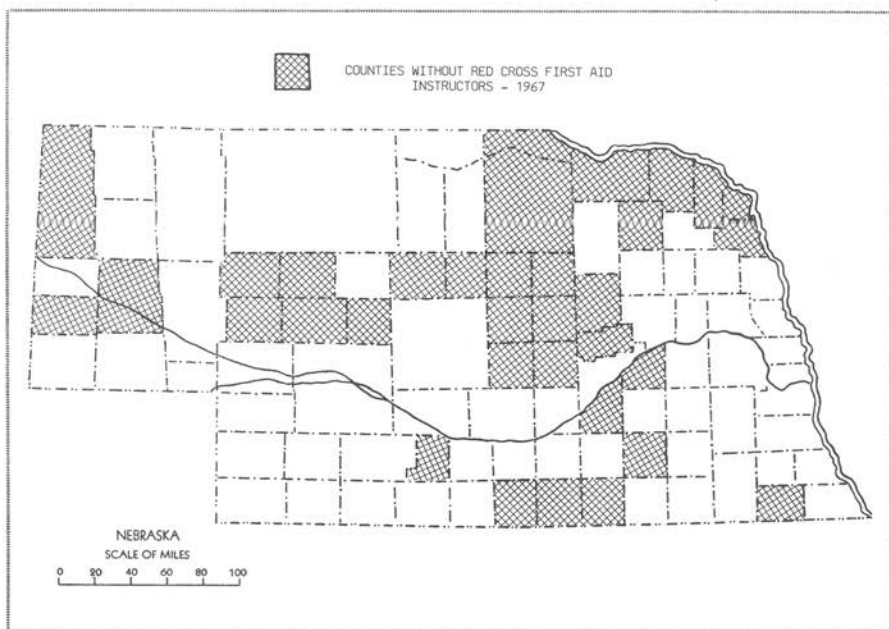
6 Counties have between 20,000 and 30,000 population

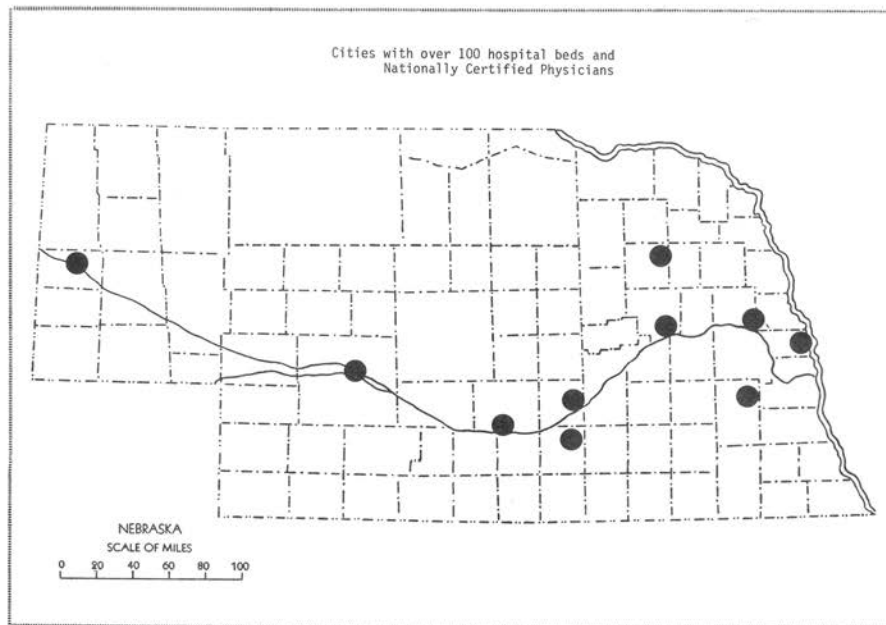
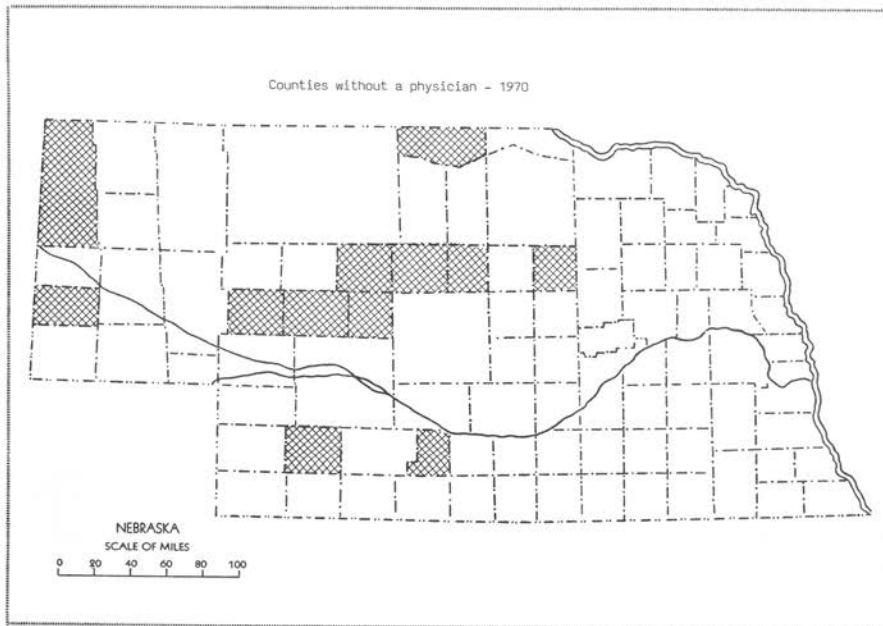
6 Counties have over 30,000 population

20 Counties have no hospital

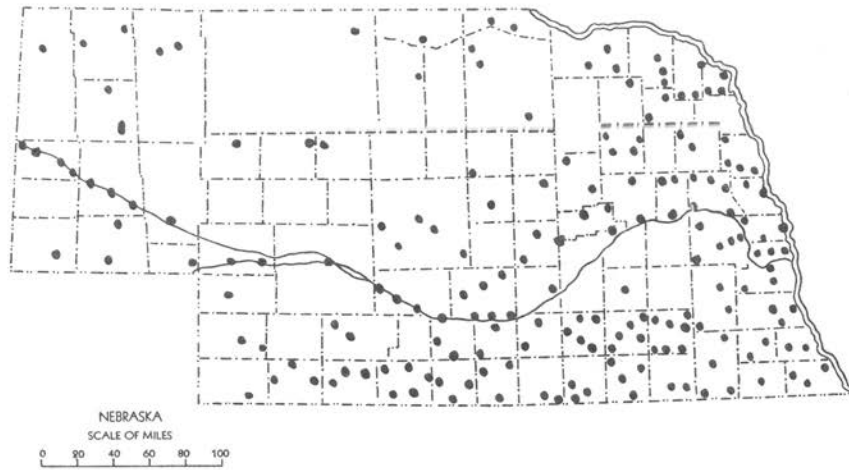
12 Counties have no physicians



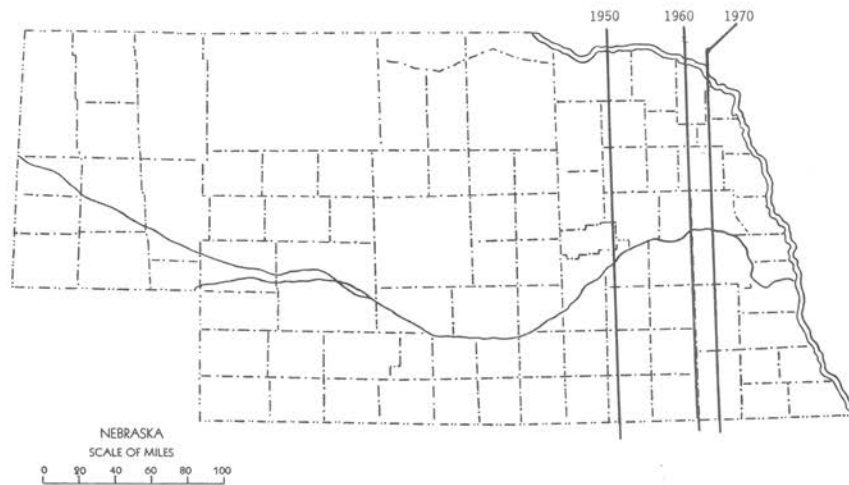




Ambulance services in 1970



50% Population Shift



A CONSOLIDATED COMMUNICATION CONCEPT

Historically, communications systems within the State of Nebraska and the nation have been totally independent of each other. Each system was built with extra capability so that in times of emergency it could still function. Where communication between any two systems was needed, two or more radio sets were purchased and installed in one vehicle.

A study carried out by the Adjutant General's office at the request of Governor Frank Morrison showed that there was duplication of equipment and personnel involved in running the systems. Each system was independent and could not communicate with any other system and, although many radio systems were in place, every disaster review determined that one of the major defects in preventing effective response concerned communications.

The Consolidated Communications System was the result of this study and represented a very advanced "state of the art" communications program. It eliminated duplication of communication systems and personnel; it allowed each agency to use its own frequency for daily use but allowed cross-talk to any other system's frequency in times of emergency; it provided a system that reduced interference on the radio bands; it allowed the ETV system to ride on the towers of the Consolidated System eliminating the lease of independent towers; and it allowed the sharing of all communication systems so everyone could have a more reliable system that worked better at less cost.

Nebraska was first in the country to suggest such a system on a statewide basis. This system was to be implemented in two areas on a trial basis and then expanded to include the entire State. It began in the 24-county area around the Lincoln and Grand Island Communication Centers and it operated for about two years with a 99.99% reliability. It passed the requirements of the National Civil Defense system which agreed to pay for a portion of its use. Bids were taken for expansion of the system to the rest of the State. Everything said about the system sounded ideal, but in spite of a glowing report by the Director of Administrative Services a few months later the contracts were canceled.

(See Appendix C.)

A TOTAL EMERGENCY MEDICAL SERVICE SYSTEM CONCEPT

The concept of a Total Emergency Medical Services System consists of the following (taken together, they result in a system greater than the sum of its parts):

1. Public Education
 - How to access the system in order to make use of it
 - First Aid training for all citizens
2. Detection
 - Knowing an accident or injury has occurred and that help is needed
3. Accessing the System
 - Telephone via 911 or other common number
 - Use of Channel 9 Citizens Band radio
 - Other system radios such as taxi, railroad, school bus
4. Central Communications Center
 - A Central Dispatch Center where all calls are received and all emergency services dispatched
 - A system which has cross-talk capability so that the various radio services may intercommunicate or be connected to telephone lines on an as-needed basis
 - Properly trained personnel in the Center so they may dispatch the best equipment and ambulance attendants available
 - A modern system that either uses or is designed to evolve into a computer assisted dispatch service when needed
5. A Response Service
 - Properly trained personnel
 - Properly equipped ambulances
 - Standardized patient forms for rapid review of the patient's condition
 - Radio equipment for dispatch and direct intercommunication between hospital, other emergency vehicles and medical consultants on an as-needed basis
 - Medical supervision according to the level of ambulance service provided
6. Well-Equipped and Staffed Medical Facilities with needed support facilities

7. A System for Interhospital Transfer of patients needing to be moved safely and rapidly to a special care facility--when possible, this should not remove the usual ambulance service from the community
8. Identified Consultants with a system for their ready access in time of need
9. Rehabilitation Services identified for patients in need of such care
10. System review and feedback so problems are identified and corrected rapidly--correction to be constructive, not punitive

No community has such a total system now, but each was encouraged to develop in such a way as to evolve into a total system. Every effort was made to see that various parts of the system were put into effect in a parallel manner.

Many areas of the country have developed excellent EMS systems, but few, if any, have given as much attention to the parallel development of all segments of their EMS system. Nebraska may have been unique in its efforts to see that all areas of the State evolved their EMS system with this thought in mind.

National Guidelines from DHEW defined their "ideal" EMS program by 15 system components:

1. Manpower
2. Training
3. Communications
4. Transportation
5. Facilities
6. Critical Care Units
7. Public Safety Agencies
8. Consumer Participation
9. Accessibility to Care
10. Transfer of Patients
11. Standard Medical Record-Keeping
12. Public Information and Education
13. Evaluation
14. Disaster Linkage
15. Mutual Aid Agreements

While the DHEW components encompass the same functions of an EMS system as the ones previously mentioned, it seemed to some of us that the former gave a truer picture of a "flow-through" EMS system and would allow for the more orderly development of a program.

Current concepts of operation would involve the following personnel in the pre-hospital phase of care.

FIRST RESPONDER: This person is trained as someone who can rapidly respond to an illness or accident and stabilize the patient until an ambulance can arrive. First responders play an important part in the very rural areas where ambulance services may not be available, and in the populated areas where, by their type of work, they may be rapidly available for immediate response.

EMERGENCY MEDICAL TECHNICIAN-AMBULANCE (EMT-A): This person is the basic or standard ambulance attendant who has taken and successfully passed the Department of Transportation 81-hour course (recently upgraded to 110 hours). The vast majority of our ambulance personnel are trained to this level of care. This represents the national minimum level for ambulance attendants.

EMERGENCY MEDICAL TECHNICIAN-D (EMT-D): This person has successfully taken and passed the EMT-A course and has been specially trained in the use of the defibrillator for immediate use on persons who have suffered a heart attack within the past 3 to 5 minutes and whose heart has gone into fibrillation (a condition in which the heart loses its ability to contract as a single unit and all effective circulation to the body is lost).

EMERGENCY MEDICAL TECHNICIAN-I (EMT-I): This person is an approved EMT-A who has received additional training in the management of shock by the use of I.V. fluids.

EMERGENCY MEDICAL TECHNICIAN-II (EMT-II): This person is an approved EMT-A who has also been trained in the use of I.V. fluids as the EMT-I, but in addition is prepared for the more technical management of cardiac emergencies and may use certain medicines under the direction of Medical Control.

EMERGENCY MEDICAL TECHNICIAN-PARAMEDIC (EMT-P): This person has completed hundreds of hours of training and is allowed to do most patient care procedures under the direction of local Medical Control including the use of I.V. fluids, endotracheal intubation, use of the defibrillator, use of medications, etc. Unfortunately, the EMT-P is not likely to be available except in the larger metropolitan areas due to the need for experience in order to maintain the many special skills.

THE NEBRASKA ADJUTANT GENERAL'S STUDY OF
TELECOMMUNICATIONS

The Adjutant General, as the Director of the State Civil Defense Agency, is directly charged by the Governor with being responsible for emergency preparedness and, as head of the military department (National Guard), is further responsible for military support to civil authority. Time and time again in emergencies, communication has been the major problem in responding to disaster.

A look at the Adjutant General's car showed multiple radio units mounted here and there so that in emergencies he would be able to talk with his military units, with fire, with police, or other groups involved. The car looked like a boat with a dozen fishing poles protruding from its rear.

By 1964, it had become clear that the State was maintaining at least seven complete radio networks across the State, each used by only one system and each sitting idle much of the day. Each system was manned by its own people and in some instances there were as many as five radio towers and control systems in one community. All were developed and maintained by tax dollars. There was a total lack of intercommunication with the exception of the telephone which in times of disaster is often not available for use.

About this same time, the medical people were stirring with their needs for a statewide communication system and the Adjutant General's office was working closely with them to provide guidance and coordination.

The study seemed to point directly to the solution of consolidating all of the systems into one statewide communications network upon which all telephone, radio, teletype and other communications could ride but which could be shared, with Civil Defense and law enforcement having the capability to utilize any or all segments of the system in times of need. Such a system would eliminate the duplication of radio equipment and of personnel. It appeared obvious that costs could be drastically reduced. A separate standby system is costly, mainly unused and certainly unnecessary if one can use an existing system.

These findings were presented to the Legislature and the Governor along with the recommendation that such a system be evolved. Governor Morrison ordered the

establishment of a trial system.

Initial funding of the system was to utilize authorized Civil Defense funds (the system was to be developed to federal disaster preparedness standards) and would establish the portion of the system that would be required to respond to local or national disaster. The remainder of the funds would come from the various agencies already paying for phones, radios, teletypes, etc.

The Legislature approved a study and seven private telephone companies banded together and formed the Nebraska Consolidated Communications Corporation (NCCC). The State was divided into six Civil Defense areas with the Lincoln and Grand Island areas being used as a test-bed. The projection by the State and the hired design consultant was for a statewide system to improve communications and to save over one million dollars each year with projections of five to ten million dollars in future years.

Since the State was already maintaining an ETV network on a lease basis, the cost involved in that system could be drastically reduced by letting it ride on the state system. It was pointed out by the Adjutant General's office that in times of emergency one channel used for color TV could be taken over and that band width would allow some 350 voice channels to be used by the State, or the system could be used to view directly what was going on at the site of a disaster. Thus a state helicopter could fly over an area with video equipment aboard and the Governor and Legislature could view firsthand what the problems were.

The concept was to allow for an orderly growth west and north until it met itself to form a closed loop in the northwestern part of the State. The multiplicity of radio systems being maintained could be eliminated and many more dollars saved.

This was a very new concept and much concern was expressed as to how it would function, whether it would be available when needed, would an agency be losing control of its own radio, etc.

The unique fact was that Nebraska had gotten FCC approval to allow for interconnects at the Central Communication Centers. Each service need have only their regular radio frequency. It would be on the fire, police, National Guard, or whatever frequency they would normally use. In times of disaster, various

radio systems could be interconnected to allow cross-talk--police-to-fire, ambulance-to-police, etc.,--on an as-needed basis. This was a first in the country. Each could also use a phone patch for connecting any radio to any phone or vice versa. Thus, the days of multiple radios in vehicles would be over resulting in a great saving to the public in taxes.

Governor Norbert Tiemann continued the use and evaluation of the two area test-bed system.

Enough interest was generated in the "Nebraska system" to result in "A Midwest Conference on Intergovernmental Telecommunication" in Lincoln June 19-20, 1968. Governors and their representatives from Illinois, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota and Wisconsin attended the two-day conference held at the Continuing Education Center in Lincoln.

The cost sharing system concept attracted national attention. It was designed for disaster preparedness yet it was to be utilized for day-to-day activity with federal, state and local government sharing the cost. Phase I was in place and had become operational in the Lincoln/Grand Island 24-county area. Phase II, which was to include an extension of the system into 12 more counties, was being presented to the State for acceptance. (See the chapter entitled NCCC.)

The National Aeronautics and Space Administration (NASA) was keenly interested in the system and wrote to Nebraska offering to set up an evaluation of the technical aspects of the system. They would provide the State with three of their communications technical personnel at no cost to help with the planning.

James McCorkle, telecommunications engineer of the Denver Region Civil Defense Office, was assigned to work closely with the State in an effort to identify a cost sharing basis for the continued use of Civil Defense money. It was generally agreed that Civil Defense would pay for half the cost of any necessary part of the system that might be needed for Civil Defense use. However, just what was a vital part of the system was still being negotiated.

On August 15, 1972, Governor Exon wrote to James C. Fletcher, Administrator of NASA, stating that Nebraska had recently modeled and successfully tested the first phase of a consolidated system and that the State was out with system specifications to extend the work-

ing model to a statewide consolidated system.

Marshall Space Flight Center technical help was made available to the State for evaluation of the system.

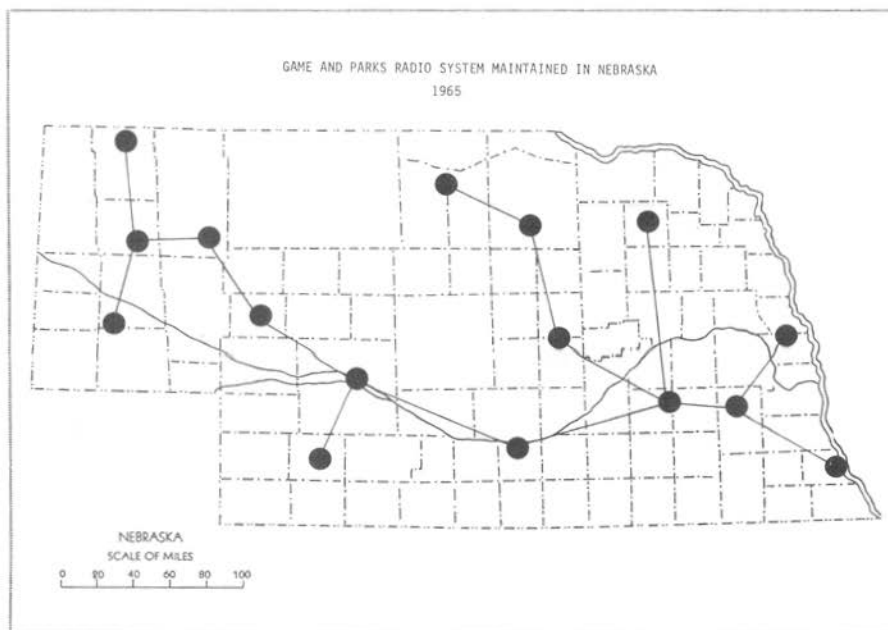
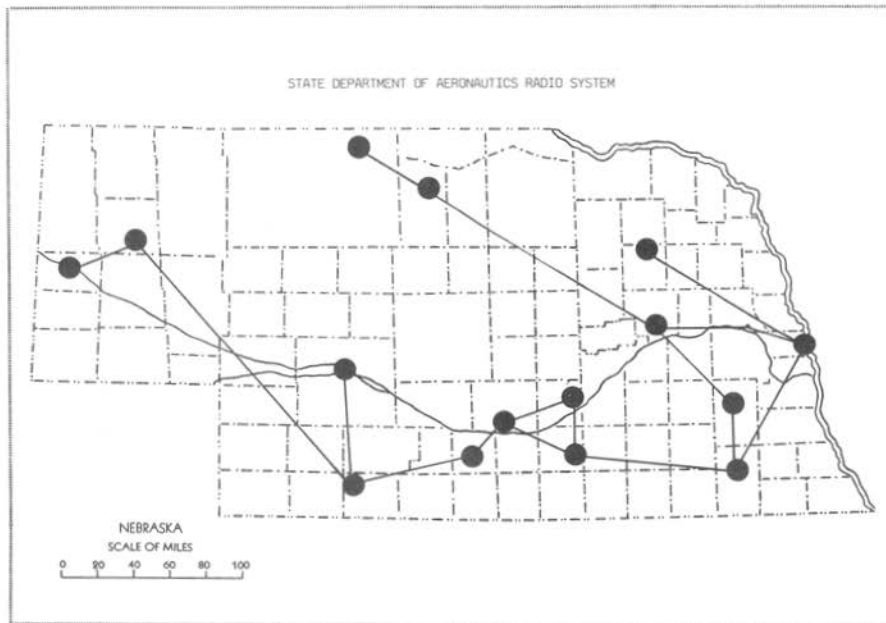
Heavy national and even international correspondence expressed interest and support for this far reaching concept.

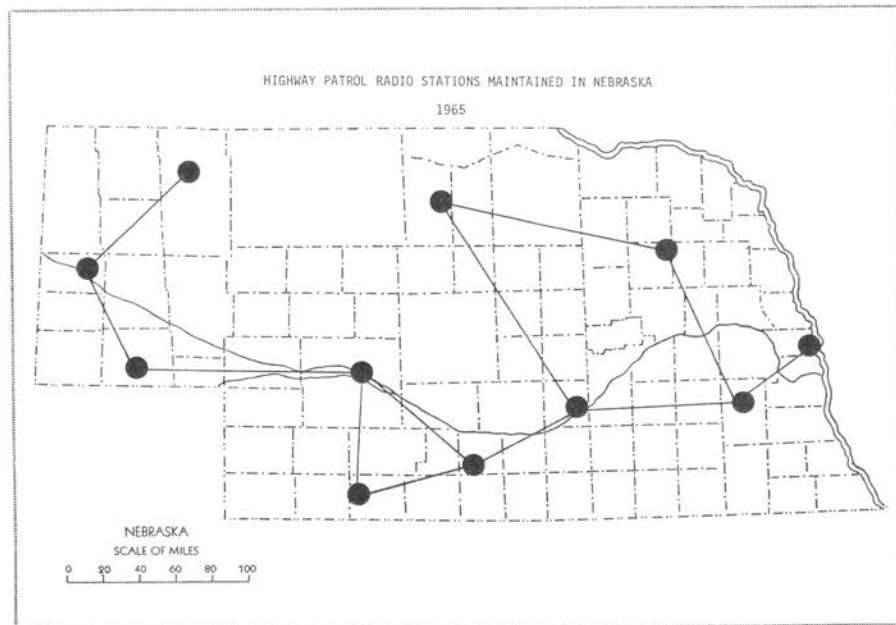
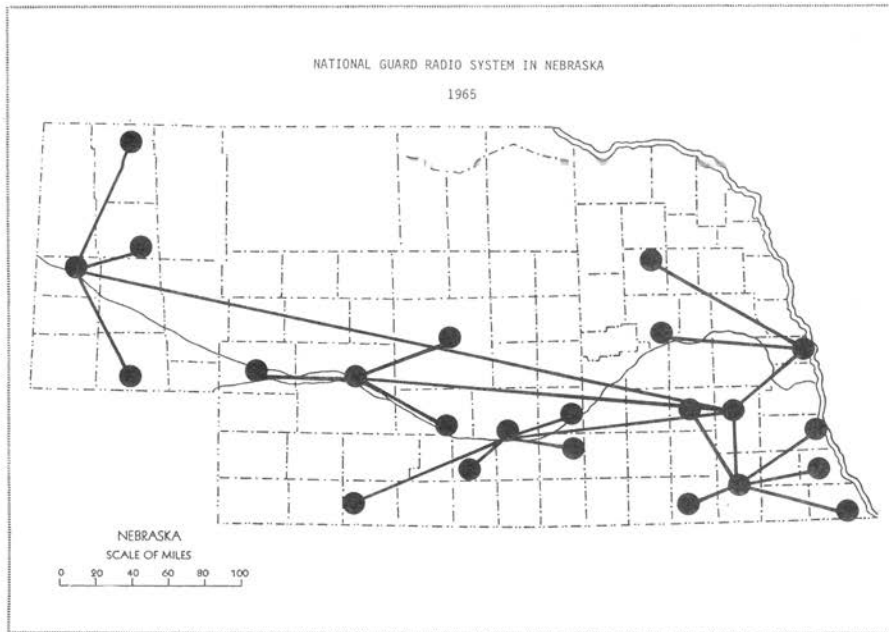
There was documented savings of one million dollars the first year and even greater savings in following years.

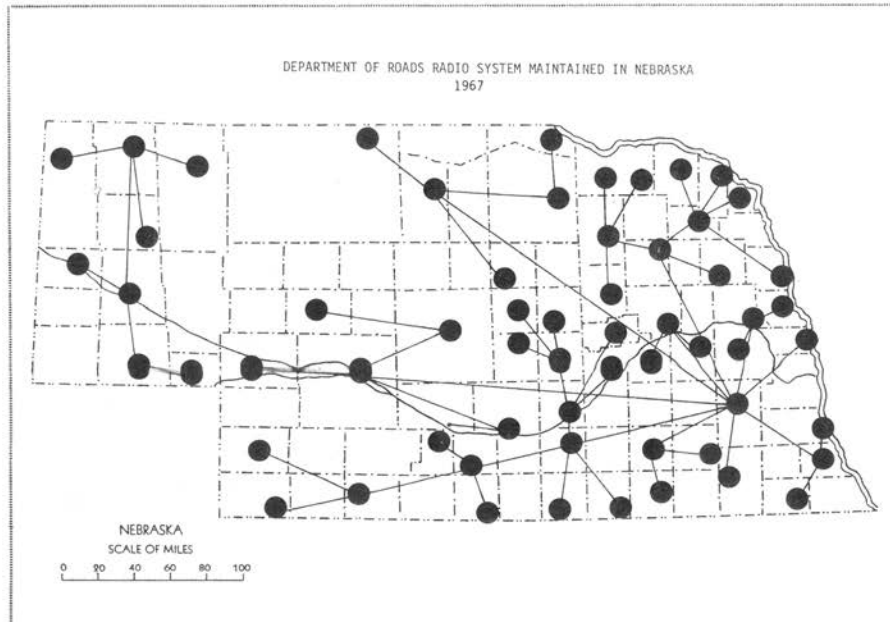
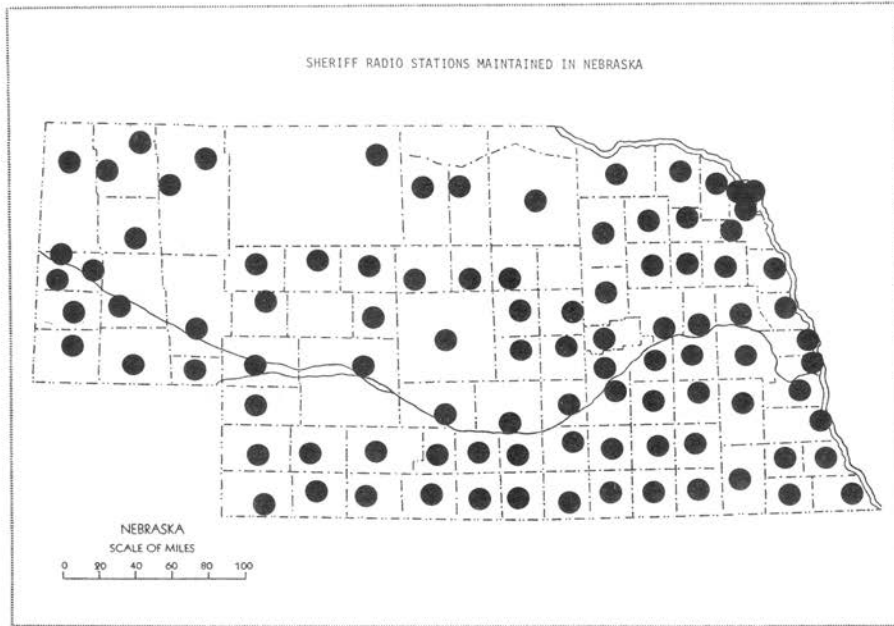
Nebraska, rather than accepting the next phase of the system, canceled the Civil Defense funding and effectively closed down the system within months of having written the above letter. One of the reasons given was that the State should not be in competition with the private sector, yet NCCC was totally a privately owned corporation as were the others who had bid on the system in the beginning.

Duane Anderson Jr., Director of Telecommunications for Iowa, stated, "The greatest tragedy of our time is the demise of the Nebraska Consolidated Communications System."

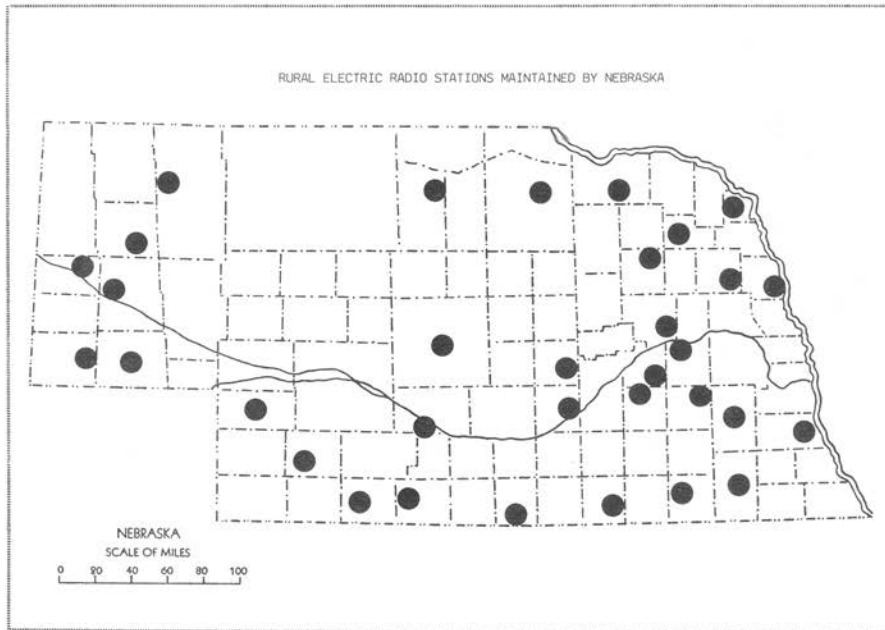
Another area of activity in which the Adjutant General's office was involved concerned efforts to find useful and effective employment for the disabled veteran. The concept of utilizing disabled veterans as communication personnel in the consolidated communication center area was developed, and Ed-U-Tec was hired to write a specific curriculum. This effort included a public announcement by the Governor through a veterans' organization. Meetings were held with personnel at Fitzsimmons General Hospital in Colorado but there was little interest on the part of the federal personnel and nothing came of the program.



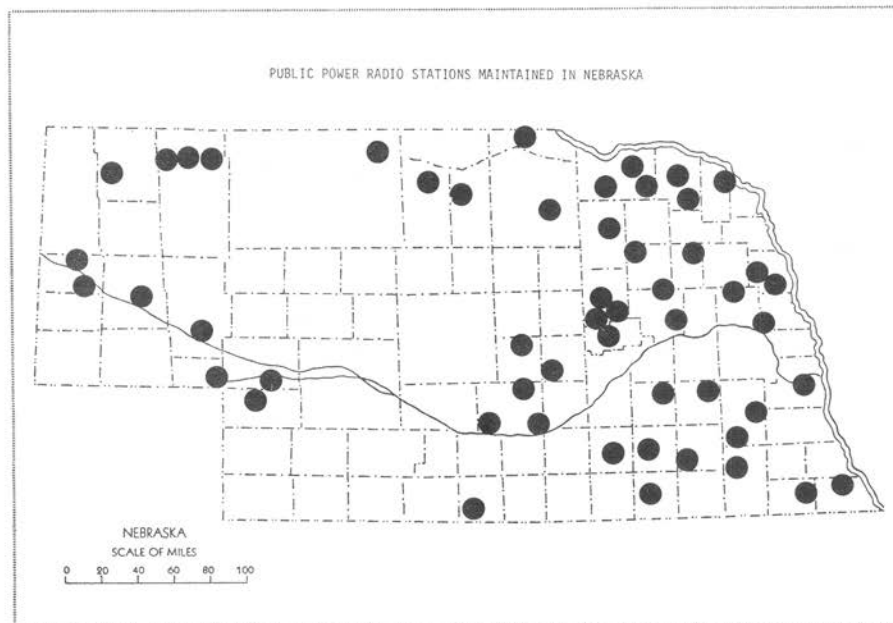


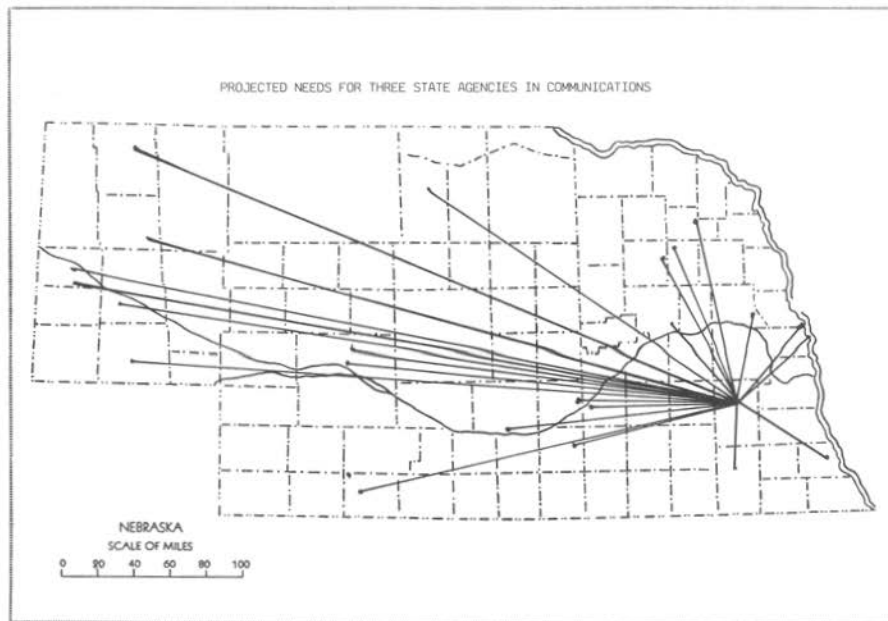
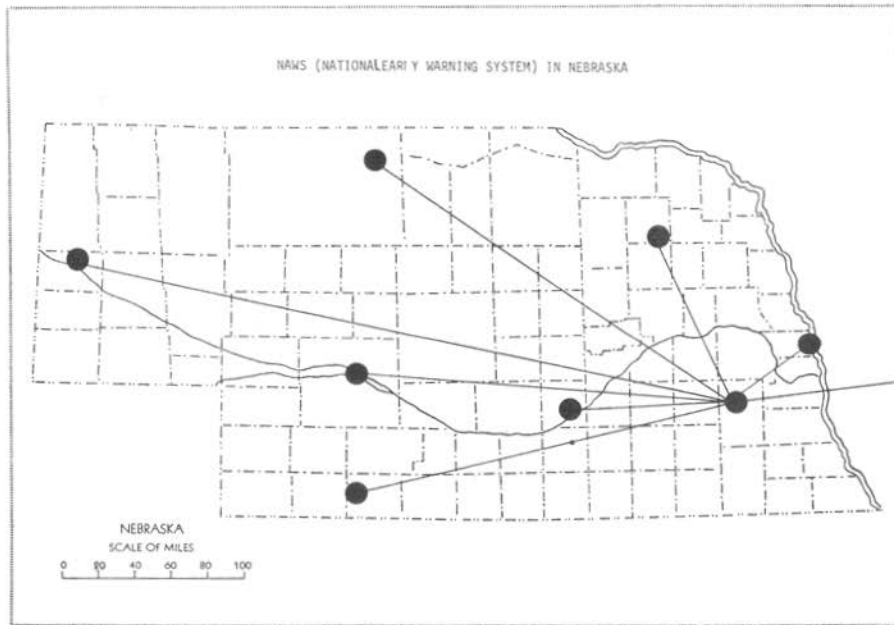


RURAL ELECTRIC RADIO STATIONS MAINTAINED BY NEBRASKA



PUBLIC POWER RADIO STATIONS MAINTAINED IN NEBRASKA





NEBRASKA STATE CIVIL DEFENSE

To understand why Civil Defense has a place in the evolution of Emergency Medical Services, one must first recognize that Civil Defense is the existing structure of government coordinating, for timely and effective response to emergencies, and utilizing the available capabilities of public and private resources.

With this in mind, it should be readily apparent why the State Civil Defense Agency, under the direction of the Adjutant General, State Military Department, played a prominent role during the 1960s and 1970s searching for ways to improve Emergency Medical Services--the primary response service for saving lives.

During the 1960s, forward thinking planners in Nebraska with the assistance of many federal agencies launched a series of statewide emergency preparedness concepts for improvement which have had national implications.

The planning and construction of an underground State Emergency Operations Center (EOC) and the concurrent development of plans for government staff organization and management of emergency resources, followed by concepts for military support to civil authority, plummeted Nebraska into the national forefront as a leader in emergency services fields. During this period, international tensions and public concern for law and order polarized the nation's attention on progress being made in Nebraska in the military and non-military aspects of Civil Defense and emergency service planning at the state level. The Nebraska plan of military support with the support and approval of Under Secretary of the Army, Stephen Ailes, became a model for other states.

As progress was being made in these areas, ancillary considerations, such as inadequate communications and radiological instrument maintenance, became apparent. Thus, was born the statewide telecommunications study and subsequent enactment into law, statutes providing for integrated telecommunications services for all agencies of state and local government. Concurrently, the requirement for a statewide radiological defense and instrument maintenance program manifested itself and was resolved through a federal/state cooperative effort into what is now an accepted national program utilizing the existing National Guard mainte-

nance organization.

During the evolution and implementation of the statewide telecommunications network, the knowledge collected regarding available sophisticated equipment opened up new applications related to a share system approach in the operations and management of emergency resources. These groups included: law enforcement, Emergency Medical Services, highway safety, fire, Civil Defense, agricultural services, and education. This network of mobile and fixed radio systems logically leads to an intergovernmental resource library and computerized information system for decision making.

The Nebraska Air Ambulance program, Sky-Aid, was inaugurated under the Adjutant General's office as a pilot project to explore the use of helicopters as ambulances and to bring the doctor to the accident scene for familiarization with highway accident problems leading to professional advice for improvement in lifesaving techniques. The unique feature of this project was the utilization of military surplus helicopters which were operated by Nebraska Army National Guard air ambulance personnel in conjunction with the University of Nebraska College of Medicine services under State Safety Patrol direction. The primary objective of this project was a complete evaluation of helicopter capabilities and effectiveness as air ambulances for evacuation of medical emergencies from highways and remote areas in Nebraska.

Directly following the inception of the Sky-Aid project, a demonstration project of emergency reporting, dispatch and assistance program for highway accident victims was launched in Nebraska under contract with the U.S. Department of Transportation, National Highway Safety Institute. Termed Project 20/20, this research program encompassed the essential elements of a total emergency response system: Accident Site Notification, Central Aid Dispatch and Control Center Operation, Ambulance Design and Enroute Treatment.

The program put strong emphasis on the development of organized and standardized training, working electronics and public involvement. It included development and trial of a common telephone call number, 911, for all rural and community emergency aid, the lead-on for initiating the movement toward a common national emergency number.

Vital function telemetry of patients was an impor-

tant element of Project 20/20. Via transducers and radio to a central computer, the victims condition was monitored by a physician who in turn relayed medical advice back to the ambulance. The goal was to provide expert medical treatment quickly in the critical period after the highway accident, stroke, farm accident, heart attack or when any other condition involving bodily injury had occurred.

Between 1960 and 1964, natural disasters created major havoc in 121 counties in Nebraska, some counties being hit repeatedly. Coordinated aid was essential to survival.

In 1964, after developing the underground EOC in accordance with the National Plan for Emergency Preparedness, and after tying in all existing statewide communication systems and defining state staffs to provide operational know-how, Nebraska state officials were still faced with some serious questions regarding the true capability for providing emergency assistance.

WHY...with a school bus lost in a snowstorm did it take seven hours to put together a search rescue team-- Safety Patrol for communications, Department of Roads for snow plows, National Guard for men and heavy equipment?

WHY...with the town of Primrose destroyed by a tornado was there an elapse of five hours from the Safety Patrol radio call to ambulance assistance?

WHY...after a one-day snow storm October 15, 1966 were 72 Nebraska towns out of communication for a period of three days to two weeks?

WHY...because of eastern Nebraska floods, June 1964, communications isolated, lives lost, inability of law enforcement, electric power or National Guard to communicate with local governments, aerial reconnaissance delayed for reason of communications?

WHY...what happened to communications...Emergency Operations Center duty log on March 22, 1966 during the peak of a blizzard which left 21 persons dead, message from State Patrol..."have no communications except Grand Island and Omaha...many stranded motorists."

A joint meeting of state agencies held in late 1964 to evaluate the past four years' disaster assistance operations found that although the State was blessed with six major separate state owned two-way radio networks and full coverage by telephone, along with public radio and television, communications climb-

ed immediately into place as the major weakness.

After viewing state communications problems found during numerous emergencies, Governor Morrison appointed a Special Study Committee on March 17, 1965 to look into state communication problems and in doing so stated, "In the interest of an approach to economy, as well as meeting emergency and expanded requirements for communication services, I am directing that a study be made into the feasibility of establishing a consolidated State Government Communications System." Members of this special committee were:

Chairman	Colonel Donald G. Penterman Adjutant General's Office
Vice Chairman	Robert Heilig Department of Roads
Member	Senator Kenneth Bowen Nebraska Legislature
Member	Senator Harold B. Stryker Nebraska Legislature
Member	M. O. Steen Game, Forestation & Parks
Member	Captain Harvey Nash Safety Patrol
Member	Jack G. McBride Educational TV Commission
Member	Del Dirrim Power Review Board
Member	Richard Pace Department of Aeronautics
Member	E. A. Rogers, M.D. Department of Health
Member	Clifford O. Hamill Department of Institutions
Member	Dan S. Jones Department of Water Resources
Member	Leon Murphy Department of Agriculture & Economic Development
Member	John McMeekin Department of Roads

In April 1965, the State Legislature gave support and assistance to the study of consolidated communications in the form of Legislative Resolution Number 37 which directed all state departments and agencies to

cooperate and coordinate any planned communication program or system expansions with the appointed study committee.

The National Office of Civil Defense expressed strong interest, assigned a Communications Officer, James E. McCorkle from Denver, to work with the Nebraska committee, and assisted with federal funding for a study to develop a system designed to meet national warning and survival requirements (National Plan for Emergency Preparedness; Chapter 7, Telecommunications, Federal Civil Defense federal guidelines, National Warning System).

The defined purpose of this study was:

1. To determine the feasibility of consolidating seven existing state radio networks into a consolidated system for effective and efficient emergency use while retaining the independency of state agency day-to-day requirements.

2. If found to be feasible, develop the design for a consolidated system projected to include future requirements for ten years.

The results of the study were:

1. Major duplication exists in the seven present state owned and/or operated communication systems. The separate state agencies maintained 94 separate antenna towers with plans to increase to 119. The system designed would require only 64 antennas properly spaced to blanket the state with full spectrum communications.

2. The development of a joint use, share system would provide for modern interlocking services, include new services (such as a teletype in each county seat) and still present savings to the state in millions of dollars.

In May 1966, the State solicited invitations for proposals to provide a communications system for consolidation of radio networks of state government. The proposal was for two of the defined eight areas of the State (each area was composed of 12 counties).

Cost proposals were requested as three options for the state:

Option 1: Leasing of the system to the State on a monthly, annual, or periodic basis.

Option 2: Construction of the system, lease with option to purchase with provisions of purchase.

Option 3: Construction of the system for the State for a fixed fee.

The Telecommunications System for Nebraska was designed on a dual purpose concept: A National/State Emergency designed system upon which day-to-day services could ride--meeting day-to-day requirements over a share system designed for emergency use--thus tying all emergency resources of government together for prompt service to a highly mobile public in times of distress.

The design, assisted by "Stratcom" (Strategic Communications, Department of Defense), creates redundancy and reroute through "loop system" design and provides radio cross-talk capability between all mobile units regardless of frequency.

A test area was structured and in operation under PHASE I (the two-area plan) serving 24 counties with two area communication centers operating this Radio Consolidation Element; the second element of PHASE I was the wire tie lines (telephone, teletype and facsimile) to each county seat. This second element was to be installed in the first two areas.

PHASE II was to extend the same area operated system to another area of 12 counties as defined in the State Survival Plan. Under this growth plan, Phase II completion would cover nearly 80% of the population of the State with "building block expansion" to the remaining five areas and cover the entire State as early as possible.

Six private communication suppliers responded to the bid proposal, most providing fine detailed plans and specifications.

Motorola Communications & Electric,
Chicago, Illinois
Radio Corporation of America (RCA),
Chicago, Illinois
Collins Radio Company, Dallas, Texas
Midwest Communications Service, Inc.,
Hastings, Nebraska
Nebraska Consolidated Communications Corporation,
Lincoln, Nebraska
Nebraska Telephone Association, Lincoln, Nebraska

In 1967, Legislative Act LB 605 created a State Telecommunications System with a State Director of Telecommunications and a State Telecommunications Advisory Board composed of certain State Agency Heads.

Legislative Bill 605

INTRODUCED BY HAROLD B. STRYKER, 23RD DISTRICT; JEROME WARNER, 25TH DISTRICT; GEORGE C. GERDES, 49TH DISTRICT; J. JAMES WALDRON, 42ND DISTRICT; ERIC RASMUSSEN, 32ND DISTRICT; MAURICE A. KREMER, 34TH DISTRICT; TERRY CARPENTER, 48TH DISTRICT; ELVIN ADAMSON, 43RD DISTRICT; RICK BUDD, 2ND DISTRICT; DALE L. PAYNE, 3RD DISTRICT; ROLAND A. LUEDTKE, 28TH DISTRICT; W.H. HASEBROOCK, 18TH DISTRICT; LESLIE ROBINSON, 36TH DISTRICT; RUDOLF C. KOKES, 41ST DISTRICT; ALBERT A. KJAR, 39TH DISTRICT; BILL K. BLOOM, 20TH DISTRICT; RICHARD D. MARVEL, 33RD DISTRICT; WILLIAM R. SKARDA JR., 7TH DISTRICT; CALISTA COOPER HUGHES, 1ST DISTRICT.

