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**TEL8 TELECOMMUNICATIONS NETWORK:
A POOLED FUND STUDY FOR
TRANSPORTATION VIDEOCONFERENCING**

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May 1999

Interim Report

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16. Abstract The document reports the 1999 research efforts and results of a telecommunication network dedicated to transportation. These efforts include a major system-wide reconfiguration of the network's telecommunication technology, and the re-establishment of the network's program director and its governing organizational structure. The research results include the programming, training, educational activities, and communication's activities developed by the network and an evaluation of the technological and organizational changes.		13. Type of Report and Period Covered Interim Report January 1998 to December 1998	
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Preface

The TEL8 Pooled Fund Study was created to support the development of a telecommunications system dedicated to improving and enhancing transportation in the Federal Highway Administration (FHWA) Region 8. TEL8 established a partnership among the region's six state Departments of Transportation (DOT) and the Mountain-Plains Consortium (MPC) of transportation research universities. The network concluded a major reconfiguration of its telecommunications technology in 1998 and established a terrestrial-based videoconference system. Included in the new system was a videoconference bridge sited at the network control center. Moreover, the videoconference enhancements of the new system were utilized with expanded TEL8 programming and training.

The Pooled Fund Study's experience in 1998 demonstrated and confirmed the value of the technological changes made to the system. The network's increased videoconference capabilities provided a more user-friendly environment for programming and training encouraging the initiation of several programming activities including an expanded DOT information seminar series and additional graduate level classes. Moreover, the enhanced technology allowed the network to more significantly focus on other areas that require additional attention to maximize the system's potential. Those areas include the continual strengthening of TEL8 programming, development of a new cost structure, and organizational structure evolution.

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Introduction

This report presents and summarizes the 1998 TEL8 Pooled Fund Study. The 1998 TEL8 Pooled Fund Study was a one year extension of the original three year TEL8 Pooled Fund Study. The original study was undertaken to support the efforts of the six state departments of transportation (DOT's) in Region 8 establish a telecommunications network dedicated to improving transportation in the region through the use of enhanced communications, technology transfer, education and research. The telecommunications network was named TEL8 and was developed to serve the transportation interests of the region by utilizing a state-of-the-art, interactive videoconference telecommunications system. The North Dakota Department of Transportation contracts the administration of the Pooled Fund Study to the Upper Great Plains Transportation Institute (UGPTI) at North Dakota State University (NDSU).

This interim report presents the accomplishments for 1998 and includes the major reconfiguration completed by the network, the benefits and costs of the project, what was learned, and who were involved in the Study. Five of the original six DOT's participated in the project (Figure 2). While not a direct part of the Pooled Fund Study, a partnership with the Mountain-Plains Consortium (MPC), a consortium of transportation research Universities in the region, was initiated to complete the TEL8 network. The report includes this important partnership as integral in the continuing development of TEL8.

