

Annual Report

Ten years of service

We are proud to provide you with our annual report for our tenth year of service. It is hard to believe that ten years have gone by since our humble beginnings with the award of the FHWA contract in 1986. Since that time, our growth in membership, products offered and international outreach has far exceeded our expectations and that of others in our profession. This success was made possible by the generous support of individuals from all corners of the transportation industry.

Along with our growth has come considerable responsibility. With approximately 28,600 members worldwide, and 79,200 products distributed annually, we recognize that our mission, **“to serve our national and international membership and the transportation profession by finding, delivering and supporting surface transportation software of the highest quality for engineers, planners and other transportation professionals”** is as appropriate as ever. All of us at **McTrans** value the relationship we have with our members and proprietors, and we continually look for ways to improve our service, products and outreach.

During our tenth year, **McTrans** added 28 new software products bringing our total to 440. A dozen existing products had notable updates, increasing their sophistication and improving ease of use. Even with the purging of our membership database, our total Annual Distribution Fees increased from \$1.054 M to \$1.138 M. We send our newsletter and ship products to members as far away as Australia, and as remote as Mutare, Zimbabwe.

We are kicking off our second decade with a fresh new look for both our newsletter and catalog. To make our publications more noticeable, easier and more enjoyable to read, we have changed from gray recycled paper and blue print, to white recycled paper with blue and black print. We hope you like the difference.

We sincerely thank all of those in the transportation community who have supported us and contributed time and effort over these last ten years making **McTrans** a success. We look forward to serving you during the next ten years and to the exciting developments in transportation the next century will bring.



Mc byte

The Annual Report continues on Page 2 with a chronology and cumulative statistics. Two new products, CORFLO Cyberbook (FHWA) and VisualTraffic (VisualSoft Co.) are reviewed on Page 3. Product updates appear on Page 4. TRANSYT-7F users can create a more reliable simulation model, see Page 5. Events and training to plan for are on the last page.