AN ACT relating to communications to provide for a state telecommunications system as prescribed; and to declare an emergency.

Be it enacted by the people of the State of Nebraska,

Section 1. The Legislature hereby declares that an efficient and reliable telecommunications system is vital to the security and welfare of the state during times of emergency and in the conduct of regular business of the state and that substantial economies can be effected by joint use of a consolidated telecommunications system by departments, agencies and subdivisions of state government. It is, therefore, declared to be the purpose of this act and the policy of the state to provide for the development of an efficient and reliable telecommunications system for joint use by departments, agencies, and subdivisions of state government, to effect maximum practical consolidation and joint use of existing telecommunications facilities and services owned or used by the state, and generally to coordinate all telecommunications functions and activities of state government.

Section 2.

In 1968, contract for development of an area organized communications system, covering two areas of the State (24 counties), was signed with the Nebraska Consolidated Communications Corporation on a low bid basis.

The State owned and/or operated seven separate radio systems, combined into one system "on a share use basis with radio cross-talk capability," presented a real "pilot approach challenge" for Nebraska and the nation. (1968 Report--Federal/State Telecommunications Advisory Committee.)

Several independent telephone companies of Nebraska stepped forward to meet this need forming the Nebraska Consolidated Communications Corporation (NCCC) thus providing the vehicle under which private industry could do the job of meeting the required telecommunications needs of government--federal, state, local. (A choice was now available--state ownership or private industry supplied.)

NCCC was designed specifically to serve government in the total communications field (see chapter on NCCC for details). Its goal was to work with the State in formation of its plans and to help the State meet its needs in the most economical manner.

The NCCC proposal to consolidate existing state radio systems into one "share system," lease it to the State and provide the maintenance on a contract basis was accepted by the State of Nebraska in a contract signed in 1968. This was a national "first" and interest was shown by people from many states. The National Academy of Sciences, The National Highway Research Board, and many others were very interested and it immediately generated inquiries for information and visitations to Nebraska followed.

NEBRASKA SYSTEM PLAN - BASE DESIGN AND CONCEPT

The Nebraska study of existing facilities proved that a consolidated system for long line requirements, carrying all means of communications, was not only feasible but could be accomplished within present expenditures of separate agencies with much broader and better communication services provided.

The State in 1966 owned and operated 94 separate agency antenna installations. The design proposed re-

quired only 64 properly spaced microwave towers to provide full state coverage of all communication means. It should be emphasized that one of the primary objectives in the design was system reliability in times of emergency and development of agency cross-talk capability...logically, if the system is capable of communications with virtually all state agencies in times of emergency, day-to-day requirements can be readily provided. The system, projected to meet ten years' future needs, was designed on a backbone microwave structure circling the State with 600 voice channels plus one two-way video channel. Cross loops connection for the 600 voice channels were provided. Created is a general grid system of long line communications on tower spacing of 30 to 35 miles, giving full land area coverage of the State for mobile radio access. Standby power and space or cross band diversity was included in the technical design.

Circuitry was aligned to create a central switching center in each of the defined emergency areas. The eight emergency area boundaries, defined under the federally approved State Survival Plan, coincided with the Department of Roads maintenance area boundaries. Each area then becomes a separate region with dome cover communications connecting all means of communications through an area control and switching center. The day-to-day circuitry desires of each agency can be provided for by manned Central Dispatch or automatic switching in or directly through the area center. The staff of state government, as designed in the State Plan for the Emergency Area Operation, can man the control center under "extreme emergency conditions" with full monitor or control capability of all government communications circuitry in the area of operations.

When consolidation began, over 200 part- and full-time radio base stations were in operation by separate state agencies. Consolidation would provide reduction to eight fully equipped, properly manned state area facilities. With the availability of automatic switching, traffic requirements would be met with reduced manpower.

All means of communications, including voice, telemetry, teletype, facsimile and television can be carried on the system allowing for savings in operations.

The concrete ribbons of highway could now be umbrella covered providing on-highway communications to serve a growing mobile public. The sportsman, the farmer, the industrial worker are also covered for times of emergency.

Area Control & Switching Center facilities provide:

Full monitor capability of all agency calls in the area when required in an emergency.

Base station "all call" capability to all mobiles, all individual agencies as desired (switching center design).

Standardizing of equipment and placement within State Area Emergency Control Centers.

Central area radio base station control and shared manning when desired.

Capability of control transfer to other areas or to central state control during any period of day or night by agency and upon separate agency decision.

Area control of all governmental communications in the area when area Emergency Operation Center (EOC) is staffed and in operation under Federal/State Emergency Plans. Includes remote control of any area by any other area or central state operations.

Full flexibility for circuitry alignment by area or transfer of control to State Center as determined by separate agency for desired method of day-to-day operation.

The Mobile Two-Way Radio provides:

Cross-talk capability created between mobile and fixed point units of separate agencies.

Select call capability by digital dial, mobile-to-mobile or mobile-to-fixed point.

Standard mobile digital dial or touch tone capability over the entire state.

Agencies continue to use existing radio frequencies. Less power is required (a VHF entry point to the microwave long line backbone is within 25 miles at all times).

The same frequency may be used for long distance circuitry by a number of mobile units at the same time from various points within the State. Frequency clutter is reduced by area-to-area directional control. All distant contacts are by the controlled noninterfering circuitry on the backbone system.

Automatic switching over all areas of the State provide for direct mobile-to-mobile select unit

call or mobile-to-control center as desired. Manual switching or voice relay is not required.

Manual or automatic recording capability can be provided at each area switching center for day-to-day use. (This is presently available for emergency operations.)

Hand carry walkie-talkie radio units can put out-of-car officers in touch with control center by relay through "held open" circuit in radio equipped vehicle.

Teletype, facsimile, telemetry, all have full flexibility, at low cost, for installation and use by agency, hub cities, and county seats. Low cost long line connections, provided over the share circuit backbone to any point within the State, provide multiple agency "joint use" of long line circuitry.

Closed Circuit Television (CCTV) can be provided with two-way audio-video. Multiagency use of long lines would then provide TV circuitry to be used for highway surveillance, education between institutions or schools, crime detection, law enforcement training, disaster damage assessment, etc. Only organization of agency "time on line" is required. The night hours might well provide freeway rest stop surveillance or on-highway point watch. Criminal suspect viewing, file retrieval, etc., done on a real time or delay basis, requires only line time scheduling and an inexpensive camera with video tape capability in the law enforcement or construction engineer's vehicle. Ready pictures of construction, damage or accident could be directed to the central office at any time. A law enforcement officer, at the point of a stopped on-highway suspect, could be video recorded from the patrol car. Unused closed circuit TV on long line could transfer any action for file or staff viewing. The door was now open to many possibilities for improving service to the public.

WHAT OTHERS WERE SAYING

LINCOLN JOURNAL EDITORIAL

A Lincoln Journal editorial opinion of December 4, 1965 said, "Certainly it's silly for a half dozen or so state agencies to operate separate statewide communications systems. But just because a governmental operation is silly doesn't necessarily mean something will be done about it.

"In the case of the communications system in Nebraska, however, it looks as though something will be done about it.

"And that's a development of some moment for taxpayers of the state. . . .

"At present, separate statewide radio networks are maintained by the State Highway Department, Game Commission, Safety Patrol, Educational Television Commission and Consumers Public Power District. They require 92 separate installations.

"By consolidating these systems, only 64 installations would be needed to cover the state, a consulting firm has found. Thus, says the John B. Heffelfinger firm of Kansas City, Mo., the network would "pay for itself in a period of six years" and eventually would save the state "many millions of dollars."

"Words like this are always music to the ears of taxpayers."

CHARLES DUNN, ASSISTANT TO THE GOVERNOR OF
NORTH CAROLINA

"In North Carolina we have been updating our State disaster planning. In considering improvements which might be utilized, I have heard several favorable comments about the disaster communications setup in Nebraska. I would appreciate any information you could supply me on the scope of your communications operation and its effectiveness in times of emergency."

SAM F. SEELEY, M.D., NATIONAL RESEARCH COUNCIL,
WASHINGTON, D.C.

"History will record that the efforts were not for Nebraska alone and that the pilot demonstration of Nebraska set the base for the rest of the nation."

DANIEL B. MAGRAW, DIRECTOR, COMPUTER SERVICES DIVISION,
DEPARTMENT OF ADMINISTRATION, MINNESOTA.

"I had some time on Tuesday night on the way home to read carefully the material concerning Nebraska's program. When I was finished, it occurred to me that I had just gone over the history of a fascinating development in public administration. The whole history of the project, its documentation, its intra- and inter-governmental implications are simply enormous."

FREDERICK L. MC GUIRE, PH.D., ASSOCIATE PROFESSOR
MEDICAL PSYCHOLOGY, UNIVERSITY OF CALIFORNIA, IRVINE.

"I consider the philosophy and concept of your approach to have important implications for all social, welfare, educational and political programs. I sincerely hope that the underlying importance of your work is not overlooked."

WALTER M. WHITLOW, STAFF ASSOCIATE,
AMERICAN COLLEGE OF SURGEONS, TULSA, OKLAHOMA.

"Thank you so much for the documents on Nebraska's day-to-day and emergency communications system. They have proved of great value in shaping our objectives in this area, and are presently being reviewed by several interested groups in the public and private sectors of government and medicine."

VALDEMAR SCHULTZ, SPECIAL ASSISTANT "911",
CITY OF SEATTLE.

"Those of us from the City of Seattle were particularly impressed with your beautifully organized and purposeful approach to the problems of emergency communications and the expensive duplication of effort which has been going on. I'm sure that the State of Nebraska will serve as a model for others in the field of emergency communications."

FRANK BARNETT, NATIONAL HIGHWAY SAFETY BUREAU,
U.S. DEPT. OF TRANSPORTATION, WASHINGTON, D.C.

"I recently visited Oregon where they are interested in comprehensive planning for state communications. The fame of Nebraska, having spread far and wide, they were interested in anything you might have that might be useful."

A diagram of the Nebraska Consolidated Communication System follows.

Emergency Preparedness through Communications



Regional Center

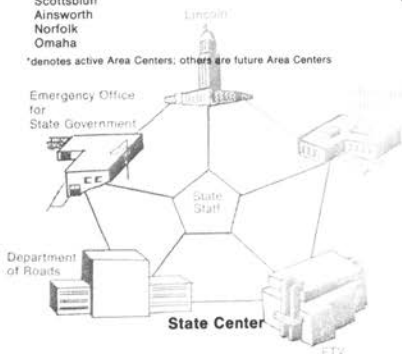
To Be Developed Under
Coordinated City/County
Mutual Aid Plans



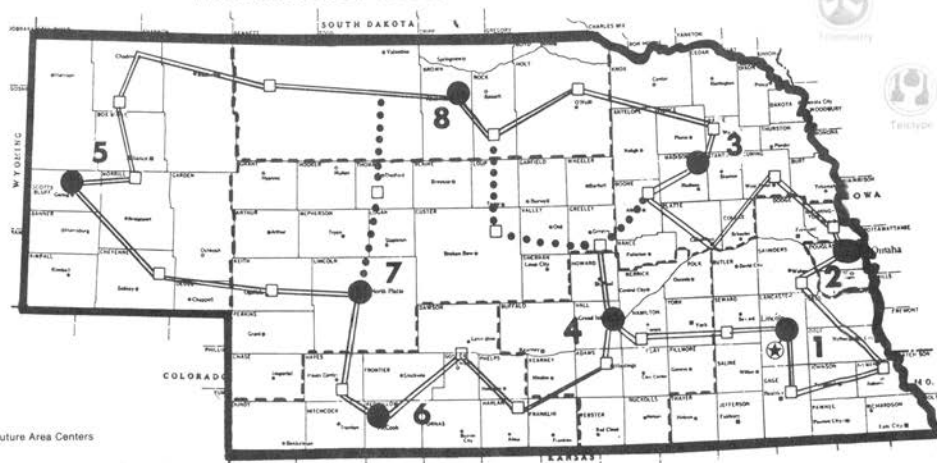
Area Center

- Lincoln
- Grand Island
- McCook
- North Platte
- Scottsbluff
- Ainsworth
- Norfolk
- Omaha

*denotes active Area Centers; others are future Area Centers



Nebraska Area Telecommunications Service



Legend	
	Area Centers
	State Master Center
	Carrier Backbone
	Subsidiary Tie
	Radio Transceiver Points
	Area Boundaries
	Emergency Area

THE NEBRASKA CONSOLIDATED COMMUNICATIONS CORPORATION
(NCCC)

The Nebraska Telecommunications study of 1964 and 1965 was greatly assisted by some very capable people from the independent telephone companies with operations in Nebraska.

During a meeting of the Nebraska Independent Telephone Association at the Lincoln Hotel in early 1966, the Nebraska consolidated system and bids for its construction were the major topics of discussion. Some of the independent companies, desiring to assist the State, felt that a new structure would be necessary if the telephone industry was to play a proper role in Nebraska's developing plans.

For this reason on June 24, 1966, Articles of Incorporation were filed establishing the Nebraska Consolidated Communications Corporation (NCCC).

The stated objects and purposes of the corporation and the general nature of the business to be transacted and carried on by it were:

(a) To plan, initiate, conduct and operate a statewide communications system for use by the State of Nebraska and any political subdivision thereof; by agencies of the United States Government operating in the State of Nebraska; and where authorized by the appropriate regulatory agency, by other persons.

(b) To rent, lease, and otherwise provide the use of a complete statewide communications system for the State of Nebraska and any political subdivision thereof; for agencies of the United States Government operating in the State of Nebraska; and, where authorized by the appropriate regulatory agency, for other persons.

(c) In connection with the forgoing purposes, to construct, purchase, lease, interconnect with or otherwise acquire the physical facilities, equipment and other materials appropriate for the operations of such communication system, and to do everything necessary and proper to accomplish the forgoing purposes, including the right to exercise the usual powers conferred upon corporations by the Nebraska Business Corporation Act, as from time to time amended.

Following the formal organization of this corporation, PHASE I (two areas serving 24 counties) of the growing network was accepted by contract from the State

and Federal Government.

A system was planned and designed after many months of meetings and hours of assistance from volunteers, federal agencies, and NASA engineers.

The following narrative, presented to members of the Nebraska Legislature, is included here to enable readers to grasp the detail, the magnitude and the great potential of a statewide consolidated system. It should be remembered that this presentation was being made at a time when the two areas of Lincoln and Grand Island were operational and the other six areas were to be phased in.

INTRODUCTION

Nebraska Consolidated Communications Corporation has, for some period of time, been working on the design of a complete, integrated telecommunications system dedicated to the use of government in the State of Nebraska. Before presenting the NCCC plan to you we would like to take a moment to review a little history so that this plan can be considered by you in the context of what has happened in communications in Nebraska to date.

In 1965, the State of Nebraska undertook an extensive study of its communications facilities and needs. In the following year, a number of business men, active in the telephone industry in the state, formed NCCC for the express purpose of offering to serve the State of Nebraska in the communications field.

As you recall, the state's Study Committee, composed of legislative and administrative personnel (communications users) reported to the 1967 Session of the Nebraska Legislature which resulted in the enactment of legislation creating the State Telecommunications Division within the Department of Administrative Services. Later, the first Division Director was appointed, specifications for the initial phase of a portion of the state network were drawn, and an agreement entered into with NCCC to provide Phase I. Since that time, we have learned much in the experience of design and construction of Phase I.

NCCC engineers have drawn upon this experience in the design of the statewide system we are presenting to you today. In addition, the system design is the result of many in-depth discussions with principal

communications users in the state. As many as three different sessions were held with several agencies.

What we are presenting to you today has been presented in detail to 13 agencies having the most to do with communications. Many of the concepts incorporated into the system are the result of these in-depth discussions.

We are pleased for the opportunity to go into a description of this communications plan, and would like to go through it briefly with you now. At the end of the presentation, we will answer the questions you may have. We urge you to make notes of such questions as we go through the presentation and we will go into greater detail as you wish.

We have tagged the concept of this system with the words: "I DIAL," which signifies one of the most elemental concepts the engineers have incorporated into the system and that is the extent to which NCCC has automated the operations as distinguished from manual operations.

CHART 2: As indicated here, we believe the words "Total Concept" describe another basic aspect of our plan. NCCC has endeavored to design and price a communications system which will provide every agency of state government with every type of communication service that it requires.

CHART 3: This chart summarizes, briefly, the major services included in the Total Concept System designed by NCCC.

It provides a statewide dial telephone service. The important word here is DIAL. In other words, it is a completely automatic, statewide telephone service.

It provides statewide VHF radio service for all radio-using agencies with a new computer-controlled VHF control center.

It provides a statewide teletype service for all agencies with a teletype need. It features computer controlled switching; access for data; and interconnection to national teletype networks.

It provides the state colleges with medium and low speed data service--a demand they now have.

It provides out-state agency offices with medium and low speed data service--as expressed as a need in the recent industry study conducted under the guidance of this committee.

It further provides an improved statewide ETV

network.

The elements of the Total Concept System will be further discussed in detail in a moment.

CHART 4: As legislators you are vitally interested in this important factor: NCCC can provide this new and complete state communications system for the same dollars that are now being spent on communications in the state--dollars spent for an uncoordinated and incomplete system, from a number of suppliers, providing much less communications service than will be provided by the NCCC "TOTAL CONCEPT" system.

We have spent considerable time investigating the current costs of services which will be replaced and expanded by the NCCC "I DIAL" System and have, in fact, found that if the system could be in place in 1971, it would not only provide a complete, statewide system, but it would do it for fewer dollars than the state will be spending at that time. We know you will want to hear more on this and we will go into detail in a moment.

Let us turn at this time, however, to an examination of the various services included in the Total Concept System designed by NCCC.

CHART 5: First we will outline the voice network. This map shows schematically, the complete statewide Voice network. This is the backbone system over which the voice, teletype, data facsimile, etc. is transmitted. Here are some of the important features incorporated in the new network:

It provides automatic switching at seven area switching centers, shown on the chart at Lincoln, Omaha, Norfolk, Ainsworth, Scottsbluff, North Platte and Grand Island. These are area switching centers for the intra-area switching requirements--that is, messages within the area served by the area switching center. In addition, statewide or "inter-area" switching is provided at a Master, 4-wire switching center shown here at Lincoln--although it could be elsewhere.

From the standpoint of pure quantity, translated into the amount of service capable on the system, there is a vast increase over what is available today. For example, there are 170 major inter-area voice trunks, between the seven area switching centers. These voice trunks are comparable to those between Lincoln and Grand Island in the Phase I system. They are rotary type trunks, capable of alternate usage by various

agencies.

The blue lines on the map illustrate greater connection of the area centers by these trunk lines.

In addition, the system will give the state 140 dedicated VHF radio circuits; 80 dedicated teletype circuits; and it will provide as many as 300 voice circuits for intra-area communications within those seven areas--each served by its own switching center.

Other unique features include: (1) a trunkload recording (or monitoring) device that permits measurement of the load or usage on the trunks between any of the area centers. This permits maximum usage of the system by having knowledge where the heaviest traffic is flowing as well as permitting orderly expansion of the system as this usage indicates; (2) a "called-number" recording service affording the state print-outs to keep a record of communications on the system.

Another unique, built-in feature of the system, which we feel greatly enhances its effectiveness and the efficiency it provides to state government, is the automatic on-on, on-off and the controlled off-on system dialing. You will note the word "controlled" off-on dialing.

Lets talk about this telephone dialing a moment. Obviously, communication can take place between any two points on the basic system--which is the "on-on" dialing. In addition, instruments on the system can reach, automatically by dialing, any telephone in the state that is not on the system. This we refer to as the "on-off" system dialing feature. Equally unique, and important to the complete system, is the provision for telephones not on the system to reach those on the system automatically, by dialing. We refer to this as the "off-on" system dialing feature--and this capability can be controlled by the state, which we feel is a feature the state wants.

The "on-off" and the "off-on" features obviously involve toll type charges to the local telephone common carriers in the state where their facilities are utilized to make this feature possible. NCCC has designed into the system a number of access points, located strategically throughout the state so that at no time will the toll charge from the system to the off-system instrument, or visa-versa, be more than 50 cents for a 3-minute call.

We should point out here that a very thorough

study has been made of the point-to-point telephone calls made by the state and from this study a determination has been made of what these toll charges would be for the use of the private carriers' toll facilities and these costs have been included in the cost comparisons we will go into later.

It will be noted from the diagram on this chart the full-concept network includes Phase I presently in operation. The cost figures we will go into later will include the Phase I expense, both in connection with our analysis of existing expenditures as well as our analysis of the proposed cost to the state for this new "total concept" system.

At the time NCCC began doing business with the state, it was our concept that one of the advantages of a dedicated system of this nature was that the customer (the state) could share in the benefits of bulk usage. Once the new system is in place, it is clearly more economical to provide additional circuitry, if required, and these additional circuits can be provided at a much lower unit cost.

CHART 6: The map on this page depicts the VHF radio coverage provided as an integral part of the NCCC Total Concept System. As we said earlier, this system will provide statewide radio coverage for all of the state agencies.

The configuration of the circles on the map shows the radio antenna coverage. Directional antennas are provided to give the maximum coverage within the state. It is important to note that the VHF radio coverage illustrated by the map is the coverage provided for all radio using agencies. In effect, each of the radio using agencies has radio system coverage as depicted by the map.

As many of you know, NCCC together with a California engineering firm, are involved with the design and fabrication of a radio communications system for the Sheriff's Department of Los Angeles County, California. Many man-months of engineering have gone into the design of this system and it is without doubt the most advanced radio system in existence in the United States. The system, when completed, could well revolutionize law enforcement communications. One of the central features of the "California system" is a centralized computer controlled operating center serving the entire county...an area about two-thirds the size

of Nebraska. The computer controlled center not only reduces the number of needed operators, but also simplifies their work load to a degree creating almost unlimited traffic-handling capability. When this new system goes into operation in early 1972, the initial traffic load will be in the neighborhood of 42,000 transmissions per day from the center. It is capable of handling many times that load. NCCC has built into its radio communications system 62.5% of this capacity. Based on the California and Nebraska studies, the Lincoln computerized control center will be capable of handling a minimum of 26,250 transmissions per day--this is radio transmissions only.

The in-depth discussions with the various state agencies has brought up the fact that some of them (the State Patrol and to some extent the Department of Roads) may desire the ability for local and/or area control of radio communications...at least for a period of time in the future. NCCC has, accordingly, developed the radio part of the system to include the design of seven area communication centers located in Lincoln, Omaha, Grand Island, North Platte, Scottsbluff, Ainsworth and Norfolk. They are shown on the map in blue diamonds...and on other maps as large red circles.

These area communication centers serve as local control centers for local communications within these areas. The centralized computer control center in Lincoln serves as a control center for the entire state. The system has the ability to transmit messages from any point in the state to any other point in the state--through the local area communication center, if the two transmission points are within the area, or through the Lincoln control center, if the transmitting and receiving points are within different areas.

The NCCC plan calls for the moving of the existing consoles located at the Lincoln and Grand Island Centers into the area communications centers, with necessary supplementation of additional area consoles, and provides for a ten-console Master Center, with at least one supervisory console at the Lincoln center.

The function of the computer in controlling the Lincoln master center can better be discussed later in this presentation by Mr. Thompson. Essentially however, it gives the radio system much more flexibility, increases the efficiency of radio communications and substantially uncomplcates the job requirements of the

console operator. Basically, the computer automatically assigns individual calls to a single operator so that each operator only hears one voice at a time. It also automatically selects the proper frequencies for the operator. CRT screens on the console automatically give the operators required visual data at a glance.

The computer control center at Lincoln, as well as the seven area communication centers, contain the ability for cross-talk between frequencies of different agencies and also contain the conferencing and phone-patch capabilities of the Phase I system. As a matter of fact, the experience with the Phase I consoles have led to improvements and updating these capabilities.

By reducing the size of the proposed area centers, it would appear that a substantial amount of one-time construction costs will be saved. The smaller area centers and the improved Lincoln center will further help reduce the expanding payroll expense for console operators.

For example, the State Patrol has indicated to us in our discussions that the improved area operating centers will permit the Patrol to reduce their existing area centers for communications by three. We believe that after operating experience is gained using the computer-controlled system that further reductions may be warranted. In this connection, the computer control center could control intra-area as well as inter-area radio communications. An electronic status board will be provided for the State Patrol so as to further facilitate a centralized operations center.

There are at present a total of 57 full-time state operators and as many as 17 part-time operators. The number of full-time operators will probably be expanded to 71 during the next biennium.

The improved system designed by NCCC will require only 54 operators which includes 24-hour-a-day operation for all of the area centers. If, through experience, operations can be streamlined to the point that the Lincoln computer control center handles all of the traffic, the number of operators can be reduced to 30.

The above facts mean real savings to the state. In reduced operator requirements alone, the annual savings will be between a minimum of \$91,800 to a maximum of \$221,400. Again, these are annual savings! No consideration has been given to the additional saving resulting from taking the many part-time opera-

tors off of radio duty.

CHART 7: The map on this page contains a schematic diagram of the ETV network that is included in the NCCC Total Concept System. It provides important and significant improvements over what the state ETV network now has.

These improvements are: (1) new hetrodyne repeaters. These will give greatly increased fidelity of the video signal; (2) high fidelity program channel that will greatly improve the quality of the audio signal; and (3) reduced cost alternate voice and teletype circuit as well as telemetry and control circuit, all on the voice network as dedicated circuits.

Another improvement over present ETV facilities bears specific mention. In response to what NCCC felt was an immediate need and demand, two-way ETV circuits between Lincoln and Omaha have been included as a part of this proposal.

Recent discussions with ETV officials and engineers disclosed their plans for a much more sophisticated and improved system, with higher operating reliability than they now enjoy, as soon as existing contract terminates. The point emphasized here is the passing on to the customer the benefits of bulk usage. This means that added channels can be provided, in either or both directions, at a much lower unit cost. For example, the system depicted on this map, with the improvements over the existing system, cost the state less than half of what it is paying for existing ETV service.

Preliminary engineering indicates that the expanded ETV plans, covering such things as the closing of the loop; two-way service to the state colleges; exchange of signal with South Dakota; and additional channels in the most populous eastern portion of the state, can ALL be accomplished for no more money than the ETV Commission is currently spending.

Before leaving the matter of educational television, we should discuss for a moment the needs expressed for a medical closed-circuit television capability. In some of the discussions we have held with communications users, the medical people indicate that the rural areas of Nebraska (nearly all of the western half to two-thirds of the state) are in need of a closed circuit television connection from local hospitals to medical centers in Lincoln and Omaha. One

physician estimated that as many as one thousand lives a year are lost because of the inability of local general practitioners to obtain prompt assistance of specialists in diagnosis and treatment. A closed circuit television capability to hospitals in the state, coupled with teletype and data channels, can give the local general practitioner this special assistance he needs, both video and audio. Of almost equal importance to outstate medical people is the potential for two-way radio through the state system thus giving ambulances and area rescue teams the needed contact with hospitals and information.

This can all be done if the state implements the NCCC Total Concept System and it can be done at a very reasonable cost, again at as much as "less than half" of what the state might normally expect to pay for equivalent service.

Similar two-way, closed-circuit television systems can be provided to fill the expanding needs for the Department of Institutions as well.

CHART 8: We have outlined so far the major segments of NCCC Total Concept, automated "I DIAL" communications system. The company has engineered into this system certain additional features that are important enough to be discussed at this time.

The first of these falls under the general heading of Reliability Features. One of the most important is the alternate routing concept. It is illustrated by the map on this chart. As can be seen, this diagram of the message network shows arrows pointing in both directions around the entire backbone network. What this means is that any given signal, or all of the signals for that matter, are transmitted in both directions at the same time. Each transmitting site has this capability.

Each receiving site has the capability of receiving transmissions from either direction.

The manner in which this enhances the reliability of the system can be illustrated as follows:

Assume a message is being transmitted from Holdrege to a point in Lincoln. As it leaves Holdrege, it is sent in both directions at the same time. Since Lincoln is the shortest distance to the right, or east, it would normally reach Lincoln and be received from that direction. The "other" (duplicate) message going to the left, or to the west, would go on around the

system and be stopped at a point in the northwest corner of the state. Automatic loop sensing equipment, located at a point about midway around the system from Lincoln, automatically stops the signal at that point. This is necessary inasmuch as a message going "around and around the system" creates a noise or "howl."

Normally, then, the signal will leave Holdrege going in both directions and reach Lincoln going east and stop when it gets to the loop sensing equipment in the northwest portion of the state.

Let's assume, however, that the Giltner tower is, for some reason, out. The normal path from Holdrege going east to Lincoln is broken and the message cannot get through. The automatic switching and loop sensing equipment located in the northwest part of the state detects the break at Giltner and automatically closes the loop break at this point and allows the signal to reach Lincoln from the alternate direction. Since this happens in a period of milliseconds, no noticeable time delay is evident.

CHART 9: We have, on this chart, illustrated the additional planning that has gone into the design of this system. Shown on the map are the seven proposed Regional Government Centers. The NCCC system is designed with sufficient circuitry to provide required intra-center and intercenter communications capability. The areas shown on the map are the proposed 26 mutual aid districts...and again the system is designed to provide circuitry for intra- and interdistrict communications requirements. The county seats are shown and the lines to them illustrate the fact that circuitry is provided for interconnection with the local political subdivision. We have not priced into the system the cost of these interconnections (that is the cost of leasing a line from the closest point on the state system to the court house) since it appears to be a consensus of opinion that if the county wants the interconnection, it should pay the charge rather than the State. The circuits are there, however, on the state network to handle the county systems. These are some of the 300 additional dedicated circuits that we mentioned earlier from the standpoint of quantity that are built into the message network.

One of the most important capabilities of this system involves the emergency number "911." This is a serious problem in many areas, particularly the rural

or smaller town area. As you know the 911 concept from a telephone company standpoint brings a 911 call into a local toll center. For explanation purposes, let's use the Mutual Aid District (MAD) in the Broken Bow area. NCCC is quite familiar with this district inasmuch as company officials have met with them concerning their communications problems and especially the 911 idea.

A portion of this MAD District has its toll center at Grand Island while another portion has its toll center at North Platte. Therefore, 911 calls from the District do not go to the same place which poses quite a problem to the telephone industry but problems that can, with sufficient engineering, be met.

Another aspect of this problem involves a question of expense for operators to man the 911 communication centers in each of the MAD Districts. To be effective, and serve the need, the centers must be manned 24 hours a day, seven days a week.

There are two ways in which the NCCC Total Concept System can help in the area of the 911 emergency number plan. First, the 911 calls from within a single district, going to different toll centers, can be transmitted on the state system. As an illustration, the calls centering at North Platte from the Broken Bow District could go on the system at North Platte, back to Grand Island and then on to the MAD District's 911 center.

The second way, and the one with the greatest potential for the state's overall problem, is to provide operators at the computer controlled center at Lincoln. Under this system, the calls would all come to the Lincoln center and back out to the district instantly and without added expense. The emergency resources of the district can be gathered and be made readily accessible, much in the manner developed in Project 20/20. A district may want to have its own communication center, but it may not be economically feasible to man it 24 hours a day in which event, part-time operator service could be provided at Lincoln. A Lincoln based computer could instantly provide the operator with visual information on the CRT screen to handle the call just as if the operator was in the district's communication center. Again, since there is no time delay, it is just a question of providing dedicated circuits (which are available) and supplying the information to the computer--information which

would already be available.

These exclusive features and capabilities substantially enhance the 911 potential for rural and small town residents in Nebraska.

CHART 10: We have discussed one aspect of reliability with the automatic alternate routing feature. Maximum reliability of the Total Concept System is further assured by the fact NCCC has engineered into the system complete redundancy of: (1) microwave, (2) multiplex, and (3) power--including both batteries and generators at all transmitting sites. Actually, there is a complete standby system with duplicate sets of equipment--designed to go into instant operation, automatically--if there is a failure in the first set.

Another type of reliability is the seven area communication center concept that is an intergal part of the system. With this feature, if some problem should arise with the Lincoln center, the seven area communication centers can automatically handle the VHF radio communication.

Incidentally, speaking of the Lincoln center, NCCC has provided in the plan full duplicate computers that work simultaneously, each checking the other at all times. If one fails the other automatically takes over.

CHART 11: This chart provides a summary of some of the key and unusual features of the NCCC Full Concept System. These features are, in some cases, unusual in terms of being new in the communications field or of substantial benefit, superior or in excess to that available to the state in its present method of communications.

Telephone--In the area of telephone communications, the system will provide the state with all of its required intra-state voice communication requirements. In fact, the capacity for intra-state communication is vastly greater with this Total Concept System than with what is presently used. The system will permit more traffic on the voice network without the long periods of waiting for a WATS line. The voice network is completely automatic and functions without operators. This includes the on-off and the off-on network dialing capability.

Teletype--In the area of teletype capability, important new features include the computer controlled automatic switching. The computer will relieve the Lincoln operators of the necessity of relaying teletype

messages from one network to another and in "transcribing" one type of teletype message to a machine of another type--the computer does it all. Therefore, for example, a county sheriff outstate can gain access to the National Crime Information Center (NCIC) or the National LETS teletype networks directly--and get his answers directly--still going through the Lincoln center, but without bothering any operators; in the process--it will all be automatic.

Quantitatively, the Total Concept System increases the network for using agencies to cover the entire state--adding 70 additional teletype machines to those presently in use--and the price of these machines is included. Not only does it include the teletypes for the Aeronautics Network, the Library Network and the Patrol Network, but it places machines at all of the outstate agency offices as recommended in the 1970 Telecommunications Study requested by this Legislative Interim Study Committee. Incidentally, all of these machines will have the capability to access the state computer.

ETV NETWORK--With reference to the ETV network, the hetrodyne repeaters will give much higher fidelity to the video signals and audio signals will be much improved with high fidelity quality. The two-way channels between Omaha and Lincoln have been included and it has been engineered to accommodate the design and requirements of the ETV Commission's long range plans.

VHF RADIO--The VHF radio capability is increased in this system by the addition of 80 additional base stations, mostly in the western portions of the state in order to extend the coverage for all agencies to a statewide system. The California concept of the computer controlled operating center, is of course, unique and makes the network as automated as possible.

OTHER EXTRAS--A number of other features should also be mentioned. First, the availability of the system to other users such as public power districts, school districts and the various county offices are significant in themselves. The reduction in payroll costs and increased efficiency result in very substantial personnel and dollar savings. The system's complete adaptability to needs of the various users, both short and long range, and the overall administrative plans of state government, both short and long range are, we believe, of great importance.

This concept becomes particularly important in view of our discussions with the Department of Administrative Services and particularly with Mr. Kavali of that Department's Computer Division. We have been advised of the existing demands for additional computer services and it appears that substantial dollars can be saved if the state has the capability of wide band (high speed) data access to its high speed, sophisticated computers. The NCCC Total Concept System makes this capability available at a fraction of the normal cost for such service. In all ways the equipment and the system is compatible to the broadband, high speed data transmission requirements of today and tomorrow.

CHART 11: Finally, we come back again to the most important factors facing any vendor of goods or services to the State of Nebraska and certainly one of the most important factors facing all Legislatures, and that factor is cost.

As this chart says, the NCCC Total Concept System will save the taxpayer of Nebraska money.

Interestingly enough, if we go back to the time of the initial study of state communications, we find that one of the basic conclusions was that a coordinated and combined-use system should, after taking into account all expenses and all savings, be possible for no more dollars than the state would be spending anyway.

We have spent weeks and weeks in a thorough investigation of the expenditures of the state government for all types of intra-state, toll-type services, including all communication services within the State except those categorized as local service. Our figures do not include, of course, inter-state (out of the state) toll-type services. We arrived at the figures from a study conducted with the assistance of the various state agencies, and have had assistance from the Department of Administrative Services (particularly from the computer) and from the Division of Telecommunications. Of special interest is the fact that the independent study made by the Department of Administration produced almost identical cost figures as compared to the NCCC study.

Based on this analysis, we have found that the "DIAL" system can save the State of Nebraska nearly \$650,000 the first year of operation--assuming that is 1973. In 1974 the savings will be in the neighborhood of \$810,000 and by 1975 the savings will be nearly

\$940,000.

NCCC is offering much more in the way of communications and a communication system, not only from a quantity standpoint, but from a quality standpoint as well, and yet it is available for much less money than the state will be paying for the uncoordinated and incomplete systems it would otherwise be utilizing from a variety of different vendors.

We have not attempted to measure dollar value of the increased efficiency of state personnel under the "I DIAL" system; nor the elimination of personnel time (except for direct saving in the case of operators); or the many other intangible benefits to Nebraska citizens resulting from the NCCC dedicated Total Concept System.

In order for the system to be operational in early 1973, the State must move ahead rapidly in 1971. Timing of all the many aspects of the system appear to be near perfect. We would hope that this committee would join with the various communications users in the State government who have expressed the desire that the State move immediately into a system of this nature.

* * *

The rest is history. NCCC did operate the system in two regions covering a 22-county area. Obviously, the terrific loss of revenue was a major source of concern to many of those then providing communication services to the State. In spite of the projected savings in tax dollars, the governor decided to kill the system rather than to spread it statewide.

We have been told by individuals in state government today that had we gone ahead with the system the million-dollar-a-year saving was probably conservative and certainly the system would have been much more efficient.

One person, who was high in state government at that time, told one of us that the system would likely be good for the State, that savings would be made, but that there was too much political pressure from various vendors to do anything but kill the system.

An article in the September 1971 issue of "Communications" magazine made the following statements:

"The system was turned 'on' for operations in September 1969, and the specified reliability factor of 99.6% was not only met but exceeded. Ultimate satisfaction came in October 1970 when Civil Defense inspection teams put the entire network through rigid acceptance tests, which were exceeded by a wide margin.

"The proposed state network ties together all of the major areas of the State of Nebraska in which state agencies maintain offices; provides service to every county seat in the state; connects virtually all major cities in the state and includes the potential for service to an even broader area if and when the need exists. Included in this system are six major areas of service. They include a statewide computer-controlled VHF/UHF radio service for all agencies of state, county, and local governments as well as other political subdivisions with radio communication needs; and a statewide computer controlled teletype service to all agencies with data access and national interconnect.

"The Phase I, 2 MHz network represents an investment of slightly more than \$1,500,000. To complete the system according to plan, will take an additional investment of approximately \$6,000,000. Present plans projected by NCCC call for completion of the entire statewide system within a two-year period.

"The new system visualizes eventual growth to UHF (450 MHz) from the present VHF basis, and in most instances, no operators required to complete radio contact.

"Nebraska, already a leader in the field, utilizes a statewide ETV network with stations strategically located throughout the State. The dedicated state system will provide a great boost to the state ETV network by overall reduction of costs.

"Other features built in to the statewide network include such engineering concepts as loop-sensing for alternate routing in case of a system break. Reliability on the non-alternate routing of the Phase I system has been maintained at approximately 99.9988 percent through use of hot-standby equipment only. The statewide network will not only have the hot-standby features but will also have the advantage of alternate routing.

"With computers available and CRT screens at the consoles, the location of a given number calling on the emergency number (911) is immediately available. Com-

puters would then supply the operators the data so that the emergency could be met within a matter of seconds and the proper action taken regardless of the location in the State."

EMERGENCY TELECOMMUNICATIONS SERVICE PLANNING FOR THE
STATE DISASTER PLAN

The Adjutant General's office was funded by the Office of Emergency Preparedness to develop an Emergency Telecommunications Service Plan for the State Disaster Plan. This study was completed and the final report filed in January of 1973.

The committee attempted to identify every type of interconnect which might be needed for all existing and projected communication systems in the state in order to look at the type of system that was needed for optimal use, not only in times of emergency, but also in day-to-day usage.

The published summary of finding was:

1. DEVELOP A DISASTER TELECOMMUNICATIONS SYSTEM PLAN IN ORDER TO PROVIDE A HIGH ASSURANCE OF TOTAL SUPPORT FOR STATE DISASTER OPERATIONS.
2. A VALID AND URGENT REQUIREMENT EXISTS FOR A LONG TERM STATEWIDE INFORMATIONAL AND EDUCATIONAL PROGRAM CONCENTRATING ON TELECOMMUNICATIONS SUPPORT FOR EMERGENCY AND NATURAL DISASTER OPERATIONS.
3. THERE IS A REQUIREMENT FOR COORDINATION BETWEEN STATE AND LOCAL AGENCIES IN THE DEVELOPMENT OF COMMUNICATIONS RESOURCES THAT ARE NECESSARY FOR DISASTER OPERATIONS. ALL PLANNING ACTIONS MUST ASSIST STATE AND LOCAL AGENCIES IN COORDINATING BOTH THEIR TELECOMMUNICATIONS DEVELOPMENT AND THEIR DISASTER PREPAREDNESS PLANNING.
4. AN ON-GOING STUDY AND UPDATE OF THIS BASIC DISASTER COMMUNICATIONS INFORMATION IS REQUIRED.
5. CONSIDERABLE INTERFERENCE, OR "CLUTTER", EXISTS ON HEAVILY USED FREQUENCIES SUCH AS 39.9 MHZ (PUBLIC SAFETY FREQUENCY).
6. INTERFERENCE EXISTS BETWEEN ADJACENT RADIO BASE STATIONS BECAUSE OF EXCESSIVE TRANSMITTER POWER USAGE.
7. INTERCONNECTIONS BETWEEN RADIO NETWORKS FOR EMERGENCY CROSS-FREQUENCY CONNECTIONS IS UNAVAILABLE EXCEPT

IN THE PHASE I AREA.

8. RADIO-TELEPHONE INTERCONNECTIONS ARE GENERALLY NOT AVAILABLE EXCEPT IN THE PHASE I AREAS.

9. TOTAL STATEWIDE COVERAGE BY MOST AGENCY RADIO NETWORKS DOES NOT EXIST.

COMMITTEE RECOMMENDATIONS

The implementation of a telecommunication system assumes the ultimate existence of a response system with action directed toward providing required, prompt, effective help via a multiagency coordinated team effort.

Both systems, telecommunications and response, must be implemented so as to pull together the sub-systems. The effectiveness of this pull together action is based entirely upon the community, area or region oriented initiative and desire. For until a totally coordinated response is installed (i.e. fire, medical, police, public safety, utilities, sheriff, etc.) and the need to coordinate actions occurs, the primary reason for a consolidated telecommunications system does not exist.

Disaster reports continually emphasize that the weakness in service is in prompt creation of a team effort--multiple agency coordinated response.

A telecommunication system designed to meet disaster needs, where multiagency coordinated action is essential to prompt assistance as well as critical conservation of resources, can greatly enhance the regular day-to-day operation of all involved agencies. Additionally, day-to-day usage assures reliability in times of disaster.

Based on information obtained during the course of this project, combined with the emphasis furnished in brief in the preceding paragraph, the following recommendations are made:

1. There must be an emergency operation center for a defined community, region or area with interconnections to a state center to provide for mutual aid coordination.

2. Steady momentum must be created to establish community and/or regional centers, interconnected by a communication system as defined in the Planning Structure for State Disaster Telecommunications system.

In this regard, a major finger of blame for separate systems, is on the federal government and their many separate agency funded programs to achieve the same thing in communications, all running for the same goal with no federal coordination--i.e. Civil Defense, Department of Transportation, Emergency Medical Services, Police Assistance Programs, etc.

3. That Civil Defense provide full-time, qualified assistance to the State Director of Telecommunications for the purpose of (a) assuring consideration for state and local government disaster plan communication requirements as alterations or additions are made to state and local government agency day-to-day in use systems, (b) to assure interconnections and interface of systems which are workable with standby power, or redundancy, in support of disaster operations, and (c) provide updating of Annex C (Communication and Warning) to the state disaster plan on a regular basis.

4. That attention be given to relieving mobile radio administrative traffic on the public safety radio channels of local government by providing a common/joint use administrative channel. Move all non-law enforcement users of 39.9 MHz (sheriff frequency) to other frequencies provided on the total system.

5. Provide continued improvement for cross-talk between all mobile radio units through area center manual connections, along with a radio-telephone patching capability, thereby assuring maximum flexibility for cross function coordination when multi-agency response teams are fielded in disaster operations.

6. Continue city-county conferences on telecommunications, mutual aid and disaster plan responsibilities and needs.

7. The federal government perfect funding assistance now provided to separate system development to encourage and allow support of joint system development.

The study was undertaken by a committee consisting of:

Kenneth F. Kimball, M.D., Emergency Medical Service
Planning, Chairman
John L. Adams, Ph.D., Ag Extension Service,
University of Nebraska
Robert G. Anderson, Sheriff, Adams County
Maj. John H. Ayres, Director, Special Services
Division, Nebraska State Patrol
Dallas G. Drda, Communications Director,
Department of Roads
Roger K. Gormley, Chief Planning Engineer,
Lincoln Telephone & Telegraph Co.
Edward L. Hamilton, Chief Electrical Engineer,
Central Nebraska Power and Irrigation District
Rodney H. Hutt, Program Manager, Highway Safety Program
Lt. Col. Burl M. Johnson, Assistant Director,
Civil Defense Agency
Jack G. McBride, General Manager,
Nebraska ETV Commission
Delmar C. Maier, Director, General Services Division,
Department of Administrative Services
Ronald J. Mertens, Assistant Director,
Department of Economic Development
W. Don Nelson, Director,
Office of Planning and Programming
B. Gen. Donald G. Penterman, Deputy Adjutant General
Joe L. Pluta, State Fire Marshall
Fred G. Steinkamp Jr, Sheriff, Gage County
Jack D. Strain, Chief, State Parks Bureau,
Nebraska Game & Parks Commission
Kenneth W. Willey, Director of Planning and Technical
Assistance, Nebraska Commission on Law
Enforcement & Criminal Justice
Dayle E. Williamson, Executive Secretary,
Natural Resources Commission

The primary thrust of this group was to determine the functional needs of the various groups involved in emergency response within the state as they relate to telecommunications.

EVOLUTION OF AMBULANCE SERVICE IN NEBRASKA

The first ambulances in the State were most likely of the horse drawn variety but we could find no specific record of their use. Such ambulances were in use by the military and it is reasonable to assume that their use carried over into civilian life.

As motorized vehicles came into being, early day trucks were modified as ambulances since the concept was one of "load and haul" with no effort made to provide stabilization or treatment prior to hospitalization.

Prior to the advent of the minimum wage bill in this country, our state was like most others in that the majority of ambulance service was provided by the funeral directors. These services were still essentially a load and haul type program with attendants having little more than basic First Aid at best. A few communities had either a public or private service but they were few and far between. Active management of the patient before and during transport was not thought of and was not allowed by state law.

Since most funeral directors had modified station wagons into which a gurney could be loaded for the transport of bodies to the funeral home, these were easily adapted for ambulance service.

Some have speculated that the funeral directors were interested in providing the service in order to be in line in the event of the death of the patient. It seems more likely that they were simply providing a needed service to their community. They had a vehicle available that could be used for transportation; they needed someone on call for their other services; and the concept of ambulance service in that day was one of "you call, we haul."

Most such personnel were trained in minimal First Aid. There may have been oxygen and occasional splints available but nothing that would approach our present day systems.

There was little interest on the part of physicians and hospitals in seeing any change and the prevailing attitude was that of bring them in to the hospital and we'll save them.

The passage of the minimum wage and hour act resulted in the mortuary companies finding themselves with the responsibility of paying their people on call

even when they did not work. The returns from their ambulance service came nowhere near meeting these costs, and within a year our state found itself with the group who were providing over 80% of the ambulance service now ready to close down.

There appeared to be no one to step in and provide ambulance service. Nebraska is primarily rural and such a service was not economically feasible in most communities.

The group in nearly every community who stepped forward and filled this need was the local volunteer fire department. Within a time period of less than one year, nearly 80% of the ambulance service had been taken over by these people. The State Fire Service stepped forward and provided Standard Red Cross First Aid and then Advanced Red Cross First Aid training for these communities. However, by history and experience, these men were firefighters who saw firefighting as their primary mission and many had little or no interest in the ambulance service. As a matter of fact, many would complain bitterly about taking the DOT 81-hour training course as EMTs but would spend as much or more time in learning fire fighting.

Perhaps the major problem was that most of the senior men in the various volunteer and paid groups really had no active interest in ambulance work.

There have been comments by some who were critical of the State Fire Service and of the volunteer services due to their lack of sophistication. The real fault more likely lay with the physicians, nurses and hospitals who, by tradition, had no interest in the area of pre-hospital care and considered care of the patients to begin only with their arrival at the hospital Emergency Room.