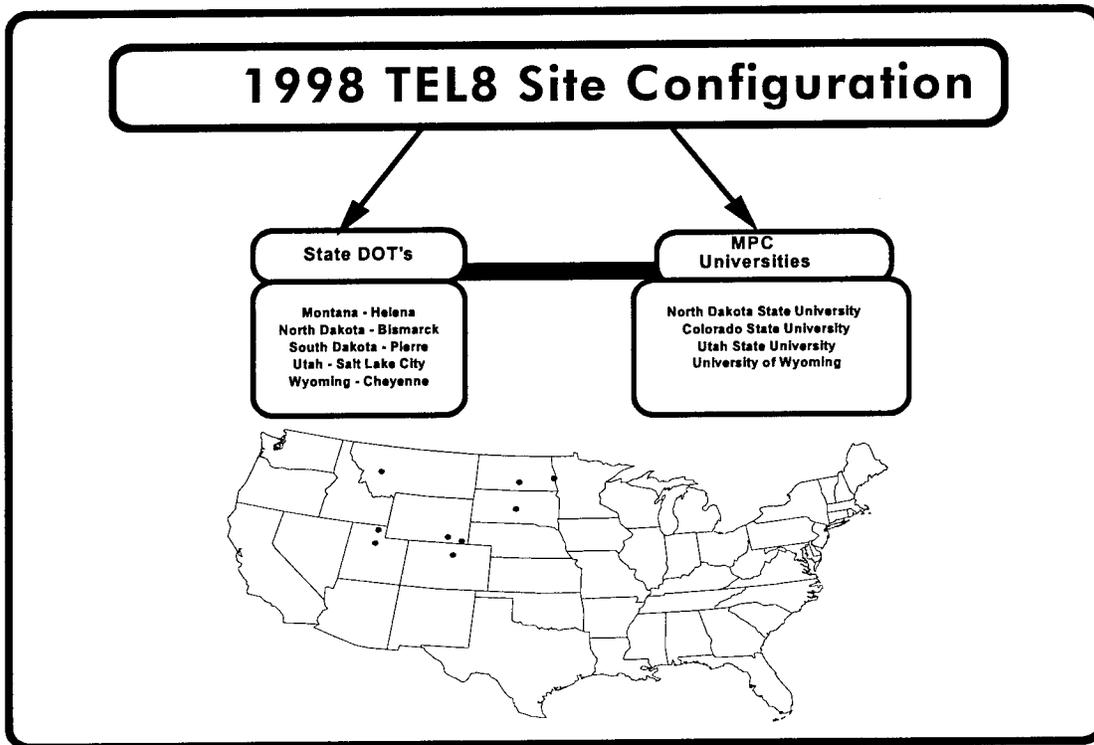


Figure 2. The 1998 TEL8 Network.

TEL8 Network Technology Reconfiguration and Upgrade

TEL8 undertook a major reconfiguration of its videoconference technology and network in 1998. Initially planned and designed during the third year of the original pooled fund study (1997), the technological reconfiguration is part of an overall enhancement of TEL8's telecommunications capability. The entire system switched from a satellite-based transmission medium to a terrestrial-based T1 private network. The switch allows for enhanced videoconference audio functionality and provides increased connectivity to all parts of the world. In addition, TEL8 acquired new codec technology and installed a network videoconference bridge which allows a cost-effective mechanism for videoconferencing among all network sites. The system reconfiguration includes:

- Network Reconfiguration - New land-based network
- Videoconference Equipment Upgrade - New codec technology
- Videoconference Bridge Installation - TEL8 bridge

TEL8 Network Reconfiguration

TEL8 switched to a terrestrial transmission medium from a satellite-based medium for the following reasons:

1. Full duplex audio, as currently developed in a terrestrial medium, is not available in the satellite-based technology. Full duplex audio provides the best interactive voice communications possible.
2. TEL8 connectivity outside of TEL8 using satellite technology was cumbersome. The establishment of a satellite-terrestrial gateway only provided limited connectivity.

The original satellite transmission medium for the network had illustrated the need for a more elegant system in terms of ease-of-use and site switching among sites. The lack of full duplex audio hindered the ease of voice communication among users. Moreover, the satellite system was a closed system preventing easy access to other telecommunication sites outside of TEL8. Despite the establishment of a satellite-terrestrial gateway in the third year of the pilot project, communications outside the satellite network proved difficult or required extensive resources. The other avenue of outside connectivity involved the use of a mobile satellite unit which was used for several successful national events but required significant coordination and scheduling resources. Within this context, the switch to a terrestrial transmission medium was completed in the spring of 1998 for all sites. One TEL8 site required additional AT&T facilities preparation and came online during the second quarter of 1998. The satellite-based system was utilized during the early months of 1998 to facilitate the transition period from satellite to terrestrial.

The components and the approximate costs of the new TEL8 terrestrial system include:

- An AT&T Pri Network (\$3,000 annual access charge per site)
- IMUX at ISDN Bri sites (\$2,500 per site)
- T1 Base Units at ISDN Pri sites (\$5,500 per site)
- A TEL8 Bridge (\$116,000 for entire network)
- Bridge Network Access (\$7,500 for entire network)
- A TEL8 Technician and Bridge Administrator (\$17,000/ ½ year for entire network)
- Estimated Network Usage Charges (\$1,000 - \$3,000 per site)

The AT&T private T1 Network consists of Primary Rate ISDN over T1 lines inside a private network. The network has an exclusive tariff filed for TEL8 including “on-network to on-network” and “on-network to off-network” rates. The network is now fully capable of connecting to any standards-based videoconference system in the world. Furthermore, the new network provides increased quality and functionality when compared to the original satellite-based transmission medium. The IMUX and T1 Base Units are videoconference transmission components required at each TEL8 site. The TEL8 satellite technician assumed the responsibilities for supporting the new terrestrial network and the new TEL8 bridge described below.