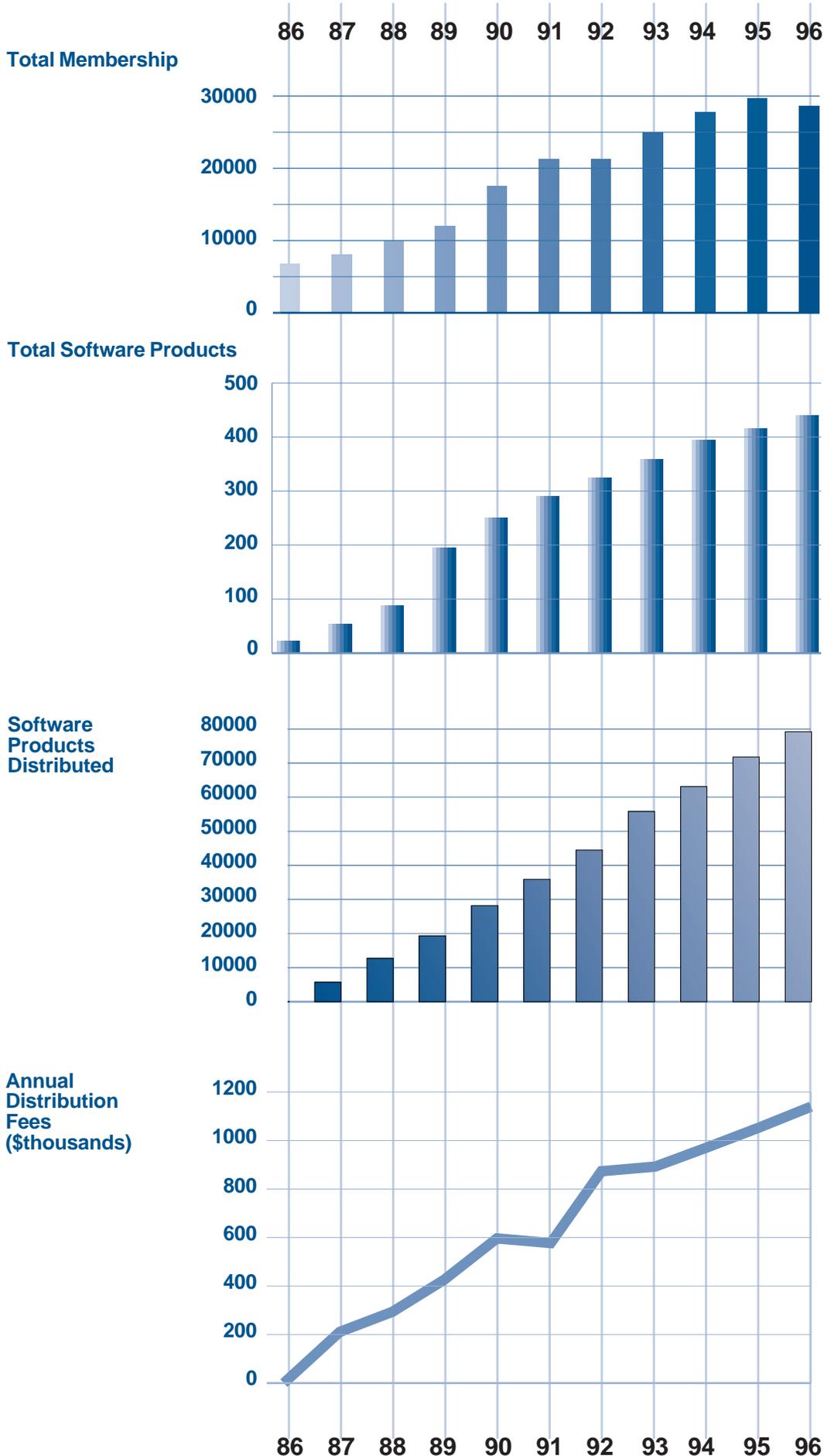


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2 Cumulative Statistics



Ten year Highlights

1986 *McTrans* is founded under a competitive contract from the Federal Highway Administration (FHWA) with the objective, "...to facilitate the exchange of information on the uses of the microcomputer and associated software among transportation professionals." *McTrans* formally "opened shop" on July 14, 1986 in Weil Hall at the University of Florida, with Ms. Martha Kirkwood as the *McTrans* Manager.

1987 Software Levels of Support (LOS) are established as a means of defining distribution fees based on the cost of providing various categories of software technical assistance. Privately-developed, proprietary software is first offered through *McTrans* under license agreements with the developers. The Highway Capacity Software (HCS) is released as the first maintained software distributed by *McTrans*.

1988 The FHWA contract ends in May and *McTrans* becomes a full service, entirely user supported center. After only two years, *McTrans* has approximately 12,000 members and 90 public domain and 25 proprietary products and Bill Sampson becomes the *McTrans* Manager, taking over for Acting Manager, Larry Hagen.

1989 *McTrans* fills its 10,000th order and grows to 145 public domain/shareware products and 50 proprietary products. *McTrans* continues to display, co-sponsor and advise to national and international conferences. *McTrans* becomes the exclusive distributor for the World Bank's Highway Design and Maintenance

nance Standards Model (HDM) and assumes responsibility of the TIME Support Center from Vanderbilt for the distribution and support of transit software.

1990 *McTrans* announces McLink, a 24-hour, PC-based electronic bulletin board system with conferences, on-line ordering and downloadable software, including the *McTrans* catalog on disk, McFinder. *McTrans* training increases with a TRANSYT-7F course in the Washington, DC area and the first HCS workshop in Orlando.

1991 *McTrans* membership breaks the 20,000 mark and Agency Licenses are introduced to provide discounted prices for agency-wide applications of *McTrans*-maintained software. The HCS moves to a new interface with the distribution of release 2 for HCS-Signals.

1992 *McTrans* fills its 20,000th order and adds a 1-800 number for toll-free messages and orders. The Methodology for Optimizing Signal Timing (M|O|S|T) series is announced as a five-volume, comprehensive resource, including a reference manual and users guides for the Arterial Analysis Package, PASSER-II, TRANSYT-7F and *WHICH* software packages.

1993 *McTrans* fills its 30,000th order and adds a file manager and screen saver to the popular McFinder catalog on disk. The revised Highway Capacity Manual (HCM) Chapter 7 for Multilane Highways is distributed in conjunction with the updated Multilane module of the HCS.

1994 *McTrans* is named a "global center" as a co-founder of World Interchange Network (WIN), a global road transportation knowledge exchange network. McLink is improved with increased speed, more phone lines and additional conferences and bulletins focused on technical assistance for several *McTrans*-maintained packages. *McTrans* co-sponsors two Advanced Intersection Analysis with Computer Models Seminars with the FHWA and the Australian Road Research Board.

1995 *McTrans* goes on line with a World Wide Web (WWW) Homepage (<http://www-mctrans.ce.ufl.edu/>), shared with its parent, the Transportation Research Center, offering and fills its 40,000th order. A major upgrade to the HCS, implementing the 1994 Update to the HCM, including a release 2 interface for the Main Menu and the Freeways, Ramps, Unsignal and Arterials modules. And, for the first time, the HCM itself is distributed through *McTrans*.