Many people in this country were now beginning to look at the terrible toll being taken on our highways and wondering what might be done to impact on this rising death rate.

Some of the early activity was at the University of Nebraska College of Medicine where Dr. Lynn Thompson, a physician in private practice in Omaha, was stirring with thoughts about a less expensive and more functional ambulance. He and others in the Omaha and Lincoln area were likewise involved in the study not only of an improved ambulance but also of better communications for medical services.

President Lyndon Johnson established a group to study death on the highways of the country and make recommendations as to what needed to be done to improve ambulances and provide better communication for medical services.

The study of criteria for an effective ambulance was published by the National Academy of Science in 1968 as The Medical Criteria for Ambulance Design. With national attention focused on this problem and with a national standard ambulance design available, it was obvious that we needed to move active patient care forward into the pre-hospital phase of care if major improvement was to be expected.

The National Academy of Science then published a study on ambulance attendant training. A new course curriculum was evolved that ended with an 81-hour training program which included some time working in the Emergency Room. Non-employed personnel in the Emergency Department created liability problems but most hospitals cooperated and allowed the EMT-A to gain valuable experience in their units. Federal funding was available to those who wished to use this program and Nebraska, like many other states, suddenly found itself moved rapidly into the days of the EMT-A. One of the key provisions in this program was the need for physician involvement in EMT training.

As the state moved forward with the development of its EMS system, there was a division of the State into six EMS areas. Local citizens were mobilized and EMS Area Councils were established. Federal and state funding became available and major changes were underway. The evolution of a system attempted to build on what was in place and add to those segments as needed. The outcome was usually evolution, not revolution.

During the early days of these changes, there were areas of local resentment against the State having any sort of rules. Many said because they were volunteers they should not be regulated. Some 30 or more ambulance services refused to be licensed as required by state law. Most were not so much against the need for better training and better service as they were against any regulation saying that they had to do this or that. There was sufficient feeling on the part of some of the volunteers to request a meeting with the Chairman of the Public Health and Welfare Committee of the Legislature. This chairman asked that Dr. Kimball be present

to represent the State EMS Division. This meeting was held and the Chairman was asked to introduce legislation to remove all ambulance regulations from the state statutes. A long discussion followed, and in the end Senator Richard Lewis explained the State's responsibility for insuring minimum standards for the citizens of the State.

As new EMS laws were established and protection was given to the ambulance attendant, it became obvious that only a state licensed service could be so protected. It also became obvious that the State Health Department was not going to close down a service except where there was gross negligence.

Less than six services continue to refuse to comply with state law and deprive themselves of legal protection against unjust law suits.

Today, the majority of ambulance services in the State are still made up of volunteers, but the quality of service on the ambulance is vastly improved. (See the chapter on Changes in Prehospital Survival.) About 80% of the services are provided by volunteers, the remaining services are either private or public. In spite of these figures, most of the ambulance service in our state is provided by paid services if total number of patients are to be considered. One study showed that about 10% of the services provide 90% of the patient care. This obviously reflects the fact that Omaha is our center of population.

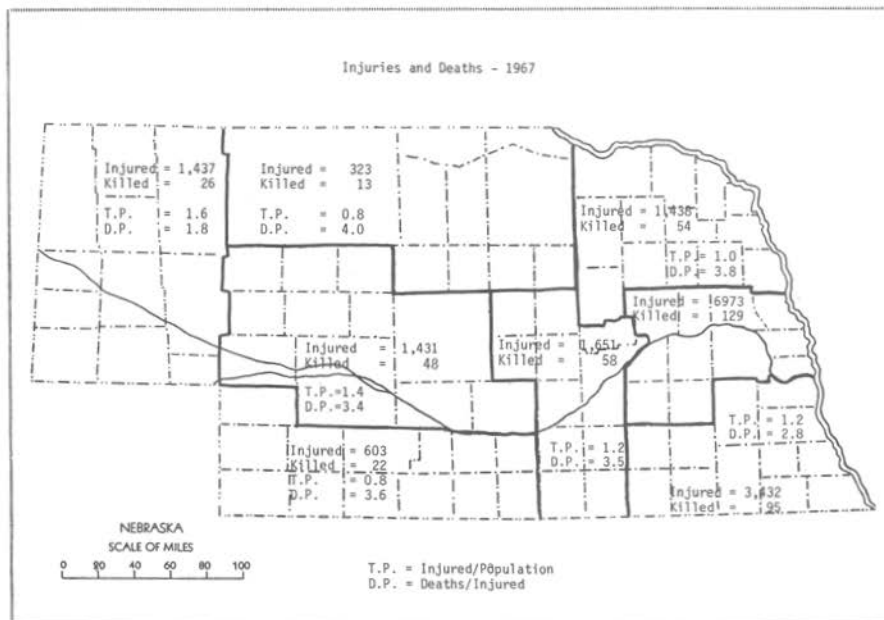
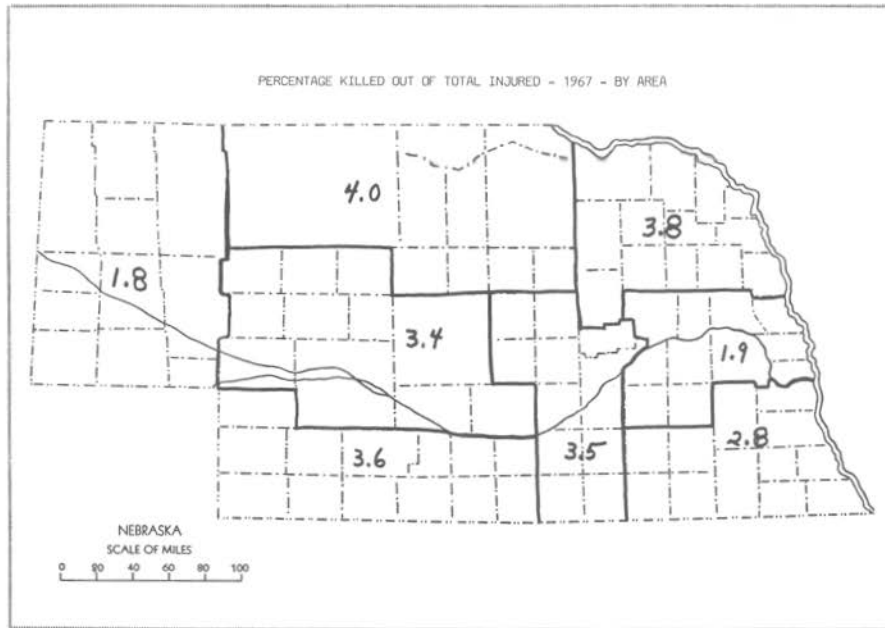
The only major drawback to the volunteer fire services taking over the local ambulance services was that many had a rule that no one could be on the ambulance unless they were firefighters. For a number of years that was no problem, but as services became busier it gradually was realized that there were a number of competent people in the community that would like to serve their area on an ambulance but had no interest or did not have the physical ability to fight fires.

This has resulted with the adoption by more and more communities of the concept that while both firefighting and ambulance service might be under the Volunteer Fire Department, the two services could be separated with people serving as firefighters only, as firefighter and ambulance attendants, or as just ambulance attendants.

Present day statistics vary from community to

community, but most will show that the volunteer fireman is making between three and five ambulance calls for each fire call.

The following chart shows the breakdown of fatalities and accidents in each of the six areas of the State for 1966, 1967 and 1968.



THE NEBRASKA COMMITTEE ON MEDICAL TRANSPORTATION AND
COMMUNICATION

During June 1965, Dr. Lynn Thompson negotiated a contract with the United States Public Health Service in Washington, D.C. to fund a study of medical transportation and communications in Nebraska. The study was done by Dr. Thompson with the cooperation of the persons shown in Appendix A. The need for a Committee on Transportation and Communication was identified in September 1965.

The study provided for the first time information on the State such as population distribution, weather and resources as they related to EMS.

Current laws were examined as they related to ambulance operation and only three were in existence. One dealt with the use of a siren, a second regulated ambulance speed and the third provided for a registration fee for ambulance operation. No minimum requirements were noted either for training of the personnel or for the design of the vehicle.

There was no list of ambulance services nor did anyone know what facilities or training each unit possessed.

A study was begun at once to produce a comprehensive list of ambulance services. This was done by going through the telephone directories for every community in the State. There were over 80 phone companies in Nebraska. A cardex file was developed listing each of the ambulance services, the mayors of each town and all practicing physicians in Nebraska. Maps were developed which showed the distribution of these on a county-by-county basis across the State. Ambulance services were found to closely parallel the location of hospitals. A number of the communities were found to have no services which immediately raised the question of how these areas could be provided adequate ambulance service.

Physician surveys were sent to 1,248 and 739 were returned. Only 173 doctors expressed any interest in wanting to participate in a program to improve ambulance services in Nebraska. The response from the 739 physicians is as follows:

- 94.70% felt ambulance service for their community was adequate
- 47.60% felt there was no need for further education of their ambulance personnel
- 56.60% stated their community had a medical advisory staff for training ambulance attendants
- 33.90% felt their present radio system for communication between ambulance and hospital was adequate
- 49.70% said that no such system existed
- 96.00% believed ambulance response to be prompt
- 21.20% felt that patients did not abuse the system
- 43.50% thought the service was abused infrequently
- 13.50% felt that it was frequently abused

Of the 125 rescue squads questioned, 70 responded. The breakdown on the reply of this group was as follow:

- 52.80% carry liability insurance
- 15.70% have some sort of community standards for safety inspection of their vehicles
- 82.80% have completed Red Cross First Aid
- 55.76% have completed Advanced Red Cross First Aid
- 77.10% would like to see the University of Nebraska College of Medicine develop an educational program for the ambulance attendant
- 61.40% would like a statewide communications system for medicine
- 37.00% would like to see Central Dispatch
- 72.80% would like to see some statewide standards for training

Among the three private ambulance services and the 151 mortuaries providing ambulance service, 129 responded.

- 55.80% had noticed a decrease in use of their equipment in the past year
- 10.00% had some form of radio
- 58.90% had completed Red Cross First Aid
- 26.30% had completed Advanced Red Cross First Aid
- 27.10% felt no educational requirements were needed
- 64.30% felt the University of Nebraska College of Medicine should develop a course for ambulance attendants
- 62.40% wanted statewide minimum standards for training

Of the 540 mayors questioned, 255 replied. Lincoln and Omaha, our two largest cities did not respond.

Generally, the response confirmed that physicians did not feel responsible for their ambulance services, did not know much about them and had little interest in improving them.

Rescue Squads appeared the best equipped and trained to provide ambulance care.

The mayors, in general, saw little need for the improvement of their ambulance system most likely because they did not understand the problem.

The majority of ambulances in use in the State in 1965 were designed for use by the funeral directors and were usually a multipurpose unit. The concept of access to the patient and intransit care was not considered important.

Dr. Thompson recognized the need for a vehicle as an ambulance that would be relatively inexpensive, could provide access to the patient and that could be repaired locally in the event of an accident. He identified 26 minimal criteria for the design of an ambulance and considered the equipment that would be needed. He was one of the first men to stress the importance of suction on the vehicle. Most ambulances carried oxygen but this was of little use when airways were obstructed with blood or secretions.

Dr. Thompson was most interested in the work being done in the Adjutant General's office on a statewide communications system and visualized the medical net as an important part of this system.

On September 9, 1965, the birth of the Committee on Medical Transportation and Communication occurred in the smoke-filled Suites 2 & 3 of the Cornhusker Hotel. Those in attendance were:

Tom Carroll, Nebraska Safety Council

Ted Dappen, State Health Department

Robert Gillespie, M.D., representing the
University of Nebraska

John Hove, U.S. Public Health Service, Cincinnati

Lt. Colonel Burl Johnson, Nebraska National Guard

M. M. Musselman, M.D., Department of Surgery,
University of Nebraska College of Medicine

Ken Neff, Nebraska State Medical Association

K. G. "Gus" Nelson, American Red Cross

George Notthelfer, Omaha Safety Council

Leonard Peterson, Ralston Fire Department
Ed F. Ross, State Hospital Association
Tom Ryan, Accident Records Bureau
Carl Sasse, M.D., Department of Surgery,
University of Nebraska College of Medicine
Rollin D. Schnieder, M.S., University of Nebraska
James Scott-Miller, M.D., University of Nebraska
College of Medicine
Lynn Thompson, M.D., Omaha Physician
Robert Ward, Metropolitan Utilities District
Maj. General Lyle Welch, Adjutant General of
Nebraska

Dr. Thompson opened the first meeting with the statement, "In the beginning. . ." and the committee was on its way. The first Nebraska Conference on Medical Transportation and Communications was scheduled to follow the Immediate Care Course at the Nebraska Center in Lincoln. He gave a report on the above mentioned study and after much discussion it was decided to have a dinner meeting on November 9, 1965 where others who were interested could be included. The conference was scheduled for October 30-31, 1965 and was timed to utilize a visit by Dr. Robert H. Kennedy, Director, Field Program, Committee on Trauma, American College of Surgeons, who would be in town for the Immediate Care Course. He had extensive knowledge of national problems in ambulance services and was an early advocate for improved pre-hospital care.

Following this conference, Dr. Thompson was elected Chairman and Rollie Schnieder Secretary. The group was without funds so all expenses were the responsibility of individuals. This meeting included the above people plus:

Russell Brauer, M.D., Anesthesiologist, Lincoln
Don Chandler, Ralston Fire Department
Bob Garey, Nebraska Funeral Directors, Hastings
Kenneth Kimball, M.D., Surgeon, Kearney
Ed McVay, Nebraska Funeral Directors, Gothenburg
B. Gen. Donald G. Penterman, State Civil Defense
Stephen Robinson, Nebraska National Guard
Russ Salak, Nebraska Fire Fighters Association,
Schuyler
Roy Sheaff, Umbergers Mortuary, Lincoln
Ed Thiliander, Omaha Fire Department
R. Vance, Mortician, Odell

Subcommittees were formed on Education, Medical Communication, Legislation, Hospital-Ambulance Relations, Community Relations and Public Relations.

There were many moans and groans on the part of some at the thought of placing EMS in the hands of volunteers, private and municipal ambulance personnel. Many said that the volunteers would never take 72 hours of training. There was also fear that the College of Medicine would take all cases to Omaha and the small town hospitals would have to close due to a lack of patients.

Concern was expressed over charges for adequate ambulance service. We all knew that the funeral directors were not charging for ambulance service and most were sure the public would never be able to pay for such service.

Dr. Thompson's work on the new concept for an ambulance was also a major concern for some. His critics "just knew" that no one would consider going to the hospital in anything but a Cadillac.

The subcommittee met and felt that a medical communications network should be statewide in scope, allow ambulances anywhere in the state to speak to any hospital, and also allow for Central Dispatch.

The Adjutant General's office in Nebraska had been doing a study of all communications in the State and had identified all existing communication systems. The fire services in the State were using a statewide frequency of 39.90 MHz which was really a public service frequency used by the sheriff. If a frequency could be obtained near 39.90 MHz it would allow the radio equipment in most of the rescue squads to be used without major modification. The Federal Communications System agreed and 39.82 MHz was identified for use as a statewide medical net. Likewise, the frequency of 39.87 MHz was chosen for use as a fire frequency. This allowed most communities to simply place the three crystals of 39.9, 39.82 and 39.87 in their present sets and not have any new radio equipment to purchase.

Such a selection had both advantages and disadvantages as many were soon to find. On the plus side, most ambulances (which were fire units in most cases) already had a radio that could be converted for use on the medical band by simply changing crystals. Thus, a statewide net could be established in a matter of weeks, and thousands of dollars could be saved. On the

negative side, this frequency was a public service one and communications were often heard from as far away as New Mexico. Skip, as this is called, is a common occurrence on these frequencies. This selection of the low band for medical communications predated the common use of the high band for medical use and allowed Nebraska to live through that phase of the system so that when the next generation of communications equipment was ready to be accepted, we could leap to the UHF bands.

The Adjutant General's office and the Nebraska Legislature were now looking at a statewide telecommunications system that might either ride on or replace the ETV system. Such a system might well carry the medical net and ensure statewide coverage at a very reasonable cost.

On December 9-10, 1966, a statewide meeting was held to provide a forum on how those involved in ambulance service felt about the present state of the art, to identify the needs as they currently existed, and to consider some of the national findings as they related to ambulance service in our State.

As with any new program, some present were open and interested in how the pre-hospital care could be better delivered while others were hostile and felt that present services had been going smoothly until meetings such as this were held.

National interest in the work of this group was expressed by the Division of Accident Prevention of the United States Public Health Service. The National Safety Council likewise became interested in the work and made a trip to Nebraska to meet with the Committee and to review its experience.

A grant was obtained through the University of Nebraska Medical College to fund the December meeting and a review of that meeting will be found in the following chapter.

Another conference on Community Emergency Services was held by the Committee in Hastings April 4-5, 1969. The program covered Traffic Highway Safety, Civil Defense in Emergency Planning, Telephone's part in Emergency Response, Nebraska State Patrol Support Services, the Role of the Nebraska Game and Parks Commission, Project 20/20, Nebraska Consolidated Communications, and Total Communications Utilization. Panel presentations covered Ambulance Services, Emergency Hospitals,

Emergency Training, Computer Monitoring of Patients, Moral Aspects of Emergency Care, Civil Defense in Nebraska, and an Overview of Emergency Health Services nationwide. All were presented by people directly involved in those programs.

Some members of the Nebraska Committee for Medical Transportation and Communication were involved nationally because of their studies in this state. They participated on committees of the American College of Surgeons, on committees of the National Academy of Science, as well as working with the Department of Transportation and the Department of Health, Education and Welfare.

Dr. Thompson became Director of the Nebraska Department of Health and provided increased emphasis on EMS at that level. The activity of the Nebraska Committee on Medical Transportation and Communication was decreasing and little more was heard of the Committee's function from that time on.

THE UNIVERSITY OF NEBRASKA COLLEGE OF MEDICINE

MERLE M. MUSSELMAN, M.D.

There can be no doubt that one of the real heroes in the development of improved emergency care in Nebraska was Dr. M. M. "Jim" Musselman. Dr. Musselman was a survivor of the Bataan Death March, and came to the University of Nebraska as Professor and Chairman of the Department of Surgery from Wayne County Hospital in Detroit, Michigan in 1954. He had an interest in trauma, as well as many other areas, which he managed to instill into his residents without most of them even knowing what was happening.

A few of the surgery residents who served under "Jim" were Bob Gillespie, Ken Kimball, Carl Sasse, John Porter and Joel Johnson all of whom were active in trauma development in its early days. Joel returned to the Medical School where he served on the faculty of the Surgery Department prior to his moving to Kearney.

Dr. Musselman was on numerous national committees including the Committee on Trauma of the American College of Surgeons which dealt with publications, and played an active part in the development of early books and periodicals on trauma management.

He was also active in his local community and state in early day trauma activities. He established the Immediate Care of the Sick and Injured course which was the first regular course taught on an annual basis by a major university for ambulance attendants. Dr. Musselman was an inspiration to us all and much of what has happened likely would not have occurred had it not been for his quiet and scholarly influence on so many of us.

DR. LYNN THOMPSON AND THE MODERN MODULAR AMBULANCE

Dr. Thompson had become disenchanted with the cost of the ambulances that were available and by their lack of access to the patient. With thoughts of better care, including access and management of the patient during transport, he invisioned the use of a small panel truck that could be modified to serve as an ambulance.

In 1965, Dr. Thompson approached Rader O. Hale, Fleet and Leasing Office of the Ford Motor Company, about Ford providing a vehicle to the University for

\$1.00 and the University adapting that vehicle and then testing it in various communities around the State in an effort to see how effective it really was.

Mr. Hale agreed. The vehicle was delivered and Dr. Thompson went to work on the modifications. The vehicle was then made available for about one month of use to eight Nebraska communities: Bellevue, Harrison, Harvard, Hildreth, Kearney, Lincoln, Ralston and Valentine. This allowed for its evaluation in both rural and urban areas.

The use in Bellevue and Ralston afforded experience in both rural and urban settings. The Lincoln study was strictly urban; Harvard, Hildreth and Kearney were typically small towns; and Harrison and Valentine showed how it might function in the Sandhills.



Prototype of Van Ambulance

During the course of the evaluation, the ambulance was involved in two accidents. The first occurred while it was being used in Bellevue. In this accident, the ambulance was struck by a driver on the wrong side of the street. Damages were approximately \$150 dollars.

The second accident occurred during its use in Lincoln. Damages to the vehicle were approximately \$50.00. In both accidents, no personal injuries were sustained. One of the valuable lessons learned in the second accident was that the vehicle could be repaired by the local Ford dealer and did not need to be sent to some far off factory for repair.

All of the services except Lincoln were staffed by volunteers.

Dr. Thompson recognized that an ambulance without communication was inadequate. Thus, radio equipment was installed. In some areas this consisted of local fire frequencies while in Bellevue and Ralston a mobile radio telephone was loaned by Northwestern Bell. The large flat roof of the ambulance provided an excellent ground plane for the propagation of radio signals.

Dr. Thompson saw this vehicle as an economical yet practical vehicle for the transportation of the sick and injured. It was not designed to carry equipment for rescue and extrication nor was it conceived for use by funeral businesses. Each ambulance service was asked to use the unit as they saw fit and at the end of the test period report their impressions of it as an ambulance.

Ralston, who first used the vehicle, reported they were generally happy with it and used it to replace one of their existing units during the test period. Some suggested a side window be added so they could look outside during vehicular motion. (The unit was a closed panel Econoline.) Adequate headroom in the patient compartment was appreciated. Some suggested the driver might be better protected in an accident if the engine were mounted ahead of the driving compartment but this type of unit was relatively new at that time. The unit was used during the winter and no problems with traction were noted. (The unit did have studded tires.) Ease of driving and softness of ride were commented on by the department.

Bellevue was next to have the unit. Actual use by them was limited due to the accident which resulted in the unit being in the shop for some time. The driver of the vehicle which hit them was not insured and there was a delay in obtaining funding for the repair. Again the smoothness of the ride was noted. However, some thought the unit was too light and was moved about on the road by the wind.

Harvard gave favorable reports on their use of the vehicle. They were sufficiently impressed that they purchased an Econoline van and built it into an ambulance for their own use. They did find a problem with dust leaking into the cab and patient compartment during use on rural roads. It was felt that 4-wheel drive would be better for rural use. A second problem noted was a tendency for the motor to overheat.

Hildreth was next to receive the unit for trial. Comments were again favorable except to problems with handling in high winds. Smoothness of the ride was appreciated.

Valentine was impressed with the vehicle but felt that 4-wheel drive would have been much better for use in the Sandhills.

Lincoln's experience with this unit was in its use by a funeral director and he was generally happy with it. He did feel it was not as adaptable to funeral use.

It is interesting to note Dr. Thompson did observe some hostility to the new unit. One area of concern was those who thought this was an attempt by the University to "jam down our throats" the concept of a different ambulance. Salesmen of funeral coaches were also quoted as spreading a report that this approach was totally wrong and would be a bad investment for the community. Units of this type were not available nor for sale at that time. Some in the medical community expressed the feeling that this was the beginning of socialized medicine in the state. Likewise, some of the firemen expressed concern that this was not a large, well equipped vehicle for extrication.

Dr. Thompson felt that the best critique on the unit came at the two-day Nebraska Conference on Ambulance and Rescue Squad Services held at Kearney State College, December 9-10, 1966. Four seminars on the use of the vehicle were held. Approximately 150 participants attended this conference and were able to closely examine the unit and visit with users. Seminars were moderated by Roy Sheaff of Umberger Mortuary who felt that it did not fit the needs of his type of operation and by Chief Royce Ling of Harvard who felt it was a very good unit.

Impressions of those attending the meeting tended to polarize into one of two views. The funeral directors desired a multipurpose unit that could be used to pick up bodies at the hospital, etc, and were not very

impressed with the Econoline. On the other hand, most of the Volunteer Rescue Units thought the vehicle was well designed and useful.

Dr. Thompson followed up on the observations that the vehicle was not safe for the driver because of the engine location. He talked to the safety directors of two large utilities in Omaha who operated large fleets of this type of vehicle. The accident rate was no higher than for other types of vehicles and there was no difference in severity of injuries that were sustained.

Due to the question of difficulty in control in high winds, he also drove the vehicle some 20 miles in high winds and did not feel the vehicle was unstable. The widespread use of vans today would justify his feeling.

Dr. Thompson looked forward to the establishment of a statewide medical communications net and felt that the use of a radio that would let the attendant talk to the dispatcher and to the hospital would be a giant step forward.

This study was done during the time that many funeral directors were withdrawing from ambulance service, and it is noted that one person correctly predicted that within the year over 50% of the funeral directors in Nebraska would have withdrawn from ambulance service. Some felt that a vehicle such as this did not have the prestige of the Cadillac type units and that patients would not care to use them. Dr. Thompson commented that in an emergency most would be happy to have any type of unit so long as it got them to the hospital safely and comfortably and allowed them to be cared for on the way.

One physician in the State was concerned enough with the possibility of a change in the status quo that he suggested to the Nebraska State Medical Society that disciplinary action be taken against Dr. Thompson.

When the study was over, and results were in, most seemed to have a positive feeling about the ambulance. The City of Harvard came forward and purchased the unit for around \$8,000.

Thus, one of the early pioneering efforts for a less expensive and better designed ambulance was carried out in Nebraska.

THE IMMEDIATE CARE OF THE SICK AND INJURED COURSE

Dr. Musselman conceived the need for better training of ambulance attendants in Nebraska and in 1959, with the help of Dr. Arthur Irons, he structured a short course which was taught at the College of Medicine for ambulance personnel. This course was held on an annual basis at that location until 1963. (See the Chapter on the Omaha Fire Department Rescue Service.) The building of the Kellogg Center in Lincoln resulted in the course being moved to Lincoln in 1964.

The Immediate Care of the Sick and Injured course was taught primarily by physicians. Persons teaching the course in 1973 are typical of the broad mix that were available and utilized.

Lodema Bender, R.N., School Nurse, Sutton
Russell Brauer, M.D., Anesthesiologist, Lincoln
Thomas Calvert, M.D., Pediatrician, Lincoln
Clayton Davis, M.D., Surgeon, Omaha
Randolph Ferlic, M.D., Vascular Surgeon,
University of Nebraska College of Medicine
William Gondring, M.D., Orthopedist, Lincoln
Paul Hodgson, M.D., Surgeon, University of Nebraska
College of Medicine
Joel Johnson, M.D., Surgeon, Kearney
Palmer Johnson, M.D., Obstetrician, Lincoln
O. C. Kreyborg, M.D., General Practitioner,
North Platte
Jack Lewis, M.D., Internist, Omaha
Harry McFadden, M.D., Pathologist,
University of Nebraska College of Medicine
William Nye, M.D., Ophthalmologist, Lincoln
Wayne Olson, Rescue Squad, Kearney
Robert Osborne, M.D., Psychiatrist, Lincoln
John Porter, M.D., Surgeon, Beatrice
Robert Roselle, Entomologist, University of Nebraska
Robert Rosenlof, M.D., Internist, Kearney
Carl Sasse Jr., M.D., Surgeon, Omaha
Rollin Schnieder, M.S., Extension Safety Specialist,
University of Nebraska
John Smith, M.D., Surgeon, Omaha
Robert Stryker, M.D., Surgeon, Omaha

This course played a very important part in stimulating the appetite of Nebraska's ambulance attendants.

It was looked forward to each year and was continued until formal ambulance training was taken over by the Department of Health under the national EMS program.

PROCEEDINGS ON AMBULANCE AND RESCUE SQUAD SERVICES
IN NEBRASKA, KEARNEY, 1966

The pioneering work by Dr. Thompson on development and evaluation of an ambulance based upon an Econoline van attracted the attention of those in the Department of Health, Education and Welfare in Washington. A contract was let with the University of Nebraska to provide for a conference on ambulance services. This was held in Kearney, because of its central location, on December 9-10, 1966.

Many of those involved in this conference were also active on the Nebraska Committee on Medical Transportation and Communication. There was a feeling that interest was growing in emergency care and Omaha became the first major city in the country to pass the Model Ambulance Ordinance. Hostility previously generated in some areas of Nebraska concerning emergency care showed signs of subsiding and a generalized atmosphere of cooperation began to emerge.

Publications, on the local and national level, by various members of the committee were being read and questions were being asked. Many committee members were being asked to speak on emergency care.

The National Safety Council became interested in what was happening and sent one of its officers to visit Nebraska.

A subcommittee of the Committee on Medical Transportation and Communication was established to look into holding a conference. They were without funds but the Committee was able to obtain a grant from DHEW in order to hold such a meeting. This was funded through the University of Nebraska.

The program committee consisted of Rollin D. Schnieder, M.S., Robert W. Gillespie, M.D. and Kenneth F. Kimball, M.D. Facilities were made available by Kearney State College. Being Nebraska, great care had to be exercised to avoid conflict with the "Big Red" games.

The theme for this meeting was decided upon as Mechanisms of Improving the Methods of Transportation of the Sick and Injured on the Community Level. The

meeting was designed to inform leaders of the communities of the complex nature of ambulance services. Professional exhibits were deemed essential. The program was divided into three distinct parts. First, were formal presentations by authorities well versed on the national scene. Second, were lectures dealing with specific aspects of the Nebraska situation. Third, were seminars where all persons at the meeting could take part and exchange views or express opinions.

Invitations were extended to all mayors in the State, all members of the Nebraska Safety Council, all members of the Nebraska Farm Safety Council, all members of the American College of Surgeons in Nebraska, all hospital administrators, fire chiefs and rescue squad captains in Nebraska, all funeral directors having ambulance services in Nebraska, all private ambulance services in Nebraska, public health officials in Nebraska and neighboring states and all district chairmen of Trauma Committees of the American College of Surgeons.

A portfolio was prepared for everyone attending which contained these documents: Accidental Death and Disability--The Neglected Disease of Modern Society; Health, Medical Care and Transportation; an excerpt from the report of President Johnson's Committee for Traffic Safety; and a copy of the Model Ambulance Ordinance.

The program was as follows:

FRIDAY, DECEMBER 9, 1966

Moderator - M. M. Musselman, M.D., Professor and
Chairman, Department of Surgery, University of
Nebraska College of Medicine

Welcome - M. M. Musselman, M.D.

History of the Nebraska Committee on Medical Transportation and Communication - Lynn W. Thompson, M.D.

Present Status of Ambulance Services in the United States - Roswell K. Brown, M.D.

Moderator - K. F. Kimball, M.D.

The Role of the United States Public Health Service in American Ambulance Services - John Hove

The Model Ambulance Ordinance - Mr. Kirby

Visit to Exhibits

Banquet - Lt. Col. Burl Johnson presiding

Community Application of Emergency Medical Services

Joe Owen, Ph.D.

SATURDAY, DECEMBER 10, 1966.

Nebraska's Contribution to Ambulance and Rescue
Services - Lt. Col. Burl Johnson

Seminars

Experiences with the Experimental Ambulance
Roy Sheaff

Communications Problems and Solutions
Lt. Col. Burl Johnson

Education of Emergency Personnel
Carl Sasse Jr., M.D.

The Ambulance, Equipment Design and Economics
John McCarmond, M.D.

Luncheon

The Role of Ambulances in Recreational Areas
Mr. Osborn

Seminars - Repeated from a.m.

Closing remarks - Lynn Thompson, M.D.

Demonstration on Air Evacuation by the National Guard

The proceedings of this meeting were recorded and published by Dr. Thompson. Some of the conclusions reached at this meeting were:

1. Work must be continued...Better organizational structure is needed as time passes....
2. Each community in Nebraska should have a local ambulance council....
3. Hospital administrators and trustees need to take a more active part in patient transportation studies....
4. The educational programs offered persons associated with emergency medical services to date are in one glorious state of confusion. Need First Aid education in high school and college for all students.
Need for a registry of qualified First Aid instructors....
Need for some type of certification of instructors....
A central library of educational material should be developed....
Educational activity needs to be mobile throughout the state....
5. Advance of the medical communications network in the state....
There is no uniform telephone number for emer-

gency....

All hospitals should be connected into a Central Dispatch.

The medical frequency for radio should be uniform....

Intercommunication with other emergency services should be available....

Consideration should be given to inclusion of a common frequency transmitter in all cars for communication in emergencies.

6. Legislation for Emergency Medical Services will be needed in the future....
7. The experience with the experimental ambulance has generated much interest....
8. Many Nebraska communities have no hospital and no physician and must rely on ambulances from neighboring towns....
9. The exodus of the funeral directors from the field of ambulance service was reviewed....
10. Ambulance services will need to provide elective transportation....
11. The field of ambulance economics--ambulances are costly....
12. Air evacuation of the sick and injured....

OBSERVATIONS OF EMERGENCY MEDICAL SERVICES AND DISPATCH IN EUROPE DURING APRIL AND MAY 1967

Arrangements were made with the Department of Health, Education and Welfare for Dr. Kenneth Kimball to spend about six weeks in Europe looking at Emergency Medical Services and Dispatch with reference to ideas that could prove of use in the United States. This trip was made during April and May of 1967 with DHEW providing introductions in the various countries.

One of the aims of this trip was to see things as they actually were and for this reason the visit was made by private auto. Upon arriving in a new country, Dr. Kimball asked how to find the ambulance service and then made an unofficial visit and discussed the function of that ambulance service. The following day the formal visit was carried out. In most instances, the material obtained was about the same, but on a few occasions he could not recognize that the services he was looking at were the same as he had seen the previous day.

Brief observations noted were:

LONDON

Blue emergency call boxes along the main road from London to the city airport were noted.

St. John's Ambulance service demonstrated well trained personnel.

No Central Dispatch was noted.

FRANCE

Call boxes were noted along the super highways.

They were of two types--one having a door that was opened and then talked into, while the second type used a push button.

A shell mattress was being worked on by Dr. Cara.

A central storage area for ambulance supplies was noted at the Necker hospital.

Helicopter ambulance service is available.

A law was recently passed that requires the first person at an accident to stop and provide help. Use of telemetry was seen in Toulouse where blood pressure, pulse, respiration and ECG are monitored remotely. Problems have caused the termination of this service since there is too much radio interference as they do not have specific medical frequencies.

All seriously injured patients must be moved to a central hospital within 24 hours.

Most ambulances were of the large cargo van type.

SWITZERLAND

Call boxes were seen along the major highways.

These are identified with blue paint and a SOS painted on them.

Ambulances were small and patient access appeared limited.

No Central Dispatch was noted.

ITALY

Radio call boxes are located every kilometer along the Autostrassa from the northern border to Florence. None were seen south of this area.

Instructions on boxes were in several languages.

Two buttons were present, one for ambulance and one for mechanical help.

There is no voice communication but a light on the box comes on to show that the message has been received.

Ambulances are small; patient access is limited.

One may join the Auto Club of Italy for \$5.00 and is then allowed to use the number 116 on any phone to get emergency service.
All autos in Italy must carry a reflective safety triangle for use when disabled.

AUSTRIA

All emergency First Aid except in Vienna, is under the Austrian Red Cross.
Many, many transfusions are used prior to moving the patient.
Most receive a transfusion prior to being put in the ambulance.
All police cars and most doctors carry six units of plasma.
There are 659 ambulances, mostly of the VW type.
All ambulance personnel are tested and licensed.
Most ambulances have two-way radio on the police net.
First Aid texts in Austria recommend control of bleeding by clamping and injury to major structures is a problem.
When an I.V. cannot be started in a vein, a hollow screw may be placed into a long bone and the fluid given interosseously.
All patients are transported on their sides, never on their backs.
A handkerchief is placed between the victim's mouth and the mouth of the EMT for mouth-to-mouth resuscitation.
All ambulance attendants learn to start I.V. fluids.
Anyone not stopping at the scene of the accident to render care in Austria, Czechoslovakia, Hungary, Germany and France is legally liable for any injury that the patient may have.
Average transport time in Austria is less than 30 minutes.
Most transfusions use packed cells so the plasma will be available for use at accidents.
Physicians ride the ambulances in Vienna but not elsewhere in Austria.
Physician response time for rural Austria was given as 8 minutes.
Physician response time for urban Austria was given as 14 minutes.
Eighty-five percent of traffic accident patients

receive I.V. plasma prior to transport.
Forty-five percent of this plasma comes from way-
side depots along the highway.
The common phone number in Austria for all emer-
gencies is 144.
Since 1960, trailers, located around the country,
are stocked with the equipment needed for
emergencies. Each trailer provides for 50
people.B
Helicopters belonging to the government are avail-
able on request for major disasters.
Splinting is not used extensively and great care
does not seem to be taken when moving the
patient.
Vienna has Central Dispatch.
Hospital equipment exchange is not done in Vienna.
All patients go to the emergency hospital.
Hospital occupancy is indicated on a board at the
Central Dispatch Center.
Most of the hospitals seen were very old but
reasonably well equipped.
European car windshields are made to "pop out."

GERMANY

Road signs here, as in most of Europe, are pic-
torial and easily understood.
Helicopters are commonly used to clear the way for
an ambulance on the crowded highways but did
not seem to be used to evacuate patients or
move them to the hospital.
There are call phones along the major roads to
communicate with the local police.

BELGIUM

SOS signs along the highway are used to indicate
an auto mechanic.
The common phone number for emergencies in Belgium
is 900.
Red Cross signs with an arrow pointing to a build-
ing identifies where First Aid is available.
In Brussels, the Red Cross ambulance service and
the Central Dispatch office are in the same
area.
Ambulances were mostly Ford station wagons which
were liked.
All dispatch and runs are taped for replay.
Yellow flashing lights used on ambulances will be
changed to blue in July 1967.

Brussels has one mobile intensive care vehicle.
There are sixteen 900 centers in Belgium.
Ambulance services are about 50% public and 50% private.
The number of the calling phone appears automatically on the switchboard of the 900 center.

THE NETHERLANDS

Only Amsterdam had designated phone numbers for emergencies: 66666 for fire; 88888 police and 55555 for ambulances.
Central Dispatch is used.
Ambulance service is operated by the city.
All ambulances are radio equipped.
Head room is excellent.
Central Dispatch is staffed by R.N.s.

DENMARK

Two ambulance services cover all of Denmark.
One is private and serves 95% of the country.
Coverage is by private subscription.
The other is available in Copenhagen and is summoned by using 000.
All ambulances maintain radio contact on the fire frequency.

SWEDEN

Sweden has a common phone number for emergencies which is 90000.
There are call boxes in the area of Malmo.
Central Dispatch is used.
All dispatch and communication is taped.
About 11% of all emergency calls are for an ambulance.

A second purpose of this trip was to identify specific areas in Europe that would be worthwhile for a second team from the United States to visit. The second group was picked and an evaluation of that trip follows.

SECOND EUROPEAN TRIP FOR EVALUATION OF EMS

A second team from Nebraska was sent to Europe by DHEW to do a more in-depth study of promising areas that had been found by Dr. Kimball and to visit several other areas that were thought to have a program that should be evaluated.

This team was made up of Dr. Merle M. Musselman,

Dr. Lynn W. Thompson, Lt. Col. Burl M. Johnson, Senator Harold B. Stryker and Dr. John T. West.

The group reviewed Dr. Kimball's report and decided to visit Yugoslavia, Austria, Belgium, Sweden, Denmark and Germany. They carefully studied the laws, regulations and policies of each country they were to visit.

Their report may be summarized as follows:

YUGOSLAVIA, Belgrade

This was the only country where time was spent in the national health offices.

The DHEW is primarily a coordinating agency. National insurance provides for emergency care for all.

Physicians usually go to the scene of the accident.

Medical facilities are said to be available within 60 kilometers of all citizens.

Each local community has at least one physician.

Helicopter support provided by the military. One hospital in Belgrade is limited to Trauma Care.

A system of hospital designation seems to function here.

Belgrade has the common phone number, 94, for emergency calls.

It is illegal to pass the scene of an accident without offering help.

All high school students must take basic Red Cross First Aid.

A visit to the University of Belgrade Clinics showed ambulance records incorporated into the patient's hospital record.

There appear to be two types of ambulances. One for simple transport (the hospital taxi) and one for the seriously ill or injured. The latter resembles a station wagon. Access to the patient is limited.

Ambulances are painted an off-white.

All ambulances are radio equipped.

Farmers do not live on their farms in this country, but live in a small community and commute to their farms. They are thus closer to emergency care when at

home, but further from help on their farms.

AUSTRIA

The great value of pictorial signs was again appreciated.

Ambulance services are provided by the Red Cross except in Vienna.

Most attendants are volunteers.

Helicopters, when needed, are provided by the military.

The stockpiling of emergency equipment in trailers was again noted. An ambulance may hook on to one of these units and tow it to the scene as needed.

Good equipment standardization for ambulances was noted.

Common phone number for emergency calls is 144.

Communication between the ambulance and the hospital is done by relay at the Central Dispatch Center.

Vienna's ambulance service is paid for by the patient.

Response time was thought to be about 10 minutes.

The number of emergency beds in each hospital is posted at the communications center.

GERMANY

Two of the group traveled to Hannover to visit the Volkswagen plant and see the new Volkswagen ambulance being made.

These units are larger than the previous models, having better patient access, but are much more limited in size than our vans.

BELGIUM

The national emergency phone number here is 900.

National law requires anyone coming upon an accident to stop and render aid.

Highway call boxes were noted. The center could not identify where a call was coming from which can be a problem in small countries with many foreign languages.

Training programs for ambulance attendants is about 40 hours.

The telephone calling number automatically appears

on the switchboard in the 900 center.
Cardex files are used to catalog resource people
and equipment.

SWEDEN

Interesting observations were made regarding the change in type of ambulance service available and the impact of studies on improving care. The ultimate impact of this was that if an ambulance service did not come up to national standards, no payment was made for their call.

The national emergency number is 9000. Pay phones on the street have a red button that will directly access 9000 without coins.

Ambulances are painted white and use a rotating red light.

All are radio dispatched.

Telemetry is not used in Sweden.

DENMARK

Ambulance service is by and large a private operation provided by only one company.

The uniform telephone number is 000.

Radio is used for dispatch and control.

SCOTLAND

This country uses the universal phone number 999 for all emergencies.

Specific recommendations based on the two European surveys were listed and changes were and are being made in the United States today.

SPECIAL ASSISTANT TO THE CHANCELLOR OF THE MEDICAL CENTER

General Donald G. Penterman had become nationally known for his work in telecommunications, in EMS, and for his service on numerous national committees. He was on the EMS Committee of the National Academy of Sciences, served as a consultant to Dr. David Boyd in DHEW, assisted DOT in communications studies and served on the committee for on-site visits for the Robert Wood Johnson Foundation. Due to this background, in September 1973, General Penterman became a Special Assistant to the Chancellor of the Medical Center in Omaha.

He continued in his activities nationally as well as in the State where his counsel was utilized. He freely offered his assistance to Dr. Kimball in the long range planning within the EMS Division and served as the President of the EMS group in the midwest known as "Rural EMS Under Construction." This group included Arkansas, Iowa, Kansas, Louisiana, Missouri, Nebraska, New Mexico, Oklahoma, and Texas.

He retired from the Chancellor's office in September 1979 after many fruitful years of service to the citizens of the State. Even in retirement, Don continues to provide counsel and remains active on a number of committees within the Lincoln/Lancaster area.

EXTENSION SERVICE, UNIVERSITY OF NEBRASKA
COLLEGE OF AGRICULTURE

One of the key non-physician leaders in the early days of EMS in our state was Rollin Schnieder, an extension specialist with the College of Agriculture. He had extensive experience in the early days of EMS in the State and was recognized for his pioneering efforts to make the tractor and other farm machinery safe for the farmer.

Mr. Schnieder became nationally known for his work in tractor and farm safety and provided some of the first stimulation in the country for the tractor manufacturers to provide roll bars for their units. He was involved in the early Immediate Care Courses by providing one hour of instruction on farm safety and rescue.

He studied the mechanisms of tractor roll-over extensively and developed methods of recovery which he was able to demonstrate to farm groups and ambulance attendants by means of a remotely controlled tractor.

The first demonstration of a tractor roll-over using remote control was at Mead, Nebraska in 1966. By 1968, these studies had made a great impact and for the first time a tractor with a protective cab was used in an over-turn to show the protection afforded to the driver.

Each year, Mr. Schnieder put on a training program at Mead where farmers from across the State could come and see for themselves the pros and cons of various systems.

He was involved in a program on farm extrication at the Legion Club in Palmer. At this meeting, Mr. Schnieder thought it would be helpful to put on a rescue demonstration at the Power and Safety Day in July 1977. He asked Roger Hanke if the Palmer Squad would be interested in helping with this. Roger was concerned about the squad leaving the town without ambulance service but this was averted by the offer of the St. Paul Squad volunteering to cover the town while the Rescue Squad was gone.

This was the first large scale farm extrication demonstration given in the country. The demonstration of retrieving a person caught in a power take-off was viewed by over 4,000 people. Needless to say, the crowd was very subdued when they saw what could happen

to a person caught in a power take-off and the problems a rescue squad would face in removing that person.

Future programs included a tractor over-turn rescue by the Ceresco Rescue Squad, a crushing rescue by the Palmer Squad, an auger rescue by the Greenwood Squad, a Jaws of Life demonstration by the Ceresco Squad and a rescue from a hazardous atmosphere by the Ashland Squad. An estimated 15,000 to 17,000 people witnessed these demonstrations. Most of these were farmers who saw firsthand just how dangerous their work could be.

Rollie often says that he looks to the people in EMS selfishly in that he takes advantage of them as a resource. He has said in his talks around the nation that he has 13,500 people, or one in every 127 Nebraskans, helping him in his farm safety work in Nebraska.

He feels we have come a long way since Dr. Thompson said, "In the beginning. . . ." He hopes there is no "In conclusion. . . ." and would prefer to choose Lyndon Johnson's words, "Let us continue. . . ."

Mr. Schnieder is a nationally recognized speaker, has written extensively on the subject of farm safety and will be contributing a chapter in the new EMT-A text on this subject when the American Academy of Orthopedic Surgeons puts out its next revision. He also is working on a publication dealing with farm safety with the American Academy of Pediatrics.

He has been or is currently involved in teaching farm safety and rescue in the states of Nebraska, North Dakota, South Dakota, Kansas, Oklahoma, Missouri, Iowa, Minnesota, Louisiana, Utah, Idaho, Montana, South Carolina, Wyoming and Nevada.