TEL8 Videoconference Equipment Upgrade

TEL8's enhancements also include new codec technology. The existing CLI codec technology required significant resources to update and improve its functionality to state-of-the-art videoconferencing. The new codecs provide improved video quality, increased user and system functionality and voice-activated camera switching. The new codec technology also allows the network to operate at established industry videoconference standards and at different bandwidths. These new features provide greater flexibility in connecting to other videoconference systems as well as providing videoconference participants an easier and more user-friendly environment.

The installation of the new codec technology includes:

- PictureTel S4200 Codecs
- PictureTel World Carts at several sites for increased mobility
- Remote Access Modems for improved remote diagnostics
- 30 Frames-per-second codec technology standards
- AMX videoconference room integration at two sites

Average costs for the new codec technology ranged from \$20,000 to \$45,000, depending upon new codec configuration and the availability of the old codec as a trade-in. The installation and configuration of the new codec technology was completed during the first quarter of 1998.

TEL8 Videoconference Bridge Installation

A comparative cost analysis of the potential transmission mediums indicated that TEL8 would benefit from purchasing and operating its own videoconference bridge. A bridge is required for videoconferences involving more than two sites, a configuration predominantly utilized by TEL8. A PictureTel Montage 570A bridge was installed at North Dakota State University (NDSU), the Network Control Center under the satellite-based transmission medium. The TEL8 telecommunications technician received bridge training and has been certified as the TEL8 bridge administrator.

The bridge has an 11 port capacity, generally available continuously. However, additional port capacity is available at reduced bandwidths. During 1998, videoconferences with up to 13 locations, including several non-TEL8 sites, were supported by the TEL8 bridge. Furthermore, TEL8 has cascaded with other videoconference bridges substantially increasing the potential for videoconference connectivity. In summary, the TEL8 bridge provides:

- Cost-effective network connectivity
- Increased non-TEL8 connectivity
- TEL8 expansion economies of scale
- Continuous videoconference capability

TEL8 supports a bridge administrator/system technician responsible for TEL8 bridge operations and overall system reliability. The bridge administrator/system technician maintains the bridge at NDSU (the network control center) and provides technical support and leadership for the entire system. Moreover, the bridge administrator/system technician supports the following activities:

- Standards The definition of system technological standards for possible expansion and for the TEL8 system.
- Connectivity The expansion of TEL8 connectivity through local site activity and through the TEL8 bridge.

Programming

TEL8 was developed to serve the transportation interests of the region by providing enhanced communications, technology transfer, education and research. Programming activities developed to meet that requirement and delivered during 1998 via the system include, but are not limited to, graduate level courses in transportation, technology transfer and continuing education courses, seminars of varying lengths, and teleconferencing among state DOT's and MPC universities.

Moreover, during 1998 TEL8 initiated one of the most technologically sophisticated regional telecommunications networks dedicated to supporting transportation activities through programming efforts dedicated to technology transfer, distance learning and continuing education.

1998 TEL8 Programming and Training

The program director initiated the development of a 1998 training and program schedule. This schedule was developed during the third year of the study and approved by the board in early 1998. Costs for providing the training program are estimated at \$37,800 and were allocated among all TEL8 sites with the DOT's assuming a larger proportion of the costs.

The adoption of a formal, system-wide programming schedule financially supported by TEL8 as a whole is an important organizational milestone and contributes significantly to the evolution of the system. The schedule also includes the InfoX seminar series, graduate level transportation classes, implementation committee meetings, and many other activities. Additional programming and training beyond the formal schedule will include DOT information exchanges and ad hoc meetings.