1996 *McTrans* celebrates its 10 year anniversary and renews its dedication to its mission, "to serve our national and international membership and the transportation profession by finding delivering and supporting surface transportation software of the highest quality for engineers, planners, and other transportation professionals." The WWW site is expanded to include an on-line catalog, with plans for on-line ordering, interactive technical assistance and increased e-mail interaction.

CORFLO CyberBook

CyberBook 4.5 is an on-line tutorial for the Federal Highway Administration (FHWA) TRAF CORFLO traffic simulation model. Based on the course material developed for the FHWA CORFLO Training Course, this tutorial walks you through the features capabilities, and applications of the model, complete with simple hands-on exercises. This graphical, full-color,, 295-page-on-line tutorial was developed as an Adobe™ Acrobat™ Portable Document Format (PDF) file that features hypertext links for easy navigation and full-text search for fast information retrieval. This online guide also provides a direct World Wide Web link to TRAF Home Global—the global home of the TRAF models. Microsoft® Windows® 3.1, 4 MB RAM, 10 MB free hard disk space, and 256-color VGA display are required. For more information, contact Ku Lee toll-free at 1-800-260-1001, fax: (703) 903-4996, or e-mail: kulee@viggen.com.

CORFLO CyberBook (#CFCB) is available at LOS 7 for \$60.

VisualTraffic

VisualTraffic is a new traffic assignment program that works with Excel 5.0 for Windows or Macintosh. It is based on manual methods of forecasting that help the user visualize the network. VisualTraffic allows diversity and relieves the user from designing spreadsheets.

The network can be drawn quickly with the mouse on a matrix of nodes. This network then becomes the interface to input distribution, route selection and assignments, making it as simple to understand as manual techniques with the advantage of spreadsheets. The user can itemize the networks to leave a clear record of the forecast assumptions. Printouts are report quality.

VisualTraffic is ideal for larger studies with the following limits:

- 1,000 nodes per network.
- 500 Zone-Trip Generator couplets.
- 25 routes per couplet.
- 25 intersections per route.

VisualTraffic Lite (25 node limit) does not require any licensing and can be used on small studies or as an educational tool. Both versions include a demonstration.

VisualTraffic (#VTRAF) and VisualTraffic Lite (#VTRFLT) are available for \$85 and \$5 respectively at LOS 7 from VisualSoft Company.

TRC Welcomes New Member



Dr. Albert Gan joined the TRC as an Assistant in Engineering in May 1996. He received his master's and bachelor's degrees in Industrial and Systems Engineering and his Ph.D. degree in transportation engineering from the University of Florida.

Dr. Gan currently serves as the TRC project coordinator for a FHWA project on traffic software testing, and is involved in a Florida DOT intersection

design project and *McTrans*' HCS/Windows software development. In addition, he is teaching a graduate course in Civil Engineering Systems. His research areas include highway safety, GIS-T, ITS, transportation systems modeling, and microcomputer applications in transportation.

Third World
Congress on
Intelligent
Transport
Systems

see you there

Orlando, Florida
Oct. 14-18, 1996.

Hosted locally by ITS Florida, a State Chapter of ITS America. *McTrans*' parent, the Transportation Research Center, is actively involved in the planning and local arrangements.

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"Intelligent Transportation: Realizing the Future."

Florida's Level of Service Manual and Worksheets

This handbook and the accompanying worksheets

- identify Florida's Level of Service Standards by area type, facility type, and number of lanes,
- use methodologies established in the 1994 Highway Capacity Manual (HCM) Update and Florida traffic, roadway, and signalization data, for broad planning applications and general LOS estimations, and
- provide methodologies in easy-to-use computer models that allow the analyst to use locally-specific input data for detailed facility planning.

The values shown in the generalized tables are based on the definitions and measurement techniques of the 1994 Highway Capacity Manual Update. The generalized tables are not

statewide standards; rather, they are guidelines on the measurement of highway level of service. The revisions made to this edition create a much broader perspective on the methodology for computing LOS. This edition provides substantially more information and guidelines on the use of the models and programs. The manual was modified to reflect the increased emphasis on the more detailed analyses which planners are required to conduct, especially in contested situations. Thus, analysts are strongly encouraged to use the computer models in all but the most broad planning applications.

Disk Label Information:
Manual in WP 6.0 Document
Worksheets in Lotus 1-2-3 Worksheets
Florida LOS Worksheets (#FLLOS) by the Florida DOT is available at LOS 3 for \$40.