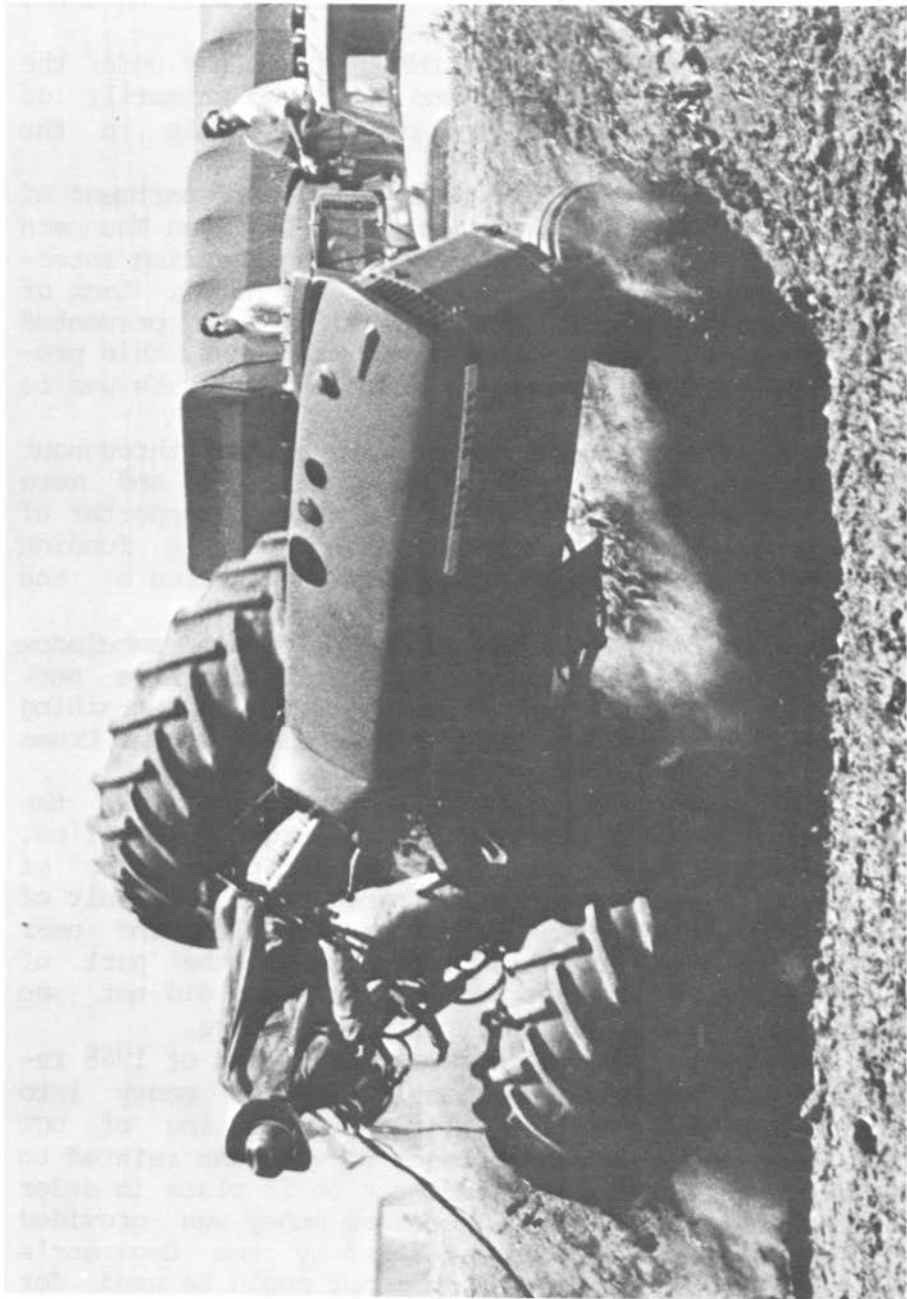
Like so many men who have done so much, Mr. Schnieder is well known throughout the nation as well as in the State.



Sky-Aid Helicopter at Farm Safety Day



Dr. Gene Gross talking at Farm Safety Day



THE NEBRASKA STATE DEPARTMENT OF HEALTH

The Nebraska Department of Health during the evolution of the EMS system was under the direction of Dr. Earl Rogers, Dr. Lynn Thompson, Dr. Dorothy Smith (Acting Director), Dr. Arnold Reeve, Dr. Robert Osborne, Dr. Henry Smith and Dr. Greg Wright.

In its early days, the EMS Division was under the direction of Milton Parker and consisted primarily of Civil Defense activity and its relationship to the medical community.

The first real effort to involve the Department of Health in EMS to any degree was while Dr. Lynn Thompson was Director. Dr. Thompson had a long standing interest in emergency services as previously noted. Lack of funding both at state and federal levels prevented little but planning and evaluation, however, this provided the much needed base on which later growth was to be built.

As interest in EMS became more evident throughout the State, the EMS division was established and more adequately staffed. Dr. Smith, a staunch supporter of EMS programs, took a strong stance to obtain funding for the division and to promote EMS activities at the local level.

At that point in time, almost all of the ambulance service was being provided by the volunteer fire services in the State (an estimated 80%) and training consisted of Red Cross First Aid or Advanced Red Cross First Aid which was taught by the Fire Service.

The majority of the remaining services were the paid services being utilized by the larger communities.

Little stress was laid on proper preparation of the patient or on care during transport. The fault of this lay not with the volunteers but with the near total lack of support and cooperation on the part of the physicians, nurses and hospitals who did not see ambulance services as a part of patient care.

The passage of the Highway Safety Act of 1966 resulted in the sudden movement of federal money into improved highway safety. It was the feeling of DOT that while only 18% of ambulance service was related to highway accidents, a system must be in place in order to respond to those 18%. Therefore money was provided to the states to be administered by the Governor's Highway Safety Office. Such money could be used for

any of the items in the DOT bill. Nebraska was ready to step forward and begin training, purchase ambulances and provide communication for its medical net.

One of the first courses taught in Nebraska based on the new Department of Transportation 81-hour Emergency Medical Technician-Ambulance (EMT-A) curriculum was in Kearney. Dr. Joel Johnson and Dr. Ken Kimball presented the course one evening a week over a number of months to the Kearney Volunteer Rescue Squads. This included hands-on type experience in extrication. Kearney had one of the early groups to become nationally certified by the National Registry of Emergency Medical Technicians.

DOT funded the Health Department for a study, published in 1973, on the impact of the training of the EMT-A in Nebraska. It had been estimated that between 20,000 and 50,000 lives could be saved nationally by improved pre-hospital care. Almost 1,000 EMT-A's had been trained in Nebraska under DOT money. (Fourteen instructors had been trained at the University of Nebraska Medical Center in 1972 and another 13 were to be trained in 1973.)

The definitive study identified that 55 lives had been saved due to the EMT-A training and countless others had been better cared for.

In February of 1971, the Department of Health became the coordinator of Emergency Medical Services in the State. Probably its biggest impact was in improved training of the ambulance personnel.

Mr. Parker conducted a statewide survey utilizing a form for collection of that data. People were identified and personal interviews were then conducted with over 500 individuals.

The survey looked at local EMS organizations, hospitals, First Aid training, communications, records, ambulance services, law enforcement agencies and expected plans for the future.

It is interesting to note that at that time there were:

Private ambulance services - - - - -	13
Mortician ambulance services - - - - -	36
Public (Police and Fire) - - - - -	20
Volunteer - - - - -	228
Federal - - - - -	2
Air Services - - - - -	3
TOTAL	302

Of the 13 private ambulance services, seven were hospital based.

The evolution from station wagon to van type vehicles was documented. Most of the ambulances by 1970 were of the van type and met the new federal KKK 1822 specifications. Typically, most carried oxygen, but less than half had suction available. Radio equipment between the ambulance and hospital was becoming very common across the State. Laws regulating ambulance activity in Nebraska were still minimal.

By 1974, DOT had funded the department to provide for training on a statewide basis. Goals were: to train 1,000 persons in the EMT-A DOT program; to add fifteen hospital based radios (on the medical net); to help five communities purchase ambulances; to train 500 EMS personnel in radio procedures; to publish a directory of EMS resources for the State; to prepare EMS legislation for the 1974 Legislature; to prepare for public education on EMS; to promote the training of the general public in First Aid; and to promote and assist the development of EMS Councils in the State.

Staff in the EMS Division in 1974 consisted of Director Milton Parker, Paul Haith and Randall Hiatt.

An Advisory Committee had been established in 1972 to advise the Director of the Department of Health in matters relating to EMS. A Comprehensive Health Plan was developed and submitted to the Director of the Department of Health which was then reviewed, enlarged and used as a guide for its future activity in EMS.

This committee consisted of the following:

Kenneth F. Kimball, M.D., Kearney surgeon, Chairman
Richard Hammer, M.D., University of Nebraska

Health Center

Claude Organ, M.D., Creighton University School of
Medicine

B. Gen. D. G. Penterman, Deputy Adjutant General
of Nebraska.

Donald Nelson, Director, Office of Planning

Dan Nelson, Associate Administrator,

Clarkson Memorial Hospital

Rod Hutt, Program Coordinator, Highway Safety Program

M. M. Musselman, M.D., University of Nebraska College
of Medicine

Calista C. Hughes, Director, Comprehensive Health
Planning

Deane Marcy, M.D., Nebraska Regional Medical Program
Henry D. Smith, M.D., M.P.H., Director of Department
of Health
Marty Miller, President, Nebraska Rescue and
Emergency Care Association
Glenn A. Goodrich, Nebraska Senator
Arnold Ruhnke, Director, Nebraska Association of
County Officials
Del Rasmussen, Executive Secretary, League of
Municipalities

As the EMS Division evolved and was more adequately staffed, the importance of better training of ambulance personnel and better design of the vehicle was coming into vogue as was federal funding to support such training programs. The EMS Division of the Department of Health began to contract for training of the EMT's and department approval of all instructors was initiated. Early teaching was done by the Fire Service and when new instructors were trained at the College of Medicine in Omaha, a number of Fire Service people took such training and were approved instructors. The Department of Health was billed for each person who was trained as an EMT-A (the policy being payment only for persons who were members of an ambulance service, not for someone who simply wanted to take the course for their own knowledge).

Local community colleges became interested in teaching the EMT-A program. They were contacted and asked for a bid on such training. It became obvious that the community colleges would be able to do this for about half of what was being paid to the fire service since they were already in the community and did not have a lot of travel expense. By the late 1970's, the training had shifted almost totally to the community colleges. This was a cause for concern to many of the volunteers in the State who saw it as an effort to "drive a wedge" between local fire units and the State Fire Service.

Federal funding from DOT via the Governor's Traffic Highway Safety office was used to help obtain ambulances for local communities, to train ambulance attendants to the new national standard DOT 81-hour course and to purchase radio equipment for ambulances and hospitals to allow for a state medical radio network.

By 1974, 87 of Nebraska's 105 hospitals had radio equipment in their Emergency Departments which allowed them to communicate with the ambulance. Thirty percent of ambulance personnel had been trained to the EMT-A level, but because the training had been spread across the State, an estimated 85% of the population was covered by EMT-A trained people.

A total of \$2,448,000 was provided to Nebraska by DOT for use in improving our EMS system.

Next to arrive was Department of Health, Education and Welfare (DHEW) funding for Emergency Medical Services in the form of 1202, 1203 and 1204 monies. Federal money from DHEW was divided into four sections:

Section 1202 - FUNDING FOR FEASIBILITY STUDIES AND PLANNING

Section 1203 - ESTABLISHMENT AND OPERATION OF A BASIC LIFE SUPPORT OPERATION (EMT-A)

Section 1204 - EXPANSION INTO ADVANCED LIFE SUPPORT (PARAMEDIC)

Section 1205 - RESEARCH (These funds were not generally available for state or local use)

The concept of administration of this program was 180 degrees opposite from what had been provided by DOT. Under DOT funding, each state could use these funds for any program that fit within the DOT guidelines. Under the DHEW concept, program approval was centralized in the Regional Office and in Washington, D.C.

The Interagency Advisory Committee on Emergency Medical Services, of which Dr. Kimball was a public member, was to make recommendations to the Secretary of DHEW respecting the administration of the EMS program. It was NOT a grant review committee nor did it have responsibility for selection or approval of individual grants. The committee, in reality, reviewed EMS programs of DHEW but had little or no input into how they functioned or changes that should be made.

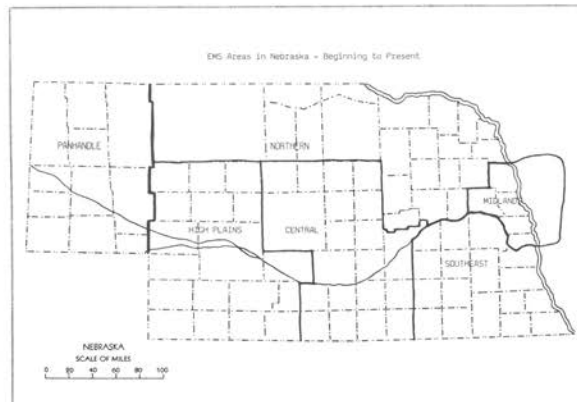
Eligibility for 1202, 1203 and 1204 funding was clearly spelled out. The applicants must fall in one of the identified eligible categories and have submitted their grant request to the local Comprehensive Health Planning (CHP) for review and comment at least 30 days prior to the time CHP was to have its report in the Regional Office.

Regional offices then met with Dr. Boyd, Director of EMS for DHEW, who took the funding available and after considering what viable projects appeared to be eligible for national funding, allocated funds to the Regional Offices. Early on, Dr. Boyd appeared to be responsible for review and approval of almost all 1203 grants but as time went on and various areas moved into the Advanced Life Support (ALS) programs (1204), more of the 1203 funding decisions seemed to be made by the regions.

Dr. Boyd attempted to provide better guidance for the regional offices of DHEW by appointing what became known as his "Super Docs." These were ten physicians with backgrounds and interests in emergency care who were appointed to help with the reviews and advise the regions on EMS programs.

Obviously, as with any governmental program, there were political pressures. Some were indirect and some were very direct with applicants calling their congressmen who then called DHEW for an explanation of why this or that area was not funded. Since Congress holds the purse strings, there can be little doubt that these efforts were effective in some cases.

Great stress was laid on the need for "wall-to-wall" service throughout the country. The State was divided into six service areas and over the period of the federal program all six areas received partial or total funding. These areas were Midlands (the Omaha area), Southeast (the Lincoln area), Northern (the counties across the top and east end of the State), Central (the south central counties around Hastings, Grand Island and Kearney), High Plains (the counties around North Platte) and Panhandle (the counties in the western portion of the State around Scottsbluff).



All federal funding was made to the Department of Health which supervised the evolution of the EMS system via allocation of the money to each area.

The 1202 funds were defined as money to allow for planning so that proper use of future money could be assured. Midlands (Omaha area) received the full \$20,000 for their study while the rest of the State received a total of \$20,000.

All areas were ultimately funded with two cycles of 1203 money in order to complete their Basic Life Support (BLS) systems which included the training of EMT's, completion of a radio system, and the beginning of updating that system from the low band to UHF.

Midlands received the full two-year 1204 funding to allow for completion of the Advanced Life Support system. Special designation of the hospitals in Omaha had not been accomplished and on-going funding on an independent basis was not established. Since these were required for 1204 funding, the Department of Health recommended that the final year of funding for Midlands be delayed. Apparently for political reasons, and perhaps because Dr. Tony Carnazzo was one of his Super Docs, Dr. Boyd did allow the funding. Without a doubt, this was a problem for both the Health Department and the other areas and could have totally destroyed the creditability of the EMS division. This did not seem to happen and everyone behaved in a rational manner.

Panhandle likewise received a full two years of 1204 funding to allow for completion of their system.

Southeast had been struggling with the establishment of a quality Medical Control and did not chose to move into pre-hospital ALS until Medical Control was in place in the community. John Frey, President of the Lincoln Foundation, chaired a local committee to work with the medical community in establishing a functional Medical Control group for Lincoln. The delay in Lincoln's participation in the federal funding cycles resulted in fewer funds than what might have otherwise been expected. Southeast received funding for only one year of 1204.

Central was funded for one year of 1204 which allowed completion of their UHF system and the beginning of Advanced Life Support.

High Plains received one year of funding in 1204 to allow them to evaluate the providing of ALS services with remote Medical Control. This was necessary due to

the lack of full-time physicians in any hospital in the Region. Medical Control was to be provided locally when the hospital Emergency Department was staffed or when local physicians were available but was to make use of the state medical net at other times so that control could be provided on a backup basis from either Scotts-bluff or Grand Island. So far as we know, this was unique for any area in the country.

Northern was funded for two years of 1203 (BLS) support. No 1204 money for ALS was obtained due to the lack of full-time Medical Control in hospital.

Each EMS Region, most were not-for-profit, was governed by a Council, composed of community representatives who were responsible for the direction of the Regional Manager. The Regional Manager worked closely with both the Council and the Department of Health to insure smooth evolution of the program. All Councils were reviewed and approved by the legal counsel of the Department of Health since they would be receiving state and federal funding through the State Health Department.

Certain functions, statewide in scope and better done as a single entity, were carried out by the Department of Health. These included training and mass purchasing. The EMS Division obtained contracts for some of the needed equipment such as Annies and radios. Use of the state telephone network was utilized to provide interconnects between the six centers in order to allow total statewide communication capability.

Dr. Smith agreed with the concept of physician direction of the EMS Division and Dr. Kimball was retained as the part-time Director of the EMS Division serving in this capacity from 1977 to 1981. Dr. Kimball was in the office on a regular basis each Wednesday as well as being available by phone and letter for consultations. The work for the coming week was defined in a staff meeting and program assignments were made. Lawrence Graham, the Assistant Director of Health responsible for EMS, often sat in on these meetings. By and large, this period went smoothly, but at times there were feelings that since Dr. Kimball came from the Central area he tended to favor them. Regular meetings with the area EMS directors were held, their input obtained and problems were discussed.

Since all money under the 1203 and 1204 projects was administered through the State Department of

Health, each area was required to develop and submit a project proposal. These proposals were reviewed in the Department of Health and then forwarded to Kansas City along with a recommendation for approval or disapproval and a rating of which of the projects should be funded first, second, third, etc. There was never enough money available for all projects but Nebraska had more than its share of the funding due to the quality of the grants which were submitted.

The EMS directors were most cooperative in their requests for grants in order to allow each other to phase the various steps of 1203 and 1204 development. This let them have time to look in depth at their area and its development. There can be no question that each area benefited from this delay with the exception of Southeast who came into their final funding as the program was winding down and who were thus not funded to the optimum amount.

As it became obvious that EMS areas would need to drop out of the funding for a year now and then, Dr. Kimball went to the Legislature and obtained state funding to maintain those EMS areas which were standing by at various times. This was money well spent since the federal grants obtained to phase the various programs were greatly in excess of the money needed for standby. Without the investment of such funds, many of the EMS areas might not have survived.

A recent study done by Dr. Joseph Ornato, Ed Craren and Norman Nelson shows that since 1976 the state and federal government has gotten back more in taxes from accident survivors than it has spent on EMS in a given year and that by 1980 it had recovered all of the funds spent since 1969 on EMS in the State.

The EMS areas were faced with many problems. Many ambulance services felt that if the money made available to operate the EMS areas could have been given to the ambulance services themselves it would have been better spent. Such use of the money was not allowed under the grant. The services did not take into account the many activities such as radio systems development and maintenance, training, and area wide public education which each EMS Region was able to provide.

One of the provisions which Washington supposedly attached to all 1204 (ALS) grants was that a program be identified which would allow for the continued function of the EMS area after federal funding was terminated.

(The concept originally had been that all 300 areas of the United States would be funded through a five-year period to allow them to end up with an in-place Advanced Life Support system. As time passed, funding became more crucial and many of the areas were either not funded at all or were cut back drastically.) All Nebraska EMS areas attempted to identify on-going sources of funding but none truly became self-sufficient.

Dr. Carnazzo was most interested in the development of a Paramedic service for the Omaha area. Prior to the publication of the new nationally standard Paramedic curriculum, he developed a Paramedic training program at Creighton University and a number of the fire service personnel from the Omaha area took the course. Some problems were identified in obtaining cooperation of the local physicians to teach the course, and inadequate emphasis was placed on the in-depth knowledge of basic anatomy and physiology that would be included in the national curriculum. The training program was completed but it was two years before Nebraska had a law allowing Paramedic services. Time elapsed and the material presented had simply not been enough in-depth for this group of early trainees who experienced a great difficulty when taking the examination based upon national standards. Refresher courses were then provided in order to update the training and allow this dedicated group to function in the City of Omaha. Mrs. Jeanie O'Brien, R.N., was hired to work with the Omaha Paramedics and supervise their work in the field until such time as the Paramedics were ready to take their state examinations.

With the benefit of the new federal curriculum, Lincoln, Grand Island and Kearney became interested in and developed Paramedic training programs. Parts of High Plains and Panhandle moved into the advanced level of care. However, due to the length of training required, to the distances present, and to the lack of volume of critical patients, most of these opted for the EMT-I or EMT-II. Some of these areas are now ready to move on to Paramedic training.

One of the major problems facing rural areas is a lack of paid personnel who can take the time for extensive training. The volume for any one unit is low, making it difficult to maintain skills, yet a major need exists for Paramedic type of care since distances

to Trauma Centers are great and some counties do not have even basic hospitals.

Today all Regions of the State have Basic Life Support services and some level of Advanced Life Support services.

Total funding to the EMS Regions was as follows:

	Panhandle		Southeast
DOT	\$ 157,750	DOT	\$ 400,450
DHEW	\$ 958,000	DHEW	\$1,274,000
State	\$ 79,333	State	\$ 46,000
Block Grant	\$ 190,000	Block Grant	\$ 190,000
TOTAL	<u>\$1,385,083</u>	TOTAL	<u>\$1,910,450</u>
	High Plains		Midlands
DOT	\$ 238,250	DOT	\$ 275,650
DHEW	\$ 995,000	DHEW	\$1,722,000
State	\$ 79,333	State	\$ 46,000
Block Grant	\$ 190,000	Block Grant	\$ 190,000
TOTAL	<u>\$1,502,683</u>	TOTAL	<u>\$2,187,650</u>
	Central		Northern
DOT	\$ 391,150	DOT	\$ 287,250
DHEW	\$ 895,000	DHEW	\$ 570,000
State	\$ 79,333	State	\$ 0
Block Grant	\$ 190,000	Block Grant	\$ 190,000
RWJ	\$ 235,000		
TOTAL	<u>\$1,790,483</u>	TOTAL	<u>\$1,047,250</u>

Looked at another way, over the 15-year period from 1969 through 1983, funding for EMS from state and federal sources for the entire State was:

State:	\$1,514,070
Federal	\$10,845,844
TOTAL	<u>\$12,358,844</u>

Several projects were funded by DOT in the late 1970s to the EMS Division of the Health Department. A study, done under one such grant by Dennis Schrauger and Dr. Kimball, was based upon emergency records from ambulance runs in the State. It determined how often a

correct diagnosis was made and the proper treatment given, how often an incorrect diagnosis was made but the proper treatment still given, how often a correct diagnosis was made and an improper treatment given, and how often an incorrect diagnosis was made and improper treatment given. This study led them to the conclusion that certain types of injuries were frequently overlooked and indicated the patient might be better off, if at the EMT-A level in teaching, the treatment of symptoms instead of specific diseases was used.

Another area of outstanding activity on the part of the EMS Division of the Department of Health has been its work in Cardiopulmonary Resuscitation (CPR) in cooperation with the American Red Cross and the American Heart Association. CPR had been popular in the State but it was likely the work done in Washington State that established the emphasis on this program.

Good figures have been established to show that the immediate delivery of CPR at the site of a cardiac arrest, so that rapid oxygenation of the brain and heart take place, will result in substantial improvement in people who live to arrive at the hospital and who survive to return to work. The above mentioned groups have initiated an effort to train one-third of all the citizens in Nebraska over a five-year period, approximately 100,000 persons per year. To date, they have been on target and the latest study shows that the pre-hospital deaths from cardiac arrest have been reduced by over 62% in the last 12 years.

Improvements have also been accomplished in the delivery system, but there can be little doubt that citizen training has played a major part in this improvement.

THE DEPARTMENT OF HEALTH, EDUCATION AND WELFARE

The early days of EMS saw little active support for the local level by DHEW (later the Department of Health and Human Services--DHHS). Most of the programs were through the U.S. Public Health Service and were in the form of small contracts for a few thousand dollars.

There was no mandate from the Congress nor from the people to become involved in the delivery of Emergency Medical Services.

The passage of the Emergency Medical Services Act in 1973 put DHEW in the act in a big way. A Division of EMS was staffed and funded nationally with the identified intent of developing EMS in every one of the 300 areas into which the entire United States had been divided. This tended to place EMS activity back in DHEW, and DOT, which had been deeply involved in pre-hospital services, shifted its emphasis to other areas of highway safety.

There were basically three programs identified. The first 1202 allocated up to \$20,000 to each area to study their present system (or lack of), to look at how it could orderly grow into a Basic Life Support system and to make plans for such growth. The second phase, 1203, made two years of funding available with up to \$300,000 allowed per year. The final two years of funding was to be used for pulling the entire program together and establishing an in-place and functioning Advanced Life Support program. These funds were projected to be up to \$600,000 for the third year of the program and up to \$800,000 for the final year. There seems to be little doubt that planners at first visualized areas of the country moving in an orderly progression through these five funding years. However, there were always more areas asking for funding than there was money to be allocated. Few, if any, received the maximum funding.

Nebraska had "done its homework" and had a viable EMS Division in the Health Department. Long range goals had been looked at and there was a reasonably good inventory of the present system due to the work by the Nebraska Committee on Medical Transportation and Communication.

Applications were submitted with the EMS Division of the Health Department as the statewide supervisor and with the six EMS areas as the subgrantees. Two pro-

grams were funded under 1202 for planning. One for Midlands (the Omaha area) and a second for the remainder of the State.

The following year the State was funded for its first 1203 programs. Money was awarded to Midlands and Central EMS areas for the beginning of the development of a Basic Life Support system. The State was on its way with DHEW funding.

An Interagency Committee on Emergency Medical Services was established by the President of the United States to work at the national level and was composed of representatives of all federal agencies involved in EMS plus five public members. Although authorized earlier, the public members were not appointed until 1974. Dr. Kimball was appointed to that committee by President Gerald Ford for a period of four years.

The charge to the Committee was to coordinate all federal activities and programs relating to EMS. There were some 19 governmental agencies involved such as The Department of Health, Education and Welfare; The Department of Transportation; The Department of Labor, The Department of Justice; The Federal Communications Commission; The Veterans Administration; The Bureau of Indian Affairs; and others with less obvious connections to EMS. The need for such coordination was evident to Dr. Kimball when, the evening before his first Interagency Committee meeting in Washington, he found that many of the people in DHEW and DOT who were charged with EMS had never even met!

The structure of the Committee seemed to him to be faulty. The Committee was presided over by DHEW. Although they made an effort to hear all sides of the questions that were raised, they obviously saw things from the view of DHEW. Many of the other departments became disenchanted with the Committee and as time went on participation of members dwindled.

However, there were major accomplishments by this committee. Perhaps the best known was the development of the Paramedic Training Program. This had been developed under funding by DOT but as a result of the cooperation between the various agencies, we ended up with a nationally standard Paramedic Training Program that was approved by DHEW, DOT and DOL.

Other areas were frequently a problem. One such problem was the development of the UHF Emergency Medical Services band. Ten frequencies were allocated for

use with two to be used for command and control and the other eight for communication including telemetry. While there was agreement with the need for these bands, there was a basic difference between the views of DHEW and DOT on how they should be funded. Each wanted to encourage the movement to the new bands but funding from DHEW was for one system and funding from DOT was for another. With these basic differences in the type of system to be built, there was no way that coordinated federal funding could be developed or used.

Many also felt that the agenda for the meetings was somewhat oriented to the desires of DHEW. Often presentations to the Committee dealt with a program that had been DHEW funded while many would have preferred to talk about new programs that should be developed.

In fairness to DHEW, they felt that the Committee needed to understand what they were doing and obviously saw things from the standpoint of their charge from Congress.

The Committee did prove useful since it helped to share information between the various government agencies. This was needed. At one meeting it was found that one agency was about to fund a satellite communication system for use in a state where another agency was funding another type of communication system. With better structuring, the committee probably could have accomplished even more.

THE SIX EMS REGIONS IN NEBRASKA

Prior to this time, many communities had their own ambulance service and/or hospital but the only coordination was that provided by interlocal agreements between the various units.

This was ideal for response to emergency problems, but did little to allow for coordination of the various units, or to establish planning for an area.

When it appeared that local organization and federal funding would make it necessary to structure EMS regions in the State, the economic development areas were used combining several of these to form one of the six EMS regions. Local councils were organized and an area director was hired.

PANHANDLE EMS REGION

This area consisted of 11 counties, headquartered in the Scottsbluff/Gering area. Its first and only director, Mrs. Lee Ehlers, was hired in August 1975 when 1203 funding first became available. In March of 1976, Panhandle EMS was incorporated as a nonprofit organization. The Board of Directors was selected by taking the chairpersons of various committees: Education/Training, Transportation, Communications, Facilities, Legislation, Public Information and Education, Disaster Planning, Evaluation, Medical Advisory Board and the Medical Director for the region.

That first board consisted of:

Bill Brennan, Scottsbluff
Roger Green, Scottsbluff
Bob Larsen, Gering
Robert Morgan, M.D., Alliance
James O'Brien, Kimball
William C. Peters, Gering
John Shaffer, M.D., Mitchell.
Tom Spence, Crawford
Jerry Warfield, Scottsbluff
Bob Zeman, Chadron

Bill Brennan, Bob Larsen, James O'Brien, William Peters and Jerry Warfield still serve on the Executive Board. The Executive Board is also composed of four others--the Deputy of the President and three Vice Presidents. A Member-at-Large is elected every year by

the PEMS Council to serve a one-year term.

The Panhandle EMS Communications system was coordinated by Carroll Fuller.

A dedicated line system was established in this region which connected to every hospital. It was for medical use only. The first year of use was free and a charge was then billed in the second year. With increasing costs, the system was not used enough to be self-sufficient and was terminated when it continued to operate at a loss.

Ambulance services in the Panhandle are functioning well. They are mostly staffed by volunteers. Only two squads are paid services, one in Scottsbluff which is privately owned, and one in Kimball which is subsidized by the county.

There are 11 Advanced EMT-I's divided between the areas of Sidney, Kimball and Scottsbluff. The region is now looking at advanced training to the level of EMT-II and are looking forward to the day when EMT-PS may be available to this important area of the state.

HIGH PLAINS EMS REGION

The first evidence of activity in the High Plains 17-county area goes back to a letter written in October 1972 by Milton S. Parker to Dr. Miles Foster of the West Central Nebraska Health Planning Council.

One-day conferences in EMS were to be held in North Platte, Scottsbluff and Norfolk. The North Platte meeting was attended by 65 persons from the various groups involved in EMS activity.

Hospital Administration	5	Medical	4
Comprehensive Health	1	Nursing	9
Public Health	4	Fire	11
Law Enforcement	4	First Aid	2
Civil Defense	2	Government	1
Ambulance and Rescue	1	Other	5

An organizational meeting was held in February of 1973 to establish an EMS Council. The meeting was called by Dr. O. C. Kreymborg. Attending were:

Shirley Alexander, North Platte St Marys Hospital
Ace Backer, Chief, North Platte Fire Department
Jack L. Cahill, Manager Northwestern Bell
Bill Eddy, North Platte Telegraph

Jack Freiberg, Capt. Rescue NPF
Eugene Herron, City Council, North Platte
Jack Humphrey, Captain, Rescue NPF
Jim Huttermaier, Radio KODY, North Platte
Art Imler, North Platte Police Department
Steve James, State Health Department
O. C. Kreymborg, M.D., North Platte
Jerry Loveland, Red Cross
Sister Mary Ruth, North Platte St Marys Hospital
Fay Nutter, North Platte Memorial Hosp. Admin.
Geo. Voorhies, Director CD for Lincoln County
Lu Zlonke, North Platte St Marys Hospital

Dr. Kreymborg was elected Chairman and, due to the size of the area, it was decided the above group would function only for the North Platte area and that other areas would be encouraged to form like groups.

Federal funding, as Title XII money, became available to the High Plains area in the amount of \$271,000 to allow for the development of an improved Basic Life Support System. The E.M.S. Committee helped the communities purchase ambulances, radios, and hospital equipment as well as coordinated training and developed a regional communications plan.

In 1974, High Plains EMS Council, Inc. was created as a private, not-for-profit (C-3) corporation. The organizational meeting was held on September 2, 1976.

The Board of Directors were:

C. G. Gross, M.D., Cambridge, President
Paul Balerud, North Platte, Vice President
Joan Anderson, North Platte, Secretary
Jerrall Gerdes, Oxford
Ken Nateboom, McCook
Rap Reynolds, North Platte

Larry Surber was appointed acting Project Director and was hired for a period of 60 days during which applications for that position were reviewed. Larry was hired for the job and has served in that capacity ever since.

Other members of the original High Plains EMS Council were:

Jim Applegarth, Hyannis
Dr. Robert Ayres, Gothenburg
Gordon Monie, Arapahoe
Harold Neal, Tryon

Lynn C. Caton, Curtis	Jim O'Brien, Mullen
Bernard Colligan, North Platte	Barney Owens, Elwood
John Cox, Lexington	Ivan Parker, Stratton
Dr. Ben Crouse, Ogallala	Paul Pascoa, Ogallala
Vernon Cullers, Cozad	Don Pearson, Mullen
Ron Dart, Wauneta	Marilyn Poppe, Brule
Rev. E. H. Denner, Wauneta	Linda Prindle, Thedford
Tom Dredla, Hyannis	Larry Rammenga, Elwood
Dr. Miles Foster, North Platte	Jay Richards, McCook
Ted Frye, Arthur	L. Rochester, Stapleton
H. Odell Grafton, Wilsonville	Robert Ross, Culbertson
Mike Grutsch, Imperial	S. Rucker, Hayes Center
Tom Hardin, Beaver City	H. Schneekle, Eustis
Gary Hastings, Hayes Center	Alice Struckman, Brule
Rod Hutt, Grant	Harold Suhr, Grant
Charles Johnson, North Platte	Gil Taylor, McCook
Gene Jones, Benkleman	Rich Terrell, Trenton
Tom Jones, Benkleman	Larry Trumbull, Tryon
Dr. O.C. Kreyborg, North Platte	Dean Vian, Stapleton
Howard Layher, Stapleton	George Wetzels, Curtis
June Lindstrom, Sutherland	Orvale Widick, Farnam
Louise Miller, Thedford	Ralph Woosters, Arthur

Of these original members, Jerrell Gerdes, Dr. C. G. Gross, Mike Grutsch, Gary Hastings, Rod Hutt and Gordon Monie remain active on the EMS Council!

By 1974, 50 citizens representing the 18 counties of west central EMS area met in North Platte to review Emergency Medical Services progress in the area and to hear reports from EMS task force chairmen. Dr. Gross, EMS Council Chairman, directed a discussion on transportation, communication, training, and medical facilities.

James LaValley, Director of the West Central Nebraska Health Planning Council, passed out surveys on hospital emergency facilities and ambulance services.

All activities to that time were held under the West Central Nebraska Health Planning Council.

The EMS 1203-1 grant monies were extended through this year.

In 1977-1978 fiscal year, the area received a total of \$194,425 for continuation of the development of their BLS system. The unexpended monies were carried over into 1978-1979.

State funding allowed the area to remain active with a grant of \$42,000 the following year so that they

were ready when 1204-1 funding became available to move into Advanced Life Support for the area.

This money was awarded in 1981-1982 from a federal grant of \$500,000. The council sponsored Paramedic training of volunteer ambulance squads through the McCook Community College, developed Quick Response Teams, installed a new regional radio system for ambulance-to-physician communication, upgraded Emergency Room equipment, coordinated advanced emergency care training for nurses and physicians, and sponsored workshops for ambulance squads.

The following fiscal year, unspent monies (\$92,844) were expended to complete the installation of the UHF radio system.

State block grants of \$92,000 were received for the 1983-1984 year to expand the ALS program development and to take a hard look at rural Paramedic training.

Some of the unique programs for this area were:

1. Sponsorship of EMT-A and First Responder courses in several local high schools.
2. Recognition of non-EMS people who have saved a life, with plaques presented to them at council meetings.
3. Recognition for local ambulance services for outstanding effort with a presentation of plaques by the council.
4. About to launch the first multicounty service area for advanced pre-hospital care in the state, if not in the nation.

People who have contributed substantial effort for EMS development and operation in the High Plains area are:

Dr. Miles Foster
Jerrell Gerdes
Dr. C. G. Gross
Mike Grutsch
Dr. O. C. Kreyborg.
Gordon Monie
Don Pearson

Some ambulance personnel who have faithfully worked with the system are:

Ben Baker, Trenton
Dale Franzen, Gothenburg
Jack Freiberg, North Platte
Gary Hastings, Hayes Center
Rev. John Kilgore, Benkelman
June Linstrom, Sutherland
Paul Madron, Thedford
Gordon Monie, Arapahoe
Bryce Tomlin, Cozad
Ken Wolf, Curtis

Physicians who have been active in the area, and not listed above include:

Dr. Robert Buckland, North Platte
Dr. Joe Davis, Gothenburg
Dr. Robert Harry, Lexington
Dr. Mark Schanbacher, McCook
Dr. W. A. Williams, Lexington

Carroll Fuller, communications consultant, is still involved in the completion of the UHF system for the High Plains Region.

CENTRAL EMS REGION

This 22-county area has its office in Kearney. The region was established in 1973 by virtue of an Inter-local Cooperation Agreement to coordinate EMS system development. Motivation for this action was the availability of the Robert Wood Johnson Grant.

Original members of the CNEMS Council were:

Rev. Keith Roumpf, Chairman
Dorothy Lippincott, Vice Chairman
Larry Matney, Secretary
Joan Heinzman, Treasurer
Paul Guptill, Executive Committee
Leo Haith, Executive Committee
Joel Johnson, M.D., Executive Committee
Ken Kimball, M.D., Executive Committee
Ward Schrack, Executive Committee
W. G. Schultz, Executive Committee
Gary Bennett Harold Lewis
Richard Etzelmiller Steve Mattox
Thomas Flack Joe McFadden
Jim Fletcher Bill Slocum

Melvin Hemje Roger Smith
Robert Jelden Bob Vohland
 Carroll Weedlun

Serving to advise the Council in its early days were General Donald G. Penterman, Dr. Henry Smith, and Duane Wolfe.

Shortly after its inception, the CNEMS began the task of developing a comprehensive system of Emergency Medical Services available to the citizens and visitors of central Nebraska.

Funding was first available through the Robert Wood Johnson Grant to allow the development of a basic communication system for the Region. The total funding by the Robert Wood Johnson Foundation was \$321,504. Of this amount, \$86,200 was used to support the state development of training curriculum, communications system design and evaluation leaving \$235,304 for use by the Central Region.

The objectives under this grant were:

1. To implement and make immediately operational the State Plan for Comprehensive Emergency Medical Services for all of Nebraska.
2. To provide area organized interlocking communications serving emergency medical mobile units and fixed facilities over all of the state.
3. To expand the ambulance and rescue services staff training programs, as now in existence.
4. To implement a staff training program for all fixed facility (hospital) emergency personnel.
5. To provide a public education program for the rural and urban areas of the state which includes a continuing program of Emergency Medical Services advice to the highway traveler.

The Central Nebraska EMS Project Objectives were:

1. To coordinate the existing EMS communication system into a comprehensive network linking the various elements of the system into a standard approach.
2. To work with individual communities in completing the 911 network and/or to establish central telephone numbers for emergency services in the community where none exist.

3. To plan and conduct a public education program explaining the elements of the EMS communications system as it is connected and made operational for their community.

4. To establish an area communication center which connects existing EMS resource agencies in the various communities located around this center.

5. To interview, hire and train Medical Communications Personnel (C-Med) in a time frame that is consistent with development of the area center.

6. To work with each of the hospitals in conducting a program of categorization which incorporated the function of self-analysis, education of Emergency Department personnel and equipment procurement.

7. To complete the basic EMT-A Training Program for ambulance attendants in the area.

8. To complete the equipping of hospitals and ambulances with standard radio equipment utilizing the 39.81 MHz medical frequency.

9. To begin development of an area-wide alerting system which provides area center notification capability.

This region participated with the other outstate regions in a feasibility study for the development of a coordinated BLS system.

Funding in fiscal years 1976 and 1977 was provided by DHEW via the Nebraska Department of Health. This funding allowed CNEMS to establish a BLS system throughout its 21-county area. The funds provided were used to purchase communications towers and equipment, provide training to area ambulance squads, and help communities purchase vehicles and supplies to assure quick response to emergencies.

Maintenance funding in fiscal year 1979-1980 was provided by the State to allow other regions to take their place in the funding cycle. This also allowed CNEMS to plan for its expansion into an Advanced Life Support (ALS) system. Included in the ALS implementation were training and purchase of communications equipment for those providers in the three major communities in the Central Region: Grand Island, Hastings and Kearney. Funding from DHEW for fiscal year 1981 (1204-1) allowed for further development and implementation of this ALS system.

This was the final year of funding under DHEW, but state funding via block grants allowed the continued

development of the ALS system by providing for an interhospital flight transfer service as well as for training in Advanced Cardiac Life Support (ACLS) and for Advanced Trauma Life Support (ATLS) for local personnel.

The first Director of CNEMS was Dorothy Lippincott who had been Director of the Region 26 Communication Center at Taylor. She was followed by Gary Henderson who was followed by Rex Cogdill, the present Director.

During the early days of communication development for this region under the Robert Wood Johnson Grant, Carroll Fuller was the consultant. Under the DHEW programs, Dale Nispel was the consultant.

One program initiated by this region was the use of a small portable UHF radio to provide immediate access to a local physician regardless of time or his location. He could be selectively called; could communicate directly with either hospital, ambulance or other physician anywhere in the country; and was no longer "married" to his local telephone. The system evolved because of the lack of full-time emergency physicians at hospitals in the area and continues in use today.

The present system represents a culmination of funding from various sources and of efforts by numerous individuals desiring to insure that quality emergency care was available in the area.

SOUTHEAST EMS REGION

The Southeast EMS Council covers 17 counties in that portion of the State.

The first funding of this area came in 1975 via the Lincoln Medical Education Foundation (LMEF) in order to assure physician direction and staff services in the drafting of a comprehensive plan to organize an EMS system for the Region. The primary impact of this activity was to provide physician support and commitment to improve the emergency medical care services for each hospital and ambulance in the area. This plan, along with those from other areas was submitted to the Department of Health for funding under 1203 grants. Southeast EMS was not funded in the first year's grant.

The year 1976 saw emphasis on the training of physicians in the entire state by LMEF under funding from the Department of Health for Advanced Cardiac Life Support instructors. A revised EMS grant request was likewise developed and submitted.

The first year of funding for Southeast EMS under the 1203 program was 1977 but confusion and politics resulted in the award of only \$100,000 when more like \$300,000 should have been expected.

Due to this limited amount of money, the directors determined that all of the funds should be concentrated in a comprehensive education and training thrust to be conducted in cooperation with LMEF which was already involved in such work. This training was comprehensive in scope and provided courses for health care and ambulance personnel across the region.

In August of this year, the not-for-profit Southeast EMS Region Council was formed. The initial members were those who had been members of the Southeast EMS Steering Committee. These were:

Marlene Baker, Beatrice	Dan Gellerman, Syracuse
Jody Bechtel, R.N., Lincoln	Bob Hilger, David City
Mike Bowman, Friend	Norm Hoeft, David City
S. W. Carveth, M.D., Lincoln	Loy Jones, Auburn
Paul Collicott, M.D., Lincoln	Glen E. Krueger, Auburn
Edwin L. Cording, Hebron	D. Loschen, M.D., York
Rudy Dollison, David City	Marty Miller, Lincoln
Roger Dondlinger, Deshler	Fred Steinkamp, Beatrice
John Frey, Lincoln	Jack Stiles, Lincoln
Paul Uphoff, Hebron	

Phyllis (Jody) Bechtel Upright was the first EMS Manager for Southeast EMS serving from 1977 through 1981. She was one of the outstanding contributors to the development of EMS in the State.

A Physicians Advisory Committee was established to insure a coordinated program and was co-chaired by Dr. Carveth and Dr. Collicott. Critical Care consultants were:

Chris Caudill, M.D., Cardiac
Paul Collicott, M.D., Trauma
Charles Erickson, M.D., Neonate/Pediatrics
Robert Gillespie, M.D., Burns
Glen Lau, M.D., General Medical Emergencies
Robert Osborne, M.D., Behavioral
Hal Schriener, M.D., Poisons
James Styner, M.D., Head, Neck & Spinal
Injury

Other physician members were:

Ron Craig, M.D., Lincoln
R. Jackson, M.D., Pawnee City
Darrell Loschen, M.D., York
Dave McMasters, M.D., Auburn
Chet Paul, M.D., Lincoln
L. Stratton, M.D., Beatrice
Robert Weldon, M.D., Nebraska City

This same year the first major effort at joint funding under the federal guidelines was proposed for Lincoln/Lancaster area. (See chapter on Joint Funding.) A total of \$125,000 was provided to allow for the EMS portion of the new co-located 911 Center along with police and fire. A new UHF radio system for EMS was completed as a result of these funds. Once again, what had been expected to be a substantial amount of money was reduced at the Kansas City level due to politics and the money received was available only through the direct intervention of Dr. Boyd in Washington.

Like most of the other areas in the State, Southeast EMS agreed to standby for the 1978-1979 year. They obtained an extension on the unspent funds from the previous year's grant and the Department of Health was able to obtain \$42,000 in state funding as "stay alive" money until the next funding cycle. During this period, the staff was able to continue to develop their EMS plan and work on an even more sophisticated grant application for the next funding cycle.

In 1980, Southeast EMS was funded with \$540,000. This was still \$60,000 less than had been applied for. In addition, \$125,000 was committed by DHEW in special grant conditions which had not been initially addressed in the grant. In this year, the real coverage of this area by a communication system was established.

In 1981, the area was again on standby with the use of carryover funds to do an in-depth look at what had been accomplished. They developed an in-depth grant application which included a plan for implementation of Medical Control for Advanced Life Support.

This same year Jody Upright moved from Manager of the Southeast EMS Region to work with establishing the Medical Control for the ALS program. She was succeeded in 1982 by Bobette Wolesensky who continues as the manager for this area.

Southeast EMS received a grant of \$474,000 for Fiscal Year (FY) 1982 to allow them to pull together the many areas of development into a more cohesive total EMS plan. This ended the 1200 series grants. As these were phased out, block grants were established and Southeast EMS received \$92,857 under the state block grant program. Permission was obtained to extend the unspent funds from the last 1204 grant and \$50,000 was spent on the purchase of training equipment with the remainder being spent on communication system development.

The block grant funding allowed the continued operation of the central staff, development of on-going funding sources, special training and public education.

Southeast, with its strong emphasis on education, was acutely aware of the probable results of the phasing out of block grant funding. They saw the needs of those in their 17 counties going unmet. The two types of courses identified were (a) courses which will upgrade the skills of personnel already employed in the provision of emergency medical care, and (b) courses which will provide people with the skills necessary for positions in the emergency medical care field.

Some people in Southeast EMS Region who have been outstanding in their help were: S. W. Carveth, M.D.; J. W. Upright, Ed.D.; Paul Collicott, M.D.; John Frey; and Jack Stiles. Dr. Collicott, Dr. Carveth and John Frey still remain active on the Council.

Also providing significant support have been Dr. Kent Reckewey, Director of St Elizabeth Community Hospital Emergency Room and Dr. Chris Maasdam.

Carol Fuller served as the communications consultant for this region.

Specific programs developed by Southeast EMS area, in addition to the usual EMS activity, include:

1. Rural Quick Response Team (QRT) program

In 1980, the Southeast EMS Council began organizing QRTs in communities which lacked a coordinated trained group of pre-hospital EMS providers. This program, which is now being implemented statewide, has resulted in the creation of 33 rural QRTs in southeast Nebraska insuring a 5-10 minute response time to rural citizens.

2. Rural "Medical Control" Committees

Such groups have been organized in Gage County in 1983 and in Johnson County in 1984. They have a goal of establishing four more county-wide groups by the end of

1985. These will be in Cass, Otoe, Saline and Seward counties.

3. EMS Tabloid Inserts in Local Newspapers

All such writing is done by the Southeast EMS staff to facilitate citizen education about local EMS Services. These "small newspapers" are 16 pages in length and cover EMS news in the Southeast EMS Region.

MIDLANDS EMS REGION

The first structured group in this region was the EMS Committee of the local Health Planning Council of the Midlands. Following the passage of the Federal Emergency Medical Services legislation, the Midlands Emergency Medical Services Council was incorporated on April 28, 1976 as a not-for-profit 501 C-3 corporation.

The first Director of Midlands was Joe Carnazzo. He was followed by Joyce Anderson (who served for Chief Van Scoy), and was followed by Bev Parker in May 1979.