The 1998 TEL8 training schedule included:

- Two Asphalt Pavement Courses
- Rural Transit Coordination Seminar
- Rural Transportation Management Course
- Leadership Development Institute for Transportation Series
- Several Workshops including DOT personnel
- Franklin Covey Courses
- Three Intelligent Transportation Systems Short Courses

1999 TEL8 Programming and Training

TEL8 has developed its 1999 training and programming schedule and will assign a significant portion of its 1999 resources to developing and acquiring programming for the system. Specific programming activities include:

- InfoX A 1999 InfoX program coordinator has been appointed and the following programs are scheduled for 1999.

January	Pavement Management	Montana DOT
February	Traffic Data/Weigh-in-Motion	ND DOT
March	New Products Evaluation	Utah DOT
April	Small Airport Management	Montana DOT

Additional InfoX topics are HR/Early Return to Work, Innovative Contracting, and Project Selection.

- **TransX** This new program will be initiated in 1999. Its focus is providing information and training to specific professional groups inside the DOT's.
- **NHI Courses** A TEL8/NHI relationship will be developed. TEL8 will survey the DOT's to identify information needs and coordinate NHI efforts to develop training to meet those needs. TEL8 will also assist the NHI in any modifications required of existing NHI courses for videoconference and TEL8 delivery.
- **Covey** The TEL8 Franklin Covey trainer has completed her training and will be presenting several Covey courses over the network.
- **Grad. courses** Graduate Classes offered for the spring semester 1999 include:

Geotechnical Engineering
Intermediate Timber Structures

Additional classes are planned for the fall.
- **Short courses** The TEL8 MPC partners will be considering re-designing graduate courses into short courses to meet the needs of the DOT's and for the videoconference format.
- **WWW** TEL8 will develop a new Web-based scheduling system to facilitate scheduling of programs and events.
- **T2** The TEL8/T2 relationship will be fostered.

Organizational and Operational Structure

Several activities modifying and expanding the TEL8 organizational structure were adopted in 1998 and will be extended into 1999. A detailed explanation of the operational objectives is found in Appendix B. Included in these objectives are:

- Expansion TEL8 will be considering expanding its membership. During 1998, preliminary membership discussions were held with prospective TEL8 members.
- DOT Sites TEL8 provided support and a model for DOT's expanding videoconference systems within their state. Several DOT's are actively expanding or considering expanding their videoconferencing organizations.
- TEL8 Costs The new cost structure outlined in this report has been defined and will be expanded including the initiation of a more complete financial reporting system. Other cost issues include local TEL8 site costs and bridge costs.
- Performance TEL8 is initiating an improved performance measure reporting system.
- Bridge Non-TEL8 bridge utilization will be defined and considered. Non-TEL8 sites may include: 1) Other/Affiliated departments of TEL8 sites, 2) State organizations inside TEL8 states; 3) Federal entities; and 4) Other governmental units; cities, counties, etc.

TEL8 Committee Structure

A revised TEL8 committee structure outlined late in 1998 is being implemented. The committees are: 1) Programming Committee; 2) Finance Committee; and 3) Technical Committee. A detailed outline of these committees and their responsibilities is found in Appendix B.

Programming Director and Administrative Staff

The Programming Director's position was strengthened during 1998. A new program director was appointed and considerable effort was expended in programming support activities. The program director is a half-time position supported by TEL8 and is located at NDSU to facilitate the coordination of TEL8 operations. The program director remains responsible for

developing, marketing, acquiring and managing programming and training. Moreover, the program director chairs the TEL8 programming committee, the committee responsible for planning and initiating TEL8 programming and training.

TEL8 initiated financial support for the system's executive director and administrative assistant in 1998. The executive director is supported on a quarter-time basis while the administrative assistant is supported on a one-third basis. Both are located at NDSU to maintain a cohesive administrative unit.

Finally, each TEL8 location continued to designate a local technician responsible for supporting that site's technology. In addition, the administrative staff provides limited technical support for the entire network. However, the new technology has improved the technological performance of the system and reduced the need for technological support at individual sites.