HYDRAIN

The HYDRAIN application programs include the main HYDRAIN program and associated programs, such as editors and configuration software. The main HYDRAIN application program (HYDRAIN program) integrates and controls the entire system of Pooled Fund Project software. The HYDRAIN program supports engineering design and analysis programs and facilitates communication (data transfer) within the system. It provides a means of file and disk management. It contains tutorial capabilities and modules. The HYDRAIN program can review input, output, or other text files.

The engineering programs, input programs and other modules controlled by the HYDRAIN program are:

- HYDRA -Storm Drain and Sanitary Sewer Design and Analysis.
- WSPRO -Open Channel Water Surface Analysis.
- HYDRO -Design Event versus Return Period.
- HY8 -FHWA Culvert Analysis and Design.
- HYCHL -Flexible and Rigid Channel Lining Design and Analysis.
- HYEHEQET -Flow Equation Program.
- NFF -USGS National Flood Frequency Program.
- HYEEDT -Inputs/Edits HYDRAIN command line data sets.
- Support System Modules.
 - DOS Shell (go back and forth to DOS without leaving HYDRAIN).
 - System Maintenance (File Housekeeping)
 - System Utilities (Change drives, directories, devices, colors).
 - System Information.
- Future HYDRAIN Programs - other programs included as desired by the HYDRAIN user community.

HYDRAIN Version 6.0 (#HYD6) by the FHWA is available at LOS 1 for \$350. Upgrades from version 5.0 and the documentation are available at \$50 each.

SIDRA

is a total intersection analysis package for the design and evaluation of signalized intersections, roundabouts, two-way stop, all-way stop and yield sign control, signalized pedestrian crossings, and single-point urban interchanges. The methods used for different intersection types are well-integrated to ensure consistency in comparison of alternative treatments. SIDRA is an advanced analysis tool that uses detailed analytical models coupled with an iterative method to provide estimates of capacity and models of capacity and performance statistics (delay, level of service, queue length, stop rate, energy, emissions, cost). It offers the Highway Capacity Manual 94, Chapter 9 and 10 methods plus many advanced features.

SIDRA 5 for Windows, the latest version, runs under Windows 3.1 and 95. It incorporates several new innovations including timing and performance estimation methods for actuated signals, and a new progression factor for queue length and related performance measures allowing for the effects of platooned arrivals generated by coordinated signals.

SIDRA is applicable to a wide range of intersection types, including intersections with 5 or more legs, and can be used for driving on the left- or right-hand side of the road. SIDRA can determine signal timings for pretimed and actuated signals with simple as well as complex phrasing arrangements. Unique features of SIDRA

include detailed lane-by-lane analysis; modeling of drive cycles for estimating various delay components, fuel consumption, emissions and operating cost; shared lane modeling allowing for lane blockages; modeling of upstream and downstream short lanes (turn bays, reduced number of exit lanes, etc.); and direct modeling of slip lanes, turn on red and protected-permitted turns including the effect of platooned arrivals.

Its input and output graphics capabilities are well known. These include intersection, phase, movement and volume pictures for easy data checking, intersection pictures with displays of output statistics for individual movements, and graphs for the purposes of optimum cycle time and design life analysis.

SIDRA Version 5.0 (#SIDRA) by the Australian Road Research Board is available at LOS 6 for \$825. Extra copies and an educational version are also available at \$300.

update

WATCH

Package	Version	Status	Target	Distribution
HCS	2.1d	Complete	Available	HCSPATCH.ZIP
HYDRAIN	6.0	Complete	Available	Registered users may upgrade
HY-8	6.0	Complete	Available	Registered users may upgrade

NOTE: The HCS Patch is a cumulative process. Patch "d" includes all changes in previous patches.

by Meher P. Malakapalli
Bell-Walker Engineers, Inc.

The analysis of traffic operations in urban areas typically involves the use of traffic engineering simulation models. Such analysis may include existing and future scenarios. Due to the absence of any other credible method, simulation is often used by engineers and decision-makers to examine the future effects of a particular alternative. TRANSYT-7F¹ is increasingly becoming one of the most reliable and accepted optimization/simulation tools for traffic operations analysis in the transportation engineering profession. When applied properly, TRANSYT-7F can produce results that portray a precise picture of future conditions. However, an erroneous TRANSYT-7F model could lead to erroneous conclusions regarding alternatives' performance. A dependable model is vital for successful completion of a project. Methods to build and check a dependable TRANSYT-7F model [Ed. The term "model" is used in this article to refer to the data construct—the modeling of the network—not the computer model itself.], are described in this paper.