The original Midlands Board of Directors was:

Bill Alf, Omaha	Charles E. Monico, Omaha
D. L. Bolam, M.D., Omaha	Bob O'Brien, Omaha
Ernest A. Bowerman, Omaha	Robert K. Olson, Papillion
A. Carnazzo, M.D., Omaha	Dorothy Palmer, Miss. Valley
William T. Cavett, Red Oak	Lloyd D. Petersen, Blair
Melvin L. Clothier, Harlan	Nick J. Piper, Omaha
M. Cunningham, RN, Fremont	Lee Retelsdorf, M.D., Omaha
Harold L. Davis, Clarinda	Mervin W. Riepe, Omaha
R. Dunlop, Council Bluffs	T. L. Ritchey, Bellevue
Ronald C. Glick, Omaha	James J. Schmidt, Omaha
H. Graves, M.D., Waterloo	Howard Schneider, Fremont
Gary Gullen, Shenandoah	Pam Schneider, R.N., Omaha
Dennis Henneman, Sidney	Carl Schroeder, Tekamah
Karl M. Hertz, Malvern	Steven Schwid, M.D., Omaha
M. Honaker, Council Bluffs	J. H. Spearing, M.D., Harlan
R. Hopp, MD, Council Bluffs	Stanley E. Sukup, Red Oak
S. Hopper, Council Bluffs	Terry J. Thompson, Blair
Steve Hunt, Glenwood	G. Van Leeuwen, M.D., Omaha
R. Johnson, Missouri Valley	Vernon Van Scoy Jr, Omaha
Robert Kloewer, Omaha	C. Walter, Council Bluffs
Robert L. Krohn, Hooper	R. C. Whitehill, Tabor
Carl Kruse, Tekamah	Fred Whitt, Fremont
C. D. McCaw, Bellevue	Milt Wuerth, Omaha
W. McCunn, Council Bluffs	W. H. Zersen, Ralston

One of the early efforts at computer supervised telemetry occurred in the Midlands when in the early 1970s the Papillion unit worked with Dr. Robert Stratbucker to see if biomedical telemetry could be successfully used on the low band and monitored by computer. But a problem with interference was so great, it was discontinued after about a six-month trial.

Dr. Anthony Carnazzo, an Omaha surgeon, served as the Council President from its inception through June of 1981. He was succeeded by Dr. Joseph McCaslin who served through 1983. The current President and Medical Director is Dr. Joseph Hoagbin of Omaha.

Much of the Midlands communication system was developed under the direction of Jim Schmidt, a past board member and Deputy Chief of the Omaha 911 Center. Jim Spearn of St Joseph Hospital also has been involved in the development of the Council's regional communications plan.

There was some discussion about the structure of the communication base stations being duplicated in the Omaha region. One station was placed at the University of Nebraska Medical Center and a second at Creighton/St Joseph. Many thought this was unnecessary duplication while others felt that it provided a redundancy to allow for disaster preparedness.

The designation of Childrens Hospital as a Poison Control Center for Nebraska occurred in 1981 and was funded in part by the Midlands EMS Region.

The University of Nebraska Medical Center and St Joseph Hospital were designated as Category I Trauma Centers in 1981. No agreement could be reached in Omaha regarding other categorization of hospitals but most were considered Category II.

Dr. Joseph Spearing has been a member of the Council since its beginning and continues as an active board member.

Dick Dunlop, a member of the original board, continues as a current member providing expertise in areas of disaster response planning.

The Board of Advanced Emergency Medical Care approved the Immanuel program (Irvington, Ponca Hills and Bennington) and the Omaha Fire Division program as the first operational Paramedic services in the State.

Midlands was one of the first to develop a dispatcher training curriculum which was first offered in 1980. They developed a 48-hour Emergency Medical

Skills for Educators course which has now trained over 450 educators in extensive basic First Aid and CPR.

Following Dr. Carnazzo's death in 1982, the Council instituted a Paramedic training award in his memory for his dedication in building an EMS system for the Midlands.

Midlands EMS has an extensive UHF communications system in place with base stations located throughout the region so that communication systems for Paramedic Service Programs are ready and waiting as new programs evolve.

One of the unique factors in the organization of the Midlands EMS Region is that it includes five counties from Nebraska and seven from Iowa. This is a logical structure since Omaha serves as a medical center for these areas but it presents some interesting problems since the Region must deal with two State Health agencies.

NORTHERN EMS REGION

The first EMS Committee in the 22-county Northern EMS area, was formed in 1974 under the Health Planning Council for that area.

The Board consisted of:

Russ Rasmussen, President	Wayne
Gary Bieganski, Vice President	Atkinson
Verner Magnusson, Treasurer	Oakland
Dr. H. Billerbeck	Randolph
Paul Gammage	Columbus
Don Jamison	Newport
Dr. Doug Laflan	Creighton
Bert Matske	Norfolk
Tom McKenzie	Valentine
Lorie Micaneck	Lynch
Al Mytty	Albion
Herman Opfer	Hoskins
Arlene Schmidt	Schuyler
Doris Sellin	Norfolk
Robert Thompson	Columbus
Steve Urosevich	Neligh

Of this original group, Dr. Doug Laflan, Herman Opfer, Russ Rasmussen, and Robert Thompson are still active members on the EMS Board.

The Northern Emergency Medical Services Council,

Inc. was created as a not-for-profit C-3 group. Ron Carter was hired as the first Director in 1975 to help the board identify their present condition, their needs and their goals. The first 1202 funding was available for this study.

The following year saw this area submit a grant for 1203 funding to establish a Basic Life Support system. The grant was approved but was not funded due to a shortage of federal funds. This was not uncommon as a means of recognizing a well planned program but did the local area little good except to indicate that they were on the correct path to establish their system. The area spent most of its efforts in education of local EMS personnel during this lean year.

In 1977, the Northern area was funded for a 1203 program with \$100,000 which was far less than the average \$350,000 allocated for this type of program. The deficit reflected the general problems of areas with low population in competition for federal grants.

Money was spent in refining their training program and in looking at how a BLS system could best function in their area. Also, the evolution from the station wagon type ambulance to the modern day vehicle was underway in this area.

The following year saw nearly full funding for this area as they were approved and funded for a second period of BLS activity. They received \$400,000, most of which was spent on education and training of EMT-As, nurses, and physicians.

The area was allowed to keep and spend the balance left over from the 1978 grant. The communications system, which was underway for medical use in their area, was expanded.

A special \$30,000 grant was received in 1980 in order to allow the area to evaluate the problems and find solutions for the use of Paramedics in very rural areas. There were no hospitals in the Northern EMS area with full-time Emergency Room physicians, a condition considered essential for Medical Control by the Department of Health and Human Services (DHHS--which had replaced DHEW). The problems of remaining current in knowledge and skills was also a problem for Paramedics in rural areas where the number of calls was somewhat limited.

Federal categorical funding terminated for EMS in 1981 and Ron Carter left his position as Director of

the Northern EMS Region.

Richard Noyes was hired the following year and has remained as the EMS Director. The advent of block grants arrived, and the State received funding in order to support the system concept of region EMS operation which has proved so effective. (See the chapter on Changes in Pre-hospital Survival.)

The Northern EMS Region has had many dedicated men and women through the years. Among those active in the area were:

Roger Blaker	Myron Jenos
Leonard Clough	Anita Kloppel
Darrell Dawson	Terry Mann
Lyle De Ford	Mitch Mastalir
Dick Friedrich	Morris Ochsner

Physicians who have been very supportive of the system concept include:

Albert Halls, M.D., Elgin
Doug Laflan, M.D., Creighton
Dwight F. Rickard, M.D., Columbus
G. Tom Surber, M.D., Norfolk
Alan Jay Taege, M.D., Neligh

Like most of the other areas, the Northern EMS Council has worked hard at developing of "special" types of training. Among their activities have been:

Pneumatic Anti-Shock Garment Protocols
EOA/EGTA Protocols
A Critical Care Directory
Hospital Squad Meetings
Disaster Management Conferences
Crisis Intervention Courses
CPR Network and Committee
Continuing Education Network
Market Analysis Study

Carroll Fuller served as the communication consultant for this region.

GENERAL OBSERVATIONS

There were several times when conflict reared its ugly head. These were few and far between and appeared

to be honest differences of opinion. The federal guidelines seemed to change from day-to-day and the State EMS Office always seemed to hear of a report that was needed "last week." The office was faced with relaying these requests to the regions, and the regions must have wondered if the State Office was the problem. However, there appeared to have been no lasting problems as a result of these confrontations.

One interesting episode in which Panhandle EMS was involved took place when they suddenly were faced with the fact that collections for the use of their communication system had not kept pace with charges due to the state. At that time, substantial money was passing through the State Department of Health to the Panhandle area. The State Office of Telecommunications was slow in identifying the rising debt and calling it to the attention of Panhandle sooner.

The EMS Division was told that they were responsible for money owed from Panhandle. Dr. Kimball talked this over with Dr. Smith and Larry Graham. They felt that the Panhandle area must address a method of repayment immediately before it got worse. Dr. Kimball called Lee Ehlers, the Manager, and asked her to correct the problem at once. Lee said she would cancel some of the use of the system immediately. Dr. Kimball said, "Great". He was thinking it was great that she was on top of the problem and addressing it at once. Unfortunately, some of her Board thought he meant it was great that Panhandle would have to close down.

Dr. Kimball then wrote to Lee saying that additional funding was to be withheld from Panhandle until arrangements for the bill owed to the State were made. He erred in not calling her first, and she was justifiably upset at the sudden loss of funds. She did make corrections and all back money due to Telecommunications was paid.

Without a doubt many felt that Dr. Kimball was partial to Central EMS since he had been involved with that area and its development from the first but he did attempt to remain neutral while serving as the Director of EMS for the State. This is the sort of situation where people must look at the overall picture and decide for themselves what happened. Certainly, nothing that would injure one area of the State would be good for the State EMS System as a whole.

Another confrontation occurred when grants were

announced one year. The Central EMS area had applied for funding (along with a number of other areas in the State). Gary Henderson, Manager for Central, had even talked to Dr. Hope of the Regional Office in Kansas City. The office had completed its reviews and made its recommendations to Dr. Boyd in Washington.

Since Dr. Carnazzo was the Medical Consultant to Kansas City, and being from Omaha and also a Super Doc (one of the physicians appointed by DHEW to advise the Regions on EMS matters) for our federal region, he was also suspect by many of the people from "outstate" Nebraska who felt that he was partial to Midlands in his recommendations. None of the areas wanted to have their projects reviewed by someone from our own State. They were worried that such a review might not be impartial.

When the grants were announced, Gary and some of the Central EMS people thought that Dr. Hope had misrepresented the evaluation and also felt that their area had not had a fair review.

They contacted their congressman and officially asked the Department of Health to set up a meeting with Dr. Hope and Dr. Boyd to discuss what they felt was a serious problem. The meeting was held at the Health Department in Lincoln. Dr. Hope presented his side of the discussion and then the people from Central presented what they felt was the problem. Dr. Boyd was present and listened but did not become involved very actively in the discussion. Funding for that year had already occurred but the discussion of all concerned did tend to clear the air and relations were improved following the meeting.

Another problem with communications occurred shortly before Gary left Central as its manager. Central had fallen behind in their payments to the State for communication usage. Apparently charges had gone up but no raise had taken place at the user level. Suddenly Central was faced with exactly the same problem that Panhandle had faced and were forced to scurry about and identify a method of payment to the State to prevent losing their state funding.

In retrospect, it does appear that a better and more prompt method of billing by the State could do a great deal to prevent this problem. One must not lose sight of the fact that by utilizing the state telephone lines as tie lines between centers, a great deal of

money was saved.

One of Dr. Boyd's ploys was to let it be known that if your area expected to be considered for grants under the Title XII program, the area had best be present with the requested reports at his meetings held around the country. This not only insured good attendance at the meetings but allowed for better understanding of just what it was he expected. It likewise involved a good deal of travel. Dr. Johnson demonstrated this when he got on the wrong airplane on his way to Baltimore and ended up in London, England. He received the award for the person who had traveled the farthest in coming to the meeting!

At one of these meetings, some 30-40 people from Nebraska decided to get together for dinner one night. We all went to a well-recommended restaurant and in the course of the evening one of our EMS directors decided to "celebrate her birthday." We ended up with a good meal, cake for all, and having one of the people pick up the tab for the meal! After that, we would always wonder if it was someone's birthday whenever we met.

An effort was made to move the meetings of the EMS directors and the State EMS Division to the western part of the State on occasion. It seems that everyone in the west was expected to come to Lincoln for meetings but it was "just too far" for others to go way out there. In fairness, most came from the eastern part of the State, but those in the Panhandle realized it was no further for people in Lincoln to go to Scottsbluff than it was for people in Scottsbluff to go to Lincoln! Lee and Larry were always good sports about their trips in.

One time, people from the state office and some of the eastern managers decided to take a plane out for a meeting in Scottsbluff. Dr. Kimball was riding "shotgun" in the right front seat and having a good visit with the pilot. Things quieted down and they crossed North Platte and headed towards Lake McConaughy with the autopilot on. About the time they crossed the dam at its eastern end, he glanced at the pilot and noticed he had fallen asleep! The air was clear and the pilot had a nice nap, awaking about the time they reached Bridgeport.

Things were never dull in the EMS world!

THE OFFICE OF TRAFFIC HIGHWAY SAFETY IN NEBRASKA

The Department of Transportation became involved in EMS through the Highway Safety bill of 1966. Congress gave the responsibility for all pre-hospital care to DOT. This was in keeping with the then current concept that medical care did not begin until after the patient had arrived at the hospital Emergency Department.

Under this law, monies were made available to the States through the regional offices and were to be supervised by the Office of Traffic Highway Safety in each state. The Governor was to appoint a director for his state who would supervise all such funds allocated to that state.

The Nebraska Office of Traffic Highway Safety was first headed by Dave McLaughlin in 1967. Mr. McLaughlin worked closely with the Motor Vehicle Department, the Department of Health, and a number of other agencies in seeing that funds which were available were used in keeping with the national programs. The money had to be spent within the guidelines established in Washington and were allocated on a grant basis to each state. The Department of Health applied for and received funding for much of the early expansion of the EMS program in the State. (See Department of Health.) The money was used for training of EMT-As, ambulance purchase, communications and other equipment.

Emphasis on highway safety has gradually refocused from care of the injured to alcohol related problems which now consume most of the grant money.

Much of the emphasis and funding for the EMS programs, which had been totally DOT oriented, was then taken over by the Department of Health, Education and Welfare.

Following Mr. McLaughlin as Director of this group were Rod Hutt, Jim McGinn, Sam Franco and Dennis Oelschlager. The current Director is Fred Zwonechek.

A good and close working relationship has always existed between the Nebraska Traffic Highway Safety Office and the Nebraska Department of Health with more than \$2,000,000 being provided over the years for various programs.

THE ROBERT WOOD JOHNSON FOUNDATION

The Robert Wood Johnson Foundation is the second largest independent philanthropic foundation in the United States concerned with improving health care. In Princeton, New Jersey in December 1972, the foundation called together a panel of nine persons for the purpose of developing guidelines for a national program to encourage the establishment of regional communications for Emergency Medical Services.

General Penterman, because of his pioneering work in the communication field in Nebraska, was invited to join this group to assist in developing the framework for a national effort. Others in the group were:

David R. Boyd, M.D., Director EMS Division,
Illinois Department of Public Health
Thomas B. Brask, Director, Communications,
Trauma Program, Yale University
R. M. Holloway, M.D., Director EMS, New York
Health & Hospital Corporation
Gerald Looney, M.D., Director EMS, New York
Health & Hospital Corporation
Eugene Nagel, M.D., Anesthesiologist,
Jackson Memorial Hospital, Miami
Alfred M. Sadler, M.D., Director,
Trauma Program, Yale University
Blair L. Sadler, Trauma Program, Yale University
Samuel F. Seeley, M.D., National Academy of
Sciences, Washington, D.C.

This group established the criteria for The Robert Wood Johnson Foundation National Competitive Program of Grants for Regional Emergency Medical Communications Systems. The program anticipated a one-shot, 2-year expenditure of \$200,000 to \$400,000 per project for some 40-50 regions. The major goal of the program was to provide seed money for a catalytic effect of bringing together emergency services operated by different geographic and institutional jurisdictions. This would hopefully provide exposure and stimulate others to work on their systems.

The foundation asked the Emergency Medical Services Committee of the National Academy of Sciences to administer this program and to recommend the projects to be funded. Field visitations were to be made by the

Academy committee to assist grantees.

The RWJ Foundation in 1973 made almost \$15,000,000 in awards to 44 sites in 38 states to develop regional emergency medical communication networks. Its program aimed at encouraging local communities to band together to establish well-planned, regional Emergency Medical Services communication systems to coordinate services and dispatch ambulances throughout relatively large geographic areas or population centers.

Two quite different assessments of the program were conducted. A committee of the National Academy of Sciences composed of experts of all facets of planning and operating Emergency Medical Systems advised on the programs and did on-site reviews of all 44 regions. An independent study, conducted by the Rand Corporation, was planned and funded separately after the start of the program.

The following are excerpts from the Rand Corporation findings:

"The study clearly showed that it required the presence of highly trained paramedics, who can administer definitive care in the ambulance, for such communications to occur. There is far less communication with the EMT-As, who receive less training and can stabilize patients but not give definitive care."

(Editor's note: Experience in our own state has made it clear that such hospital notification by EMTs can also be life saving where hospitals are few and far between and where there may not be full-time staffing by physicians in the Emergency Department.)

"The value of such communication--and notification of the hospital of the nature and severity of the problem being brought to it--noted that this prenotification increased the chances that the patient will be seen by a physician, that the physician will be present in the Emergency Room when the patient arrives, and sharply cuts the delay in treatment from 27.3 minutes to 10.7 minutes in the region examined."

The National Academy of Sciences observations showed that Foundation supported programs trained large numbers of new emergency medical personnel.

Criteria for the competitive program arrived in Nebraska in April of 1973. Upon review, the State EMS Advisory Committee recognized that all of Nebraska's EMS regions were strong possibilities for funding under this nationwide foundation effort. All regions had been

working for the past two years to get regional EMS councils organized, community communication centers better equipped and improved training of all persons in the chain of actions responding to a medical emergency.

Accordingly, following a meeting with all six Regional Councils, the State EMS Advisory Council formed a State Executive Committee for EMS. This committee then developed one statewide plan for individual area entry into the national competition entitled:

Nebraska EMS Project--Four over Six.

"Four" referred to the four keys to improving EMS.

1. Notification (Public entry)
2. Communication Center (Response Coordination)
3. Response and Transport (Mobile units)
4. Emergency Facilities (Emergency Departments)

"Six" referred to the six EMS regions of Nebraska.

1. Panhandle - Scottsbluff
11 counties, 13,000 square miles
2. High Plains - North Platte
17 counties, 15,000 square miles
3. Central - Grand Island
21 counties, 18,000 square miles
4. Southeast - Lincoln
17 counties, 12,000 square miles
5. Midlands - Omaha
5 Nebraska counties, 7 Iowa counties
6. Northern - Norfolk
22 counties, 24,000 square miles

Under this project, Dr. Henry Smith, Director of Health, was to have the primary responsibility.

The plan, covering the entire state, was received with great interest by the National Academy Review Committee. However, as the intent of the Foundation was to obtain wide encouragement geographically, the committee chose one of the EMS areas in the state plan to be funded. The State Health Department received a grant of \$312,504 with instructions that the Central EMS Region consisting of 21 counties had been designated for implementation of their plan. From 1974, to 1977 the Central EMS Region received a substantial boost with funding from the national program of the Robert Wood Johnson Foundation. Encouragement came to perfect a statewide plan for all six EMS areas with volunteer

councils ready to provide direction.

The Central EMS Region started actively to carry out the plan on July 1, 1974. The program was under the direction of the CNEMS Council Executive Board.

Chairmen:

R. Keith Roumpf	1973-1974
Robert Anderson	1974-1975

Project Managers:

Ward Schrack	1974
Dorothy Lippincott	1974-1975

Communication Manager:

Joan Heinzman

Other Committee Members:

Leo G. Haith, Central City
Eldon Higby, Aurora
Charlene Johannes, Central City
Joel T. Johnson, M.D., Kearney
Kenneth F. Kimball, M.D., Kearney
Larry Matney, Kearney
Wayne Olson, Kearney
C. W. Schlotfeldt, Grand Island
W. G. Schultz, Aurora
Robert Smith, M.D., Hastings

Although only one area of the State received Robert Wood Johnson funding to establish an EMS communication system, the other five area councils immediately moved to improve understanding and establish a stronger base for operations. This fact is attested to by the logical and realistic moves made by these area councils to prepare and submit EMS system plans to DHEW for funding consideration in 1975. All areas, including Central, received funding as requested to be administered by the State Health Department as was proposed in the original Robert Wood Johnson plan.

The CNEMS Council pioneered in the establishment of procedures and bylaws requiring county representatives to be appointed on the basis of population. Representatives were officially designated by proper jurisdictional authorities. Multicounty coordination found its legal base under the Nebraska Interlocal Coordination Act of 1963 (RS23-2201/2207). This act provided a firm legal base for EMS Council authority, responsibility and planning as well as on-going fiscal support for the regional EMS system. As hoped by the

Robert Wood Johnson Foundation, this project provided the means whereby solid cooperation of the medical profession and the state and local governments could work effectively on the problem.

Regular meetings, with all official actions documented, were held by both the EMS executive committee and the full council representing every county.

Early in August of 1974, the Council organized specific task forces to guide project actions and to work with the state EMS committee task groups. These groups were (a) Education and Training, (b) Communications, (c) Hospital, (d) Legislation, and (e) Evaluation.

Effective February 1, 1975, Dorothy Lippincott, of Ord, was hired as full-time project director. At first it was intended that Dorothy be involved only in the establishment of the system but she did so well that she was hired full-time. This caused some minor problems for Ward Schrack who had asked her people in Region 26 to allow her leave to help out with this project and then had to tell them that they wished to keep her full-time.

As you review the accomplishments of this vast volunteer team effort, one can only feel a swelling of great pride in people from "the heartland" of Nebraska. The title "heartland" is very appropriately used when one visualizes the large number of evening meetings and substantial driving distances endured by so many. Only a dedicated interest in improved Emergency Medical Care and Response could be the reason for literally thousands of hours of service provided by these people.

The task forces proved very effective.

THE TASK FORCE FOR EDUCATION AND TRAINING

Ward Schrack, Chairman

Bob Anderson	Marvin Knittel
George Fairfield	Bill Schlotfeldt
Jim Johnson	George Sweet
Dr. Joel Johnson	Bob Vohland
Paul Haith, Coordinator	Dick Wenske

Training courses were developed, tried and perfected for:

The General Public
Central Dispatchers
Ambulance Dispatchers

Ambulance Personnel
Hospital Emergency Room Staff

A special film for public education was developed and used on a local TV station and the task force members individually assisted in news announcements, interviews and TV spots.

THE TASK FORCE ON TELECOMMUNICATIONS:

Robert Anderson, Chairman

Bill Alf	Harvey Kleib
Herbert Bierhaus	Dorothy Lippincott
Joan Heinzman	Hugh Rath
Rex Kelley	Robert Tripp
Steve Robinson, Consultant	Carroll Weedlum

It was immediately recognized that this vast area of 21-counties, very open and rural in nature, required an effective mobil radio system in which all ambulance personnel, rural sheriffs and road personnel could work effectively together in expediting actions or services over long distances and long periods of time.

Nebraska had already in place many low band radio units (sheriff, fire, etc.) at a time when the FCC passed Docket 19880 moving future mobile networks to VHF high band frequencies.

The Task Force faced a formidable task of "use what has been purchased (low band radio) and plan for and purchase new equipment usable over the next ten years on the eight medical frequencies in UHF." (Docket 19880, FCC, Aug 15, 1974.)

Needless to say, many discussions, charts and plans were formulated by this active task force before settling on a "go-ahead" plan acceptable to provide effective service for 21 counties with 58 ambulance services.

Coordinated area interlocked mobile radio and telephone service would be established at Grand Island with Central Dispatch and telephone/radio interconnects at Kearney, Holdrege, Taylor and Hastings. Hot-lines would be established directly between centers with connecting circuits to all hospitals. This meant that any mobile radio, sheriff, fire, ambulance, State Patrol, park personnel, etc. could talk mobile-to-mobile or over any telephone line via the closest center whenever coordinated services were desired.

The Task Force was now off and running to install equipment. Steve Robinson, Director of Telecommunications for the State, and an implementation team were present to insure progress and workability of the system as it grew.

A training course for all operators was developed, field tested, refined and printed. Training was started in July and by September 35 operators had completed the course.

For the public, the TV spot, Code Blue, was implemented showing the 21-county coverage for public use of the emergency telephone number. It presented coverage of a burning building on a farm, mobile radio equipped response units moving to the scene all in voice contact with the party on the telephone at the farm, plus response assistance with advanced instructions and directions to assure fast response and immediate help upon arrival.

The following excerpt was taken from the published handbook made available to the public:

When a funnel cloud appears or an accident strikes a remote Nebraska farm or village, the emergency is no less an emergency because doctors and rescue workers may be miles away.

The problem of providing fast, high quality services to disaster victims in sparsely settled areas is not new to Nebraskans. But the problem is being met through an unusual telecommunications link-up which brings services of the medical professionals serving 200,000 people scattered over 14,000 square miles in the central part of the State.

It is the brain child of an organization called Central Nebraska Emergency Medical Services Council in cooperation with telephone companies serving the area.

This telecommunications network is providing Emergency Medical Services to rural Nebraskans.

With a small hand-held radio, a doctor in Central Nebraska can be relayed to Omaha and be in consultation with a specialist in less than three minutes. He can call from

his office or from out on the range country to an accident site. A special telephone line is established between each of the 20 hospitals located in the EMS region and a central communication center. The line, which also has connections to hospitals in Lincoln and Omaha, is used for everything from consultations between hospitals to the ordering of tongue depressors.

This special line makes it possible for patients needing specialized attention to receive expert care, even though a smaller medical facility isn't able to staff many highly trained specialists.

The Task Force recognized the urgency for moving to a common, easy to remember telephone number for the public. Already 911 had seen some growth in these 21 counties. Aggressive action of the task force established a special committee of the ten telephone companies serving this multicounty region. The telephone companies proved very willing and helpful. The number 911, for any emergency, was available to 51% of the population as all major communities established this service. As a temporary measure, until 911 could be provided over the entire area, a common 7-digit number was publicized along with 911 and exposed by public announcement and telephone stickers. (See chapter on 911.)

Measuring the effect of this simplified and easy to remember number, one only needs to visualize the over 400 separate emergency numbers previously available in the ten separate telephone companies' various community telephone books.

THE TASK FORCE ON HOSPITALS

Rex Kelly, Chairman

Gordon Bainbridge, M.D.

Bob Garey

Mike Chalupka, M.D.

Joel Johnson, M.D.

Duane Wolfe, Coordinator

Harold Lewis

Eugene Peck, M.D.

L. A. Vanderheiden

Carroll Weedlum

Wayne Zlonke, M.D.

In coordination with other task force efforts this committee assisted in training courses with hospitals, emergency staffs and the volunteers on ambulance/rescue

This task force reported to the Council on a regular basis with their recommendations for change in any phase of the Council's effort.

The opportunity to have a grant of this type had great impact on the future of EMS in Nebraska not only because of the input of many national figures during the grant period but also because of the evolution of the total communications concept that was field tested by this program.

COMPREHENSIVE HEALTH PLANNING

The Office of Comprehensive Health Planning was originally under the Governor but was later moved to the Health Department which at that time was under the Board of Health and independent of political pressures.

Mrs. Calista Hughes was the Director of Comprehensive Health Planning and provided good leadership in developing committees that looked at problems and suggested solutions.

A remarkable study was carried out in the early days that was published as a light blue colored book. In the course of its reproduction it appeared black and became known as the "Black Book." It was entitled Toward an Integrated System of Emergency Medical Services for Nebraska - A Citizens Participation Project Through Task Force. A review of this book reveals some truly in-depth looks at health care as it related to EMS. The following material was abstracted from the book:

This study was carried out by two task forces. TASK FORCE 1 was assembled to outline goals and standards pertinent to Nebraska Emergency Medical Services delivery systems up to the Emergency Room. Specifically, the task force was charged with:

What kind (of ambulance)?
How equipped?
How manned?
Emergency Room standards: equipment, personnel?
Response times: minimum and desirable?
What are the deficiencies?
How can they be overcome?

TASK FORCE 2 was directed to:

Draw together all of the work which had been done by various groups throughout the State in phases of EMS in preparation for a coordinated system.

Review standards established by Task Force 1 and extend the scope of study to a total system of Emergency Medical Services.

The results of Task Force activity as described above...are summarized in this section as specific recommendations for standards which must be achieved and maintained, for programs required to meet these standards, and for commitments which need to be made by

new and existing organizations that are charged with responsibilities involving Emergency Medical Services.

The work of the subcommittees and their final reports provide a good basis for the development of the Emergency Medical Services system and follow very closely the recommendations of the Division of Emergency Health Services report to the Department of Health, Education and Welfare, Public Health Service, Health Services and Mental Health Administration, Washington, D.C.

*****RECOMMENDATIONS*****

A. EMERGENCY MEDICAL SERVICES

1. Organization

a. Responsible State Agency

It is desired that the State Department of Health and its Director be designated to coordinate EMS for the State of Nebraska.

b. Advisory Committees/Councils

(1) A state level council should be formed to advise the Director, State Health Department and the Coordinator, State Emergency Medical Services Program.

(2) Regional, county, city or town Emergency Medical Services committees should be formed to:

(a) Develop closer cooperation and coordination among doctors, hospitals and ambulance personnel of all facets of Emergency Medical Services.

(b) Develop public awareness of need for maintaining adequate Emergency Medical Services.

(c) Develop methods of financial support for EMS.

(d) Provide information to the State Advisory Council concerning local needs and suggestions for legislation or administrative solutions to problems.

2. Information

- a. A directory of EMS should be prepared and published. This directory would identify the state's resources for Emergency Medical Services.
- b. Public information should be made readily available concerning every ambulance facility providing emergency services including the following:
 - (1) Front page listings of telephone directories.
 - (2) Newspaper listings of public services.
 - (3) County and municipal buildings provide signs prominently displayed listing ambulance locations and telephone numbers in their jurisdictions--within the sheriff's offices, city police offices, welfare offices, etc.

3. Financing

Prepare a survey of current methods for financing ambulance services in Nebraska and develop a plan of various feasible methods adapted to specific locales. (Observations made during Task Force meetings showed a wide variety in the patterns of ownership of ambulance services and their utilization marked by various service patterns in Omaha and Lincoln, other cities and small towns and rural service areas. Availability, personnel, financial problems, and response time all have a bearing.)

Funding must be decided upon at the local level by the agency charged with providing the service. This should be considered by the local EMS advisory committee/council. Decisions as to use of local funds and in some instances decisions on priority of allocation of these funds will need to be made.

4. Legislation

- a. No immediate legislation is needed to improve EMS. Eventually some legislation may be required for the licensing of ambulance services.
- b. A further investigation of current legislation is required to determine legal

responsibility of ambulance attendants, the usefulness of the Good Samaritan Law, the effect of the Medical Practice Act, and other laws affecting the operation of an emergency vehicle.

- c. Only municipalities may require an ordinance to provide a subsidy to private Emergency Medical Services.

5. Communications

- a. Consolidated dispatch of emergency vehicles should be encouraged where possible. Ambulances should have a receiving capability on 39.90 MHz to monitor local sheriff operation.
- b. For two-way communication, ambulances and hospitals should use the medical network (39.82 MHz) which has been set aside for emergency medical use (in this state). Private ambulances should be allowed to use the emergency medical network providing the local sheriff or other local governmental agency holds the appropriate license for network control. Physicians who normally respond to emergencies should also be allowed use of the network for that purpose.
- c. Emergency Medical Service Communications should include connections to the State Communications system.
- d. Encourage local telephone industry to install the emergency call number (911) without delay.
- e. All telephone and power facilities within an appropriate radius of the hospital should be underground to facilitate heliport construction (and to prevent their destruction by storm).

6. Transportation

Develop an efficient and integrated system using surface vehicles before implementing air ambulances. Air ambulances are costly to operate and maintain. Consideration should be given, however, in hospital planning to allow heliport construction for future air ambulance service.

7. Education

a. Curriculum for Ambulance Attendant Training

Adopt the curriculum developed for the U.S. Department of Transportation and for the Division of Emergency Health Services Public Health Service, U.S. Department of Health, Education and Welfare. This is a 72-hour basic course for Emergency Medical Technicians-Ambulance.

b. Certification

Ambulance personnel should be certified by level of training as follows:

- (1) Personnel in training--Emergency Medical Trainee
- (2) Personnel who satisfactorily have completed the training course--Emergency Medical Technician-Ambulance.

B. AMBULANCE SERVICES

1. Definition of an ambulance

Accept the definition of an ideal emergency vehicle submitted jointly by the Highway Research Board, National Research Council to the National Highway Safety Administration, U.S. Department of Transportation as follows:

"A vehicle for emergency care which provides a driver compartment, a patient compartment to accommodate two emergency medical technicians and two litter patients so positioned that at least one patient can be given intensive life support during transit; which carries equipment and supplies for optimal emergency care outside of the vehicle and during transport, for two-way radio communication, for safeguarding personnel and patients under hazardous conditions and for light rescue procedures: which is designed and constructed to afford maximum safety and comfort and to avoid aggravation of the patient's condition, exposure to complications, and threat to survival.

2. Registration of Ambulance Services

All ambulance services including all vehicles

used to transport emergency medical cases should be registered with the Health Department by the purveyor. Those vehicles which meet the minimum standards as defined herein should be painted Omaha Orange and White through services provided in the state's annual Emergency Medical Services work program.

Eventually, this registration should be replaced by a licensing process with annual relicensing required. Legislation will probably be required. When licensing is finally implemented, ambulance service operation should be restricted to licensed operators.

3. Minimum Standards for an Ambulance Service.

a. Service Records

Service records should be maintained which records provide uniform data. . . . Such records should be accessible to the Health Department and should be maintained in a condition suitable for the preparation of periodic reports.

b. Vehicle Design

In general, the Ambulance Design Criteria established by the National Research Council is applicable. Exceptions to certain design requirements may be justified at time of procurement and funding request.

c. Personnel

Ambulances should be manned by two persons who have completed the basic training program for Emergency Medical Technicians-Ambulance or have shown equivalent skill and knowledge.

d. Medical Equipment

Ambulances should be equipped with. . . .

e. Communications Equipment

Ambulances should be equipped with a two-way radio operating on 39.82 MHz frequency and have a digital encoder capability. Dual reception on 39.90 MHz is also recommended along with a channel scanning device. Equipment should meet the minimum performance specifications

. . . .

f. Rescue Equipment

Ambulances should be equipped with items listed. . .in the American College of Surgeons Essential Equipment List.

g. Vehicle Performance

Response time to an emergency should be consistent with the existing conditions and restrictions affecting the use of the public roads.

C. HOSPITAL SERVICES (EMERGENCY)

1. Licensing

Emergency Departments should be defined in the Hospital Standards and should become a condition for hospital licensing.

Each Nebraska hospital should be inspected annually before license renewal and fee acceptance.

The annual hospital inspection report should be reviewed by the hospital, medical advisory council, and the Board of Health prior to relicensing. Correction of defects listed on the inspection sheet should be a prerequisite for license renewal.

2. Hospital Standards

In general, the Guidelines of the Joint Commission on Hospital Accreditation and the Handbook on Hospital Emergency Rooms by the American Hospital Association are applicable. Specific recommendations are provided in this section.

a. Records

An Emergency Room record should be maintained which record is consistent in degree of detail with Ambulance Service records, permits periodic review, and becomes a permanent part of the hospital record system.

b. Equipment Exchange

The Letterman system of exchange should be developed between the hospital and ambulance services.

c. Hospital Signs

A standard sign is required which will indicate hospital location from the

roadside.

Signs should be placed at every appropriate exit of the Interstate and on every major highway outside the community having a hospital. Enough signs should be installed to indicate a sensible route to the hospital.

Hospital location should also appear on road maps of Nebraska.

Each hospital should also have a large sign on the grounds indicating the location of the Emergency Room. This sign should be illuminated at night.

d. Hospital Communication

Facilities should be provided in the Emergency Rooms of hospitals for utilization of the medical network (39.82 MHz).

Each hospital should have a select dial call number assigned to permit access by a mobile unit equipped with encoder equipment.

e. Heliports

Space for heliports should be considered in hospital plans.

f. Driveways

An adequate driveway from the public street to the Emergency Room entrance should be provided. This driveway should be clear of parked vehicles at all times for ambulance access.

g. Parking

Adequate parking should be provided in the vicinity of the Emergency Room for use by emergency vehicles other than the ambulances, i.e. police cars, physician cars, etc. These parked vehicles should not interfere with the ambulance.

h. Emergency Room Design

- (1) The Emergency Room entrance for ambulance delivered cases should be designed to facilitate the delivery of such cases in all weather conditions.

- (2) The Emergency Room should not be in close proximity with the public lobby but should be near the facilities for radiology, laboratory, surgery and other emergency support services.
 - (3) A separate lobby for persons accompanying emergency cases should be provided.
 - (4) A conference room should be provided for physicians, law enforcement, and others.
- i. Hospital construction standards existing since 1957 should be updated.
3. Hospital Administration
- a. The trustees of each Nebraska hospital should be requested to appoint an Emergency Medical Service Committee for that hospital.
 - b. In most instances, the guidelines of the Joint Commission on Hospital Accreditation and the Handbook on Hospital Emergency Rooms printed by the American Hospital Association could serve as the basis for function of the hospital Emergency Medical Services Committee.
 - c. Proper coordination should exist between the hospital Emergency Medical Services Committee, the local community and the State Department of Health.
 - d. The Emergency Medical Services Committee should be the coordinating agency for the town having a hospital and those in the area having only an ambulance to provide the emergency transportation.
 - e. Each hospital staff should periodically review all aspects of the emergency service including records as is done for other services of the hospital.
 - f. The trustees, the medical staff, and the administrators of each Nebraska hospital should join forces to upgrade educational training for those with the ambulance services and should adhere to the training system prescribed by the State Department of Health.

D. State Government

1. The Governor should designate one agency of state government to be responsible for Emergency Medical Services.
2. The Department of Health should:
 - a. Register all ambulance services as well as all vehicles used to transport emergency medical care.
 - b. Serve as the official clearinghouse for all informative matters concerning EMS.
 - c. Prepare and distribute a uniform Ambulance Service record.
 - d. Coordinate future training programs and courses between the Department of Education, the University of Nebraska and other responsible agencies.
 - e. Coordinate with the Department of Aeronautics in planning future air transport facilities on hospital property.
 - f. Be assisted by an Advisory Committee/Council on Emergency Medical Services to provide continuity of communications with local EMS councils.
 - g. Revise the state plan for Hill-Burton participation to read that each hospital requesting federal assistance shall provide emergency facilities that meet minimum standards.
3. Department of Roads
 - a. Design a standard sign to indicate hospital locations in Nebraska. These signs should meet the approval of the U.S. Department of Transportation and the State Department of Health.
 - b. Road signs should be placed uniformly and in locations acceptable to the Department of Roads and the Department of Health.
4. Telecommunication Bureau, Department of Administrative Services.
 - a. A digital radio station identification system should be developed and announced to hospitals, equipment suppliers, and ambulance services.
 - b. A TENCODE system for emergency medical radio communications should be developed

which is compatible with other Nebraska Safety TENCODE systems.

- c. Develop and maintain equipment specification data applicable to the 39.82 MHz frequency and for use by agencies involved in equipment procurement.

5. Department of Aeronautics

The Department of Aeronautics coordinate with the Department of Health in planning future air transport facilities on hospital property.

E. LOCAL GOVERNMENT

1. The Local Government of each city (or county) having a hospital should be asked to create a local Emergency Medical Service advisory committee to upgrade Emergency Medical Services at the local level, and to coordinate them with the state program.

Community support of ambulance service should be evident by the organization and active operation of local Emergency Medical Service Councils. The local EMS Council would initially be formed at the community or county level, however, these local councils need to be represented on a Planning District or Area EMS Council.

For example, an EMS council covering the entire Panhandle needs to be organized so that it may consider the EMS problems and the solutions for the entire western Nebraska area.

2. Streets leading to community hospitals are to be open at all times and should allow for smooth delivery of ambulance and emergency vehicles.
3. Ascertain that zoning about the hospitals is such as to permit future development of heliports. Adequate land should be provided about each hospital for that purpose.
4. Make certain that all telephone and power facilities within an appropriate radius of the hospital are located underground for future heliport construction.
5. Do everything possible to encourage the local telephone industry to install the 911 number without delay.

6. Expedite telecommunications connections to the state telecommunications system.
7. The Sheriff's office or any political subdivision involved in Emergency Medical Services should license the use of radio equipment on private ambulances and hospitals. This is permitted by FCC Regulations.
8. Maintain title to emergency medical equipment procured for private operator using matching funds.
9. A municipal ordinance may be required to provide a subsidy to private Emergency Medical Services. The Attorney General has written an opinion stating that a county may provide a subsidy to private Emergency Medical Services.

Following the move of Comprehensive Health Planning into the Department of Health, an Advisory Committee served to make recommendations to Dr. Smith, the Director of the Department. This group recognized the urgent need for:

1. A better understanding by responsible persons locally of assistance that may be furnished by state agencies and organization in upgrading of their Emergency Medical Services.

2. The development of local and area EMS Councils to review and upgrade existing Emergency Medical Service systems.

Accordingly, the Kearney Conference was set up on August 3, 1972 to bring together statewide representatives of the providers of Emergency Medical Services both to make known to them in detail the state persons on whom they might call for EMS assistance and also to learn from local participants their need and suggestions for fulfillment.

The following people made presentations:

Kenneth F. Kimball, M.D. Welcome and a briefing on the meeting

Ole Kolstad, Ph.D., Kearney State College. Welcome to Kearney State College

Norman Otto, Executive Assistant to Governor Exon

Maj. Gen. Lyle A. Welch, Adjutant General

B. Gen. Donald G. Penterman, Nebraska National Guard

Joel T. Johnson, M.D., Kearney Surgeon

Donald Silverman, ECE, Chief of Systems Program,
Communications Programs, National Aerospace
Administration
Captain John Waters Jr., Director of Public Safety
Jacksonville, Florida
Calista Hughes, Comprehensive Health Planning
Deane S. Marcy, M.D., Coordinator, Nebraska Regional
Medical Program
Henry D. Smith, M.D., M.P.H., Director State Health
Department
Anthony J. Carnazzo, M.D., Creighton University
School of Medicine
Merle M. Musselman, M.D., University of Nebraska
College of Medicine
Ronald Meyer, Nebraska Rescue and Emergency Care
Association
Harlan Heald, Nebraska Hospital Association
Rodney Hutt, Nebraska Highway Safety Program
Senator Glenn A. Goodrich, Nebraska State Legislature

The format of this meeting was to review the sugges-
tions for Emergency Medical Services as made by the
Comprehensive Health Planning Committee and to let each
major area of state government react to these in how
they might support and supplement those plans at the
local level. Input was then obtained from local rep-
resentatives on their feelings and suggestions.

PROJECT 20/20

A FEDERAL/STATE DEMONSTRATION-RESEARCH PROJECT EMERGENCY NOTIFICATION DISPATCH AND ASSISTANCE PROJECT FOR HIGHWAY ACCIDENT VICTIMS

1968-1969

During a trip to Washington, D.C., General Penterman and Dr. Kimball gave serious thought to what part Nebraska might play in a research program for improved safety on the highways and submitted the Project 20/20 application.

This project may be best described by quoting from a paper presented by General Penterman at the International Conference on Communications, Institute for Electrical and Electronics Engineers, Inc., San Francisco, in June 1970.

INTRODUCTION

During the period 1964 through 1968, pressured by increased demands and exploding technology, officials of Nebraska State government tackled and solved the problem of multiagency, fragmented development, national survival specifications, upon which day-to-day services would ride.

With "area organized-umbrella coverage" communications in place, creating the capability for cross-talk between the mobile operations of all agencies and interface to telephone and fixed point radio systems, it became obvious that this terrain blanketing system had established a natural "real world" laboratory for coordinating city and county research actions focused on improving emergency services for highways, law enforcement, mutual aid fire plans, Emergency Medical Services, Civil Defense, etc.

Under these conditions, Project 20/20 was born as a federal/state research and demonstration project entitled: "Emergency Notification, Dispatch and Assistance for Highway Accident Victims." The Project was short titled "20/20" to indicate the need for "good vision" in the direction of broad research action which, of necessity, must cover the vertical and hori-

zontal governmental structure, private industry and public interests, and require imagination and progressive ideas as input to this "thought and hardware" research effort. Improving emergency services for the home and highways, with city and country variations, requires wide agency involvement.

The Nebraska studies of telecommunications, with voluminous cross agency discussions, started the exposure of the great overlap of effort and high expenditures of funds existing in a profusion of federal/state and local government partnership programs attempting to handle domestic emergency services.

In order to continue this multiagency directional effort which had proven so successful in solving the telecommunications problems, Project 20/20 was established under the direction of the Governor's Office with a Board of Directors from those agencies of government concerned with the many and various facets of all public emergency services and required resources.

"Who is responsible"--in total, coordinated system approach to emergency service--is the vital and currently unanswered question.

COORDINATION - THE URGENT NEED

Though the primary thrust of the project is highway oriented, the nature of the study and the operational concepts needed lead logically to investigation of the full spectrum of emergency services.

More and more at the local, state and national levels, we are beginning to realize that providing effective emergency services to the home and highways is a multiagency job requiring close coordination of many and varied resources.

The general term "emergency" really defies simple definition and appears in many sizes and forms. One rather astute colleague sorts emergencies into three categories--blood, sweat and tears: blood--for life affecting actions; sweat--certainly can cover uncollected garbage problems; tears--for emotional problems. Specific cases in the latter two categories might at any time change to the category affecting life or limb.

These numerous agencies and varied resources presently operate on different standards with non-unified procedures and policies with incompatible hardware. All this points to the one main problem - "who is

responsible" to develop a workable, effective, economical, coordinated system required to provide the best possible service to the public under a broad variety of life-saving or human-suffering emergencies. The expectation is that with systemization it would be possible to avoid such situations as one in which an accident victim is initially picked up in a vehicle from one local authority and then is asked to be transferred to another vehicle arriving somewhat later at the accident site from a (different) local authority having jurisdiction over the area in which the accident occurred. Extreme and somewhat absurd though this may seem, such incidents have happened and are happening.

Project 20/20 - Research has established a meaningful goal in addressing itself to this talk: a total system research approach, concentrating on the highway and home environment, attempting to put coordinated action and hardware together to expose and improve the presently uncoordinated, fragmented, multiagency service now being rendered. Services from the parking lot to the cornfield, emergencies from postage stamp size to a possible nuclear holocaust.

There is little that can be done about the population and the mobility demands of our living in the next two decades; we can, however, look to the quality and quantity of our technology and resources to see if some answers for public service improvement in both dollar economies and physical assistance can be found.

Happily, from our initial findings, it appears that by collective action we can upgrade sharply our way of serving the vast public on the move. On these pages we have tried to provide some munitions for thought regarding a total system look at service from point of incident (impact) to the open door of a fixed treatment center.

THE EMERGENCY SYSTEM: FOR ACTION WHERE TIME AND DISTANCE ARE KILLERS

The segments for study in a total system approach are recognized as: Notification for Help; Coordinated Communications; Response Vehicle Capabilities; and Treatment Center Accessibility.

In Project 20/20, these segments are broken down into specific elements for detailed research: (1) in

Notification (a) common emergency telephone call number 911 for fixed point reporting, (b) development of a Volunteer Highway Surveillance Corps for on-road mobile reporting as well as fixed point; (2) in Coordinated Communications (a) area operated command and control centers with computer assisted management of resources, this coupled to a flexible incident site and resource location identification system, (b) capability of creating cross-talk between response vehicles assigned to incident site and in transit operations; (3) in Response Vehicle capability (a) setting standards and uniformity of procedures, (b) providing personnel training to set provisional standards for on scene Emergency Medical Services, (c) electronic monitoring of vital body signals of patient on scene and in transit (computer and/or doctor assisted); (4) in Treatment Center accessibility effecting enroute care direction and open door for receiving for patients.

These elements are defined as specific building blocks or sub-systems of the total system to be built and tested as a total system in operation for approximately a one-year period. The Project research effort, starting in late 1968, is of two and one-half years duration. The effort is one of "real world-road net" study improving, perfecting and coordinating day-to-day services over an interlocking city/state "all purpose" telecommunications system operated on regional command and control center concepts. The test system, designed for two areas of the state encompassing 24 counties and two major cities, allows comparison of actions with similar areas of the State where no coordination attention is being provided.

THE PROJECT ELEMENTS - RESEARCH BUILDING BLOCKS

Element 1: Nebraska Emergency Reporting System (NERS),
A Voluntary Highway Surveillance System

One of the significant weaknesses in emergency care systems today, especially critical in rural areas, is the time lapse between occurrence of an accident and subsequent detection and notification. Usual information sources--State Patrol, sheriffs, police, and the passerby--are insufficient to provide early detection and notification for the great maze of roads upon which the public travels. Involvement by all persons through simplified reporting techniques and a broadly based,

well-organized core of reporter/travelers is the heart of NERS.