New TEL8 Cost Structure

TEL8's extensive technological reconfiguration required the defining of a new cost structure and paradigm. The original satellite system was more cost effective at the time the network was established when compared to the land-based technologies and provided low-cost, 24 hours-a-day, seven days a week videoconference capability. The costs for the original system was not dependent upon the usage of the system by any individual TEL8 site. In contrast, the new terrestrial system, now cost-effective when compared to the original satellite vendor, has costs associated with an individual site's usage of the system as well as system-wide costs. TEL8 developed a new cost structure to meet the requirements of the new system. The current cost structure has been defined as:

Shared Costs (divided equally among all Tel8 sites as a system):

- Access into the AT&T Network
- Bridge purchase and operation
- Tel8 Technician/Bridge Administrator
- Program Director (from existing TEL8 revenues)
- Administrative Staff

Shared Costs (two different levels of cost, one for DOT's and one for MPC)

- Tel8 Training Program

Individual Site Costs:

- Line Usage Charges (including NDSU portion of bridged Tel8 events)
- Videoconference Room Equipment
- In-room Audio-Visual Equipment

The shared cost of access into the AT&T network dictates that every TEL8 site has the same cost of access into the TEL8 telecommunications system. This policy ensures that all sites are connected into the system equally in terms of cost and, from an organizational standpoint, enables all sites to participate as equals in the telecommunications system. Such a policy mirrors the cost structure first developed by TEL8 for the satellite system and means that no particular site becomes disadvantaged because of their geographical location.

The 1998 TEL8 costs included a large capital investment for the network reconfiguration (Figure 3). Various other cost issues are under consideration and will be addressed in 1999. These include: 1) potential bridge rental; 2) local site cost recovery; 3) TEL8 programming costs to non-TEL8 entities; 4) non-TEL8 utilization of system; and 5) program director funding.

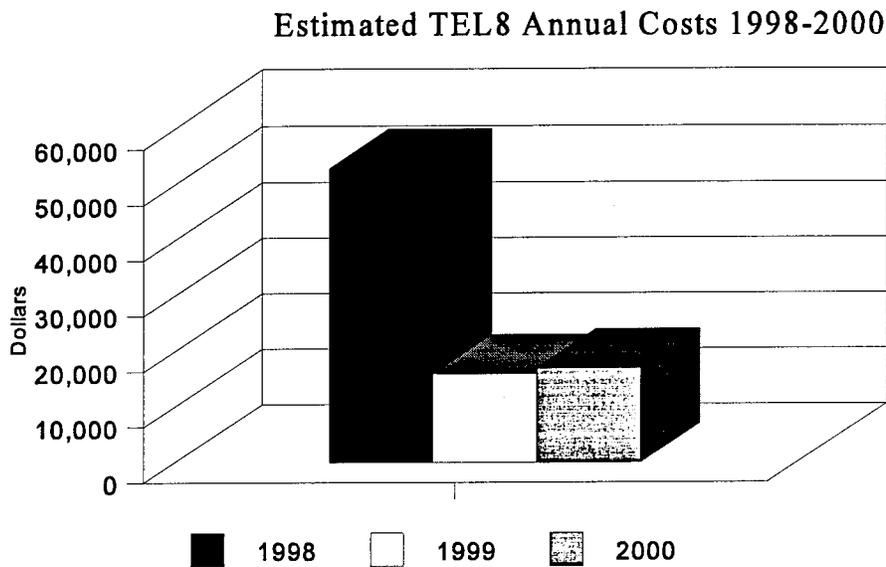


Figure 3. Estimated TEL8 Costs per Site, 1998 - 2000.

TEL8 Re-Dedication

TEL8 re-dedicated its system July 14, 1998. Associate Deputy Secretary of Transportation John Horsley gave the keynote address from the United States Department of Transportation in Washington, D.C. as part of the videoconference rededication. (Mr. Horsley participated in an earlier TEL8 videoconference, a five-state congressional hearing with Secretary of Transportation Péna originating from Missoula, Montana.) The re-dedication noted the new, reconfigured system and highlighted:

- The importance of utilizing partnerships and technology to further the advancement of national, regional and local transportation systems.

- The pooling of resources among DOT,s and universities in a symbiotic relationship dedicated to serving the region's transportation interests.
- The development of regional programming and training activities to meet the needs of transportation professionals and students.
- The employment of communication technology to more effectively administer transportation organizations.
- The utilization of a state-of-the-art videoconference system to pool resources, develop new regional relationships, maximize educational and training opportunities, and provide communication facilities

Mr. Horsley particularly noted the role of organizations like TEL8 in developing transportation policy.