TRANSYT-7F was used for one of the most recent projects for Interstate 90/Sunset Way Interchange Feasibility Study for the Issaquah, Washington area. The project was sponsored by the City of Issaquah and was required to satisfy the requirements of the City, the Washington State Department of Transportation, King County, the FHWA, and the affected citizens. Several future scenarios were being evaluated and accurate TRANSYT-7F results were critical for the success of the project. Therefore, several new methods to build a factual model were investigated. These methods applied particularly to the evaluation of future scenarios. The following describes several strategies that were found to be effective building a more accurate TRANSYT-7F model:

- A network of intersections that includes a freeway interchange should always have input traffic volumes that are consistent with the output from a freeway operations analysis program such as *FREQ10PL*². Traffic conditions on the freeway always dictate the amount of traffic being delivered to the surface streets. It is important to realize this phenomenon and efforts should be made to use the output from the freeway program and adjust raw input volumes to TRANSYT-7F. This is particularly true if the future scenario being evaluated has large traffic volumes that will cause congestion on the freeway. This type of analysis will not only produce unerring output, but may in fact act as a feedback for the freeway operations analysis.
- For prediction of feeder link volumes from upstream nodes to downtown nodes, select link volumes from a transportation model are the best source. However, the select link runs are not frequently available, and in these cases, it is better to proportion traffic volumes based on input flows. Ignoring to code any input feeder volumes may cause a significant shift in the measures of effectiveness obtained from the model. Similarly, any known mid-block input flows should always be included, as these were found to account for a significant amount of delay.

- The calculation of saturation of flow rates are best determined using a field study. However, time and resources do not often permit the use of such a study. For the I-90/Sunset Way interchange study, saturation flow rates were computed using the *PASSER II-90*³ program. In the absence of a field study, this was found to be the most practical and quickest way to obtain saturation flow rates. However, several adjustment factors have to be ensured for local validity before using them specifically the lane utilization factors. For a majority of future scenarios with heavy volumes, lane utilization factors typically approach 1.0.
- Queue lengths in TRANSYT-7F increase substantially when volume-to-capacity (v/c) ratios reach 1.0. Obviously, these can be reduced by reducing the cycle length. However, queue lengths for movements with a v/c ratio greater than 1.0 should be examined for reasonableness before manipulating cycle lengths.
- Due to extensive data input that TRANSYT-7F requires for a multi-intersection network, there are numerous possibilities for coding errors. There are several network errors that TRANSYT-7F may not recognize from an input standpoint, but may actually be a significant misrepresentation. A good example of this is incorrect feeder link volumes which may be internally interpreted by TRANSYT-7F as an entirely different network. There are several areas that require a thorough inspection, but may not always be manually possible. A new software, *WinTransyt*⁴ (Beta version), which was developed at Lawrence Livermore National Laboratory by Keith Huffer and Rowland Johnson under the auspices of FHWA, accomplishes a majority of checks that are frequently overlooked by the users but are not reported in TRANSYT-7F as errors or warnings. This public domain software was found to be an extremely useful software to check, correct, and validate several model scenarios. Additionally, the layout of the network of intersections can be graphically viewed on the screen—a task which TRANSYT-7F is not ca-

pable of. Some of the errors that *WinTransyt* reports (which are found to be a very useful source for a good model build) are listed below:

- Two-way links with different lengths
- Misdirected external links
- Misdirected internal links
- Links with multiple flow sources
- Links with wrong orientation and invalid upstream links

A nice feature of *WinTransyt* is that it reports the error and also suggests possible corrections that can be made. Software such as *WinTransyt* will certainly improve the quality of traffic modeling using complicated simulation tools.

- Land use changes can be evaluated in TRANSYT-7F without having to run and evaluate transportation planning models that involve significant time and resources. Good judgement on traffic volume adjustments and appropriate modelling will save both time and effort spent on a particular scenario. Finally, TRANSYT-7F can model any type of flyover or interchange configuration, provided an accurate coding is made. **McT**

1. *Traffic Network Study Tool, Version T7F User's Manual, Release 7.2*, University of Florida, Gainesville, 1994.
2. *Demand Estimation Benefit Assessment of HOV-Lanes for Use with the FREQ10 Model*, Institute of Transportation Studies, University of California, Berkeley, June 1991. [Ed. the FREQ10 model is available from the University of California, Berkeley.]
3. *Progression Analysis Signal System Evaluation Routine II-90 (PASSER II-90) User's Manual, Version 2.0*. Texas Transportation Institute, Texas A&M University, December 1993.
4. Huffer, Keith and Johnson, Rowland. *Win-Transyt User's Guide, Version 1.01*. Lawrence Livermore National Laboratory, November 1995. [Ed. *WinTransyt* was distributed by LLNL to all registered T7F users in 1995.]



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