Thus a public-wide Volunteer System has been organized, known as the Nebraska Emergency Reporting Service. Initially NERS incorporates the reporting capabilities of several existing on-road reporting sources:

1. State and country radio-equipped vehicles-- Department of Roads vehicles, Agricultural Extension Agents, Game and Parks personnel, utility services, etc.

2. Vehicles which operate on a regular schedule-- mail, milk and bakery trucks, etc.

3. Citizen's Band volunteer groups.

Along with NERS insignia marked vehicles, key location service stations in the two test areas have been designated and similarly marked as accident reporting stations to assist the public in reporting. Another test is the establishment of a county-wide common emergency telephone number 911 which can be dialed from any location without coin or going through regular toll channels.

With the telephone system now capable of simple emergency reporting, every citizen becomes a potential reporter of "he needs help." With every telephone now a NERS station, simple prompting procedures of WHO, WHAT, and WHERE can be posted at home or on every telephone. Reporting time could be reduced to less than 30 seconds.

Element 2: Videotape Documentation

Light-weight portable television cameras, videotape recorders and monitors provide a valuable asset in various aspects of the project.

Element 3: Ambulance Attendant Training--a provisional standard set and met

AmBuCare, a 36-hour special emergency care training course designed for this project, provides the training necessary to substantially increase the on-spot care capability of present personnel (at the beginning of the project less than 8% of attendants met this standard and less than 50% had any formal instruction).

Training is being accomplished through the cooperative effort of the University of Nebraska College of

Medicine, State Department of Health and the American Red Cross

Enthusiasm for this effort has been a very gratifying benefit. Organizations outside the test areas are requesting the same training.

Element 4: One County Road Equipment Test - a local road NERS

The objective of this research is to examine county road maintenance personnel for emergency notification possibilities. Operating personnel are trained as NERS reporters. Emergency service dispatch and centralized documentation is furnished by the County Sheriff's Department, tied directly to the total State Telecommunications System.

In December 1968, less than two months after this test was initiated, central Nebraska was hit by heavy blizzards. During these blizzard conditions, the reporting of stranded vehicles and motorists needing assistance was accomplished by expedited notification procedures to these radio-equipped road graders. Coordinated action, facilitated by continuous communication contact, enabled the early rescue of 23 stranded motorists. In one documented case, weather exposure would have taken several lives had time not been gained through priority of action and this coordinated communications.

Element 5: Computer Assisted Information System

In order to provide a truly effective response to an emergency incident, a decision maker must have instant access to all possible information concerning the variety, capability and number of resource services and individuals upon which he can call.

The key to rapidity of action from the Operation Center is instantaneous knowledge of number and combinations of aid response possibilities. This can be provided more rapidly and effectively through computer technology.

Considering that accurate information regarding the "true capability" of an emergency response unit (man and machine) is of paramount importance in a life saving action, a "care capability code" has been developed and computer stored for each emergency resource. This code depicts, in a readily usable and standard manner, the equipment and personnel availability and

training. Thus a response unit's true capability is readily shown for rapid decision to the best possible solution.

Initial computerized resource inventories now include, with details of hours of operation, location, capability, communications, etc.:

All Law Enforcement elements	Hospitals
Ambulance Units	Doctors, Nurses
Funeral Directors	Wreckers
Fire and Rescue Units	Garages

Of central importance to the use of this computer stored information is the Incident Site Locator System (a geographic reference point) which is simply an application of longitude and latitude readings for specifying the location of an accident or a resource. A transparent grid overlay printed in parallels of latitude and meridians of longitude, suitable to a given region, placed over an appropriate portion of the map of Nebraska, permits reading the location of resource and accident site (first identified by "landmark") to the nearest minute of latitude and longitude. A site reading such as 98 degrees 30 minutes west, 40 degrees 30 minutes north is further translated into the form 098 30 40 30 for computer input.

This technique relates geographical points and resource locations in a simple way that is basic to the computerized resource inventory. Its universality permits the computer program to accept inventory and data additions readily and without disruption. At the same time it provides for a direct and simple command to the computer for initiating search for a required resource. Thus a particular coded input of the service needed and incident site grid location will cause the computer to search for and display (on CRT or "hardcopy" at remote terminals) in response such information as all ambulance units, fire, or police within a selected mile radius of the accident (i.e. 10 miles, 20 miles, etc.).

Shown with the resources are such additional need-to-know items as name of personnel, training, equipment and means of communication. Inquiry for nearest, specific, radius or full inventory is available.

Element 6: Comparative Analysis - Air and Ground Ambulances

This phase of Project 20/20 continues studies which began in 1966. Subsequently, the Nebraska Air Ambulance Project Sky-Aid conducted field tests during 1968.

The studied approach to the development of an integrated land and air ambulance companion system for Nebraska revealed that such a system would have 14 helicopters and 70 land ambulances to cover the entire State, operating (private or government) on a city and area basis with central control and dispatch for maximum efficiency.

Experience shows that six ground ambulance vehicles are required on hand in order to maintain assured availability for operation of five vehicles (plus factor of one for five) and an estimated three helicopters are required to maintain assured availability for operation of two helicopters (plus factor of one for two). Carefully projected cost estimates were based on an annual operating cost of \$100,000 per helicopter and \$70,000 per land ambulance (average cost). The total annual operating cost of this combined system would be \$6,300,000 for the entire State.

By contrast, at present 345 different agencies currently operate 439 ambulances in the State of Nebraska at an operation cost of about \$15,390,000 annually; 164 of the 439 are operated on a volunteer personnel basis. For purposes of this computation, an estimate of \$10,000 per year operational cost is assumed for the volunteer units and \$50,000 per year as an average for the remaining 275 ambulances.

At the above stated rate estimates, the companion air/ground vehicle system described here could be instituted at a cost of approximately \$9,000,000 less for annual operation cost.

This projection yields at least a very strong suggestion that service might well be better and cheaper in a coordinated air/ground service approach than now being received through wholly ground-based uncoordinated service.

Element 7: Vital Function Telemetry

The Vital Function Telemetry research being conducted is aimed ultimately at developing a system which can monitor, transmit, sort and make rapid decisions on

the condition of highway accident victims. Equipment will detect and transmit data on several physiological functions: heart rate, respiration, blood flow and electrocardiogram.

A three channel FM transmitter can broadcast three different signals simultaneously transmitting data from the patient to a computer. A computer, specially programmed for this purpose, will transmit typed word instructions for care of a patient while he is enroute and will provide the hospital information on a patient's condition before arrival.

Element 8: Model Demonstrator

Ranking high on the list of requirements needed for state and local officials to become fully aware of the myriad of problems which must be faced in establishing an emergency care system is the development of a model demonstrator. A classroom laboratory was designed to display the scale of the problem and create the atmosphere in which remedies may be collectively discussed.

The providing of a common base of statistical data and specific case understanding, at a time when the facts and problems are of such vast dimensions that even the most concerned individuals scarcely know what to do about them, is the model's goal. The model demonstration room provides a place where ideas can be exposed, problems investigated and joint action plans laid.

The model's threefold purposes are:

1. Extensively exposing government officials, industrial executives and others to the problems and resources concerned with city and highway emergency operations.
2. Providing classroom atmosphere for training individuals who are actively participating in service.
3. Establishing a "laboratory" to develop and test operational concepts--the vital seed of operational understanding required to improve coordinated service to accident victims is sown.

A static information display, intended to enhance discussion, complements the model demonstrator and includes: standards of the Federal Highway Safety Program; State communication; Central Dispatch operation

systems; the Nebraska Educational Television Network; the need for a common emergency phone number; federal and state laws and programs bearing on the subject.

This model has developed into a highlight for the Project. Government groups, agencies and even private associations are requesting to come, learn and assist.

THE EXPANDING POTENTIAL - Information Management System

The project approach of "touch and tell" has already opened up more ideas and suggested beneficial add-on actions than can be tackled at this time. Many are moving parallel with the 20/20 study making multiple uses of project software as well as hardware. Continued exposure seems to set on a chain reaction as more agencies view possibilities for multiple uses of a jointly operated system for management and remote access to resource and statistical information.

To comment broadly on this influencing development, expressed here for example only, are such areas as Comprehensive Health Planning which makes use of the computer stored population base, age groups, hospital locations and capacity, etc. Utilizing the geographic point reference system of 20/20, planning information surrounding any point of reference in the State is fingertip available. Crime planning action, mutual fire aid system, insurance evaluations and educational planning needs are but a few of the uses to which the geographic point of reference and immediate data availability are now being examined and used.

One can readily see the growing development of a computerized interagency/intergovernmental resource and information system with remote access provided by the all purpose telecommunications system of the State.

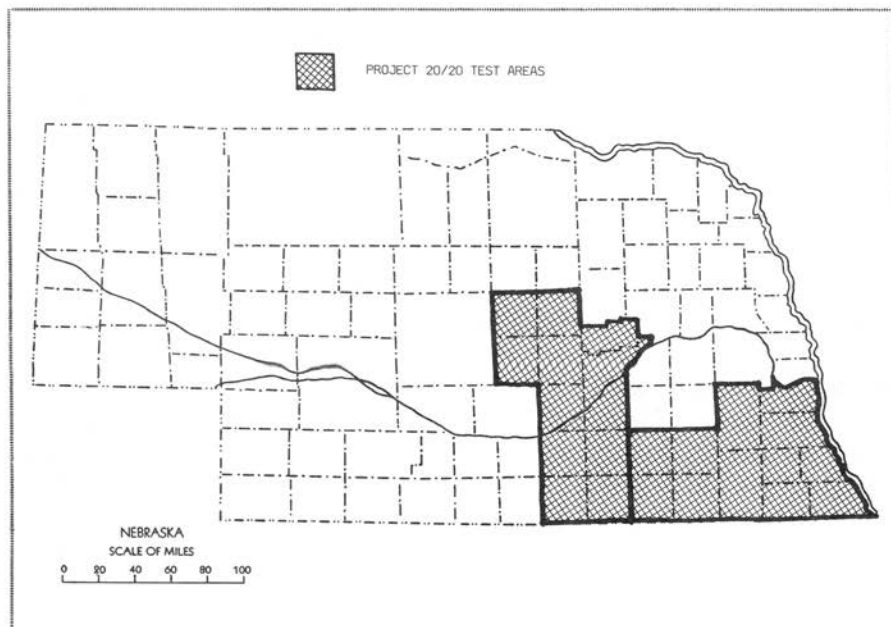
The Board of Directors for the project were:

Robert Barnett, Chairman
Legal Counsel to the Governor
Senator Jerome Warner
Nebraska Legislature
B. Gen. Donald G. Penterman
Deputy Adjutant General
Kenneth F. Kimball, M.D.
Consultant to Department of Health
David McLaughlin
Director, Highway Safety

Lynn Thompson, M.D.
Director, Department of Health
Lt. Col. Burl Johnson
Assistant Civil Defense Director
Robert Stratbucker, M.D.
Department of Physiology
University of Nebraska College of Medicine
Col. James Kruger
Superintendent, Nebraska State Patrol
Robert Rogers
Director of Administrative Services
Don Venter
State Fire Marshall
Douglas Bereuter
State Planning Director

Advisory groups to this body were: the Nebraska Safety Center, the University of Nebraska College of Medicine and the Nebraska Committee on Medical Transportation and Communication.

This project was a great success and without a doubt did demonstrate many of the concepts that later evolved into everyday use across these United States.



OPERATION SKY-AID

In July 1967, the Governor had directed the Adjutant General's office to study the feasibility of utilizing state owned helicopters for a demonstration project to obtain information on their potential use in providing Emergency Medical Services including rapid transport of medical and law enforcement personnel to the scene of an accident and evacuation of the severely injured victims to adequate facilities.

A visit to Washington in 1968 by General Penterman and Dr. Kimball ended in the offices of the Department of Transportation. A discussion of the terrific cost involved in the evaluation of helicopters for civilian use came up and it was proposed that in Nebraska it might be done on a very economical basis by using surplus Sikorsky H-19Cs. The outgrowth of that visit was the project known as operation Sky-Aid.

The study utilized the Sikorsky H-19C which was war surplus and could be purchased at a cost of \$50. By allowing the National Guard to upgrade and fly the plane as a part of their training, it appeared that the unit could be put into the air at selected times for patrol of the highways on a shared basis and be available on an emergency basis at other times. The concept was to use the vehicle for highway monitoring, accident surveillance, or the movement of government personnel with the understanding that at any time it could be diverted to an accident or injury and used for evacuation.

Two helicopters were used and at least one of these was available and ready to fly 100% of the time. Weather did not appear to be a major limiting factor. Offutt Air Force Base Weather Bureau reported that the Lincoln Base was closed only 1.5% of the time with low ceilings and poor visibility. Icing was also uncommon. Night flying could be a problem when it came to landing due to lack of visibility of obstructions near the landing area. A portable glide slope was tried and seemed to work well.

Average dispatch time delay was from 3-7 minutes. The 14-month study was a cooperative venture between DOT, the University of Nebraska College of Medicine, the Nebraska State Patrol, the 24th Medical Company, the Nebraska National Guard and the State of Nebraska.

The Operation Sky-Aid Board consisted of:

LAW ENFORCEMENT

Lt. Col. C. P. Karthaus, Nebraska State Patrol
Lt. Ray Syslo, Nebraska State Patrol

MEDICAL

Merle M. Musselman, M.D., University of Nebraska
College of Medicine.
John German, M.D., University of Nebraska
College of Medicine.

MILITARY

Maj. James Sweetman, Nebraska ARNG, Flt Act Comdr
Capt. Don Gross, Nebraska ARNG, Flt Stand Off

ADVISORY COMMITTEE (in addition to the above)

Sheriff Robert Anderson, Adams County
Maj. William Cook, C.O., 24th Air Ambulance ARNG
Kenneth F. Kimball, M.D., Nebraska Committee
on Trauma
Col. James Kruger, Nebraska State Patrol
David McLaughlin, Director Office of Highway
Safety, Nebraska.
Roy Sheaff, Chairman, Nebraska Committee on
Medical Transportation and Communication.
Sheriff Fred Steinkamp, Gage County
Lynn W. Thompson, M.D. Director
Department of Health
Maj. Gen. Lyle Welch, Nebraska Adjutant General
B. Gen. Donald Penterman, Deputy Adjutant General

PROJECT COORDINATOR

Melba Scott - - 1968
Paul R. Haith - 1969

The project extended for a period of 14 months. The helicopter was used for a good deal of patrol and an occasional evacuation. The time share type of activity would be the only feasible manner such a unit could be used in a rural setting such as Nebraska.

THE USE OF HELICOPTERS IN EMS SERVICES IN NEBRASKA

The study done by the State of Nebraska and the Department of Transportation under the direction of the Adjutant General's office was to see if the use of surplus military helicopters might be economically utilized in the more rural areas on a time shared basis for EMS evacuation. Helicopters had proved invaluable in the military in allowing injured personnel to be in the military operating room in as little as 15 minutes after an injury. However, in the military, distances were relatively small and costs were not of major concern.

It was fairly widely considered that due to the generally small size of civilian helicopters and their great cost that without a large population base there was just no way they could be used in EMS.

There were a number of helicopters, small and privately owned in the western portion of our state, used by ranchers for their own work. In times of emergency, these were occasionally pressed into use. In spite of the experience with these units, helicopters were not in general use as ambulances in the State.

The Operation Sky-Aid study showed that a Sikorsky H-19C could be used for transport of state officials or for road patrol and be diverted in times of need. However, these units were being flown by the Army National Guard and thus were stationed in Lincoln. Following the study, Lincoln also acquired an Army Air Evac. unit in the National Guard that might be called upon in times of disaster or urgent need. These units did function under the MAST program for evacuation of children by St Elizabeth Hospital.

General Penterman, who had been interested in military support to civil authority, conceived the idea of taking the National Guard air ambulance units and dispersing them around the State. Then the local Guard personnel could be used in their own community, could gain valuable experience, and both vehicles and personnel would be immediately available in times of emergency need. This concept was proposed to headquarters in Washington, D.C. but it was apparently too radical a concept for acceptance. Everything had to be kept at state "headquarters" and personnel had to make the long trip into Lincoln and back home each time they appeared

for duty.

The first regular use of a fully dedicated helicopter was by St Joseph Hospital in Omaha in 1979. They suggested that such an ambulance service might be used for evacuation of critical patients from a radius of some 150 miles of Omaha. However, when they applied for a Certificate of Need (CON), the application was denied on the basis that it would not be used enough to make it an economic success.

The figures which were presented showed a wide difference between what St Joseph was projecting as use and profitability and what the CON group of the State Health Department projected. It seemed logical to some of us that the only way this could be resolved (unless it was simply turned down) was by a trial period. At the end of that time it would either be meeting the needs that had been projected or it would not.

Dr. Kimball, from the Division of EMS, set up conferences between St Joseph and the CON group within the Health Department, and it was finally agreed that a 6-month pilot study would be done and that a decision would be made following the study. The program was a success and has remained operational to date.

The University of Nebraska Medical Center had been using fixed wing aircraft for medical evacuations and so did not come under CON review when they also suggested utilizing helicopters for EMS evacuation.

The Military Assistance to Safety and Traffic (MAST) units of the Army National Guard remained available, but due to time required to mobilize the flight teams and the fact that they had to fly out from Lincoln and then back to either Lincoln or Omaha they were not a major source of such evacuations for civilian hospitals. Likewise, there was little use for such a vehicle for transport to any of the hospitals in the central portion of the State. The range of the Omaha helicopters was about Grand Island without the need for refueling.

The Central EMS Region had been looking at the need for better interhospital transfer. Most of the ambulance services west of Grand Island were volunteer and when they were needed to move a patient to a resource hospital the local community was often left without adequate ambulance service. This also required the volunteers to take time off from their jobs. A trip to Lincoln or Omaha would mean missing about one day's

work.

The need for skilled, rapid ambulance service for patients needing transfer was obvious and one that the Department of Transportation had been very much interested in. However, DOT funding was now placing less emphasis on EMS and money was becoming available under DHEW.

Good Samaritan Hospital in Kearney agreed to provide staffing for such a unit utilizing critical care nurses if a vehicle could be obtained for use locally. Since the Central EMS Council had projected this as an area wide project, agreements were made that the ambulance could be used to move any critical patient to or from any hospital in the 21-county area.

Ronald Rodgers of Kearney offered to provide his helicopter for use as an air evacuation unit and to make it available with a pilot 24-hours-a-day. An agreement was drawn up and helicopter EMS service was available in the central portion of the State. The aircraft was provided by Mr. Rodgers (he was compensated for his time and the use of the unit), staffed by nurses at Good Samaritan Hospital with medical supervision by Dr. Joel Johnson of Kearney, and Medical Control by a group of physicians from Good Samaritan Hospital. Whenever the Good Samaritan helicopter is used, a physician is available by radio contact for medical direction should it be needed. Likewise, Medical Control is available from Grand Island on the Medical Net. The unit was initially used most for movement of critical infants with supervision provided by local pediatricians.

At first there was some concern on the part of physicians in the nearby communities that this was an effort to "move all of the injured patients to Kearney" just as outstate physicians had seen the Omaha helicopters as an effort to "move all patients to Omaha" but it soon became obvious that patients were also being moved to Grand Island, Hastings and Kearney as well as from these and other hospitals to Lincoln and Omaha.

The helicopter which Mr. Rodgers used initially was the FH-1100 which had a range of about 300 miles (150 miles out and 150 miles back without refueling), an air speed of about 110, and could carry about 750 pounds of people--the pilot, nurses and patients. Patient access was somewhat limited and so in 1983 Good Samaritan Hospital signed a contract with Mr. Rodgers

for the use of a newer and larger unit, the Bell Long Ranger. This helicopter flew at about 130, had about the same 300 mile range round-trip but had much better patient access and could carry 1,500 pounds of people. It is the unit in use today. The average time from call to lift-off for the three hospitals providing helicopter service is a matter of minutes.

All flight nurses are trained in the use of emergency procedures and are under physician instruction to be sure the patient is properly prepared prior to movement. There can be no question that lives have been saved by the ability to rapidly move a critical patient to an area of definitive care.

When interhospital transfer was first being upgraded and the use of the critical care nurse was evolving, most of these nurses came from the Intensive Care units and did not feel comfortable following any patient without a cardiac monitor in place. Such units are now standard on the vehicles but are used with a bit more selection.

Nebraska thus ends up with four in-state helicopter services being available for EMS emergency evacuation: the unit at St Joseph Hospital in Omaha; the unit at the University of Nebraska Medical Center in Omaha; the Army National Guard unit at Lincoln; and the unit at Good Samaritan Hospital in Kearney.

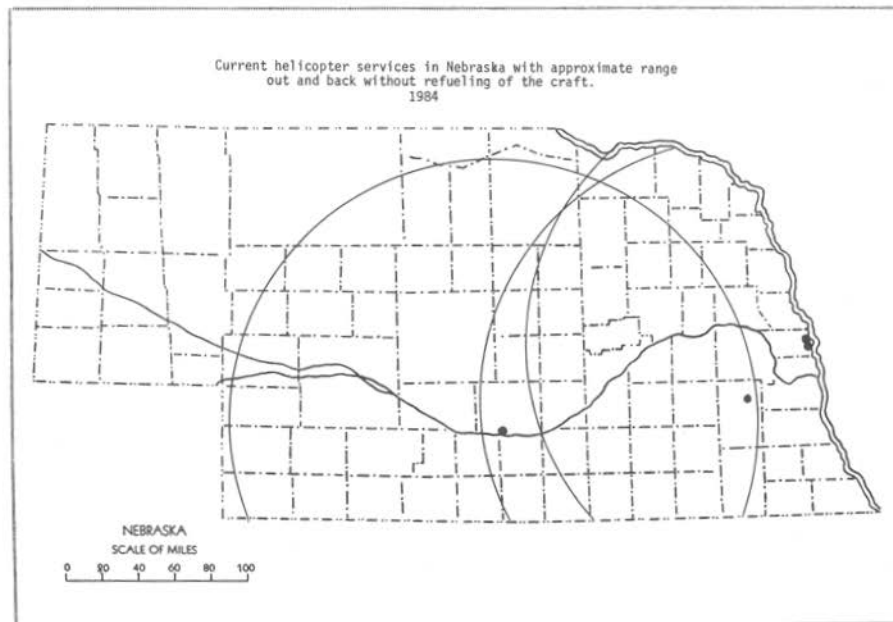
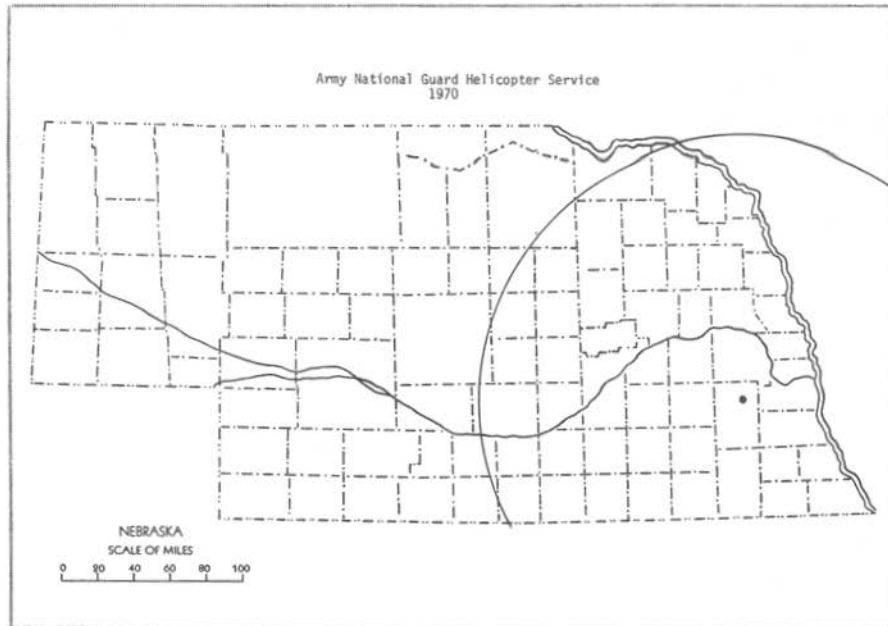
Western Nebraska, which lies beyond the range of any of these services, is well served by the long established helicopter service from Denver's St Anthony Hospital and by fixed wing aircraft from Denver and Omaha.

There are several fixed wing air ambulance units but these are used most commonly for movement of patients who are not critical or patients whose transportation needs are for great distances. Most such units are not equipped in the same manner as the helicopter services.

With these services available, the lessons learned in Operation Sky-Aid still hold true. The vast majority of emergency transport is best handled by the use of land ambulances. Perhaps the major value of the helicopter, in addition to its providing flight nurses at the scene for stabilization of the patient, is its ability to fly when roads are snow packed or icy which would make surface transport unsafe.

Costs at first appear high but when compared to a

long ambulance ride without critical care nurses on board, they appear more reasonable. Most insurance companies accept this as a part of critical care medicine.



THE COMMON EMERGENCY CALLING NUMBER - 911

The visits to Europe by Dr. Kimball, Dr. Musselman, Dr. Thompson, Lt. Col. Johnson, Senator Stryker and Dr. West created a profound impression on them so far as a common emergency phone number was concerned.

In Nebraska alone, there were over 80 phone companies. Many served only one small community. On the other hand, some of the larger companies had service areas that covered large portions of the State. Telephones along our interstate might be answered by an operator miles away with no knowledge of the local emergency response services.

Persons traveling outside of their own community had no idea of the local emergency number to call. Such a number might be found in the local telephone book but just keeping a phone book intact in the many isolated phone booths was almost impossible. There were 1,384 different telephone numbers identified for emergency help just in Nebraska!

The group who traveled to Europe were most impressed that such a common number would be a boon to our country with its thousands of phone companies and would allow any person to obtain help in any community if only such a number could be put into place.

At the national level various groups were advocating the need for a common phone number for emergency calls, but this did not include EMS. The one group which represented a majority of the phone systems was American Telephone and Telegraph. At first, the telephone system said it was not feasible to identify a number that could be used universally but then some thought it might be. While the industry was not a leader in pushing for this number, they did respond to the pressure and established 911 as that common number. Likewise, those interested in EMS insisted that medical care was as much an emergency as police or fire and soon 911 was a "common number" for all emergencies.

The number of 911 was chosen by AT&T as one that could be used across the country. The number "1" and the number "0" were already used and so could not be the initial number. The specific numbers chosen were said to have been picked on the basis that the "9" was the only number that could be easily made available across the country and easily found on the dial. The "1" was chosen since it was also easy to locate and

would require a minimum of time to dial. Therefore, 911 became the number. (Some people used to say it was "nine eleven," but we all know there is no eleven on the phone dial!)

Many telephone companies were not enthused about such a program since the use of a specific number which could be routed to the local emergency dispatch center was not possible on switchboards which existed at that time. Furthermore, the entire cost of such changes would have to be born by the phone companies since there was no mechanism for them to charge for such services.

Exceptions to this were found. Northwestern Bell in Omaha was one of the early leaders to step forward and implement 911 once it had been decided upon by the telephone industry. The 911 Center in Omaha became a showplace in the country with all of the "goodies" that a 911 Center should have.

Some of the rural areas that could not use 911 due to their switchboards adopted a common last four digits such as 2345 or 2222. Then a person who was not familiar with the area could look at the phone and identify the first three digits for that location and simply use the last four common numbers with the first three on the phone. However, those that had direct access for long distance dialing could also have 911 if funding were available for its installation.

By 1975, about 60 communities in Nebraska had the 911 service.

One of the major considerations in the formation of a 911 Center is to decide who will be involved in its emergency response. This is not the responsibility of the phone company but of the local community.

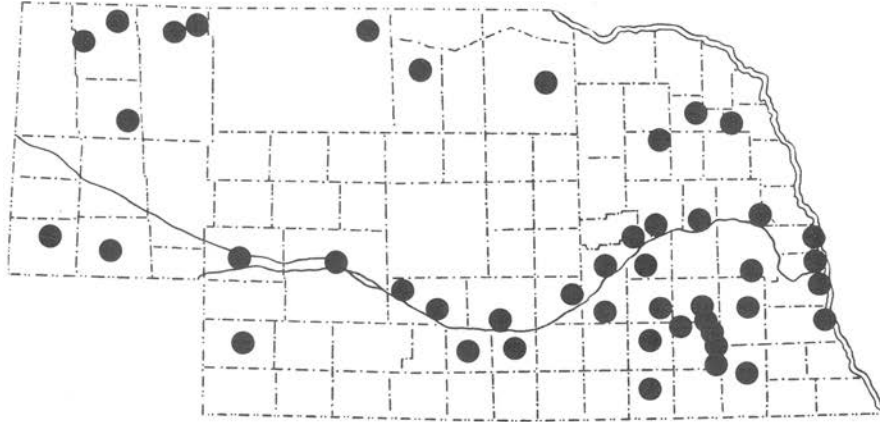
There is a story that Nebraska was the first place in the country to have a 911 Center. It seems that one small community installed 911 and in order to have a phone that would be staffed on a 24-hour-a-day basis, connected the 911 to a phone at the nurses station in their small hospital. Shortly after it was installed, a call was received by a very busy nurse to report that so and so's barn was on fire. This was the last thing she needed. She had no way to respond with help, and so she hung up!

The above story is likely just a story, but it illustrates the point that staffing of a 911 Center must be by people who have the ability to provide

needed response, not just to answer the phone.

By March of 1978, 911 was available to over 65% of Nebraska citizens.

THE STATUS OF 911 IN NEBRASKA IN MARCH 1978
POPULATION SERVED = 961,515 = 65%



Ainsworth	3,052	Lincoln	172,046
Alliance	10,132	Milford	2,650
Aurora	9,524	Minden	4,419
Beatrice	16,189	Nebraska City	8,652
Central City	4,070	Norfolk	20,457
Ceresco	836	North Platte	21,388
Chadron	7,017	O'Neill	5,730
Columbus	17,746	Ogallala	5,776
Crawford	1,788	Omaha	387,218
Crete	5,241	Pender	1,413
DeWitt	1,170	Plattsmouth	7,571
Fremont	25,582	Rushville	1,625
Friend	1,814	Sarpy Co.	65,430
Geneva	3,149	Schuyler	6,195
Gordon	3,706	Seward	6,568
Gothenburg	5,128	Sidney	8,403
Grand Island	45,000	Silver Creek	1,117
Hebron	3,267	So. Sioux City	7,684
Holdrege	6,935	Stromsburg	6,716
Imperial	3,171	Utica	1,562
Kearney	20,889	Valentine	3,670
Kimball	4,430	Wayne	6,203
Lexington	7,254	Wilber	1,932

TOTAL = 961,515

IMMEDIATE DIAL TONE/COIN FREE TELEPHONES

One of the early defects regarding access to the emergency system which became apparent in the study was the presence of public phones that required a coin for reaching the operator. The Immediate Dial Tone Coin Free Telephone provided the solution to this dilemma.

While there is an investment in the installing and maintaining of such phones, there is also a terrible problem for the person in an emergency who does not have change available to make a call on a phone without this capability.

The use of credit cards for phone calls, especially with the automation of credit card calling has made access to the system without coins desirable for both the telephone company (since this saves operator time) and for the public.

The Immediate Dial Tone Response phone has proven a boon to those in need of help away from home. In association with 911, any person in the country can access an emergency center for help. (Such phones and 911 are not universally available but are becoming more and more prevalent across the State.)

The Lincoln Telephone and Telegraph Company was one of the early systems in Nebraska to provide such phones along the interstate and in the areas which they serve.

IDENTIFICATION OF CALLING NUMBER
AND RING-BACK CAPABILITY

Another of the interesting and useful items to come out of the European trip was the identification of the calling number at a Central Dispatch switchboard.

The purpose of this capability is primarily so that should the person calling become incapacitated or have to leave the phone, the center can identify where the call was made from and dispatch the appropriate response unit to that address.

In Belgium, such a system exists and the calling phone number appears as a digital read out on the switchboard at the emergency center. Many thought such a system in this country would be ideal as emergency centers were being developed.

Conferences with the telephone industry nationally indicated would be most difficult. Dr. Thompson pointed out that the switchboards in Belgium were built by AT&T. It was also pointed out that in this country at that time we could dial 1, an area code, and a phone number, and the local phone company knew what the calling number was since they always billed us for those calls!

A meeting was held between Mr. Golden, of Law Enforcement Assistance Association (LEAA) in Washington, D.C. and Roger Ghormley, Chief Engineer for the Lincoln Telephone and Telegraph Company. In short order, Mr. Ghormley suggested that a small chip could be installed in each phone that would be interrogated by the switchboard and it could display to the operator the calling number. He estimated that such a method could be evolved in short order for relatively little cost.

Within a few months, it was announced nationally that identification of the calling phone number would be available.

Along with this identification, it was also desirable for the emergency center to be able to prevent a disconnect of the call in the event the calling phone was hung up, or to disconnect the line if the calling phone was not hung up. This is standard telephone operation and when the calling phone is hung up the line is disconnected, however, when the calling phone is not hung up, the line is tied up and cannot normally be disconnected.

The reason for this capability is that if a phone

were to be accidentally hung up the operator could still know where the call came from. This was also useful for identifying where calls came in that were nuisance calls or real attempts to obstruct the use of the center in times of civil disobedience. It had been found in the urban centers of the country that when local riots were taking place, some callers would call into the center and then leave their phone off the hook and completely tie up the switchboard.

The importance of identification of the calling number was evident by a recent news event on national TV. A child had called 911 for help but was unable to tell the operator who she was or where she lived. The operator was astute enough to keep the child on the phone and have the central telephone office trace down the number. But it took two and one-half hours!

The 911 Center in Omaha, installed by Northwestern Bell, was one of the early Centers where all services were coordinated from one Center and which had the capabilities for identification of the calling number and for disconnect of incoming calls when needed.

VISIT OF NATIONAL DOT PERSONNEL TO NEBRASKA
TO INSPECT COMMUNICATIONS

Several experts in the field of Emergency Medical Services from across the nation visited Nebraska in late October and early November of 1978 to see the advances made in communications and medical response to emergencies in metropolitan and rural areas of the State.

Their tour was arranged by Leo Schwartz, Director of Emergency Medical Services for the Department of Transportation in Washington. He had closely followed Nebraska's development in both EMS and communications both because of contracts between DOT and the State and because he had been born and raised in Sargent.

He put together a group of people from across the country to visit our state and see firsthand the system that was in being and providing care for the ill and injured.

The first day of the visit was spent in Omaha where the communication center in the city/county building was visited and the joint response center of 911 was explained. The second day was spent in a tour across Nebraska by bus to visit some of the very rural areas. The bus was equipped with a speaker system and local EMS personnel were able to discuss what would be seen at each stop along the way. This day ended up at Kearney where some of the local physicians explained their operational system and were able to demonstrate the use of the state system by communication between the Kearney Center and the bus during its trip down from Taylor. The final day was spent in visiting the centers at Grand Island and Lincoln.

Bonnie Bernholtz, Community Relations Director for Good Samaritan Hospital, wrote an interesting account of the second day of the trip with some detailed explanations of just what they saw that day:

Some 20 experts in the field of Emergency Medical Services (EMS) from across the nation visited eastern and central Nebraska last week to see and learn about a unique and successful system of coping with emergencies in vast areas of scant population. During a three-day visit, they toured emergency facilities on a National Guard bus traveling from Omaha to St. Paul to Taylor to Kearney to Grand Island to Lincoln and back to Omaha.

I had the privilege of bumping along with the group on the St. Paul to Taylor to Kearney lap, along with Dr. Joel T. Johnson of Kearney. Dr. Johnson, with Kearney's Dr. Kenneth Kimball and Lincoln's General Penterman, has long been a guiding force in local area, state and national EMS circles.

As we rode by car to pick up the bus in St. Paul, Dr. Johnson told me how the tour came to be organized. About six weeks ago, he said, Leo Schwartz, who heads EMS for the Department of Transportation (DOT) visited central Nebraska. Mr. Schwartz was born in Sargent so is personally interested in and understands the area. (Ed. Note: EMS as a national effort started with the Department of Transportation but now shares responsibility with the Department of Health, Education and Welfare. DOT was responsible for care prior to the time the patient arrives at the hospital and DHEW was responsible for care following that arrival.) DOT is especially involved with the development of appropriate emergency vehicles.

"Leo thinks the way we are doing things is practical," Dr. Johnson said. And so the tour was born.

People who live and work in cities such as Washington, Dr. Johnson suggested, don't really understand rural EMS problems. "Most rural EMS conferences," he said, "are really suburban EMS conferences. They don't know what rural is. So we decided to show them rural."

And show they did!

St. Paul's Dr. M. D. Matthews, also a prime mover of the Central Nebraska EMS system, met the bus and briefed the group on emergency services as it exists in his area. The group had a brief tour of the St. Paul hospital, examined the local emergency unit and had a cup of coffee.

When the group climbed back on the bus, Dr. Matthews climbed on, too--along with two of St. Paul's highly respected emergency medical technicians. Over a public address system in the bus, Dr. Matthews described the area and the EMS system as it affects his patients and his practice of medicine. He pointed out the farm homes of some of his patients, miles from St. Paul, and the problem of delivering emergency care in Nebraska began to seem very real.

The St. Paul contingent got off the bus at Ord (a car had followed to take them home) and Rick Noyes, communications coordinator for the Region 26 Communica-

tions Center in Taylor, got on. The briefing continued as we headed for Taylor, which is near Burwell, north of Broken Bow.

At the tiny town of Taylor, in a building that looks as if it might have been the town's barbershop sits a dazzling array of communications equipment. The center, one of five in Central Nebraska (with Grand Island, Kearney, Hastings and Holdrege) has ultra-high frequency transceiver capability used primarily by medical people. Paging to any agency or individual--such as a hospital or a doctor--is routine.

The center provides around the clock message and dispatch service for law enforcement agencies in the eight counties of Region 26--county sheriffs, town marshalls, police, State Game Commission officers, State Patrol officers, state brand inspectors, state fire inspectors and others.

Using the Region 26 Communications Center with its dispatch service are fire departments, rescue units, ambulances, Civil Defense, the National Weather Service, and the school bus network. The communications center is tied to the National Warning System, the National Weather Service, the State Emergency Operation Center and the North American Air Defense Command (NORAD). There is a teletype terminal tie to both the state and the FBI computer information systems. Messages coming in to the center can be recorded for future reference, garbled messages can be played back.

Channel 9 on Citizen's Band Radio is monitored 24 hours a day. A duplicate console allows two dispatchers to operate in times of crisis. The center has 100% backup power.

All of this, at tiny Taylor, Nebraska!

Dr. Mike Chaloupka of Broken Bow and hospital administrator, Ken Klaasmeyer, of the Broken Bow hospital got on the bus at Sargent. Dr. Chaloupka told the group about emergency medical care as it used to be in central Nebraska and as it is now.

Intermittent briefings were given by: General Penterman, DHEW EMS telecommunications team leader; Steve Robinson, State Communications Coordinator for Nebraska; and Duane Wolfe, special EMS consultant.

At the Jennie M. Melham Memorial Medical Center in Broken Bow, a mock emergency transfer of a patient via National Guard helicopter was demonstrated. Dr. Chaloupka showed the group Broken Bow's impressive hospi-

tal.

After lunch, it was back on the bus to Kearney.

In Kearney, the tired group assembled around a table near Kearney's Communication Center in the basement of City Hall. Several people were there to welcome them including Dr. K. F. Kimball, Director of the EMS Division of the Nebraska State Health Department (and Kearney surgeon), who had also been with the group at the start of the tour in Omaha. Discussion continued as to the strengths and weaknesses of the EMS system in Nebraska.

The most evident weakness, Dr. Johnson told the group, is the problem of transporting seriously ill people between hospitals. He asked the group to imagine a seriously ill heart patient in a St. Paul hospital needing treatment available in a large center. Does the well-equipped local emergency unit transport the patient to Grand Island or Lincoln or Omaha and leave the St. Paul community unguarded for the period of time it takes? Or is the local mortician asked to provide transportation in a vehicle with no emergency equipment? Planes and helicopters are a possibility, but the service is very expensive, and air transportation is not feasible in all weather.

Dr. Kent Shaffer, Kearney pediatrician, and his partner, Dr. Phil Gasseling, addressed the problem of interhospital transfer for babies. They travel with a nurse within a 75-mile radius, in a 4-wheel drive vehicle, to pick up premature and sick babies and bring them back to Good Samaritan's Neonatal Intensive Care Unit in a "Transport Bubble," carrying other special equipment and giving treatment on the way. But transporting a tiny baby and transporting a seriously ill adult are two different things. To date, there are no transport bubbles for adults.

Interhospital transportation, apparently, is the next problem to be tackled. It won't be easy, as the alternatives are expensive and highly skilled personnel are required.

I don't know what happened with the group during the first day of their three-day tour in Omaha, or the last day when they visited the Grand Island and Lincoln communication centers. But I do know for sure during the middle day in Central Nebraska, they learned what "rural" is!

This graphic description by Ms. Bernholtz gives

one a good feeling for what the visitors from across the nation saw in rural Nebraska as well as an idea of the support and enthusiasm existing in Nebraska for this new system.

THE OMAHA FIRE DEPARTMENT RESCUE SERVICE

The Omaha Fire Department Rescue Service was begun in 1936 under Chief Arthur W. Olsen, with Dr. E. A. McQuiddy as the medical officer. The unit was headed by First Aid Instructor, Ben Meister and his assistant, John Marchetti. Both were Captains in the Fire Service.

Medical direction for the Fire Service was assumed by Dr. Glen Whitcomb, then by Dr. Lynn McQuiddy, Dr. Richard Svehla and finally by the Creighton University staff who continue in that capacity today.

Direction of the Fire Department passed to Daniel A. O'Connor from 1942 to 1946, Ben S. Meister from 1946 to 1948, Clyde P. Dunn from 1948 to 1953, Eugene Fields from 1953 to 1962, Martin J. Dineen from 1962 to 1971, Vernon L. Van Scoy Jr. from 1971 to 1981, and the current Chief, Horton A. Dahlquist assumed command in 1981.

Eugene Fields, who was later to become Chief, was placed in charge of the Rescue Service and was the father of the modern Omaha Rescue Service. He was a dedicated taskmaster who expected much of his men and operated a no nonsense service.

When he was promoted to Chief, supervision of the Rescue Service was not isolated as a specific department under a specific person but was a portion of the Omaha Fire Division. Operational supervision of the service was assumed by Captain Tilliander.

On September 15, 1977, the Rescue Service was once again headed by a specific designated officer, Bob Worsacki.

The early days of the service are of interest due to several facts. Both the Police and the Fire Service operated ambulance services for the city and we are not sure how it was decided which service was to be called. Secondly, in the late fifties, some of the men from the Fire Rescue Service attended a meeting on the coast and returned with an interest in endotracheal intubation, the use of I.V. fluids and other invasive techniques which were prohibited by state law.

Dr. McQuiddy worked with these men to develop some skills but encountered much resistance from his associates in the medical community who did not believe that firemen should be doing such procedures.

Dr. McQuiddy had requested Dr. Musselman, at the University of Nebraska College of Medicine, to set up a

training program which included dog labs where the men could actually practice some of these procedures.

The outgrowth of this was the realization by the medical school that added training was needed for the ambulance attendants and resulted in the development of the Immediate Care Course which was to become famous as the first training program taught by a major medical school on a regular basis for ambulance personnel.

A PARAMEDIC SERVICE FOR NEBRASKA

The agreement by the Interagency Committee for Emergency Medical Services upon a nationally standard Paramedic Training Program allowed the establishment of a national curriculum for the first time. While some states had already established Paramedic programs, there was no uniformity from state to state and a person trained in one state would most likely not be able to move to another state and obtain licensing.

Nebraska delayed the developing of its state law until the curriculum was available and a national standard program could be adopted.

The Legislature was then approached with the need to write a bill that would allow for the function of Paramedics. Many of the techniques for which Paramedics were trained were considered "invasive" and could only be done by physicians (or in some cases by nurses). The bill to allow such practice was developed and introduced into the Legislature. Public hearings were held and during these hearings a few other items were added as riders to the bill that related to ambulance service, not to Paramedic care. These additions were made by members of the Ambulance Board. This created some problems because some felt that the EMS Division was trying to "sneak in new legislation without anyone knowing it." However, the bill was by and large a good one.

There was concern on the part of many who did not understand the need for a bill to allow Paramedic operation. They feared that the bill would be passed and then suddenly someone would say that now everyone must be a Paramedic. There was little trust between the volunteers in the field and the EMS Division of the State Health Department.

Nebraska law must be reviewed by the Attorney General and in the course of this review it was felt that the Legislature had allocated to the Board of Advanced Emergency Care (The Paramedic Board) some of the functions that could only be done by the Legislature. This is an honest difference of opinion. Some thought that the Board which was created by the Legislature should be able to do those things given to it by the Legislature while others felt that unless the specific requirements of training were spelled out in the law, the Board could not apply those requirements.

Such a literal interpretation allows the Legislature to maintain control over rules and regulations. It requires that a new bill be introduced into the Legislature and passed each time there is a change in the curriculum requirements. The Attorney General, Paul Douglas, felt that the law required the Legislature to specifically spell out every function and requirement in the bill so when changes were needed, it was necessary to go back and make changes in the law.

Rule 50 is the designation of the Rules and Regulations that the Board of Advanced Emergency Care under the Bureau of Examining Boards must develop and operate under.

The first Rule 50 was perhaps a bit overdrawn but was done in an effort to be sure everyone understood the rules and regulations since the law was just going into effect. Rex Higley, the Director of the Bureau of Examining Boards, spent hours in travel about the State trying to be sure this was properly written. This rule is currently being rewritten and hopefully it will be less cumbersome.

Part of the explanation for the way Rule 50 was written was the confusion that existed in trying to get a number of people in Omaha, who had been trained but had not passed the national examination, into a condition where their services could be used. The Board made every effort to allow for the early retesting and certification of these people. The city of Omaha hired a nurse, Jeanie O'Brien, to work specifically with the Omaha Paramedic group in order to rapidly bring them up to state standards.

The Board of Advanced Emergency Care meets quarterly in Lincoln. The agenda is published and meetings are open to the public. There are frequently a dozen or more observers present.

The Board functions under the Bureau of Examining Boards within the Department of Health.

The Board of Advanced Emergency Medical Care consists of:

G. Tom Surber, M.D., Norfolk, Chairman
Richard M. Fruehling, M.D., Grand Island
Alice L. Gorgen, R.N., Omaha
C. G. Gross, M.D., Cambridge
Michael J. Grutsch, P.A., Imperial
Charles D. Hanf, M.D., Omaha
Kenneth F. Kimball, M.D., Kearney

Donald Matthews, M.D., Lincoln
Robert K. Olson, EMT-P, Papillion
William C. Peters, Gering
Jody Upright, R.N., Lincoln
Greg Wright, M.D., Lincoln

The examination used by Nebraska is that of the National Registry of Emergency Medical Technicians. The test is based upon the national curriculum and where differences in approach are found in different standard texts, no questions on that topic are used. The exam has been thoroughly tested and is probably better validated than most examinations. It has a very high reliability.

There have been concerns by some taking the test because it seems too hard but all questions are based upon the nationally standard curriculum. In 1984, the fail rate for the examination was about 36%. However, if only graduates of nationally American Medical Association approved schools are considered, the fail rate is very low, something on the order of under 10%.

Most who fail the written examination do so because they are not well enough informed in basic anatomy and physiology while most who fail the oral exam do so because they fail to explain their assessment of the patient. In the practical examination, the student must do an assessment of a seriously injured patient. In order for the examiner to know that the student has given thought to various areas, the student must express what he is looking at and for while doing the assessment. In the pressure of a test, students sometimes forget to express what they are doing as they make their assessment.

The following licenses for Paramedic operation had been issued at the time this was written.