Conclusion

The 1998 TEL8 Pooled Fund Study extended and built upon the results of the original pilot project. Several conclusions were reached during the 1998 extension: 1) the importance of a TEL8 program director; 2) the benefits of switching to a different network transmission medium; 3) the value of upgrading to state-of-the-art videoconference equipment; 4) the benefits of purchasing and operating a TEL8 videoconference bridge; and 5) the importance of the organizational structure and processes in a multi-site, multi-state network. Additionally, several issues were identified during 1998 including: 1) TEL8 expansion; 2) bridge rental; 3) supporting DOT system expansion; and 4) improved reporting procedures.

The TEL8 program director's value to the network was demonstrated during 1998. The first TEL8 system-wide program of training was developed and established under the guidance of the program director. This program initiated several programming and training series, each well received. Moreover, the program director revitalized the programming committee, focusing TEL8 efforts on acquiring the requisite training for the network and its clientele. The program director's unique and central position contributed to enhanced scheduling, advertising, and coordination of all TEL8 events.

The switch from a satellite to a terrestrial transmission medium was a success and is providing several benefits. The terrestrial medium brought improved videoconferencing functionality and is projected to be more cost-effective. The terrestrial medium also provides expanded connectivity opportunities for the network which were realized in 1998. Moreover, any expansion by the system will be more readily accomplished with the terrestrial system.

The upgrading of the network's videoconference equipment significantly enhanced the ease-of-use of the system. This is vitally important to TEL8 participants and propels use of the system. The improved audio and video capabilities make the system more appealing and

contribute to successful videoconferencing. The overall quality of the new technology has expanded and increased utilization of the network.

TEL8's decision to purchase and install its own videoconference bridge required significant resources but is providing cost-effective network connectivity. Commercial bridge services, the alternative to TEL8's bridge, are expensive in multi-point configurations, the configuration typical for TEL8 events. Moreover, the bridge provides continuous cost-effective videoconference connectivity to any standards-based videoconference system. This capability is a great improvement from the old network and was utilized for numerous events in 1998.

The organization structure of TEL8 is vitally important to its success and continued to evolve in 1998. The new technology required the definition of a new cost structure, a process which is still ongoing. The revitalization of the committee structure more closely assigned system objectives and responsibilities. TEL8's multi-site, multi-state membership makes it's organization structure particularly important and remains a significant activity.

Several issues were highlighted in 1998 and will be addressed in the coming year. TEL8 expansion continues under consideration and membership requirements have been outlined for potential members. The bridge has the potential for non-TEL8 utilization and will be considered a source for generating revenues for network use. Several DOT's are currently expanding instate videoconference systems which will retain TEL8 connectivity. Additionally, improved reporting procedures will be developed.

Recommendations

The 1998 TEL8 project makes a series of recommendations for other transportation telecommunication networks. First, the development of a program director for the system is crucial to long-term success. The essence of a telecommunications network is the programming and training the system provides its clientele. A successful network requires programming and training that affords opportunities to its participants and it is essential that a central, focused individual provide the leadership necessary for the development and coordination of that programming. Secondly, the technology employed by the network must not hinder its use. TEL8's move from a satellite to a terrestrial transmission medium significantly improved the ease-of-use of the system and increased its overall quality. In addition, the videoconference equipment upgrade enhanced the system's quality. Together, these improvements have made TEL8 a much easier-to-use and better system. Thirdly, TEL8 recommends transportation telecommunications networks operate their own bridge to provide cost-effective network and off-network connectivity. Fourthly, the importance of developing an organizational structure that meets the needs of those using the network must be created. TEL8's experience as a multi-site, multi-state organization demonstrates the need for such a structure. Finally, and again, TEL8

recommends the development of a partnership or working relationship with other transportation entities similarly situated. The DOT/MPC partnership within TEL8 has proven invaluable in the opportunities afforded to the system.

APPENDIX A: 1998 TEL8 POOLED FUND STUDY EXPENDITURES

**NORTH DAKOTA STATE UNIVERSITY
STATEMENT OF EXPENDITURES**

FUND-DEPT: 4352 - 5980
 GRANT-CONTRACT ID: 17-893-0794
 AGENCY NAME: US Department of Transportation
 SUBAGENCY NAME: ND Department of Transportation
 PROJECT NAME: Transportation Telecommunications Network Region VIII
 PRINCIPAL INVESTIGATOR: Gene Griffin

<u>ELEMENTS OF COST</u>	Current Period Expense 1/1/98 <u>12/31/98</u>	NDDOT Cumulative Expense 7/1/94 <u>12/31/98</u>	<u>TOTAL BUDGET</u>
SALARIES AND WAGES-FACULTY	2,475.00	2,475.00	0.00
SALARIES AND WAGES-SUPPORT	8,887.38	27,429.89	23,370.00
FRINGE BENEFITS	<u>2,461.39</u>	<u>7,157.45</u>	<u>0.00</u>
TOTAL PERSONNEL	13,823.77	37,062.34	23,370.00
TRAVEL	982.75	12,499.18	0.00
COMMUNICATIONS	20,144.21	21,440.53	0.00
DATA PROCESSING	0.00	162.83	77,090.00
RENTS & LEASES	0.00	900.00	0.00
OFFICE	150.00	1,742.48	0.00
REPAIRS	0.00	74,061.58	0.00
SUPPLIES	90.35	5,972.08	0.00
FEES	38,221.77	280,350.77	148,640.00
INSTRUCTIONAL	30.00	30.00	0.00
GENERAL	1,713.20	4,758.20	0.00
EXPENDABLE EQUIPMENT	<u>-848.25</u>	<u>3,826.00</u>	<u>0.00</u>
TOTAL OPERATING	60,686.03	405,743.59	223,730.00
EQUIPMENT ACCOUNTS	0.00	587.00	
MAJOR EQUIPMENT	<u>192,810.54</u>	<u>760,142.14</u>	<u>1,440,000.00</u>
	192,810.54	760,729.14	1,440,000.00
INDIRECT COST	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>
TOTAL COST	<u>267,320.34</u>	<u>1,203,535.07</u>	<u>1,887,100.00</u>
LESS: PAYMENTS PREVIOUSLY RECEIVED		1,156,306.32	
BALANCE REMAINING		47,228.75	

I CERTIFY THAT ALL EXPENDITURES REPORTED OR PAYMENTS REQUESTED ARE FOR APPROPRIATE PURPOSES AND IN ACCORDANCE WITH THE PROVISIONS OF THE APPLICATION AND AWARD DOCUMENTS.

APPROVED BY *Darlene Rein* Grants Officer

DATE 3-31-99

APPENDIX B: TEL8 OPERATIONAL OBJECTIVES AND COMMITTEE STRUCTURE

Introduction

The operations of the Tel8 Network have reached the level of maturity and service demand that it is necessary to establish specific operations objectives and formalize the support structure of the organization. The Board of Directors, in its Board Meeting of June 6, 1998, agreed with the need to formalize operational objectives and the support functions of the Tel8 Network structure.

This paper establishes objectives, committee structure, and responsibilities in response to these priorities of the Board of Directors.

Operational Objectives

It is proposed that the following work objectives guide the operations and support of the Tel8 Network, until changes are initiated by the Board of Directors:

- Complete the technical installation of the Picture-Tel Teleconferencing System and assure necessary operational support.
- Evaluate the planned use of the 'Bridge' which supports the Picture-Tel System and accomplish the following:
 - Identify the potential for making available the use of 'Bridge' services to support other non-Tel8 users.
 - Determine if this resource should be offered for non-Tel8 use.
 - If yes, establish policy and guidelines to direct the use of the 'Bridge'.
- Prepare a prioritized Programming Plan to guide education, training, and conferencing uses of the Network. This plan should include two elements, as a minimum:
 - Develop and deliver graduate courses to meet the objectives of the Board of Directors, and the needs of the member universities and departments of transportation (departments).
 - Identify the need for, prioritize, and implement short courses and information sharing experiences to meet the needs of departments.