1. Omaha Fire Department
2. Immanuel Medical Center
3. Papillion Volunteer Fire Department
4. Lavista Volunteer Fire Department
5. Bellevue Volunteer Fire Department
7. Eastern Ambulance Service, Lincoln
9. St Joseph Hospital Paramedic Service
10. Millard Volunteer Fire Department
19. Eastern Ambulance Service, Hastings
20. Woodburn Ambulance Service

THE NEBRASKA COMMITTEE ON TRAUMA
AMERICAN COLLEGE OF SURGEONS

Nebraska had a Committee on Trauma in name only until Dr. Robert Gillespie became its Chairman during the early 1960s. Dr. Gillespie saw the work of the Committee as something more than just a name and set about to build its membership and to encourage activity and interest in the group on a statewide level. One of the major projects he undertook while Chairman was to implement a statewide immunization program. While the primary stress was on tetanus immunization, the other usual immunizations were stressed also.

Working with Dr. Gillespie were Sue Smith, Home Editor of "Nebraska Farmer"; Dan Lutz, University of Nebraska Agricultural Communications; Rollin D. Schnieder, Extension Safety Specialist, University of Nebraska. The importance of such immunizations becomes evident when one realizes that the death rate for persons contracting tetanus is about 50 percent.

Dr. Kimball served as State Chairman from 1964 to 1968 and during his term in office conducted the first comprehensive study of Emergency Rooms in the State. During a two-year period, Dr. Kimball visited hospitals noting how easily and quickly the hospital could be found, whether or not any signs were available to help in its identification, how easily one could get to its Emergency Room, and what the Emergency Room was like.

He traveled through the State, driving into town trying to find the hospital. In those days, no street signs were used to direct one to a hospital. Neither were hospital buildings identified by signs. It became evident that local people knew where their hospital was but out-of-towners might have difficulty finding it. The state developed a directory of maps showing hospital locations and a list of radio access numbers for each hospital in the State.

There were few Emergency Departments in those days. Emergency Rooms were usually just that, a room that had been drafted for use as a place to put on bandages. Most were poorly located. They were in the basement, on first floor, and on second or third. In one town, the Emergency Room was across the street from the hospital in a doctor's office.

Most serious cases were moved directly to the operating room, ala the Louisville, Kentucky method,

with no real thought given to contamination. Often mud was tracked across the operating room.

There was little equipment and often it had been purchased because someone had said every Emergency Room should "have one of these." One hospital had a defibrillator and was most proud of it. However, one of the nurses shyly asked Dr. Kimball if he could show them how to use the unit since no one there had ever used one and they had never been instructed in its use.

During the evaluation, the need for better identification of the building as a hospital was discussed with the administrator and doctors; the need for adequate space to work on emergency patients was pointed out; and the need for a well-lit and well-identified Emergency Department was stressed. Many hospitals had a real problem since they had little money, were in an old, old building, and had no real place to turn for help in resolving their problems.

Following this study, a preliminary report was made to the physicians in the State via the Nebraska Medical Journal.

Efforts were made to have signs placed at interstate interchanges and on major thoroughfares to direct one to a hospital. This met with much resistance. The State Highway Department pointed out that because these signs were not mandated by the Department of Transportation, the State could lose its highway funding. When one of our congressmen was asked to help, he questioned whether the next request might not be from barbers to advertise haircuts! It did not seem to him to be anything but an effort to "attract customers." Many physicians were less than happy to see such signs erected since it meant more emergency calls at night and on weekends.

The Committee on Trauma in Nebraska has since been chaired by Dr. John Gatewood, Dr. Tony Carnazzo, Dr. Joel Johnson and Dr. Paul "Skip" Collicott.

Following his term as State Chairman of the Nebraska Committee on Trauma, Dr. Johnson became Region Chief with responsibility for the committees in Missouri, Iowa, Kansas and Nebraska. The Committee has established an annual program in Kansas City the first weekend in December which deals with trauma and is well attended by the physicians from this section of the country. Nationally known physicians present papers on various types of trauma management.

The Advanced Trauma Life Support program (ATLS), which was developed in Nebraska by LMEF, was adopted by the American College of Surgeons Committee on Trauma and taken nationally as a standard training program for the education of physicians not trained in the management of the severely injured patient.

Dr. Kimball chaired the committee to "nationalize" this program. The needs of one section of the country may not include all of the items that are needed elsewhere and a period of more than two years was involved in working out the details of what the course should and should not contain and how it should be presented. The University of Nebraska Medical Center then field tested this program following which it was turned over to the American College of Surgeons for national presentation.

One of the concerns of the College in this program was that it be a nationally standard course. In order to insure this, they began by training the Region Chiefs from across the country. These in turn trained each of the state chairmen who in turn supervised all training programs of ATLS in their state. The program was initially limited to physicians but is now becoming more popular with nurses from Emergency Departments and is even being presented in an abbreviated form for pre-hospital personnel.

Dr. Collicott, the present State Chairman of the Nebraska Committee on Trauma, is the national coordinator of the ATLS program for the Committee on Trauma. Continued upgrading of the course has taken place under Dr. Collicott's direction.

FULL-TIME EMERGENCY DEPARTMENT STAFFING

One of the major impacts of the DHEW funding under 1204 was the need for full-time medical staff in Emergency Departments. The requirements were very specific. There must be at least one hospital in each region of the State that has full-time physicians in the Emergency Department to provide Medical Control via radio.

Being a rural state, it was our contention that such control could be provided on a rotating basis by local physicians who would be radio equipped and would agree to take their turn at being available on the radio for the 24-hour period. Dr. Boyd never accepted this probably because to accept it here, where there was a Medical Net that already existed, would require that it be accepted elsewhere where such radio contact might not have been available.

At that time (the early 1970s), about the only communities with full-time Emergency Department staff were the cities of Omaha, Lincoln and Scottsbluff. A few communities were looking at week end staffing.

The big need for such facilities was the difficulty in finding the local physicians in times of emergency need. It seemed that the more physicians in the community, the harder it was to find someone. On the other hand, in rural areas with only one doctor, he was "always available." This need was recognized by a group of physicians. These physicians could fill the need of having a physician in-house on a 24-hour-a-day basis while they could have regular hours themselves. This could be done by forming groups that would contract to cover the Emergency Department with this type of practice. They most generally did not have admitting privileges so once the patient was put into the hospital that patient again was returned to the care of his local doctor. This let the local doctor have some time off, avoid some night calls, and still see that his patients were taken care of in emergencies.

Most likely, the early movement of physicians into this type of service was motivated by their long hours of work, their never being away from the phone, and the frequent interruption during the evening and night with calls that to the patient were emergencies but to the physician were really not so important. They saw in full-time Emergency Department work the excitement of

doing Critical Care medicine with the sure knowledge that they would have time off for sharing with their families and for doing those things that the average person does after their workday. The high cost of malpractice insurance was usually paid by the hospital, and the physician had no collection problems since the hospital collected for the care provided and the physician was paid directly. As time passed and the concept caught on, many young men just out of medical school expressed the desire to enter this type of work.

This led to the formation of the American College of Emergency Physicians and later to the formation of a Conjoint Board known as the American Board of Emergency Care.

One of the physicians who was involved in this work was Harris Graves, a family practitioner in the Omaha area. Dr. Graves was involved in the establishment of a group who provided coverage at Methodist Hospital in Omaha. He was active nationally and served as one of the early presidents of the American College of Emergency Physicians.

LINCOLN MEDICAL EDUCATION FOUNDATION

One of the little recognized groups in Nebraska which has had a profound impact on EMS in our state and in the country is the Lincoln Medical Education Foundation (LMEF) established as a cooperative, educational effort by Bryan Memorial, St Elizabeth and Lincoln General Hospitals in conjunction with the Lancaster Medical Society. It has been a major developer of educational programs. The Foundation, established in 1970, was not staffed until October 1973 when Jay Upright, Ed.D., was hired as the Executive Director.

About 1970, Dr. Steven Carveth, a Lincoln cardiovascular surgeon, and others at Bryan Memorial Hospital had been interested for a number of years in the delivery of emergency CPR for coverage at the University of Nebraska football games. Such a service was developed and found to be successful.

This interest led to the development of a service which was an extension of the Bryan Memorial Hospital Cardio-Respiratory Services. Trained nurses and respiratory therapists were provided who could travel to the site of a cardiac arrest and provide immediate care. No transportation was done by Bryan Memorial Hospital Heart Team, this being provided by the Lincoln ambulance services. Jody Bechtel (Upright) was one of those who played a major part in the development and the implementation of this program.

LMEF worked with the group from Bryan and the ACLS training program was the basis for the American Heart Associations national ACLS training. Once again, the person most often noted in this work was Jody Bechtel. LMEF then took the national program and developed a course on how to teach the ACLS course with heavy emphasis placed on teaching methods. About 150-175 physicians in Nebraska were trained by this group under a program by the Nebraska Department of Health.

LMEF likewise worked to establish basic medical educational programs, programs in continuing education, and in graduate medical education. It was LMEF who was instrumental in bringing the nurse training program to Lincoln.

Other programs that were developed were post anesthetic recovery training for nurses and special training for nurses in the Emergency Department.

More recently, a similar interest evolved in how

to prepare the local physician and nurse to recognize and care for the acutely injured patient during the first hour in order to allow for stabilization and rapid transfer when the patient's injuries exceeded the capabilities of the local community. Once again, this group was hard at work and their program was taken, modified to make it nationally acceptable, and became the basis of the Advanced Trauma Life Support Program that is provided today by the American College of Surgeons.

A further outgrowth of this program is the Advanced Trauma Life Support Course being provided for those in pre-hospital care.

A course on infant resuscitation was another developed by this group and has been taught locally to many medical personnel.

LMEF is currently working on a similar program with Dr. Robert Gillespie on early burn care.

During 1980 and 1981, the Physicians Critical Care Committee initiated and completed a review process for identification of Lincoln General Hospital as a Level II Trauma Center and which was so designated by the EMS Division of the Department of Health. This was the first such designation in the State.

Likewise, approval for hospital funding of the Lincoln/Lancaster Medical Control Plan was completed.

The following fiscal year, 1981-1982, the Medical Control Implementation Plan was completed. A part-time Medical Director was employed and Medical Control for the Lincoln/Lancaster EMS System became operational in March 1982. This included development of a comprehensive communications system integrating all units in a UHF system and established a continuing education program for all personnel.

July 1982-June 1983 saw a continued revision, implementation and improvement of the Medical Control Plan.

July 1983-June 1984, LMEF developed and implemented the first EMT-D Service Program in the State when the Medical Control Board established this for the Lincoln Fire Department.

LMEF is now working on expansion of Medical Control in relationship to rural communities which is expected to be completed this year.

LMEF, and its committee of 18 dedicated physicians, has been unique for a large Nebraska community.

They have worked at a steady pace to improve the high quality of emergency medical care in Lincoln, in their area, and in the State.

There can be little doubt that Lincoln might have received greater funding had they jumped in without a careful plan for Medical Control and input. However, they refused to compromise on quality and developed a sound and functioning system.

CATEGORIZATION OF HOSPITALS

Studies done during the early days of EMS development by DHEW and by others in the country tended to show that the survival of patients was better when the critically ill or injured were taken to a hospital which had an active interest in that particular illness or injury. Another acute need seemed to be full-time personnel in-house so that there was no delay in treatment of the patient.

Dr. Donald Trunkey did a study in California that showed a remarkable increase in survival where such centers were used. It became fashionable to speak of Trauma Centers, Neonatal Centers, Burn Centers and Cardiac Centers.

In Nebraska, where the largest single group of hospitals are those in the 20-30 bed range, much resistance was met to any such use of the term categorization. Local physicians "knew" they were concerned about the patient and were giving that patient the best care possible; hospital administrators and boards "knew" they were doing all they could to provide good facilities and care; and everyone "knew" that categorization would end up with all of the patients being taken to Lincoln and Omaha.

The College of Surgeons had drawn up criteria for designation of Trauma Centers and since these were national standards they were very rigid. Nebraska probably had only two hospitals that could be classed as Category I Trauma Centers. Perhaps another half dozen might be known as Category II Centers, and not over another dozen that could be called Category III Trauma Centers.

With the exception of the few larger communities in the State, it was an academic problem anyway since almost everyone agree that in areas where there was only one hospital, the patient should be taken to that facility at once where they could be stabilized, most of the time could be treated, and in those rare cases needing further care, could then be transferred to a major center for definitive care.

Lincoln did some soul searching and with the support (and perhaps a push from its medical community) identified Lincoln General as its Trauma Center, St Elizabeth as its Neonatal and Burn Centers and Bryan Memorial as its Cardiac Center.

Omaha, where there were too many beds already and hospitals were trying hard to maintain occupancy, had more of a problem. The national requirement for full-time in-house personnel and research in trauma led to St Joseph and University Hospitals being designated as Category I Centers. Most of the other hospitals immediately decided they must be Category II Centers and so, far as we know, no further designation has been made.

The fact remains that some 85% of all patients can have their specific problem cared for at any good hospital, 5% may need the specific equipment and staff of a Category III Center, 5-8% will need the care of a Category II Center and 2-5% will need the care of a Category I Center. This leads one to the obvious conclusion that to make the best use of all facilities, those few patients needing the special care must be identified early and moved as rapidly as possible to those special facilities. Most of us feel that such a decision is a medical one and should not be made by the ambulance personnel since it leaves them "holding the bag" if they misjudge a patient's condition and do not move them to the proper facility.

From a practical standpoint, the medical community should take the lead in identifying where patients are to go in the very large centers where multiple facilities are available. With these medical decisions made, the ambulance can follow its Medical Control instructions and go directly to a Center when it is indicated. In the more rural areas, we tend to discourage passing any hospital unless the ambulance personnel establish by radio contact that there is no one at that facility to provide care for the patient.

All of this has led to a second phenomenon across the country known as the Free-Standing Emergency Department. These are not too common in our state as yet but will likely become more prevalent. The objection to the Free-Standing Emergency Department (one without in-house facilities for the care of the severely ill and injured) is that for the few critical patients it may well be a matter of life and death where the delay of unloading the patient, examination, and then movement to a proper facility makes the difference.

Once again, proper medical decisions prior to the time of the accident as to what type of patient should be taken to those Centers is an easy solution if the medical community is willing to take that stand. There

is certainly absolutely no reason the vast majority of common illnesses and injuries may not be adequately treated so long as the critical cases are identified and the facility bypassed.

The concern of the hospital administrators, boards and staff can be understood when looking at one Nebraska community. This is a major center for care in out-state Nebraska. It has two hospitals. Neither wanted the other to be the one with "full-time staff" in its Emergency Department. The solution was to use both facilities and let the Emergency Department be in one hospital one month and in the other the next month. This obviously requires duplication of facilities.

Results of this arrangement showed that during the month one hospital has the Emergency Department open its beds are much better utilized than during the month when it is not full-time emergency. No administrator can overlook these statistics. By the same token, there is not a large enough patient load for full-time operation of Emergency Departments in both hospitals.

All of this is to say that it is difficult to make these kinds of decisions since they may lead to the success or failure of a hospital. It is problems like these that gave rise to the concept of Certificate of Need. Unfortunately, the CON has not always prevented the duplication it was intended to address.

THE AMERICAN RED CROSS HANDBOOK

The standard handbook for the American Red Cross First Aid course was revised by Carl Pottoff, Professor of Public Health at the University of Nebraska College of Medicine.

Most of us were not even aware of this quiet man's activity in the revisions of this teaching aid.

During the early 1960, American Red Cross First Aid and Advanced First Aid were the optimum training programs available for ambulance personnel. Following the recommendations of the National Academy of Science and the Department of Transportation, the training programs for attendants was upgraded.

The Red Cross First Aid remained something that was needed by the general public. As interest in citizen EMS education increased, more and more efforts were made to initiate First Aid as a standard course in the classroom. The state goal was to have all students have had Red Cross First Aid by the time they obtained their driver's license and all students have had Advanced First Aid by the time they graduated from senior high school.

This should have great impact on pre-hospital survival since it would insure that within a period of two or three generations essentially everyone in the United States would be trained in what to do and what NOT to do.

Good progress has been made and some schools in the State now do include First Aid in their curriculum while others make it available as an option. This is like Drivers Education and some of the other items of education which have little immediate impact but could have great impact in the years to come.

Every school is having difficulty with funding and there are just too many things to teach to too many students in too little time. We hope that this important course does not get lost in the shuffle!

VETERANS ADMINISTRATION TV NETWORK
ITS USE FOR EMS

The Veterans Administration developed a closed circuit television net for connecting their hospitals in this section of the country. Dr. Joel Johnson, then in the Department of Surgery at the University of Nebraska College of Medicine, was concerned about the lack of specific ongoing training for the rescue and ambulance personnel in the Omaha area and so he set up a series of programs in which presentations were made each month in the Nebraska Psychiatric Institute auditorium. Shortly before leaving the University to move to Kearney, Dr. Johnson found that the VA television net was available to them and these training programs were carried live on the VA network. Through the efforts of Dr. Musselman and Dr. Clay Davis, the system was made available to the EMS for use on certain evenings. The point of origin was at Omaha but it was tied to the VA Hospitals in Lincoln and in Grand Island. Ambulance attendants who were watching in Grand Island could talk to Omaha to raise questions or add appropriate comments.

There was keen interest in these programs with 80 to 100 people attending the Omaha portion of the meeting.

The series was carried on for about a year and helped make the facilities and personnel in Omaha available to the southeast and central portion of the State.

These programs were eventually phased out as the nationally standard EMT-A training programs were initiated by the State Department of Health.

SOME EARLY DAY UNIQUE ACTIVITIES IN EMERGENCY
SERVICES IN WHICH NEBRASKANS WERE INVOLVED

1. The design and trial of a modular ambulance
2. An annual Immediate Care of the Sick and Injured course for ambulance personnel taught by the University of Nebraska College of Medicine Department of Surgery
3. The use of a Veterans Administration TV Network for education and training of ambulance personnel across the State on a regular basis
4. Membership on committees of the National Academy of Science which developed the standards for training of the EMT-A, the EMT-P, the modern ambulance and the EMS Committee of the Academy
5. Chairman of the Committee on Trauma, American College of Surgeons
6. President of the American College of Emergency Physicians
7. Public member of the Interagency Committee on Emergency Medical Services
8. Studies of European EMS for utilization in this country
9. One of the first courses for ambulance attendants using the new 81-hour curriculum taught in Nebraska
10. The concept of cross channel interconnects between various radio systems to allow for communication during times of emergency
11. The development and trial of a totally Consolidated Communications System
12. A statewide ETV Network which could "ride on" the state communication system
13. Computer assisted control and dispatch of emergency vehicles with identification of local resources (location of police, fire, ambulance, rescue) by computer

14. On-line computer monitoring and diagnosis of vital body functions
15. Evaluation of a "Shared System Concept" for helicopter utilization in rural areas
16. Review and upgrading of the Standard Red Cross First Aid Handbook
17. Development of all six EMS regions as a state coordinated program
18. Protected underground facility for continuation of state government in times of man-made or natural disaster
19. The concept of interconnection between various radios and telephone
20. The development of major central communication centers in very rural areas
21. Demonstrations of farm safety hazards utilizing a remote control tractor to show effects of upset as well as methods of recovery
22. Development of a Farm Accident Rescue handbook
23. Development of a training course for placing the handicapped veterans in positions as telecommunications operators

THINGS THAT MIGHT HAVE BEEN

A PROPOSED STATEWIDE TV NET FOR MEDICAL EDUCATION IN NEBRASKA

Early in the 1960s when in Washington, Dr. Thompson and Dr. Kimball were invited to spend some time with Wilbur Cohen, Secretary of Health, Education and Welfare. A 15-minute talk extended to over an hour and ended with Secretary Cohen asking to know more about the ETV net that was then being planned for Nebraska.

Secretary Cohen was very interested in how doctors in rural areas of the State could get away to go to the city for continuing education. How was the community covered while they were gone? We discussed the concept of a statewide educational network pointing out that such a system might be used for long distance consultations. The fact that the College of Medicine in Omaha might be able to produce a series of continuing education classes was discussed and he seemed most interested.

Mr. Cohen called in a number of his people and by the time the meeting was over he asked that we put down on paper our ideas and send them to him for use as a demonstration project.

Returning home, Dr. Thompson, then the Director of the Department of Health, developed a specific proposal that would cover the State with a two-way video system that could be established as an educational system but could be used for other purposes. The system would ride on and parallel the ETV net that was being built at that time.

The material was forwarded to our state officials for approval but was rejected.

COMPUTERIZATION OF LICENSE PLATE RECORDS IN NEBRASKA

Shortly after Dr. William Hadden left DOT and assumed his position with the Insurance Institute in Washington, General Penterman, Dr. Kimball and one of the Governor's assistants were in Washington. During a visit, Dr. Hadden, expressed concern about a study done in one of our western states that showed a very high percent of vehicles on the highway were stolen.

The way the study was done, especially its location, made it seem that a non-representative group had

been observed.

Dr. Hadden knew of Interstate 80 crossing Nebraska and felt that this would be a good place to do a study of random groups of cars crossing the State. It was suggested that a video camera could be set up on an overpass and zoomed in to allow the reading of license plates. The tape could later be reviewed allowing the recording of almost every license passing that area during the time of taping.

We expressed an interest but said we had no simple way of even identifying the license plates from our own state. Dr. Hadden said it should not be too hard to computerize those records since our population was relatively small. The Governor's assistant was most enthused and left the room to call Lincoln for approval of a plan to computerize our license plate records and for us to do a study for the Insurance Industry. When he returned to the room it was obvious he had been told "NO".

Some good did come of this trip since it opened doors that allowed the State to obtain computerization of drivers' licenses by a contract from the Insurance Institute to Mid-America Research Corp. This was done in the eight more populated counties in the State.

A FEW OF LYNN'S COMMENTS

No one could write letters like Dr. Lynn Thompson. He had the ability to express his views clearly and often with humor (which was not always understood or appreciated).

One of his classic comments was made in talking to an untrained ambulance attendant regarding the need for a higher level of training. He said that if his family was injured he would like to have someone on the ambulance who knew the difference between a Band Aid and a Kotex.

Another classic remark was in a letter to the Governor's office while Dr. Thompson was Director of the Department of Health. He had been asked by that office to explain why a certain person had not seen the need for the Educational Television Network (see the previous chapter) and he said the reason was that the mentioned individual did not know the difference between a motorcycle and a megacycle.

In that same letter, Lynn was responding as to why six buildings were needed around the State and he explained that in outstate Nebraska when one got out of the nice warm capitol building, there could be as much as three or four feet of snow in the winter, and if they put radio operators at desks out in the field without a building to keep them warm, no one would be willing to take the job.

MID-AMERICA RESEARCH CENTER, INC.

(ALL OF THE MATERIAL WHICH FOLLOWS IS EITHER QUOTED
DIRECTLY OR ABSTRACTED FROM A MID-AMERICA
RESEARCH PUBLICATION)

Mid-America Research Center was established in March 1970 to "Assist in the Development of Rural America." In 1965, Governor Morrison directed personnel from Nebraska government to do a study of the existing state and local government's system for responding to all types of emergencies. This action, along with that of many private citizens from private industry, established a team effort to organize and foster a cooperative research and development relationship between private industry and business, federal, state and local governments.

Governor Tiemann, by executive order, established a Division of Emergency Services within the State Civil Defense Agency. This stated in part, "Support, as appropriate, the private sector in the development of a viable, non-profit research center in furtherance of the objectives of the State's emergency services program."

Mid-America was established to fill this need.

The Corporation offered the following primary services:

- M - Management - Provide management for community-centered research activities.
- I - Investigation - Determine an appropriate research and development program for the problem being investigated.
- D - Dissemination - Assist with the dissemination of research and technological information.
- A - Analysis - Engage in a professional analysis of research data.
- M - Methodology - Use tested methods of scientific inquiry.
- E - Education - Help with the transfer of educational information resulting from research.
- R - Research - Provide facilities and personnel for research and development studies.

- I - Implementation - Publicize research results for the benefit of government, business and industry leaders.
- C - Coordination - Provide coordination for research activities designed to improve rural America.
- A - Action - Advance the use of technology in Nebraska through consultations and demonstrations.

Who may use Its Resources?

1. Agencies of government within the state.
2. Agencies of government within the nation.
3. Non-governmental organizations and their representatives.

Officers of the Corporation were:

Neal J. Westphal, President
Howard P. Doerr, Vice President
Tyler Ryan, Secretary-Treasurer
David Tews, Legal Council

The Board of Directors:

Vernon A. Allan
Gene A. Budig, Ed.D.
Howard P. Doerr
George C. Gerdes, Senator
Hugh W. Hunt
Kenneth F. Kimball, M.D.
Jack McBride
J. Earl Nelson
Phillip C. Nelson
Jay Orr
Norman Otto, Admis. Asst. to Governor
B. Gen. Donald G. Penterman
Tyler Ryan
Lynn W. Thompson, M.D.
Neal J. Westphal
Wayne W. Ziebarth, Senator

At this same time, the Nebraska Legislature had formed a Bureau of Nebraska Affairs whose objectives were similar.

There was great emphasis on an effort to find an effective way to allow federal government, state government, local government and industry to work to-

gether.

Projects undertaken early on in the history of Mid-America were:

PROJECT I.

A project entitled "The Role of Telecommunications in Technology Transfer Programs" was assigned to Mid-America Research Center by the Nebraska Department of Economic Development. Funds were provided for a five-month study to evaluate the role of telecommunications in technology transfer programs. Among other findings of the study was the proposing of a model for multiple agency sharing of terminal hardware located at selected sites throughout the state which would be linked to centers of technology.

PROJECT II.

In Nebraska and in other states there has accumulated much evidence that the present communications system is inadequate to meet the requirements of emergency conditions. The question of how best to use available telecommunications networks so as to provide for both normal and emergency situations was the theme for the study entitled "Emergency Services Communications." This study consisted of three parts: (a) an analysis of highway accidents and the use of the State's Emergency Medical Network in handling these incidents, (b) development of a Training Manual for use in training Communication Specialists in the use of the Emergency Medical Network, and (c) a directory for use by the Telecommunications Bureau in assigning decoder numbers to users of the Emergency Medical Network. Funding for the project was provided by the U.S. Department of Transportation through the Telecommunications Bureau of the State Department of Administrative Services.

PROJECT III.

Mid-America Research Center, under contract with the Insurance Institute for Highway Safety, has conducted a pair of studies concerning the usefulness of "Observations of Large Numbers of Passenger Car License Plates" for detecting certain characteristics of the vehicle and driver. The first phase of this study was to determine if such observations were of use in detecting stolen cars. The second phase was concerned

with the usefulness of such observations in detecting drivers of vehicles whose operator's license is under suspension. Those two studies were especially important with respect to the cooperation which was necessary between the staff of Mid-America Research Center and the State of Nebraska. As a result of the study the entire file of suspended operator's licenses was put onto computer cards and a program written to enable quick access by law enforcement agencies. This was done without cost to the State, all funds being provided by the Insurance Institute for Highway Safety.

PROJECT IV.

The National Highway Traffic Safety Administration (DOT) is conducting an intensive countermeasures program to reduce death and injury due to drunken driving. The City of Lincoln has received one of the Alcohol Safety Actions Project grants. Mid-America Research Center has subcontracted with the City of Lincoln for conducting a Household Survey and a Roadside Survey. The Household Survey was conducted to provide a means of evaluating the Public Information Countermeasure and to determine present attitudes concerning the problem of drinking and driving. The Roadside Survey, a complicated and sensitive method of obtaining data, will provide information concerning the drinking-driving habits of motorists using the streets of Lincoln. Many problems had to be solved and arrangements made prior to the initiation of this survey--explanations to law enforcement officials, cooperation from local governing officials, and a letter of explanation to stopped motorists developed.

THE INTEREST IN JOINT FUNDING--LINCOLN/LANCASTER
PILOT PROJECT

There was increasing interest in the federal government as to how it might better utilize joint funding. By using such a system of funding, each agency could put up some of the money for a given project, and one department of government would serve as a lead group to coordinate and follow the project. A special effort was made on the part of the White House which designated a Special Assistant to the President to work toward this end. (See Appendix D.)

General Penterman, who had long espoused this concept, worked hard to see if a "showplace" might be made of the development of a Consolidated Communications Center in Lincoln.

The potential was discussed with the Mayor, with various members of the City Council, with Civil Defense personnel for the city, and others involved in public safety.

Jack Watson, of the White House staff, was assigned by the President to "see that joint funding worked," and he took an interest in this project. However, although the 911 Center was established, the city's efforts seemed to be focused more on the establishment of the Center than in capitalizing on future funding.

The proposal was brought to the Interagency Committee on Emergency Medical Care in Washington and was discussed as the type of project needed to show that it was possible to get cooperation between agencies for the funding of programs that would be helpful to multiple programs.

The significance which the federal government attached to this project is shown by the following notes from a meeting of the December 13, 1978 Interagency Committee on Emergency Medical Services.

(Ed. note: The following comments were made by Dr. Boyd of DHEW, a representative from the Office of Management and Budget (OMB), and Captain Glass of DOT.)
"Okay, let's have a report on the joint funding of EMS Communication Projects Update.

"Let me give you an update, and others can comment on this. We started in this committee almost a year ago in November with a presentation by General Don Penterman on the Lincoln-Lancaster Combined Federal Funding Project, which probably you all recall, that

major discussion and a motion by Mr. Birchman (DOL), to send a memo from Dr. Lythcott to Jack Watson of the domestic council, talking about the virtues of combined federal funding for Emergency Medical Services Communications Project. And it was positively received by Jack Watson. Too, Eugene Idenberg [sic], who was then the Deputy Assistant for Intergovernmental Affairs.

"DHEW was then instructed to be the lead force to develop the plans. We had meetings with representatives from DHEW, DOT, Commerce in relation to LEAA, and the Department of Defense in terms of DCPA.

"A strategy was developed to take one, at least, model Emergency Medical Services program as funded by my office with FY 78 monies to try and use these as teaching models and examples of how to put a combined federal (joint funding) program together. Joe Amerol, a member of the Office of Management and Budget, was also at these meetings.

"The game plan at this time is to use as many of the elements of the OMB combined federal efforts as possible in this year's model programs, and I think there are seven.

"At least seven."

The Center was built and utilized by Lincoln.

CHANGES IN PRE-HOSPITAL SURVIVAL SINCE THE INCEPTION
OF THE EMS PROGRAM IN NEBRASKA

The only real justification for change is improvement, and there can be no question that EMS in Nebraska has improved.

Literally millions of dollars have been spent--some for ambulances, some for communication systems, some for EMS area offices and some for the training of EMT-A's, EMT-I's, EMT-II's and EMT-P's. The system is in place and is working. There have been few places where things fell apart after the federal funding terminated which shows good planning and real dedication on the part of the ambulance personnel.

The State currently has a statewide medical radio system. Nearly all of our ambulance attendants are trained to the national level. EMT-I and EMT-II people, as well as our Paramedics, are increasing in numbers across the State. There are in-place advanced training programs located in Omaha, Lincoln, Grand Island, Kearney, McCook and Scottsbluff. Each serves its surrounding area to provide training for on-going development.

Studies done by Dr. Joseph Ornato, Ed Craren, and Norman Nelson of the EMS Division of the Health Department over the period of time from 1969 to 1982 show a remarkable improvement in the survival of patients in the pre-hospital phase of care. Persons with cardiac arrest and fibrillation have shown a 62% decrease in death over the past 12 years. Likewise, trauma patient deaths in the pre-hospital phase of care have decreased 45% over the same period.

The time frame of this study begins before the development of the EMS system in our state. It pre-dates the advent of the 55 mph speed limit. The death rate for non-vehicular trauma has decreased on a parallel with deaths from motor vehicular trauma which could have no relation to highway speeds or design.

Does this mean that the 55 mph speed limit, the design of better highways, the use of driver education, the wearing of seat belts and all of the other preventative measures have not been important? We think they have helped. We do know that to have a decrease in the pre-hospital deaths when the number of accidents continues to rise and the injury indicies appear to be about the same, must reflect the dedication and the training of our pre-hospital personnel. We would ex-

pect preventative measures to reduce the number of injured or the extent of their injuries. This does not appear to be the case. Non-vehicular trauma deaths have come down on a parallel with vehicular trauma deaths in the pre-hospital phase. Improved interest of physicians, nurses and hospitals are important, but could have no impact on pre-hospital survival (with the possible exception of physician control).

We think these figures show how fortunate Nebraska has been and is to have so many unselfish and dedicated EMS people that give of their time and family life in order that everyone can have a better chance to survive and reach the hospital for more adequate care.

PEOPLE INVOLVED IN THE DEVELOPMENT OF THE CONSOLIDATED
COMMUNICATIONS SYSTEM IN NEBRASKA

ELVIN ADAMSON

A State Senator from the 43rd District who was involved with the introduction of LB 605.

VERNON ALLAN

Vice President and Commercial Manager of the United Telephone Company of the West in Scottsbluff. He was one of those involved in establishing NCCC.

GENE BIRDSALL

An original member of Project 20/20 Staff along with his wife Janet. Later he became the acting State Director of Telecommunications to assist in the establishment of the policies and procedures for the new state government activity.

BILL K. BLOOM

A State Senator from the 20th District who was an introducer of LB 605.

RICK BUDD

A State Senator from the 2nd District who was an introducer of LB 605.

GENE A. BUDIG, Ed.D.

A Special Assistant to the Governor for Federal Programs and Director of Public Affairs for the University of Nebraska System in Lincoln. Gene was one of the early supporters of the concept of an advanced communications system for the State.

DOUGLAS BEREUTER

Doug was the Director of Planning under Governor Tiemann and was the "father" of the Economic Development Areas for the State. He served on the Board of Project 20/20. He is currently the Nebraska Representative for the First Congressional District.

GEORGE CARLSON

He was active in the development of the communication plan and provided engineering and design input for the system. He visualized the possibilities and benefits of a Consolidated Communications System.

TERRY CARPENTER

A State Senator from the 48th District who was one of those introducing LB 605.

ROBERT CLARK

Senator Clark was a long time member of the Nebraska Legislature and served as Chairman of the Committee on Telecommunications.

GOVERNOR J. JAMES EXON

Governor of the State during the final period of the test phase of the communication system.

CARROLL FULLER

A communications salesman and consultant who worked with five of the six EMS Regions in the development of their communications systems. He originated some unique hardware to allow for more flexibility in the system operation.

GEORGE C. GERDES

A State Senator from the 49th District, Alliance. He was one of the introducers of the Telecommunications bill (LB 605) and worked closely with the Adjutant General in support of the Consolidated Communications System. He was a frequent visitor to Washington, D.C. and to NASA in support of the program.

ROGER GHORMLEY

Chief of planning for Lincoln Telephone and Telegraph Company. He was very active in the development of the system and the design of the Communication Centers. He assisted in the proposal to Dr. Golden of LEAA for the development of automatic number identification and worked with Orange County, California in the development of their system.

ED HAMILTON

The Chief Engineer of the Central Nebraska Public Power and Irrigation District in Holdrege.

W. H. HASEBROCK

A State Senator from the 18th District who was one of those introducing LB 605.

CALISTA COOPER HUGHES

A State Senator from the 1st District who was one of those introducing LB 605.

HUGH W. HUNT

Vice President and General Manager of the Hunt Telephone Properties, Blair. Active in NCCC.

LT. COLONEL BURL JOHNSON

A Lt. Colonel in the Nebraska National Guard who served as the Assistant Director for Civil Defense under General Welch. He worked closely with Dr. Lynn Thompson's Committee in the development of a medical radio network for the State.

EMMETT JUNGE

The Director of Public Safety for Lincoln. He assisted with the establishment of the 911 Center for Lincoln/Lancaster County, the first such Center in the nation.

ALBERT A. KJAR

A State Senator from the 39th District who was one of those introducing LB 605.

KENNETH F. KIMBALL, M.D.

A surgeon in Kearney who worked with Dr. Thompson and others in the State in the development of the medical communications network. He served on numerous of the communications task forces and committees.

RUDOLF C. KOKES

A State Senator from the 41st District who was involved with the introduction of LB 605.

MAURICE A. KREMER

A State Senator from the 34th District who was one of the introducers of LB 605.

COLONEL JAMES KRUGER

Superintendent of the Nebraska State Patrol. He served on the Board of Project 20/20 and was deeply involved in the development of the consolidated system and its use during the trial phase of the program.

FRAN LADEN

A National Guard officer involved in directing research and coordinating data on Project 20/20. He was active in the development of the Mid-America Corporation and served as its Acting Director.

CHARLES LATHEY

Mr. Lathey was an Assistant to the Director of Telecommunications Policy, in Washington, D.C. He was a frequent visitor to Nebraska and at one time was considered for the position of Director of Telecommunications for the State. He was to be on loan to the State for a two-year period to assist in the development of the consolidated system and to coordinate joint funding. He also was to work with the engineers from NASA in the evaluation of the system.

GUS LIESKE

He was Director of the Department of Administrative Services (DAS) under Governor Exon. He was very interested in the consolidated system and insisted that day-to-day telephone services be included in such a system since he visualized substantial savings for state government by this use.

ROLAND A. LUEDTKE

A State Senator from the 28th District who was one of those introducing LB 605.

DELMAR MAIER

An assistant to Mr. Lieske in DAS and an active proponent of the consolidation. (See his comments made in Washington, D.C. in Appendix C.)

RICHARD D. MARVEL

A State Senator from the 33rd District who was an introducer of LB 605.

JACK MC BRIDE

Jack has been Director of the Educational Television Network since its inception. He was active in the design of the State Telecommunications Building which was to be the "nerve center" for the Consolidated Communications System.

JAMES MC CORKEL

The communications officer for Region V Civil Defense in Denver. He was permanently assigned to Nebraska to assist in the planning, funding and implementation of the NCCC system.

GOVERNOR FRANK MORRISON

The Governor who recognized the need for a better system. He directed that studies be done and established by executive order a study committee. This led to the establishment of the Telecommunications Division and the hiring of the first Director.

RICHARD MULLICAN

An employee of Northwestern Bell in Omaha who worked closely with the development of the 911 Center in Omaha and with Dr. Thompson's Committee.

CAPTAIN HARVEY NASH

Director of Communications for the State Patrol who traveled extensively in the State and nationally to investigate the potential of consolidation.

DONALD NELSON

Director of the Office of Planning and Programing who worked closely in many of the aspects of the early development of the consolidated system.

EARL NELSON

President of the Hamilton County Telephone Company and one of the individuals primarily responsible for the formation of NCCC. He recognized the importance of Nebraska telephone companies providing improved service to the State.

JAY ORR

The General Manager of the General Telephone Co. of the Midwest in Columbus. He was active in NCCC.

DALE L. PAYNE

A State Senator from the 3rd District who was one of those to introduce LB 605.

BRIG. GENERAL DONALD G. PENTERMAN, (Ret.)

The Deputy Adjutant General of the State under General Lyle Welch. He was assigned the responsibility

for much of the early work on improving emergency response and developing the consolidated system.

He served as a communication consultant to DHEW and DOT.

ERIC RASMUSSEN

A State Senator from the 32nd District who was one of those introducing LB 605.

LESLIE ROBINSON

A State Senator from the 36th District who was one of the introducers of LB 605.

STEVE ROBINSON

Steve is the State Director of Telecommunications. He was involved with Project 20/20 and NCCC prior to his present position. Steve recognized the great potential for consolidation.

TYLER RYAN

This man was a Vice President of Lincoln Telephone and Telegraph Company. He was very helpful in the establishment of the test-bed consolidated system in the Lincoln and Omaha area. Like Earl Nelson, he was one of those most involved in the establishment of NCCC. He served as President of the U.S. Independent Telephone Association.

WILLIAM R. SKARDA JR.

A State Senator from the 7th District who was one of those introducing LB 605.

FRED STEINKAMP

The Sheriff of Gage County and active in many aspects of the system planning and development.

HAROLD B. STRYKER

A State Senator from the 23rd District who had a keen interest in communications. He was the lead name on LB 605 which established the Telecommunications system for the State. He traveled widely and spoke at many meetings on the value of such a system.

WILLIAM SWANSON

A State Senator who was the first Chairman of the Telecommunications Committee. He often spoke favorably

of the need for the telecommunications system.

GOVERNOR NORBERT TIEMANN

Under his administration the system was evaluated and plans were made for its expansion to include the entire State.

CLIFF THOMPSON

He was the owner of the Thedford Telephone Company and an engineer for the Hamilton Telephone Company. He was the first President of NCCC.

LYNN THOMPSON, M.D.

The "father" of the Nebraska Committee on Transportation and Communication of the Sick and Injured. Designer of the modern ambulance and later a Director of the Department of Health who served on the Project 20/20 Board.

J. JAMES WALDRON

A State Senator from the 42nd District who was one of the original introducers of LB 605.

JEROME WARNER

A State Senator from the 25th District who was one of those to introduce LB 605. He was a member of the Board of Directors of Project 20/20.

MAJ. GENERAL LYLE WELCH

The Adjutant General who was directed to evaluate the problems in emergency response by Governor Morrison and a strong supporter of the system. He was an outspoken supporter of the benefits for the State and National Civil Defense programs.

MAJOR DEL WHITEFOOT

Succeeded Captain Nash as Director of Communications for the State Patrol during the operation of the NCCC system as a test-bed.

THOMAS WOODS III

Lincoln Telephone and Telegraph Company President and involved in the establishment of NCCC. He was instrumental in promoting Lincoln community leadership interest in the EMS and 911 system.

CLAYTON YEUTTER

Assistant to Governor Tiemann and responsible to the Governor for the day-to-day activity of the new system. He was a speaker at the Telecommunications Workshop held for Midwestern Governors in Lincoln.

A FEW OF THE PEOPLE WHO HELPED MAKE EMS
WHAT IT IS IN NEBRASKA TODAY

There must have been literally thousands of people who worked to establish an Emergency Medical System in OUR state. We wish to identify some of these people.

Others who may have done just as much or more, we may have inadvertently overlooked. This is one of the hazards of trying to recognize outstanding workers. For any such oversight, the authors apologize.

GEORGE ARTERBURN

George was one of the very active First Aid Instructors in the State Fire Service who worked to see that training was available to firefighters across the State.

During the early years of EMS, much of the training was carried on by the Nebraska Fire Service under the direction of Wayne McLaughlin. George traveled many miles across the State and back providing classes in the many small communities where training was needed.

George was a firm believer in Red Cross First Aid and helped evolve a course of about 55 hours that was used in the classes.

He continued active in this teaching until cost required the movement of EMT training to the Community Colleges.

RUSSELL BRAUER, M.D.

Dr. Brauer, an anesthesiologist, was involved in the early day training provided by the University of Nebraska College of Medicine for the Immediate Care Course.

He made presentations at this course while a Resident at University and after the course was transferred to the Kellogg Center in Lincoln.

BILL BRENNAN

Station Manager of KSTF-TV and one of the early supporters of the Panhandle EMS Region. He served as Chairman of their Publicity Committee.

ANTHONY CARNAZZO, M.D.

Dr. Carnazzo was a surgeon who took his training at Creighton University and then stayed on in the Surgery Department where he worked for improvement of

trauma care in the Midlands Area.

He was instrumental in the organization of the Midlands EMS Council and served as its first President until his death.

He served as State Chairman of the Nebraska Committee on Trauma of the American College of Surgeons.

A training program for Paramedics was initiated by him at Creighton some two years prior to the passing of a state law allowing such practice.

He was a "Super Doc" for the DHEW region covering Missouri, Iowa, Kansas and Nebraska and worked closely with Dr. David Boyd, Director of the National EMS program.

He served on the State EMS Advisory Committee as a representative of Dr. Claude Organ.

Dr. Carnazzo was a member of the Board of Advanced Emergency Medical Care from its inception.

A special Paramedic Training award has been established by the Midlands EMS Council in his name.

JOE CARNAZZO

Joe, a younger brother of Dr. Carnazzo, was active in the early days of the Midlands EMS Council serving to provide staff support at Creighton University and later at the University of Nebraska College of Medicine when the two institutions were utilizing a foundation for providing cooperative efforts for the community.

TOM CARROLL

Mr. Carroll was the prime mover in establishing the Safety Council of Nebraska. From his office in Lincoln, he almost single handedly molded the work of the many volunteers into safety efforts.

He was active in the early days of Dr. Thompson's work with the Committee for the Medical Transportation and Communication of the Sick and Injured.

RON CARTER

Ron was the original EMS Manager for the Northern EMS Region of our state and served diligently in that position throughout the DHEW funding period.

He traveled many miles in his area working with the training of EMTs and in close cooperation with the local hospitals.

EMS was not a very popular activity in some of his communities especially where any federal money was

concerned. This tended to hold EMS back in northern Nebraska compared to other parts of the State.

Ron spoke well for the system, provided good local education, and helped to mold that area into a region that has now moved into Advanced EMT training. Ron resigned as the manager of the Northern EMS Region in 1981 and was succeeded by Richard Noyes.

DON CHANDLER

A member of the Ralston Fire Department and an active participant on Dr. Thompson's Committee.

REX COGDILL

Rex is the current Manager of the Central Nebraska Emergency Medical Services Region.

ED CRAREN

Mr. Craren joined the EMS Division of the State Department of Health in 1974. He had been active in the work of the Red Cross prior to that time.

He was later made the Assistant Director of the EMS Division.

Perhaps his greatest contribution to EMS was the work he did to coordinate CPR training between the Health Department, the American Red Cross and the Nebraska Division of the American Heart Association. Ed provided much of the training for state employees and was instrumental in providing staff support for their effort of providing training in CPR to one-third of the State's citizens over a five-year period.

He also worked closely with the EMS Division Director, Dr. Joseph Ornato, in research and publication of material on accident statistics and their impact on the citizens of the State.

Ed was responsible for two of the EMS areas during the days of DHEW funding for the State.

W. CLAYTON DAVIS, M.D.

Dr. Davis was the Chief of Surgery at the Omaha Veterans Hospital. He was on the staff of the University of Nebraska Hospital and on the EMS Committee of the Surgery Department there.

He was active in his support of the early training courses such as the Immediate Care Course, and worked closely in allowing the use of the VA television system for EMS training between Omaha, Lincoln and Grand

Island.

BOB DEBORD

Mr. DeBord joined the EMS Division of the State Health Department in 1974 where he worked until his retirement in 1983.

Bob was responsible for the training coordination as well as work with two of the EMS areas during some of this time.

JAMES "BUTCH" DOYLE

Butch was an instructor with the Nebraska Fire Service. Even though firemanship training was his field, he saw the need for communications between the firefighters and the ambulance people. Butch devoted his life to improving the welfare of his fellow Nebraskans. He was a gentleman.

LEE EHLERS

Mrs. Ehlers joined EMS work as the Manager of the Panhandle EMS Region in 1975 and continues to serve in this capacity today.

She helped to take a widely spread group of communities in the Panhandle area and mold them into a very cohesive group.

Scottsbluff, which serves as the medical center for that portion of the State, was fairly advanced in its EMS staffing, but good coordination between all of the Panhandle areas did not exist until Lee began her work in EMS.

Lee, like other EMS managers, worked hard to see that systems were evolved and cooperation obtained, and to defend the needs of her EMS region.

DEKE FARRINGTON, M.D.

Dr. Farrington, a national leader in EMS, was active in the evolution of EMS in Nebraska since both were evolving at about the same time. He visited the State on several occasions, provided input into its EMS early development and spoke on numerous occasions.

EUGENE FIELDS

Chief Fields was the man who put the Rescue Squad of the Omaha Fire Department on the map in the 1940s and 1950s as an excellent EMS responder.

He headed the Omaha Rescue Squad and was a hard

taskmaster who required the same dedication from his men as he did of himself. He would tolerate no foolishness on the part of his men and saw that they were totally professional.

One of his early observations was that there were more people being injured by the Fire Department Rescue Squads rushing through red lights at high speed than were being saved.

He ran a test where two units left the downtown fire station and headed for 72nd and Dodge. One was to drive as fast as it could with siren and red lights while the second was to obey all speed limits and stop signs. The second unit arrived less than two minutes later and everyone was convinced that high speeds and reckless driving were not needed in order to provide good emergency care.

He was later named Fire Chief for the City of Omaha and was succeeded on the Rescue Service by Captain Thiliander.

JOHN FREY

Mr. Frey, President of the Lincoln Foundation, has been most active on committees in Lincoln in their work on EMS and Medical Control but he also has been a true friend of EMS for the State.

He obtained support for statewide conferences in EMS and helped to establish a not-for-profit corporation on EMS to allow collection of funding from private sources that could be used to support some of those activities that might not be done by state or federal government funding.

He served on the State EMS Advisory Committee and provided quiet counsel in many matters.

RICHARD FRUEHLING, M.D.