- Develop and implement an evaluation process to assure the programming conducted by the Network responds to the objectives and plans approved by the Board of Directors.
- Prepare a strategy and initiate efforts to increase the coordination and shared use of training resources such as National Highway Institute (NHI), Transportation Research Board (TRB), and Federal Highway Administration (FHWA) with the Tel8 Network.
- Initiate an effort to consider and invite expansion of the membership of the Tel8 Network, to include additional universities, departments of transportation and other related entities.
- Evaluate the funding and billing structure of the Network, and finalize or adjust it to assure the most effective and efficient operations, and the continuing stability of the organization.
- Prepare and recommend needed amendments to the By-Laws of the organization to the Board of Directors for consideration.
- Evaluate the committee and coordination structure which supports the Tel8 Network and make appropriate adjustments to optimize the continuing operation and management of the Network.

Committee Structure and Responsibility Changes

The organizational structure of the Network will include three working committees to carry out the operating objectives of the Board of Directors:

- Programming
- Technical
- Finance

Programming Committee

Membership:

The membership of the Programming Committee will include the following:

**Chair Person -
Training Director-**

Program Director Tel8 Network
Each member department of transportation
(Or representative where a department of transportation

does not have a training director)

University Representative - One from each member university

Responsibilities:

The responsibilities of the Programming Committee will be to:

- Recommend programming which the Board of Directors should consider to meet evolving needs of the universities and departments.
- Prepare and implement the annual Program Plan for Tel8 Network use, approved by the Board of Directors.
- Design and manage the annual Program Plan to provide appropriate scheduled time to support graduate training, short courses and information sharing opportunities, by the universities, and in support of the departments.
- Provide a continuing communication, programming, scheduling, and coordination link among the member universities, departments and the Board of Directors.
- Survey the continuing education and training needs of the universities and departments, and use this information to prepare and update the annual Program Plan.
- Conduct and report periodic evaluations of the education, training and other events conducted over the Tel8 Network to the Board of Directors.
- Recommend technical or other support required by the Board of Directors or Tel8 Staff to assist the Committee to carry out its mission.
- Coordinate and/or carry out the logistics activities needed to facilitate the education, training or information events provided over the Tel8 Network.

Meetings:

The Programming Committee will hold monthly meetings, or as called by the Chair Person.

Technical Committee

Membership:

The membership of the Technical Committee will include the following:

Chair Person -	Technical member of the Tel8 Staff
Technician -	One from each member university and department
Board of Directors Liaison -	To be appointed by the President of the Board of Directors.

Responsibilities:

The responsibilities of the Technical Committee will be to:

- Continue the implementation, maintenance and updating of the Tel8 Network.
- Carry out technical scheduling and support of the events conducted over the Network.
- Evaluate and resolve technical problems and constraints identified in the Network.
- Provide technical evaluation and planning recommendations concerning the future migration of the Network.
- Provide technical advice and support to member universities and departments, within the resource capability of the Committee.
- Prepare technical recommendations concerning use of the available capacity of the Tel8 Network 'Bridge'.
- Provide periodic status reports on the technical performance of the Network to the Board of Directors.

Finance Committee

Membership:

The membership of the Finance Committee will include the following:

Chair Person -	Secretary/Treasurer - Board of Directors
Vice President -	Board of Directors
University Representative -	Board of Directors
FHWA Representative -	Board of Directors
Executive Director -	Tel8 Network
Executive Secretary -	Tel8 Network

Responsibilities:

The responsibilities of the Finance Committee will be to:

- Prepare and recommend the annual budget of the Tel8 Network to the Board of Directors for approval.
- Negotiate the annual financial commitment of the member universities and departments of transportation to provide their funding support to the Network.
- Plan and coordinate the continuation of the Federal Pooled Fund Study which supports the participation of the departments, and the funding provided by the member universities.
- Review the funding and billing procedures managed by the Tel8 Network Staff and verify their continued use or recommend appropriate adjustments. work through the Board of Directors to accomplish changes.
- Receive reports, monitor and report the financial affairs of the Network to The Board of Directors.
- Assist the Tel8 Staff in the identification and resolution of budgeting and funding and billing problems.
- Conduct periodic (annual) audits and prepare reports for the Board of Directors

Executive Staff Responsibilities

The Executive Director of the Network will represent the Board of Directors in all Tel8 affairs, and with all committees, as requested by the President of the Board. Tel8 Staff will participate in and support all committee functions and meetings as requested by the Executive Director.