Dr. Fruehling first became involved in EMS while in practice in St. Paul with Dr. M. D. Matthews. These two physicians established one of the first "mobile heart" groups in outstate Nebraska. By their single-handed effort, local ambulances were equipped with heart monitors and defibrillators and nurses were trained to ride the local ambulances.

He left practice in St. Paul and completed his training in Family Practice following which he took up residence in Grand Island.

Dr. Fruehling has worked closely with the Grand

Island Paramedic program and serves on the Board of Advanced Emergency Medical Care (Paramedic Board).

CARROLL FULLER

Mr. Fuller was a salesman for General Electric radio products who became interested early on in the EMS system.

He operated out of Grand Island but worked to help build, or served as a consultant to, five of the six EMS Regions of the State. He worked as a consultant to the Central EMS Region during the Robert Wood Johnson Grant. He helped in the design of the systems in the Panhandle EMS Region, the High Plains Region, the Southeast Region and the Northern Region.

Some of the modifications developed for use in the early days of EMS radio were the product of his shop and met the needs of the local communities when there were no off-the-shelf products available.

ROBERT GAREY

Mr. Garey was the representative of the Nebraska Funeral Directors Association. His home was in Hastings. He attended many of the early planning meetings in the days when most of the ambulance service was provided by the funeral directors.

GEORGE GERDES

Senator Gerdes was a farsighted State Legislator who came from Alliance. He had a keen interest in the development of EMS programs and traveled out of state on a number of occasions to support the need for an improved EMS system in the country as well as in Nebraska.

He worked to evolve the communication system and was a wise counsel for many of those involved in the early day EMS programs.

JACK GERMAN, M.D.

Dr. German was a surgeon who was attached to the Veterans Administration Hospital in Omaha and who served on the Surgery service of University Hospital.

He was frequently utilized for support in the EMS programs and played an active role in the teaching of ambulance attendants during those early days.

Dr. German was the medical consultant on the Sky-Aid program and was a member of the EMS Committee of

the Department of Surgery at the University of Nebraska
College of Medicine

ROBERT GILLESPIE, M.D.

Dr. Gillespie was a surgeon who took his training under Dr. M. M. Musselman while at Wayne County Hospital in Detroit.

He was one of the first active Chairmen of the Nebraska Committee on Trauma of the American College of Surgeons and then moved onto the national Trauma Committee itself. While serving as State Chairman, Dr. Gillespie conducted a statewide program to encourage immunization of all people. He was appointed as Chairman of the Committee on Trauma, American College of Surgeons and served in that capacity for two full terms.

Dr. Gillespie had a special interest in burns and was instrumental in the establishment of St Elizabeth Hospital in Lincoln as the Burn Center for the State.

He also served on the Commission on EMS of the American Medical Association and became President of that group.

HARRIS GRAVES, M.D.

Dr. Graves was a family practitioner in Omaha who was one of the first in the State to leave his practice and establish a group to provide full-time coverage in the Emergency Department at Methodist Hospital in Omaha and at Lincoln General Hospital in Lincoln.

He was active in the formation of the American College of Emergency Physicians in Nebraska and went on to become the National President of the ACEP group.

C. G. GROSS, M.D.

Dr. Gross was a family practitioner in Cambridge for some time with Dr. Ron Morgan before leaving for three years of surgical training. He had an active interest in EMS and worked as one of the leaders in the High Plains Region.

He taught one of the first EMT-A courses in the High Plains area and has been instrumental in their movement into the Advanced level of EMS care.

Dr. Gross is a member of the Board of Advanced Emergency Medical Care for the State.

PAUL HAITH

Mr. Haith became involved early on as a Project Coordinator of Operation Sky-Aid in 1969 and worked on the staff of Project 20/20.

In 1971, he moved to the EMS Division of the State Health Department and has remained active in that capacity since. He worked in many areas of state EMS but was most closely allied with the early days of communication development.

During a portion of his tenure, he was responsible for two of the six EMS Regions in the State.

As the man who has been within the EMS Division for the longest period of time, Paul is often called upon to identify why this or that happened. He works with the Board of Ambulance Advisors as staff support.

JOAN HEINZMAN

The advent of the Robert Wood Johnson grant to the Central EMS Region resulted in the sudden need to look at the status of their communications, what was needed to make a coordinated, workable system, and then to move such a system into being. As the Civil Defense Director for the Grand Island/Hall County area, Joan played a key role.

She supervised the establishment of the Communication Center in Grand Island, the central tie point for all EMS communication in the Central EMS Region. Although there were other Centers in Hastings, Kearney, Holdrege and Region 26, all tied into the Grand Island Center for their interconnect to the state telephone system.

GARY HENDERSON

Mr. Henderson was one of the Managers of the Central EMS Region. He succeeded Dorothy Lippincott.

Gary had an acute interest in training in the EMS field and was often involved in the day-to-day training programs that were carried on in the Central Region.

RANDY HIATT

Randy was employed by the EMS Division of the Department of Health during the early days of EMS in our state.

PAUL HODGSON, M.D.

Dr. Hodgson was a member of the surgical staff of the University of Nebraska College of Medicine and was involved in the presentation of the Immediate Care Course.

He succeeded Dr. M. M. Musselman as Chairman of the Surgery Department at the University and was a full supporter of EMS activity in the State.

CALISTA C. HUGHES

Mrs. Hughes, a former State Senator, became Director of the Office of Planning and Programming when that section was under the Governor of the State.

She was keenly aware of the part that good planning could play but was suspect by many who just "knew that planning was not very practical."

When her office was moved under the Director of the Department of Health, she was responsible for the study and eventual publication of the "Black Book" which is discussed in the chapter on Comprehensive Health Planning.

Many of the things we now all take for granted in a good EMS system were almost unheard of at the time they were proposed in her book on EMS planning.

ROD HUTT

Rod is a member of the Grant Rescue Service and was formerly in charge of the Office of Traffic Highway Safety in Lincoln.

LT. COLONEL BURL JOHNSON

Colonel Johnson, a member of the Adjutant General's Staff, was the Deputy Director of Civil Defense for the State.

He was involved early on in Dr. Thompson's Committee looking at improved communications for EMS work.

He also was one of those from the State who went on the second European trip to evaluate EMS in Europe and to see what systems might be helpful if used in this country.

JOEL JOHNSON, M.D.

Dr. Johnson was a surgeon who trained at the University of Nebraska, served in the Navy, and then returned to the University as a full-time staff person. He was one of the early supporters of EMS and managed

the Veterans Administration TV system programs that were conducted for the ambulance attendants in Nebraska.

He moved to Kearney where he practices surgery. He has been acutely involved as the Medical Director for the Central EMS Region and was a leader in the establishment of the helicopter ambulance service at Good Samaritan Hospital in Kearney.

He served as Chairman of the state Committee on Trauma of the American College of Surgeons and is currently a Region Chief for Missouri, Kansas, Iowa and Nebraska.

KENNETH F. KIMBALL, M.D.

Dr. Kimball has been active in EMS since the early 1960s. He was first involved with Dr. Thompson's Committee on Medical Transportation and Communication of the Sick and Injured. Shortly thereafter, he was asked to serve as a member of the National Academy of Science committee to define the medical criteria for ambulance design, then for the EMT-A training program and for the Paramedic training program.

He served as the State Chairman of the Committee on Trauma of the American College of Surgeons and was later a member of the national Committee on Trauma of the American College of Surgeons. He served one term as Vice Chairman of that group.

Dr. Kimball was appointed by President Ford to serve as one of five public members on the Interagency Committee on Emergency Medical Services in Washington, D.C.

He was an early member of the Board of the National Registry of Emergency Technicians and served two terms as its Chairman.

He served for four years as the Director of the EMS Division of the State Department of Health under Dr. Henry Smith.

He has been a member of the Central EMS Region Board at different times, a position which he currently holds.

Dr. Kimball has worked on numerous committees of the State in EMS work and has been a member of the Board of Advanced Emergency Care since its inception. An annual State EMS Award has been established in his name.

O. C. KREYMBORG. M.D.

Dr. Kreymborg was a family practitioner in North Platte who worked as an early Medical Director for the North Platte Fire Department.

He was involved in day-to-day training as well as in the organization of the High Plains EMS Region. He had a close working relationship with the fire services and was known and respected by many.

BOB LARSEN

Chief of the Gering Fire Department Rescue Squad and current Transportation Committee Chairman of the Panhandle EMS Region, Bob has been a long time supporter of EMS in the Panhandle.

JIM LAWSON

Jim is with the Sheriff's Department at Scottsbluff, has been involved in EMS for over 10 years, and is currently in charge of teaching communication.

RICHARD LEWIS

Senator Lewis chaired the Public Health and Welfare Committee of the Nebraska Legislature for a number of years.

He had a keen interest in EMS and was one of the early supporters of legislation to insure that our ambulance personnel had adequate training. He saw the development of the state's first EMS law, worked on the Paramedic legislation, and was widely respected for his knowledge about EMS and his fairness in dealing with all segments of the EMS system.

He has been and remains active on the High Plains EMS Council.

DOROTHY LIPPINCOTT

Mrs. Lippincott was the Communications Director for Region 26 in Taylor. When the Robert Wood Johnson grant was made to the Central EMS Region, Ward Schrack asked Region 26 to allow Dorothy to come to Kearney on a temporary basis to help get the communications project off the ground.

After a short period of time, it became obvious that her expertise was needed on a permanent basis and arrangements were made for her move to Kearney.

She served as the Central EMS Manager through that period and into the DHEW funding of 1203 grants.

M. D. MATTHEWS, M.D.

Dr. Matthews is a physician in family practice in St. Paul who, along with Dr. Fruehling, established the early day EMS "heart team" in that community.

Since Dr. Fruehling left St. Paul, Dr. Matthews has continued an active interest in EMS for the community working closely with the Central EMS Council.

ED MC VAY

Ed has been a long time EMS supporter. He is a Funeral Director in Gothenburg.

E. A. MC QUIDDY, M.D.

Dr. McQuiddy was an early day Medical Officer for the Omaha Fire Department. He worked closely with Chief Fields when Mr. Fields was Director of the Omaha Rescue Squads.

LYNN MC QUIDDY, M.D.

Dr. McQuiddy, son of E.A. McQuiddy, also served as the physician for the Omaha Fire Department and was instrumental in the involvement of the University of Nebraska College of Medicine in its Immediate Care Course.

DAVE MC LAUGHLIN

Dave was the first Director of the Office of Traffic Highway Safety for the State. He worked closely with the EMS Division in the early day funding of ambulances, communication and training for EMS and was a quiet but strong supporter of improved care on our highways. It was with his cooperation that Nebraska began its move into a Total EMS System.

RICHARD MEYER

Dick was the Director of the EMS Division of the Department of Health from 1975 to 1977. He was a strong supporter of EMS for the State.

MARTY MILLER

He established Eastern Ambulance Service in Lincoln which provides Lincoln/Lancaster County with ambulance service on a contract basis.

M. M. "JIM" MUSSELMAN, M.D.

Dr. Musselman has had a major impact on EMS in our state. In his position as Chief of Surgery at the University of Nebraska College of Medicine, he was acutely involved in the training of a number of surgeons who later became well known for their efforts in Emergency Medical Services.

He was responsible for the development and annual presentation of the Immediate Care of the Sick and Injured course.

He provided counsel and wisdom to many persons both in Omaha and in outstate Nebraska when EMS was in its infancy.

He has served on the national Committee on Trauma of the American College of Surgeons.

GEORGE NOTTHELFER

Mr. Notthelfer was the first Director of the Omaha Safety Council and was involved from the beginning with Dr. Thompson's Committee to improved transportation and communication for the sick and injured.

He served in Omaha, as Tom Carroll had in Lincoln, to provide the tie between the medical personnel and the general public whose support and understanding were so acutely needed.

JEANIE O'BRIEN, R.N., EMT-Paramedic

Jeanie was brought in to work for the Omaha Fire Department at the time it was realized a problem existed in the training of their personnel--training which had occurred before certain standards were enacted into law by the Legislature. She supervised the upgrading of their clinical experience and practical skills so that they were able to pass the state examination and go into service. She continues as a supervisor for the Omaha service.

JAMES O'BRIEN

One of the major supporters of the Panhandle EMS program from Kimball, he was recognized as the EMS Person of the Year in 1984. He has served as President of the Panhandle EMS Council.

DIANA OHLERKRING (BELIK)

Diana is a secretary in the EMS Division who was keenly appreciated by anyone having need of information

from that division.

Her filing system was without peer, and regardless of what paper or bit of information was needed, Diana could pull it up from memory or find it in a file in short order.

BOB OLSON

Mr. Olson has been involved with the Papillion Rescue Service for some 20 years. He was among the first Paramedics trained in Nebraska and was in the first class conducted for Paramedics at Creighton.

His unit worked closely with Dr. Stratbucker on the use of vital function telemetry between ambulance and computer.

Bob has served on the Board of Ambulance Advisors and is currently a Paramedic member of the Board of Advanced Emergency Medical Care.

JOE OWEN, PH.D.

Dr. Owen was the Section Chief of EMS for the United States Public Health Service in Washington, D.C. He was one of the first to identify the need to promote a sharing of information. (EMS funding was unknown in those days except for small grants that could be made from year-to-year.)

He was instrumental in getting Dr. Kimball to visit Europe in 1967 in an effort to identify concepts that were then in use that might be applicable in this country. He likewise put together a second team from Nebraska to return to areas specifically identified as worthwhile for a more in-depth study expanding that visit to include a look inside the Iron Curtain.

BEVERLY K. PARKER

Mrs. Parker is the current Manager of the Midlands EMS Region. She assumed that position in 1979.

She has worked diligently with the various groups to form a cohesive unit. Omaha undoubtedly had the biggest problem in establishing a workable EMS system because of the presence of two medical schools, numerous hospitals, and many different groups of physicians. Such a diversity of interests always makes changes hard and without expert handling it is easy to end up with hurt feelings.

BRIG. GENERAL DONALD G. PENTERMAN (RET.)

General Penterman was the Deputy Adjutant General of Nebraska when EMS was born. He had been specifically asked by the Adjutant General and the Governor to look into our problems in disaster management. He was well into the identification of communication needs as the major obstacle in emergency response. As such, he became involved in early day EMS studies and planning.

He had been in the Medical Corps during active duty and has continued to maintain an active interest in this area.

His interest in communication attracted national attention as a consolidated communications system was planned for the State on which could ride the EMS communications system. This was a national first, and many of the concepts were unheard of prior to his involvement. Such concepts as the ability to interconnect different radio systems at a Central Command Center and the use of phone patches allowed, for the first time, a total useful system without duplication.

He was invited to serve on the Robert Wood Johnson Committee involved in the evaluation of their EMS grants; he was a close confidant of Dr. Dave Boyd of DHEW; he worked with DOT as a consultant in their approach to the EMS communications; and he was the project director for numerous contracts between the State and the Federal government (such as Project 20/20 and Sky-Aid). He served on the EMS Committee of the National Academy of Science, National Research Council. He later served as a consultant to Dr. Kimball at the EMS Division of the State and was a Special Assistant to the Chancellor of the Medical Center in Omaha.

He has the ability to visualize new and different concepts and has given freely of his time and expertise for the past 25 years.

WILLIAM C. PETERS

Mr. Peters is an attorney who has long been active in the EMS work in the Panhandle EMS Region. He was a founding member of that council and continues to be active.

He has been a member of the Board of Advanced Emergency Medical Care since its inception and his advice in legal matters, as well as basic good sense, has been much appreciated.

LEONARD PETERSON

Leonard has been an active member of the Ralston Fire Department Rescue Squad for many years and has been active on numerous EMS committees.

JOHN PORTER, M.D.

Dr. Porter is a surgeon in Beatrice. He received his training at the University of Nebraska College of Medicine in Omaha and was active in the early training programs on Immediate Care of the Sick and Injured both in Omaha and then after the program had been moved to Lincoln.

STEVE ROBINSON

Mr. Robinson, as Director of Telecommunications for Nebraska, has been directly involved in the development, licensing and operation of the EMS communications system.

TOM RYAN

Much of the early data on accidents, location, or severity was available only because of the work of Mr. Ryan.

As the man within the Department of Roads who maintained these statistics, his help was invaluable in looking at needs as well as improvements associated with the system.

JOHN SAHS

Mr. Saha first worked in EMS with Project 20/20. Following this activity he joined the Health Planning Group within the Health Department.

CARL SASSE JR., M.D.

Dr. Sasse, an Omaha surgeon, was primarily responsible for the development of the AmBuCare training that was developed under Project 20/20 for ambulance attendants.

National studies had identified that First Aid was not designed for active care that might be provided by ambulance personnel and no other course was available. Dr. Sasse, a volunteer in the Surgery Department at the University Hospital coordinated the development and the curriculum for such a course and supervised the instruction of ambulance attendants in the two test areas.

ROLLIN D. SCHNIEDER, M.S.

Mr. Schnieder is perhaps the best known expert in the United States regarding farm emergencies from the standpoint of both prevention and management.

He is an extension safety specialist with the University of Nebraska in Lincoln and has had an active interest in farm safety for many years.

His best known efforts were the demonstrations he put on during Ag Days at Mead where tractors could be over-turned or prevented from over-turning by proper use of the remote controls installed on such units. This interest in safety expanded to include such items as power takeoff accidents, silo suffocation and the proper management of such accidents.

Rollie was among the original group who met to form the Committee on Medical Transportation and Communication of the Sick and Injured. He was involved in the first Immediate Care Courses and maintains a close watch on all farm accident statistics.

He has been asked to write a new chapter on farm accidents for the next addition of the American Academy of Orthopedic Surgeons' EMT text.

He is in constant demand for talks and demonstrations across the State on these important subjects.

His reputation has spread far beyond our state and he currently travels extensively outside Nebraska for training programs.

WARD SCHRACK

Mr. Schrack was the first Chairman of the Central EMS Council when the Robert Wood Johnson grant was received. He was a prime mover in getting the area organized and getting the project underway.

He has had a keen interest in health matters and a special interest and knowledge in EMS. He recently served as EMS Director for the area during a hiatus in management prior to the hiring of Rex Cogdill.

Ward's broad knowledge of EMS, his familiarity with persons in the health care field, and his dedication to his work has made him one of the real giants of EMS in the Central Region.

LEO SCHWARTZ

Mr. Schwartz was born in Sargent. He entered the Marine Corps where he served with distinction. Following his retirement from service, he became the Chief of

EMS for the Department of Transportation. He maintained an acute interest in what was happening in the nation and had the ability to spread his interest in both urban and rural communities.

He was involved at the Washington level in many of the grants and projects which DOT had with Nebraska and was the instigator of the trip to bring 20 or more people with communications interests to Nebraska for a view of EMS in rural America.

Mr. Schwartz retired this past year.

(See the chapter on the Visit of National DOT Personnel to Nebraska.)

SAM SEELEY, M.D.

Dr. Seeley was born in Palmer and was a physician in the Army who rose to the rank of Brig. General. He first served in the Physician Assignment Office under Dr. Lahey of Boston and later was a Commanding Officer in the European theater.

He edited the Emergency War Surgery book for NATO in 1956 and was instrumental in having this reprinted into many languages including those of enemy nations so that, in the event of another war, our soldiers who were captured would hopefully receive adequate care.

Dr. Seeley returned to Washington, D.C. where he became the Professional Associate at the National Academy of Science, National Research Council. The early work on EMS dealing with ambulance design, EMT training and Paramedic training were both carried out under his superb guidance and direction.

Dr. Seeley, now retired, lives in Washington, D.C.

ROY SHEAFF

Roy was the owner of Umberger Funeral Home in Lincoln and an active member of early day EMS committees.

HENRY SMITH, M.D., M.P.H.

Dr. Smith became Director of the Department of Health during the time that major funding was evolving for EMS.

Much planning for EMS had occurred under one of his predecessors and there was much active interest throughout the State but little had actually been done in the way of building the system.

Dr. Smith aggressively pursued federal funding for the State, encouraged local councils to be formed and

to function, and projected the State EMS Office into the training and communications development.

He was responsible for hiring a physician director for the EMS Division and provided his personal support to this office.

ROBERT STRATBUCKER, M.D.

Dr. Stratbucker was a physician with special interest in electronics or an electrical engineer with special interest in medicine.

He worked with the Department of Physiology and was an internist at the University Hospital.

During the days of Project 20/20, he became interested in the possibility of using a computer to monitor telemetry. It was his concept that if a computer could be programed to review a heart tracing (EKG) as it was received and determine whether it was normal or not, it would allow for rapid EKG interpretation in rural areas where an internist might not be available.

He further reasoned that this computer might be able to feed back to the physician a series of questions or suggestions for determining the management of that patient.

The radio system frequencies in use for EMS at that time were marginal to poor, and skip and interference were common. So much so, that a reliable signal could not be obtained and the study was terminated.

HAROLD B. STRYKER

Senator Stryker was another of the State Legislators who believed in a good EMS system and did all that he could to support it. He understood the concept of a good communications system and, like Senator Gerdes, was available for visits to other parts of the country to look at improved systems for our state.

LARRY SURBER

Mr. Surber was the first Manager for the High Plains Region of the State. He was appointed to that position in 1976 and continues to provide guidance and leadership at this time.

Larry, like other managers in rural Nebraska, has been faced with sparse population, short funding, and no single hospital within his region that has full-time physicians available in their Emergency Department on a 24-hour-a-day basis.

LYNN W. THOMPSON, M.D.

Dr. Thompson was an anesthesiologist in Omaha who had a keen interest in EMS and in radio. Like so many others, he was impressed that patient care rarely was begun until the patient reached the hospital. The ambulance units in existence were not made to allow access to the patient during transport, and the medical community expressed little interest in working to upgrade the ambulance personnel.

Dr. Thompson contacted Rader Hale of the Ford Motor Company in Michigan and explained that he would like to take a van type vehicle and modify it into a model ambulance. This was done and the vehicle was used in various areas of the State on a trial basis.

He also formed a group known as the Committee on the Medical Transportation and Communication of the Sick and Injured. This brought together a group from across the State (although at first it was largely made up of people from Omaha and Lincoln) to look at needs in EMS.

He worked with Dr. Joe Owen of the USPHS to see if he could stimulate their interest in EMS.

He was one of those sent by the USPHS to look at EMS in Europe.

He became the Director of the Department of Health for the State.

He served on a committee of the National Academy of Science.

Dr. Thompson is retired and lives in Little Rock, Arkansas.

CAPTAIN THILIANDER

Captain Thiliander succeeded Eugene Fields as the officer in charge of the Omaha Rescue Squad. He was equally dedicated to the operation of a first class service and was supported by Mr. Fields, then the Chief of the Omaha Fire Department.

JAY W. UPRIGHT, Ed.D.

Dr. Upright was another of the key movers in the EMS development in Nebraska. He was the first Director of the Lincoln Medical Education Foundation and was the man responsible for much of the stress on education that evolved into the teaching of ACLS, ATLS, and other such programs.

He was acutely involved in the development of the Southeast EMS Region since the early contracts were to LMEF for program development. His wife, Jody, was the Manager for the Region, and he had worked closely with the Department of Health and thus had the confidence of many of the people involved at the state level.

All who knew Jay were impressed with his knowledge and understanding of system development as well as EMS needs.

JODY UPRIGHT, R.N.

Jody was the first Manager of the Southeast EMS Region. She had worked with the Bryan Heart Team and moved naturally into this important position.

She obviously had a thorough understanding of the systems involved in EMS and of the ways to work with the people.

She remained with the Southeast EMS through the end of the federal funding. She insisted that the area not move ahead more rapidly than it could evolve its Medical Control system.

She accomplished categorization of the three Lincoln hospitals as well as of some of those in the region. A number of various centers were identified including a Trauma Center, a Burn Center, a Neonatal Center and a Heart Center.

When Lincoln/Lancaster County were ready to move on with Medical Control, Jody left the EMS manager's position and took on the responsibility for coordination of the Medical Control program.

She has now moved on to more challenges by entering law school.

CHIEF VAN SCOY

Chief Van Scoy was the Chief of the Omaha Fire Department during the time of the development of the EMS system for the Midlands Region.

He was a strong supporter of EMS and had the desire that all of his firefighters be trained in emergency care.

He served briefly as the Manager of the Midlands EMS Region.

JERRY WARFIELD

Jerry was with the telephone company and a strong supporter of EMS in the Panhandle Region. He has been

Chairman of the Panhandle EMS Council.

ASSISTANT CHIEF BOB WARSOCKI

Mr. Warsocki was the Assistant Fire Chief in Omaha with the responsibility for the Rescue Service. He worked under Chief Van Scoy to develop a coordinated system for Omaha. Mutual Aid agreements were confirmed with the surrounding areas and as the concept of First Responder came into popular use, men on the Engine units were trained and routinely dispatched on all calls. Likewise, Paramedic teams were trained and were among the first units on the street.

Some difficulty was had when the Paramedic system was first installed since nearly all of the men had been trained some two years before a state law was passed which allowed them to function. This time lapse resulted in their needing substantial retraining before they could be licensed for service.

Bob is presently Chairman of the Ambulance Board.

MAJ. GENERAL LYLE WELCH

General Welch was the Adjutant General for the State at the time Governor Morrison directed him to take an in-depth look at problems in disaster response.

This was assigned to his Deputy, General Penterman, and the studies were supported by General Welch.

CLAYTON YEUTTER, PH.D.

Dr. Yeutter was an Assistant to Governor Tiemann who followed the EMS development and the communication concept very closely.

He was well informed on these subjects, was easily available for discussions, and made one of the major presentations at the Mid-West Telecommunications Conference in Lincoln dealing with a system which supported EMS communications as one of its functions.

APPENDIX A

Persons and groups who helped Dr. Lynn Thompson in his
initial study of the ambulance services in Nebraska

University of Nebraska College of Medicine faculty

Merle M. Musselman, M.D.,
Professor and Chairman, Department of Surgery
Robert W. Gillespie, M.D., Instructor,
Department of Surgery
William R. Hamsa Jr., M.D., Instructor,
Orthopedic Surgery
Jack K. Lewis, M.D., Instructor,
Internal Medicine
Edwin F. Ross, M.A., Administrator,
University Hospital
William F. Roth Jr., M.D.,
Professor of Neurology and Psychiatry
Carl W. Sasse Jr., M.D., Instructor,
Department of Surgery
James R. Scott-Miller, M.D., Instructor,
Orthopedic Surgery

University of Nebraska College of Agriculture faculty

Rollin D. Schnieder, M.S.,
Safety Extension Specialist

American Red Cross
Ford Motor Company
Kendall Company, Bauer and Black Division
Meredith WOW, Inc.
Nebraska Chapter, Committee on Trauma,
American College of Surgeons
Nebraska Game, Forestation and Parks Commission
Nebraska National Guard
Nebraska Safety Council
Nebraska Safety Patrol
Nebraska Department of Education
Nebraska Department of Health
Nebraska Funeral Directors Association
Nebraska State Hospital Association
Nebraska State Medical Association
Nebraska State Volunteer Firemen's Association
Northwestern Bell Telephone Company
Omaha Fire Department
Omaha Safety Council
United States Public Health Service

APPENDIX B

The Professional Staff in the EMS Division of the
Nebraska Department of Health

Milton Parker, Director.....1968-1974
Boyd Sankey.....1969-1975
Dennis Hammer.....1969-1973
Paul Haith.....1971-Present
Dick McCullum.....1973
Randy Hiatt.....1973-1974
Tom Adams, Director.....1974-1977
Ed Craren.....1974-Present
Bob DeBord.....1974-1983
Brian Klein.....1974
Dick Meyer, Director.....1975-1977
Ken Wall.....1976
Kenneth F. Kimball, M.D., Director.....1977-1980
Betty Steele.....1978
Joseph Ornato, M.D., Director.....1981-1984
Bob Leopold, Director.....1984-Present

APPENDIX C

A CONSOLIDATED COMMUNICATIONS SYSTEM

The following presentation was made by Delmar Maier, Director, General Services Division, Department of Administrative Services for Nebraska to the United States Department of Commerce, Office of Telecommunications on July 20-21, 1972 in the Washington Hotel, Washington, D.C.:

INTRODUCTION

I am pleased to have the opportunity to briefly express my views regarding this important topic.

If you did not come to this conference with a feeling of the urgency for finding solutions to the growing demands for State Government Telecommunications, and for the complexity of the topic, I feel sure you will soon grasp the magnitude of the subject along with the far reaching impacts facing us if we fail to solve this rapidly growing intergovernmental problem. I refer, of course, to the problem facing State Governments, as the middle man of government, in their attempts to capture the economies and benefits offered by modern telecommunications.

In the opinion of many, and I am sure you will agree, it is of immediate and grave concern because it affects the day-to-day working patterns of every segment of our government services--patterns which are presenting "growing cost demands" with each passing day.

We note with interest that the January 1972 Report to Congress on Disaster Preparedness, compiled by the U.S. Office of Emergency Preparedness, in Volume 2, Section 14, on the topic of communication reads in part as follows:

Communications: The subject of this section is a critical one. The need for emergency communications could contribute to the feasibility of a State, or States and the Federal government, developing or expanding an interrelated communication networks, as exemplified in Nebraska.

The Nebraska Legislative Act of 1967 which established the Telecommunications Bureau, in the Department of Administrative Services - recognized that emergency communications were of vital importance. The first lines

in the defined purpose of the State Act carry this language:

"The Legislature hereby declares that an efficient and reliable telecommunications system is vital to the security and welfare of the State during times of emergency and in the conduct of regular business of the State and that substantial economies can be affected by joint use of a consolidated telecommunication system by departments, agencies and subdivisions of State government."

The two documents I mentioned, the Report to the Congress early this year and the Nebraska Legislative Act of 1967, are but indicators of the progress being made in Nebraska for reason of long time effort. For over a decade there have been some few people, and this very fortunately for our State, that have had a very comprehensive understanding and great foresight for the future communication needs of the State. Not just the needs for more lines to handle more calls. Not just the needs for some radios for a specific agency. Not just more base station power to reach more distance. Not just the needs of Civil Defense to be able to act in case of emergencies. These people envisioned a beautiful vine, in some fashion encircling the entire State, with the ability of this vine to satisfy the total needs of each of its branches (agencies), and the branches utilizing this vine for effective, independent and/or interrelated action with any other branch. Obviously, the first objective was to give this vision roots.

Under the direction of the Governor in 1965, a historic effort was implemented to make a complete study of communications in the State, for the express purpose of determining not only "what did communications in Nebraska State Government consist of, but more objectively, where was it headed." The question that needed an answer was - what are the needs of State Government in the future, and how can these needs best be met.

The main thrust of this effort is defined in a very complete study made by a consulting firm from outside Nebraska. The conclusion of this study was a recommendation for a statewide communications network, with revolutionary changes to take advantage of the many rapid developments in new communications technol-

ogy, and to have the capability to accommodate the present and projected needs of all agencies of State government, as well as other political subdivisions.

A search of the market place made it apparent that there were few, if any, companies in existence who were, because of tariff and/or other precedent setting policies, capable of satisfying the needs of an integrated telecommunications network which the State of Nebraska desired to implement.

Because of this void, a large segment of the independent telephone industry in the State formed a corporation for the express purpose of satisfying this need. This decision and the accomplishments of the company involved have opened a new era in our State communications. It cannot go without saying that the "AUDACITY" of this group with its new corporation, breaking down traditional barriers of the past with its long established single source, providing services below the costs of those previously unquestionable tariffs, there had to be, and there were, and there have been all along the line, repercussions - MILD - TEMPERED - SHOCKING.

Progress has been questioned. Capabilities have been questioned. The future has been questioned. Quite obviously, these were all attempts to discredit and possibly destroy the future of what is believed by many to be an enviable position in which the State of Nebraska finds itself today. Don't allow me to mislead you, however, into thinking that we have answers for all problems. We will still face many new problems which had never been faced before. Of course, we all know this is nothing new, since any type of new installation needs and requires a settle in burn time. We even faced those "WILLFUL" problems--willfully designed to impede progress. In late August, a few weeks from now, we will open the responses to our invitation to bid on specifications for a total consolidated statewide system. I know today, as I knew a year ago when we were preparing our specifications, that there would be many more new problems that would need to be solved to truly have the type of system we know we need and is possible today. We believe in the turtle adage, you cannot progress unless your neck is stuck out.

Getting back to the roots of the vine for just a moment. The Governor established a communications focal point, which busied itself with the gathering of data,

following up on the consultant study, and outlining the objectives necessary to be accomplished to begin implementation of the findings of the study. In 1967, Legislation was passed, which established the Telecommunications Division, with definition of its purpose, authorizing a director and establishing his authority and responsibility. I would just like to say that I believe the statutes which we have in Nebraska are very clear, concise, and direct in nature, pertaining to all agencies and for comprehensiveness this is probably the best piece of Legislation I personally work with. We do have copies of our statutes prepared for those who have a desire for them.

This Legislation finally gave foundation to this tender group of energetic people, and gave them the spectrum necessary to project their vision into a set of specifications, which became a reality late in 1969 when a test-bed of the consolidated system, covering approximately 20% of Nebraska, was turned down. That was when the problems began, but that was also when the real progress began. In 1970, both the U.S. Office of Civil Defense and the State of Nebraska accepted the system as operational, and as meeting the specifications. We now know that it did more than just meet the specifications in its total configuration; it can meet the total needs of all levels of government within the STATE, providing an integrated system to accept, interrelate and interconnect all types of telecommunications.

With the wealth of experience and information, gained from this test-bed, work began towards the preparation of specifications for a statewide system. After initial preparation and pre-bid meeting with all possible vendors, requests for bids went out about five months ago. They are due as I mentioned previously in August this year.

I have been asked to present to this conference a view of our state actions and developments which have occurred while moving towards a statewide consolidated telecommunication system. I was asked to present a view covering development, operation, maintenance, management and benefits. With the aid of overhead projection charts--I will attempt to do this. Before I do, however, let me again emphasize that I believe this topic to be one of the most urgent facing State Government. The potential for economy in meeting the de-

mands for more and better service is beyond imagination.

Technical design is not the problem. Technology is far ahead of system organization. Equipment reliability is here. The organization of reliable systems, to use this equipment, is now a must. Savings of millions of dollars in property and thousands in human life are involved.

Secondly, I would like to thank the many Federal agencies that have assisted us to come this far, with some success, in this very complex task. The agencies which have been involved are really too numerous to take time for individual identification.

With special thanks, however, I note FCC, Civil Defense, OEP and the National Academy of Science. Charles Lathey, of the Department of Commerce, assisting in this conference, has been of immeasurable help to Nebraska over the past years.

SECTION I - CONSOLIDATED SYSTEM DEVELOPMENT
A CAPSULE VIEW OF THE STATE GOVERNMENT
COMMITTEE REPORT OF 1965

WHY STUDY CREATED

1960 through 1964 natural disasters created major havoc in 121 counties (some counties being hit repeatedly). A joint State Agency meeting held in late 1964 to evaluate the past four years disaster assistance operations found that, though the state was blessed with six major separate state-owned two-way radio networks and full coverage of telephone, along with public radio and television, communications climbed immediately into place as the major weakness.

STUDY COMMITTEE APPOINTED AND DIRECTION GIVEN

By Governor Morrison, March 17, 1965.

Supported by Legislative Resolution Number 37,

April 27, 1965, 75th Session.

Funding and Legislative direction given by LB 922,
75th Session.

Federal assistance, direction and matching funds
provided by Department of Defense,
Office of Civil Defense.

Special National Reference - Chapter 7,

Telecommunications, The National Plan
for Emergency Preparedness - Executive
Office of the President.

PURPOSE

To determine feasibility of consolidating existing state radio networks into a consolidated system for more efficient emergency use, while retaining the independence of State Agency day-to-day requirements. If found feasible, to develop the design for a consolidated system projected to include 10 year future requirements.

FINDINGS

Six extensive radio systems are now owned and operated by the State--major deficiencies exist--major expansions proposed.

A detailed agency by agency survey of use of electronic means communications (telephone, radio, teletype, facsimile, telemetry, etc.) for an average month revealed that only 10% of intrastate contacts were made by telephone.

One year (1965) expenditures by type of service:

Telephone (toll only)	\$258,887
Radio	491,926
Teletypewriter	40,951
Telemetry	600
TV Picture	509,120
1965 Total	<u>\$1,295,484</u>

Major duplication exists in present state-owned and operated communication systems with as many as five separate antenna towers now existing in the same general location. The separate State agencies now maintain 94 separate antenna towers with plans for increase to 119. The proposed design requires only 64 to blanket the State with full spectrum communications included.

Considerably more service and many new means of modern telecommunications could be immediately obtained by multi-agency use of existing systems and the integration of present expenditures.

<u>Equipment in Use.</u>	
Telephones	4,254
Radio Base Stations	343
Radios - 2-way	1,775
Teletype	33
Television	13
Telemetry	16

CONCLUSIONS

Consolidation of existing state-owned networks is not only feasible but highly desirable for reasons of emergency need, economy and utilization of plant capability - definite savings will result.

Standardization of procedures is essential if realistic, effective emergency assistance is to be provided.

It can be expected that a convenient, efficient communications system will influence the business system of every department. The conduct of day-to-day business or handling of responsibilities will change toward more efficiency. Many sideline benefits and by-product savings can be expected.

No city or county need be an island alone in disaster if emergency communication ties are provided; county sheriffs, police, ambulance, and hospital communication networks can have broader capability.

The State now has 5 million dollars of state-owned plant and end-of-line equipment, in addition to contracted or leased long line service and equipment. This is presently operated and maintained by several agencies.

The recommended consolidated network, as presently engineered and designed, presents an opportunity for private enterprise to perform the full task of providing State Government communications. Primary considerations for this decision are:

- (1) obtain maximum use of existing state-owned facilities,
- (2) substantial assurance of service during periods of labor or private industry disputes,
- (3) assurance that the State can realize economies of bulk service created by consolidation and circuitry sharing, as well as possible future expansion,

- (4) provide the system now designed for national natural disaster protection, with provisions for service redundancy.

Consolidation will allow major savings from continued individual network development...large expenditures are not necessary - only coordinated use of present expenditures.

SPECIFIC RECOMMENDATIONS

- That the State Legislature provide for centralized assistance, direction and authority for obtaining service in this vital, highly technical, rapidly developing field.
- That a State telecommunications policy and decision board be established consisting of the heads of state agencies having broad requirements for statewide communications.
- That a position of State Director of Telecommunications be established.

COMMENTS

- It is possible to suck the present clutter into an efficient communications pipeline, economically operated to serve both emergency and normal government agency needs while retaining agency independence.
- If we postpone this urgent work now, it will have to be done later and then will be more expensive.

LEGISLATIVE ACTION

In 1967, Legislative Act LB 605 directed the establishment of a State Telecommunication System, the position of State Director of Telecommunications and a State Telecommunications Advisory Board composed of certain Agency Heads.

SYSTEM TEST-BED ESTABLISHMENT

Because of many complexities and system design concerns being exposed in attempting to consolidate the six state systems, it was decided to take two areas of state and establish a Test-Bed Consolidated System in order to work out the problems of hardware and stand-

ardization of procedures. By doing this to gain the necessary experience as well as prove that a consolidated system was actually economical and practical; this was started in 1968 and became fully operational in 1970 providing a central operations center in two areas, each serving 12 counties in Central and South-eastern Nebraska.

EACH AREA CONTROL AND SWITCHING CENTER PROVIDED

Cross-talk capability between radio frequencies.
Radio to telephone interconnections.
Full monitor or control capability of all agency radio calls in the area when required in emergency.
Base station individual or "all-call" capability to all radio equipped mobiles, for five state agencies along with local law enforcement and medical services.
Capability of net control transfer from one area to the other during any period of low traffic.
Connections to commercial or public telephone service.
Full flexibility for circuitry alignment by area or transfer of control to State Center as determined by separate agency for desired method of day-to-day operations.

MOBILE TWO-WAY RADIO

Cross-talk capability created between mobile or fixed point units of all agencies.
Select call capability by digital dial for mobile-to-mobile or mobile-to-fixed point
Agencies continue use of existing radio frequencies.
Less power required - (a VHF entry point to the microwave long line backbone is within 25 miles at all times). The same frequency used over long distance state system circuitry by a number of mobile units at the same time from various points within the state. Frequency clutter is reduced by area-to-area directional control. All distant contacts are by the controlled non-interfering circuitry on the backbone system.
Automatic switching over the areas provides for direct mobile-to-mobile select unit call or mobile-to-control center as desired.
Manual or automatic recording capability.
Hand carry radio units can be used "out of car" and be

in touch by long distance as desired.

SYSTEM DEVELOPMENT
EXPANSION TO STATEWIDE

Bid requests are now out for a Statewide System - patterned after the 2 Area test bed in operation since 1970 - these cost bids are due in August, this year.

In brief, Consolidated System means:

1. Long lines (Nebraska) provided for multiple agency (state and local use) for all means of communication (radio, voice, teletype, facsimile, TV) an open line is automatically selected, providing connections any place in the state at any time for a fixed share-cost rate.
2. Statewide "radio cross talk" capability between existing mobile radio systems, i.e. school buses operating on football nights are in touch with home station while operating anywhere in the state. Radios on ambulances, fire, police, sand-hills, fire fighting units, etc, can operate 24 hours a day - in touch with their base location through telephone interconnect to radio. No one has to "wait up" on off-duty hours.
3. Any open line is available for use by standard dial-in or request. Private line circuits are automatically provided in the same manner as telephone.
4. Fully consolidated use of manpower, as well as hardware, in state employed positions.
5. Growing automatic alarm systems, (banks, nursing homes, etc.) can be connected by radio signal or line as desired and a 24-hour connection to alerting service is available. At no extra charge for long line circuits, river level gauging stations can be read automatically. Road icing sensors can be computer connected with finger tip information of storm conditions available. Many other censor device services for air, land and water conditions can utilize the same long line - bulked circuits (radio or metallic lines).

In brief the System will:

1. Provide a statewide DIAL/TELEPHONE SERVICE WITH THE CAPABILITY OF INTERCONNECTIONS TO ALL RADIO EQUIPPED VEHICLES AND "WALKIE-TALKIE" PORTABLE

RADIO sets of all state and government agencies and supporting public services.

2. Provide a statewide INTER-INTRA AGENCY CONNECTED RADIO SERVICE serving state and local government.

3. Provide a statewide INTER-INTRA AGENCY TELETYPE SERVICE for state and local government.

4. Provide a statewide SYSTEM FOR DATA AND FACSIMILE TRANSMISSION BETWEEN ALL MEDICAL FACILITIES, STATE COLLEGES, ETC., with access, (as desired) to all other agency facilities throughout the state.

5. Provides for statewide COLOR TELEVISION TRANSMISSION FOR EDUCATIONAL TELEVISION.

New facility in being:

Just last month, June 1972, Nebraska dedicated a new State Telecommunications Building to house Nebraska Educational Television, one of the first, if not the finest in existence today....The new facility...half of the basement area of the Nebraska Educational Telecommunications Center houses the State Telecommunications Bureau. Switching equipment and computer interconnects will in the future be located in the complex for coordinating and consolidating all voice data, facsimile, radio, television and teletype networks for Nebraska state agencies and governmental subdivisions. The communications "nerve center" meeting all emergency and Civil Defense requirements including an Emergency Programs Center will be operating on a round-the-clock basis and in event of an emergency, eating and sleeping facilities are provided for Bureau staff personnel.

SYSTEM ADVANTAGES

* Economical, effective, all purpose communications established.

* Provides flexibility of selection for type of modern communications best suited to perform the task (i.e. replace voice with hard copy).

* Provides the framework for accomplishing numerous agency improvement research proposals, which depend heavily on extensive and reliable communications.

* Allows reduction of power output for radio use, thus enabling each agency to better utilize its assigned frequencies.

* Provides the opportunity to readily identify and

eliminate weaknesses in communications.

* Experiences from the system could provide sound basis for adjustments in policies on government communications. Data might be furnished on which to base recommendations for better Federal/State cooperation in communication activities and expansions.

* Communication traffic study capability readily available.

* Makes maximum use of existing facilities.

* Allows for realization of economies inherent in bulk or shared services.

* Provides the framework under which traffic audits, cost analysis and other essential administrative research and problem solving can be accomplished.

* Government emergency and public safety communication responsibilities effectively answered.

* Data available to assess the status of communications for Civil Defense purposes, and provide further insights into the emergency and highway safety communications requirements of the state.

* Establishes a capability to expedite service during both normal and emergency periods with "mutual aid-cross agency action" at the lowest level possible.

* Coupled with manpower and material resources knowledge, a high state of emergency preparedness is established.

* Consolidated communications, using the emergency operation center facility in local emergencies and day-to-day agency activities, provides a purpose for existence, can create the multiagency cooperation habit essential to any emergency - including a full scale national emergency.

(Ed. note: One should remember that this was presented to the federal government as a status report and from reading this report there was every appearance that the system was alive and well. In fact, he speaks of taking bids for the expansion of the system to the entire state within a few months. Yet by the end of the year the system was closed and we reverted to our old system.)

APPENDIX D

THE JOINT FUNDING SIMPLIFICATION ACT OF 1974

The entire purpose of this act was to simplify the method of obtaining federal grants and the use of such grants in order to allow multiple agencies within the federal government to participate in a specific project.

It was a concept that should have been most attractive to those looking for grants because it allowed:

1. One application to be made even though multiple federal agencies were involved.
2. There would be only one set of audit standards and only one audit to be done.
3. One financial and programmatic report to be done on a quarterly or semi-annual basis.
4. Ability to establish one overall set of operating procedures.
5. A means to obtain a waiver of conflicting federal administrative regulations.
6. A single Letter of Credit for all federal funds that are eligible for advance draw-down.
7. One grant award for all federal funds.
8. A synchronized funding cycle (common fiscal year for all agencies).

According to the Office of Management and Budget, Intergovernmental Affairs Division, the following areas of federal government were approved for such programs.

Department of Agriculture
Department of Commerce
Department of Defense
Department of Health, Education and Welfare
Department of Housing and Urban Development
Department of the Interior
Department of Justice
Department of Labor
Department of Transportation
Appalachian Regional Commission
Civil Service Commission
General Services Administration
Community Services Administration
Veterans Administration
Water Resources Council
Environmental Protection Agency
Action
Department of Energy
Coastal Plains Regional Commission
Four Corners Regional Commission
New England Regional Commission
Old West Regional Commission
Ozarks Regional Commission
Pacific Northwest Regional Commission
Southwest Border Regional Commission
Upper Great Lakes Regional Commission

(The information above is based on a November 1978 publication by Office of Management and Budget on Joint Funding.)

APPENDIX E

ETV NETWORK DEVELOPMENT

The concept of a statewide Educational Television Network in Nebraska was already underway. KUON had been on the air since November 1954 and transmitter towers were spreading across the State to allow for all citizens of Nebraska to receive these programs.

By 1972, the new specially designed State Telecommunications Building had been built in northeast Lincoln. This building was not only one of the finest facilities for educational television in the nation, but also was designed with the basement to house the nerve center of the Consolidated Communications System. The office of the Director of Telecommunications was located here; the facility was "protected"; it was to house the switching equipment and computer interconnects for coordinating and consolidating all voice data, facsimile, radio, television and teletype networks for Nebraska state agencies and governmental subdivision.

This protected Center could be operated on a round-the-clock basis during emergency activity with eating and sleeping facilities located there.

It was likewise tied to the underground Emergency Operating Center for the State so that during times of emergency, communications from government officials could directly access the State ETV Network.

There was a TV studio for disaster operations which had the capability to transmit survival information by both picture and voice over the entire State.

The schedule of "sign on" for the various stations of the ETV network were as follows:

- KUON-TV first signed on air Nov 1, 1954
- 1961 Nebraska Legislature urged a study regarding a state-wide system
- 1962 Great Plains National Instructional Television Library (Regional videotape exchange project)
- 1963 Legislature and Governor signed into law an act to allow the system's development

1965 Transmitter relocated to Mead, full power
with coverage now available to 65% of the
population
KLNE-TV Channel 3, Lexington
KYNE-TV Channel 26, UNO
1966 KTNE-TV Channel 13, Alliance
KPNE-TV Channel 9, North Platte
1967 KMNE-TV Channel 7, Bassett
KXNE-TV Channel 19, Norfolk
1968 KHNE-TV Channel 29, Hastings
KRNE-TV Channel 12, Merriman

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